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CABINET

DEFENCE AND OVERSEA POLICY COMMITTEE

RESOURCES FOR CIVIL HYDROGRAPHY

Note by the Secretary of State for Trade

At their meeting on 19 March last (OD(80) 8th Meeting) the Committee considered the problem of finding additional resources for civil hydrography. They agreed on a proposal for ensuring the construction and operation of one new Coastal Survey Vessel and suggested possible ways of closing the gap between the apparent requirement for two further vessels and the funds available to meet that requirement.

2 With the agreement of the Ministers concerned the points raised by the Committee were examined by the official Working Group on Civil Hydrographic Requirements. The results of that examination are set out in paragraph 1 of the Working Group's report at Annex.

3 It is clear that the need to reduce public expenditure has made it impossible to achieve the progress which the Committee envisaged last March might be possible. The report goes on to consider the implications of this position. Its conclusions are as follows:-

i Increasing demands on the Hydrographic Fleet and pressure for economies are making it increasingly difficult for the Hydrographer to satisfy the hydrographic requirements of both the Royal Navy and civilian users.

ii The agreement of Ministers to fund the construction of one new Coastal Survey Vessel will allow resurveying of unstable areas of the North Sea to be undertaken without prejudice to high priority naval tasks. But without the commitment of further resources to civil hydrography no new surveys will be possible after 1983.

iii No Department represented in the Group is able to find the resources required to construct one or more additional Coastal Survey Vessels.

iv There is no clear alternative to the construction of additional Coastal Survey Vessels to carry out the civil hydrographic tasks which have been identified. But there are some other possible options which ought to be considered in order to facilitate a choice when the financial constraint is no longer over-riding.

4 My colleagues in MISC 19 and I have considered these unpalatable conclusions. Notwithstanding the risk of criticism if, for example, a tanker disaster could be attributed to the use of an out-of-date chart, we were not able to identify any immediate source of funds to improve the situation. But in the light of point (iv) above officials are exploring further the possibilities of leasing or chartering survey vessels as an eventual alternative to purchase; and the scope for diverting to hydrographic work vessels currently used for scientific research.

5 This report is circulated for the information of OD colleagues.

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26 February 1981

RESOURCES FOR CIVIL HYDROGRAPHY

Report by Officials

1. The present position on the decisions taken by the Defence and Oversea Policy Committee at their meeting on 19 March 1980 is as follows -

a. The Department of Industry should pay for the Shipbuilding Intervention Fund for one new Coastal Survey Vessel (CSV) to be built as soon as possible

A PESC transfer of £9 million at 1980 Survey Prices has been made from the Department of Industry to the Ministry of Defence to cover the cost of building the new vessel. The Ministry of Defence are at present expecting to place a contract for the new CSV in 1981.

b. The question of how to fund the capital cost of 2 further CSVs should be addressed in the next PESC round

Pressure to reduce public expenditure in the current PESC round has made it impossible for any Department to find the resources required to construct one or more additional survey vessels.

c. The Ministry of Defence should provide the crew and meet the running costs of the first new CSV

The Ministry of Defence are planning to meet this commitment when the new CSV is completed.

d. The Ministry of Defence should also provide crews and running costs for the second and third CSVs when built

The situation described under b. means that this decision at present remains hypothetical. However even if agreement could be reached to pay for the capital cost of one or two further vessels, there is no guarantee that shortages of manpower with the requisite skills can be overcome.

e. The Ministry of Defence should meet urgent requirements up to an amount equal to the work of the three ships by paying for private contracts and/or making capacity available from within the existing Hydrographic Fleet

The Ministry of Defence have, with the agreement of the Department of Trade, rearranged part of their survey programme for the years 1981-83 to meet the most urgent of the Department of Trade's priorities. Thus three Inshore Survey Craft (ISC) (with an output roughly equivalent to that of one CSV) will be allocated to repetition surveys of unstable areas; they will be assisted by a CSV which will also progress the Humber approaches task. The equivalent of one Ocean Survey Ship will be deployed to complete new surveys West of the Hebrides and in the Little Minch.

f. The Ministry of Defence were invited to report on the high priority defence surveys on which the Hydrographic Fleet would be engaged until the mid 1990s, and on the availability and suitability of HMY Britannia for hydrographic purposes

Surveys are needed to provide up to date navigational information for the Fleet and also for the following more specialised defence tasks -

i. Bathymetric surveys which establish the depth of water and contours of the seabed. The main purpose of these surveys is to provide information for ballistic missile submarines (SSBNs) and nuclear attack submarines (SSN). Until completion of these surveys SSBNs and SSNs have to transit to and from their bases along the limited choice of narrow lanes which have been surveyed. This increases the risk of detection or mining by enemy forces, the more so as detection techniques improve. Incomplete bathymetric data in operational areas limit the freedom of manoeuvre of submarines thereby inhibiting SSNs in their attack role and the ability of SSBNs to remain undetected in the face of advances in anti-submarine warfare.

ii. Surveys of inshore waters and the Continental Shelf. In order to make the greatest possible use of available space and to avoid the risk of grounding, more detailed surveys are needed of waters near naval bases and in the proximity of ports and anchorages which in time of tension or war would be used for reinforcement, resupply or assembly

points. Some have not been surveyed for many years. Data are also required for the charting of routes to be kept clear in time of war by mine countermeasures vessels for the safe passage of reinforcement and resupply shipping.

iii. Gravity information. This is required by submarines to pin-point their position for navigational purposes; and, in particular, to enable ballistic missiles to be precisely targetted.

iv. Detailed oceanographic information on the acoustic properties of water and the seabed. This is needed to enable the Royal Navy to detect enemy forces more easily and to reduce the risk of our own submarines being detected.

The scale and sophistication of the Soviet submarine, anti-submarine and mine-laying capability are continually growing. In the face of this increasing threat further diversion of hydrographic effort beyond that already agreed by OD would have a serious effect on the operational effectiveness of our submarines and our mine countermeasures ships. The recent decision to purchase Trident with its longer range than Polaris has opened up a much greater choice of deployment areas which will need surveying. It is too early to be precise about the increase in effort required in these areas as the task is shared with the United States and negotiations have not yet begun. But there will inevitably be a reduction in the amount of survey work undertaken which is relevant to civil needs.

HMY Britannia already carries out hydrographic soundings when on passage and checks the adequacy of Admiralty charts in the vicinity of ports visited in the course of her duties. In the judgement of the Hydrographer, however, she is not suited for hydrographic work connected with the preparation of charts because her navigational and surveying equipment is insufficiently sophisticated; nor do her size and manoeuvreability lend themselves to surveys in the shallow waters round the United Kingdom. She would only be available intermittently when not on Royal duties or undergoing the more stringent than normal maintenance and training required to keep her

operational at the high standards required of a Royal Yacht. She could not, therefore, be used for the sustained periods needed for effective surveying of priority areas. Moreover, in comparison with purpose-built ships, she would be very expensive to run in terms of manpower and fuel.

g. The Ministry of Defence were invited to consider whether charges for charts should be increased

The Hydrographic Department is required to cover the costs of compilation, production, correction and distribution in the prices charged for Admiralty Charts. As a secondary objective the Treasury have consistently urged that a surplus be earned in order to contribute towards the costs of the survey fleet engaged in civil work. This secondary aim has proved very difficult to achieve in recent years, initially because of price restraint and more recently because the increases required to chart prices would have been more than the market would bear. Annex B shows trading performance since 1974-75. It will be seen from this that apart from a surplus of £1.11 million in 1976-77 when sales peaked at 3.2 million charts, trading conditions have been difficult and the Hydrographic Department has been hard pressed to break even.

The sale of charts is sensitive to price. There are now several competitors in the field whose products, whilst not as good as the Hydrographer's, are more attractively priced. An even more significant influence on sales is the state of the world shipping market. The figures at Annex B show that sales fell sharply during 1977-78 and 1978-79 and have still not risen above the level achieved in 1974-75 and 1975-76 although it is hoped that they will do so during the current year. In limiting this year's price increase to 23 per cent the Ministry of Defence made a marketing judgment, with which the Treasury agreed, that higher prices would depress demand just as it was beginning to pick up after the low levels of earlier years. There can, therefore, be no guarantee that higher prices will result in additional revenue.

The United Kingdom already recovers a higher proportion of the costs of its hydrographic services than do other countries. Further large increases in chart prices could jeopardise the flow of free information from overseas which provides over three-quarters of the data used to produce the Admiralty chart series.

Nevertheless, for the purpose of illustration, the Ministry of Defence have assessed what further increases would be required to cover the costs of the CSVs. Assuming that sales remain constant, that costs are spread evenly over 10 years and that the capital cost is held down to £9 m. per vessel (at September 1979 prices) chart prices would have to be increased by about 25 per cent (over and above the 23 per cent already applied this year) to cover the running costs of one CSV. To meet the running costs of a second and third CSV, increases of nearly 50 per cent and 75 per cent respectively would be required. If the chart prices had to cover capital cost as well, increases of the order of 40 per cent, 80 per cent and 120 per cent would be required for one, two and three CSVs respectively. After the losses sustained in the past two years and the slow recovery in chart sales since 1978-79, increases of this order would be extremely damaging.

h. The Department of Trade were invited to investigate the possibility of a contribution from European Community sources for the cost of civil surveys

There are only three possible headings of the European Community Budge under which Community finance for the building of hydrographic survey ships might be obtained. These are the Regional Development Fund (RDF); Article 875 (Protection of the Marine Environment); and an Article 235 Regulation, as part of the recent agreement dealing with the United Kingdom contribution to the Community Budget.

i. On the RDF, there are already Community proposals for the 5 per cent non quota section: and there are enough well qualified projects to take up the United Kingdom's 27 per cent quota in full, whereas the proposal to build ships would be most unusual and might prove contentious.

ii. The 1981 Budget proposals, unlike 1980's, do not even contain a token entry for Article 875, and in any case the intention here is to combat oil pollution. Our considered view is therefore that even if such an entry were inserted, a request for assistance under this article would be held not to qualify.

iii. The Commission have made it clear that the proposed Community support under an Article 235 regulation would be devoted mainly to

expenditure on infrastructure and urban renewal. There is no shortage of proposals under these headings. In any case we see substantial difficulty in persuading the Commission or other Member States that they should subsidise or pay for British hydrographic ships under these arrangements.

The Group therefore conclude that use of European Community sources does not offer an alternative to a decision on Government funding: even if the use of the RDF or Article 235 funds could be agreed, their use for expenditures which Departments could not afford within their programmes would run counter to the general policy of using European Community receipts to reduce the PSBR, not to increase public expenditure.

i. The Department of Trade were invited to re-examine the need for as many as three new vessels for civil survey work

The requirements for civil hydrographic surveys are set out in order of priority in Annex A. The highest priority is for continuing surveys of certain unstable areas crossed by important shipping lanes. Arrangements have been made to undertake these surveys pending the construction of the new CSV agreed by Ministers; thereafter the new vessel will be allocated indefinitely to this task. The second priority is for a series of specific new surveys. The three most urgent of these tasks are being undertaken by the present Hydrographic Fleet. This will leave after 1983 over eight ship/years worth of high priority, and nearly twenty ship/years worth of medium-term requirements, which cannot be undertaken unless Ministers decide to devote additional resources to civil hydrographic work. How much additional work can be done, and how fast, depends directly on the number of additional vessels that can be made available. This can be illustrated schematically, as follows:-

New CSV Capacity	Most urgent new surveys	Medium-term requirements
No additional CSV	None undertaken	none met
1 additional CSV (if ordered in 1981)	remaining work completed by end of 1991	work completed by end of 2011
2 additional CSVs (if both ordered in 1981)	remaining work completed by end 1987	work completed by end of 1997

In the view of the Department of Trade, Ministers will continue to be subjected to vigorous public criticism unless further effort, additional to the one CSV already agreed upon, is allocated to new civil hydrographic surveys.

2. Need for further action

By tradition the Royal Navy has carried out hydrographic surveys required for safe navigation of the waters round the United Kingdom's coasts and harbour approaches. The navigational information derived from these surveys has been as useful for civilian as for naval purposes. The Royal Navy continues to have a requirement for accurate navigational charts, but there has been a growing divergence between civil and naval requirements. The Navy now needs to devote an increasing proportion of its diminishing hydrographic resources to the examination of areas of the sea which are of importance for the deployment of submarines. Meanwhile largely because of developments in the oil industry (eg introduction of Very Large Crude Carriers (VLCCs), the towing and installation of oil rigs, and the need for new routes to reduce the risk of pollution round the Shetlands) there is a requirement for accurate and up to date information about waters which have not been surveyed to modern standards.

The size of VLCCs and the frequency of their movements have increased the risk of an accident causing major pollution. There is heightened public concern about damage to the environment which has added to the political pressure to reduce the likelihood of such an accident.

3. This pressure has been most clearly articulated in successive reports of the former Parliamentary Sub-Committee on Trade and Industry and recently the Industry and Trade Committee's Third Report which was the subject of an adjournment debate on 4 December. In brief, the Committee recommended that at least one further vessel (additional to the CSV agreed by Ministers), be procured at the earliest possible date and the Department of Trade said that they would consider this recommendation in the light of public expenditure restraints.

4. Options for further action

The Group have identified the following policy options -

a. Do nothing more

The Government could accept the implications described in para 1i. above, of building only the one CSV already agreed. Current estimates put the cost of the vessel in excess of the £9 m (at 1979 prices) PESC transfer, but the cost will not be known for certain until tenders are received in the autumn of 1981. In the meantime, every effort is being made in design work to keep the cost within the £9m already allocated.

b. Continue to divert effort from naval to civil hydrographic tasks

Ministers agreed that further consideration should be given to the relative importance of the Hydrographic Fleet's defence tasks. The fleet currently comprises 12 vessels: 4 Ocean Survey Ships, 4 CSV and 4 ISC (one of which is due to be paid off in April 1981). At present roughly one-third of the Hydrographic Fleet's effort is allocated to tasks in which the primary interest is civilian. However some of this work, which is carried out incidentally to defence tasks, is not of high civil priority. The decision to introduce Trident will make additional demands on the Hydrographic Fleet and will reduce the amount of overlap significantly. The Ministry of Defence's firm

judgement is that if effort is devoted to civil tasks beyond what has already been agreed (para 1.e above) there will be unacceptable damage to the defence requirement (described in para 1.f. above). The Group were not able to resolve this question of priorities.

c. Build more ships

The cost of building a further one or two additional ships would be slightly less than double or three times respectively the cost of building one, the saving arising from ordering in bulk.

d. Alter functions of some existing research vessels

The Government could seek to reduce the capital costs of obtaining additional survey vessels by converting from their existing uses one or more research vessels. At Annex C is a list of 15 vessels which it might be possible to convert to a surveying role. Complex discussions would be required to establish whether the benefit to the Government of being able to undertake more surveys more quickly outweighed the loss arising from the curtailment of the current activities of the ship(s) in question. A decision in this sense could well attract public controversy. Nor would it be possible without a detailed study involving the owners, costing experts and others concerned to establish with any precision how much it would cost to adapt each ship. However the table indicates a useful order of cost of buying and fitting where necessary survey echo sounders, Hifix receivers and sidescan sonars and winches. As a rough guide to operating costs, figures are shown for what the owner Departments expect to charge (at 1980 prices) per day for work. Without knowing the normal maintenance schedule for each ship it would not be possible to indicate the annual cost; but, as a broad guide, most research ships can be expected to operate for about 300 days per year. In addition there would be the cost of providing the extra surveying personnel at sea and ashore to supervise the work: about £50K per year in each case.

e. Charter

A further option would be to eliminate altogether the need for capital expenditure by the Government, which would instead hire the services of commercial organisations. The cost of chartering a commercial survey vessel would vary according to the area to be surveyed. No recent

figures are available but a study earlier this year indicated that a charter equivalent to the work of the Ocean Survey Ship outside the Hebrides would cost about £2 million a year at early 1980 prices. As a rough approximation, the Hydrographer estimates that the cost of work in the exposed Pentland Firth and off the Shetlands would be of the order of £2.5 million a year at 1980 prices. The Group consider that further examination is required to determine whether commercial survey capacity is in fact available; and also how best the necessary continuity in methods and standards can be ensured.

f. Leasing

Finally, the Group considered in a preliminary way the possibility of a leasing arrangement under which the Government would in effect be buying, but spreading the capital cost over the useful life of, a vessel or vessels. In contrast to the charter option the Government would be responsible for manning the vessel and would incur costs for any periods when it was not usefully employed. The Royal Navy has acquired the use of a Royal Fleet Auxiliary by this means. However more time is required to explore this option thoroughly and to cost it.

5. At present, no Department has made provision in its programme for meeting the costs of any of the options described in paragraph 4 above; nor is any Department ready to make offsetting savings in other programmes to accommodate increased expenditure on civil hydrography. The Treasury have similarly made clear their view that the unallocated margin should not be used for this purpose.

6. Conclusions

The Group conclude that -

i. Increasing demands on the hydrographic fleet and pressure for economies have made it increasingly difficult for the Hydrographer to satisfy the hydrographic requirements of both the Royal Navy and civilian users.

ii. The agreement of Ministers to fund the construction of one new Coastal Survey Vessel will allow resurveying of unstable areas of the North Sea to be undertaken without prejudice to high priority naval tasks. But without the commitment of further resources to civil hydrography no new surveys will be possible after 1983.

iii. No Department represented on the Group is able to find the resources required to construct one or more additional vessels.

iv. In the absence of agreement on how the costs might be met, the Group were unable to recommend any of the alternative means of increasing the effort devoted to civil hydrography. However the Group consider that it would be useful to consider further options d., e. and f. in order to facilitate a choice when the financial constraint is no longer overriding.

Cabinet Office
15 January 1981

ANNEX A

REQUIREMENT OF SHIPPING INDUSTRY FOR HYDROGRAPHIC SURVEYS

Assessment by Department of Trade

A High Priority Requirements for Repetition Surveys of Unstable Areas

Five ship (ISC) years per year (of which 2 ship (ISC) years per year are included within defence priority requirements) for surveys of unstable areas, amounting to about 2,500 sq miles, of the Southern North Sea, Dover Strait and off the south and west coasts of England and Wales.

B High Priority Home Waters Requirements

Priority	Locality	Task Outstanding November 1980	Outstanding Task Quantified
*1	West of Hebrides	(a) 550 sq miles	0.63 ship years
		(b) 400 sq miles	0.45 ship years
*2	Little Minch & Approaches	750 sq miles	1.80 ship years
3	Approaches to the Humber	840 sq miles	2.00 ship years
4	Pentland Firth & West Approaches	2,600 sq miles	4.90 ship years
5	West of Shetlands	250 sq miles	0.28 ship years
6	Shetlands	(a) 250 sq miles	0.28 ship years
		(b) 150 sq miles	0.10 ship years
7	Irish Sea	450 sq miles	0.50 ship years
	TOTAL	6,240 sq miles	10.94 ship years

C Medium Term Home Waters Requirements

order of priority to be reviewed nearer the time	Bristol Channel	1,000 sq miles	2.10 ship years
	Firth of Forth	2,435 sq miles	4.80 ship years
	Humber and Tees Approaches	3,000 sq miles	5.70 ship years
	Liverpool Bay	1,395 sq miles	2.80 ship years
	Moray Firth	1,660 sq miles	3.30 ship years
	Scilly Isles/Lands End	500 sq miles	1.00 ship years
	TOTAL	9,990 sq miles	19.70 ship years

* Surveys planned for completion by the end of 1983 using existing surveying fleet resources.

ANNEX B

CHART SALES BY THE HYDROGRAPHIC DEPARTMENT - RECENT TRADING PERFORMANCE

		1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	Estimate 1980/81	Provisional forecast of out-turn 1980/81
Price Increase		25%	40%	17%	18%		12½%	23%	
Date		Nov 74	July 75	May 76	Nov 77		March 79	May 80	
* Price £	(a) Basic	1.30	1.80	2.10	2.50		2.80	3.45	
	(b) Decca	1.75	2.50	3.00	3.50		3.95	4.85	
Sales achieved (million charts)		2.83	2.87	3.24	3.08	2.56	2.75	2.95	2.85
Revenue earned	£M	2.12	3.21	4.65	4.71	4.40	5.20	6.85	6.47
Costs	£M	2.29	3.03	3.54	4.03	4.49	5.31	6.60	6.60
Surplus/Deficit	£M	-0.18	+0.19	+1.11	+0.68	-0.09	-0.10	+0.25	-0.13

* Retail price, which includes agents' commission.

CONFIDENTIAL 13

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RESEARCH VESSELS CAPABLE OF CONVERSION FOR HYDROGRAPHIC SURVEY WORK

ANNEX C

Ship	Owners	Length (feet)	Tonnage grt	Complement Crew (including Officers) and Scientists	Cost of Extra Instrumentation £K	Rough Cost of Charter Per Day £	Remarks including areas in which operations would be possible
DISCOVERY	NERC	261	2665	41 + 20	17	6,600	Anywhere.
SHACKLETON	NERC	200	1102	32 + 14	17	4,900	Anywhere on shelf with reasonable shelter.
CHALLENGER	NERC	180	988	25 + 11	17	4,300	Anywhere on shelf with reasonable shelter.
JOHN MURRAY	NERC	133	441	19 + 7	17	2,600	Sheltered coastal and inshore waters.
BRANSFIELD	NERC/BAS	325	4815	38 + 60	49	6,400	Anywhere except close inshore.
JOHN BISCOE	NERC/BAS	220	1584	32 + 28	74	5,800	Anywhere.
SCOTIA	DAFS	224	1521	39 + 12	74	4,000 (plus depreciation	Anywhere.
EXPLORER	DAFS	203	831	33 + 5	74	-	In need of exponsive modernisation Due for survey March 1981.
CLUPEA	DAFS	106	215	11 + 5	74	c.1000(1)	Sheltered coastal and inshore waters.
CIROLANA	MAFF	237	1732	30 + 11	49	c.3100(2)	Anywhere.
CLIONE	MAFF	154	495	24 + 6	42	c.2100(2)	Being taken out of Service.

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Ship	Owners	Length (feet)	Tonnage grt	Complement Crew (including Officers) and Scientists	Cost of Extra Instrumentation £K	Rough Cost of Charter Per Day £K	Remarks including areas in which operations would be possible
CORELLA	MAFF	133	459	18 + 5	74	c.1800(2)	Sheltered coastal and inshore waters.
PRINCE MADOG	DES/UCNW	94	182	10 + 6	49	1000(plus depreciation)	Sheltered coastal and inshore waters.
OCEAN CREST	DES/U of Swansea	100	131	NK	17	250	Inshore waters.
KAY BB	DES/U Wales	48	22	6	17	c.100(1)	Inshore waters.

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(1) Guesses based on figures given by OGD for other vessels.

(2) Includes element for depreciation but no allowance for inflation of original value (based on 240-260 days p.a. operating).