INTERNATIONAL COURT OF JUSTICE

PASSAGE THROUGH THE GREAT BELT
(FINLAND v. DENMARK)

WRITTEN OBSERVATIONS
BY
THE GOVERNMENT OF THE KINGDOM OF DENMARK
RELATING TO THE REQUEST FOR INDICATION OF PROVISIONAL MEASURES

JUNE 1991

TABLE OF CONTENTS

Page

PART I. THE FACTS 1

A. The Geography and Transport Policy of Denmark 2

B. The Great Belt Project 4

C. Consultations between Danish and Finnish Representatives 9

D. The Passage Route through the Sound 11

E. The Finnish Mobile Offshore Drilling Units 12

F. Vertical Clearance of Existing Bridges across International Straits and Waterways 17

G. The Effects of an Interruption of the Great Belt Project 18

PART II. THE LAW 21

A. Introduction 22

B. The Alleged Right 23

C. Irreparable Prejudice and Urgency 30

D. Circumstances of the Present Case 34

PART III. SUBMISSIONS 36

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MAPS

Map I Entrances and Exits to the Baltic Sea with Water Depths
Map II Territorial Sea and Internal Waters of Denmark
Map III Detailed Chart of the Area in the Great Belt for the Construction of the Fixed Link

LIST OF ANNEXES

1. Act No. 414 of 13 June 1973 on the Construction of a Bridge across the Great Belt
2. Circular Note from the Danish Ministry of Foreign Affairs dated 12 May 1977
3. Note from the Embassy of the Soviet Union dated 29 March 1978
4. Note from the Danish Ministry of Foreign Affairs to the Embassy of the Soviet Union dated 28 June 1978
5. Note from the Embassy of Poland dated 6 December 1977
6. Note from the Danish Ministry of Foreign Affairs to the Embassy of Poland dated 3 July 1978
7. Act No. 380 of 10 June 1987 on the Construction of a Fixed Link across the Great Belt
8. Circular Note from the Danish Ministry of Foreign Affairs dated 30 June 1987
9. Sketch of the Fixed Link across the Great Belt
10. Report from *Det Norske Veritas* dated 10 March 1989
11. Circular Note from the Danish Ministry of Foreign Affairs dated 24 October 1989
12. Note from the Embassy of Finland dated 19 June 1990

13. Note from the Danish Ministry of Foreign Affairs to the Embassy of Finland dated 11 July 1990
14. Note from the Embassy of Finland dated 5 November 1990
15. List of Rauma-Repola Offshore Oy's Production of Mobile Offshore Drilling Units in the period 1974 - 1990
16. Sales Folder from Rauma-Repola Offshore Oy on Mobile Offshore Drilling Units

PART I

THE FACTS

A. The Geography and Transport Policy of Denmark

1. Denmark consists of the peninsula Jutland, the two major islands Zealand and Funen and a number of small islands. Almost half of the five million Danes lives on Zealand and its neighbouring islands, including Lolland, Falster, and Moen, all being connected with Zealand by bridges. The other half of the population lives on Funen and Jutland. Since 1935 Jutland and Funen have been linked by a bridge across the Little Belt. In 1970 a second bridge across the Little Belt was opened.

2. The Great Belt is the strait between Zealand and Funen. In the middle of the Great Belt lies the small island of Sprogoe. This island divides the Great Belt Strait into two channels, the Western Channel between Funen and Sprogoe, and the Eastern Channel between Sprogoe and Zealand. The area of the construction of the Fixed Link across the Great Belt lies entirely within the territorial sea of Denmark, see Map II.

3. Copenhagen, the capital of Denmark, is situated on Zealand. The major part of the central administration, cultural institutions of major importance for the national heritage and a substantial part of the Danish business community are placed in or around Copenhagen. Transportation of passengers and goods between the two parts of the country and from the part of the country east of the Great Belt to the European continent has to take place by ship or air until the fixed link across the Great Belt has been established. With a minimum width of 18.5 kilometres, the Great Belt constitutes a barrier between the two parts of Denmark.

4. The establishment of a fixed link across the Great Belt has for a long period of time been regarded as an undertaking of paramount national interest.

5. Surveys have shown that the volume of both passengers and goods carried by ferry crossings on the Great Belt is substantially smaller than the volume of passengers and goods transported between corresponding parts of the country connected by road and rail via bridges. The fixed link will reduce the travel time by rail and by car between the two halves of Denmark by more than one hour. During peak periods the reduction in travel time will be

substantially more. This will be of major benefit for the business community. It will improve the conditions for a more rational production and transport. The cost of storage and stock will be reduced due to the enhanced transportation possibilities. The fixed link will increase the level of mobility in the labour market facilitating commuting by persons resident on the western part of Zealand or on Funen to work on the other side of the Great Belt.

6. Zealand makes up the geographic link to Sweden and thereby, also to Norway and Finland. The fixed link will therefore contribute towards enhanced transport services between the Nordic countries and the rest of Europe.

7. The daily passenger traffic in 1988/1989 between East Denmark and West Denmark was 42,000 passengers; out of these, 21,400 passengers were crossing the Great Belt. Forecasts of inland transport show an increase in this traffic to 55,300 passengers in 1994 when the rail link is scheduled to open and 67,500 in 1997 when the road connection is planned to open, see paragraph 33 below. Out of the 67,500 of the daily passengers between East and West Denmark 58,000 are expected to use the Great Belt link.

8. The goods traffic forecast shows an increase in the daily volume of traffic between the two parts of the country from 22,000 tonnes in 1988/1989 to 28,000 tonnes in 1994 and to 34,500 tonnes in 1997. Today about half of the daily tonnage is carried via the Great Belt. Carriage across the Great Belt will account for a daily 15,000 tonnes out of a total quantity of 28,000 tonnes by 1994, and 24,000 tonnes out of the 34,500 tonnes by 1997. By then the Great Belt Link will have become the undisputed hub of the Danish traffic network.

9. To enhance the safety of navigation the Government of Denmark has established a route between Skagen and the area northeast of Gedser through the Great Belt with a minimum depth of 17 metres. Due to the occurrence of unknown and moving obstructions the depth of "Route T" may be reduced to 15 metres. Map I indicates the official depths of both the Great Belt and the Sound between Denmark and Sweden.

10. The total north - and southbound traffic of merchant ships of 50 GRT and above in the Great Belt has been more or less constant during the period 1975 - 1989 at around 20,000 - 22,000 movements per year with a slowly falling trend. However, the total tonnage has increased. Around 80 per cent. of the traffic pass through the Eastern Channel. In the same period, on the average less than one Finnish offshore unit per year has passed through the Great Belt.

B. The Great Belt Project

11. The Great Belt Project was initiated in 1948 when a Governmental Commission was established to study the possibilities for constructing a bridge across the Great Belt. The final report of the Commission published in 1960 suggested, *inter alia*, the construction of a high-level bridge.

12. In 1961 the Danish Parliament, *Folketinget*, passed Act No. 379 which authorized an investigation of the possibilities of constructing a road and rail bridge across the Great Belt. Following the results of this investigation the Danish Parliament passed Act No. 414 of 13 June 1973 on the Construction of a Bridge across the Great Belt (Annex 1). On the basis of the Act, preparatory work was initiated.

13. By Circular Note of 12 May 1977, the Ministry of Foreign Affairs advised all Heads of Foreign Diplomatic Missions accredited to Denmark of the Great Belt Project which included a high-level bridge across the Eastern Channel with a free vertical clearance for passage of 62 metres above sea level (Annex 2). Several missions acknowledged receipt of the Note, whereas only the USSR and Poland reacted in substance to the notification. In a Note of 29 March 1978 the USSR requested that the bridge should have a clearance for passage of 65 metres (Annex 3). In the reply of the Government of Denmark of 28 June 1978 the Embassy of the USSR was asked to submit information to support the need for a 65 metres clearance (Annex 4). In a Note of 6 December 1977 Poland suggested that future trends within the shipbuilding should be taken into consideration (Annex 5). The Government of Denmark replied in a Note of 3 July 1978 (Annex 6).

14. The Danish Prime Minister announced in his opening address to the Danish Parliament on 3 October 1978 that due to financial considerations the Government had decided to postpone the implementation of the Great Belt Project. The Prime Minister stated that the Government would give Parliament a more detailed account of the issue.

15. This account was given by the Minister of Public Works on 17 October 1978. The Minister stressed that the Great Belt Project was merely postponed and stated that the Government expected that the necessary preconditions for resuming the Project would not be present until 4 - 5 years had passed. Thus, the Finnish statement in paragraph 21 of the Application that the Project was suspended *sine die* is not correct.

16. In accordance with the prediction given by the Minister of Public Works in Parliament in 1978, investigations were commenced in 1983 to evaluate the technical and economic possibilities for the implementation of the Great Belt Project. In 1986 it was announced that the Government of Denmark and the Social Democratic Party, the largest political party in Denmark, had agreed that a fixed link across the Great Belt should be established. The Danish Parliament subsequently passed Act No. 380 of 10 June 1987 on the Construction of a Fixed Link across the Great Belt (Annex 7).

17. The 1987 Act provides for the construction of a fixed link across the Great Belt for rail connection and a motorway. According to the Act the rail connection shall be established as a tunnel under the Eastern Channel and a low-level bridge over the Western Channel. The motorway shall also cross the Western Channel on the low-level bridge. Regarding the crossing of the Eastern Channel by the motorway the Act provides that the motorway shall cross either on a high-level bridge allowing for the necessary navigational passage or through a tunnel. In the official comments to the Bill it was stated that the high-level bridge provided for in the 1973 Act was the preferred alternative.

18. According to the Act a government-owned public limited company, *A/S Storebæltsforbindelsen*, was to undertake the planning and implementation of the Project.

19. By Circular Note of 30 June 1987 the Danish Ministry of Foreign Affairs advised all Heads of Foreign Diplomatic Missions accredited to Denmark of the Project (Annex 8). The diplomatic missions were informed that the traffic link crossing the Eastern Channel would be either a high-level bridge or a tunnel. This note did not give rise to any reactions from foreign States.

20. On 4 November 1988 it was decided that the Project should consist of a 6.6 kilometre road and rail bridge spanning the Western Channel. This bridge was to have a navigational clearance of 18 metres. The crossing of the Eastern Channel was to be effected by a railway tunnel and a high-level road bridge, see sketch in Annex 9. The high-level bridge was chosen in lieu of a tunnel for reasons of technology, safety and economy.

21. On 16 June 1989 the Minister for Transport decided that the high-level East Bridge should have a clearance of 65 metres. The height of 65 metres met the request of the USSR and conformed with international practice, see paragraphs 60 - 67 below. Denmark based its decision on a report by *Det Norske Veritas*, an internationally renowned classification agency. The report from *Det Norske Veritas* is submitted as Annex 10. The report by *Det Norske Veritas* showed that all merchant vessels could pass under a bridge. A clearance of 76 - 77 metres to allow for the passage of drill ships had been contemplated when the Bill was submitted. It was, however, subsequently established that drill ships with drill towers exceeding 65 metres in height would be able to pass through the Sound.

22. By Circular Note of 24 October 1989 from the Danish Ministry of Foreign Affairs all Heads of Missions accredited to Denmark were advised of the decision concerning the Great Belt Project (Annex 11).

23. Safety of navigation has been of major concern to the Danish authorities. Consequently, as a result of study relating to different types of bridges, Denmark chose not to be content with the stipulated requirement for two navigation lanes with a minimum breadth of 375 metres each as mentioned in the 1989 notification. For purposes of optimum maritime safety as prescribed by technical experiments, including experiments of simulated navigation, Denmark in 1990 opted instead for the more expensive solution in

the form of a 1,624 metre suspension bridge to guarantee vessels continued free passage under *a single* span with a full clearance of 65 metres within a width of 750 metres.

24. The measures taken by Denmark to ensure safety of navigation in connection with the building of the East Bridge across the Great Belt were formally discussed and unanimously approved at meetings in the International Maritime Organization (IMO) in September 1990 and May 1991 during which Finland was present.

25. The Great Belt Project, which constitutes an integrated whole, is to be carried out in such a way that the railway connection will be completed first. Notice for tender by restricted procedure for the tunnel under the Eastern Channel was given on 28 July 1987, tender documents were submitted on 26 February 1988, offers were submitted on 30 June 1988, and a contract for the tunnel was signed on 28 November 1988. The tunnel works started immediately after the signing of the contract.

26. Notice for tender by restricted procedure for the West Bridge was held on 9 October 1987, tender documents were submitted on 7 March 1988, and offers were submitted on 30 November 1988. The contract for the West Bridge was entered into on 26 June 1989. The works on the West Bridge started shortly after the signing of the contract.

27. The implementation of the Project involves substantial approach and access work on and around the island of Sprogoe. Notice for tender by restricted procedure for this work was held on 28 July 1987, offers were submitted on 24 January 1989 and the contract was signed on 26 June 1989.

28. Notice for tender by restricted procedure for the East Bridge was held on 15 July 1989, tender documents were submitted on 31 May 1990, and offers were submitted on 18 December 1990. The offers submitted expire on 18 August 1991.

29. The construction costs of the Great Belt Project are forecast to be DKK 19,030 million (USD 2,927 million)[1], in 1988 prices. These costs do not include financial expenses. The total cost of the Project including financial expenses and price increases due to inflation is expected to be approximately DKK 30,000 million (USD 4,457 million).

30. As of 31 May 1991 contracts totalling 56 per cent. of the total construction budget for the Great Belt project have been entered into, and an amount corresponding to 28 per cent. of the total construction budget for the Great Belt Project has been paid to the contractors.

31. The physical status of the Project as of 15 June 1991 can be summarized in the following way: The work on the West Bridge is on schedule. A work site of 300,000 square metres with production facilities has been established on Funen. A substantial number of caissons, pier shafts and bridge girders has been cast. The positioning of the caissons started on 23 April 1991. Four caissons have already been positioned. The first girder will soon be in place above the water off the port of Knudshoved. The construction site for the tunnel works consisting of 550,000 square metres also with extensive production facilities has been completed. The production of the 60,000 tunnel lining elements and other work in connection with the tunnel is carried out according to the plans. The drilling of the tunnel is delayed due to technical problems with the tunnel boring machines. The approach and access work on and around the island of Sprogoe is close to completion.

32. *A/S Storebæltsforbindelsen* has evaluated the tenders submitted for the East Bridge and is in the process of entering into contract negotiations with the designated contractors.

33. Preparatory work for the East Bridge has been completed with the construction of a 25 metre high access ramp at Sprogoe and of four artificial islands for the protection of the anchor blocks in the Eastern Channel. The navigational Route T of the Eastern Channel of the Great Belt will be spanned

[1] *Throughout these Written Observations figures in Danish Kroner have been converted into US Dollars on the basis of the rate of exchange on 7 June 1991 when 100 US Dollars (USD) equalled Danish Kroner (DKK) 673.15.*

by the suspension part of the East Bridge. The cable works for this span will not be initiated until late 1994. The bridge is expected to open for traffic during the year of 1997.

34. Major work is being carried out in order to connect the Great Belt Link with existing railways and motorways. 7 kilometres of new railway is being laid on Zealand and Funen, 4 kilometres of new motorway is being constructed, a new railway bridge and a new motorway bridge are being constructed, and an existing motorway bridge is being raised.

35. Today almost 3,000 people are working on the large construction sites around the Great Belt. The total number of employees involved in the project, including sub-contractors and suppliers, is estimated at approximately 11,000. The East Bridge project will prompt a considerable increase in the number of employees.

C. Consultations between Danish and Finnish Representatives

36. In its Request the Government of Finland has informed the Court that Finnish drilling rigs have been transported through the Great Belt since 1972. As stated above in paragraphs 13 and 19, Finland was directly informed of the Great Belt Project by Circular Notes in 1977 and 1987. Other Baltic States reacted to these Notes, but no reaction was received from Finland.

37. It was not until 18 July 1989 that Finland reacted by a letter from the Commercial Department of the Embassy of Finland in Copenhagen addressed to the Danish Maritime Authority (Annex 4 to the Application). In the letter it was stated that according to available information Finland's large transports, e.g., drilling platforms with a free height of 150 metres, would be obstructed by the new bridge. If this was the case, Finland requested information on possible alternative routes. The Finnish letter was answered by the Danish Ministry of Foreign Affairs on 29 August 1989 confirming that passage under the bridge would not be possible for structures measuring 150 metres in height. The Danish Ministry of Foreign Affairs pointed out that such structures would be able to pass through the Sound provided their draught did

not exceed 8 metres. Moreover, it was suggested that the rigs be transported partly dismantled thus permitting passage under the Great Belt Bridge (see Annex 5 to the Application).

38. On 24 October 1989 the Danish Ministry of Foreign Affairs issued another Circular Note advising on the decision to build a high-level bridge over the Eastern Channel. In the period July 1989 to May 1990 the Danish authorities received no further inquiries or other reactions from Finland. It was not until May 1990 that Finland asked for informal talks to discuss aspects of international law pertaining to the passage of drilling platforms through the Great Belt. From the Danish side it was maintained that the fixed link was in conformity with international law allowing ships of all nations which had used the Great Belt to pass under the bridge with its clearance of 65 metres.

39. On 19 June 1990 the Embassy of Finland sent a Note to the Danish Ministry of Foreign Affairs (Annex 12) stressing that the bridge would impede transport of offshore constructions through the Great Belt. Finland requested that negotiations be initiated to secure the free passage of the Finnish offshore units prior to any final decision on the bridge project.

40. In the following months meetings were held and Notes were exchanged between the Parties (Annexes 13 and 14). Denmark pointed out that the practical solution to the problem would be to complete the assembly of the oil rigs after the bridge had been passed. The Finnish delegation rejected this solution as it would allegedly deprive the private Finnish shipyard Rauma-Repola Offshore Oy of its competitiveness. The Finnish delegation never put forward any suggestions as to how a technical solution to its problem could be found.

41. While retaining its position that the fixed link in its entirety conformed to the requirements of international law Denmark undertook at the request of the Finnish side to investigate on a no-prejudice basis the possibility of inserting a passage opening in the West Bridge, either as a dismountable span or a movable bridge. However, the conclusion was that it would not be possible to modify the West Bridge as requested by the Finnish side.

42. The Danish points of view were summed up in the letter of 20 February 1991 from the Danish Prime Minister to his Finnish counterpart (see Annex 7 to the Application).

D. The Passage Route through the Sound

43. In its first inquiry to the Danish authorities regarding transport of large offshore constructions through the Great Belt, Finland requested information on other feasible routes through the Danish straits (Annex 4 to the Application). In its reply Denmark pointed out that the Sound could be used as an alternative route without any limitations as to the height of the constructions (Annex 5 to the Application).

44. The Sound is a relatively narrow strait separating Denmark from Sweden. The deepest navigational route through the Sound passes between the Danish islands of Amager and Saltholm, a passage known as the Drogden. The Drogden, which is the most shallow part of this navigational route through the Sound, has an official minimum depth of 7.7 metres and a width of 290 metres (see Map I).

45. As will be demonstrated, this minimum depth of 7.7 metres in the Drogden would have allowed for transportation through the Sound of all drill ships and almost all oil rigs ever constructed by the Finnish ship yard Rauma-Repola Offshore Oy. These transports could have passed through the Sound without any technical modifications or alterations of the oil rigs or drill ships.

46. On 23 March 1991 the Danish and Swedish Governments in principle agreed on the establishment of a fixed link across the Sound. As of June 1991 the project has been formally approved by the Swedish but not yet by the Danish Parliament. The project comprises a bridge between Sweden and an artificial island south of Saltholm and an immersed tunnel from the artificial island south of Saltholm to the Danish island of Amager, i.e., crossing the Drogden. Due to the proximity to Copenhagen International Airport on Amager, a bridge between Amager and the artificial island south of Saltholm has been excluded from consideration. The project also envisages that the

official depth of the Drogden will remain at the present 7.7 meters. A fixed link across the Sound will thus not affect the passage through the Drogden.

E. The Finnish Mobile Offshore Drilling Units

47. Worldwide a variety of designs exists for Mobile Offshore Drilling Units (MODUs) but nearly all these designs follow one of three basic design principles called Drill Ships, Semi-Submersibles and Jack-Ups.

48. MODUs within each of these groups will therefore have common basic design principles, but there are variations of size and detailed design between the individual units in the groups.

49. All drilling units are equipped with a high tower (derrick) used for handling and storing drill pipe sections. The drill pipe sections are normally 30 metres high and the derrick more than 50 metres high. To the derrick height must be added the deck elevation and derrick substructure height to find the distance from sea level to the top of the derrick.

50. The main characteristics for each of the three different MODU types may be described as follows:

51. *Drill Ships* normally have hull and machinery corresponding to ships used for other purposes. Drilling is performed while the ship is floating, held on location either by anchors or dynamic positioning. Only the derrick will be higher than 65 metres above sea level. The draughts of drill ships vary considerably and for some designs it could in some conditions be more than 7.7 metres. The draught of the individual unit depends on the load carried and the ballast condition. In transport condition it is normally possible to obtain a draught which is significantly less than 7.7 metres. The 3 drill ships built by Rauma-Repola Offshore Oy all have transit draughts of 7.3 metres (see para. 17 in the Application).

52. *Semi-Submersibles* are floating drilling units where the influence of waves has been minimized by having only a small cross-section at the

waterline. The main buoyancy chambers are located below the sea surface in drilling but not necessarily in transportation mode, and columns from the buoyancy chambers give additional buoyancy and support for the platform, which is always kept above the water level. While drilling, the units are held on location by anchors or dynamic positioning. Only the derrick will be higher than 65 metres above sea level. The draughts of semi-submersibles in transport condition vary, but according to information available to Denmark only one of the semi-submersibles built by Rauma-Repola Offshore Oy has a transit draught of more than 7.6 metres.

53. *Jack-Ups* have - often triangular - hulls which float during transport and are supported on long legs standing on the sea floor during drilling operations. During transport nearly the full leg length will be above sea level. During transport of jack-ups normally both the legs and the derrick will be higher than 65 metres. The legs of the largest existing platform designs are close to 200 metres high. The draught of jack-up platforms when towed or floating is normally between 4 - 6 metres. While towing is the normal procedure of transporting jack-ups, carriage by heavy-lift ships is often used for transport over very long distances. The draught of these heavy-lift ships during transports may be between 6 - 10 metres depending on the load carried. When towed none of the jack-ups built by Rauma-Repola Offshore Oy has a transit draught exceeding 6.4 metres.

54. A list of all drill ships, semi-submersibles, and jack-ups produced by Rauma-Repola Offshore Oy in the period 1974 - 1990 is submitted as Annex 15. The list gives the name, delivery date, and transit draught of each drilling unit. Annex 15 should be read in conjunction with the Rauma-Repola Offshore Oy Sales Folder (Annex 16) showing photographs of each of the drilling units produced by the yard in the period 1974 - 1990.

55. It might be inferred from Finland's Application and Request that the Great Belt is the only waterway available to the Finnish offshore drilling units for passage to and from the Baltic. This is not correct. All of the Finnish produced drill ships may sail and all of the Finnish produced jack-ups may be towed through the Sound. As stated above in paragraphs 44 - 45, the Sound has an official minimum depth of 7.7 metres, and Annex 15 demonstrates that all drill ships and jack-ups ever produced by Rauma-Repola Offshore Oy have

transit draughts of considerably less than 7.7 metres. Thus, the East Bridge of the Great Belt Project will not prevent the passage of Finnish drill ships or jack-ups to and from the Baltic, as all of these units may be transported through the Sound without any technical modifications to their design.

56. Based *inter alia* on the transit draught specifications of Annex 15 Denmark is of the opinion that also most of the semi-submersible drilling units produced by Rauma-Repola Offshore Oy may be transported through the Sound without technical alterations. The draught figures quoted in Annex 15 are for normal transit conditions. For passage through the protected Danish straits the transit draught of a semi-submersible may if necessary be reduced even below the quoted transit draught by using less than full ballast or by limiting the load carried.

57. The very few semi-submersible drilling units that due to their draught will not be able to pass through the Sound, will have to use the Great Belt. For this type of unit, passage under the East Bridge with its clearance of 65 metres will merely require that part of the drilling tower (derrick) is left unassembled until after passage of the bridge. Subsequent assembly of the derrick is a relatively simple operation that in some cases has been executed on Danish drilling units at sea without docking at a yard. Such subsequent assembly of the derrick is standard procedure at a number of offshore yards throughout the world located behind bridges on rivers or canals.

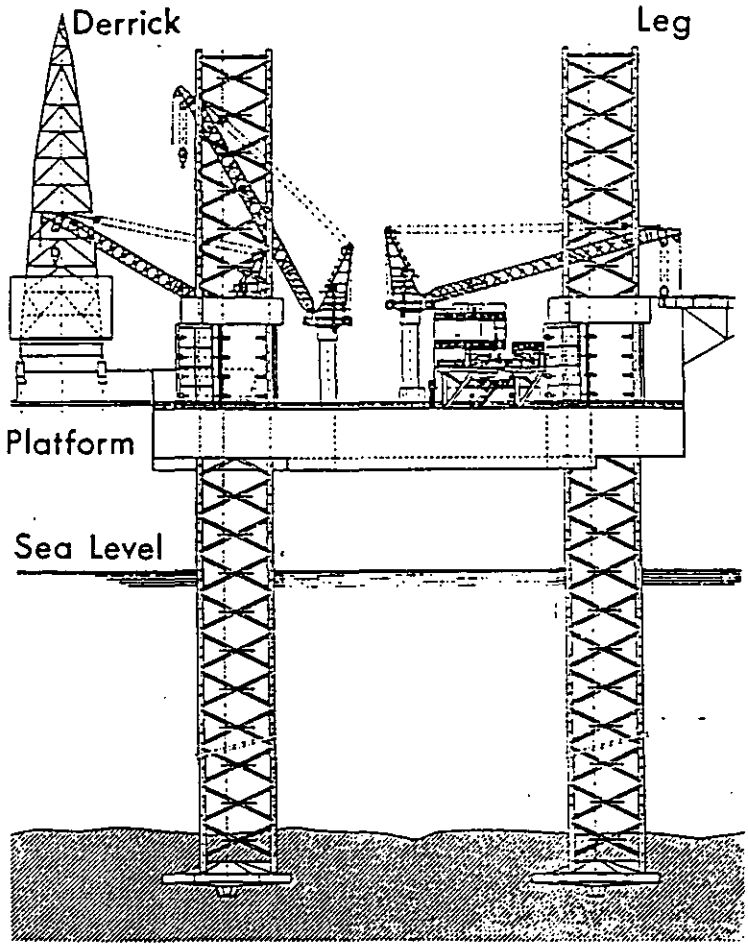
58. In the opinion of Denmark, subsequent assembly of the derrick of a semi-submersible is thus the only modification relevant to the discussion of the continued passage of the Finnish units through the Danish straits as all the Finnish drill ships and jack-ups and the majority of the semi-submersibles may be transported through the Sound. In its Request, paragraph 8, Finland has alleged that completing the construction of the unit after passage of the bridge will involve an additional cost of USD 7.5 - 13.5 million per unit and an extension of the date of delivery of 4 months. These figures cannot refer to subsequent assembly of the derrick of a semi-submersible. According to Danish experts, completing the assembly of the drill tower of a semi-submersible after passage of the bridge will take less than one week and cost

less than USD 1 million. The figures quoted by Finland are thus either irrelevant or grossly exaggerated.

59. In its estimate of the expected volume of Rauma-Repola Offshore Oy's future production Finland states that the yard will have a demand for 10 - 20 drill ships and oil rigs in the 1990s, see the Request, paragraph 9. Obviously, the volume of future production is by nature difficult to predict. It should not be overlooked, however, that according to information available to Denmark Rauma-Repola Offshore Oy produced its last mobile offshore drilling unit in 1985 and since then the yard has only assembled two jack-ups in 1988 and 1990.

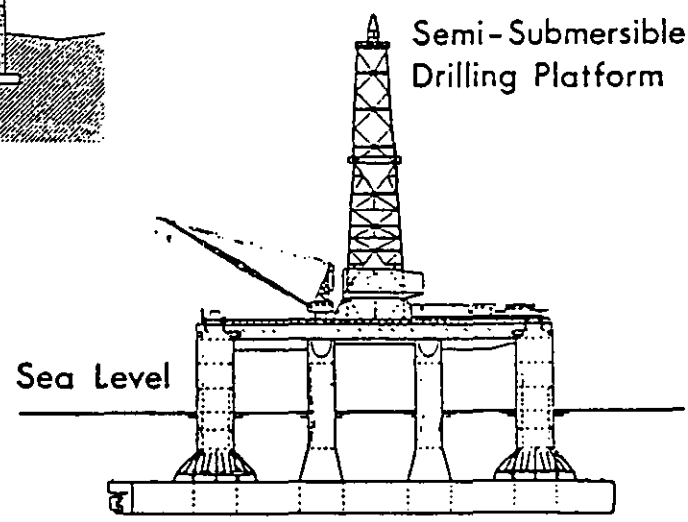
Mobile Offshore Drilling Units

Different Design

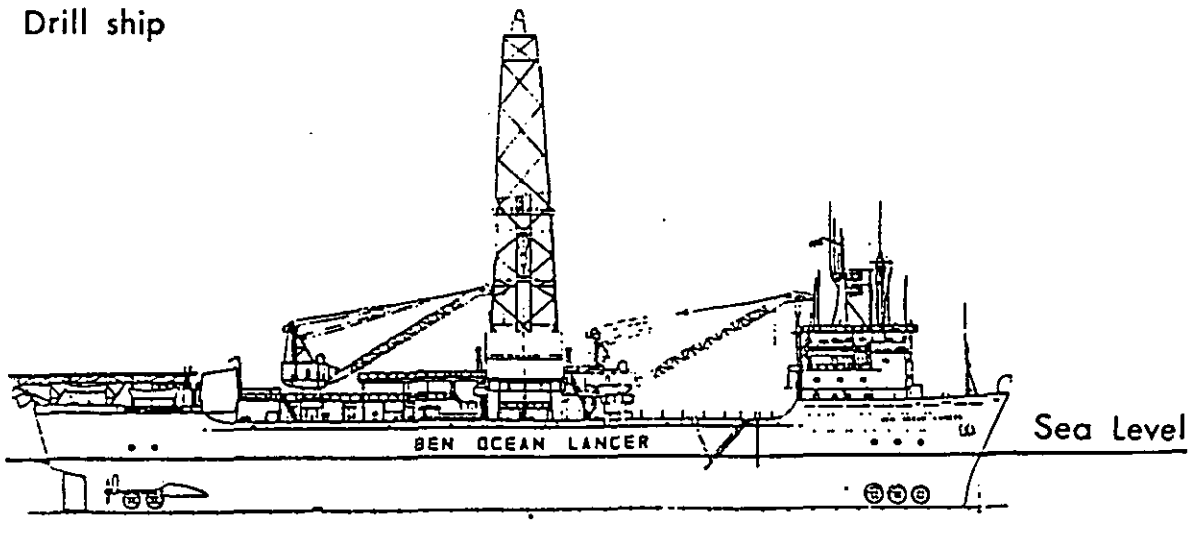


Jack-up Drilling Platform
(in Drilling Position)

During transport the legs of the Jack-up platform are raised so that the lowermost part of the legs are directly underneath (the floating) Platform.



Drill ship



F. Vertical Clearance of Existing Bridges across International Straits and Waterways

60. The legal implications of the construction of the East Bridge with respect to the right of innocent passage will be dealt with below in Part II, The Law, where it will be demonstrated that international law does not prohibit the building of bridges across international straits as long as existing shipping traffic is not hampered by the construction.

61. International straits with a status similar to that of the Great Belt exist in Turkey and in Japan.

62. The Bosphorus Bridges in Turkey built in 1973 and 1988 both have vertical clearances of 64 metres, restricting the height of all vessels sailing to and from Bulgaria, Rumania, and the Black Sea ports of the Soviet Union and Turkey.

63. In Japan, the Kanmon Bridge from 1971 has a clearance of 61 metres. The bridges connecting Honshu and Shikoku have a clearance of 65 metres.

64. Bridges are also to be found across canals open to international ship traffic, with the following vertical clearances.

Panama Canal, Panama	65 metres
Kiel Canal, Germany	42 metres

65. Across the entrances to major ports served by international shipping routes the vertical clearances are:

Verrazano Narrows Bridge, New York	66 metres	
Golden Gate Bridge, San Francisco	67 metres	
Bay Bridge, San Francisco	65 metres	
Lions Gate Bridge, Vancouver	60 metres	
Tagus River Bridge, Lisbon	70 metres	(due to local topography)
Maracaibo Bridge, Venezuela	45 metres	
Guanabara Bay Bridge, Rio de Janeiro	63 metres	
Sidney Harbour Bridge, Sidney	52 metres	
Älvsborg Bridge, Gothenburg	45 metres	
Yokohama Bay Bridge, Yokohama	55 metres	

66. The clearances vary between 42 and 70 metres. Apart from the extremes, it is obvious that the clearances concentrate around 60 - 65 metres. All of the above clearance figures are based on official sea charts.

67. A bridge clearance of 65 metres takes account of the maximum height of contemporary ships and may now be considered an "international standard" for bridge heights.

G. The Effects of an Interruption of the Great Belt Project

68. Should the Court comply with Finland's Request for provisional measures thereby suspending the motorway part of the Great Belt Project major losses will be suffered by *A/S Storebæltsforbindelsen* as well as by the Danish society in general. The fact that the Great Belt Project has already progressed to an advanced stage has a significant bearing on the magnitude of these losses.

69. The losses inflicted upon *A/S Storebæltsforbindelsen* if the works on the East Bridge were to be suspended for a three year period, i.e., from 1 August 1991 to 31 July 1994 have been calculated by *A/S Storebæltsforbindelsen* as follows:

Increased project costs (excluding interest):	DKK 850 million	USD 126 million
Increased interest costs (including interest on the investments in the motorway part of the West Bridge:	DKK 1,050 million	USD 156 million
Loss of net earnings due to the delay of the opening of the fixed road link:	DKK 1,150 million	USD 171 million
In total:	DKK 3,050 million	USD 453 million

70. The amounts are given as net present values as of July 1991. In the calculations a rate of inflation of 5 per cent. per annum and a 10 per cent. interest rate per annum on debt has been used.

71. The increased project costs include preparation of design, prequalification of tenderers, invitation to tender, evaluation and award of contracts, price changes, and additional expenses incurred by the head office of *A/S Storebæltsforbindelsen*.

72. All investments in the road link are to be paid by toll fees from the users. A delay of the opening of the East Bridge will cause a loss of net earnings from toll fees.

73. In the Danish Parliament's decision to establish the Great Belt Project the positive impact of the Project on the economy of the Danish society has played a decisive role. On the basis of the present budget and time schedule of the Project, the social rate of return on the total Great Belt Project has been calculated at 11.8 per cent. per annum.

74. The calculation of the cost/benefit of the Great Belt Project is mainly based on an estimate of the time saved by the users and the anticipated

reduction of costs for purchase and operation of ferryboats. It also includes an estimate of the particular logistic advantages for industry and trade that will be created by the Project.

75. A delay in the motorway link will cause difficulties for the planning in those sectors of the Danish society that are dependent on or influenced by the motorway link.

76. The ferryboat companies operating the present lines between the Eastern and the Western parts of Denmark will have to change plans at a late stage due to a delay in the motorway project. A delay will have an impact on decisions concerning investments, major repairs, and lease contracts in relation to the ferry services.

77. Town planning related to the development of sites presently used in connection with the ferryboat operations will be adversely affected by a delay.

78. Long-term employment planning for work forces in areas close to the construction works and in other regions of Denmark providing labour for the Project will be detrimentally influenced by a delay.

79. Within trade and industry, the already commenced process of adjusting to the new, faster means of communication between the Eastern and Western parts of Denmark will be disturbed. The anticipated rationalization of the logistics pertaining to stock and storage will be postponed.

80. The return on the major investments made in order to connect the existing motorway system to the Great Belt Project will be deferred by a period corresponding to the delay.

81. A suspension of the works on the East Bridge will, therefore, have a substantial negative impact on the economy of the Danish society.

PART II

THE LAW

A. Introduction

82. The Statute of the Court provides in Article 41 that "(t)he Court shall have the power to indicate, if it considers that circumstances so require, any provisional measures which ought to be taken to preserve the respective rights of either party."

83. The object of this provision has been explained by the Court in its case law on Article 41 and may be summarized as follows:

(1) Article 41 has as its object to preserve the respective *rights* of the parties pending the final judgment of the Court;

(2) The Court's power to indicate provisional measures *presupposes*

- that there is a risk of *irreparable prejudice* to rights which are the subject of dispute in judicial proceeding,
- that the measures requested are a matter of *urgency*,
- that the rights claimed in the Application, *prima facie*, appear to fall within the purview of the Court's *jurisdiction;*

(3) The Court's power under Article 41 shall only be exercised if the *circumstances so require.*

84. The Court's jurisdiction is not in dispute in so far as both Denmark and Finland according to their longstanding tradition of adhering to procedures for peaceful settlement of international disputes have accepted the Court's jurisdiction under Article 36 of the Statute. The Government of Denmark therefore wishes to concentrate its observations first on the question relating to Finland's alleged right of passage for oil rigs, drill ships and reasonably foreseeable ships, secondly on the questions relating to the concepts of "irreparable prejudice" and "urgency" and thirdly on the condition that circumstances require that provisional measures be indicated.

B. The Alleged Right

85. Finland contends that it has an absolute and unconditional right of unimpeded passage through the Danish straits for certain industrial installations and structures up to 170 metres high, designed for the exploration and exploitation of the natural resources of the continental shelf or the subsoil of the high seas.

86. The question which arises is whether, by erecting a tower on the deck of a ship or by building floating industrial units of an extraordinary height, Finland has become entitled to demand a fundamental alteration (and a suspension *pendente lite*) of the current project based on a clearance of 65 metres. This clearance has not been met with any objections by other States and has been applied in similar international straits such as the Bosphorus and certain Japanese straits.

87. A first observation is that Finland is not only invoking an absolute and unconditional right, but also an elastic one, by referring not only to present drill ships and oil rigs, but also to future ships (para. 27 of the Application). Such a claim, if accepted, would grant Finland a permanent right of veto over any installation or bridge which Denmark may consider necessary to build in its territory and across its territorial waters. In effect, the alleged Finnish right would increase in its dimensions so as to correspond to the increased height that any private Finnish company decides to give to the "foreseeable" oil rigs, floating platforms and other structures it might build for oil exploration and exploitation.

Reasonable Considerations

88. Obviously, there cannot be such an absolute and elastic right. The Court is in the presence of a conflict between two rights, neither of which can be absolute: the right of passage through the Danish straits for merchant ships of all States and the equally uncontestable right of Denmark to erect a bridge that will establish a necessary and long-due communication between two of the highly populated islands composing its territory.

89. But here the dispute is not the traditional conflict concerning international straits, between the territorial State and the international community as a whole, interested in the freedom of navigation through straits serving as routes for the bulk of the world's shipping trade.

90. The international community as a whole, by its silence with respect to Denmark's notification has shown itself to be satisfied that the bridge under construction will not interfere with the right of passage of their ships, whatever their flag. It is only Finland which has belatedly questioned the project.

91. And as in every situation of conflict arising from a collision between two claimed rights, the solution has to be founded on a comparison of the claims and a determination of which is the more reasonable one. One test of reasonableness is the fact that the international community has accepted the projected bridge. Another test of reasonableness results from a comparative balancing of the foreseeable damaging effects for the two countries and peoples involved (see paras. 68 - 81 above).

92. Yet another test of reasonableness is the comparison between the social damage that would be inflicted on the population of both countries by giving precedence to one or the other of the claimed rights.

93. From the Finnish Request it follows that since 1972, 18 years ago, "the company has built altogether 23 drill ships, semi-submersible and jack-up oil rigs". Discounting the initial years, the output has been roughly of one drilling unit per year. In the opinion of the Government of Denmark, the possible social damaging effects to Finland, if any, are limited.

94. On the other hand the social repercussions for the Danish population and society which would result from a cancellation or suspension of the Great Belt project would be enormous.

95. The Great Belt is a very significant barrier to traffic between the different parts of the country. The fixed link will reduce transport time between the two parts of Denmark by more than one hour each way and at peak times by much more. That means that both the transport of goods and

business trips can take place within a normal working day. That in itself will mean great savings to Denmark's economy added to which there are the advantages of the possibilities the link offers for a more rational organization of production, transport and storage distribution. The fixed link will also increase the possibility of mobility on the labour market facilitating commuting across the Great Belt.

Legal Considerations

96. In paragraphs 25 and 26 of the Application, the Finnish Government refers to three instruments governing the right of passage in the Danish straits: the 1857 Treaty of Copenhagen on the Abolition of the Sound Dues, the 1958 Geneva Convention on the Territorial Sea and the Contiguous Zone and the transit passage régime of the 1982 United Nations Convention on the Law of the Sea.

97. However, the transit passage régime in Part III of the 1982 Law of the Sea Convention is not applicable to the Danish straits because, as will be demonstrated below, these straits have their own treaty regime.

98. At UNCLOS III Denmark and Finland co-sponsored a proposal (A/Conf. 62/C.2/L15) aiming at exempting straits less than six miles wide between the baselines, like the Danish straits, from the regime of transit passage.

99. The negotiations resulted in a general clause of exemption contained in Article 35 of the Convention in Part III under the title "Scope of this Part" which states:

"Nothing in this Part affects:

(c) the legal régime in straits in which passage is regulated in whole or in part by long-standing international conventions in force specifically relating to such straits"

The 1958 Geneva Convention

100. On the other hand, the 1958 Convention on the Territorial Sea is relevant since both Denmark and Finland have ratified it. But the 1958 Geneva Convention only contains a single provision concerning straits, that in paragraph 4 of Article 16. And this is an incidental provision, forbidding suspension of the right of passage in straits used for international navigation. This prohibition, accepted by Denmark and also a part of customary law, is not relevant to the present dispute.

101. With that exception, the 1958 Convention does not deal directly with passage through straits. This matter is fully governed by the same rules which are applicable to "innocent passage" through the territorial sea. Thus, passage through straits is a derivative and incidental corollary of innocent passage through the territorial sea.

102. While the 1982 Convention on the Law of the Sea proclaims in Article 38 a right of passage through straits as a separate and independent right, there is no equivalent or similar right proclaimed in the 1958 Convention.

103. All there is, is a right of "innocent passage" through the territorial sea, granted by Article 14 of the 1958 Convention to "ships of all States".

The 1857 Treaties and Finland's Position in Respect to them

104. But basically, as it results from Article 35 (c) of the 1982 Convention on the Law of the Sea the Danish straits are governed by two treaties of long standing. These are the Treaty for the Abolition of the Sound Dues between Denmark on the one hand and on the other Austria, Belgium, France, Great Britain, Hanover, The Hansa Towns, Mecklenburg-Schwerin, the Netherlands, Oldenburg, Prussia, Russia and Sweden/Norway, signed at Copenhagen, 14 March 1857, and the separate bilateral treaty between Denmark and the United States, signed at Washington D.C., 11 April 1857.

105. It is to be noticed that Finland is not one of the Parties to these agreements. It may, however, invoke the right of passage granted by the 1857

Treaties, as a third party beneficiary, in accordance with Article 36 of the Vienna Convention on the Law of Treaties. But, as a third party beneficiary Finland cannot claim nor exercise additional or more extensive rights than those enjoyed by the actual parties to the Treaty. The parties to the 1857 Treaties have accepted a clearance of 65 metres as being sufficient for the exercise of their right of passage through the Danish territorial sea. Finland, not a party, cannot legitimately invoke additional rights or a more favourable treatment than the one accepted by the parties to the 1857 Treaties.

106. There cannot be two different measures for the right of passage: an elastic one for Finland, eventually more than 170 metres high, another for the contracting parties, 65 metres high.

Scope of the 1857 Treaties

107. To define the scope of the 1857 Treaties attention must be paid to its object and purpose, according to the rules of interpretation in Article 27(1) of the Vienna Convention on the Law of Treaties.

108. The object of the 1857 Treaty is defined in the treaty itself in the following terms: "la suppression complète et à jamais de tout droit perçu *sur les navires étrangers et leurs cargaisons* à leur passage par le Sund et les Belts".

109. From this definition of the object and purpose of the 1857 Treaties it results that they have in mind "navires marchands", merchant vessels, since the text refers to "navires étrangers et leurs cargaisons". The oil rigs and drill ships are not supposed to transport cargo and consequently can hardly be described as "merchant ships" according to the distinction prevailing at the time between "merchant vessels" and "warships", which were subject to a different regime in accordance with the 1857 Treaties.

110. Professor Brüel, a recognized authority on the régime of straits has stated, in interpreting the 1857 Treaty that:

> "si l'on interprête ainsi le traité selon son object strict, qui est d'abolir une taxe sur le passage des *navires marchands* dont la perception a

cessé d'etre jugée compatible avec les droits de l'Etat riverain sur un détroit international, il est a présumer que les bâtiments de guerre échappent à ses dispositions" (*Les détroits danois au point de vue du Droit International, Recueil des Cours de l'Académie de Droit International*, Vol. 55, 1936, p. 621).

111. The 1857 Treaty, applicable only to "merchant ships" is even more restrictive than the régime of the 1958 Convention and of course of the 1982 Convention.

112. This difference in the more or less liberal position concerning the passage of ships is no obstacle to the application of the long-standing Convention of 1857, as exempted from Part III of the 1982 Convention (Article 35 (c)).

113. The specialists who have studied the régime of straits under the 1982 Convention coincide in affirming that:

"if a convention of long-standing exempt by Article 35(c) calls for the application of a more restrictive régime than would be applied under the 1982 Convention, the more restrictive régime would take precedence" (*Prof. H. Caminos, The Legal Régime of Straits in the 1982 United Nations Convention on the Law of the Sea, Recueil des Cours, Hague Academy*, Vol. 205 (1987 V) p. 135).

114. And in almost identical terms it is said by Professor Treves that:

"si une convention de longue date prévoit dans un détroit un régime plus restrictif de passage que celui qui serait applicable aux termes de la Convention, ce régime reste valable" (*Dupuy et Vignes, Traité du Nouveau Droit de la Mer, T. Treves, La Navigation* p. 793).

115. In conclusion, Denmark accepted in 1857, in response to the interest of the international community in free maritime navigation and trade certain well defined limitations to its sovereign rights.

116. It would not be fair and reasonable to interpret the long-standing commitments assumed in 1857 as imposing upon Denmark a sort of permanent and expanding servitude *"non-edificandi"* over its own territory which would prevent its economic progress and impede the public works required for the well-being of its population.

Customary International Law

117. In paragraphs 25 and 26 of the Application the Finnish Government also refers to international customary law in support of its claim of an absolute and unconditional right of passage through the Danish straits. But no evidence of that contention has been advanced in the Application.

118. Denmark submits that an absolute and unconditional right of passage through the Danish Straits has no foundation in international customary law. No rule of customary law can be invoked which prohibits the building of bridges across international straits as long as existing shipping traffic at the time of the construction is not hampered by the construction.

119. Bridges with clearances similar to that of the East Bridge across the Great Belt have been built across international straits, e.g., in Turkey and Japan.

120. No objections having been voiced against the construction of the bridges across the Turkish and Japanese straits, the *opinio juris* among states must be that contemporary international law on the subject supports the conduct of Turkey, Japan and Denmark.

121. This legal position is further confirmed by the fact that during the Third United Nations Law of the Sea Conference an attempt was made at the early stage of the Conference to have inserted into the future text the following provision: "The coastal State shall not place in the straits any installations which could interfere with or hinder the transit of ships". The proposal was contained in Doc. A/CONF.62/C.2/L.11 of 17 July 1974, Art. 1, 2 (f) sponsored by Bulgaria, Czechoslovakia., German Democratic Republic, Poland, Ukranian Soviet Socialist Republic and Union of Soviet Socialist Republics.

The Element of Urgency

125. It follows from the practice of the International Court of Justice that provisional measures can be applied only if the prejudice to the Applicant's rights is imminent, see e.g., *Nuclear Tests Australia v. France* (*I.C.J. Reports 1973*, p. 104, para. 26, Order of 22 June 1973), *Nuclear Tests New Zealand v. France* (*I.C.J. Reports 1973* p. 140, para. 27, Order of 22 June 1973), and *Trial of Pakistani Prisoners of War* (*I.C.J. Reports 1973*, p. 330, para. 14, Order of 13 July 1973).

126. Finland submits as its primary submission that the Court should indicate to Denmark to "refrain from continuing or otherwise proceeding with such *construction works* in connection with the planned bridge project over the East Channel of the Great Belt as would impede the passage of ships, including drill ships and oil rigs, to and from Finnish ports and shipyards" (Emphasis added). However, no impediment to the passage will be in place before the end of 1994, see paragraph 33 above i.e., at a point when which the present case can be finally decided by the Court.

127. In their secondary submission Finland asks the Court to indicate to Denmark to "refrain from any other action that might prejudice the outcome of the present proceedings". No specific measures are indicated but in paragraph 11 of the Request reference is made to the signing of contracts with regard to the construction of the East Bridge. This question, however, is a matter which cannot in itself prejudice Finland's alleged right to passage of the Great Belt.

128. From Finland's own submissions it thus appears that no prejudice to Finland's alleged right is imminent.

129. The description in paragraphs 43 - 59 above on the passage route through the Sound and the Finnish Mobile Offshore drilling units further reveals that the construction of the East Bridge in the Great Belt hardly represents any practical hindrance for the passing of these units through the Danish straits. Consequently, there exists no urgency justifying the indication of provisional measures.

130. It also seems relevant to raise the following question: Can there be "urgency" after the striking passivity shown by Finland with regard to the present case? Since 1918 Finland has had a diplomatic representation in Copenhagen. It is to be assumed that in the light of the stated interests of Finland in the conditions of passage in and through the Danish straits (Application para. 11 and 12), the Embassy would have been watching carefully developments in Danish politics concerning the plans for establishing a fixed link over the Great Belt - a historic connection of the two main parts of the realm. These developments have been described in paragraphs 11 - 24 above.

131. The silence by Finland through all these years must be interpreted simply as Finnish acquiescence in Denmark's right to construct a high-level bridge across the Great Belt.

132. The real element of urgency arose in 1977 when the Danish Ministry of Foreign Affairs issued its first Circular Note on the Bridge Project. No reaction from Finland was forthcoming although the Finnish Offshore Industry at that time did produce drilling units which would not be able to pass under the bridge fully assambled. The second Circular Note of 1987 explicitly stated that a possibility existed to construct an immersed tunnel instead of the high-level bridge. This was the last call for States having problems for their ships passing the Danish straits to express and explain those problems to the Government of Denmark. As the Circular Note of 30 June 1987 did not give rise to any reaction from States, the Government of Denmark proceeded with the actual planning and implementation of the project as a whole. The Circular Note of 24 October 1989 simply conveyed supplementary information on the actual status of the Great Belt link including the information that it had been decided to construct a high-level bridge of 65 metres over the East Channel. At that time the element of urgency would appear to have been overtaken by events in the sense that it would be almost impossible to stop even this part of the entire project. Nevertheless, it was not until June 1990 that the first representation was made by Finland to the Danish Ministry of Foreign Affairs (see para. 39 above) i.e., at a time when construction works on the current project had been going on for almost two years.

133. In short, it seems fair to state that successive Danish Governments have since the 1970s taken great care when planning the construction of a fixed link over the Great Belt to take into account the existing traffic of ships through that strait. The accredited foreign missions in Copenhagen have been duly informed and notified about the plans. No objections have been raised, but one special request was made by the Soviet Union to increase the clearance from 62 metres to 65 metres. Finland has never before reacted to Denmark's plans and notifications. The Danish Government having acted in good faith all along cannot, therefore, accept to be stopped in the middle of a legitimate enterprise by an objection which is long overdue.

134. How can there be urgency in the light of such a striking passivity by the Applicant? If a State cannot rely upon the reactions of other States, express or tacit, to its diplomatic communications, grave insecurity and instability in international relations would be the consequence. In particular it would seem dangerous to the stability and predictability of relations between States if the Court would use its power under Article 41 of the Statute to declare that longstanding passivity *vis-à-vis* concrete communications on a specific project is no hindrance to issuing a temporary ban on the continuation in whole or in part of that project. Such passivity should not be rewarded but act as an estoppel against furthering the matter.

Reparability of the damage in the present case

135. In reality the present case is about economic expenses on the part of a private Finnish company, and the fact that Finland has not included a demand for compensation in the Request for provisional measures should not be overlooked by the Court. The concept of expenses and compensation is extensively dealt with in paragraphs 18 and 23 in the Application, and in the Submissions Finland reserves *in particular* its right to claim compensation for any damage or loss arising from the bridge project. In paragraph 18 in the Application Finland has estimated the additional cost for constructing the drill ships and oil rigs in a way which ensures passage under the planned bridge to about USD 7.5 - 13.75 million for each construction. In this way Finland has acknowledged that the case is about the cost of manufacturing the drill ships and oil rigs in a different way than now and about the cost of modifying already existing drill ships and oil rigs. The contention in the Request in

paragraph 12 that Finland's losses cannot be offset by compensation is in remarkable contradiction to the Application.

136. Against this background the question of provisional measures emerges in a different light. The Request for provisional measures must now be assessed in such a way as to establish whether the alleged rights infringed by Denmark may be made good by compensation. This test was applied by President Huber of the Permanent Court of International Justice in the case concerning the *Denunciation of the Treaty of November 2nd, 1865, between China and Belgium*. In granting provisional measures President Huber based his decision on the fact that the alleged infraction "could not be made good simply by the payment of an indemnity or by compensation or restitution in some other material form" (*P.C.I.J., Series A, No. 8*, Order of 8 January 1927). In the present case before the International Court of Justice the opposite situation seems to exist.

137. The Government of Denmark thus contends that any possible damage to Finland may be compensated, and no irreparable prejudice or damage as far as Finland is concerned will ensue if the requested provisional measures are not granted. This should in the opinion of the Government of Denmark be given considerable weight when the Court makes its decision on the Request for provisional measures.

138. Furthermore, it should be pointed out that the economic damage that would be caused to Denmark by a suspension of the projected construction of the East Bridge as set out in paragraphs 68 - 81 above would be out of all proportions to the extra cost involved for the company of Rauma-Repola. To grant provisional measures having such a disproportionate effect would not render justice to the Kingdom of Denmark.

D. Circumstances of the Present Case

139. In light of the considerations set out above the circumstances of the present case do not in the view of the Government of Denmark call for any provisional measures to be indicated by the Court.

141. The Government of Denmark requests the Court

(1) To adjudge and declare that, in the light of the law and the facts outlined above, the Request of Finland for an order of provisional measures be rejected.

(2) In the alternative, and in the event that the Court should grant the Request in whole or in part, to indicate that Finland shall undertake to compensate Denmark for any and all losses incurred in complying with such provisional measures, should the Court reject Finland's submissions on the merits.

Copenhagen, 28 June 1991.

(Signed) TYGE LEHMANN

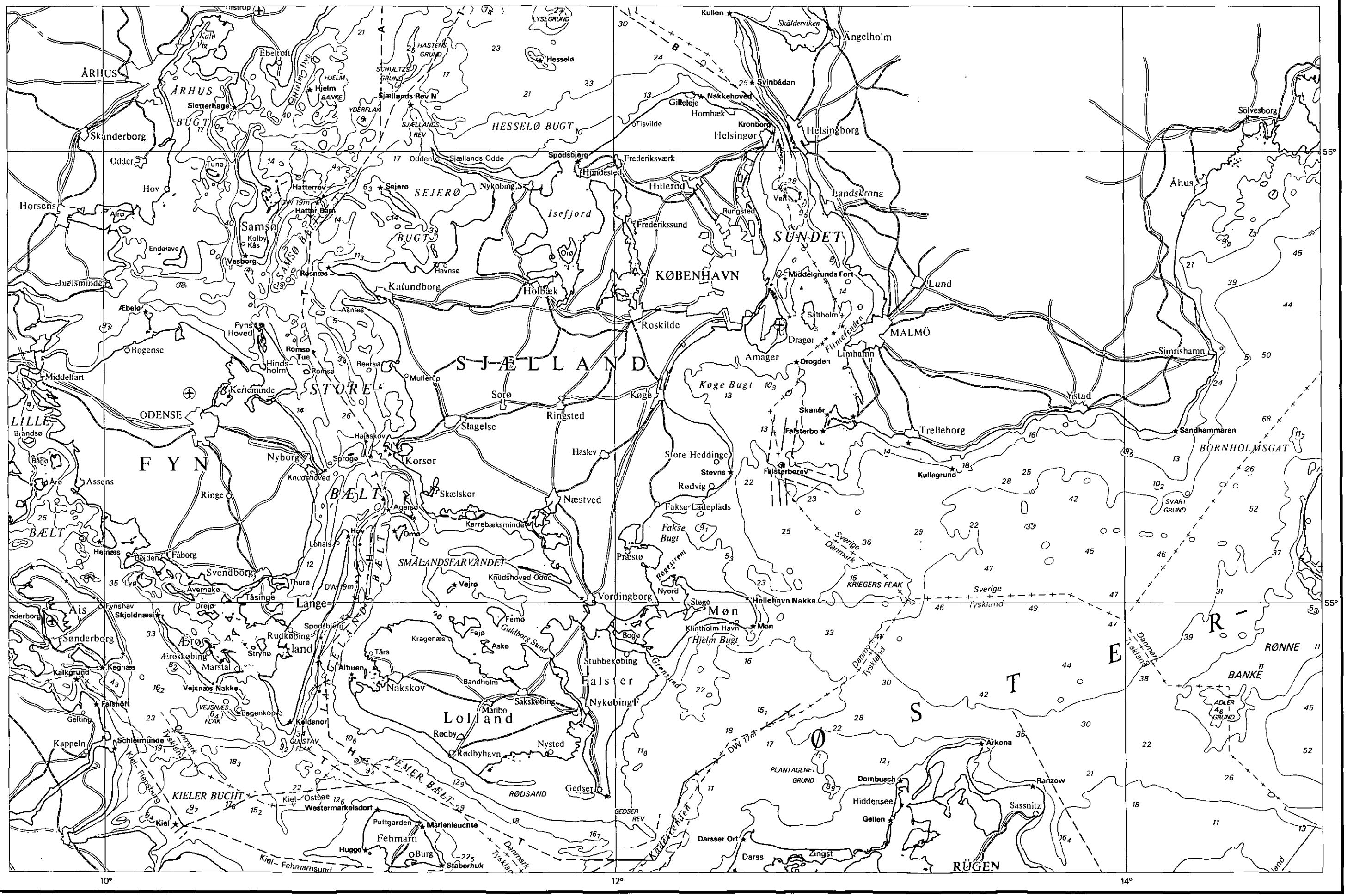
Agent of the Government
of the Kingdom of Denmark

MAPS

MAP I
Exit/Entrance Baltic Sea

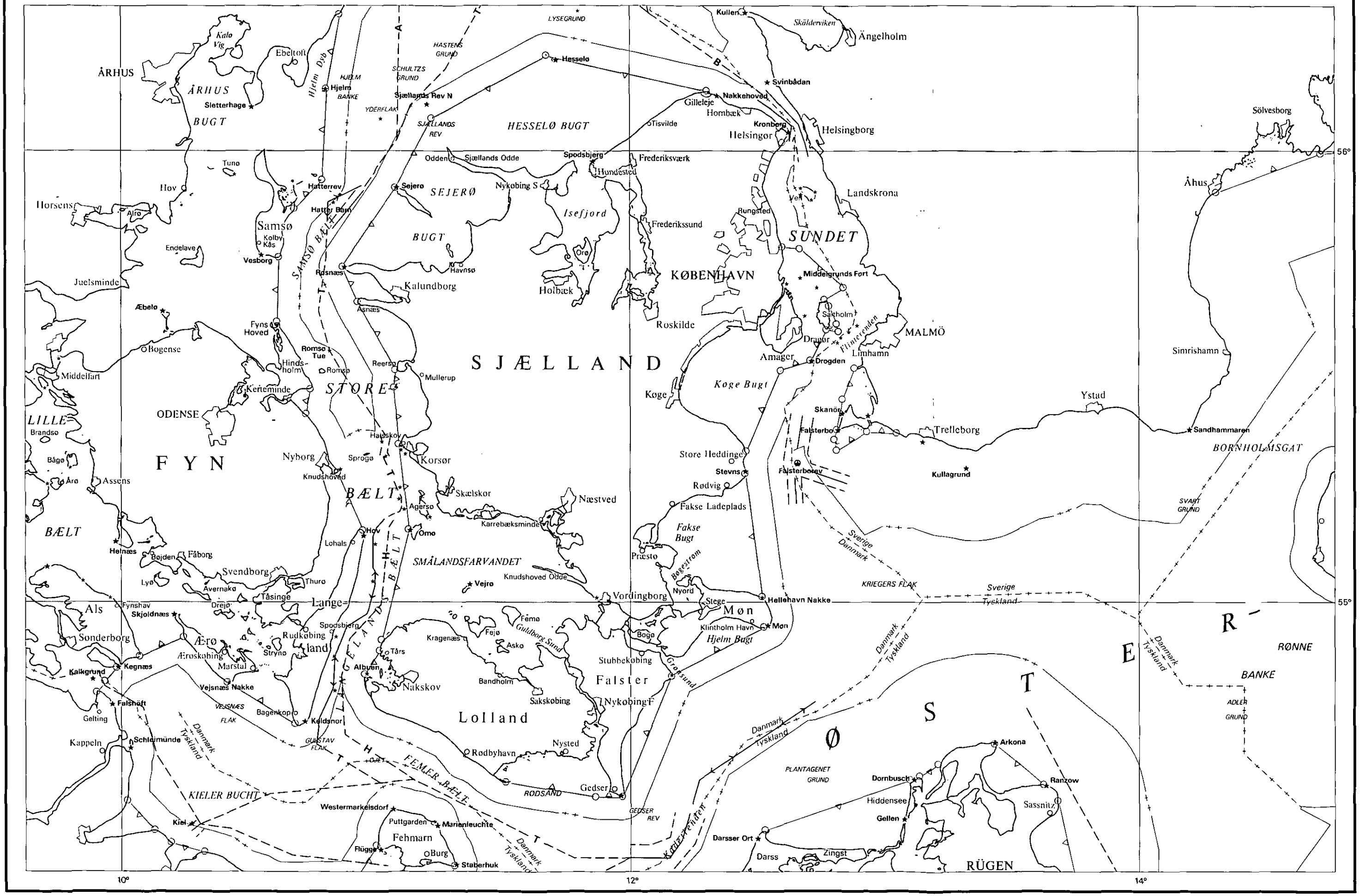
Drogden dredged channel with minimum depth 7,7 m

Route T 17,0 m



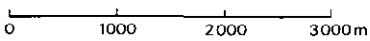
Kort- og Matrikelstyrelsen

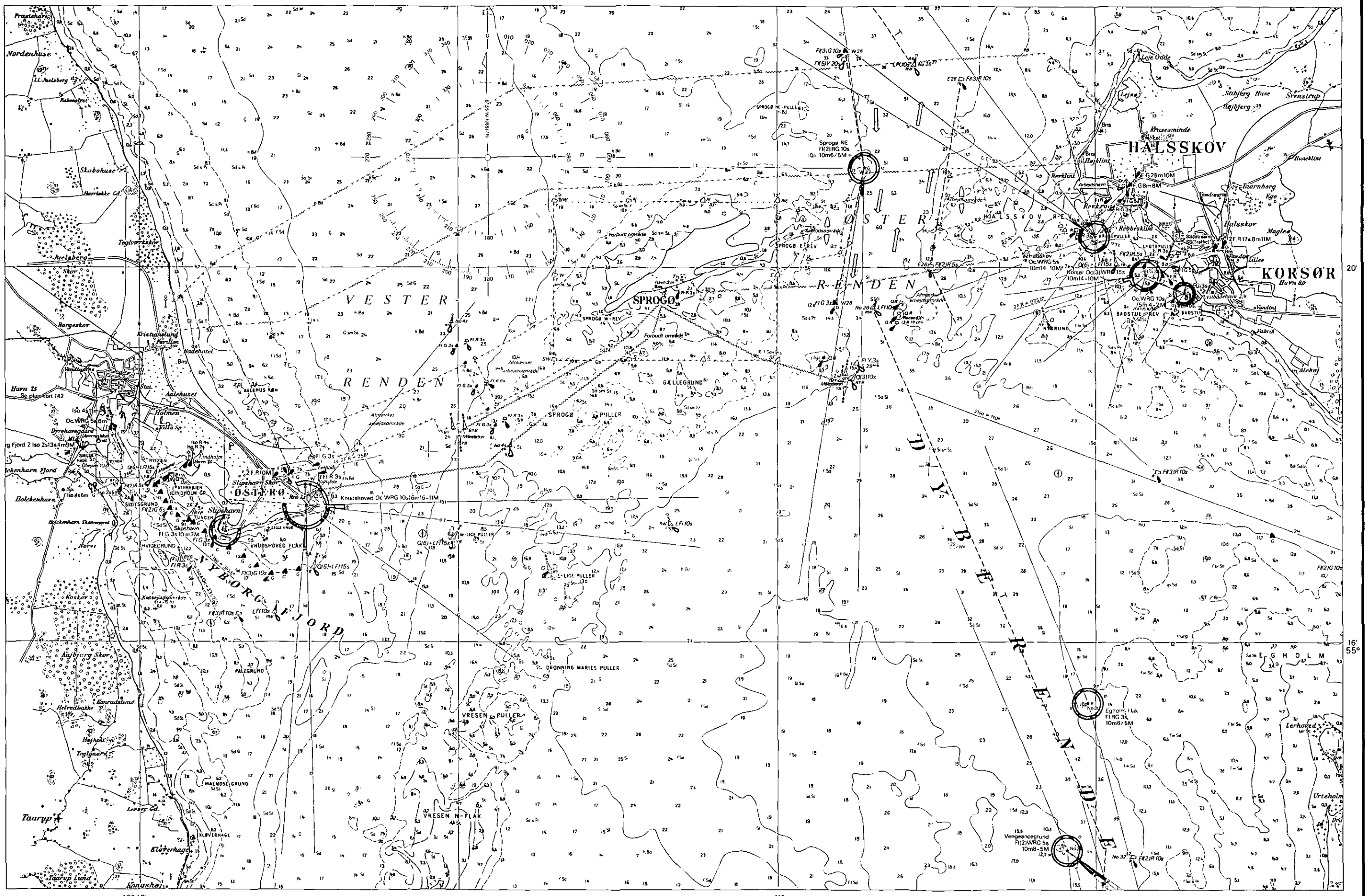
MAP II
Danish territorial sea with internal waters



Kort- og Matrikelstyrelsen

MAP III
Store Bælt
Relevant area.





Kort- og Matrikelstyrelsen

LIST OF ANNEXES

1. Act No. 414 of 13 June 1973 on the Construction of a Bridge across the Great Belt
2. Circular Note from the Danish Ministry of Foreign Affairs dated 12 May 1977
3. Note from the Embassy of the Soviet Union dated 29 March 1978
4. Note from the Danish Ministry of Foreign Affairs to the Embassy of the Soviet Union dated 28 June 1978
5. Note from the Embassy of Poland dated 6 December 1977
6. Note from the Danish Ministry of Foreign Affairs to the Embassy of Poland dated 3 July 1978
7. Act No. 380 of 10 June 1987 on the Construction of a Fixed Link across the Great Belt
8. Circular Note from the Danish Ministry of Foreign Affairs dated 30 June 1987
9. Sketch of the Fixed Link across the Great Belt
10. Report from *Det Norske Veritas* dated 10 March 1989
11. Circular Note from the Danish Ministry of Foreign Affairs dated 24 October 1989
12. Note from the Embassy of Finland dated 19 June 1990
13. Note from the Danish Ministry of Foreign Affairs to the Embassy of Finland dated 11 July 1990
14. Note from the Embassy of Finland dated 5 November 1990
15. List of Rauma-Repola Offshore Oy's Production of Mobile Offshore Drilling Units in the period 1974 - 1990
16. Sales Folder from Rauma-Repola Offshore Oy on Mobile Offshore Drilling Units

Unofficial Translation
Original: Danish

Act No. 414 of 13 June 1973 on the construction of a bridge across the Great Belt

WE MARGRETHE THE SECOND, by the Grace of God Queen of Denmark hereby make known: The Folketing has passed and We have given Our Assent to the following Act:

Construction works

Section 1. The Minister for Public Works shall be empowered to let the undertaking Statsbroen Store Bælt construct a bridge across the Great Belt, cf. section 5 of this Act.

Section 2. The construction works shall consist of a high-level bridge across the Eastern Channel and a low-level bridge across the Western Channel with a six-lane motorway with emergency lanes and two railway tracks. The design of the high-level bridge shall allow for the necessary navigational clearance.

Section 3. The Minister for Public Works shall be empowered to authorize construction of the necessary approach systems etc. to provide link-up to roads and railways and in this respect to authorize the relocation of Korsør and Nyborg railway stations.

Subsection 2. The Minister for Public Works shall stipulate which parts of the overall construction works to be assigned to the bridge project, to the railway link and to the motorway works, respectively.

Section 4. The Minister for Public Works shall be empowered to close down the Danish State Railways's ferry service across the Great Belt after the completion of the bridge.

Administration

Section 5. The Minister for Public Works shall establish a special, governmental, administrative undertaking, Statsbroen Store Bælt, which shall be in charge of the design, in its capacity as client construct the bridge link, as well as operate it.

Section 6. Statsbroen Store Bælt shall keep separate profit and loss account as well as prepare separate balance sheet. The undertaking's assets and liabilities shall be separated accounting-wise from the State's general balance sheet. The State shall be liable for the undertaking's financial obligations.

Subsection 2. The cash funds of Statsbroen Store Bælt shall be separated from the assets of the State in general.

Section 7. The own capital of Statsbroen Store Bælt shall comprise contributions made by the State and reserves put aside once the bridge is operating.

Subsection 2. Foreign capital may be procured by way of domestic or foreign loans which are raised following negotiations with the Minister for Economic and Budgetary Affairs.

Section 8. The Minister for Public Works may lay down general or specific instructions and directives for Statsbroen Store Bælt. He may direct that the decision on certain groups of or individual specified matters shall rest with him.

Section 9. The management of Statsbroen Store Bælt shall consist of a Board of Directors and a Managing Director, who is in charge of the day-to-day management.

Section 2. The Board of Directors shall be composed of five members to be appointed for a specific period of time by the Minister for Public Works, who also appoints a chairman among the members. One member shall be appointed upon recommendation by the Minster for Economic and Budgetary Affairs. One member shall represent special expert knowledge within building and construction.

Section 3. Any member of the Board may demand that the Minister for Public Works shall decide on a matter.

Toll charges

Section 10. A toll shall be levied on the use of the bridge, and the amount of the toll shall be stipulated by the Minister for Public Works with the approval of the Parliamentary Finance Committee.

Other provisions

Section 11. The Minister for Public Works shall be empowered to acquire real property, by way of agreement or compulsory acquisition, necessary for the completion of the construction works in accordance with sections 1-3 of this Act.

Section 12. The Minister for Public Works shall be empowered to initiate preliminary investigations and commence work on the design of the construction project before Statsbroen Store Bælt is established. Any expenses defrayed before the establishment of Statsbroen Store Bælt shall be included in its balance sheet after the establishment.

Given at Christiansborg Castle on 13 June 1973

Under Our Royal Hand and Seal

MARGRETHE R.

/Kampmann

MINISTRY OF FOREIGN AFFAIRS

R.III. File No. 55.D.33.

Annex 2

Circular Note

In adopting Act No. 414 of June 13, 1973, the Danish Folketing (parliament) endorsed erection of a bridge for vehicular and rail traffic across the Great Danish Belt. Construction plans are now being prepared. As the Great Belt is a fairway traversed by ships from many countries the Ministry of Foreign Affairs considers it appropriate to provide the following information about the project:

The planned Great Belt bridge will feature a high-level bridge across the eastern channel (Østerrenden) and a low-level bridge across the western channel (Vesterrenden). The construction of the section across the eastern channel will, in conformity with International Law, allow international shipping between the Kattegat and the Baltic Sea to proceed as in the past.

The planned bridge, having a six-lane motorway with emergency lanes and two sets of railway tracks, will set out from Zealand at Halsskov north of the ferry port, pass the eastern channel, traverse the island of Sprogø, pass the western channel and merge with the coast of Funen north of the Knudshoved ferry port. The distance between the coasts of Zealand and Sprogø along the selected bridge line across the eastern channel is approx. 8½ kms. The actual bridge will be at least 5 kms long while the balance of the distance will be taken up by causeways. The distance between the coasts of Sprogø and Funen along the selected bridge line across the western channel is approx. 8 kms, of which at least 5½ kms will be constructed as a low-level bridge and the rest as causeways.

According to all available data the high-level bridge across the eastern channel will not in any way restrict passage through the Great Belt by existing ships which have navigated these waters in the past, and it will be

To

all Heads of Mission
accredited to Denmark

possible to establish two sea lanes, one for northbound and one for southbound traffic. Both lanes will be located within the existing lines of depths of 20 m and will each have a horizontal clearance of not less than 360 m in the bridge line and not less than 325 m in a line perpendicular to the direction of sailing. In the latter width the free vertical clearance for passage under the bridge will be 62 m above mean sea level.

During the period of construction precautions will be taken in order to ensure safe passage of ships. When construction has been completed the traffic separation which IMCO has approved for the area will be adjusted.

The text of the Act of June 13, 1973, embodying the decision to establish a bridge across the Great Belt has been made public. Construction is scheduled to begin in 1978 or 1979 and to go on for about eight years.

Copenhagen, May 12, 1977

Original: Russian

Annex 3

Unofficial translation

N O T E V E R B A L E

The Embassy of the Union of Socialist Soviet Republics presents its compliments to the Danish Ministry of Foreign Affairs and has the honour to submit the following information:

By Circular Note dated 12 May 1977 from Denmark's Ministry of Foreign Affairs the USSR Embassy was informed about the Danish plans concerning the construction of a bridge across the Great Belt. The Soviet side would like to submit the following viewpoints in this respect.

The Soviet authorities assume that the construction of a bridge across the Great Belt, which is a sea passage for international navigation, and which connects the Baltic Sea with the Atlantic Ocean, in no way should affect the status of this passage as an important sea route or hamper traffic.

The safe and free navigation of the eastern and western part of the Great Belt should be guaranteed at any time and under any meteorological conditions, during the period of construction as well as when the bridge is operating. In this respect, it is in particular necessary that the depth of water in the Belt's channels is not changed to a lower depth as compared to the existing depth, that the free height below the bridge piers in the channel allow for the passage of ships with a mast of a minimum height of 65 metres, and that the free horizontal clearance in the channel between the bridge piers is at least 350 metres.

The Note from the Danish Ministry of Foreign Affairs containing information about the plans for construction of a bridge across the Great Belt causes anxiety, because the Danish side, while preparing these plans, has not paid due attention to the question concerning the safeguarding of unhampered passage through the Great Belt for traffic.

In the opinion of the Soviet authorities, the low height of the bridge across the Western Channel will not make it possible to use it for passage of ships of large or medium tonnage, thus increasing traffic in the Eastern Channel and impeding the possibility of establishing a system of separated sea routes in order to increase navigation safety. The erection of bridge piers in the Eastern Channel will reduce its width, which may have the effect that under unfavourable weather conditions traffic will have to be one-way only, that ships approaching the bridge passage will have to slow down, and that the possibility of overtaking will be excluded, causing loss of hours of operation.

In this connection, the Soviet authorities would be grateful to get the opportunity to acquaint themselves well in advance with the technical data concerning the bridge project, in order to

scrutinize in more detail the subsequent questions and submit their viewpoints thereon.

However, considering the Belt's great importance to international navigation, not least to that of the Baltic States, it would be expedient to have a comprehensive exchange of viewpoints between the interested states in order to discuss the complex of issues relating to the bridge project.

The Embassy avails itself of this opportunity to renew to the Ministry the assurances of its highest consideration.

Copenhagen, 29 March 1978

Denmark's Ministry of Foreign Affairs
Copenhagen

Original: Danish

Annex 4

Unofficial translation

MINISTRY OF FOREIGN AFFAIRS

Ref.: R.III. 55.D.33

2 encls.

N O T E V E R B A L E

By Note of 29 March 1978 the Embassy of the Union of Socialist Soviet Republics raised a number of questions about the Danish plans concerning construction of a bridge across the Great Belt as stated in Circular Note of 12 May 1977 from this Ministry. In this connection this Ministry can inform the Soviet Embassy as follows:

That part of Danish territorial sea which constitutes the Great Belt is an important link in the possibilities of passage for international navigation to and from the Baltic Sea. It is against this background that a special regime for navigation in these waters has evolved, a regime which has proved its worth for Denmark's coastal interests as well as for those of international navigation. The planned bridge project will not entail any changes in this special regime.

As emphasized in Circular Note of 12 May 1977 from this Ministry, the planned bridge project encompassing the construction of a high-level bridge across the Eastern Channel will, as in the past, render international navigation between the Kattegat and the Baltic Sea possible, and the bridge project is thus in conformity with international law.

The re-routing of traffic from the Western Channel to the Eastern Channel, necessitated by the implementation of the project, will only to a very limited extent affect international navigation.

As regards the technical data on the high-level bridge across the Eastern Channel please be informed that in connection with the planning of the bridge construction thorough investigations have been carried out to ascertain what ships can navigate the Great Belt with due regard being had to the natural conditions. All particulars available show that the projected height of the bridge, in the navigation spans, of 62 metres above mean sea level, which under all conceivable conditions of sea levels will allow ships with a height of 61 metres from sea level to the highest point on the ship to navigate the strait, will not restrict passage through the Great Belt for ships having navigated these waters in the past.

Thus, there is no material available to the Danish authorities which may justify a free height of 65 metres as mentioned in the Embassy's Note of 29 March 1978. Should the Embassy be in a possession of material substantiating the need for a free

height of 65 metres, the Embassy is requested to inform this Ministry accordingly as soon as possible.

As regards free width, this will be at least 360 metres for each lane, and it will be possible to establish two lanes for northbound and southbound traffic, respectively, in order that traffic may continue to be safe also under difficult weather conditions.

Finally, this Ministry would like to emphasize that the existing depth of water will not be reduced as a consequence of the high-level bridge.

During the period of construction, efforts will be made to ensure safe traffic, and after the completion of the construction works the traffic separation scheme adopted by IMCO for the area will be adjusted.

As additional information about the technical data on the bridge please find enclosed "Orientering" Nos. 1 and 2 published by Statsbroen Storebælt.

Copenhagen, 28 June 1978

Annex 5

-8 DEC 1977

55.D.33.

J R

No. 161/1977.

L'Ambassade de la République Populaire de Pologne presénte ses compliments au Ministère Royal des Affaires Etrangères et a l'honneur informer le sujet suivant:

Faisant suite a la Note circulaire du Ministére des Affaires Etrangères Ref. R.III.no 55.D.33. du mai 1977 a l'honneur de l'informer que le Gouvernment polonais a pris connaissance du projet de la construction d'un pont du Grand Belt.

Le Gouvernment polonais partage entièrement le soucis du Gouvernement danois pour que la construction du pont ne resulte pas en aucune limitation des possibilitiés de passage des eaux en question par bateaux et navires ayant pu jusqu'a presént emprunter ces eaux.

Il est également important a l'avis du Gouvernment polonais - de prendre en considération les tendances futures en ce qui concerne la construction des bateaux et navires. Le Governement polonais comprend que ces tendances seront examinées et prises en considération lors de L'élaboration du projet afin d'eviter les difficultés de passage non seulement à l'époque actuelle, mais aussi à l'avenir.

L'Ambassade de la République Populaire de Pologne saisit cette occasion pour renouveler au Ministére Royal des Affaires Etrangères les assurances de sa très haute consideration.

Copenhague, le 6 Décembre, 1977.

Le Ministère Royal des
Affaires Etrangères
Copenhague.

AMBASADA POLSKA W KOPENHADZE

CC/ES/js

Réf.: R.III. N° 55.D.33.

MINISTERE DES AFFAIRES ETRANGERES

Note verbale

Le Ministère des Affaires Etrangères présente ses compliments à l'Ambassade de la République Populaire de Pologne et, se référant à la note de l'Ambassade n° 161/1977 du 6 décembre 1977 relative au projet danois de construction d'un ensemble de ponts sur le Grand Belt, a l'honneur de porter à la connaissance de l'Ambassade que l'exécution du pont viaduc sur la Passe Est (Østerrenden) permettra, en conformité avec les règles du droit international, au trafic maritime international circulant entre le Kattegat et la Baltique de garder la même ampleur que par le passé.

L'élaboration du projet de construction a comporté une étude détaillée visant à déterminer les navires qui, compte tenu des conditions naturelles des eaux, peuvent emprunter le Grand Belt, et, dans ce contexte, il a été procédé également à une étude des tendances actuellement prévisibles dans les techniques de constructions maritimes. L'ensemble des études en question ayant révélé la compatibilité du projet de construction du pont sur la Passe Est avec ces tendances, ledit projet est en pleine conformité avec les règles du droit international sur les possibilités de passage des navires étrangers.

Le Ministère des Affaires Etrangères saisit cette occasion pour renouveler à l'Ambassade de la République Populaire de Pologne les assurances de sa haute considération.

Copenhague, le 3 juillet 1978

Ambassade de la République Populaire de Pologne

Copenhague

Original: Danish

Annex 7

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Date 28.2.1989

J/no. 902240

C O N F I R M A T I O N

I, the undersigned official translator and interpreter of the English language, hereby confirm that the document:

The Public Works Act for a Fixed Link across Storebælt of June 10, 1987, 10 p.

is a correct and semantically identical translation of the document presented to me:

Lov nr. 380 om anlæg af fast forbindelse over Storebælt af 10. juni 1987, 4 s.

INTERPRES REGIUS JURATUS
JØRGEN HØEDT

JØRGEN HØEDT
Official translator and interpreter
of the English language
Authorized by the Royal Danish
Ministry of Industry

Act no. 380 of June 10, 1987

The Public Works Act for a Fixed Link across Storebælt

WE, MARGRETHE THE SECOND, by the Grace of God Queen of Denmark, hereby make known:
The Folketing (Danish Parliament) has approved, and we have by our Royal Assent provided, the following Act:

The Public Works

Section 1

The Minister for Public Works shall be authorized to take action in accordance with this Public Works Act for a Fixed Link across Storebælt for railway and road traffic.

Section 2

The works shall be accomplished in two stages, of which stage 1 is a railway link and stage 2 is a motorway link.

Subsection 2. The construction works for stage 2 shall commence at the latest one year before the expected commissioning of the railway link, but the construction period shall otherwise be selected on the basis of financial and employment considerations, i.a. in such a way as to endeavour to achieve a rational flow of design and construction for the works in their entirety.

Section 3

The railway link shall be constructed with two tracks in a tunnel under the Eastern Channel and on a low bridge across the Western Channel.

Subsection 2. As an element of stage 1 of the works, the low

bridge shall to the extent which is financially justifiable be planned to also include the motorway link.

Section 4

The motorway link shall be constructed with four lanes and with emergency lanes.

Subsection 2. The motorway link may cross the Eastern Channel on an elevated bridge with the required navigational clearance, or in an immersed tunnel. A project shall be prepared for the inclusion of an immersed tunnel in the invitation to submit tender, if it is considered appropriate in terms of construction and economy to invite tenders for both alternatives.

Subsection 3. The motorway link shall cross the Western Channel on the same low bridge as the railway link, and the low bridge shall be completed as an element of stage 2 of the works.

Section 5

The two stages of the works shall be performed separately in such a way that the water flow through the Storebælt shall remain unchanged after the completion of the work, for the sake of the marine environment in the Baltic.

Section 6

The Minister for Public Works shall be authorized to implement the performance of the necessary auxiliary works, etc. for roads and railways, and in this connection shall implement the relocation of the Korsør and Nyborg railway stations.

Subsection 2. The Minister for Public Works shall determine which elements of the overall works are allocated to the

Fixed Link, the national railway system and the main road network, respectively.

Section 7

The Minister for Public Works shall be authorized to discontinue the Danish State Railways' ferry services between Korsør and Nyborg when the railway link has been commissioned, and the Danish State Railways' ferry services between Halsskov and Knudshoved when the motorway link has been commissioned.

Ownership and Management

Section 8

A limited liability company, of which the entire share capital is owned by the Danish State, shall undertake the design and as the Employer the construction of the Fixed Link.

Subsection 2. The size of the share capital shall be determined by the Minister for Public Works with the endorsement of the Parliamentary Finance Committee.

Subsection 3. The Company may raise loans to finance the implementation of the works. Loans shall be raised according to the more detailed provisions of the Minister of Finance, in order to achieve the best possible terms. The Minister of Finance shall be empowered to provide Treasury guarantees for payment of interest and instalments and other current obligations. The Minister of Finance shall furthermore be empowered to cover the Company's financing requirement through Government loans to the extent which is considered appropriate. Such loans may not be granted on terms which are more favourable than those which the Danish State itself can obtain as borrower.

Subsection 4. The Danish State shall without special provision in individual cases guarantee the Company's other financial obligations.

Subsection 5. The Danish Labour Market Supplementary Pension Fund and the Danish Employees' Capital Pension Fund shall hold a joint first option to provide loans of in total up to 60 per cent of the Company's total borrowing requirement, provided that more favourable terms cannot be obtained on the market.

Section 9

Simultaneously with commissioning of the railway link, the Company shall cede the right of use of this Link to the Danish State Railways (DSB).

Subsection 2. DSB shall handle and defray the costs of operation and maintenance of the railway tunnel under the Eastern Channel and of the railway-technical installations on the bridge across the Western Channel.

Subsection 3. DSB's remuneration for use of the Fixed Link shall cover the following costs:

1) The costs required to pay interest and instalments on the expenses related to the construction of the railway tunnel under the Eastern Channel, including financing costs and other consequential expenses. Any costs defrayed concerning stage 2 of the works shall not be included.
2) The corresponding costs attributable to the railway's share of that part of the works across the Western Channel performed as an element of stage 1, cf. Section 3, Subsection 2. This share shall be determined on the basis of the assumption that via this remuneration DSB shall contribute half of the cost of the total works across the Western Channel.

3) Costs for the operation and maintenance of the bridge across the Western Channel until commissioning of the motorway link.
4) After commissioning of the motorway link half of the operation and maintenance costs for the bridge across the Western Channel, with the exception of the costs involved in operation and maintenance of the road.

Subsection 4. DSB's remuneration shall be assessed on an annual basis. A monthly on-account amount shall be defrayed, for the first time in the first month after commissioning of stage 1.

Subsection 5. The Minister for Public Works shall determine the boundary between the works allocated to the Eastern Channel and the works allocated to the Western Channel and shall settle any disputes on the distribution of the construction and maintenance costs. Costs for remedial measures, cf. Section 5, on the construction of the railway tunnel under the Eastern Channel which might lower the construction costs for stage 2 shall be distributed by the Minister between the construction costs for the railway link and the construction costs for the motorway link.

Subsection 6. The costs related to the construction of the railway link shall be settled on a current basis and instalments and interest are assumed to be paid over 30 years from the commissioning of stage 1. The interest shall be calculated as the average total loan costs for the Company's current loan capital at a given point in time. A flow of payments such that the annual instalment is constant measured in fixed prices shall be strived for. The Minister for Public Works shall settle any disputes.

Section 10

When the construction costs for the railway link have been fully defrayed via the remuneration, cf. Section 9,

Subsection 3, the right of ownership of the railway tunnel under the Eastern Channel shall be transferred to DSB. Simultaneously a joint ownership contract shall be entered into between the Company and DSB on the construction across the Western Channel, so that DSB acquires a share of half of this construction project.

Section 11

The Company shall collect toll charges for use of the motorway link. On the commissioning of the road link the toll shall correspond to the equivalent ferry rates on the date of commissioning of the link, with deduction of motorists' own costs for use of the link. The principles for adjustment of the rates shall be approved by the Minister for Public Works with the endorsement of the Parliamentary Finance Committee.

Subsection 2. After that element of the costs of establishment of the works allocated to the motorway link have been covered, the rates or the principles for their calculation shall be determined by the Minister for Public Works, with the endorsement of the Parliamentary Finance Committee.

Section 12

The Board of Directors of the limited liability company shall consist of eight members appointed by the Minister for Public Works.

Subsection 2. The Company's Articles of Association and the Board of Directors' rules of procedure, as well as amendments to the same shall be approved by the Minister for Public Works.

Subsection 3. The Minister for Public Works may provide general or specific instructions and directives for the Company on matters of significant importance.

Section 13

The Minister for Public Works may instruct the Company to maintain a car ferry link between Zealand and Jutland across the Kattegat and a car ferry link between Spodsbjerg and Taars on a scale to be determined in more detail.

Section 14

Should the Company's taxable income assessment for the first income year show a deficit, deduction for this deficit may be made in the taxable income for the following 15 financial years. The deficit in financial years prior to the financial year in which the railway link is commissioned may be deducted in the taxable income for the following 30 financial years, however. Within the aforementioned periods the deduction may only be transferred to a subsequent financial year, however, if it is in excess of what can be accommodated in a previous year's taxable income.

Section 15

From and including the financial year in which the railway and road links, respectively, are commissioned (the year of acquisition), the Company may make taxable depreciation for the Fixed Link across Storebælt on the basis of the acquisition price.

Subsection 2. By acquisition price is meant the total construction costs for the railway and road links, respectively.

Subsection 3. On calculation of the acquisition prices the company may not include taxes which can be deducted as Value Added Tax receivable in the assessment of the Company's Value Added Tax obligation according to the Danish Act on Ordinary Value Added Tax.

Section 16

The depreciation basis shall be adjusted at the end of each financial year at the same percentage as that by which the wage-regulating price index for April of the financial year has been adjusted in relation to the wage-regulating price index for April of the preceding year. The annual percentage adjustments shall be assessed on the basis of the wage-regulating price index with January 1980 = 100, and rounded up to whole percentages. However, the basis may not be adjusted in the year of acquisition. If the financial year does not correspond to the calendar year adjustment shall take place on the basis of the wage-regulating price index for April in the calendar year which the financial year replaces, compared to the wage-regulating price index for April of the preceding year.

Section 17

Depreciation shall be made at up to 6 per cent of the acquisition price which is index-linked according to the provision in Section 16. In the financial year in which the sum of the depreciation rates used exceeds 60 and in the following years depreciation can, however, take place only by up to 2 per cent of the index-linked acquisition price.

Subsection 2. The sum of the depreciation rates used for each link may not exceed 100.

Section 18

Taxable depreciation shall be made separately for the railway and motorway links.

Subsection 2. On transfer of the right of ownership to the railway link across the Eastern Channel and half of the right of ownership to the link across the Western Channel to DSB,

the limited liability company's right of depreciation in respect of the transferred property shall lapse.

Subsection 3. No taxable depreciation may be made on the transferred property in the financial year in which the transfer takes place.

Section 19

Legislation concerning limited liability companies, with the amendments arising from this Act, shall apply for the Company.

Other provisions

Section 20

The Minister for Public Works shall be empowered on behalf of the Company and the Danish State to acquire by expropriation the real property necessary to accomplish the works under this Act. Expropriation shall take place according to the rules in the Danish Act on Procedures for Expropriation Concerning Real Property.

Subsection 2. The Minister for Public Works shall determine the alignment of the works in territorial waters.

Section 21

The following Acts shall be repealed:

1) Act no. 414 of June 13, 1973 on the Construction of a Bridge Across Storebælt.
2) Act no. 296 of June 6, 1984 on the Expansion of the Ferry Services Across Storebælt.

Given at Christiansborg Palace,
June 10, 1987
Under Our Royal Hand and Seal
MARGRETHE R.

/ FRODE NØR CHRISTENSEN

MINISTRY OF FOREIGN AFFAIRS

02 JUL 1987

Annex 8

19 87 / 1
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R.H. File No. 55.D.33.

Circular Note

The Ministry of Foreign Affairs has the honour to inform that on 26 May 1987 the Danish Folketing (Parliament) passed a new Act No. 380 of 10 June 1987 on the construction of a fixed traffic connection for both vehicular and rail traffic across the Great Belt i.e. between Halsskov on Zealand and Knudshoved on Funen.

The new act repeals the former Act No. 414 of 13 June 1983 on the construction of a bridge across the Great Belt, of which all Heads of Mission accredited to Denmark were informed by Circular Note of 12 May 1977.

According to the new act, the construction works will be carried out in two stages. The first stage consists of a railway connection with two sets of railway tracks, which will cross the Great Belt through a tunnel under the eastern channel (Østerrenden), and of a low-level bridge across the western channel (Vesterrenden).

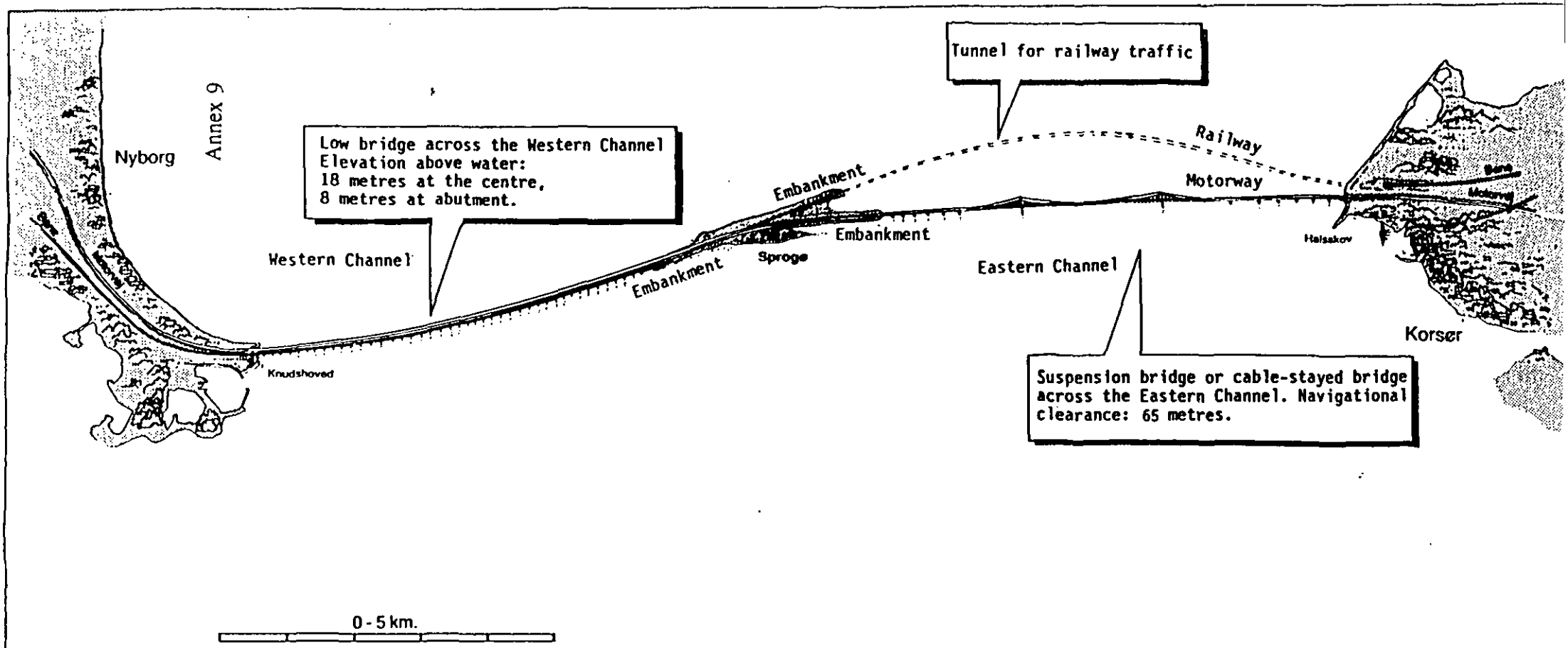
The second stage comprises a four-lane motorway with emergency lanes. The motorway will cross the western channel on the same low-level bridge as the railway connection. It has not yet been decided whether the motorway shall cross the eastern channel on a highlevel bridge or through a tunnel. In case the bridge solution is selected, the erection of the bridge section crossing the eastern channel will, in conformity with international law, allow for the maintenance of free passage for international shipping between the Kattegat and the Baltic Sea as in the past.

The first stage, i.e. the railway connection, which has already started, is expected to be completed at the end of 1992. The construction of the motorway connection shall be initiated not later than one year before the railway is taken into use. The motorway will probably be completed at the end of 1995.

Copenhagen, 30 June 1987

MINISTRY OF FOREIGN AFFAIRS

To all Heads of Mission
accredited to Denmark


Annex 9
Nyborg
Low bridge across the Western Channel
Elevation above water:
18 metres at the centre,
8 metres at abutment.
Tunnel for railway traffic
Railway
Motorway
Embankment
Embankment
Embankment
Western Channel
Eastern Channel
Sprogø
Halsskov
Korsør
Knudshoved
Suspension bridge or cable-stayed bridge across the Eastern Channel. Navigational clearance: 65 metres.
0 - 5 km.

Storebælt


DET NORSKE VERITAS
ESTABLISHED 1864

DET NORSKE
VERITAS

Rapport/Report

Dato/Date	Avd./Dept.	Prosjektnr. Project No
10.03.89	265	265401

Godkjent av/Approved by

Kåre Lindemann
Avdelingsleder

Ship Division

Klient, Oppdragsgiver/Client, Sponsor — Klient ref. Clients ref

A/S Storebæltsforbindelsen

Rapporttype Type of Report

Technical

Sammendrag/Summary

Investigations of air-draughts on normal oceangoing vessels, drill ships, semi-submersible drilling units, jack-ups, semi-submersible crane vessels, sailing ships, ice-breakers and fishing factory ships passing through the Great Belt.

VERITAS Rapportnr./Report No.	Emnegruppe/Subject Group
89-0042	

Rapporttittel/Title of Report

Revised study on air-draught of merchant ships, carried out for A/S Storebæltsforbindelsen

Utført av/Work carried out by

P. NEDRUM

4 indekseringstermer (på engelsk)/4 indexing terms

- AIR-DRAUGHT
- BRIDGE PASSING
- LARGE VESSELS
-

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Dato for siste revisjon/ Date of last rev	Rev No.	Antall sider/ Number of pages
10.03.89	0	16

NV 5.87

REVISED STUDY
ON
AIR-DRAUGHT
OF
MERCHANT SHIPS
CARRIED OUT FOR

A/S STOREBÆLTSFORBINDELSEN

VERITAS MARINE OPERATIONS

10. March 1989

INDEX

1 INTRODUCTION

2 GENERAL

3 SHIP CATEGORIES

3.1 MERCHANT SHIPS
3.2 OTHER SPECIALIZED SHIPS

4 OFFSHORE CATEGORIES

4.1 SEMI-SUBMERSIBLES DRILLING UNITS
4.2 DRILL SHIPS
4.3 JACK-UPS
4.4 CRANE VESSELS

5 REFLECTIONS ON BALTIC BOUND TRAFFIC THROUGH THE GREAT BELT

5.1 PASSING FREQUENCIES OF LARGE SHIPS
5.2 ALTERNATIVE SAILING ROUTES

6 KNOCK DOWN EFFECT / DISMANTLING

6.1 DRILL SHIPS
6.2 JACK-UPS
6.3 SEMI-SUBMERSIBLES DRILLING UNITS

7 RESUME

8 REFERENCES

1 INTRODUCTION

This report is an update of Veritec Report No 86-3094 on "Air-draught on large ships", from 1986.

The largest sea passage into the Baltic Sea is planned to be crossed by a bridge system , Storebæltsforbindelsen.

The eastern bridge, crossing the deepest water entrance to the Baltic, will require a free sailing height, air-draught, allowing free passage for all normal existing ship traffic.

A limiting factor with regard to air-draught of ships in general is existing bridges and their free sailing height. Relevant in this context are the Golden Gate in San Francisco; Verrazano Narrows in New York, with a free sailing height of 64 meters; the Vancouver bridge in Canada, with a free height of 60 meters; and the Bosporous bridge in Turkey, with a free height of 62 meters.

Of special interest to Storebæltforbindelsen is Ælvsborgsbron in Gothenburg, with a free sailing height of 45 meters. This bridge is already limiting the traffic trading on one of Scandinavia's major ports.

In this context it should also be mentioned that the free sailing height in the Kieler Kanal is 43 meters.

This report will endeavour to present all ships with air-draught exceeding 65 meters, highlighting possibilities to reduce the air-draught by ballasting, dismantling and/or to evaluate the possibility to re-route the ship through alternative routes.

The limiting air draught of common existing ship types, will also be stated.

The possible air-draught of future passages likely to trade on the Baltic Sea, will be briefly mentioned.

2 GENERAL

The types and size of vessels considered, are restricted to those complying with IMO Res. A.620 (15), - inter alia - the draught of vessels passing through the entrance to the Baltic Sea is limited to 15 meters (recommended) and 17 meters (exceptional)

Naval vessels are not included in the present survey Nor are planned future vessels, although they are briefly mentioned.

Regarding voluminous deck cargo transports (project loads) on specialized heavy lift vessels, a separate study has been carried out /8/, and the conclusion is that none of the transportation modes will appear as governing factors when deciding upon the permissible air-draught below the eastern bridge. The shipments may be adapted to any height chosen by Storebæltsforbindelsen

Ships with high air-draught, regularly trading into the Baltic, are Ro-Ro carriers, Container ships, Very Large Crude Carriers, Ice Breakers, Sailing Ships and Fishing Factories. They will all be dealt with separately.

In the mid seventies the Semi-Submersible Drilling Unit "Treasure Hunter" drilled seven wells south of Gothland. In 1987, the Semi-Submersible "Treasure Seeker" drilled another well in much the same area.

Hence Offshore Oil Rigs, Drill Ships or Semi-Submersible drilling units, may be required to pass through Storebælt for drilling operations or "en route" from a shipyard.

Crane Ships or Crane Barges, might also be required to pass through Storebælt in connection with possible salvage operations or construction works.

Offshore Mobile Units and Crane Barges etc. will be dealt with separately.

3 SHIP CATEGORIES

3.1 MERCHANT VESSELS

3.1.1 Dry Cargo Vessels

There has been no significant change in air-draught since the Veritec Report. The biggest dry cargo ship in the world, Berge Stahl of 364.000 DWT has an air-draught of 49,2 m, with a draught of 10,0 m. The new Generation of Post - Panamax Container vessels, e.g. President Truman, has an air draught of less than 55 m at 6,5 m draught.

In the near foreseeable future, the air-draught for Dry Cargo Vessels are not expected to exceed 55 m.

Hence, the eastern bridge will not create any hindrance to Dry Cargo Vessels expected to trade on the Baltic.

3.1.2 Tankers

Extreme air-draught for Ultra Large Crude Oil Carriers (ULCC) with a draught of about 10 m, are found to be in the order of 55 to 70 m. The table below presents the largest existing ULCC's in the world today, and their air-draughts, based on a light draught of 10 meters.

Name	TDW	Air-draught
Esso Atlantic	566,000	54.2 m
Batillus	553,000	61.5 m
Nanny	499,000	53,5 m
Burma Endeavour	445,500	68.6 m
Happy Sailor	423,000	57.0 m
Tokhai Maru	238,500	58.0 m

In the case of "Burma Endeavor", in complying with IMO Resolution A.620 (15), allowing a maximum draught of 15 meters, she will have an air-draught of 63.6 m.

3.1.3 Passenger Ships

No existing passenger liners were found to have an air-draught exceeding 65 m. The largest in the world today are "Sovereign of the Sea" and "Norway" with air draught of respectively 51,5 and 57 meters. Corresponding draught of "Sovereign of the Sea" is 7,35 meters.

At this stage, the planned future passenger vessels, mentioned in the previous Veritec Report, are still in the future.

A free air-draught of 65 meters is not expected to create any problems to these ships since they also are likely to be designed to call on San Francisco Bay.

3.1.4 Ferries

No existing ferries will create a problem with a free sailing height of 65 m. The highest air-draught has Silvia Regina, with 52,75 meters, corresponding to a draught of 6,7 m.

Two new ferries are being built for Silja Line at Wärtsilä, Finland, scheduled for delivery in May 1990 and in 1991, with a designed air-draught of 52,8 m at a designed draught of 6,0 m.

Most of the ferries servicing the Swedish west coast, are likely to trade on Gothenburg harbors, and as such will be limited by Ælvsborgsbron.

"Kronprins Harald" trading between Oslo and Kiel, has an air-draught of 38.3 m and a draught of 6.5 m.

The tallest DBS ferry, "Peder Paars", has an air-draught of 46 meter.

3.2 OTHER SPECIALIZED SHIPS

3.2.1 Sailing Ships

There has been no development in air-draught to existing sailing ships, since the issuance of the VERITEC report. It should be noted that presently four new Sailing ships are being built in Poland, the Mir-class school ship, with an air-draught of 49,5 meters.

3.2.2 Ice Breakers

Below some of the biggest Ice Breakers in the world today are listed.

Nationality	Name	Displ. (tdw)	Air-draught	Draught
USSR	Taymyr	23.500	44.0 m	8.0 m
USSR	Arktika	19.300	43.5 m	8,0 m(abt)
Sweden	Oden	10.300	44,5 m	8,0 m
Canada	Polar 8		56,0 m	11,5 m

The Canadian Ice Breaker "Polar 8" is believed to represent the upper limit of such ships in the years to come

3.2.3 Fishing Factory Ships

USSR operates several Fishing Factory Ships. Their air-draught is well below 65 m, and Storebæltforbindelsen will not create any problems to their free passage.

A new factory ship, M/V Sodruzhestvo, has newly been delivered by Wärtsilä, Finland, having an air-draught of 46,7 m with a corresponding draught of 7,8 meters

4 OFFSHORE CATEGORIES

The shipbuilding/offshore industry in the area, as well as the possibilities of oil exploration, or other specialized tasks, necessitate an evaluation of possible future traffic, expecting to have an air-draught exceeding 65 m.

However, no regular traffic of such vessels are foreseen, and each passage will more or less be on a project basis. E.g. only new buildings out of the area, or units called upon for special tasks such as for example salvage operations or construction jobs, are likely to occasionally pass through Storebælt.

4.1 Semi-Submersibles Drilling Units

Most of those units have an air-draught exceeding 100 m in transit draught. For instance the Friede & Goldeman "Pacetter" design has an air-draught of 105 m. Rauma Repola in Finland has delivered more than a dozen of this type to the Soviet Union.

The air-draughts listed in the Veritec Report for Semi-Submersible Drilling Units are still valid.

The eastern bridge will not allow a free passage of such units.

4.2 Drill Ships

Most Drill Ships have an air-draught exceeding 65 m. The following table illustrates the most typical dimensions.

Name	Nationality	Air-draught	Max.draught
Valentil Sashin	USSR	75,6 m	7,3 m
Pelican	France	75,0 m	7,3 m
Polly Bristol	UK	71,3 m	7,6 m
Pelerin	Norway	75.0 m	7.3 m
Energy Searcher	Australia	75,0 m	8,8 m
Discovery 534	US	75,0 m	7,3 m

As noted, only Energy Searcher has a draught exceeding 8 meters. Consequently, the others could pass through Øresund in fair weather and with, if required tug assistance.

Furthermore, the derrick itself can be dismantled, thus allowing free passage under 65 meters. For instance, the 6 to 10 meters high "Gin-pole" (top of the derrick) has successfully been dismantled on previously occasions. There are a cost element of cause, but technically it is fully possible.

Hence physically the eastern bridge will not be an absolute hindrance for the passage of such units.

4.3 Jack-Ups

Most Jack-ups in transit have an air-draught well above 100 m. The actual draught of a Jack-up under tow will normally be in the range of 4 to 8 meters, thus allowing it to be towed through Øresund. In worst case, the legs can be cut off sufficiently to allow safe passage below the eastern bridge. Such shortening of the legs are often done prior to wet tows over long distances, in order to minimize possible damage caused by inertia forces.

Hence it is technically feasible for Jack-ups to freely sail below the eastern bridge.

Below some typical Jack-ups with characteristics air-draught and draught are listed.

Name	Design	Airdraught	Draught
West Beta	ETA EUROPE	150 m	5,0 m
Neddrill 7	MSC	100 m	4,0 m
Glomar Moray Firth 1	T 2600	146 m	4,0 m
Maersk Giant	Hitachi	152 m	4,8 m
Maersk Guardian	Hitachi	152 m	4,8 m
Maersk Endeavour	Gusto	132 m	4,6 m
Maersk Explorer	Gusto	100,2 m	4,3 m
Maersk Viking	Modec 300	118 m	5,0 m
Maersk Valiant	Modec 300	118 m	5,0 m
Maersk Voyager	Modec 300	118 m	5,0 m
Maersk Vanguard	Modec 300	118 m	5,0 m
Maersk Endurer	Marathon LeTourn.	101,5 m	7,3 m

4.4 CRANE VESSELS

Below some of the biggest crane vessels operating offshore are listed. Since there is sufficient depths under the eastern bridge, it is possible to pass under with maximum operating draught It is likely to assume that passing vessels of this type will ballast down to maximum draught. The air-draughts indicated in the table are based on maximum operating draught.

It appears from figure 1 that most crane vessels will pass under the 65 meters limit, thus allowing the Baltic Sea being serviced by 9000 sh.t. SWL crane vessels.

Name	Type	Lifting capacity	Transit draught	Operating draught	Air draught
Micoperi 7000	Tweenhull	14.000 mt	10,5 m	27,5 m	90,0 m
DB 102	"	12.000 mt		31,6 m	87,5 m
Hermod	"	9.000 sh.t		28,0 m	63,0 m
Balder	"	7.000 sh.t		27,0 m	63,5 m
McDermott DB 50	Monohull	4.000 m.t		9,5 m	77,5 m
Odin	"	3.000 sh.t		12,0 m	62,5 m
Tor	"	3.000 sh.t		11,5 m	53,5 m
Stanislav Yudin	Catamaran	1.600 m.t		5,5 m	62,6 m
Champion	Monohull	1.150 sh.t		10,0 m	38,0 m

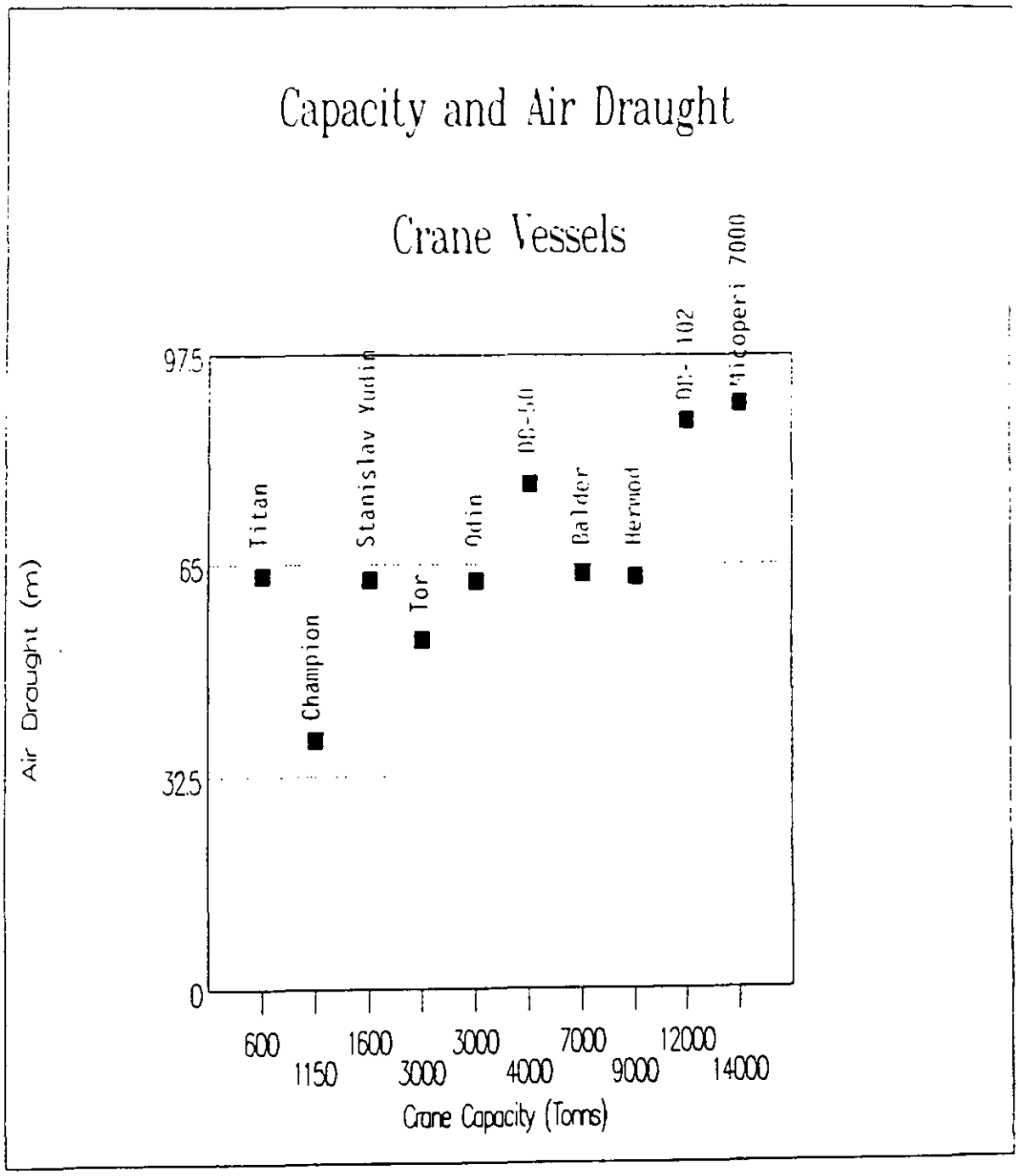

Capacity and Air Draught
Crane Vessels
Air Draught (m)
97.5
65
32.5
0
Titan
Champion
Stanislav Yudin
Tor
Odin
Balder
Herwod
102
7000
600
1150
1600
3000
3000
4000
7000
9000
12000
14000
Crane Capacity (Tonns)

FIGURE 1

5 REFLECTIONS ON BALTIC BOUND TRAFFIC THROUGH THE GREAT BELT

5.1 PASSING FREQUENCY

The report made by MSR CONSULTANTS on "Skibstrafikken i Storebælt", dated 25. Jan. 1988 has been evaluated. Their conclusion with regard to the passing frequency of large ships, i.e.ships over 40.000 TDW, corresponds very well with our information.

Based upon the MSR-reports and our records on air-draughts, figure 2 features the distribution of passages through the Great Belt as a function of the air-draughts. The histogram in the range between 0 -30 meters gives an estimate with considerable uncertainty regarding the percent wise distribution of the intervals. However, this is irrelevant to this specific part of the study. The most important comment to figure 2 is that of all the passages, approximately 99 % have an air-draught less than 40 meters.

5.2 ALTERNATIVE SAILING ROUTE

The official maximum draught through Øresund is 7,7 m. Ships with an air- draught exceeding 65 m having less draught than 7,7 m, could thus pass through Drogden. This is particular the case for drill-ships, as most of them have a draught of approximate 7,3 - 7,6 meters

That would also be the case for Semi-Submersible drilling units, if not fitted with Azimuth Thrusters, being the case for the Aker H3 type. They have a transit draught of approximately 6,5 m.

The majority of the new generation Semi-Submersible Offshore Drilling Units, are fitted with Azimuth Thrusters, protruding well below the base line, and making a passage through Øresund less feasible. However, such thrusters may be dismantled by the rig crew, thus allowing most types of Semi-Submersibles to transit.

As for Jack-ups, we note that all of those listed have a draft less than 7,7 m. The vast majority are thus able to pass through Drogden.

GREAT BELT TRANSITS

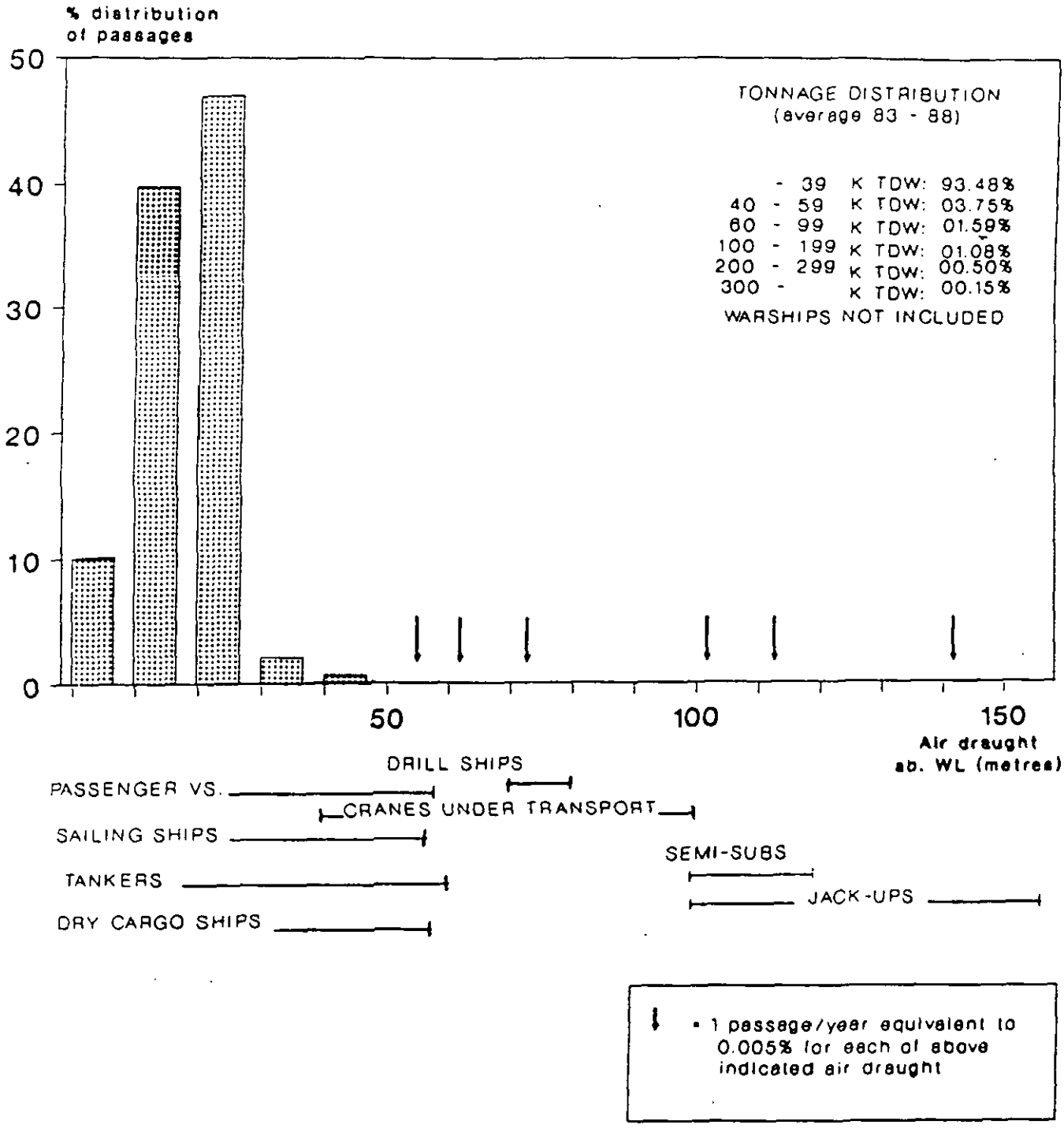


FIGURE 2

6. KNOCK DOWN EFFECT / DISMANTLING

6.1 DRILL SHIPS

Most Drill Ships have an air-draught of about 75 m. Quite a few have a possibility to lay down the derrick completely. E.g. Pacnose 1, Aladdin Sinbad Saxon, Ocean Voyager, Odin Drill, Nordskald and some of the Sedco drilling ships.

Other types of drilling ships have a shorter derrick, 180 feet (55 m) instead of 200 feet (60 m), thus having an air-draught of about 69 m. The very top of the derrick, the gin-pole, can further be dismantled, thus reducing the height of the derrick with another 6
to 10 m, resulting in an air-draught of 63 or 59 meters respectively.

6.2 JACK-UPS

The legs of a Jack-Up may be dismantled in sections, thus making it possible to reduce the air-draught to well below 65 m. The derricks on such units, are normally shorter than those fitted on Drill Ships, 140 feet (43 m) against 180 or 200 feet (55 - 61 m), and will normally not create any problems.

6.3 SEMI-SUBMERSIBLES DRILLING UNITS

The air-draught of these units are normally so high that dismantling the ginpol, combined with ballasting down to maximum draught will still exceed an air-draught of 65 m. In the case of for instance an Aker H3 type, the operating draught is 21,2 m, with a corresponding air-draught of 74,0 m. A further reduction of the air-draught, necessitates dismantling of sections of the derrick, which technically may be done, but are not that common.

7 RESUME

In the following table our findings of extreme air draught for existing ships are presented. These values are compared to those in the previous Veritec Report.

Ship Category	Air-Draught previously	Air-Draught revised
Cargo ships	51,5	55,0
Tankers	52,0	68,7
Sailing vessels	55,3	55,3
Icebreakers		56,0
Passenger liners	64,0	57,0
Ferries		52,8
Fish factory ships		46,7
Heavy Lift vessels		46,2 (no cargo)
Crane Vessels	62,0	90,0
Drill Ships	75,0	75,0
Semi-Submersible Drilling Units	100,0	105,0
Jack-ups,Drilling Units		152,0

The investigation made on normal ocean going merchant ships indicate an extreme air-draught of 68,7 m (e.g. tankers) . By ballasting down in accordance with IMO Res. A.620 (15), the air-draught of any normal merchant ship is well below 65 meters.

For ordinary merchant vessels our findings correspond with the conclusion of MSR /10/, establishing 52,5 meters being the highest recorded air-draught in the Great Belt.

Some Offshore vessels, like drilling ships, Semi-Submersible drilling vessels, Semi-Submersible crane vessels etc. will have an air-draught exceeding 65 m at normal transit draught.

Naval vessels have not been studied in details, but we conclude that limiting air-draught for Russian flag naval vessels are likely to be the height of the Bosporous bridge, i.e. 62 meters.

For US flag naval vessels the Golden Gate bridge and the Verrazano Narrows, both with 64 meters is a natural limiting factor.

For UK flag naval vessels the Firth of Forth Bridge, and for Swedish flag naval vessels, Ælvsborgsbron, with 45 meters are natural limiting factors.

8 REFERENCES

/1/ Fairplay Information System Ltd

/2/ Det norske Veritas files.

/3/ Norwegian Shipowners Association

/4/ Survey of MSR Consultants. "Skibstrafikken i Storebælt", 25- Jan-1989.

/5/ The Motor Ship - monthly publication

/6/ Schiff & Hafen - monthly publication

/7/ Veritec Report No. 86-3094 : "Mastehøyde på store skip", 1986.

/8/ "Assessment on the impact of tall project loads on the air- draught of the coming eastern bridge of the Great Belt Link". DnV, Copenhagen, Feb. 20. 1989.

/9/ IMO Resolution A.620 (15)

/10/ MRS Report on Maximum Airdraft of Cargo Ships in the Great Belt. 2nd Preliminary Edition. March 6th 1989.

Annex 11

MINISTRY OF FOREIGN AFFAIRS

Circular Note

Referring to Circular Note of 30 June 1987 by which all Heads of Mission accredited to Denmark were informed of the adoption of Act No. 380 of 10 June 1987 on the Construction of a fixed Traffic Connection across the Great Belt the Ministry of Foreign Affairs has the honour to convey the following supplementary information on the status of the Great Belt link and in particular on the high-level bridge across the Eastern Channel of the Great Belt, i.e. between Zealand and the island of Sprogø:

The first stage of the construction works comprises the railway connection. The railway tracks will cross the Western Channel (i.e. between the islands of Funen and Sprogø) on a low-level bridge with a vertical clearance (i.e. the free sailing height or air-draught) for passage of 18 metres above mean sea level in the navigation spans at the centre of the bridge. Across the Eastern Channel the railway connection will consist of a tunnel to be drilled through the subsoil of the Great Belt. The railway connection is expected to be completed during 1993.

As regards the second stage of the Great Belt link, which consists of a motorway connection, it has been decided to construct a high-level bridge across the Eastern Channel. In the navigation span at the centre of the bridge the vertical clearance for passage under this high-level bridge will be 65 metres above mean sea level. The horizontal clearance will be a total of not less than 750 metres or at least 375 metres for each traffic separation lane for northbound and southbound sailing, respectively. The motorway will cross the Western Channel on the same low-level bridge as the railway tracks.

During the period of construction which has been initiated in autumn 1989 as regards construction of the low-level bridge across the Western Channel and will be terminated at the end of 1995 as far as the high-level bridge across the

To all Heads of Mission
accredited to Denmark

KOB0557

Eastern Channel is concerned, the free and safe passage of ships through the Great Belt will be ensured. Details on the implications of the construction works for navigation in the Great Belt will be given in due course through the appropriate maritime channels of communication.

Thus the construction of the traffic connection across the Great Belt will, in conformity with international law, allow for the maintenance of free passage as in the past for all existing ships navigating this strait between the Kattegat and the Baltic Sea.

Copenhagen, 24 October 1989

MINISTRY OF FOREIGN AFFAIRS

Unofficial Translation
Original: Swedish

Annex 12

N O T E V E R B A L E

With reference to Circular Note No. 55.D.33 of 24 October 1989 from the Danish Ministry of Foreign Affairs concerning the fixed link across the Great Belt, the Embassy of Finland has herewith the honour to submit the Finnish viewpoints on this matter.

By Circular Note dated 24 October 1989 the Danish Ministry of Foreign Affairs informed the Finnish authorities about the Danish plans for the construction of a fixed link across the Great Belt and in particular about the implementation of the link between Sealand and Sprogø, which comprises a railway tunnel and a motorway bridge, the maximum height of which would be 65 metres above sea level.

The Finnish side has in previous communications on civil-servant level drawn the attention of the Danish authorities to the inconvenience which the planned bridge would cause shipping and thus Finland's maritime industry and international trade relations. Pursuant to currently applicable maritime law Denmark must not obstruct the free passage of its straits.

The Bridge will impede transport of traditional industrial products such as large offshore constructions from Finland to the North Sea. E.g. oil drilling rigs require a navigational clearance of up to 200 metres, and the depth of water must be at least 12 metres. Rigs have been navigated through the Great Belt since the beginning of the 1970s. Due to too low depth, the Sound e.g. cannot be used for these kinds of transports.

With reference to previous contacts in this respect and to the great significance which the matter has to Finland's trade, it is a matter of urgency to the Finnish side that the Finnish and Danish authorities concerned, before the plans concerning the bridge are finalized, initiate negotiations to secure a free passage through the Great Belt for international transports of the kind referred to.

Copenhagen, 19 June 1990.

To
The Royal Danish Ministry of Foreign Affairs
Copenhagen

Unofficial Translation
Original: Danish

Annex 13

WMS/JT/mi
VN7.11.1

R.H.55.D.33

N O T E V E R B A L E

Reference is made to Note Verbale dated 19 June 1990 from the Embassy of Finland informing the Danish Ministry of Foreign Affairs that it will not be possible to navigate certain large offshore constructions, such as oil drilling rigs made in Finland, through the Great Belt when the fixed link, including a bridge between Sprogø and Sealand, is completed.

As stated in Circular Note of 24 October 1989 from this Ministry, it is the opinion of the Danish authorities that the construction of the fixed link across the Great Belt, which as before will permit free passage for all existing ships which have used this strait for passage, in all respects fulfils the requirements of international law that nothing must interfere with the free passage of ships.

Consequently, the Ministry of Foreign Affairs is of the opinion that the points raised by the Finnish authorities do not offer grounds for any negotiations concerning the bridge project as suggested in the communication from the Finnish Embassy. But the Danish authorities will of course not reject a Finnish request for consultations between the competent Danish and Finnish authorities on any practical, technical possibilities of solving, in any other way, the problem faced by Finland.

Copenhagen, 11 July 1990.

Embassy of Finland
Copenhagen

Unofficial Translation
Original: Swedish

Annex 14

Embassy of Finland

No. 87/

N O T E V E R B A L E

The Embassy of Finland has herewith the honour to submit Finland's position on the Great Belt construction.

In October 1989 Finland was informed that Denmark's plans concerning the construction of a fixed link across the Great Belt and in particular the link between Sealand and Sprogø would cause great difficulties for Finland's offshore industry since it would obstruct the free passage of offshore constructions through the Danish straits.

On several occasions the Finnish side has drawn the attention of the Danish authorities to the inconvenience which the planned bridge would cause for an important industrial sector in Finland.

The competitiveness of Finland's offshore industry has been based on the concept of quick and efficient construction of oil drilling rigs at Finnish shipyards, and, since the beginning of the 1970s, on free passage for Finnish rigs through the Great Belt. Any change in this concept would cause the Finnish industrial sector to lose its viability.

It has been difficult to find a technical solution. An alternative route through e.g. the Sound proved unsuccessful due to low depth. However, during the most recent technical discussions in Copenhagen on 17 October 1990 the Finnish and Danish experts found a third possibility. It was not improbable that the design of the so-called West Bridge between Funen and Sprogø could be modified and provided with a bascule, which would render free passage possible for the rigs. According to the provisional assessment such a solution could prove expedient, cost-wise as well as with regard to the traffic across the bridge. The strait should also be sufficiently deep.

With reference to previous communications in this respect and in the light of the growing importance assigned to the matter, the Finnish Ministry of Foreign Affairs is anxious to have the third alternative discussed soonest possible.

The Ministry of Foreign Affairs would also like to remind the Danish authorities that the current dispute between Finland and Denmark about the aspects of international law as regards the matter at hand has not yet been solved. For this purpose the Finnish Ministry of Foreign Affairs reserves the right to suggest high-level consultations with the Danish authorities.

Copenhagen, 5 November 1990

Rauma-Repola Offshore OY's Production of Mobile Offshore Drilling Units (Drill Ships, Semi-submersibles and Jack-ups) in the Period 1974-1990.

Yard No.	MODU Type	Name of Rig	Main Designer	Delivery Date	Transit Draught. Source (1) A	B	C	Able to pass through the Sound
RR 1	Semi-Sub	Pentagone 84	Forex Neptune	Oct. 1974	7.3	7.3		Yes
RR 2	Semi-Sub	Penta-gone 85	Forex Neptune	Jan. 1975	7.3	7.3	7.3	Yes
RR 3	Semi-Sub	Dundee Explorer	Aker H-3	Sep. 1975	6.7	6.1	6.7	Yes
RR 4	Semi-Sub	Kingsnorth Explorer	Aker H-3	Mar. 1976	6.7	6.1		Yes
RR 5	Semi-Sub	Ocean Benloyal	Aker H-3	Oct. 1976	6.7	6.1	6.1	Yes
RR 6	Semi-Sub	Petrobras VII	Aker H-3	Apr. 1977	6.7	6.1		Yes
RR 7	Semi-Sub	Pentagone 86	Aker H-3	Mar. 1977	6.7	6.1		Yes
RR 8	Semi-Sub	Mexico III	Aker H-3	Mar. 1978	6.7	6.1	6.5	Yes
RR 9	Semi-Sub	Treasure Finder	Aker H-3	Aug. 1977	6.7	6.1		Yes
RR 10	Semi-Sub	Borgny Dolphin	Aker H-3	Nov. 1977	6.7	6.1	6.7	Yes
RR 12	Semi-Sub	West Delta	Odeco (Ocean Ranger)	Dec. 1980	7.3	8.5	7.3	Maybe
RR 14	Semi-Sub	Casp-morneft	Friede & Goldman (9501)	Jun. 1978		5.8	5.8	Yes
RR 15	Drill Ship	Valentin Shashin	Gusto En-gineering (Pelican)	Dec. 1981		7.3	7.0	Yes

Yard No.	MODU Type	Name of Rig	Main Designer	Delivery Date	Transit Draught. Source (1) A	B	C	Able to pass through the Sound
RR 16	Drill Ship	Viktor Muravlenko	Gusto Engineering (Pelican)	Jun. 1982		7,3	7,0	Yes
RR 17	Drill Ship	Mikhail Mirchink	Gusto Engineering (Pelican)	Sep. 1982		7,3	7,0	Yes
RR 18	Semi-Sub	MSV Stadive	T O Haavie /Rauma-Repola	Nov. 1982		7,9		No (2)
RR 19	Semi-Sub	Glomar Arctic I	Friede & Goldman (L-907)	Dec. 1983		7.0-7.6	7.5	Yes
RR 20	Semi-Sub	Maersk Highlander	Friede & Goldman (L-907)	Jul. 1984		7.0-7.6	7.6	Yes
RR 21	Semi-Sub	Glomar Arctic III	Friede & Goldman (L-907)	Dec. 1984		7,0-7.6	7.5	Yes
RR 22	Jack-Up	Kolskaja	Gusto Engineering (Jack-Up)	Jun. 1985		6.4		Yes
RR 23	Jack-Up	Sahalinskaja	Gusto Engineering (Jack-Up)	Nov. 1985		6.4		Yes

In addition to the above mentioned productions Rauma-Repola Offshore OY has according to information available to Denmark assembled two Jack-Ups for a Soviet entity in November 1988 and September 1990.

Note 1) **Source A: The transit draught quoted by the Offshore Drilling Register, H. Clarkson & Company Limited, 1982.**

Source B: The transit draught quoted by the Guide to Mobile Drilling Units, Oilfield Publications Limited, 1989.

Source C: The transit draught quoted by Lloyd's Register Offshore Units Submersibles and Diving Systems, 1990 - 1991.

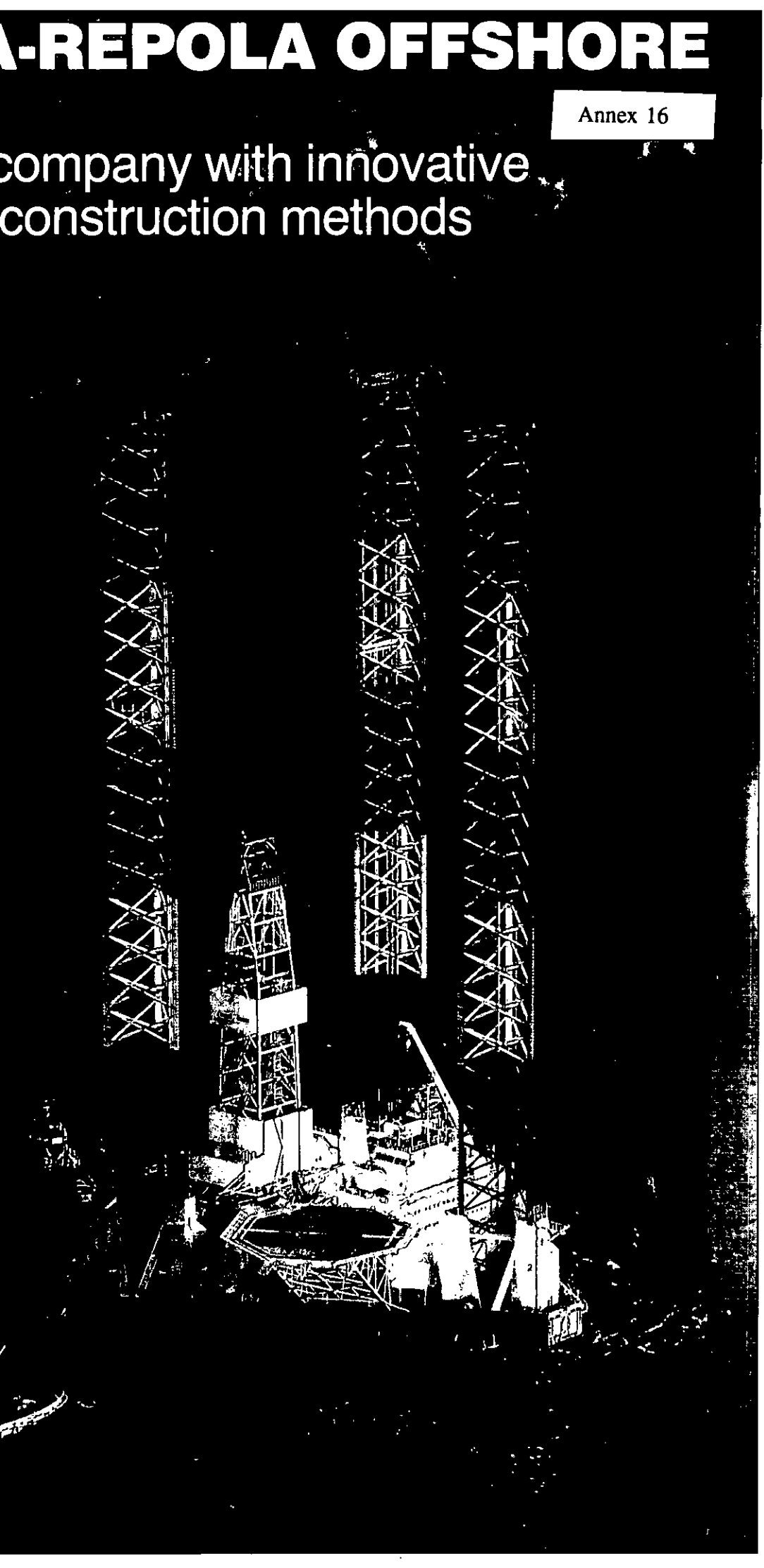
Note 2) This semi-submersible, which is classified as a Multi-purpose Support Vessel (MSV) has no drilling tower (derrick) and is will consequently be able to pass beneath the future bridge across the Eastern Channel of the Great Belt.

Sources: Material published by Raumo-Repola and the reference books mentioned in Note 1).

A-REPOLA OFFSHORE

Annex 16

company with innovative
construction methods

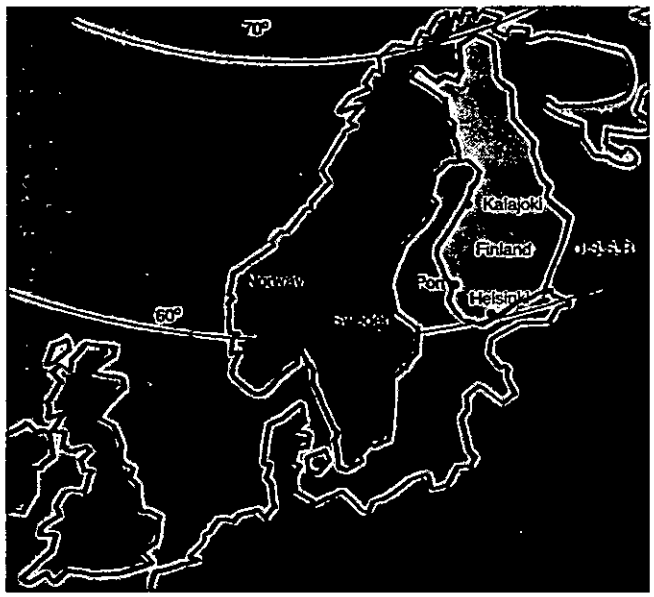


RAUMA-REPOLA OFFSHORE

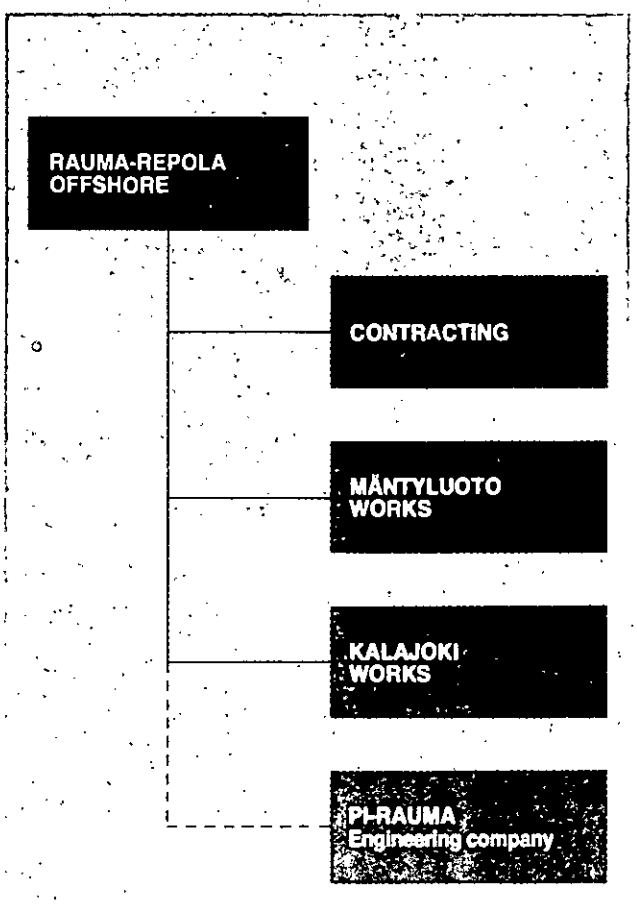
Offshore construction activities started in Rauma-Repola Offshore Industry in 1972, and have been continuing under the new name Rauma-Repola Offshore Oy since 1989. The parent company Rauma Oy is a metal and engineering based subsidiary of Repola Ltd. Rauma's key areas are marine technology, machinery and equipment for pulp, paper, board and forest based industries. Stone crushing equipment are also a vital part of Rauma's activities. There are about 14 000 employees in Rauma Oy. Repola Group, Rauma's parent, is one of the largest industrial enterprises in Finland with about 35 000 employees and extensively internationalized activities. Repola's main business areas are pulp, paper, metal based engineering industry and plastic packings.

Since starting in the offshore business in 1972 Rauma-Repola has built e.g. 14 semi-submersible drilling rigs, three drillships, two multi-purpose service vessels, two jack-ups, legs and jacking units for two jack-up rigs including the final assembly of the rigs, the main mechanical outfitting for a gravity base production structure, a pipe-laying vessel, part of a TLP deck and several ships.

Mäntyluoto Works



Location of facilities



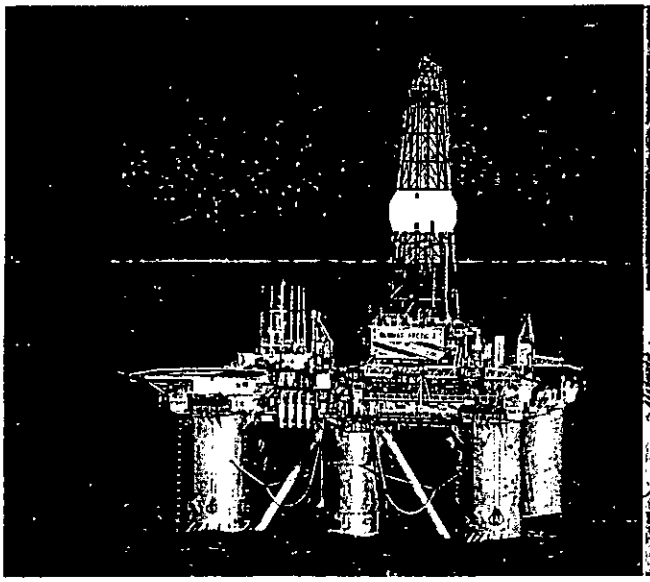
Organization

PRODUCT \ SERVICE	TURNKEY DELIVERY	DESIGN & ENGINEERING	CONSULTANCY	FEASIBILITY EVALUATION
EXPLORATION VESSELS				
LARGE MODULES				
FLOATING PRODUCTION SYSTEMS				
CONVERSIONS				
PIPE-LAYING VESSELS				
SUBSEA MAINTENANCE AND INSTALLATION SYSTEM				

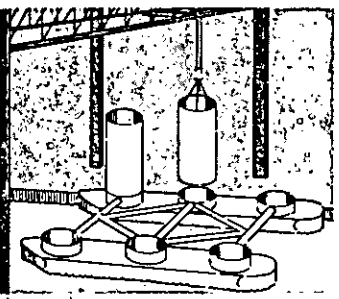
Product Range

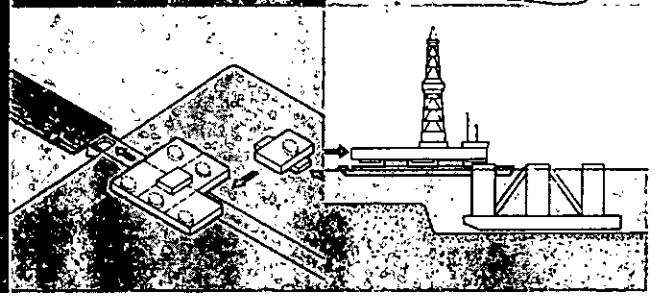
CONSTRUCTION OF EXPLORATION VESSELS

SEMI-SUBMERSIBLES

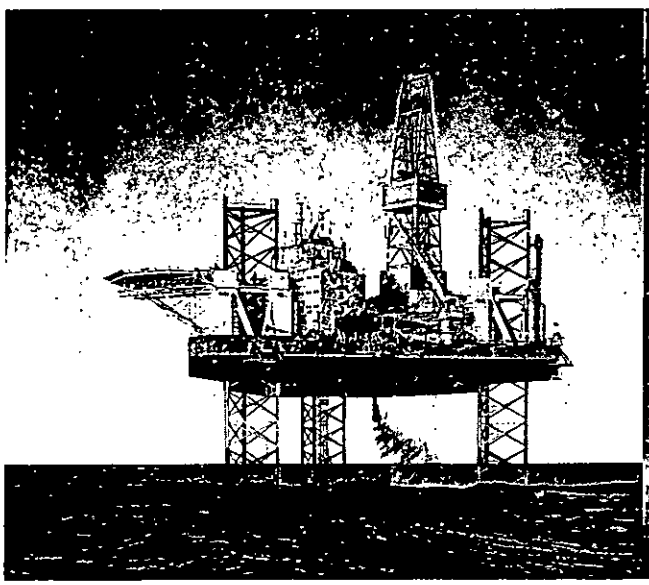


Heavy-duty construction facilities are utilized when constructing semi-submersibles to make shorter delivery times possible: hull structures under the bridge crane, the deck completed onshore, marine mating in the deep-water basin.

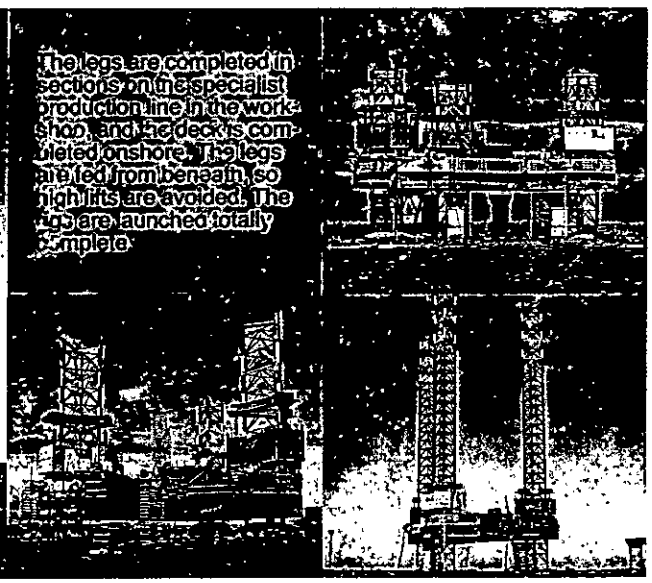




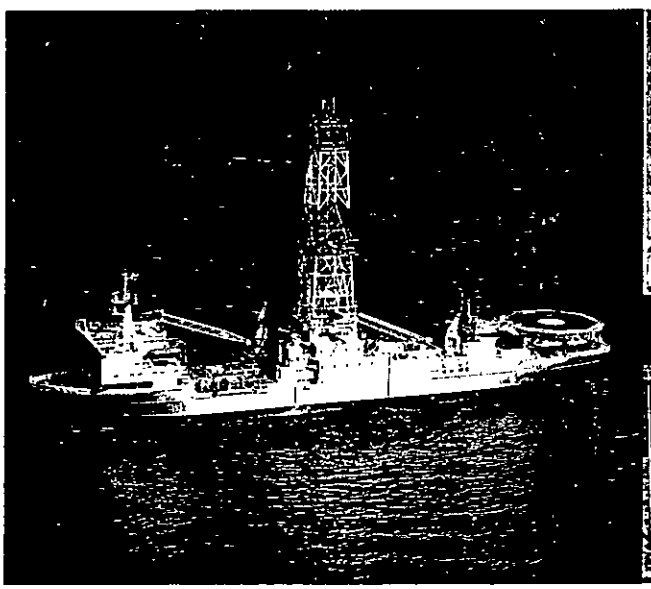
JACK-UPS



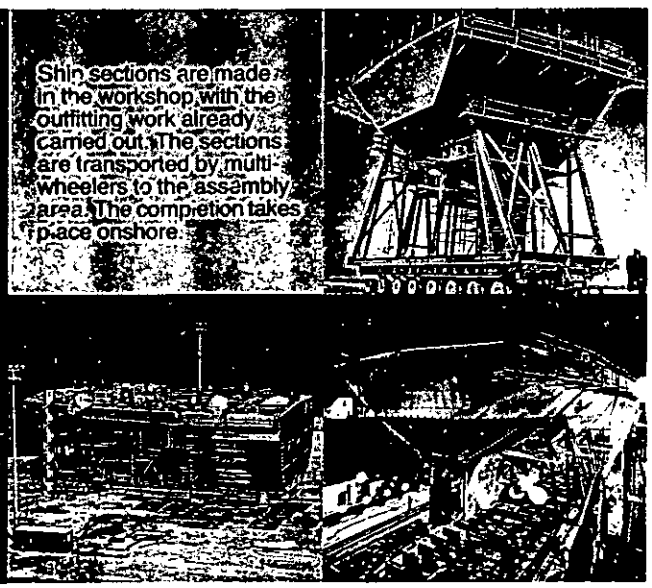
The legs are completed in sections on the specialist production line in the workshop, and the deck is completed onshore. The legs are lifted from beneath, so high lifts are avoided. The rigs are launched totally complete.

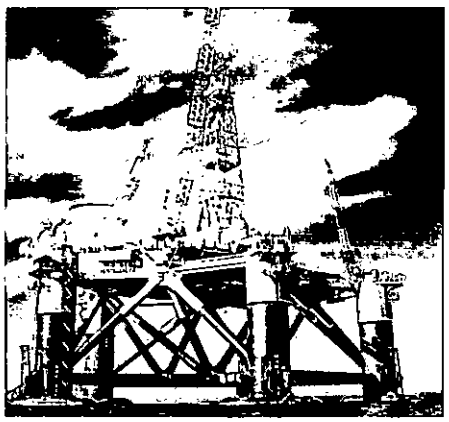


DRILLSHIPS

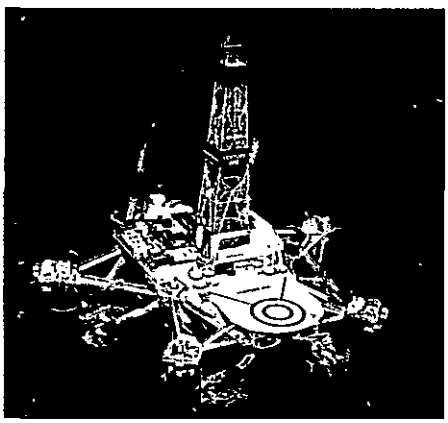


Ship sections are made in the workshop with the outfitting work already carried out. The sections are transported by multi-wheelers to the assembly area. The completion takes place onshore.

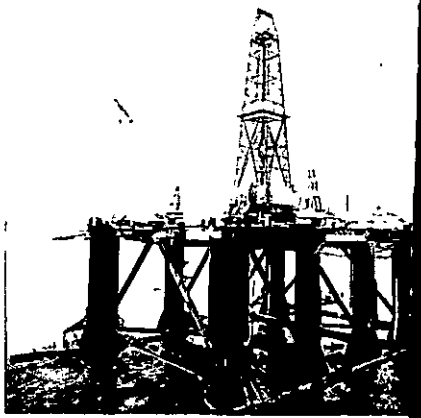




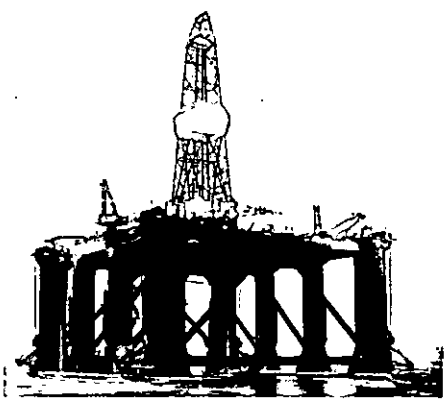
Pentagone 84, Triton Industries, Inc.
(Schlumberger Group), France
October 1974



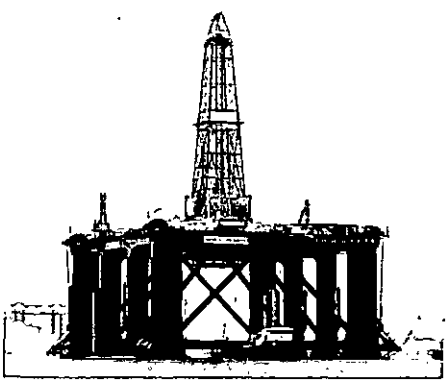
Pentagone 85, Sonat DF-96 (Venture One)
Pel-Lyn Godager Company, USA/Norway
January 1975



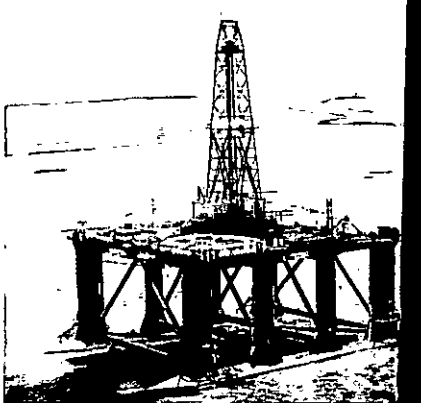
Aker H-3, Dundee Explorer (Dundee Kingsno
Kingsnorth Marine Drilling Ltd., U.K.
September 1975



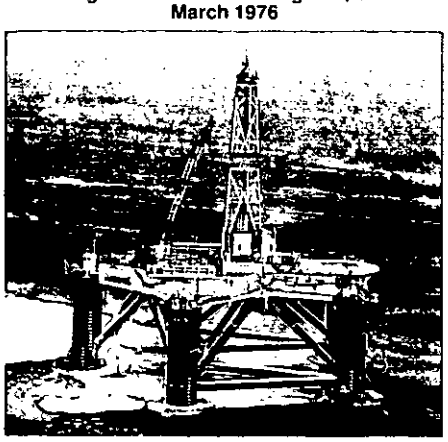
Aker H-3, Kingsnorth Explorer (Kingsnorth U.K.)
Kingsnorth Marine Drilling Ltd., U.K.
March 1976



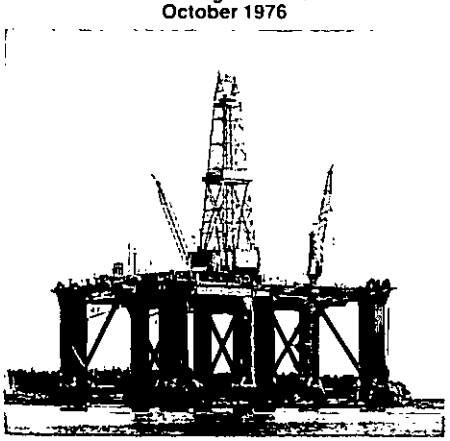
Aker H-3, Ocean Benloyal (Sea Conquest)
Celtic Drilling Co. Ltd., U.K.
October 1976



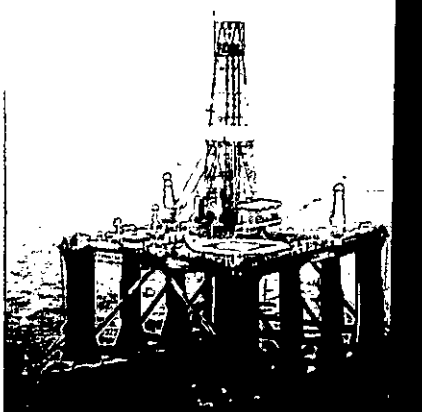
Aker H-3, Petrobras VII (Altantic II)
Atlantic Drilling Company Ltd., U.K.
April 1977



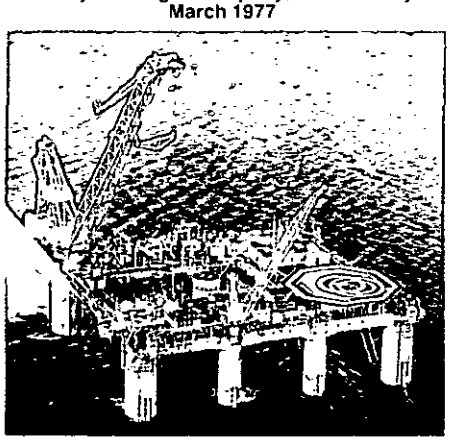
Pentagone 86, Sonat DF-97 (Venture Two)
Pel-Lyn Godager Company, USA/Norway
March 1977



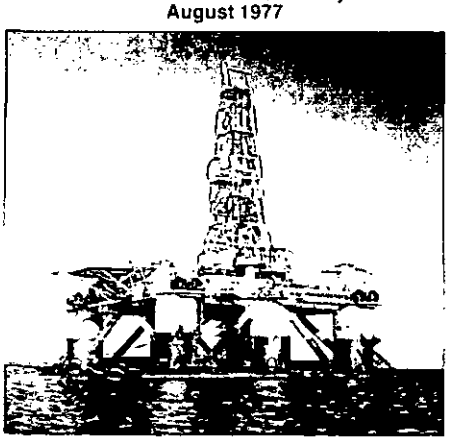
Aker H-3, Treasure Finder
Wilh. Wilhelmsen, Norway
August 1977



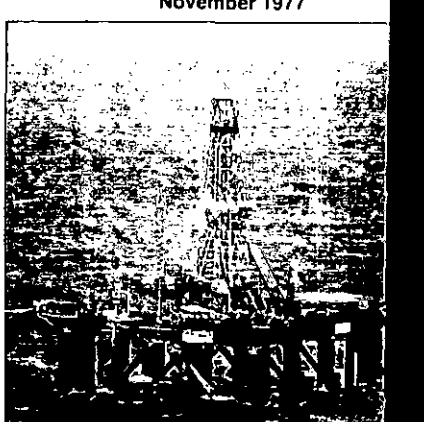
Aker H-3, Borgny Dolphin (Fernsta
K/S Fearnley Offshore A/S, Norway
November 1977



Aker H-3 MSV, Mexico III (Seaway Swan)
K/S Seaway Offshore Work Platform
A/S, Norway, May 1978

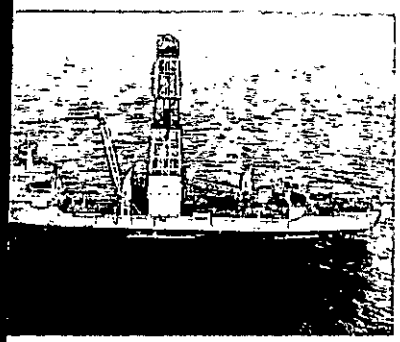


Friede & Goldman, Caspmorneft
V/O Sudoimport, USSR
June 1978

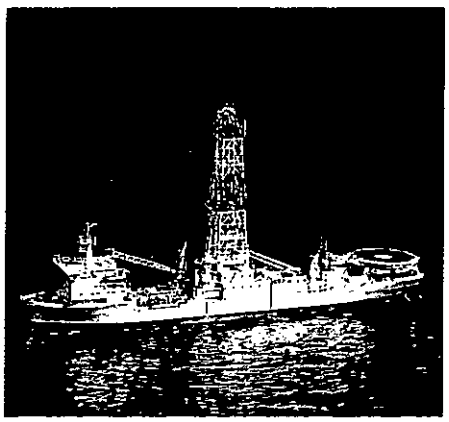


Ocean Ranger, West Delta (Dyvi Del
Dyvi Offshore/Statoil, Norway
December 1980

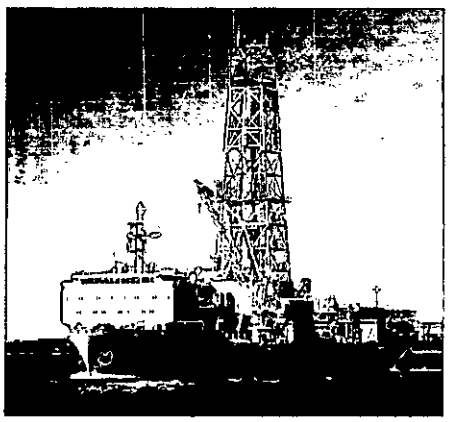
HORE DELIVERIES



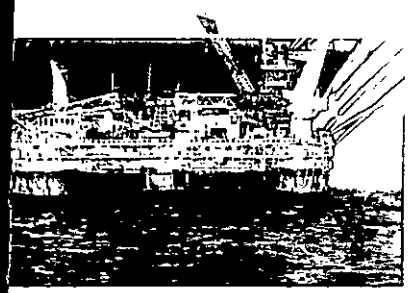
Valentin Shashin
V/O Sudoimport, USSR
December 1981



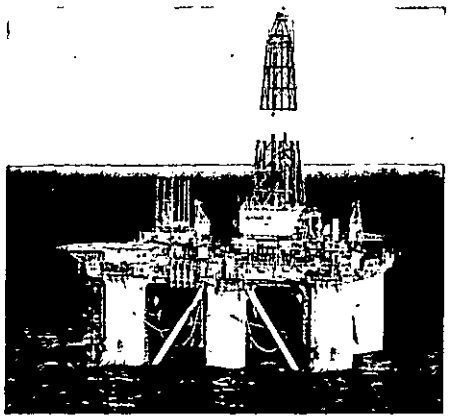
Viktor Muravlenko
V/O Sudoimport, USSR
June 1982



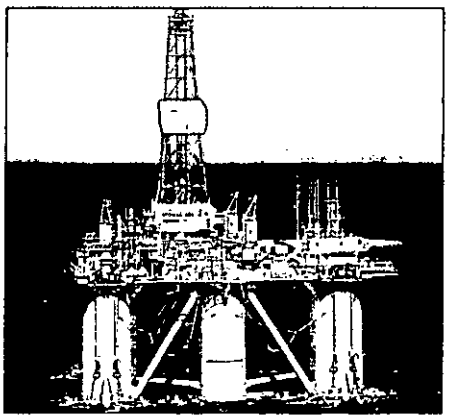
Mikhail Mirchink
V/O Sudoimport, USSR
September 1982



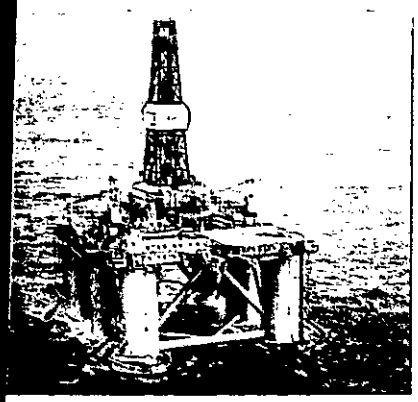
MSV, Stadive
Seaforth Maritime/Shell Expro, U.K.
November 1982



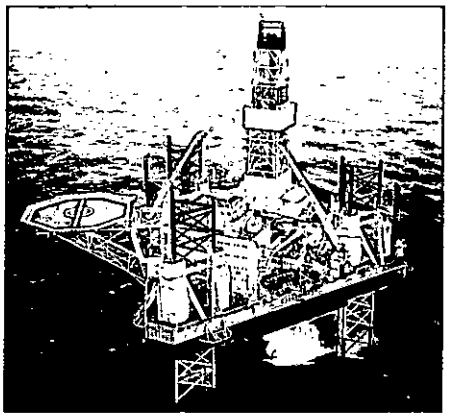
Friede & Goldman L-907, Glomar Arctic I
Global Marine, USA
December 1983



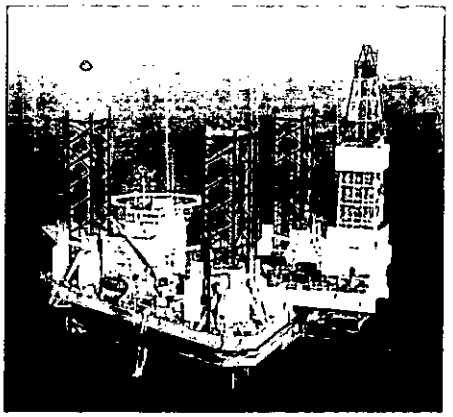
Friede & Goldman L-907, Maersk Highlander
(Glomar Arctic II)
Global Marine, USA, July 1984



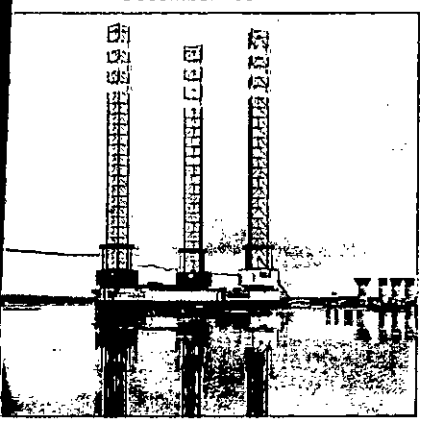
iede & Goldman L-907, Glomar Arctic III
Global Marine, USA
December 1984



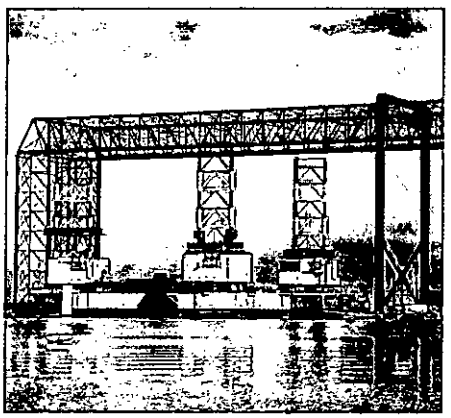
Jack-up, Sahalinskaja
V/O Sudoimport, USSR
November 1985



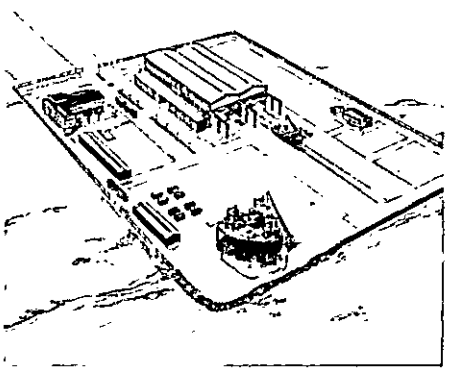
Jack-up, Kolskaja
V/O Sudoimport, USSR
June 1985



Assembly of jack-up
Minsudprom, USSR
November 1988

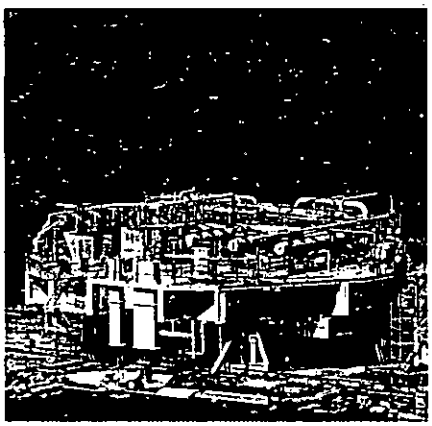


Assembly of jack-up
Minsudprom, USSR
September 1990

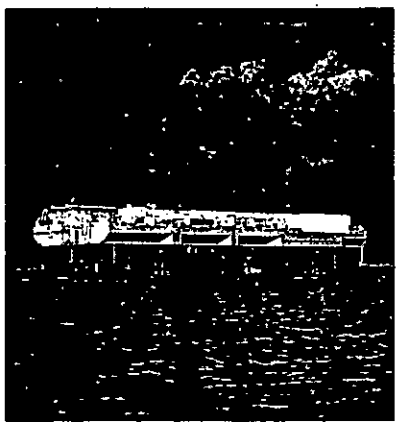


Assembly yard and jack-up
NIOC, Iran
March 1993

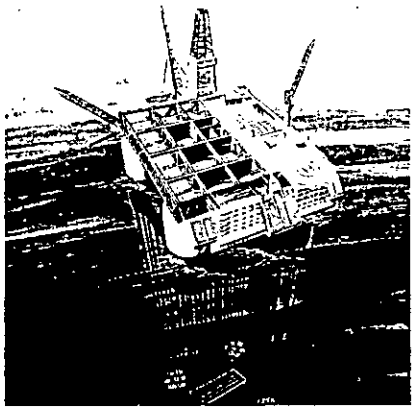
RAUMA-REPOLA OFFSHORE DELIVERIES



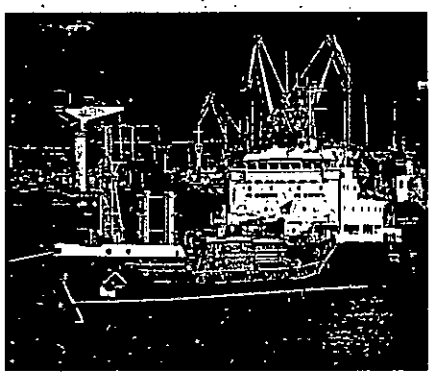
Gullfaks 'C' – MMO,
Aker Contracting/Statoil, Norway,
May 1988



Israfil Guzelnov – Pipe layer,
v/o Sudoimport, USSR,
September 1988



Snorre TLP, M1-deck.
Aker Stora/Saga Petroleum, Norway,
April 1990



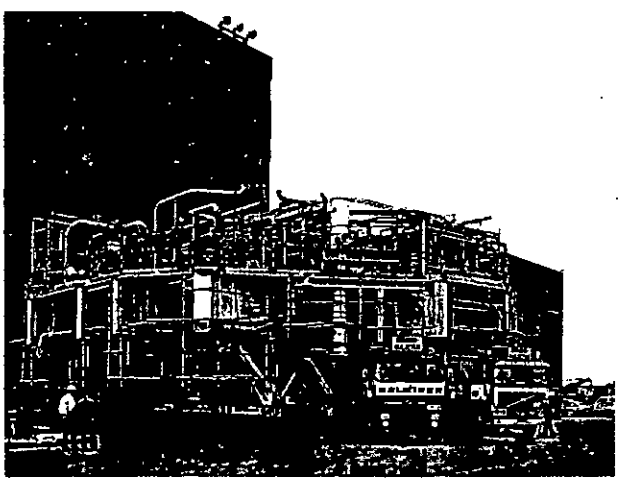
Three Arctic Tankers
v/o Sudoimport, USSR –
1989-90

CONTRACTING

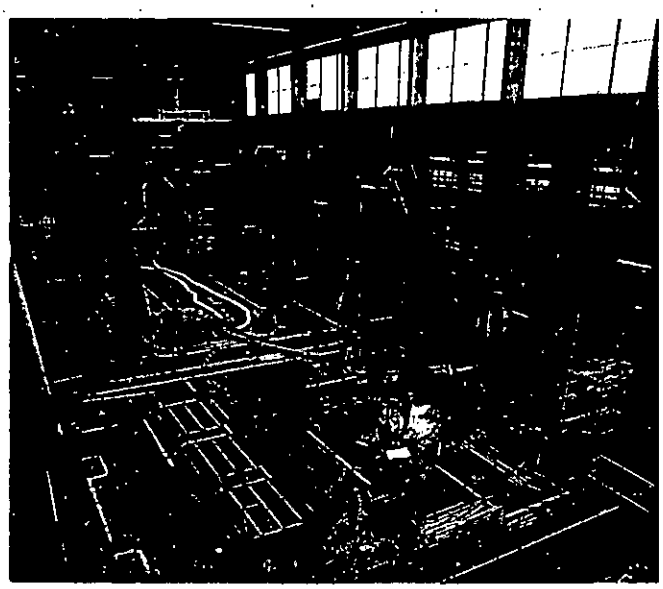
There is a separate Contracting Department in Rauma-Repola Offshore concentrating on large construction projects all around the world. The most advantageous construction sites and sub-contractors are utilized to maximize the cost efficiency.
The erection of a rig construction yard and building of a jack-up for the National Iranian Oil Company (NIOC), contracted in 1989, was a breakthrough in the contracting activities of Rauma-Repola Offshore Oy.

MODULES

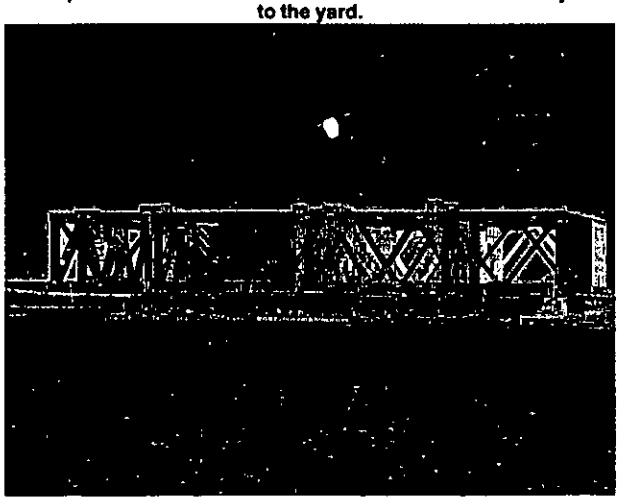
The facilities at the Mäntyluoto Works of Rauma-Repola Offshore Oy are well suited to producing large modules. The high load-carrying capacity of more than 10,000 t and the large main assembly hall make effective construction possible.
Modular construction methods have been used since the erection of Pentagone 84 at the beginning of the 1970's. The Main Mechanical Outfitting of the Gullfaks C GBS-structure was made in deck modules with a total weight of about 5,500 tons in 1988. A major part of the Snorre TLP deck structure was delivered in April 1990. The M1 section weighed 4,800 tons.



Transportation of an outfitted deck from the main assembly hall to the yard.



Snorre M1-deck under construction.



Load-out of Snorre M1 deck module.

DIVERSIFIED CAPABILITIES

10,000 TON LOAD TRANSPORTATION CAPABILITY

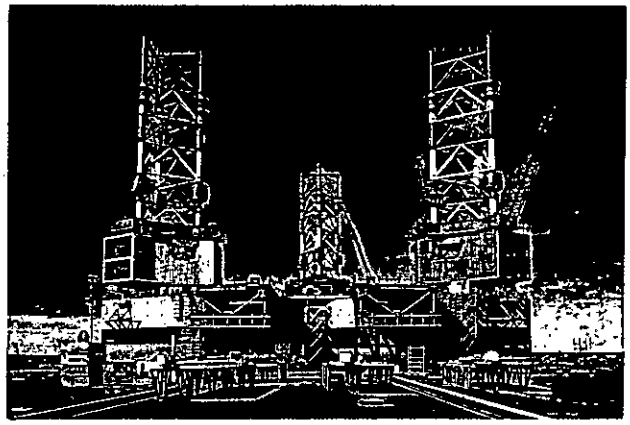
Rauma-Repola Offshore Oy's load transportation system is based on heavy duty assembly rails, a hydraulic jacking system for transfer and a multi-purpose barge.

TURN-KEY DELIVERIES

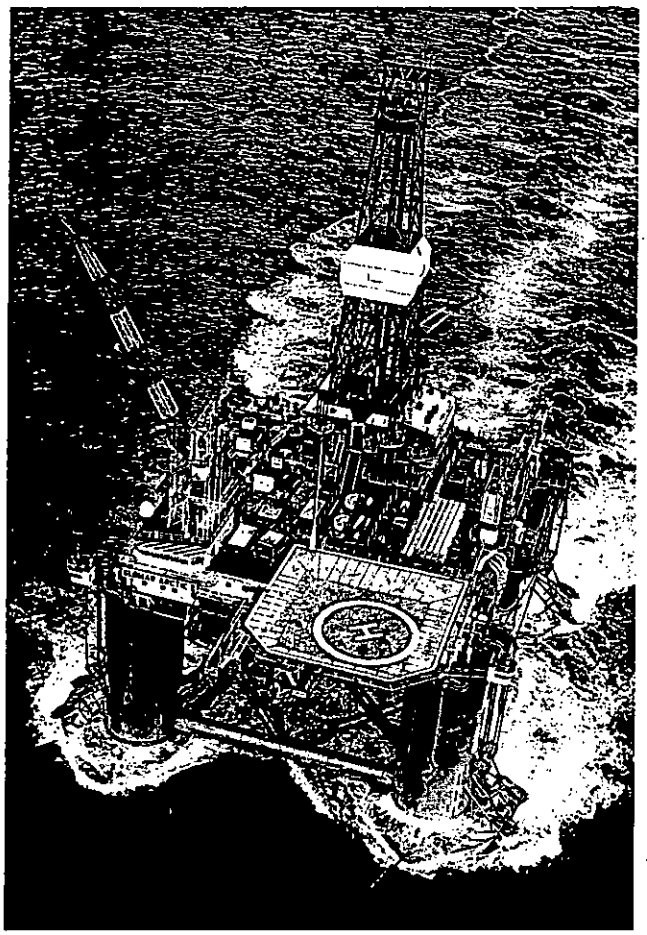
Rauma-Repola Offshore Oy is capable of delivering rigs on a turn-key basis: all structural parts can be made and most of the equipment can be manufactured in-house.

FLOATING PRODUCTION

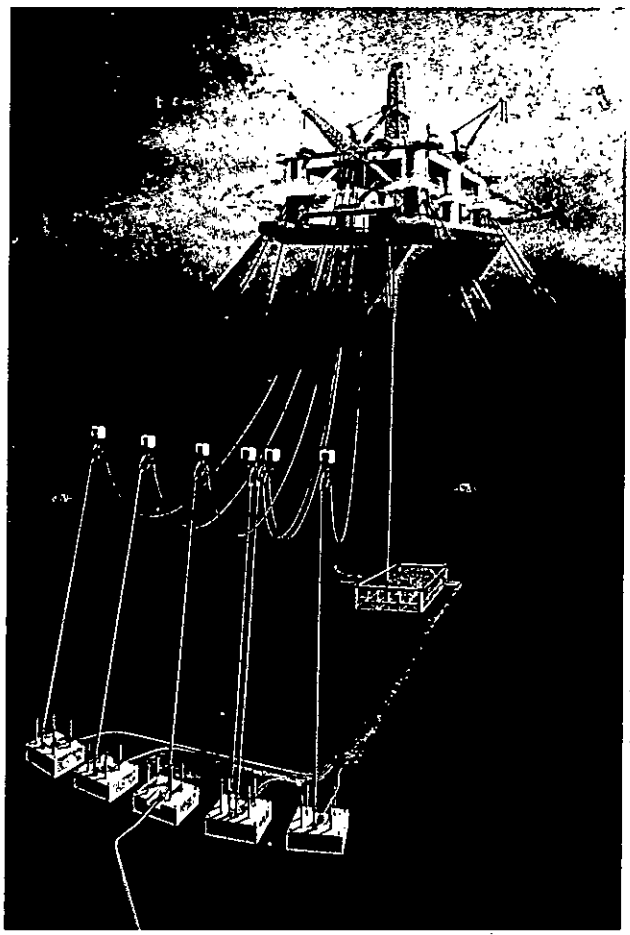
On the basis of continuous development work and having built more semi-submersibles than any other manufacturer in Europe, Rauma-Repola Offshore Oy is ready for rig conversions and deliveries of complete floating production systems.



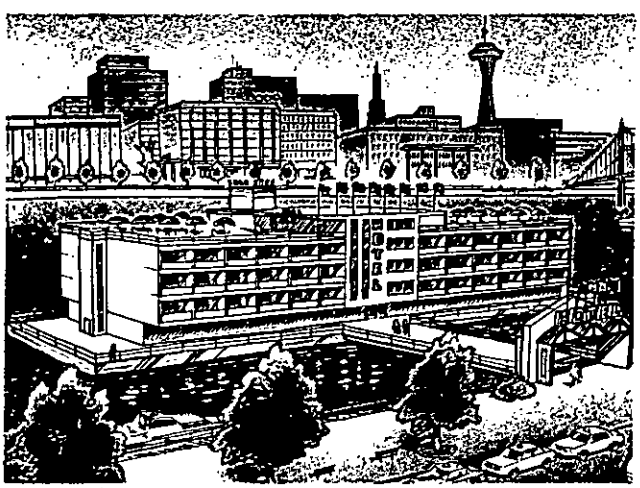
Jack-up on heavy-duty assembly rails.



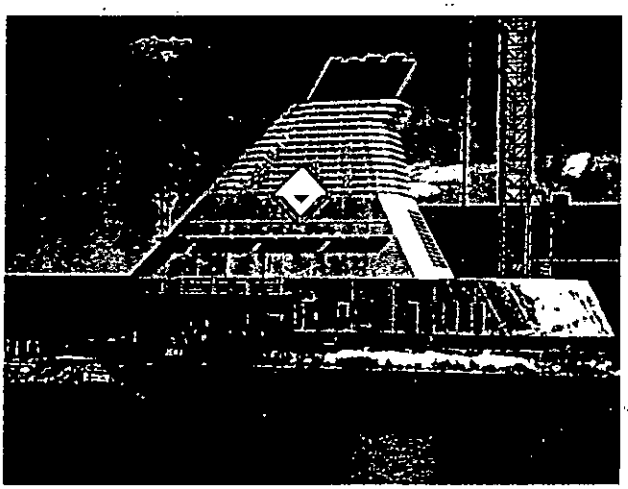
Turn-key Deliveries.



Floating Production Systems.



Floating Hotels.

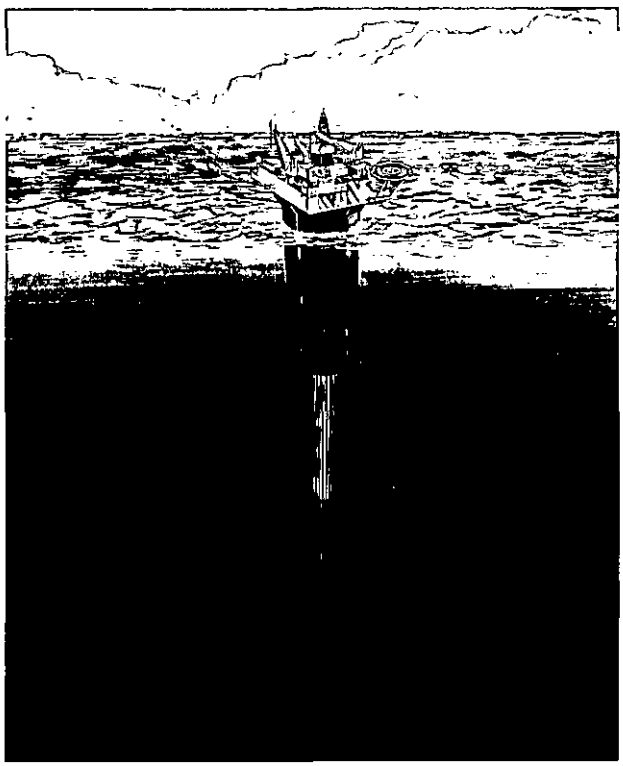


Marine structures from aluminum, Kalajoki Works

FRONTIER TECHNOLOGIES

Deepwater and Arctic Technology are areas where Rauma-Repola Offshore concentrates its research and development work.

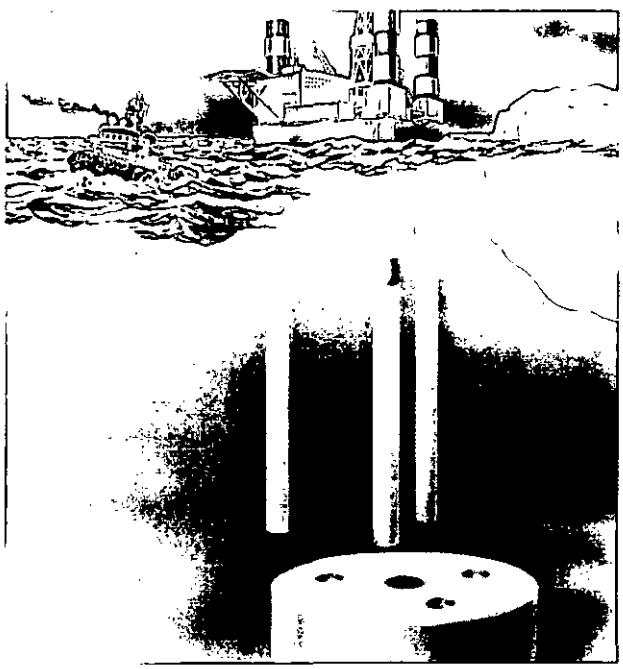
RR-3090 Year Round Arctic Drilling and Production Unit. The Platform is designed for operation in the shallow waters of the Arctic. RR-3190 is a design for exploration drilling in similar conditions.



The SPAR is a deep draft, floating platform designed to support drilling and production equipment and to store oil. It is used to develop offshore fields in water depths greater than one thousand feet.

RAUMA-REPOLA OFFSHORE

- Offshore exploration rigs
- Large modules
- Topsides structures
- Floating production systems
- Conversions
- Pipe-laying vessels
- Subsea maintenance and installation systems



Flexible Economical Mobile Arctic Production System – FEMAPS – combines movability and rigidness of a jack-up to storage capacity thus enabling and economical Arctic Production Concept.

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