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# ABSTRACTS OF PAPERS

***Keynote Address***

## Transition into deepwater for South East Asia and Malaysia

MIKE SHIRLEY
Murphy Oil

***Paper 1***

## Exploration during the 1990s in South East Asia: a discussion on activity, the lessons learned and a glimpse into the future

IAN CROSS
IHS Energy Group
135 Cecil St., 02-01 LKN Bldg.
Singapore 069536

This talk will review the many ups and downs that the nine countries in South East Asia have seen during the past decade. The events covered are deemed important to the industry during the decade and some will have a bearing on the next ten years through the decisions made and lessons learned. Much of the discussion will be focussed on upstream activity with particular emphasis on exploration and appraisal drilling, reserve replacement, and contract and concessional activities.

As we started the decade the herd instinct was in full flow with companies rushing out to acquire acreage in the Far East at highly inflated prices, which, in a large number of cases, they hoped to farm-out to offset costly exploration programmes. 'Hot spots' at the time included offshore Cambodia and Vietnam, onshore Burma (Myanmar), eastern Indonesia, the disputed Spratly Islands and the overlapping zones in the Gulf of Thailand.

The decade started off well with the announcement that Conoco's Indonesian wildcat Alu Alu East #1, which had actually been completed in late 1989, had flowed at very impressive rates from its location in the West Natuna Basin. This was subsequently developed as the Belida Field, and with reserves of around 300 MMBO. Not bad for a gas prospect which was drilled on acreage held since 1968.

There were other successful oil (and condensate) discoveries announced during the decade but overall the amount of gas discovered dominated. The average field size discovered in the 1990s was 24 MMBO and this was still higher than the 18 MMBO recorded in the previous decade but much lower than the 1970s when it averaged 70 MMBO (see below).

In the 1990s the 485 reported discoveries recorded recoverable reserves of just under 25 MMMBOE thus being a more successful decade than the 1980s which recorded some 14 MMMBOE from 476 discoveries. The best year was 1997 when almost 5 MMMBOE were added to the reserves base, largely a result of successful drilling by Arco in the Indonesian province of Irian Jaya in the gas-prone pre-Tertiary where its Vorwata #1 wildcat discovered some 11 TCFG. The figures available show that in 1989 ultimate recoverable reserves in South East Asia totalled 87 MMMBOE and by 1999 this had increased to 112 MMMBOE (or by 29%).

The most successful operator in terms of exploration success was Arco, followed by Unocal, Total, CTOC, Shell, Gulf Canada, Oxy, Esso, and Texaco.

Meanwhile during the 1990s production rose from approximately 2,360,000 barrels of liquids per day (oil and condensate) and 9400 MMCFGD in 1989, to 2,550,000 barrels of liquids per day and 15,800 MMCFGD in 1999. Liquids showed an 8.5% rise with a fall in Indonesian production being countered by a large increase in oil production in Vietnam and increases in condensate in Malaysia and Thailand. Gas production showed a dramatic increase of almost 70% with large increases from all the main producing countries.

In terms of exploration activity Indonesia was the most active country in South East Asia being responsible for almost 60% of the exploration wells completed (see below).

Some of the more important discoveries made during the decade include Total's NW Peciko, Arco's Wiriagar Deep and Vorwata (to be developed as Tangguh), Asamera's Sumpal, Exspan's Kaji-Samoga, Unocal's West Seno and Merah Besar (all Indonesia), Oxy's Malampaya in the Philippines, Texaco's Yetagun in Burma, JVPC's Rang Dong in Vietnam, Shell's Kamansu East and Oxy's Jintan (both Malaysia), and Unocal's Pailin and Pogo's Benchamas (both in Thailand). Interestingly, three of these were made in deep-water areas, four in pre-Tertiary or Basement sequences and several in structures mapped by earlier operators who chose not to drill for various reasons.

The largest deal made in the South East Asia region during this period was Texaco's purchase of a 45% stake from Shell to join it in the Malampaya Field in the Philippines. This was understood to be a complex deal and press reports indicated that Texaco paid somewhere in the region of US$1 billion to join the project. Other large deals saw Chevron purchase Rutherford-Moran's stake in B8/32 in the Gulf of Thailand, Premier purchase Texaco's equity in the Yetagun Field offshore Burma and Total buy a stake from PTTEP in the "B" Structure (now Bongkot) also in the Gulf of Thailand. A look at the top ten deals in the region saw only two of these involving Indonesian acreage while eight of them primarily involved the purchase of gas rather than liquids.

As we enter the next decade many changes have occurred in the industry. No longer are we seeing companies using the machine gun approach to selecting acreage. The industry is becoming far more focussed with a great deal of effort being put into buying hydrocarbons in the ground rather than drilling for it. The larger companies, or majors and super majors, seem to be concentrating their exploration efforts on the deep-water areas and unless they become involved in gas in a big way they may choose to leave the region in the near future. We are seeing more and more small companies enter areas where exploration is becoming more and more mature and blocks smaller. However, many of these independent companies are struggling with high funding costs and have little production to benefit from the high oil price following its dramatic rebound in late 1999.

National oil companies are now less dependent on licensing rounds as a means to attract foreign investment and are becoming more realistic about signature bonuses and flexible about fiscal terms. Some have relaxed their rules on viewing and obtaining data, one of the great problems the industry experienced in previous decades.

Many areas do still exist for major hydrocarbon finds however, although these may be gas rather than oil biased. These include several deep-water basins, which are very much in their infancy in terms of exploration, the under-explored Mekong and Eastern basins of Vietnam, the complex onshore pre-Tertiary of Indochina and Eastern Indonesia, and the remote northern onshore basins of Burma.