



**Director General Security Policy
Ministry of Defence,
4th Floor, Zone D, Main Building, Whitehall, London, SW1A 2HB
Tel No. 020 7218 3832 Fax No. 020 7218 1042
DGSecPol-privateoffice@mod.uk**

DG Sec Pol/(99/10)

2 June 2010

PS/Secretary of State

Copied to:

PUS	D DST Strat Tech
CDS	Hd SW IPT
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CSA	

UK-FRANCE NUCLEAR HYDRODYNAMICS CO-OPERATION

Issue

1. The Cabinet Office have asked for a restatement of the MOD position on increased UK-France nuclear hydrodynamics cooperation.

Recommendation

2. That SofS:

- agrees that [REDACTED]

- [REDACTED]

Timing

3. Priority. The French are keen to push ahead with their proposal for a joint facility and will raise it when President Sarkozy visits London on 18 June. We also want to

[REDACTED]
[REDACTED]
[REDACTED]

Presentation

4. A decision to commit to this level of nuclear collaboration with France could [REDACTED]

[REDACTED]
[REDACTED]

Background

5. [REDACTED]
[REDACTED]

This facility would replace a new national capability planned for AWE Aldermaston. [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]. In the meantime, we have learned that President Sarkozy intends to raise the issue on 18 June. [REDACTED]

[REDACTED]
[REDACTED]

[REDACTED]. This submission sets out the issues to enable SofS to decide whether to endorse our previous position – [REDACTED]

[REDACTED]
[REDACTED]

6. What is a hydrodynamic experiment? Hydrodynamics is the term used to describe experiments to capture high speed X-ray images of nuclear warheads as they implode. Data from these experiments is used in conjunction with computer simulations

to demonstrate warhead safety and predict warhead yield to provide the confidence previously obtained by underground nuclear testing. [REDACTED]

[REDACTED]. The experiments are currently conducted in the hydrodynamics facilities at AWE but the buildings are nearing the end of their operational life, [REDACTED]

7. Why are hydrodynamic experiments important? The ban on live nuclear warhead testing makes hydrodynamic experimentation a cornerstone of the UK's ability to maintain the safety, performance and reliability of our current and future deterrent. To maintain a credible hydrodynamics capability, and thereby a genuinely independent nuclear warhead capability, we require unfettered access to a specialised facility, including the ability to undertake [REDACTED] experiments.

8. The UK requirement for hydrodynamic experimentation is [REDACTED]
[REDACTED]. The French continued underground testing until 1996. We curtailed our testing programme following the US moratorium in 1992, but we had always supplemented test data with hydrodynamics experiments. [REDACTED]

9. What have the French proposed? The main points of the French proposal are to jointly build and operate a dedicated hydrodynamics facility – the EPURE facility at the CEA Valduc site.

- **Phase 1** would meet French requirements for a firing point capable of full scale and scaled experiments, and would be equipped with one high performance radiographic machine and an assembly hall. It would be in operation in 2014, to meet the French programme timetable.
- **Phase 1 Prime** would consist of a second assembly hall, designed and constructed to allow UK operation to start in 2017.

- **Phase 2** would include two more high performance radiographic machines on the first firing point (to meet the UK requirement for 3-D experimentation), a second firing point (to meet the trials throughput) and a waste processing facility. This phase would be completed around 2022.

The facility would have a planned life of around 25 years, though it is not clear at this stage whether that means until 2039 or 2047. [REDACTED]

[REDACTED]

10. What do the French stand to gain from a joint programme? The French currently possess [REDACTED]

[REDACTED]

11. What are the Pros and Cons of the French Proposal?

a) Security. [REDACTED]

[REDACTED]

[REDACTED]. As proposed by France, the joint facility would not accommodate UK requirements [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

b) Cost, value for money, and investment risk. The joint approach offers the prospect of savings to MOD of £150M £200M over 25 years and avoids significant expenditure in the first four to five years. [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

c) Write-off. Cancellation of the HYDRUS programme – planning for which is already public – would result in the write-off and formal notation in the published National Accounts of up to £184M sunk costs. This would attract PAC interest, particularly if the decision to adopt the alternative joint programme had failed to demonstrate value for money and required an Accounting Officer directive.

d) Non-proliferation and arms control issues. A joint facility with France would oblige us to counter accusations, including legal challenges, that it contravened our Nuclear Non-Proliferation Treaty obligations and/or international law. More significantly, we would need to be satisfied that the joint facility could be operated without prejudice to our obligations under any future Fissile Material Cut-Off Treaty. [REDACTED]

[REDACTED]
[REDACTED]

[REDACTED]

12. UK-US Co-operation. A key driver in maintaining the UK's preferred partner status with the US on nuclear co-operation is our pre-eminence in the field of hydrodynamics. As the world-leader in this key research capability, [REDACTED]

[REDACTED]

13. The US is, we know, [REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]

14. [REDACTED]

[REDACTED]

15. What alternative areas are there for Anglo-French nuclear co-operation? [REDACTED]

[REDACTED]. We believe that collaboration on detailed technical aspects of hydrodynamics experimentation [REDACTED] proceed to mutual UK and French benefit. [REDACTED]

[REDACTED]. There are, in addition, a number of other nuclear weapon-related areas of work where we assess that there is considerable scope for collaboration to our mutual benefit, including: [REDACTED]

16. Way Forward. A final decision on the future provision of hydrodynamics experimentation facilities will to be taken through the Investment Approvals Board process and by Ministers. [REDACTED]

[REDACTED]

Jon Day

DRAFT LETTER TO JULIAN MILLER, CABINET OFFICE

PROJECT EPURE – PROPOSED UK/FR JOINT DECLARATION

Dear Julian,

[REDACTED]

[REDACTED]. I have consulted the Defence Secretary, who has confirmed that our position [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].

Jon Day

PROPOSED JOINT UK/FR DECLARATION ON HYDRODYNAMICS CO-OPERATION

A NOTE BY MOD OFFICIALS

1. What is a hydrodynamic experiment? Hydrodynamics is the term used to describe experiments to capture high speed X-ray images of nuclear warheads as they implode. Data from these experiments is used in conjunction with computer simulations to demonstrate warhead safety and predict warhead yield to provide the confidence previously obtained by underground nuclear testing. [REDACTED]

[REDACTED]. The experiments are currently conducted in the hydrodynamics facilities at AWE but the buildings are nearing the end of their operational life, [REDACTED]

2. Why are hydrodynamic experiments important? The ban on live nuclear warhead testing makes hydrodynamic experimentation a cornerstone of the UK's ability to maintain the safety, performance and reliability of our current and future deterrent. To maintain a credible hydrodynamics capability, and thereby a genuinely independent nuclear warhead capability, we require unfettered access to a specialised facility, including the ability to undertake [REDACTED] experiments.

3. The UK requirement for hydrodynamic experimentation [REDACTED]
[REDACTED]. The French continued underground testing until 1996. We curtailed our testing programme following the US moratorium in 1992, but we had always supplemented test data with hydrodynamics experiments. [REDACTED]

4. What have the French proposed? The main points of the French proposal are to jointly build and operate a dedicated hydrodynamics facility – the EPURE facility at the CEA Valduc site.

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The facility would have a planned life of around 25 years, though it is not clear at this stage whether that means until 2039 or 2047. [REDACTED]

[REDACTED]

5. What do the French stand to gain from a joint programme? The French currently possess [REDACTED]

[REDACTED]

6. What are the Pros and Cons of the French Proposal?

a) Security. [REDACTED]

[REDACTED]

b) [REDACTED] As proposed by France, the joint facility would not accommodate UK requirements [REDACTED]

[REDACTED]

c) Cost, value for money, and investment risk. The joint approach offers the prospect of savings to MOD of £150M to £200M over 25 years and avoids significant expenditure in the first four to five years. [REDACTED]

[REDACTED]

d) Write-off. Cancellation of the HYDRUS programme – planning for which is already public – would result in the write-off and formal notation in the published National Accounts of up to £184M sunk costs. This would attract PAC interest, particularly if the decision to adopt the alternative joint programme had failed to demonstrate value for money and required an Accounting Officer directive.

e) Non-proliferation and arms control issues. A joint facility with France would oblige us to counter accusations, including legal challenges, that it contravened our Nuclear Non-Proliferation Treaty obligations and/or international law. More significantly, we would need to be satisfied that the joint facility could be operated without prejudice to our obligations under any future Fissile Material Cut-Off Treaty. [REDACTED]

7. UK-US Co-operation. A key driver in maintaining the UK's preferred partner status with the US on nuclear co-operation is our pre-eminence in the field of hydrodynamics. As the world-leader in this key research capability, [REDACTED]

8. The US is, we know, [REDACTED]

- [REDACTED]
[REDACTED]
- [REDACTED]
[REDACTED]

9. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED].

10. What alternative areas are there for Anglo-French nuclear co-operation? [REDACTED]
[REDACTED]. We believe that collaboration on detailed technical aspects of hydrodynamics experimentation [REDACTED] proceed to mutual UK and French benefit. [REDACTED]
a [REDACTED]
[REDACTED]. There are, in addition, a number of other nuclear weapon-related areas of work where we assess that there is considerable scope for collaboration to our mutual benefit, including: [REDACTED]
[REDACTED]
[REDACTED].

28 May 2010

COMMENTS ON TECHNICAL CONTENT OF PROPOSED JOINT DECLARATION

Joint Declaration

No technical content but would challenge several general statements made as follows:

Page A1. Final para, first sentence. Currently, we could not recommend this. If, however, it was decided to proceed we would wish to replace the phrase "[REDACTED]" to "[REDACTED]".

Page A2. Final para. Currently, we could not recommend this.

Omission

The declaration should also include some form of recognition that each partner has guaranteed access, and access to national information, similar to provisions set out in EPURE annex.

Annex relating to EPURE facility

Page A1, Second Para. - It is unclear what this means. D Strat Tech has e-mailed CEA for clarification.

Page A2, Para 1 - Delete last sentence. [REDACTED].

Page A3, sub-para 3 - The Epure facility. Clarification is needed on its life. We understood it to be 25 years from 2014 but the statement implies from 2022.

Page A4, Para 7 - [REDACTED].

Para 8. - Delete "shortly". Timescales will be dictated by facility availability.

Omissions

Duration - [REDACTED].

Liability - Something covering liability for accidents and incidents is required.

Management - A clause setting up a joint Management Board is required giving UK and Fr equal status in a true joint facility.

Other, non-technical, comments

Para 5 – Currently, we would not recommend agreeing to this.