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# Malampaya Topsides Installed in the South China Sea; Largest Integrated Deck In Asia Pacific

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HOUSTON, March 28 /PRNewswire/ -- Kellogg Brown & Root (KBR), a business unit of Halliburton Company (NYSE: HAL), announced today that it has successfully installed the Malampaya topsides. The topside facility was set on its concrete base as a complete integrated deck in the South China Sea on 17 March 2001, 14 days ahead of schedule. At an installation weight of 11,500 tonnes, the Malampaya topsides is the largest integrated deck ever installed in Asia Pacific and is currently the largest offshore installation in the world using the float over method. This method, pioneered by KBR, allows a complete integrated deck to be installed as one unit thereby maximizing the fabrication and testing work that can be completed onshore.

KBR's scope of work is to engineer, procure, fabricate, install and commission an offshore gas processing facility for its client, Shell Philippines Exploration B.V. KBR was awarded this scope in August 1998.

On completion of the installation of the topsides, the Managing Director of Shell Philippines Exploration B.V. commented, "I was struck by the professionalism of the operation, the excellent co-operation of all parties involved under KBR's leadership and the 'silent elegance' of the docking and mating of these two structures -- a truly professional piece of engineering and a New World Record to boot. The ease with which the structure was maneuvered into position and lowered onto the CGS supports was a sight none of us present offshore will ever forget. KBR has every reason to be very proud of themselves as they have all collectively 'raised the bar' and set the pace for others to follow in terms of world record breaking float-over installation technology, know-how and expertise. It was an honor to join you all offshore to witness this latest successful episode of the Malampaya Project and I thank all KBR staff and subcontractors for the dedication, team-work and commitment shown by so many that contributed to this milestone's success."

Tow

The topsides set sail from its fabrication site in Singapore at 7:00am on 1 March 2001 and arrived at its destination 50 kilometers northwest of Palawan Island, the Philippines on 10 March having covered 1,134 nautical miles. The average speed of the tow was five knots with the route passing the north coast of Borneo. The tow was performed by three ocean going tugs with a combined power of 39,000 brake horse power generating a bollard pull of up to 300 tonnes. Sea states experienced during the tow were generally calm with swells of up to two meters.

The Malampaya topsides were transported on a newly constructed barge, the H-541 owned by Heerema Marine Contractors Nederland B.V. who held a subcontract from Kellogg Brown & Root to transport and install the topsides. The H-541 is 165 meters long, 42 meters wide and during the transportation maintained a draught of 5.7 meters. The topsides were supported 22 meters above the deck of this barge on a transportation truss weighing 1,500 tonnes. This truss, together with the barge freeboard enabled the legs of the topsides to pass over the tops of the Concrete Gravity Sub-structure (CGS) shafts during the initial installation phase.

Installation

The H-541 barge and its three tow tugs rendezvoused with the Rockwater 2, a Halliburton owned vessel, a maneuvering tug and a further ocean going tug at the location of the CGS offshore Palawan Island in the Philippines on 10 March 2001. The Rockwater 2 is capable of dynamic position holding without using anchors and was to act as the construction support vessel over the installation period.

During the initial two days after arrival of the installation spread, final preparations for the topsides installation were made on the CGS and H-541 barge. On the 14 March a second maneuvering tug joined the installation spread and with all eight vessels and equipment checked and ready the vessels waited for the sea states to reduce such that installation could commence.

On the morning of 16 March 2001 the swell at the CGS location had reduced to 0.5 meters and the forecast for the next 72 hours was good. At 06:00 hours on 16 March 2001 one tow and one docking tug commenced maneuvering the H-541 barge to the CGS location. Two pre-laid anchors and four docking lines attached to the CGS shafts were connected to winches on the H-541 barge and the H-541 was then maneuvered between the legs of the CGS. At 03:10 hours on 17 March 2001 the H-541 barge was connected to the first of the four inch diameter steel wire mating lines and by 07:45 hours all mating lines had been connected and environmental conditions were confirmed as within limits for the installation to proceed. Ballasting operations then commenced with 36 pumps combining to transfer seawater at more than 21,000 tonnes per hour into the H-541. At 15:20 hours first contact was made between the CGS leg mating units and the deck leg supports of the topside facility. Rubber columns in the deck legs and on the transportation frame allowed a progressive transfer of weight to the CGS. Fifty seven minutes later the topsides weight had been fully transferred to the CGS and nine hours later the H-541 barge was clear of the platform. Sand jacks on each of the four CGS leg mating units were then simultaneously released allowing the topside to be lowered in a controlled manner into its final position. The contact points are now being welded together to form the one permanent structure of the Malampaya Platform.

Offshore commissioning

Kellogg Brown & Root will use the Rockwater 2 as its Construction Support Vessel during the offshore commissioning phase that is now just starting. The target is to complete commissioning such that the platform can export treated gas by 1 August 2001 through a 504 kilometer pipeline to shore. This will allow the onshore gas plant at Batangas on Luzon Island, the Philippines to start its commissioning on schedule. Following onshore gas plant commissioning the Malampaya platform will be ready to supply gas to power plants in the Philippines by October 1, 2001.

Randy Harl, president, Kellogg Brown & Root commented, "I am pleased to report that Malampaya has achieved yet another milestone ahead of schedule, under budget and while maintaining an excellent safety record."

Headquartered in Houston, Texas, Kellogg Brown & Root is an international, technology-based engineering and construction company providing a full spectrum of industry-leading services to the hydrocarbon, chemical, energy and forest products industries. Kellogg Brown & Root is a business unit of Halliburton Company, the world's leading diversified energy services, engineering, energy equipment, construction and maintenance company.

Halliburton Company, founded in 1919, is the world's largest provider of products and services to the petroleum and energy industries. The company serves its customers with a broad range of products and services through its Energy Services Group and Engineering and Construction Group business segments. The company's World Wide Web site can be accessed at www.halliburton.com.

KELLOGG BROWN & ROOT
COMPLETION OF MALAMPAYA TOPSIDE FACILITY
FACT SHEET

Facts & Figures

The topside measures 40 meters by 92 meters and during the installation phase was equivalent in weight to 39 fully loaded Jumbo Jets. The topside comprises three decks: weather, production and cellar decks and contains the equipment necessary to separate produced water and condensate from the wet gas stream flowing from the wellheads. The integrated offshore processing facility is located in 43 meter water depth with subsea wells located in 850 meters of water.

Construction of the topside facility commenced on 27 May 1999 in Singapore and took 21 months to complete.

In the summer of 2000 KBR installed the concrete base for the platform at the offshore location three months ahead of schedule.

During the transportation of the topsides the flare tip was 105 meters above sea level. This height required KBR to notify air traffic control of the departure of the topsides from Singapore.

Environmentally responsible platform design

- Dry low emission gas generators were specified. This is a world first for RB211's installed offshore.
- 100% spared flash gas compression to minimize flaring.
- Waste heat recovery from the export gas compressors to conserve energy.
- Flare system purging with nitrogen to avoid continuous flaring. SOURCE Halliburton Company

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