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OFFICE OF AEROSPACE STUDIES (AFMC)
KIRTLAND AIR FORCE BASE, NM

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FROM: OAS/XRN
2350 Maxwell Street
Kirtland AFB NM 87117-6008

8 October 1992

SUBJ: HPRF Phase 2 Kickoff Meeting Minutes

TO: Distribution

1. Enclosed is the meeting minutes from the HPRF Phase 2 Kickoff Meeting held on 10-11 September 1992 at Phillips Laboratory in Albuquerque, NM.
2. Capt Lamb and I would like to thank all who participated in the meeting. We look forward to working with you on the Phase 2 study.
3. Attachment 2 contains Restricted Data/Critical Nuclear Weapon Design Information.
4. This letter is UNCLASSIFIED when separated from Attachment 2.

ROGER F. KROPF, Major, USAF
Chief, Nuclear Weapons Concept Div

- 2 Atch
1. Distribution List (U)
 2. HPRF Phase 2 Kickoff Meeting Minutes (U),
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High Power Radio Frequency (HPRF) Phase 2 Study

Kickoff Meeting Minutes (U)

30 September 1992



Captain William A Lamb

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Chief, Nuclear Weapons Concept Division



JERRY G. COLYER
Technical Director,
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30 September 1992

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ACKNOWLEDGEMENTS

(U) I would like to take this opportunity to thank Mr Sam Gutierrez of Phillips Laboratory who helped me during the HPRF Phase 2 Kickoff Meeting. His efforts prior to and during the meeting helped immensely and were greatly appreciated.

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(U) INTRODUCTION

(U) The Nuclear Weapons Concept Division of the Office of Aerospace Studies (OAS/XRN) conducted the kickoff meeting for the High Power Radio Frequency (HPRF) Phase 2 study on 10-11 September 1992. The meeting was held at Phillips Laboratory on Kirtland AFB, NM. The purpose of the meeting was to review the tasking for the phase 2 study, refine the working group structure, identify memberships in each working group, and discuss the organization and structure. The individual working groups met to finalize their structure, goals and memberships. The agenda for the meeting is contained in appendix A.

(U) These meeting minutes document the kickoff meeting and include copies of presentations. Additionally, a list of attendees is provided in appendix B. The meeting highlights are presented in the following paragraphs.

(U) ADMINISTRATION AND INTRODUCTIONS

(U) Major Kropf opened the meeting by welcoming all in attendance. He then presented an overview of the importance of the HPRF Phase 2 study. Each of the attendees then introduced themselves and their organizations. The Navy was represented in this meeting but only as observers.

(U) HPRF PHASE 2 TASKING AND REQUIREMENTS

AM LtCol Martin reviewed the draft Phase 2 Tasking Letter (see appendix C). Since there was no change to the tasking requirements presented in the planning meeting, LtCol Martin reviewed the contents of the finalized tasking. He reiterated the missions of interest that were not addressed in the phase 1 study and reemphasized the issues for phase 2. The approach to validation of lethality methodology must be reported to the Nuclear Weapons Council Standing Committee (NWCSC) within 90 days after the kick-off meeting. This will require reporting to the NWCSC by December 15th. Additionally, further examination of the delivery systems, packaging options, and damage expectancy with regards to mission effectiveness will be addressed.

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(U) PHASE 2 STUDY ORGANIZATION

(U) Capt Lamb proceeded to outline the working group structure for the Phase 2 study. Figure 1 shows the working group structure. Discussions centered around the need for a separate threat working group but a consensus was reached that there would be

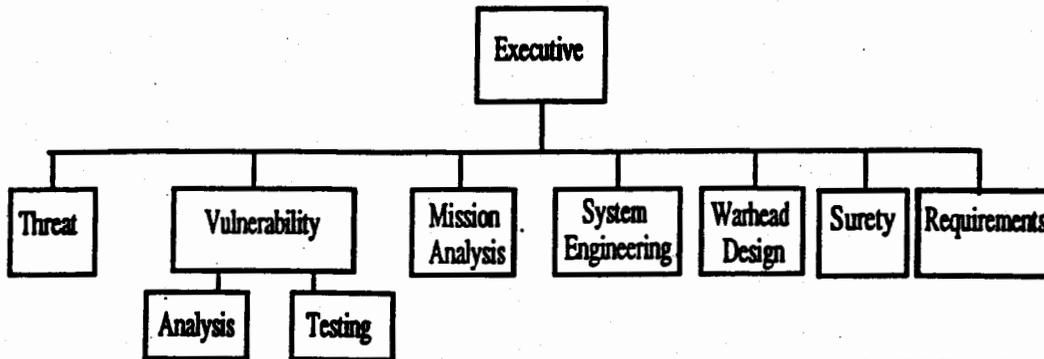
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enough information required from this area that the study would keep the working group. The chairs of each working group were presented with a list of members for each group taken from the attendees. The chair of each working group is presented in table 1. The lists of members are presented in appendix D

Working Group Structure



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Figure 1. (U) Working group structure

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(U) WARHEAD DESIGN INTRO

ASAM Dr Jas Mercer-Smith (LANL) presented his view of the work in the warhead design area. His slides are included in appendix E.

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The issue that will need to be addressed in the warhead design working group is the certification process of the warhead design. Without an underground test, how will the warhead be certified? This issue will be addressed during the phase 2 study.

(U) SYSTEM ENGINEERING INTRO

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(U) VULNERABILITY INTRO

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Appendix G includes his slides. He reiterated the work completed during phase 1 and how this plays to phase 2. The basic premise of the phase 2 work is to provide quantified vulnerability data to the mission analysis working group (MAWG). He stated the need to address three areas of vulnerability and fill in more data in those three areas when the data become available.

The prediction methods for determining vulnerabilities can then be verified and size of uncertainties reduced.

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Some concerns of the VWG are in post strike assessment and how it will be defined; and how collateral damage will be addressed.

(U) MISSION ANALYSIS INTRO

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(U) Future work will be very involved as it will require interactions between other working groups.

[Redacted]

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(U) SURETY INTRO

(U) The main emphasis will be on the use control and surety themes that are involved in a phase 2 study. The SWG will work closely with system engineering to ensure the missile interface is identified. The further emphasis of the SWG will be in the safety technology area.

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(U) REQUIREMENTS INTRO

[Redacted]

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HPRF phase 2 meeting.

Further information will be provided at the next

(U) THREAT INTRO

[Redacted]

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(U) WORKING GROUP MEETINGS

(U) Before breaking into individual working groups, Capt Lamb provided the breakout of the tasking and in which working group the specific tasking should be addressed. The breakout is provided in table 2. The remainder of the day was spent in working groups determining members, charters, and working group plans. The results of the meetings is contained in appendix I.

Table 2. (U) Specific tasking assignments.

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(U) EXECUTIVE WORKING GROUP

(U) Capt Lamb presented the proposed memberships for the executive working group of the HPRF Phase 2 study. The provide representation from each working group along with representation from each organization involved in the study. Table 3 presents the proposed executive working group members.

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(U) ACTION ITEMS

Table 4. (U) Action items from kickoff meeting.

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NOTE: Numbers 1-10 were not included in this list as they originated from the planning meeting and not from this meeting.

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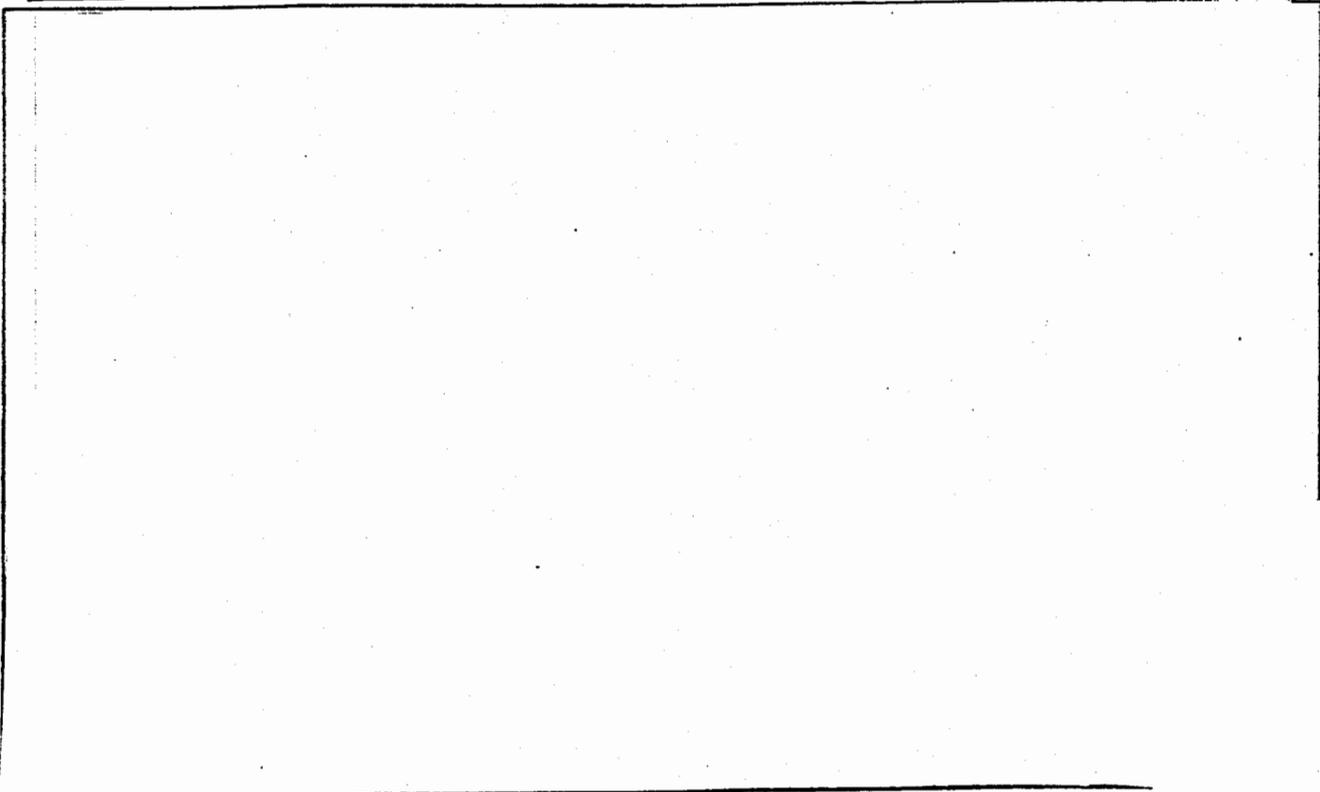
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APPENDIX A
(U) KICKOFF MEETING AGENDA

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Office of Aerospace Studies



Agenda - September 11, 1992

- | | | |
|------|-----------------------------|---------------|
| 0830 | Sign-In | ALL |
| 0845 | Administration | Capt Lamb/OAS |
| 0900 | Working Group Presentations | Chair |
| | - Charters | |
| | - Schedules | |
| | - Memberships | |
| | - Estimated Costs | |
| 1100 | Action Items | ALL |
| 1130 | Summary | Capt Lamb/OAS |

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APPENDIX B

(U) KICKOFF MEETING ATTENDANCE LIST

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NAME	ORG./ADDRESS (for Classified Mailing)	PHONE #
10. <u>J. Philip Castillo</u>	<u>Logan RDA</u> <u>Pb Box 9377</u> <u>Albuquerque NM</u> <u>87119</u>	Com: <u>(505) 942 8156</u> DSN: _____ FTS: _____ FAX: <u>525-242 4121</u>
11. <u>Michael Blano</u>	<u>LLNL</u> <u>PO Box 808 L-153</u> <u>Livermore CA</u> <u>94550</u>	Com: <u>(570) 422-9882</u> DSN: _____ FTS: _____ FAX: <u>510-423-5080</u>
12. <u>DOUG HENSON</u>	<u>SNL 5371</u> <u>Box 969</u> <u>LIVERMORE, CA.</u> <u>94550</u>	Com: <u>(510) 294-2729</u> DSN: _____ FTS: <u>same</u> FAX: <u>-1015</u>
13. <u>JERRY CUDERBIN</u>	<u>SNL 5161</u> <u>6500 5E70</u> <u>ALBUQUERQUE NM</u> <u>87185</u>	Com: <u>(505) 944 8062</u> DSN: _____ FTS: <u>505 944 8063</u> FAX: _____
14. <u>Ronald W McFee</u>	<u>Los Alamos</u> <u>MS D220</u> <u>Los Alamos NM</u> <u>87545</u>	Com: <u>(505) 667-1112</u> DSN: _____ FTS: _____ FAX: _____
15. <u>Ed Whited</u>	<u>Los Alamos</u> <u>MS F602</u> <u>Los Alamos, NM</u> <u>87545</u>	Com: <u>(505) 665-0038</u> DSN: _____ FTS: <u>505-665-0038</u> FAX: <u>(505) 665-2017</u> <small>E-mail: whited@seneca.lanl.gov</small>
16. <u>LCDR ED ADE</u>	<u>FCDNA/FCPRW</u> <u>ATTN FCSAC</u> <u>ISRTLAND AFB</u> <u>NEW MEXICO 87115</u>	Com: <u>(505) 846-8575</u> DSN: <u>246-</u> FTS: _____ FAX: <u>846-8611</u>
17. <u>JOHN A. ANDERSEN</u>	<u>SNL 5161</u> <u>132 NMA 87185</u>	Com: <u>(505) 844 0391</u> DSN: _____ FTS: _____ FAX: _____
18. <u>Charles S. Chow</u>	<u>LLNL</u> <u>E-125</u> <u>Livermore, CA</u>	Com: <u>(570) 422-4639</u> DSN: _____ FTS: <u>532-4689</u> FAX: <u>FTS 532-8185</u>
19. <u>JIM HOGAN</u>	<u>SNL 5371</u> <u>PO BOX 969</u> <u>LIVERMORE CA</u> <u>94550</u>	Com: <u>(510) 294 2853</u> DSN: _____ FTS: _____ FAX: <u>(510) 294-1015</u>

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Attendance List (cont)

NAME	ORG./ADDRESS (for Classified Mailing)	PHONE #
20. <u>KEN CALAHAN</u>	<u>LANL/AT-9</u> <u>PO Box 1663</u> <u>MAIL STATION 5000</u> <u>LOS ALAMOS NM 87545</u> <u>ATTN: KEN CALAHAN, AT-9, MS H818</u>	Com: <u>(505) 665-4297</u> DSN: _____ FTS: _____ FAX: <u>667-8207 (UNCL)</u>
21. <u>Michael Bernardin</u>	<u>LANL / X-5</u>	Com: <u>(505) 667-1439</u> DSN: _____ FTS: _____ FAX: _____
22. <u>Carolyn Mangens</u>	<u>LANL/NWT</u> <u>Mail St. 5000</u> <u>P.O. Box 1663</u> <u>Los Alamos, 87545</u> <u>ATTN: C Mangens MS F633</u>	Com: <u>(505) 667-3460</u> DSN: _____ FTS: _____ FAX: <u>605-665-4833</u>
23. <u>Lt Col Charles R. Martin</u>	<u>SAF/AQOS(N)</u> <u>Pentagon</u> <u>Washington DC 20330</u>	Com: <u>(703) 693-6303</u> DSN: <u>2263-6303</u> FTS: _____ FAX: <u>(703) 697-7399</u>
24. <u>CPT M.L. Kiehlberg</u>	<u>DMJ/PAIC</u> <u>Mail Telegraph Bldg</u> <u>Alexandria, VA</u> <u>22310</u>	Com: <u>(703) 325-1622</u> DSN: <u>221-1622</u> FTS: _____ FAX: <u>(703) 325-2225</u>
25. <u>Debra K. Johnson</u>	<u>LANL L-13</u> <u>PO Box 500</u> <u>Los Alamos NM</u> <u>87545</u>	Com: <u>(505) 423-7600</u> DSN: _____ FTS: _____ FAX: _____
26. _____	_____	Com: () _____ DSN: _____ FTS: _____ FAX: _____
27. _____	_____	Com: () _____ DSN: _____ FTS: _____ FAX: _____
28. _____	_____	Com: () _____ DSN: _____ FTS: _____ FAX: _____
29. _____	_____	Com: () _____ DSN: _____ FTS: _____ FAX: _____

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APPENDIX C

(U) HPRF PHASE 2 TASKING

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DEPARTMENT OF THE AIR FORCE
WASHINGTON DC



OFFICE OF THE ASSISTANT SECRETARY

SAF/AQQ
Pentagon Rm 4E342
Washington DC 20330-1000

AUG 31 1992

MEMORANDUM FOR AFMC/XR

SUBJECT: Phase 2 Warhead Feasibility Study of a Strategic High Power Radio Frequency (HPRF) Weapon (U) - ACTION MEMORANDUM

(U) Request the Office of Aerospace Studies (OAS) initiate and lead for the Air Force a joint DOD/DOE Phase 2 Warhead Feasibility Study to investigate the development of a Strategic High Power Radio Frequency (HPRF) weapon. The Study Group will complete the effort in 30 months. OAS should schedule a kickoff meeting within 30 days. In addition, within 90 days after the kickoff meeting, the Chairman of the Study Group will report to the Nuclear Weapons Council Standing Committee (NWCSC), through SAF/AQQS, on the study goals, strategy, and milestones. In particular, this report should address the plan for validating the lethality methodology.

(S) The NWCSC has approved the Air Force request for this study and asked the DOE to join the study. At the request of the Deputy Assistant Secretary of Defense (Policy), the study will consider possible SLTM delivery of the HPRF weapon. To accomplish this additional goal, the NWCSC has asked the Navy to join the study. We expect that the Navy will have a significant role in the study, and may designate a deputy chairman for the study group. This letter includes the NWCSC letters to DOE and the Navy as attachments.

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DOE,
USAF
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(U) The SAF/AQQ point of contact for this effort is Lt Col Charles R. Martin,
SAF/AQCS, DSN 223-6303 or (703) 693-6303.

Patrick P. Caruana

PAUL F. CARUANA, Major General, USAF
Director of Strategic, SOF, and
Airlift Programs
Assistant Secretary for Acquisition

- 3 Aich
- 1. NWCSC Letter to DOE (SFRD)
- 2. NWCSC Letter to Navy (SFRD)
- 3. Nominal Warhead Parameters (SFRD)

cc: OAS(AFMC)

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DEPARTMENT OF DEFENSE
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DEPARTMENT OF ENERGY

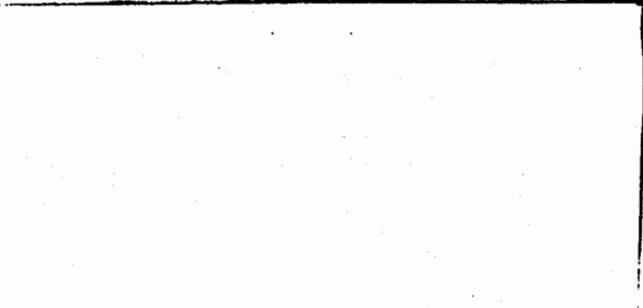


NUCLEAR WEAPONS COUNCIL
STANDING COMMITTEE
WASHINGTON, DC 20301-3050

11 AUG 1992

Rear Admiral W.G. Ellis
Deputy Assistant Secretary
for Military Application
Department of Energy
Washington, DC 20585

Dear Admiral Ellis:



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DOE, USAF,
DTRA

(U) I request the Phase 2 Study Group present its goals, strategy, and milestones to the NWSC within 90 days of initiation of

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"Unauthorized disclosure subject to
administrative and criminal sanctions."

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the Phase 2. In addition, I request the Study Group report at least yearly to the NWCSC on their progress and conclusions.

b(3)

DOE, USAF
DTRA

Sincerely,

John H. Birely
Acting Chairman

Enclosure

cc:
SAF/AQQ
AF/XOO

→ USAF
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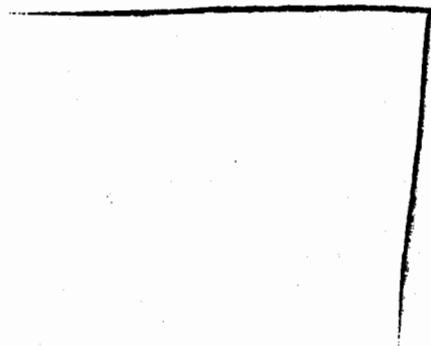
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UN
DEPARTMENT OF DEFENSE
AND
DEPARTMENT OF ENERGY



NUCLEAR WEAPONS COUNCIL
STANDING COMMITTEE
WASHINGTON, DC 20301-3030

11 AUG 1992

MEMORANDUM FOR CHIEF OF NAVAL OPERATIONS

USAF

b(3)

SUBJECT: High Power Radio Frequency (HPRF) Weapon Phase 2
Warhead Study

DOE, USAF
DTRA

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(U) For this reason, I request the Navy join the Air Force in the HPRF Phase 2 Feasibility Study so that the study group can investigate both the ICBM and SLBM basing options.

John H. Birely
John H. Birely
Acting Chairman

cc: SAF/ACQ
DAMO

Classified by: CG-W-3, Jan 84

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**APPENDIX D
(U) WORKING GROUP MEMBERS**

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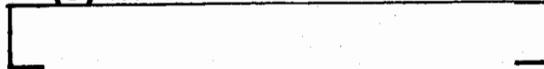
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APPENDIX E

(U) WARHEAD DESIGN INTRO



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September 9, 1992
THIS DOCUMENT CONSISTS OF 7 PAGE(S)
NO. 7 OF 3 COPIES, SERIES A

High Power Radio Frequency Phase 2 Study
Preliminary Kickoff Meeting



Warhead Design Introduction (2)

10 September 1992

USAF
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THERMONUCLEAR APPLICATIONS (X-2)

Los Alamos National Laboratory

DISTRIBUTION:
Cy. 1A - W. Lamb, KAFB, ABQ.
Cy. 2A - James Mercer-Smith, X-2, MS-B220
Cy. 3A - X-2 (1992CD) Orig. File

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Page -2 -
September 9, 1992

DOE
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Phase 1 Study: Warhead Design Issues

The High Power Radio Frequency Phase 1 Study addressed many of the warhead design issues which will be important in the current Phase 2 Study. Notably, in the Phase 1 Study:

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THERMONUCLEAR APPLICATIONS (X-2)

Los Alamos National Laboratory

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September 9, 1992

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Page - 6 -
September 9, 1992

Phase 2 Study: Warhead Design Issues

The High Power Radio Frequency Phase 2 Study Warhead Design Working Group will concentrate on several key weapons issues, including:

- Weapon certification in the absence of nuclear testing.

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Page -7 -
September 9, 1992

Weapon Certification

- The Warhead Design Working Group will have to develop a methodology for certifying a special-purpose weapon in the absence of nuclear testing.

- Device certification may have a significant impact on the design of the physics package.

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APPENDIX F
(U) SYSTEM ENGINEERING INTRO

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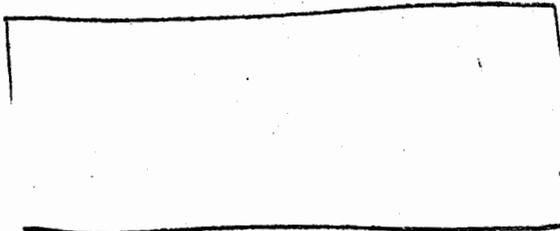
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System Engineering Working Group
Phase I Issues Review

*High Power Radio Frequency
Weapon*



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10 - 11 September 1992
Phillips Lab
Kirtland AFB, NM

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Major SEWG Issues

	Description of Issue	Agency	
I.	General Issues		
A.	Implications of the President's Initiatives	DoD	
B.	Implications of START	DoD	
C.	Human Intent Decision	DoD/DOE	
D.	Build Quantity (force structure issues)	DoD/DOE	
E.	ABM Assumptions	DoD	
F.	New MCs	DoD/DOE	
G.	Delivery Options	DoD	
H.	Other Mission Options	DoD	
II.	Delivery Requirements		
A.	Height of Burst	DOE	DOE 2/3
C.	Range Requirements	DoD/DOE	
D.	Targeting Requirements (w/h integration driver)	DoD	
III.	Warhead Packaging		
A.	External Case Options		
	1. Existing RVs	DoD	
	2. Optimized Case	DoD/DOE	
B.	Nuclear System Options	DOE	
C.	Usage Requirement and Design	DOE/DoD	
D.	Shielding Requirements	DOE	
E.	Degradation Concerns	DOE	
F.	Nuclear Surety		
	1. Enhanced Safety	DoD/DOE	
	2. Use Control	DOE	DOE 2/3
H.	Warhead Electrical System	DOE	
I.	LLCE	DoD/DOE	
J.	Mechanical & Electrical Interfaces	DoD/DOE	
K.	Maneuvering Capability	DoD/DOE	
IV.	Delivery Platform		
A.	Missile Interface		
	1. Mechanical	DoD/DOE	
	a. Static Loading		
	b. Dynamic Loading		
	c. External Usage Design		

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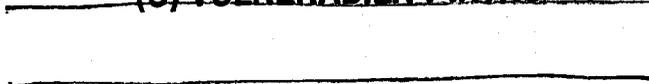
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| | 2. Electrical | DoD/DOE |
| | 3. Software | DoD |
| B. | Impacts of Platform Modifications | DoD |
| | 1. Singlet Conversion | |
| | 2. Mk21/Mk4-5 Conversion | |
| | 3. Guidance Electronics Upgrade (GEU) | |
| | 4. Others | |
| C. | Flight Performance | DoD |
| | 1. Range Capability | DoD |
| | 2. PVB Maneuvering Capability | DoD/DOE |
| | 3. Vehicle Stability | |
| | a. Critical HOB | |
| | b. Critical Vehicle Parameters | |
| | c. Tradeoffs | |

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APPENDIX G

(U) VULNERABILITY INTRO



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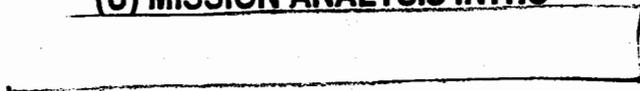
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APPENDIX H

(U) MISSION ANALYSIS INTRO



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MISSION ANALYSIS
INTRODUCTION

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MM

USER INTEREST

- SAC/XR LETTER, 18 APR 90
- SAC TNS, 10 SEP 91
- SAC/XO MESSAGE, JAN 92
- HQ ACC/DO LETTER TO USSTRATCOM J-5
- MNS - TBD

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WHAT WE NEED

- AGREEMENT ON MISSIONS OF INTEREST
- TARGET LIST FOR EACH MISSION
- MEASURE OF EFFECTIVENESS (MOEs)
- MOEs EVALUATION VIA SPECIFIC MODELING

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APPENDIX I
(U) WORKING GROUP PRESENTATIONS

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HPRF Phase 2 VAWG

Technical Objectives

1. **Develop Input Data for Mission Analysis Studies and Future Strategic Planning**
 - **Increase HPRF Effects Database on Specific System Vulnerabilities**
2. **Measure Effectiveness of HPRF Weapons to Cause Damage**
 - **Provide Empirical Data to Labs on Best Weapons Characteristics**
 - **Explore Parametric Variations**
 - **Verify MAWG Analysis Tools by Test & Analysis**
3. **Address Possible Effects on US & Friendly Forces**
4. **Provide Feedback on Possible Methods of Damage Assessment**

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HPRF Phase 2 VAWG

Working Group Structure

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HPRF Phase 2 VAWG

VTSG Questions

- Identify Past Tests
 - Applicability to HPRF Phase 2
 - Sufficiency of Data

- Identify of HPRF Phase 2 Testing
 - Funded
 - Planned but Unfunded
 - Other

- Testing Program Plan (Due in 90 days)
 - Time Schedule
 - Milestones
 - Costs/Funding

HPRF Phase 2 VAWG

VASG Questions

- Review of Target Lists
 - Which Systems are Completed?
 - Which Systems Need Work?

- Analysis Questions
 - Further Refinement of P_E Methodology
 - Further Generic Testing/Validation?

- How Validate MOE Predictions for MAWG?

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HPRF Phase 2 VAWG

Planned Test

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HPRF Phase 2 VAWG

Review Items

- 1. Charter**
- 2. Objectives**
- 3. Structure/Division of Responsibilities**
- 4. Membership/Participants**
- 5. Analysis Activities**
- 6. Test Activities**
- 7. Summary and Action Items**

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CHARTER FOR MISSION ANALYSIS
WORKING GROUP (MAWG)

MAWG ISSUES

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1. Identify Missions
2. Identify Potential Targets
3. Develop Credible Scenarios
4. Determine Measures of Effectiveness (MOEs)
5. Evaluate MOEs Through Modeling
6. Develop Mission Need Statement
7. Determine Post-Strike Assessment Methods with (VAWG)

10. Determine if Damage Expectancy can be used for mission effectiveness with VAWG
11. Identify Appropriate Model and Associated Cost
12. Assist VAWG to Define Test-Bed
13. Test Analysis Should be part of MAWG

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MAWG SCHEDULE

Last Week September Define Missions with USSTRATCOM
First Week October Identify VAWG Test-Bed

MAWG STRUCTURE

Mission Specific Subgroups

Subgroup members would identify targets, develop scenarios, determine MOE and conduct modeling to determine effectiveness.

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SURETY WORKING GROUP-PROPOSED CHARTER

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Charter for the
Warhead Design Working Group (WDWG)

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3	DOE/HQ, DP-251 Attn: Mr Joe Gazda, GTN P.O. Box A Germantown MD 20874	13	USSTRATCOM/J541 Attn: Mr Stan Gooch 901 SAC Blvd Offutt AFB NE 68113-6500
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6	FCDNA/FCPRW Attn: LtCol Walt Atchison Kirtland AFB NM 87115	16	OL-NS/ENN Attn: Ms Denise Fattor Kirtland AFB NM 87117
7	FCDNA/FCPRW Attn: LCDR Ed Ade, FCSAC Kirtland AFB NM 87115	17	USCENTCOM/CCSA Attn: Dr Earl Rubright MacDill AFB FL 33608-7001
8	PL/WSR Attn: Mr Bill Prather Kirtland AFB NM 87117-6008	18	PL/WST Attn: Lt Dave VanVeldhuizen Kirtland AFB NM 87117-6008
9	PL/WSM Attn: Mr William Walton Kirtland AFB NM 87117-6008	19	PL/WST Attn: LtCol Sam Squiller Kirtland AFB NM 87117-6008
10	PL/WSM Bldg 909 Attn: Mr Sam Gutierrez Kirtland AFB NM 87117-6008	20	PL/WSR Attn: Mr Robert Torres Kirtland AFB NM 87117-6008

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