IV SAFETY ISSUES

Safety Elements

36. MoD last year confirmed to the Committee that Trident is indeed one-point safe.[139] Concerns, however, still remain as to whether it is as safe as it could be, and whether or not it contains such elements as fire resistant pits, insensitive high explosive, or enhanced nuclear detonation systems, all designed to increase warhead safety. In the United States, information concerning the incorporation of such features in warheads has been made public.[140] The MoD here, however, will still not make public whether or not these devices are part of the UK Trident warhead. In our last Report, we asked MoD to reveal this information, or, if it would not, to at least explain the basis for its unwillingness to do so.[141] In its Reply, MoD re-affirmed that "for reasons of national security, it has been the long-standing practice not to disclose details of warhead design", and that the information should therefore not be released.[142] **The Committee considers this unsatisfactory**, especially as the US evidently considers releasing such information as fully compatible with its own national security. **While MoD may feel that there is no reason why Trident should be considered unsafe, it has a duty to maintain public confidence in the safety of the system; and we repeat our conviction that this is best achieved through greater openness concerning the safety systems adopted for the Trident warhead.**

WE-177

37. In his speech of 18 October 1993, the Secretary of State announced the cancellation of the Tactical Air-to-Surface Missile (TASM) which was to provide the UK's sub-strategic nuclear capability once the WE-177 free-fall bomb was finally withdrawn from service.[143] A substantial proportion of WE-177 free-fall bombs, and all depth charges, have already been withdrawn from service.[144] A sub-strategic capability is now to be provided by Trident which will therefore be the future platform for both strategic and sub-strategic nuclear strikes. As recently as SDE 92, the retirement date for WE-177 had been set at around the year 2000.[145] According to latest estimates, the WE-177 is due to leave service by the year 2007.[146] MoD explained in oral evidence that this extension was the result of "an ongoing testing programme" — non-nuclear — "which looks at the ageing effect on warheads".[147] All nuclear weapons are also "subjected to a continuous safety review".[148] At the initial point of manufacture, extra components are made that are then regularly tested as they get older. Warheads are also withdrawn from service and subjected to "very serious testing, such that it is destructive testing because the warhead is tested to destruction in a non-nuclear way".[149] In his Report, Professor Oxburgh also called for an additional design review every six to seven years and an immediate design review for the WE-177;[150] the latter is presently underway. Trident will undergo its first such design review at the end of the century.[151] **As nuclear testing after 1996 seems now increasingly unlikely, it will repay MoD many times over to learn carefully any relevant lessons from the ageing of the WE-177, the better to act as custodian for Trident in its twilight years.**

---

[139] 1993 Report, Qq 1525-1530

[140] Report of the Panel on Nuclear Weapons Safety of the House Armed Services Committee, Dr Sidney Drell *et al*

[141] 1993 Report, paras 14-15

[142] HC 917 of Session 1992-93, Annex B, para 4

[143] HC Deb, 18 October 1993, col 34

[144] 1993 Report, Q1587

[145] SDE 92, p 28

[146] HC Deb, 8 March 1994, col 136

[147] Q1254

[148] Q1251

[149] *ibid*

[150] Oxburgh Report, p 5, paras 14 and 15

[151] Q1264

[**Mr Cook** *contd*]
facilities as part and parcel of the business of exercising and maintaining proper stewardship of the nuclear weapons we have in a testless world.

Mr Churchill

1251. Can we briefly speak about the WE 177? Oxburgh said that it was one point safe, but stressed the need for an immediate safety review, and a safety review every 6-7 years for all nuclear weapon systems. First of all, can you give us the technical definition of the phrase "one point safe'; and, secondly, why did he call for an immediate safety review having said that it was one point safe?

(Mr Beaven) I am not sure I can quote exactly the definition of single point safety, but the essence is that if the high explosive within a warhead detonates only at a single point then the nuclear effects will not create a yield of any consequence. Zero yield is not actually the case, but it is virtually zero. That is the key design safety aim and feature of all modern nuclear weapons. In respect of the 177, again I cannot quote Oxburgh exactly, I think he called for a design review and not necessarily a safety review. The 177, as are all our weapons, is subjected to a continuous safety review. There is a programme of testing of components both when we manufacture the warhead initially and also extra components are tested over the period of life of the warhead, such that as components get older they are tested regularly. We also withdraw warheads from service and subject them to very serious testing, such that it is destructive testing because the warhead is tested to destruction in a non- nuclear way, and that programme is used to assess the ongoing safety of WE 177. That programme has been running for some time for that particular warhead. What Oxburgh said was, "Okay, perhaps we ought to go back to the original design clearance and re-run that original design clearance process every seven years", which is what we are currently doing. That is in parallel and in addition to this regular, what we call, "surveillance programme", which helps us to ensure that the warhead is safe.

1252. Has this now been done?

(Mr Beaven) The work we are doing is similar to the work which we would have done originally to clear that design. The Committee are aware for Trident that programme of work has been spread over several years, but it is not a small task. The 177 design review is underway but it is not yet complete.

1253. We do not have confirmation from that review that it is one point safe, that all is well with the system?

(Mr Beaven) Certainly the review to date has not provided any unexpected problems. I believe the single point safety has been looked at in the review and that, again, has not caused us any reason to withdraw the original clearance for the warhead.

1254. The life of WE 177 seems gradually to be extending. As recently as SDE 92 it was due for retirement before the year 2000, then it was planned for retirement well into the next century, according to SDE 93, and the date seems now to have been set at 2007, according to a reply given to Defence Questions on 8 March. What has been responsible for this extension?

(Mr Beaven) I have taken some time to explain to you this surveillance programme, which is an ongoing testing programme which looks at the ageing effect on warheads as it occurs. We use that to predict how much life we think is left in the warhead. We extend the life as we inspect it and as we get knowledge of how it is ageing. That has enabled us, as it has remained in service, to predict further life for the warhead. As you quite rightly indicate, currently we believe that that will take us into the early part of the next century.

1255. Fears have been expressed that since the safety of WE 177 was allegedly assessed single-handedly by AWE, the results could not be cross-referenced to really confirm one point safety, as happens in the United States. Do you think this is a fair criticism?

(Mr Beaven) I do not think it is an entirely fair criticism. The work that AWE did to predict single point safety is looked at by other bodies within this country, particularly the Nuclear Weapons Safety Committee, which spent considerable effort in looking at that particular aspect. Also the work that AWE do in terms of their ability to predict such factors is compared with work which is done in the United States on similar weapons and, therefore, we have some degree of confidence that what AWE did in the first place was correct.

1256. Are our own ships, Royal Navy ships, still nuclear certified?

(Mr Thatcher) We have withdrawn our maritime tactical nuclear capability, as was announced, I believe, a couple of years ago.

1257. And has that process of nuclear certification of Royal Navy vessels ended?

(Mr Thatcher) Yes.

Chairman

1258. Before we go off that, how difficult would it be to re- introduce if you decided you wanted to deploy WE 177 on Royal Navy ships?

(Mr Thatcher) That would be a substantial process. It is certainly not one for which we have any plans at the moment. In principle, of course, it could be done if the necessity was felt to have arisen.

1259. Over what timescale, though?

(Mr Thatcher) I am sorry, it would be wrong to make a guess without information.

1260. Would you be able to give that some thought and let us have a written note on this whole subject?

(Mr Thatcher) Yes.

Mr Churchill

1261. Previously these were installed in the form of nuclear depth bombs?

[**Mr Churchill** *contd*]

(Mr Thatcher) Yes.

1262. I take it you still will not budge on making public statements on whether or not Trident has such safety features as ENDS, IHE or fire resistant pits?

(Rear Admiral Irwin) That is correct.

1263. The regular six- to seven-year review that Oxburgh recommended, are you going to apply this to Trident?

(Rear Admiral Irwin) Yes.

1264. If so, when will the first such review take place?

(Rear Admiral Irwin) The first pass is being done now, so the first review would be six to seven years after we complete.

1265. And will it be done by AWE with or without the nuclear safety champion?

(Rear Admiral Irwin) With the nuclear safety champion.

1266. Talking of the nuclear safety champion, he has finally been appointed, has he?

(Rear Admiral Irwin) Yes, he has.

1267. Could you tell us about his powers, resources and programme over the next few years—how many staff, what input, what output?

(Rear Admiral Irwin) Mr Quigley works in the same area, so he can probably give you a better answer than I can.

(Mr Quigley) As you know, he started on 19 January. His group has three full-time technical staff supported with a part-time consultant and further supported by a personal secretary and some clerical staff. We can give you the terms of reference, if you wish, for him, but broadly speaking, if you look at recommendation No. 6 of the Oxburgh Report, all the things listed in there are things which the safety champion will do. And he has a right of access to the Minister of Defence Procurement.

1268. Will he report confidentially to MoD or openly to Parliament?

(Mr Quigley) He will report to ministers.

1269. Oxburgh recommended that he have a hotline to ministers and that he be empowered to assess the safety case of nuclear weapons systems, to set criteria for the reporting of incidents and accidents and to appropriately disseminate records of such, to compile a Nuclear Weapons Safety Manual and to maintain safety databases. Is all this being done?

(Mr Quigley) Yes. In fact, a number of those started before the champion was appointed because some of his staff were in place before he was, so this is well under way.

Chairman

1270. Before we move off the safety champion, the Committee knows who he is. His name is not secret, is it?

(Rear Admiral Irwin) No.

1271. Would you mind putting on the record who it is?

(Rear Admiral Irwin) Yes, Dr Archie Ferguson.

Mr Cook

1272. On the very point that Winston has just mentioned, the question of the manual, I have here a copy of the United States manual, 'Nuclear Weapon Accident Response Procedures". It is known as the NARP manual. They have had it in existence since January 1984, ten years ago. Are we saying that we will get something like this which can be distributed to local authorities and emergency services, so that they will know how to respond and who to respond to if your nuclear champion is only answering to the minister?

(Mr Quigley) That is a different manual to the sort of thing the safety champion is doing. I think Jonathan is probably the best person to talk about the accident response manual.

(Mr Thatcher) Yes. I think there is a distinction between nuclear safety intrinsically and planning for accident response, although obviously there are relationships between them. Nuclear accident response is clearly a different field of activity. We have guidance for local authorities at present which has been issued and on which we have received a very large number of comments, which we are now assessing, and we have plans for re- issuing and to some extent revising that guidance in the light of the comments we have received from a large number of authorities.

1273. Might I ask then if it is possible, once your guidance has been finalised, to have sight of a copy of it so that we can match it against the American equivalent, which is freely available?

(Mr Thatcher) I am sure there will be no problem in providing a copy.

Mr Churchill

1274. Last year a decision still had not been taken on how to load and unload Trident; it was still being assessed as to which method was the more safe, the United States method of warhead and missile together, or the United Kingdom method of warhead followed by the missiles. Has a decision now been made and can you tell us which it is?

(Rear Admiral Irwin) Yes, we plan to load the missiles and then attach the warhead to them in the submarine.

1275. Continuing the old United Kingdom practice?

(Rear Admiral Irwin) Yes. The United States have moved to this practice.

1276. From what date have they moved to our practice?

(Rear Admiral Irwin) We think about two years ago, following the DRELL study.