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Report on the Second North Sea Conference, London,
12 and 13 December 1972

1. Organised jointly by the Financial Times and the Petroleum Times and held at the Grosvenor House, Park Lane with appropriate accompanying opulence, including cocktails at the Dorchester, this was a distinctly commercial venture as compared with the typical scientific conference. Nevertheless there were several good lectures including some touching on the geology of our Continental Shelf. Over 600 attended; they represented the petroleum industry and a wide variety of its service companies, major civil engineering firms, banking, stockbroking and other City services. The public sector was very thin on the ground - with the UKAEA, Gas Council, Programmes Analysis Unit, Ministry of Defence, National Coal Board and Universities providing about 20 delegates between them. By contrast there was a strong foreign contingent.

2. A list of speakers and the subjects of their papers is given in the Appendix. General accounts of the Conference have appeared in the Financial Times (13 December, pages 31 and 44; 14 December page 13) so this account will be directed towards information pertinent to the possible application of peaceful nuclear explosions (PNE) on the West European Continental Shelf. Copies of all papers promised to each participant "approximately three weeks after the Conference" are still awaited.

3. There is now no doubt that the West European Continental Shelf is a major oil and gas bearing region. Nearly all estimates of reserves and production potential made to date have proved to be over-cautious and have later been uprated. The exploration companies obviously paint a gloomy picture in several areas as part of their price negotiation strategy so one might expect that the figures given to the Conference will yet again prove to be conservative. On the other hand very little oil has yet been landed from the North Sea and estimates for areas to the west of Britain are certainly pretty speculative. [REDACTED] (BP) noted that estimates of the North Sea's oil production potential (mainly from the northern area up to the 62nd parallel) ranged between 1 and 5 million barrels (bbl) per day (~ 50 to 250 million tons/year compared with present UK consumption of ~ 100 million tons/year). This was a prolific oil basin by any standards (of same order as found in one major country of the Middle East). [REDACTED] claimed that it was unreasonable to expect this kind of thing elsewhere round the British Isles but later speakers, particularly [REDACTED] did not seem so sure. The most recent finds are Brent and Cormorant (Shell/Esso) NE of the Shetlands and Beryl (Mobil) and Heimdall (Pan Ocean Oil Norway?). Figures published so far for about one quarter of the known potential oil and gas bearing structures in the North Sea indicate reserves of 10 to 12 billion (10^9) bbl of oil and 15 to 20 trillion (10^{12}) cubic ft (cf) of gas so the ultimate totals could be something like four times these figures. The oil reserve figure had increased by nearly 50% during the past three months. Oil production was likely to reach 2 million bbl/day (~ 100 million tons/year) by 1979 and 4 to $4\frac{1}{4}$ million bbl/day (200 to 240 million tons/year). To be set against these figures is the current Western European energy consumption of 1100 million tons of oil equivalent of which oil and natural gas account for two-thirds; this is expected to rise to 1300 million tons by 1975/6 and 1600 million tons by 1980 with oil and gas accounting for 80 and 85% respectively. The North Sea only accounts for about 2½% of available reserves outside the USA and USSR but, in a regional context, is of great significance because of technical and political factors.

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4. It is significant that all the above North Sea figures for oil are based on recovery factors of about 30%. White said that more could be recovered if political and economic conditions dictate. Secondary recovery methods would certainly be used. Tertiary recovery methods were expensive but might be used. It seems that sooner or later nuclear stimulation of oil could be attractive in the North Sea (and, of course, of natural gas since low permeability reservoirs suitable for this technique have already been discovered).

5. In developing North Sea oil fields the level of investment required is about £1000 per bbl per day against that for comparable Middle East fields of £100 per bbl per day; this is offset to an extent by lower transportation costs. The oil yields a lower proportion of fuel oil but has a low sulphur content. Large high producibility fields also favour the North Sea. By the mid-70's 15% of European requirements could be met; this was rather unlikely to rise as high as 20%. All this implies that the case for strategic reserves against difficulties with imported supplies remains strong and will continue to be an important issue within the EEC and OECD.

6. [REDACTED] graphic description of North Sea operating conditions - 65 ft waves, 100 mph winds, with the possibility of up to 50% greater every 100 years - was obviously partly aimed at forthcoming price negotiations but did make seismic damage and nuclear explosion-induced sea waves appear as rather trivial matters by comparison. New rigs built for all-year operation around the UK might cost £10 million with costs of £500,000 to £2 million for one exploration well. In discussing production [REDACTED] emphasised that every field is unique; the system developed for say, Forties, will not necessarily be imitated elsewhere. The Lockheed system for seabed wellhead completion had been tested in up to 900 ft of water and was now installed at 365 ft depth in the Gulf of Mexico. In discussing storage [REDACTED] quoted costs of \$250,000 per mile for pipelines in the southern North Sea; costs rose dramatically in the north, and he foresaw tanker take-off as the normal method of recovery in the far north. The Ekofisk storage tank is designed to hold 1 million bbl, representing 3 to 4 days production and so mitigate effects of bad weather when tankers cannot stay at the single buoy mooring. The Auk field is also likely to operate in this way from 1974 onwards; at Brent there will be a vertical floating spar with a capacity of 300,000 bbl near the production platform. All this suggests there may be a need for sub-seabed storage at one or more of the fields.

7. [REDACTED] speaking on seabed equipment mentioned the Elf (French national) petroleum company's experiments off Brest. The French may have sub-seabed storage in mind if and when they start to develop this deep water area. It is a possible area for any PNE experiment.

8. [REDACTED] pleaded the case for developing an exportable technology using the North Sea as a proving ground whilst Licence of the Gas Council predictably sought to wipe away some of the crocodile tears of the petroleum companies on natural gas prices, although he conceded that prices in future contracts would probably be higher. He took the recoverable reserves to be in the 55 to 60 trillion cubic feet bracket.

9. [REDACTED] noted that Ekofisk would cost twice the cost of the largest United States (bank-financed?) oil project and that the whole of the northern North Sea would cost \$4 to 5 million. Other views on financing North Sea operations were put forward by [REDACTED]. "A stockbroker's

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view of the North Sea" by [redacted] seemed to arouse sleeping financiers, but must be considered as of academic interest only to a poor scientist! However he did issue a useful 170 page report on the North Sea, including a map to complement that issued by Petroleum Times.

10. Summarising, the meeting provided an admirable briefing on the North Sea in preparation for detailed discussions on the role of PNE in the exploitation of its petroleum resources.

[redacted]
AWRE
Aldermaston
[redacted]

10 January 1973

Distribution

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Appendix

Speakers and Subjects of Papers

1. "The Oil Potential of the North Sea"
[REDACTED] Director BP Trading Ltd - paper delivered by [REDACTED]
(Chief Geologist BP)
2. "The Significance of the North Sea in the Context of World Oil Reserves"
[REDACTED], Director Petroleum Economics Ltd)
3. "Oil and Gas Technology Offshore of the United Kingdom"
[REDACTED], OBE, Managing Director and General Manager Shell UK
Exploration and Production Ltd)
4. "The Prospects for North Sea Natural Gas"
[REDACTED], Vice-President, Natural Gas and Natural Gas Liquids
Phillips Petroleum Company Europe-Africa - paper delivered by [REDACTED]
(Consultant to the Company)
5. "The Norwegian View of the North Sea"
[REDACTED], Deputy Director General, Royal Ministry of Industry and
Handicraft, Norway)
6. "Hydrocarbon Potential Of Offshore Western Britain and Ireland"
[REDACTED], Director, Exploration Consultants Ltd)
7. "Report on the 1972 Drilling Season"
([REDACTED], Field Co-ordinator UK and Eire, BP Exploration Dept.)
8. "The Financing of North Sea Exploration and Exploitation - An American View"
[REDACTED], Vice-President and Chief Petroleum Engineer, First
National City Bank)
9. "Scottish Investment in the North Sea"
[REDACTED], MBE, Senior Partner, Ivory and Sime - Investment
Managers)
10. "North Sea Potential - The View of the Gas Council"
[REDACTED], Chief Economist, The Gas Council)
11. "The Norwegian Industry View of North Sea Oil and Gas"
[REDACTED], Head of Petroleum Division, Norsk Hydro a.s.)
12. "EEC Energy Policy and the North Sea"
[REDACTED], Director-General, Directorate General - Energy,
Safeguards and Controls of Euratom)
13. "A Socialist View of North Sea Developments"
[REDACTED], Fellow of Balliol College, Oxford)
14. "The North Sea Within the Framework of World Oil Policies and Economics"
[REDACTED]
15. "British Industry and North Sea Oil"
(The Rt Hon [REDACTED] MP, Minister for Industrial Development)

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16. "Effects of North Sea Oil and Gas on Scottish Economy - A Highland View"
[REDACTED], KCMG, Chairman, Highlands and Islands Development Board)
17. "The Role of the City in Financing North Sea Development"
[REDACTED], Manager - Banking, Lazard Brothers and Co Ltd)
18. "A Stockbroker's View of the North Sea"
[REDACTED], Partner, Cazenove and Co)

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