



CABINET OFFICE

70 Whitehall, London SW1A 2AS Telephone 01-233 8378.

SECRET UK EYES A

B.06925

7 January 1985

Dear Charles,

Briefing for the Prime Minister on BMD/SDI

*Prime Minister 63
This is additional technical briefing for your meeting with Professor Norman (MOD's Chief Scientific Adviser) tomorrow. It is well worth reading.*

2. Mr. McFarlane has asked whether he can bring General Abrahamson, head of the SDI Programme, on Wednesday. I have agreed. CDP 7/i

With my letter of 4 January I sent you three papers which might be useful to the Prime Minister in preparing for the private briefing which she is to receive from Mr McFarlane on 9 January on the US research effort into Ballistic Missile Defence. I promised to let you have, today, a short commentary on these papers and any updating of them which might be necessary. I now enclose a note, prepared by the Ministry of Defence, which brings the BMD/SDI papers up-to-date and puts our current knowledge of the US and USSR BMD programmes in perspective. You may wish to draw the Prime Minister's attention, in particular, to those sections of the note which deal with the comments made during her meeting with President Reagan on 22 December on the survivability of non-nuclear space based assets (paragraph 10) and the ability of a developed BMD system to counter Cruise missiles (paragraph 8).

Although I understand that Mr McFarlane's briefing of the Prime Minister is likely to be mainly factual, he may take the opportunity of developing the two basic arguments which he has previously advanced in favour of the SDI: these are that it is a necessary response to a shift in the strategic balance to the disadvantage of the West and that a Ballistic Missile Defence can enhance deterrence by altering the strategic calculus. If Mr McFarlane does revert to these concepts, I suggest that the Prime Minister might simply say that we are giving the most thorough consideration both to the points which were advanced by the US side at the Camp David meeting and to those embodied in the White House statement of 13 January on the SDI; that we still have some reservations about the US approach; but that she looks forward to resuming the discussion of these issues when she meets President Reagan again on 20 February. (FCO and MoD officials are preparing an analysis of the US case which will be ready for discussion at the Prime Minister's briefing meeting on 2 February.)

C D Powell Esq
10 Downing Street
S W 1

SECRET UK EYES A

I also take this opportunity to repair an omission from the set of Treaty texts which I sent to you with my letter of 4 January: this is the text of the Protocol, signed in 1974, to the 1972 ABM Treaty, limiting each side to only one ABM deployment area.

I am sending copies of this letter, with the first enclosure only, to John Weston and Robert Alston (FCO) and Nigel Nicholls (MoD).

Yours ever,

Bryan.

B G Cartledge

SECRET UK EYES A

US AND USSR BMD PROGRAMMES

1. A summary comparison between US and Soviet attainments and capabilities in BMD R&D was contained in Annex C of the joint MOD/FCO paper on the SDI. This remains valid. As far as Soviet ABM R&D is concerned, there is little to add to the assessment in JIC(84)(N)30.

2. For twenty years or so the Soviet Union has been pursuing an R&D programme which could give it the capability to mount some kind of ballistic missile defences in space. This includes the development of high-powered lasers; heavy lift space vehicles and reusable spacecraft. At the same time it has been upgrading its existing ground-based ABM system located around MOSCOW, with improved interceptor missiles and a new range of ABM radars. The developments which are seen are a logical extension of technological advances and the Soviet pre-occupation with Defence of the Homeland, but there is ^{conclusive} no evidence of any Soviet intention to abrogate the ABM treaty at least within the foreseeable future.

3. There is very little to add by way of developments since the JIC assessment was made. There is further evidence to support the statements made in para 12 of the Note as regards the effort the Soviets are dedicating to operating space-based lasers. The

possibility that they may also be developing a high-power ground-based laser for use with space-based deflecting mirrors has also gained some credence. However, at the moment we can go no further than this. The role and purpose of the Abalakovo radar is still not resolved. The Russians have persistently claimed that it is space-related, but it may well be a long-lead item in some kind of BMD activity. However we cannot claim this with any certainty at the moment.

4. An assessment of US attainments and capabilities is, in some ways, more difficult to make. We have received a number of US briefings on the SDI programme, but most of these have concentrated on strategic and political issues and aims, rather than technical achievements. There is a considerable amount of material appearing in the technical journals, but it is not clear how much reliance can be placed on it.

5. In a study commissioned by CSA, AWRE and RAE attempted a best assessment of US progress as a starting point for a judgement of the longer term potential of the SDI. A historical perspective of US work produced in June 1984 for this report is given in Annex 'A'. Work on laser damage weapons started in 1966 and most progress since has been in this area. However, the demonstrations of satellite sensor damage and short range missile intercept from ground and aircraft based lasers were at relatively low power. Although considerable effort has gone into particle beams and microwaves these

are still at a comparatively early stage of research. The published list of technology areas being considered in the SDI programme is consistent with this in that the topics include DEWs and kinetic energy weapons, precision sensors, tracking and pointing, millimetre and laser imaging, high velocity projectiles, hypervelocity guns and electronics/computers for battle management.

6. In August, 1984 NATO was invited to send representatives to observe a 3-day conference at which a briefing on the US SDI programme was presented by Lt Gen Abrahamson's staff. Only the UK and France accepted this invitation. The prime purpose of this meeting was to seek proposals to explore SDI related technology from US contractors. The UK was allowed to attend all the briefings at Secret level but was excluded from a session involving nuclear driven devices, eg. X-ray lasers, and high endoatmospheric discrimination. Although some detailed points differed from earlier UK scientific assessments, and the general tone of the presentations was distinctly optimistic, the UK technical views reported in the AWRE/RAE study and used in the MOD/FCO joint paper remain valid.

7. The US presentations indicated that the current preferred systems are space and ground based kinetic energy weapons, space based lasers, ground based lasers with space based relay optics, space based neutral particle beams and nuclear driven devices. The emphasis on the role of kinetic energy weapons in the SDI programme was stronger than had been appreciated previously in the UK. In particular, it was

claimed that a concept involving kinetic energy intercept of the ballistic missile post boost phase by a space based system would be potentially cost effective. Such a system called PORCUPINE might include a large number of individual chemically driven projectiles (numbers from 5 to 150 have been quoted), each projectile capable of terminal guidance to kill a post boost vehicle. (The issues of saturation, target acquisition, guidance in a hostile environment and overall practicality were not discussed).

8. The US presentations stressed that the SDI programme did not include low level terminal defence in its Terms of Reference ie. funding comes from alternative defence budget target headings. The reference during the Prime Minister's meeting with President Reagan on an SDI role to counter cruise missiles may relate to the application of SDI components or technology to short range point defence systems using either lasers or electron beams. Effective terminal defence of area targets against cruise missiles would be much more difficult. Alternatively the reference may have indicated a concept to intercept cruise missiles in mid course by space based lasers but this was certainly not raised as a system objective at the August SDI conference.

9. It is clear that the US SDI Programme Office does not believe that they have all the technical answers. Breakthroughs will be needed before the technology is available for a system. In particular writing reliable and verifiable software for overall system

integration is a major problem area. The Americans have produced no evidence so far to support the assertion that a fundamental shift in technical advantage from offence to defence is likely to occur.

10. The only technical area where an exchange has been initiated with the US specifically on SDI aspects is that of target damage effects. Collaboration so far has been confined to establishing damage levels for the various potential weapon types. During the Prime Minister's meeting with President Reagan there was a reference to recent work which indicated a potential for improving the survivability of non-nuclear space based assets. We are not aware of any progress in the effects area but it may be relevant that during the US presentations in August, the PORCUPINE system referred to in para 7 was also identified as a concept which could be applied to the defence of other space battle stations.

11. Inevitably since the US has not yet completed the necessary work to establish component feasibility it seems unlikely that more detailed technical information would alter UK scientific assessment. The US presentations in August were helpful and our first objective in any further technical interchange would be to request the US to release copies of the briefing material used then as this was very detailed and note taking was specifically forbidden.

12. A meeting in November 1983 between CSA and Dr Keyworth, the President's scientific adviser, included SDI aspects and it may be useful to exploit this link further to improve the UK's technical understanding of the SDI.

Mr. Keyworth was mentioned by DHJ