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DEFENCE AND OVERSEA POLICY COMMITTEE

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THE HEAVYWEIGHT TORPEDO

Note by the Secretary of State for Defence

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1. I need the guidance of my colleagues on a (politically) highly-charged and very important procurement decision. This is the choice of heavyweight torpedo for the Royal Navy. The issues are set out at Annex.
2. I am not asking for a decision at this stage, because from the MOD's point of view the only correct course (as matters now stand) is to buy American, not least because we have financial provision for it in our costings. Yet I am conscious that if we were to buy American we might be faced by a major row which, quite frankly, I think we would have extreme difficulty in resisting in Parliament. Indeed, whilst I always believed that I could get the wider Defence Review proposals through the Party, I have been consistently much more wary of this one.
3. There are a host of ways of working out the sums, but in the end a high degree of uncertainty about the competing bids remains. The arithmetic can be made to prove almost anything. We can argue for ever about whether the (acknowledged) financial devices for supporting the British version are sound, or not. But the simple fact is clear. There

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is no way in which the Defence Budget (which is seriously over-extended in the next few years) can stand the extra £100 million to buy British - even if we can push forward the near term cash flow problems into later years; yet I can hardly recommend colleagues to buy American at this political/economic juncture. But I regret that we cannot any longer put off a decision beyond end October. We have a huge national investment in submarines and there is no point in deploying them at all into the next century, unless their weapon systems are capable of killing the enemy (with Soviet escalating technological capabilities, particularly submarine speed and depth).

4. Thus, I would be grateful for a preliminary discussion on this subject prior to my putting forward a firm recommendation after the Party Conference. I have kept the attached report reasonably simple but I would be happy to submit a much more detailed note for the decision-making meeting, if so required. In the last resort, however, we have to take a political decision. Can we buy American at this time - or have we no choice but to dip into the contingency reserve? The only solution which is not available is that I should somehow fund a British buy out of my present budget; I cannot do so without quite unacceptable consequences for our defence capability.

Ministry of Defence

4th September 1981

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THE NEW HEAVYWEIGHT TORPEDOIntroduction

1. The Royal Navy's present heavyweight torpedo, Tigerfish, introduced in 1974, is inadequate against the new types of Soviet submarine coming into service, in terms of speed, depth, homing capability and lethality. A new heavyweight torpedo is urgently required. Details of the operational requirement are at Appendix 1.
2. There are two possible contenders - the existing American Mark 48 torpedo produced by the Gould Corporation with a new ADCAP (Advanced Capability) homing and guidance system still being developed by Hughes, and a British torpedo being developed under MOD contract by Marconi Space and Defence Systems Limited (MSDS).
3. The MSDS torpedo has a slight edge in terms of quietness, sprint speed and types of warhead, but has yet to be fully proved. The American torpedo has better endurance and uses a tried and tested vehicle which has been in service in the American Navy for some years. Overall the assessment is that either torpedo should satisfactorily meet the Royal Navy's current requirements.

Advantages of US option

4. The issue therefore turns upon financial and industrial considerations. The Mark 48 ADCAP would be purchased on a Government-to-Government basis and our procurement would effectively be integrated with that of the United States Navy. Logistic support would be guaranteed as part of a wide-ranging support package covering modifications, post design services and the provision of maintenance information and assistance. By having our requirements incorporated into a larger USN contract we get equally favourable terms with the

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US Navy and US Government procurement is normally based on fixed or tight incentive contracts. We do not have to bear the costs and risks of the development programme; indeed the United States is prepared to waive any R&D levies which might otherwise have amounted to some £50M. The US manufacturers (Gould) have offered to provide offset for British industry equivalent to 35% of the dollar content of the total purchase - and have promised to establish a new factory in the UK, employing 200 people to manufacture torpedo components.

#### Drawbacks of US option

5. But if we bought the Mark 48 ADCAP we would have no control over the development programme or the fixing of prices for production. It should be noted that the Hughes ADCAP development programme has not been completed. Another risk is that because the Mark 48 itself is now some ten years old, the Americans could decide at some stage in the future to move to a completely new heavyweight torpedo. If they did that, we could be faced then with the alternative of either re-equipping with the new torpedo after Mark 48 ADCAP had given us only a few years service or accepting the cost burden which would arise from continuing to operate the Mark 48 ADCAP by ourselves. We know that the Americans are considering this question and are reported to have funded some initial research work. On balance, however, we expect that the Mark 48 will remain in US service until late in this century at the earliest.

#### The MSDS torpedo

6. The MSDS torpedo would probably have a longer life and would have greater stretch potential. But it suffers from two major financial disadvantages - it is more expensive on a total programme

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basis and it involves severe cash flow problems for the MOD over the next few years. Both difficulties arise from our having in this case to fund the costs of development.

7. There have been very intensive negotiations with MSDS over the last few weeks to try to reduce the programme cost. The present MSDS proposals, which are still subject to detailed validation, are based upon a comprehensive fixed price package covering development, initial production and post development services for both Stingray and the heavyweight. They contain undertakings on reliability and maintainability for the heavyweight with cash penalties if they are not met. A firm comparison between the MSDS and Gould figures is not straightforward. The US figures are US Navy planning figures confirmed within the last three weeks. They contain a 15% contingency and although ADCAP development is not complete, we believe on past experience that this provides an adequate margin against changes in the figures once the US Government gets down to detailed contractual negotiation with the manufacturer. The latest MSDS proposals by contrast contain a large fixed price element including development and manufacture of 100 torpedoes; the estimate for the production of the remaining 570 torpedoes and long term support is much less firm and depends upon negotiations at the appropriate time.

#### Cost comparison

8. On the basis of a 20 year costing, a direct comparison of costs shows that, if their latest offer is validated, the MSDS torpedo package would be about £120M more expensive. However, if the MSDS heavyweight programme is cancelled, MSDS overheads would increase and put up the cost of the Stingray programme by £20M. The extra cost to the Defence Budget of buying the MSDS torpedo is, therefore,

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put at about £100M (see Appendix 2). It can be argued that abandonment of the MSDS heavyweight torpedo would seriously affect Stingray sales prospects (see Appendix 3) and that we could thus lose sales levies of up to £50M (on the basis of the present MSDS offer) in the longer term: this is, however, speculative. If VAT is disregarded because it is an internal Government transaction the difference would be reduced by a further £15M, but this does not help my problem.

#### Cash flow implications

9. The second major financial disadvantage of the MSDS option is the additional cash it requires in the earlier years. To meet the serious cash flow problems in the earlier years, MSDS has offered to limit its cash demands. This involves:

- a. putting some MSDS money (which they claim to be of the order of £57-72M) in return for our foregoing a proportion of levies on sales of Stingray, and heavyweight torpedoes.
- b. our paying the total sum due in each financial year in five equal monthly instalments starting in April of that year. This in itself raises public accounting issues, although in the circumstances it could be considered an acceptable arrangement - recognising that it must not be allowed to establish a precedent.

The validity of the MSDS offer has still to be established. But, even if it is acceptable, we would still face difficult cash flow problems because a good deal of the work would be done by firms other than MSDS. The British option therefore not only involves higher

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overall costs but also requires a minimum of £55M more than the US / over the early years (1982/83 to 1986/87); (see Appendix 4).

Industrial and employment implications

10. Through the Stingray project, we will have spent over £1 billion of public money to create an advanced UK torpedo industry. Whether this was the correct decision is not any longer a useful topic of debate. But failure to go ahead with a heavyweight torpedo would have an adverse effect upon Stingray sales prospects. It would also involve over 2,000 redundancies and lost job opportunities at MSDS at Portsmouth and Neston, near Liverpool, and at MRSL in Leicester and elsewhere (see Appendix 3); sub-contractors are located in many Conservative constituencies including Chatham. Whether a torpedo industry without the heavyweight work would be viable in the long term is a matter of judgement - MSDS believes not. In particular, it believes it could not hold its important technical team if we bought the American torpedo. MOD Ministers and officials have failed in their attempts to secure any commitment by the USA to purchase Stingray or collaborate on joint development of Stingray successors as a quid pro quo for a UK purchase of Mark 48 ADCAP. Although efforts continue, there is no chance of tangible results until long after the decision on the heavyweight torpedo which must now be made.

11. It is also fair to put the figure of 2,000 jobs in perspective. Many of those concerned are highly skilled and would readily find employment elsewhere without significant loss of earnings - though probably not in the UK torpedo industry. There would be no serious threat to the survival of MSDS. Moreover, if the extra cost of the MSDS torpedo had to be met without relief from the Defence Budget, it would be necessary to cut other programmes with consequent effect

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on employment elsewhere. This effect is not readily quantifiable but would be real. And there are obvious political problems about another mini Defence Review at this stage. To this should be added the loss of the not insignificant offset work offered by Gould.

### Conclusion

12. The need for a new heavyweight torpedo is not in doubt and both contenders would meet the operational requirement. Despite all endeavours, on present estimates the UK torpedo remains significantly more expensive and also involves cash flow problems. The Exchequer would need to find an additional £100M (at September 1980 prices) with much of the extra funding falling in the next few years, as follows:

<u>1982/83</u>	<u>1983/84</u>	<u>1984/85</u>	<u>1985/86</u>	<u>1986/87</u>
£9.7M	£14.8M	£20.2M	£5.0M	£5.4M

13. On the other hand, purchase of the American torpedo would have a severe impact on the torpedo industry which we have spent a great deal of money to build up.

### Treasury View

14. The Treasury view is that the threat of increases to the existing planned public expenditure totals for all these years is so great that reductions in other programmes will be necessary to offset this; and they argue that there is no scope for further additions to the defence programme, for which a very substantial rate of real growth has already been agreed.

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APPENDIX 1

NEED FOR A NEW HEAVYWEIGHT TORPEDO

1. The Royal Navy requires both lightweight and heavyweight torpedoes. The lightweight is primarily an anti-submarine weapon to be dropped from aircraft and helicopters or to be launched from surface ships either directly or in rocket systems such as IKARA, in close proximity to the target; for that reason it needs only relatively short endurance. STINGRAY will meet that need. It is not designed to, and cannot, be fired from submarines.

2. The heavyweight torpedo is both anti-ship and anti-submarine and is carried and launched only from submarines where the dominant problem is to catch an escaping submarine and not be diverted by countermeasures. Because of the relentless improvement in the performance of Soviet submarines, the present RN torpedo, TIGERFISH, although introduced into service only in 1974, is inadequate in terms of speed and depth. It has a depth limit of some 400 metres and a speed of 30-35 knots; Soviet submarines already in service can reach 700 metres and 40 knots. Future classes are expected to dive to 800 metres or more. By increasing the distance between the outer and pressure hulls and using special materials, the Soviets are greatly increasing the damage resistance. Against this, TIGERFISH has inadequate lethality and poor homing performance against countermeasures and anechoic coatings.

3. To meet these targets, the RN needs a heavyweight torpedo with, primarily, increased lethality, better homing performance against countermeasures, ability to operate down to 1000 metres and to attack targets moving at 40 knots. It is required to be in service in 1986 to meet the Third Generation Soviet submarines (OSCAR, TYPHOON and SSN-X-1) which are expected to be in service in significant numbers by then, and should be capable of stretch to attack the predicted Fourth Generation of Soviet submarines.

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APPENDIX 2

SUMMARY OF PROGRAMME COSTS

£m

	<u>US Mk 48 ADCAP</u>		<u>UK Option based on MSDS package</u>
1. Development, Production and Support of Heavy- weight Torpedo	476**	}	1637*
2. STING RAY	1044		
3. Increase in STING RAY costs due to higher MSDS overheads (estimated)	20		
Sub-totals	1540		1637
Difference		97	
4. Sunk Costs	32		32
5. Submarine modifications	8		10
6. Intra-mural costs	13		13
7. MOD(PE) Capital Costs	17		17
Total Programme Costs (Heavyweight and STING RAY)	1610		1709

NOTES

\*MSDS emphasise that these costs apply only if MOD accepts basis of their latest package offer for both STING RAY and Heavyweight

\*\*at £1 = \$1.90

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APPENDIX 3

INDUSTRIAL AND SALES IMPLICATIONS

1. We estimate that there is a potential export market for 2000 STINGRAY and 600 heavyweight torpedoes. We face stiff competition from the American lightweight torpedo, Mk 46 NEARTIP, and heavyweight (Mk 48 ADCAP), as well as from the torpedo industries in France, Germany and Italy.
2. Cancellation of the MSDS heavyweight would inevitably affect the overseas sales of STINGRAY by throwing doubts upon the long term credibility of the UK torpedo industry. Loss of Government sales levies on STINGRAY and the heavyweight could amount to as much as £50M.
3. Cancellation of the heavyweight would cause the immediate loss of 470 development jobs at MSDS, mainly at Portsmouth. An additional 500 job opportunities in development would not be created at MSDS between 1984 and 1987. In due course, there would be further redundancies and loss of job opportunities at MSDS amounting to some 1500 on the heavyweight alone mainly at Portsmouth and Neston and at MRSLS in Leicester. Loss of Stingray sales because of the cancellation of the MSDS heavyweight would increase the loss of jobs, primarily at Chelmsford and Neston, but also among the subcontractors notably the ROFs at Patricroft and Glascoed.
4. These losses would however be offset by some hundreds of jobs created in UK industry by Goulds' commitment to provide 35% offset, and by that firm's offer to set up a factory for other torpedo work employing at least another 200 people. Some of the offset work would go to MSDS.

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	<u>CASH FLOW REQUIREMENT</u>									Later years	Grand total	
	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91			
A. <u>MSDS Original Price (estimated)</u>												
(1) Heavyweight	26.8	49.6	64.2	73.5	65.0	57.9	62.8	59.5	53.0	281.6	793.9	
(2) STING RAY	62.0	61.1	82.2	79.0	90.1	102.7	122.7	132.7	127.7	183.7	1043.9	
(3) Total	88.8	110.7	146.4	152.5	155.1	160.6	185.5	192.2	180.7	465.3	1837.8	
B. <u>US Option (*)</u>												
(1) Heavyweight	1.6	2.5	6.1	24.1	52.9	69.5	63.8	58.7	60.0	136.8	476.0	
(2) STING RAY	67.0	66.1	87.2	84.0	90.1	102.7	122.7	132.7	127.7	183.7	1063.9	
(3) Total	68.6	68.6	93.3	108.1	143.0	172.2	186.5	191.4	187.7	320.5	1539.9	
C. <u>UK Option</u> (based on MSDS Package Offer for STING RAY and Heavyweight Torpedo)	78.3	83.4	113.5	113.1	148.4	154.9	177.9	168.6	159.7	439.2	1637	
D. <u>Excess of C over B</u>	9.7	14.8	20.2	5.0	5.4	-17.3	-8.6	-22.8	-28.0	98.7	97.1	

(\*) At £1 = \$1.90