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U.K. NORTH SEA OIL FINANCING CONTEXT
AND PROBLEMS: A GENERAL OUTLOOK

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TABLE OF CONTENTS

- I - INTRODUCTION SCOPE AND OBJECT OF THE PAPER

- II - THE SIGNIFICANCE OF NORTH SEA OIL. A BRIEF PICTURE
 - 1) Oil and the U.K. Economy and Balance of Payments
 - 2) Oil reserves and Production. The value of the oil.
 - 3) Oil and independence

- III - NORTH SEA EXPLORATION AND DEVELOPMENT CONDITIONS
 - 1) The Fields and the Operators.
 - 2) The technical conditions of exploration. Impact on costs and investment needs.
 - 3) Introduction to the finance problem.
 - 4) U.K. offshore oil policy
 - 4.1 NSO taxation
 - 4.2 NSO oil depletion policy
 - 4.3 Participation and the British National Oil Corporation

- IV - THE FINANCIAL ALTERNATIVES AVAILABLE
 - 1) Bank loans
 - 2) The Forties Arrangement
 - 3) The small operators. The state role

- V - CONCLUSION

- VI - FOOTNOTES AND BIBLIOGRAPHY

I - INTRODUCTION SCOPE AND OBJECT OF THE PAPER

Ever since the importance of North Sea Oil emerged, many studies and a lot of research has been done on the subject. Despite this research, the subject matter still has a lot of uncertainties about it due to the constantly changing conditions of the factors involved.

The above means, first, that a mass of information is available, not always in a coherent form and, secondly, that every study on North Sea Oil should be carefully dated and updated.

As far as this project is concerned, and due to this extremely fluid situation, we shall consider as a cutoff date May 10, 1975, for reasons of practicality as well. In fact, this paper required an enormous amount of desk research trying to collect, coordinate, interpret and summarize the available data in order to give as clear a picture as possible at a given point in time. Though we have complemented the desk research with interviews with the entities involved in N S O, (corporate officers, bankers and government officials), to bring in the latest available elements in the picture, it must be emphasized that tomorrow the reader can be confronted with a different situation; hence, will always have to update the following material.

This brings us to the scope and object of this paper. More than being just a mass of figures which will probably be obsolete by the completion of the paper, the object is to give a comprehensive identification of the problems directly and indirectly involved in N S O financing. The figures given herein are intended much more as an indication of the underlying trends and dimensions involved. In order to accomplish this, comparative figures will be given, whenever possible.

As it has been done, one might try to construct an economic model to figure out what are and will be the economics of N S O exploration and production. Due to the fluidity of the data mentioned, it appears that this approach is not so worthwhile, moreover, it can be misleading. In fact, as one banker put it, the first £ 10 billion invested in N S O must work, otherwise the whole undertaking may be in serious danger. Nevertheless, these models have the usefulness of giving indicative figures and may become highly operational once the major uncertainties about N S O have been removed. This is to say that, at present, the methodology of these models remains their most important feature. For the interested reader, the bibliography refers to two of these models (A) (B).

In doing this project, we felt that the N S O^{*} finance problem could not be approached in a coherent way without placing the problem within a world energy context, and more specifically within the U.K. context. This problem of financing will only be understood if the accompanying political and economic issues are present in the mind of the reader. This brings us to the question of the methodology of this study. A rapid glance at the table of contents will give a clear idea as far as methodology is concerned.

II - THE SIGNIFICANCE OF NORTH SEA OIL

1) Oil and the U.K. Economy and Balance of Payments

Table 1, below, gives the OECD forecasts (1) for 1980 and 1985 of the world primary sources of energy as a percentage of total consumption.

(A) (B) - See bibliography at the end

(1) - See references at the end

* It must be pointed out that this study deals only with oil, excluding the gas resources of the N S

Table 1

*Primary sources of energy
in % of total consumption*

	Ch.	Petr.	G.Nat.	En.Nu.	Hydro Geo	Electr.
<u>1972</u>	22,2	63,1	10,2	1,4	3,1	(11,2)
<u>1980</u>						
\$ 6	17,2	55,1	17,8	7,3	2,7	(15,1)
\$ 9	18,5	50	21,1	7,6	2,8	(16)
<u>1985</u>						
\$ 6	13,8	52,8	18,2	12,9	2,3	(16,8)
\$ 9	14,8	47,8	21,5	13,5	2,4	(17,8)

Source OCDE, Perspectives Energétiques pour 1985, p. 71

A look at the table will bring out that, in spite of the development of alternative sources of energy, oil, even at the more unfavourable price considered, will amount in 1985, to approximately 50 % of world consumption of energy. Regarding the U.K., the estimates of the National Institute Economic Review show that oil will, in 1980, amount to about 50 % of U.K. energy consumption, compared with 45 % in 1970, and in spite of the development of alternative sources in nuclear and gas energy.

Bearing in mind the recent increases in the price of oil (fourfold in late 1973), this suggests to us the importance Britain attaches to the oil problem. This importance can be readily seen in Table 2 which gives

an idea of the impact of N S O upon the British balance of payments (2).

Table 2 (2)

*U.K. : NORTH SEA OIL'S EFFECT ON BALANCE OF PAYMENTS
In £ Million*

<u>CURRENT ACCOUNT</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
. Savings in net imports of crude oil	660	1405	2630	4745	5380	5650
. Exports of crude oil	-	-	-	-	650	1650
. Import content of total Expenditure	(380)	(550)	(650)	(590)	(535)	(480)
SUB-TOTAL	280	855	1980	4155	5495	6820
 <u>CAPITAL FLOWS</u>						
. Capital inflows	380	600	780	810	870	960
. Remittances of earnings	(80)	(170)	(810)	(545)	(670)	(800)
SUB-TOTAL	300	430	470	265	200	160
TOTAL	580	1285	2450	4420	5695	6980
STATE REV. (57,2)	400					4570

TO COMPARE WITH :

- U.K. BALANCE-OF-PAYMENTS DEFICITS in 1973 \approx £ 2.348 M
- " " " " in 1974 \approx £ 4.000 M
- TOTAL INDIRECT TAXATION in 73/74 \approx £ 5.700 M

ASSUMPTIONS :

- . PRODUCTION : 360 kb/d (1975) ; 3 Mb/d (1980)
- . INTERNAL CONSUMPTION : 3 Mb/d (1980)
- . FOB PRICE (1 BARREL) : \$ 11
- . FINANCEMENT : 60 % FOREIGN
- . NO REPATRIATION (NET) OF FUNDS BEFORE 1980 (NET PROFIT/b = \$ 2)

(2) - see references at the end

Despite the optimism of the figures when considering delays already incurred in N S O development, the amounts involved are significant when compared with British balance-of-payments deficits in recent years. Moreover, Britain has been financing its balance-of-payments deficits with mortgages on N S O to upkeep if not live above its means. Then, it appears, N S O is becoming a question of solvency for Britain.

Two other general points should be considered when talking about the significance of the U.K. N S O. The first one can be understood by looking at the map which gives the geographical situation of the fields which have already been discovered and are being developed. The majority of the fields are on the Scottish continental shelf. Scotland has traditionally been relegated among the last places among U.K. development areas. Being one third of the U.K. territory it represents less than one tenth of the population. Hence the industrial opportunities open by N S O development have found the Scottish industry and the social infra-structure unprepared. On the other hand, Scots are also very sensitive to environmental problems, an issue clearly raised by N S O development.

In view of these problems, both the Government and the opposition are in accord that it is "politically fair and opportune to make the Scottish region benefit from N S O revenues". Until 1974, eleven thousand people had been directly employed in N S O activities and another five thousand indirectly. In 1975, the global figure is already forty thousand. Again, in 1974 the rate of unemployment fell in the Aberdeen region to 1.9 % though in the centre and west regions the rate was maintained at a more "Scottish" rate of 5 %, which leads to the potential effect of N S O development giving rise to regional imbalances, even within Scotland.

A certain number of big refinery projects and production platform sites are envisaged as a downstream result of N S O development. However, there remains the tendency of the central government to decide on these matters, shortcutting the regional authorities, which, again, raises the tensions between national and regional aspirations. To sum up, in the 1970 general elections the Scottish National Party got 11.4 % of the vote, and in 1974, the same party obtained 21.9 % of the vote. The Scottish community has been claiming full sovereignty on the so-called "Scottish N S O resources". In developing N S O, the Scottish issue is a factor which the UK government must bring into the picture in defining its policies.

The second point relates to the possible answer British industry might give to the problem of production of goods and services for which demand has been greatly increased due to N S O development. Due to the systematic underestimation of the probable size of the finds, British industry was wholly unprepared to obtain a due share of the new investment of the oil industry. Even though this investment is small in relation to the total oil investment, it represents a very substantial amount in terms of the British productive capacity of capital goods. Each platform installed in the N S O provides on the average five million tons of oil a year, which at current worldwide prices represents a benefit of £ 185 million to the balance of payments. On top of this risk of loss of oil production, more direct economic consequences should also be noted. In fact the cost of a gravity structure in the N S is about £ 30 million (of this, the cost of the basic concrete structure, together with the site costs and overheads amounts to £ 15 million). The deck equipment installed on the structure costs a further £ 25 million,

so that the total installed cost is about £ 60 million. In general terms, the subcontracts for specialized equipment for the structure and the deck tend to follow the award of the main contract. So a British platform order means up to £ 60 million worth of business to British industry. Even in the case of securing locally a part of the subcontracted work for a platform ordered abroad, the loss would still be of the order of £ 45 million, much of it in mechanical and electrical engineering work. Furthermore, no fundamental change in the technology of offshore oil production can be predicted before 1980. Hence there is a high probability that once the capability to build those new structures is vested in local contractors most of the subsequent orders for the rest of the decade will go to them. Unfortunately, as a result of this systematic underestimation, the Japanese and French, in addition to the Americans and Norwegians, have stolen a market which British industry will have some trouble recuperating, which is by no means (as we have seen) of insignificant importance.

II - OIL RESERVES AND PRODUCTION . THE VALUE OF THE OIL

Up till now it is conformed that there exist over 1,000 million tons of oil reserves on the U K continental shelf, which, on the available evidence, are almost certain to be economically and technically producible, based on geophysical and geological information obtained from seismic surveys and testing of appraisal wells. The estimates of the reserves not yet fully appraised have been made on a similar basis but, because necessarily less reliable, only a small percentage of these reserves can be considered "proven". The following table (3) gives the estimates of the existing and possible future reserves.

(3) - see references at the end

Table 3

	total (millions of tons)				
	Proven (i)	Probable (ii)	Probable total	Possible (iii)	Possible total
1 Proven fields	995 (895)	90 (165)	1085 (1060)	135 (100)	1220 (1160)
2 Other significant discoveries not yet fully appraised	65 (-)	215 (230)	280 (230)	300 (160)	580 (390)
3 Total from existing finds (1 March 1975)	1060 (895)	305 (395)	1365 (1290)	435 (260)	1800 (1550)
4 Expected from future finds on existing licenses	- (-)	900 (700)	900	400 (700)	1300 (1400)
5 Total from existing licenses	1060 (895)	1205 (1095)	2265 (1990)	835 (960)	3100 (2950)

Footnotes: (a) The figures include the small amounts of liquid condensate at present being produced with gas in the Southern North Sea basin and those which might be produced from the gas condensate discoveries East of Scotland and East of the Shetlands.

(b) Reserves are estimated on a volumetric basis, reservoir by-reservoir. Recovery efficiencies assumed range from 30 - 45 per cent of oil in place, depending on the reservoir characteristics and on the properties of the reservoir fluids.

(c) The 1974 estimates are included in brackets in the table for ease of comparison.

Future discoveries are set out in Table 3 in the following three categories :

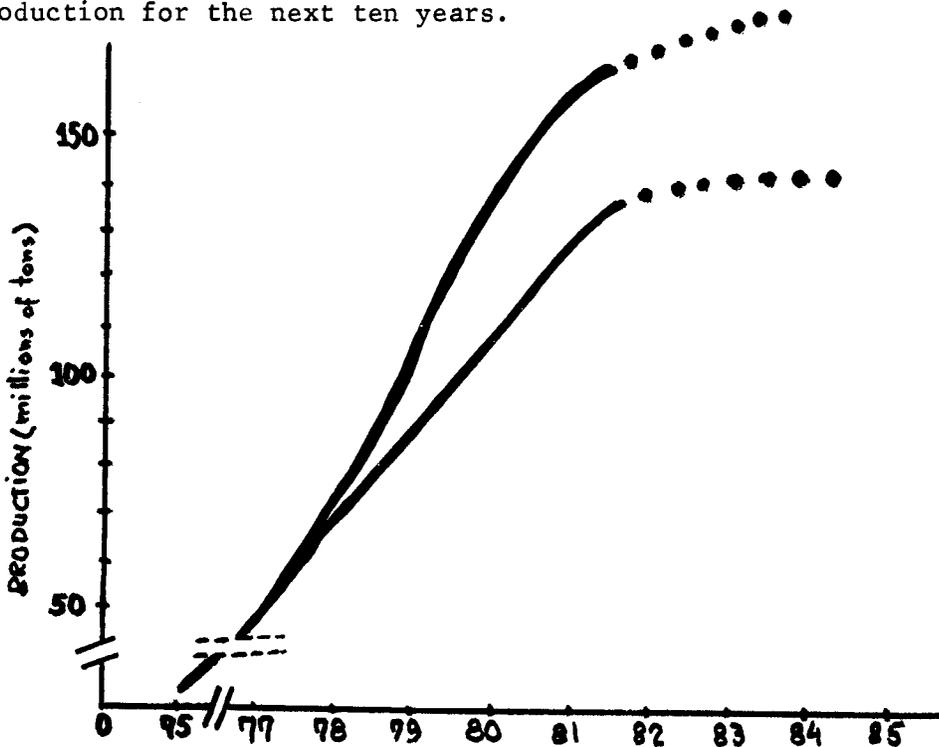
(i) Proven - those which on the available evidence are virtually certain to be technically and economically producible.

(ii) Probable - those which are estimated to have a better than 50 per cent chance of being technically and economically producible.

(iii) Possible - those which at present are estimated to have less than a 50 per cent chance of being producible.

The tables show that reserves of oil in existing licensed areas could total between 2.265 and 3.100 million tons. If the estimates of reserves in areas in the U.K. shelf already designated but not yet licensed are to be taken into account, the total reserves could reach 4.500 million tons. It should be pointed out that the lines which will divide parts of the continental shelf between U.K. and Ireland and U.K. and France have not been agreed upon. Once this is done, additional areas will be available for licensing and it is reasonable to assume that discoveries made in those areas could contribute to U.K. oil production in the 1990's.

Oil production from the U.K. sector is expected to begin in the summer of 1975 with a total production for this year of something between one and two million tons (a lower figure than that assumed for the balance of payments table. Nevertheless production is still expected to build up rapidly during the rest of the decade to the point where the production level equivalent and even greater than national consumption is achieved in 1980). The following figure (4) shows the government's forecast of oil production for the next ten years.



(4) - see references at the end

Of course there are many uncertainties associated with the estimating of future production, and this should be kept in mind. More reliable estimates will only be available once production experience has been gained. After 1980 total production will depend mostly on discoveries not yet made and estimates must therefore depend on assumptions about these discoveries. Broadly, the upper line in the figure above is associated with total recoverable reserves in presently designated areas of 4500 million tons, and the lower one of 3000 million tons. Nevertheless for the almost certain figure of 150 million tons a year in the U.K. sector at the conservative price of ten dollars a barrel the gross yearly revenue of more than \$ 10 billion or some £ 4 billion can be considered. The value of total reserves at that price would be around \$ 300 billion which shows that on the side of revenues we are confronted with staggering magnitudes and potentially profitable opportunities for oil companies. One should not forget that the forecasts illustrated raise the question of the best use of oil reserves over time from a U.K. point of view. This leads inevitably to the issue of governmental interference and definition of the depletion strategy. This in turn on the company side leads to a potential major uncertainty on the question of the rentability of their investments in U.K. N S O. Later in this paper this point will be brought out anew.

3) Oil and independence.

As we have seen, the prospective yields of oil in the N S should be sufficient to cover U.K. home demand from 1979 onwards. After the drastic increase in miner's wages, it is probable that Britain has a comparative advantage in substituting oil for coal. Moreover, it is not likely that the attitude of governments and people will return to the blissful neglect of dependence on Middle East potentates which dominated its policies before the 1973 crisis - unless, indeed, the oil states go too far and provoke

massive armed intervention. Britain, however, is a member of the EEC and is in any case bound by GATT rules. The former entails abstinence from any discriminating export controls on oil, which means, in the final analysis, that the value of Britain oil will be determined by the OPEC. Nevertheless, it is not necessarily in Britain's interest to subsidise exports through an artificially low price for oil. It may well pay to sell oil at high prices to the EEC and burn domestic coal. Be as it may, the existence of N S O has undoubtedly given the U.K. government a much wider room for manoeuvre in defining its economic and even political strategy, for the years to come.

III - N S EXPLORATION AND DEVELOPMENT CONDITIONS

1) The fields and the operators

The following Table 4 gives some important figures (5) and data about the main fields discovered and under development in the N S.

(5) - see references at the end

Oil Fields in the U.K. Continental shelf

Table 4

Proven Main Block Oil Fields			Extension into other U.K. Blocks						
Field Name (water depth feet)	Block Number	Licensees	Company interest in block %	Licensees	Company interest in block %	Date of Discovery	Operator's estimated date of production start-up	Operator's estimate of first peak production year	Operator's estimated production (million tons per year)
Forties	21/10	BP Oil Development Ltd	100	Shell UK Ltd (Shell) Esso Petroleum Co Ltd (Esso)	50 50	Nov 1970	1975	1977	20
Auk (275)	30/16	Shell Esso	50 50	-	-	Feb 1971	1975	1976	2
Brent (445)	211/29	Shell Esso	50 50	Texaco North Sea UK Ltd	100	July 1971	1976	1981	22
Argyll	30/24	Hamilton Brothers Oil Co (Great Britain) Ltd Hamilton Brothers Petroleum (UK) Ltd RTZ Oil and Gas Ltd Blackfriars Oil Co Ltd The Trans-European Co Ltd	48 12 25 12.5 2.5	-	-	Oct 1971	1975	1976	1.8
Piper	15/17	Occidental Petroleum UK Ltd Getty Oil International (England) Ltd Allied Chemical (Great Britain) Ltd Thomson Scottish Petroleum Ltd	36.5 23.5 20 20	-	-	Jan 1973	1976 ^a	1978	10.9
Beryl	9/13	Mobil Producing North Sea Ltd Amerada Exploitation Ltd (Amerada) Texas Eastern (UK) Ltd (Texas Eastern) British Gas Corporation	50 20 20 10	-	-	Sept 1972	1975	1977	4
Dunlin	211/23	Shell Esso	50 50	Conoco Ltd (Conoco) Gulf Oil (Great Britain) Ltd (Gulf) National Coal Board (Exploration) Ltd (NCB)	33 1/3 33 1/3 33 1/3	July 1973	1977	1982	4
Thistle (575)	211/18	Burmah Oil Development Ltd Champlin Petroleum Co Ltd Deminex (London) Ltd Sante Fe (UK) Ltd Tricentrol North Sea Ltd Charterhouse Securities Ltd	24 22.5 20 22.5 10 1	Conoco Gulf NCB	33 1/3 33 1/3 33 1/3	July 1973	1977	1978	8.8
Montrose	22/18	Amoco UK Petroleum Ltd (Amoco) British Gas Corporation Amerada Texas Eastern	30.77 30.77 23.08 15.38	Amoco British Gas Corporation Amerada Texas Eastern	30.77 30.77 23.08 15.38	Sept 1969	1976	1978	2.43
Winian	3/3	Burmah Chevron Petroleum Cy Ltd Imperial Chemical Industries Ltd Murphy Petroleum Ltd Ocean Exploration Co Ltd	30 24 26 10 10	B.P. Petroleum Development Ltd Ranger Oil (UK) Ltd Scottish Canadian Oil and Transportation Co Ltd London & Scottish Marine Co Ltd Cawoods Holdings Ltd National Carbonising Co Ltd	50 20 7 15 1/2 3 3/4 3 3/4	Jan 1974	1977/78	1981	^a

^a under reassessment

Two aspects are worth noting. First, the number of blocks licensed to small speculative companies ; secondly, the discrimination in favour of the national champions. The first aspect underlines the main objective of the U.K. government to bring oil ashore as quickly as possible. In fact, the smaller companies without other reserves in other parts of the world add, at least in the beginning, to the same objective of the U.K. government to make the investments bear their fruit quickly. At the same time, they do not have the strategic alternatives and interests that large companies have - delaying the N S project and favouring production elsewhere where costs and political motives advise the quickest possible development (this is to say that for the large oil companies, N S O is just another piece in the oil jigsaw). This compromise solution raised new questions and problems, mainly financial, as we shall see. The discrimination in favour of the national champions reveals the foreseen ability of an eventual U.K. government takeover of N S development. In fact, today, the question of state participation is one of the most heated issues at hand.

2) The technical conditions of exploration. Impact on costs and investment needs.

The previous table gives also, in relation to several fields, one revealing indication about the exploration and development difficulties in the N S : the depth of the waters in the northern basin of the N S, where these depths reach the 200 metre level just around the 62nd parallel and just where most of the discoveries have been made. On top of these difficult exploration conditions, other climatic adversities should be noted : hurricane force winds, giant waves, and icy temperature conditions. Also, the work problems can be considerably delayed by recurring fog which impedes the movement and transportation of men and equipment. For comparison's sake,

"the wave of the century" in the Forties zone can reach 28 metres against 8 metres in the Persian Gulf. Quoting the Forties example, in 1973, 200 useful days of work had been forecasted but in fact, work was only possible for 89 days. In the N S the possibility of unloading equipment on the platforms during winter is evaluated, on average, as being possible three times a month for tubes, and five times a month for chemical products and fuel. Though this figure is in itself unfavourable, it is only an average figure that can be worsened by climatic changes that occur from one winter to the other. Up till now, four exploration platforms have been lost in the N S, but a considerable number of other platforms have been badly damaged because of the weather, remaining out of service for weeks, sometimes months. To cope with these problems, the companies are forced to make hundreds of design changes in the production platforms which causes inevitable delays.

The above-stated technical conditions should be considered in conjunction with the economic and political situation of the U.K. The former were enough to make exploration and development costs much higher in the N S than in the traditional offshore and inshore areas where oil is extracted. But, the inability to forecast the future costs of inflation and slippages in the development of the N S fields add new problems causing the doubling of the budgeted costs of individual fields since 1973 and making rapidly obsolescent all the estimates about exploration and development costs for the N S.

It should be noted that a year's slippage could mean a cash loss to the producer of some 60 dollars/barrel for a small field with a plateau output of 15.000 barrels/day, or \$.20 for a big field with a plateau output of 150.000 barrels/day, both at a "favourable" deferment rate of 15 %. Quoting against the Forties example, the present cost estimates for this project are of £ 500 per barrel/day (including production setup costs) against 1000 in 1973. To express the costs in a different way, globally and not per

barrel/day, the total costs estimates are in 1975 of £ 700 million against £ 400 million in 1973. Taking the conservative average figure of £ 1.200 per barrel/day, of production capacity, the development of the projects for Ekofisk, Forties, Brent, (with Thistle and Dunlin), Auk, Argyll, Piper, Beryl and Montrose, can be evaluated to £ 2.400 million. The development of other fields already discovered, taking a more realistic cost of £ 1.600 per barrel/day would cost about £ 1.300 million. If, for the next six years, the recoverable reserves to be probably discovered amount to 18 billion barrels, the development costs of these fields will total in the period 1976-1982 about £ 7 billion (taking a cost of £ 1950 per barrel/day because at that time the costs will be obviously higher). If the success percentage is lower and the number of reserves to be discovered total only 11.5 billion barrels, then the cost figure will be somewhere around £ 4.7 billion. Put these figures against total capital expenditure in the U.K. manufacturing in 1974 of £ 1.900 million and the idea of the investement needs will appear more clearly.

In trying to establish the breakdown of these global figures among different categories of fields (in terms of recoverable reserves) it should be pointed out that because of the many uncertainties involved, few technical data on costs have as yet been published for N S operations, as development is after all still in a very early stage. The following figures were published in 1973 (6) and give the unit capital investment to generate a daily barrel of oil at plateau rates. Nevertheless we notice that unit costs in the N S have risen sharply since 1973, with a figure of £ 3.000 per barrel of peak daily output published recently for a large field.

(6) - see references at the end

Table 5

Oilfield's capital requirements in the North Sea
(£ Sterling per barrel/day)

FIELD A (50 Million barrels of reserves and 50.000 barrels per day plateau output)	800 - 1000
FIELD B (100 Million barrels and 30.000 b/d)	1000 - 1200
FIELD C (500 Million barrels and 150.000 b/d)	1500 - 2000

Some comparable information for other areas is given below, bringing out that, in fact, the N S is a high cost area.

Table 6

Oilfield's capital requirements
(£ Sterling per barrel/day)

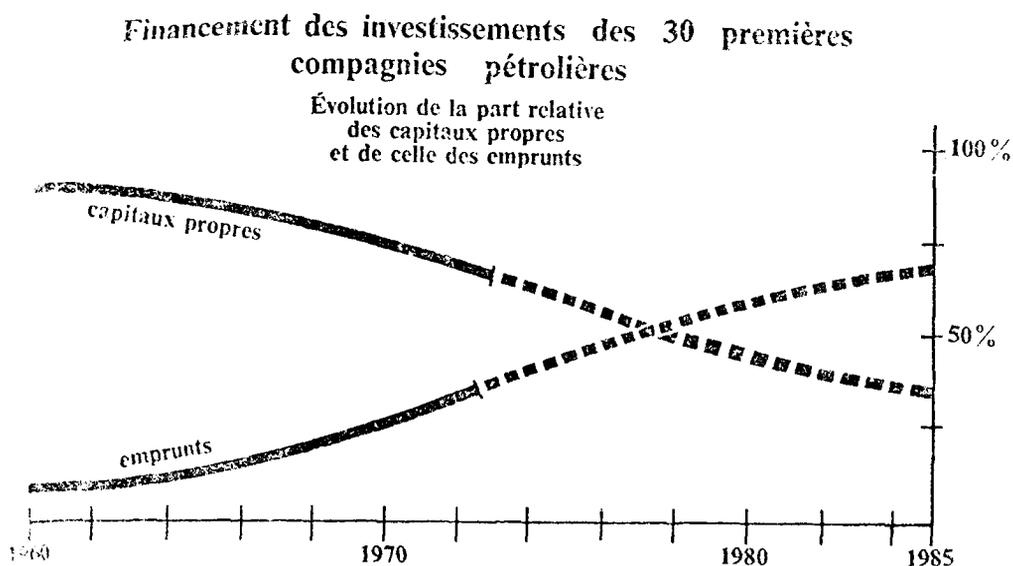
MIDDLE EAST - LAND	100 - 150
MIDDLE EAST - OFFSHORE	150 - 250
WEST AFRICA - LAND	300 - 400

3) Introduction to the financial problem

In trying to compare the previous staggering, though probably conservative, cost figures with the financial possibilities of the oil companies involved in the N S operations, let us quote the B.P. example. As far as this company is concerned, the cumulated amount of cash flow of the last five years is

slightly more than \$ 3 billion, that is to say, two and a half times the development costs of the Forties field alone in 1973 figures. Being involved in a vast capital budgeting program from Alaska to the Persian Gulf, it is obvious that B.P. (and the same goes for other companies) cannot expect to afford the burden of these development costs on its own funds.

If historically the oil companies have financed their operations largely with equity funds relying on borrowing only for downstream activities and working capital, the picture is undergoing a radical change. Even if the exploration costs will continue to be met by the large companies exclusively out of cash flow, it is obvious that, faced with tremendous capital requirements, the necessity of external finance on a large scale is a vital factor for the oil industry today. A Chase Manhattan study on the investment financing of the thirty largest oil companies showed that internal financing in relation to the total amount invested, has not stopped declining : from 90 % in 1960 to 69 % in 1972. The chart below, (7) from the same source, states the forecasted evolution of the relative weights of internal versus external finance.



(7) - see references at the end

In the N S the payback period of the investments is particularly long, creating the need for external finance very early in the production cycle when, in the past, according to the U S experience, most production type loans have been made on developed producing properties. Quoting again the Forties example, between the discovery and the production takeoff, more than five years will pass. The same picture is valid for the others fields for which the development will last for several years. This means that the oil companies have to spend tremendous amounts of money without in many cases any significant cash inflow within the near future. This imposes obviously very sophisticated and non-traditional schemes of external financing, i.e. each one tailored to its own particular needs. Actually the scale of finance required rules out the equity market as it does the pension funds, insurance companies or investment trusts as major sources. The oil industry is therefore radically left with the banks who have both the knowledge of and access to the loan capital available in the international capital markets.

How does a banker approach such financing ? Keeping apart those who approach it just near enough to have a closer look and then run away, it should be noted that the entire N S O financing process is in itself very frightening. Due to the uncertainties involved and already mentioned, with no production records and such hazardous operating conditions, it is very difficult just to sit down at the moment and analytically work out what is and what will be an oil company's cash flow. Uncertainty over the future price of crude oil is compounded by the increasingly interfering attitude of the U.K. government towards taxing the oil companies' margins, setting (?) depletion policies, claiming state participation and so on. As a result it is almost impossible to project the oil companies' future profitability on the N S fields. And to sound of the picture the sums involved are so large that

usual security is impossible to find.

Most bankers would have nightmares at the thought of lending on such schemes (anyway, there could always exist legal difficulties in that the legal owner of the oil in the ground is the U.K. government, until it reaches the well-head and the royalty has been paid ; the lender, therefore, has no ultimate security, as trading of licenses is in principle prohibited by the Department of Trade). But as with all "debtors", the banks' problem is precisely in assessing the former's ability to repay (as we have been told by certain bankers, the financial institutions are not willing to place the "British widows" money in the highly risky N S investments, and, therefore, all money directed towards the oil companies will play the role of debt, and not equity). Because that ability is extremely dependent on the state's policies, and attitudes, particularly in the U.K., we shall now consider this problem, before going into the finance problem in more detailed fashion.

4) U.K. Offshore oil policy

The white paper on U.K. offshore oil and gas policy, published on 11 July 1974, described the government's policy for the development of offshore oil and gas resources. The policy is based on three main objectives :

- a) To secure a fairer share of the profits for the nation and to maximize the gain to the balance of payments.
- b) To assert greater public control in order to safeguard the national interest in an important resource which belongs to the nation, and
- c) To develop the oil resources as fast as possible, at least to a self-sufficiency level of 100-150 million tons per year.

Recognizing, also, that the N S is one of the roughest and wildest areas in the world, not to mention the unpredictable aspect - and, also, the escalation of costs through inflation and delays in development, as well as the necessary cooperation with the oil companies due to their virtual technological monopoly - the U.K. government stated at the same time that the last thing they wished was to drive the oil companies out of the N S : "We want them to continue to operate there profitably, and, of course, to bring the oil ashore".

To achieve these somewhat contradictory objectives, the U.K. government took several courses of action among which we will consider the most important, namely the taxation of N S O the depletion policy, the state participation in existing and future licenses, and the setting up of a British oil company fully state-owned.

4.1 NSO taxation

The government take from the offshore oilfields will flow from three sources :

- a) a royalty at 12.5 % of the well-head value of the oil.
- b) a Petroleum Revenue Tax (PRT) at a rate of 45 %.
- c) a corporation tax (at the current rate of 52 %) on net revenue after deduction of royalty, PRT, and of expenses computed according to normal corporation tax rules.

The total "take" will amount to about 70 %, over a period of years. PRT is charged on the profits from winning oil and gas under license in the United Kingdom and on the U.K. continental shelf. It is effective since 13 November 1974, although any capital expenditure before this date is allowed against it. The tax is charged on each field separately. This means that a company cannot defer paying tax on the profits of one field by offsetting against it the development costs of another field. The object of this policy is to ensure a reasonably early inflow of tax to the exchequer. No PRT is to be charged before 1976, after what it will be charged for periods of six months after the end of the chargeable period. Thus, it shall be received much earlier than the corporation tax.

For the sake of calculating the tax, some expenses are deductible against PRT :

- a) License royalties at 12.5 %.
- b) Capital expenditure on the field, plus an uplift of 75 %.
- c) Operating costs for the field (however, interest payments are excluded).

Over and above this, abortive exploration expenditure or a loss on an abandoned field incurred elsewhere in the North Sea by the same group may be set off against PRT on developed fields.

If, after deducting any loss carried forward or backward from another period, this computation shows a net profit, an oil allowance representing up to half a million tons is given for the chargeable period. This oil allowance of

one million tons a year is subject to a cumulative total of ten million tons per field. Any unused oil allowance cannot be carried forward or backward, from one chargeable period to the next. The ten million tons limit only applies to the amounts actually relieved from tax by the oil allowance. Obviously, some fields may not be big enough to use up the full ten million tons. However, one must note that the fact that the allowance is at a fixed amount implies that relative to income, it is a much greater benefit to the smaller fields than to the large ones.

The following table (8) gives an example of PRT computation

Table 8 Example of PRT computation

It is assumed that the company has a 1/5 share in an oilfield producing 8 million tons a year, the oil price being £ 35 a ton.

	£ million	£ million
Gross revenue for six months ended 30 June 1980 (i.e. 1/5 of 4 million tons at £ 35 a ton).		28
Less :		
Royalty : 12,5 % of well-head value (about £ 31 a ton)	3.1	
Operating costs	3.0	
Capital expenditure : £ 1 million, plus 75 % uplift	1.75	
	<hr/>	7.85
NET PROFIT		<hr/> 20.15
Less :		
Oil allowance at 1/5 of 500,000 tons at £ 35 a ton		3.5
Amount chargeable to tax		<hr/> 16.65
PRT at 45 %		<hr/> 7.5

N.B. The above table shows the PRT liability only. The profits are also subject to corporation tax.

From the onstart, as it has been indicated by the government, it was necessary to design provisions that would ensure the rate of return on marginal fields was sufficient to encourage their full development. These provisions benefit

all fields by exempting part of their revenue from PRT. But they will be of proportionately greater benefit to marginal fields.

Among the non-discretionary provisions, we find the oil allowance per field, outlined above, plus the above mentioned 75 % uplift on capital expenditure allowed against PRT. This provision of "uplift" exists, in part to compensate the companies for the fact that interest payments will not be allowed against PRT. The effect will be to increase the net of tax return to the companies early in the life of a field, which is important in oilfield economics. The third non-discretionary provision will be a "safeguard" clause to protect the companies against a fall in the price of oil or a significant increase in costs. The government have expressed their openness in reviewing the rate of PRT in the event that any of the above occurs.

Another form of relief, in the form of discretionary relief, will exist to assist marginal fields. This will empower the Secretary of State for Energy to decide on the refunding of royalties, in whole or in part, to provide the incentive to develop a field which would not normally fulfill purely economic criteria.

The variety of circumstances encountered by companies, and the proposed allowances and reliefs to assist marginal fields will mean that the incidence of PRT will vary from one field to another. Table 9 on the next page shows how the tax structure as a whole would operate during the life of a hypothetical field (9) . It illustrates how the three components of the government "take", outlined above, will be calculated. The figures in the table which relate to price, operating costs and capital expenditure are purely for the sake of illustration ; they are not necessarily representative of expected production or revenue.

*Effect of tax structure on a hypothetical North Sea field :
Totals over life of field*

	£ million (rounded)	% of net revenue
REVENUE		
1. Production (million tons)	80	
2. Price per ton (£)	35	
3. GROSS REVENUE (1 x 2)	2800	
EXPENSES		
4. Operating costs	400	
5. Capital expenditure	400	
6. Interest payments (say)	200	
7. TOTAL EXPENSES (4+5+6)	1000	
8. NET REVENUE (BEFORE ROYALTY AND TAX) (3-7)	1800	100
9. ROYALTY	310	17
PRT LIABILITY		
10. Allowances for PRT (4+ (175 % of 5) +9)	1410	
11. Oil Allowance (10 million tons maximum)	350	
12. Total PRT Allowances (10+11)	1760	
13. Taxable base for PRT (3-12)	1040	26
14. PRT at 45 %	470	
CORPORATION TAX LIABILITY		
15. Allowances for Corporation Tax (4+5+6+9+14)	1780	
16. Taxable base for Corporation Tax (3-15)	1020	
17. CORPORATION TAX AT 52 %	530	30
18. TOTAL GOVERNMENT TAKE (9+14+17)	1310	73
19. COMPANY TAKE (8-18)	490	27

Note : The Table does not illustrate the effect of the "safeguard" or the remission of royalty. No remission of royalty would be necessary in this example. It is possible, depending on costs, prices and the profile of production, that the safeguard might affect the PRT liability in a field of this size when production began to decline towards the end of the life of the field.

It should be noted that under the existing rules for corporation tax, there are a number of ways in which the government's corporation tax take from U.K. oil activities could be eroded. The most important example is that companies could set off against North Sea income losses and capital allowances from other activities carried on either by the same company or by an associated company in the same group. But also one company in a group could use these extraneous losses to claim payment from the inland revenue of any tax credit attached to dividend received from an associated company with North Sea income. The effect of the "ring fence" erected by part II of the oil taxation bill is to prevent the corporation tax yield from the N S being reduced by these or other means. The "ring fence" will apply after 11 July 1974, except that the provision relating to dividends will apply to distributions made after 19 November 1974 (i.e. the date of the publication of the bill).

4.2 North Sea oil depletion policy

The government's intention towards the use of the proposed powers on the depletion of N S O was announced on 6 December, 1974, by the Secretary of State for Energy, Mr. Eric VARLEY. He said the objective was to build up production from the U.K. continental shelf as quickly as possible over the next few years and to implement the power in such a way as to ensure that the oil would be used at a rate which secured the greatest long-term benefit to the nation's economy, and in particular, to Scotland, Wales and other parts of the U.K. in need of development. The statement's main points were as follows.

- No delays on the development of finds already made or on any new finds made up to the end of 1975 under existing licenses ; full consultation with the companies, should it prove necessary to

delay the development of finds made in 1976 or later, so that premature investment is avoided ;

- no cuts in production from finds already made, or from new finds made before the end of 1975 under existing licenses, until 1982 at the earliest, or until four years after the start of production whichever is the later ;
- the government to take into account the needs of the offshore supply industry in Scotland, Wales and other parts of the U.K., for a continuing and stable market in deciding on action to postpone development or limit production.

4.3 Participation and the British National Oil Corporation

It is the government's belief that "majority state participation in the existing state licenses for commercial fields provides the best means for the nation to share fully the benefits of N S O". It will be a condition of future licenses that the government will have the option to take majority participation in all commercial fields under those licenses. The government also stated in the white paper that it would be inviting the holders of current licenses to negotiations to discuss majority participation in their commercial discoveries.

Of the issues above the only not yet clearly defined is the participation one. Great uncertainty still hangs over this central problem.

Though the U.K. government argues that participation is a weapon for reviving development expenditures, rather than killing it, by rescuing the weaker operators and injecting new finance into the exercise (as it was the case for Tricentral as we will see), the majority of the big operators, to which

these circumstances do not apply, look at the issue in a very cold way. They fear the participation to be one additional arrangement to add to the "already immense discretionary powers of control given to the Energy Secretary of State", pursued because of demagogic political objectives but economically unjustified, the fact that the U.K. Energy Secretary revealed in the Commons, the 1st of May, that BP had accepted government demands for 51 percent participation and that, the following day, BP strongly denied this acceptance, is indicative of the present situation. Which of course, can lead to anything but further delay in the development of North Sea fields with all its consequences.

IV - THE FINANCIAL ALTERNATIVES AVAILABLE

1) Bank Loans

Historically, oil financing has been one of the most desirable outlets for bank's loanable funds. As engineering techniques are improved and predictable risks are identified, coupled with reasonably well-known governmental and regulatory policies, banks are able to provide finance for not only the larger integrated energy companies but, more important, for the small independent oil operators. As we have seen and mostly in our days of an extremely tight and stagnant equity market, banks, and bank financing are vital for the N S O operators. But, the expertise called for to provide financing arrangements for both exploration and production in what is, in this context, (and in others, as we have seen) a virtually unknown area, is one which must include not only traditional banking skills but also a knowledge of the corporate and financial structure of the oil industry. The banker considering the creditworthiness of any exploration or production program must have the ability to weigh up all the considerations inherent in such operations ; he must be aware of the prevailing economic and political situations as

of the pertinent reserve estimates, development and performance estimates, and of all the other factors which affect the viability of a field and also the risk of providing debt loans for such developments.

As U.K. bank officers told us during our meetings, bankers in New-York and Houston are often able to look at a proposal and select a financing program which has been used successfully in the past for a similar development. Unfortunately, their European counterparts have not built up a stock of arrangements and must be meticulous in fitting out their new customs.

"Historically" does not enter into the vocabulary of exploration and production in Europe. In what relates to the big fields there have been only two or three production financing arrangements from which European bankers can draw experience. Before we direct our comments specifically to one of these N S arrangements we are going to outline the basic types of bank credits theoretically available to the oil operators in the N S.

"Unsecured loans" (balance-sheet loans): those which are made on the corporate financial strength of the borrower without necessarily looking directly at reserves and production or being tied to any particular project.

At the moment the majors rarely raise money in the bond market and from the banks specifically earmarked for the N S, though a certain amount of these funds is deviated for the N S projects. As we have been told by Shell officers (and this is probably the case for all majors), Shell is not finding it difficult to raise conventional finance because of the size of its balance sheet.

Production loans: These use oil as a security; however, for their use certain criteria must be met. Technical information must be available so that a comprehensive evaluation of producible reserves can be made; the overall economics of the project must be sound and the value of the security pledged must exceed

the required credit by a comfortable margin ; the environmental conditions must be satisfactory so that the reserves can in fact be produced ; the ability, know-how and integrity of the borrower are of course vital and the ability to secure the loan by mortgage plus the assignment of production runs is also a must. In lending money in this type of arrangement, a banker looks at the project itself for repayment rather than at the general balance sheet. In return for the loan the bank takes the oil as a security. If the company defaults, the bank has no recourse on the company's other assets ; hence the bank's prime concern is about the time the loan is covered by the proved oil reserves rather than the debt/equity ratio. Given these basic criteria, financing can be arranged even when the company is quite small.

This has been the most common type of financial arrangement for the American operators in the USA and in the Persian Gulf.

In the "lease or throughput loans" type of financial arrangement, the lender is relying on the financial strength of the lessor to meet repayment schedules and not the lessee or the underlying assets. This type of credit system is normally only applicable to depreciable equipment in a development project (vessels, pipelines and so on).

"Production payments" transactions are of three types but only one is applicable to the development of a mineral project and is referred to as "development production payment". As someone put it, this type of arrangement can be defined as a "limited expansory economic interest which has been created of some larger mineral interest for the purpose of funding the development of the property from which the production payment was created". The important characteristic of a "development production payment" is that it is repaid solely from the proceeds of production from the property being

developed and as such becomes what amounts to an off-balance-sheet loan, the implications of which are readily apparent.

"Direct equipment financing", term credit for projects for which other sources of financing might not be available. Notwithstanding certain limitations on amounts financed and strict security requirements most major companies in the N S are making use of such credits even if they are financing their discoveries from their internal cash flow.

Of the financial arrangements concluded until now for the N S O, one must be mentioned in detail, because it can become increasingly insignificant in providing the capital required for the development of N S production.

Being a "production payment" loan, not only it provides the advantage of being an off-balance-sheet loan but also circumvents the tricky theoretical impossibility for the N S O operators to use oil as a security, the oil being state-property until he is well-ahead as we've mentioned before.

2) The Forties ' Arrangement

Financing arrangements for the Forties field sprung from the "Production payment" methods used for some time in the U.S. Under this system, as we have seen, banks provide finance by buying the oil in the ground and recouping their loans by selling the production when and if it is realized. Under the Forties arrangement, a syndicate of London and Scottish clearing banks, merchant banks and London branches of many North American, European and other overseas banks managed by the three principals - Lazard Bros. and Co. Ltd., The Morgan Guaranty Trust Company of New York, and the National Westminster Bank Limited - agreed to lend a total of some £ 360 million equivalent to a company controlled by the managing banks. This company will use advances from this to purchase from B.P., on a forward basis, oil and gas produced

from the field and these advance payments will be available to finance the development of it. This was the first time that the "production payment" method of financing has been used in the U.K. The first advance has been given in the first semester of 1973 and other advances are available until 1978. These advances are limited to the development expenses including financial charges. At the actual production rate, it is expected that less than 60 % of the field's production during the five years between 1973 and 1978 will be enough to repay the loan. Up to the end of 1978, repayments will only be made out of the cash flow realized from oil produced from the field. From that time on, B.P. must make cash payments but only up to the value of recoverable oil in the field to keep the repayments on a schedule which will ensure final repayment of all the advances by 1982's end. As security for advances, B.P. will charge the assets and contracts connected with the development of the Forties field. In the event of default by B.P., the company controlled by the managing banks will be empowered to take control of the Forties field and the facilities for operating it.

As it is seen in this arrangement, the banks took upon themselves the risk that there might not be sufficient oil to pay the loan, whilst B.P. undertook the guaranty, with certain covenant, that it could produce the oil as long as it existed. This quasi-"production payment loan" illustrates the kind of lack of expertise on the side of the U.K. banks. Though, as we have been told by National-Westminster Officers, the banks were conscious of the limited risks they themselves undertook - the assessment of the Forties field was comfortably reliable - they still feel uncomfortable about certain items of the contract ; most of all, on what is meant by "produce oil as long as it exists". In fact, as it usually happens with NS fields, the Forties one is a single reservoir which is very difficult to analyse accurately given the inexact science of reservoir estimation. Though the Forties field has been the object of very deep studies, nobody can be sure

of how much is there - and thus, how to evaluate collateral - and if oil really exists there, if it is technically possible to extract it or not. If the former is the case, and even if it is not economically feasible from B.P.'s point of view, the oil company is committed under agreement to extract it. But, the bankers fear that under such circumstances, B.P. will try to defend its own position behind technical arguments, and, hence, not meet the terms of the agreement. This would not be difficult for a company with a huge staff of highly technically skilled oil experts. And this is why, despite the size of B.P. and the U.K. government's stake in the company B.P.'s bankers found at the true a marked unwillingness, in some quarters, to put up the funds, although the North American banks were not at all reluctant.

The loan arranged for the Forties field has been widely acknowledged as a major development, not only for its size and type of financing, but also due to the risks involved, bearing in mind the environmental conditions of the area. We feel that this kind of arrangement can be an example for other similar arrangements in the N S, despite the fact that because of the huge amounts involved some bankers doubt whether the B.P. scheme will be imitated by other parties.

Be as it may, this kind of arrangement will only be available for the oil majors. A lending institution, unless it is dealing with the major oil companies - and we mean major - is not likely to make significant funds available based on limited experience to date and current margins.

But, the real obstacle, as we have pointed out several times, is the impossibility of calculating what the financial returns will be ; moreover, and to the contrary of what happened in the United States, where the loans have been made on developed producing properties, in the N S the funds are required at a much earlier state of development. And, until the uncertainties over

state participation are fully cleared, it is extremely difficult to forecast a project's cash flow. On this basis, it is very hard for a banker to do business, because what looked like a normal banking risk emerges as an investment risk, and this is not the role of the banks (as they understand it) involved in the N S.

What the Forties deal proves is that companies with a huge capital base in relation to their N S borrowing needs can still get their money, but for the smaller ones, if the bankers cannot do sums which reveal enough future profits to make the loans secure, this source of funds could very well dry up.

3) The small operators. The state role.

Unfortunately, the major oil companies only constitute about forty percent of the concession holders in the N S. This is one feature that distinguishes the N S from other exploration areas : the number of odd bedfellows with little oil experience that have got into the act as consortium members, as a result of deliberate U.K. government policy. For the reasons previously stated, the particularly tricky problems for the bankers really lie with the small operators. And a very basic challenge facing bankers is how the small operator, who does not have the financial muscle even despite his eventual competence and reputation, will be able to raise the money required to develop the fields he discovers, again bearing in mind the costs, the climate and the environmental conditions, without forfeiting their independence. The financing problems become even more difficult with the consortium arrangements. Within the consortium, there are bound to be large and small companies and the banks' attitude to the group will be reflected by a well-known rule of thumb : " a chain is as strong as its weakest link". Moreover, within the individual consortia, various political pressures are bound to arise. The desires and motivations of large partners could easily run counter to those of the smaller, leading eventually to a restructuring of the various

consortia, if these political problems cannot be solved. And we are not sure that the bankers are not ready to get their hands a little dirty. Though the panorama seems quite black to the smaller operator, there are still a number of options open to him : he can assign a portion of the anticipated future production, in return for a pre-production cash payment, say by a major oil company or an investing group. This kind of arrangement would not necessarily affect the terms under which the license was granted initially although the political considerations must be taken into account, because in the U.K. licenses may not be assigned or pledged, except under very special circumstances. This is likely to arise if oil is discovered close beside another major field ; there are bound to be strong pressured to cut development costs by utilising the same facilities (pipelines, etc.). This may involve being taken over by one of the major oil companies (which the U.K. government is trying to avoid) or, as we previously pointed out, working out an arrangement to assign a portion of the anticipated future oil production to the oil company in return for a pre-production cash payment. Alternatively, the operator can endeavour to raise equity. This has already been done to a limit extent, but stock exchange regulations are strict, making this approach more improbable.

Another possibility could be for operators to look to users of petroleum, finding major consumers at corporate level such as companies like ICI, which seem ready to invest in order to obtain future production. Or the operators could look at the country level (and here we are particularly thinking of Japan which, as a nation, is almost totally devoid of petroleum resources).

Barter deals can also be envisaged and worked out, such as the exchange of pipe machinery and drilling equipment and pre-production payments in return for a share of any oil found in the future.

And, finally, there are numerous permutations by which companies could take the strain off their balance-sheets, though they nearly all involve sacrificing part of their equity interest. In spite of this being something that the small oil companies are often reluctant to do, the Burmah oil company is a well-known case in point.

Because N S O cannot wait for the start-up of many of the alternatives pointed out above it is then evident that in the attempt to encourage further development of N S O in the short term, which means the survival of the smaller operators (even if they merge : a sum of two or three N S small operators can never match the size of the big oil companies operating in our days) the ball is squarely back at the government's feet. Thus, at a time when banking is under strain, it is vital that the government gets the financial framework of its policy absolutely right.

Two recent developments seem to give an indication of what the future is going to look like. Here we are talking about the LSMO^{*} investment consortium's announcement of a merger of its interests with two other U.K. concerns in the Ranger-Ninian group - National Carbonising and Canwoods - and the announcement of new government guarantees to enable Tricentrol to raise money for its share in the Thistle field development.

The first fact marks a considerable step forward in the Ranger group's plans for Ninian financing, as well as indicating a merger route which other small companies might follow to achieve project loans. The second gives some indications of the extent to which the department of energy feels able to provide financial backing to ensure that field development is not held up through banking problems and to assure a small U.K. independent oil company of its place in the N S. This governmental attitude fits, of course, the desire of a more deep involvement of the U.K. government in the N S O because, as it

* LONDON & SCOTTISH MARINE INVESTMENT CONSORTIUM

could be easily guessed, the financial backing is provided at a tough cost in carried interest provisions. To sum up, these events constitute firm signs to push N S O development forward again. Though, these indications are still but straws in the wind, on the financial side, at least, there are hopes that some of the hurdles have been jumped. The LSMO deal is expected to take the financing negotiations between the Ranger group and the bank consortium, led by the Royal bank of Canada, one step further. LSMO includes some of the biggest names in insurance as well as various investment trusts ; and this should make it much easier for the group to support financing for the combined 8 % share of the three companies in the two billion dollar Ninian development.

The government support of the Tricentrol group, on the other hand, is aiding this group out of its financing difficulties. The guaranty of \$ 90 million is well in excess of the \$ 52 million share the company has in the Thistle field financing, and the department promised to increase its support for Tricentrol's remaining share of costs of nearly \$ 60 million (implying a total backing for the 100 % costs of around \$ 120 million). By the same token, the Department of Industry seems to have accepted much of the company's argument for a large contingency element in the support and reassured banks that their position will be safeguarded in the participation negotiations. The price of this support, of course, is not low. An increase of a minimum of five percent royalty over the life of the field can be expected. But provided that the field can be brought into production on time, in 1977, the company should remain in a profitable position being able to repay its bank advances within three years of production start-up. Hopefully, too, the revival of its exploration expenditures can be envisaged while so far these expenditures have suffered from the commitment of internal funds and borrowing to Thistle costs.

The main point in this arrangements is that deals at this stage do much to boost the moral on the scene of N S operations, though one can expect that if this schemes do indeed work, banks involved in the N S will "learn" a different approach than that they are taking in the present, looking at each project individually. Nevertheless, until the "participation" question is fully cleared, their concern about this issue will remain, diminishing their enthusiasm to finance N S operations, other than those where major companies are involved being capable to support the loans on their general credit basis.

V - CONCLUSION

It is very difficult to formulate unquestionable conclusions about the future financing of the N S. In trying to put this problem in its global context, as we outlined in this paper, some developing trends seem to emerge. Though it seems that private investment will keep on being important and make a significant contribution to N S financing, it appears that the long-term trend may be for the U.K. government, through the state company, B.N.O.C., or other institutional bodies, to command an increasingly important position in the N S. It seems foreseeable that because of the political factors involved, and the structure of the N S concessions, in the future, more and more development finance will be provided through the public sector which obviously helps to keep a closer control over the N S resources. Though the big companies will stay tolerated in the N S for many years, primarily, due to their virtual technological monopoly, an increasing role of the U.K. government seems unavoidable.

The above is more of a medium and long-term trend, because if the U.K. government squeezes too hard on the oil companies, the latter may not be

prepared to commit themselves to expensive development programs or to continue to explore in such a high risk area. Because a difficult balance must be achieved - it being necessary to reconcile the need for further and fast development with the maximization of national revenue - the issue of state participation seems crucial. The oil companies feel this participation to be unnecessary bearing in mind that the U.K. government, even without any carried interest in the N S, has available all the institutional tools* it needs to guarantee the control over the N S resources and its development policy. The private oil companies fear that the carried interest will imply, on the part of the government, a decisive word of acknowledgement on the N S development programs. Hence the oil companies fear that the lack of skilled personnel on the part of the state bodies (lack that the companies themselves feel !) can only constitute a delay element in the assessment and subsequent fulfillment on the N S O projects. The ghost of the bureaucracy, with its implied costs and delays, could divert the attention of the banks, investors, and companies to other areas of the world, with dramatic consequences for N S O.

It seems that this issue should be carefully weighted by the U.K. government which is then facing a great challenge for skilled and imaginative solutions in trying to achieve what is its basic and undeniable right and obligation: to put the U.K. resources at the service of the British nation.

* Here, we are referring mainly to taxation policy and depletion policy

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