

# Case study on the nimrod project history essay



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BUSTER**

In the early seventies it became clear to NATO intelligence that the Warsaw Pact was developing several new fighter-bombers capable of mounting direct attacks on Western Europe, flying very fast, in large numbers, and very low, under the ground radar horizon. To combat this new threat, the NATO nations agreed to purchase a very expensive new defence called AEW – Airborne Early Warning. The system involved, literally, putting a radar station in the sky where it could look down and see enemy aircraft as far away as 250 miles. The flying radar station could then warn whomever necessary, and also act as a command and control system of its own, capable in war of ‘managing’ its own fighters to counter-attack the raiders.

By the mid-Seventies, in the United States, Boeing and Westinghouse radar had just finished a long, painfully expensive development of such a system. They ‘married’ a special radar to the military version of the Boeing 707 plane and called it AWACS (Airborne Early Warning and Control System). AWACS has a huge, ugly radar scanner perched like a mushroom on its back and a belly full of the most sophisticated avionics (radar) and electronics. By 1977 the system was working and on offer to NATO. After much politicking, lobbying and haggling, Washington offered the AWACS to NATO at an extremely generous price. Britain’s share would have been £228 million (1977 pounds).

So, if we’d played our cards right, we could now have full AEW coverage in Britain for a mere £460 million (1985 pounds).

In fact, Britain had decided to join the NATO AWACS project. The Royal Air Force liked the plane, and the government actually wanted an integrated

NATO AEW system. But the moment that that decision was taken by the then Labour government, a powerful lobby began to wind itself up to get the decision reversed in favour of an all-British AEW system. British Aerospace (Bae) happened to have several old Comet airliner frames lying around: three were ex RAF, eight had been built by the Labour government for no purpose at all save to keep employment up, thereby relieving the taxpayer of £24 million. And Marconi Avionics (now GEC Avionics) had been working on the development of an AEW radar and had already received 'trickle funding' of £14 million. If Britain were to opt out of the NATO AWACS deal, it would need 11 of its own AEW aircraft – to be called Nimrods.

Defence Minister Fred Mulley found himself under considerable pressure from Little Englanders, backbenchers, carefully organised trade union delegations and persistent Bae and Marconi lobbying to reject AWACS and Buy British. Not only, it was argued, would this emerging technology remain ours, but also, far more importantly, the contract would create 7, 000 much-needed jobs. The first argument was sound; the second was poorly thought through. In fact, the Americans were offering a generous offset deal to NATO if it bought AWACS. The highly lucrative contract for marrying the radar to the plane would have gone to British Aerospace, and the fleet of 27 NATO planes would have been based in Britain. Indeed, in the long term Britain would probably have created more work for itself by buying into the AWACS deal. The only jobs that we would have lost – some 2, 000 specialist avionics and electronic and computer engineers – were among a group of the most employable people in the Western world. But this argument was not heard in the House of Commons when Mr. Mulley was ceaselessly harried to buy

British and buy now. Slowly the Nimrod lobby gained strength. Its greatest asset was a NATO ministerial Council that dragged its feet over which country should pay how much for AWACS. The West Germans in particular were delaying a decision, partly because their own defence budget inflexibility made it difficult to divvy up quickly, and partly because Defence Minister George Leber thought he could pressure a little more out of the Americans.

Faced with the demands of the lobby and assurances from his Ministry advisers that Nimrod was capable of being delivered by November 1981, Fred Mulley imposed a deadline on the NATO Ministers: agree on AWACS funding by March 1977 or Britain goes it alone with Nimrod. The historical version of what ensued is that the Germans continued to procrastinate, and left Mulley no choice but to withdraw. However, there is still some confusion about the truth of that. West German Defence Minister George Leber says he left his friend Fred Mulley 'in no doubt whatsoever' that he would join the NATO AWACS programme and that it was just a question of time (indeed, the Germans did join 18 months later).

Nevertheless, Britain pulled out of the best AEW deal it could ever have struck, and opted instead to take the long, dark road of discovery and produce its own highly complex AEW system, not, as the Americans had done, in 15 years, but in an astonishing four years. 'We just couldn't understand why you guys decided to reinvent the wheel', said a friendly Westinghouse man.

Marconi had been developing a different kind of AEW radar. Instead of mounting one big scanner on the back of the airframe, they would build two small scanners, one in the nose and one in the tail. The rotation of the dishes would be synchronised and the signals processed accordingly. Theoretically the system would be better over water than AWACS (and may yet be), even though the old Comet airframe is a third smaller than the Boeing 707.

Just how undeveloped Marconi's radar was in 1977 seems not to have been fully appreciated by the Ministry of Defence scientists who studied the theory of the process and looked admiringly at a rather basic ground-working display. Why anyone actually believed in the 1981 deadline is equally mysterious. If Nimrod was to have only the same number of problems as the AWACS had in its development then it couldn't be on station before 1987.

The agent for the huge contract was the Ministry of Defence Procurement Executive or MOD PE. The customer would be the Royal Air Force: British Aerospace would supply and convert 11 Nimrods and integrate the avionics (radar), which would in turn be made by Marconi Avionics (now GEC Avionics). The Ministry promised that the first interim version of the Nimrod would be up and about in 1981, and the whole squadron go on-line by 1985. The cost? Parliament was never told: in fact the way Parliament has been treated on the subject of Nimrod is little short of a national disgrace. In fact, the figure was £306 million.

The MOD PE decided to create a ' Cost Plus' contract for Nimrod – the biggest single systems contract of its time. Cost Plus means that the contractors charge the taxpayer what the item cost to make, plus an agreed

profit (Marconi say this was three percent but I believe it was more). The system could have been contracted on a ' Fixed Price' basis, which means the MOD PE tender out, then accept a fully specified contract at the price the contractor quotes. (It's worth remembering, incidentally, that Marconi was the only radar game in town for Nimrod). Unless rigorously supervised, Cost Plus can become a bottomless pit. Nevertheless, the MOD PE argued that Nimrod would have to be contracted Cost Plus because of the unknown amount of development the system would entail. Marconi says that that was all right but a Cost Plus contract ran effectively gave the MOD PE control and responsibility over everything. In the event, the four-year Cost Plus contract ran to ten years.

Normally it would have made sense to appoint a prime contractor to oversee the job and take responsibility for presenting the MOD PE with a finished and working Nimrod on time and on cost. That way, to put it inelegantly, someone has the power and authority to ' kick arse'. But no prime contractor was appointed. Why? The MOD PE thought that Bae didn't then have the experience to do it (but do now), nor did Marconi know enough about airplanes to do it. (British Aerospace now say privately they wouldn't have become prime contractors for love nor money once they'd seen that absurdly early MOD deadline).

So, with that unrealistic deadline, with no prime contractor, and with a set of specifications and requirements which, to be fair to Marconi, must have been a little imprecise, to put it mildly, the MOD PE and the two contractors set off down the long, dark road of discovery. And the problems began.

First, Bae suffered industrial disputes which created some time-slippage. Marconi, too, found some problems in developing the radar as quickly as they would have liked. They suffered specialist recruitment problems – radar engineers aren't two a penny in Britain. The third partner, the MOD PE, also stumbled. In a 1979 review (for the new Tory government), they discovered their original cost estimates had been out by a little matter of 20 per cent. A blissfully ignorant Parliament was told that April that Nimrod was now 'in full development, with the design work well in hand'.

In the early eighties, more pain. A moratorium on defence spending hurt Marconi for several months, leading to more slippage; wage restraints allowed some of their best engineers to be lured out of the country. Bae had caught up with their slippage to a certain extent, but were now finding problems in their factory in the working relationship with Marconi. To make matters even worse, the MOD PE had created a two-committee bureaucracy for the Nimrod project. One committee looked after the airframe and one after the avionics. Whoever had the job of coordinating, integrating, consulting and smoothing out the recurring problems wasn't earning any medals. MOD PE project directors came and went, on normal rotation. Nimrod was now slipping badly on time and costs, and no one seemed to want to crack the whip.

Finally, by May 1983 – the original deadline now well and truly dead – a Nimrod plane with a radar set was flown to the Ministry's testing grounds at Boscombe Down. MOD scientists, RAF officers, Bae and Marconi men eagerly awaited the first flight trial of what was fast becoming the most expensive plane in the world. Reputations were at stake.

During the first six flights of the plane, the radar scarcely worked at all. When it finally did, it produced a radar picture that was 'militarily unusable'. Nimrod failed its test. Angry and astonished protagonists reported the bad news to their head offices. By September, when the plane again failed its trials, Geoffrey Pattie, an early and vociferous member of the original Nimrod lobby, was now Minister of Defence Procurement. The buck rolled into his sixth-floor office at the Ministry of Defence and stopped there.

On October 23 1983, Mr. Pattie was due to make his first formal visit to Marconi's Hemel Hempstead factory where they were making the radar. The top brass waited in the boardroom, a special lunch had been prepared and the workers all had neatly pressed overalls. Mr. Pattie arrived at 9 am for a five-hour visit – and stormed out 30 minutes later. What happened in between, according to a witness, was 'an incident in the megaton range'. Mr. Pattie, furious at Marconi's progress, was driven back to Whitehall and ordered that funds for the AEW radar be withheld. The punishment lasted several months.

Meanwhile, NATO's AWACS were being delivered as promised (the entire 18-plane delivery will be completed earlier than promised and with money left over to spend on a little 'gold-plating' too). NATO obligingly began to stretch its AEW cover to include the northern flank that Britain had agreed to cover with the Nimrods that haven't arrived. Last September, a public launch of the first interim Nimrod was proudly announced by British Aerospace. The defence correspondents were preparing to reach for their superlatives when a deeply embarrassed Ministry of Defence cancelled the launch. The radar



was still not acceptable to the customer, but at least the story had begun to leak out.

When, Labour MP Bruce George, a member of the House of Commons Select Committee on Defence, dared ask the government's new Procurement Minister Adam Butler when the Nimrod would be fully operational, what it would cost, and how much the figure differed from the original estimate, he received the following helpful and informative answer: ' It is neither our policy to reveal the dates on which defence systems become fully operational nor to divulge information which is commercially confidential'. Well, that's how seriously some people treat the House, and it's certainly the way billion-pound bungles stay snugly hidden inside Whitehall files.

What the Minister should have been able to reveal was a growing catalogue of Nimrod horror stories. In February 1985 the system suffers from the following problems.

1. The main GEC 4080 computer is now so overloaded it can only deal with half the targets it was originally required to deal with. The demand on the computing load has increased by 400 per cent since 1977: consequently the computer has to work more slowly. This is not what is required during an aerial battle when micro-seconds matter. The computer cannot currently accept any more programs. There are some temporary ways of increasing its memory store, but it simply does not contain the fifty per cent spare capacity the RAF wanted. It cannot therefore last much longer in its present state and will eventually need changing.

The replacement computer the RAF is looking at now, although it has compatible software (the program will need ‘rearranging a little’) still does not contain the full capacity required by the RAF. The one model that would do the trick still hasn’t left the drawing board. The options are then as follows:

Stay with the present saturated computer, adding memories, slowing its functions;

Buy an immediate replacement (not cheap) which itself will not be state of the art.

Wait for the experimental computer

Buy overseas the model you want and spend some 500 computer-man years rewriting the software.

‘It is’, said a depressed Ministry man, ‘a bit of a bugger’s muddle’.

2. The radar’s transmitter has had problems connected with the ‘purity’ of the signal it sends to the target. If that signal is electronically impure, then, on its return, those impurities read by the overworked computer as possible targets (which, of course, they are not) further overloading the computer.

3. There remain some endemic problems with the radar, which mean that natural ‘gaps’ in the coverage may be widened too far. There are reliability problems in the critical area of tracking and holding low-flying fast-moving aircraft – the very planes Nimrod needs to observe. Very roughly, on a bad day, there is a significant shortfall in the radar’s required efficiency.

4. The Nimrod's current data and communications system, with which GEC Avionics have had no involvement, is not a modern one. This means it cannot, in an emergency, pass huge quantities of data in total security to wherever the data is needed – another plane, a ground station, etc. It was always promised that Nimrod would be inter-operable and compatible to as high a degree as possible with its sister NATO AWACS planes. That is not the case now. Nor does Nimrod as currently configured have more than a very basic command and control over its own fighter force.

If it is ever to match up to its earliest requirements, Nimrod must be fitted with a highly sophisticated data transmission system called JTIDS (again, GEC Avionics aren't involved in this). The architectural and software changes, together with the capital costs of installing JTIDS, will cost extra millions of pounds.

Whatever happens now, Nimrod will have to be accepted by the RAF as a compromise in terms of what it asked for and what it expected. Just how large the compromise must be is being argued between the MOD PE and GEC Avionics. Whatever remains to be done will not be done on a Cost Plus contract. Meanwhile, Secretary of State for Defence Michael Heseltine, who has to pay the final bill, is sitting at his desk, reading the figures and grinding his teeth. What he reads will not go down well in Cabinet. Just to stop the haemorrhage and get something in the air that works after a fashion will need an extra £300 million – coincidentally the very price of the original 1977 contract.