

MIMS OCEAN SCIENCE

VOLUME 2 ISSUE 4
JULY/AUGUST 2005

THE SCIENCE & TECHNOLOGY JOURNAL OF THE MINERALS MANAGEMENT SERVICE

**The Key to Our
Energy Future**

**The Right Staff –
Working for
the Nation**

**Pride in a Job
Well Done**

**Drilling Where
No One Has
Drilled Before**

**Going Deeper
and Colder**

**Environmental
Studies
Program –
Collecting the
Data**

**Native
Collaboration
and OCS
Development
in Alaska**



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MMS OCEAN SCIENCE is published bi-monthly by the Minerals Management Service to communicate recent ocean science and technological information and issues of interest related to offshore mineral recovery, ocean stewardship, and mineral revenues.



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Correction to the May/June Issue

Excelerate Energy's Gulf Gateway project is 116 miles offshore and has a boilloff of 0.15% per day or less. Their vessels have a cost in the \$200 million range.

ABOUT THE COVER

Researchers being lifted from research vessel to platform. Photo by Gregory S. Boland.

All photos courtesy of Minerals Management Service unless otherwise noted.

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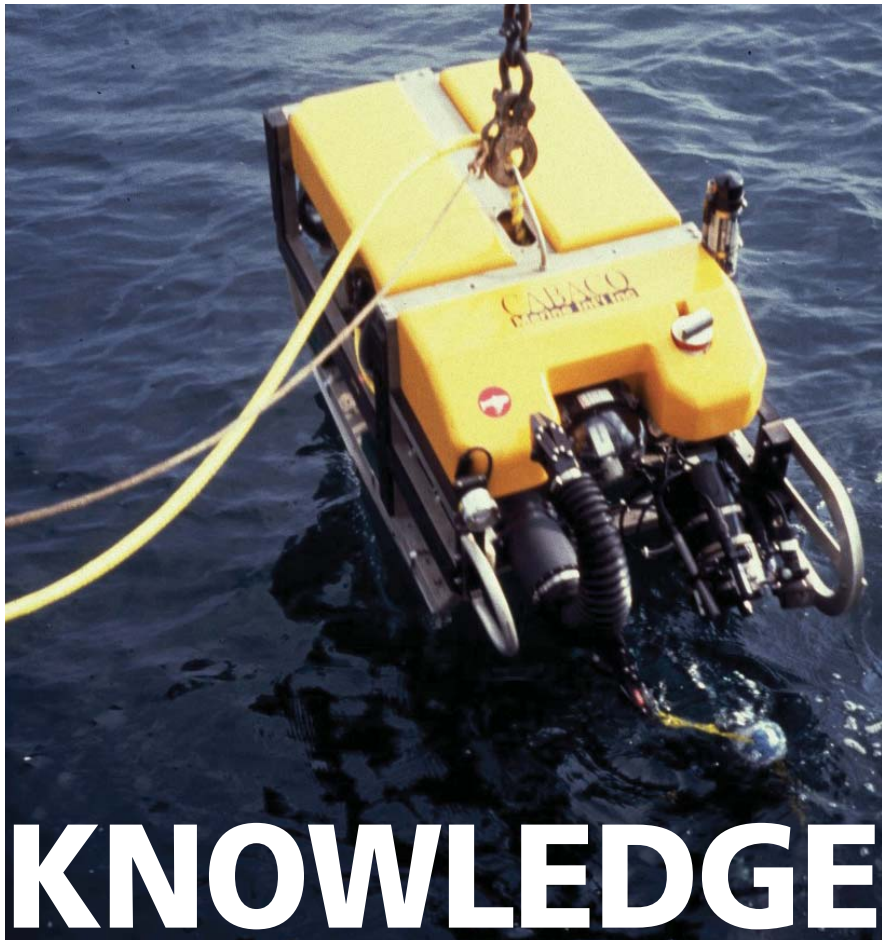
- 3 Knowledge –
The Key to Our Energy Future**
- 4 The Right Staff –
Working for the Nation**
- 5 Pride in a Job Well Done –
An Ocean of Opportunity**
- 5 *Deepwater Nautilus*
Breaks World Record**
- 6 Using the Data to
Make Better Decisions**
- 7 Drilling Where
No One Has Drilled Before**
- 8 Evaluating Shallow Hazards –
Surveys for Historic Shipwrecks**
- 9 Going Deeper and Colder –
Exploring New Environments**
- 10 Environmental Studies Program –
Collecting the Data**
- 11 Native Collaboration and
OCS Development in Alaska –
A Mutual Understanding**
- 12 New Waves
Late-breaking News & Information**

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Left: A remotely operated vehicle (ROV) being deployed.

Top: A research diver taking a photograph of coral at the Flower Garden Banks.

Bottom: Rockfish sitting on a coral head.

All photos by Gregory S. Boland.



KNOWLEDGE

Many of the decisions regarding the direction to pursue in the development of the Outer Continental Shelf (OCS) are affected by the types of energy resources, the technological challenges, and the potential environmental effects. The National Environmental Policy Act (NEPA) requires that the Minerals Management Service (MMS), like all Federal agencies, use knowledge from environmental data and scientific expertise to provide the best possible information from which to make responsible decisions. This information is used to address critical questions asked by decisionmakers and the public concerning the effects on the environment, both human and marine, by the recovery of energy resources such as oil and gas. Some of these critical questions are as follows:

THE KEY TO OUR ENERGY FUTURE

How can we minimize the impacts to ecosystems while developing energy resources?

What will development mean for the future of the OCS?

How should the Nation's energy needs be weighed against the possible environmental effects?

How can technological advancements be used to improve and encourage future development in a safe and environmentally sound manner?

The MMS has sponsored hundreds of studies to obtain the data necessary to address these questions. The Environmental Studies Program (ESP), the Technological Assessment and

Research Program (TA&R), and their many partnerships with academic institutions, industry scientists, and international agencies generate the data and analyses to ensure MMS has the best information available on which to make plans for the future of the OCS.

What is the answer as to where we are going on the OCS? The broad answers are deeper, colder, smarter, and safer. And how do we get there? Through responsible, detailed planning by the expert teams that make up MMS. It is their job to ensure the environment is protected while providing energy to the Nation for generations to come.

THE RIGHT STAFF

A young geologist using updated geophysical data to search for potential pockets of oil and gas... a marine biologist working with university scientists to document how oil and gas platforms affect the marine environment in which they stand... a physical oceanographer studying how ocean currents affect coral reefs beneath the ocean surface... a zoologist exploring the arctic ice to discover how polar bears may be affected by potential oil and gas leases... an auditor combing through yearly figures to ensure that the Nation is receiving fair market value for its resources... What do these people have in common? They represent a glimpse of some of the diverse opportunities available at the Minerals Management Service (MMS) to those who seek to make a difference in the future of our Nation's energy needs and environmental health.

Since being created in 1982, MMS's mandate has been "to manage the mineral resources on the Nation's Outer Continental Shelf (OCS) in an environmentally sound and safe manner

Bob Broome, geologist, and Carol Crawford, petroleum engineer, examining geophysical data.



MMS scientists Bill Shedd, Jesse Hunt, Mary Boatman, Greg Boland, and Mike Smith participate in an exploration of the Gulf of Mexico seafloor on the Johnson Sea-Link Submarine.

and to collect, verify, and distribute, in a timely fashion, mineral revenues generated from Federal (onshore and offshore) and Native American lands." This mission is enormous, but it is done with an approximate workforce of only 1,800. To accomplish this, MMS

maintains a very effective staff with a broad range of technical backgrounds ranging from engineers to support staff.

What will the future bring at MMS? As we move farther and deeper into the OCS, there will be more opportunities to use new imaging and research software, review technological advances in equipment to meet environmental stresses, develop environmental protection plans for alternative energy, and a multitude of other new opportunities and as-yet-unknown challenges. As our Nation's energy needs continue to grow, so will the importance of MMS's mission and its diverse and highly educated staff.

"...a glimpse of some of the diverse opportunities available at Minerals Management Service (MMS) to those who seek to make a difference..."

PRIDE IN A JOB WELL DONE

Mike Conner, Chief of Technical Assessment and Operations Support Section with the Minerals Management Service (MMS) in New Orleans, has served with MMS for 15 years, starting in the pipeline section and eventually moving into the technical section four years ago.

The main focus of Conner's section is the review of deepwater operations plans (DWOP's). Each structure in water deeper than 1,000 feet and any subsea well must be reviewed and approved by the Technical Assessment and Operations Support Section to ensure safe construction. He comments, "The detailed DWOP's might have 100 sheets of diagrams and we have to go through each one, checking each safety device on each platform. Major platforms have about 1,200 safety devices."

Conner has a petroleum engineering degree, which is very useful in the highly technical work he performs. He enjoys his work with MMS and explains the opportunities it provides him. "I get to look at everything that goes on in the Gulf of Mexico, the premier oil and gas area in the world. We're reviewing the oil and gas industry's space age-type operations, and that's really exciting."



Mike Conner, Chief of Technical Assessment and Field Operations Support Section with MMS.

According to Conner, the area of oil and gas production currently getting the most attention is deepwater. Since deepwater drilling and production is a relatively new phenomenon, Conner notes that you can't "go get a degree" in the new deepwater technologies because no one has done them before. Drilling in the Gulf of Mexico recently set a record at 10,011 feet of water.

Conner explained that his section comprises geologists, engineers, and geophysicists. He continued, "We review shallow hazards, drilling, production, workover (activities), and subsea (structures)."

People not familiar with offshore activities sometimes have misconceptions about the offshore oil and gas industry. Conner relates, "One common

misconception is that people think that the oil and gas industry offshore in Federal waters is like what you see in the movies: grease and oil all over... On (floating production facility) Mars, which cost 1.7 billion dollars to build, you could eat off the floor if you wanted to. You have to put booties on just to walk on the floor! It's not like in the movies."

Conner notes there are many opportunities in many fields in MMS. He feels that a college graduate interested in MMS employment should check out all the different areas and jobs to help decide where to start first in this "ocean of opportunity."

The MMS's careful, regular inspection of rigs and platforms for the safety of the workers and the environment is a source of pride for Conner. He says, "I'm proud of what we do here at MMS."

FOR MORE INFORMATION ON CAREERS:

Careers in Science

Website: <http://www.gomr.mms.gov/homepg/lagniapp/careerpg.html>

Deepwater Nautilus Breaks World Record for Moored Rig

The *Deepwater Nautilus* team has set another world water-depth record for an offshore drilling rig operating in moored configuration at 8,951 feet of water in Lloyd Ridge Block 399 in the U.S. Gulf of Mexico for Shell. The achievement surpasses the prior world record for a moored rig of 8,717 feet of water set by the *Deepwater Nautilus* team for Shell in Alaminos Canyon Block 857 in the U.S. Gulf of Mexico.

The *Deepwater Nautilus* team has been setting world water-depth records for a moored unit since the deepwater semisubmersible went on its first location in 2000 for Shell.

The *Deepwater Nautilus* is one of 13 Transocean 5th-generation mobile offshore drilling rigs that work in the world's deepest water depths. A multi-operation-class rig, the *Deepwater Nautilus* can operate within a pattern of eight moorings. A 9,400-metric-ton deckload accommodates all the equipment, riser, conductor, and casing to start a well

and work through setting the blowout preventer on the wellhead quickly and efficiently.

In addition to the world water-depth records for a moored rig, the *Deepwater Nautilus* team also holds the world record for the deepest subsea completion, set at 7,570 feet of water on the Shell-operated Coulomb project C-2 well in the U.S. Gulf of Mexico.



Deepwater Nautilus



Divers examine mussels growing on Platform Grace off the California coast near Santa Barbara.

USING THE DATA TO MAKE BETTER DECISIONS

by Fred Pilz, Senior Environmental Scientist, Pacific OCS Region

Managing energy resources on America's offshore public lands is a complex balance of science, public engagement, and sound policy-making. The Outer Continental Shelf Lands Act (OCSLA) charges the Minerals Management Service (MMS) with this important responsibility. In addition to carrying out management and regulatory responsibilities under the OCSLA, the MMS must also ensure it meets Federal legal mandates set forth in the National Environmental Policy Act (NEPA). The NEPA requires that MMS use the best available data and information in preparing environmental review documents for OCS oil and gas lease sales and for the many decisions that MMS must make in approving offshore exploration, development, and production.

The MMS Environmental Studies Program (ESP), one of the Federal Government's premier ocean research programs, fulfills a critical section of the OCSLA that requires that the MMS acquire the necessary information to assess and manage environmental impacts in areas that may be affected by Federal offshore oil and gas activities. The connection between the ESP and NEPA is therefore direct and has been a driving force in the history of the

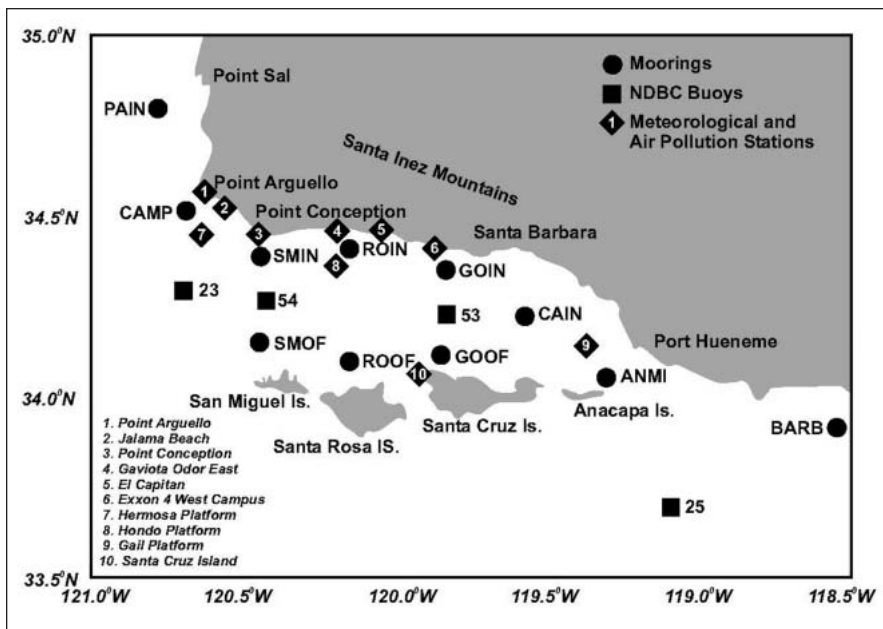
"The Secretary shall conduct a study of any area or region included in any oil and gas lease sale in order to establish information needed for assessment and management of environmental impacts on the human, marine, and coastal environments of the Outer Continental Shelf and the coastal areas which may be affected by oil and gas development in such area or region."

(Section 20 of the OCS Lands Act)

program. The intense focus of the public, environmental interest groups, and government agencies on the connection between the ESP, NEPA documents, and MMS oil and gas decisions is best illustrated by the Presidential Task Force convened in 1989 to address the knowledge base that was available for leasing decisions in California and Florida. This Task Force turned to the National Academy of Sciences National Research Council (the preeminent scientific body in the United States) to assess the state of information available to the agency through the ESP and elsewhere and specifically analyzed how such information and data had been captured in NEPA Environmental Impact Statements (EIS).

Since that time, MMS's ESP has worked diligently to address the data gaps identified in the series of NRC reports and has gone far beyond the recommendations to capture the information that is used regularly in MMS-prepared NEPA documents. A recent example of the relationship of an ESP study to a NEPA document is the use of physical oceanography data in a draft EIS for undeveloped oil and gas leases in the Pacific OCS Region. These leases are at present the subject of litigation and have not been drilled, but the use of ESP data in the EIS is illustrative of the connection between the ESP and NEPA.

The Pacific Outer Continental Shelf Delineation Drilling Activities in Federal



Santa Barbara Channel and Locations of Data Gathering Moorings and Buoys.

Institution of Oceanography. In addition to the data, scientists at Scripps had been able to describe the dominant circulation patterns in the area being analyzed in the draft EIS. Wind and current information collected by the Scripps research were incorporated into the Oil Spill Risk Analysis (OSRA) computer model that MMS developed for use in NEPA documents. As a result, the predictions of oil-spill movement created by the model are more accurate. In addition to the MMS OSRA analyses, ocean drifter tracts were incorporated into the EIS analysis directly from the research generated through the ESP and supplemented the analyst's ability to predict potential environmental impacts.

Far from being an exception, the use of ESP data in the draft EIS for California illustrates the strong continuing link between MMS's environmental research and NEPA documents in all regions where the Department of the Interior manages offshore oil and gas resources for the Nation.

Waters Offshore Santa Barbara County, California Draft Environmental Impact Statement (OCS EIS/EA MMS 2001-046) is typical of the NEPA documents prepared in the region. Extensive public and local government scrutiny requires that such documents be encyclopedic, using the most recent environmental

data and analytical techniques available. In the case of the draft EIS, the MMS had more than five years of extensive physical oceanography data collected in the Santa Barbara Channel and Santa Maria Basins available through a study funded as a Cooperative Agreement with the University of California, Scripps

Drilling Where No One Has Drilled Before

On February 10, ExxonMobil Corporation spudded one of the most anticipated wells on the Gulf of Mexico Outer Continental Shelf. The well is being drilled in the West Blackbeard prospect, which is thought to have a potential for several trillion cubic feet of recoverable gas in the Miocene and older sections. The location of the well is in South Timbalier Block 168, in a water depth of only 70 feet.

So why is it so well-known? If completed, this Blackbeard well will rank among the deepest wells ever drilled on the planet and the deepest in the Gulf of Mexico. The well has a scheduled depth of 32,000 feet, according to reports.

To do the job, ExxonMobil has hired the Rowan Industries "Scooter Yeargain," a new series of Tarzan Class rigs targeted for shallow water and deep gas drilling. The Tarzan Class design is a lighter-weight version of Rowan's "Gorilla Class" and "Super Gorilla Class" designs, with the hull half the size of the Gorillas. The "Scooter Yeargain" is capable of drilling deep gas wells down 30,000 to 40,000 feet – about 15,000 feet deeper than the industry's aging jack-up fleet.

But don't expect to find results on this well in the near future; it will take approximately nine months to a year to drill this site.

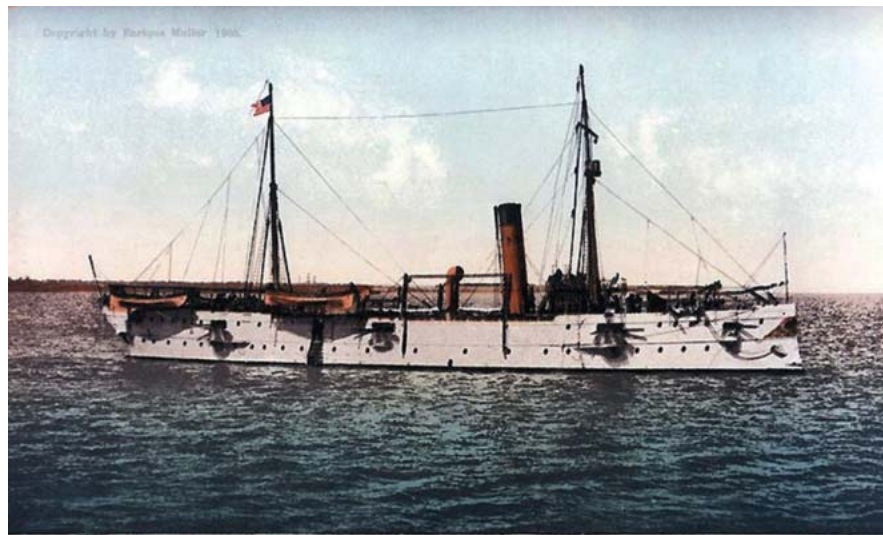
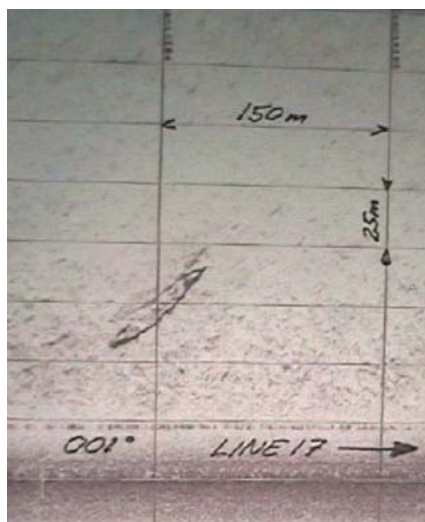
Rowan's Scooter Yeargain Tarzan Class jack-up rig being constructed.



EVALUATING SHALLOW HAZARDS

Under Section 106 of the National Historic Preservation Act (NHPA), the Minerals Management Service (MMS) has the responsibility to consider the effect of its actions on significant archaeological resources. The MMS has adhered to the NHPA by requiring industry to conduct remote-sensing surveys and avoid potential targets that could be associated with archaeological resources. Many of these targets do not undergo additional evaluation to determine whether they are actual shipwrecks or, if they are, whether they have any archaeological significance. The general practice is simply to avoid any suspicious areas.

As a result, MMS amassed a tremendous amount of information about the location of these anomalies, but still needed to know more about the effectiveness of this process. Detailed information about these anomalies has value in eliminating extraneous, archaeologically insignificant sites from further concern and in refining the analytical methods used in selecting certain sites for avoidance in the future. In order to help understand if MMS-prescribed avoidance of seafloor features was sufficient to provide adequate protection to significant historic resources, a study was awarded to PBS&J of Austin, Texas, in November 2003 to



U. S. S. "Castine" at anchor. Pensacola, Fla.
Color-tinted post card of a photograph taken circa 1905 at Pensacola, Florida, by Enrique Muller. Courtesy of the Naval Historical Center.

ground-truth, positively identify, and assess the National Register status of several sidescan-sonar targets.

Fieldwork for this study has been completed and was carried out as two separate task orders, over two one-week periods. The first was completed in May 2004 and successfully investigated seven sidescan-sonar targets. The second was recently completed in May 2005 and successfully investigated five sonar targets. Of the 12 targets examined, 4 were confirmed to be historic shipwrecks.

Probably the most significant vessel identified was that of the former U.S. Naval gunboat *Castine* (above), which was documented in May 2005 in the Grand Isle area, south of Fourchon, Louisiana. *Castine* was built in 1893 and commissioned in October 1894. Preliminary research suggests that this ship may have been the first U.S. Naval vessel to capture a Spanish ship during the Spanish-American War of 1898. After serving as a submarine tender in World War I, *Castine* was decommissioned in 1919 and sold in 1921. The vessel sank

Sidescan-sonar survey of the *Castine* shipwreck provided to MMS by industry.

in a collision off the mouth of the Mississippi River in 1924 while in tow to Sabine, Texas.

Today the *Castine* rises about 10 feet above the seafloor in over 100 feet of water and is covered in shrimp nets. Most of the hull appears to be intact and several hatch covers and wooden deck planks were observed on the deck of the vessel. Unfortunately, visibility at the site was less than 2 feet, but observations were made that identified at least four gun ports along the starboard side of the vessel. Further information on this vessel and the others examined during this study will be published in a final report of findings due in November 2005.

FOR MORE INFORMATION:

Archaeological Resources Regulations

Website: www.gomr.mms.gov/homepg/regulate/regs/laws/postsale.html#arl

Gulf of Mexico Archaeological Information

Website: www.gomr.mms.gov/homepg/regulate/envirom/archaeological/introduction.html

GOING DEEPER AND COLDER

New technological advances in the exploration, drilling, and production of oil and gas seem to emerge daily. In the interest of safety, potential advances are reviewed and approved by the Minerals Management Service (MMS), Technology Assessment & Research (TA&R) Program before implementation of these innovations. The TA&R Program was established in the 1970's to provide for research into pollution prevention and operational safety. Its primary objectives are technical support to MMS decisionmakers; technology assessment to ensure the Best Available and Safest Technologies (BAST) are used in the Outer Continental Shelf (OCS); acting as a research catalyst for safety, engineering, oil spill and cleanup; and providing research for international regulatory initiatives. TA&R incorporates two primary research programs: Operational Safety and Engineering Research (OS&ER) and Oil-Spill Response Research (OSRR).

OS&ER addresses the complete range of oil and gas technologies from the drilling of exploratory wells to active production to the decommissioning of platforms and other equipment. As exploration and production move deeper offshore, new techniques and equipment must be developed to meet the physical and economic challenges imposed by deepwater (greater than 10,000 feet). Technologies developed to meet the challenges of deepwater or sea ice are often unique ideas and designs constructed of advanced materials. Through a cooperative agreement with the Offshore Technology Research Center at Texas A&M University, research is conducted using model platforms in a



OHMSETT facility test of containment boom and skimmer used to control and recover oil in open waters.

wave tank. These experiments mimic the impacts from ocean storms and are used by engineers in the design of the platform.

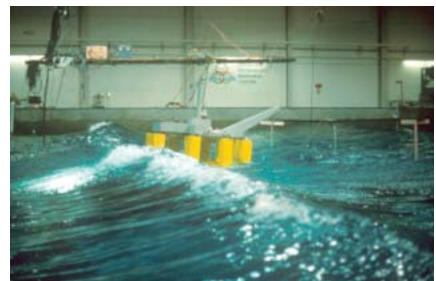
Information from the OSRR program is used to make "regulatory decisions pertaining to permitting and approving plans, safety and pollution inspections, enforcement actions, and training requirements." The goal of OSRR is to ensure the best available oil-spill response technology is immediately available should any spill occur. The focus of the program is to identify and develop technology that will prevent any offshore spill from reaching sensitive ecosystems on and offshore. Essential to the OSRR program is OHMSETT, the National Oil Spill Response Test Facility located in Leonardo, NJ, which provides testing, training, and research opportunities for TA&R program and industry scientists and engineers. The aboveground concrete test tank is one of the largest of its kind, measuring 203 meters long x 20 meters wide x 3.4 meters deep, and is

Left: Researcher testing oil in a laboratory at the OHMSETT facility.

Right: Test of oil and gas rig sea state stability at the Texas A&M facility wave pool in College Station, TX.

filled with 10 million liters of crystal clear salt water. Public and private sector agencies and organizations contract the use of the facility to test oil-spill containment and cleanup equipment and techniques, to test remote-sensing devices and alternative response methods (in situ burning and dispersants), and to conduct responder training as well as basis research.

As oil and gas exploration moves to deeper and icier environments, it becomes imperative that MMS has access to the best scientific, technological, and environmental information on which to base decisions. The results of the TA&R Program, incorporated with the Environmental Studies Program, help ensure an environmentally sound and safe future for the OCS.



COLLECTING THE DATA

From the currents deep in the ocean to the migration of birds, the Minerals Management Service (MMS) is collecting data to be used to make sound decisions about the impacts from offshore oil and gas activities as well as the recovery of sand for beach renourishment. Through the Environmental Studies Program (ESP), scientific experts are enlisted to make the observations, interpret the data, and report to MMS about the different aspects of the marine ecosystem. Within MMS, the scientific staff takes this information and uses it to make evaluations that are presented to decisionmakers who oversee the resources of offshore Federal lands.

The Outer Continental Shelf Lands Act authorized the ESP in 1978 and established three goals for the program:

- Define and gather the information needed for the assessment and management of impacts on the human, marine, and coastal environments of the Outer Continental Shelf (OCS) and nearby coastal areas.
- Monitor and predict the possible impact of chronic, low-level pollution or other large or small spills of oil and gas, drilling fluids, cuttings discharges, pipelines or onshore facilities.
- Establish possible trends and changes in human, marine, and coastal environments and the causes of those changes.

The scope of this mission has made ESP the “largest, single-agency, mission-oriented, marine-studies Program in the Federal Government.” Since its inception, more than \$750 million has been invested by the ESP on research and synthesis of information.

The emphasis of ESP has changed over the years. The initial focus was



Research diver collecting a water sample used to evaluate the use of oxygen by organisms that live in the sediment. Photo by Gregory S. Boland.

establishing baseline information through biological, geological, meteorological, and oceanographic surveys and studies of the OCS. As more information was cataloged, the emphasis was narrowed to more specific topics, problems, and phenomena. For example, new technologies such as computer-modeling have allowed for the integration of information into predictive models. These models enable researchers to see more easily the “whole picture” of the interaction of human, marine and meteorological systems. But models do not hold all of the answers, so MMS is continually pursuing the collection of data on everything from red snapper around platforms, deep-sea currents, location of archaeological

resources, and movements of sperm whales.

Facilitating the sharing of new information between the stakeholders, the technical disciplines, and the decisionmakers is also a goal of the ESP. Numerous meetings and workshops, which are open to the public, are used to share this information among the scientific experts, the MMS staff, and anyone else who is interested in the topics. In addition, research scientists are encouraged to publish in peer-reviewed journals and present findings at conferences and symposia, sharing their data with the rest of the scientific community. Another information dissemination tool is the Environmental Studies Program Information System (ESPIS), which makes the study findings available online.

Collecting the best data, making sound interpretations, and sharing the findings are all a part of the mission of MMS and the Environmental Studies Program. With this information, the marine environment can continue to be protected during development of the Nation’s resources.

FOR MORE INFORMATION:

Environmental Research at MMS

Website: www.mms.gov/offshore/EnvironmentalResearch.htm

Environmental Studies Program

Website: www.mms.gov/eppd/sciences/esp/index.htm

NATIVE COLLABORATION AND OCS DEVELOPMENT IN ALASKA

A MUTUAL UNDERSTANDING



Skin boat made with walrus skins, used by Alaskan Natives for whaling.

The search for new oil and gas resources to meet our growing energy needs is a national priority. That search and subsequent development could potentially have an effect on the subsistence and culture activities of the Native populations of the region being explored. One vital concern of the Minerals Management Service (MMS) is the potential for social and environmental damage on local populations, economies, and social and cultural systems in areas where exploration activities occur. The MMS works with industry and native populations to assess and document that potential and to ensure that exploration and development of the energy resources is done in a manner that will avoid harm to the sociological systems currently in place.

Three diverse areas in the Alaska region are currently the subject of active planning at MMS: the Beaufort Sea; the Cook Inlet in the Gulf of Alaska; and the northwest Alaskan coast, which includes Hope Basin, Norton Basin, and the Chukchi Sea. In these areas, environmental damage is of special concern because it is the habitat of the marine mammals and fish that native peoples

depend on; these are the natural resources available locally for food, shelter, and livelihood. The integration of traditional and local knowledge about the environment is vital to an assessment of potential disturbance to whale, mammal and fish habitat, which could negatively affect its subsistence use.

The importance of input from the Alaskan Native community in development and exploration is illustrated by the cooperative relationship between MMS's Alaska Region and the North Slope Borough (NSB), the Alaska Eskimo Whaling Commission (AEWC), and Inupiat Community of the Arctic Slope (ICAS). These groups confer with MMS to address environmental and cultural

An Alaskan Native searching for whales with binoculars. In the foreground is a harpoon attached to a skin float.



concerns to develop mutually agreed upon compromises. In fact, as a consequence of the strong working relationship that has been developed, all companies are required by MMS to consult the AEWC before initiating any exploration or development activity that may affect the harvest of bowhead whales. In addition, AEWC and MMS coordinate research and survey activities to ensure aerial data collection does not interfere with subsistence harvests.

The Alaska Region Environmental Studies Program has initiated approximately 60 studies, which include topics such as socio-economics, marine mammals, birds, and oceanography. Alaskan Native communities play a significant role in the planning and execution of these studies, as well as the identification of areas that should be studied. For example, in 2003, MMS sponsored a workshop on Arctic cisco (a type of fish), which included Nuiqsut village elders and outside experts. The workshop resulted in a list of more than 60 issues and questions to be studied as part of MMS's ongoing mission.

Communication and data sharing between the communities and the Alaska Region is ongoing and helps enhance the mutual understanding of each party. Such joint efforts enhance the stewardship of the environmental and cultural resources of the Alaskan coast and assist in building partnerships between MMS and the communities that depend on the subsistence resources.

MMS – A Leader in Securing the Nation's Domestic Energy Supply



A Sperm whale exhaling (or blowing) in the Gulf of Mexico.

NEW WAVES Late-breaking News & Information

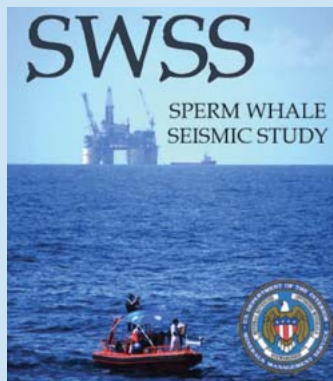
Sperm Whale Seismic Study Begins Final Year

The Gulf of Mexico has many whales and dolphins (cetaceans), including a resident population of sperm whales. The Gulf also has extensive offshore oil and gas development, and concern exists that noise from industry activities, in particular seismic airguns, may create problems for cetaceans that live in the same waters.

In 1999, the Minerals Management Service (MMS) began planning a study to investigate the lives of Gulf of Mexico sperm whales and if seismic vessels and offshore platforms affected them. In 2000-2001, MMS conducted a preliminary study through cooperation with the National Marine Fisheries Service (NMFS) and in 2002, the Sperm Whale Seismic Study (SWSS) began with

additional support from an Industry Research Funders Coalition (IRFC), the Office of Naval Research (ONR), the National Science Foundation (NSF), and the National Fish and Wildlife Foundation (NFWF). The 5-year Cooperative

Agreement, awarded to the Texas A&M Research Foundation, is managed by the Texas A&M Department of Oceanography and includes researchers from around the world. June 2005, begins the fourth and the final year of research cruises for SWSS. Next year will be devoted to analyzing and reporting on data collected from all the SWSS cruises and a final report will be released in early 2007. How do you study the lives of sperm whales? Check out the MMS website at www.mms.gov/swss/ to learn more about this study and the most recent cruise.



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