

Subsequent software issues will be released to meet the trials programme and HMS VANGUARD's deployment.

c. The problems with the reliability of the electronic systems of the Self Protection Mast (SPM) described by the Committee in paragraph 30 of the 1993 Report (HC 549) have been overcome and modifications have recently been incorporated into HMS VANGUARD. Performance is proving satisfactory; further trials at sea will be undertaken shortly.

Q6.a. Are further missiles to be purchased from the United States in Fiscal Year 1994?

b. Are any further changes in the costs of D5 missiles expected?

c. As a result of the announcement of the Secretary of State concerning warhead numbers for Trident at the Centre for Defence Studies on 17 November 1993, will completion of the missile procurement programme be achieved any earlier than the 4-6 years referred to in the Government Reply to the Committee's Sixth Report of 1992-93?

d. What further costs are involved on modifying Trident for a sub-strategic use with regard to:
(i) the software;
(ii) the warheads?

Will any modifications be required to the system by which Trident receives targeting data if employed in the sub-strategic role? Will such modifications result in any delay to parts of the Trident programme?

e. What are the financial and manpower implications for (a) MoD and (b) AWE of limiting the number of warheads carried by Trident to no more than 96 per submarine? Will the A90 building at AWE Aldermaston ever reach full capacity?

A6.a. No UK missiles are planned to be purchased in US Fiscal Year 1994.

b. Costs are likely to fluctuate according to exchange rate movements and/or the effect of the size of annual US/UK orders. The extent of such changes could be self cancelling or marginal but could, either adversely or beneficially, prove significant. We and our US colleagues are seeking constantly to absorb and minimise any adverse cost movements.

c. The announcement by the Secretary of State for Defence in November 1993 on warhead numbers will not alter our missile procurement programme.

d. The use of Trident in the sub-strategic rôle will require some minor enhancements to the hardware and software of the UK shore-based target planning system, at an additional cost of just under £1 million, together with annual support costs in the region of £0.15 million. These costs do not fall to the strategic Trident programme, and accordingly, are not included in the Trident project estimate. No additional warhead costs will be incurred on account of the sub-strategic rôle, nor will this require any modifications to Trident communication facilities or to the Trident fire control system on the submarine itself. It follows, therefore, that there will be no consequential delay to the Trident programme.

e. The announcement does not have any financial or manpower implications for the MoD or the Atomic Weapons Establishment (AWE). Building A90 was not designed to meet a particular programme requirement. Only those areas needed for Trident are being made operational at this time. It is not possible to confirm whether the full capacity will be needed.

Q7. Although no UK nuclear tests are planned while the US moratorium is in force (until at least September 1994), are future tests still required to ensure the safety and efficiency of both WE177, Chevaline and Trident?

A7. We have hitherto depended on extensive above ground experimental (AGEX) work and computer simulation, coupled with a minimal programme of nuclear underground testing, as a cost-effective means of ensuring our ability to underwrite the safety and reliability of UK warheads. However in the light of the current situation on nuclear underground tests and the opening of negotiations on a Comprehensive Test Ban Treaty, our plans are now based on the development and exploitation of simulation and AGEX technologies to provide a basis for the continued underwriting of warhead safety and reliability.

Q8. Has the champion for nuclear safety yet been appointed?

A8. Yes. He is Dr Archie Ferguson. Dr Ferguson spent most of his career in the UK Atomic Energy Authority (UKAEA) including many years in a variety of safety-related posts, culminating in his appointment as Head of Safety for Culham and Harwell. Dr Ferguson retired from the UKAEA in December 1993.

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REAR ADMIRAL RICHARD IRWIN, MR GEOFFREY BEAVEN,
MR TONY QUIGLEY, MR DAVID LEWIS
and MR JONATHON THATCHER

[Continued

[Mr Trotter contd]

1118. Adversely?

(Rear Admiral Irwin) Not necessarily, although for the moment we are assuming adversely.

1119. What about the timescale?

(Rear Admiral Irwin) If the Americans were to reduce their buy and decide to terminate their production earlier then we would have to either bring our buy forward to tie in with their production, or bear a very much higher unit cost.

1120. That decision has not had to be faced yet?

(Rear Admiral Irwin) Correct.

1121. When do you think it would be?

(Rear Admiral Irwin) As the US budget goes to bed in the summer, so they will take decisions on that.

1122. Could you see us buying fewer in total as an outcome?

(Rear Admiral Irwin) That is always a possibility, but it is not one I envisage at the moment.

1123. Presumably the figure you have arrived at you calculated as being what we need?

(Rear Admiral Irwin) Yes.

1124. We have been told there are no missiles purchased in the US financial year 1993-94, is that just so far or is it for the whole of the year?

(Mr Lewis) They have placed the US order for their fiscal year 1994. That has already been placed.

1125. That is the year to September 1994?

(Mr Lewis) Indeed so. We have not included any UK orders in that consignment.

1126. Were there any more than the 18 we were told about last year purchased in the previous financial year 1992-93?

(Mr Lewis) That was the final figure for that year.

1127. 18. Is there still a total of 44 missiles?

(Mr Lewis) Already ordered and procured, yes.

1128. The cost of modifications to allow for tactical use of the missiles is minimal, we have been told. What is "minimal"?

(Rear Admiral Irwin) The money is being spent only on providing facilities ashore to the tune of £1 million, plus the £0.15 million per year over ten years.

1129. That is for the procurement, or for the change in the system?

(Rear Admiral Irwin) That is to procure and run equipment ashore.

1130. Do I understand from that that the total number of missiles will not be any different, but some of them will be different from what was originally intended?

(Rear Admiral Irwin) The total number will not differ.

1131. But some will be tactical as opposed to strategic?

(Rear Admiral Irwin) There is no such thing as a tactical or strategic missile; it is the use to which you put it.

1132. The end?

(Rear Admiral Irwin) Yes.

1133. What about the US, are they making a similar modification, or considering doing so?

(Rear Admiral Irwin) I am not privy to American plans.

1134. Is everything still on target for the first missile firing? I think it is from what you say?

(Rear Admiral Irwin) Yes, it is.

1135. How many are you planning to fire? Can you reveal that to us?

(Rear Admiral Irwin) Two.

1136. And then there would be an annual firing thereafter?

(Rear Admiral Irwin) Not annual. We are intending to fire from each submarine after completion of build.

1137. And then after each recommission, I suppose?

(Rear Admiral Irwin) Not necessarily. We may or may not.

Mr Churchill

1138. Will that be full range?

(Rear Admiral Irwin) Not necessarily. There are more challenging profiles and ranges are not necessarily full range. We will be firing it over the years over a wide variety of different profiles.

Mr Trotter

1139. The reduction in the number of warhead numbers per boat, has that affected the missile programme at all?

(Rear Admiral Irwin) Not at all.

1140. So there is no change whatsoever, apart from the actual warheads—no change at all in the overall programme?

(Rear Admiral Irwin) I did not mention any change in the warheads. There is no change in the missiles.

1141. But there has been no consequent change in missile procurement as a result of the changes in warheads?

(Rear Admiral Irwin) None at all.

Mr McWilliam

1142. I am having trouble understanding one of your answers, Admiral. You said there is no

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[Mr McWilliam contd]

difference between a tactical and a strategic missile in this context, did you not? Does that imply a mixed warhead load possibility on each missile

(Rear Admiral Irwin) I think I will ask the Director of Policy and Security to come in on that one.

(Mr Thatcher) I think the sense of the answer was intended to be in terms of the missile that is procured. There is not a difference. The missiles are the same.

1143. But clearly you would not load up a mixed warhead load because presumably if you are using the missiles tactically you would have to neutralise somehow or other the strategic heads on it?

(Mr Thatcher) Clearly that is one of the things we are now considering as we now look towards the point at which Trident will first begin to take on a non-strategic role.

1144. While we are on policy, you were talking earlier about the tactical role. Can you tell me how anybody who has a tactical launch directed at them could, at launch-out or at any point until the warhead had actually gone off, determine whether it was a tactical or strategic load coming at them and what action they would be likely to take?

(Mr Thatcher) Obviously concerns like that were an important part of the decision that was taken.

1145. Why did you take it then?

(Mr Thatcher) It is already long since and always has been part of NATO planning in particular, that NATO would communicate clearly its intentions, particularly in relation to any decision to use nuclear weapons at a non-strategic level, to make it perfectly clear that NATO's intention was to bring a conflict to a halt in order to allow the political process to resume. Clearly using Trident in a sub-strategic role, or considering using it, the communication of intention would be an equal and perhaps, as you say, more important part of the process. There is no doubt at all in our minds in considering Trident for that role that communication of what is the United Kingdom's intention, the nature of the activity to be undertaken, will be fundamental. It is also the case, which will be perhaps more apparent to some potential adversaries than to others, that sub-strategic use would not entail the number of missiles that one might reasonably have supposed in a strategic strike, but that is secondary to the communication of the United Kingdom's intentions.

Mr McWilliam: There is an awful lot of "ifs" there.

Chairman: That is a comment.

Mr Churchill

1146. Are you considering in terms of a sub-strategic capability only putting a tactical warhead on the standard Trident missile or are you also giving consideration to the possibility of a limited buy of Tomahawk, which might not necessarily be confined exclusively to deployment on VANGUARD class submarines?

(Rear Admiral Irwin) I am sorry, I am not quite

clear. The Navy are certainly interested in Tomahawk but nothing to do with nuclear weapons.

1147. When you are talking about the sub-strategic capability that is being considered or even planned for Trident now, will there be a question of putting a tactical warhead on top of a Trident ballistic missile or is consideration being given to the possibility that it might be more cost-effective to make a limited buy of Tomahawk cruise missiles for deployment either on the Trident submarines or on any other Royal Naval submarines with a tactical nuclear warhead?

(Rear Admiral Irwin) No, there is no consideration being given to that.

1148. Not even for evaluation of the cost-effectiveness of the two systems?

(Rear Admiral Irwin) No. The Government has decided to use Trident as the sole sub-strategic weapon after the retirement of the WE 177.

Mr Cook

1149. Following the bilateral detargeting agreement with Russia in February, the Department stated formally that: "Guidance computers on board UK Trident and Polaris missiles will not routinely hold targeting information and the primary targets will be points in the open ocean." For its sub-strategic role in order to fulfil this revised function, what changes will be needed to the Trident that you are buying off the shelf?

(Rear Admiral Irwin) None.

1150. None at all? No redesign?

(Rear Admiral Irwin) No.

1151. No additional cost?

(Rear Admiral Irwin) No.

Mr Campbell

1152. The exchange that you had with one of my colleagues—I think he has temporarily left us—persuaded me of the extent to which we are dependent upon the United States and particularly the question of whether we might have to pay a higher unit cost in the event of certain circumstances arising in the United States within, I think, the next six months or so. I think I am right that there is a bit of a head of steam building up in Congress. I think I am right that Senator Bumpers and others have been arguing very strongly that, putting it rather crudely, the United States should not be subsidising the United Kingdom. What is your assessment of the likelihood of our having to pay a higher unit cost because of changes in the American programme?

(Rear Admiral Irwin) First, can I say there is absolutely no question of the United States subsidising the United Kingdom.

1153. That is what Senator Bumpers says.

(Rear Admiral Irwin) Indeed, we pay the market price for our missiles and the reason we have not

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[Mr Campbell contd]

(Mr Thatcher) Yes, on the basis of four submarines and on the basis of the ceiling figure.

1204. That is what the Secretary of State says, no more than 96 and four submarines. You have got 96 warheads, and since they are capable of being MIRV'd that gives you, per submarine, the possibility of 96 targets. So far as Polaris is concerned it is accepted, and I hope you will accept it for the purpose of the argument, that the maximum number of targets per Polaris submarine is 16. Are you with me so far?

(Mr Thatcher) I am with you.

1205. If the maximum number of targets for the Polaris force on these figures is 64 and for the Trident force on the Secretary of State's announcement is 384, then how is that one can apply the definition of 'minimum deterrent' to each of these two sets of circumstances?

(Mr Thatcher) I think there are two points I would make in answer to that. Firstly, the Secretary of State made clear that it was a ceiling and that VANGUARD Class submarines might well deploy with significantly smaller numbers of warheads. Secondly, that the means of the operational nature of the two systems is different and consequently the comparison purely of the number of warheads put in the air is not a direct guide to the effectiveness of the system.

1206. Would the number of targets capable of being hit not be a direct guide to the effectiveness of the system?

(Mr Thatcher) No, because deterrence depends on assessing, as you said I think, the damage that would be regarded by an aggressor as unacceptable, and that is not necessarily a linear function of the number of targets, it depends on the nature of the targets and the location.

1207. One last question, because I understand the Chairman would like to move on. Are you saying that in the mind of a potential aggressor, the fact that one system may be able to strike seven times approximately the number of targets as compared with another system, would not bulk substantially in the mind of the aggressor?

(Mr Thatcher) The aggressor will take into account what he knows about his own capabilities. Our belief, and essentially it has to be a matter of judgment in the circumstances of judging a potential aggressor's thought process, is that what we will be able to achieve with the capability that we intend to deploy with Trident will, to essentially the same degree as Polaris, deter him.

1208. Not greatly?

(Mr Thatcher) Essentially, no.

1209. He is immune to the fact there are a potential 384 warheads and that all of them might have the effect of hitting an individual target, in this analysis that you have given us?

(Mr Thatcher) As I said before, our perception, our assessment is that the relationship of being deterred to the number of warheads is not linear in that sense.

1210. That seems to me to be an argument then perhaps for fewer warheads than there are on Polaris, if they are capable of being independently targeted?

(Mr Thatcher) There are other operational aspects of the systems that are significantly different.

Chairman: We must move on.

Mr Churchill

1211. Can you clarify whether the yield of a Trident warhead is decided at the time of manufacture, at the time of loading, or is it actually variable while it is in the submarine prior to launch. Can you dial in the yield that you want within a certain range?

(Rear Admiral Irwin) I was just checking whether there was an embargo on that. It is a fixed yield and determined on manufacture.

Chairman

1212. Just to put it into context, can you tell the Committee how many warheads the Russians hold?

(Mr Thatcher) The START II Treaty, once totally implemented, will bring the figure down to approximately 3,000.

1213. And at the moment?

(Mr Thatcher) It is very much higher than that.

Chairman: It is nearly 10,000, I think, is it not?

Mr Churchill

1214. You are talking of just strategic; overall it is 27,000?

(Mr Thatcher) I was talking just strategic.

Sir Nicholas Fairbairn

1215. 27,000 admitted.

(Mr Thatcher) Indeed.

Chairman: Let us come back now to our agenda.

Mr Home Robertson

1216. The warhead programme at the Atomic Weapons Establishment is on schedule despite the fact that A90 entered production late. We have been told that the Secretary of State's announcement of the 96 warhead limit per boat had no effect on the programme so—from your last evidence to the Committee, which dealt with the short contingency in the warhead schedule, and the need for A90's greater output capability to be brought on line on time if the programme was not to slip—it follows that production must have increased in the old facilities, A1.1 and A45. Can you confirm that?

(Mr Beaven) The straight answer is, yes. This was achieved by a combination of optimising the programme requirement, which took out some of the peak rate production needs; and the production expertise which was brought into the establishment through the contractorisation activities that have

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Sir Nicholas Fairbairn

1303. Was the warranty put into effect?

(*Mr Thatcher*) Most of the problems were dealt with under the warranty arrangements. These were just the two items we decided of our own volition should be changes which should be done.

Chairman: Thank you. What I would like to do now is close the public session, clear the room, and then we will go into one or two matters in private session.

[Qq 1304 – 1309 are classified and not printed].

Mr Cook

1310. It struck me at the time the decision was taken to discard the TASM programme and adopt a sub-strategic role for Trident that the cost of such a delivery vehicle for such a purpose seemed to me anyway, as a layman, to be insanely expensive. Is that not so?

(*Rear Admiral Irwin*) It is a very good balance. To develop a complete new tactical weapon system would cost a very large sum of money. Against that one has to put that if you use Trident for it it would be quite expensive to have one shot. But actually these days tactical weapons are extremely expensive as well. So it is not as though it is a different order of magnitude. It would be somewhat more expensive to fire one Trident than it would be to fire one tactical weapon.

1311. But we do develop these in conjunction with allies as opposed to buying them off the shelf, as it were?

(*Rear Admiral Irwin*) We were thinking of developing something with the French but it would still cost a very large amount of money for the carrier, for the missile, and, of course, we would have been developing for ourselves the warhead.

Mr Campbell

1312. Figures of 3 billion were mentioned. I do not know if these were accurate or not but these figures were certainly in discussion once.

(*Rear Admiral Irwin*) Ball park figures.

1313. Just to be clear, what one would do leaving the quayside (if I can put it in such terms) is that one would put a mix, as it were, into the arsenal?

(*Rear Admiral Irwin*) Yes.

1314. There would be some strategic and some tactical, and you would make that decision, I think you told us last year, in advance before you leave the quayside? This is not a decision you make once you are in the water?

(*Rear Admiral Irwin*) You would have to configure it before you left. Having left, you can choose the way a missile is configured and say, "I will use that one sub-strategically." You can also use it strategically. If you configured it to only have one bang then its strategic side would be relatively small, but depending on how you configured it, it can make a bigger or lesser contribution.

1315. But you have, as it were, to allocate. You have to create the match between missile and warhead before you go to sea?

(*Rear Admiral Irwin*) That is correct.

1316. So that would depend on your assessment of the threat or the political circumstances? All of that has to be built into the decision-making before you have actually seen the boat?

(*Rear Admiral Irwin*) And how many boats you have at sea at the time.

Mr Campbell: And how many our allies might have as well.

Mr McWilliam

1317. The announcement on the tactical version came out after the announcement that TASM was no longer to proceed. How much of this was to meet a perceived threat and how much was just to placate somebody with a petted lip?

(*Rear Admiral Irwin*) Not the latter at all!

Chairman: I think you have answered it, Admiral. I do not think we need to go into that in more detail.

Mr McWilliam: No, I would rather deal with the threat in public actually.

Chairman: You will have the opportunity to do so. Very finally, Mr George?

Mr George

1318. The travel by sea option, were you excluding it from the public or from us?

(*Rear Admiral Irwin*) I do not see any reason why we should not give it here.

(*Mr Beaven*) * * *

1319. It could be used more frequently?

(*Rear Admiral Irwin*) * * *

Mr Campbell

1320. Convoys divert the CND, I suppose, in a sense?

(*Rear Admiral Irwin*) You still have to drive to a port, so it does not solve that problem.

Mr Cook: They are soon spotted.

Chairman: I would have thought the risk might be higher at sea, more difficult to detect. Before we go into the stratosphere, thank you very much, Admiral and everybody.