

Thanks to Ben Burne

Speaking Notes - An Initial Review of the Duff-Mason Report

The Duff-Mason report, was drafted in 1978 and was used to support the decision to replace Polaris with Trident.

Structure / 3 parts / British Long Range Theatre Nuclear Forces

HMS Stubborn 1943 – attack on Tirpitz – Lt Antony Duff – 1946 FO – 1975 chair JIC – end 1977 selected by John Hunt to chair a group to study the criteria for deterrence.

The Duff group drafted Part 1 & 2 of the report

The Nuclear Matters Working Party, chaired by Ronald Mason, CSA MOD, drafted part 3. It included all the members of the Duff Group and shared the same secretary, Richard Mottram. It also included other MOD representatives and Mr Hansford from the Treasury.

Part 1 Politico-Military Requirement

The main purpose of part 1 was to "set out the case for and against a United Kingdom nuclear deterrent in the context of the wider strategic problems which the country is likely to face in the future."

The case against

- was best set out in a draft of Part 1 written in June 1978 by Sir Clive Rose -

- a. If Britain developed a new generation of nuclear weapons this would be inconsistent with arms control and would damage our credibility in disarmament negotiations.
- b. ~~This will reduce our ability to influence NNWS in the 1990s when more might be considering developing nuclear weapons.~~ - example *
- c. We cannot tell what future arms control agreements there will be between the US and Russia or whether they could restrict British nuclear capabilities.
- d. The cost of replacing Polaris will make it more difficult for Britain to fund the improved conventional forces which were agreed with other members of NATO – "the continuing United States commitment to the Alliance is more likely to be assured by this means than by concentrating resources on the United Kingdom deterrent." This was to be a recurring theme when the issue was discussed over the next few years.

Paper with Purposes of UK Strategic Nuclear Forces used for "case for"

- Numerical contribution to NATO nuclear forces
- Second centre of decision making
- Independent defence of national interests
- Political status and influence

Dange of n.p. & reply, R1
 not helpful ->
 * a decision by the UK
 to abandon it, one option could
 have a strike impact -
 it could cast doubt on
 the benefits of being an N.W.S!

Numerical contribution to NATO nuclear forces

The contribution made by British forces to SACEUR's nuclear plan was "marginal" & "should not be exaggerated" - compared with thousands of US missiles and bombs.

insignificant

→

signed - Q - when B-10

Report shows the very limited circumstances in which strategic nuclear weapons would be released to NATO

"it is a clear, if necessarily implicit, assumption in our planning that the Polaris force would not be released for use in its NATO role short of a general war involving the United States strategic forces".

→ statement as!

Second centre of decision making

The decision to launch nuclear weapons did not lie entirely in Washington, there was a second centre, London, where the decision could be made.

The UK might act if the United States hesitated about using nuclear weapons.

The report recognised the weakness of this argument. If the United States, with its immense nuclear arsenal was not willing to push a conflict to the next level, how could it be credible for Britain, with its far smaller nuclear force, to threaten to do so?

The report says the second-centre argument could apply if there was a long-term decline in the US commitment to Europe

But this does not appear to have had a significant impact on the criteria defined in Part 2. Here it was proposed that the nuclear force should be able to be sustained without foreign assistance for a period of 1 year. (Chevaline 6 months)

Independent defence of national interests

The existence of an independent nuclear capability was fundamental to the Second-Centre argument. Without an independent capability to inflict unacceptable damage the threat to use nuclear weapons in support of NATO was a bluff and would be seen as such.

Political status and influence

Nuclear weapons were important for Britain's place in the NATO pecking order - second only to the US. There was also a clear concern that France should not be left as the only nuclear-armed power in Europe.

Prioritisation of the purposes

Two of the purposes, second-centre and independent defence, were considered to be more important than the other two, numerical contribution to NATO and status. If the prioritisation had been different, this would have had a dramatic effect on the choice of systems. NATO - Cruise; Status - Any.

Irrationality and deterrence

At an early meeting the Duff group referred to "the deterrent effect of the possibility that an opponent might act irrationally".

The final report says even in the aftermath of a Soviet nuclear attack, there would be no logical reason for British nuclear weapons to be launched -

"In these circumstances the actual use of our strategic nuclear force in retaliation against the Soviet Union would represent an act of rage and revenge ... there can be no certainty that a Government would take a deliberate decision to launch this act involving the killing of large numbers of enemy civilians but serving no rational purpose".

not ethical or logical but cable → release

The politico-strategic background (Annex A to Part 1)

no meeting of Duff group - chair → looked at context back + produce paper on nuclear 2010

UK strategic nuclear forces had the sole purpose of deterring the Soviet Union.

Although there was a danger of nuclear proliferation it was unlikely that any new Nuclear Weapon State would consider it advantageous to pose a nuclear threat to the UK. It was also unlikely that Britain would become involved in an intense conflict outside Europe which might escalate to a nuclear level.

It was assumed that there would be an adversarial relationship with the Soviet Union.

And that the US would remain committed to Western Europe.

Part 2 Criteria for Deterrence

- central to process 1

Independent control

The UK should maintain national control over the order to fire. If the system was dependent on support from another country it should be able to be sustained for 1 year without such assistance.

Assured Second Strike Capability

Minutes of the Duff Group meeting on 15 March 1978 said: "It could be argued that the Russians would never launch a bolt from the blue attack".

~~Despite this a case was presented~~ *then say* explaining why British nuclear forces should be ^{missile} on high alert. If they were on a low state of alert then increasing their readiness in a crisis could concern the public. This public anxiety could influence the resolve of Ministers who might then be reluctant to authorise a nuclear ^{able to be fired in minutes} ~~response~~ ^{nuclear strike}. *→ in context high alert → 'spasm blindly hitting back' - as direct for a rational decision*

Mission success probability

Most of the figures for probability options have been redacted. Two references say "a 50% chance of achieving the specified damage".

change is -



Key term in the language of Ditt - U.D.
→ PM - rare explanation on what this means

Unacceptable Damage

Annex A of Part 2 considers how Unacceptable Damage to the Soviet Union might be defined. It identifies four key capabilities:

1. Governmental capabilities
2. Military facilities
3. Military research, development and production and general industrial capabilities
4. Generalised destruction *cities*

The second and third items were dealt with briefly. It was felt that an attack on military facilities would not in itself cause unacceptable damage, although such attacks were not ruled out. It was acknowledged that Britain could not present an effective threat to Soviet missile silos. It was also felt that the loss of even carefully selected military-industrial capabilities in the Soviet Union would not decisively undermine their military strength or industrial potential.

----- *Sov* - SU - centralized command system
Two points used to establish the importance of the command centres: ABM; *→ being improved*,

bunkers. *→ Danger of debris also note is of value*
→ large nos of more sophisticated NW

SCND study 12 years ago

The Duff Mason report included a map of the national-level command and control bunkers. These include Sharapovo and Chekhov, both 65 km South of Moscow, A CIA report from 1983 explains that Sharapovo and Chekhov were relocation facilities for the National Command authority. They were built in the 1950s and modernized in the 1970s.

and Chaadayevka, 600 km East of the capital but within the estimated coverage of the ABM system - a multi-level underground complex which was under construction *at this time*. It was considered to be the main alternate command centre for the Soviet leadership. *1983*

The other key area was "generalised destruction" which meant attacks on urban areas. It was argued that the Soviet Union placed great value on some cities, particularly Leningrad and Moscow. This was based on "both Russian tradition and preservationist practice".

----- *Insight Arithmetic of ~~destruction~~ nuclear war. - Not counting how many people killed here*
(A key question was how unacceptable damage to cities should be assessed. (An attack would need to cause) "sufficient damage to bring about the breakdown of the city as a functioning community." The existing criterion was that breakdown required Severe Structural Damage to 40% of the area. The result would be that "at least 40% of those in the city at the time of the attack would be likely to be killed outright".

The Soviet Union were building civil defence shelters for the population. The MOD calculated how they could get round this by using groundburst explosions, which create large amounts of nuclear fallout, in attacks on cities. A study an attack on Leningrad concluded -

"in near-still-air conditions ground-bursts would subject 55-60% of the city to a radiation dose sufficient to cause rapid debilitation followed by death for most people in the area. Residual radiation would remain a hazard for many years to come."

Groundburst explosions are the preferred way to destroy hardened targets. So attacks on command centres would have the devastating effect which was described in the Leningrad study.

likely

Options

On the basis of these ideas of "Unacceptable damage" a number of illustrative options were drawn up by the Duff group: → *demonstrated that for at least 3 years after D-M.*

Option 1

"to destroy the command centres of the Soviet political and military systems (both above and below ground) inside the Moscow ring road and extra ones in the wider Moscow area." [*Article 29 - not 'devastate' but destroy!*]
"the loss of governmental control, with great collateral damage".

Option 2

"to inflict a level of damage that would cause the breakdown of normal life in Moscow, Leningrad plus two more big cities."

Option 3a

→ *3 - excl Moscow.*
"to inflict breakdown on 10 big cities West of the Urals, including Leningrad." (*excl Moscow*)

Option 3b

"to inflict lesser damage on 30 big targets (also including Leningrad)" *Gen*
"30 bangs in 30 places".

DM

In assessing the relative merit of these options the report concludes: "Option 1 would provide greater certainty of deterrence; but we believe that any one of them would be adequate".

→ *own page (Solly Zuck) - CM.*
The Foreign Secretary, David Owen, argued that all the options "impose an unnecessarily high and detailed threshold of destructive capability". He said that one million deaths anywhere in the Soviet Union would be "more than adequate".

Cabinet Secretary, Sir John Hunt, wrote to the Prime Minister. Referring to Owen's proposal, he expressed doubts about a "bargain basement deterrent" but he added that he would not recommend going for Option 1 in the Criteria study.

Sir Antony Duff and Ronald Mason presented their full report to the Prime Minister, Foreign Secretary, Defence Secretary and Chancellor on 21 December 1978. The minutes of this meeting say that "the options proposed in Part II of the study were unnecessarily exacting." It was suggested that destroying less than the ten cities of Option 3a (excluding Moscow) would "probably be sufficient". It was also argued that deterrence could be achieved with the destruction of one city.

→ *nevertheless → Cuthbert - Carter re Trade CC.*

When the Chiefs of Staff reviewed the Duff-Mason report for the incoming Thatcher government in the summer of 1979 they took a different approach.

They argued that Option 1, command centres, would be of particular value in a situation of advanced escalation where the Soviet Union sought to knock the UK out of a war.

They rejected Owen's criterion and they were also critical of Option 3b. - "A good deal of MOD opinion would regard Option 3(b) as very doubtfully adequate, though the point cannot be proved"

The Commentary says: "The Soviet Union sustained over 20 million casualties in the Second World War and inflicted almost as many on itself between 1930 and 1950; this must give at least a measure of the threshold with which UK planning has to deal"

This view may have influenced the subsequent decision-making process. However it does not appear to take account of the effect of at least 35 years of relative peace on the attitude of the Soviet leadership.

Option 1 appears to have had significant influence on subsequent nuclear policy. Richard Mottram, secretary of the Duff group and the NMWP, said in January 2008 that British nuclear weapons policy meant "threatening where the key players in Soviet Government operate from". Field Marshall Nigel Bagnall said "It is more than just the destruction of Moscow, it is the destruction of their command and control system"

Part 3 System options and their implications

Original version Dec 1978; revised version Oct 1979

- based a cabinet +
Jan 78 - delay in getting news of the Solle
etc + review -> provisional assumption ->

Warhead numbers

Options 1 & 2 - more warheads to swamp / destroy ABM - MIRVs needed for 1, preferable for 2. ?

Warheads for Option 2 (Breakdown of Moscow, Leningrad and 2 other cities)

There was "a sharp drop" in the number of warheads required if none of the targets in the plan were defended by the Moscow ABM system.

The report says that Option 2 (breakdown of Moscow, Leningrad and two other cities) could be met with only one submarine on patrol, ie 128 warheads.

Warheads for Option 1 (command centres)

CIA report 1983, Sharapovo & Chekhov - The CIA estimated that these large bunkers were 100 m underground and that they "would present a difficult targeting problem" for US with large numbers of accurate high yield nuclear warheads.

The C4 missile was not designed to attack hardened targets. The D5 was built to destroy SS-18 missile silos, but to do this it was to be armed with 475 kiloton Mk5/W88 warheads. -> Sign No 1 per [correct bubble correct]

The number of ballistic missile warheads which would need to be delivered to their targets to meet Option 1 would be "about double" the number required for any other option.

Annex B suggested that Option 1 "is almost met by two 16-tube boatloads of C-4 missiles at sea". - - ie 256 warheads.

In 1980 AWRE were commissioned to look again at the effectiveness of Trident. This time they concluded that Option 1 could be met with 27 C4 missiles, ie 216 warheads

Stockpile totals: The Commentary in August 1979 referred to an increase in "the number of UK warheads from the present holding of about 140 to a total of 576 - probably with 2 on patrol carrying a total of 256 warheads on C4 missiles.

By January 1982 the proposal was to produce 568 warheads for Trident D5. This is close to the figure for C4. The intention was probably planned to have 160 - 192 on each submarine. The stockpile target of 568 is too high if the focus was only on option 2. It suggests that option 1 determined the force size.

26/

SNM -> US
Aug - US 'certain' excluded.
US -> 50000 Tgb -> philos not certain
July - 54 times cap
-> but US wanted to know more.

→ 2000 - CR

range (speed) - large
2000 km
- low speed
- low values

Numbers of Cruise Missiles

higher accuracy - the number of warheads which would need to be delivered for all options was "relatively low".

However an assessment in September 1978 said:

"their range would be insufficient to carry out strikes on all of the ... associated with Category 1 of the criteria." It is possible that what this was saying was that the Soviet Alternate Command Centre at Chaadayevka, 600 kms East of Moscow, was beyond the projected range of SLCM.

In any event Cruise Missiles were regarded as generally unsuitable because of their high vulnerability in flight - SA -10, radar systems, AWACs, look down & shoot fighters.

The December 1978 report says that even the least demanding criterion, Option 3b, would require 300 Cruise Missiles deployed at sea. In the October 1979 revision of Part 3 this number was increased to 400.

Ballistic Missile Options

Dec 1978 - C4 more capable than Fr M4; D5 range not necessary & expensive; US would not have only D5; MC either 640 (Poseidon) or Ohio

Oct 1979 - Non MIRV options: Chevaline, A4 (modified Pol A3) non MIRV C4 none desirable; Poseidon; C4 preferred

1981 - C4 - Ohio MC; C4 withdrawn 1998 - avoid unique system - D5 preferred

Long Range Theatre Nuclear Forces

US policy makers wanted to have a range of capabilities to enable them to escalate a nuclear conflict. LRTNF were intended to bridge a perceived gap between Theatre and Strategic Forces. They were also advocated as a response to new Soviet capabilities. This US policy resulted in the deployment of GLCM, → Green + SLCM and Pershing 2, all assigned to NATO, in the 1980s.

In the late 1970s the Vulcan bomber force, assigned to NATO, gave the RAF the capability of launching nuclear strikes on targets in the Soviet Union. But the aircraft were regarded as approaching the end of the life. In 1979 papers were circulated on proposals for a new British LRTNF. This was in addition to the potential deployment of US-manned GLCM and separate from the replacements for Polaris and WE-177.

A paper promoting this new force said:

"there are many things they could do to use which would be too severe for (say) a Tornado strike on Poland to be an adequate response but not severe enough for a Polaris strike on Moscow (bringing annihilation upon us)."

Polaris was not considered to be appropriate for a limited nuclear strike. The association of SLBM with a strategic exchange meant that they were unsuitable for more selective functions.

The preferred British LRTNF option was US GLCM missiles armed with UK warheads. The proposal for a new force ran into problems from the start. The Chief of Defence Staff was in favour of a modest replacement for the V bombers, but the heads of all three services were opposed to any new force.

Arming this new UK LRTNF would have required 100 extra warheads. The Naval staff argued that this plan was unrealistic. It was generally agreed that LRTNF was the lowest priority of the proposed projects. Chevaline, Trident and WE-177 replacement were all more important.

Concluding Remarks

papers - certain
Discussions in Part 1 not fully reflected in Part 2
New high threshold (command centres) introduced
Lower options not given serious consideration
System choice primarily determined by US posture.

→ in part WE-177 system also
beco ~~important~~ diff
→ RAF concern

(over)