From: J R C Oughton
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MINISTER OF STATE FOR
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28 November 1985

Dear Tim.

... Mr Stanley has asked me to send you a copy of a paper prepared by the Ministry of Defence about Soviet ballistic missile defence activity, which he placed in the House of Commons Library on 26 November. This paper has been written in consultation with FCO officials, and has been cleared by the defence intelligence staff here.

Yours ever,

John Oughton

Tim Flesher Esq
No 10

THE SOVIET BALLISTIC MISSILE DEFENCE PROGRAMME

Introduction

1. The 1972 Anti-Ballistic Missile (ABM) Treaty, as amended by a 1974 Protocol, allows the United States and the Soviet Union to deploy one static ABM system with up to 100 launchers in defence of either an intercontinential ballistic missile silo field or the national capital. Development, testing or deployment of sea, air, space or mobile land-based ABM systems or components is forbidden although research into such systems is not precluded. If "ABM systems based on other physical principles and including components capable of substituting for ABM interceptor missiles, ABM launchers or ABM radars" are created there in an obligation under the 'Agreed Interpretations' of the Treaty for the signatories to enter into discussions aimed at limiting those systems.

The Soviet Position

2. The Soviet Union has the only deployed ABM system in the world. It is currently being upgraded and when completed will consist of 100 static launchers sited around Moscow, the maximum permitted under the 1972 ABM Treaty. The system will comprise a mix of the existing GALOSH missiles, which are nuclear tipped and designed to intercept their target outside the atmosphere, and the newer high acceleration vehicles (HAV) which are designed to intercept missiles after they have re-entered the atmosphere. This system will enable discrimination against all but the most elaborate penetration aids and will, when deployment is completed in the late 1980's provide a limited two layer ABM defence system around Moscow. The missiles are supported by a chain of early warning radars, and surveillance and target acquisition radars with target tracking and missile control radars in the Moscow area.

3. In addition, the Soviet Union has the world's only deployed anti-satellite (ASAT) system, a space-based orbital interceptor of limited capability. Although operational since the early 1970s the system has been tested on various occasions, not always successfully, and not since 1982.

Soviet Research Programme

4. An examination of Soviet research programmes indicates that mature research programmes are under way in most of the fields - directed energy weapons, heavy lift space capability, pointing and tracking, surveillance and target detection - which could contribute to a defence capability against ballistic missiles.

a. Lasers. The Soviet Union has an extensive R&D programme underway on high energy lasers which dates from the mid 1960s, is carried out at over half a dozen major R&D facilities, and employs more than 10,000 scientists and engineers. It includes research into three types of gas lasers, the gas dynamic laser,

the electric discharge laser and the chemical laser, and also other types including the excimer and free electron laser. Development of high energy lasers could include those intended for close-range defence of ships at sea, defence of high-value strategic targets in the Soviet Union and for air defence of theatre forces. An airborne laser has also been tested which could have ASAT or air defence applications, and the testing of a ground based laser which could be a prototype ASAT weapon has taken place.

b. Particle Beam and Radio Frequency Weapons. There is a vigorous R&D programme into particle beam weapons which could lead to a prototype space based system by the late 1990s. Research into radio frequency weapons is also taking place. These have the potential to interfere with components of missiles, satellites or re-entry vehicles. Testing of ground based radio frequency weapons capable of damaging satellites could take place in the mid 1990s.

c. Kinetic Energy Weapons use as a kill mechanism the high speed collision of a small mass with the target. The Soviet Union has a number of longstanding research programmes in this field including research and development of electromagnetic railguns to accelerate projectiles to extra high velocities. There is however no evidence of work on space based systems.

d. Surveillance and Target Detection. The Soviet Union possesses a launch detection system based on a satellite borne infra-red sensor in a highly elliptic orbit. It covers US inter-continental ballistic missile launches but in its present form is not capable of detecting submarine launched ballistic missile launches. An experimental geostationary satellite aimed at improving the performance of the current system has been launched and there is a strong research programme to improve capabilities in this field.

e. Pointing and Tracking. Any effective defensive system against ballistic missiles would require pointing and tracking accuracies of the order of 1 metre at ranges of 1000km to achieve high enough energy densities. Research is continuing in this field associated with the Soviet space programme but major advances would be necessary to provide the Soviet Union with adequate capabilities for weapons systems.

f. Space Capability. All the space borne elements of a ballistic missile defence system will require adequate facilities for their launch. The Soviet Union has eight space launch systems which are used to place objects in orbit and are developing two more, a medium lift launch vehicle and a heavy lift launch vehicle. They are also developing an equivalent to the US Shuttle. The new heavy lift vehicle should be able to lift as much as 150 tonnes into low earth orbit, adequate to launch the components needed for a large manned space complex or elements of space based weapons systems. With their manned space programmes they are also acquiring experience of maintaining complex platforms in space.

g. Command and Control. The most serious deficiency in Soviet capability is in the electronic systems required to manage the operations involved in detecting, tracking and recording all the missile movements covered by a ballistic missile defence system.

The Soviet Response to SDI

5. The Soviet propaganda response to SDI has been outright condemnation, on the grounds that such a system would be destabilising, but it has also accepted that it would have to counter it in some manner. In the most authoritative statement so far Minister of Defence, Marshal Sokolov, on 4 May 1985 said that the Soviet Union would have no choice but to take 'counter-measures' if the US started to undermine the "existing strategic-military equilibrium" by deploying weapons in space. He also acknowleged that the Soviet Union had a military space research programme but said that this was only for perfecting space early warning, reconnaissance, communication and navigation systems.

6. Marshal Akhromeyev, Soviet Chief of the General Staff and General Chervov, a leading arms control spokesman, have subsequently elaborated on Sokolov's statements. Akhromeyev said that the "limitation, still less the reduction, of nuclear arms is inconcievable in conditions of the militarisation of space". The Soviet Union would be "forced to build up its own strategic offensive forces, supplementing them by means of defence". Chervov added more detail in a Press interview, suggesting that Soviet efforts will not attempt to match the US space based SDI programme - "we will not ape the US in spending billions on space systems" - but will seek a lower cost solution.

7. An account of the US and Soviet positions on ballistic missile defence in relation to the current Geneva arms control talks can be found in the FCO/MOD Defence and Disarmament leaflets Nos 16 and 17.

Conclusions

8. Despite its criticism of the US SDI programme the Soviet Union has long standing research programmes examining new technologies with weapons potential which are generally relevant to ballistic missile defence. The future size and shape of Soviet ballistic missile defence is impossible to predict but current R&D programmes provide capabilities to develop SDI type systems if required.

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