

Ref: B06812

PRIME MINISTER

c Sir Robert Armstrong

OD: A Defence Suppression Weapon for the Royal Air Force

BACKGROUND

The Committee discussed on 16th June the choice of a defence suppression weapon for the Royal Air Force but took no final decision as between HARM and ALARM. They invited the Defence Secretary to give a presentation on the ALARM programme and the Foreign and Commonwealth Secretary to obtain the advice of our Ambassador in Washington on how best to explore the possibilities of improved terms for a purchase of HARM.

2. The presentation will be given in the Cabinet Office Briefing Room (Conference Room F) by Air Chief Marshal Sir John Rogers, who is Controller (Air) in the Procurement Executive of the Ministry of Defence: he will be supported by his deputy, Dr Pope, and by Air Vice Marshal Harcourt-Smith (Assistant Chief of the Air Staff), Air Commodore Brown and Mr Hazel. It will last about 30 minutes; there will then be an opportunity for questions, after which Ministers will return to the Cabinet Room for further discussion. The Chief of the Defence Staff has been invited.

3. The key facts are -

a. ALARM has still to be developed. British Aerospace would be the contractors, in association with Marconi, Thorn-EMI and others. They have offered a fixed price contract (subject to inflation) at a total cost of £388 million and promised an in-service date of August 1987. The project would generate 9,400 man years of work for British industry, and ensure that Britain retains a capability in this area of missile technology.

b. HARM has been developed by Texas Instruments in the United States but production would be shared with Lucas and the Royal Ordnance Factories, at a total cost of £254 million with an in-service date of September 1986. The homing head would be produced in the

United States and would have to be returned there for repair. The project would save 2,500 jobs in the West Midlands which Lucas would otherwise have to shed.

4. The key uncertainties can be summarised as follows.

a. HARM is already developed; any necessary improvements will be done by the Americans who will buy some 20,000 missiles. ALARM is not yet developed; it may slip by two years, or possibly longer, leaving the RAF without an effective missile for the Tornado aircraft.

b. ALARM will enable British industry to keep up with advanced homing head technology. It is unlikely that the Americans will allow us any share in the high technology aspects of HARM; nor is it clear whether British industry could be kept in the forefront of this technology in other ways, such as by the Ministry of Defence financing a research and development programme for a future missile.

c. Export prospects: if we buy HARM, Lucas will be well placed to export components to the United States. The Chairman of Lucas believes that it could obtain 25 per cent of the value of the total United States HARM programme, apart from the guidance section. But there can be no absolute guarantee of exports. Export prospects for ALARM are highly uncertain, given the strong competition from HARM.

d. Jobs: it is at least possible that HARM will in the end produce as many jobs for British industry as ALARM, but at this stage nobody knows.

HANDLING

5. The main purpose of the presentation is to equip Ministers to judge whether the ALARM programme is likely to provide the RAF with an effective missile in reasonable time. If there is a serious risk that the programme will suffer the sort of delays and cost increases which affected the Stingray torpedo, then it would be prudent to go for HARM, which is already developed. The worst of all worlds would be if delays in ALARM forced us later on to make an interim purchase of HARM missiles in order to give the Tornado

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aircraft an adequate weapon. The most important factors therefore are the degree of technical risk in the ALARM programme and the quality of the management teams in British Aerospace Dynamics, Marconi and the Ministry of Defence.

6. The other key question is whether ALARM offers the only real opportunity of retaining a capability in homing head technology in the United Kingdom. Does our Ambassador at Washington see any future in trying to get the Americans to offer better terms for a purchase of HARM? On this point, could the United States Administration deliver the Congress and American industry even if they wanted to? What plans have the Ministry of Defence for developing the Short Range Anti-Air Missile (SRAAM), which itself could keep British industry in the forefront of this technology? Will ALARM really give us a competitive lead over the Americans in the 1990s?

CONCLUSION

7. If the decision is in favour of ALARM, you will wish to stress the vital importance of ensuring that

- a. the contractors give the programme their maximum management effort in order to ensure that it keeps to time and specification;
- and b. the Ministry of Defence do not alter the specification in such a way that the contractors are given an excuse for delay and increased costs.

It will also be important to make it clear both to the Americans and to British industry that the decision does not mean that defence orders will always go to British rather than foreign industry: the decisive factors in each case will be the extent to which British industry can meet the technical specifications in time and at a reasonable price, the importance of the technology in terms of our overall defence and national interests, and the value of the order to the health and international competitiveness of the industry concerned.

David Goodall

29th June 1983

A D S GOODALL

\$1.59

Review 'Amichu'

Lucas, 53 | ^{the} 97 Cost - Vajanti 1 u.s. 1,300
 less than 1 year Time - 2 years more time
 Technology required
 (36-month delay)

Have
 detail
 (ask for 2 year.
 New lead in
 1990's)



A DEFENCE SUPPRESSION WEAPON FOR THE RAF

1. This paper seeks to analyse the key criteria on the basis of which a decision will have to be taken by Ministers on the purchase of a defence suppression weapon for the RAF. The competitors are:

a) HARM (High Speed Anti-Radiation Missile):
a US missile manufactured by Texas Instruments,
which is available either;

i) by direct government-to-government purchase
on Foreign Military Sales (FMS) terms (ie at
the price paid by the US Government, plus admini-
strative costs); or

ii) by purchase from a combination of Texas
Instruments and a group of British companies
led by Lucas Aerospace, who have concluded
coproduction arrangements providing for a
roughly equal share in the UK and the US of
manufacture of a British buy of HARM.

b) ALARM (Air Launched Anti-Radar Missile): this is
offered by British Aerospace Dynamics Group (BAe),
with Marconi (MSDS) the major subcontractors.
Nobody appears now to be arguing for option (a)(i).
Effectively, the choice is between (a)(ii) and (b).

2. The principal criteria on which a decision will have to be based and the relative performance against these criteria of the competing missiles are described below.

a) Technical Considerations and Operational Requirement

3. The RAF would be prepared to accept that either missile would meet the operational requirement. ALARM is judged to have



greater potential to operate in the more complex environment expected after 1990; however, there is some uncertainty about what that environment will comprise, and we would expect HARM technology to have advanced by that time (although we would of course have to purchase new equipment to upgrade the performance of HARM if we bought it now). Both systems have operating deficiencies. In the case of ALARM these were serious enough to require modifications to be made to BAe's initial proposals and the cost shown below provides for almost all of these in the fixed price. Moreover, while HARM already exists (the US Government has already decided to launch full production), ALARM is still on the drawing board. This is particularly important in the context of the RAF's need for an early in-service date. Pending procurement of a defence suppression weapon, RAF Tornados will have no direct capability to destroy Warsaw Pact radars (£6 and a half billion have been invested in the strike version of the aircraft). HARM can be in-service by September 1986, with little risk of slippage. BAe claim that ALARM can meet an in-service date of August 1987, but given the complexity of the development programme, MOD consider August 1989 as more realistic.

b) Costs

4. Comparative costs of 750 missiles (the RAF requirement) are as follows (at 1982/83 prices):

<u>HARM (FMS)</u>	<u>HARM (Coproduction)</u>	<u>ALARM</u>
£235m	£254m	£388m

The HARM price is approximate. It is subject to the price finally accepted by the US Government and to the exchange rate. There is a chance that the FMS price might be less than the above estimate because of pressure by the US Government on Texas Instruments which has required the latter to suggest modifications which could significantly reduce unit price. BAe have proposed a fixed price contract, But there are grounds for believing

/that



that BAe may be unable to stick to this. The expected 2-year slippage in the programme could cost BAe some £60-70 million. MOD would expect BAe to seek every opportunity to slip out of their obligation to maintain a fixed price. In practice BAe might well succeed.

c) Employment

5. The following figures showing the relative employment benefits to the UK of the ALARM and HARM (coproduction) options are based on production of 750 missiles and exclude potential overseas sales:

ALARM - 8950 man years over 7 years

including BAe Hatfield	2500 man years
BAe Bracknell	950 man years
*BAe Lostock	2000 man years
MSDS Stanmore	600 man years
MSDS Portsmouth	750 man years
Thorn-EMI Feltham and Hayes	500 man years

* Even with ALARM, the underloading at BAe Lostock (situated between Bolton and Blackburn) will be 20% in 1986 and 35% in 1987. Thus the factory may well have to close whichever weapon is selected.

HARM Co-Production - 3450 man years over 8 years

including Lucas, Hall Green Birmingham	900 man years
Lucas Burnley and Bradford	1600 man years
ROF Bridgewater, Chorley and Patricroft (nr Eccles)	900 man years

NOTE: MOD(PE) accept the figures quoted for ALARM, but consider that those for HARM Co-Production may be too high.

The HARM coproduction jobs are concentrated in areas of already high unemployment, whereas the majority of BAe jobs are in the south of England. The substantial sum saved by the purchase of



HARM would be available to enhance defence capability elsewhere and could in the process generate new jobs.

d) Technology

6. Acceptance of the BAe bid would enable the UK (primarily Marconi) to maintain a significant capability in guided weapon technology through Marconi's work on the seeker head for ALARM. Purchase of the coproduction versions of HARM would offer us only limited access to US technology in this area, since the seeker head would be sold complete on a government-to-government basis. There are differences of view on the importance of the UK maintaining a foothold in this technology; the MOD view now is that this is vital, but this is questioned by the Treasury. Moreover, it is argued by some that MOD should be able to fund development and supporting technology programmes to maintain UK companies' technological capability in this field for far less than the extra cost (£134m) of purchasing ALARM; arguably this would leave the UK in a much stronger position to compete in the world market for second generation defence suppression weapons. MOD, however, consider that full-scale project development work is essential to maintain a competitive position in this technology.

e) Sales

7. There are substantial differences of view on both the size of the world market and of the likely UK share. BAe identify a total world market (excluding US, UK and the communist world) of some 20,790 missiles, of which they claim a reasonable prospect of selling between 4000 and 6000. MOD (Defence Sales) regard these figures as far too optimistic. Their survey identifies a world market up to the year 2000 of some 4000 missiles of which ALARM would not capture more than about 1250.

8. Not surprisingly, Lucas Aerospace claim that BAe would have virtually no success with overseas sales. They base this on the argument (which is not unconvincing) that virtually all the



potential purchasers of anti-radar missiles operate US aircraft, that the UK's past success-rate in selling British weaponry for operation with US aircraft is virtually nil and that owners of American aircraft can therefore be expected to purchase HARM. They therefore argue that the UK's best chance of entering the world market is through coproduction arrangements on HARM, which would also provide an opportunity to supply components for the US market (of some 14000-21000 missiles in total). There is, however, no guarantee that Lucas Aerospace would gain a share of the HARM production for either the US or the world market. They would have to compete with other companies, most of whom would be American, for subcontracts with Texas Instruments. They claim, however, that both their track record in the US market and their current competitiveness should place them in a strong position in competition for subcontracts for a substantial share of US production of HARM. But without a British purchase of the coproduced HARM, Lucas would be unable to compete for a share of the action in the US, since only the UK purchase would provide them with the funds they require to set up a production line.

9. However, Defence Sales judge the relative saleability of the two missiles as roughly balanced: while HARM is more complex to instal it has greater range and speed, and is available earlier, and Defence Sales agree that it would tend to follow aircraft sales. BAe claim that ALARM, as offered, should be cheaper (because the price, unlike that on offer to the MOD, will not have to take full account of development costs) and relatively easy to instal, although it is slower and has a shorter range.

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MR COLES
_____Prime MinisterAgree to have presentation on
Alarm on 30 June?Yes
mtA.J.C. 21.
6Defence Suppression Weapon

At the meeting of OD on 16 June the Secretary of State for Defence was invited to arrange for the Committee to be given a presentation on the ALARM programme.

2. The earliest date on which the Committee can be assembled for this purpose is Thursday, 30 June, following Cabinet. There is at present only a light Agenda for Cabinet then, and we would hope to start the presentation around 11.00 am. Provisional arrangements have been made with the Ministry of Defence for the presentation to be given in the Cabinet Office Briefing Room, which is convenient for the visual aids, and where the MOD hope to have an inert ALARM missile on display. The presentation will be given by Air Chief Marshal Rogers, Controller (Air) in the Procurement Executive of the Ministry of Defence, and we have suggested that it should last not more than 30 minutes. The remainder of the morning would then be free for questions and discussion, and for the Committee to take a decision on the choice of weapon if they felt able to do so. The Secretary of State for Defence is naturally keen to take and announce a decision as soon as possible.
3. I should be grateful to know whether these arrangements are acceptable to the Prime Minister.

Lindsay Wilkinson
LINDSAY WILKINSON

21 June 1983

MISS WILKINSON
CABINET OFFICE

Defence Suppression Weapon

Thank you for your minute of 21 June.

The Prime Minister agrees with the arrangements which you propose for the presentation on the ALARM programme at the meeting of OD following Cabinet on Thursday 30 June.

AJC

23 June 1983