



# Ministry of Defence

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Our Ref: FOI2018/03285

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[REDACTED]  
[REDACTED]

15 March 2019

Dear [REDACTED]

Further to our letter dated 19 February 2019, we are writing to provide the substantive response to your email of 3 March 2018 in which you requested the following information:

*"This is an application for access to documents under the Freedom of Information Act 2000 (FOIA). Under the provisions of FOIA, I seek access to the following file held by the Ministry of Defence:*

*Reference: ES 1/899*

*Description: Progress review meetings*

*Date: 1956-1958*

*Former reference in its original department: 0290 Pt 1*

*Legal status: Public Record(s)*

*Closure status: Closed Or Retained Document, Open Description*

*Access conditions: Retained by Department under Section 3.4*

We apologise for the considerable time it has taken to provide you with a substantive response.

We can confirm that your request has been treated as a request for information under the Freedom of Information Act 2000 (FOI) Act and that the Ministry of Defence (MOD) holds information that falls within scope of your request. However, as you had recognised, some of the information you requested falls within the scope of qualified exemptions Section 24 (National Security) and Section 26 (Defence) provided for within the Act. A public interest test has been conducted and it is assessed that the greater interest lies in withholding some of the information requested.

Section 24(1) (National Security) has been applied to some of the information requested because it includes details about the various warhead design options that were considered

at the time. Releasing this information could be useful to an adversary or third-party state and undermine the UK's strategic deterrent or allow the development of a device. It is judged that the disclosure of all the information would be prejudicial to both the safeguarding of the UK's national security and our obligations and interests in the non-proliferation of nuclear weapons. Section 24(1) is therefore engaged, and the balance of public interest has been found to lie in favour of withholding some of the information.

Section 26(1) (Defence) has also been applied to elements of the documents as disclosure of some of the information relates to how the UK's strategic deterrent works thereby providing a potential adversary with the ability to undermine its effectiveness. Furthermore, this information could be used by an adversary or third-party state to develop their own device, which would undermine the defence of the UK. Section 26(1) is therefore engaged, and the balance of public interest has been found to lie in favour of withholding some of the information. We have set the level of prejudice against release of the exempted information at the higher level of 'would' rather than 'would be likely to'.

If you wish to complain about the handling of your request, or the content of this response, you can request an independent internal review by contacting the Information Rights Compliance team, Ground Floor, MOD Main Building, Whitehall, SW1A 2HB (e-mail [CIO-FOI-IR@mod.gov.uk](mailto:CIO-FOI-IR@mod.gov.uk)). Please note that any request for an internal review should be made within 40 working days of the date of this response.

If you remain dissatisfied following an internal review, you may raise your complaint directly to the Information Commissioner under the provisions of Section 50 of the Act. Please note that the Information Commissioner will not normally investigate your case until the MOD internal review process has been completed. The Information Commissioner can be contacted at: Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF. Further details of the role and powers of the Information Commissioner can be found on the Commissioner's website at <https://ico.org.uk/>.

Yours sincerely,

Defence Nuclear Organisation Secretariat

UNITED KINGDOM ATOMIC ENERGY AUTHORITY

ATOMIC RELATIONS RESEARCH ESTABLISHMENT

ALDERMASTON

ES 1/8

# HISTORICAL ARCHIVES

~~SECRET~~

CLASSIFICATION

MARKING

FILE NUMBER

PART

TITLE

GENERIC

PERIOD

FOR REVIEW

THIS FILE MUST BE RETURNED TO

**SECOND REVIEW DISPOSAL INSTRUCTIONS**

File No. <b>0290</b>		Part No. <b>I</b>	Period <b>1956-58</b>	
Title:- <b>INDIGO HAMMER (BLUE FOX)</b> <b>PROGRESS REPORT 9-11-56 → 20-2-58</b>			<b>MINUTES OF MEETINGS</b>	
		<b>Initials</b>	<b>Date</b>	
<b>1</b>	<b>PRO complete</b>			
<b>2</b>	<b>PRO less tagged papers</b>			
<b>3</b>	<b>Security review required</b>			
<b>4</b>	<b>Embargo. Review in ...</b> <i>1999</i> <b>.....</b> <i>2010</i>	<i>JHE</i>	<i>14/89</i>	
<b>5</b>	<b>Retain AWE for reference.</b> <b>Review in .....</b>			
<b>6</b>	<b>Destroy</b>			
<b>7</b>	<b>Reviewer's Remarks (reason for embargo or retention)</b> <i>Weapon details given</i> <i>restated weapon details</i> <i>control and prohibition</i>	<i>JHE</i>	<i>15/10</i>	
<b>8</b>	<b>Sensitivity Reviewer's Remarks</b>			
<b>9</b>	<b>Classification Officer's Remarks (where appropriate)</b>			
<b>10</b>	<b>Final Decision</b>			



## INVENTORY - Classified Historical Records

File No.

0290 (Part I)

File Title

Indigo Hammer (Blue Fox) Progress Report: 9.11.56 - 20.2.58

Title of Document	Date	Reference	Copy No.	Security Class'n
Mine of Mtg. held in SSUP's Office on Tues. 1st Oct. at 2.15 p.m. to record Progress & Review Plans for Indigo Hammer	7.10.57	BN/44/01	4	TS
Mine of Mtg. held in SSUP's Office, Hldg. [redacted] on Tues. 12th Nov. 1957 to record Progress and Review Plans for Indigo Hammer	18.11.57	GND/12/12	5	TS
Mine of Mtg. held in SSUP's Office, Hldg. [redacted] on Wed. 8th Jan. 1958 to record progress and Review Plans for Indigo Hammer	20.1.58	GND/12/12	7	TS
Mine of Mtg. held in SSUP's Office, Hldg. [redacted] on Thurs. 20th Feb. 1958 re. Indigo Hammer	4.3.58	GND/12/12	7	TS

M45/63

21.8.63

File No.

0290 (Part I)

File Title

Indigo Hammer (Blue Fox) Progress Reports: 9.11.56 - 20.2.58

Title of Document	Date	Reference	Copy No.	Security Class'n	
Mins of Mtg. held in Mr. [redacted] Office on 9th Nov. at 10 a.m. to record progress and review plans for the [redacted] Weapon	14.11.56	SSWP/TS/2808	2	TS	
Mins of Mtg. held in Mr. [redacted] Office on 7th Dec. 1956 at 10 a.m. to record progress & review plans for the [redacted] Weapon	13.12.56	DCE/W/3916	14	TS	
Mins of Mtg. held in Mr. [redacted] Office on 7th Dec. 1956 at 10 a.m. to record progress & review plans for the [redacted] Weapon	17.12.56	DCE/W/3916	15	TS	
Blue Fox Development Programme No. 1 - Summary of Trials Required	12.12.56	SSWP/TS/2808	40	TS	
Mins of Mtg. held in Mr. [redacted] Office on Thurs. 3rd Jan., 10.00 a.m. to report progress & review plans for the Blue Fox Weapon	21.1.57	SSWP/TS.2808	3	TS	
Mins of Mtg. held in Mr. [redacted] Office on Thurs. 7th Feb. at 10 a.m. to record progress & review plans for the Blue Fox Weapon	15.2.57	SSWP/TS.2808	3	TS	
Mins of Mtg. held in Conference Rm., Building [redacted] on Fri. 8th March at 10.15 a.m. to regard progress & to review plans for the Blue Fox Weapon	13.3.57	SSWP/TS/2808	3	TS	
Mins of Mtg. held in Conference Rm., Bldg. [redacted] on Thurs. 11th Apr. at 10.00 a.m. to record progress & review plans for Blue Fox Weapon	6.5.57	BA/AA/01	2	TS	
Mins of Mtg. held in Conference Rm., Bldg. [redacted] on Fri. 10th May at 2.30 p.m. to record progress & review plans for Blue Fox Weapon	31.5.57	BA/AA/01	2	TS	
Mins of Mtg. held in Conference Rm., Bldg. [redacted] on Wed. 5th June at 2.15 p.m. to record progress & review plans for Blue Fox Weapon	27.6.57	BA/AA/01	2	TS	
Mins of Mtg. held in SSWP's Office, Bldg. [redacted] on Thurs. 6th July 1957 at 2.15 p.m. to record prog. & review plans for the Blue Fox Weapon	12.7.57	BA/AA/01	2	TS	
Mins of Mtg. held in SSWP's Office, Bldg. [redacted] on Thurs. 1st Aug. 1957. to record Progress & Review Plans for the Blue Fox Weapon	6.8.57	CWD/LD/12	2	TS	

M45/63

21.8.63

Item Title

Indigo Hammer & Blue Fox Warheads - Progress Reports and Minutes of Meetings

IMC No:

IMC606493

Subject Matter Review Output:

Has Value to AWE

Other Ref Nos:

002829

Retention Review Output:

Retain for 10 years after item date

Sensitivity Review Output:

Too Sensitive for External Release - Pending LCI

Item Reference

R. FILE 0290 PART 1

Issue

n/a

Item Date

01 Jan 1956

File Reference: (for items in a File)

R. FILE 0290 PART 1

TNA Piece No.

ES1/899

Control No.

Next Action:

Next Action Date

**R040993 | 14 Mar 2018 12:54 | 10210 | [REDACTED] | Item is too sensitive to release externally - Apply for Retention under PRA s3(4)**

I agree with the previous Reviewer's [REDACTED] comments that this document can be reclassified as Secret [REDACTED] and treated accordingly

**R040990 | 14 Mar 2018 11:45 | 13082 | [REDACTED] | Item is too sensitive to release externally - Apply for Retention under PRA s3(4)**

This has been considered for a reclassification. Under today's guidance it would be considered as Secret [REDACTED], and I recommend it be reclassified at that level.

**R036843 | 05 Sep 2017 13:20 | 714 | [REDACTED] | Retain in Department for an additional 10 years**

Data Cleanse to include a retention Review

<b>R036842</b>	<b>05 Sep 2017 13:17</b>	<b>714</b>	<b>[REDACTED]</b>	<b>Subject suitable for TNA ES01 1944-1986</b>
Data Cleanse to set ES Class				
<b>R033465</b>	<b>13 Apr 2016 10:46</b>	<b>714</b>	<b>[REDACTED]</b>	<b>Item is too sensitive to release externally - Retain at AWE</b>
Import from CKB; cleanse required.				
<b>R001097</b>	<b>24 Mar 2014 00:00</b>	<b>12064</b>	<b>[REDACTED]</b>	<b>Agreed - Item is too sensitive to release externally - Apply for Retention under PRA s3(4)</b>
This report has been recommended to be transferred to TNA in the future by some unknown reviewer.				



6290

TOP SECRET [REDACTED]  
SECRET [REDACTED]

6290

Ref: SSWA/158/161

ONE COPY ONLY

ARCHIVE'S FILE 0290

Part I

INDIGO HAMMER (BLUE FOX)

Progress Report 3-11-56 -

20-2-58

JAMES  
281  
[REDACTED]

[REDACTED]

[REDACTED]

INDIGO HAMMER

Minutes of a Meeting held in S.S.W.P's Office, Building [redacted] on Thursday 20th February, 1958.

<u>Present:</u>	Mr. [redacted] (Chairman)	C.W.D.
	Gp. Capt. [redacted]	S.S.W.P.
	Mr. [redacted]	S.S.W.P.
	Mr. [redacted]	S.S.W.P.
	Mr. [redacted]	S.D.P.
	Mr. [redacted]	S.D.P.
	Dr. [redacted]	S.S.W.A.
	Mr. [redacted]	S.W.A.
	Mr. [redacted]	S.S.W.D.
	Major [redacted]	W.D.2.
	Mr. [redacted]	W.D.2.
	Mr. [redacted]	S.W.X.
	Mr. [redacted]	S.L.W.A.
	Lt.Col. [redacted] (Secretary)	C.W.D.

*Create 1 Document from all I II Meetings*

MINUTES

ACTION

1. Last Minutes

1.1. In sub-title delete "Tuesday 12th November 1958" and substitute "Wednesday 8th January 1958" Minutes AGREED.

2. Actions

1 of 8.1.58: W.D.2. to show sketches of [redacted] systems.

Tabled at present meeting. Action complete

2 of 8.1.58: S.W.A. to initiate further [redacted] rounds. Completed.

3 of 8.1.58: S.W.A. to write a paper on preference [redacted] Lapsed

4 of 8.1.58: S.S.W.D. to consider requirements for III, Mk.2 [redacted] trials. Completed.

5 of 8.1.58: Mr. [redacted] to give yields [redacted] [redacted] quoted the following orders of [redacted]

- (a) [redacted]
- (b) [redacted]
- (c) [redacted]
- (d) [redacted]

[redacted] difficult to define as changes are occurring near peak of optimum curve.

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Copy No. of 21 CopiesACTION

Action completed.

6 of 8.1.58: S.L.W.A. to promulgate a programme for bomb and missile trials for [redacted] system and electronic components.

Mr. [redacted] reported some difficulties due to lack of provisioning of missiles by Ministry of Supply. Correspondence was passing with a view to determining the exact number of bombs and missiles which would become available. Action continuing.

Action 1  
S.L.W.A.

7 of 8.1.58: S.S.W.A. to suggest suitable layouts for [redacted] of the second home and second Maralinga [redacted].  
Action continuing.

Action 2  
S.S.W.A.  
(Completed)

8 of 8.1.58: S.S.W.A. to suggest further home firings in [redacted] series.  
Action continuing.

Action 3  
S.S.W.A.  
(Completed)

3. Implosion

3.1. The Chairman said that the full Antler yield of [redacted] might not be required. It was AGREED not to strain for extra yield [redacted].

3.2. Dr. [redacted] said that results from the first trial [redacted].

[redacted] Result was a little inconclusive, but it was to be concluded that the [redacted] to be driven by the [redacted] was too big. Major [redacted] suggested a [redacted].

[redacted] It was AGREED to programme an extra round including the [redacted].

Secretary  
(Completed -  
11/6/57/12)

4. Weaponisation

4.1. The Chairman said it has been agreed with Ministry of Supply to proceed on the assumptions of:-

- (a) Maximum diameter [redacted]
- (b) Maximum length including loading system [redacted]
- (c) Overall weight not including loading system [redacted] etc. [redacted].
- (d) Yield not yet quoted, [redacted] [redacted]
- (e) [redacted] [redacted]
- (f) [redacted]

Major [redacted] said all agreements outside A.W.R.E. had been made for [redacted] The

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SECRET



ACTION

Chairman ruled [redacted] should be examined. If this was impossible [redacted] would have to be accepted.

- 4.2. Major [redacted] tabled drawings of [redacted] schemes. The Chairman emphasized that with lowered yield [redacted] but not essential. Major [redacted] reported that a strength of safe trial had been fired. Dr. [redacted] requested circulation of the results of this type of trial. Major [redacted] AGREED to circulate results.

Action 5  
W.D.2.

5. [redacted]

- 5.1. Dr. [redacted] reported [redacted] difference between timings [redacted]. A modification would soon be tried out in [redacted] trials. The Secretary reported the first [redacted] fired. Dr. [redacted] said further [redacted] would include [redacted] modifications decided after the [redacted] firings.

6. [redacted]

- 6.1. Dr. [redacted] said the first [redacted] had [redacted]. The mean time was longer than usual. [redacted]. Various theories were held to account for the low speed measurements, but further work would have to be done before the interpretation became clear. Mr. [redacted] pointed out that [redacted]. It was AGREED S.S.W.A. urgently to consider what supporting evidence and what changes of technique might be required towards interpreting results [redacted].

Action 5  
S.S.W.A.

- 6.2. The Secretary pointed out that there was only one more home round on the programme. Dr. [redacted] agreed to raise further rounds if required.

Action 6  
S.S.W.A.

7. [redacted]

- 7.1. Major [redacted] tabled alternative [redacted] for [redacted]. He wished to make further studies before the [redacted] was committed. Especially he wished to consider [redacted]. So far examined were:-

- (a) [redacted]
- (b) [redacted]
- (c) [redacted]
- (d) [redacted]



ACTION

The Meeting showed great interest in type (d) above, noting its possibilities for use with [REDACTED] systems. The possibility of changing from [REDACTED] using scheme (d) was discussed. Mr. [REDACTED] stressed that in this case [REDACTED] during assembly must be watched carefully. Reduction in this danger could be achieved either by:-

- (a) [REDACTED]
- (b) [REDACTED]

The Chairman summarized saying that the meeting was very much in favour of pursuing the [REDACTED] design (d) above. It was AGREED W.D.2. to explore this design more fully.

Action 7  
W.D.2.

7.2. The Secretary raised the question of continuance with [REDACTED] implosion trials proposed by S.W.A. It was AGREED to suspend these until completion of W.D.2's survey of possible engineering designs.

8. Next Meeting

8.1. The next meeting will take place in the Conference Room, [REDACTED] at 2.15 p.m. on Thursday, 27th March, 1958.

[REDACTED]

Secretary.

Building [REDACTED]  
A.W.R.E.,  
Aldermaston.  
Ext. [REDACTED]  
4th March, 1958.

Distribution: All present

Mr. [REDACTED]	C.M.
Dr. [REDACTED]	S.S.P.D.
Mr. [REDACTED]	S.M.M.

Copy No	✓ Described	11
2		12
3		13
4		14
5		✓ Described
6		16
7		✓ Described
8 Described		18
9		19
10		20
		21

INDIGO HAMMER

Minutes of a Meeting held in S.S.W.P's Office, Building [redacted] on Tuesday  
5th January, 1958  
19th November, 1957, to record progress and Review Plans for Indigo Hammer

Present:	1 Mr. [redacted] <i>Chairman</i> 5/7/60	C.W.D.
	2 Gp. Capt. [redacted] 4/6/60	S.S.W.P.
	3 Mr. [redacted]	S.S.W.P.
	4 Mr. [redacted]	S.S.W.P.
	5 Mr. [redacted]	S.D.P.
	6 Mr. [redacted] <i>Secretary</i> 7.3.60	S.D.P.
	7 Dr. [redacted]	S.S.W.A.
	8 Mr. [redacted] <i>Secretary</i>	S.W.A.
	9 Mr. [redacted] <i>Secretary</i> 20.4.60	S.S.W.D.
	10 Major [redacted]	W.D.2
	11 Mr. [redacted]	W.D.2
	12 Mr. [redacted]	S.W.X.
	13 Mr. [redacted]	S.L.W.A.
	14 Lt. Col. [redacted] <i>Secretary</i> 21.3.60	C.W.D.
	15 [redacted] <i>Secretary</i>	

MINUTES

ACTIONS

1. Last Minutes

Para 1.1: Line 19 sub-para (a). after "should" add  
"for the time being".

Para 2.1: Line 2: Delete "1959" and substitute "1958"

Para 2.1: Line 3: Delete "Hunter Percival" and  
substitute "BAC"

Para 3.5: sub-para (c): After [redacted] add [redacted]

With these amendments, the last minutes were AMENDED

2. Actions from Last Meeting

Act 1 of 12/11/57: [redacted] at present to have [redacted]  
system for [redacted] Continuing actions.

Act 2 of 12/11/57: Mr. [redacted] to check theory of yield  
against experimental results:

Mr. [redacted] reported he had written to C.W.D. Action  
complete, but see para 3.1 for continuing actions.

Act 3 of 12/11/57: W.D.2 to show sketches of [redacted] Action 1  
Not taken. Action continues. W.D.2

Act 4 of 12/11/57: W.D.2 to provide design sketch [redacted] for  
current discussions. Completed

Act 5 of 12/11/57: Mr. [redacted] to consider [redacted]  
ref. [redacted] initiation. Completed

Act 6 of 12/11/57: S.W.A. to initiate further [redacted] Actions 2  
rounds. Continuing S.W.A.

Act 7 of 12/11/57: S.W.A. to write a paper on feasibility  
study ref. [redacted]

S.W.A. reported consideration in progress. Action  
continuing. Action 3  
S.W.A.

Act 8 of 12/11/57: S.S.W.D. to consider further requirements for Mk2 trials.

S.S.W.D. reported design studies in progress. Action continuing.

Action 4  
S.S.W.D.

### 3. Implosion Development

3.1 The Chairman asked for a clearer statement of the improvement in yield from [redacted] Mr. [redacted] said that a change [redacted] Dr. [redacted] felt that only half of this might be gained in practice. Mr. [redacted] said this might amount [redacted] Dr. [redacted] asked how [redacted] would affect the argument. It was AGREED that Mr. [redacted] give a revised estimate of what practical improvement might be gained with [redacted] Immediate estimates would be required for [redacted] In the long term estimates would be required with [redacted] Mr. [redacted]

Action 5

3.2 The Meeting reviewed dates for trials weapons for Maralinga Spring 1958, as affected by lateness of home firings. It was AGREED that the following alternative rounds should be manufactured:-

- (a) two with [redacted]
- (b) two off each manufactured to give a last minute choice [redacted]

3.3 It was AGREED to go ahead with [redacted] development, but that this must take second place to loading system development.

### 4. Weaponisation

4.1 The Chairman said that a service [redacted] version had to be introduced by 1960, and asked what progress was being made on the prototype trials model for the end of 1958. Major [redacted] said that DAC had agreed that [redacted] would fit into [redacted] was favoured, and space could be allotted. He was proceeding with an [redacted] system which could be converted to [redacted] by last minute modification. He expected to have tested a prototype with [redacted] by the end of 1958. In 1959 climatic and vibration trials, and about 12 flight trials to test [redacted] would be required. Mr. [redacted] said that he expected to be in a position to provide trial firing systems towards the end of 1958.

[redacted] he wished to undertake a few trials in free flight bombs, to follow on in unguided missiles and finally do trials in guided systems. It was AGREED that free fall trials would be co-ordinated within A.W.R.E. and that Mr. [redacted] would act as trials co-ordinator between A.W.R.E. and A.R.D.E. on missile trials. It was further AGREED:-

Mr. [redacted] to formulate a programme and put it before the next meeting.

Action 6  
S.S.W.D.  
S.S.W.D.

4.2 Mr. [redacted] asked whether there would be a load on S.L.W.E. for [redacted] development. Major [redacted] said that an arming signal would be required, and also telemetry on arming. Details had not yet become clear.

5. [REDACTED]

5.1 [REDACTED]

5.1.1 Dr. [REDACTED] said that plane wave experiments had shown that with [REDACTED]

[REDACTED]

[REDACTED] The Chairman asked whether additional trials were now required. Mr. [REDACTED] suggested that a [REDACTED]

[REDACTED] Mr. [REDACTED] suggested a trial with two arrangements of differing uniform spacing on [REDACTED]. It was AGREED Dr. [REDACTED] to suggest a suitable layout for the second home and second Maralinga Spring [REDACTED]

Action 7  
S.S.W.A.

5.1.2 Gp. Capt. [REDACTED] pointed out that if new rounds were required these would require two to three months for manufacture. After discussion, it was AGREED S.S.W.A. to initiate a programme for a further two home [REDACTED] replicating the present [REDACTED] and [REDACTED] and to bulk order 6 off overseas minor rounds [REDACTED]

Action 8  
S.S.W.A.

5.2 [REDACTED]

5.2.1. The Chairman stressed that for the present the [REDACTED] development was to be looked on as the basic development of a new [REDACTED] system not allied to a particular weapon. However, as a requirement for [REDACTED] might in future arise it would be advantageous to chose a [REDACTED] size such as might later be used if a warhead was required for that weapon. After discussion it was AGREED [REDACTED]

6. Next Meeting

6.1 The next meeting will take place at 2.30 p.m. on Thursday, 20th February, 1958.

[REDACTED]

Lt. Col.

Building [REDACTED]  
Aldermaston.  
Ext. [REDACTED]  
20th January 1958.

Distribution: All present  
Mr. [REDACTED] S.S.M.D.  
Dr. [REDACTED] S.S.P.D.  
Mr. [REDACTED] S.M.M.



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CND/LD/12

Sheet No. 1 of 4 sheets  
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INDIGO HAMMER

Minutes of a Meeting held in S.S.W.P's Office, Building  
on Tuesday, 12th November 1957, to record Progress and Re-  
view Plans for Indigo Hammer.

Present: 1 Mr. [redacted] (Chairman)	5/9/60.	C.W.D.
2 Cp. Capt. [redacted]		S.S.W.P.
3 Mr. [redacted]	8.6.60.	S.S.W.P.
4 Mr. [redacted]		S.D.P.
5 Dr. [redacted]		S.S.W.A.
6 Mr. [redacted]		S.W.A.
7 Mr. [redacted]		S.S.W.D.
8 Maj. [redacted]		W.D. (2)
9 Mr. [redacted]		W.D. (2)
10 Mr. [redacted]		S.W.X.
11 Lt. Col. [redacted] (Secretary)		C.W.D.
12 [redacted]		

MINUTES

ACTIONS

1. Basis Development

1.1 Mr. [redacted] reported that [redacted] showed a pattern similar to [redacted]. Mr. [redacted] felt that:-

- (a) [redacted]
- (b) [redacted]

but said that the optimum yield [redacted] was not yet known. The Chairman asked what further improvement could be made. Mr. [redacted] felt that a major improvement in yield would only be obtained [redacted]. The Chairman said that while minor changes to improve yield should continue to be explored, [redacted] depended on the reliability of Mr. [redacted] theory. Steps should be taken to examine existing results for confirmation of the theory. It was AGREED:-

- (a) that for the [redacted] version, [redacted] should go ahead on the present basis [redacted] system [redacted]
- (b) Mr. [redacted] to check his theory against existing experimental results.

Action 1

W.D.2

Action 2

Mr. [redacted]

2. Weaponisation

2.1 Maj. [redacted] said that he hoped to freeze drawings in aid of [redacted] by the end of 1959. [redacted] should be ready from Hunter Percivals about mid 1960. A later

*Handwritten notes*

? 1957

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application would be [REDACTED] After considerable discussion it was AGREED:-

- (a) to check the design using [REDACTED] but to keep open as long as possible the possibility of introducing [REDACTED]
- (b) to programme as follows:-
  - (i) Prototype Trials Model for [REDACTED] ready by end of 1958.
  - (ii) Service Model of [REDACTED] [REDACTED] into Service in mid 1960.
  - (iii) Sophisticated weapon [REDACTED] ready for service by mid 1962.

2.2 The Chairman asked when weaponisation trial results would be to hand. Mr. [REDACTED] said that trials would be delayed about six weeks owing to a decision to change to [REDACTED] Trials were now expected ready:-

- (a) [REDACTED] - end of November 1957.
- (b) [REDACTED] - mid December 1957.
- (c) [REDACTED] - mid January 1958.

Maj. [REDACTED] said [REDACTED] would be used to conform with the "safe" mechanism.

2.3 Mr. [REDACTED] said that [REDACTED] would be by a [REDACTED] of about [REDACTED] acceleration and deceleration. The Chairman asked if [REDACTED] could be used. Mr. [REDACTED] said that they could if additional weight was accepted. The Chairman stressed that [REDACTED] must be available. It was AGREED that:-

- (i) W.D.2 report the position and show sketches at the next meeting
- (ii) W.D.2 provide G.W.D. with a design sketch to use as a basis for current discussions.

Action 3  
W.D.2.

Action 4  
W.D.2

### 3. Future Development

3.1 The Chairman asked whether it would be possible with different design to exploit more of the high energy of [REDACTED] Dr. [REDACTED] felt not. Mr. [REDACTED] said that the geometry had been optimised for [REDACTED] and that change in the [REDACTED] would not change this optimum. [REDACTED]

3.2 [REDACTED]: The Meeting discussed whether the [REDACTED] had been chosen, and if not, whether this factor should be investi-

~~TOP SECRET~~ACTION

gated. Dr. [REDACTED] said that implosionwise it was required to know the maximum [REDACTED]. Mr. [REDACTED] said that [REDACTED].

[REDACTED] The Chairman said that optimum [REDACTED] should be examined from two points of view:-

(a) [REDACTED]

(b) [REDACTED]

It was AGREED:-

(i) Mr. [REDACTED] to consider [REDACTED] of detonators.

(ii) S.W.A. to consider and initiate such extra rounds as he felt would be required to examine the effect of [REDACTED].

Action 5

Mr. [REDACTED]

Action 6  
S.W.A.

3.3 [REDACTED] Mr. [REDACTED] said that work had started on an [REDACTED] Mr. [REDACTED] and Mr. [REDACTED] asked for a full review of this system to be made at the outset of the project. Major [REDACTED] showed a sketch of an [REDACTED] system with [REDACTED]. Mr. [REDACTED] asked whether [REDACTED] were preferred. Mr. [REDACTED] said that [REDACTED] and asked for an opinion on [REDACTED]. Mr. [REDACTED] said [REDACTED].

Mr. [REDACTED] favoured [REDACTED]

The S/O ratio [REDACTED]

It was AGREED that S.W.A. call a meeting to conduct a feasibility study including consideration of [REDACTED] systems. A paper should be written.

Action 7  
S.W.A.

3.4 The Chairman asked whether a [REDACTED]

It was AGREED that in the short term (say up to 3 to 4 months) this was so, but it was not so in the long term. The Chairman said that at present there was no firm requirement for a weapon of [REDACTED] character, but it remained possible that a requirement might arise for 1962. It was desirable that as early as possible [REDACTED] be fired as a check against home rounds, followed by further development. Mr. [REDACTED] said that if a final Minor Trial was required in Spring 1958 a [REDACTED], but if in Autumn 1958 a [REDACTED] system could be ready, it was AGREED to proceed on the basis of a [REDACTED] not before June 1958.

3.5 Mk2 [REDACTED] The Chairman said that [REDACTED] any of which might go into [REDACTED] Mk2. These were:-

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ACTION

(a) [REDACTED] System

(b) [REDACTED]

(c) [REDACTED]

and asked what further work might be necessary at the moment. Mr. [REDACTED] felt that the rival systems should at once be examined with relation to loading systems. It was AGREED Mr. [REDACTED] to consider what further investigations might be necessary on [REDACTED] reference to possible loading systems.

Action 8  
S.S.W.D.

4. Next Meeting

4.1 The next meeting will be held in S.S.W.P's Office, Building [REDACTED] at 2.15 p.m. on Tuesday, 7th January, 1958.

[REDACTED]  
[REDACTED] Lt. Col.  
Secretary.

Building [REDACTED]  
A.W.R.E. Aldermaston,  
Ext. [REDACTED]  
18th November, 1957.

<u>Distribution:</u>	All present	
	Mr. [REDACTED]	S.S.M.D.
	Dr. [REDACTED]	S.S.P.D.
	Mr. [REDACTED]	S.M.M.
	Mr. [REDACTED]	S.L.W.E.



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BA/11/101

Date 7th Oct. 1957

13/10  
[Redacted]

Minutes of Meeting held in S.S.W.P.'s Office on Tuesday 1st Oct. at 2.15 p.m. to Record Progress and Review Plans for Indigo Hammer

Present

- 1 Mr. [Redacted] Destroyed 9/1/60 C.W.D. (Chairman)
- 2 Sp. Capt. [Redacted] - S.S.W.P.
- 3 Mr. [Redacted] Destroyed 20/1/60 S.S.W.D.
- 4 Dr. [Redacted] - S.S.W.A.
- 5 Mr. [Redacted] - S.D.P. - Part time
- 6 Maj. [Redacted] - S.M.D.E.
- 7 Mr. [Redacted] Destroyed 17/2/60 S.D.P. - Part time
- 8 Mr. [Redacted] - S.W.X.
- 9 Mr. [Redacted] Destroyed 9/1/60 S.S.W.P. - Secretary
- 10 [Redacted] Destroyed
- 11 [Redacted]
- 12 [Redacted] Destroyed 21.3.60.

ACTION

1. Experiment

1.1 After some discussion on the experimental results and the results from Antler trials, the Chairman ruled that this completed the experimental stage which was to fire a weapon of this design to confirm Mr. [Redacted] theory and figures.

2. Weaponisation

2.1 The Chairman stated that A.W.R.E. had no definite commitment for this weapon, but present indications were that the requirements from A.W.R.E. would be:-

2.1.1 Indigo Hammer type of weapon with [Redacted] to be introduced into Service by 1961/2.

2.1.2 [Redacted] size weapon with [Redacted] introduced into Service by 1961/2.

2.2 Dr. [Redacted] queried the possibility of the [Redacted]

[Redacted] Dr. [Redacted] thought that this form of initiation may be more advantageous with [Redacted]. He said he would like to have trials authorised on the Indigo Hammer size of weapon [Redacted] to investigate the [Redacted] and the [Redacted] motion, and to establish the feasibility of this form of initiation.

I am not sure of the [Redacted] this. I will suggest details from minutes of meeting next time.

Secretary's Note - Warhead Investigation Sheet 6142 has been issued for the above.

2.3 The Chairman stated that at present the [Redacted] of initiation would be more applicable to the [Redacted] weapon and Engineeringwise this would be the first weapon. For Indigo Hammer the weaponisation would go ahead [Redacted] Major [Redacted] would submit detail layouts of the schemes at the next meeting.

S.S.W.D.  
S.M.D.E.

**SECRET** [Redacted]

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2.4 Safety - Mr. [redacted] stated that from the engineering side, [redacted] would be required to meet the safety conditions. The Chairman ruled that Mr. [redacted] submit the safety scheme to the Nuclear Safety Panel. S.S.W.D

2.5 Design Limits - The Chairman ruled that Mr. [redacted] would confer with A.R.D.E. to establish the design limitations. S.S.W.D

2.6 [redacted] - The Chairman ruled that the development work carried out on Red Beard would be used to assess what further trials would be needed [redacted]

2.7 R.A. Assembly - In reply to the Chairman, Mr. [redacted] stated that he could not foresee any changes in the general R.A. design unless the requirements regarding yield were altered. There would be a possible redistribution of fissile material [redacted]

2.8 Implosion -

2.8.1 The Chairman ruled that Dr. [redacted] assess the [redacted] and [redacted] to determine what design changes would be required to gain full advantage [redacted] S.S.W.A

2.8.2 The Chairman ruled that Mr. [redacted] assess the structural properties of [redacted] S.W.X.

3. New Materials. The Chairman stated that at present weaponisation would go ahead on the present material for [redacted]. New materials would be treated as a development for weapons generally. Dr. [redacted] stated that [redacted] certain corrections were made to [redacted] design to obtain the present [redacted] and thought that the [redacted] material may have influenced this form, consequently any material changes may require more development work on the [redacted]

4. General. The next meeting would be held at 2.15 p.m. on Tuesday 12th November in S.S.W.P.'s office, Building [redacted]

[redacted]  
[redacted]  
Secretary

Distribution

All present

- |                     |          |
|---------------------|----------|
| Mr. [redacted]      | C.N.     |
| Dr. [redacted]      | S.S.P.D. |
| Mr. [redacted]      | S.R.H.   |
| Mr. [redacted]      | S.S.W.I. |
| Mt. Col. [redacted] | C.W.D.   |
| Mr. [redacted]      | S.W.X.   |

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Page 1 of 3 Pages

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Minutes of a Meeting Held in S.S.W.P.'s Office, Building

On Thursday, 1st August, 1957, to Record Process and Review Plans

For the Blue Fox Weapon

Blue Fox

Present:-

- 1 Mr. [redacted] (Chairman) 6.5/9/60 C.W.D.
- 2 Dr. [redacted] S.S.W.A.
- 3 Mr. [redacted] Desbury 20.10.60 S.S.W.D.
- 4 Maj. [redacted] S.M.D.E.
- 5 Op. Capt. [redacted] S.S.W.P.
- 6 sq. Odr. [redacted] S.S.W.P.
- 7 Mr. [redacted] Desbury 8.6.60 S.S.W.P.
- 8 Mr. [redacted] S.D.P.
- 9 Lt. Col. [redacted] (Secretary) O.W.D. 13 Desbury

ACTIONS

MINUTES

1. Minutes of Last Meeting

1.1 Para 1.1 (a): after [redacted]

2. Weapon Yield

2.1 Dr. [redacted] reported the increase [redacted]. The Chairman pointed out that at [redacted] Mr. [redacted] estimate given by Mr. [redacted]. Mr. [redacted] said that he had assumed [redacted].

After discussion, it was AGREED:-

(a) Secretary to refer the estimate back to Mr. [redacted] for further comment.

Action 1a  
Secretary

(b) Mr. [redacted] to estimate [redacted]

Action 1b  
Mr. [redacted]

3. Blue Fox for Antler

3.1 The Chairman asked whether there remained any doubts regarding the use of [redacted] at Antler. Dr. [redacted] felt that no more useful information on [redacted] for Antler could be obtained on home trials, [redacted].

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ACTIONS

Mr. [redacted] asked if any criterion could now be given for a choice later between [redacted] Mr. [redacted] gave diagrams showing [redacted]

Tabulated values for [redacted] had been circulated in a form applicable after study of the wave pattern. A similar tabulation for [redacted] could be produced but it would be much less reliable. Dr. [redacted] said that it was hoped a decision on the order of firing in Antler Minor could be made at Aldermaston. He asked whether [redacted] and Blue Fox could be fired alternatively at Maralinga to allow time for a decision at Aldermaston. It was AGREED Mr. [redacted] and Dr. [redacted] to consider and give on paper an appreciation on the factors shown by [redacted] on which a decision could be based.

S.S.W.A.  
D.S.P.

3.2 The Chairman reported that since the last meeting the [redacted] fired in trial 6050 [redacted]

asked whether the effect of the field of view had yet been taken into account for Blue Fox. It was AGREED that Mr. [redacted] consult Mr. [redacted] regarding the influence of the field of view.

Action 3  
D.S.P.

3.3 The Chairman asked the feeling of the Meeting regarding further [redacted] It was AGREED [redacted]

S.S.W.P. was asked to co-ordinate the provision [redacted] and to ensure that the overseas assembly team were aware of the correct parts to assemble.

Action 4  
S.S.W.P.

3.4 S.S.W.P. reported that S.W.A. had given shipping clearance for [redacted] but would not agree to the shipping [redacted] in [redacted] assemblies.

3.5 The Meeting discussed future requirements regarding [redacted] 11.6052 to 11.6056. Dr. [redacted] said that if [redacted] was available it would be preferable to fire 11.6055 with [redacted] and [redacted] for comparison with 11.6052 which [redacted] After discussion it was AGREED to fire trials as follows:-

- 11.6052 [redacted]
- 11.6054 Spare: [redacted]
- 11.6055 [redacted]
- 11.6056 Spare: [redacted]

4. Weaponisation

4.1 Maj. [redacted] reported that he had consulted ARLE who were averse to [redacted] They would like to hear whether [redacted] was possible [redacted] made a significant difference to [redacted]. The Chairman felt that there might be no alternative [redacted] if there was no possibility of increasing [redacted]



SECRET

ACTIONS

4.2 The Meeting registered agreement with the decision of the W.I.D.C. meeting to delete firings using the so-called [redacted] (trials 11/6105/4 and /5).

4.3 Maj. [redacted] reported action to investigate the use of [redacted] to be in hand in investigations nos. 6106 and 6107. Orders had been placed.

4.4 Maj. [redacted] reported that trials on the use of integral explosives had been initiated. (Investigation 6108).

5. Plastic Structure

5.1 Maj. [redacted] reported progress held up for lack of priorities due to preparations for Antler. It was AGREED that S.M.D.E. consider and lay down a programme for future work [redacted]

Action 5  
S.M.D.E.

6. Mixed Blue Fox Safety Precautions

6.1 Maj. [redacted] reported conversations with Mr. [redacted] regarding the manufacture of [redacted] Mr. [redacted] was working on [redacted]

[redacted] A better estimate would be available when Mr. [redacted] had completed his present experiments.

7. Administration and Co-ordination

8.1 The Meeting AGREED that the firing-circuit should be included in future discussions. S.L./W.E. should be asked to attend future meetings.

Action 6  
S.S.W.D.

8.2 The Meeting AGREED that formal discussions with A.R.D.E. on weaponisation were now due. It was AGREED that C.W.D. ask Mr. [redacted] to attend a working party meeting to be held at Aldermaston with Mr. [redacted] in the chair. S.S.W.D. would ask S.L./W.E. to attend.

Action 7  
C.W.D.

Action 8  
S.S.W.D.

9. Next Meeting

9.1 The next meeting will be held in the Conference Room, Building [redacted] at 2.5 p.m. on Tuesday, 1st October, 1957.

[redacted]  
[redacted] Lt. Col.  
(Secretary)

Building [redacted]  
A. W. R. E.,  
Aldermaston.  
Extn. [redacted]  
6th August, 1957.

Distribution:-

All present  
Mr. [redacted] S.S.M.D.  
Dr. [redacted] S.S.P.D.  
Mr. [redacted] S.M.M.  
Mr. [redacted] S.L.W.E.

SECRET

Minutes of meeting held in S.S.W.P.'s Office, Building [redacted]  
on Thursday 6th June, 1957 at 2.15 p.m.  
to record progress and review plans for the Blue Fox Weapon

BLUE FOX

Present:-

- |                      |                        |
|----------------------|------------------------|
| Mr. [redacted]       | H.W.D. - Chairman      |
| Dr. [redacted]       | S.S.W.A.               |
| Gp. Capt. [redacted] | S.S.W.P.               |
| Mr. [redacted]       | S.S.W.D.               |
| Mr. [redacted]       | S.W.X.                 |
| Mr. [redacted]       | S.D.P.                 |
| Mr. [redacted]       | S.D.P.                 |
| Major [redacted]     | S.M.D.E.               |
| Lt. Col. [redacted]  | H.W.D.                 |
| Lt. Col. [redacted]  | S.S.W.P.               |
| Wg. Cdr. [redacted]  | S.S.W.P.               |
| Mr. [redacted]       | S.S.W.P.               |
| Mr. [redacted]       | S.W.A.                 |
| Mr. [redacted]       | S.S.W.P. - (Secretary) |

Corrections to minutes of meeting held on 5th June, 1957.

- Para.2.1 for "repeat of round 6047" read "6049" ✓
- " 2.3 for "...from [redacted] Area" read "to [redacted] Area" ✓
- " 5.1 for ".... [redacted]"

1. Weapon Yield

1.1 Mr. [redacted] stated that after reassessing his calculations the estimated yield [redacted]

- (a) [redacted]
- (b) [redacted]

2. Programme

2.1 It was agreed that the development work directed towards Antler was complete except for the proving rounds for [redacted]

2.2 It was agreed that for Antler trials [redacted]

2.3 It was stated that the first [redacted] would be despatched to Foulness from [redacted] Area during the week ending 12th July, 1957.

2.4 Mr. [redacted] stated that [redacted] Area were experiencing difficulty in the manufacture of [redacted] At present they had produced 6 complete [redacted] that were just within the maximum tolerances. Discussions were being held between S.W.X. and S.M.D.E. on the manufacture [redacted]

Action  
Mr. [redacted]  
Maj. [redacted]

2.5 It was agreed that the [redacted] in [redacted] already manufactured would be allocated

- (a) [redacted] Home Development [redacted] proving trials
- (b) [redacted] Antler Major trials.

Action

Mr. [redacted]

The [redacted] as at (b) would be shipped on the 18th July, 1957 provided Mr. [redacted] could get the necessary clearance for shipping.

3. Minor Trials

3.1 Mr. [redacted] stated that if the [redacted] [redacted] was available early enough there was every possibility of providing [redacted] for the Antler minor trials.

4. Future Research

4.1 Mr. [redacted] stated that there were two applications of the Blue Fox weapon being considered but that the precise requirements had yet to be specified but that these would entail

(a) [redacted]

(b) [redacted]

Major [redacted] stated that a [redacted] was almost complete. For [redacted] Mr. [redacted] stated that the [redacted]

During the ensuing discussion it was agreed that a system common to [redacted] would be preferable if this could be achieved. Mr. [redacted] directed Major [redacted] to lay on design work to investigate the systems for (a) and (b)

Major [redacted]

4.2 In reply to a question from Major [redacted] Mr. [redacted] directed that no direct approach could be made to Bristol Aircraft Company as this would conflict with the policy being formulated.

4.3 Major [redacted] stated that design investigation was proceeding [redacted] After some discussion Mr. [redacted] stated that for long term policy, work should proceed on investigating the possibilities of utilising different materials in the mechanical components.

4.4 Mr. [redacted] suggested that trials should be held [redacted] profile ordinates had already been given by Mr. [redacted] to S.M.D.E. and machining cams were being manufactured. Mr. [redacted] agreed and the draft programme submitted to H.W.D. would be considered.

5. Mixed B.F. Safety precautions

Major [redacted]

5.1 Major [redacted] agreed to discuss B.F., mixed with Mr. [redacted]

6. General

6.1 Mr. [redacted] stated that Blue Fox [redacted] had been withdrawn from the Antler programme but that items ready and packed for shipment on 18th July, 1957 should not be withdrawn.

7. The next meeting will be held in the Conference Room, Building [redacted] on Thursday August 1st at 2.15 p.m.

[redacted]  
Secretary

Building [redacted]  
A.A.W.R.E. Aldermaston  
12th July, 1957

/Distribution

TOP SECRET SECRET [redacted]

Distribution

All Present

Mr.	[REDACTED]	C.E.
Mr.	[REDACTED]	S.S.M.D.
Dr.	[REDACTED]	S.S.F.D.
Mr.	[REDACTED]	S.M.M.

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Minutes of a meeting held in the Conference Room, Building [REDACTED] on Wednesday 14 June, at 2.15 p.m. to record progress and review plans for the Blue Fox Weapon.

BLUE FOXPresent

Mr. [REDACTED]	H.W.D. (Chairman)
Dr. [REDACTED]	S.S.V.A.
Mr. [REDACTED]	S.S.V.D.
Mr. [REDACTED]	S.W.X.
Mr. [REDACTED]	S.D.P.
Mr. [REDACTED]	S.D.P.
Major [REDACTED]	S.M.D.E.
Lt. Col. [REDACTED]	H.W.D.
Lt. Col. [REDACTED]	S.S.V.P.
Wg. Cdr. [REDACTED]	S.S.V.P.
Mr. [REDACTED]	S.W.A.
Mr. [REDACTED]	S.S.V.P. (Secretary)

Correction to previous minute. Para. 1.3. This should read, "it was agreed to bring the matter up at Mr. [REDACTED] Meeting".

1. Weapon Yield

1.1. Mr. [REDACTED] said that [REDACTED]

[REDACTED] Mr. [REDACTED]  
said that a [REDACTED]

1.2. A discussion then followed [REDACTED]

2. Programme

2.1. It was reported that there had been a failure to obtain results on Round 6049 and it was agreed that round 6050 should be expedited. There was a request that a repeat of round 6049 be fired and that round 6052 could be used for this purpose. After discussion about the [REDACTED] design all present agreed that when 6050 and a repeat of 6049 had been fired then all possible would have been done in the way of home development for intler trial [REDACTED]

2.2. The meeting then discussed the [REDACTED] aspect of home development. In reply to a query from Mr. [REDACTED] it was felt that the use of [REDACTED] would not affect [REDACTED]. Mr. [REDACTED] stated that there was little difference in the initiating properties of [REDACTED] with [REDACTED] and [REDACTED] bare.

2.3. The following rounds were programmed.

6051 - Available W/E June 21st <sup>to</sup> [REDACTED] Area  
6052 - " W/E June 28th <sup>from</sup> [REDACTED] Area

<sup>to</sup>  
/It was

It was felt that there was a good chance of knowing before the Antler packing date whether [REDACTED] would be available for the trial and that information on the increased velocity would also be available.

2.4. At Mr. [REDACTED] request Mr. [REDACTED] promised to give more information on the yield [REDACTED] Mr. [REDACTED]

### 3. Minor Trials

3.1. A discussion was held on the minor trials rounds and explanations were given by Dr. [REDACTED] about the inclusion of [REDACTED] Mr. [REDACTED] ruled that there was no prospect of including [REDACTED] which Major [REDACTED] had suggested should be included.

### 4. Future Research

4.1. Mr. [REDACTED] said that a small working party under Mr. [REDACTED] was looking into the safety aspects of missile warheads.

4.2. Major [REDACTED] had written a paper on [REDACTED] (copy attached) and there was a lengthy discussion on this subject. Three types of system are being considered

1. [REDACTED]
2. [REDACTED]
3. [REDACTED]

It was felt that method 1 is unlikely [REDACTED] [REDACTED] have been programmed. No trials have yet been laid on for method 2 and 3.

4.3. [REDACTED]

4.4. Dr. [REDACTED] said that from the physics point of view the choice would be.

1. [REDACTED]
2. [REDACTED]

The difficulty [REDACTED] is to get enough [REDACTED] and that a bad pattern may result.

4.5. During the ensuing discussion Mr. [REDACTED] said that the [REDACTED] appeared easier from the engineering aspect but was the most unlikely to work. He was also concerned [REDACTED] Major [REDACTED] also emphasised this latter point and also said that [REDACTED] Major [REDACTED] also made the point that although a poor result may be obtained from [REDACTED] this did not necessarily mean that the fundamental principle was wrong. Mr. [REDACTED] said that we had a fair amount of experience with [REDACTED]

4.6. Mr. [REDACTED] pointed out that [REDACTED] Major [REDACTED] was asked to look at the method of [REDACTED]

[REDACTED] assuming that screws cannot be used.

Major [REDACTED]

[REDACTED] Major [REDACTED] agreed to suggest the appropriate [REDACTED]

Major [REDACTED]

4.7. Mr. [REDACTED] asked what effect [REDACTED] and it was agreed that Mr. [REDACTED] would study the problem.

Mr. [REDACTED]

5.

5.1. There was a discussion on the [REDACTED] for Blue Fox when the [REDACTED] was in production. There was a disadvantage with a [REDACTED]

6. Mixed B.F. Safety Precautions

6.1. The safety problems associated B.F. mixed were discussed. Major [REDACTED] agreed to discuss with Mr. [REDACTED]

It was agreed to hold the next meeting in the Conference Room, Building [REDACTED] on 4th July, at 2.15 p.m.

[REDACTED]

Secretary

Building [REDACTED],  
A.W.R.E., Aldermaston.

27th June, 1957.

Distribution

All Present.

Mr. [REDACTED]	C.E.
Mr. [REDACTED]	S.S.M.D.
Dr. [REDACTED]	S.S.F.D.
Mr. [REDACTED]	S.M.M.

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~~TOP SECRET~~

Ref. BA/44/01  
Copy 2 of 15 copies  
Page 1 of 2 Pages

Minutes of a meeting held in the Conference Room Building on Friday 10th May, at 2.30 p.m., to record progress and review plans for the Blue Fox Weapon.

BLUE FOX

<u>PRESENT</u>	1 Mr. [redacted]	H.A.D.	(Chairman)
	2 Dr. [redacted]	S.S.P.	
	3 Mr. [redacted]	S.S.P.D.	
	4 Mr. [redacted]	S.T.A.	
	5 Mr. [redacted]	S.D.P.	
	6 Mr. [redacted]	S.D.P.	
	7 Major [redacted]	S.P.D.S.	
	8 Lt. Col. [redacted]	H.A.D.	
	9 Lt. Col. [redacted]	S.S.P.P.	
	10 Mr. [redacted]	S.S.W.P.	
	11 [redacted]		
	12 [redacted]		

13  
17 [redacted] 22.3.60  
15.3 [redacted] 5.6.60

Correction to previous minute Para 3.5 Mr. [redacted] said that [redacted]

Action

1. [redacted]
  - 1.1. Major [redacted] said that G.C. had now successfully [redacted] which was very near the theoretical density. It was hoped to have some [redacted] soon. He promised to get details of the specific heat and melting point for Mr. [redacted] Major
  - 1.2. Dr. [redacted] asked if he could have some [redacted] firings and Major [redacted] promised to arrange this. In reply to Mr. [redacted] Major [redacted] said that there were no machining problems with the material. Major
  - 1.3. A discussion followed on the best ways of incorporating [redacted] trials in the programme and after various suggestions were made it was agreed to bring the matter up at Mr. [redacted] meeting on 22nd May and Mr. [redacted] was asked to give guidance. Mr.

2. Weapon Yield

Mr. [redacted] said that although he wished to study the problem still further his estimate that [redacted] Mr. [redacted] agreed to check the figures for the next meeting

3. Programme

3.1. A detailed discussion was held on the immediate programme. Mr. [redacted] pointed out that the [redacted] method was his last /choice



Action

choice and he was not keen to fire round 6049 as at present designed and was more interested in firing [redacted] It was finally agreed that the firing order be as follows.

Maj. [redacted]  
Col. [redacted]

- 1. Round 6048 - [redacted]
- 2. Round 6050 - As 6048 but with [redacted]
- 3. Round 6049 Repeat of either 6048 or 6050.

It was also agreed that [redacted]

Maj. [redacted]

3.2. Mr. [redacted] remarked that the [redacted] programme was in jeopardy because of the non delivery of the [redacted] It was pointed out that the [redacted] had been delayed because of Grapple priority work but there was every hope that it would now be delivered within the next week and not by the 24/5 as previously estimated.

After discussion of possible requirements for home firings it was finally agreed that Dr. [redacted] will detail requirements for firing during June and July.

Dr. [redacted]

3.3. In connection with the overseas Minor Trials, Mr. [redacted] stated that he had submitted a programme for approval. As far as Blue Fox is concerned this calls for [redacted] with identical [redacted] assemblies and [redacted] If [redacted] is not available then only two rounds will be shipped. (Secretary's note:- The trials have not been ordered in accordance with above decision. If C3 and C4 have [redacted] their minor rounds will have [redacted] but two different types of [redacted] are called for. If C3 and C4 have [redacted] then 2 minor rounds with [redacted] will have [redacted] but 2 minor rounds with [redacted] will have [redacted]).

Mr. [redacted]

4. System

4.1. Discussion then centred on [redacted] Major [redacted] said that he wished to get a [redacted] It was finally agreed that Major [redacted] should proceed with same designs [redacted] It was also agreed after discussion [redacted] that Major [redacted] would present designs at the next meeting and all present would in the meantime give some thought to possible [redacted] requirements.

Maj. [redacted]

Maj. [redacted]

All present

The next meeting will be held in the Conference Room, Building [redacted] on June 5th at 2.15 p.m.

[redacted]  
Secretary

31st May, 1957.

Distribution: [redacted] present S.S.M.D. S.W.K.  
C.E. S.S.P.D. S.M.M.

Minutes of a Meeting held in the Conference Room Building [redacted], on Thursday 11th April, at 10.00 a.m., to record progress and review plans for the Blue Fox Weapon.

BLUE FOX

<u>PRESENT:</u>	Mr. [redacted]	Chairman.	H.W.D.
	Dr. [redacted]		S.S.W.A. ✓
	Mr. [redacted]		S.D.P.
	Mr. [redacted]		S.D.P.
	Major [redacted]		S.M.D.E.
	Lt. Col. [redacted]		H.W.D.
	Lt. Col. [redacted]		S.S.W.P.
	Mr. [redacted]		S.S.W.P.
	Mr. [redacted]		S.S.W.A.

Correction to previous minutes:- Delete in para. 5.3 "and Mr. [redacted] said that he was satisfied with [redacted] but the ideal material would be [redacted] Insert "Mr. [redacted] agreed". ✓

1. Antler Trial Rounds Action

It was noted that the Antler Trial Rounds are as follows:-

- Round C3 is Blue Fox [redacted]
- Round C4 is Blue Fox [redacted]

2. R.A. Design

2.1 The Chairman stated that the design of the R/A assemblies are as shown in DO SK 5723 Issue 4 and DO SK 5851 Issue 3. Major [redacted]

2.2 The completion dates for the R/A assemblies were given as follows:

- C3 - 17th May.
- C4 - 25th June.

3. Implosion System

3.1 There was a long discussion about the present [redacted] design and the effect of results obtained from the firing trials.

3.2 Mr. [redacted] informed the meeting that [redacted]

[redacted] A discussion then followed on the results of the [redacted] and the [redacted] Mr. [redacted] said that [redacted]

Mr. [redacted] stated that there was nothing to indicate that the [redacted] as causing distortion to the picture.

3.3. Mr. [redacted] expressed concern [redacted] and Mr. [redacted] agreed [redacted] ✓

In broad terms Mr. [redacted] thought that [redacted]  
[redacted]

3.4 Mr. [redacted] mentioned that [redacted] and it was expected that results of a firing would be available within 2 weeks. Dr. [redacted] and Mr. [redacted] both said that they preferred to wait for [redacted] before firing a [redacted] Mr. [redacted] considered that the [redacted] must be fired before the end of May.

3.5 [redacted]

3.6 Mr. [redacted] suggested that in the Antler rounds [redacted] Major [redacted] was asked to incorporate this change.

Major [redacted]

Home trials will [redacted]

3.7 Major [redacted] raised the point of [redacted] Dr. [redacted] felt that this should not be in the programme before the end of June. It was agreed to keep the point in mind during the investigation [redacted]

4. Programme

4.1 The immediate programme was then discussed at length and the following agreement reached. [redacted] would make arrangements for the manufacture [redacted]

- (a)
- (b)
- (c)
- (d)

[redacted]

These [redacted] would be incorporated in [redacted] round and must be completed by end of May.

Major [redacted]

4.2 It was announced that the W.D.P.C. have agreed to the firing of [redacted] in Australia and Mr. [redacted] will propose the programme. The rounds will be fired after Antler.

5. Use of [redacted]

Mr. [redacted] said that the technical side was now covered but that the explosion characteristics must be studied from scratch. A discussion followed about the probable target dates for home development trials and the practical difficulties of making [redacted] It was agreed that Mr. [redacted] would decide what is possible in this respect and that surplus [redacted] hardware could be used in trials.

Mr. [redacted]

6. Materials

The question of using alternative materials to [redacted] was discussed and it was stated that Dr. [redacted] considered that [redacted] may be suitable. The general position is that more information is required about the various metals. It was considered that [redacted] and Blue Fox should be borne in mind in any development programme.

✓

7. [redacted]

Major [redacted] showed several design studies for a Blue Fox [redacted] system. [redacted] It was agreed after discussion that Major [redacted] make a start to assess the engineering problems [redacted]

[REDACTED] Major [REDACTED]

The next meeting will be held in the Conference Room, Building [REDACTED] on Friday 10th May, at 2.30 p.m.

Note: The meeting was originally organised for Thursday 9th May.

[REDACTED]

Secretary

Building [REDACTED],  
A.W.P.Z.,  
Aldermaston.

6th May, 1957.

Distribution:

- All Present.
- C.M.
- S.S.M.D.
- S.S.P.D.
- S.S.P.D.
- S.S.P.D.
- Sqn. Ldr. [REDACTED]
- Mr. [REDACTED] S.M.E.
- Mr. [REDACTED] S.M.M.

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SECRET

MINUTES

Minutes of a Meeting held in the Conference Room, Building [redacted] on Friday 8th March, at 10.15 a.m., to regard progress and to review plans for the Blue Fox Weapon.

PIC SEAT:

- |                            |                |                      |
|----------------------------|----------------|----------------------|
| 1 Mr. [redacted] Chairman. | H.W.D.         | 13                   |
| 2 Grp. Capt. [redacted]    | S.S.P.D. 21.60 | 14 Destroyed 5.9.60  |
| 3 Dr. [redacted]           | S.S.P.A.       | 15                   |
| 4 Mr. [redacted]           | S.S.P.D.       | 16 Destroyed 21.3.60 |
| 5 Mr. [redacted]           | S.P.E.         |                      |
| 6 Major [redacted]         | S.P.D.         | 17                   |
| 7 Mr. [redacted]           | S.P.D.         |                      |
| 8 Mr. [redacted]           | S.P.D.         |                      |
| 9 Mr. [redacted]           | S.P.E.         |                      |
| 10 Mr. [redacted]          | S.S.P.D.       |                      |
| 11 Lt. Col. [redacted]     | S.S.P.D.       |                      |
| 12 Mr. [redacted]          | S.S.P.D.       |                      |

1. Matters arising from the Previous Meeting

Action

1.1 Mr. [redacted] reported that he had spoken to S. [redacted] about the [redacted] and the matter was now cleared.

1.2 Major [redacted] complained about the changes to the [redacted] design by fresh requirements for [redacted]. After discussion it was agreed that the reason for the fresh requirements would be raised at the W.D.P.C. on Monday 11th March, and if the requirement was confirmed the necessary changes would then be handled by the R.A. Committee. It was also agreed that the present drawings would not be altered until this procedure had been followed. It was reported that the [redacted] had already been [redacted] and could accommodate the latest proposed change.

1.3 It was reported that the data sheet for Blue Fox [redacted] had been issued. All drawings for the R.A. assembly have now been issued.

2. New Business, R.A. Design

2.1 No fresh points were raised about the [redacted] design. It was stated that [redacted] will now be [redacted].

3. Manufacture

3.1 No troubles were foreseen from the manufacturing point of view. Whilst the first [redacted] was not up to standard a second had been [redacted] and appeared to be correct. Machining was expected to start next week.

3.2 Grp. Capt. [redacted] confirmed that shipping has been arranged for the 2nd and the 10th of July.

3.3 Mr. [redacted] did not anticipate trouble with [redacted].

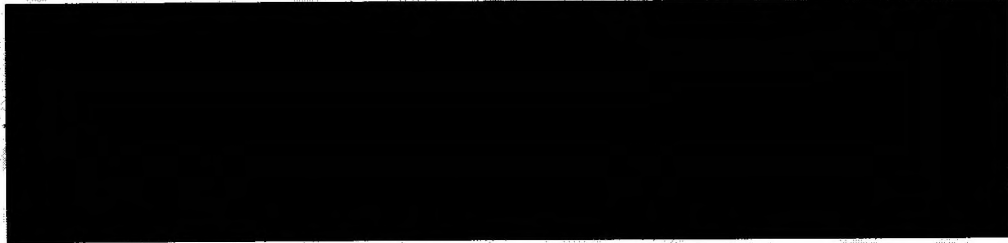
3.4 The question of using [redacted] as a [redacted] material was discussed and it was agreed that whilst for ordering purposes work would continue on the assumption that [redacted] would be used, research would proceed with the object of [redacted]. Several problems were still outstanding and it was agreed that Dr. [redacted] would compile a suggested trials programme.

Dr. [redacted]

SECRET

SECRET

/In reply

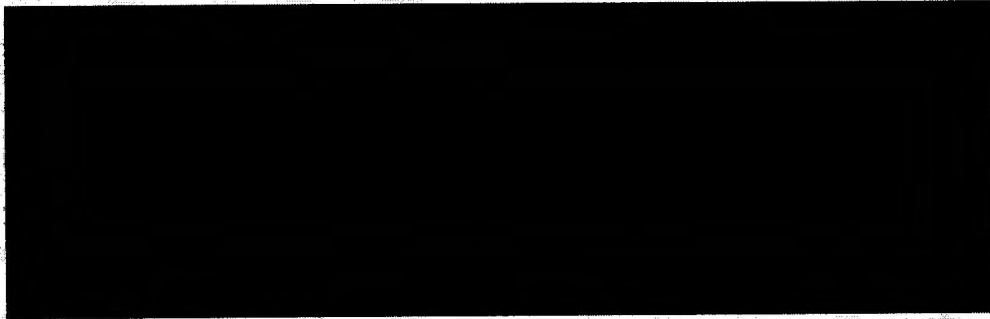


3.5 Mr. [redacted] asked that the [redacted] for [redacted] should be expedited.

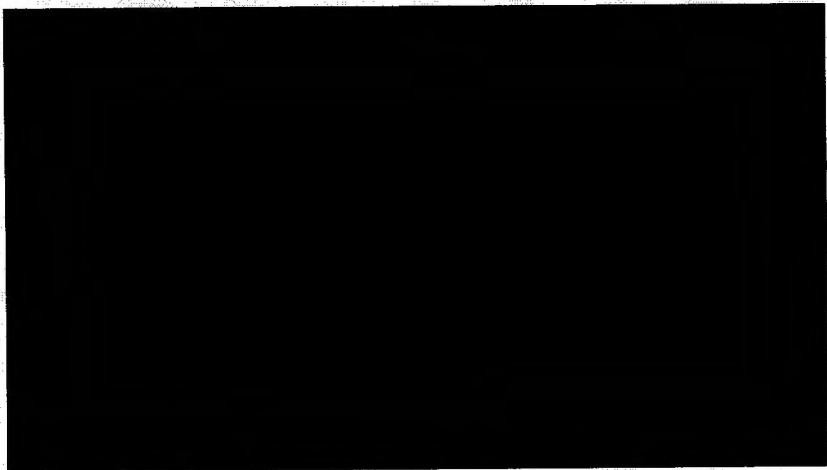
G.S.F.

3.6 In reply to Mr. [redacted], Mr. [redacted] stated that there was no possibility of using [redacted]

4. Performance



(a)



(b)

(c)

4.2 It is hoped to have [redacted] and [redacted] completed by the 15th March. S.S.F.P. will then arrange a meeting of the interested parties to discuss the results.

S.S.F.P.

5.

5.1 Major [redacted] stated that no action had yet been taken [redacted]

5.2 Mr. [redacted] asked that Major [redacted] should consider schemes for [redacted]. Mr. [redacted] felt that more information was required and agreed that preliminary design studies could be made.

S.M.D.E.

5.3 Mr. [redacted] raised the question of the material used [redacted]. Dr. [redacted] expressed the opinion that [redacted]

and Mr. [redacted]

This led to a discussion as to the desirability of [redacted] trials during the Antler minor trial series, and it was agreed that Group Captain [redacted] would raise the point at the J.D.P.C. on 11th March. Major [redacted] stated that G.M.C. would

G.S.F.P.

[REDACTED]

SECRET

It was agreed that the next meeting be held in the Conference Room, Building [REDACTED] on 11th April, at 10.30 a.m.

[REDACTED]

for S.S.P.

Building [REDACTED],  
Aldermaston.

15th March, 1957.

Distribution:

All Present.

- C.
- S.S.M.D.
- S.S.P.D.
- S.H.M.
- Sqn. Ldr. [REDACTED]

Minutes of a Meeting held in Mr. [redacted] Office on Thursday 7th February, at 10. a.m. to record progress and review plans for the Blue Box Weapon.

PRESENT:	1 Mr. [redacted]	W.D.O. (Chairman)	
	2 Group Captain [redacted]	S.S.W.P. Designer 5/6/60	
	3 Dr. [redacted]	S.B. [redacted]	12
	4 Mr. [redacted]	S.W. [redacted]	13 Designer 5/9/60
	5 Mr. [redacted]	S.D.P. [redacted]	17
	6 Mr. [redacted]	S.D.P. [redacted]	5
	7 Major [redacted]	S.M.D.E. [redacted]	16 Designer 21-2-60
	8 Mr. [redacted]	S.M.M. [redacted]	
	9 Mr. [redacted]	S.D./P.E. [redacted]	
	10 Lt. Col. [redacted]	[redacted]	
	11 Mr. [redacted]	S.D. [redacted]	

Action

1. Mr. [redacted] said that discussion now fell into two broad divisions of Design and Production and he proposed to deal firstly with the design aspect.

2. DESIGN

2.1. Mr. [redacted] said that the W.D.P.O. had considered the R/A design for Blue Box [redacted] and had agreed to the broad terms. [redacted] Drawing Office sketch 5725 refers. Mr. [redacted] agreed that this requirement was now firm.

2.2. Mr. [redacted] announced that Blue Box had now been chosen for the [redacted] round at Antler. This round is additional to the Blue Box [redacted] round and he asked Mr. [redacted] if any details of the [redacted] assembly were available. Mr. [redacted] replied that Dr. [redacted] is responsible for the R/A design. Mr. [redacted] stated that he had received preliminary details and that it had been agreed that [redacted] both Blue Box [redacted] and Blue Box [redacted] would be similar.



2.4. At Mr. [redacted] request Major [redacted] promised to have a Data Sheet of Blue Box [redacted] available for the W.D.P.O. by Monday 11th February. Maj. [redacted]

2.5. Mr. [redacted] said that Dr. [redacted] had decided that time did not permit the detailed calculations to be made to determine [redacted] Group Captain [redacted] pointed out that Air Transport would give another 6/8 weeks for delivery beyond the shipping date. It was agreed to proceed on the basis that a [redacted]

2.6. No points were raised on [redacted] design and Major [redacted] said that drawings and an order would be issued on the 11th February. It was pointed out that the production of [redacted] may well be a bottleneck for the live weapons. Maj. [redacted]

2.7. ....



Action

2.7. Mr. [REDACTED] said that he had the necessary information on the [REDACTED]

2.8. Major [REDACTED] confirmed that all details of [REDACTED]

PRODUCTION

3.1. After discussion it was agreed that emphasis be given to the production of [REDACTED]

3.2. The question of [REDACTED] was again raised but Mr. [REDACTED] said that [REDACTED] discussion followed about the filling material for the home [REDACTED] Mr. [REDACTED] considered that if the flight time of [REDACTED] was being investigated [REDACTED] but if [REDACTED] were to be inserted in the [REDACTED] then [REDACTED] be used.  
(Dr. [REDACTED] has since confirmed from Dr. [REDACTED] that [REDACTED])

3.3. Major [REDACTED] said he would like to go ahead with investigations to find a suitable alternative material for [REDACTED] Mr. [REDACTED] thought that we should wait until the first [REDACTED] Major [REDACTED] was fired before any positive action is taken but asked Major [REDACTED] in the meantime to prepare a specification for a development contract.

3.4. Mr. [REDACTED] asked if any stressing had been done on [REDACTED] Major [REDACTED] said some work had been done on [REDACTED] Major [REDACTED] and Mr. [REDACTED] asked that the information be given to Mr. [REDACTED]

It was agreed to hold the next meeting on Friday 6th March at 10.00 a.m. in the Conference Room, Building [REDACTED]

[REDACTED]

Secretary

Building [REDACTED],  
A.W.R.E.,  
Aldermaston.

15th February, 1957.

Distribution:

- All those present.
- C.A.
- S.S.F.D.
- S.S.P.D.
- S.S.F.D.
- S.H.M.

Minutes of Meeting held in Mr. [redacted] Office on Thursday 3rd January, at 10.00 a.m. to report progress and review plans for the Blue Fox Weapon.

PRESENT:

- |                          |             |
|--------------------------|-------------|
| Mr. [redacted]           | W.D.        |
| Group Captain [redacted] | S.S.V.P.    |
| Dr. [redacted]           | S.S.V.A.    |
| Mr. [redacted]           | S.V.X.      |
| Mr. [redacted]           | S.D.P.      |
| Mr. [redacted]           | S.D.P.      |
| Major [redacted]         | S.M.D.P.    |
| Mr. [redacted]           | S.M.M.      |
| Mr. [redacted]           | S.S.V.P./P. |

1. Mr. [redacted] said that the weapon should in future be referred to by the code name "Blue Fox".

2. Mr. [redacted] also stated that Mr. [redacted] had asked him to make it clear that the design completion date by the end of May referred to the implosion system design and not to the R.A. design. Major [redacted] when asked when the R.A. design would be complete, said that final information should be available by next month. Major [redacted]

2.1 Group Captain [redacted] stressed the need to have details of the [redacted] as quickly as possible, in order that programming can proceed.

2.2 It was agreed, that because of the relative simplicity of the R.A. Components, that final manufacture could possibly be left till after May, but rough details of the R.A. requirements should be sent to Mr. [redacted] in order that he may place the requirements into his programme. Major [redacted]

3. Problems of [redacted]

3.1 Problems arising from [redacted]. Mr. [redacted] asked Mr. [redacted] if he could comment on the problem. Mr. [redacted] stated that it was difficult to comment on the problem on the basis of theoretical conclusions alone, and that in his opinion it would be necessary to wait for the trial before any conclusive evidence could be obtained. During the discussion that followed, Major [redacted] stated that the [redacted] may affect the results, and Dr. [redacted] felt that the experimental approach to the general problem of [redacted] should be made.

3.2 It was agreed that in a weapon of Blue Fox scale, there was more likelihood of trouble from the problem than with a weapon of [redacted] size, because the [redacted] to the same extent.

3.3 Mr. [redacted] asked if the energy lost [redacted] was a serious factor. Mr. [redacted] did not think that any energy was lost. [redacted]

3.4 It was suggested that the [redacted] size rounds [redacted] may be used in any theoretical investigations but Dr. [redacted] felt that experiments using [redacted] could obtain necessary information at this stage. Dr. [redacted]

4. Approval of Design

4.1 Mr. [redacted] expressed the wish to have the design approved by the W.D.P.C. and Major [redacted] was asked to issue drawings to the W.D.P.C.

/members

members by Monday 14th January.

Major [redacted]

5. [redacted] Specification

5.1 Mr. [redacted] said that [redacted] would be necessary for trials purposes. It may be possible to reduce this for a service weapon, but more detailed calculations would be necessary for this purpose. Dr. [redacted] asked if there would be any variation in the specified efficiency of the service weapons when [redacted]

6. Development Programme

6.1 Group Captain [redacted] said that a development programme had been circulated. The trials were estimated to be running at least one week late. Mr. [redacted] stressed the importance of obtaining the [redacted] by the 24th January.

6.2 Mr. [redacted] promised to send a copy of the programme to Dr. [redacted]. Mr. [redacted]

6.3 Group Captain [redacted] stressed the high priority of the programme.

6.4 Mr. [redacted] said that it would not be possible to [redacted] for the Volcano trial.

7. Volcano Minor Trials Programme.

7.1 Group Captain [redacted] asked if Blue Fox Minor Trials were envisaged at Volcano. After discussion it was agreed that no requirement was foreseen at present.

8. R/A Design

8.1 Major [redacted] circulated drawings of the current design. He pointed

[redacted]

[redacted]

8.3 Mr. [redacted] agreed that it would be possible to make [redacted] be made to suit. The decision to ask [redacted] will depend on [redacted] and must be made by the end of May. Mr. [redacted] said that [redacted] Mr. [redacted]

[redacted]

It was agreed to have the next meeting in Mr. [redacted] Office on Thursday 7th February, at 10.00 a.m.

[redacted]

for S.S.W.P.

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Building [redacted],  
L.W.R.E., Aldermaston.  
21st January, 1957.

Distribution: All Present. G.E.  
S.S.J.D. S.S.I.D. S.S.W.P.  
S.J.E. S.S.J.D.

SECRET [REDACTED]

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Page 1 of 4

TOP SECRET [REDACTED]

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Page 1 of 4 pages.  
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Date of issue:- 12th December, 1956.

TOP SECRET [REDACTED]

BLUE FOX DEVELOPMENT PROGRAMME NO. 1

SUMMARY OF TRIALS REQUIRED

- (i) [REDACTED] required - out of [REDACTED] by 1st Feb. 1957.  
" - out of [REDACTED] Area by 15th Feb. 1957.  
" - to be fired by 22nd Feb. 1957.
  - (ii) [REDACTED] required - out of [REDACTED] by 15th Feb. 1957.
  - (iii) [REDACTED] required out of [REDACTED] by 1st Mar. 1957. [REDACTED] required out of [REDACTED] by 8th Mar. 1957.  
" " out of [REDACTED] Area by 8th Mar. 1957. " " out of [REDACTED] Area by 15th Mar. 1957.  
" " to be fired by 15th Mar. 1957. " " to be fired by 21st Mar. 1957.
  - (iv) [REDACTED] required out of [REDACTED] by 15th Mar. 1957. [REDACTED] required out of [REDACTED] by 22nd Mar. 1957.  
" " out of [REDACTED] Area by 22nd Mar. 1957. " " out of [REDACTED] Area by 29th Mar. 1957.  
" " to be fired by 29th Apl. 1957. " " to be fired by 5th Apl. 1957.
  - (v) [REDACTED] required at weekly intervals during the following periods.  
out of [REDACTED] 1st Mar. 1957 - 5th Apl. 1957.  
out of [REDACTED] Area 15th Mar. 1957 - 17th Apl. 1957.  
to be fired 22nd Mar. 1957 - 10th Apl. 1957.
- Details for the [REDACTED] to be given later.
- (vi) A decision [REDACTED] is required by 25th Feb. 1957.

SECRET [REDACTED]



Serial No. (a)	Description (b)	Ancillary (c)	PROGRAMME COMPLETION DATES			Remarks (h)
			Design (d)	[REDACTED] (e)	Area (f)	
<u>MANUFACTURING TOOLS</u>						
	<u>Tools for [REDACTED] use</u>					
	[REDACTED] OD Form 1		Complete	1.1.57		Tools ordered to be ordered by S.M.E. internally are not programmed, these include the following:- [REDACTED] Forming Die Container Forming Die Pressing jigs for [REDACTED] Spinning chuck for [REDACTED] Location fixture - Exploder Holder to [REDACTED]
	" " OD Form 2		Complete	1.1.57		
	" " OD Form 3		Complete	1.1.57		
	[REDACTED] ID Form 1		Complete	1.1.57		
	" " ID Form 2		Complete	1.1.57		
	" " ID Form 3		Complete	1.1.57		
	<u>Tools for [REDACTED] Area Use</u>					The following tools will be designed and manufactured by [REDACTED] Machining Fixtures [REDACTED] profile [REDACTED]
	[REDACTED] Form 1		Complete	1.1.57		
	" " Form 2		14.12.56	14.1.57		
	" " Form 3		14.12.56	14.1.57		
	[REDACTED] Form 1		14.12.56	14.1.57		
	" " Form 2		14.12.56	14.1.57		
	" " Form 3		14.12.56	14.1.57		
	[REDACTED] 2 off		Complete	14.1.57		
	[REDACTED] 2 off		Complete	14.1.57		

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Trial No. (a)	Description (b)	Ancillary (c)	PROGRAMME COMPLETION DATES				Remarks (h)
			Design (d)	[REDACTED] (e)	[REDACTED] Area (f)	Equlness (g)	
	[REDACTED] 2 off M/C Fixture for [REDACTED]  Assembly Tools & Transit Equip. for [REDACTED] Area. Assembly Fixture Transit Boxes [REDACTED] Transit Boxes [REDACTED] Transporting [REDACTED] Assembly Tool A " B " C " D " E " F " G		Complete Complete  1.1.57 1.1.57 1.1.57 1.1.57 1.1.57 1.1.57 1.1.57 1.1.57 1.1.57 1.1.57	14.1.57 14.1.57  1.3.57 1.3.57 1.3.57 1.3.57 1.3.57 1.3.57 1.3.57 1.3.57 1.3.57			
1.6001 1.6002 1.6003	[REDACTED] Trials, on [REDACTED]	[REDACTED] 3 off Firing Stand	Complete	1.2.57	15.2.57	22.2.57	
1.6004 1.6005 1.6006	[REDACTED] Trials, on [REDACTED]	[REDACTED] 3 off Firing Stand	Complete	1.2.57	15.2.57	22.2.57	
1.6007 1.6008 1.6009	[REDACTED] Trials, on [REDACTED]	[REDACTED] 3 off Firing Stand.	Complete	1.2.57	15.2.57	22.2.57	

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1.6010 1.6011 1.6012	[REDACTED] Trials. [REDACTED]	[REDACTED] 3 off Firing Stand	Complete	1.2.57	15.2.57	22.2.57	
1.6013 1.6014 1.6015	[REDACTED] Trials. [REDACTED]	[REDACTED] 3 off Firing Stand	Complete	1.2.57	15.2.57	22.2.57	
1.6016 1.6017 1.6018	[REDACTED] Trials. [REDACTED]	[REDACTED] 3 off Firing Stand	Complete	1.2.57	15.2.57	22.2.57	
1.6019 1.6020 1.6021	[REDACTED] Trials. [REDACTED]	[REDACTED] 3 off Firing Stand	Complete	1.2.57	15.2.57	22.2.57	
1.6022 1.6023 1.6024	[REDACTED] Trials. [REDACTED]	[REDACTED] 3 off Firing Stand	Complete	1.2.57	15.2.57	22.2.57	
1.6025 1.6026 1.6027	[REDACTED] Trials. [REDACTED]	[REDACTED] 3 off Firing Stand	Complete	1.2.57	15.2.57	22.2.57	
1.6028 1.6029 1.6030 1.6031 1.6032 1.6033	[REDACTED] Trials Details to be decided later.	[REDACTED] 6 off Firing Stand					1.6034

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Trial No. (a)	Description (b)	Ancillary (c)	PROGRAMME COMPLETION DATE				Remarks (h)
			Design (d)	[REDACTED] (e)	[REDACTED] Area (f)	Foulness (g)	
1.6034 1.6035 1.6036	[REDACTED] Details to be decided later.	[REDACTED] 3 off Firing Stand.					
3.6037 3.6038	[REDACTED]	[REDACTED] 2 off Firing Stand	28.12.57	1.3.57 (See col (h))	8.3.57	15.3.57	Decision on [REDACTED] required by 25.2.57 if delivery date from [REDACTED] is to be met.
3.3039 3.3040	[REDACTED]	[REDACTED] 2 off Firing Stand	28.12.57	8.3.57 (See col (h))	15.3.57	22.3.57	Decision on [REDACTED] required by 25.2.57 if delivery date from [REDACTED] is to be met.
3.6041 3.6042	[REDACTED]	[REDACTED] 2 off Firing Stand	28.12.57 (see col. (h))	15.3.57	22.3.57	29.3.57	[REDACTED] needed by 25th Feb. 1957.

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3.6043 3.6044	[REDACTED] Trials [REDACTED]	[REDACTED] 2 off firing stand	28.12.57 (See col. (h))	22.3.57	29.3.57	5.4.57	Decision on [REDACTED] needed by 25th Feb. 1957.
11.6045	[REDACTED] Trial with [REDACTED] [REDACTED]	[REDACTED] 1 off firing stand	1.1.57 (See col. (h))	1.3.57	15.3.57	22.3.57	Decision on [REDACTED] needed by 25th Feb. 1957.
11.6046	[REDACTED] Trial with [REDACTED] [REDACTED]	[REDACTED] 1 off firing stand	1.1.57 (See col. (h))	8.3.57	22.3.57	29.3.57	Decision on [REDACTED] needed by 25th Feb. 1957.
11.6047	[REDACTED] trial with [REDACTED] [REDACTED]	[REDACTED] 1 off firing stand	1.1.57 (See col. (h))	15.3.57	29.3.57	5.4.57	Decision on [REDACTED] needed by 25th Feb. 1957.
11.6048	[REDACTED] Trial with [REDACTED] [REDACTED]	[REDACTED] 1 off firing stand	1.1.57 (See col. (h))	22.3.57	5.4.57	12.4.57	Decision on [REDACTED] needed by 25th Feb. 1957.

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Trial No. (a)	Description (b)	Ancillary (c)	PROGRAMME COMPLETION DATES				Remarks (h)
			Design (d)	[REDACTED] (e)	[REDACTED] Area (f)	Foulness (g)	
11.6049	[REDACTED] Trial with [REDACTED] [REDACTED]	[REDACTED] 1 off firing stand	1.1.57 (See col. (h))	29.3.57	12.4.57	19.4.57	[REDACTED] needed by 25th Feb. 1957.
11.6050	[REDACTED] Trial with [REDACTED] [REDACTED]	[REDACTED] 1 off firing stand	1.1.57 (See col. (h))	5.4.57	19.4.57	26.4.57	[REDACTED] needed by 25th Feb. 1957.
11.6051 11.6052 11.6053 11.6054 11.6055 11.6056	[REDACTED] Trial. Details to be given later.	[REDACTED] 6 off Firing Stand					

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[REDACTED] CAPT., R.A.  
for S.S.W.P.

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Mr.	[REDACTED]	H.W.D.	5
Mr.	[REDACTED]	S.S.P.D.	6
Mr.	[REDACTED]	<del>D.S.S.X.</del>	<del>7-8</del>
Dr.	[REDACTED]	S.X.X.	9 - 13
Mr.	[REDACTED]	S.I/W.E.	14 - 15
Major	[REDACTED]	S.M.D.E.	16
Mr.	[REDACTED]	S.A.X.	17
Mr.	[REDACTED]	S.M.E.	18 - 22
Dr.	[REDACTED]	S.D.D.	23
Mr.	[REDACTED]	S.X.F.	24
Mr.	[REDACTED]	S.W.X.	25 - 26
Mr.	[REDACTED]	S.A.X.	27 - 29
Mr.	[REDACTED]	S.X.F.	30
Mr.	[REDACTED]	S.M.D.E.	31
Mr.	[REDACTED]	S.M.D.E.	32
Mr.	[REDACTED]	S.M.D.E.	33
Mr.	[REDACTED]	S.M.D.E.	34
Mr.	[REDACTED]	B.20.	35
Lt. Cdr.	[REDACTED]	S.S.W.P/P.	36
Sq. Ldr.	[REDACTED]	S.S.F.P/P.	37
Sq. Ldr.	[REDACTED]	S.S.W.P/P.	38
Capt.	[REDACTED]	S.S.W.P/P.	39
Mr.	[REDACTED]	S.S.W.P/P.	40
File	[REDACTED]		41

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Minutes of Meeting held in Mr. [REDACTED] Office  
on Friday, 7th December, 1956 at 10 a.m. to record  
progress and review plans for the [REDACTED] Weapon

Please make the following correction to the Minutes of the above meeting:-

Para. 12



Captain [REDACTED] R.A.  
for Squadron Leader [REDACTED] S.S.W.F.

Building [REDACTED]  
A.F.R.E.,  
Aldermaston.  
17th December, 1956.

Distribution: All present  
C.E.  
S.S.M.D.  
S.S.P.D.  
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Minutes of Meeting held in Mr. [redacted] Office  
on Friday, 7th December, 1956 at 10 a.m. to record  
progress and review plans for the [redacted] Weapon  
(this weapon also covers [redacted])

Present: Mr. [redacted]	D.C.E./W
Group Captain [redacted]	S.S.F.P.
Mr. [redacted]	S.W.X.
Mr. [redacted]	S.D.F.
Mr. [redacted]	S.D.F.
Mr. [redacted]	S.M.M.
Major [redacted]	S.M.D.E.
Mr. [redacted]	S.B./M.E.2
Sqdn. Ldr. [redacted]	S.S.W.P.
Dr. [redacted]	S.S.W.A.

Action for all

1. Mr. [redacted] opened the meeting by explaining that a Code Name had been allocated for [redacted] weapon. Financial estimates for the project had been assessed and forwarded to the Ministry of Supply for approval. All concerned should note that Project Numbers had been allocated to its development.

Design of the Implosion System

2. Major [redacted] produced completed drawings for the projected implosion system and the design was discussed in detail. [redacted]

Problems of [redacted]

[redacted]

Mr. [redacted]

Approval of Design

Major [redacted]

4. It was agreed that as no alternative design was forthcoming at this stage, manufacture should commence with the present design. Major [redacted] was asked to circulate these designs for study and comment.

Reducing Project Weight

Mr. [redacted]

5. It was stated that [redacted] Some saving in weight could be expected when the design was "cleaned up". Mr. [redacted] informed the meeting that [redacted] It was agreed that such development was premature at present but a decision on the matter would be taken in the new year.

Design of the R.A. System

Action for all

6. Mr. [redacted] said that the [redacted] had been discussed with Mr. [redacted] It had been decided however, that [redacted] Major [redacted] produced a sketch of the R.A. design [redacted] He was requested to circulate the design for comment at the next meeting.

Computed Yields for Various Designs

7. Mr. [redacted] said that the yield, [redacted] This figure was based [redacted] An increase in yield [redacted]

8. Mr. [redacted] said he had looked into various factors which could give an increased yield from [redacted] these were:-

a) [redacted]

b) [redacted]

c) [redacted]

Mr. [redacted] went on to say that an increased yield [redacted]

9. In the discussion which followed, Mr. [redacted] said he thought there would be a limitation on the minimum amount of [redacted] which could be used owing to problems [redacted] Mr. [redacted] said that he was [redacted] until August, 1957 and that date would leave no time for development. [redacted] stated that [redacted]

Action for all

Weight of [redacted]

10. Need was expressed for a clear definition of what was to be [redacted] At present it was not clear whether this term stipulated the weight [redacted] Mr. [redacted] decreed that the term [redacted]

Action for all

Specification of [redacted]

Mr. [redacted] 11. Mr. [redacted] said he had not yet seen a specification for the size and strength of [redacted] Mr. [redacted] was asked to state details [redacted]

Risks

12. Mr. [redacted] was questioned on the [redacted] risk. He replied that [redacted]

Mr. [redacted] was asked to compute the [redacted] risk for the latest [redacted] on the assumption [redacted] so that a decision could be taken as to whether the risk was acceptable. Mr. [redacted] remarked that a graph of [redacted] risk/yield would be extremely useful and said he would produce it early next year.

Mr. [redacted]

Development Programme

13. Major [REDACTED] gave details of the proposed development programme; this was summarised as follows:-

[REDACTED] fired by the end of February 1957  
[REDACTED] fired by early March  
[REDACTED] fired by early April  
[REDACTED] fired by mid-May

Line of Development

14. It was stated that the programme was directed toward [REDACTED] To achieve this in the short time available [REDACTED] were to be ordered in sufficient quantities to obviate delays. All other components were to be standardized and could be ordered from the outset. The development programme was agreed in principle.

Major [REDACTED]

Loading upon Foulness

15. Dr. [REDACTED] with next year's strenuous [REDACTED] firing programme to mind, doubted whether Foulness could accept this additional load in the light of the interchange of personnel which would be taking place between Foulness Porton and [REDACTED] Area in the new year. Group Captain [REDACTED] advised the meeting that he will be circulating shortly a composite programme showing the weekly loading expected upon all Groups for the forthcoming six months. Mr. [REDACTED] said the programme would be awaited with interest and requested addressees to comment as necessary.

Action  
for allFinal Design Date

16. Mr. [REDACTED] advised the meeting that operation Sapphire was expected to take place in September 1957. It was, therefore, important at this stage to fix the date by which the final designs must be issued. It was agreed that completed designs for the trial round should be ready by the end of May 1957. This should allow adequate time for manufacture to meet a flying date in July 1957.

Action  
for allNext Meeting

Action for all It was agreed to hold the next meeting in Mr. [REDACTED] office on Thursday, 3rd January 1957 at 10 a.m.

Please Note: Amended figures for [REDACTED] risk in para. 12 have been included at Mr. [REDACTED] request.

[REDACTED]  
Squadron Leader, S.S.T.P.

Building [REDACTED]  
A.W.R.E.,  
Aldermaston.  
13th December, 1956

/Distribution  
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Minutes of a meeting held in Mr. [redacted] Office on Friday 9th November, at 10 a.m. to record progress and review plans for the [redacted] Weapon.

Present:- Mr. [redacted] D.C.E./W.  
Dr. [redacted] S.S.W.A.  
Mr. [redacted] S.W.X.  
Mr. [redacted] S.D.P.  
Major [redacted] S.M.D.E.  
Mr. [redacted] S.M.M.  
Mr. [redacted] S.S.W.P.

Action

1. Mr. [redacted] opened the discussion by referring to the requirement for a new warhead for a series of ground to air and ground to ground rocket missiles. The basic specification [redacted]

[redacted] Because of the need to know the weight of the warhead for incorporation in the rocket design pressure is being put on the Establishment to finalise the design as soon as possible and it had been decided that a live firing will be held in the Sapphire programme scheduled to commence in September 1957. [redacted]

2. Major [redacted] gave details of a proposed warhead. In this design the weight was slightly more than that specified but it was hoped to make reductions at the detail design stage. [redacted]

[redacted] The design was then discussed in detail.

3. R/A Design [redacted]

4. [redacted]

Mjr. [redacted]

5. [redacted]

Mr. [redacted]

6. [redacted]

Mjr. [redacted]



general question of [redacted] should be raised outside the meeting: [redacted]

7. Major [redacted] stated that [redacted] and Mr. [redacted] agreed to this arrangement. [redacted]

8. Explosion System Major [redacted] gave an outline of the proposed development programme. [redacted] He expected to receive details of the forms early next week and said that he [redacted] He hoped that drawings of all types would be available for issue to the workshops by the end of November. [redacted]

Mjr. [redacted]

Orders for forgings etc. would be on this basis.

9. A discussion followed on [redacted] Major [redacted] stated that he thought [redacted] He thought that [redacted] It was agreed that Dr. [redacted] should look into the matter with his staff. Mr. [redacted] stressed that [redacted] and very strong arguments would have to be put forward to make a change. Major [redacted] stated that [redacted] he was [redacted] He would check this with Mr. [redacted]

Mjr [redacted]

10. Mr. [redacted] was asked to give the best combinations of materials for [redacted] trials and it was agreed that the final requirements for the [redacted] should be given not later than January.

Mr. [redacted]

11. A tentative programme was discussed and it was agreed that [redacted] details must be frozen by the end of April. Major [redacted] and Mr. [redacted] are to discuss the programme in more detail next week.

Mjr [redacted]

12. Mr. [redacted] said in reply to Mr. [redacted] that [redacted]

13. The [redacted] design was discussed and it was agreed that Mr. [redacted] and Major [redacted] should decide the details so that drawings can be issued by the end of November.

Mr. [redacted]  
Mjr [redacted]

14. Mr. [redacted] said the weapon had not yet been given a code name.

15. Mr. [redacted] asked that a clear definition be given to what is [redacted] In some instances [redacted] It was agreed that guidance be given by the R/A committee on this point.

Mr. [redacted]

16. It was agreed to hold the next meeting in Mr. [redacted] office on Friday 7th December at 10 a.m.

ALL

Building [redacted]  
A.W.R.E., Aldermaston, Berks.  
14th November, 1956.

Distribution:- Those present, S.S.P.D. S.S.X.D.  
C.E. S.S.I.P.  
S.S.M.D. S.M.M.

For S.S.W.P.

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