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An MMS diver inspects a segment of an artificial reef in the Gulf of Mexico for damage from recent hurricanes. MMS photo



## Nine Oil Companies Billed For Underpaid Royalties

So far, MMS auditors are right on schedule with billing 20 major oil companies for alleged past royalty underpayments in California. To date, nine companies have been billed close to \$274 million. The bills are the result of Interior's reassessment of the amounts of royalties owed to the government for oil produced onshore and offshore California between 1980 and 1988.

The amounts billed range from \$117 million to \$57,175. While all the companies royalty payments were assessed at the same rate, the amount of the bills varied depending on how much crude oil was produced and how much interest had accrued.

Actually collecting the amounts billed is another matter, as MMS expects that all the companies will appeal their royalty reassessments. It will probably be years before legal actions are completed or settlements are reached.

## Around MMS

After a three-month leave of absence, **Donna Cedar-Southworth**, of the MMS Office of Communications, has decided to put her federal career on hold to pursue a writing career while working from home and spending more time with her infant daughter.

"Freelance writing has always been my goal," she explained during a farewell luncheon attended by her co-workers and MMS Director **Cynthia Quarterman**, MMS Associate Director for Offshore Minerals Management **Carolita Kallaur**, and Interior Assistant Secretary for Land and Minerals **Bob Armstrong**.

During her years with MMS, which she joined in 1988, Cedar-Southworth wrote speeches for a number of MMS directors and other Interior officials. She also wrote articles; prepared posters and displays, including the design and development of MMS's interactive video *Future Choice*, which was on display at the Louisiana Science and Natural History Museum for two years and recently moved to its new home at the soon-to-be-opened Offshore Energy Center Museum in Galveston, Texas. Cedar-Southworth served as editor of *MMS Today* and bureau editor for *People, Land and Water*. Her talents will be missed.

**Elverlene Wms-Flatts**, a mineral leasing specialist, celebrated the Pacific Region's support for the Youth Motivational Task Force by participating in the Task Force's entry in the Martin Luther King, Jr., Memorial Parade held in Los Angeles.

"Being a part of the Task Force and this historic march at the same time is a dream fulfilled," said Wms-Flatts. "Even the rain couldn't dampen the spirit of this celebration."

The Task Force is a professional organization that provides guidance and motivation to at-risk students on the importance of staying in school.

Donna Cedar-Southworth, right, with President Clinton.



## Hurricanes and Artificial Reefs: What's the Connection?

Les Dauterive

In 1995, Hurricanes Erin and Opal hammered the Florida Panhandle. We all know the damage these two storms did to the coastline of Pensacola and the Fort Walton-Destin areas. Less obvious are the severe consequences these storms can cause underwater.

According to the areas' local newspapers and the recreational and sport fishing and diving community, Erin and Opal had severe effects on offshore artificial reef development and its benefits to the local economy. In a recent application to the Army Corps of Engineers for new reef sites, Okaloosa County reported that Hurricane Opal destroyed 9 percent of the reefs in the local waters offshore Destin.

A variety of materials, including tires, car and airplane bodies, bridge rubble, military tanks, retired ships, oil and natural gas structures, and fabricated reef balls and pyramids, has been used to create hard substrate on offshore Florida's sea floor of endless sand and scanty outcrops of low-relief rock. These man-made materials, also known as artificial reefs, reportedly provide the livelihood for recreational and sport fishermen and divers in this region of the Gulf of Mexico.

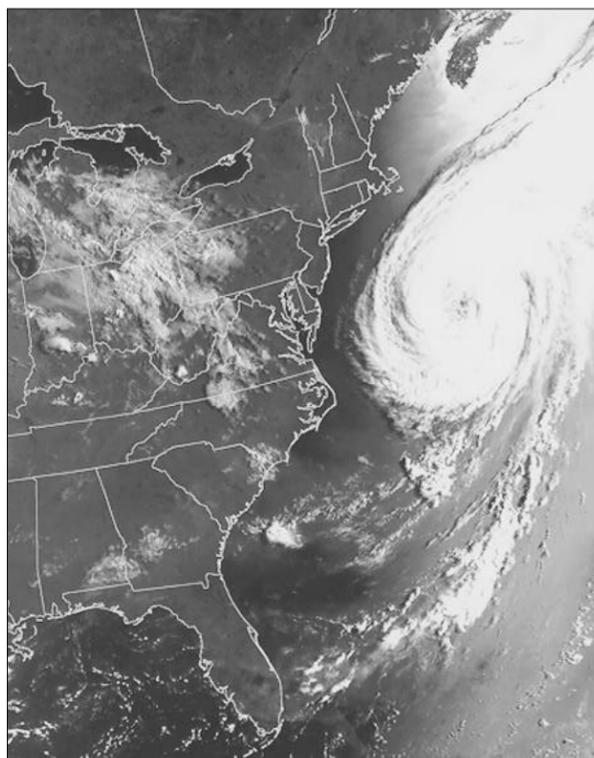
**Les Dauterive** and **Jim Kendall**, divers for the MMS Gulf of Mexico Region, participated with divers from Florida's Department of Environmental Protection, Santa Rosa County, and the University of West Florida in two days of an ongoing study being conducted by the university's Institute of Coastal and Estuarine Research. The study is designed to evaluate and determine the relative impacts that Hurricanes Erin and Opal had on certain artificial reef materials, which types of reefs were moved the greatest distance, and which experienced the most damage after the storms.

MMS divers focused on evaluating and documenting firsthand the two submerged oil and natural gas platforms donated to Florida by Tenneco and Chevron through the Rigs-to-Reefs program, comparing how they fared with other artificial reef materials affected by the storms.

The results were not surprising to MMS divers, who experienced dives after Hurricanes Juan and Andrew on Rigs-to-Reefs sites offshore Louisiana. The Tenneco and Chevron sites appeared to be unaffected by the hurricanes. Because of the Chevron

site's comparatively shallow depth, specific observations were made at its base. There was no evidence it had moved. Extensive biofouling communities covered both the Tenneco and Chevron artificial reefs. Small reef fish were also abundant at both artificial reefs, but larger grouper and jacks that were abundant at the Chevron site were absent at the Tenneco site.

Preliminary results indicate that Hurricanes Erin and Opal either destroyed or moved many artificial



reefs, which probably contributed to a significant increase in fishing at the surviving Rigs-to-Reefs sites. Numerous tangles of abandoned fishing line, leaders, and hooks indicated intense fishing pressure at the Tenneco site. The owner of the chartered diving vessel said he believed severe overfishing was the reason for the lack of large fish on the Tenneco site. He told the MMS divers that on a typical weekend as many as four or five charter fishing boats are tied up at any one time on this site, bringing fishermen from the Destin and Fort Walton areas as well from Pensacola.

Two other artificial reefs sites were visited and evaluated. A dive to a 365-ft. Russian freighter that was sunk in place and intact prior to Hurricane Opal showed it had sustained significant impact from this storm. The hurricane broke the ship into at least three pieces. The biofouling community was minimal, undoubtedly the result of the vessel being submerged for only one year. Few large fish were observed, again probably in part because the reef is new; however, broken fishing line, leaders, and hooks were abundant, suggesting intense fishing pressure at this reef site.

While the damage to the ship should not hamper its development into a viable reef, future storms could do additional damage, threatening the overall integrity of the vessel and its long-term viability as a reef.

Prefabricated 6-foot by 4-foot concrete pyramids also were visited and evaluated. Several of these structures had collapsed in shallower water to the east offshore of Panama City. The two pyramids observed by the divers were cracked at their base but still intact. Few fish were observed at this reef site.

The kind of information collected by divers helps MMS and state managers make decisions about new reef installations and demonstrates the popularity of existing reefs with local fishermen. It's clear that artificial reefs make important environmental and economic contributions to local communities.

## International Training: It's An Experience!

*Exhausting travel. Late hours in the classroom. Exotic cuisine and accommodations. Singing for your supper. Dancing invitations you can't refuse. And managing the mushroom season.*

Those are just a few of the attractions and rewards for those brave souls who participate in MMS international assistance initiatives. MMS staff assigned to training sessions in far-off countries spend months preparing for their visits, much of it on their own time. These employees have carried their message of efficient, environmentally sensitive natural gas and oil development to interested audiences in Europe, Asia, and South America.

According to **Carolita Kallaur**, associate director for Offshore Minerals Management, MMS professional staff learn quickly that they can make a difference. While they have valuable experience to share, they can also benefit personally by learning more about the people and cultures of other nations.

Once overseas, MMS staff usually find their workday doesn't end with scheduled sessions. Students and teachers often go to dinner together and continue to discuss issues brought up in the day's lessons, as well as other topics.

During the first training course in Tyumen, Siberia, the participants were so interested in the resource evaluation subject matter that they requested three additional unscheduled sessions. The topics of the additional classes were resource economics (a three-hour evening session), the MMS lease sale computer tracking system (held concurrently with another scheduled class), and the PRESTO model that MMS uses to estimate undiscovered offshore natural gas and oil resources (a six-hour Saturday session). The MMS team also kept a room open for two hours every evening so students could drop by and ask questions. Most evenings students showed up with penetrating questions about applying resource evaluation methods in the Russian context.

MMS staff also gain insights into local daily life and culture. During the Hungarian session, for example, the students brought their trainers to a wine cave that included a small restaurant. In Hungary, it's traditional to take turns singing after dinner, going around the table with each person explaining their song, then leading the rest of the table in singing while draining a glass of wine. By the end of the evening, one MMS song leader could only think of one song, Twinkle, Twinkle, Little Star. Fortunately, everyone knew the words.

Some excursions require MMS staff to exercise a certain amount of grace under pressure. During a tour of a Hungarian coal mine, it was only after the team had descended to the depths of the mine and traveled far down one of its passageways that the



Russian students listen attentively to MMS trainers.

tour leader mentioned that they were in one of Hungary's most dangerous mines. After learning that it recently had been the site of a major coal dust explosion that resulted in a number of fatalities, team member **Larry Slaski** vowed never to enter another mine.

Sometimes the teams run into minor difficulties due to differences in customs or facilities between the U.S. and the host country. For instance, MMS staff have found that they need to bring all their own equipment. This caused a real problem when the team needed transportation from its hotel to the Moscow airport for a flight to western Siberia, and a tiny subcompact car showed up to carry the seven team members and their 38 boxes of supplies, equipment, and suitcases. Anxious to provide sufficient transportation for the group on the way home from the airport, the team's Russian hosts sent a 40-passenger bus to carry the group and its baggage, not realizing that the seven-member team had left its donation of surplus MMS equipment and supplies in Siberia and was only carrying suitcases.

Training teams also have found that their students can be generous and kind. In Tyumen, Siberia, MMS trainer **Norm Froomer** didn't care for the food and wasn't eating. Concerned, the women in the class started bringing him vegetables each day. Eventually they got together and brought him something they thought he'd really like: a local pizza. The entire team devoured it.

The first Tyumen team spent their session at a sanatorium in the country, where they ate what they were served. A second training session to Tyumen was housed in the city where MMS staff could

sample the local restaurants. A translator helped order their meals. Each night the group was served a different entree; but the translator's description of the entree was always "Siberian meat."

Sometimes the teams are called upon to exercise diplomatic skills. The group sent to Magadan in Russia's Far East found the former regional center

for the Gulag to be a rustic frontier city. Accommodations were limited, and one of the better eating establishments was in a hotel that was reputed to be controlled by the Russian mafia. After dinner one night, team members **Norm Froomer** and **John Paden** were asked to dance by women who appeared to be girlfriends of the local mafia dons.

Uncertain about whether to dance and risk the ire of the dons, or refuse to dance and insult the women, they decided to dance. It must have been the correct choice, because they survived the encounter.

To get a feel for Siberian life, some members of the Magadan team visited a fishing camp. They expected a lodge with fly rods, wicker creels, and maybe canoes. Instead, they found a rustic shack with a net stretched from the shore out into the river. On the way back from the fishing camp, the group stopped to participate in a favorite Russian pastime: picking mushrooms. It was here that they learned why attendance at their class had declined during the previous days. It seems it was mushroom season, and several of the class members had apparently gone picking. The team learned that there are two seasons in Magadan: mushroom season and winter; inevitably, picking mushrooms takes priority over other activities.

While providing training overseas can be demanding, it can also be an exciting chance to foster valuable long-term relationships. For example, during the Moscow session, Russian Minister of Natural Resources **Orlov** asked the team to brief Duma member **Melnikov**, who was engaged in writing legislation involving topics like federal-state relationships dealing with natural gas, oil, and other mineral developments. Melnikov was so impressed that when a delegation from his Duma committee on natural resources came to the United States, he gave them instructions to visit two places: Congress and MMS.

## Vintage Plane on Active Duty as Oil Spill Eye in the Sky

The low growl of a vintage World War II DC-3 could be heard recently along the coast of Santa Barbara, California. For a week in January, local residents were able to catch a glimpse of the wartime flyer as it cruised about 300 feet above the water over the natural oil seeps along the majestic California coast.

The overflights in the Santa Barbara Channel were not part of a local air show demonstration or a multi-million dollar Hollywood movie production. Rather, the low-altitude flights were part of a cooperative research project on remote sensing technology being conducted by Environment Canada, the equivalent to the U.S. Department of Energy, and the Minerals Management Service.

The DC-3, which is specially outfitted to conduct research and development on airborne remote sensing equipment and to respond operationally to oil spills, used the natural oil seeps along Santa Barbara as targets to demonstrate and test the capabilities of the Laser Environmental Airborne Fluorosensor (LEAF), the only remote sensor which can be used under various weather conditions to detect oil both during the day and at night.



The specially equipped DC-3 propeller-driven aircraft can fly low and slow providing a stable platform for the sophisticated remote sensing equipment. Photo courtesy Environment Canada

Laser fluorosensors also are the only remote sensors which can positively identify oil in a variety of marine and terrestrial environments including water, beaches, shorelines, snow, and ice, said Canadian scientist **Dr. Carl Brown**. The laser fluorosensor can also differentiate between various types of oil, such as heavy refined, crude, and light refined, said Brown.

The LEAF system onboard the DC-3 scanned the waters in the Santa Barbara Channel using five sensor bays located in the aircraft's large, flat underbelly. A

reconnaissance video camera and a sophisticated computer system also were used to collect and analyze data. According to Brown, the system is designed so that once the data is collected and classified, icons are displayed along the flight path on the operator's map display and on a hard-copy map produced by the computer. In the event of an oil spill, this information can be faxed instantaneously from the aircraft to the Coast Guard and other response vessels.

This leads to a method of real-time confirmation, said MMS oceanographer **Joseph Mullin**. Currently, response crews must physically inspect reported spill sites either by boat or helicopter. This uses dollars and resources which could be better spent on clean up and remediation of known sites of contamination.

In addition to its overflights, the DC-3 and its crew of scientists provided tours of the aircraft which included a simulation of the LEAF system using data collected during flights over the channel. Representatives from federal, state, and local government agencies, elected officials, and the media joined members of the Pacific Region in learning about the LEAF system and the valuable contribution it will make in oil spill response.