JP 3-12

p viii → Don't say when we will ~~not~~ use nw
→ because adversary would exploit when would not use
— UK US
→ bluff

x → "some contingencies will remain where the most appropriate response may include the use of US n.w."
"integration of conv + nuc forces is :. crucial."

1-1 — purpose of US NF —
(d) 'Decisively defeat an adversary if deterrence fails'

Comments p5 — Quote from NUWEP included in Deeb
→ + 1-2 — Assure, Dissuade, Deter + Defeat (QDR 2001 Defense Policy Goals)

1-2 — Original primary emphasis on deterring WMD
para 1 — EUCOM → shifts to 'among other things deter WMD'
+ conv attack ~~delete~~ 'serve as hedge'
→ i.e. more emphasis on nw deterring conv attack
— but ~~US~~ JSDS — 'there does not now exist even a potential conventional threat to the US'

~~EUCOM → hedge → (1) WMD + (2) conv~~

Original — deter WMD; hedge conv threats
EUCOM — hedge WMD + conv.
JSDS (Agreed) — deter WMD, dissuade development of conv

1-4 — Annex (60) — 'Inactive Stockpile' is a term used in classified documents; TC Annex are 'inactive stockpile'

Al Qaeda nuc

Comm —

Non — (1) bef [illegible] — WMD — to — [illegible] arm —
(B/N)
— [illegible] a [illegible] danger —
(2) NPT → proposed for [illegible] [illegible]
capacity → [illegible] [illegible]
— [illegible] the [illegible] the [illegible]
— [illegible]

→ [illegible] self [illegible]

[illegible] Opp — [illegible] — [illegible] public of [illegible]
— RNEP. — [illegible]
Nucl [illegible] — [illegible] [illegible] attack
→ [illegible] nucl [illegible] —

Solution — [illegible] —
Who benefit — [illegible]
(US)
([illegible] US [illegible])

— [illegible] [illegible] [illegible]
ALO & TRI — [illegible] [illegible]

Solution —
(1) Nucl taboo — been [illegible] since [illegible]
— [illegible] [illegible] poison gas [illegible] 2
→ Geneva [illegible] Protocol → Not used because
of [illegible] & [illegible] ([illegible] fold: (+ [illegible])
→ [illegible] Hitler [illegible] been
[illegible] [illegible] [illegible] Same [illegible];
(2) [illegible] threat → [illegible] [illegible]
→ If [illegible] [illegible]
Non — Why is [illegible] [illegible] for [illegible] [illegible] ? —
No [illegible] [illegible] for [illegible] in the [illegible]:
Or political!
[illegible] [illegible] [illegible]; + [illegible] [illegible] to [illegible]
[illegible]:

8 Feb PLP – debate : not until.
Lab Dem – but take pos till issue are up.
Arc Cong – Lack of Lab pty prob c-ex-C.
Cons pty gp lack not h...

Int

Importance of debate –
Opportunities →
→ TRC position ... deal ... made.

Costs

money – ?
Paul → ... to ...
→ encourage debate – ... no ...
→ concern of costs.

Ken ... – ... on ...
... ...

US blueprint & parts – screwed together in Br:

Is it a flat pack – self assembled?
or a genuine product of Br manufacturing?

Rumsfeld – Coal'n of the willing – ~ ~ ~

Re use – go US against attack?
~~+ other bluff – + cliq~~.

Bluff → eg nuclear weapon & CB

Mention US → Russ;

CP – ~~[illegible]~~ a.

Keep bloc in Coal – hard & endure;
nuclear taboo & np).
Neither target nor avoid.

Risk & Costs –
profit; Euro Com; Ukraine; [illegible] air! ; Coal
Pre-strat ; [illegible]
[illegible] for US view
Importance of UK – in US prog.
p36 – [illegible]
Full spectrum global [illegible]
RNDP – dig deeper

Miam Deb → not (nuclear attack or n.w., Iran → know 'min' for Rus →

Yet we are told Russia is not considered to be a threat, ~~either to~~

It would be over optimistic to expect that if Br gave up n.w. Russia would immediately follow our example → but it could only have a +ve effect ~~on~~ on the relationships with the old enemy.

Full Spec. + Ukraine Strike

~~Within the~~ The new draft US nuclear doctrine is open about using n.w. in a pre-emptive strike → + using them against chem + bio targets. * The signs are that the Br mil establishment do not share these views — I think that any signals we give about an independent use of n.w. in response to a c or b threat fall are ~~into the category of a bluff~~. Tim Kane, former Br N.P + M Quinlan have spoken out against the US warfighting approach + useable n.w. →

~~Br planners planners say~~ They talk of 'priority war' + 'Britain's credibility' — But the reality is that we are tied into a US system that ~~that~~ is planning for nuclear warfighting — ~~at short notice~~, anywhere around the world, at ~~minutes~~ a hours notice.

There is no coherent rational for B n.w, + there are substantial costs + risk in retaining the. There are major benefits that would flow from not replacing TRI. This would send a msg that B take seriously its obligations under the NPT + it would contribute to tackling proliferation. It would reinforce the taboo on the use of n.w + free up valuable resources. It would also send a clear signal that this Govt is not willing to support an aggressive US Nuclear policy.

In service life of WE177 —

WE177A	1969 – 1992	— 23 yrs
WE177B	~~1980 – 1998~~ 1966 – 1995	— 30 yrs.
WE177C	1980 – 1998	— 18 yrs

Which is more difficult to predict →
(a) Effect of age on a ~~certified war~~ certified warhead
(b) Certification of an ~~untested~~ new warhead?
— Depends how many years old.
— Where is threshold where it is more difficult to predict aging than certify new to warhead!

→ Components —
~~AF&F~~
AF&F; NG; GTS — replace ∴ ~~[illegible]~~ manageable.
Secondary — Q
Primary — HE — replace
— pit — ~~100~~ 50 – 100 yrs

Issues for JASONs report for NSW
→ credible peer review process.
WRI - safety feature - int fire (ie Fire Resistant Pit)
- new features to preclude unauthorised use.
Non-nuclear components can be certified by engineering test
WEP - performance assessed by simulation, then by engineering test
non-nuclear components partially needed for WRI safety features

→ integration of hydrodynamics testing (p8)
→ RRW required improved understanding of aging.
[ie RRW requires what LEP does ?]
→ 'enhanced safety features' is a top requirement of WRI
→ requires safety, security
+ QMU assessment
→ new fabrication processes.

Q of scale of pit/sec manufacturing facilities
→ for LEP certain-scale production sufficient

SASONs
his pages

LEP/NSW + AWE
→ Pit/sec/case manufacture
→ NSW - essential
→ LEP - just in case.

AWE now on LEP program in any case

US Trident

Difficulty of projecting age
WE177 – 92 – 2000
94 – 2007
?98 – 1998.

2054
1994
60
20 yrs x3.
15 yrs x 4.

~~Optic~~

What is the optimum life of the warhead?

How is 'optimum' measured?

→ Cost
→ Safety / Hazards
→ Operational effectiveness

[TRI – Jasons report]

→ Cost in comparison with cost of USA.

CSA = secondary + separately release?

~~Overall + com~~
Component ~~[illegible]~~ life →

94. Primary

Life End
2010? + 2026?

HE – 10–14 yrs; prob 16+
pu pit – ~~[illegible]~~ 60 yrs + (based on JASON + W76-1)
be – 60 yrs + (W76-1)
organic material – 30 yrs! – (W76-1 refurb!)

~~Secondary~~ CSA
HEU – 60 yrs + (W76-1)
material – – 30 yrs also (W76-1 refurb!)

Radiation case
– 60 yrs (W76-1).

How long can AGR keep the reactors in service
(– into 2020s at least)

→ LCC are not a big issue
 – AF&F; GTS; RC.

→ Major components are not a significant issue
 – Bupst, HOCL sands ; Be Type ; radiation con

→ HE can be replaced –
 – hard to be done of [illegible] / [illegible]
 – ~~Graphite may not be~~ HE life not clearly established

→ What ageing problems are there →
 – components of CSA – L78-1 refurb
 – [illegible] in [illegible] – L78-1 replacing

 Acceptability + Reversibility issue
 & production of non-nuclear material
 → don't require large synergistic [illegible]

Timescale options →

~~① Extend to 202~~

① Decide 2010 to have new reactors in service by 2020.

~~② Major expenditure to 2010!~~ –
 – Minimum reliability to keep current reactors in service

② Substantial reliability 2010-20 –

US LEP – 30+30

So why UK Q?

(a) Warhead not identical
(b) Standards + ~~stte~~ support not identical

+ (c) US considering replace W76-1 with WR1
↳ NNSA – W76-1 is OK – WR1 is better.
Safe; more reliable

US W76-1 plan

cf CCL05?

~~W76-1 Develop~~

	00	05	10	15	20	25	30
W76-1	|- Develop ——	|- produce -|	—— |				
FY08 plan WR1			|- Develop —|	– produce ——	——	—— |	
FY11 pr plan	————	————		|- Develop ——	| — produce ——	——	——

2 Issues –
(1) ~~Have~~ to date when warhead must be ebar[?]
(2) ~~Which~~ Having 'best' warhead → a) W76-0
b) W76-1
c) WR1

Why was W76 the priority for RRW when there is an eff LEP program? →
(1) W76 is the most important warhead in stockpile

OMICRON Safety + Risk Technologies
→ work with → "characterization of CSA hazardous material"

Casting - pouring forms rougher pits than casting
+ is followed by machining to form final shape

lead since
→ 99% of W88 pits cast [illegible] process [illegible]

Qualified W88 pits to stockpile
→ delayed to FY 2009 → and 7 yrs

US carried out pit cert as part of dual validation for W76

W76 LEP - in advance to FOA2
- CANL statement to Senate S.F Subcom
10/4/02

LEP → can we [illegible] data
no design - depend on model.

JASON [illegible]

www.princeton.edu/~globsec/publications/pdf

[illegible] - may start W89 for TRI

[illegible]

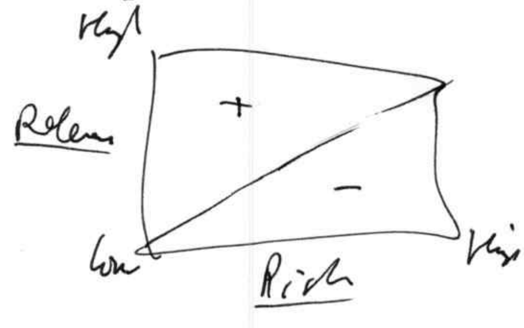
FRP coating on W59 - vanadium [illegible]

NO grounds –

(1) NKs are dangerous
- rate of nuclear war
- doomsday clock
- Cannabis
- pt 6.

Or/ (2) NKs are incidents
- no role
- expensive
- some rate reasons for use.

Performance Indicators	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Endpoint Target Date
Cumulative percentage of progress in completing Phases* of NWC-approved W76-1 LEP	Completed initial 50% of W76-1 Phase 6.3 activity.	Complete 75% of scheduled W76-1 Phase 6.3 activity. Complete initial 10% of W76-1 Phase 6.4 activity.	Complete 95% of scheduled W76-1 Phase 6.3 activity. Obtain W76-1 Phase 6.4 authorization. Complete 25% of W76-1 Phase 6.4 activity.	Complete 100% of scheduled W76-1 Phase 6.3 activity. Complete 65% of W76-1 Phase 6.4 activity.	Complete 100% of scheduled W76-1 Phase 6.4 activity. Deliver FPU. Obtain W76-1 Phase 6.6 authorization.	Complete 4% of scheduled W76-1 Phase 6.6 activity.	Complete 11% of scheduled W76-1 Phase 6.6 activity.	Complete W76-1 refurbishment FY 2013
Cumulative percentage of progress in completing Phases* of NWC-approved W80-3 LEP	Completed 55% of scheduled W80-3 Phase 6.3 activity. Rebaselined the W80-3 LEP.	Complete 70% of scheduled W80-3 Phase 6.3 activity. Complete initial 10% of scheduled W80 Phase 6.4 activity.	Obtain W80 Phase 6.3 authorization. Complete 100% of scheduled W80-3 Phase 6.3 activity. Complete 35% of scheduled W80-3 Phase 6.4 activity.	Complete 60% of W80-3 Phase 6.4 activity.	Complete 85% of scheduled W80-3 Phase 6.4 activity.	Deliver FPU. Complete 100% of scheduled W80-3 Phase 6.4 activity. Obtain W80 Phase 6.5 authorization.	Obtain W80 Phase 6.6 authorization. Complete 15% of scheduled W80-3 Phase 6.6 activity.	Complete W80-3 refurbishment FY 2015
Cumulative percentage of progress in completing Phases* of NWC-approved W87-1 LEP	Completed work activity in accordance with Directive Schedule.	Complete scheduled Alteration 342 to W87.						LEP pending decision and direction
Cumulative percentage progress in completing Phase 6.2/6.2A* activities of the Robust Nuclear Earth Penetrator (RNEP)	N/A	Complete 17% of scheduled RNEP Phase 6.2/6.2A activity.	Complete 56% of scheduled RNEP Phase 6.2/6.2A activity.	Complete 100% of scheduled RNEP Phase 6.2/6.2A activity.	Report results of RNEP Phase 6.2/6.2A to Nuclear Weapons Council. Obtain, if applicable, RNEP Phase 6.3 appropriate authorization. Complete initial 25% of scheduled RNEP Phase 6.3 activity (if	Complete 65% of scheduled RNEP Phase 6.3 activity (if appropriately authorized).	Complete 100% of scheduled RNEP Phase 6.3 activity (if authorized). Complete 15% of scheduled RNEP Phase 6.4 activity (if appropriately authorized).	Ongoing (if appropriately authorized)



Low Risk
Low Relevance – High Risk
High Relevance

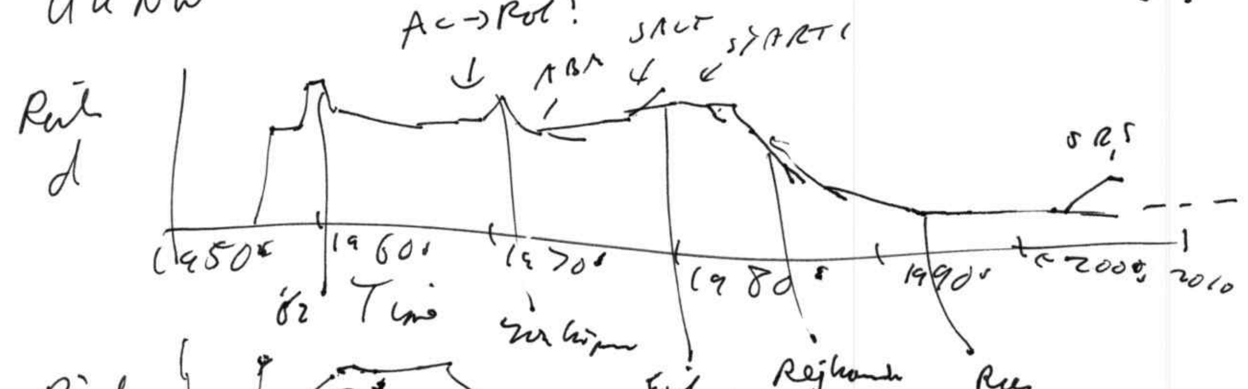
LRk HRk
HRv LRv

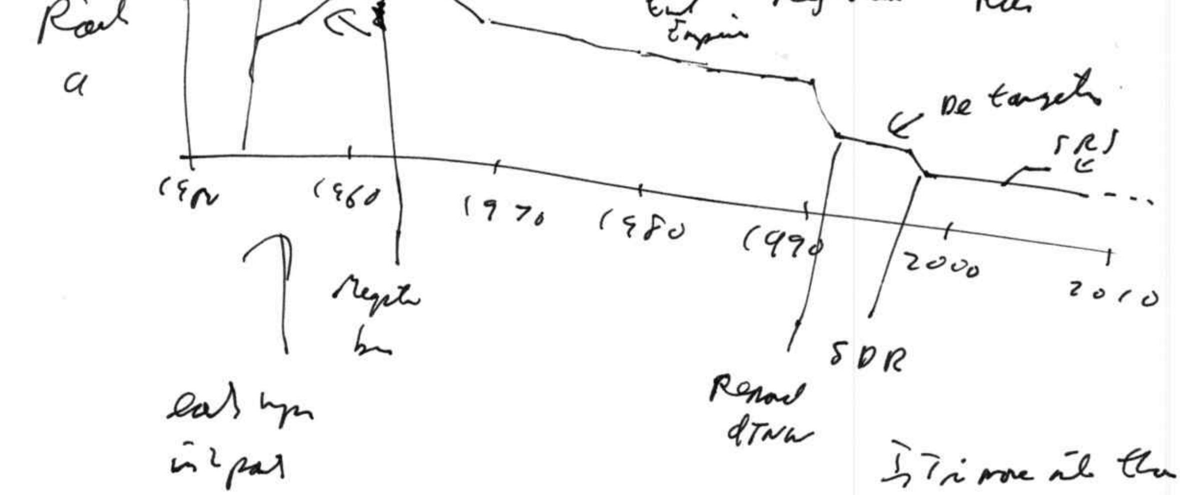
Risk – Probability of casualties – deliberate – Russ / CP / d+a
– accidental – UK < US

Relevance – Political significance – international + f –
– national

– benefit to nation / world [mechanism to make war less likely]

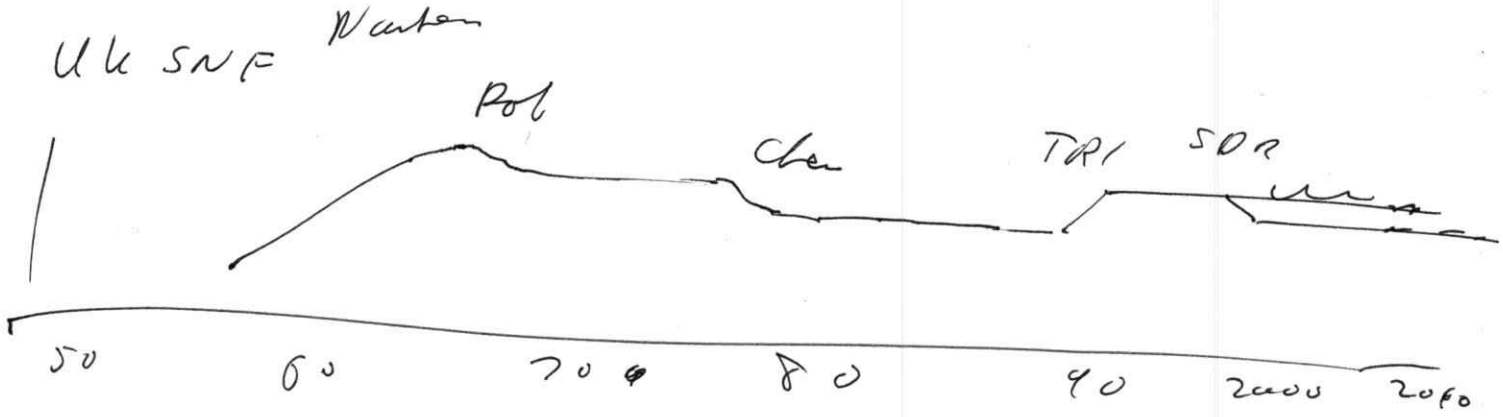
UK NW



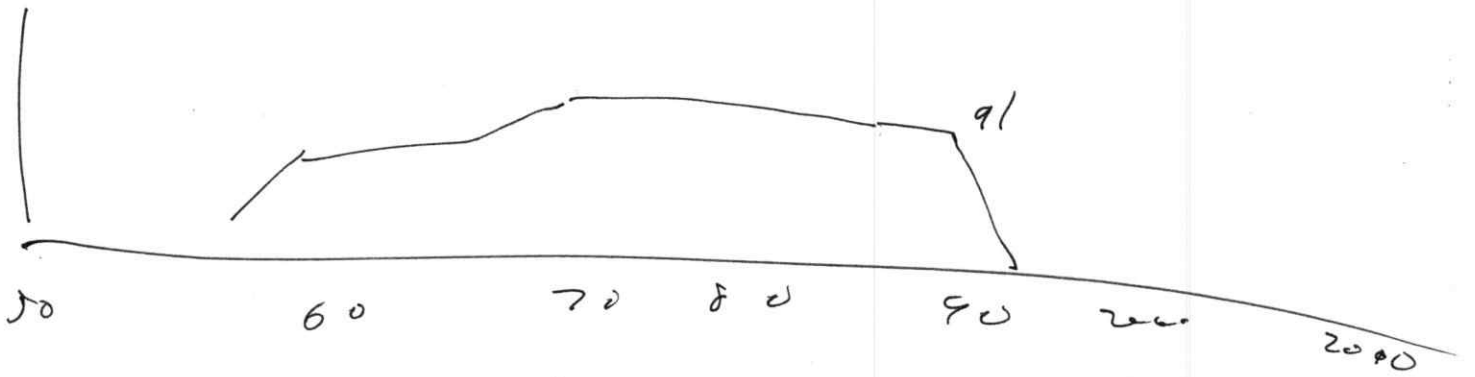


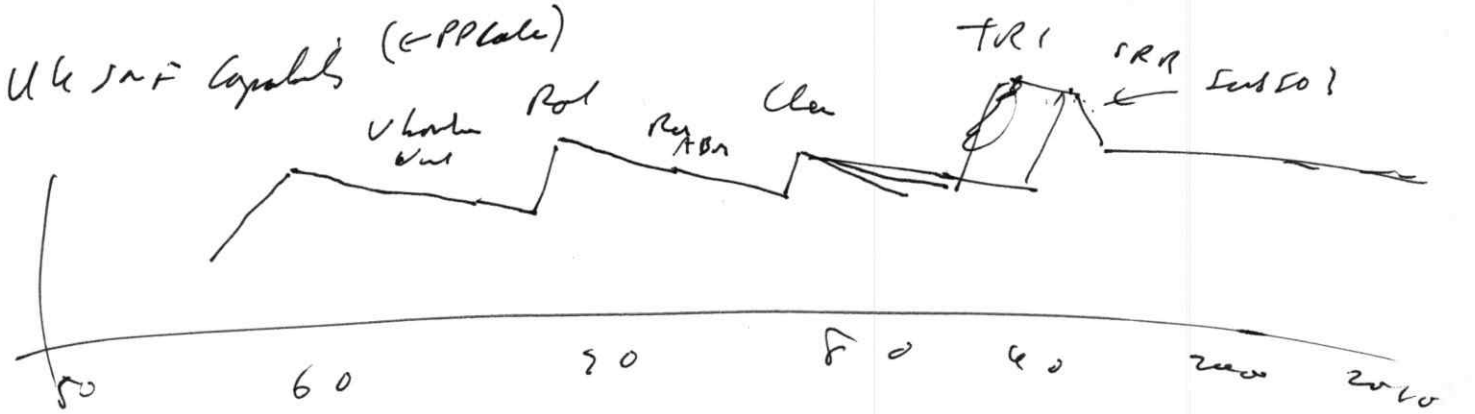
Is Tri more risk than Pol?

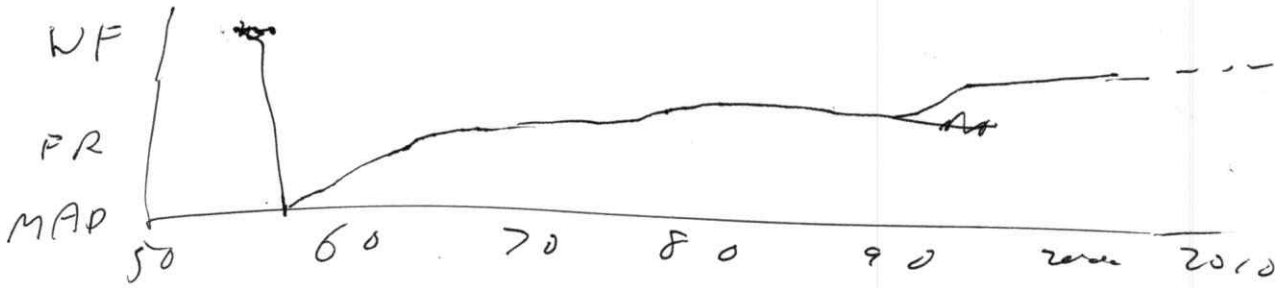
If detargeting reduces risk a → SRS increases risk a


UK SNF
Wantage
Rot
Chap
TRI
SDR
50
60
70
80
90
2000
2040

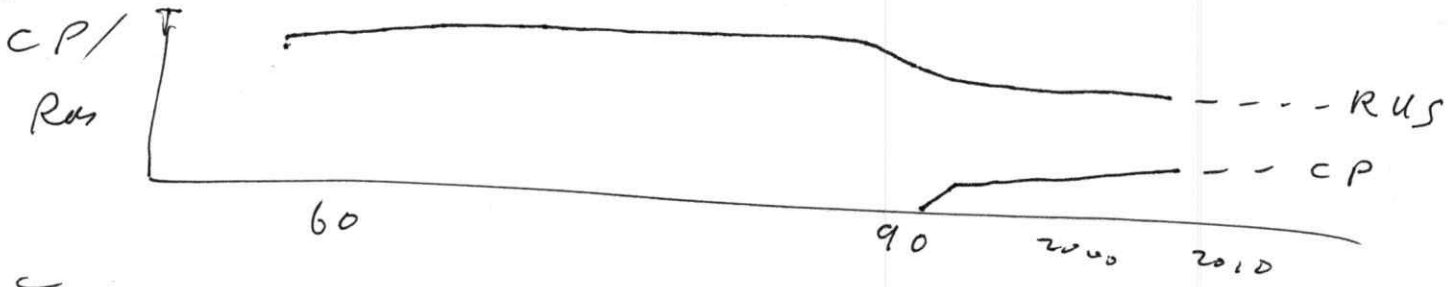

UK TNF
Netherlands
50
60
70
80
90
2000
2040


US TNF in UK
91
50
60
70
80
90
2040


UK SNF Capability (← PP Scale)
Rot
Chap
TRI
50
60
90
80
40
2040



US



Technical dates

1940 - 45 - Manhattan project → Historic
UK bomb project

50 Fis A bomb Test
Cottage industry Blue Danube. Blue Steel. Yellow Sun

60 Fis H bomb Test
Polaris A1 A2

70 Chevaline

80 Trident TASM

90

2000 SRS
~~SRS~~

2010 TRI repl.

Russia Arguments

w ~~the~~ relationship with Russia will not be similar to US-UK in foreseeable future:

Keeping Br NW ~~#~~ is a basis for building the new relationships with Rus → without → instability.

Denuking would be destabilising → rush to re-introduce (Ending pts)

Need Br NW so that Rus cannot in future use NW to coerce.

Arms control is US-Rus – until they get to minimum det levels. [but in US now – not how many, but how few]
→ US → ability to reduce impact of Rus NW strike
→ UK → ability to make an unacceptable response

(Russia is disengaged from CP.)

Counter-Argument

Case – what place for and counter-Rus NW – role ~~virtually~~ negligible.

Global opposition to use of NW as the main constraint
– eg US in 1st Gulf War → should be clarity + build on
– Fr new tests. / Coll Fed mm test & NPT – as sign of global rejection of NW
– Undermined by having NW → Britain abandoning NW would strengthen this attitude

Alternative cycles –

Strengthen constraints → get rid of NW → (cycle)

Basis is the unacceptability of the use of NW

Relevance → what is likelyhood of a conventional attack which could only be repelled by a NW?

→ what is likelyhood of nuclear blackmail?

→ Range of cold war scenarios – where US/NATO/Ger would see NW as playing a role of influencing options available to SU.

Public perception → NW irrelevant for Res; potential CP role.

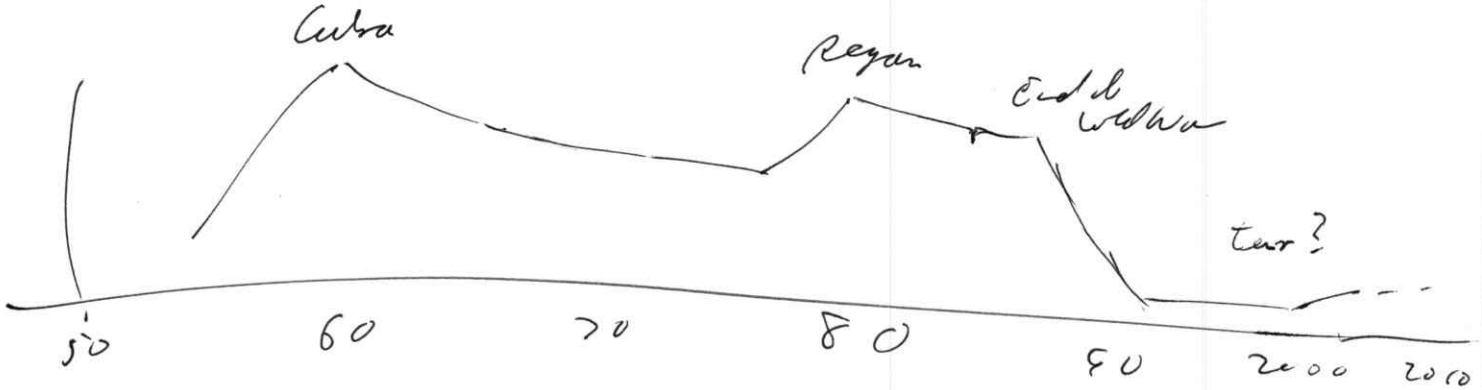
Education need → Importance of 'Res' for Br NW planners (→ Holland/Australia)

→ Belief of CP – not crude Communism

→ Dependence on US → Not Independent def.

(– carbuncle vis-à-vis Res)

Perception of Relevance



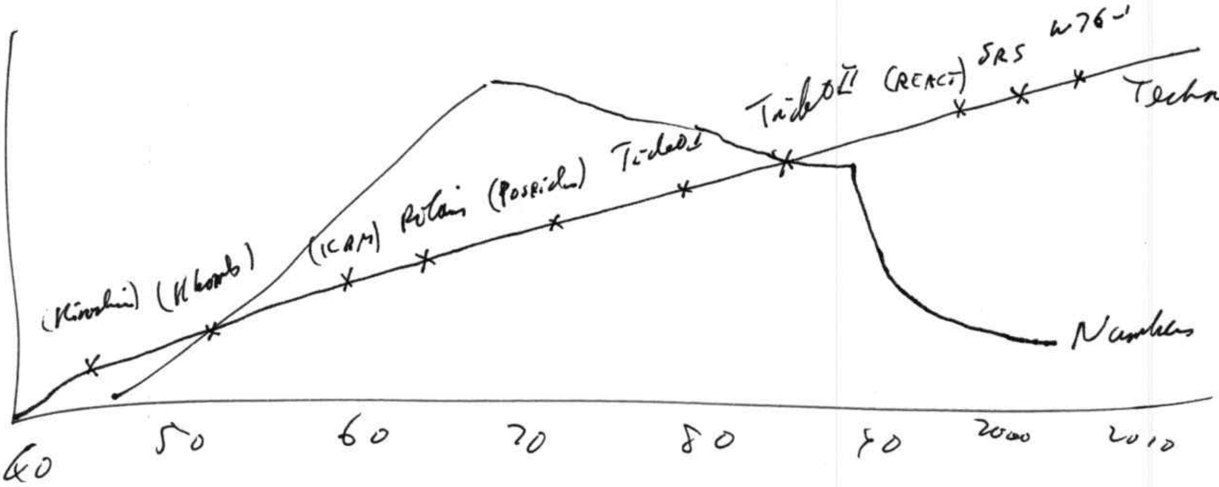
SRS Risk & Release — SNF - / TNF -

d → risk of conventional use is greater because more options available

a → risk of a limited to d greater?

R → Numerical reductions / Technological entrainment

CP — could be dealt through lens of TNF

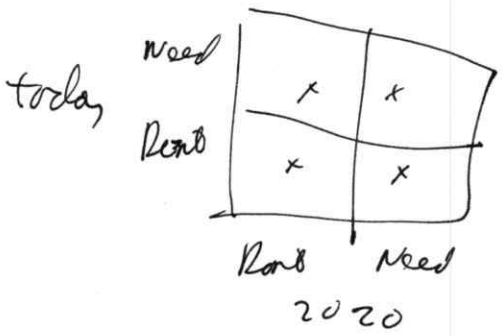


Factors in the Russian case

Timescale – re potential change in overall relationship
– re size / threat from Russia.

→ Re the TRI ROPC
→ is situation in 20yrs likely to be different?
→ if not → a) current amounts is correct
b) — " — is wrong

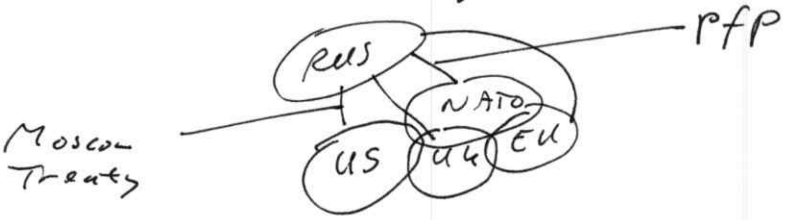
→ (i) We need TRI today – but not in 20yrs time.
(ii) We don't need TRI today or — " —
(iii) We need TRI today and — " —
→ danger of failing to reassure current situation + maintaining the States you.
(iv) We don't need TRI today but we might in 20yrs time *



TRI is kept because it serves
(1) potential future ~~threat~~ from Russia ~~+ China~~.
(2) Encourages new relationship with Russia
(3) ~~Ends rabbit / deters~~ Stops towards distance would be destabilising.

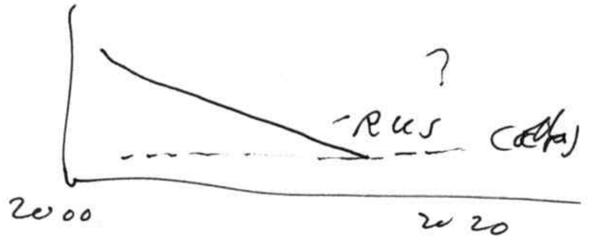
Rus

US / UK / NATO arguments.

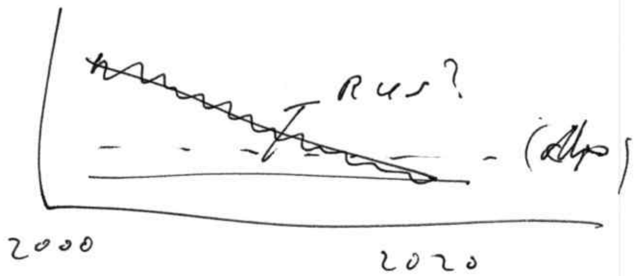


Threat

Capability



Intention



Key Q - could Rus intention change?

Will Rus capability decrease - how much, when!

Will other capabilities appear?
- Will they have intent?

How will UK NW influence Rus - directly
indirectly → NPT → Deterrence → wider issues → Fr →

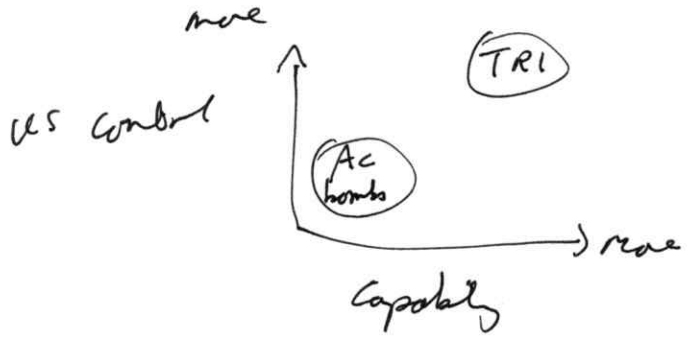
Recognise that use of NW is unimaginable → fundamental
way [illegible] - UK should take lead.

2nd Centre Argument

→ Complicates Rus ~~ext~~ cost/benefit analysis when planning NW coercion

US approach to Br nuclear deterrent
(a) Oppose → re role of NATO; loss of potential to internationalize US Nucl attack
(b) Neutral
(c) encourage → as part of Non Prolif

Choice of Tri replacement – US perspective



Detailed Justification

(dollars in thousands)

	FY 2003	FY 2004	FY 2005
B61 Life Extension Program	**71,927**	**86,113**	**117,927**

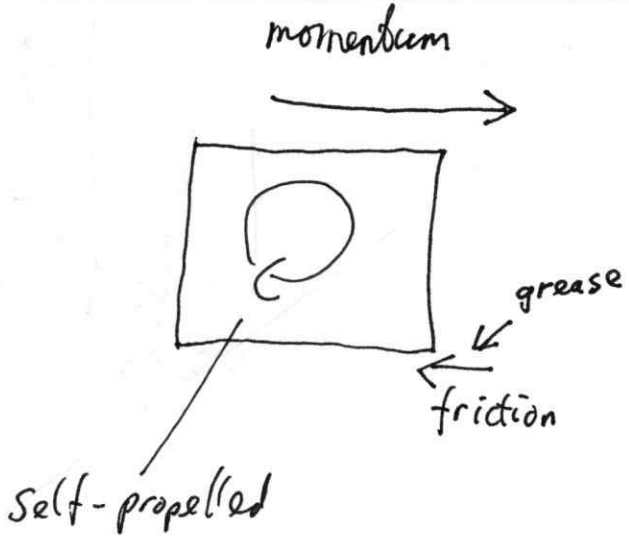
The B61 Life Extension Program includes refurbishment of the canned subassembly (CSA); and replacement of associated seals, foam supports, cables and connectors, the group X kit, and limited life components on the B61 Mods 7 and 11. The complex will produce two lots of process prove-in hardware and will start production of war reserve quality parts in FY 2005. Process prove-in hardware production demonstrates that plants have adequate processes in place to produce war reserve parts. This production schedule will support the FY 2006 First Production Unit (FPU).

W76 Life Extension Program	**100,237**	**146,363**	**213,111**

The W76 Life Extension Program will extend the life of the W76 for an additional 30 years with the FPU in FY 2007. R&D activities will include qualification and certification activities ensuring refurbished warheads meet all required military characteristics and Stockpile Management efforts will include work on the nuclear explosive package; the Arming, Fuzing, and Firing system; gas transfer system; and associated cables, elastomers, valves, pads, foam supports, tapered tapes, telemetries, and miscellaneous parts. In FY 2005, R&D efforts will complete engineering design of the nuclear explosive package primary subsystem components; conduct the final design and independent peer reviews; and design-flight test bodies for the follow-on commander-in-chief evaluation test (FCET-34). Stockpile Management efforts will ramp up activities in qualification system engineering; procure commercial off-the-shelf parts and associated production materials; design and fabricate tools and gauges; and, conduct process prove-in of production activities for major components including flight tests bodies.

W80 Life Extension Program	**116,774**	**144,702**	**146,400**

The W80 Life Extension Program extends the life of the W80 for an additional 20 years with the FPU in FY 2008. With the combination of W80 program rebaselining and the congressional direction included in the FY 2004 Energy and Water Development Appropriation Act, the W80 FPU has been adjusted to FY 2008, consistent with the Department of Defense schedules. R&D activities will include qualification & certification activities to ensure refurbished warheads meet all required military characteristics and Stockpile Management efforts will focus on replacing the neutron generator, trajectory sensing signal generator, gas transfer system, and other associated components. In FY 2005, R&D efforts will include high energy density experiments, full system engineering tests, system thermo-mechanical tests, captive carry flight tests, development of a joint test assembly (JTA-5) flight test unit; and, support for chemistry and material science. In FY 2005, Stockpile Management will prepare for component design and production; and, ramp up to full production focusing on process prove-in activities beginning with the warhead electrical system subassembly and cover, gas transfer system, cables, warhead interface module, environmental controls, and outer aluminum case.



Concern is not rational explanation of aim
- but greasing the friction of resistance.

Alert Status

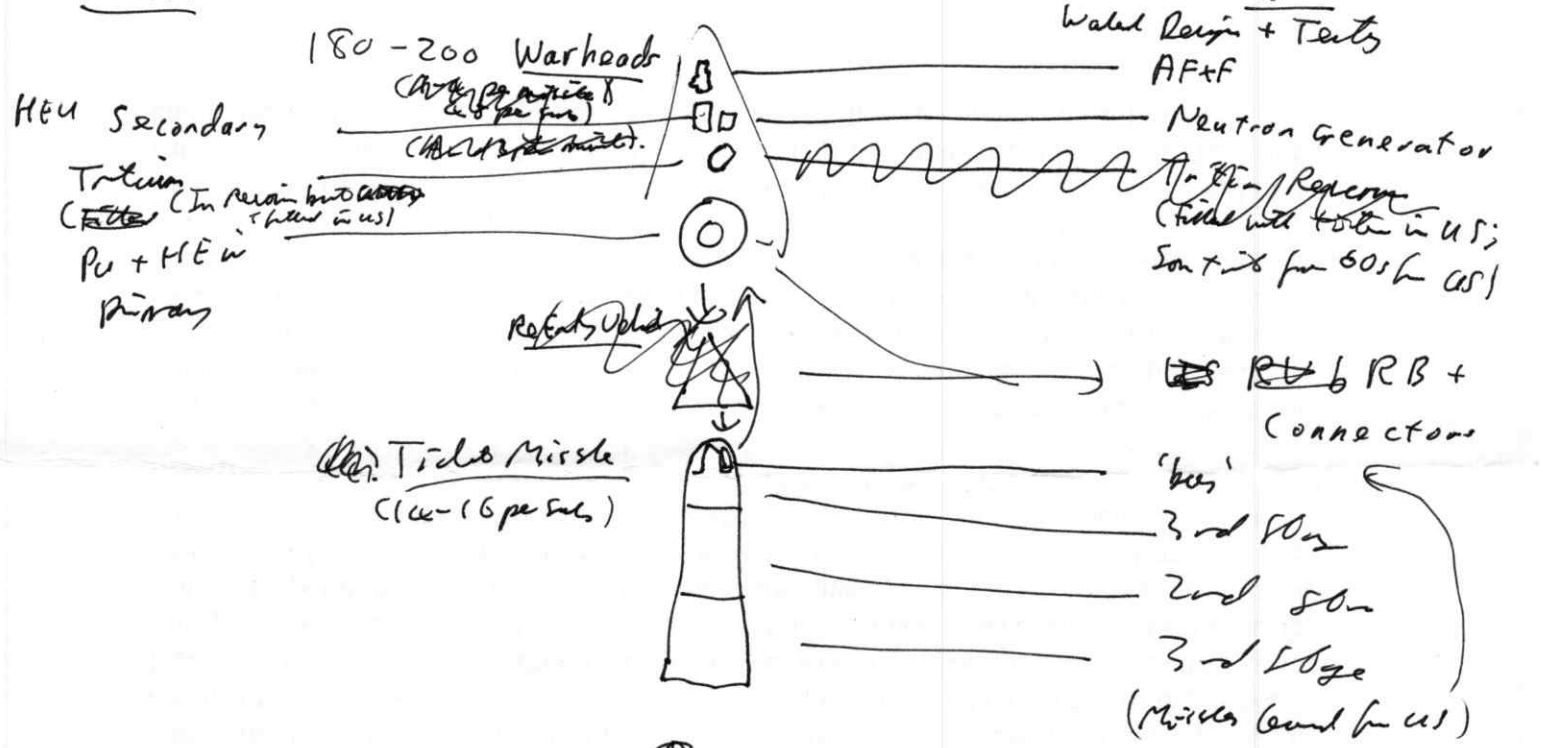
	US	UK	Russia
15 min	↑	↑	↑
days			
months			

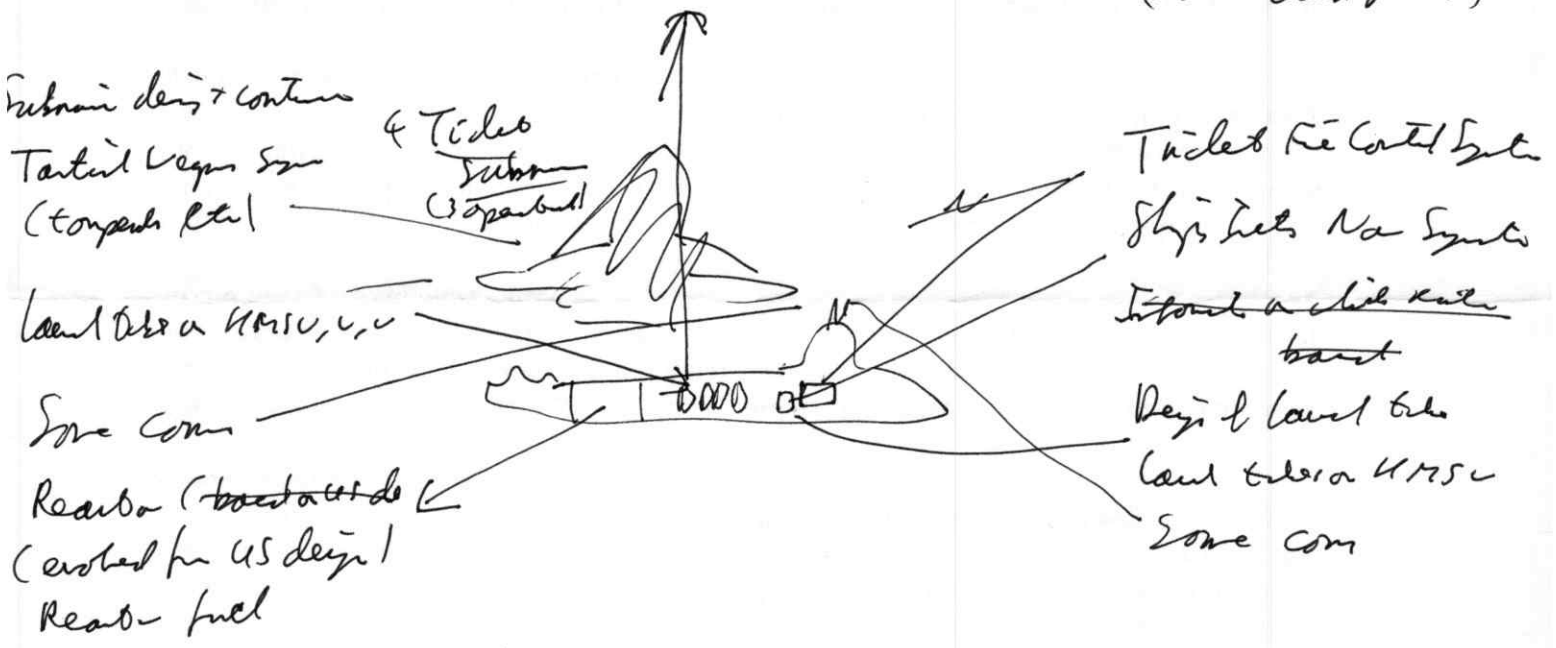
— launch on warning.
— potential to put on Col

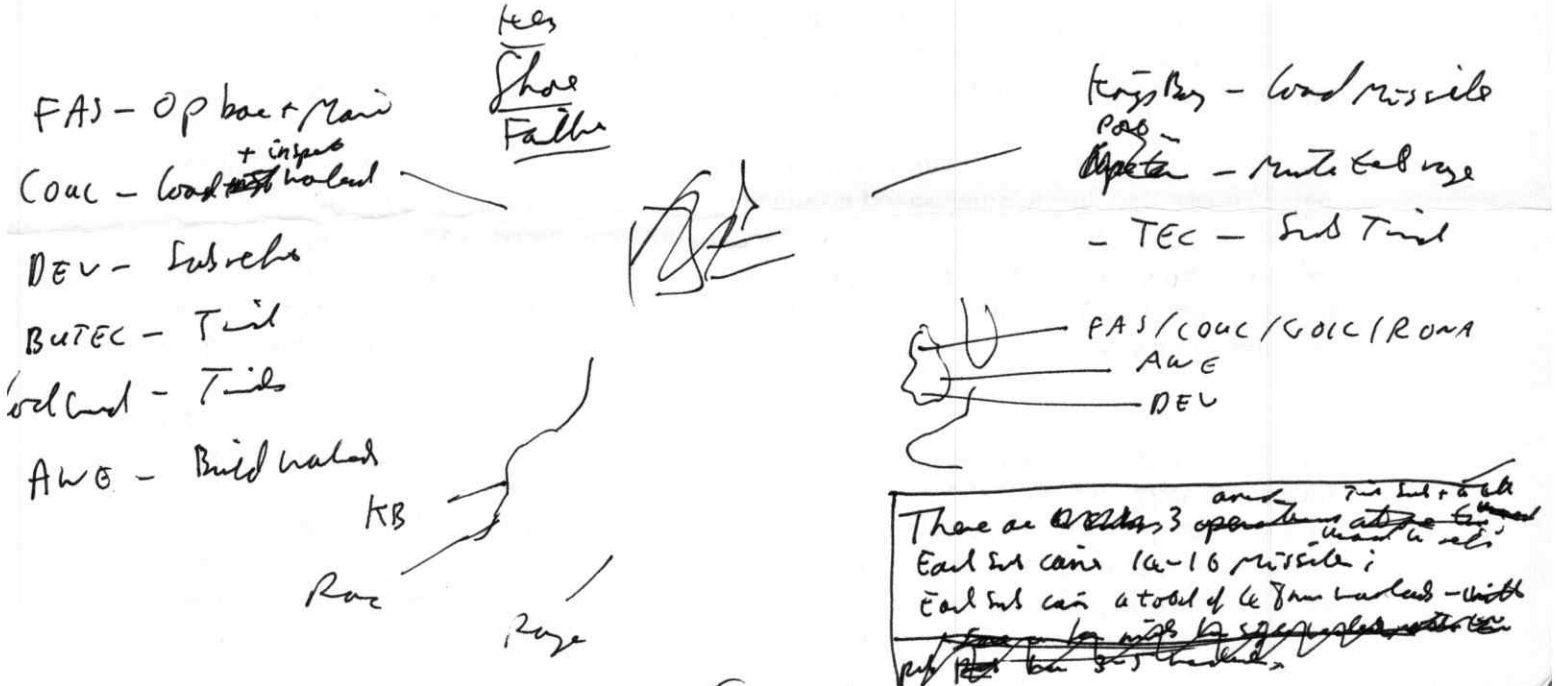
TRIDENT ANTIOMY OF BRS AND [illegible]

British

US







There are 3 operational ... Each Sub carries 16-16 missiles; Each Sub can attack a total of 16 [illegible]

mean that you have a dog. That Saddam could have deliberately created uncertainty about whether or not he had WMD should have come as no surprise to Britain. For decades "uncertainty" has been at the heart of British nuclear weapons policy. Military planners here have never adopted the doctrine of a nuclear trip-wire. They have never clearly spelt out that a particular action would be certain to result in a specific nuclear response. They have made a virtue of ambiguity, even if the source of that ambiguity was the lack of a clearly thought out and agreed policy.[4]

With regard to the role played by nuclear weapons in Counter-Proliferation both Britain and the United States have placed emphasis on deliberate lack of clarity. "Studied ambiguity" has become the official line. But the example of Saddam Hussein's experience in Iraq shows the dangers of this approach. Ambiguity and uncertainty lead to bluffs and lies. Far from a careful rational process, crisis management becomes a poker game, trying to guess what the opponent really intends to do, despite the signals he is sending.

Ambiguity and bluff have been at the heart of nuclear weapons policy for decades. A central tenet of NATO strategy was that if Soviet troops crossed into West Germany the United States would use nuclear weapons on the battlefield, which could result in a nuclear exchange between Russia and the American homeland. But yet to implement this policy would not have been rational. It was not a certainty that this is what would happen, it was a possibility that it might. McNamara advised two Presidents that they should say clearly to Russia that they would carry out this policy, but if they were ever faced with the real situation, they should never carry it out.

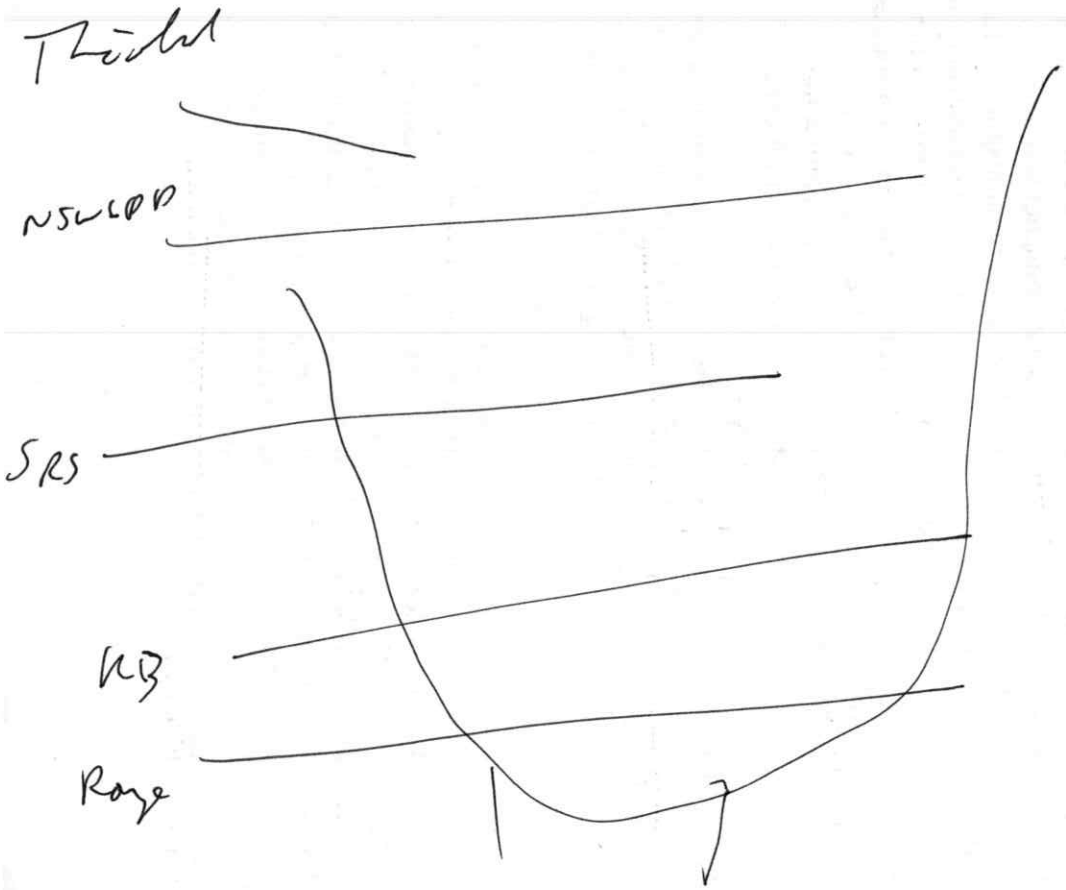
The US approach in the First Gulf War was similar. There were hints that if Saddam used Chemical weapons then America would make a nuclear response. Assessments were carried out of potential targets. But behind the scenes the decision was made that in no circumstances would nuclear weapons be used.

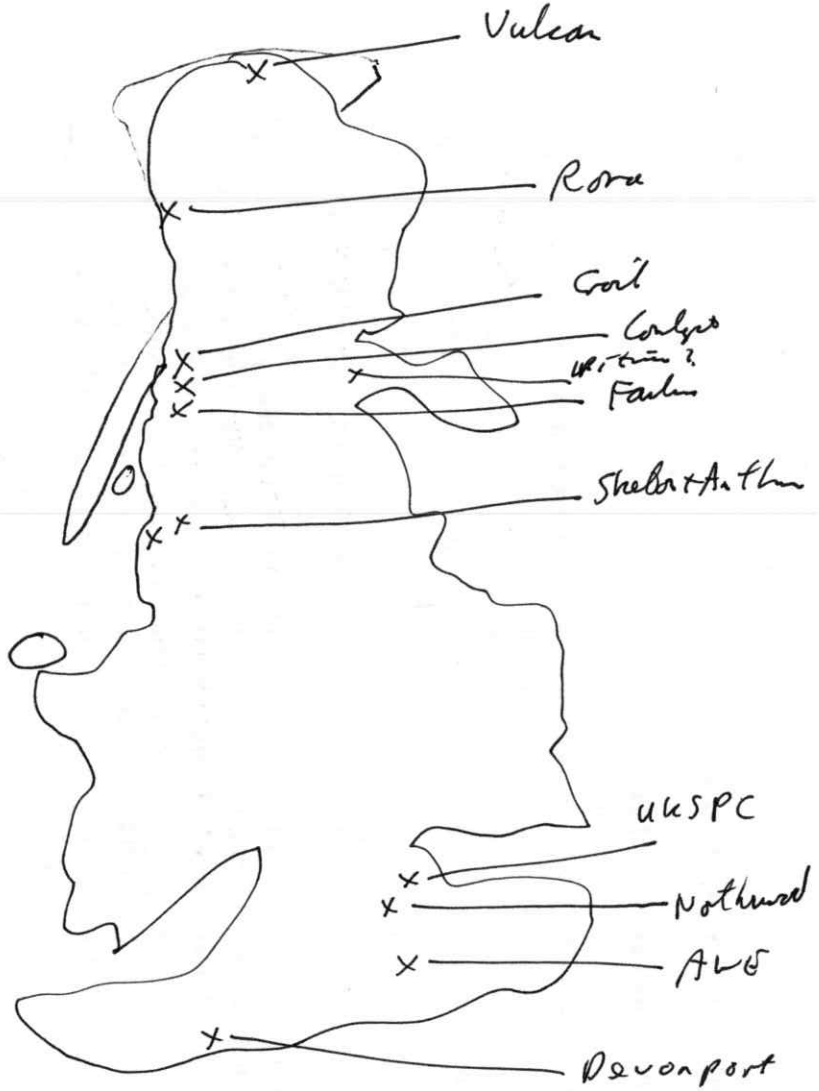
It may be reassuring that some of the apparent threats to use nuclear weapons have included an element of bluff. But the dishonesty of nuclear policy may inflict a heavy price. The bluff may be called, and the bluffer left with a choice between humiliation or the irrational use of nuclear weapons. Even if it is based on a bluff, the policy may be implemented in terms of specific nuclear forces created and deployed to carry it out.

Lee Butler has illustrated the gulf between abstract theories of deterrence and the practical results of implementing them.[5] The operational requirements take on a life of their own. Detailed nuclear planning is dominated by the vulnerability of command and control systems. This places emphasis on the need to be able to rapidly launch a large part of the nuclear force at an early point in a nuclear exchange. The theory may be that the US retains the ability to strike back if it is subject to a nuclear attack. The practice is that hundreds of missiles are poised ready to fire in the short period, less than half an hour, between when a Russian missile is launched from its silo and when it reaches its target in America.

Britain's deterrence theory may rest on generalised long-term arguments, but the details of implementation are current and specific. The Cold War posture has been retained in a modified form. It is a force configured for use in a nuclear conflict with Russia. Small adjustments have been made to provide some wider capability. A substantial invulnerable nuclear force is constantly kept at sea, although the required notice to fire has been extended.

The First World War is the classic example of how the world can blunder into a conflict with catastrophic consequences. Many of the individual moves in the decades before the conflict and in the summer of 1914 appeared to be rational to those involved, on the basis of


Thistle
NSWLOD
SRS
KB
Rose


Vulcan
Rose
Goal
Corlyn
Fulmar
Shelter + Anthem
UKSPC
Northwood
ALE
Devonport

Arguments about nuclear weapons today

Nuclear weapons as instruments of peace

Arguments put forward today about why Britain or America need nuclear weapons do not rest on clear tangible current threats. While Russia retains a large nuclear arsenal, on-one considers that they are likely to use these weapons in a threatening way in the near future. While there is concern about the potential for more states to acquire nuclear weapons and then to use them as instruments of coercion, there are no current examples of this.

One of those who has argued that NATO must keep nuclear weapons, despite the lack of a specific threat, is Michael Quinlan, former Permanent Secretary at the Ministry of Defence. In a speech in Moscow at the close of the Cold War he argued that relations between Russia and the West had not reached the point where war was inconceivable. They could not be compared with the relationship between Britain and France. While more than a decade has past since Quinlan's comments, the positions of London and Washington suggest that this assessment has been sustained. There is a reluctance to accept that in a few years time military conflict between NATO and Russia might be as unlikely as war between Britain and France.

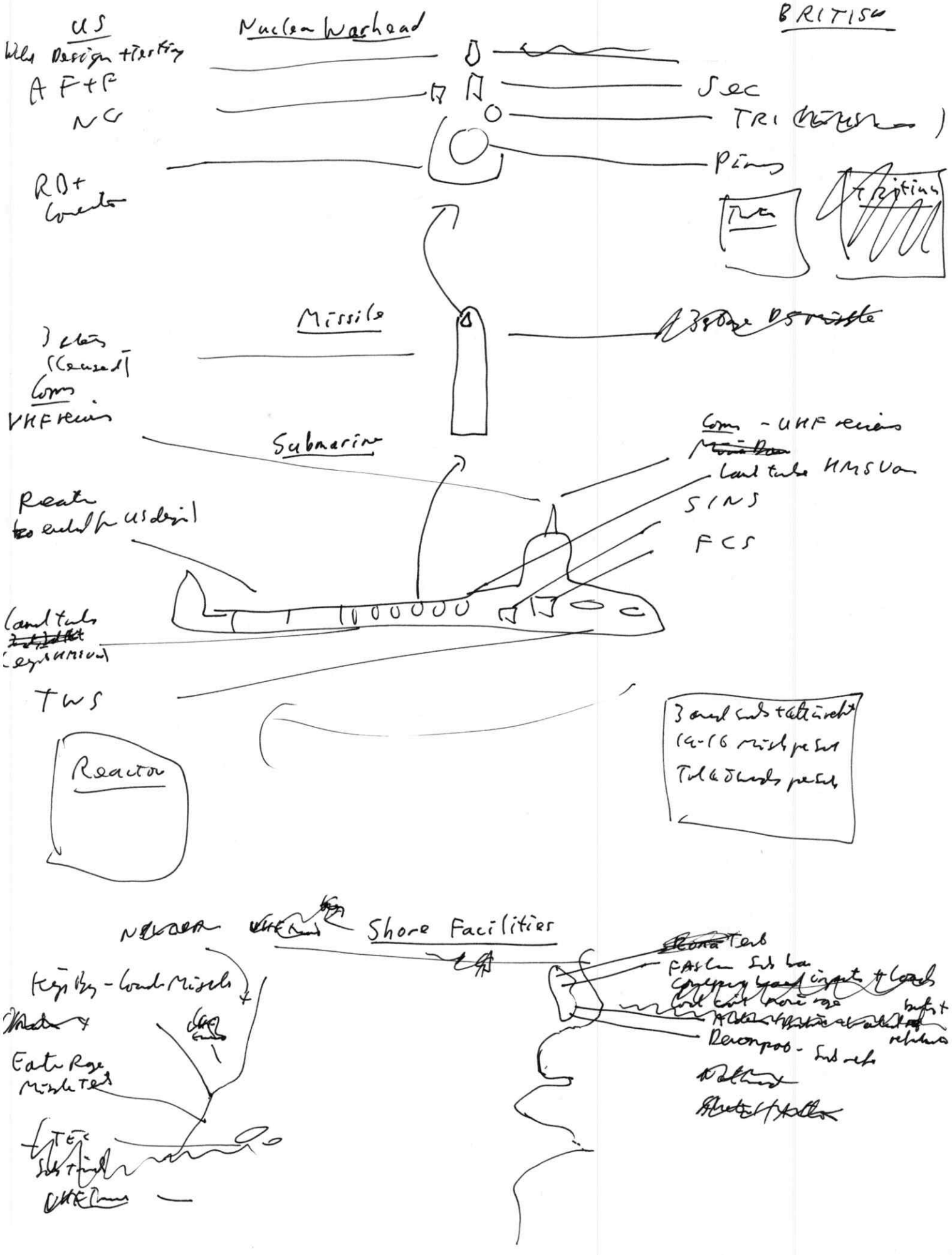
Quinlan argues that nuclear arms should become "the keystone of an arch of freedom from war". He says that war can be made less likely by continuing to raise the stakes of taking up arms. The penalty for conflict is higher when nuclear weapons are part of the equation. If this cost is higher then war is less likely to happen.

General Lee Butler has responded that it is a fallacy to say that the nuclear stand-off of the Cold War prevented or contained conventional conflict. The thousands of victims in Korea, Vietnam, Indonesia, Afghanistan, Mozambique, Angola and Hungary bear testimony to the failure of the bomb as an instrument of peace-keeping. The course of the Cold War was affected by the fact that both sides were armed with nuclear weapons, but this was not a benign influence. The danger of nuclear attack led to the increasing demonisation of the opponent. The bomb did not lead to a sense of security, but rather it heightened fears that the other side was bent on destruction. Lee Butler describes how nuclear weapons thrive in enmity. More than this, they are catalysts of insecurity and fear. The bomb intensified and perpetuated the Cold War, it contributed to the enmity which led to US and Soviet interference in disputes around the globe. The price of this hostility was paid in the lives of thousands caught up in regional wars, as East and West fanned the flames of local conflicts.

Richard Perle described nuclear weapons as a "sobering influence"[1]. The theory that these weapons have a calming effect was also put forward in Malcolm Rifkind's important policy statement in 1993. This recognises the immediate danger from instability when new members join the nuclear club, but also suggests that in due course new balanced arrangements would be established.

This theory could be applied to South East Asia. It would be argued that while were are initial dangers when India and Pakistan demonstrated their possession of nuclear weapons, in due course this will settle down and nuclear deterrence will make the relationship between the two neighbours more stable. But yet, so long as both sides have nuclear weapons, the sense of fear and insecurity will be greater. Whatever is said diplomatically, the government of India now lives with the fear that Bombay could be destroyed at any time, and the government of Pakistan is constantly aware that Islamabad could be the next Hiroshima. This is not the basis on which to build a secure future. So long as nuclear weapons are part of the equation, each side will continue to regard the other as a threat.

ANATOMY OF BRITAIN'S 1ST NUCLEAR FORCE



The argument that nuclear weapons play a positive role in international relations is carried to its logical conclusion by John Mearsheimer of the University of Chicago. He encourages "well-managed proliferation" of nuclear weapons technology.[2]

The balance of risk

Advocates of the bomb say that because the knowledge of how to make the bomb exists there will always be the risk that a nation, or terrorist group could use or threaten to use nuclear weapons. The existence of this risk cannot be denied. However we do not live in a risk free world. The need is to try to quantify this risk and to balance it against other risks. In particular to assess the dangers which come from sustaining our own nuclear arsenal.

There are two obvious mathematical bases for looking at the risk. Firstly, the more countries which have nuclear weapons, the greater the risk that one of those countries will use them. This lies at the heart of the widely accepted norm that the proliferation of nuclear weapons should be contained and reversed.

Secondly the longer nuclear weapons are deployed the greater the risk that they will be used. After their initial use in 1945 there have been decades when there have been thousands of nuclear weapons in the world, and none have been used. But it would be wrong to conclude from this that nuclear bombs can be retained without any risk that they will be fired. Robert McNamara has made it clear that if nuclear weapons are deployed indefinitely, then it is certain that they will be used.

Nuclear weapons can be used deliberately, as a result of a careful rational decision. They can also be launched as a result of a technical accident such as a computer malfunction. But the greatest risk of nuclear weapons being launched comes from neither of these. It comes from the grey area which lies between rational decision and accident, the area of miscalculation and human error. McNamara has highlighted the significance of this.[3] As a central player in the events of 1962, he regards the handling of the Cuban Missile Crisis as a model of crisis management. But yet he has learnt that it was an example of poor intelligence and miscalculation. The world came far closer to nuclear war than the key players realised. US assessments of how Russia might react were wildly inaccurate. US intelligence had not registered that tactical nuclear weapons were already deployed in Cuba and that authority to use them had been delegated to Russian commanders on the ground. The US was seriously considering invading Cuba, but they grossly underestimated the risk that an invasion would have triggered nuclear war.

McNamara identifies the danger that a country could find itself manoeuvred into a situation where nuclear weapons would be used, even though such a use would not be rational if all the information was available to decision makers. The fog of war and human fallibility make the use of nuclear weapons inevitable if they are retained indefinitely.

We don't need to look back to the events of 40 years ago to realise how wrong information can lie at the heart of crucial military decisions. The decision to invade Iraq, or at least Britain's involvement in the operation, was founded on the belief that Saddam Hussein had not destroyed all his chemical and biological weapons after the first Gulf War. It was reported that he had continued to stockpile Weapons of Mass Destruction. The error may be identified as a failure to assess intelligence, a result of group-think, or the consequence of political influence. Whatever the cause, it was clearly a major failure in the rational decision-making process. It was not the first and it will not be the last.

The UN Weapons Inspector Hans Blix graphically described the approach which Iraq had taken. He said that you can put a sign on your gate saying "beware the dog", but it does not

Commander US Joint Forces Command

is also Supp Allied Commander Transformation (SACT)

USAFE

CTF 345

551XS-1P

(SPAN would combine)

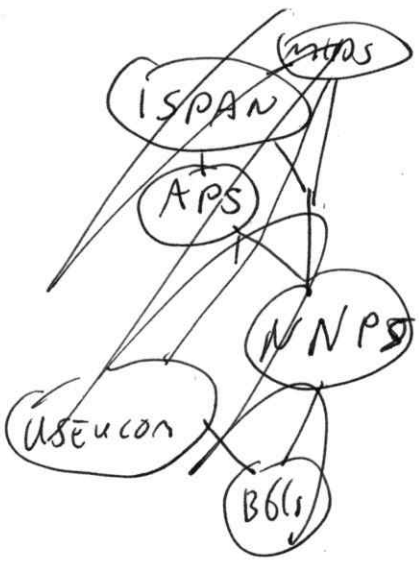
strikes, so Britain will be regarded as the most likely partner for a joint nuclear attack, in many scenarios. The fact that Britain's only force is Trident presents a complication. The US is most likely to use nuclear bombers, particularly B2s. A joint strike plan would have to coordinate the use of bombers and Trident missiles. The US nuclear war planning system, ISPAN, is designed to support strategic and regional nuclear operations involving a variety of different types of nuclear weapons. The coordination of a strike plan, involving British weapons, would almost certainly be carried out within the ISPAN system at Omaha, Nebraska.

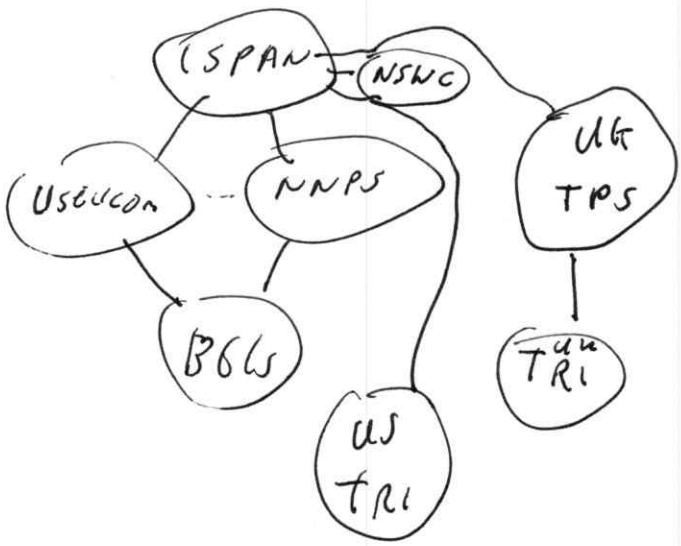
NATO today has no plan (but AP)

* Br deconflicts plans with STRATCOM
* NATO —"— —— JSTPS

——

Relationship between US/UK + NATO
Naval planning system?





NATO plan [ ] — Deconflict — US plan [ ]
↓ STRATCOM
UK plan [ ] — Deconflict — US plan [ ]

FCS Collins & naval cognition – his lab.

Dependence

NATO/as we → not a problem → but who decides → Exp AP → agreed together

UK ind – problem.

FCS – only guarantee w/ NATO EAM.

types of plan

	DP	AP
NATO/~~US-UK~~		
Bilateral (US/UK)		
Independent		

Can only veto through EAM & weapons — Could veto in TPS.

Independent → who decides? (A)

→ Can system work without deconflicting?

Joint – deconflicted ↗

Ind – Road "

Does TPS allow Ind AP?

Introduce a requirement to deconflict → ~~could~~ would tie plan to US planned [illegible]

→ could be covered → about [illegible] to FCS

For Nation – 'Sup Nat [illegible]'

→ Could TPS return it?

How / When.

↓ TPS ↓ EAM → NATO's EAM through SACEUR.

target location was within particular geographical bounds then a variable could be changed which would abort any launch command.

Britain's main independent target plan is probably aimed at command centres around Moscow. An attack like this would be against US interests in virtually all circumstances. This target plan is predictable in that it involves a large proportion of the warheads being aimed at targets within a particular area. Again a few lines of code could be altered to abort the mission if this target plan was activated.

The 12-hourly weather messages produced in the US, and fed into the Fire Control System on British Trident submarines, could be used by the US to give them a veto over the use of the missiles. These messages could be used to send covert on/off messages to the Fire Control System. They could provide the US with a veto or authorisation procedure, within a 12-hour timescale.

There is no evidence that the US has made any attempt to cripple the software supplied to Britain in any of these ways. However it could be done. The feasibility of any such project would depend on how rigorously Britain carries out independent checks on the software.

Target Planning

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[1] Software and Support N00178-99-Q-0020 Commerce Business Daily 24 August 1999. Upgrade of MathWorks MathLab on DGSNET.
[2] Software and Support N00178-97-Q-0184 Commerce Business Daily 4 August 1997
[3] Software and Support N00178-97-Q-0184 Commerce Business Daily 4 August 1997
[4] Current K Dept M&S efforts, T Gemmill, NSWCDD, 20 Nov 99. The accuracy model may be that described in John Hopkins APL Technical Digest Vol 17, No 4 (1996)
[5] Nuclear Futures, H Kristensen, for BASIC
[6] Adm J T Mitchell, SSPO, US Congress, Senate, Cmte on Armed Services, 103 Cong 1st Session, 11 May 1993, quoted in Nuclear Futures, H Kristensen, for BASIC.
[7] SRS Operational Requirements Document, OR #254-0289, US Navy, SSPO, partially declassified and released under FOIA, 9 February 1996, quoted in Nuclear Futures, H Kristensen, for BASIC.
[8] The Six Hundred Million Dollar Mouse, W Arkin, Bulletin of Atomic Scientists, Nov/Dec 1996
[9] Software and support contract for FCS Commerce Business Daily 4 June 1997
[10] Trident II Fire Control Procedures and Operational Support, Commerce Business Daily, 9 April 1999.
[11] K-Technical Support, FBO, 25 January 2003
[12] Presolicitation, 5 November 2003
[13] Trident D5 Fire Control solicitation, 2 April 2003
[14] Solicitations listed in Commerce Business Daily referring to these programs.
[15] CACI News Release 10 May 2002
[16] Missiles, Physics Lecture slides, FK Lamb, 2001
[17] Missiles, Physics Lecture slides, FK Lamb, 2001.
[18] FREE – Algorith for solution of an SLBM multiple constraint mission problem, SM Davis and DL Owen, NSWCDD Technical Digest 1997
[19] FREE – Algorith for solution of an SLBM multiple constraint mission problem, SM Davis and DL Owen, NSWCDD Technical Digest 1997
[20] Computation of Ballistic Parameters for SLBM, KA Wright, NSWCDD Technical Digest 1997
[21] Submarine issues for future networking, AD Sutherland, DSTL, AUSCANNZUKUS paper.
[22] Current K Dept M&S Efforts, T Gemmill, Navsea Dahlgren, 30 Nov 99
[23] Non Joint Owned Models and Simulations used by Joint Components, Joint Staff, J-8/SAMD, excel spreadsheet
[24] Non Joint Owned Models and Simulations used by Joint Components, Joint Staff, J-8/SAMD, excel spreadsheet
[25] Non Joint Owned Models and Simulations used by Joint Components, Joint Staff, J-8/SAMD, excel spreadsheet
[26] Current K Dept M&S Efforts, T Gemmill, Navsea Dahlgren, 30 Nov 99
[27] SATS is associated with SIMON, which is the version of the SIOP used on the airborne command post. Joint-owned M&S Used by Joint Components, 10 March 1997. SATS is also listed in the legacy progras

- problem - Conv puttin
perception of mil - accurate?

The ~~problems~~ dangers of nuclear deterrence

existing

Instrument of pe
NW increase hostility
Conflicts during Cold War
Copying leads to proliferation - balance (CB)
Risk - miscalculation
intelligence failure - Iraq
bluff / ambiguity /
operationalization
chaos
Constraints - NW
com
Non-mil - sanctions

Alternatives

new

tradition of non-use
immorality
Dangerous - Accident
+
Cold War success - Q
- diff of judging success of det
Det requires knowing mind of stereotyped opp.*
Rules of the Game - Russ (CB), Ch, Rogue
Multipolar rules
(* linked to bluff / uncertainty
→ det not a precise art - but blunt
+ dangerous gamble)

Effectiveness

Does it work - historical evidence ← w peace + ND → logical error in connecting; Conflict during Cold War; diff of judging success of det

inherent weakness ← requires knowing mind of a stereotyped opponent; rules of game - Russ (CB) - Ch - Rogue (irrational n power); uncertainty → risks / bluff / ambiguity; complexity - multipolar; miscalculation

Risk - probability of failure - balance of risk not assessed (CB); so oversimplifying analysis - Det-Mets / Suspd Attack ignoring other risks.

?

results of failure ← immorality of use; precedent of use → consequences so great requires certainty

side effects ← accident risk; undermine tradition of non-use; proliferation; raise hostility, insecurity, threat.

How dangerous is nuclear deterrence?
works best when least needed (FRUnw)
→ but ignores false pattern set + antidote

US Handling and Arms Trains (Type 3E)

		Ac	B61-4	B61-7	B61-11	B61-0	~~W53~~	W80-20
US	Whiteman	B2	1	8	5			
	Barksdale	B52		1				12 (c)
	Minot	B52	1	2				13 (d)
	Sheppart		1	2				
	Seymour Johston	F15E	5					
	Cannon	F16	3					
USAFE	Ramstein	–	4			1		
	Aviano	F16	3					
	Lakenheath	F15E	→ (B)					
	Spangdalem	F16	1					
	Incirlik	–	1					
Ge	Buechel	Tor	6					
It	Ghedi	Tor	6					
Bel	Kleine Brogel	F16	6 (A)					
Dutch	Volkel	F16	6					
	Total		51	13	5	1		25

B61-4 (A) 03 Amd – 2 (K-B) (C) 03 Amd – 8
(B) 03 Amd – 6 (Laken) (D) 03 Amd – 16

—

Implications of the 03 Amendments for B61, ~~etc~~ changes →
None stored in Italy (Ghedi) or Holland (Volkel)
although aircraft train to use B61s.
Fewer aircraft in Belgium (K-B) trained to use B61s.
More bombs would have been stored at Ramstein; 5 trains rather than 2 (?).
~~B61~~ B61-4s would have been stored at Whiteman + Minot
– but not in 04

—

B2 can carry 8 B61-7 + Whiteman has 8 trainers; ∴ could carry 5 B61-11 (same weight)
B52 – " – 12 ACCM/ACM

US ~~Bombers~~ Maintenance Trainers

	Ac	B 61-11	B 61-7	B 61-4	W 80-1	B 83-0	B 83-1	B 53-1	W 78-0	W 62+0	W 87-0	ICBM	Vault US
Whiteman	B2	1	2	Ⓒ		2							
Barksdale	B52		1		1 Ⓔ	2							
Minot	B52		2	Ⓒ	1 Ⓜ	2			2			150 x3	
Eglin	Stone		3 Ⓓ	3	3*	3			2*	4 Ⓕ	2+ Ⓖ		
Sheppard	"		1	1	1	2			2		1 Ⓗ		
Nellis	"		1	2	1		1	1	1	1			
Kirtland	"	1	2	2	1	2				1	(2)⊕		
Warren	ICBM									1	2	150 + PU	
Vandenberg	"									2	1		
~~Ramstein~~ Malmstrom	"								1	2		200 x3	
Aviano				2									18
Ramstein				2 Ⓑ									54
Lakenheath				2									33
Incerlik				2									25
Buechel				1									11
Ghedi				1 Ⓐ									11
Klein Brugel				1									13
Volkel				1 Ⓐ									11
Spangdalem				1									
Type		C	C	A	A	C	C	A	A	C	C		
		2	12	21	8	13	1	1	8	11	6		176

* also 1 type D [$^{03}_{-3\,Type\,3C}$)

+ also 2 type B

⊕ 1 type A, 1 type B

BGL-4 Ⓐ 04 Amended-1; 03 Amended-0 (Volkel + Ghedi) (+2)

Ⓑ 04 Amended-2; 03 Amended-5 (Ramstein) (-3)

Ⓒ 04 Amended-0; 03 Amended-1 (Whiteman + Minot) (-2)

BGL-7 Ⓓ 04 Amended-3; 03 Amended-0 (Eglin)

All Nellis + Kirtland counted in 03 Amended

W80-1 Ⓔ 03 Amended - also 4 Type 3 (Barksdale); 04 Amd-3 Type 3 Ⓜ 04 Amd-2 Type 3

W62-0 Ⓕ 03-0; (Eglin)

W87-0 Ⓒ 03-0; (Eglin); Ⓗ 03-0 (Sheppard);

(3a) Emphasis US –

Capabilities based approach in NPR – various countries with capabilities – not US/SU; (NPRED, 2)

No longer focus on one a single threat, but a multitude of potential threats (NPRED 5)

Not multilateralising MAD – not allowing Ch... the capabilities to destroy US (NPRED 7)

Old triad – ICBM/SLBM/Ac – each able to inflict unacceptable damage on SU (NPR-NT, 2)

NPR – 'move away from balance-of-terror policy framework .. a (nuclear cold) conflict involving Rus, while plausible, is not expected" (NPR 17)

HDTB + mob tgt → pon use agns Rus.

Blair quote;

not how many but how.

The dangers of nuclear deterrence

1w as instrument of peace, a sobering influence.
balance of rules not altered ; or overwhelmed - Re AtoB / Sup Attack; (?)
~~Immorality~~ ~~to~~ summary of sections below.
Immorality - effect is so great no balance benefit pos.
Historical judgment of success
Inherent weakness in deterrence -

- rules of game - Res (CB), China, Rogue, Unplanned response,
- requires knowledge of a shared rational approach

Miscalculate — bluff
Complexity - multipolar

Danger of accident

Negative effects of dtr - raise hostility, insy, threat
- proliferation
- undermine practice of non-use

The main file on 'dtr'.

mp →

The use of DCA for CP

DCA can carry B61-3, 4 and 10 bombs with variable yields ~~which~~, the lowest option being 300 tons. As such they might seem suitable for CP missions. However there are a number of problems.

No 66

DCA were intended ~~for use~~ to be used to drop nuclear bombs to stop an invading Warsaw Pact army. The use of NW against attacking conventional forces is not a major consideration for the US today, nor is it projected as being a major future concern. [FRUNW 27]

(DCA1)

→ Today they do not have any clear military purpose [FRUNW 26 + Refs]. They have a political role – "to ~~assure~~ reassure the European members of NATO of the US nuclear commitment to them" [FRUNW 26]

The Future Strategy Strike ~~Syst~~ Forces report advocates new weapons for CP but argues that forward-based tactical DCA should be abandoned because "there is no obvious military need for these systems" [FSSF 5-13] and the ~~sav~~ money freed up used for other purposes. The White Defence study notes that currently DCA may not have a future but argues that Dual Capable Systems offer a cheaper way of retaining a nuclear option than maintaining exclusively nuclear systems. Paul Robinson argued that DCA could play an important role in "deterring WMD threats" beyond Russia. [ZIC PR 11]

Indep + Dependen

(What's new) (David Bigler) (Uncertainty) (Cost)

US nucl pol -
(a) UK - Debate
(1) Dependen
(2) US pol
(3) Relevance. / Options.

(1a) Warheads - US design → NV; AF + F; GTS;
US components
~~US design~~ US support for Br components. - HE:
→ Anglo-Am not Br - // Eurofighter / Airbus

(1b) Software. - Missile Tech - gone.
~~US~~ FCS - type / mgs - targ plan (models)
- Sy - cab den prog (demo / 30 days)
→ (i) Reliability limited + US sets standards
(ii) Changes in US pol sys → flex (Rus + new)
+ UK TRI.

(1c) Comms - EHF;

(a) Govt statements on NW - SR recognise need for debate
(i) Repeat ~~steps~~ modest steps take in SDR.
(ii) Future Long Gen uncertainty
(iii) Can't dismiss debate
+ debate requires info.

(1d) - ~~Pharma~~ Ind (~~[illegible]~~ or AWO / Lockheed

/ Issues in the policy.

NW are the problem - not the soln.

+ Options.

Cont - use of justification
+ centre grand dispa there
Sweden there is logical cont to
keep - if cont at all
- then is now.

NATO Tac[illegible] [illegible]

Bluff – in 1955–59 – ~~[illegible] 3 people~~ few knew we had very few wps

~~Gaps~~ —— Penkovsky [illegible] – SU exaggerated effectiveness

Emphasis on control – Kennedy,

Nuclear scared → dispersion – vulnerable to conv attack

Key point of report -

Dependence -

Option - [illegible]
[illegible] -

Relev - [illegible]
CP
'[illegible]' - NP.

Cont

Background
31.08 PCP
Cp poll Ind

Weekend - ~~Flat~~ pack - [illegible] job
→ ~~HE~~ - Not [illegible]
Soltime →

NW US UK

Rationales

General

CP

Russia

Sp for NATO/US.

Practical Steps

Maintain ~~two~~ powerful credible force

Alert Status

SRS

IT Integration

Add – Debate of Crisis – re NATO/Coalit.

Issue of Sp for US/NATO – Independence

Uniqueness of NW → Mini-nukes → Common planning (SPAN → durable/det. and NW – new Challenges

---

Objectives

(a) Describe recent changes + unknown details

(b) ~~Prepare basis~~ Describe current policy/posn – so as to effectively [illegible]

(c) Prepare for replacement debate

(a) Descriptive

(b) Basis for anti-nuclear case → today → replacement

Main points

≡

British nuclear policy may emphasise the role of nuclear weapons in preventing war, but the operational preparations have a rhythm of their own. The patterns established in the Cold War have been sustained, albeit in a modified form. The capabilities of Trident are far greater than the V Bombers, Polaris or Chevaline.

Both Lee Butler and Bruce Blair have pointed out the limited role which the President plays in this process. The approval of the President is needed before the nuclear response is initiated. But the President only has three minutes to make a decision and the advise from STRATCOM will be heavily biased towards emphasising that he must authorise a strike. The Russian president has a similar period to decide.

Russia recognised that their nuclear forces could not be launched if several key Command and Control centres were destroyed in a US nuclear attack. They made two responses to this. One was to construct very deep and substantial bunkers. This was the basis for the US program to build nuclear bunker-busters. The second was to introduce a "dead-hand" system. This automatically issues instructions to launch missiles if the main command centre is destroyed.

---

[1] Jonathan Schell, The Gift of Time, p34
[2] Jonathan Schell p13
[3] Jonathan Schell, p47
[4] Ambiguity and Deterrence
[5] Jonathan Schell p184f
[6] UN Charter Article 41
[7] Supplement to an Agenda for Peace: Position paper of the Secretary General on the occasion of the 50th anniversary of the United Nations. January 1995.

Br de-alerting →

Verification - Russ + US

- is it possible to take up to 15 minutes US knowing?

→ could prep for use be made without US knowing.

The critical relationship with US -

The US view of Br NW - hot & cold

- Skybolt ×
- McMahon Act ×
- Polaris ×
- Dual trigger ✓
- Polaris ✓
- ~~Te~~ Antelope ✓
- Tridents ✓
- Future ? ?

- Degree of independence - [Ind] ← [Br Tri] → [Dual trigger]

→ how much does US know?

→ how much can US interfere?

→ US + Br owners of US/UK + Independent use

→ do both see 'Ind' as marginal?

- What about the Antelope decision?

→ Why did the US give Br Antelope?

- to give an anti-Russ rather than NATO role)

→ because it didn't work?

→ A good illustration of US ambivalence towards UK NW → gave limited help. → lukewarm.

→ Days to day / months / yr by yr dependence (eg Tri / Spares).

→ Replacement → Major issue.

→ How would the US look on Br NW today? or Fr NW!

(From US view - what is the alternative → Nuclear Fr Br → or real ind NW Br?)

Structure

Consider by – argument, application to UK,

Risks – abolition, retention

Russia
Counter Proliferation

The link between Russia & CP – history of proliferation

Routes to disarmament – horizontal, vertical - dealerting

Uncertainty – Ambiguity, bluff, lies and miscalculation

European nuclear force

WMD

Public constraint rests on knowledge – need for education.

Balance of power arguments lie at the heart of argument for nuclear weapons and against de-alerting – but both sides are very heavy and keeping balance is tricky. But balance of power approach does not consider the weight of non-military power and factors.

First World War and example of horrendous consequences of miscalculation.

Britain's role in the US/Russia nuclear stand-off today is hard to get to grips with. By acquiring Trident Britain purchased a system which was capable of launching a devastating attack on Russia. In the early 1980s it would have been justified for its wider role in support of NATO. SACEUR would have allocated the targets, probably in Poland and East Germany. But, as the successor to Chevaline, the ability to attack targets around Moscow would have been a major criteria. The deployment of Trident today, with one submarine on patrol with 48 nuclear warheads, is a posture which is designed for use against Russia.

Despite the new capabilities of SRS, communications still constrain submarine operations. It is almost certain that British Trident submarines will take with them targeting tapes when they sail at the start of a patrol. British nuclear forces are assigned to NATO, but the NATO Nuclear Planning Group say that they have no longer maintain peacetime nuclear plans. It is possible that although NATO does not retain nuclear plans, Britain does have plans for the use of Trident in support of NATO. Plans for use against Russia are probably carried. Options for targeting elsewhere may also be carried. Additional options could be communicated through SRS.

Relat between factors →

Replace TRI more frequently to increase reliability
without new with old design
→ increase warhead movements at EHS
→ increase demands risk
→ ~~fail~~ but the TRI faults sooner.
Replace IHE with HE in new variant
→ retain Stockpile/EHS safety answers
~~as awaited~~
→ (probably of accident risk reducing)

(W59)

...704 → ...dge CSA refurb for B61 7/11 - FPU FY2006
(FY04 budget)

material reuse/remake decision for B61 3/4/10 ~~A-L0357~~
made in FY02

...0757 → CSA baseline of Y12 in FY03
FY02 hd → phase 6.2/2A Study to focus on CSA aging issue for B61 7/11
~~(ALt 356)~~!)

...08 hd B61 LEP (20yr) - include refurb of CSA. + CCC

...19... Dec 98 - Y-12 completed first refurb CSA for W87 LEP

plan
NASA - ~~'Enhanced~~ 'Enhanced Surveillance campaign'
→ 'will produce a validated ...' 16...

ANC FY 2005 - detailed CSA + Case aging assessment.

ALt 357 FPU achieved FY2006

Warhead components with expected 60 yr life
(Checked on W76-1)

Primary - Pu Pit, Be tamper,
CSA - MEU
Radiation case.

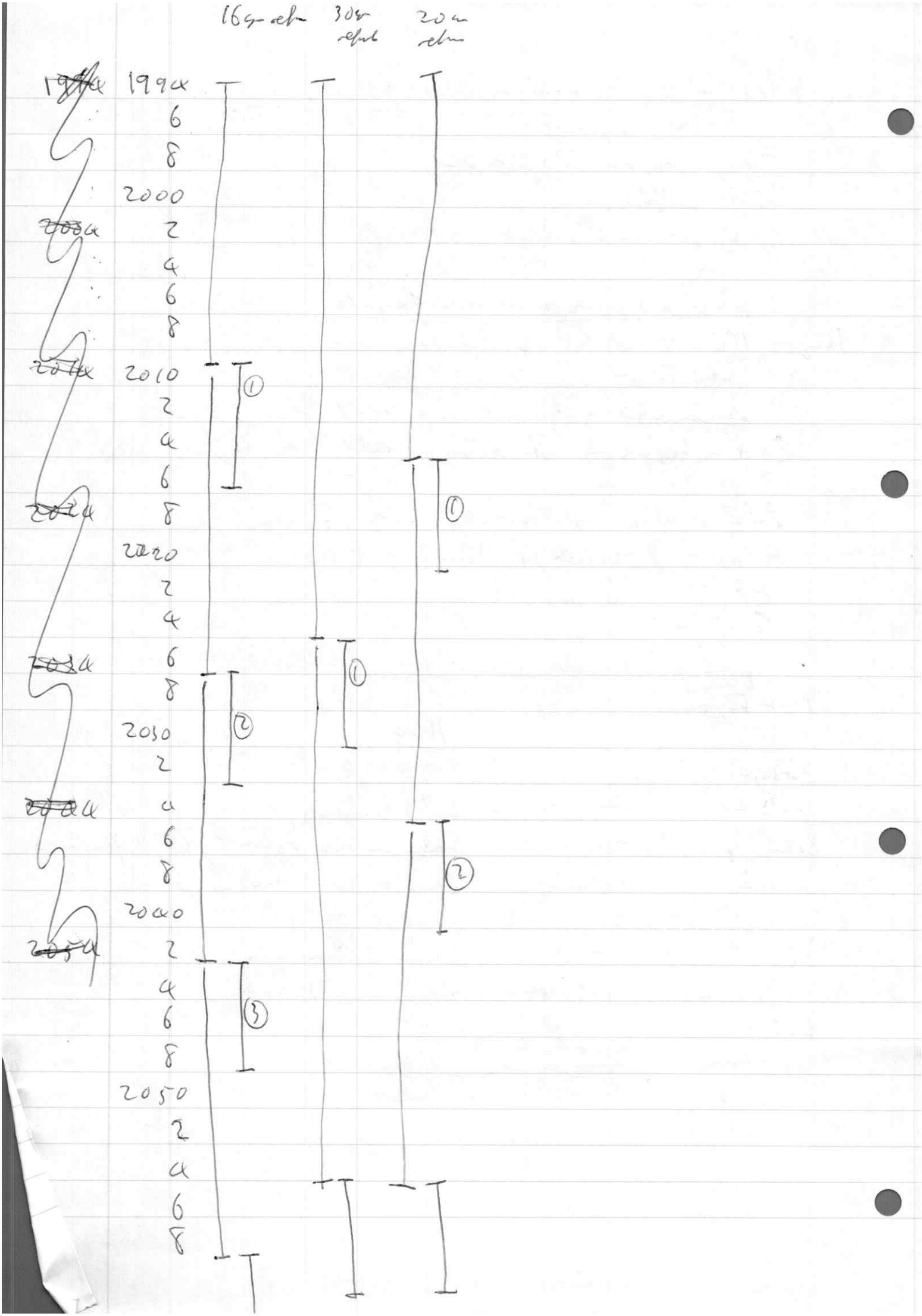
Warhead components with shorter life

Primary → HE — PBX 9501 - 30 yrs
EDC37 - ?
↳ organic material - replaced in W76-1 after 30 yrs.
CSA - refurb → some material replaced after 30 yrs.

AF&F - 30 yrs → although replaced after c 10 yrs
GTS - ? - Acorn + Acorn II
NG -
Cabling - 30 yrs.

New ~~Design~~ Design / Manufacture

	LEP	HSN	
Primary -			
Pu Pit	—	Design + Manufacture	
BeBe (Tamper)	—	Substitute new material - Design + Manufacture	
HE	replicate	Design + Manufacture	
CSA -			
MEU	—	Design + Manufacture	
Other components	refurb some	Design + Manufacture	
LCC -			
AF&F	~~Design~~ Rebuild / ~~replace~~ Design / mini	Design + Manufacture	US Component (AF&F, GTS, NG)
GTS			
NG			


16 cm
30 cm
20 cm
1994
6
8
2000
2
4
6
8
2010
2
4
6
8
2020
2
4
6
8
2030
2
4
6
8
2040
2
4
6
8
2050
2
4
6
8
①
①
①
②
②
③

MSW / LEP Decision

LEP Advantages

Cheaper
Tested design

Disadvantages

Less safe
may be replaced before SSBNF
Uses HE
Uses Beryllium
may not work with ULMS – resulting
~~[illegible]~~

MSW Advantages

Safer
~~longer~~ In service until later
Uses IHE
Avoid Beryllium
All the new material
Easier to maintain
Fire Resistant Pit
Use Control improved
Increased margins (e.g. pit [illegible])
MOD Work can be done in 'bays' not a 'cell' (table)
Retain design skills

Disadvantages

Create reliance on US support
Create requirement for computing + simulation sys
Requires Mk 5 RV
Requires manufacture of – pits
– secondaries
– cases
– all components
Encourage proliferation
Increased risk from new manufacture
Could lead to erosion of testing

Costs of divergence from US

Uranium - booster or intercha fission for WE177A.
↓
abandoned in favour of RE179 band.

USW - 59

Primary

Secondary
↓

USW - aa - primary Tetra
↓
Anglicised + Tony - for RE179

Anglicised → Simon for RE179 (Ilsgbeard)

Tetra and PBX9404 - 600 shot series
→ with British HE - yield two Cm for fission.

Alternative UK Design →
Octopus
↓
Super Octopus
↓
Cleo

} (novel form of implosion!
→ Tetrel - Pampas 1/3/62 - 9.5 kT.
gas-boosted: composite core; mechanical safety device
- not one point safe.

Tetrel-Tendrac - more HE, smaller core - 1 point safe.
(7/12/62)
↓
Katie - primary for WE177B
↓ → Scenic - (Orelloy).
Katie A - Calico PT176) for WE177A.
↓

Defe 70-783 e5
- P Pol probes [illegible] by PMs [illegible] in response to Chev [illegible]
- [illegible] study 8-12 wks - should be led by [illegible]
e3 p2 - PM asks SoS when a [illegible] decision on party policy on a [illegible] could be expected - 3 Aug 77
- [illegible] study report - incl crit
e4 - brief for COS mtg 13/9/77 on Chev
e5 - — " — [illegible] study.
e12 - Annex to COS mtg 13/9/77 [illegible]
e13 — " — Chev
e15 - plan to outflank ABM [illegible].

Defe 23-219 e52 - Draft report drafts Jun 78.
→ 'one in two chance that the damage threshold would be achieved in full'.
*
e55 pa 20/6/78 - [illegible] would [illegible] to Chev.

DM - [illegible] Opt 2 (5) + 3a (10) - based on [illegible] study?
- no [illegible]

Defe 19-91 - [illegible] of [illegible]:

3-5 yrs - 6.5 [illegible] → 5.5 [illegible]

Defe 19-208 e12 p7 - Lavered REB - sep by 1600 nm.
e20-1 - re 3 boat load ET 317
e36-0 p1 MIRVs + Submarines
e66-01 p1 - patrol at 2500 nm + concede 1900 nm to fire?
e67-2 p6 - Italian / Soviet / Chinese letters

Cabs + bombs p 177 - 5 boat pol, as V force - 20 cities.

1972 - JIC Study - Moscow Criterion -
JIC(A)(72)30

1972 - JIC Assessments - Defe 5/192 RCS
Rationale for U.K. Strat Det force, 25/6/72

Moscow Author - Quinlan - briefing -
~~[illegible]~~ Ag gp - rel; dat: own judgment; US/Atl cond

Morality & credibility - & Healey etc

CO + XO → Sole → Cattle.

Defe 19-129 e1 CSA -
critique of some rationales for NW
- eg US-Rus nuc conflict - 'our possession of an untraceable n.w. is then a cause of danger rather than its cure in this case'
- (b) deter minor hostile nuc power of future
→ if there was a world of NWS, the UK contends to be the only one unprotected

Q302 - C1No21 - re new tritium plant - currently being commissioned - can't operate until safety case agreed by NII

NII approved AWE withholding info on Ald + Burgh for reasons of public sy + nation def.

3 - Sp

4 - Pu

5 - nuclear

7 - Calder

41 - Nuc mat sh

TASS here a formerly

TASS formerly did not operate in 2005

TASS initially 10p/yr 30-40p/yr run - 50 dill (CCRS)

NII CCC reports

Q1 05 -

Consent for commencement of routine operation in Bays 3 + 4 (A90)

Q2 04 - agreed to commence active commissioning of A45 SWARF line

Q3 04 - notification under licence condition 21 for Bays 3 + 4 of A90.
(licence instrument no 29)

Q1 03 - amended plan for order of decommissioning plant

Q3 03 - A ~~Agreement~~ Burghfield (CLI No 8) issued for agreeing to a "continuation of the modified process for the disassembly of TRI warheads"

Q4 03 - NII took part in discussions to change processes to incorporated in a new plant to replace some current production processes

Q1 02 - Burghfield (CLI No 7) issued agreeing to a modified process for disassembly of TRI warheads

→

Reed etc

→ Surveillance program sets life
→ with goal of 10 yr lead or degradation

Question of what proportion to inspect
to determine reliability may involve
2000 charges.

—

yield uncertainty margin reduced if
Tritium replaced more often

pit 116 — CAML in 96

12a in 88

MC 3350
~~20~~ 2a06 | LCNC
3737

A90 fully op in '98

build A90, 2

Bays 3 + 4 A90

TA-55 - 80 per yr

TA-55 30-50 pits per yr / [illegible] 70-80,

— Thomas P D'Agostino
Deputy ~~Administrator~~ for Def Program NNSA
Administrator
5/9/06 to House Arm Serv
Sub Comm on SF

In 1 yr 9-12 disassembled 12 units under the
Stockpile surveillance program
→ + disassembled warhead units a [illegible]
03 → 06

"Enhanced Surveillance Campaign" program ESP

↳ Testing

'Start. revive of the Surv program' NNSA

Report to Congress of [illegible] to assess Rel Saf + S of US
non [illegible]

pit surv prog

Lib Dems - open to new arguments -

MP/MSP Survey -

Spin

(a) Lab MPs keep mum on TRI REPL

Ind email & MSPs

(b) Only handful of Scots MP/MSPs willing to openly back TRI REPL.
Brown + Blair

(c) Voters face choice on TRI REPL
→ vote for those against it → or those who keep their own counsel.

(d) Labour rebels ...

(e) TRADERS GUIDE TO ELECTION PUBLISHED?

(f) Quote

Lib Dem

Oppose - Delay - Support

If likely to oppose - don't explain delay
If likely to approve - explain delay
] either way flexible argument.

Collate Lib Dem opposition + statement

How will it look in 2030 -

(A) I'm glad we ~~spent all that money~~ have on n.w. - they are vital today for our sy.

(B) Why did we waste all that money on n.w. → + why didn't we do more to tackle climate change.

But getting rid of n.w. is a no brainer.

Eping – Open; Not elections are
– Cut Sean May.
Noel – Fee 3wks before regatta;
Sponsorship – Scott – Spoke to Matt
Lou Reid

Contacts

Scott
John McA
John D
Martin B
Noel K

Ke McA

Malcolm P

Build Momentum
press strategy
(release pattern some double to local press)

(1) Cabinet Can't get [illegible]
→ Now correct [illegible]

Dec – Cabinet
– white paper

Xmas] hols

Jan

Feb

Mar
I vote
– recess

Apr – Easter

– Election
May

Reform Plan –
We need to keep it
– but we need to take people with us
– Not in my name

22/11/06 Newsnight

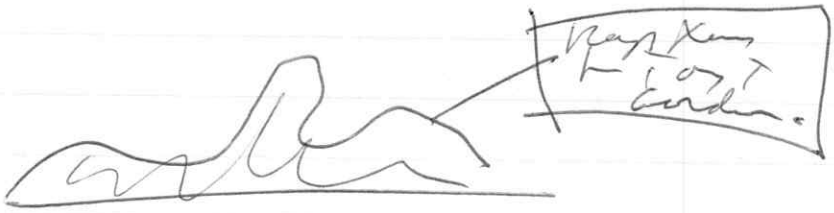
Jack McConnell →

'Govt has to be seen about creating a debate before they make a decision

- people should not
- sovereignty between autonomous government + other options of the system that are aware of the world situation.

- put it in term of decision:

1) Autonomous area + regulation — in agreement of decision [illegible]
2) " — reject — well saying but [illegible]
   - debate on where the [illegible] debate in more.



Lab, SNP, Lib Dem, Con. Ind, ..

Lib Dem policy

Independence + Morality:

Only likely use of Br n w would be to add moral authority to a US nuclear strike.
→ put in breach of Can. (– several d notes 3.3.6)

Q.1.6 Nuclear Bargaining consider.
Keep as consider – 2 outcomes → Both sides disarm ✓✓
→ Neither disarm ××
→ whereas if there is no Unity → One side disarm ✓
This is a more +ve situation.
→ Core but see detail dig ...

Lib Dems
Aim is global elimination
→ Is giving Br disarm to able of other lead cy of doing that?

Q of effect of UK replacing TR / reducing / disarming – on others.
3.0.7 – NWS must continue their agreed path to disarm (eventually 3.3.2)
(→ is there any logical argument for smaller TR force!!
→ How do you measure nuc dis!!

3.1 Taboo.
3.2.1 – Acceptance of proportionality in cold war
→ not universal or understood (see Bubble)
3.35 – increase in capability
→ nb. capability ≠ numbers.

Sef cu – Broad Ind
China ?? (as)

Public Opinion — → + Costs

Scotland | Morality | Dependence | Signal

US | Scot

What would happen if no real agent (or)!

N Korea + TRI range – [illegible]

Opinion Poll –

Q1 Should TRI be replaced
(wording from White Paper)

Q2 Should Scot Parl have power to
prevent ~~the deployment of W.M.D. in Scotland~~
~~basing~~
W.M.D. being based in Scotland.

Astute cost £1.2bn ea for 3. £3.6bn.
planned £0.8bn ea !
for ea £4.8bn

∴ TR [illegible] → £5bn.
based on VAT cost + £6bn.
Running cost – 30 yrs @ 1bn → £36bn] £[illegible]bn
AWE rebuild £8bn.

Q3 Would you be more or less likely to
vote for a candidate in the Scottish election
who was opposed to TRI renewal!

Some Early Sat am ?? ;
Memb forms [fee]

| min
53 / 46 / 30 / 23 / 15 | 27 / 22 / 10.
Fu Ad Stud Sn Ass |
(25) (20)
55 65
(50) (60)

[In part – clarify what people get – ?? / storage
and ?? about discounts.]

Park Liaison

7–10. /

ACM →
Food – SD;

Budget ?

MP?

Chi 8 on – proposal ;
' Cttee should consider –
Scott – or addn series. ; SnD – ? of runners !
– Summer – not univ runners.
9/4 – 11/6 – Calder Cup ; July – Nov ; Aug–Sep – ?? ??
?? Sat ??
Sat summer series ; / could consider addn series ;
May – Try?
– propose addn series in May – subject to agreement with Park ; – to speak to Chris
Bouquet – his info. (Cldrdll)
retain ?? without damage ; guard on props ;
more on stems ;
Cederdll – Sat – 80 ; raffle prizes – mixed ups ?

T EXT + FC.

ery reassuring."

4to — NSWC.

FC + T.

Software environment.
NSWC –

T
FC
REACT
SRS

Product.

Survey of the Dept Syst.

S/a C.

FC Hardware
FC
CACI Costing

? – execution

Information →

Aim + to explain of T/FC
role of NSWC.
targets
F.C.

(Uk role.)

JP 3-12.1 Doctrine for Joint → Under Assessment Apr 00

USAF Th. Nuc Weapon Ops

USSTRATCOM Theater Sup Plans Sys TSPS

CAPS

CP Analysis + planning System

NATO DPG → Same Doctrine Go → NPG

DIRECT → CINCs + generate + transmit EAMs

→ to all nuclear force elements

AN/TSC-5

Oct 8 →
1200 –

Met Norman →
East region

Lithium can form deuterium + solid
+ establish itself in fusion

fusion fuel – LiD – [illegible]
natural lithium deuteride
& liquid deuterium

core – Aluminium ?

the shield both Ron + Sam

the use of new fuel "little dust"
(dry fuel) in Greenhouse Castle Bravo
1950s
→ requires lithium production

mercury used in separation + P109
enrichment of lithium

9/12 produced lithium compounds

purifying liquid lithium → removal of
nitrogen or aluminium → by adding
reagent (Ti or Al) to liquid lithium
→ aluminium nitride can be
mechanically separated from molten liquid
lithium –

Source lithium aluminium silicate ore,
→ can extract from this lithium carbonate

(lithium used in battery)

lithium flammable + potentially explosive
we have to avoid publicity & lithium
prob 1 –
"special materials" is related
to 'person level'

REACT → improved comms
+ upgrade system controls

OZ SCEP for REACT → replace hardware

React designed in late 80s

OZ - Contract for new Hand Drive Assembly (HDA)
for REACT

Ad Joel Mitchell - Mngr of Det FY90
p87 - News Rel 11/5/93

SRS - NSWC DD is lead org.

Mk 98 Mods -

US Naval College - Missile Test Mk98 mod0

Mk-98 Posi for EV
M2&OR / M2&IR Data Recording System
(Tiburton Electronics Corp)
contract to SCBM

DCSNET

Network	DCS Net	FCS PPC
OS	Sun Solaris 2.x	VxWorks ~~on Force~~

Mod 4/8/97 Tornstrupcc ~~Fornado~~ server on Sun Solaris ⟶
pst GF-PCC Green Hills Fortran Compiler for ppc
- Works fine on Sun Sol 2.5
→ Upgrade to unsupported Sun OS version

US 6385 5/12/01 + 4/1/02 + 8/12/00

UK 538 pre FAT Software - 8/12/00

SCSI - Small Computer System Interface

IN545 Shaun Orman
Orman

pst MK8a Blue system
Farnborough

Qinetiq

Gordon Simmonds
UVR Consulting Services Ltd
"To own the intellectual ownership of the UK TRI Syst

Access to MIDB in UK

→ SDISS

MIDS [illegible] UK – [illegible]

US
IECS – Imagery [illegible] → UK
– Molesworth

SDISS → Blandford Camp UK → Royal Sigs Trg Camp
→ [illegible]

UK SWID97 38 CMCS [illegible]

Ex [illegible] →
can SDISS [illegible] [illegible] [illegible] [illegible]
[illegible] Coalition + US [illegible] [illegible]

TOP SEC – SCI [illegible]

(SAC)
US EUCOM Joint Analysis Centre Molesworth

18/2/03 →

CINCUSNAVEUR – Grosvenor Square London

1975 Ex High Noon world
SAC F-111s + Vulcan bomber (RAID)
+ B52

1970 Ex Guam Visit
23 SAC B52s, 2 F111, 3 Vulcan

1960 – Middle East area of Key Load in
return for participation in Skybolt

CP

US Com sup (Gulf) | + perceived increased ability / threat from WMD

(1) Res - Ind UK plan
~~Tape~~ UK Int ~~as~~ - Target > Target list ~~plan~~ - Targeting plan [complete]
ABM assessment
Not agreed
Tape/CD → Sub

(2) NATO - No fixed plan but rapid plan capability
~~Tape~~ ~~athe~~ → CINC STRATCOM - CINC USEUCOM - - → Sub
SACEUR
SWPS - NNPS - Normal workshops → (Northwood) Sub - and SOint TRC

or SWPS - (Northwood?) → Sub
SACEUR / CINCUSEUCOM
UK

DTF – Direct to Force →
Used by STRATCOM Airborne SOW to
replan/use SCBM – determine range/footprint etc.

→ PMARS is ICBM/AC equivalent

SIPs – linked to AEM
– Richard Deroos
no SATs on line

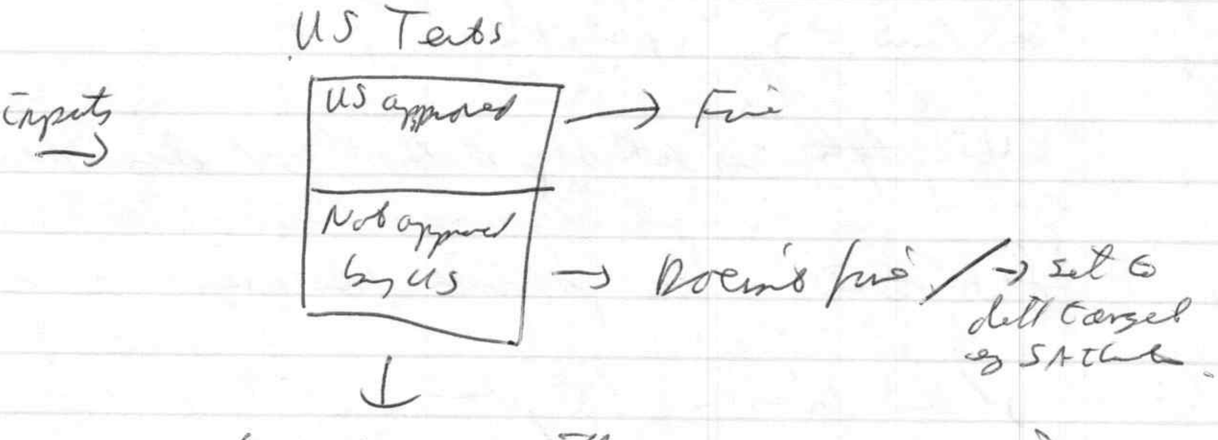
Bob Aldrich → REACT – retargeting. Whole force
redone [illegible] – 20hr → 10hr;
+ instant retargeting of single missiles.

React Office → Higher Authority Communication/
Rapid Message Processing Element (HACRMPE)
produces REACT

How to cripple FCS Software

① UK independent attack on Russia
→ Identifiable criteria in target set
→ number of targets in a particular area
→ ie most of set in Moscow area
→ no US origination equivalent
→ cripple.

② SRS
→ Sophistication means selection possible (pos.)



eg → target area within CONUS → Fail

→ How could the software detect
→ (a) This is a US approved target plan
(b) This is not a US — " —

→ (1) Target area → eg
(a) eg US
(b) No of targets in area → eg all around Moscow

(2) Specific inputs →
re SRS

MIRV

boost phase 2-4 min - rocket
postboost " <5 min - bus separate + release RVs
midcourse - <20 m - RVs ballistic
terminal - ~~[illegible]~~ 20-60 sec - RVs reenter atmosphere

Earth gravitation field varies
→ bumps (anomalies)
+ mass concentration
+ gravitational pull of moon;

Atmospheric drag - jetstream, [illegible]

US ~~data~~ satellite geodetic target data

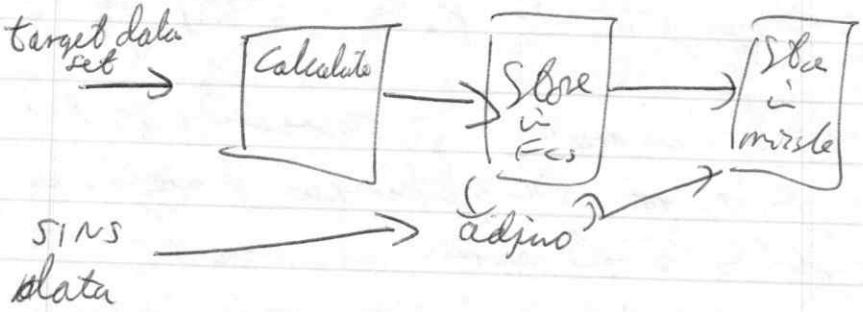
fast reentry → less deviation by wind or [illegible]

Stellar fixes in bus phase

Console Operator Program → REACT

FAC
RMPE
LCC
WSCC

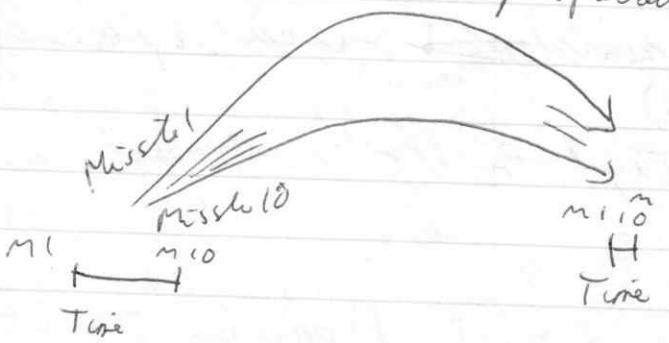
FCS



2nd target set — " —
3rd — " —
... — " —

Target Set → Missile 1 — Missile data + RV1 + RV2 + RV3 + RV4
Calculator → Missile 2 — " —
→ — " —
→ Missile n — " —

Basic target data - Latitude; Longitude, HOB, Timing
angle of attack;



Preset data - time; stellar info; missile performance data;
gravitational data; earth rotation data;

Launch pos data - updated from SINS
environmental data - from radio - wind speeds,

British Targeting options from a US perspective

(a) '2nd centre of decision making' deterrence factor
→ create the impression that Br nuc forces can be used completely independently

(b) Nuclear war fighting + Crisis Management —
→ maintain a veto over any independent Br use if need appears
→ how could such a veto be exercised in advance
→ (i) technically by crypto software
(ii) by threatening + being prepared to use nuc against Br.

→ Re nuclear war fighting →
attacking Russian leadership targets are the final option, not the critical option in a nuclear exchange
→ for Britain force, used independently, against Russia they are the main ~~option~~ critical option (because of size)
→ important that Br NF not used in this way.

Why did Br go ahead with Chevaline
→ if FCS for Polaris could have been upgraded?

Plume avoidance - box narrower to avoid disturbing RV trajectory

---

99 budget request R1 - WMD related technologies Flagship Co

Completed study on development of an interface between the Air Vehicle Planning System (APS) + service planning systems such as the Tactical Aircraft Mission Planning System (TAMPS), Nato MPS (NNPS), + US/NATO Int. Systems.

FY 2001 plan ↓
(Initiate study for requirements development to integrate APS with NPES.)

Check T.P.S.D. from SWPS Sow. → T.PDN
T.PSDC

How the US could veto UK TRI use

(A) (1) FCS normal state includes a hidden disabled function

(2) This function can be altered by a coded message through weather data

(3) Weather data can also disable.

- ie 12 hr on/off switch.

(B) (1) Restore Spain gate.

Navy / Air Force

STRATCOM / CINCS

2043
→ 72
+10
→ 720
→

Refined Int Stab 'range'
→ Comes from a situation where only Str SNW
was being considered as an option.

1267 → Q – why don't just have SNW
A – ... 'range'
→ SST does not arise from a particular
strategy need a strategy.

greater.

NPR →
Russia / Other
Russia – says 'not expected' → but most warheads for
(SORT of START).
→ Russia / China / Other
– 2 of the 'immediate contingency, relate to China
– Bargain T1 → T2 + adjusts sub balance ; China – un. or poss. conflicts
[China as Egt for Str NW
567 → redeploy subs? ; Br tie as factor in US adjusts SSBN balance)
– 733

25 Adaptive – could poss. apply to new mobile missile
(+ program, originate from?)

NPR of UK
'operationally deployed force – US – 2007 – 3,800 2012 – 1,700 – 2,200
UK – 144.
If SSBN are 1/3 – 2007 → UK = 11% US ; 2012 → UK = 20-25
If SSBN Atl are 1/2 → UK = 22% w/ Atl ; UK = 40-50% w/ A

'Responsive force' – As a reserve ~~to deal with~~
→ ~~size~~ with variable timescales

Trend in US Nuclear Strategy

→ Away from MAD deterrence to Nuclear warfighting

→ Flexible Response can be interpreted as a move in this direction

→ Reagan era developments — adoption of some of the Soviet Nuclear warfighting methods

→ 'Adaptive planning' + ~~START~~ (on expansion on the rigid SIOP can also be seen as more 'warfighting' (on 'deterrence').

(see Burke - 'New Debate 'a dialogue of the blind + the deaf'.

SAIC (or Land NL

RUSI
RIIA ... [illegible]

John [illegible]

Laurence Freedman

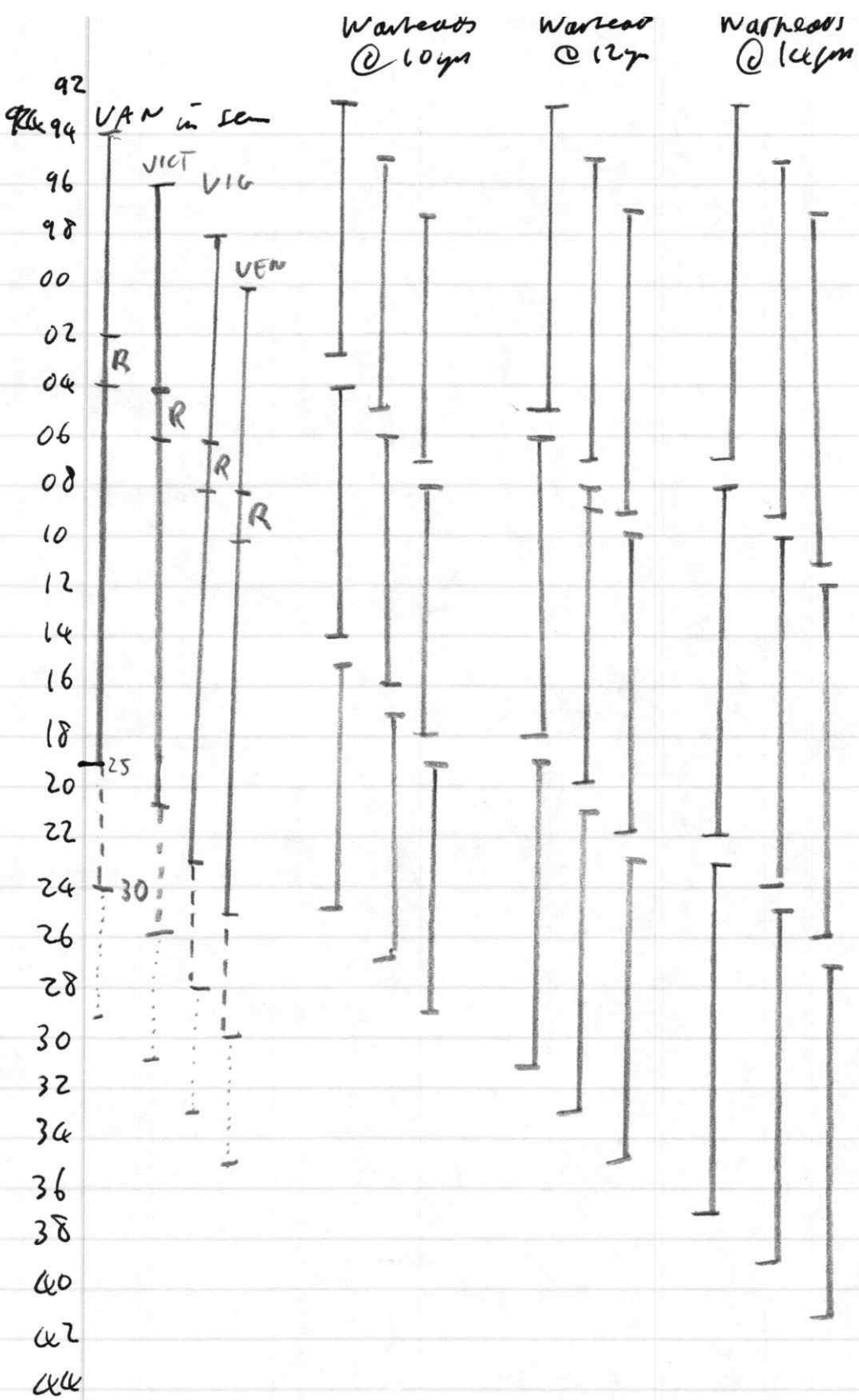
Defe 13/619 - US/UK Polaris agreement

defe13/619 Sir Solly - Scott Lugar [illegible]
IISS [illegible] → by [illegible]

If UK replace TRI with
US TRI replacement + when is that available!
2029.
< [illegible] 2016

NATO, NW + the [illegible] -
[illegible] + [illegible] Oct 2002 £2.50 RUSI
[illegible]

[illegible] RIIA


Warheads @ 10yrs
Warhead @ 12yr
Warheads @ 14yrs
92
94
96
98
00
02
04
06
08
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
VAN in sec
VICT
VIG
VEN
R
R
R
R
25
30

NATO -

global role not just regional
- now longer if but how
- what does it involve

Art V and Scp II

~~→ Art V Enemy inclu~~

→ threats include non-state actors

Bud 04 → Feb 03 - CNuclear Submarine + CP Technology
FY02 Army Ref RDT&E

Nuclear Operations → → Maintained USSTRATCOM / SHAPE Europe Theater Nuc Support Program to provide in-theater nuclear + WMD sp to CINCom + NATO

Operation Warfighting Support (re CP)
FY02 dollars →

→ Completed War Planning Support (WPS) to SHAPE

From a US perspective its nuclear forces in Europe may be regarded as either NATO Sub-Strategic forces, or as forces supporting USEUCOM.

A 1998 contract for the "European Theater Nuclear Forces Improvement Program" lists ~~Each~~ one of the tasks for analysis as "Support ~~to~~ of NATO Sub-Strategic Nuclear Forces / USEUCOM Nuclear Forces". This phrase is repeated in ~~an update~~ a ~~similarly worded~~ similar contract issued in 2003. ~~Again this suggests while the equation of~~ While US B61 bombs may be regarded as both USEUCOM and as NATO Sub-Strategic forces – this terminology ignores Britain's Sub-Strategic Trident.

The contract was for studies ~~into a number of areas~~ including "deterrence with sub-strategic forces". To ~~also~~ → focusing on the "deterrence of WMD threats and or attacks on NATO + the maintenance of the nuclear deterrence component of the NATO States concepts supported by USEUCOM and SHAPE and SACLANT", SOW ETNF 98. + WMD counterforce options – new doc.

→ Amplification (elsewhere here)

NNCCRS's a ...

FCS

For UK + US ~~...~~ + for SRS →

9/6/97 → Power PC CPU has been incorporated into SCBM FC computer architecture

→ VxWorks OS operates on Power PC CPU

→ Wind + VxWorks programs

FY96 – ~~Phase~~ Effort in sp of phase III development of SRS

FY99 →
FY00 – SRS: Effort contin in sp of phase III dev
+ FY01 —"—

SRS to be deployed by 0803.

– ROTXE Jan 02

TR II

BAS Nov/Dec 96 – 600 mil Roll mom – in cem '98

– REACT – for ICBM – conceived in late 70s

→ for ICBMs to be targeted against Rus mobile ICBMs

REACT reduces time to process pre planned target lists → 20hrs → 10hs

+ 'on the fly targeting'.

→ SRS is SCBM equivalent

SRS approved c'95

Rapid Execution + Combat Targeting REACT

Ling SIOP → SIOP generat < 24hs →
retargeting of 1000 relocatable target per day

'REACT' enables the Sqn to respond to NCA targeting directives in near ~~...~~ real time – 341st Strat Missile Wing

SAC.com

Hodder Leeds