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MR POWELL

cc Mr Unwin  
Mr Stark

NIMROD Airborne Early Warning

The Defence Secretary's minute of 26 March to the Prime Minister, about which I had a word with Mr Flesher, suggests that, apart from the multiple failings of GEC, this sad story arose essentially from two factors:

- the project was launched without proper project definition;
- we failed until this year to insist on contracts providing a fair sharing of incentives and risks between the Government and GEC.

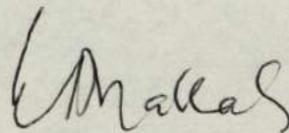
2. Paragraph 9 of the memorandum says that a cost-plus contract was the only possibility at the outset of the project, since the specification could not yet be defined. Paragraph 22 says that the work of detailing the specification had been largely completed by 1979 and that the current version of the contract specification is dated February 1981. It is very surprising that no attempt was apparently made to obtain a better type of contract until March 1984 and that two more years elapsed before new contractual arrangements were actually secured. Some experts would argue that there is no alternative to a cost-plus contract until the intended product can be precisely described. But it must be counter-productive to have contracts which give the manufacturer no incentive to reach a precise definition quickly. And it would be reasonable for the manufacturer to take a major part of the



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risk in the early phases; in civil projects the manufacturer takes all the risk.

3. The proposals in paragraphs 4 and 5 of the memorandum for avoiding such failures in future seem convincing. In particular, the idea of letting separate contracts for specific steps within the development phase will give the manufacturer an incentive to perform well, in the hope of winning the succeeding contract. But these paragraphs do not mention the idea of the manufacturer taking some of the development risk. The introduction of a single project manager in the Ministry of Defence for each project of this type is no doubt a step in the right direction. But I understand that the Nimrod project is still managed by an Air Commodore working to an Air Vice Marshal, and it must be questionable whether RAF officers, however able, have sufficient understanding of industry to strike hard bargains with manufacturers and monitor their performance completely effectively.



C L G Mallaby

3 April 1986

ANNEX ANIMROD AIRBORNE EARLY WARNING PROJECT: CHRONOLOGY

Jan 1975

The Ministry of Defence's Operational Requirements Committee endorsed Air Staff Requirement (ASR) 400 for an airborne early warning (AEW) system to report targets over the sea and over land on the Northern Flank of NATO. The preferred solution was participation in a NATO AEW Force based on the Boeing E3A (AWACS). However, because of uncertainties over whether the NATO programme would proceed and in view of the high estimated cost of a national purchase of E3As, a limited project definition study of a national alternative based on the Nimrod was authorised <sup>by whom</sup> (This followed a number of years of research into AEW radar and limited feasibility studies.)

Mar 1975

*possibly I am not  
entitled to know.*

Apr 1975-

Sept 1976

Following project definition, Ministry of Defence Operational Requirements Committee and Defence Equipment Policy Committee concluded that Nimrod Option 4C should continue to be funded as the preferred national alternative against the possibility that NATO discussions on AWACS might prove to be prolonged or end in failure.

Mar 1977

NATO failed to agree on the funding of AWACS and the Secretary of State for Defence sought the Prime Minister's agreement for the Nimrod AEW to proceed to full development.

31 Mar 1977

The Secretary of State for Defence, Mr Mulley (as he then was), announced to Parliament the decision to proceed with the Nimrod AEW project. Seen as a contribution in kind to a NATO AEW force should one eventually be formed. 11 aircraft to be converted from surplus Nimrod Maritime Reconnaissance Mk 1 airframes.

1977

Development and production contracts placed with Hawker Siddeley Aviation (now British Aerospace) for the air vehicle conversion, and Marconi Avionics Borehamwood (now GEC Avionics - GAv) for the Mission System Avionics (MSA).

Estimated programme cost £856M at 1985-86 average outturn prices. Aircraft expected to be delivered for Training Release in May 1982, with Limited Release to the RAF in April 1984.

Dec 1978

NATO agreed to form a mixed AEW force, based 18 Boeing E3A, together with the 11 Nimrod AEW aircraft (giving an Alliance capability broadly equivalent to the 27 E3As originally envisaged).

Mid-1979

The new Conservative Government reviewed the Nimrod AEW project and considered the alternative of joining the NATO E3A programme. Cost estimate had risen to £1027M and Training Release date had slipped to December 1982. About half the cost increase attributable to increased GAV spend. Slippage caused by delays at contractors and in MOD in getting the programme started; a series of industrial disputes at BAe; manpower shortages; and a need to incorporate additional communication security testing. However, no significant technical difficulties encountered at this stage and the remaining estimated Nimrod expenditure and the likely costs of joining the NATO E3A project broadly comparable. Ministers judged therefore that there was no justification for abandoning

Who,  
what,  
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when,  
on what  
info.  
what-adequate

the Nimrod AEW project, with the loss of jobs  
that would ensue.

May 1980

A further slip of three months and a consequent real cost increase of £3M, due primarily to effects of long national engineering strike in 1979, notified to Minister of State for Defence (Lord Strathcona) who accepted that this did not warrant re-exploration of the AWACS alternative.

Aug 1980

It was reported at CA's Project Review that the basic soundness of the programme and the ability to complete it within the MOD's time and cost estimates were not in doubt.

*May 1 see the report*

Mar 1982

Air Chief Marshal Sir Douglas Lowe (Controller Aircraft - CA - from 1975 to September 1982) met GAV's Chairman to impress upon him MOD's dissatisfaction with poor progress and a consequent loss of confidence in GAV forecasts. Company responded by urgently reviewing the MSA situation with the aim of producing a modified programme which would take better account of remaining uncertainties.

May-Jun  
1982

A further series of meetings with GAV eventually resulted in their production of a revised development programme. MOD considered that a set of constructive proposals had been tabled and that a more realistic programme was now available. As a result of CA's pressure the following action resulted:

*Jo. - then evidence*

- a. Two additional sets of flight-worthy MSA spares were made available to support flight development programme.
- b. There were management changes at MRSL (manufacturer of transmitters), organisational changes in GAV's Airborne Warning Systems Division and a stiffening of GAV's management at Borehamwood by the appointment of a General Manager with specific responsibility for the performance of the company on the Nimrod MSA and the Tornado airborne intercept (AI) radar.
- c. A six-weekly series of reports from GAV to CA was instituted which closely monitored significant milestones (this in addition to normal management information systems).

*But it didn't*





works in place of the cost-plus incentive fee basis of the original contract.

Aug 1984

GAV incentive offer received: implied over 20% increase on approved cost of approaching ASR 400, and first aircraft to such a standard not available before 1989.

Aug/Sep  
1984

First production aircraft fails test of its acceptability to the RAF for training because of poor availability of MSA.

Dec 1984

Joint Trials Unit established at RAF Waddington to prove the Nimrod in a Service environment, with aim of improving MSA availability and working up engineering and supply procedures. First production aircraft transferred to Waddington.

May 1985

Mr Levene (Chief of Defence Procurement from March 1985) agreed with Lord Weinstock (Managing Director of GEC) the broad principles of an incentive contract. Most important feature was that development would continue at the company's rather than the taxpayer's risk, and that no further payment would be made to GAV in respect of development unless and until they had

demonstrated that system performance met MOD's specification.

*Reported to me. Together with the firm that the man - who bit to MOD specified to GAV a minimum level of capability acceptable as an initial standard at which the Nimrod could enter service. It was hoped that aircraft to this standard could enter service in 1987.*

Jul 1985

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*17 Dec* Dec 1985

GAV belatedly submitted an initial offer which did not comply with the terms agreed between Mr Levene and Lord Weinstock in May and which was considered totally unacceptable in terms of operational capability, timescale and cost.

*Not reported to me! believed the previous emergency to be a failure*

*What date?*

Meetings between Mr Heseltine (Defence Secretary from January 1983 to 9 January 1986) and GEC resulted in a revised offer. Estimated cost over £1250M (i.e. £375M on top of the £882M already spent or committed). In-service date not until 1990.

*Why - why was there any change in the previous emergency?*

*17 Dec* Jan 1986

Military advice that the level of capability offered would be so far below the Minimum Initial Operational Capability that it would be of no use whatsoever to the RAF, even for training purposes. Substantial further work and expenditure would be necessary even to approach

ASR 400. Advice by Chief of Defence Procurement that the GAV proposal did not represent value for money.

Jan/Feb

Further negotiations with GEC resulted in risk-1986 sharing arrangement for GAV to continue development of MSA for a period of up to six months at a maximum cost of £50M; during that period MOD to seek costs of alternative AEW systems so that way forward may be determined.

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16th February, 1977

*Dear Prime Minister,*

I am very sorry to have to bother you again about a matter which might in the ordinary way have been taken up with the departmental minister concerned. The subject is the Airborne Early Warning system, for which there are two contenders,

- (i) the U.K. AEW Nimrod; and
- (ii) the U.S. AWACS.

With the highest motives of fulfilling our obligations as a member of the Alliance, the U.K. has participated constructively in the protracted NATO consideration of AWACS. NATO has not been able to make up its mind, questions arising as to the operational suitability of AWACS for Europe, as to its cost, and as to any counter-benefits which might fall to the non-US participants by way of off-set. For the U.K., it turns out that the off-set will be very small, while the other

*two*

two questions remain unresolved.

I am sure you are well acquainted with the details of the controversy. On the one hand, AEW Nimrod will meet the operational requirements for the defence of the U.K. and fulfil our obligations to NATO. It will do this at the right time and at least as effectively as AWACS. It will cost notably less. It will integrate more readily and cheaply into the existing RAF operating and support structure. It will be completely inter-operable with the NATO ground environment and with USAF aircraft deploying in Europe.

On the other hand, if AWACS is bought, the ultimate cost of the so-called enhancements to meet the full U.K. and NATO requirements is unknown. The operating and ground support organisation will have to be developed also at unknown cost.

No doubt Boeing would present the arguments differently. But there are two points they would not make.

/Firstly

Firstly, if AEW Nimrod wins, there will be secure for five years, at any rate, 7,000 jobs in GEC-Marconi, Hawker Siddeley and their sub-contractors. If AWACS is chosen, there will be under sub-contract from Boeing at the most only 500 jobs for Britain. I do not have to emphasise the importance, particularly at the present time, of preserving 6,500 jobs which will be otherwise lost.

Secondly, if we go along with AWACS we will once again be handing over to the Americans an area of advanced technology in which we are at least as competent as they are. Airborne radar is a really complicated game; we are good at it, and it employs some of our brightest and brainiest people. In your letter to me of 11th November about nuclear energy, you were good enough to make specific reference to the importance of technological achievement in re-building our national self-confidence.

For reasons of Government policy, little is officially known of the AEW Nimrod system outside the

/U.K.

U. K. AEW Nimrod has not been presented to or evaluated by the other NATO countries; its effective capability, and its performance and timescale relative to AWACS are not widely appreciated.

From what we read in the Press, it seems that a NATO decision in favour of AWACS depends upon agreement between the parties on funding. Germany has no funds budgetted for airborne early warning. But Germany, like our own country, would find it uncomfortable, to say the least, to be the only opponent of an otherwise unanimous NATO decision.

If it is accepted that U. K. interests are better served by adopting AEW Nimrod rather than AWACS, the German position provides a key to the resolution of the difficulty. A work sharing arrangement between the U. K. and Germany to produce AEW Nimrod would satisfy NATO operational requirements and maintain employment and expertise in Europe. Of course, the Secretary of State for Defence, as a member of the NATO committee, can hardly make such a proposal to his German colleague.

/And

And that is why I am appealing to you to organise, by whatever means you judge appropriate, an approach to the German government offering them participation in the AEW Nimrod programme.

As the time for decision is already upon us, I would be grateful if the matter could be treated with some urgency. GEC-Marconi and the Hawker Siddeley Co. are ready at any time to make a full presentation of the AEW Nimrod system to the German authorities. And we are, of course, all at your disposal should you wish to call us for further discussion.

*Yours sincerely,*

*Arnold Weinstock*

A. Weinstock

The Rt. Hon. James Callaghan, MP.,  
10 Downing Street,  
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Defence, Procurement Pt 3

