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Prime Minister:

MO 26/3

*What about?*  
*mf*

Agree that  
Mr Heseltine may announce  
the purchase of the  
McDonnell Douglas Harpoon  
Missile system, subject to  
the news of colleagues?

PRIME MINISTER

SURFACE-TO-SURFACE GUIDED WEAPONS FOR THE ROYAL NAVY

*JA*  
*2/9*

My minute of 15th July foreshadowed the need to take a fairly early decision on a surface-to-surface guided weapon (SSGW) for new ships of the Royal Navy. You will wish to know that I now intend, subject to the satisfactory completion of negotiations with the US authorities and McDonnell Douglas, to authorise the procurement of the McDonnell Douglas Harpoon missile system to a value of about £220M (at current exchange rates) to be fitted on the 4 Batch III Type 22 frigates and the first 8 Type 23 frigates. I also propose to announce this decision before I depart for the United States on 12th September.

Four leading contenders have been evaluated in detail taking into account operational aspects, cost, timescale and industrial factors. They are: Sea Eagle (British Aerospace), Harpoon (McDonnell Douglas), Exocet MM40 (Aerospatiale) and Oto Mat (Oto Melara). I attach a detailed discussion of the factors taken into account in the evaluation.

The strongest candidate on operational grounds is Harpoon. It has the necessary range, carries an advanced target seeker and is part of a stable US Navy programme. SEA EAGLE would require additional development to meet the same standards, and it is extremely doubtful whether it would be available for the Type 22 Frigates on time. Allowing for the additional development SEA EAGLE would cost £258.5M against £218.3M for Harpoon, £243.5M for Oto Mat and £211.5M for Exocet MM40 (current exchange rates).



?? MDAC have offered 100% offset against a purchase of Harpoon. 50% of the total offset would be "High Technology", and the employment opportunities over the ten years of the offset programme would equal at least those arising directly on an RN purchase of SEA EAGLE. The record of McDonnell Douglas trade offset against the current RN Sub-Harpoon and AV8B programme is good.

Our decision to develop ALARM rather than HARM has already provided a sound base for future UK missile seeker technology, and has gone a long way to provide adequate loading for British industry.

There is bound to be a sharp reaction from British Aerospace (and MSDS, who would develop and manufacture the seeker for ship-launched SEA EAGLE) to a decision to buy foreign. But I believe that the excellent offset terms on offer provide in this case a solid basis on which to defend the choice against criticism that an overseas purchase will reduce employment opportunities in British industry. In terms of relations with the Americans, what I propose would go some way at least to defusing the criticism which I shall face in Washington over our decision to procure ALARM. It is with the latter point in mind that I believe it would be advantageous to have announced a decision in favour of Harpoon before I leave for the United States. I would also make arrangements to inform my French and Italian counterparts of our decision prior to the public announcement, in view of the involvement of their defence industries in the competition.

I should be glad to know, by Thursday 8th September, that you and our OD colleagues are content with the action I propose to take.

I am sending copies of this minute to our OD colleagues and to Sir Robert Armstrong.

*R. Armstrong*

*(Approved by The Defence Secretary  
& signed in his absence)*

Ministry of Defence

1st September 1983

SECOND GENERATION SURFACE-TO-SURFACE GUIDED WEAPON FOR TYPE 23 AND  
TYPE 22 BATCH III FRIGATES

BACKGROUND

1. The immediate warship building programme for the RN consists of four Type 22 Batch III and subsequently eight Type 23 frigates. These ships require a Surface-to-Surface Guided Weapon (SSGW) to provide defence against the growing number of Soviet ships with an anti-ship capability. The aspects of most operational significance are range, salvo size, the ability to penetrate enemy defences, and the need to meet the tight In-Service Dates of the Frigate programme.

2. Our existing SSGW system is the Exocet MM38. To meet our future needs, a more advanced system is required and, as several are available, an international competition has been held to select the most cost-effective equipment. Six solutions were offered:-

- a. HARPOON - McDonnell Douglas Astronautics Company
- b. SEA EAGLE - British Aerospace plc
- c. OTOMAT (FR) - Matra SA
- d. OTOMAT (IT) - OTO Melara
- e. OTOMAT (UK) - Melara/MSDS
- f. EXOCET MM40 - SNIAS

The options at c and d were not evaluated in detail for reasons of cost and performance when compared to option e.

EVALUATION

3. An in-depth evaluation of the four remaining options against a number of key aspects was conducted by MOD staff. The options were evaluated both as offered by the firms and on the basis of improvements thought necessary to meet the RN's requirement. In the latter case, account was also taken of the USN's plans to improve the existing HARPOON missile before the end of the decade.

4. Operational Factors. This evaluation resulted in the identification of the following main points:-

a. Range. The MM40 missile could not provide the 140 km range now required by the RN and, because it has a solid fuel motor, improvements would be impracticable. HARPOON and OTOMAT (UK) have the required range and ship launched SEA EAGLE (SEA EAGLE(SL)) could be improved to provide it.

b. Salvo-Size. A Salvo of 4 missiles is needed to penetrate sophisticated defences; thus 8 missiles provide a 2-target capability. 8 missiles of all types can be fitted in the Type 23, and 8 HARPOON and MM40 in the Type 22 Batch III. Ship fitting constraints make it impossible to fit more than 6 of the longer OTOMAT(UK) missiles, as currently configured, in the Type 22, Batch III frigates. 6 SEA EAGLE missiles can be fitted to the Type 22, Batch III frigates and it may be possible to fit 8, in the light of British Aerospace's latest proposals.

c. Penetration against Countermeasures. Harpoon and MM40 both provide good performance against the postulated electronic countermeasures threat and possess the maximum survivability against hard kill weapons available from second generation weapons. SEA EAGLE (SL) and Oto Mat (UK) would both require considerable development of the associated MSDS target seeker and some improvements in missile performance to counter hard kill weapons.

d. Timescale. Harpoon and MM40 have no difficulty in meeting the timescale for the Type 22 Batch III vessels. The seeker improvements required for Oto Mat and SEA EAGLE could be ready in time for the Type 23 only, though British Aerospace have undertaken to retrofit the advanced seeker to earlier missiles at no extra cost.. The ship system for SEA EAGLE would almost certainly be late for the Type 22 Batch III ships. To meet the shipbuilding programme it would be necessary to fit an alternative weapon to these ships with the corresponding penalties in cost and further diversification of RN anti-ship missile types.

5. In summary, from an operational point of view, Harpoon is a clear first choice, SEA EAGLE (SL) and OTOMAT (UK) could provide a similar capability at additional cost, and SEA EAGLE (SL) would probably not be available in time for the Type 22 Batch III ships.

6. Technology Factors. Anti-ship guided weapons is a field where international competition is particularly fierce. The production of the air launched SEA EAGLE missile provides within the UK the basic technology to enable air-launched anti-ship missiles and their supporting equipment to be designed and developed in the UK. The high technology area of 2nd generation missiles is the seeker head: however, given the decision to buy ALARM the technological and industrial position on future seekers has essentially been protected.

7. Industrial and Employment Implications

a. SEA EAGLE. Based on information supplied by BAe it is estimated that some 5,500 man years of work would be created by the selection of SEA EAGLE improved to meet the RN requirement. BAe, MSDS, Ames Industry, ROF Patricroft and IMI Summerfield would be the principal beneficiaries.

b. HARPOON. A MDAC offer to offset to the value of 100% will be included in a separate Memorandum of Agreement between MOD and MDAC. This will generate a similar number of jobs to SEA EAGLE and 50% of the offset would be in "high technology" areas. MDAC's record on SUB-HARPOON has been good and there is every expectation that this level of offset will be achieved. Lucas and ROF Patricroft are likely to obtain a significant amount of work.

c. OTOMAT(UK). OTO Melara have offered offset at 100% of the contract price. MSDS would expect up to 1600 man years work associated with the seeker, as well as being invited to tender for electronic units (1800 man years), and launch containers, propulsion unit shells and fuel tanks (180 man years). Plessey could expect some ship system equipment and ROF Patricroft warhead production.

d. EXOCET MM40. Offset valued at 70% has been offered by SNIAS. The exact location is uncertain but SNIAS have offered to have the seeker produced in the UK by either Ferranti or MSDS. This could amount to 1150 man years work.

8. Costs and Financial Provision. The cost of the various options at current exchange rates (£1 = \$1.53 = FF12.11) are:

MM40 - £211.5M, Harpoon - £218.3M, Otomat - £243.5M,  
Sea Eagle - £258.5M

Although Exocet MM40 has the cheapest prime cost, investment appraisal shows Harpoon to be the cheapest option in discounted terms. Harpoon is £40M cheaper than Sea Eagle, a differential which increases to £53M if Sea Eagle is chosen and MM40 adopted for Type 22 Batch III in consequence.

9. Sales. Taking into account political/security constraints Ship Launched SEA EAGLE sales might reach £30M p.a. The potential recovery through R & D levy amounts to some £25M, over a 10 year period, but SEA EAGLE would be competing in a highly competitive market against by then well established in-service systems. Current potential sales of Air Launched SEA EAGLE are not thought to be seriously endangered by an RN decision against SEA EAGLE (SL).

#### DISCUSSION

10. With regard to both its operational capabilities and its cost advantage, HARPOON is the clear first choice to meet the RN's requirement for a second generation SSGW system for the 4 Type 22 Batch III ships and 8 Type 23 ships. The main disadvantage of the EXOCET MM40 system is a lack of range. The capability of SEA EAGLE (SL) could be improved, but it is by far the most expensive solution. In any case, even the basic option could not be available in time to meet the Type 22, Batch III ships. OTOMAT(UK) suffers from many of the same drawbacks as SEA EAGLE. In addition, the RN would have HARPOON, SEA EAGLE(AL) and EXOCET MM38 in service: OTOMAT(UK) has no strong advantage to justify a further proliferation of types.

11. A choice of HARPOON would not have adverse implications for the technology base given that ALARM has been chosen to meet ASR 1228, neither would it adversely affect total employment opportunities. A decision not to procure HARPOON would open the UK to the sort of criticism on the international front which has been well aired in the consideration of a choice between HARM and ALARM for ASR 1228; and could adversely affect the UK's credibility as an organiser of international competitions as part of the procurement process, as well as affect the UK's ability to sell equipment to USA.

12. To overcome the timescale problems with SEA EAGLE it would be possible to fit EXOCET MM40 to the Type 22, Batch III ships (to provide a degree of commonality with the existing fleet) and introduce SEA EAGLE on the Type 23s. This would entail a total cost premium of £53M or 25%. The only other viable option to keep the purchase within Europe would be to purchase Oto Mat, with its attractive offset package, and to accept the cost premium and the disadvantages of introducing a fourth surface-to-surface missile variant with our forces.

#### CONCLUSION

13. The operational and financial arguments lead to the conclusion that the most cost-effective option for an SSGW to equip 8 Type 23 and the 4 Type 22, Batch III Frigates is to purchase Harpoon at an estimated cost of £218.3M (July 1982 prices, current exchange rates, VAT inclusive). This would cover 12 ship systems and 215 missiles together with associated shore based equipment and support.

Defence: Ham/Alam  
3/88



*O. Pascall*  
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Treasury Chambers, Parliament Street, SW1P 3AG

Rt Hon Michael Heseltine MP  
Secretary of State  
Ministry of Defence  
Main Building  
Whitehall  
London SW1A 2HB

6 September 1983

*Dear Secretary of State,*

SURFACE TO SURFACE GUIDED WEAPONS FOR THE ROYAL NAVY

*with ASC*

I have seen a copy of your minute of 1 September to the Prime Minister explaining the background to your decision to procure the McDonnell Douglas Harpoon missile system for new ships of the Royal Navy. I support your proposals and agree that an early announcement would be advantageous.

I am sending copies of this letter to the recipients of yours.

*yours sincerely*  
*PR*

*for* PETER REES

*(Approved by the Chief Secretary  
& signed in his absence)*

Defence  
March 83  
Harm/Alarm

SEP 11 1983

SEP 6 1983

FROM:

THE RT. HON. LORD HAILSHAM OF ST. MARYLEBONE, C.H., F.R.S., D.C.L.



HOUSE OF LORDS,  
SW1A 0PW

12th September, 1983

SECRET UK EYES AND  
COMMERCIAL IN CONFIDENCE

The Right Honourable  
Michael Heseltine, MP  
Secretary of State for Defence,  
Ministry of Defence,  
Whitehall,  
London,  
SW1.

Dear Michael:

Surface to Surface Guided Weapons for the Royal Navy

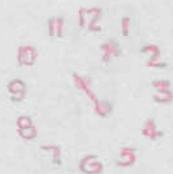
I read with interest your minute of 1st September to the Prime Minister. I am much encouraged to see that it has the support of both the Foreign Secretary and the Chief Secretary to the Treasury.

The detailed requirements and the rival bids are not strictly a matter for me, but I believe that it is imperative that operational needs should not be sacrificed for apparent economic advantage. It would be a dangerous development to give undue weight to economic arguments in the matter of defence procurement. We should always remember that the reason for defence hardware is defence in an emergency and not to repair our industrial efficiency when there is no emergency. For these reasons I should like to be confident that when the final decision is taken you will be able to accede to it with no reservations whatsoever.

I am copying this letter to other members of OD and to Sir Robert Armstrong.

yrs.

13 SEP 1983





FCS/83/168

SECRETARY OF STATE FOR DEFENCE

Surface to Surface Guided Weapons for the Royal Navy

1. Thank you for copying to me your minute of 1 September to the Prime Minister. The operational arguments in favour of Harpoon are compelling; and as you point out a decision in favour of the weapon would go a long way to defusing any criticism you may face in Washington over ALARM. You will recall my concern at the time about the implications of choosing ALARM for our wider defence sales interests in the US. I therefore have no hesitation in endorsing the action you propose to take in your letter.

2. I am glad that you intend to make arrangements to inform your French and Italian colleagues of your decision prior to any announcement. It should not be difficult to explain to them in view of the strong case for Harpoon. But, at a time when we are trying to develop our defence relationship with France and are urging the Italians to provide funds for the EH101 helicopter project, it is important that we should minimise any risk of damage to these objectives.

3. I am sending copies of this minute to our OD colleagues and to Sir Robert Armstrong.

(GEOFFREY HOWE)

Foreign and Commonwealth Office

5 September, 1983

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- 5 SEP 1993

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PRIME MINISTER

2 September 1983

SURFACE-TO-SURFACE GUIDED WEAPONS FOR THE ROYAL NAVY

The Secretary of State for Defence in his minute of 1 September 1983 is seeking early agreement to the procurement of the McDonnell Douglas Harpoon missile system for new ships of the Royal Navy.

Of the six alternatives which include a ship-launched Sea Eagle to be developed by British Aerospace, Harpoon is clearly the most cost-effective proposal being superior on operational, delivery and cost grounds. McDonnell Douglas have also offered a 100% offset against a purchase of Harpoon which in employment opportunities should at least match those arising from a Royal Navy purchase of Sea Eagle.

Although the issues to be considered are similar to those raised by the HARM v ALARM case, the need to retain the basic technology in the UK is not a relevant argument in this case for preferring the UK system. This requirement is met by the current programme for the air-launched Sea Eagle system from which the ship-launched version would be developed. In addition, the decision to buy ALARM will ensure a continued UK capability in the development of seeker heads for future generation missiles.

All arguments therefore favour the Secretary of State's proposal to purchase Harpoon.

DP.

DAVID PASCALL



10 DOWNING STREET

Mr. Coker - s.r.

Before the PM decides on this, could she please be given more details about how the McDonnell Douglas offset arrangements work, and more specifically what from the offset would be likely to take in this case (e.g. what jobs and where?).

FERB

3-9.



SECRET

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PRIME MINISTER

Surface-to-surface guided weapons for the Royal Navy

You saw the Defence Secretary's minute of 1 September describing his intention to authorise the procurement of the McDonnell Douglas Harpoon missile system (flag A).

You asked for further details of the 100% offset offered by McDonnell Douglas.

These details are set out in the attached letter of 7 September.

C.

Both the Foreign Secretary and the Chief Secretary support the Defence Secretary's proposal.

Mr. Heseltine wishes to announce this decision before his visit to Washington on Monday in order to diffuse the criticism that he would otherwise meet over our decision on Alarm.

Are you now content that he should announce a decision, subject to the satisfactory completion of negotiations, to purchase Harpoon?

A.S.C.  
Mr. Parkinson  
opposes it, or  
wants a discussion  
not

7 September 1983

SECRET



MINISTRY OF DEFENCE  
MAIN BUILDING WHITEHALL LONDON SW1  
Telephone 01-830 7022  
XXXXXX 218 2111/3

MO 26/3

7th September 1983

Dear Tom,

SURFACE-TO-SURFACE GUIDED WEAPONS FOR THE ROYAL NAVY

I understand that the Prime Minister has asked for further details of the McDonnell Douglas (MDAC) offset offer referred to in Mr Heseltine's minute of 1st September, with particular reference to the numbers and location of the jobs which would be created or preserved by orders placed under the offset agreement.

It may be helpful to explain first that MDAC's approach to offset is to provide bidding opportunities to firms wishing to compete for sub-contract work. MDAC have undertaken, in an agreement which comes into effect in the event of a decision to purchase Harpoon, to provide sufficient bidding opportunities to United Kingdom firms to achieve 100% offset over a ten year period (MDAC are well placed to do this given that their sub-contract expenditure over the next five years is expected to total \$25 billion).

With a competitive bidding style of offset programme it is not possible to say with precision how many jobs will be created or preserved, and where. Since MDAC received an invitation to tender last summer, they have been canvassing United Kingdom industry to find out which firms would be best equipped to respond to bidding opportunities. 83 firms have so far expressed an interest, and their responses to a MOD questionnaire indicate that many of them stand a good chance of picking up business.

In most cases there are several United Kingdom firms interested in a particular sub-contract. The more valuable prospects are:-

- a. Lucas Harpoon sub-systems with potential value of about \$50 million;

A J Coles Esq

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- b. ROF Patricroff Harpoon sub-systems with potential value of \$40 million;
- c. Ferranti F18 aircraft laser target designator with potential value of about \$50 million;
- d. Marconi/Plessey/Ferranti F15 wide angle head-up display and remote map display with potential value of \$90 million.

The timing and, as I have indicated, the incidence of orders under the offset agreement is not pre-determined. As Mr Heseltine's minute made clear, however, MDAC have an excellent record in this field. Against suggestions that the offset business, given that it would be secured competitively, would be open to United Kingdom firms in any event, it may be argued firstly that a leading US corporation is under no obligation to extend competitive opportunities abroad (and under heavy pressure not to); and secondly, that it is very much in the long-term interests of British industry to have the opportunity to become established suppliers to the United States.

I am copying this to Jonathan Spencer (DTI), John Gieve (HM Treasury) and to Richard Hatfield (Cabinet Office).

*Yours ever*

*Nick Evans*

(N H R EVANS)

27 SEP 1944

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