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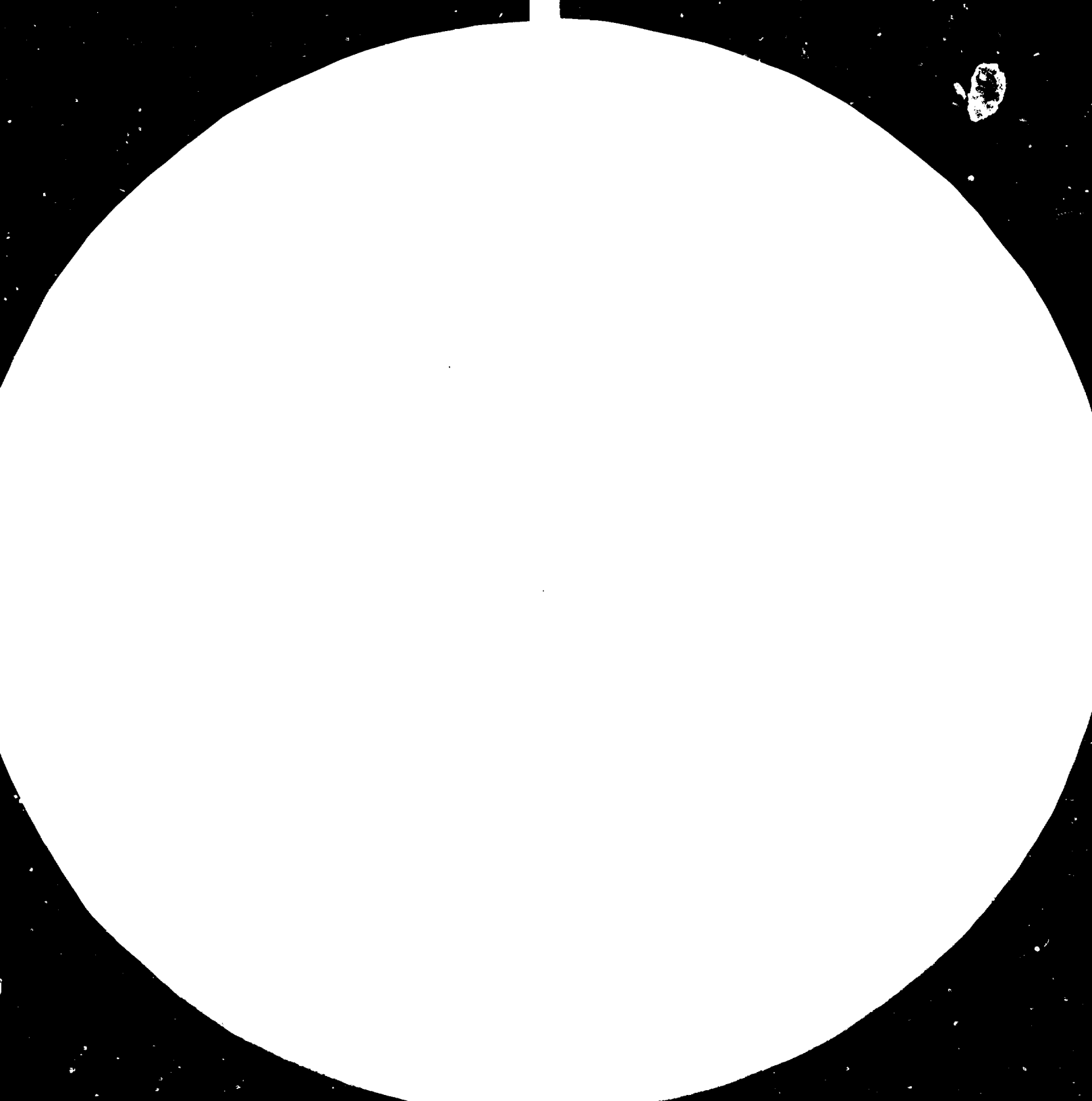
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MICROCOPY RESOLUTION TEST CHART

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POSSIBLE INFLUENCE OF OFFSHORE INDUSTRY
ON THE ACTIVITIES OF DEVELOPING COUNTRIES*

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1. GENERAL

It is common knowledge that offshore technology or better petroleum technology has developed substantially in the world of our times since the first pioneer oil-well was drilled in 1859 near Titusville, Pennsylvania. It is also common knowledge that the oil industry gained a new and formidable impetus in respect of operations and profitability when the world's financial power centers shifted in 1973.

In the world today there are some 20 oil and gas exporting countries. Further there are 80 countries which may yet become exporters or will have to continue to import oil for their primary power requirements. However, an analysis of the world situation in terms of population discloses that 25% of the world's population lives in 10 countries that import oil or produce some oil, while in 75 petroleum importing developing countries that produce no oil 15% of the population may continue to be dependent on oil. Referring to the 85 importing countries one may find that 10 countries have no oil prospects at all, 21 have limited prospects, while another 10 have a reasonable chance of supplying their own needs and becoming exporters.

Experts in the petroleum industry have been chiefly concerned with the successful finds and developments that have taken place since 1947 when the first offshore well was drilled in the Gulf of Mexico, off the coast of Louisiana. They were also concerned with the 40 countries that must find oil and develop new sources of energy supplies and of which 31% are dependent today on imports of oil and natural gas. The problem of exploration is thus raised for these 40 countries which have neither the financial means nor the human capabilities to undertake

prospection on their own and whose petroleum potential is not good enough to attract financing from outside.

Among the 37 countries which actually produce crude from wells located in the outer continental shelf are also the following Asian developing countries, namely:

Republic of Indonesia,
Malaysia,
Republic of India,
Republic of Philippines,
People's Republic of China, and
Islamic Republic of Iran.

However, taking into consideration the geographical situation it is evident that the remaining Asian and Pacific developing countries may belong to the above mentioned 40 potential offshore oil or gas producing countries. This may concern:

People's Republic of Bangladesh,
Socialistic Republic of the Union of Burma,
Fiji,
Territory of Hong Kong,
Republic of Korea,
Democratic People's Republic of Korea,
Republic of Pakistan,
Papua New Guinea,
Republic of Singapore,
Democratic Socialistic Republic of Sri Lanka,
Kingdom of Thailand, and
Socialistic Republic of Vietnam.

Drilling for oil and gas on the world's outer continental shelf increased significantly during the last years, and although offshore crude oil production is down from 1981, it continues to grow as a share of total crude supply. In 1982 total number of wells drilled offshore increased 21% to 3,494 or 614 more than 1981's total of 2,880. Republic of Indonesia came in second in the world with 261 wells drilled compared to 204 a year earlier.

Worldwide offshore crude oil production amounted to a daily average of 13,359,20 bbl during 1982, a 2.2% decline from 13,664,610 b/d in 1981. The offshore share of total world production increased to 25.2%, however, as total world crude plunged 5.1% to 53,002,000 b/d in 1982, compared 55,886,200 b/d in 1981.

Worldwide offshore natural gas production climbed to 28.2 trillion cu ft per day, compared to 27.6 Tcf per day in 1981 an increase of 2.39%.

The situation of the Asian developing countries is given in Tab. 1 and 2.

Offshore daily average crude production
/thousands of bbl/

Table 1.

Country	1982	1981	1980	1979	1978	1982-1981	
						Change	%Change
Indonesia	535.69	561.00	533.05	374.66	545.24	-25	-4.5
Malaysia	302.20	250.00	280.32	271.03	225.00	+52	+0.8
India	257.00	160.00	124.12	81.36	61.74	+97	+0.6
Philippines	16.50	7.80	4.00	26.00	-	+8.7	+1.5
China	-	2.00	2.00	2.00	2.00	-	-
Iran	-	350.00	150.00	200.00	654.50	-	-
World total	53,002	55,886	59,812	62,768	60,337		
World offshore	13,359	13,664	13,687	12,491	11,481		
% Offshore	25.20	24.45	22.88	20.15	19.02		

Offshore gas production /MMcf/d/

Table 2.

Country	1982	1981	1980	1979	1978	1982-1981	
						Change	%Change
Indonesia	550.00	632.00	440.00	439.28	561.00	-82	-2.9
India	141.00	2.20	2.67	48.52	3.44	+138.8	+9.0
World offshore	28.292	27.630	27.838	25.668	26.052		

The presented figures indicate that the actual amount of crude oil and gas production in Asia and Pacific developing countries is still small even when comparing only to the world's offshore production /crude oil ~ 10%, gas ~ 2.5%/. This means generally that an increase of offshore drilling activity is urgently necessary. How is the present situation in this field ? Statistics from their most recent indices on offshore activity show the drilling index reached record levels during the second quarter of 1982 and continued to grow through the end of the last quarter. In addition a number of new offshore exploration areas are receiving attention eg. belonging to kingdom of Thailand, and this is undoubtedly contributing to the sustained drive to appraise the region's full potential for petroleum development. It has to be stressed that recently almost five out of every 10 wells drilled in the Asia-Pacific were reported to have successful oil and/or gas finds. This is of course an indication that the development is fully possible and that the results might be satisfactory.

Generally because the developing countries are increasing their consumption it is urgently necessary to start or continue to explore and develop their outer continental shelf not only to maintain their position but also to supply oil and gas to other countries and thus become oil and gas exporters. However, according to some forecast made for the year 1984, the growth of offshore industry can be ensured if:

a/ Improvement of exploration and production technology will take place.

b/ Finding and development costs will be reduced to make offshore projects more economically feasible.

c/ Safety of offshore operations will increase, to maintain operator and government confidence.

The consensus is that despite some near-term problems the offshore industry will soon return to a climate of stability and profitability.

The considerations presented above indicate that the development of the offshore industry in the Asia and Pacific developing countries is a question of the near future and requires above all a wide governmental promotion. However, recently some other areas may be important not only to develop the offshore industry but also to increase other engineering activities which may have considerably influence on the total industrial development of the country. Shortly speaking it concerns the production of components for the growing oil and gas exploration and production industry. Taking into consideration the actual situation in this field a suggestion may be made to promote and develop the production of components given in the following chapter, necessary above all for the world's offshore industry. If these components will be also required for the industry of the country in consideration, depends of course on the governmental policy and promotion.

2. COMPONENTS FOR OFFSHORE INDUSTRY

Analysing the existing wide set of components necessary in the whole offshore industry, following products may be suggested for future consideration in developing countries. This means, however, that the components listed below may be produced by the industry existing in the country into consideration or may be the subject of new established factories producing in the first stage mainly for export. The competition factor in relation to developed countries have to be first of all the labour costs of skilled workers available in the developing countries into consideration.

List of products:

- a/ Bolts and fasteners
- b/ Construction materials:
 - Concrete
 - Non-ferrous metals
 - Non-slip coatings

Plastic

Rubber

Steel

c/ Concrete mattresses as pipeline jacketing

d/ Cranes, hoists, davits

e/ Deck modules

f/ Drilling equipment:

Bits

Blocks

Blowout preventors and accessories

Coring bits

Derricks

Directional drilling equipment

Drawworks, rotaries, swivels

Drill pipes

Drilling fluid and chemicals

Drilling tools-downhole: drilling jars, subs,
collars, stabilizers, etc.

Drilling tools-surface: tongs, slips, etc.

Power pipe handling equipment

Risers

Tensioners

Tool joints

g/ Drydock and drydocking equipment

h/ Electrical equipment:

Cables /electrical, thermal, etc./

Electrical switch gears, connectors, enclo-
sures

Lightings

Transformers

i/ Fire and safety equipment

j/ Heating and air conditioning equipment

k/ Hoses:

Fittings

Hydraulic

Pneumatic

Rotary

Transfer

l/ Insulations

- m/ Lubricate and thread components
- n/ Marine equipment
 - Anchor chains
 - Anchoring systems
 - Hoisting systems
 - Marine loading arms
 - Single point loading / mooring buoys
 - Towing systems
 - Winches and windlasses
- p/ Offshore housing and equipment
 - Housekeeping
 - Quarters
 - Sanitation equipment
- q/ Pipeline equipment
 - Coatings
 - Connectors
 - Pigs, spheres, etc.
 - Pipeline handling equipment
 - Strainers
- r/ Pipings
 - Elbows
 - Fittings
 - Flanges
 - Flexible pipes
 - Insulations
 - Pipe cutting equipment
 - Pipings
 - Stud bolts and nuts
- s/ Platforms
 - Jackets
 - Piles
 - Jacket components /legs, nodes, ect/
- t/ Pressure vessels
- u/ Pumps and pumps accessories
- v/ Rubber products
 - Buoys
 - Bumpers
 - Fenders
 - Gaskets
 - Packing material

w/ Safety equipment

Personal safety equipment

Protective clothing

Survival equipment, crafts

x/ Special ships

Barges

Crane ships and derrick barges

Divers support vessels

Fire fighting vessels

Multi support vessels

Research vessels

Towing and supply vessels

y/ Tools

Hand

Machine

z/ Tubular goods

Casings and tubings

Line pipes

z1/ Valves

Ball valves

Butterfly valves

Check valves

Control valves

Gate valves

Plug valves

Safety valves

Valves accessories

z2/ Vessels equipment

Anchors

Moorings

Propellers

Thrusters

Winches

z3/ Wire ropes, cables, chains

Cables /non electrical/

Chains

Fiber slings

Hawsers

Ropes /soft lines/

Wire ropes
Wire rope fittings
Wire slings

3. CLOSING REMARKS

The mobilization in the developing countries of the undoubtedly necessary production of the above listed components for the growing world's offshore industry requires above all the governmental promotion and assistance of international organizations and UN agencies. This assistance should concern mainly the location of orders, delivery of technology, creation of natural and regional enterprises, training of personnel and arrangement of financial support directly through an international bank or indirectly by certain joint-ventures which are of interest in developed countries mainly among operators which may be also considered in the future exploration and production activities of the developing countries into consideration. This generally should also mean that an onshore and offshore oil and gas exploration and production concession can be awarded to an operator only in such a case when this concession will be connected with the organization of production of agreed components for local and international offshore industry. This concerns also the shipbuilding and shiprepair industry which should be in such a case directed to production and repair of different types of special ships used mainly in the offshore industry.

The proposed actions mean also a growth of investments and the need of adequate capitals. Thus above all a global investment program is necessary which will also combine the planned oil and gas exploration and production development. The elaboration of such a program might be the contribution of UN agencies which could through the work of experts provide necessary studies and final results.

Finally it should be taken into consideration that all proposed actions require certain time. Thus in the first stage adequate time schedule for all planned actions should be prepared. The prepared time schedule should show all grup of works developing effectively on certain stages. For example in the case of offshore activities this time schedule should show stages for exploratory processing, seismic surveying, experimental seismic processing, complete processing, interpretation, site selection, establishment of supply bases, drilling of wells etc.

