STRENGTH THROUGH INNOVATION SPRING 2010 #20

CUMING EVENTS

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PREPARING FOR THE NEXT BIG THING

The next big thing the future holds for Cuming Corporation's high performance buoyancy business is oil and gas production offshore West Africa, according to Randy Porter, Manager of Project Engineering.

"We're recognized as the leaders in the specialized technology of making buoyancy and insulation systems for large deepwater production risers," says Randy. "This knowledge, along with our proven ability to meet deadlines while maintaining high quality, positions us to benefit from the coming round of big projects shaping up off the coast of Africa and elsewhere."

Randy cites Cuming's recent successes with the Greater Plutonio and Erha fields as proof of the company's capability. Greater Plutonio, a BP project in Angola, required the manufacture of buoyancy modules for a hybrid riser tower operating in water 4,000 feet deep.

"The challenges included hot water, tight tolerances, and long service life," Randy explains. Product development and lengthy qualification testing had to be folded into a demanding delivery schedule. "Fortunately, Cuming was already well known to BP, as we have long been the exclusive supplier of high technology wellhead protection syntactic foam for BP's huge Thunder Horse field in the Gulf of Mexico."

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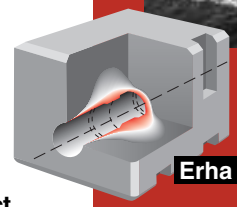
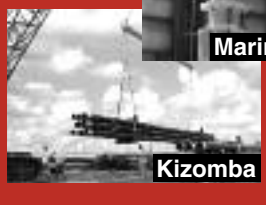
SUCCESS


Thunder Horse


Erha


Marimba


Kizomba

CUMING ENABLES DEEPEST-EVER DRILLING

Cuming Corporation announces the development and sale of deepsea drilling riser buoyancy modules rated to a depth of 12,000 feet, the deepest such units ever made. The buoyancy modules are a key component in exploring for offshore oil and natural gas.

The first sale of the ultradeep *C-FLOA*T modules is to Noble Corporation, Sugar Land, Texas, an 88-year-old drilling contractor, for use around the world, probably beginning in the Gulf of Mexico. The construction is Cuming's new "Ultralight" syntactic foam offering markedly improved performance.

Cuming has sold 3,600 of these advanced technology modules rated to various depths to Noble, and delivered 1,560 of them to date. The modules are in use or planned for the Noble Jim Day rig,

CONT. ON PAGE 2

INSIDE . . .

CUMING TECH PAPER FOR SHANGHAI

Wen-Tsuen (Vincent) Wang, Director of R&D, and Lou Watkins, P.E., Vice President-Technology at Cuming Corporation in Avon, Massachusetts, have written a paper for the 29th International Conference on Offshore Mechanics and Arctic Engineering, Shanghai, China, 6-11 June 2010. The paper is entitled "Flexible Epoxy Syntactic Foam Thermal Insulation for High Temperature Deep-Sea Reelable Pipelay Installations."

C-THERM syntactic foam, a composite material combining glass microspheres with other fillers in an epoxy binder, has been used with increasing success in insulating offshore pipelines and subsea equipment for the past decade or more. The advantages of epoxy include excellent resistance to high temperature and high pressure sea water as well as good thermal insulting properties. The exceptional strength of epoxy has made service at great depth possible. However, the rigidity of conventional epoxy-based material has so far limited its application to subsea equipment and J-Lay or S-Lay pipelines.

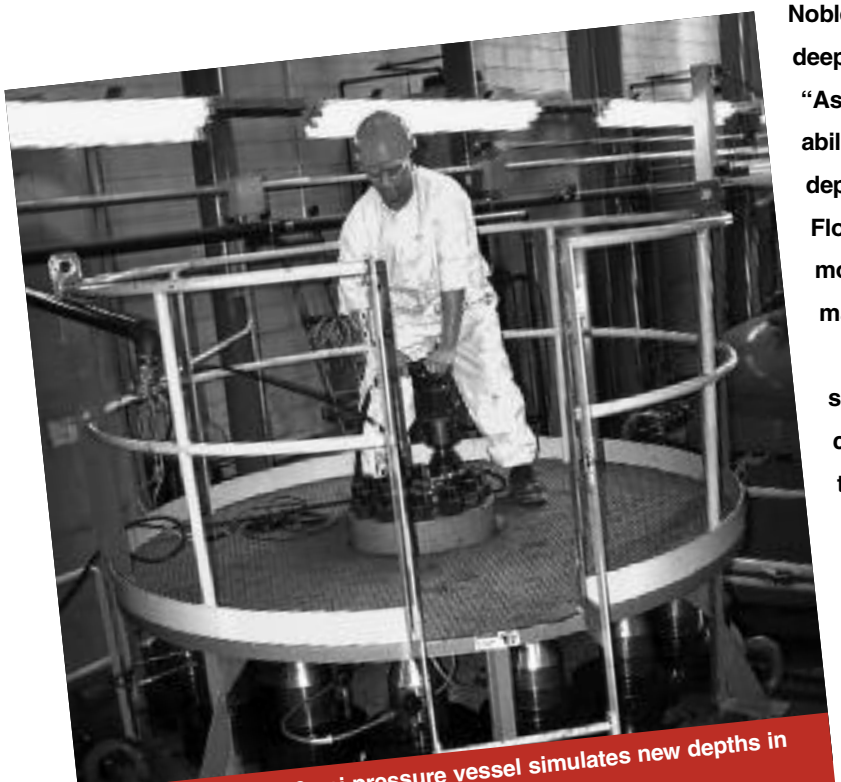
As the offshore industry moves into deeper water and larger fields, it is necessary to develop advanced flexible epoxy insulation and extend its use to more efficient reeled deployment. The Cuming paper describes research directed toward identifying new, highly flexible insulating materials suitable for service up to 300^{O} F (150^{O} C) and as deep as 10,000 ft (3000m).

Tests now underway indicate the Cuming researchers have made substantial progress toward advanced composite materials systems that combine the flexibility of polyurethane or polypropylene with the high strength and superior temperature resistance of epoxy. Such performance is urgently needed as offshore production moves into deeper and hotter conditions.

DEEP BLUE LIVES UP

The Deep Blue is an ultra deepwate
that has been deployed in the Nans
of Mexico, among other locations. (s

CUMING ENABLES DEEPEST-EVER DRILLING *(continued from page 1)*



Cuming's new 6,500 psi pressure vessel simulates new depths in product-quality testing.

Noble Globetrotter drill ship, and as spares for Noble's deepwater fleet.

"As companies must search deeper for gas and oil, the ability of drilling riser modules to function at greater depths is crucial," says Ray Wong, Manager of Cuming Flotation Products. Ray explains that the new "Ultralight" modules are made of the lowest-density, highest-performance syntactic foam available anywhere.

"Installation of our new 6,500 psi (14,600 ft.) pressure vessel capable of testing the modules under the conditions they will endure at 12,000 feet was crucial to the success of the project," Ray says. The massive vessel weighs over 300,000 pounds. Its lid alone weighs 16 tons and is sealed with studs seven inches in diameter and custom-made hydraulic nuts that weigh 150 pounds each.

For more information on *C-FLOAT* buoyancy modules, contact Ray Wong,
Cuming Corporation
225 Bodwell St., Avon, MA 02322.
(508) 580-2660.

OFFSHORE OIL EXPLORATION GOES GREEN

(No, it's not a contradiction in terms!)

As one of the world's largest manufacturers of deepsea buoyancy and insulation products, Cuming Corporation processes a lot of epoxy-based syntactic foam – over 20 million pounds annually. Managing that much material in an environmentally responsible way is not only a big challenge but a major opportunity to make things better.

P TO ITS NAME

r pipelay and subsea construction vessel
en and Boomvang gas fields in the Gulf
sources: oilopubs.com, offshore-technology.com)

Cuming's Manager of Product Development, Dr. Majdi Haddad, has seized that opportunity and succeeded in replacing as much as 20 percent of the conventional syntactic chemicals with biodegradable raw material from renewable sources. Not only that, but the resulting composite systems are significantly stronger than their predecessors and save money in overall processing costs as well.

"It's a matter of seeing the product, the materials, the manufacturing process, and the environment as one big picture," Majdi explains. "Once you understand the total system, you can fine-tune the ingredients for maximum efficiency."

A native of Jordan, Majdi took advantage of Cuming Corporation's educational assistance program to study plastics engineering at the University of Massachusetts. In a ground-breaking new graduate program of advanced "green chemistry" science under noted professors John Warner and Lisa Foster, Majdi received his Ph.D. in 2008. He wasted no time in applying his knowledge to improvements in Cuming's product line.

Now Dr. Haddad is focusing on minimizing the toxicological hazards that are part of any plastics manufacturing operation.

"The new chemistry is more benign than were the old materials," Majdi says. "That makes our factory a more pleasant place to work and reduces the protective gear required. More importantly, it lowers some of the barriers to growth." In a densely populated region like New England, reduced emissions and less hazardous waste mean that manufacturers are viewed in a more friendly light. "That's the beauty of green chemistry," Majdi summarizes. "It's a win-win situation for everyone."

> *"Once you understand the total system, you can fine-tune the ingredients for maximum efficiency."*

Dr. Majdi Haddad

NEW QHSE 'BEST' ACHIEVED IN 2009

Elmer Hershey, Product Manager, and Jason Pecoraro, Project/QHSE Manager, have announced that Cuming Insulation Corporation in New Iberia, Louisiana, ended 2009 with a safety score of zero recordable incidents, or a 0.00 TRIR (Total Recordable Incident Rate).

Elmer says that the company's safety culture has continuously improved, enabling them to keep pace with the ever increasing QHSE (quality, health, safety and environment) demands set forth by our industry.

"Over the past four years, we've averaged only one recordable per year," says Jason. "That's quite an accomplishment, especially in our line of work. Now, we have reduced that to zero recordables! To validate this zero-recordable accomplishment, we've documented three near misses and two first aids during 2009. Now we're continuing our documented daily, weekly and monthly safety meetings and extensive JSA (job safety analysis) process in 2010. Safety comes first!"

SHELL APPRECIATES CUMING'S WORK

In a letter of appreciation dated December 7, 2009, Adam Maggio, Manager of Pipeline Engineering for Shell Exploration and Production, thanked Cuming Corporation for its outstanding work in applying *C-THERM* insulation to the Shell Llano Mid-E manifold. The letter was addressed to Elmer Hershey, Manager of Cuming Insulation Corporation, and to Jason Pecoraro, Cuming Project Manager. The work was performed in the Spitzer Industries yard in Houston, Texas.

Cuming Corporation's work applying *C-THERM* insulation to this manifold earned a letter of praise and gratitude from customer Shell.

"This is an especially gratifying honor," says Elmer Hershey, a registered professional mechanical engineer and a 40-year veteran of the offshore oil industry.

"As one of the premier energy companies in the world, Shell is not only an industry leader, but also a very demanding customer. They set the standards for the rest of us," explains Elmer. "To receive Shell's approval is very meaningful." The Llano manifold had an extremely tight schedule, and completing the insulation process without delay was crucial to the project's success.

"Improved methodology was the key," adds Jason Pecoraro. "We were able to use the latest upgrades in both equipment and procedures to streamline the installation process. The result was a top quality job."

Jason, whose responsibilities include quality assurance as well as project management at Cuming's New Iberia, Louisiana, factory, has made continuous improvement of the quality of *C-THERM* materials a personal priority. Thanks to teamwork among Shell, Spitzer, and Cuming, the Mid-E manifold was delivered on time to the Llano field in water 2,600 feet deep, 200 miles southwest of New Orleans, where it helps to produce 10,500 barrels of oil and 26 million cubic feet of gas per day.

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CUMING CORPORATION

PREPARING FOR THE NEXT BIG THING *(continued from page 1)*

ExxonMobil's Erha project offshore Nigeria posed yet another set of challenges.

"Hot water was again an issue, but this time the attachment method was unique, as well as the geometry and many environmental issues, such as currents and vortex shedding," Randy says. "ExxonMobil was familiar with our work, since Cuming was the exclusive supplier of buoyant riser insulation on their Kizomba and Marimba developments in Angola, and we had a good working relationship with their contractor, Acergy-France. As a result, the project went remarkably smoothly."

Randy Porter is now deeply involved in Cuming's preparations for a number of new West African fields, including Clov (Angola), Usan (Nigeria), Pazflor (Angola), and Lianzi (Congo). These giant fields are expected to have enormous requirements for production-related buoyancy. Water depths range from 1,000 to 4,000 feet.

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