

## John Ainslie

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**From:** BRIAN BURNELL [brian.burnell@btinternet.com]  
**Sent:** 07 March 2008 11:48  
**To:** John Ainslie  
**Subject:** Re: Lighweight warhead

This is really interesting John. I'd overlooked [REDACTED] comments in that symposium paper. It does seem to fit with my original suspicion. However when I put it to [REDACTED] some time ago, he offered a different explanation pasted below, which he doesn't have any hard evidence for. I'm inclined to attach more weight to insider [REDACTED] view.

I need to study your paper closely. So far I've just scanned thro' it, and there are some changes I'll suggest if you don't mind me annotating it.

Will get back to you this weekend. I'm sure that [REDACTED] would like to see it, altho' I suggest after some tweaks.

Regards  
Brian

[REDACTED] version below emailed 12 Feb 08

START

..... "I imagine weight reduction on the Chevaline warhead would have been very useful for extra sea-room, and therefore an important programme-level objective - at least until the rest of the front end began to be design-frozen, at which point further weight reduction might have been positively unhelpful because of overall effect on c of g.

I don't know what the relative emphasis/balance was in the warhead test programmes of these years between Chevaline development, pure research (for credibility in US eyes), and use in possible successor systems. I'm a bit surprised to see in your notes that tests in 1980 were "for Chevaline" - wasn't it a bit late to change? And hadn't Harriet been tested successfully in 1974/6? A small, higher-yield primary might have helped weight reduction for Chevaline, although it's not clear to me exactly how; it might similarly have been seen to have some advantage for use in TD127. It seems to me more likely to have been of interest in the context of investigating options to use Poseidon/Trident-type small conical RVs in Chevaline successor (such an RV would be faster for endoatmospheric penetration and to limit wind drift; more could also be carried).

Speculative conclusion:

Foundutta/Quargel were first attempts at a possible UK Trident warhead (or possibly primary). This was before any political decision for Trident had been made, and probably before the yield req'd from a Trident warhead was known, but it was already clear that small would be beautiful. The tests were successful and a brief enthusiasm developed for using a similar concept in Chevaline, because it offered a weight saving, but it was really too late in the overall programme to change. Testing of refined versions of the same concept continued in 1980, now focused on developing a new family of designs for Trident and TD127. (This relies on "for Chevaline" in the 1980 papers being a misunderstanding, or relating to a test or tests that eventually didn't go ahead).

There is public-domain seismic data to suggest the Dutchess test had a lower yield than the others. "

ENDS

----- Original Message -----

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Sent: Friday, March 07, 2008 10:56 AM  
Subject: Lightweight warhead

Brian

I was trying to make sense of the UK tests in the late 1970s from the details you sent, and I have drafted the attached summary.

Is this something that you were planning to write up yourself ?

Should I send this to  for his comments ?

John

John Ainslie

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