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5 November 1959

COPY NO. 86

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NOTE BY THE SECRETARIES

to the

HOLDERS OF J.C.S. 1620/266 - 4700 (13 July 69)
 (Request for Missile Firing Results (U))

In a memorandum for the Commander in Chief, Continental Air Defense Command, dated 23 October 1959, subject: "Request for Missile Firing Results", a copy of which was furnished the Joint Chiefs of Staff, the Chief of Staff, U.S. Air Force stated:

"Reference your SRI 99-59.* Tab A** (attached) contains the information on Air Force weapon systems that is available at this Headquarters. Only test firings of missiles in the operational configuration are included."

H. L. HILLYARD,

J. O. COBB,

Joint Secretariat.

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 RET. TO RM. 2C934

* See Enclosure to J.C.S. 1620/266
 ** Enclosure hereto

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2nd N/H of JCS 1620/266

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ENCLOSURE

MISSILE FIRING RESULTS

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2nd N/H of JCS 1620/266

Enclosure

THORPL

MISSILE NO.	Date	Intended Range (NM)	Azimuth Error (NM)	Range Error (NM)	Reason for Failure
158	21 Mar 1959	1302	0.13 right	2.86 short	-
162	26 Mar	1300	0.82 left	1.29 short	-
161	16 Apr	1326	-	95 long	Long impact due to technician error in setting the range value into the guidance system. This resulted in a 95 NM set-in "error". Miss of "new" intended impact point was plus or minus 2 NM.
176	23 Apr	1300	1.66 right	0.15 short	-
164	25 Apr	1300	1.81 left	2.33 short	-
187	12 May	1300	1.66 left	1.23 short	-
184	22 May	1300	1.75 left	0.68 short	-
151	16 June	1326	-	-	Failed to program as the result of lift-off pin not being extracted from the missile.
198	25 June	1300	0.62 left	0.28 short	-
194	29 June	300	1.75 right	0.50 short	-

- 1/ In all cases:
- a. Re-entry was intended.
 - b. Intended impact target was a point.
 - c. In general, error was established by a combination of Azusa, Guidance, Impact Predictor, and SOPAR.

THOR (Continued)

Missile No.	Date	Intended Range (NM)	Azimuth Error (NM)	Range Error (NM)	Reason for Failure
203	21 July 1959	1300	-	-	Same as for Missile 191.
202	24 July	1300	2.40 left	0.65 short	-
175	3 Aug.	1326	7 left	67 long	Gross error apparently due to failure of main engine to cut off completely so that thrust continued after vernier engine cut-off. At vernier engine cut-off the guidance equation was satisfied to give a miss of 1 NM left and 1 NM long.
208	5 Aug	895	0.50 left	1.40 long	-
204	14 Aug	1300	1.4 left	1.7 short	-
190	14 Aug	1326	7 left	237 short	Gross error apparently caused by propulsion system malfunction. Data indicated probable explosion in engine section due to fuel depletion.
216	27 Aug	1300	0.38 right	1.34 short	-
217	9 Sept	1300	0.99 left	1.28 long	-
283	17 Sept	1370	3.5 right	3.5 short	Nose cone failed to separate.
222	22 Sept	1300	Successful flight. Data unavailable as yet.		
235	6 Oct	1575	2.6 right	7.0 long	Accuracy of measurement \pm 10 NM
228	6 Oct	1370	3 right	3 short	Accuracy of measurement \pm 5 NM
221	14 Oct	1300	Successful flight. Data unavailable as yet.		

JUPITER ✓

Missile No.:	Date	Intended Range (NM)	Azimuth Error (NM)	Range Error (NM)	Reason for Failure
01-22A	3 Apr 1959	1302	5 left	0.5 short	Guidance malfunction.
12	6 May	1302	4.9 right	68.9 short	High thrust in proper operation of thrust controller and propellant mixture value resulted in fuel or LOX depletion.
17	13 May	1302	0.4 left	0.26 long	-
18	28 May	1302	0.1 right	0.1 long	-
15	9 July	1302	0.7 right	0.2 short	-
19	26 Aug	300	0.22 right	0.03 short	-
23	16 Sept	1302	-	-	Unknown at present. Missile destroyed soon after lift-off because of erratic motion in roll and pitch.
24	30 Sept	1300	-	-	Preliminary data indicates impact less than 1 NM from target.

- ✓ In all cases:
- a. Re-entry was intended.
 - b. Intended impact target was a point
 - c. In general, error was established by a combination of Azusa, Guidance, Impact Predictor, and SOPAR.

ATLAS/

Missile No. Date Intended Range (NM) Azimuth Error (NM) Range Error (NM) Reason For Failure

10	14 Apr 1959	4385	-	-	Failure caused by the IOK fill and drain valve remaining on open position at lift-off.
10	18 May	4385	-	-	Attributed to low pressure helium pressurization lines which were ruptured when the airborne stock absorber malfunctioned.
20	6 June	4385	-	-	Failure in the area of the fuel staging disconnect valve resulted in a premature mixing of propellants and explosion.
10	28 July	4385	0.55 left	0.5 long	-
10	11 Aug	4385	0.31 right	0.84 long	-
20	9 Sept	3899	1.0 right	1.20 short	-
17	9 Sept	4384	0.5 left	5 short	Vernier system malfunctioned.
18	6 Oct	4385	Successful flight. Data unavailable as yet.		
20	9 Oct	4385	Successful flight. Data unavailable as yet.		

REPRODUCED AT THE NATIONAL ARCHIVES

- 1/ In all cases:
- a. Re-entry was intended.
 - b. Intended impact target was a point.
 - c. In general, error was established by a combination of Azusa, Guidance, Impact Predictor, and SOPAR.

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(Results of Unit Operational Test-Phase III)

Missile No.	Date	Azimuth Error (ft.) ^{2/}	Range Error (ft.) ^{2/}	Reason for Failure
93	1 Apr 1959	4500 left	28000 long	(Gross error)
100	3 Apr	-	-	Failed to lock-on
66	6 Apr	1700 right	8200 long	
82	10 Apr	-	-	Programmed too low; impacted prematurely
92	10 Apr	1500 right	4500 long	
90	13 Apr	-	-	Partial tracking
94	14 Apr	500 left	1400 long	
86	17 Apr	1200 right	4600 long	
89	29 Apr	1600 left	7000 long	
79	30 Apr	-	-	Partial tracking
81	1 May	-	-	Tracked 95%. Failed to follow programmed trajectory.
107	8 May	-	-	Failed to track all the way.
72	15 May	-	-	Failed to track all the way.
108	19 May	2000 right	4000 long	
75	21 May	-	-	Altitude program too low. Failed to go total distance.
70	8 June	Tracked, recovered, but not scored.		
77	12 June	-	-	Failed to track all the way.
74	15 June	Successful flight. Score not available.		

1/ In all cases:

- a. Re-entry was not intended; missile does not leave atmosphere.
- b. Intended impact point was a point in space.
- c. Error was established by telemetry signal which indicated where the fuze did or would have detonated the warhead.
- d. Range was approximately 425 NM.
- e. ATRAN (map-matching) guidance was employed.

2/ It is believed that most of the errors that caused a displacement of the mean point of impact from the target point are map errors. The following groups of missiles were programmed to follow the same map:

- Chart 9 - 66, 94 and 92.
- Chart Mod 9 - 86, 89 and 108.
- Chart 6 - 93.

These groups of missiles should be used independently of each other to determine the mean point of impact of the group.

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Attachments 2 and 3 (TAC/OA/M-98 and M-100) to the basic letter contained data on 44 Matador firings. These are representative of the more than 100 Matador firings to date.

TITAN

There have been no firings in the operational configuration as yet.

SNARK

There have been little data gathered on the accuracy of the Snark and much of it has been unsatisfactory.

AIR LAUNCHED BALLISTIC MISSILE

There have been no firings in the operational configuration.

HOUND DOG

There have been no firings in the operational configuration as yet.

RASCAL

There have been insufficient amounts of satisfactory data gathered on the accuracy of Rascal. Rascal was cancelled in December 1958.

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