

THE WHITE HOUSE

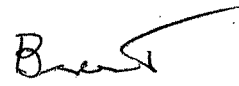
WASHINGTON

August 30, 1973

Henry -

Your package contains the following:

1. The French list of requirements.
2. The proposed outline for the meeting, as modified by you.
3. An expanded version of Foster's points for the meeting.
4. A reminder to discuss with Galley AEC briefing the Joint Committee on French participation in underground testing.



DECLASSIFIED

E.O. 13526, Section 3.5

NLN 01-11/BA per sec 3.3(b)(2)(4)(5)(6), ltr 9/16/2010

By YAS NARA, Date 11/4/2010

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# PENETRATION AND MISSILES FIELD

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- Advices on the overall conception and particular design of the payload of the improved missile SSBS S3 wich will succeed to the SSBS S2 (warhead disposition, hardening, penaidis). Inquiries allowing to replace the single nuclear warhead, now foreseen, by three multiple warheads. Providing informations required to develop in France the devices and equipments useful for multiple reentry vehicle.
  
- Inquiries allowing to improve the efficiency of our decoys and chaffs.
  
- Nuclear underground testing for X rays hardening.
  
- Advices (on an operationnal and technical point of view) on the dispositions that have to be adopted for the M4 missile payload (POSEIDON type) wich will succeed to the first submarine based missile generation (this cooperative work had been suggested by Dr. J. FOSTER). The warhead of these missile is foreseen to be a M. I. R. V. or an equivalent one.
  
- Technology transfer for multiple warhead development.
  
- Technology transfer for performance and aging improvement of french solid propellants.
  
- Technology transfer for [REDACTED]

**SANITIZED**

per sec 3.3(b)(2)(4)

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## NUCLEAR FIELD

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Improvements in French thermonuclear formulae for strategic weapons, especially by means of new formulae investigations.

Inquiries allowing to reduce weight and size of triggers in order to improve their hardening and to reach "autosafety".

Inquiries allowing to improve the power stage behaviour (weight, size, yield).

Inquiries allowing to obtain low weighted, clean and adjustable powered tactical weapons.

Inquiries making easier realisation of an underground nuclear site (drilling methods, equipments for measurements, containment and confinement) - Possibility to purchase measurement means and eventually some other items for this test facility.

Inquiries about components, materials (porous fissile materials; hydrogenated materials, explosives having better properties...) and equipments (neutronic sources, safety devices, firing devices...) for nuclear weapons.

General inquiries about performances which are to be expected with up-to-date nuclear weapons (yield, laws of similitude mass-energy, ratio between the different components weights, hardening thresholds, fiability, reasonable surrounding stresses...).

Purchase of an X Ray generator for high speed radiography (outstanding business).

Purchase or hiring of a CDC 7600 computer (or of an equivalent one).

... / ...

Purchase of special codes (outstanding business) and of their up-to-date expansions in order to improve our nuclear weapons (mesh, re-mesh and interface problems, opacity, instabilities...).

Classified complements on physical data available in opened literature : behaviour of materials in the high pressure and elasto-plastic ranges, equation of state at high pressures and temperatures, cross sections, interaction between photons and matter, interface instabilities...

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Dr. Kissinger's Points

1. U.S. view on U.S. -French Cooperation.

- U.S. supports a modern evolving French nuclear capability.
- Importance of achieving a credible capability in view of present limitations in the French force (warning, vulnerabilities, penetration).
- Present exchange good start but is very restricted.
- Possibly we could evolve a much broader relationship.

2. The necessity of constantly evolving strategic capability.

- Soviets have massive and growing offensive capabilities.
- Limited defensive capabilities (ABM Treaty).
- Uncertainties in Soviet defensive capabilities.
- U.S. believes in the strategy of deterrence (make the Soviets price too high).
- Reasonable for the French to achieve such a capability (tens of thermal nuclear warheads can demand an adequate price).
- Evolving technology can modernize a small force within an acceptable cost.
- Key improvements (necessary for credibility of any nuclear capability) which France may wish to make are: (a) removal of critical vulnerabilities, (b) provision for tactical warning, (c)

selection of missile penetration approaches that may be unique to France (cruise missiles, - chaff, decoys -- Schlesinger will discuss).

3. Suggestion as to how the parties might proceed.
  - Agree to continue and intensify present exchange efforts (Foster will outline).
  - Agree to a new memorandum of understanding.
  - Agree to initiate high level discussions on strategic objectives, concepts for achievement and evaluation of the different alternatives (Schlesinger will outline).
  - Agree to discuss current limitations on French capabilities and means of alleviation (Schlesinger will outline).
  - Agree to the transmission of design data and practices for underground nuclear testing (then France should consider whether or not it would be helpful to use U.S. test facilities).

Secretary Schlesinger's Points

1. The requirements for deterrence (a capability that can make the Soviet price too high).

- Personal judgment on the required number of reliable and penetrating warheads.
- Ask critical questions.
- 2. Soviet offensive capabilities.
  - Approximately 38 SS-11s required to remove 18 land-based missiles and submarines in port with 95 percent confidence (less than one percent of Soviet forces).
  - But a large force necessarily changes slowly.
- 3. Soviet defensive capabilities.
  - Limited by SALT I Treaty.
  - Moscow's 64 to 100 missiles might intercept 30 to 50 French warheads.
  - Soviet current air defense system might intercept a few tens of missiles.
  - The Soviets are likely to have great uncertainty in their ability to intercept missiles because of inadequate atmospheric tests.
- 4. Improvements to French capabilities.
  - Need for joint understanding of real problems and needs.
  - Need to separate out the desires of the technologists from real needs.
  - Penetration aids could be very effective against the high altitude Soviet ballistic missile defenses (decrease effectiveness by five to ten times).

- U.S. could provide info on chaff and decoys.
- U.S. could provide info on design and testing to remove vulnerabilities (EMP, Neutrons, gamma-rays).
- Multiple warheads can provide more confidence than Pen aids but are much more expensive (France may wish the U.S. to review French warheads designs).
- MIRV is still more expensive; probably not necessary for France.
- France may wish to consider the development of cruise missiles with sea or land-based systems.
- Tactical land warning (radars):
  - . Without warning Soviets know they can remove 40 to 100 percent of French capability.
  - . With warning Soviets would know French capability could be released before its destruction.
  - . Tactical warnings adds to deterrence.
  - . There is value to integrating some U.S. and French warning capability for crisis management.
- Underground testing:
  - . Transmission of information on methods of conducting underground tests.
  - . Visit Nevada test site in the fall (October?).



5. DOD will be the representative for all aspects of exchange (AEC and DOD).

Dr. Foster's Points

1. What has been exchanged.

-- Value to France.

2. Exchange in process (as defined by Dr. Kissinger to Secretary of Defense March 9 memo).

-- Value to France.

3. Details on proposed extension (to be firmed up after Dr. Kissinger-Secretary Schlesinger points are decided).

-- Value to France.

Foster Points

AGENDA

1. The Exchange to Date
2. US and French Objectives
3. *US uncertainties in the capability objectives observed*  
~~Some US Concerns Regarding Present French Strategic~~ *by France.*  
Capabilities
4. Concern of Possible Deficiencies in French Forces
5. Suggested Approach

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## Foster Points

### 1. What has been exchanged to date?

#### Examples:

- a. Propulsion: Extensive and continuing assistance on detection, assessment, repair and avoidance of propellant separation. This apparently has been a significant problem to the French. They have stated our assistance has been very helpful.
- b. Gas bearing gyros: Provided information to improve reliability and extend life, solving existing failure problems. The gyros were in their submarine navigation system, and improved bearings could permit them a longer time between navigation resets, thereby lowering vulnerability of the submarines.
- c. High pressure nitrogen tanks: Provided information and consultants (US Government employees) to solve serious corrosion problems in missile control system. Corrosion caused leaks in tank, which rendered missile inoperable.
- d. Missile ignition safety in submarines: Provided information on US methods to insure against inadvertent ignition

in submarine tube. Discussion revealed their approach and philosophy largely paralleled ours.

- e. Electrical connectors: Provided information on US approach to connectors. (Several French flight failures due to faulty connector design and test.)
- f. Hydraulic systems: Provided information on materials and methods to avoid leakage in long-term storage. Information essentially confirmed French conclusions arrived at independently.
- g. Nuclear hardening test methods: Provided information on several widely applicable methods for laboratory simulation of shock resulting from nuclear exposure. On a recent visit, an experiment on an RV sample was demonstrated to us. Statement made that experiment based directly on information supplied by US and that in this one area, it had saved over a year, and many millions of dollars.
- h. Nuclear hardening techniques: Provided general information in response to specific questions related to general

hardening techniques. (Provided enough information for them to realize we have considerable expertise in this field, which could be very valuable to them.)

- i. Missile maintenance and reliability: Provided information on US methods for guidance and missile maintenance and service-life evaluation.
- j. Nuclear safety: Provided information on US techniques and components.

2. What has been the value of the past exchange to France?

The exchange has:

- 1) Removed anxiety and uncertainty in a number of areas (reliability, deterioration, safety and vulnerability).
- 2) Highlighted specific areas for concern (Soviet ABM, vulnerability and penetration).
- 3) *In many areas,* Saved from one to several years of time which might otherwise have been required.
- 4) Saved France at least a few tens of millions of dollars.

3. What is presently being exchanged?

The exchange currently centers in four particular areas:

- a. Characteristics of the [REDACTED]
- b. Nuclear hardening. **SANITIZED** per sec 3.3(b)(5)(6)
- c. Data to permit analysis of the shock vulnerability of the silos at d'Albion.
- d. Data on US simulators for nuclear effects.

4. We have not exchanged information on:

- a. Tactical warning of missile attack.
- b. Conceptual design of penetration aids.
- c. Conceptual design of MRV or MIRV systems.
- d. Attack assessments.
- e. Nuclear warhead designs.
- f. Underground testing.

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2. US and French Objectives.

A. US Objectives

- 1) Provide what is needed by France and legal authorized.
- 2) Provide no more than is needed
- 3) Honor our commitments
- 4) Assure no unnecessary leakage beyond those with a need to know

B. Assumed French Objectives

- 1) Provide a strategic deterrent (convincing, safe, reliable, timely, low-cost)
- 2) Obtain the necessary and available US assistance
- 3) Minimize leakage of information

C. Potential Problems

Recall last meeting in France. Inadvertant transmission of, too little or too much for French needs

- 1) US has wealth of information

- \_\_\_\_\_ billion developing ICBM's

- \_\_\_\_\_ billion developing SLBM's

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- \_\_\_\_\_ people involved on the average for the last 10 years

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- 2) The US problem is to understand what is really needed by France
- 3) Make information available in useful form
- 4) Be sure not to overwhelm the French technical staff
- 5) Therefore transmit only what can be used in a timely way



3. US Uncertainty of <sup>the</sup> ~~a Desired French Capability~~ *desired by France*

- Survivable forces?
- How to know when to launch?
- Destroy [REDACTED] **SANITIZED** per sec 3.3(b)(5)(6)
- Counterforce capability (command & control targets)

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4. **Concern Over Possible Deficiencies in French Forces.**

Desire to find some way to discuss them.

- Lack of warning of Soviet attack.
- Vulnerability of French missiles to long-range nuclear effects.
- Lack of further capability to penetrate Soviet defenses.
- Little flexibility in French missile payload (heavy warheads, components and reentry vehicles).
- Slow progress in nuclear testing.

5. Suggested Approach.

US believes assistance has gone well to date. In turn this has permitted progress in other areas.

France has given the US a general picture of its plans and needs.

But the questions we receive indicate that a broadening of our assistance is needed, as well as a greater understanding of French objectives.

The US is prepared to provide expanded assistance.

Suggest we think of this problem not in terms of one year but 10-15 years.

In view of the problems in facilitating the exchange we suggest the following approach for consideration:

- Continue present activities
- Reach agreement on specific areas for expansion

General objectives

System concepts

Soviet targets

Nuclear warhead design critique

Underground testing capabilities and techniques

- Assignment of a full time team of experts (for the US 3-4 people, civilian and military)
- Develop an information plan in the next 3-4 months (charts 1-4)
- Submit plan to Galley/Schlesinger for government agreement





EXCHANGE PROGRAM

Subjects: 1973 | 75 | 77 | 79 | 81 | 83 |

Strategic Obj.

System Concept,

Soviet ABM

Soviet targets

MSI Propulsion

MSI Guidance

Re-entry Vehicle

Silo hardware

Nuclear Effects

Simulators

Misc Vulnerability

Misc Hardware

to be followed by French

in

Penetration Aids  
RV, Chaff, Decoys

Payload  
Optimization

Nuclear Safety

Warhead  
design

Underground  
testing

etc.

filled  
to be  
found  
by

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