

DRAFT RESEARCH BRIEF - FOR COMMENTS

US Ohio submarine replacement and its potential impact on the UK Vanguard submarine replacement programme.

Context: At the end of 2010 the UK will decide on whether to invest more money in designing a replacement for the UK's nuclear weapons carrying 'Vanguard' submarines. The government 2006 white paper estimates that the total cost for these submarines will be £11-14bn (for 4 subs). This has been contested by Greenpeace amongst other groups. The MoD are currently revising their estimates - as requested by the national audit office and public accounts committee - as part of the 'Value for Money' review of trident which should have concluded at the end of July 2010.

Now evidence seems to be emerging from the US that the parallel process over there - to replace their 'Ohio class' nuclear weapons submarines is hitting problems - because of increases in its estimated cost.

It appears that the US may be considering (due to cost pressures) further extending the life of their existing submarines (which have already has their lives extended from 30 to 45 years). Further there is evidence that there is some pressure emerging from the US House of Representatives to build a smaller submarine design to replace the Ohio.

If true any of these developments could impact the UK's planned Vanguard replacement submarine building programme;

- Increasing US costs could indicate the likelihood of similar increases in the UK programme.
- Further life extension could strengthen the argument for Vanguard life extension (beyond the already planned 5 years extension).
- A switch to a smaller submarine would affect the size of the replacement submarine missile. This would impact the UK as we rent D5 missiles from the US for use on Vanguards. There is currently a US-UK agreement that replacement for the D5 missiles will be compatible with the new UK sub and a 'common missile compartment' (capable of taking both the D5 and as yet undersigned future replacement missile) is currently being designed.

Research outline: To investigate, via online research, interviews with specialists and using freedom of information requests - issues relating to the US Ohio submarine replacement programme and its relationship with the UK Vanguard submarine replacement programmes. To identify potential problems for the UK programme arising from either the UK submarine building programme being out of synch with the US one, or increasing cost estimates for the US project indicating that UK budgets are likely to be inaccurate.

Specific tasks:

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Eric Loh.

- Verify reported increases in the cost of the Ohio submarine replacement programme and clarify the exact causes of these cost increases. Identify whether similar cost increases are likely to apply to the UK Vanguard submarine replacement programme.
- Identify an expert on submarine procurement/costs who would be willing to look at/comment on the US submarine cost estimates increases and their relevance to the UK submarine cost estimates to UK media.
- Confirm whether or not the US government is giving serious consideration to building an alternative size of submarine as a replacement for the Ohio class and whether this could impact the UK submarine replacement programme.
- Confirm whether or not the US government is giving serious consideration to further extending the life of the Ohio class subs.
- Research the agreements surrounding joint US-UK funded work to develop a common missile compartment for the future US and UK nuclear armed submarines (which is supposed to fix the problem of the programmes being out of alignment). Verify its costs and how payment is split between the UK and US and the progress of the project.
- Assess whether US regulations concerning nuclear submarine safety are less stringent than US regulations. This is a factor often cited by opponents to life extension.
- Report on any other relevant factors that arise during the research process that could be of use to the campaign and liaise with the campaigner to assess whether they are worth pursuing research into.

USN and
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Final output - Produce a briefing detailing key facts and arguments, with full references and suggested expert interviewees (who have indicated their willingness to talk to UK media). This briefing will be used to explain and backup the story to an investigative journalist.

Dependent upon the results, Greenpeace may produce an edited version of the briefing aimed at a wider audience of MPs and non specialist media.

Relevant background information:

US submarine cost increases:

Notes from John Ainslie: The US Navy has plans to replace their Trident submarines, the Ohio class. In 2006 they estimated that each of the new vessels would cost \$3.4 bn (in FY2008 prices). On 20 January 2010 three experts told the Seapower subcommittee of the House Armed Services committee that the revised cost had doubled to \$6-7 bn.

Loren Thompson, Chief Executive of the Lexington Institute, told the committee that the Navy's calculations were that R&D would be \$15 bn, the lead ship \$10 bn and each subsequent ship \$5 bn. If the 4-boat British fleet were costed on the same basis the total would be \$40 billion (£24.7 bn). This is almost double the £11-14 bn estimate for

Costs - 'Smoking all the air' -

the new submarine in the 2006 White Paper. This difference cannot be explained by the smaller number of missile tubes (12 rather than 16).

While the UK claims that it can build nuclear submarines for less than the US, the latest figures suggest that Trident replacement could cost more than originally projected. The desire to build a new reactor, PWR3, and the safety requirements imposed by the Defence Nuclear Safety Regulator are likely to increase the cost of the British programme.

The total cost of 12 new US submarines is projected to be \$80 billion. Taking this amount from the navy's shipbuilding programme would drastically reduce their plans to build other warships. So Gene Taylor, chair of the Seapower committee, and others have advocated that the Ohio-replacement should be funded from outwith the shipbuilding budget.

The Senate Armed Services Committee was told on 17 March 2010 that the Navy are "facing significant cost challenges" over the Trident missile.¹⁷ The cost of building new rocket motors has increased by 10-20% and is expected to continue to rise by up to 50% because of limited orders from NASA.

Other notes: We have already identified one significant reason the US Navy cost estimates for Ohio replacement were revised up. Basically, it seems to be an accounting error - the US Navy didn't factor in shipbuilding inflation for their 2011 figures, which is at a higher rate than GDP inflation. See page 24 of the CBO report: <http://www.cbo.gov/ftpdocs/115xx/doc11527/05-25-NavyShipbuilding.pdf>

We need to know what is included in 'shipbuilding inflation' and whether similar factors would affect UK shipbuilding (and should be reflected in UK costings)

Another key question is do the UK MOD factor in shipbuilding inflation to their submarine cost estimates. Potential sources for this information include the individual in the UK National Audit Office who was responsible for critiquing MoD estimates for trident replacement, plus PQs and FOI.

Existing media coverage of US submarine cost increases:

<http://www.businessweek.com/news/2010-05-25/new-navy-sub-may-cost-1-billion-more-cbo-says-update1-.html>

<http://politics.caledonianmercury.com/2010/05/03/trident-replacement-threatened-by-doubts-over-us-submarines-2/>

NB we know the source of the Rob Edwards quote, but it was given off the record as they did not want to speak publicly in UK media.

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Evidence for US pressure for alternatives to like for like Ohio replacement:

The House of Representatives are/were holding back funds for Ohio replacement until the department of defence releases reports into alternatives to Ohio style replacements (text below). We do not know whether the alternatives has now been released and what are their implications/what was response to them?

Sounding of US experts (Daryl Kimball, Jeffrey Lewis, Hans Kristensen) taken by Paul Ingram indicate that there is no serious consideration being given by the US administration to building radical alternatives to a replacement Ohio submarine, though another life extension is likely to be under consideration.

Below is the section from the FY2011 Defence Authorization Act. This withholds 50% of the budget for the Ohio replacement submarine until the Navy releases its Analysis of Alternatives. Among the issues raised in the Act is the timescale for introducing each of the options, costs and the sizes of alternative missiles.

The Act was passed by the House of Representatives on 28 May 2010 and put before the Senate on 9 June 2010. There will now be House/Senate negotiations to determine the final budget.

The Act calls for an unclassified version of the study to be released, possibly with a classified annex. If this was published it is likely to have implications for the UK programme.

H.R.5136 National Defense Authorization Act for Fiscal Year 2011 (Engrossed in House [Passed House] - EH)

SEC. 211. REPORT REQUIREMENTS FOR REPLACEMENT PROGRAM OF THE OHIO-CLASS BALLISTIC MISSILE SUBMARINE.

(a) Findings- Congress makes the following findings:

- (1) The sea-based strategic deterrence provided by the ballistic missile submarine force of the Navy has been essential to the national security of the United States since the deployment of the first ballistic missile submarine, the USS George Washington SSBN 598, in 1960.
- (2) Since 1960, a total of 59 submarines have served the United States to provide the sea-based strategic deterrence.
- (3) As of the date of the enactment of this Act, the sea-based strategic deterrence is provided by the tremendous capability of the 14 ships of the Ohio-class submarine force, which have been the primary sea-based deterrent force for more than two decades.
- (4) Ballistic missile submarines are the most survivable asset in the arsenal of the United States in the event of a surprise nuclear attack on the country because, being submerged for months at a time, these submarines are virtually undetectable to any adversary and therefore invulnerable to attack, thus providing the submarines with the ability to respond with significant force against any adversary who attacks the United States or its allies.

(b) Sense of Congress- It is the sense of Congress that--

- (1) as Ohio-class submarines reach the end of their service life and are retired, the United States must maintain the robust sea-based strategic deterrent force that has the ability to remain undetected

by potential adversaries and must have the capability to deliver a retaliatory strike of such magnitude that no rational actor would dare attack the United States;

(2) the Secretary of Defense should conduct a comprehensive analysis of the alternative capabilities to provide the sea-based strategic deterrence that includes consideration of different types and sizes of submarines, different types and sizes of missile systems, the number of submarines necessary to provide such deterrence, and the cost of each alternative; and

(3) prior to requesting more than \$1,000,000,000 in research and development funding to develop a replacement for the Ohio-class ballistic missile submarine force in advance of a Milestone A decision, the Secretary of Defense should have made available to Congress the guidance issued by the Director of Cost Assessment and Performance Evaluation with respect to the analysis of alternative capabilities and the results of such analysis.

(c) Limitation-

(1) REPORT- Of the funds authorized to be appropriated by this Act or otherwise made available for fiscal year 2011 for research and development for the Navy, not more than 50 percent may be obligated or expended to research or develop a submarine as a replacement for the Ohio-class ballistic missile submarine force unless--

(A) the Secretary of Defense submits to the congressional defense committees a report including--

(i) guidance issued by the Director of Cost Assessment and Performance Evaluation with respect to the analysis of alternative capabilities to provide the sea-based strategic deterrence currently provided by the Ohio-class ballistic missile submarine force and any other guidance relating to requirements for such alternatives intended to affect the analysis;

(ii) an analysis of the alternative capabilities considered by the Secretary to continue the sea-based strategic deterrence currently provided by the Ohio-class ballistic missile submarine force, including--

(I) the cost estimates for each alternative capability;

(II) the operational challenges and benefits associated with each alternative capability; and

(III) the time needed to develop and deploy each alternative capability; and

(iii) detailed reasoning associated with the decision to replace the capability of sea-based deterrence provided by the Ohio-class ballistic missile submarine force with an alternative capability designed to carry the Trident II D5 missile; and

(B) a period of 30 days has elapsed after the date on which the report under subparagraph (A) is submitted.

(2) FORM- The report required by paragraph (1) shall be submitted in unclassified form, but may include a classified annex.

<http://thomas.loc.gov/cgi-bin/query/D?c111:3:./temp/~c111aheMKA>

Notes on the common missile compartment:

Contracts placed:

<http://www.defenseindustrydaily.com/CMC-contract-to-Define-Future-SSBN-Launchers-for-UK-USA-05221/>

John Ainslie notes: the new US subs will be designed to initially carry D5 missiles, then the new missiles. Apparently there was an exchange of letters between Robert Gates and Bob Ainsworth agreeing the common missile department.

Useful websites/sources:

<http://frn.beedall.com/fsm.htm>

Richard (dick) Garwin - US submarine expert.

Desired skills:

Experience of researching defence issues.

Knowledge of the US government' processes.

Experience of using US and UK freedom of information processes.