

MAN & MACHINE - UNDERWATER SAFETY, SUSTAINABILITY AND ADVANCES IN UNDERWATER TECHNOLOGY

IN ASSOCIATION WITH DOLPHIN OFFSHORE ENTERPRISES (INDIA) LTD.

IT TOOK India more than half-a-century since independence to emerge strongly in the international petroleum industry as an attractive exploration destination. The government driven initiatives under New Exploration Licensing Policy launched in 1998 and the subsequent successful discoveries highlighted India's hydrocarbon potential. The offshore area - off the western as well as eastern coast - has now been internationally acclaimed as prolific. In the entire journey, the offshore marine service vendors played a crucial role to support the relatively young petroleum exploration industry of India.

THE ECONOMIC TIMES Intelligence Group KNOWLEDGE FORUM



From Left to right: Rear Admiral Kirpal Singh (Rtd), Executive Chairman Dolphin Offshore Enterprises (India) LTD, Vice Admiral Sanjeev Bhasin AVSM, VSM, FOCNC, Western Naval Command, Sudhir Vasudeva, Director (Offshore), ONGC

This industry, although key to the success of India's energy security, still has a long way to go in improving its contribution. To discuss various challenges before the industry and to chart its way forward, ETIG Knowledge Forum in association Mumbai based Dolphin Offshore Enterprises organised a seminar on 13th May 2009. A host of industry experts not only brought forward the salient features of this highly technical industry and the special attention it needs, but also suggested steps it should take going forward.

Offshore exploration - looking for and extracting oil from middle of the ocean and taking it to the shore - is a daunting task considering the hazards involved. This needs highly specialized support for a range of tasks such as collection of data, drilling, constructing mid-sea infrastructure, laying pipelines and maintaining the entire set up. If high quality support is not available, the offshore exploration and production (E&P) can have only limited success.

Sudhir Vasudeva, director (offshore) of ONGC, elaborated on what the offshore support industry has to offer.

ultra-deep locations have their own key challenges. Ian Gallett, chief executive, Society for Underwater Technology London, said, "Since we can't set up a stationery production platform at such deep locations, we have to operate out of floating production units. We need to study the physics of waves, the effect of waves on structures and the design of structures for better wave loading. At the same time we also need to manage the entire production system at the sea bottom including pipes, valves, controls and moorings connected with the floating production unit."

Traditionally, India's offshore experience had remained limited to the western offshore with the discovery of the Mumbai High oilfield, where the water is less than 100 meters deep. It is only in the last few years that we have become aware of the great hydrocarbon potential of the eastern coast, with water depths at some places over 2000 meters. Indian offshore support industry proved ill equipped to handle these challenges.

Mr S K Srivastava, the deputy director at the Director

E&P and has developed a remotely operated vehicle (ROV) that can operate at depths upto 6000 meters.

The other key challenge before the industry is the shortage of skilled manpower. In fact, delay and cost overruns in a number of projects or accidents globally are directly related to human errors or unavailability of trained crew. Ms Sunita Maclaren, founder president, World Wise Inc, US, said, "There are over 5000 energy related firms in Houston. If there is a single issue that keeps their CEOs awake at night, it is the talent crunch." The training is also essential when it comes to maintaining strict health and safety standards during offshore operations.

Dr A C Kulkarni, consultant in marine medicine, elaborated on what the offshore support companies could do to ensure better safety for their employees. "Investing a little in facilities such as portable X-ray machines and training a few crew members as paramedics could save the company great future costs."

To help India tackle the skilled manpower problem, particularly in deep sea diving, Alfred Leadbitter, diving training manager of The Underwater Centre (TUC) already has an action plan. "We are establishing a diving training institute in India as a joint venture with Dolphin Offshore to start classroom courses shortly. India has vast pool of human resource, which is both educated and motivated with marine orientation."

It is noteworthy that Dolphin Offshore has initiated several efforts towards developing the talent pool in India. Rear Admiral Kirpal Singh (Rtd), executive chairman of the company, announced setting up of Dolphin Foundation to support underwater research and training of professionals in India. "This industry can be a powerful engine for social change in India providing highly paid jobs to skilled professionals," he mentioned.

The offshore support industry in India may have long miles to cover, but it has already embarked on the journey. It is just a matter of time before India can boast of its own deep-sea divers and remotely operated vehicles capable of exploiting the tremendous hidden treasures of the deep seas.

For more information visit:
<http://ms.timesofindia.com/ads/dolphinoffshore/index.html>
<http://www.dolphinoffshore.com>

Looking For A Brighter Future

The past decade has seen the growth in global oil consumption steadily surpassing the expansion in oil supply. This, combined with spare oil production capacity at a three decade low, has put considerable pressure on the global oil supply situation. Firm crude prices, absence of significant new finds, low oil reserves and rising demand have all contributed to increasing E&P (exploration & production) spends by most upstream oil companies. This to secure new oil and gas reserves has led to a dramatic increase in exploration and drilling activities, which in turn has pushed-up the demand for offshore services in India.

Over the last 2 years, Indian service providers have been of the most aggressive participants in this global to growing offshore fleets through a mix of secondary market purchases and new building orders. While, Aban Offshore followed the inorganic route by acquiring Sinvest, other service providers like Shipping Corporation of India, Greatship, Great Offshore, Varun Shipping, Dolphin Offshore and Garware Offshore among others acquired assets in the secondary market and put-in fresh contracts with shipyards. Though, a few assets have been delivered during the year, a large part of the orders will be joining fleets over the next 2-3 years. This will lead

providers specialised in carrying out their specific activity need to be synchronised. Slip ups and variance at some stage or the other is bound to happen along with other non-controllable challenges like weather and geology. Also, huge sums are involved and no E&P operator tends to abort amidst the activity chain.

According to Director General of Hydrocarbon, "Indian sedimentary basins are under explored and huge opportunities exist in offshore and deep-waters." The 'World Energy Outlook-2006' published by IEA (International Energy Agency), expects a total investment of \$8.3 trillion in oil & gas out of total energy investment of \$20.2 trillion to be made from 2005-2030. IEA also expects \$5.5 trillion (two thirds) of the total investments to go into exploration and development.

As far as Indian owners and operators are concerned, their asset profile is considerably diverse and significantly locked-in for period charters. In case of Aban Offshore, which is only in the rig segment, the diversity is with regard to rig type, build, vintage and specifications. There are other challenges as well for Indian offshore service providers--retaining crew at the cost of higher emoluments and high taxation regime as compared to their global peers, employing the same crew/seafarer at less tax outgo etc. Also, Indian offshore services companies have long tenure contracts entered into at various points of time during the freight cycle. This ensures earnings stability. While growth in revenues is a function of accretion to assets or revised earnings, the profitability margins are a function of serving cost and wage inflation. Indian owners have, over the last few weeks, also seen increased nominations and extensions of earlier contracts thereby ensuring uninterrupted service and utilisation.

After years of low investment and below average reserves and production growth, upstream oil companies are beginning to catch up on investments, and this is evident in the significant capex spending under way.

An initiative by:
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to a dramatic rise in Indian ownership.

Though, the impact of the global meltdown as reflected in budget slashing and decrease in E&P activities is seen more pronounced in the western world, in India, the base itself was modest. Hence, India cannot be isolated and has seen a plateauing of and a further slashing of E&P budgets in the next 2 years seems unlikely.

Contrary to the general belief, oil exploration followed by production is a long drawn process spread over 8-10 years. A host of independent operators and service

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rated on the challenges in the deep sea operations. "Water depths, floating production systems, harsh weather, wind, wave and sub-surface currents all pose technological challenges to operate in deep and ultra-deep locations. However, in the future, majority of E&P activity will take place only in such locations."

Vice Admiral Sanjeev Bhasin in his keynote address brought forward another important aspect that the deep sea can be a great source of a large number of industrial inputs and alternative energy sources rather than just petroleum. "Seabed contains abundant deposits of industrial minerals such as copper, manganese, nickel or cobalt. India has obtained 1.5 lakh sq km mining site mid-way between Madagascar and Australia as exclusive economic zone and efforts are under way to develop these deposits which shall bring down India's import dependence." A successful exploitation of these resources will however require development of capabilities to operate at extreme sea depths.

Operating offshore is certainly difficult, but the deep and

General of Hydrocarbons voiced his disappointment. "Despite the biggest gas discovery in 2002 in deep water, there has been no response for development of indigenous services. As a result, a large chunk of the expenditure being incurred on development of these fields is being spent on foreign service providers."

While the E&P regulator's observations are true, the domestic offshore support industry has been battling several other challenges particularly with regard to the technological improvements, skilled manpower and conforming to the global health and safety standards.

The country's efforts to develop indigenous technologies for operating at extreme depths are unable to keep pace with the needs of the domestic E&P industry. Mr Anand Ramadas, the deputy director of the National Institute of Ocean Technology (NIOT), said that despite the institute's R&D plans, it lacks industry support. "We would like to invite the offshore industry to view our R&D efforts and provide inputs." The institute is working on technology for deep-sea mining, production of gas hydrates and

STRAIGHT TALK



"It is deep and ultra-deep areas, where the future E&P activity will take place."

SUDHIR VASUDEVA
DIRECTOR (OFFSHORE),
ONGC



"India needs to develop under-sea mining to access large deposits of key strategic minerals such as copper and nickel."

VICE ADMIRAL SANJEEV BHASIN
AVSM, VSM, FOCNC,
WESTERN NAVAL COMMAND



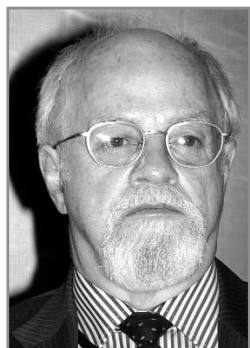
"The development of Indian services industry has lagged despite the deepsea discovery in 2002. Our offshore support industry needs to bridge the technological gap to operate in deep seas."

S.K. SRIVASTAVA
DY. DIRECTOR GENERAL OF
HYDROCARBONS



"Reaching the moon has become easier compared to the deep sea."

H. S. CHEEMA
FORMER CHAIRMAN, GAIL



"Oceans drive the climates. So we need to study the oceans better for understanding the climate change."

IAN GALLETT
CEO, SOCIETY OF
UNDERWATER TECHNOLOGY,
UK



"India has huge opportunity in upstream oil & gas segment. Local companies have great scope of tying up with foreign partners, which will be a win-win situation for both."

WADE ABADIE
CHIEF OPERATING OFFICER,
DEEP MARINE TECHNOLOGY,
USA



"Today for everything that you do offshore in the Gulf of Mexico, safety is of paramount concern. We would like to see that happening the world over."

DREW MICHEL
CONSULTANT ON ROV
PROJECTS, CHAIRMAN OF
THE MTS ROV COMMITTEE



"Some of the best divers I have worked with were Indians. India has a vast talent pool, but is largely untapped."

ALFRED LEADBITTER
DIVING MANAGER, UWC
FORT WILLIAM

Deepwater Diving Skills: Today & Beyond

Oil exploration activities are set to increase substantially due to rising crude prices and anticipating a shortage of manpower, the industry is taking concerted efforts to develop skilled manpower. Expecting a massive shortfall of skilled divers, Dolphin Offshore Services is setting up a dedicated divers' training institute in India.

Currently, there is no full-fledged diving training institute in the country except one started by the Indian Navy for air diving at Kochi, which has been accredited by the International Marine Contractors Association. According to a recent study, "Due to the booms and busts in the oil sector, most companies have closed their in-house training programmes. The industry is now having difficulty attracting and keeping the best engineers." (There have been four booms and busts in four decades according to another speaker.). The study estimates that more than 400 major upstream projects are expected to go live by 2014 and there are plans throughout the world to construct 180 new offshore rigs.

Industry sources said there is a requirement of about 2,000 specialised divers within Indian oil and gas industry. This includes companies such as ONGC, Reliance and Cairn Energy. But, there are hardly 200 to 250 such divers in the country, with about 20% of them working in West Asia and South-East Asia on more lucrative

contracts, leaving a dent of 400-500 divers in the country. Being cheaper by around 40%, Indian divers are in much demand globally, which is adding to the woes of the domestic oil majors. Due to the shortage of trained manpower it is estimated that industry's bottom lines saw a dent of \$5.2 billion annually - \$3 billion was due to lost profits because of lack of experienced personnel and \$2.2 billion was due to direct employees, cost.

India could be the new offshore frontier as PricewaterhouseCoopers has estimated the total outsourcing market in India to be worth \$310 billion. Starting as a diving manpower subcontractor in 1979, Dolphin Offshore has steadily and systematically developed its capabilities in Indian offshore service arena. The company began by becoming an independent diving contractor providing bounce bell diving support upto 100 metres, then a saturation diving company supporting operations in upto 300 metre of water. The company will commence in house training for air and mixed gas diving, with a view to expanding saturation diving and ROV operations. The company is also planning to set up a formal institute for the purpose. Navpreet Singh, joint managing director, Dolphin Offshore said, "Divers mostly work as freelancers and the wages range from Rs 1,500 to Rs 3,500 a day for air diving which goes up till Rs 25,000 a day for

deep-water saturation divers." Dolphin Offshore sends trainees abroad to learn commercial diving. "So, prospective commercial divers have to get their training abroad. Currently, the cost of training abroad ranges from Rs 6 lakh for air diving to Rs 9 lakh for saturation diving. Locally, the training provided by the Indian Navy costs Rs 2.5 lakh, but it is only for air diving," Singh said.

These figures pose a serious challenge to an industry already finding it difficult to recruit, train and retain skilled personnel. The worldwide diving schools can perhaps train about 100 new saturation divers a year, added Singh. Dolphin has a programme to provide cross-train personnel from other industries who may already have many of the skills necessary for offshore work. The company also believes in establishing relationships with colleges and universities to promote science and engineering courses leading to challenging and worthwhile careers in offshore industry. Dolphin Offshore has made considerable investments for the acquisition of equipments for air, mixed gas and saturation diving, underwater welding and cutting, NDT Inspection, CCTV and hydraulic equipment and air lift equipment. The company also has a diving workshop at Navi Mumbai for storage and maintenance of such equipment.

"The offshore support industry can be an engine of social change in India"

An interview with Rear Admiral Kirpal Singh (Rtd), Chairman of Dolphin Offshore Enterprises

What made you enter the offshore industry? How do you feel about it today?

My entry into the offshore industry is thanks to the opportunity provided by the Offshore Technology Conference (OTC), which takes place annually in the US at Houston, Texas. It was there in 1978 that I met John Harter and Ken Wallace of Taylor Diving and became aware of the absence divers in India and thus started Dolphin Offshore. Today, both maritime security and energy security are on top of the nation's agenda. I am happy that these have played a significant role all my life. The oceans hold the secrets of mankind's past. They could also hold the key to our future.

How is India's offshore support industry placed today? What will be the major challenges for the industry going ahead?

Our industry stands at a crossroads today on so many fronts. As we venture into deeper waters to extract hydrocarbon resources we are faced with the global impact of climate changes on the oceans and the increasing concerns for the safety of men and machines. Although the country has begun to invest hugely in clean renewable energy sources, oil still remains the most attractive fuel. The safe and sustainable development of our

deep-sea hydrocarbon and mineral assets requires the focusing of our best scientific minds, identifying the challenges, requiring technological solutions and investing in emerging technologies.

How will the offshore support industry benefit from an annual conference?

We all understand the value of networking and information gathering provided by the events such as OTC. The Indian offshore industry too needs to develop our own equivalent of OTC for all of Asia. Given the geo-strategic importance of the Indian Ocean, I have no doubt it would attract interested parties from all across the world.

What are Dolphin's plans to contribute towards the growth of India's offshore support industry?

One of the key resources that the industry today lacks is trained manpower. Dolphin Offshore has begun work on training divers. Training of Indian divers locally however is important for the industry's growth and should be taken up on a national scale with the establishment of a formal institute for such training and certification. Dolphin is willing to pioneer such an initiative with support and investment from India's private and public sectors. This industry can be a powerful engine of social change in India, providing highly paid jobs to skilled professionals.

