

X-721-65-456

NASA TM X- 55429

NASA SOUNDING ROCKET PROGRAM SUMMARY OF SOUNDING ROCKET FLIGHTS

FACILITY FORM 802

N66-20987	
(ACCESSION NUMBER)	(THRU)
399	1
(PAGES)	(CODE)
Tmx-55429	31
(NASA CR OR TMX OR AD NUMBER)	(CATEGORY)

GPO PRICE \$ _____

CFSTI PRICE(S) \$ _____

Hard copy (HC) 7.00

Microfiche (MF) 2.00

653 July 65

NOVEMBER 1965



————— GODDARD SPACE FLIGHT CENTER —————
GREENBELT, MARYLAND

X-721-65-456

NASA SOUNDING ROCKET PROGRAM
SUMMARY OF SOUNDING ROCKET FLIGHTS

by

J. A. Sterhardt

November 1965

Goddard Space Flight Center
Greenbelt, Maryland

ABSTRACT

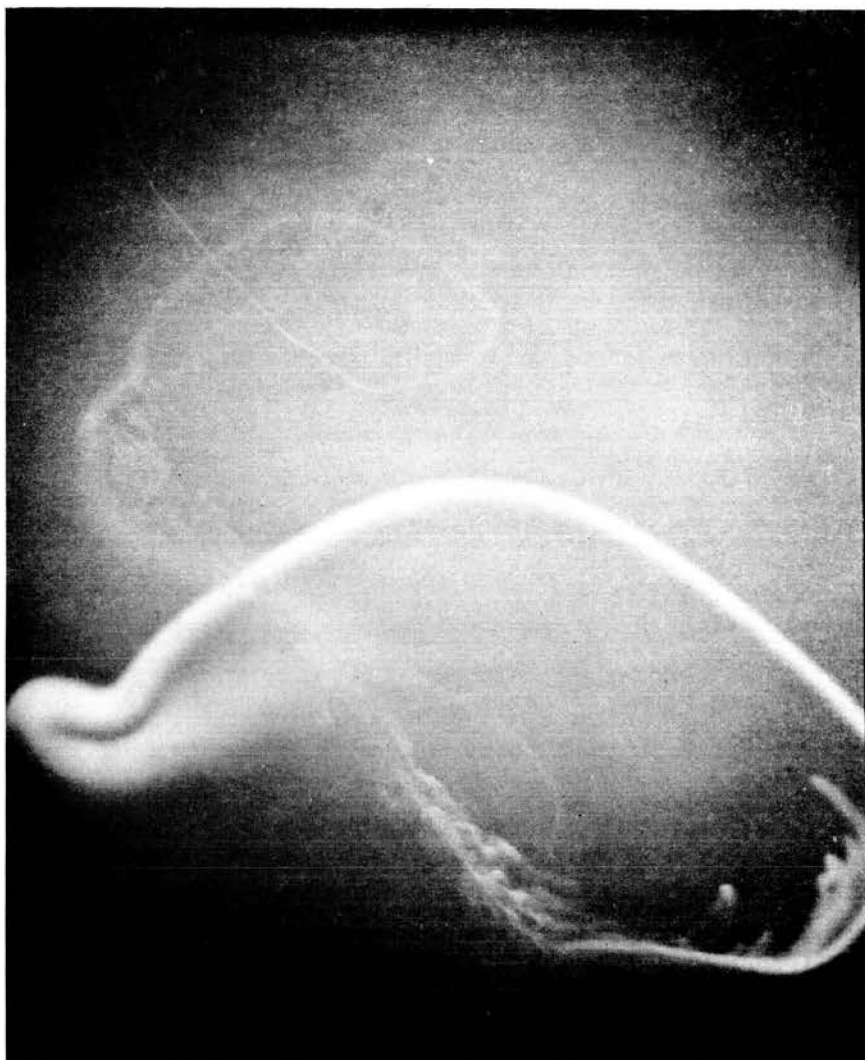
Data on sounding-rocket flights supported by the NASA Sounding Rocket Program are presented, including information on the rockets and ground and rocket-borne equipment employed, rocket and equipment performance and experiments undertaken. All NASA Sounding Rocket Program flights from May 1959 through December 1964 are listed in the summary tables. Those rockets fired in 1959, 1960 and 1961 are included in the individual rocket data sheets.

CONTENTS

	Page
Abstract	ii
INTRODUCTION.	1
ROCKET OUTLINE DRAWINGS	3
Aerobee 100 (NASA 1.--)	4
Nike Asp (NASA 3.--)	5
Aerobee 150/150A (NASA 4.--)	6
Iris (NASA 5.--)	7
Aerobee 300 (NASA 6.--)	8
Javelin (ARGO D-4) (NASA 8.--)	9
Skylark (NASA 9.--)	10
Nike Cajun (NASA 10.--)	11
Journeyman (ARGO D-8) (NASA 11.--)	12
Nike Apache (NASA 14.--)	13
COMPENDIUM SUMMARY - LAUNCHING BY DISCIPLINE, AGENCY, ROCKET TYPE, AND SITE.	15
PHOTOGRAPHS.	27
Figure 1-Payload and Nose Cone-Rocket 14.03 UA	29
Figure 2-Nike Apache 14.04 UA on Launcher in Vertical Position.	30
Figure 3-Payload for Nike Cajun 10.74 GI	31
Figure 4-Nike Cajun 10.74 GI on Launcher in Vertical Position	32
Figure 5-Javelin 8.10 GI on Launcher in Vertical Position	33
Figure 6-Payload and X248 Motor for Javelin 8.17 in Spin Test	34
Figure 7-Payload and Aerobee 4.40 NP in Ready Room.	35
Figure 8-Fin Assembly for Cajun and Apache Motors.	36
Figure 9-Spaerobee 6.05 UI with Payload Nose Cone in Open Position..	37
Figure 10-Payload and Housing for Nike Cajun 10.52 CI	38
Figure 11-Nike Cajun 10.52 CI on Launcher in Firing Position.	39
SUMMARY TABLES.	41
Aerobee 1.00.	42
Arcon.	43
Nike Asp.	44
Aerobee 150/150A	45
Iris	48
Spaerobee 300.	49
Javelin Argo D-4	50
Skylark.	51
Nike Cajun	52
Nike Cajun International	55
Journeyman Argo D-8.	56
Special Projects.	57
Nike Apache	58
Arcas.	63
Astrobee 1500	64
Aerobee 350	65

CONTENTS (Continued)

	Page
ROCKET PERFORMANCE SHEETS	67
Aerobee 100	68
Arcon.	92
Nike Asp.	104
Aerobee 150/150A	152
Iris	198
Spaerobee 300	204
Javelin Argo D-4	214
Skylark.	242
Nike Cajun	250
Journeyman.	344
Special Projects.	350
Nike Apache	352
REFERENCES	363
DISTRIBUTION LIST	377



Sodium Vapor Cloud

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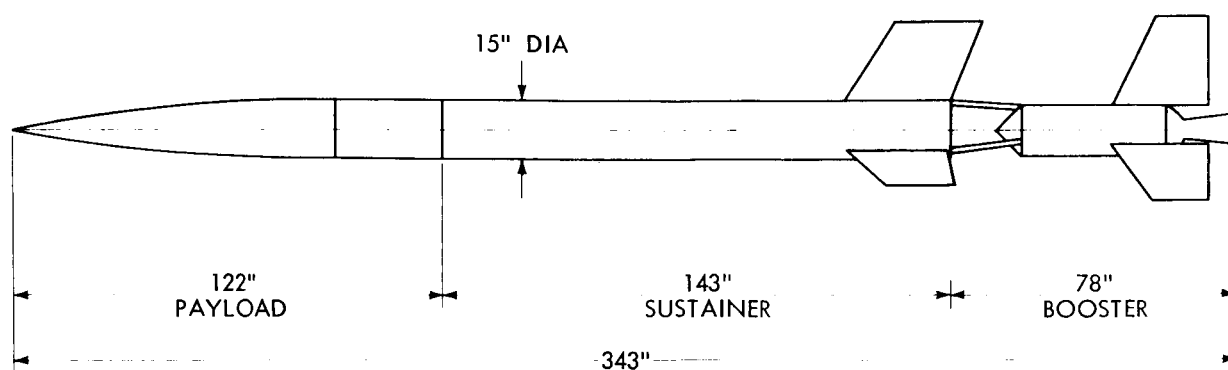
INTRODUCTION

The Sounding Rocket Branch of the Space Sciences Division of the Goddard Space Flight Center has supported sounding-rocket firings since May 1959. Experiments in nine disciplines were conducted utilizing twelve rocket types. Firings were conducted from several ranges in the continental United States and in Australia Canada and Italy.

Detailed information on the firings is given in this publication only through 1961 and in some cases this information is incomplete. However, revisions will be issued periodically as data become available to expand the information presented herein and to include the newer firings. All recipients of this publication will be registered and the new material will be forwarded as it is published.

References to published documents, articles and talks are included in the rocket data sheets. Additional references will be included in the references list and rocket data sheets in the addenda to this summary as they are made available to GSFC Code 721.4.

ROCKET OUTLINE DRAWINGS

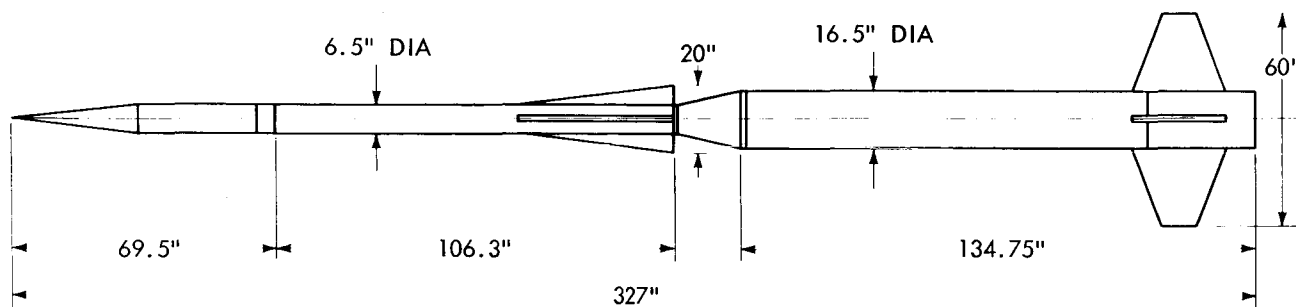


Aerobee 100 is a two-stage sounding rocket with a solid propellant booster and a liquid propellant second stage. The rocket is launched from a vertical tower by remote control with initial guidance provided by fixed rails. The first stage is ignited at launch and burns for 2.5 seconds, after which it separates from the sustainer. One second after launch the sustainer motor starts. Stability during flight is provided by three fixed fins on the booster and a similar set of fins on the sustainer.

VEHICLE DATA

	PAYLOAD	BOOSTER	SUSTAINER	TOTAL
LENGTH (Inches)	122	78	143	343
WEIGHT (Pounds)	177	600	780	1557
AV. THRUST (Pounds)		18600	2600	
BURNING TIME (Seconds)		2.5	40	
PROPELLANT		Solid	IRFNA/UDMH	

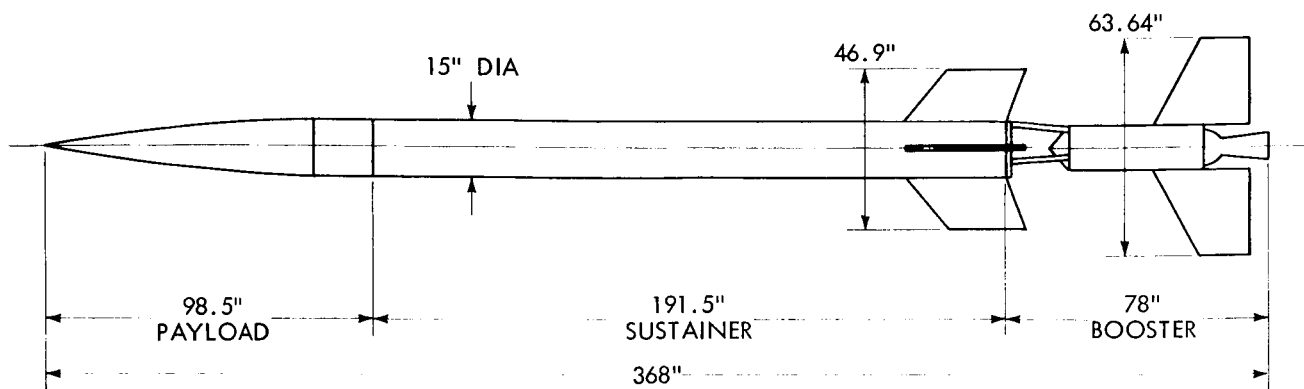
NASA 3.--
Nike Asp



Nike Asp is a two-stage solid propellant rocket. It consists of a four-finned Nike M 5-E1 booster and a four-finned Asp 1 second stage. It can be launched from a modified Nike launcher, a zero length launcher or from a rail mounted on an "A"-frame.

VEHICLE DATA

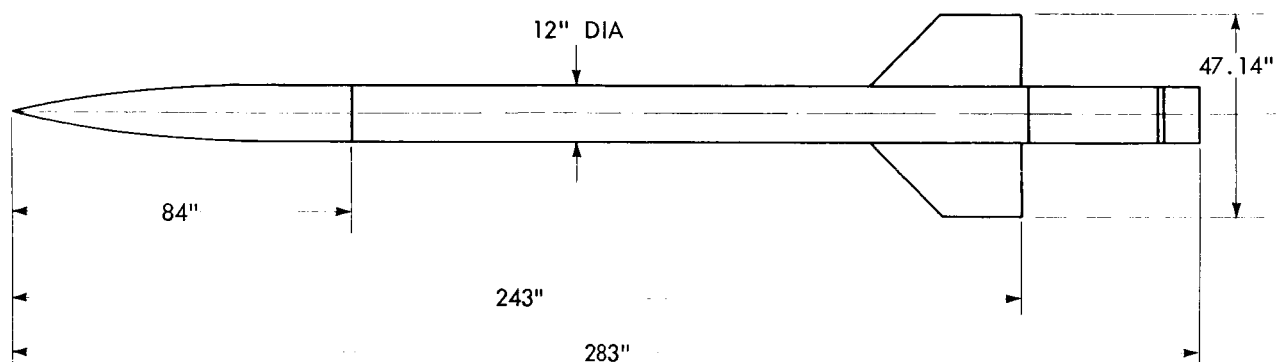
	NIKE	NIKE WITH ADAPT & FINS	ASP 1	AVE. PAYLOAD	TOTAL
LENGTH (Inches)	134.75	158.2	106	69.5	327
WEIGHT (Pounds)	1180	1305	121	80	1506
AV. THRUST (Pounds)	48700		5850		
BURNING TIME (Seconds)	3.5		5		
PROPELLANT	Solid		Solid		



Aerobee 150A is a four-finned, two-stage, solid and liquid propellant sounding rocket. The Aerobee 150 is a three-finned version of the 150A. The rocket is launched from a vertical tower by remote control with initial guidance provided by fixed rails. The booster is ignited at launch and burns for 2.5 seconds, falling away by drag separation. The sustainer is ignited 0.3 seconds after launch and burns for 52 seconds.

VEHICLE DATA

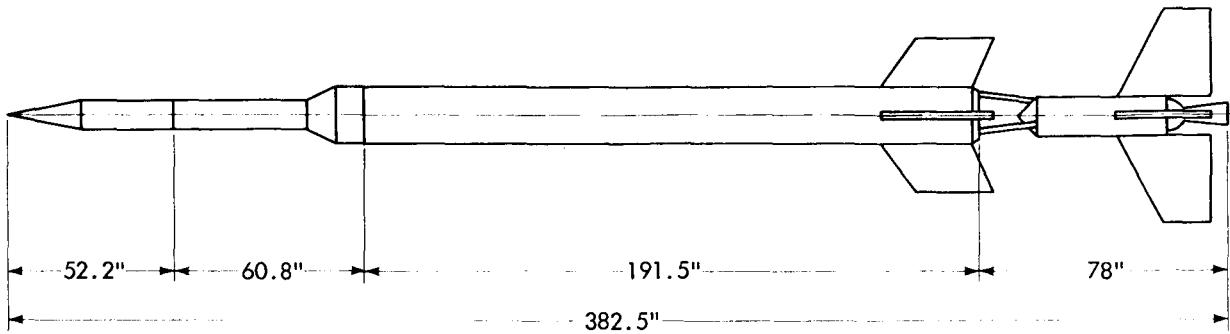
	PAYLOAD	BOOSTER	SUSTAINER	TOTAL
LENGTH (Inches)	98.5	78	191.5	368
WEIGHT (Pounds)	200	600	1338.5	2138.5
AV. THRUST (Pounds)		18600	4100	
BURNING TIME (Seconds)		2.5	52	
PROPELLANT		Solid	IRFNA/Aniline Furfuryl Alcoh.	



Iris is a two-stage solid-propellant sounding rocket with a cruciform mounting of four fins on the second stage only. The first stage motor consists of seven 4-inch diameter motors and is not mechanically attached to the second stage. It burns for 0.8 seconds and falls away after the rocket exits from the tower. Firing of the second stage is actuated through a time-delay relay. The Iris is launched from a 160-ft 4-rail tower.

VEHICLE DATA

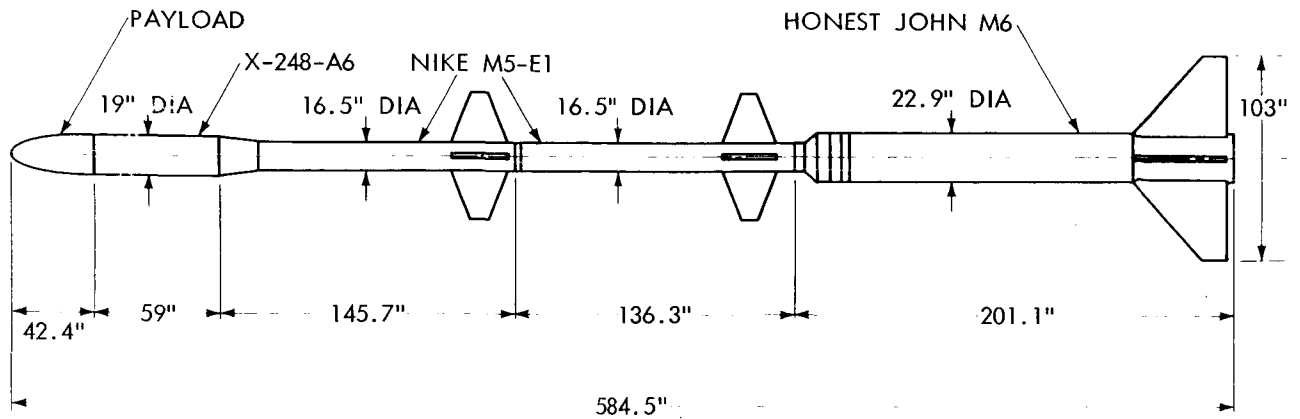
	PAYLOAD	1 ST STAGE	2 ND STAGE	TOTAL
LENGTH (Inches)	84 Average	40	159	283
WEIGHT (Pounds)	100	206	1018	1324
AV. THRUST (Pounds)		18800	4375	
BURNING TIME (Seconds)		0.8	56	
PROPELLANT		Solid	Solid	



Aerobee 300A is a four-finned, three-stage, solid and liquid-propellant sounding rocket. The Aerobee 300 is a three-finned version of the 300A. The rocket is launched from a vertical tower. The first stage is a solid-propellant booster, ignited at launch, and burns for 2.5 seconds, falling away by drag separation. The second stage is a liquid-propellant Aerobee 150/150A, and is ignited at 0.3 seconds after launch and burns for 52 seconds. The third stage is a solid-propellant sparrow motor; it is ignited at second stage burnout and burns for 2 seconds.

VEHICLE DATA

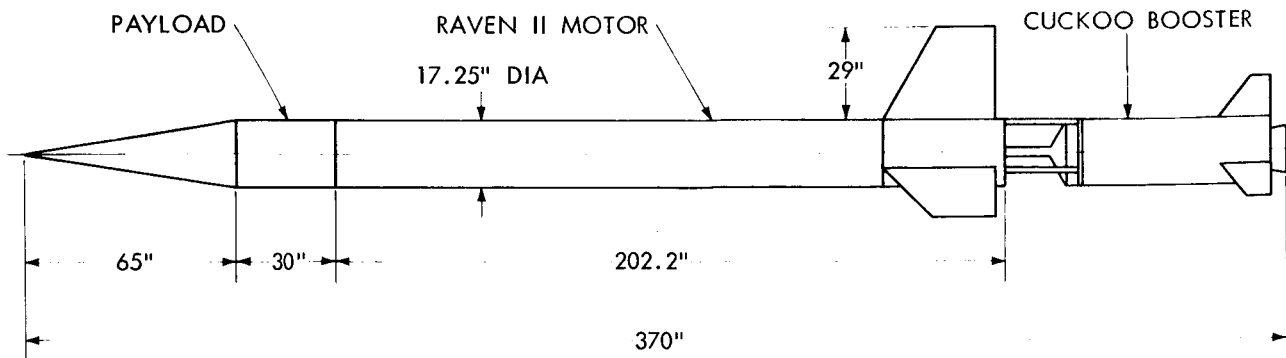
	PAYLOAD	BOOSTER	SUSTAINER	3RD STATE	TOTAL
LENGTH (Inches)	52.2	78	191.5	60.8	382.5
WEIGHT (Pounds)	100	600	1338.5	127	2165.5
AV. THRUST (Pounds)		18600	4100	7800	
BURNING TIME (Seconds)		2.5	52	2	
PROPELLANT		Solid	IRFNA/Aniline Furfuryl Alcoh.	Solid	



Javelin (Argo D-4) is a four-stage, solid-propellant sounding rocket. It consists of an Honest John M6 as the first stage, Nike M5-E1 as second and third stages and the X-248-A6 as the fourth stage. Cruciform fins are fitted on the first three stages to provide stability. The Javelin is launched from a modified, tubular, Sergeant launcher. The first stage is ignited at launch, burns for 5 seconds and falls away. The second stage ignites at 9.7 seconds, burns for 3.5 seconds and falls away, lock pins between stages 2 and 3 having been pulled during burning. Stage 3 ignites at 25 seconds, burns for 3.5 seconds, and then stages 3 and 4 coast together for a preset time. Stage 4 ignites at 53 seconds and burns for 40 seconds. Stage 3 is explosively disconnected at stage-3 ignition.

VEHICLE DATA

	PAYLOAD	1 ST STAGE	2 ND STAGE	3 RD STAGE	4 TH STAGE	TOTAL
LENGTH (Inches)	42.4	201.1	136.3	145.7	59	584.5
WEIGHT (Pounds)	125 (Nominal)	4186	1304	1304	526	7445
AV. THRUST (Pounds)		82000	48700	48700	3150	
BURNING TIME (Seconds)		5	3.5	3.5	40	
PROPELLANT		Solid	Solid	Solid	Solid	

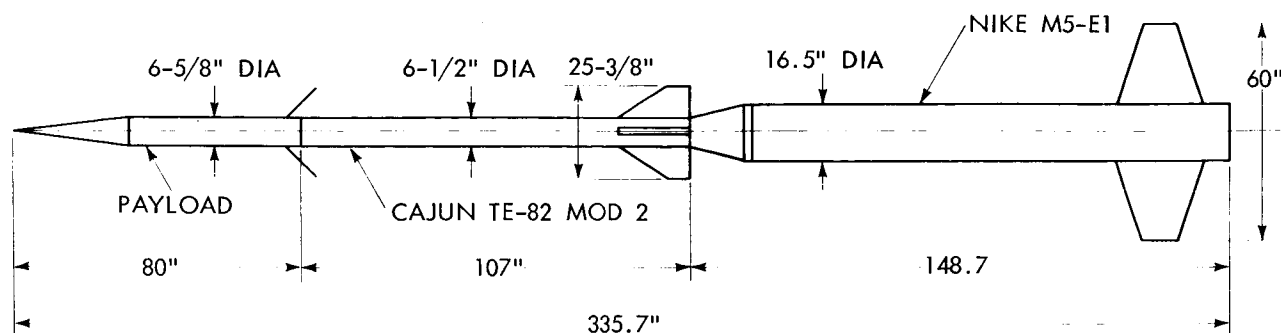


Skylark, a two-stage solid-propellant sounding rocket consists of a Raven II motor with GW25 fins and a cuckoo booster. It can be launched from a 100-foot tower at Woomera, Australia. The Raven burns for about 40 seconds and provides a thrust of 12,000 pounds.

VEHICLE DATA

	PAYLOAD	RAVEN II	CUCKOO BOOSTER	TOTAL
LENGTH (Inches)	95	202.2	72.8	370
WEIGHT (Pounds)	300	2338	557	3195
AV. THRUST (Pounds)		12000		
BURNING TIME (Seconds)		40		
PROPELLANT		Solid	Solid	

NASA 10.--
Nike Cajun

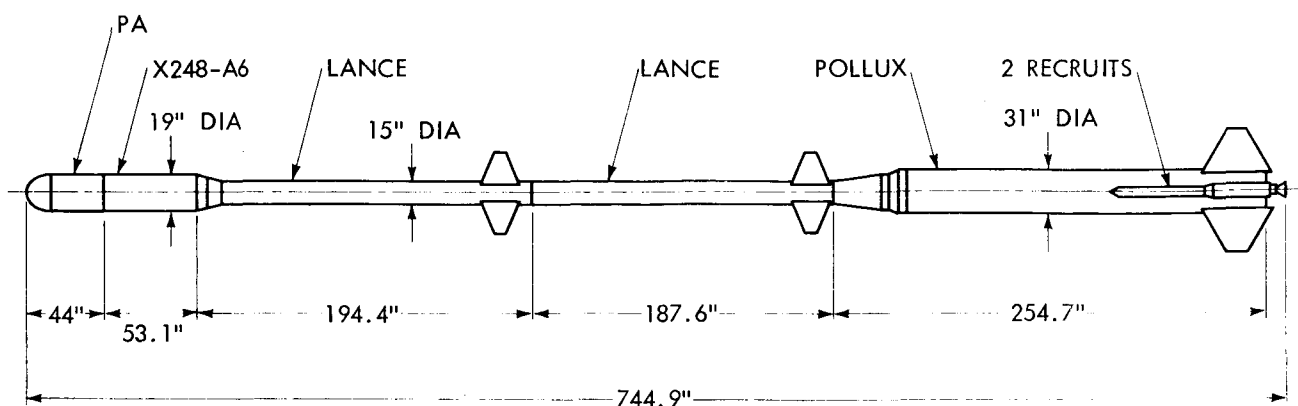


Nike Cajun, a two-stage solid-propellant sounding rocket, is made up of a four-finned Nike M5-E1 booster and a four-finned Cajun TE-82 Mod2 second stage. The rocket can be launched from a zero-length launcher or a modified Nike-Ajax launcher. The Nike is ignited at launch and burns for 3.5 seconds, after burnout it drag separates from the Cajun. The Cajun is ignited by a 17-second pyrotechnic delay squib, which is ignited at launch. The Cajun burns for 4 seconds.

VEHICLE DATA

	PAYLOAD STD HOUSING	NIKE WITH ADAPTER & FINS	CAJUN	TOTAL
LENGTH (Inches)	80	148.7	107	335.7
WEIGHT (Pounds)	80	1305	202	1587
AV. THRUST (Pounds)		48700	7850	
BURNING TIME (Seconds)		3.5	4	
PROPELLANT		Solid	Solid	

NASA 11.--
Journeyman (Argo D-8)

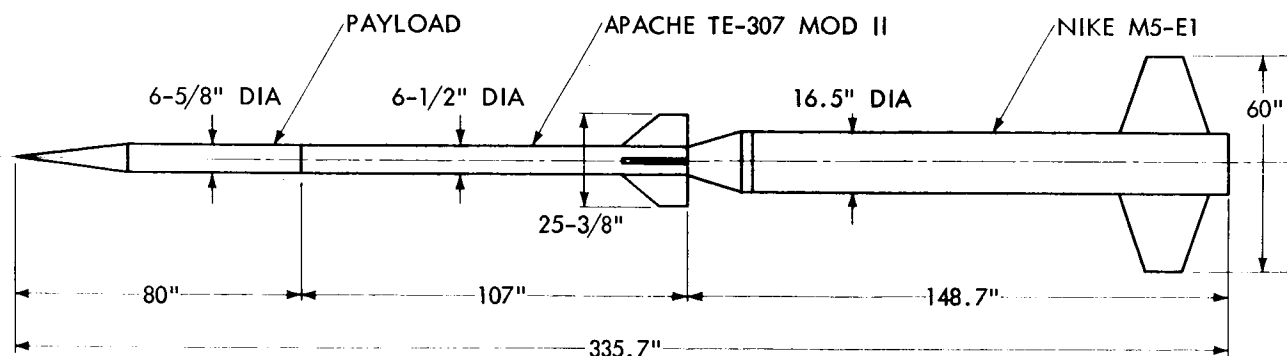


Journeyman (Argo D-8) is a four stage solid-propellant sounding rocket. The first stage is a Pollux TX 20-6 with two Recruits XM-19 booster rockets attached to the side. The second and third stages are Lance rockets. The fourth stage is a X248-A6 rocket. The Journeyman is launched from a modified Sergeant launcher. The first three stages are fin stabilized and the fourth stage is spin stabilized. After the first stage burnout, explosive bolts are activated and drag separation occurs. The second and third stages are timer ignited and separate after burnout through blowout diaphragm action. The fourth stage is timer ignited and jettisons its heat shield.

VEHICLE DATA

	PAYLOAD	1 ST STAGE		2 ND STAGE LANCE	3 RD STAGE LANCE	4 TH STAGE X248-A6	TOTAL
		POLLUX	RECRUIT (2)				
LENGTH (Inches)	44	254.7	111	187.6	194.4	53.1	744.9
WEIGHT (Pounds)	125	9000	372	1870	1870	526	14335
AV. THRUST (Pounds)		50000	35900	44000	44000	3150	
BURNING TIME (Seconds)		27.5	1.8	6	6	40	
PROPELLANT		Solid	Solid	Solid	Solid	Solid	

NASA 14.--
Nike Apache



Nike Apache, a two-stage solid-propellant sounding rocket, is made up of a four-finned Nike M5-E1 booster and a four-finned apache TE-307 Mod II second stage. In general configuration and launching characteristics it is identical to the Nike Cajun. The first stage is ignited at launch and burns for 3.5 seconds, after which it separates from the second stage by differential drag forces. The Apache is ignited by a 20-second delay pyrogen igniter. The Apache burns for 6 seconds.

VEHICLE DATA

	PAYLOAD STD HOUSING	NIKE WITH ADAPTER & FINS	APACHE	TOTAL
LENGTH (Inches)	80	148.7	107	335.7
WEIGHT (Pounds)	80	1305	217.5	1602.5
AV. THRUST (Pounds)		48700	4750	
BURNING TIME (Seconds)		3.5	6.0	
PROPELLANT		Solid	Solid	

COMPENDIUM SUMMARY - LAUNCHING BY DISCIPLINE,
AGENCY, ROCKET TYPE, AND SITE

NASA SOUNDING ROCKET PROGRAM - COMPENDIUM SUMMARY
1959 LAUNCHINGS BY DISCIPLINE, AGENCY, ROCKET TYPE, & SITE

	Rocket				Experiment			
	S	P	X	%	S	P	X	%
DISCIPLINE								
Aeronomy	4		1	80	2		3	40
Biological								
Energetic Particles								
Fields								
Galactic Astronomy								
Ionospheric Physics	3	1		100	3		1	75
Meteorology (Grenade)								
Radio Astronomy								
Solar Physics								
Special Projects								
Test & Support	1		6	14	4		3	57
AGENCY								
Goddard	3		6	33	6		3	67
Other NASA								
College/University								
DOD								
Other Government								
Industry	4		1	80	2		3	40
International	1	1		100	1		1	50
ROCKET TYPE								
Aerobee 100								
Arcon			6	0	3		3	50
Nike Asp	4		1	80	2		3	40
Aerobee 150	3	1		100	3		1	75
Aerobee 150A								
Iris								
Aerobee 300/300A								
Javelin	1			100	1			100
Skylark								
Nike Cajun								
Journeyman								
Special								
Nike Apache								
Astrobee 1500								
SITE								
Wallops Island	5		7	42	6		6	50
WSMR								
Fort Churchill	3	1		100	3		1	75
PMR								
Eglin AFB								
Ascension Island								
Australia								
India								
Italy								
Norway								
Pakistan								
Sweden								
TOTAL	8	1	7	56	9		7	56

S = Overall success

P = Partial success

X = Failure

% = Percent successful

(Subject to interpretation)

$$\% = \frac{S + P}{S + P + X}$$

Jan.-Jun. 1960 LAUNCHINGS BY DISCIPLINE, AGENCY, ROCKET TYPE, & SITE

	Rocket				Experiment			
	S	P	X	%	S	P	X	%
DISCIPLINE								
Aeronomy	2		1	67	2		1	67
Biological								
Energetic Particles	1			100	1			100
Fields			1	0			1	0
Galactic Astronomy	2	1		100	1	2		100
Ionospheric Physics	2		1	67	2		1	67
Meteorology (Grenade)		1		100			1	0
Radio Astronomy								
Solar Physics	2		2	50			4	0
Special Projects								
Test & Support	3		1	75	3		1	75
AGENCY								
Goddard	9	2	4	73	6	2	7	53
Other NASA								
College/University	2		1	67	2		1	67
DOD								
Other Government								
Industry	1		1	50	1		1	50
International								
ROCKET TYPE								
Aerobee 100								
Arcon								
Nike Asp	3		4	43	1		6	14
Aerobee 150								
Aerobee 150A	5	1	1	86	4	2	1	86
Iris								
Aerobee 300/300A	2			100	2			100
Javelin	1		1	50	1		1	50
Skylark								
Nike Cajun	1	1		100	1		1	50
Journeyman								
Special								
Nike Apache								
Astrobee 1500								
SITE								
Wallops Island	9	2	5	69	6	2	8	50
WSMR								
Fort Churchill	3		1	75	3		1	75
PMR								
Eglin AFB								
Ascension Island								
Australia								
India								
Italy								
Norway								
Pakistan								
Sweden								
TOTAL	12	2	6	70	9	2	9	55

S = Overall success X = Failure

P = Partial success % = Percent successful

(Subject to interpretation) %

$$= \frac{S + P}{S + P + X}$$

Jul.-Dec. 1960 LAUNCHINGS BY DISCIPLINE, AGENCY, ROCKET TYPE, & SITE

	Rocket				Experiment			
	S	P	X	%	S	P	X	%
DISCIPLINE								
Aeronomy	6		1	86	3	1	3	57
Biological								
Energetic Particles	15			100	14	1		100
Fields	1			100	1			100
Galactic Astronomy	1			100	1			100
Ionospheric Physics	4		1	80	4		1	80
Meteorology (Grenade)	4			100	2		2	50
Radio Astronomy								
Solar Physics								
Special Projects	3			100	2	1		100
Test & Support	4			100	4			100
AGENCY								
Goddard	30			100	26	2	2	93
Other NASA								
College/University	4			100	2		2	50
DOD								
Other Government								
Industry	4		2	67	3	1	2	67
International								
ROCKET TYPE								
Aerobee 100	4			100	3	1		100
Arcon								
Nike Asp	2		1	67	2		1	67
Aerobee 150	1			100	1			100
Aerobee 150A	3			100	3			100
Iris	2			100	2			100
Aerobee 300/300A	1			100	1			100
Javelin	3			100	2	1		100
Skylark								
Nike Cajun	21		1	95	16	1	5	77
Journeyman	1			100	1			100
Special								
Nike Apache								
Astrobee 1500								
SITE								
Wallops Island	19		2	90	14	1	6	71
WSMR								
Fort Churchill	18			100	16	2		89
PMR	1			100	1			100
Eglin AFB								
Ascension Island								
Australia								
India								
Italy								
Norway								
Pakistan								
Sweden								
TOTAL	38		2	95	31	3	6	85

S = Overall success

P = Partial success

X = Failure

% = Percent successful

(Subject to interpretation)

%

=

$$\frac{S + P}{S + P + X}$$

Jan.-Jun. 1961 LAUNCHINGS BY DISCIPLINE, AGENCY, ROCKET TYPE, & SITE

	Rocket				Experiment			
	S	P	X	%	S	P	X	%
DISCIPLINE								
Aeronomy	5		1	83	4		2	67
Biological								
Energetic Particles								
Fields								
Galactic Astronomy		1		100		1		100
Ionospheric Physics	5			100	3	1	1	80
Meteorology (Grenade)	5	1	1	86	4	2	1	86
Radio Astronomy								
Solar Physics								
Special Projects	4			100	2	2		100
Test & Support	6		1	86	4	3		100
AGENCY								
Goddard	15	2	2	89	9	8	2	89
Other NASA	2			100	1	1		100
College/University	3			100	2		1	67
DOD								
Other Government	1			100	1			100
Industry	3		1	75	3		1	75
International	1			100	1			100
ROCKET TYPE								
Aerobee 100	2			100	1	1		100
Arcon								
Nike Asp	4		1	80	4		1	80
Aerobee 150								
Aerobee 150A	4	1		100	1	4		100
Iris			1	0		1		100
Aerobee 300/300A	1			100	1			100
Javelin	4			100	2	1	1	75
Skylark								
Nike Cajun	8	1	1	90	6	2	2	80
Journeyman								
Special	1			100	1			100
Nike Apache	1			100	1			100
Astrobee 1500								
SITE								
Wallops Island	23	2	3	89	16	8	4	86
WSMR								
Fort Churchill	2			100	1	1		100
PMR								
Eglin AFB								
Ascension Island								
Australia								
India								
Italy								
Norway								
Pakistan								
Sweden								
TOTAL	25	2	3	90	17	9	4	87

S = Overall success
P = Partial success

X = Failure
% = Percent successful

(Subject to interpretation)

$$\% = \frac{S + P}{S + P + X}$$

Jul.-Dec. 1961 LAUNCHINGS BY DISCIPLINE, AGENCY, ROCKET TYPE, & SITE

	Rocket				Experiment			
	S	P	X	%	S	P	X	%
DISCIPLINE								
Aeronomy	14		1	93	13		2	87
Biological	1	1		100			2	0
Energetic Particles	1			100	1			100
Fields	3			100	3			100
Galactic Astronomy	4			100	3	1		100
Ionospheric Physics	5			100	5			100
Meteorology (Grenade)	5	1		100	3	1	2	67
Radio Astronomy								
Solar Physics	1			100	1			100
Special Projects	2			100	1	1		100
Test & Support	1			100	1			100
AGENCY								
Goddard	22	2		100	18	2	4	83
Other NASA	3			100	2	1		100
College/University	5			100	4		1	80
DOD								
Other Government	1			100	1			100
Industry	6		1	86	6		1	86
International								
ROCKET TYPE								
Aerobee 100	6			100	6			100
Arcon								
Nike Asp	2		1	67	2		1	67
Aerobee 150								
Aerobee 150A	3			100	2	1		100
Iris								
Aerobee 300/300A	1			100	1			100
Javelin	4			100	4			100
Skylark	4			100	3	1		100
Nike Cajun	12	1		100	9	1	3	77
Journeyman	1	1		100			2	0
Special								
Nike Apache	4			100	4			100
Astrobee 1500								
SITE								
Wallops Island	25	1	1	96	21	2	4	85
WSMR								
Fort Churchill	7			100	7			100
PMR	1	1		100			2	0
Eglin AFB								
Ascension Island								
Australia	4			100	3	1		100
India								
Italy								
Norway								
Pakistan								
Sweden								
TOTAL	37	2	1	98	31	3	6	85

S = Overall success
P = Partial success

X = Failure
% = Percent successful

(Subject to interpretation) $\% = \frac{S + P}{S + P + X}$

Jan.-Jun. 1962 LAUNCHINGS BY DISCIPLINE, AGENCY, ROCKET TYPE, & SITE

	Rocket				Experiment			
	S	P	X	%	S	P	X	%
DISCIPLINE								
Aeronomy	12	1	2	87	10		5	67
Biological								
Energetic Particles								
Fields								
Galactic Astronomy			1	0			1	0
Ionospheric Physics	6			100	4		2	67
Meteorology (Grenade)	7			100	7			100
Radio Astronomy								
Solar Physics								
Special Projects	5			100	3	1	1	80
Test & Support	3		1	75	4			100
AGENCY								
Goddard	15	1	3	84	16		3	84
Other NASA	4			100	2	1	1	75
College/University	5			100	4		1	80
DOD								
Other Government	1			100			1	0
Industry	6		1	86	6		1	86
International	2			100			2	0
ROCKET TYPE								
Aerobee 100								
Arcon								
Nike Asp	2		1	67	2		1	67
Aerobee 150	1			100			1	0
Aerobee 150A	6		2	75	5	1	2	75
Iris		1		100	1			100
Aerobee 300/300A								
Javelin	2			100			2	0
Skylark								
Nike Cajun	20		1	95	18		3	86
Journeyman								
Special								
Nike Apache	2			100	2			100
Astrobee 1500								
SITE								
Wallops Island	30	1	4	88	28	1	6	83
WSMR	1			100			1	0
Fort Churchill								
PMR								
Eglin AFB								
Ascension Island								
Australia								
India								
Italy								
Norway								
Pakistan	2			100			2	0
Sweden								
TOTAL	33	1	4	89	28	1	9	76

S = Overall success
P = Partial success

X = Failure
% = Percent successful

(Subject to interpretation)

$$\% = \frac{S + P}{S + P + X}$$

Jul.-Dec. 1962 LAUNCHINGS BY DISCIPLINE, AGENCY, ROCKET TYPE, & SITE

	Rocket				Experiment			
	S	P	X	%	S	P	X	%
DISCIPLINE								
Aeronomy	12	1	2	87	7	3	5	67
Biological								
Energetic Particles								
Fields								
Galactic Astronomy	3			100	2		1	67
Ionospheric Physics	6		2	75	6		2	75
Meteorology (Grenade)	6		1	86	4		3	57
Radio Astronomy	1			100	1			100
Solar Physics	2			100		1	1	50
Special Projects	2			100	1		1	50
Test & Support	1	1		100	1	1		100
AGENCY								
Goddard	10	1	1	92	7	1	4	67
Other NASA	3		1	75	2		2	50
College/University	5		1	83	3	1	2	67
DOD								
Other Government	2			100		1	1	50
Industry	7	1		100	6	1	1	88
International	6		2	75	4	1	3	62
ROCKET TYPE								
Aerobee 100	1		1	50	1		1	50
Arcon								
Nike Asp								
Aerobee 150	2			100			2	0
Aerobee 150A	5	1	3	67	3	2	4	56
Iris								
Aerobee 300/300A	1			100	1			100
Javelin								
Skylark								
Nike Cajun	15		1	94	11	1	4	75
Journeyman	1			100	1			100
Special								
Nike Apache	8	1		100	5	2	2	78
Astrobee 150								
SITE								
Wallops Island	19	2	3	88	15	3	6	75
WSMR	3		1	75	1		3	25
Fort Churchill	3		1	75	2		2	50
PMR								
Eglin AFB	2			100		1	1	50
Ascension Island								
Australia								
India								
Italy								
Norway	2			100	2			100
Pakistan								
Sweden	4			100	2	1	1	75
TOTAL	33	2	5	88	22	5	13	68

S = Overall success

P = Partial success

X = Failure

% = Percent successful

(Subject to interpretation)

%

$$= \frac{S + P}{S + P + X}$$

Jan.-Jun. 1963 LAUNCHINGS BY DISCIPLINE, AGENCY, ROCKET TYPE, & SITE

	Rocket				Experiment			
	S	P	X	%	S	P	X	%
DISCIPLINE								
Aeronomy	21		2	91	17		6	74
Biological								
Energetic Particles	1			100	1			100
Fields								
Galactic Astronomy	2			100	2			100
Ionospheric Physics	7	1		100	7	1		100
Meteorology (Grenade)	6			100	6			100
Radio Astronomy								
Solar Physics	2			100		2		100
Special Projects	2			100		1	1	50
Test & Support	1		1	50	1		1	50
AGENCY								
Goddard	12		1	92	11	1	1	92
Other NASA	3			100	1	1	1	67
College/University	5		1	83	4		2	67
DOD	3			100	3			100
Other Government	2			100		2		100
Industry	11	1	1	92	10		3	77
International	6			100	5		1	83
ROCKET TYPE								
Aerobee 100								
Arcon								
Nike Asp			1	0			1	0
Aerobee 150	5			100	2	2	1	80
Aerobee 150A	7		1	88	6	1	1	88
Iris								
Aerobee 300/300A	1			100	1			100
Javelin								
Skylark								
Nike Cajun	9			100	8		1	89
Journeyman	1			100	1			100
Special								
Nike Apache	19	1		100	16	1	3	85
Astrobee 1500			1	0			1	0
SITE								
Wallops Island	23	1	3	89	19	2	6	78
WSMR	5			100	2	2	1	80
Fort Churchill	6			100	6			100
PMR	1			100	1			100
Eglin AFB	3			100	3			100
Ascension Island								
Australia								
India								
Italy	3			100	3			100
Norway								
Pakistan	1			100			1	0
Sweden								
TOTAL	42	1	3	93	34	4	8	83

S = Overall success
P = Partial success

X = Failure
% = Percent successful

(Subject to interpretation)

$$\% = \frac{S + P}{S + P + X}$$

Jul.-Dec. 1963 LAUNCHINGS BY DISCIPLINE, AGENCY, ROCKET TYPE, & SITE

	Rocket				Experiment			
	S	P	X	%	S	P	X	%
DISCIPLINE								
Aeronomy	11		1	92	10	1	1	92
Biological								
Energetic Particles	1			100	1			100
Fields	1			100	1			100
Galactic Astronomy	2		1	67	2		1	67
Ionospheric Physics	15	2	2	89	13	3	3	84
Meteorology (Grenade)	5			100	5			100
Radio Astronomy								
Solar Physics	4			100	2	1	1	75
Special Projects	1			100	1			100
Test & Support	1			100	1			100
AGENCY								
Goddard	13	1	1	93	11	2	2	87
Other NASA	6			100	6			100
College/University	8		1	89	8		1	89
DOD	1			100		1		100
Other Government								
Industry	4	1	2	71	4	1	2	71
International	9			100	7	1	1	89
ROCKET TYPE								
Aerobee 100								
Arcon								
Nike Asp								
Aerobee 150	5		2	71	3	1	3	57
Aerobee 150A	10			100	10			100
Iris								
Aerobee 300/300A	1			100	1			100
Javelin	2			100	2			100
Skylark								
Nike Cajun	11			100	10		1	91
Journeyman								
Special								
Nike Apache	12	2	2	88	10	4	2	88
Astrobee 1500								
SITE								
Wallops Island	24			100	24			100
WSMR	4	1	1	83	2	2	2	67
Fort Churchill	6	1	3	70	5	2	3	70
PMR								
Eglin AFB								
Ascension Island								
Australia								
India	1			100		1		100
Italy								
Norway	2			100	1		1	50
Pakistan								
Sweden	4			100	4			100
TOTAL	41	2	4	91	36	5	6	87

S = Overall success

P = Partial success

X = Failure

% = Percent successful

(Subject to interpretation)

%

=

$$\frac{S + P}{S + P + X}$$

1959 - 1964 LAUNCHINGS BY DISCIPLINE, AGENCY, ROCKET TYPE, & SITE

	Rocket				Experiment			
	S	P	X	%	S	P	X	%
DISCIPLINE								
Aeronomy	131	4	17	89	110	5	37	76
Biological	1	1		100			2	0
Energetic Particles	34	1		100	26	5	4	89
Fields	13		2	87	13		2	87
Galactic Astronomy	22	4	3	90	18	5	6	79
Ionospheric Physics	75	4	6	93	67	7	11	87
Meteorology (Grenade)	71	3	3	96	61	3	13	83
Radio Astronomy	2			100	2			100
Solar Physics	12		2	86	4	4	6	57
Special Projects	21			100	12	6	3	86
Test & Support	26	1	10	73	28	4	5	86
AGENCY								
Goddard	196	10	22	90	166	24	38	83
Other NASA	24		2	92	16	4	6	77
College/University	65	3	5	93	56	2	15	79
DOD	13		1	93	11	1	2	86
Other Government	7			100	2	3	2	71
Industry	65	4	11	86	60	3	17	79
International	38	1	2	95	30	2	9	78
ROCKET TYPE								
Aerobee 100	13		1	93	11	2	1	93
Arcon			6	0	3		3	50
Nike Asp	17		10	63	13		14	48
Aerobee 150	33	4	5	88	23	5	14	67
Aerobee 150A	47	3	7	88	38	11	8	86
Iris	2	1	1	75	3	1		100
Aerobee 300/300A	10		100	100	10			100
Javelin	24		1	96	18	3	4	84
Skylark	4			100	3	1		100
Nike Cajun	134	3	5	96	113	5	24	83
Journeyman	4	1		100	3		2	60
Special	3			100	3			100
Nike Apache	116	6	6	95	99	11	18	86
Astrobee 1500	1		1	50	1		1	50
SITE								
Wallops Island	236	11	30	89	204	21	52	81
WSMR	28	3	6	84	18	5	14	62
Fort Churchill	74	3	6	93	64	9	10	88
PMR	3	1		100	2		2	50
Eglin AFB	5			100	3	1	1	80
Ascension Island	8			100	7		1	88
Argentina	2			100	2			100
Australia	4			100	3	1		100
India	10			100	9	1		100
Italy	3			100	3			100
Norway	7			100	6		1	86
Pakistan	6			100	2		4	33
Sweden	16			100	12	1	3	81
Ship	6		1	86	6		1	86
TOTAL	408	18	43	91	341	39	89	81

S Overall success
P Partial success

X = Failure
% = Percent successful

(Subject to
interpretation)

%
 $\frac{S + P}{S + P + X}$

PHOTOGRAPHS

LIST OF PHOTOGRAPHS

- Figure 1-Payload and Nose Cone - Rocket 14.03 UA.
- Figure 2-Nike Apache 14.04 UA on Launcher in Vertical Position.
- Figure 3-Payload for Nike Cajun 10.74 GI.
- Figure 4-Nike Cajun 10.74 GI on Launcher in Vertical Position.
- Figure 5-Javelin 8.10 GI on Launcher in Vertical Position.
- Figure 6-Payload and X248 Motor for Javelin 8.17 AI in Spin Test.
- Figure 7-Payload and Aerobee 4.40 NP in Ready Room.
- Figure 8-Fin Assembly for Cajun and Apache Motors.
- Figure 9-Spaerobee 6.05 UI with Payload Nose Cone in Open Position.
- Figure 10-Payload and Housing for Nike Cajun 10.52 CI.
- Figure 11-Nike Cajun 10.52 CI on Launcher in Firing Position.

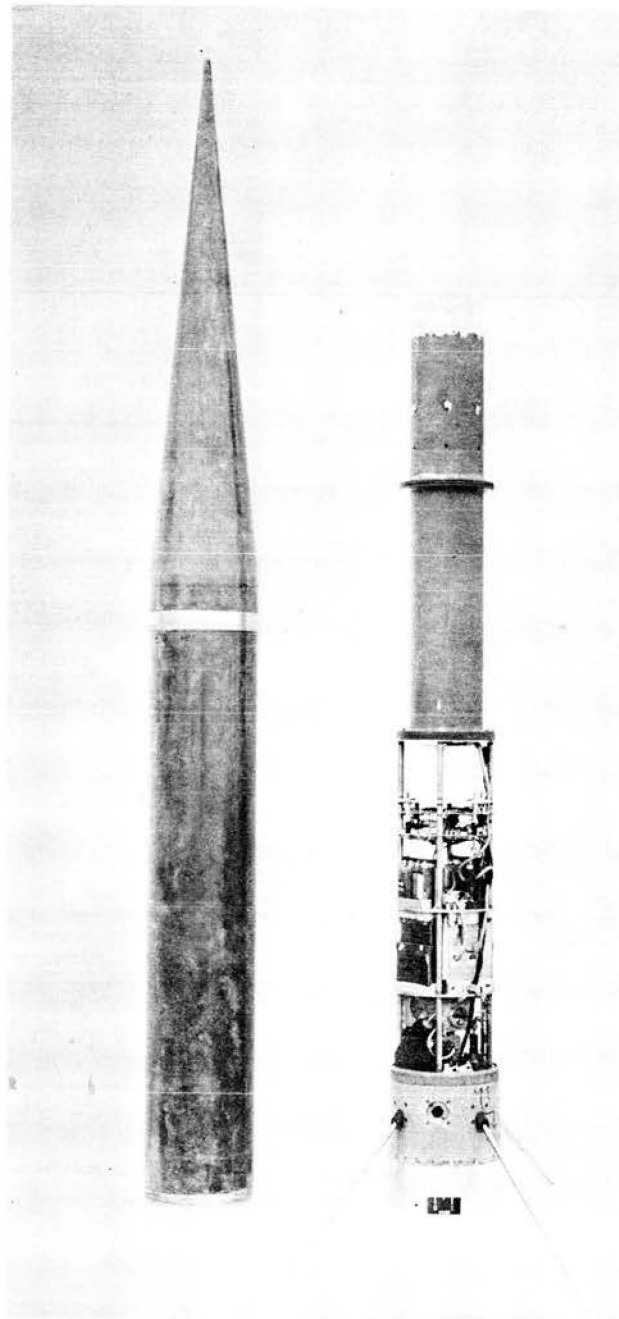


Figure 1—Payload and Nose Cone—Rocket 14.03 UA.

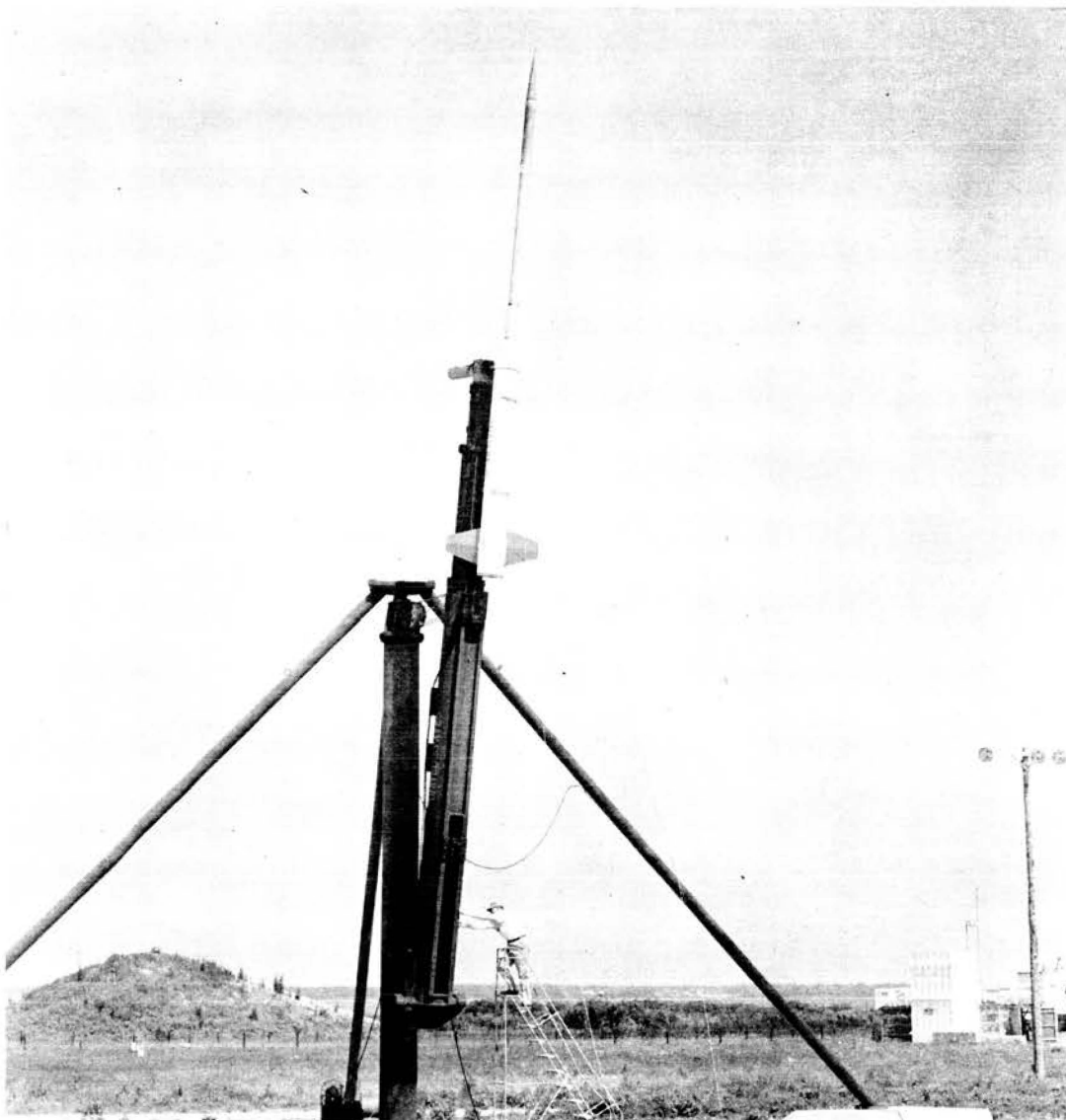


Figure 2-Nike Apache 14.04 UA on Launcher in Vertical Position.

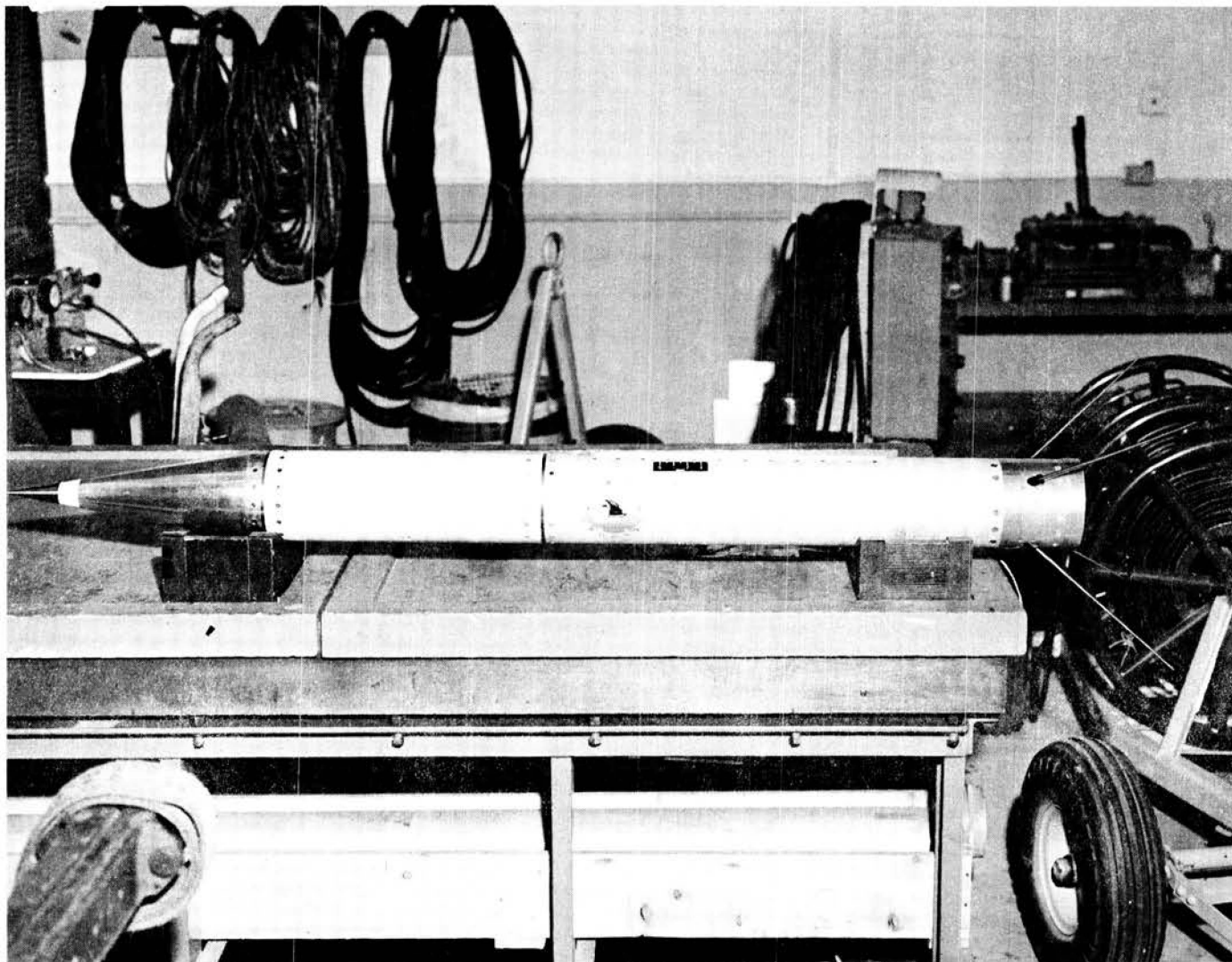


Figure 3—Payload for Nike Cajun 10.74 GI.

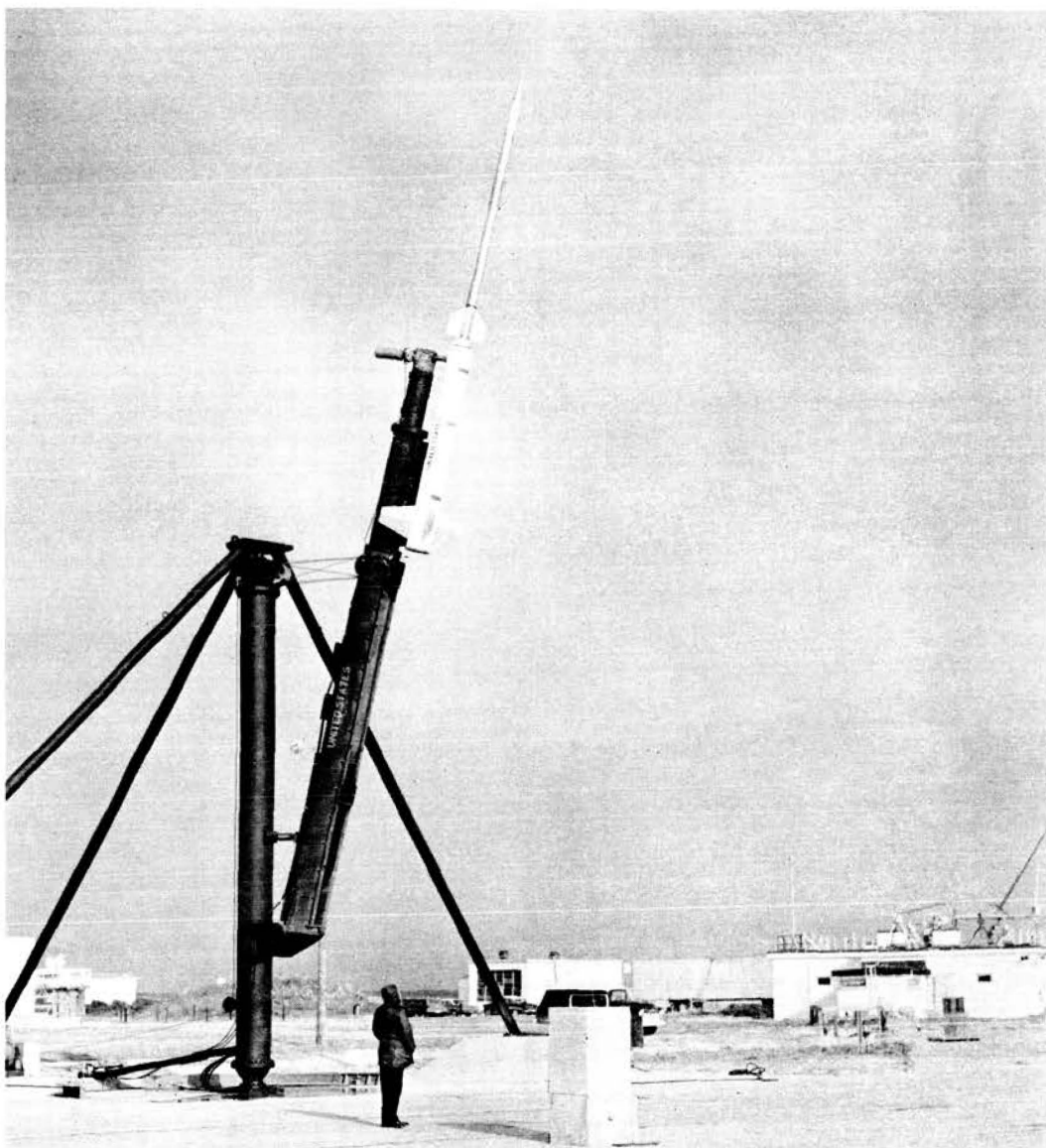


Figure 4—Nike Cajun 10.74 GI on Launcher in Vertical Position.

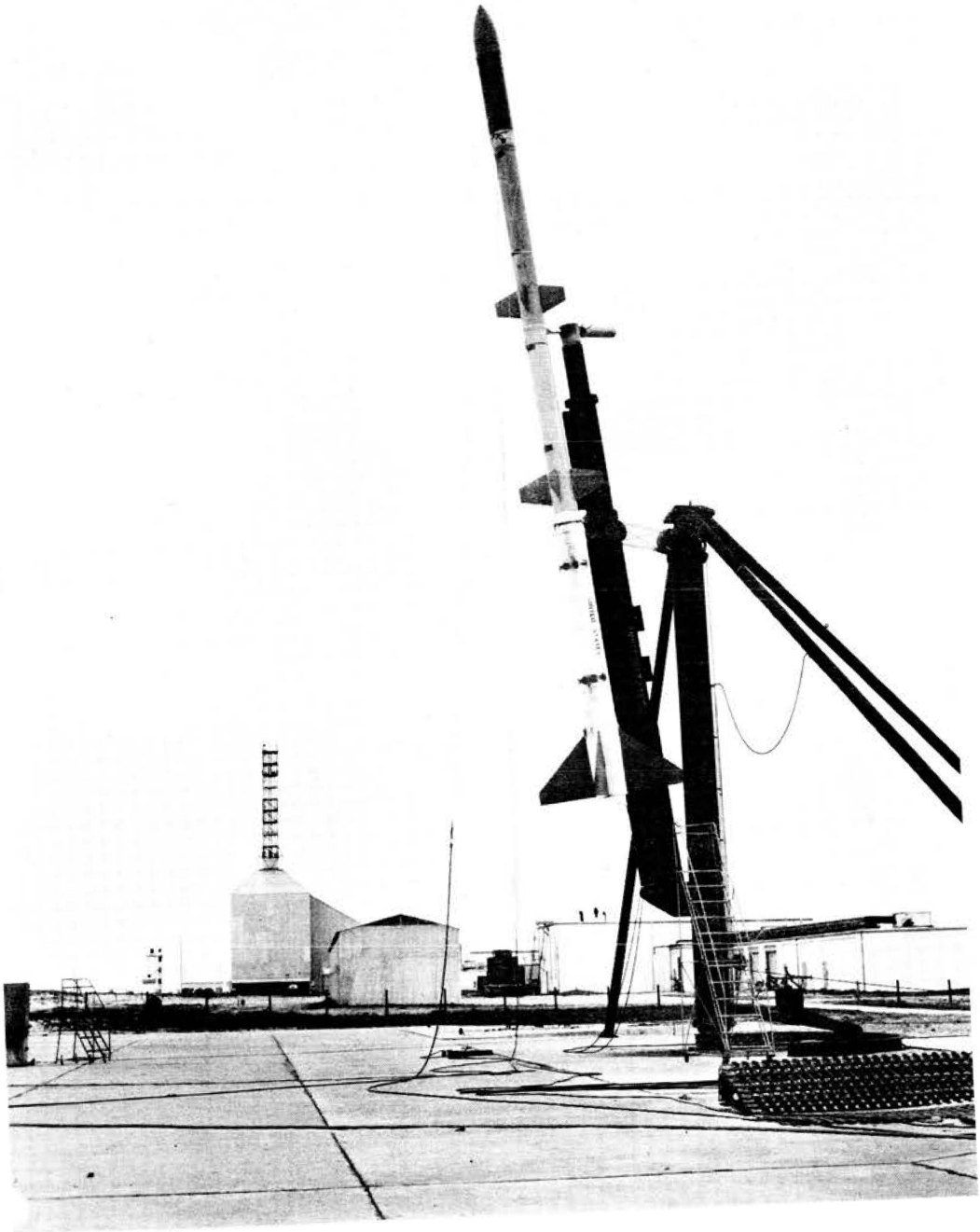


Figure 5—Javelin 8.10 GI on Launcher in Vertical Position.

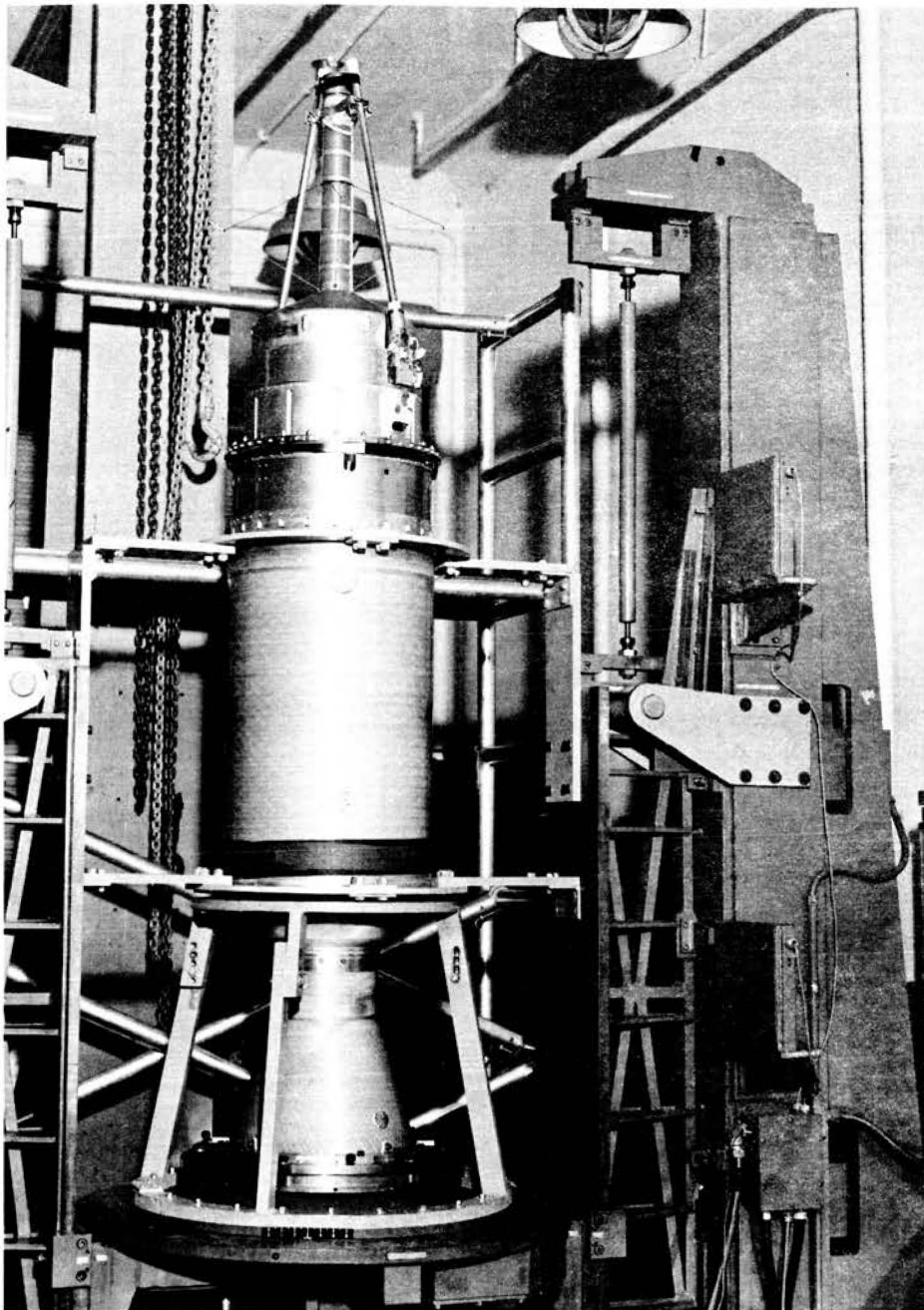


Figure 6—Payload and X248 Motor for Javelin 8.17 A1 in Spin Test.

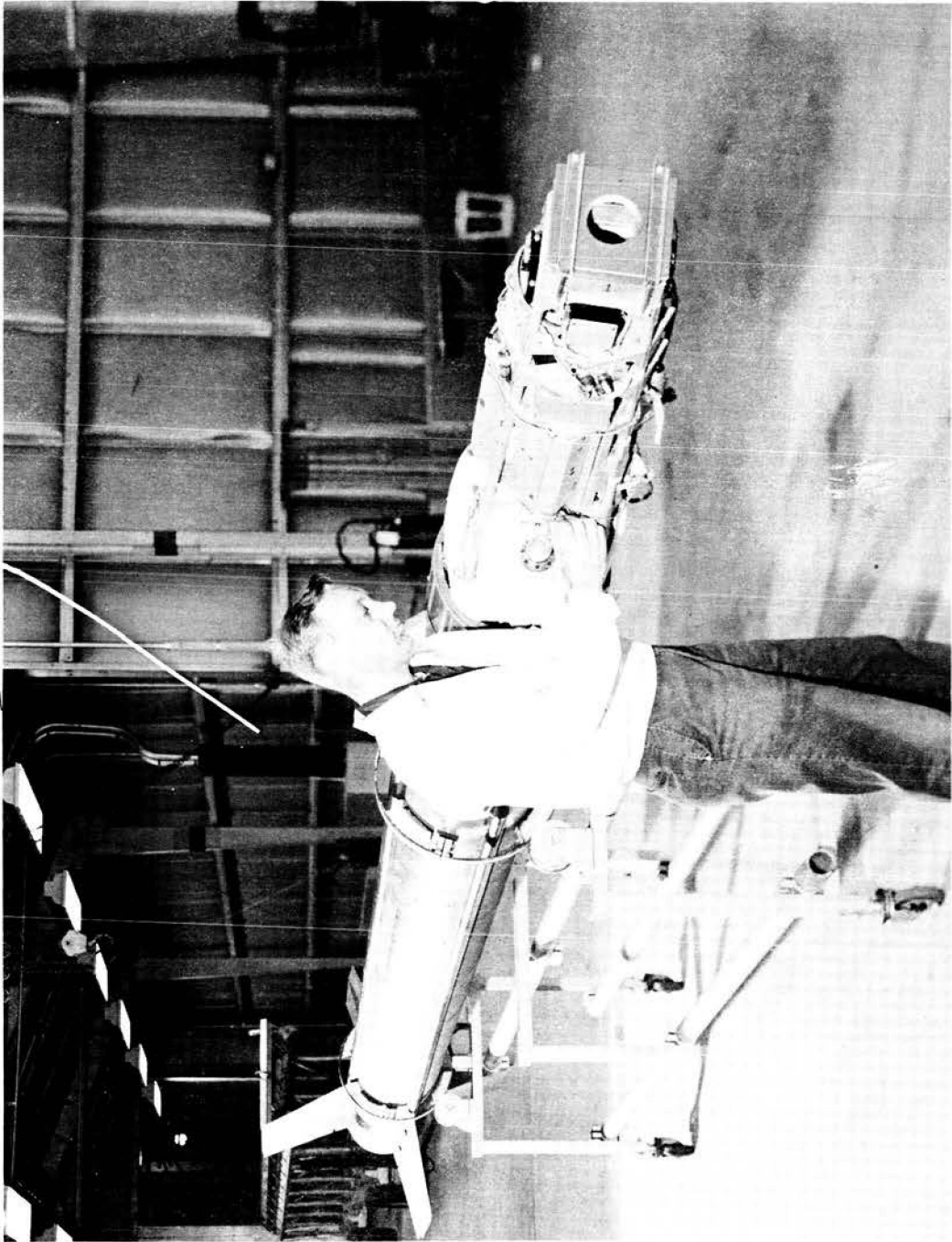


Figure 7-Payload and Aerobee 4.40 NP in Ready Room.

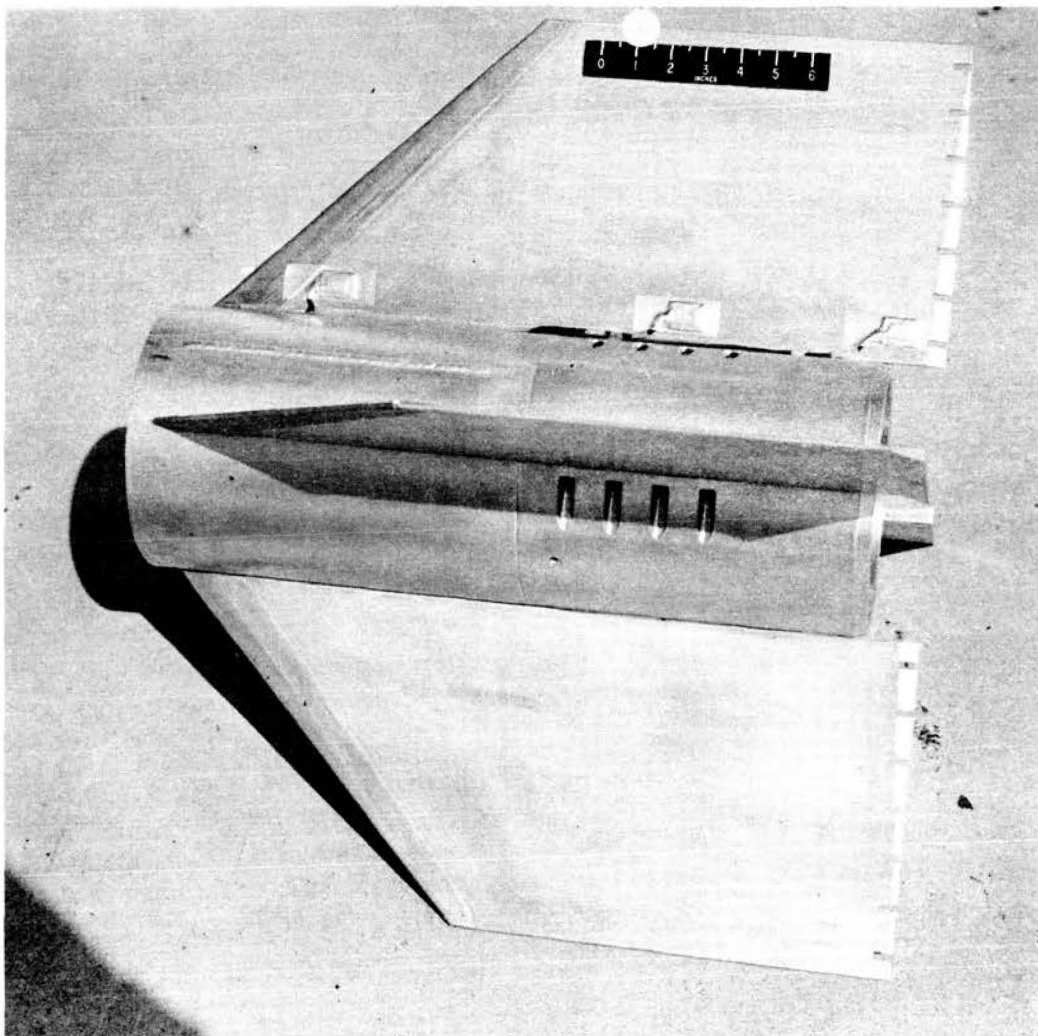


Figure 8—Fin Assembly for Cajun and Apache Motors.

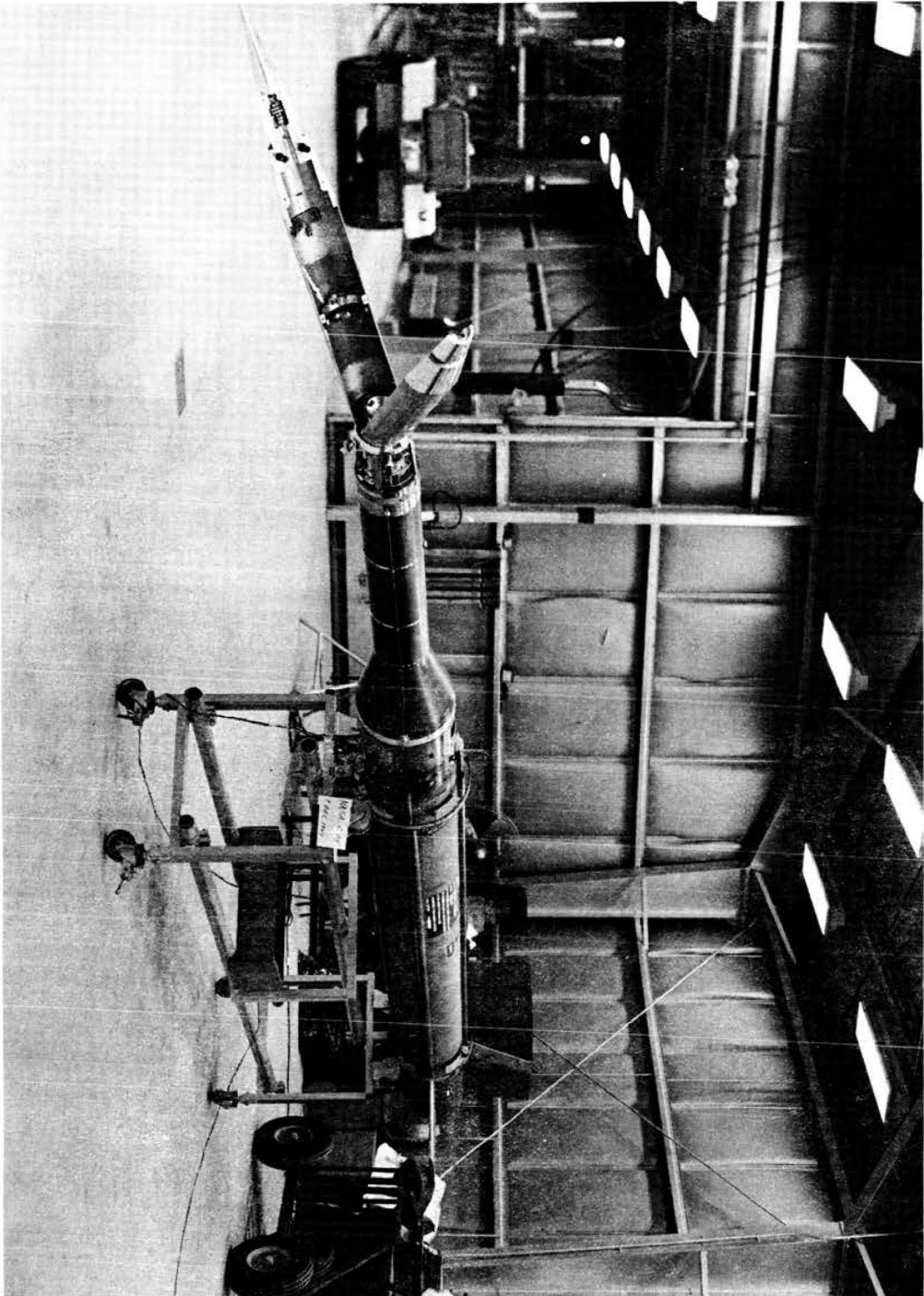


Figure 9—Spacelab 6.05 UI with Payload Nose Cone in Open Position.

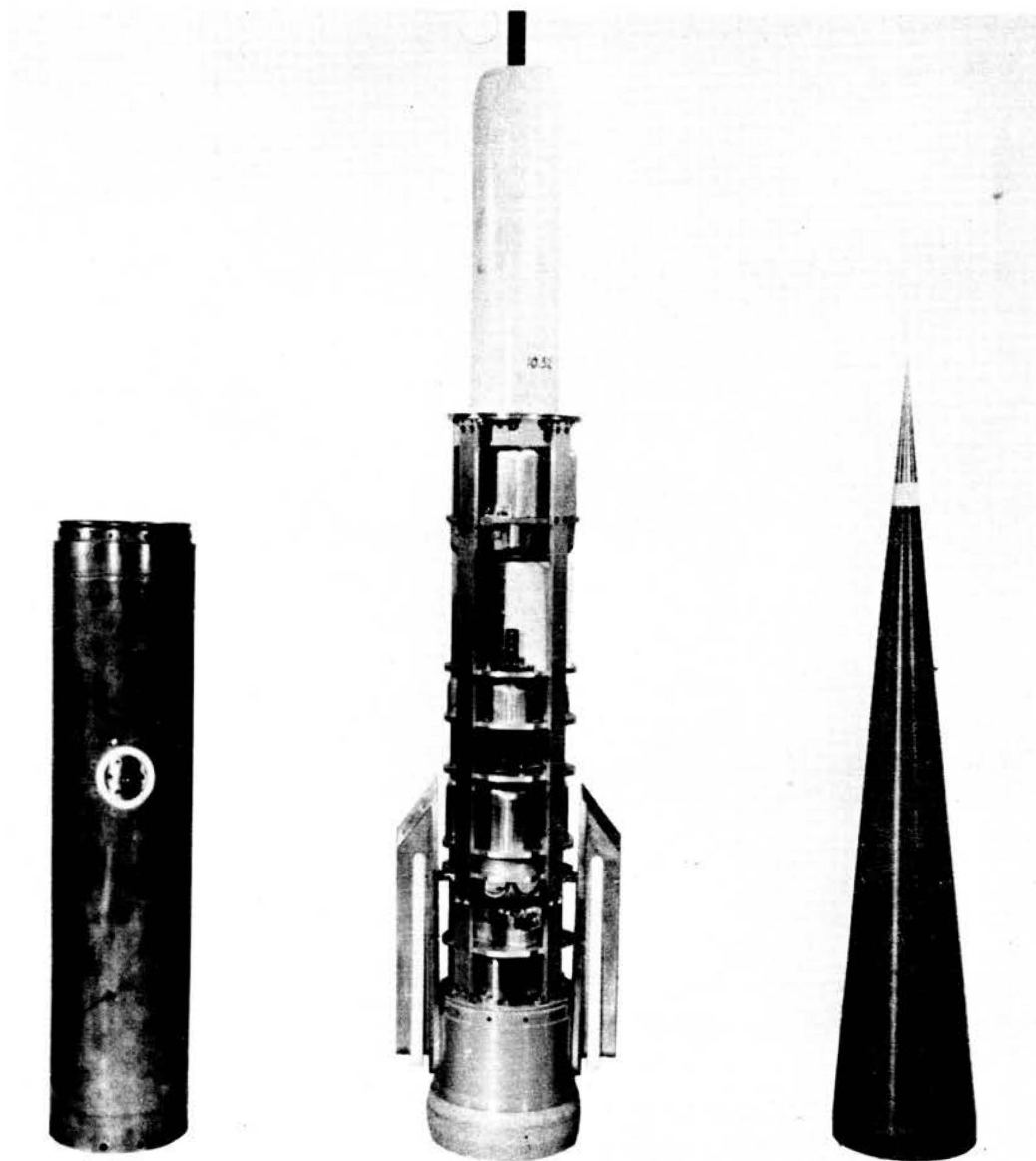


Figure 10—Payload and Housing for Nike Cajun 10.52 CI.

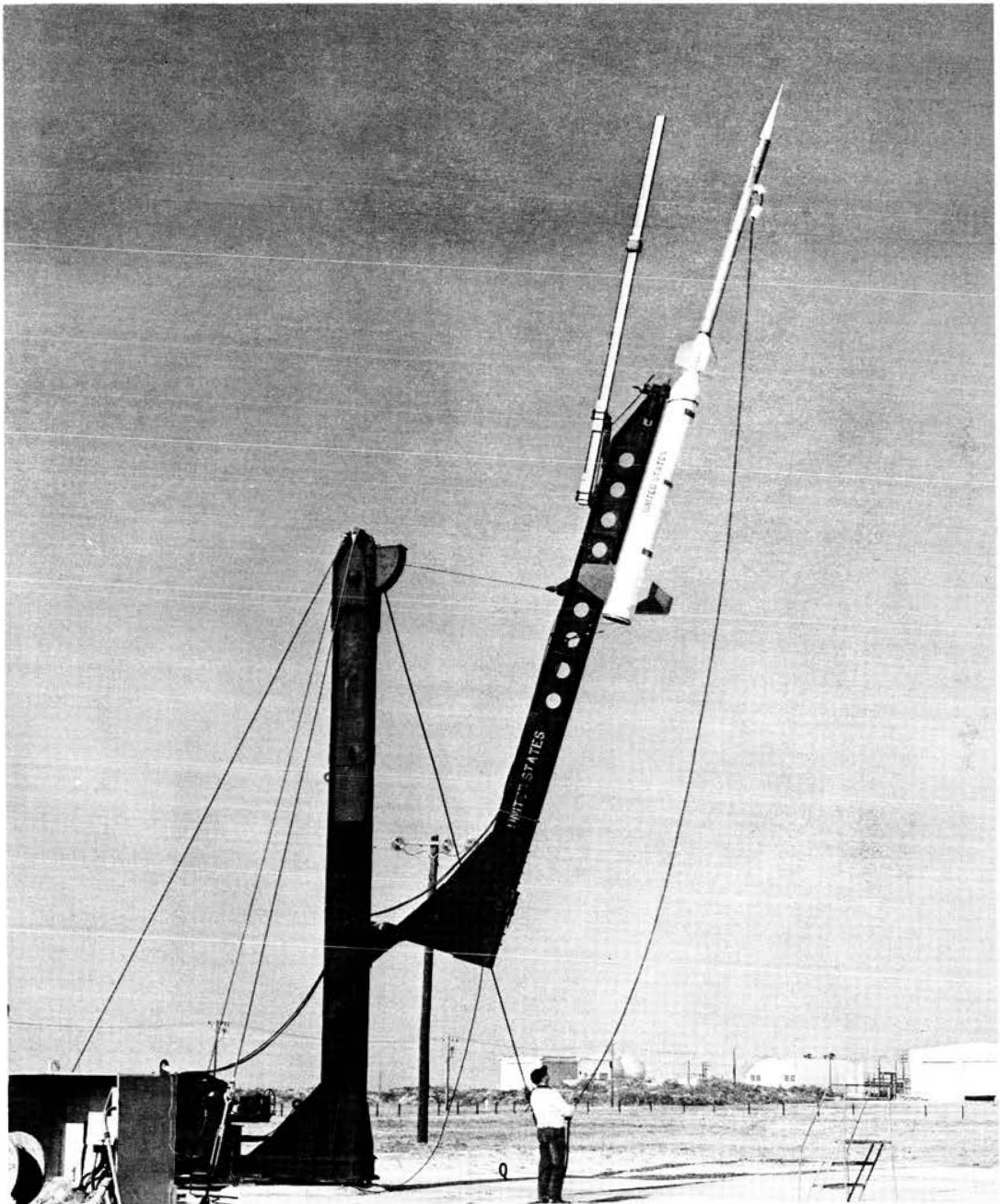


Figure 11—Nike Cajun 10.52 CI on Launcher in Firing Position.

SUMMARY TABLES

NASA SOUNDING ROCKET FIRINGS

AEROBEE 100

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	Km		
1.01 GI	-	11-23-60	1019	FT. CH.	56.7	91	Ionosphere	Successful
1.02 GI	-	11-27-60	1748	FT. CH.	52.8	85	Ionosphere	Successful
1.03 GP	-	9-15-60	1809	FT. CH.	47.08	75.6	AMPP	Successful
1.04 GP	-	5-17-60	1922	FT. CH.	47.5	76.4	AMPP	Partial
1.05 GP	-	9-24-60	1813	FT. CH.	47.43	22.8	AMPP	Partial
1.06 GP	-	5-19-61	1803	FT. CH.	14.2	65.2	AMPP	Successful
1.07 GA	-	10-17-61	2011	FT. CH.	40.5	65	ATM. Structural	Successful
1.08 GA	-	9-23-61	1827	FT. CH.	48.5	78	ATM. Structural	Successful
1.09 GA	-	9-30-61	2043	FT. CH.	45.3	73	ATM. Structural	Successful
1.10 GA	-	10-15-61	1433	FT. CH.	46.5	74.8	ATM. Structural	Successful
1.11 GA	-	11-2-61	1724	FT. CH.	42.6	68.5	ATM. Structural	Successful
1.12 GA	-	11-5-61	2011	FT. CH.	44.4	71.5	ATM. Structural	Successful
1.13 NA	-	9-6-62		WSMR			U. V. Airglow	Successful
1.14 NA	-	11-20-62		WSMR			U. V. Airglow	Failure

NASA SOUNDING ROCKET FIRINGS

ARCON 2

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	Km		
2.01 GT	G2-1	5-14-59	1755	W. I.			Rocket Test	
2.02 GT	G2-2	5-15-59	1710	W. I.			Rocket Test	
2.03 GT	G2-3	5-15-59	2210	W. I.			Rocket Test	
2.04 GT	G2-88	8-7-59		W. I.	13.62	23.8	Rocket Test	Failure
2.05 GT	G2-90	8-7-59		W. I.	30.8	49.5	Rocket Test	Failure
2.06 GT	G2-89	8-7-59		W. I.	64.7	104	Rocket Test	Successful

NASA SOUNDING ROCKET FIRINGS

NIKE ASP 3.00

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
3.01 GS	G2-206	3-1-60	2211	W. I.	132	222	Solar Study	Failure of experiment
3.02 GS	GS-211	3-3-60	2250	W. I.	132	222	Solar Study	Failure of experiment
3.03 GS	G2-212	4-27-60	2156	W. I.	15.2	24.4	Solar Study	Failure - ASP failed inflight
3.04 GS	G2-279	5-25-60	2200	W. I.	15.2	24.4	Solar Study	Failure - ASP failed inflight
3.05 CA	G2-338	4-19-61	0936	W. I.	104	167	Sodium Vapor	Successful
3.06 CA	G2-572	4-21-61	0012	W. I.	112	180	Sodium Vapor	Successful
3.07 CA	G2-573	4-21-61	0934	W. I.	15	24	Sodium Vapor	Failure - ASP did not ignite
3.08 CA	G2-574	4-21-61	0939	W. I.	103.1	165	Sodium Vapor	Successful
3.09 CA	G2-575	9-16-61	1002	W. I.	17	27	Sodium Vapor	Failure - ASP did not ignite
3.10 UI		3-16-60		FT. CH.			Ionosphere	Failure - ASP did not ignite
3.11 CA	G2-218	2-18-63	2314	W. I.	15.7	25.2	Sodium Vapor	Failure - ASP did not ignite
3.12 CI	G2-222	8-22-60	1740	W. I.	65	105	Langmuir Probe	Failure - ASP broke up
3.13 CA	G2-119	8-17-59	0918	W. I.	147	236	Sodium Vapor	Successful
3.14 CA	G2-120	8-19-59	0034	W. I.	18.7	30	Sodium Vapor	Failure - ASP broke up
3.15 CA	G2-191	11-18-59	2217	W. I.	156	251	Sodium Vapor	Successful
3.16 CA	G2-192	11-19-59	1051	W. I.	159	256	Sodium Vapor	Failure
3.17 CA	G2-193	11-20-59	1051	W. I.	147	236	Sodium Vapor	Failure
3.18 CA	G2-602	9-16-61	2139	W. I.	129	207	Sodium Vapor	Successful
3.19 CA	G2-603	9-17-61	1003	W. I.	108	173.5	Sodium Vapor	Successful
3.20 CA	G2-887	4-17-62	0943	W. I.	125	201	Sodium Vapor	Successful
3.21 CA	G2-888	6-7-62	0056	W. I.	101	161.5	Sodium Vapor	Successful
3.22 CA	G2-906	6-7-62	0852	W. I.	20.9	33.6	Sodium Vapor	Failure - Vehicle broke up
3.23 CA	G2-339	5-24-60	0857	W. I.	16		Sodium Vapor	Failure - Vehicle broke up
3.24 CA	G2-340	5-25-60	0048	W. I.	124	200	Sodium Vapor	Successful
3.25								
3.26								
3.27								
3.28 GT	G2-388	8-9-60	2010	W. I.	16.8		Rocket Test	Failure - Rocket broke up
3.29 GT								
3.29 GT	G2-463	11-3-60	2119	W. I.	120	193	Rocket Test	Successful
3.30								
3.31								
3.32								
3.33								
3.34								
3.35								
3.36 GT	G2-497	1-17-61	2125	W. I.	130	209	Rocket Test	Successful

NASA SOUNDING ROCKET FIRINGS

AEROBEE 150/150A 4.

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
4.01 GT	G2-216	2-16-60	2048	W. I.	1.9		Rocket Test	Failure of Rocket
4.02 II	DRTE-01	9-17-59	1837	FT. CH.	159	256	Ionosphere	Successful
4.03 II	DRTE-02	9-20-59	1735	FT. CH.	-	-	Ionosphere	Failure of Rocket
4.04 GG	G2-288	4-27-60	0418	W. I.	130	209	Stellar Fluxes	Partial
4.05 GG	G2-289	5-27-60	0530	W. I.	133.7	214	Stellar Fluxes	Partial
4.06 GG	G2-292	6-24-60	0625	W. I.	131	210	Stellar Fluxes	Successful
4.07 GI		9-14-59	1727	FT. CH.	136	218	Ionosphere	Successful
4.08 GI		9-11-59	1912	FT. CH.	140.9	226	Ionosphere	Successful
4.09 GA	G2-293	4-29-60	1547	W. I.	150.7	242	Atm. Comp.	Successful
4.10 GT	G2-294	4-23-60	2145	W. I.	148	238	Rocket Test	Successful
4.11 GG	G2-460	11-22-60	0842	W. I.	113.6	182	Stellar Spectra	Successful
4.12 GT	G2-217	3-25-60	1840	W. I.	132	212	Rocket Test	Successful
4.13 GP- GT	G2-1986	9-26-64	1204	W. I.	74.5	120	Rocket Test	Successful
4.14 GA	G2-450	11-15-60	1641	W. I.	141.3	217	Atm. Compl	Successful
4.15 GG	-	4-2-64	0348	WSMR	118	190	Stellar Spectra	Rocket Good - ACS Failure
4.16 UE	G2-295	8-23-60	1701	W. I.	132	212	Cosmic Ray	Successful
4.17								
4.18 GA	G2-742	3-19-62	1530	W. I.	49	79	Atm. Structure	Failure - Early Shut Down
4.19 GT								
4.19 GT	G2-545	4-14-61	1715	W. I.	128	206	Attitude Control Test	Failure to Despin
4.20 GT	G2-639	6-26-61	1515	W. I.	116	186.5	Attitude Control Test	Booster Exploded at 2 sec.
4.21 US	-	11-27-62	1800	W. S.	124	202	Solar Studies	Instrum. Power Failure
4.22 US	-	9-6-63	2130	W. S.	138	222	Solar Studies	Successful
4.23 US	G2-719	7-24-62	2141	W. I.	129	208	Solar Spectroscopy	Fair Data Return
4.24 US								
4.25 GS	G2-695	9-30-61	1430	W. I.	139	224	Solar Studies	Successful
4.26 NP	G2-943	6-20-62	1329	W. I.	97.5	157	Zero Gravity	Successful
4.27 NP	GS-1075	11-18-62	0457	W. I.	129	207	Zero Gravity	Successful
4.28 NP	G2-1264	6-9-63	1733	W. I.	119.5	191.2	Zero Gravity	Successful
4.29 GG	G2-1323	7-23-63	0600	W. I.	111	178.5	Stellar Spectra	Successful
4.30 GG	-	3-28-63	0015	W. S.	185	298	Nebular Spectra	Successful
4.31 GG	-	10-10-63	1033	W. S.	1.4	2.3	Nebular Spectra	Failure - Sustainer Failure
4.32 NP	G2-1361	9-11-63	1424	W. I.	102.2	164.4	Zero Gravity	Successful
4.33 GS	-	10-15-63	1605	W. S.	123.5	199	Solar Studies	Successful
4.34 GS	G2-546	3-31-61	0250	W. I.	45	72.5	Stellar Fluxes	No Data - Doors Ejected Early
4.35 GG	G2-811	2-7-62	0438	W. I.	2.3	3.7	Stellar Spectra	Cut Down by Range Safety
4.36 GG	G2-1018	9-21-62	0224	W. I.	117	188	Stellar Spectra	Failure of Experiment
4.37 GG	G2-1226	7-19-63	0530	W. I.	114.5	185	Stellar Spectra	Successful
4.38 NP	G2-495	2-5-61	1348	W. I.	93.9	151	Zero Gravity	Successful - No Recovery
4.39 NP	G2-543	4-21-61	1200	W. I.	96	154	Zero Gravity	Successful
4.40 NP	G2-722	10-18-61	1325	W. I.	94.5	152	Zero Gravity	Successful
4.41 NP	G2-808	2-17-62	1943	W. I.	97.7	157	Zero Gravity	Successful
4.42 NP	G2-641	8-12-61	1057	W. I.	95	153	Zero Gravity	Successful
4.43 GP		10-5-60	1952	FT. CH.	140.1	235	AMMP	Successful
4.44 GI	G2-1190	4-23-63	2048	W. I.	123.9	198	Electron Density	Successful
4.45 GA	G2-1293	11-16-64	1818	W. I.	117	188	Thermosphere Probe	Successful
4.46 NP	-	5-8-62	1505	W. S.	122	197	Radar	Failure of Exp't
4.47 NP	-	7-10-62	1500	W. S.	124	200	Radar	Failure of AFC
4.48 GT	G2-924	5-25-62	1243	W. I.	124.5	200.4	Water Recovery	Successful
4.49 GS								
4.50 UG								

NASA SOUNDING ROCKET FIRINGS

AEROBEE 150/150A 4.

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
4.51 UG								
4.52 UG	-	11-3-64	0757	WSMR	78.8	126.5	Stellar Spectra	Satisfactory
4.53 GS								
4.54 UG	G2-983	10-30-62	0850	W. I.	116.8	187	Stellar Studies	Successful
4.55 UG	G2-1987	9-2-64	0308	W. I.	97.1	156	Stellar Studies	Successful
4.56 GG								
4.57 GG								
4.58 UI	G2-1064	4-3-63	1646	W. I.	147	236	Ionosphere	Successful
4.59 UI	G2-1322	7-10-63	0246	W. I.	126.9	212	Ionosphere	Successful
4.60 GT	G2-978	8-8-62	1655	W. I.	93	150	ACS Test	Successful
4.61 AS	-	6-20-63	1425	W. S.	119.2	192	Coronagraph	Successful
4.62 AS	-	6-28-63	1430	W. S.	126	203	Coronagraph	Successful
4.63 GS								
4.64 GI	G2-926	9-28-63	1443	W. I.	140.5	225	Electron and Ion Trap	Successful
4.65 GI	G2-1016	9-25-63	0709	W. I.	139.5	224	Electron and Ion Trap	Successful
4.66 NP	-	5-14-63	1545	W. S.	115	185	Paraglider	Successful
4.67 NP	-	6-10-64	1245	W. S.	95.5	153.5	Paraglider	Successful
4.68 GT	G2-738	1-13-62	1615	W. I.	130	209	ACS Test	Successful
4.69 CG	G2-1017	9-30-62	0602	W. I.	107	172	Night Sky Mapping	Successful
4.70 CG	G2-1194	3-16-63	0219	W. I.	122.8	197.1	Stellar Spectra	Successful
4.71 UA	G2-944	6-29-62	0455	W. I.	129	208	Airglow	Successful
4.72 UA	G2-945	6-29-62	2100	W. I.	131	211	Airglow	Successful
4.73 UA	G2-1125	1-29-63	1627	W. I.	2.46	3.95	Airglow	Failure of sustainer
4.74 UA	G2-1146	12-13-62	1723	W. I.	0	0	Airglow	Failure of sustainer
4.75 UA	CRR-153	7-20-63	2106	FT. CH.	50	80.4	Airglow	Failure of Booster
4.76 UA	G2-1398	11-12-63	1858	W. I.	136	219	U. V. Spectrum	Successful
4.77 GS	-	7-20-63	1518	W. S.	130.5	210	U. V. Spectrum	Successful
4.78 GS	-	10-1-63	1700	W. S.	134	216	U. V. Spectrum	Successful
4.79 II	G2-1078	11-16-62	0422	W. I.	18.5	29.8	VLF Studies	Failure of Rocket
4.80 II	G2-1079	12-11-62	0422	W. I.	33.5	53	VLF Studies	Failure of Rocket
4.81 GG	-	4-7-64	0431	W. S.	46	74	Stellar Spectra	Failure of Rocket
4.82 GG	-	8-11-64	1030	W. S.	107	171.9	Stellar Spectra	Rocket Good, ACS Failure
4.83 GA	-	12-1-64	0615	W. S.	113.5	182.2	U. V. Airglow	Successful
4.84 GA								
4.85 NA	G2-1480	11-17-63	1815	W. I.	115	185	U. V. Airglow	Successful
4.86 NA	-	4-14-64	1830	W. S.	18.2	29.2	U. V. Airglow	Failure of Rocket
4.87 GT	-	6-17-63	1800	W. S.	113	181.8	ACS Test	Successful
4.88 GT	-	1-28-64	1900	W. S.	117	188	ACS Test	Successful
4.89 GG								
4.90 GG								
4.91 GE		9-4-63	1311	FT. CH.	150	242	VLE Heavy Nuclei	Successful
4.92 GS								
4.93 II	G2-1412	10-17-63	1650	W. I.	116.4	187.2	VLF Studies	Successful
4.94 II	G2-1413	10-31-63	1650	W. I.	114.6	184	VLF Studies	Successful
4.95 GS								
4.96 II	G2-1255	4-12-63	0550	W. I.	124.6	200	VLF Studies	Successful
4.97 II	G2-1256	5-9-63	1802	W. I.	125.8	202.5	VLF Studies	Successful
4.98 US	G2-1126	5-7-63	1915	W. I.	138.6	223	UV Spectrum	Successful
4.99 DS								
4.100 DS								
4.101 DS								
4.102 DS								
4.103 DS								
4.104 DS								
4.105 NP								
4.106 NP								
4.107 GE		7-23-64	1843	FT. CH.	144.5	232.6	Heavy Nuclei	Partial

NASA SOUNDING ROCKET FIRINGS

AEROBEE 150/150 4.

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
4.108 GE	357	7-25-64	1735	FT. CH.	133.1	214	Heavy Nuclei	Successful
4.109 GG		11-7-64	1031	WSMR	132	213	Stellar Studies	Successful
4.110 GG		11-14-64	1023	WSMR	128	206	Stellar Studies	Successful
4.111 NA		1-13-65	2348	W. I.	110	178	Dayglow	Successful
4.112 NA	G2-2069							
4.113 GA-GI		4-21-64	1618	WSMR	6.25	10.2	Micrometeorite	Failure of Rocket
4.114 GA								
4.115 NA								
4.116 GS	G2-1988	9-18-64	1717	W. I.	104.4	168	U. V. Airglow	Successful
4.117 GS		10-30-64	1930	WSMR	117.5	189	Solar Studies	Successful
4.118 NA		11-16-64	1821	WSMR	97	156	Micrometeorite Sampling	Successful
4.119 NA								
4.120 CG		10-2-64	0235	WSMR	89	143.2	Stellar X-ray	Successful
4.121 CG								
4.122 CG		8-29-64	0530	WSMR	110	176.99	X-ray Astronomy	Successful
4.123 CG		10-26-64	0058	WSMR	119.2	191.5	X-ray Astronomy	Successful
4.124 UA		2-27-64	0318	FT. CH.	100	161	Aurora	Successful
4.125 UA								
4.126 GG		8-22-64	1015	WSMR	76.6	122.2	Stellar Spectra	Successful
4.127 UA								
4.128 UA								
4.129 UA								
4.130 UA								
4.131 UA								
4.132 GA-GI								
4.133 UG								
4.134 DS								
4.135 DS								
4.136 DS								
4.137 DS								
4.138								
4.139								
4.140 GE								
4.141 GE								

NASA SOUNDING ROCKET FIRINGS

IRIS 5.

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
5.01 GT	G2-306	7-22-60	1205	W. I.	139	244	Rocket Test	Successful
5.02 GT	G2-451	10-18-60	1417	W. I.	140	245	Rocket Test	Successful
5.03 GT	G2-480	1-19-61	1242	W. I.	86	138	Rocket Test	Failure - Probable Break Up
5.04 GA	G2-806	5-3-62	1803	W. I.	70	112	Rocket Structure	

NASA SOUNDING ROCKET FIRINGS

SPAEROBEE 300 - 6.00

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
6.01 UI		3-16-60	2125	FT. CH.	210	338	Ionosphere	Successful
6.02 UI		6-15-60	2256	FT. CH.	200	322	Ionosphere	Successful
6.03 UI	G3-414	8-3-60	1526	W. I.	258	415	Ionosphere	Successful
6.04 UI	G3-548	3-26-61	1654	W. I.	240	385	Ionosphere	Successful
6.05 UI	G3-743	12-22-61	0424	W. I.	227	365	Ionosphere	Successful
6.06 GA	G3-1088	11-20-62	2141	W. I.	213.6	344	Thermosphere Probe	Successful
6.07 GA	G3-1227	4-18-63	2100	W. I.	212.5	342	Thermosphere Probe	Successful
6.08 GI	G3-1328	7-20-63	2155	W. I.	210	338	Thermosphere Probe	Successful
6.09 GA	G3-1562	1-29-64	0309	W. I.	192.3	308	Thermosphere Probe	Successful
6.10 GA		7-28-64	2114	FT. CH.			Thermosphere Probe	Successful
6.11 GA								
6.12 GA								
6.13 GA								
6.14 GA								
6.15 GA								
6.16 UE								

NASA SOUNDING ROCKET FIRINGS

JAVELIN ARGO D-4 8.00

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
8.01 GT	G4-204	12-22-59	0756	W. I.	560	900	X-248 Vib. Test	Successful
8.02 GT	G4-214	1-26-60	0048	W. I.	590	950	X-248 Vib. Test	Successful
8.03 CA	G4-1798	10-8-64	0532	W. I.	631	1015	Ion Spectroscopy	Successful
8.04 CA	G4-462	11-9-60	2040	W. I.	610	980	Ionosphere	Successful
8.05 CA	G4-487	12-10-63	2230	W. I.	446	716	Sodium Vapor	Successful
8.06 CA	G4-430	9-13-61	0932	W. I.	261	420	Sodium Vapor	Successful
8.07 GE	G4-378	6-30-60	1525	W. I.	40.7	65.5	Magnetic Field	Multiple Targets at end of 3 rd Stage
8.08 GE	G4-384	12-12-60	1736	W. I.	721	1160	Magnetic Field	Good Flight - Bad AZ Error
8.09 GI	G4-568	6-13-61	0012	W. I.	539	867	Ionosphere	Failure of Nose Cone Ejection
8.10 GI	G4-567	4-27-61	1502	W. I.	472	759	Ionosphere	Poor 4th Stage - Telem. Failure
8.11 UA								
8.12 UA								
8.13 II	G4-627	6-14-61	1902	W. I.	560	900	Antenna Test	Successful
8.14 GI	G4-628	7-2-63	1418	W. I.			Topside Sounder	Successful
8.15 AI	G4-626	6-24-61	1817	W. I.	633	1040	Topside Sounder	Successful
8.16 AI	G4-636	2-7-62	1150	W. I.	568	912	Ionosphere	Nose Cone Did Not Eject
8.17 AI	G4-686	10-14-61	1426	W. I.	656	1055	Topside Sounder	Successful
8.18 GI	G4-1351	9-29-63	0237	W. I.			Topside Sounder	Successful
8.19 DI	CRR-525	11-5-64	2039	FT. CH.	522	840	Ionospheric Studies	Successful
8.20 DI	CRR-528	11-6-64	0514	FT. CH.			Ionospheric Studies	Successful
8.21 GI	G4-727	5-3-62	2000	W. I.	845.2	1360	Elf Electron Trap	
8.22 CA	G4-696	9-13-61	2353	W. I.	268	430	Sodium Vapor	Successful
8.23 GA	G4-697	10-10-61	1740	W. I.	585	940	Ionosphere	Successful
8.24 GI-	G4-1723	10-19-64	1542	W. I.	527.8	850	Ionosphere	Successful
GI								
8.25 GA-								
GI								
8.26 GA-								
GI								
8.27 GA-								
GI								
8.28 UI	G4-1724	1-13-65	1712	W. I.	625	1006	Mother-Daughter	Mother-Daughter Separation Failed
8.29 UI								
8.30 UI								
8.31 DA	G4-1423	1-17-64	0501	W. I.			Comp. Airglow	Successful
8.32 DA								
8.33 GR	G4-2016	10-23-64	1600	W. I.	664	1065	Radio Astronomy	Successful
8.34 UA	G4-1993	11-5-64	1903	W. I.	538.5	865	Airglow	Successful
8.35								
8.36								
8.37								

NASA SOUNDING ROCKET FIRINGS

Skylark 9.00

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St.Mi.	km		
9.01 GG		9-18-61	1215	Woomera	120	193	Stellar Photo	Successful Successful Possible Volt. supply Failure Successful
9.02 GG		10-4-61	1119	Woomera	121	195	Stellar Photo	
9.03 GG		11-1-61	1756	Woomera	120	193	Stellar Photo	
9.04 GG		11-20-61	1804	Woomera	130	209	Stellar Photo	

NASA SOUNDING ROCKET FIRINGS

Nike Cajun 10.00

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
10.01 GA	G2-308	7-13-60	1944	W.I.	17	27.3	Grenade	Grenades exploded at 4.25 sec.
10.02 GA	G2-580	5-5-61	2300	W.I.	70.4	113	Grenade	Successful
10.03 GA	G2-310	6-16-60	0029	W.I.	60	96.5	Grenade	High pitch angle—one explosive
10.04 GA	G2-311	7-8-60	2259	W.I.	64.5	103.5	Grenade	Successful—8 grenades expl.
10.05 GA	G2-428	9-20-60	1518	W.I.	12	19.3	Grenade	Grenades exploded at 4.5 sec.
10.06 GA	G2-429	12-14-60	1152	W.I.	68.5	110	Grenade	Extra explosions
10.07 GA	G2-438	2-14-61	2350	W.I.	81	130	Grenade	11 grenades exploded
10.08 GA	G2-532	2-17-61	0226	W.I.	52.3	84	Grenade	11 grenades exploded
10.09 UA	G2-464	11-2-60	1725	W.I.	78.6	126.4	Composition	Experiment failure
10.10 GA	G2-465	11-16-60	1237	W.I.	95	152.5	Composition	Experiment failure
10.11 GA	G2-485	12-9-60	1715	W.I.	15.2	14.3	Sodium	2nd stage did not fire
10.12 GA	G2-486	12-9-60	0620	W.I.	91	146.4	Sodium	Successful
10.13 GE	-	11-16-60	1351	FT. CH.	79.5	128	SBE	Successful
10.14 GE	-	11-17-60	0000	FT. CH.	79.5	128	SBE	Successful
10.15 GE	-	11-12-60	1732	FT. CH.	79.5	128	SBE	Successful
10.16 GE	-	11-13-60	1002	FT. CH.	79.5	128	SBE	Successful
10.17 GE	-	6-6-60	1110	FT. CH.	76	122	SBE	Successful
10.18 GE	-	7-21-60	2253	FT. CH.	76	122	SBE	Successful
10.19 GE	-	9-3-60	1408	FT. CH.			SBE	Successful
10.20 GE	-	9-3-60	1729	FT. CH.			SBE	Successful
10.21 GE	-	9-27-60	1444	FT. CH.			SBE	Successful
10.22 GE	-	11-11-60	1121	FT. CH.	80	128.5	SBE	Successful
10.23 GE	-	11-11-60	1210	FT. CH.	80	128.5	SBE	Partially Successful
10.24 GE	-	11-12-60	1839	FT. CH.	80	128.5	SBE	Successful
10.25 CI	G2-488	12-8-60	1652	W.I.	95.6	153.5	Langmuir probe	Successful
10.26 GE	-	11-18-60	0338	FT. CH.	80	128.5	SBE	Successful
10.27 GE	-	11-18-60	2338	FT. CH.	80	128.5	SBE	Successful
10.28 GA	G2-553	5-6-61	0454	W.I.	71	114	Grenade	Successful
10.29 GA	G2-610	5-9-61	1153	W.I.	72.5	116.5	Grenade	Partial—One and two data points
10.30 GA	G2-611	7-13-61	2207	W.I.	73.7	118.5	Grenade	Successful
10.31 GA	G2-637	7-14-61	1602	W.I.	62.7	101	Grenade	Successful
10.32 GA	G2-638	7-20-61	1030	W.I.	77	124	Grenade	Successful
10.33 GA	G2-551	4-5-61	1257	W.I.	71	114	Grenade	Partial—DOVAP transp. failed
10.34 GA	G2-552	4-27-61	2232	W.I.	10.9	17.5	Grenade	Failure—Cajun did not ignite
10.35 GA	G2-553	7-21-61	0350	W.I.	43	69	Grenade	Failure—All grenades expl. at once
10.36 GA	G2-680	9-16-61	2355	W.I.	55	88.4	Grenade	Partial—Only 5 grenades exploded
10.37 GA	G2-703	9-17-61	1013	W.I.	57.5	92.4	Grenade	Partial—All grenades exploded at No. 3
10.38 GA	G2-832	3-2-62	0005	W.I.	70.4	103	Grenade	Successful
10.39 GA	G2-833	3-2-62	1115	W.I.	71.2	104	Grenade	Successful
10.40 GA	G2-834	3-23-62	2354	W.I.	75.5	121	Grenade	Successful
10.41 GA	G2-835	3-28-62	0003	W.I.	76.5	123	Grenade	Successful
10.42 GA	G2-883	4-17-62	0928	W.I.	74	119	Grenade	Successful
10.43 GA	G2-886	6-7-62	0005	W.I.	74.6	120	Grenade	Successful—DOVAP failed
10.44 GA	G2-908	6-8-62	0053	W.I.	73	117.2	Grenade	Successful
10.45 GA	G2-1069	12-1-62	2125	W.I.	77.6	124.5	Grenade	Successful
10.46 GA	G2-1070	12-4-62	0719	W.I.	30.8	49.5	Grenade	Partial—Only 2 grenades exploded
10.47 GA	G2-1071	12-6-62	0532	W.I.	80.8	130	Grenade	Successful
10.48 GA	G2-1072	2-20-63	2347	W.I.	70	112.5	Grenade	Successful

NASA SOUNDING ROCKET FIRINGS

Nike Cajun 10.00

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
10.49 GT	G2-309	3-15-61	1747	W.I.	80	129	Cajun Fin Test	Successful
10.50 UA	G2-577	6-6-61	2148	W.I.	93	150	Upper Atm. Density	Successful
10.51 CI	G2-682	8-13-61	0306	W.I.	88	141.5	Langmuir Probe	Successful
10.52 CI	G2-685	10-27-61	0935	W.I.	90	146	Langmuir Probe	Successful
10.53 GA	G2-1171	2-23-63	2211	W.I.	63.9	102.5	Grenade	Successful
10.54 GA	G2-1187	3-9-63	0001	W.I.	73.4	118	Grenade	Successful
10.55 GA	G2-1188	12-7-63	1311	W.I.	65.4	105	Grenade	Successful
10.56 UA	G2-621	6-9-61	1802	W.I.	89	143	Massenfilter	Experiment failed
10.57 UA	G2-622	7-26-61	1922	W.I.	91	146.2	Massenfilter	Experiment failed
10.58 GA	-	2-20-63	2334	FT. CH.	70	112.5	Grenade	Successful
10.59 GA	-	2-28-63	2148	FT. CH.	70	112.5	Grenade	Successful
10.60 GA	-	3-9-63	0001	FT. CH.	73	117	Grenade	Successful
10.61 GA	G2-1563	1-24-64	0016	W.I.	73.6	118	Grenade	Successful
10.62 GA	G2-1564	2-4-64	0146	W.I.	71.9	115.5	Grenade	Successful
10.63 GA	G2-1565	2-5-64	0320	W.I.	73.8	118.5	Grenade	Successful
10.64 GA	G2-772	12-21-61	1954	W.I.	81.5	131	Test of S-6 Thermal Coat	Successful
10.65 GA		11-16-62	0559	FT. CH.	9.5	15.3	Grenade	Cajun did not ignite
10.66 GA		12-6-62	0543	FT. CH.	70.7	113.5	Grenade	Successful
10.67 GA		12-4-62	0705	FT. CH.	69	111	Grenade	Successful
10.68 GA		12-1-62	2134	FT. CH.	67	107.5	Grenade	Timer did not function
10.69 GT	G2-844	3-1-62	2330	W.I.	13.6	21.8	Water Test	Cajun did not ignite
10.70 GT	G2-845	3-2-62	1047	W.I.	89	143	Water Test	Successful
10.71 GA	G2-1566	1-29-64	0411	W.I.	71	114	Grenade	Successful
10.72 NA	L2-688	11-18-61	0630	W.I.	88	141.5	Langley Test	Successful
10.73 GA	CRR-284	4-18-64	0038	FT. CH.	77.3	124	Grenade	Successful
10.74 GI	G2-744	12-21-61	2131	W.I.	61.8	99.5	Ion Studies	Successful
10.75 UA	G2-1307	8-2-63	2333	W.I.	91	147	San Marco	Successful
10.76 GE		12-10-61	1701	FT. CH.	82	130	Low En. Cos. Ray Study	Successful
10.77 IA		5-16-63		Pakistan			Sodium	Failure
10.78 GA	G2-1981	8-7-64	0100	W.I.	73.4	118	Grenade	Successful
10.79 NA	G2-858	4-5-62	0431	W.I.	43.5	70	Chem. Luminescent	Successful
10.80 NA	G2-1101	1-17-63	0144	W.I.	46.3	74.5	Chem. Luminescent	Successful
10.81 GA		1-29-64	0418	Ascen.	77	124	Grenade	Successful
10.82 GA		2-13-64	0455	Ascen.	74	119	Grenade	Successful
10.83 GA	G2-1662	4-18-64	0059	W.I.	74.3	119.5	Grenade	Successful
10.84 GA	G2-1982	8-12-64	0149	W.I.	72	115.9	Grenade	Successful
10.85 GA	G2-1983	8-16-64	0315	W.I.	74	119	Grenade	Successful
10.86 GA		1-24-64	0036	FT. CH.	13.3	21.4	Grenade	Cajun did not ignite
10.87 GA		2-5-64	0439	FT. CH.	78	125	Grenade	Successful
10.88 GA		2-13-64	0429	FT. CH.	74	119	Grenade	Successful
10.89 GA		1-29-64	0417	FT. CH.	76.5	123	Grenade	Successful
10.90 UA	G2-745	2-20-62	1328	W.I.	82	132	Atm. Structure	Experiment failed
10.91 UA	G2-746	5-18-62	1801	W.I.	83.5	134	Atm. Structure	Successful
10.92		9-25-63		W.I.			Chem. Release-Langley	Successful
10.93		9-25-63		W.I.			Chem. Release-Langley	Successful
10.94 IA				Pakistan				
10.95 IA				Pakistan				
10.96								
10.97								
10.98 NA								
10.99 CI	G2-1092	11-7-62	1025	W.I.	81.5	131	Electron Density	Successful
10.100 CA	G2-822	3-1-62	2323	W.I.	84	135	Sodium	Successful
10.101 CA	G2-825	3-2-62	1054	W.I.	83	133.5	Sodium	Successful
10.102 CA	G2-826	3-23-62	2344	W.I.	88	141.5	Sodium	Successful
10.103 CA	G2-829	3-27-62	2348	W.I.	74	119	Sodium	Successful
10.104 GA	397	8-8-64	0400	FT. CH.	86.5	139.2	Grenade	Successful
10.105 GA	405	8-12-64	0215	FT. CH.	77.5	124.8	Grenade	Successful
10.106 GA	423	8-18-64	0115	FT. CH.	77.5	124.8	Grenade	Successful
10.107 GA	G2-2070	11-5-64	1700	W.I.	76.8	123.2	Grenade	Successful

NASA SOUNDING ROCKET FIRINGS

Nike Cajun 10.00

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
10.108 CI	G2-1093	11-30-62	1057	W.I.	76	122	Langmuir Probe	Successful
10.109 CI	G2-1094	12-5-62	2200	W.I.	79.7	128	Langmuir Probe	Successful
10.110 GI	G2-882	4-19-62	1600	W.I.	75.2	121	Electron Temp.	Successful
10.111 GI	G2-885	5-17-62	0204	W.I.	79	127	Electron Temp.	Successful
10.112 GI	G2-889	5-16-62	1703	W.I.	75.6	122	Electron Temp.	Successful
10.113 GA	G2-1984	8-18-64	0125	W.I.	74.3	119	Grenade	Successful
10.114 GA		8-5-64	0207	Ascen.	17.1	28.4	Grenade	F-Payloaded exploded
10.115 GA		8-16-64	0553	Ascen.	76.7	123.2	Grenade	Successful
10.116 GA		8-17-64	1255	Ascen.	75.7	121.8	Grenade	Successful
10.117 GA	G2-2053	11-19-64	1902	W.I.	78	125	Grenade	Successful
10.118 GA	G2-2143	1-27-65	2223	W.I.	73.2	117.6	Grenade	Successful
10.119 GA	G2-2744	2-4-65	0510	W.I.	73.5	118.2	Grenade	Successful
10.120 GA	G2-2145	2-8-65	2253	W.I.	66.3	106.7	Grenade	Successful
10.121 GA	5R32	1-27-65	2223	FT. CH.	77.4	124.5	Grenade	Successful
10.122 GA	5R42	2-4-65	1734	FT. CH.			Grenade	Successful
10.123 GA	5R49	2-8-65	2259	FT. CH.	77.7	125.1	Grenade	Successful
10.124 GA	GH2-1916	1-27-65	2132	PT. BA.	NA		Grenade	Successful
10.125 GA	GH2-1917	2-8-65	0445	PT. BA.	75	121	Grenade	Successful
10.126 GA	GH2-1918	2-8-65	2215	PT. BA.	77	124	Grenade	Successful
10.127								
10.128								
10.129								
10.130		5-22-63	0110	Eglin	-	-	Sodium	Successful
10.131 UA	G2-1512	11-26-63	1844	W.I.	93.7	150	Atm. Density	Successful
10.132 GA	G2-2049	11-3-64	1738	W.I.	76.8	123.2	Grenade	F No grenade expl.
10.133 GA	G2-2050	11-6-64	0002	W.I.	74.3	120	Grenade	Successful
10.134 GA	G2-2051	11-6-64	0520	W.I.	75	120.8	Grenade	Successful
10.135 GA	G2-2052	11-6-64	1000	W.I.	75.3	121	Grenade	Successful
10.136 GA	G2-1567	2-13-64	0430	W.I.	73.9	118.9	Grenade	Successful
10.137 GA	G2-1568	3-7-64	0245	W.I.	71.1	114.1	Grenade	Successful
10.138 GA		8-7-64	0015	Sweden	81.0	130	Grenade	Successful
10.139 GA		8-12-64	0110	Sweden	NA	NA	Grenade	Part-Lost DOVAP
10.140 GA		8-16-64	0113	Sweden	84.2	135.4	Grenade	Successful
10.141 GA		8-17-64	0049	Sweden	82.2	132	Grenade	Successful
10.142 UA	G2-1671	4-17-64	2315	W.I.	92.5	149.5	Atm. Comp.	Successful
10.143 UA								
10.144 UA				WSMR			Interpl. Matter	
10.145 UA				WSMR			Interpl. Matter	
10.146 UA				WSMR			Interpl. Matter	
10.147 UA				FT. CH.			Interpl. Matter	
10.148 UA				FT. CH.			Interpl. Matter	
10.149 UA				FT. CH.			Interpl. Matter	
10.150								
10.151								
10.152								
10.153 UA	KS2-1903	11-17-64	2110	SHIP	92.6	149	Falling Sphere	Successful
10.154								
10.155 UA	KS2-1800	2-26-65	2133	SHIP	NA		Falling Sphere	Successful

NASA SOUNDING ROCKET FIRINGS

NIKE CAJUN - INTERNATIONAL

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
	REHBAR I	6-7-62	1442	Pakistan	77.6	125	Sodium	Successful
	REHBAR II	6-11-62	1450	Pakistan	77.6	125	Sodium	Successful
	ION I-64-I	12-1-64	0420	Argentina	83.3	134	Ionospheres	Successful
	ION I-64-2	12-4-64	0606	Argentina	84.8	136.5	Ionospheres	Successful
K-62-1		8-7-62		Sweden			Air Sampling	Successful
K-62-3		8-11-62		Sweden			Air Sampling	Successful
K-62-4		8-11-62		Sweden			Air Sampling	Partially Successful
K-62-5		8-31-62		Sweden			Air Sampling	Failure
Ferdinand II		12-14-62		Norway			Ionosphere	Successful
Ferdinand III		12-11-62		Norway			Ionosphere	Successful
Ferdinand IV		9-11-63		Norway			Ionosphere	Successful
Ferdinand V		9-8-63		Norway			Ionosphere	Failure
K-63-1		7-27-63		Sweden			Grenade	Successful
K-63-2		7-29-63		Sweden			Grenade	Successful
K-63-3		8-1-63		Sweden				Successful
K-63-4		8-7-63		Sweden			Grenade	Successful

NASA SOUNDING ROCKET FIRINGS

ARGO D-8 11.00

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
11.01 GE	G4-966	9-19-60	1635	PMR	1260	2025	Micrometeorite RF-Energy and Electron Density	Successful
11.02 UR		9-22-62	0645	W. I.	1058	1703		Successful
11.03 UR		9-15-61	1441	PMR	1159	1864	Electron Spectrometer	Successful
11.04 GB								No Recovery
11.05 GB		11-18-61	1342	PMR	657	1057		No Recovery
11.06 UE		2-12-63	0147	PMR	1000	1610		Successful
11.07 UE								

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
12.01 GT	GI-554	5-2-61	2115	W. I.	8.5	13.6	Cone Test	Successful
12.02 GT	GI-1425	12-11-64	1800	W. I.	1	1.83	350 Launch Test	Successful
12.03 GT-GI	G4-1597	4-15-64	2325	W. I.	452	729	Test X-258 Motor	Successful
12.04								
12.05 GA		3-19-65	1808	W. I.			Thermosphere Probe - Tomahawk	

NASA SOUNDING ROCKET FIRINGS

Nike Apache 14.00

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
14.01 GT	G2-614	5-25-61	1703	W.I.	120	193	Rocket Test	Successful
14.02 GT	G2-615	8-16-61	2027	W.I.	128	206	Rocket Test	Successful
14.03 UE	G2-647	7-14-61	0259	W.I.	125	207.5	Magnetic Field	Successful
14.04 UE	G2-648	7-14-61	1500	W.I.	124	199.5	Magnetic Field	Successful
14.05 UE	G2-649	7-20-61	1312	W.I.	120	193	Magnetic Field	Successful
14.06 UE	G2-1362	9-9-63	1602	W.I.	102.6	165	Magnetic Field	Successful
14.07 UE	KS2-1830	3-12-65	1330	SHIP	NA	NA	Magnetic Field	Successful
14.08 UA	G2-1195	3-28-63	0755	W.I.	117.5	189	Massenfilter	Successful
14.09 UA	G2-1196	3-28-63	1906	W.I.	118	189.5	Massenfilter	Failure
14.10 UA	G2-1197	11-26-63	1816	W.I.	124.5	200	Massenfilter	Successful
14.11 UA	5R64	2-18-65	2009	FT. CH.	NA	NA	Massenfilter	P-No radar tracking
14.12 GI	G2-897	6-15-62	1648	W.I.	88.6	142	Electron Density	Successful
14.13 CA		5-22-63	0410	FT. CH.	115	185	Sodium	Successful
14.14 CA		5-22-63	0751	FT. CH.	114.5	184	Sodium	Successful
14.15 CA		5-23-63	0413	FT. CH.	124.5	200	Sodium	Successful
14.16 CA	G2-1065	11-7-62	1053	W.I.	102	164	Sodium	Successful
14.17 CA	G2-1066	11-30-62	1115	W.I.	105.1	169	Sodium	Successful
14.18 CA	G2-1067	12-5-62	2216	W.I.	110.5	178	Sodium	Successful
14.19 UA	G2-884	6-6-62	2340	W.I.	77	124	PITOT	Successful
14.20 UA	G2-1076	12-1-62	2034	W.I.	82	132	PITOT	Successful
14.21 UA	G2-1077	12-7-63	1343	W.I.	87.2	140	PITOT	Successful
14.22 UA		2-4-64	0135	ASCEN	98	158	PITOT	Successful
14.23 UA		4-15-64	1556	ASCEN	98	158	PITOT	Successful
14.24 UA		4-15-64	0122	ASCEN	97	156	PITOT	Successful
14.25 UA	GS2-1822	4-15-65	1600	SHIP	NA	NA	PITOT	Successful
14.26 UA	GS2-1823	4-6-65	1634	SHIP	NA	NA	PITOT	Successful
14.27 UA	GS2-1824	4-13-65	1600	SHIP	NA	NA	PITOT	Successful
14.28 GT	G2-1603	2-12-64	2023	W.I.	90	144.8	Fin Test	Successful
14.29 UA	GS2-1905	11-19-64	1834	SHIP	8.68	13.8	PITOT	Apache failed to ignite
14.30 CA	G2-965	8-23-62	1710	W.I.	79.8	128	Ion Composition	Rocket under- performed-no data
14.31 GI	G2-1043	10-16-62	1506	W.I.	103	166.1	Electron Density	Successful
14.32 GI	G2-1044	12-1-62	1806	W.I.	105	169	Langmuir Probe	Successful
14.33 GI	G2-1481	6-3-64	1845	W.I.	86.6	139.2	Geophysic Probe	Partial-Nosecone did not release
14.34 GI	G2-1482	8-26-64	1601	W.I.	95.3	153	Geophysic Probe	Successful
14.35 CA	G2-1068	2-20-63	2318	W.I.	100.7	162	Sodium	Successful
14.36 DI		10-7-63	2000	FT. CH	103	171	Magnetic Field	Partial-Poor telem- etry
14.37 GI		12-13-63	2332	WSMR	43.5	73	U.V. Radiation	Apache performance poor-failure
14.38 CA	G2-1560	1-15-64	2234	W.I.	28.4	45.65	Sodium	Apache performance poor
14.39 CA	G2-1199	2-21-63	2316	W.I.	104.3	168	Sodium	Successful
14.40 CA	G2-1265	5-24-63	0045	W.I.	126.7	204	Sodium	Successful
14.41 CA	G2-1266	5-24-63	0900	W.I.	126.7	204	Sodium	Sodium did not eject
14.42 CA	G2-1267	5-25-63	0047	W.I.	121.7	196.7	Sodium	Successful
14.43 GE		2-20-64	0722	FT. CH.	127	204	Aurora	Successful
14.44 GE		2-29-64	0532	FT. CH.	127	204	Aurora	Successful
14.45 AA		12-1-62	2320	Eglin	129	207	Sodium	Failure of sodium
14.46 AA		12-3-62	2320	Eglin	118	188	Sodium	Poor sodium trail
14.47 UA								
14.48 UA								
14.49 CA	G2-1781	7-15-64	0058	W.I.	118.9	191	Sodium	Successful
14.50 CA	G2-1782	7-15-64	0409	W.I.	120	192.5	Sodium	Successful
14.51 CA	G2-1783	7-15-64	0805	W.I.	118.7	190	Sodium	Successful
14.52 CA	G2-1784	7-15-64	0906	W.I.	119	191.5	Sodium	Successful
14.53 CA	G2-2082	11-10-64	2228	W.I.	122.6	197.1	Sodium	Successful
14.54 DA		8-28-64	0215	WSMR	30.1	48.5	Air Sampling	Second stage broke up
14.55 DA		8-6-64	2329	Sweden	77.2	124.1	Air Sampling	Partial-No recovery

NASA SOUNDING ROCKET FIRINGS

Nike Apache 14.--

Rocket Number		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
14.56 DA		8-12-64	0045	Sweden	75.5	121.4	Air Sampling	Successful
14.57 DA		8-16-64	0053	Sweden	74.3	119.3	Air Sampling	Successful
14.58 DA		8-17-64	0029	Sweden	77.1	124	Air Sampling	Successful
14.59								
14.60 UE	G2-2021	12-7-64	1755	W.I.	90	145	Particles & Fields	Telemetry failure
14.61 UE	G2-2022	2-3-64	1808	W.I.	87.7	141.1	Particles & Fields	Successful
14.62 UA		3-18-65	2043	W.I.	98.2	158	Atmosph. Comp	Partially Successful
14.63 UA	GS2-1825	4-9-65	2026	SHIP	NA	NA	PITOT	Successful
14.64 UA	GS2-1847	3-8-65	1748	SHIP	NA	NA	PITOT	Successful
14.65 UA	GS2-1848	3-9-65	0626	SHIP	NA	NA	PITOT	Successful
14.66 UA								
14.67 UA								
14.68 GI				Brazil				
14.69 GI				Brazil				
14.70 GE	GS2-1838	3-29-65	1547	SHIP	NA	NA	Geomagnetism	Successful
14.71 CM	G2-2262	6-23-65	0159	W.I.	126.7	203.86	Sodium	Successful
14.72 CM	G2-2263	6-23-65	0103	W.I.	118.4	190.5	Sodium	Successful
14.73 CM	G2-2264	6-23-65	0847	W.I.	121.6	195.7	Sodium	Successful
14.74 CM	G2-2265	6-23-65	0852	W.I.	88.8	142.9	TMA	Successful
14.75 GR	G2-2201	9-10-65	2358	W.I.	106.1	170.7	Radio Physics	Successful
14.76 UA								
14.77 UA								
14.78 UA								
14.79 UE		1-25-64	0514	India	102	164	Electrojet	Successful
14.80 UE		1-27-64	0430	India	102	164	Electrojet	Successful
14.81 UE		1-29-64	1000	India	104	167	Electrojet	Successful
14.82 UE		1-31-64	1330	India	104	167	Electrojet	Successful
14.83 UE	KS2-1831	3-10-65	1600	SHIP	NA	NA	Electrojet	Successful
14.84 UE	KS2-1832	3-12-65	1600	SHIP	100.9	162.3	Electrojet	Successful
14.85 UE	KS2-1833	3-9-65	1625	SHIP	NA	NA	Electrojet	Successful
14.86 CI	G2-1200	2-27-63	1930	W.I.	94.3	151.3	Electron Density	Successful
14.87 CI	G2-1201	3-28-63	2006	W.I.	100.1	162	Electron Density	Successful
14.88 CI		7-14-63	2103	FT. CH.	107.5	173	Electron Density	Successful
14.89 CI		7-20-63	2000	FT. CH.	-	-	Electron Density Solar Eclipse	Nike exploded
14.90 CI		7-20-63	2030	FT. CH.	-	-	Electron Density Solar Eclipse	Nike exploded
14.91 CI		7-20-63	2103	FT. CH.	123	198	Electron Density Solar Eclipse	Successful
14.92 CI		7-20-63	2113	FT. CH.	127	201	Electron Density Solar Eclipse	Successful
14.93 CI		7-20-63	2140	FT. CH.	127	201	Electron Density Solar Eclipse	Successful
14.94 CI		7-20-63	2210	FT. CH.	120	193	Electron Density Solar Eclipse	Successful
14.95 UA	5R67	2-19-65	0917	FT. CH.	116.2	187	Massenfilter	Successful
14.96 UA								
14.97 UA								
14.98 UA	KS2-1844	3-11-65	0935	SHIP	NA	NA	Massenfilter	Successful
14.99 UA	KS2-1845	3-11-65	2007	SHIP	NA	NA	Massenfilter	Successful
14.100 UA	KS2-1803	4-15-65	1802	SHIP	NA	NA	Massenfilter	Failure
14.101 UA	KS2-1804	4-13-65	1906	SHIP	NA	NA	Massenfilter	Successful
14.102 NA	G2-1400	10-9-63	2314	W.I.	98	157.5	Artificial Comet	Successful
14.103 NA	G2-1401	10-10-63	2313	W.I.	97.3	156.5	Artificial Comet	Successful
14.104 DI	524	11-5-64	2038	FT. CH.	-	-	Ionospheric Studies	Successful
14.105 DI	527	11-7-64	0512	FT. CH.	83	134	Ionospheric Studies	Successful
14.106 CA	G2-1559	1-15-64	2240	W.I.	70.1	112.8	Sodium	Successful
14.107 GI	G2-1174	3-8-63	1930	W.I.	96.7	155.3	Electron Density	Successful
14.108 GI	G2-1175	4-9-63	2028	W.I.	101	162.5	Electron Density	Successful
14.109 GI								

NASA SOUNDING ROCKET FIRINGS

Nike Apache 14.--

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
14.110 CA	G2-1261	5-8-63	1723	W.I.	103.6	167.9	Mass Spectrometer	Partial experiment
14.111 GT	G2-1281	10-31-63	2117	W.I.	83.3	134	Environmental Test	Successful
14.112 CA	G2-2083	11-11-64	2227	W.I.	125.3	201.8	Sodium	Successful
14.113 CA	G2-2084	11-12-64	1056	W.I.	126.4	203.5	Sodium	S--Sodium failed to burn properly
14.114 CA	GS2-1900	11-10-64	2225	SHIP	-	-	Sodium	Successful
14.115 CA	GS2-1901	11-11-64	2224	SHIP	-	-	Sodium	Successful
14.116 CA	GS2-1902	11-12-64	1053	SHIP	-	-	Sodium	Successful
14.117 GI	G2-2071	11-23-64	1707	W.I.	110.8	178	Electron Density	Successful
14.118 GE		3-24-64	0422	FT. CH.	117	188	Aurora	Successful
14.119 GE		3-26-64	0330	FT. CH.	120	194	Aurora	Successful
14.120 GE		3-25-64	0324	FT. CH.	111	178	Aurora	Telemetry failure
14.121 UE		4-11-64	0629	FT. CH.	107	171	Aurora	Successful
14.122 UE		4-15-64	0639	FT. CH.	96	154.4	Aurora	Successful
14.123 UE		4-22-64	0654	FT. CH.	103.2	166	Aurora	Successful
14.124 UE				FT. CH.				
14.125 CA	G2-1557	1-16-64	0500	W.I.	105.1	169	Sodium	Successful
14.126 CA	G2-1558	1-16-64	1134	W.I.	122.6	197	Sodium	Successful
14.127 GI	G2-1358	7-16-64	1622	W.I.	85.5	137.3	Radio Physics	Successful
14.128 IA		11-21-63	1255	India	106	170	Sodium	Successful
14.129 IA		1-8-64	1315	India	106	170	Sodium	Successful
14.130 IA		1-12-64	0026	India	106	170	Sodium	Successful
14.131 IA		11-6-64	0008	India	119.5	192	Sodium	Successful
14.132 NA	G2-2194	4-1-65	0207	W.I.	86.36	139	Airglow	Successful
14.133 NA	G2-2195	8-19-65	0140	W.I.	89.5	144	Airglow	Partially Successful
14.134 IA	Rehbar IV	4-9-64	1422	Pakistan	99.5	160	Sodium	Failure of sodium
14.135 IA		11-30-64	1311	Pakistan	124.3	200	Sodium	Successful
14.136 IA		12-1-64	0120	Pakistan	124.3	200	Sodium	Successful
14.137 IA		5-20-63		Italy			Sodium	Successful
14.138 IA		5-21-63		Italy			Sodium	Successful
14.139 IA		5-21-63		Italy			Sodium	Successful
14.140 DA		5-18-63	1006	Eglin	116.5	187.4	Sodium	Successful
14.141 DA		5-18-63	0106	Eglin	115	185.8	Sodium	Successful
14.142 NA	G2-1186	1-7-65	0350	W.I.	91.1	146.6	Airglow	Successful
14.143 UI	G2-1645	4-16-64	2105	W.I.	104.9	169	Electron Density-IQSY	Successful
14.144 UI	G2-1646	7-15-64	0800	W.I.	96.6	155.3	Electron Density-IQSY	Successful
14.145 UI	G2-1647	7-15-64	0920	W.I.	99.3	159.8	Electron Density-IQSY	Successful
14.146 UI	G2-1648	7-15-64	1025	W.I.	106	170.7	Electron Density-IQSY	Successful
14.147 UI	G2-1649	11-10-64	1107	W.I.	72.6	117	Electron Density-IQSY	Successful
14.148 UI	GS2-1906	11-19-64	2202	SHIP	105.3	169	Electron Density-IQSY	Successful
14.149 UI	G2-341	11-19-64	2020	W.I.	102.3	165	Electron Density-IQSY	Successful
14.150 UE	G2-1556	1-15-64	0231	W.I.	56.1	90	Aurora	Rocket alt. low
14.151 UE		3-18-64	0611	FT. CH.	94	151	Aurora	Successful
14.152 UE		3-20-64	0522	FT. CH.	94	151	Aurora	Successful
14.153 UE		3-23-64	1037	FT. CH.	95.1	153	Aurora	Successful
14.154 UE	G2-1660	7-9-64	0413	W.I.	103.1	166	Aurora	Successful
14.155 GE	G2-1591	6-10-64	1510	W.I.	90.6	145.8	Geomagnetism	Successful
14.156 GE	G2-1592	6-25-64	1457	W.I.	92.5	149	Geomagnetism	Successful
14.157 GE	G2-1593	6-26-64	0052	W.I.	96.7	168	Geomagnetism	Successful
14.158 GE	G2-1594	10-7-64	2319	W.I.	8.5	13.7	Geomagnetism	Second stage did not ignite
14.159 GE	G2-1595	10-8-64	1034	W.I.	87.4	140.3	Geomagnetism	Successful
14.160 GE	GS2-1914	3-8-65	1535	SHIP	NA	NA	Geomagnetism	Successful
14.161 GE								
14.162 GE								
14.163 GE								
14.164 GE								
14.165 GE								
14.166 GE								
14.167 GE								

NASA SOUNDING ROCKET FIRINGS

Nike Apache 14.--

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
14.168 GE								
14.169 GE								
14.170 GE								
14.171 GE	GS2-1806	3-16-65	1614	SHIP	NA	NA	Geomagnetism	Successful
14.172 GE	GS2-1807	3-19-65	0664	SHIP	NA	NA	Geomagnetism	Successful
14.173 GE	GS2-1808	3-26-65	1541	SHIP	NA	NA	Geomagnetism	Successful
14.174 GE	GS2-1809	3-24-65	1624	SHIP	NA	NA	Ionospheres	Successful
14.175 GE	GS2-1810	3-27-65	1808	SHIP	NA	NA	Geomagnetism	Successful
14.176 GE	GS2-1805	3-19-65	1601	SHIP	NA	NA	Geomagnetism	Successful
14.177 GI	GS2-1812	3-16-65	1651	SHIP	NA	NA	Ionospheric Studies	Successful
14.178 GI	GS2-1813	3-18-65	0641	SHIP	NA	NA	Ionospheric Studies	Successful
14.179 GI	GS2-1814	3-18-65	1638	SHIP	NA	NA	Ionospheric Studies	Successful
14.180 GI	GS2-1815	3-24-65	1707	SHIP	NA	NA	Ionospheric Studies	Successful
14.181 GI	GS2-1816	3-26-65	1613	SHIP	NA	NA	Ionospheric Studies	Successful
14.182 GI	GS2-1811	3-27-65	0300	SHIP	NA	NA	Ionospheric Studies	Successful
14.183 UE								
14.184 UE	KS2-1835	4-5-65	1945	SHIP	NA	NA	Neutron Experiment	Successful
14.185 UE	KS2-1836	4-2-65	1321	SHIP	NA	NA	Neutron Experiment	Successful
14.186 UE	KS2-1837	4-13-65	1710	SHIP	NA	NA	Neutron Experiment	Partially Successful
14.187 UE				SHIP				
14.188 GE								
14.189 GE								
14.190 GE								
14.191 GE								
14.192 GE								
14.193 GE								
14.194 CA	G2-2019	10-8-64	1023	W.I.	99	159	Sodium & Langmuir probe	Successful
14.195 CA	G2-2020	10-7-64	2304	W.I.	106.8	172	TMA & Langmuir probe	Successful
14.196 CA		2-28-65	0021	FT. CH.	105.5	200	TMA & Langmuir probe	Successful
14.197 CA		11-1-64	0600	FT. CH.	-	-	Sodium & Langmuir probe	Successful
14.198 CA		2-28-65	0330	FT. CH.	-	-	TMA	Failure
14.199 CA		2-28-65	0600	FT. CH.	-	6.7	TMA	Failure
14.200 CA		2-28-65	1211	FT. CH.	34.1	54.9	TMA	Failure
14.201 CM	G2-2306	6-23-65	0400	W.I.	102.2	164.4	TMA and DC Probe	Successful
14.202 CA				FT. CH.				
14.203 CA				FT. CH.				
14.204 IA		11-9-64	1254	India	119.5	192	Sodium	Successful
14.205 IA		11-10-64	0005	India	119.5	192	Sodium	Successful
14.206 IA				India				
14.207 UE	5R 156	4-3-65	0638	FT. CH.	127.2	204.7	Auroral Particles	Successful
14.208 UE				FT. CH.				
14.209 GI		12-16-64	1457	WSMR	121	194.6	Electron Density	Successful
14.210 DI	G2-2350	8-24-65	2159	W.I.	100.8	162	Airglow	Failure
14.211 IA				Pakistan				
14.212 IA				Pakistan				
14.213 UA	G2-2348	9-1-65	1117	W.I.	93.3	150	Ionospheres	Successful
14.214 UA	G2-2349	9-3-65	0517	W.I.	95.3	153.1	Ionospheres	Failure
14.215 AI	G2-2261	6-18-65	1756	W.I.	116	186.5	Ionospheres	Successful
14.216 AI				W.I.				
14.217 AI				W.I.				
14.218 GE				FT. CH.				
14.219 GE				FT. CH.				
14.220 GE				FT. CH.				
14.221 GE				FT. CH.				
14.222 GE				FT. CH.				
14.223 GE				FT. CH.				
14.224 IA		9-18-65	2202	Surinam	127	205	Sodium	Successful
14.225 IA		9-21-65	2200	Surinam	127	205	Sodium	Successful

NASA SOUNDING ROCKET FIRINGS

Nike Apache 14.--

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
14.226 IA		9-24-65	0852	Surinam	NA	NA	Sodium	Successful
14.227 IA		9-27-65	0854	Surinam	NA	NA	Sodium	Successful
14.228 UI	KS2-1817	3-20-65	1320	SHIP	108.1	171	IQSY Studies	Successful
14.229 UI	KS2-1818	3-23-65	0931	SHIP	NA	NA	IQSY Studies	Failure
14.230 UI	KS2-1819	4-5-65	1345	SHIP	NA	NA	IQSY Studies	Successful
14.231 UI	KS2-1820	4-9-65	1918	SHIP	NA	NA	IQSY Studies	Successful
14.232 UI	KS2-1821	4-12-65	1714	SHIP	116	186	IQSY Studies	Successful
14.233 UA	KS2-1907	11-17-64	1749	SHIP	136.3	219	Falling Sphere	Successful
14.234 UE		9-16-65	1404	FT. CH.	17	27.4	Particles & Fields	Failure
14.235 UE		9-17-65	1544	FT. CH.	100	160	Particles & Fields	Successful
14.236 UE		9-20-65	1608	FT. CH.	91	146	Particles & Fields	Successful
14.237 UE		9-20-65	1410	FT. CH.	14.8	23.8	Particles & Fields	Failure
14.238 UE				FT. CH.				
14.239 UE				FT. CH.				
14.240 UE				FT. CH.				
14.241 UE				FT. CH.				
14.242 UE				W.I.				
14.243 UE				W.I.				
14.244 UI	G2-2370	9-15-65	2028	W.I.	111.9	180	Ionospheres	Successful
14.245 UI	G2-2259	6-14-65	0913	W.I.	108.8	175	Ionospheres	Successful
14.246 UI	G2-2260	6-17-65	2141	W.I.	109.5	176.8	IQSY Studies	Successful
14.247 UI								
14.248 UI								
14.249				Pakistan				
14.250				Pakistan				
14.251				Pakistan				
14.252				Pakistan				
14.253 II		3-1-65		Norway				
14.254 II		3-3-65		Norway				
14.255 NA		4-23-65	0402	W.I.	90.1	145	Chemiluminesc. Cloud	Successful

NASA SOUNDING ROCKET FIRINGS

Arcas 15.--

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
15.01 GI	KIWI-2	3-15-65	0620	Norway	47.8	77	Ionospheres	Successful
15.02 GI		3-21-65	0645	Norway	47.2	76	Ionospheres	Successful
15.03 II		3-1-65		Norway			Ionospheres	Successful
15.04 II		3-3-65		Norway			Ionospheres	Successful
15.05 GI		5-30-65	1900	N. Z.	54.7	88	Ionospheres	Successful
15.06 GI		5-30-65	1920	N. Z.	54.7	88	Ionospheres	Successful
15.07 GI		5-30-65	1940	N. Z.	54.7	88	Ionospheres	Successful
15.08 GI		5-30-65	2000	N. Z.	54.7	88	Ionospheres	Successful
15.09 GI		5-30-65	2020	N. Z.	54.7	88	Ionospheres	Successful
15.10 GI		5-30-65	2100	N. Z.	54.7	88	Ionospheres	Successful
15.11 GI	KIWI-1	5-25-65	1959	N. Z.	54.7	88	Ionospheres	Successful
15.12 GI								
15.13 GI								
15.14 GI								
15.15 GI								
15.16 GI								
15.17 GI								
15.18 GI								

NASA SOUNDING ROCKET FIRINGS

Astrobee 1500 16.--

Rocket Numbers		Date	Time Z	Range	Peak Altitude		Experiment	Result
GSFC	Range				St. Mi.	km		
16.01 GT	G2-1120	4-8-63	1126	W.I.	47.2	76	Flight performance test	Vehicle broke up
16.02 GT	G2-2012	10-21-64	1944	W.I.	1182	1900	Flight performance test	Successful
16.03 GA-GI				W.I.				
16.04 UA				W.I.				

Aerobee 350 17.--

65

ROCKET PERFORMANCE SHEETS

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft
 Latitude 58.7° N
 Longitude 93.8° W

ROCKET: Aerobee Jr. 100

NASA No.: 1.01 GI
 Date: 23 Nov. 1960
 Time: 1019:11 Z

INSTRUMENTING AGENCY

GSFC and Oklahoma State University

KEY PERSONNEL

E. C. Whipple, Jr., (GSFC), Scientist; C. R. Hamilton (GSFC), Project Manager; E. C. Pressly (GSFC), Vehicle Manager; O. L. Cooper (OSU), Scientist

EXPERIMENT

(1) Determine the nighttime electrical conductivity and ion density of the atmosphere from 20 to 90 km under quiet ionosphere conditions (no auroral activity) using two Gerdian chambers located on the nosecone tip. (2) Same as daytime experiment in 1.02 GI.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 120°
 Elevation 80.8°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	40.2		
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	159.4	56.7 st.mi.	

Impact: Time 296.8 secs , Range 19.7 n.mi. , Azimuth 114°

ROCKET INFORMATION

NASA No. 1.01 GI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	109.5			
Extensions				
Stage 1	600			78
Stage 2	892.2			239
Stage 3				
Stage 4				
Total	1492			317

ROCKET-BORNE EQUIPMENT

Two Gerdian condensers mounted outside of nosecone; three Alphatron air-pressure gages; magnetometer
Longitudinal accelerometer; propellant valve position transducer
PPM/AM DKT 7
S-band radar beacon DPN 41, two quadraloop antennas
Cutoff RCVR DRW 3, fin notch antenna

GROUND-BASED EQUIPMENT

Canadian ionosphere station
PPM/AM stations
Beacon and skin tracking radars, sonic tracking stations (SOTIM)
Cutoff XMTR (54.5 Mc)

RESULTS

Telemetry normal. Rocket performance normal. Extra drag produced by payload configuration. Radar data unusable for good evaluation of performance.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

ROCKET: Aerobee Jr. 100

Elevation 70 ft

NASA No.: 1.02 GI

Latitude 58.7° N

Date: 27 Nov. 1960

Longitude 93.8° W

Time: 1748:37 Z

INSTRUMENTING AGENCY

GSFC and Oklahoma State University

KEY PERSONNEL

E. C. Whipple, Jr. (GSFC), Scientist; C. R. Hamilton (GSFC), Project Manager; E. C. Pressly (GSFC), Vehicle Manager; O. L. Cooper (OSU), Scientist

EXPERIMENT

Determine the daytime ion density and electrical conductivity of the atmosphere from 20 to 90 km under quiet ionosphere conditions by measuring the current-voltage characteristics of two Gerdian condensers. Compare results with the nighttime experiment in 1.01 GI.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 110°

Elevation 81°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	38.5		
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	155	52.8 st. mi	

Impact: Time 279.7 secs, Range 19.79 n.mi., Azimuth 114°

ROCKET INFORMATION

NASA No. 1.02 GI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	109.7			
Extensions				
Stage 1	600			78
Stage 2	892.5			239
Stage 3				
Stage 4				
Total	1493			317

ROCKET-BORNE EQUIPMENT

Two Gerdian condensers mounted outside of nosecone, three Alphanon air-pressure gages, magnetometer
Longitudinal accelerometer; propellant valve position transducer
PPM/AM (DKT 7)
S-band radar beacon DPN 41, two quadraloop antennas
Cutoff RCVR DRW 3, fin notch antenna

GROUND-BASED EQUIPMENT

Canadian ionosphere station.
PPM/AM ground stations.
Beacon and skin tracking radars; sonic tracking stations (SOTIM).
Cutoff XMTR (54.5 Mc).

RESULTS

Telemetry normal. Sustainer burned out 2 seconds early. Extra drag produced by payload configuration. Beacon and skin radar tracking was adequate for range safety but inadequate for rocket performance evaluation.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7° N

Longitude 93.8° W

ROCKET: Aerobee Jr. 100

NASA No.: 1.03 GP

Date: 15 Sept. 1960

Time: 1809 Z

INSTRUMENTING AGENCY

GSFC and Washington Technological Associates

KEY PERSONNEL

R. C. Baumann (GSFC), Project Scientist; R. J. Andryshak (WTA), Engineer; E. C. Pressly (GSFC), Vehicle Manager

EXPERIMENT

(1) Photograph a vigorous synoptic weather situation with lots of clouds but some earth background for photogrammetric control points. (2) Test 3 types of film for high altitude weather photography. (3) Recover payload and evaluate recovery system. (4) Same experiment in 1.05 GP.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 45°

Elevation 87.2°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	39.0	70,660	3,512
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	145	47.08 st. mi.	

Impact: Time _____, Range 7.8 n.mi., Azimuth 77-78°

ROCKET INFORMATION

NASA No. 1.03 GP

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	144.75	65.9	Nose tip	103
Extensions				
Stage 1	600			78
Stage 2	787			143
Stage 3				
Stage 4				
Total	1532			324

ROCKET-BORNE EQUIPMENT

Two 70 mm aerial cameras, two aspect sensors

FM/FM (227.5 Mc), fin notch antenna.

DOVAP transponder (76.062 Mc), radar beacon DPN-19 (2907 Mc), four DOVAP and quadra-loop antennas

Cutoff RCVR DRW 3, fin notch antenna

Parachute, two smoke markers, SARAH beacon (243 Mc)

GROUND-BASED EQUIPMENT

FM/FM stations

Four DOVAP stations (38.031 Mc), beacon (2860 Mc), and skin tracking (2895 Mc) radars

Recovery craft with SARAH RCVR

Cutoff XMTR (54.5 Mc)

RESULTS

Complete data recovery. Rocket performance as predicted. Complete tracking with DOVAP; 212 secs of DOVAP position and velocity tabulated data. Nosecone with cameras recovered intact.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7°N

Longitude 93.8°W

ROCKET: Aerobee 100

NASA No.: 1.04 GP

Date: 17 May 1961

Time: 1922 Z

INSTRUMENTING AGENCY

GSFC and Washington Technological Associates

KEY PERSONNEL

H. E. Evans (GSFC), Experimenter; R. C. Baumann (GSFC), Project Scientist; R. J. Andryshak (WTA), AMPP Liaison Officer

EXPERIMENT

(1) To obtain high altitude photographs of various cloud formations with a snow and ice underlay. (2) To determine effectiveness of a polaroid filter in helping to distinguish the clouds from the snow and ice. (3) To record high altitude radiation.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 143°

Elevation 84.9°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	2.5	5000-6000	1000
Stage 2	Ignition			
	Burnout	41	64125	3462
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		47.5 st. mi.	

Impact: Time 316 secs, Range 24.7 n.mi., Azimuth 147°

ROCKET INFORMATION

NASA No. 1.04 GP

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	143			
Extensions				
Stage 1				
Stage 2	523			
Stage 3				
Stage 4				
Total	1342.7			321.93

ROCKET-BORNE EQUIPMENT

Telemetry FM/FM (227.5 Mc), range safety AN/DRW-3 cutoff receiver, Beacon AN/DPN-19
Two 70 mm aerial cameras, two aspect sensors, SARAH beacon
Payload separation mechanism, recovery parachute, smoke markers

GROUND-BASED EQUIPMENT

Telemetry ground station, cutoff transmitter
Tracking radars MPQ-18, MPQ-12 (2), sound ranging network

RESULTS

Rocket performance below predicted. The separation device that separates the sustainer from the payload did not function. This prevented parachute deployment and the rocket and payload fell as one unit. Some film was found and a few pictures were recovered. Telemetry data was good. Radar tracking was poor.

REPORTS

Reference P-1.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7°N

Longitude 93.8°W

ROCKET: Aerobee Jr. 100

NASA No.: 1.05 GP

Date: 24 Sept. 1960

Time: 1813 Z

INSTRUMENTING AGENCY

GSFC and Washington Technological Associates

KEY PERSONNEL

R. C. Baumann (GSFC), Project Scientist; R. J. Andryshak (WTA), Engineer; E. C. Pressly (GSFC), Vehicle Manager

EXPERIMENT

(1) Photograph a vigorous synoptic weather situation with lots of clouds but some earth background for photogrammetric control points. (2) Test 3 types of film for high altitude weather photography. (3) Recover payload and evaluate recovery system. (4) Same experiment in 1.03 GP.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 45°

Elevation 85.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	40.5	70,636	3531
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	147	47.43 st. mi.	

Impact: Time _____, Range 9.6 n.mi., Azimuth 90°

ROCKET INFORMATION

NASA No. 1.05 GP

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	145	65	Nose Tip	103
Extensions				
Stage 1	600			78
Stage 2	787			143
Stage 3				
Stage 4				
Total	1532			324

ROCKET-BORNE EQUIPMENT

Two 70 mm aerial cameras, two aspect sensors.

FM/FM (227.5 Mc), fin notch antenna.

DOVAP transponder (76.062 Mc), radar beacon DPN 19 (2907 Mc), four DOVAP and quadra-loop antennas

Cutoff RCVR DRW 3, fin notch antenna

Parachute, two smoke markers, SARAH beacon (243 Mc)

GROUND-BASED EQUIPMENT

FM/FM stations.

Four DOVAP stations (38.031 Mc), MPQ 12 (2860 Mc), beacon and MPQ 18 (2810 Mc) skin tracking radars

Cutoff XMTR (54.5 Mc)

Recovery craft with SARAH RCVR

RESULTS

Complete data recovery. Rocket performance as predicted. Complete tracking to impact; 192 secs of DOVAP position and velocity tabulated data. Nosecone recovered but damaged at impact, parachute lost above 9000 feet altitude.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft
 Latitude 58.7°N
 Longitude 93.8°W

ROCKET: Aerobee 100

NASA No.: 1.06 GP
 Date: 19 May 1961
 Time: 1803 Z

INSTRUMENTING AGENCY

GSFC and Washington Technological Associates

KEY PERSONNEL

H. E. Evans (GSFC), Experimenter; R. C. Baumann (GSFC), Project Scientist; R. J. Andryshak (WTA), AMPP Liaison Officer

EXPERIMENT

(1) To obtain high altitude photographs of various cloud formations with a snow and ice underlay. (2) To determine effectiveness of a polaroid filter in helping to distinguish the clouds from the snow and ice. (3) To record high altitude radiation.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 158°
 Elevation 82.1°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	2.5	5000-6000 (est)	1000 (est)
Stage 2	Ignition			
	Burnout	41	75,000	3311
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	151	14.2 st.mi.	

Impact: Time 286 secs, Range 24 n.mi., Azimuth 156°

ROCKET INFORMATION

NASA No. 1.06 GP

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload				
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total				

ROCKET-BORNE EQUIPMENT

Telemetry FM/FM (227.5 Mc), AN/DRW-3 cutoff receiver.
Beacon AN/DPN-19, two GSFC nuclear emulsion packages.
Two 70 mm aerial cameras, two aspect sensors, SARAH beacon.
Payload separation mechanism, recovery parachute.

GROUND-BASED EQUIPMENT

FM ground station, cutoff transmitter.
Tracking radars MPQ-18, MPQ-12 (2)
Sound ranging network: SOTIM

RESULTS

Rocket performance as predicted. Rocket tipped up to wind but failed to follow predicted flight path. Telemetry good. Radar did not track. Payload separation was clean. Cameras and emulsion packages were recovered and high quality pictures were obtained.

REPORTS

Reference P-1.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7°N

Longitude 93.8°W

ROCKET: Aerobee Jr. 100

NASA No.: 1.07 GA

Date: 17 Oct. 1961

Time: 2011 Z

INSTRUMENTING AGENCY

GSFC and Varian Associates

KEY PERSONNEL

Frank Martin (GSFC), Project Scientist; Steve Derdyn (GSFC) Project Scientist; Jon R. Busse (GSFC), Vehicle Manager

EXPERIMENT

Launch and recover a VAC-SORB pump and two nuclear emulsion packs. AN/DPN-41 tracking radar beacon and Aerobee recovery pack.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 154°

Elevation 80.4°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	2.5	900	NA
Stage 2	Ignition			
	Burnout	40	70,000	NA
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	140	40.5 st.mi.	

Impact: Time NA, Range 28.9 n.mi., Azimuth 145°

ROCKET INFORMATION

NASA No. 1.07 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	202	77.4	Nose Tip	117-5/8
Extensions				
Stage 1	600	NA	NA	NA
Stage 2	247.5	68.75	Front Fl.	143
Stage 3				
Stage 4				
Total	449.5	140.3		265.75

ROCKET-BORNE EQUIPMENT

Varian VAC-SORB pump, two nuclear emulsion packs

Tempilaq-temp. sensitive paint on nosecone

Tracking beacon DPN-41, aerojet land recovery pack with SARAH beacon (24.3 Mc)

GROUND-BASED EQUIPMENT

Radar beacon track AN/MPQ-18 — transmit (2850 Mc), receive (2930 Mc)

Radar beacon track AN/MPQ-12 — transmit (2800 Mc), receive (2830 Mc)

Recovery helicopter with SARAH receiver

Sound ranging network

RESULTS

Rocket performance below prediction. Adequate radar tracking. All miscellaneous instrumentation worked as predicted. VAC-SORB pump operates satisfactorily.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7° N

Longitude 93.8° W

ROCKET: Aerobee 100

NASA No.: 1.08 GA

Date: 23 Sept. 1961

Time: 1827 Z

INSTRUMENTING AGENCY

Varian Associates

KEY PERSONNEL

Frank T. Martin (GSFC), Project Manager; Dr. R. Jepsen (Varian), Sr. Experimenter;
K. P. Medrow (GSFC), Vehicle Coordinator

EXPERIMENT

To obtain an air sample above 150,000 feet for analysis to determine argon-nitrogen ratio and carbon dioxide content.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 124°

Elevation 81°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	2.5	1000	900
Stage 2	Ignition			
	Burnout	40	74,000	
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	145	48.5 st.mi.	

Impact: Time 316 secs , Range 26.9 n.mi. , Azimuth 122°

ROCKET INFORMATION

NASA No. 1.08 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	148.5			
Extensions				
Stage 1	600			
Stage 2	260 dry			
Stage 3				
Stage 4				
Total	408.5 less booster			246

ROCKET-BORNE EQUIPMENT

Tracking beacon AN/DPN-41
SARAH equipped land recovery unit
VAC-SORB pump

GROUND-BASED EQUIPMENT

Radar and beacon tracking
Sound ranging network

RESULTS

Rocket performance as predicted. Complete tracking with AN/DPN-41. Rocket borne Vac-Sorb pump performed as planned.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft
 Latitude 58.7° N
 Longitude 93.8° W

ROCKET: Aerobee 100

NASA No.: 1.09 GA
 Date: 30 Sept. 1961
 Time: 2042 Z

INSTRUMENTING AGENCY

Varian Associates

KEY PERSONNEL

Frank T. Martin (GSFC), Project Manager; Dr. R. Jepsen (Varian), Sr. Experimenter;
 K. P. Medrow (GSFC), Vehicle Coordinator

EXPERIMENT

To obtain an air sample above 150,000 feet for analysis to determine argon-nitrogen ratio and carbon dioxide content.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 145°
 Elevation 83.6°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout			
Stage 3	Ignition			
	Burnout	40	70,000	3600
Stage 4	Ignition			
	Burnout			
	Peak	140	45.3 st.mi.	

Impact: Time NA, Range NA, Azimuth NA

ROCKET INFORMATION

NASA No. 1.09 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	145			108
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total	849 w/o booster			251.5 w/o booster

ROCKET-BORNE EQUIPMENT

Varian Vac-Sorb pump

Tracking Beacon: 2895 (transmit), 2850 (receive)

Sea recovery package including Strobe light, SARAH beacon

Flotation gear, dye marker and parachute

Separation device

GROUND-BASED EQUIPMENT

Tracking radar (2850 Mc)

Sound ranging network

RESULTS

Rocket performance as predicted. Radar track good. Beacon track from launch to impact. SARAH beacon worked. Rocket borne Vac-Sorb pump performed as planned.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7° N

Longitude 93.8° W

ROCKET: Aerobee 100

NASA No.: 1.10 GA

Date: 15 Oct. 1961

Time: 1433 Z

INSTRUMENTING AGENCY

GSFC and Varian Associates

KEY PERSONNEL

Frank Martin (GSFC), Project Scientist; Steve Derdyn (GSFC) Project Scientist; Jon R. Busse (GSFC), Vehicle Manager

EXPERIMENT

Launch and recover a VAC-SORB pump and two nuclear emulsion packs. AN/DPN-41 tracking radar beacon and Aerobee recovery pack.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 120°

Elevation _____

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	2.5	900	—
Stage 2	Ignition			
	Burnout	40	72,000	—
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	145	46.5 st.mi.	

Impact: Time 1170 secs, Range 24.5 n.mi., Azimuth _____

ROCKET INFORMATION

NASA No. 1.10 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	171.5	72.9	Nose Tip	123-5/8
Extensions				
Stage 1	600	—	—	—
Stage 2	247	68.75	Front Flange	143
Stage 3				
Stage 4				
Total	418.3	146.6		271.75

ROCKET-BORNE EQUIPMENT

Varian VAC-SORB pump, two nuclear emulsion packs

Tempilaq-temp. sensitive paint on nosecone

Tracking beacon DPN-41, Aerojet land recovery pack with SARAH beacon (24.3 Mc)

GROUND-BASED EQUIPMENT

Radar beacon track AN/MPQ-18 — transmit (2850 Mc), receive (2930 Mc)

Radar beacon track AN/MPQ-12 — transmit (2800 Mc), receive (2830 Mc)

Recovery helicopter with SARAH receiver

Sound ranging network

RESULTS

Rocket performance as predicted. Complete radar tracking. All instrumentation worked except SARAH beacon. Payload was recovered. However, air sampling may not have occurred.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7°N

Longitude 93.8°W

ROCKET: Aerobee 100

NASA No.: 1.11 GA

Date: 2 Nov. 1961

Time: 1724 Z

INSTRUMENTING AGENCY

GSFC and Varian Associates

KEY PERSONNEL

Frank Martin (GSFC), Project Scientist; Steve Derdyn (GSFC) Project Scientist; Jon R. Busse (GSFC), Vehicle Manager

EXPERIMENT

Launch and recover a VAC-SORB pump and two nuclear emulsion packs. AN/DPN-41 tracking radar beacon and Aerobee recovery pack.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 228°

Elevation 86.1°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	2.5	900	950
Stage 2	Ignition			
	Burnout	40	70,000	3600
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	140	42.6 st.mi.	

Impact: Time 960 secs , Range 18.8 n.mi. , Azimuth 170°

ROCKET INFORMATION

NASA No. 1.11 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	199	77.63	Nose Tip	117.75
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total	446	143.68		265.25

ROCKET-BORNE EQUIPMENT

Varian VAC-SORB pump, two nuclear emulsion packs
Tempilaq-temp. sensitive paint on nosecone
Tracking beacon DPN-41, Aerojet land recovery pack with SARAHA beacon (24.3 Mc)

GROUND-BASED EQUIPMENT

Radar beacon track AN/MPQ-18 — transmit (2850 Mc), receive (2930 Mc)
Radar beacon track AN/MPQ-12 — transmit (2800 Mc), receive (2830 Mc)
Recovery helicopter with SARAHA receiver
Sound ranging network

RESULTS

Rocket performance as predicted. Radar tracking adequate. SARAHA beacon not operating.
Payload was recovered. All experiments worked.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7°N

Longitude 93.8°W

ROCKET: Aerobee 100

NASA No.: 1.12 GA

Date: 5 Nov. 1961

Time: 2011 Z

INSTRUMENTING AGENCY

GSFC and Varian Associates

KEY PERSONNEL

Frank Martin (GSFC), Project Scientist; Steve Derdyn (GSFC) Project Scientist; Jon R. Busse (GSFC), Vehicle Manager

EXPERIMENT

Launch and recover a VAC-SORB pump and two nuclear emulsion packs. AN/DPN-41 tracking radar beacon and Aerobee recovery pack.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 150

Elevation _____

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	2.5	1000	1000
Stage 2	Ignition			
	Burnout	40	70,000	3600
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	130	44.4 st.mi.	

Impact: Time —, Range 27.8 n.mi., Azimuth 150°

ROCKET INFORMATION

NASA No. 1.12 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	177.5	78.9	Nose Tip	117.75
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total	428	145		265.25

ROCKET-BORNE EQUIPMENT

Varian VAC-SORB pump, two nuclear emulsion packs

Tempilaq-temp. sensitive paint on nosecone

Tracking beacon DPN-41, Aerojet land recovery pack with SARAH beacon (24.3 Mc)

GROUND-BASED EQUIPMENT

Radar beacon track AN/MPQ-18 – transmit (2850 Mc), receive (2930 Mc)

Radar beacon track AN/MPQ-12 – transmit (2800 Mc), receive (2830 Mc)

Recovery helicopter with SARAH receiver

Sound ranging network

RESULTS

Rocket performance as predicted. Radar tracking adequate. Beacon tracking poor. SARAH performance excellent. Payload recovered. All experiments worked.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Arcon

NASA No.: 2.01 GT
 Date: 14 May 1959
 Time:

Wallops No. G2-1

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

K. R. Medrow (GSFC), Project Scientist

EXPERIMENT

Performance test of vehicle.

FLIGHT INFORMATION

Launcher Setting:

Azimuth
 Elevation

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak			

Impact: Time , Range , Azimuth

ROCKET INFORMATION

NASA No. 2.01 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload				
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total				

ROCKET-BORNE EQUIPMENT

Chamber pressure gage, angle of attack gages, accelerometers, temperature gages, pressure integrity gages, magnetometer, photocell

FM/FM telemetry (219.45 Mc), AN/DPN-19 transponder, two quadraloop antennas

GROUND-BASED EQUIPMENT

FM/FM ground station

Radar tracking — FPS-16, MOD II

RESULTS

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Arcon

NASA No.: 2,02 GT

Date: 15 May 1959

Time: _____

Wallops No. G2-2

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

K. R. Medrow (GSFC), Project Scientist

EXPERIMENT

Performance test of vehicle.

FLIGHT INFORMATION

Launcher Setting:

Azimuth _____

Elevation _____

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
	Ignition			
Stage 2	Burnout			
	Ignition			
Stage 3	Burnout			
	Ignition			
Stage 4	Burnout			
	Ignition			
	Peak			

Impact: Time _____, Range _____, Azimuth _____

ROCKET INFORMATION

NASA No. 2.02 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload				
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total				

ROCKET-BORNE EQUIPMENT

Chamber pressure gage, angle of attack gages, accelerometers, temperature gages, pressure integrity gages, magnetometer, photocell
FM/FM telemetry (219.45 Mc), AN/DPN-19 transponder, two quadraloop antennas

GROUND-BASED EQUIPMENT

FM/FM ground station
Radar tracking - FPS-16, MOD II

RESULTS

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
Latitude 37.8°N
Longitude 75.5°W

ROCKET: Arcon

NASA No.: 2.03 GT
Date: 15 May 1959
Time: _____

Wallops No. G2-3

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

K. R. Medrow (GSFC), Project Scientist

EXPERIMENT

Performance test of vehicle.

FLIGHT INFORMATION

Launcher Setting:

Azimuth _____
Elevation _____

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak			

Impact: Time _____, Range _____, Azimuth _____

ROCKET INFORMATION

NASA No. 2.03 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload				
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total				

ROCKET-BORNE EQUIPMENT

Chamber pressure gage, angle of attack gages, accelerometers, temperature gages, pressure integrity gages, magnetometer, photocell
FM/FM telemetry (219.45 Mc), AN/DPN-19 transponder, two quadraloop antennas

GROUND-BASED EQUIPMENT

FM/FM ground station
Radar tracking — FPS-16, MOD II

RESULTS

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Arcon

NASA No.: 2.04 GT

Date: 7 Aug. 1959

Time:

Wallops No. G2-88

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

E. F. Sorgnit (GSFC), Project Scientist

EXPERIMENT

Performance test of vehicle.

FLIGHT INFORMATION

Launcher Setting:

Azimuth

Elevation

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition	31	55241	437.7
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	53	13.62 st.mi.	

Impact: Time , Range , Azimuth

ROCKET INFORMATION

NASA No. 2.04 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	16.9			
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total	231			160

ROCKET-BORNE EQUIPMENT

None

GROUND-BASED EQUIPMENT

FPS-16 radar tracking

RESULTS

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Arcon

NASA No.: 2.05 GT

Date: 7 Aug. 1959

Time:

Wallops No. G2-90

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

E. F. Sorgnit (GSFC), Project Scientist

EXPERIMENT

Performance test of vehicle.

FLIGHT INFORMATION

Launcher Setting:

Azimuth

Elevation

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition	34	67767	4338
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	101	30.8 st.mi.	

Impact: Time , Range , Azimuth

ROCKET INFORMATION

NASA No. 2.05 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	16.9			
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total	231			160

ROCKET-BORNE EQUIPMENT

None

GROUND-BASED EQUIPMENT

FPS-16 radar tracking

RESULTS**REPORTS**

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Arcon

NASA No.: 2.06 GT
 Date: 7 Aug. 1959
 Time: _____

Wallops No. G2-89

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

E. F. Sorgnit (GSFC), Project Scientist

EXPERIMENT

Performance test of vehicle

FLIGHT INFORMATION

Launcher Setting:

Azimuth _____
 Elevation _____

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition	38	74162	4420
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	169	64.7 st.mi.	

Impact: Time _____, Range _____, Azimuth _____

ROCKET INFORMATION

NASA No. 2.06 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	16.9			
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total	231			160

ROCKET-BORNE EQUIPMENT

None

GROUND-BASED EQUIPMENT

FPS-16 radar tracking

RESULTS**REPORTS**

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Nike Asp

NASA No.: 3.01 GS
 Date: 1 March 1960
 Time: 2211 Z

Wallops No. G2-206

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

K. L. Hallam (GSFC), Scientist; W. A. White (GSFC), Project Manager

EXPERIMENT

(1) Measure the absolute intensity of solar radiation in the following wavelength bands: (a) 1100 to 1350 Å; (b) 1230 to 1350 Å; (c) 1 to 8 Å using 6 ionization chambers and 2 Geiger-Mueller counters. (2) Checkout payload instrumentation package and nosecone ejection system.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 110°
 Elevation 70°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	31.6	NA	NA
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	190	132 st.mi.	

Impact: Time _____, Range _____, Azimuth _____

ROCKET INFORMATION

NASA No. 3.01 GS

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	48	18.06	Pl Base	68
Extensions				
Stage 1	1344			151
Stage 2	218	52.6	Top of Asp	111
Stage 3				
Stage 4				
Total	1610			330

ROCKET-BORNE EQUIPMENT

Six ion chambers, two photon counters, two aspect system photodiodes, two skin temperature sensors, two logarithmic pulse ratemeters.
FM/FM (244.2 Mc), four antennas 45° sweep

GROUND-BASED EQUIPMENT

FM/FM stations
Radars (skin)

RESULTS

Solar radiation experiment didn't function due to failure of nosecone to eject, possibly due to squib or battery defect or to jamming by heat expansion. Telemetry operated satisfactorily. Rocket vehicle performance satisfactory, peak altitude slightly low.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Asp

NASA No.: 3.02 GS
 Date: 3 March 1960
 Time: 2250 Z

Wallops No. G2-211

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

K. L. Hallam (GSFC), Scientist; W. A. White (GSFC), Project Manager

EXPERIMENT

(1) Measure absolute intensity of solar radiation in the following wavelength bands: (a) 1100 to 1350 Å; (b) 1230 to 1350 Å; (c) 1 to 8 Å using 6 ionization chambers and 2 Geiger-Mueller counters. (2) Checkout payload instrumentation package and modified nosecone ejection system.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 110°

Elevation 79°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	26	NA	NA
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	230 ± 5	132 st.mi.	

Impact: Time _____, Range _____, Azimuth _____

ROCKET INFORMATION

NASA No. 3.02 GS

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	48	18.06	Base	68
Extensions				
Stage 1	1344			151
Stage 2	218	52.6	Tip	111
Stage 3				
Stage 4				
Total	1610			330

ROCKET-BORNE EQUIPMENT

Six ion chambers, two photon counters, two aspect system photodiodes, two skin temperature sensors, two logarithmic pulse ratemeters
FM/FM (244.2 Mc), four antennas 45° sweep

GROUND-BASED EQUIPMENT

FM/FM stations
Radars (skin)

RESULTS

Solar radiation experiment didn't function due to failure of nosecone to eject. Nosecone was modified to prevent jamming by heat expansion. Telemetry indicated small voltage pulse was applied to NC squibs but its not certain squibs fired. Telemetry operated satisfactorily up to splash. Rocket vehicle performance satisfactory, peak altitude slightly low.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Asp

NASA No.: 3,03 GS
 Date: 27 April 1960
 Time: 2156 Z

Wallops No. G2-212

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

K. L. Hallam (GSFC), Scientist; W. A. White (GSFC), Project Manager

EXPERIMENT

(1) Measure absolute intensity of solar radiation in the following wavelength bands: (a) 1100 to 1350 Å, (b) 1225 to 1235 Å, (c) 1230 to 1350 Å; (d) 1 to 8 Å using 6 ionization chambers and 2 Geiger-Mueller counters. (2) Checkout payload instrumentation package and modified nosecone ejection system.

FLIGHT INFORMATION

Launcher Setting:		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Azimuth	<u>110°</u>			
Elevation	<u>83°</u>			
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	18 (Asp broke up)	40,000	
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		15.2 st.mi.	

Impact: Time 283 secs , Range _____ , Azimuth _____

ROCKET INFORMATION

NASA No. 3.03 GS

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	48	18.06	P1 base	68
Extensions				
Stage 1	1344			151
Stage 2	218	52.6	Top of Asp	111
Stage 3				
Stage 4				
Total	1610			330

ROCKET-BORNE EQUIPMENT

Six ion chambers, two photon counters, two aspect system photodiodes, two skin temperature sensors, two logarithmic pulse ratemeters.

FM/FM (242 Mc), four antennas 45° sweep

GROUND-BASED EQUIPMENT

FM/FM stations

Radars (skin)

RESULTS

Solar radiation experiment didn't function due to failure of the nosecone to eject. Failure may have been caused by Asp break up. Telemetry was satisfactory. Payload wasn't demolished and telemetry signals were received up to splash. Asp broke up 3 seconds after it ignited. Radar tracking saw pieces and tracked major target.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Asp

NASA No.: 3.04 GS
 Date: 25 May 1960
 Time: 2200 Z

Wallops No. G2-279

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

K. L. Hallam (GSFC), Scientist; W. A. White (GSFC), Project Manager

EXPERIMENT

(1) Measure absolute intensity of solar radiation in the following wavelength bands: (a) 1100 to 1350 Å; (b) 1225 to 1235 Å; (c) 1230 to 1350 Å; (d) 1 to 8 Å using 6 ionization chambers and 2 Geiger-Mueller counters. (2) Checkout modified nosecone ejection system.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 110°
 Elevation 83°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	21 (Asp broke up)		
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		15.2 st.mi.	

Impact: Time ≈ 280 secs, Range _____, Azimuth _____

ROCKET INFORMATION

NASA No. 3.04 GS

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	46.8	18-1/16	P1 base	68
Extensions				
Stage 1	1345.2			151
Stage 2	218	52-3/5	Top of Asp	111
Stage 3				
Stage 4				
Total	1610			330

ROCKET-BORNE EQUIPMENT

Six ion chambers, two photon counters, two aspect system photodiodes, two skin temperature sensors, two logarithmic pulse ratemeters
FM/FM (235 Mc), four antennas 45° sweep

GROUND-BASED EQUIPMENT

FM/FM stations
Radars (skin)

RESULTS

Solar radiation experiment didn't function due to failure of the nosecone to eject. Telemetry operated satisfactorily. Asp broke up 3 seconds after it ignited. Radar tracking saw pieces and tracked major target.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Asp

NASA No.: 3.05 CA
 Date: 19 April 1960
 Time: 0936 Z

Wallops No. G2-338

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. E. R. Manring (GCA), Project Scientist; J. F. Bedinger (GCA), Project Scientist;
 M. Dubin (NASA), Scientist, J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds and diffusivity in the region of 80 to 200 km. The series investigated the effects of longitude by coordinated firings from Sardinia during the same period. Diurnal effects were investigated by firings during successive twilight periods.

FLIGHT INFORMATION

Launcher Setting:		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Azimuth <u>116°</u>				
Elevation <u>77°</u>				
Stage 1	Burnout	3.5	8000 (est)	2800 (est)
Stage 2	Ignition	25.5	47,000	1600
	Burnout	29.6	64,802	5948
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	207	104 st.mi.	

Impact: Time 401 secs , Range 110.3 n.mi. , Azimuth 116°

ROCKET INFORMATION

NASA No. 3.05 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	87			65.4
Extensions				
Stage 1	1333.4	76.2	NEP	151
Stage 2	311	72.3	NEP	176.8
Stage 3				
Stage 4				
Total	1644.4			327

ROCKET-BORNE EQUIPMENT

Sodium-aluminum thermite and iron oxide

GROUND-BASED EQUIPMENT

Radar tracking – FPS-16, 584, MOD II

Camera sites at Dover AFB, Andrews AFB, Camp A. P. Hill, Dam Neck, Va., Wallops Island

RESULTS

Rocket performance excellent. Good radar tracking. Photographic coverage, clear 2 sites, partial 1 site, cloudy 1 site. Good data obtained.

REPORTS

See References A-1, A-2, A-3, A-4, A-5, A-6, A-9.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Nike Asp

NASA No.: 3.06 CA
 Date: 21 April 1961
 Time: 0012 Z

Wallops No. G2-572

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. E. R. Manring (GCA), Project Scientist; J. F. Bedinger (GCA), Project Scientist;
 M. Dubin (NASA), Scientist, J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds and diffusivity in the region of 80 to 200 km. The series investigated the effects of longitude by coordinated firings from Sardinia during the same period. Diurnal effects were investigated by firings during successive twilight periods.

FLIGHT INFORMATION

Launcher Setting:				
Azimuth		110°		
Elevation		79°		
		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.5	5800 (est)	2800 (est)
Stage 2	Ignition	23	46,800	1800
	Burnout	29	70,086	5993
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	213	112 st.mi.	

Impact: Time 410 secs, Range 101.6 n.mi., Azimuth 116°

ROCKET INFORMATION

NASA No. 3.06 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	87.5			65.4
Extensions				
Stage 1	1354.2	76-1/4	NEP	151
Stage 2	309.5	72-1/8	NEP	176-3/4
Stage 3				
Stage 4				
Total	1663.7			327

ROCKET-BORNE EQUIPMENT

Sodium-aluminum thermite and iron oxide

GROUND-BASED EQUIPMENT

Radar tracking – FPS-16, 584, MOD II

Camera sites at Dover AFB, Andrews AFB, Camp A. P. Hill, Dam Neck, Va., Wallops Island

RESULTS

Rocket performance excellent. Good radar tracking. Sodium was ejected from 50 to 112 miles. All camera sites clear. Good data was obtained.

REPORTS

See References A-1, A-2, A-3, A-4, A-5, A-6, A-9.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Nike Asp

NASA No.: 3.07 CA

Date: 21 April 1961

Time: 0934 Z

Wallops No. G2-573

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. E. R. Manring (GCA), Project Scientist; J. F. Bedinger (GCA), Project Scientist;
M. Dubin (NASA), Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds and diffusivity in the region of 80 to 200 km. The series investigated the effects of longitude by coordinated firings from Sardinia during the same period. Diurnal effects were investigated by firings during successive twilight periods.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 111°

Elevation 79°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition	ASP failed to ignite.		
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak			

Impact: Time _____, Range _____, Azimuth _____

ROCKET INFORMATION

NASA No. 3.07 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	88			65.4
Extensions				
Stage 1	1353	76-3/16	NEP	151
Stage 2	310.5	72-1/4	NEP	176-3/4
Stage 3				
Stage 4				
Total	1663.5			327

ROCKET-BORNE EQUIPMENT

Sodium-aluminum thermite and iron oxide

GROUND-BASED EQUIPMENT

Radar tracking — FPS-16, 584, MOD II

Camera sites at Dover AFB, Andrews AFB, Camp A. P. Hill, Dam Neck, Va., Wallops Island

RESULTS

Asp failed to ignite. No data was obtained.

REPORTS

Experiment was a failure and no reports were published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Asp

NASA No.: 3.08 CA
 Date: 21 April 1961
 Time: 0939 Z

Wallops No. G2-574

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. E. R. Manring (GCA), Project Scientist; J. F. Bedinger (GCA), Project Scientist;
 M. Dubin (NASA), Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds and diffusivity in the region of 80 to 200 km. The series investigated the effects of longitude by coordinated firings from Sardinia during the same period. Diurnal effects were investigated by firings during successive twilight periods.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 111°
 Elevation 79°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.5	5800 (est)	2800 (est)
Stage 2	Ignition	26	48,000	1200
	Burnout	32.1	679,888	5622
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	208	103.1 st.mi.	

Impact: Time 405 secs , Range 76.4 n.mi. , Azimuth 115°

ROCKET INFORMATION

NASA No. 3.08 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	87			65.4
Extensions				
Stage 1	1351.9	76-3/16	NEP	151
Stage 2	309	72	NEP	176-7/8
Stage 3				
Stage 4				
Total	1660			327

ROCKET-BORNE EQUIPMENT

Sodium-aluminum thermite and iron oxide

GROUND-BASED EQUIPMENT

Radar tracking – FPS-16, 584, MOD II

Camera sites at Dover AFB, Andrews AFB, Camp A. P. Hill, Dam Neck, Va., Wallops Island

RESULTS

Rocket performance as predicted. Radar tracking good. Sodium vapor was ejected from 50 to 102 miles. All camera sites were clear and good data was obtained.

REPORTS

See References A-1, A-2, A-3, A-4, A-5, A-6, A-9.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Asp

NASA No.: 3.09 CA
 Date: 16 Sept. 1961
 Time: 1002 Z

Wallops No. G2-575

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. E. R. Manring (GCA), Project Scientist; J. F. Bedinger (GCA), Project Scientist;
 M. Dubin (NASA), Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds and diffusivity in region of 80 to 200 km by observation of a trail of sodium vapor ejected from the rocket.

FLIGHT INFORMATION

Launcher Setting:
 Azimuth 122°
 Elevation 78°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	4	5000 (est)	3200 (est)
Stage 2	Ignition	Failed to ignite.		
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak			

Impact: Time , Range , Azimuth

ROCKET INFORMATION

NASA No. 3.09 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	80			65.4
Extensions				
Stage 1	1346.6	76-3/4	NEP	151
Stage 2	303	70-3/4	NEP	110.6 w/o payload
Stage 3				
Stage 4				
Total	1649.6			327

ROCKET-BORNE EQUIPMENT

Sodium-aluminum thermite and iron oxide

GROUND-BASED EQUIPMENT

Radar tracking – FPS-16, 584, MOD II

Camera sites at Dover AFB, Andrews AFB, Camp A. P. Hill, Dam Neck, Va., Wallops Island

RESULTS

Second stage failed to ignite. Sodium was ejected but due to low altitude, no data was obtained.

REPORTS

Experiment was a failure and no reports were published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

ROCKET: Nike Asp

Elevation 70 ft

NASA No.: 3.10 UI

Latitude 58.7°N

Date: 16 March 1960

Longitude 93.8°W

Time: _____

INSTRUMENTING AGENCY

University of Michigan

KEY PERSONNEL

Mr. Spencer (U. of M.), Chief Scientist

EXPERIMENT

Ionospheric studies.

FLIGHT INFORMATION

Launcher Setting:

Azimuth _____

Elevation _____

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak			

Impact: Time _____, Range _____, Azimuth _____

ROCKET INFORMATION

NASA No. 3.10 UI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload				
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total				

ROCKET-BORNE EQUIPMENT**GROUND-BASED EQUIPMENT****RESULTS**

Failure. Second stage broke on lift off. Launcher tore loose from pad.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Asp

NASA No.: 3.11 CA
 Date: 18 Feb. 1963
 Time: 2314 Z

Wallops No. G2-218

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. E. R. Manring (GCA), Project Scientist; J. F. Bedinger (GCA), Project Scientist;
 W. S. Smith (GSFC), Project Scientist; W. Phillips (GSFC), Vehicle Manager

EXPERIMENT

Measure atmosphere winds and diffusion by photographing sodium vapor trail.

FLIGHT INFORMATION

Launcher Setting:		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Azimuth	109°			
Elevation	83°			
Stage 1	Burnout	3.5	5300	3220
Stage 2	Ignition	22	45,000	1800
	Burnout	Did not ignite.		
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	72	15.7 st.mi.	

Impact: Time 147 secs , Range 8.6 n.mi. , Azimuth 110°

ROCKET INFORMATION

NASA No. 3.11 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload				
Extensions				
Stage 1	1352.4	76	NEP	
Stage 2	306.5	70.875	NEP	14'-7.625
Stage 3				
Stage 4				
Total	1658.9	NA	NA	

ROCKET-BORNE EQUIPMENT

Sodium, thermite and lithium

GROUND-BASED EQUIPMENT

Radar FPS-16, MOD II, 584, SPANDAR

Camera sites at Wallops Sta., Dover A.F. Base, Andrews A.F. Base, Camp A. P. Hill, Dam Neck Station.

RESULTS

Second stage apparently exploded shortly after ignition.

REPORTS

Experiment was a failure. No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Nike Asp

NASA No.: 3.12 CI
 Date: 22 Aug. 1960
 Time: 1740:37 Z

Wallops No. G2-222

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

L. G. Smith (GCA), Scientist; R. E. Bourdeau (GSFC), Project Manager; C. R. Hamilton (GSFC), Coordinator

EXPERIMENT

- (1) Measure electron temperature and density by the Langmuir double probe technique.
- (2) Secondary objective is to determine effect of telemetering transmitter on electron density and temperature near the rocket.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 102°

Elevation 80.3°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	25.6 (Asp broke up)	56,030	4700
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		Between 60 and 70 st.mi.	

Impact: Time 323 secs, Range 4.1 n.mi., Azimuth 102°

ROCKET INFORMATION

NASA No. 3.12 CI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	59	16-3/16	From aft end	60
Extensions				
Stage 1	1333	76-9/16	Nozzle exit	134-1/2
Stage 2	223.5	51-5/8	Nozzle exit	111
Stage 3				
Stage 4				
Total	1669			324

ROCKET-BORNE EQUIPMENT

Nose electrode, side electrode, aspect sensors
FM/FM (230.4 Mc), two opposed radial antennas

GROUND-BASED EQUIPMENT

FM/FM stations
584 and MOD II radars (skin), cameras

RESULTS

Telemetry was satisfactory. After Asp broke up telemetry continued to function, with payload rolling, until impact at 323 seconds. Asp broke up 3.4 seconds after it ignited. Radar tracking was adequate; saw pieces. No experimental data obtained.

REPORTS

Experiment was a failure. No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Nike Asp

NASA No.: 3.13 CA
 Date: 17 Aug. 1959
 Time: 0918 Z

Wallops No. G2-119

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. E. R. Manring (GCA), Project Scientist; J. B. Bedinger (GCA), Project Scientist

EXPERIMENT

Measure atmospheric winds and diffusion by photographing sodium vapor trail.

FLIGHT INFORMATION

Launcher Setting:		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Azimuth				
Elevation	80°			
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		148 st.mi.	

Impact: Time _____, Range _____, Azimuth _____

ROCKET INFORMATION

NASA No. 3.13 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	76			60.4
Extensions				
Stage 1	1333.5			151
Stage 2	218.5			106.3
Stage 3				
Stage 4				
Total	1628			317.7

ROCKET-BORNE EQUIPMENT

2.2 kg sodium, 6.6 kg thermite, pellets of lithium and potassium

GROUND-BASED EQUIPMENT

Radar tracking FPS-16 radar

Camera sites at Dover AFB, Andrews AFB, Camp A. P. Hill, Dam Neck Naval Sta., and Wallops Island

RESULTS

Rocket performance was good.

REPORTS

See References A-1, A-2, A-3, A-4, A-5, A-6, A-7, A-8, A-10.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Asp

NASA No.: 3.14CA
 Date: 19 Aug. 1959
 Time: 0034 Z

Wallops No. G2-120

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. E. R. Manring (GCA), Project Scientist; J. F. Bedinger (GCA); Project Scientist

EXPERIMENT

Measure atmospheric winds and diffusion by photographing sodium vapor trail.

FLIGHT INFORMATION

Launcher Setting:

Azimuth
 Elevation 80°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	25	18.7 st.mi.	

Impact: Time , Range , Azimuth

ROCKET INFORMATION

NASA No. 3.13 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	75.5			60.4
Extensions				
Stage 1	1333.5			151
Stage 2	219			106.3
Stage 3				
Stage 4				
Total	1628			317.7

ROCKET-BORNE EQUIPMENT

2.2 kg sodium, 6.6 kg thermite and pellets of lithium and potassium

GROUND-BASED EQUIPMENT

FPS-16 radar tracking

Camera sites at Dover AFB, Andrews AFB, Camp A. P. Hill, Dam Neck Naval Sta., Wallops Island

RESULTS

Asp broke up before normal burnout. Sheared pullaway cable indicated possibility of failure due to fin damage and excessive angle of attack.

REPORTS

Experiment was a failure. No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Asp

NASA No.: 3.15 CA
 Date: 18 Nov. 1959
 Time: 2217 Z

Wallops No. G2-191

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. E. R. Manring (GCA), Project Scientist; J. F. Bedinger (GCA), Project Scientist

EXPERIMENT

Measure atmospheric winds and diffusion by photographing sodium vapor cloud.

FLIGHT INFORMATION

Launcher Setting: Azimuth _____ Elevation _____		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		156 st.mi.	

Impact: Time , Range , Azimuth

ROCKET INFORMATION

NASA No. 3.15 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	68.8			60.4
Extensions				
Stage 1	1342			151
Stage 2	220			106.3
Stage 3				
Stage 4				
Total	1630.8			317.7

ROCKET-BORNE EQUIPMENT

2.2 kg sodium, 6.6 kg lithium and pellets of lithium and potassium

GROUND-BASED EQUIPMENT

Radar tracking, FPS-16, MOD II, 584

Camera sites at Dover AFB, Andrews AFB, Camp A. P. Hill, Dam Neck Naval Sta., and Wallops Island

RESULTS

Good rocket performance. Sodium cloud was photographed at several sites. Shear regions were observed below 120 km with a sharp shear about that altitude. Above this altitude to 200 km the cloud moved uniformly and diffused regularly.

REPORTS

See References A-1, A-2, A-3, A-4, A-5, A-6, A-7, A-8, A-10.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Nike Asp

NASA No.: 3.16 CA
 Date: 19 Nov. 1959
 Time: 1051 Z

Wallops No. G2-192

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. E. R. Manring (GCA), Project Scientist; J. F. Bedinger (GCA), Project Scientist

EXPERIMENT

Measure atmospheric winds and diffusion by photographing sodium vapor trail.

FLIGHT INFORMATION

Launcher Setting:

Azimuth _____
 Elevation _____

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		159 st.mi.	

Impact: Time _____, Range _____, Azimuth _____

ROCKET INFORMATION

NASA No. 3.16 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	68.8			60.4
Extensions				
Stage 1	1342			151
Stage 2	220			106.3
Stage 3				
Stage 4				
Total	1630.8			317.7

ROCKET-BORNE EQUIPMENT

2.2 kg sodium, 6.6 kg thermite and pellets of lithium and potassium

GROUND-BASED EQUIPMENT

Tracking radars, FPS-16, MOD II

Camera sites at Dover AFB, Andrews AFB, Camp A. P. Hill, Dam Neck Naval Sta. and Wallops Island

RESULTS

Rocket performance above normal. Sodium generator failed to ignite. No data was obtained.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Asp

NASA No.: 3.17 CA
 Date: 20 Nov. 1959
 Time: 1051 Z

Wallops No. G2-193

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. E. R. Manring (GCA), Project Scientist; J. F. Bedinger (GCA), Project Scientist

EXPERIMENT

Measure atmospheric winds and diffusion by photographing sodium vapor trail.

FLIGHT INFORMATION

Launcher Setting:

Azimuth
 Elevation

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		147 st.mi.	

Impact: Time , Range , Azimuth

ROCKET INFORMATION

NASA No. 3.17 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	68.5			60.4
Extensions				
Stage 1	1342			151
Stage 2	220			106.3
Stage 3				
Stage 4				
Total	1630.5			317.7

ROCKET-BORNE EQUIPMENT

2.2 kg sodium, 6.6 kg thermite, and pellets of lithium and potassium

GROUND-BASED EQUIPMENT

Tracking radars FPS-16, MOD II

Camera sites at Dover AFB, Andrews AFB, Camp A. P. Hill, Dam Neck Naval Sta. and Wallops Island

RESULTS

Rocket performance was good. Sodium generator failed to ignite. No data was obtained.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel

Latitude 37.8°N

Longitude 75.5°W

ROCKET: Nike Asp

NASA No.: 3.18 CA

Date: 16 Sept. 1961

Time: 2139 Z

Wallops No. G2-602

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. E. R. Manring (GCA), Project Scientist; J. F. Bedinger (GCA), Project Scientist; M. Dubin (NASA), Scientist, J. A. Sterhardt (GSFC), Vehicle Manager; Prof. J. E. Blamont (National Space Studies Center of France), Observer

EXPERIMENT

Measurement of winds and diffusivity in the region of 80 to 200 km. The series investigated the effects of longitude by coordinated firings from Sardinia during the same period. Diurnal effects were investigated by firings during successive twilight periods.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 118°

Elevation 79°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3	5200 (est)	3300 (est)
Stage 2	Ignition	22	48,000	2000
	Burnout	26.9	67,419	6491
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	228	129 st.mi.	

Impact: Time 441 secs, Range 105.6 n.mi., Azimuth 102°

ROCKET INFORMATION

NASA No. 3.18 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	80			65.4
Extensions				
Stage 1	1353	76-13/16	NEP	151
Stage 2	303.5	70-5/8	NEP	176
Stage 3				
Stage 4				
Total	1656.5			327

ROCKET-BORNE EQUIPMENT

Sodium-aluminum thermite and iron oxide

GROUND-BASED EQUIPMENT

Radar tracking — FPS-16, 584, MOD II

Camera sites at Dover AFB, Andrews AFB, Camp A. P. Hill, Dam Neck, Va., and Wallops Island

RESULTS

Rocket performance as predicted. Radar tracking good. Sodium vapor was ejected from 70 to 200 km. Most sites were clear and good data was obtained. Temperature measurements were attempted by Prof. Blamont. Results of these measurements have not been reported.

REPORTS

See References A-1, A-2, A-3, A-4, A-5, A-6, A-9.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Nike Asp

NASA No.: 3.19 CA
 Date: 17 Sept. 1961
 Time: 1003 Z

Wallops No. G2-603

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. E. R. Manring (GCA), Project Scientist; J. F. Bedinger (GCA), Project Scientist;
 M. Dubin (NASA), Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds and diffusivity in the region of 80 to 200 km. The series investigated the effects of longitude by coordinated firings from Sardinia during the same period. Diurnal effects were investigated by firings during successive twilight periods.

FLIGHT INFORMATION

Launcher Setting:		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Azimuth	<u>127°</u>			
Elevation	<u>78.7°</u>			
Stage 1	Burnout	3.6	5200 (est)	3300 (est)
Stage 2	Ignition	26	48,000	1700
	Burnout	32	72,000	6000
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	213	108 st.mi.	

Impact: Time 400 secs, Range 62.5 n.mi., Azimuth 117°

ROCKET INFORMATION

NASA No. 3.19 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	87			65.4
Extensions				
Stage 1	1351.5	76-3/4	NEP	151
Stage 2	310.75	71-7/8	NEP	176
Stage 3				
Stage 4				
Total	1662.25			327

ROCKET-BORNE EQUIPMENT

5 lbs of sodium and 15 lbs thermite

GROUND-BASED EQUIPMENT

Radar tracking — FPS-16, 584, MOD II

Camera sites at Dover AFB, Andrews AFB, Camp A. P. Hill, Dam Neck, Va., and Wallops Island

RESULTS

Rocket performance below predicted. Radar tracking good. Sodium vapor was ejected from 70 to 200 km. Camera sites were clear except Dam Neck. Good data was obtained.

REPORTS

See References A-1, A-2, A-3, A-4, A-5, A-6, A-9.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel
Latitude 37.8° N
Longitude 75.5° W

ROCKET: Nike Asp

NASA No.: 3.23 CA
Date: 24 May 1960
Time: 0857 Z

Wallops No. G2-339

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

J. F. Bedinger (GCA) Scientist; E. R. Manring (GCA), Scientist

EXPERIMENT

(1) Measure atmospheric winds and diffusion between 80 and 200 km altitude by triangulation photographs of twilight sunlit sodium vapor trail. (2) Determine diurnal variations with rockets 3.24 and 3.25 CA.

FLIGHT INFORMATION

Launcher Setting:

Azimuth
Elevation

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	24.8 (Asp broke up)		
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		16 st.mi.	

Impact: Time , Range , Azimuth

ROCKET INFORMATION

NASA No. 3.23 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	79			65.4
Extensions				
Stage 1	1349			151
Stage 2	301	70-7/16	From nozzle	176.0
Stage 3				
Stage 4				
Total	1650			327

ROCKET-BORNE EQUIPMENT

Vaporizer containing 6.6 kg of thermite, 2.2 kg of Na and 10 encapsulated pellets of Li of about 0.1 gm weight, vaporizer dual ignition circuits, timer controlled

GROUND-BASED EQUIPMENT

Camera sites at Dover AFB, Andrews AFB, Dam Neck Naval Station, Camp A. P. Hill and Wallops Island
FPS-16 radar (skin); Cameras

RESULTS

No data because of rocket failure. Asp broke up 3.8 seconds after it ignited.
Rocket was stable until motor broke up. Radar tracking was adequate.

REPORTS

Experiment was a failure; no reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Nike Asp

NASA No.: 3.24 CA
 Date: 25 May 1960
 Time: 0048 Z

Wallops No. G2-340

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

E. R. Manring (GCA), Scientist; J. F. Bedinger (GCA), Scientist

EXPERIMENT

(1) Measure atmospheric winds and diffusion between 80 and 200 km altitude by triangulation photographs of twilight sunlit sodium vapor trail. (2) Determine diurnal variations with rocket 3.23 CA.

FLIGHT INFORMATION

Launcher Setting:

Azimuth _____

Elevation _____

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		124 st.mi.	

Impact: Time _____, Range _____, Azimuth _____

ROCKET INFORMATION

NASA No. 3.24 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	80			70
Extensions				
Stage 1	1348			151
Stage 2	302	70-9/16		176
Stage 3				
Stage 4				
Total	1650			327

ROCKET-BORNE EQUIPMENT

Vaporizer containing 6.6 kg of thermite, 2.2 kg of Na and 10 encapsulated pellets of Li of about 0.1 gm weight, vaporizer dual ignition circuits, timer controlled

GROUND-BASED EQUIPMENT

Camera sites at Dover AFB, Andrews AFB, Dam Neck Naval Station, Camp A. P. Hill, and Wallops Island

FPS-16 radar (skin), cameras

RESULTS

Sodium cloud was photographed from all sites. Rocket vehicle performance fair; peak slightly low; Asp went into flat spin or precession after 80. Radar tracking adequate.

REPORTS

See References A-1, A-2, A-3, A-4, A-5, A-6, A-7, A-9, A-10.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Asp

NASA No.: 3.28 GT
 Date: 9 Aug. 1960
 Time: 2010:33 Z

Wallops No. G2-388

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

E. F. Sornit (GSFC), Scientist

EXPERIMENT

(1) First of 3 test flights (3.29 GT and 3.36 GT) to determine reason for flight failures of 2nd stage Asp which have marginally defective (porous) propellant. Temperature, bending stress, attitude, roll, chamber pressure and acceleration data are telemetered. (2) Test nosecone ejection mechanism.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 106.5°
 Elevation 82.6°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	25 (Asp blew up)	52,923	2968
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		16.8 st.mi.	

Impact: Time 444 secs, Range 100 n.mi., Azimuth 110°

ROCKET INFORMATION

NASA No. 328 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	50.9	46-1/2	Tip of pitch yaw gage	64.5
Extensions				
Stage 1	1333	76-9/16	Nozzle exit	134.5
Stage 2	226	51-9/10	Nozzle exit	110.9
Stage 3				
Stage 4				
Total	1665			326

ROCKET-BORNE EQUIPMENT

Long. accelerometer, pitch-yaw gage, roll magnetometer; Long. strain gages in 3 planes, hoop tension strain gage, Asp Pc gage, fin breakwires, NC, ext. and fin temperature gages FM/FM (244.3 Mc), four 45° sweep antennas

GROUND-BASED EQUIPMENT

FM/FM stations
FPS-16, 584 and MOD II radar (skin); cameras including 320" telescopic

RESULTS

Asp blew up 2.5 seconds (normal BO 5.8 seconds) after it ignited. The data indicate Asp failures are due to combination of severe flight environment during Nike boost and porous propellant.

Telemetry: Complete data recovery up to explosion. All signals were lost at 30 seconds.
Radar tracking: Complete; saw pieces and tracked major targets to splash.

REPORTS

Experiment was a failure. No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Nike Asp

NASA No.: 3.29 GT
 Date: 3 Nov. 1960
 Time: 2119 Z

Wallops No. G2-463

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

E. F. Sornigt (GSFC), Scientist; R. B. Jenkins (GSFC), Scientist

EXPERIMENT

Second of 3 test flights (3.28 GT and 3.36 GT) to remedy flight failures of 2nd stage Asp. Several material and design modifications were incorporated to strengthen nosecone and Asp fins. Chamber pressure, spin rate and acceleration data were telemetered.

FLIGHT INFORMATION

Launcher Setting:		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Azimuth	<u>115°</u>			
Elevation	<u>76°</u>			
Stage 1	Burnout	3.64	4500	3500
Stage 2	Ignition	26.24	45,000	1300
	Burnout	32.00	70,000	6500
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	217	120 st.mi.	

Impact: Time 434 secs, Range _____, Azimuth 117°

ROCKET INFORMATION

NASA No. 3.29 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	51.4	48.7	Nose tip	71-5/8
Extensions				
Stage 1	1386.6	77	NEP	150-1/4
Stage 2	223.6			110-1/2
Stage 3				
Stage 4				
Total	1662			332-3/8

ROCKET-BORNE EQUIPMENT

Asp Pc gage, long. accelerometer, long. and lat. magnetometers
FM/FM (240.2 Mc), four 45° sweep antennas

GROUND-BASED EQUIPMENT

FM/FM stations
MIT, FPS-16, MOD II and 584 radars (skin), cameras including AF1352 photo unit

RESULTS

Rocket vehicle performance satisfactory; slightly low peak attributed to low flight elevation angle and delayed separation. Nike burned normally for 3.64 seconds. Separation occurred at 4.54 seconds (set for 4 seconds). Asp burned normally for 5.76 seconds. Vehicle did not break up; flew an elevation angle of 80°, correcting less than predicted. Complete data recovery. Radar tracking complete (MIT).

REPORTS

See Reference T-9.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Nike Asp

NASA No.: 3.36 GT
 Date: 17 Jan. 1961
 Time: 2125 Z

Wallops No. G2-497

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

E. F. Sornnit (GSFC), Project Scientist; R. B. Jenkins (GSFC), Vehicle Manager

EXPERIMENT

Test of Nike Asp rocket to prove the adequacy of the structural modifications of the payload section and fins and the built-in time delay of the stage separation.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 110°N

Elevation 83°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.6	5000 (est)	3200 (est)
Stage 2	Ignition	23	45,500	1400
	Burnout	28.6	70,000	6900
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	223	130 st.mi.	

Impact: Time 445 secs, Range 73.4 n.mi., Azimuth 125°40'

ROCKET INFORMATION

NASA No. 3.36 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	55	44-5/8	Nose tip	66-5/8
Extensions	52.7			15-3/4
Stage 1	1337	58-3/4	Fd flange	143-3/4
Stage 2	221	49-1/2	NEP	110-5/8
Stage 3				
Stage 4				
Total	1665.7			325-3/4

ROCKET-BORNE EQUIPMENT

Telemetry FM/FM (240.2 Mc)

Roll rate magnetometer, longitudinal accelerometer

Temp. gages, pitch-yaw gage, strain gages, chamber press. gage

GROUND-BASED EQUIPMENT

FM ground station, radar FPS-16, MOD II, 584, MIT

Optical - USAF 180" lens camera, one 16 mm camera

Two 35 mm cameras

RESULTS

Rocket performance as predicted. Telemetry data good on three of four channels.

REPORTS

See Reference T-2.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.
 Elevation \approx Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Aerobee 150A
 NASA No.: 4.01 GT
 Date: 16 Feb 1960
 Time: 2048 Z

Wallops No. G2-216

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

K. R. Medrow (GSFC), Project Scientist; O. E. Berg (GSFC), Micrometeorite Experimenter;
 M. W. Oleson (NRL), Vibration Measurements

EXPERIMENT

- (A) Primary objective: First of two (4.12 GT) performance tests of new four fin Aerobee.
 (B) Secondary objectives: (1) Measure vibrations at four Aerobee fin roots and representative payload mounting. (2) Measure micrometeorite impacts. (3) Performance tests of cadmium sulphide cell aspect gage.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 78.2°
 Elevation 84.75°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	2.5	800	
Stage 2	Ignition			
	Burnout	1.0 + (Failed)	160	
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		1.9 st.mi.	

Impact: Time , Range , Azimuth

ROCKET INFORMATION

NASA No. 4.01 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	167			
Extensions				
Stage 1	600			78
Stage 2	1511			290-1/4
Stage 3				
Stage 4				
Total	2111			368

ROCKET-BORNE EQUIPMENT

Pitch yaw gage, long. and 3 lat. accelerometers, shroud, tail section, 4 fins and 5 NC temperature gages, lat. and long. magnetometers, sun and earth solar aspect sensors, He, Ox, fuel and Pc pressure gages, pressure regulator gage.

Other experiments: 3 meteor detectors (light pulse, acoustical and condenser discharge); meteor monitor microphone, CdS cell, 5 vibration accelerometers (pickups), vibration background microphone. DRW 13 cutoff RCVR, fin notch antenna. PPM/AM (225.7 Mc); FM/FM (240.2 Mc); 3 fin notch antennas.

GROUND-BASED EQUIPMENT

PPM/AM and FM/FM stations

FPS-16, MOD II and 584 radars (skin), MIT radar (skin) tracked without recording, optical sky screen, cameras

Cutoff XMTR (412 mc)

RESULTS

Sustainer motor failed at $t + 1$ seconds. Analysis of recovered combustion chamber indicated failure caused by high frequency unstable flame which burned a hole through inner liner near ejector plate, booster was normal. Other experiments: No results because of rocket failure. Telemetry good until sustainer blew up at 47 secs. Radar tracking: MOD II tracked to splash but results are not considered reliable; FPS-16 and 584 poor.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

ROCKET: Aerobee 150

Elevation 70 ft

NASA No.: 4.02 II

Latitude 58.7° N

Date: 17 Sept. 1959

Longitude 93.8° W

Time: 1837 Z

Churchill No.: DRTE-.01

INSTRUMENTING AGENCY

Defense Research Telecommunications Establishment, Department of National Defense,
Shirley Bay, Ottawa, Canada

KEY PERSONNEL

W. J. Heikkila (DRTE), Project Scientist

EXPERIMENT

To determine electron density and temperature, ion density, radio wave absorption and vehicle charge in the ionosphere.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 129°

Elevation 83.6°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	54	131,440	6600
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	270	159 st.mi.	

Impact: Time 540 secs (est) Range 80.8 n.mi. , Azimuth 109.4°

ROCKET INFORMATION

NASA No. 4.02 II

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	174			
Extensions				
Stage 1	600			78
Stage 2	1497			288-1/4
Stage 3				
Stage 4				
Total	2097			366-1/4

ROCKET-BORNE EQUIPMENT

Magnetic aspect and solar aspect gages
Telemetry, DOVAP

GROUND-BASED EQUIPMENT

Telemetry ground station
DOVAP ground station

RESULTS

Very good rocket vehicle performance, three miles above predicted peak.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft
 Latitude 58.7°N
 Longitude 93.8°W

ROCKET: Aerobee 150

NASA No.: 4.03 II
 Date: 20 Sept. 1959
 Time: 1735 Z

Churchill No.: DRTE .02

INSTRUMENTING AGENCY

Defense Research Telecommunications Establishment, Department of National Defense,
 Shirley Bay, Canada

KEY PERSONNEL

W. J. Heikkila (DRTE), Project Scientist

EXPERIMENT

To determine electron density and temperature.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 150°
 Elevation 87.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		Unknown	

Impact: Time _____, Range _____, Azimuth _____

ROCKET INFORMATION

NASA No. 4.03 II

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	176			
Extensions				
Stage 1	600			78
Stage 2	1499			290-1/4
Stage 3				
Stage 4				
Total	2099			368-1/4

ROCKET-BORNE EQUIPMENT

Magnetic aspect and solar aspect gages
Telemetry, DOVAP

GROUND-BASED EQUIPMENT

Telemetry ground station
DOVAP ground station

RESULTS

Experiment unsuccessful due to low altitude; transmissions terminated at 237 seconds. Telemetry signals stopped at 11.1 seconds; data normal up to failure. Rocket vehicle: structural failure indicated at approx. 25 seconds; normal performance up to failure.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Aerobee 150A

NASA No.: 4.04 GG

Date: 27 April 1960

Time: 0418 Z

Wallops No.: G2-288

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

J. E. Kupperian, Jr. (GSFC), Project Scientist; A. Boggess, III (GSFC), Experimenter; K. R. Medrow (GSFC), Rocket Vehicle

EXPERIMENT

(1) Measure stellar fluxes at 2700, 2600, 2200 and 1300 Angstroms by means of multiplier phototubes. (2) Map and measure intensities of ultraviolet nebulosities at 1300 and 1216 Angstroms by means of ion chambers. (3) Measure interplanetary scattering of Lyman-Alpha radiation and heights and intensity distributions of ultraviolet nightglow. (4) Same experiment flown in 4.05 GG and 4.06 GG.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 105°

Elevation 86.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	53		5950
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	250	130 st.mi.	

Impact: Time 450 secs , Range 57.4 n.mi. , Azimuth 130°

ROCKET INFORMATION

NASA No. 4.04 GG

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	202.5			117
Extensions				
Stage 1	600			78
Stage 2	1334.5			191
Stage 3				
Stage 4				
Total	2137			386

ROCKET-BORNE EQUIPMENT

Eleven telescopes using photomultiplier and ion chamber sensors, photocounter, wide-angle ion chamber

PPM/AM telemeter DKT-7 (225.7 Mc), fin notch antenna

Rate gyro, two magnetometers, pitch-yaw, He and Pc gages, accelerometer

Cutoff RCVR ARW 59, 412 Mc, fin notch antenna

GROUND-BASED EQUIPMENT

PPM/AM ground stations (225.7 Mc)

Cutoff XMTR DRW 13 (412 Mc)

FPS-16 and MIT Mainland radars (skin track), motion picture cameras.

RESULTS

Experiment was successful. Good data was obtained. Complete data recovery. Normal rocket vehicle performance. Despin was successful. Tracking adequate; FPS-16 and MIT tabulated data available.

REPORTS

See Reference G-3. G-2

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Aerobee 150A

NASA No.: 4.05 GG

Date: 27 May 1960

Time: 0530 Z

Wallops No.: G2-289

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

A. Boggett, III (GSFC), Project Scientist; K. R. Medrow (GSFC), Rocket Vehicle.

EXPERIMENT

(1) Measure stellar fluxes at 2700, 2600, 2200 and 1300 Angstroms by means of multiplier phototubes. (2) Map and measure intensities of ultraviolet nebulosities at 1300 and 1216 Angstroms by means of ion chambers. (3) Measure interplanetary scattering of Lyman-Alpha radiation and heights and intensity distributions of ultraviolet nightglow. (4) Same experiment flown in 4.04 GG and 4.06 GG.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 97°

Elevation 86.7°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	52.5	130,000	6000
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	249	133.7 st.mi.	

Impact: Time _____, Range 62.3 n.mi., Azimuth 114°

ROCKET INFORMATION

NASA No. 4.05 GG

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	204.5			122
Extensions				
Stage 1	600			78
Stage 2	1333.5			191
Stage 3				
Stage 4				
Total	2138			391

ROCKET-BORNE EQUIPMENT

Eleven telescopes using photomultiplier and ion chamber sensors, wide-angle ion chamber, Geiger counter
PPM/AM telemeter DKT 7 (225.7 Mc) fin notch antenna
Rate gyro, two magnetometers, pitch-yaw, He and Pc gages, accelerometer
Cutoff RCVR ARW 59 (412 Mc), fin notch antenna

GROUND-BASED EQUIPMENT

Telemetry: PPM/AM ground stations (225.7 Mc)
Range Safety: Cutoff XMTR (412 Mc)
Tracking: MOD II, FPS-15 and MIT Mainland radars (skin track), motion picture cameras

RESULTS

Good data for airglow studies only was obtained due to high roll rate. Complete data recovery. Rocket performance close to predicted peak. Despin failed. Tracking complete; 157 seconds of MOD II and FPS-16 position and velocity tabulated data; MIT range, elevation and azimuth data available.

REPORTS

See Reference G-4, G-2

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Aerobee 150A

NASA No.: 4.06 GG

Date: 24 June 1960

Time: 0625 Z

Wallops No. G2-292

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

A. Boggess, III (GSFC), Project Scientist; K. R. Medrow (GSFC), Rocket Vehicle Manager

EXPERIMENT

(1) Measure stellar fluxes at 2700, 2600, 2200 and 1300 Angstroms by means of multiplier phototubes. (2) Map and measure intensities of ultraviolet nebulosities at 1300 and 1216 Angstroms by means of ion chambers. (3) Measure interplanetary scattering of Lyman-Alpha radiation and heights and intensity distributions of ultraviolet nightglow. (4) Same experiment flown in 4.04 GG and 4.05 GG.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 91°

Elevation 83°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	53	124,619	5987
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	246	131 st.mi.	

Impact: Time _____, Range 70.7 n.mi., Azimuth 102°

ROCKET INFORMATION

NASA No. 4.06 GG

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	204			122
Extensions				
Stage 1	600			78
Stage 2	1335			191
Stage 3				
Stage 4				
Total	2139			391

ROCKET-BORNE EQUIPMENT

Eleven telescopes using ion chamber and photomultiplier sensors, wide-angle ion chamber, Geiger counter

PPM/AM telemeter DKT 7 225-7 Mc, fin notch antenna

Rate gyro, two magnetometers, pitch-yaw, He, and Pc gages, accelerometer

Cutoff RCVR ARW 59 (412 Mc), fin notch antenna

GROUND-BASED EQUIPMENT

PPM/AM ground stations (225.7 Mc)

Cutoff XMTR DRW 13 (412 Mc)

584, MOD II and FPS-16 radars (skin track), motion picture cameras

RESULTS

Excellent stellar data was obtained. The channel measuring interplanetary Lyman-Alpha radiation worked well. Complete data recovery. Rocket performance close to predicted peak, despin was good. Complete tracking 584 radar. Adequate tracking by FPS-16. 59 secs of 584 position and velocity tabulated data.

REPORTS

See Reference G-5.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

ROCKET: Aerobee 150

Elevation 70 ft

NASA No.: 4.07 GI

Latitude 58.7° N

Date: 14 Sept. 1959

Longitude 93.8° W

Time: 1727 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

J. E. Jackson (GSFC), Project Scientist; R. E. Bourdeau (GSFC), Project Scientist; G. W. Langanecker (GSFC), Vehicle Manager

EXPERIMENT

A. Determine electron density and temperature, ion density, radio wave absorption and vehicle charge in the ionosphere. B. Secondary objective: Test feasibility of single station DOVAP (SSD) tracking system.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 140°

Elevation 82.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	51.9	126,731	5986
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	249	136 st.mi.	

Impact: Time 470 secs (est) , Range 45.2 n.mi. , Azimuth 90°

ROCKET INFORMATION

NASA No. 4.07 GI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	209			118.4
Extensions				
Stage 1	600			78
Stage 2	1531			310
Stage 3				
Stage 4				
Total	2131			388

ROCKET-BORNE EQUIPMENT

RF impedance, probe, continuous wave XTMR (7.75 and 46.5 Mc), two pairs of telescoping whip antennas, electric field meter, Langmuir, single grid and two multi-grid probes. PPM/AM DKT 7 telemeter (227.5 Mc), fin notch antenna. DPN 41 beacon (2860 and 2900 Mc), two quadraloop antennas used for SSD tracking, CW XTMR (46.5 Mc) also two shroud antennas DRW 3 cutoff RCVR (54.5 Mc), fin notch antenna, Long. accelerometer, magnetic aspect, solar aspect and chamber pressure gages

GROUND-BASED EQUIPMENT

PPM/AM ground stations (227.5 Mc)
S12 radar beacon (2860 and 2900 Mc), single station DOVAP (SSD) (46.5 Mc)
Ionosphere ground station, ionosphere virtual height station
Cutoff XTMR (54.5 Mc), ballistic wind computer

RESULTS

The experiment was a complete success. All systems functioned well. Excellent quality data; terminated at 450 secs. Very good rocket vehicle performance. Tracking: Complete tracking. S12 radar and SSD tracked for 450 seconds.; 350 seconds of position and velocity tabulated radar data.

REPORTS

See Reference I-11, I-12, G-6, I-25.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft
 Latitude 58.7°N
 Longitude 93.8°W

ROCKET: Aerobee 150

NASA No.: 4.08 GI
 Date: 11 Sept. 1959
 Time: 1912 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

J. E. Jackson (GSFC), Project Scientist; R. E. Bourdeau (GSFC), Project Scientist; G. W. Langanecker (GSFC), Vehicle Manager

EXPERIMENT

A. Determine electron density and temperature, ion density, radio wave absorption and vehicle charge in the ionosphere. B. Secondary objective: Test feasibility of single station DOVAP (SSD) tracking system.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 117°
 Elevation 80.7°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	54	127,500	6200
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	255.6	140.9 st.mi.	

Impact: Time 510 secs (est) , Range 45.4 n.mi. , Azimuth 90°

ROCKET INFORMATION

NASA No. 4.08 GI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	208			118.4
Extensions				
Stage 1	600			78
Stage 2	1532			310
Stage 3				
Stage 4				
Total	2132			388

ROCKET-BORNE EQUIPMENT

RF impedance probe, continuous wave XTMR (7.75 and 46.5 Mc), two pairs of telescoping whip antennas, electric field meter, Langmuir, single-grid and two multi-grid probes PPM/AM DKT 7 telemeter (227.5 Mc), fin notch antenna, DPN41 beacon (2860 and 2900 Mc), two quadraloop antennas, CW XTMR (46.5 Mc) also used for SSD tracking; two shroud antennas, DRW 3 cutoff RCVR 54.5 Mc, fin notch antenna, Long. accelerometer, magnetic aspect, solar aspect and chamber pressure gages.

GROUND-BASED EQUIPMENT

PPM/AM ground stations (227.5 Mc)
S12 radar (2860 and 2900 Mc), single-station DOVAP (SSD) (46.5 Mc)
Ionosphere ground station, ionosphere virtual height station
Cutoff XTMR (54.5 Mc), ballistic wind computer

RESULTS

All experiments were successful. Excellent quality data, terminated at 410 seconds. Very good rocket vehicle performance. Enough data for firm trajectory; 465 seconds beacon data (intermittent); 465 seconds SSD data (not optimum due to ground station instability).

REPORTS

See Reference G-7.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel

Latitude 37.8° N

Longitude 75.5W

ROCKET: Aerobee 150A

NASA No.: 4.09 GA

Date: 29 April 1960

Time: 1547 Z

Wallops No.: G2-293

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

E. B. Meadows (GSFC), Project Scientist; R. Horowitz (GSFC), Project Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

(1) Determine composition, pressure and density of the atmosphere between 100 and 150 km altitude. Neutral particles and positive ions are measured by two mass spectrometers. Pressure and density are measured by Bayard-Alpert ionization gage. (2) Secondary objective: Test stellar-sun aspect sensor.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 130°

Elevation 85°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	2.5		
Stage 2	Ignition	0.3		
	Burnout	50.5	130,000	6400
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	262.4	150.7 st.mi.	

Impact: Time , Range 73.5 n.mi. , Azimuth 120°

ROCKET INFORMATION

NASA No. 4.09 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	183			112.5
Extensions				
Stage 1	600			78
Stage 2	1334			191
Stage 3				
Stage 4				
Total	2117			381.5

ROCKET-BORNE EQUIPMENT

Two Bennett 3 stage RF mass spectrometers, Bayard-Alpert ionization gage, optical stellar-sun aspect sensor with computer, two magnetometers, PPM/AM telemeter DKT 7 (225.7 Mc), FM telemeter 3115-1C (231.4 Mc); Three fin notch antennas, Long. accelerometer, Pc gage Cutoff RCVR DRW 13 (412 Mc), fin notch antenna

GROUND-BASED EQUIPMENT

PPM and FM ground stations

Cutoff XMTR (412 Mc)

MIT Mainland, FPS-15, 584 and MOD II radars (skin track), motion picture cameras

RESULTS

The experiments were successful. Complete data recovery; DKT 7 to 483 seconds; 3115 to 485 seconds. Rocket: 2.7 mi. above predicted peak, good stability. Complete tracking with MIT radar; FPS-16 position and velocity tabulated data 64.2 to 161 seconds.

REPORTS

See Reference G-8, A-47.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Aerobee 150A

NASA No.: 4.10 GT
 Date: 23 April 1960
 Time: 2145 Z

Wallops No. G2-294

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

K. R. Medrow (GSFC), Project Scientist

EXPERIMENT

- (1) Test rocket performance with minimum payload.
- (2) Test payload recovery package.
- (3) Checkout launching tower modifications.

FLIGHT INFORMATION

Launcher Setting:				
Azimuth <u> </u> 90°				
Elevation <u> </u> 84.5°				
		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	53.5		6270
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	261	153 st.mi.	

Impact: Time , Range 59 n.mi. , Azimuth 126°

ROCKET INFORMATION

NASA No. 4.10 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	145			100.8
Extensions				
Stage 1	600			78
Stage 2	1324			191.3
Stage 3				
Stage 4				
Total	2069			370.1

ROCKET-BORNE EQUIPMENT

Lateral magnetometer
FM/FM telemeter (219.45 Mc), fin notch antenna
DRW 59 cutoff RCVR (410 Mc), fin notch antenna
Recovery package with parachute

GROUND-BASED EQUIPMENT

FM/FM ground stations (219.45 Mc)
Cutoff XMTR (410 Mc)
MIT Mainland, FPS-15, 584 and MOD II radars (skin track), tracking camera
Two boats

RESULTS

Satisfactory performance; sustainer entered flat spin around burnout; no evidence of fins striking tower. Complete data recovery. Adequate tracking with MIT and FPS-16 radars; 539 seconds of MIT tabulated position data. Payload recovery cancelled when holds used up boats' fuel; radar showed parachute worked successfully.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel

Latitude 37.8°N

Longitude 75.5°W

ROCKET: Aerobee 150A

NASA No.: 4.11 GG

Date: 22 Nov. 1960

Time: 0842 Z

Wallops No.: G2-460

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

J. E. Milligan (GSFC), Project Manager; T. P. Stecher (GSFC), Scientist; E. C. Pressly (GSFC), Vehicle Manager

EXPERIMENT

Measure intensity distribution of stellar spectra with 50 and 100 Å resolution in the wavelength region of λ 1300 to λ 4000 and using 4 objective grating spectrometers. Rocket carries magnetometers and optical aspect sensors for attitude determination as well as a despin mechanism.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 100°

Elevation 82.3°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	2.3		
Stage 2	Ignition			
	Burnout	53.6	121,718	5473
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	230	113.6 st.mi.	

Impact: Time , Range 48.6 n.mi. , Azimuth 118°

ROCKET INFORMATION

NASA No. 4.11 GG

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	245			121
Extensions				
Stage 1	600			78
Stage 2	1334			191
Stage 3				
Stage 4				
Total	2179			390

ROCKET-BORNE EQUIPMENT

Four scanning photoelectric spectrophotometers
PPM/AM (DKT 7) (240 Mc); FM/FM (241 Mc), three fin notch antennas
Long. accelerometer, Pc and He press. gages, two magnetometers, two optical aspect sensors,
Despin mechanism, rate gyro
Cutoff RCVR (DRW 13), fin notch antenna

GROUND-BASED EQUIPMENT

PPM/AM and FM/FM stations
MOD II radar (skin track), motion picture cameras
Cutoff XMTR, sky screen

RESULTS

The experiments were successful. Telemetry normal; 415 seconds of data. Rocket performance satisfactory; good despin and aspect. Tracking adequate; 66 seconds of position and velocity MOD II tabulated data.

REPORTS

See Reference G-9, G-13.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel

Latitude 37.8°N

Longitude 75.5°W

ROCKET: Aerobee 150A

NASA No.: 4.12 GT

Date: 25 March 1960

Time: 1840 Z

Wallops No. G2-217

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

K. R. Medrow (GSFC), Project Scientist; O. E. Berg (GSFC), Micrometeorite Expert; M. W. Oleson (NRL), Vibration Measurements

EXPERIMENT

(A) Primary objective. Second of two (4.01 GT) performance tests of new 4 fin Aerobee
(B) Secondary objectives: (1) measure vibrations at 4 Aerobee fin roots and representative payload mounting; (2) measure micrometeorite impacts; (3) performance test of CdS cell aspect gage.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 115°

Elevation 80°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	52	127,746	
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	244	132 st.mi.	

Impact: Time 493 secs, Range 66 n.mi., Azimuth 137°

ROCKET INFORMATION

NASA No. 4.12 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	169			97.2
Extensions				
Stage 1	600			78
Stage 2	1502			291-1/2
Stage 3				
Stage 4				
Total	2102			370

ROCKET-BORNE EQUIPMENT

Pitch-yaw gage, 3 long. and lat. accelerometers; shroud, tail section, 4 fin and 5 NC temperature gages, lat. and long. magnetometers; Sun and earth solar aspect sensor, He, Ox, fuel and Pc pressure gages, pressure regulator gage. 3 meteor detectors (light pulse, acoustical and condenser discharge), meteor monitor microphone, CdS cell, 5 vibration accelerometers (pickups), vibration background microphone. FM/FM (240.2 Mc), fin notch antenna, PPM/AM (225.7 Mc). DRW 59 cutoff RCVR, fin notch antenna.

GROUND-BASED EQUIPMENT

PPM/AM and FM/FM stations
FPS-16, 584 and MOD II radars (skin); MIT radar (skin) tracked without recording; cameras
FRW-2 cutoff XMTR (412 Mc)

RESULTS

Peak altitude and propulsion were satisfactory even though the booster fins struck the tower at several levels. Other experiments were satisfactory. Complete data recovery from both telemeters. Radar tracking adequate.

REPORTS

See Reference G-10.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Aerobee 150A

NASA No.: 4.14 GA
 Date: 15 Nov. 1960
 Time: 1641 Z

Wallops No.: G2-450

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

N. W. Spencer (GSFC), Project Manager; H. A. Taylor, Jr. (GSFC), Chief Scientist;
 E. C. Pressly (GSFC), Rocket Vehicle Manager

EXPERIMENT

(1) Determine composition and pressure of the atmosphere between 100 and 250 km. Neutral particle and positive ion composition measured by two mass spectrometers, Bayard-Alpert ionization gage measures pressure and density. (2) Test solar aspect sensor for satellite.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 110°
 Elevation 87°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	51.6	124,318	6175
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	254	141.3 st.mi.	

Impact: Time , Range 39.2 n.mi. , Azimuth 148° (from MIT radar)

ROCKET INFORMATION

NASA No. 4.14 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	179.5			113.8
Extensions				
Stage 1	600			78
Stage 2	1332			191
Stage 3				
Stage 4				
Total	2112			382.8

ROCKET-BORNE EQUIPMENT

Two mass spectrometers, ionization gage, solar aspect (satellite) sensor, solar-earth aspect sensors. PPM/AM (DKT 7) (225.7 Mc), FM/FM (3115-1C) (231.4 Mc), three fin notch antennas. Long. accelerometer, Pc gage, two magnetometers. Cutoff (DRW 13) RCVR, fin notch antenna.

GROUND-BASED EQUIPMENT

Ionosphere station (1-25 Mc)
PPM/AM and FM/FM stations
MIT Mainland, FPS-16, 584 and MOD II radars (skin track), motion picture cameras
Cutoff XMTR (412 Mc)

RESULTS

All experiments were satisfactory. Complete data recovery. Both telemeters transmitted to 471 seconds. Rocket performance close to predicted peak; impact azimuth 42° greater than predicted. Complete tracking; 344 seconds position and 100 seconds velocity FPS-16 tabulated data.

REPORTS

See References A-43, G-11, A-47.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Aerobee 150A

NASA No.: 4.16 UE
 Date: 23 Aug. 1960
 Time: 1701 Z

Wallops No.: G2-295

INSTRUMENTING AGENCY

New York University

KEY PERSONNEL

L. H. Meredith (GSFC), Scientist; R. Haymes (NYU), Scientist; W. A. Russell, Jr. (GSFC), Coordinator

EXPERIMENT

Measure slow neutron intensity vs. altitude using 44 neutron counters; altitude variation may then be interpreted in terms of neutron albedo which is of interest in studying the origin of Radiation Belts.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 105°

Elevation 84.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	2.18		
Stage 2	Ignition	0.28		
	Burnout	50	119,000	5804
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	248	118 st.mi.	

Impact: Time _____, Range 53.3 n.mi., Azimuth 112.8°

ROCKET INFORMATION

NASA No. 4.16 UE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	238.5			119
Extensions				
Stage 1	600			78
Stage 2	1319.5			191
Stage 3				
Stage 4				
Total	2158			388

ROCKET-BORNE EQUIPMENT

Forty-four (BF3 filled) neutron proportional counters, eleven transistorized amplifiers and integral pulse-height discriminators. PPM/AM DKT 7 telemeter (231.4 Mc), fin notch antenna. PL temperature gage, two magnetometers, solar aspect gage, Long. accelerometer, chamber pressure gage. Cutoff RCVR (ARW 59).

GROUND-BASED EQUIPMENT

PPM/AM ground stations (231.4 Mc)

Cutoff XMTR

MIT, FPS-16, 584 and MOD II radars (skin track), motion picture cameras

RESULTS

All experiments were satisfactory. Adequate data recovery. Rocket performance satisfactory. Tracking adequate; 170 seconds of FPS-16 and MOD II position and velocity tabulated data.

REPORTS

See Reference G-12.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Aerobee 150A

NASA No.: 4.19 GT

Date: 14 April 1961

Time: 1715 Z

Wallops No. G2-545

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

W. A. Russell, Jr. (GSFC), Project and Vehicle Manager; L. Dunkelman (GSFC) Experimenter;
W. A. White (GSFC), Experimenter

EXPERIMENT

Test attitude control system, gamma ray energy, detector, solar flux measurements.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 115°

Elevation 81°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	53.4	123,318	5900
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	240	128 st.mi.	

Impact: Time 464 secs , Range 49.5 n.mi. , Azimuth 120°

ROCKET INFORMATION

NASA No. 4.19 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	206			93.93
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total	2158			364

ROCKET-BORNE EQUIPMENT

Attitude control system, control programmer temperature gauge, gamma ray scintillometer, two solar photometers, solar aspect sensing system
PPM/AM telem. (240.2 Mc), FM/FM telem. (231.4 Mc)
AN/DRW-13 cutoff receiver

GROUND-BASED EQUIPMENT

Telemetry ground stations PPM/AM (240.2 Mc), FM/FM (231.4 Mc)
Tracking radars FPS-16, MOD II, 584.

RESULTS

The attitude control system was ineffectual due to an apparent wire failure; however, the control system gyros programmer and switching network worked properly. Complete telemetry data recovery. Radar tracking good. Solar flux experiment provided no useful data.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
Latitude 37.8° N
Longitude 75.5° W

ROCKET: Aerobee 150A

NASA No.: 4.20 GT
Date: 26 June 1961
Time: 1515 Z

Wallops No. G2-639

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

W. A. Russell, Jr. (GSFC), Project and Vehicle Manager; L. Dunkelman (GSFC) Experimenter;
W. A. White (GSFC) Experimenter

EXPERIMENT

Attitude control system, flight test, gamma ray energy detector and solar flux measurements.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 90°
Elevation 85°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	2.06		
Stage 2	Ignition			
	Burnout	52.9		
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	230	116 st.mi.	

Impact: Time NA , Range 51.2 n.mi. , Azimuth NA

ROCKET INFORMATION

NASA No. 4.20 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	214			93.93
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total				

ROCKET-BORNE EQUIPMENT

Attitude control system, control programmer temp. gauge, gamma ray scintillometer, solar aspect sensing system, long. and lat. vibration pickups
Telemetry – PPM/AM (235.5 Mc), two (FM/FM) (231.4 and 240.2 Mc) – AN/DRW-13 cutoff receiver

GROUND-BASED EQUIPMENT

Telemetry ground station, PPM/AM, FM/FM
Tracking – radars FPS-16, MOD II, 584
Range safety cutoff transmitter

RESULTS

Rocket performance below predicted. First stage booster exploded after 2 seconds. However, PPM and FM/FM telemetry functioned normally but 28V power was lost. ACS functioned properly. No data was received from gamma ray and solar flux experiments.

REPORTS

See Reference T-15.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Aerobee 150A

NASA No.: 4.25 GS
 Date: 30 Sept. 1961
 Time: 1430 Z

Wallops No. G2-695

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

Dr. W. B. Benring (GSFC), Project Scientist; Dr. K. L. Hallam (GSFC), Project Scientist;
 W. H. Follett, Ball Brothers Research Corp.

EXPERIMENT

Flight test of solar x-ray spectrophotometer designed for S-16. Solar flux measurements.
 Flight test of blue diode experiment and solar aspect eyes designed for S-16.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 108.9°
 Elevation 86.2°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	51.5	129,500	6150
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	252	139.2 st.mi.	

Impact: Time 550 secs, Range 58.4 n.mi., Azimuth 121°

ROCKET INFORMATION

NASA No. 4.25 GS

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	182	68.4	Nose tip	98.5
Extensions				
Stage 1	600			78
Stage 2	291			192
Stage 3				
Stage 4				
Total	473	145.6		290

ROCKET-BORNE EQUIPMENT

Solar x-ray photometer, solar flux sensors, blue diode experiment, solar aspect eyes.
Telemetry FM/FM (235 Mc)
Range Safety: AN/DRW-13 cutoff receiver
Chamber press. ga., long. accelerometer

GROUND-BASED EQUIPMENT

FM telemetry ground station, range safety cutoff transmitter AN/DRW-13 400 mc band.
Tracking radars – FPS-16, MOD II, 584
Ionosonde ground station

RESULTS

Rocket performance as predicted. All experiments worked normally.

REPORTS

See Reference S-1, S-2, S-3.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Aerobee 150A

NASA No.: 4.34 GS
 Date: 31 March 1961
 Time: 0250 Z

Wallops No. G2-546

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

A. Boggess, III (GSFC), Project Scientist

EXPERIMENT

Measurement of far ultraviolet stellar and nebular fluxes.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 131°

Elevation 82.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	41.5	80,000	3360
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	142	44.7 st.mi.	

Impact: Time 275 secs, Range 49.7 n.mi., Azimuth 138°

ROCKET INFORMATION

NASA No. 4.34 GS

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	182.5	70	Nose	118.6
Extensions				
Stage 1				
Stage 2	294	212	Nose	191.3
Stage 3				
Stage 4				
Total	476.5	160		309.9

ROCKET-BORNE EQUIPMENT

Eight four-inch telescopes with an ion chamber at each prime focus. An S-30 type micro-meteorite package to check cosmic ray background. Two magnetometers and two optical aspect units to measure rocket attitude.

Telemetry PPM/AM (231.4 Mc) – Range safety AN/DRW-13 cutoff receiver

GROUND-BASED EQUIPMENT

PPM ground station, cutoff transmitter

Tracking radar FPS-16

RESULTS

Rocket was cut down at 41.5 seconds due to malfunction of G reduction timer. Five of six skin panels separated at approximately seven seconds. No results were obtained due to inadequate altitude.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Aerobee 150A

NASA No.: 4.38 NP
 Date: 5 Feb. 1961
 Time: 1348 Z

Wallops No. G2-495

INSTRUMENTING AGENCY

NASA Lewis Research Center

KEY PERSONNEL

H. Gold (Lewis), Project Scientist; W. A. Russell, Jr. (GSFC), Coordinator.

EXPERIMENT

Determine heat transfer coefficients for liquid hydrogen in the absence of gravity and obtain photographs of the liquid hydrogen in the partially filled Dewar.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 130°

Elevation 80.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	53	98,000	4850
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	215	94.7 st.mi.	

Impact: Time 412 secs, Range 67.1 n.mi., Azimuth 118°

ROCKET INFORMATION

NASA No. 4.38 NP

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	303.25			125
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total	584.25	151.75	Nose tip	317.25

ROCKET-BORNE EQUIPMENT

Telemetry PPM/AM (AN/DKT-7) (240.2 Mc)

AN/DRW-13 cutoff receiver

Programmer, camera, magnetic aspect sensors (2), accelerometers (4), hydrogen filled Dewar, turntable, parachute recovery package

GROUND-BASED EQUIPMENT

PPM ground station, cutoff transmitter

Tracking radars

RESULTS

Rocket performance below predicted. PPM/AM telemetry satisfactory. Complete radar tracking of rocket to splash. Payload was not recovered.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
Latitude 37.8° N
Longitude 75.5° W

ROCKET: Aerobee 150A

NASA No.: 4.39 NP
Date: 21 April 1961
Time: 1200 Z

Wallops No. G2-543

INSTRUMENTING AGENCY

NASA Lewis Research Center

KEY PERSONNEL

H. Gold (Lewis), Project Scientist; W. A. Russel, Jr. (GSFC), Coordinator.

EXPERIMENT

Determine heat transfer coefficients for liquid hydrogen in the absence of gravity and obtain photographs of the liquid hydrogen in the partially filled Dewar.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 120°

Elevation 85.1°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	52.5	98,000	4850
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	212	96 st.mi.	

Impact: Time _____, Range 40 n.mi., Azimuth 132°

ROCKET INFORMATION

NASA No. 4.39 NP

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	301			125
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total	581.25	150.5		317.25

ROCKET-BORNE EQUIPMENT

Telemetry PPM/AM (AN/DKT-7) (240.2 Mc)

AN/DRW-13 cutoff receiver

Programmer, camera, magnetic aspect sensors (2), accelerometers (4), hydrogen filled Dewar, turntable, parachute recovery package

GROUND-BASED EQUIPMENT

PPM ground station, cutoff transmitter

Tracking radars

RESULTS

Rocket performance as predicted. Radar tracking good. Telemetry good. Payload recovered and good data was obtained.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Aerobee 150A

NASA No.: 4.40 NP
 Date: 18 Oct. 1961
 Time: 1325 Z

Wallops No. G2-722

INSTRUMENTING AGENCY

NASA Lewis Research Center

KEY PERSONNEL

J. D. Regetz, Jr. (Lewis), Chief Scientist; W. L. Phillips (GSFC), Vehicle Manager

EXPERIMENT

Determine heat transfer coefficients for liquid hydrogen in the absence of gravity and obtain photographs of the liquid hydrogen in the partially filled Dewar.

FLIGHT INFORMATION

Launcher Setting:

Azimuth NA

Elevation NA

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	2.4	1200	
Stage 2	Ignition			
	Burnout	53	109,000	5044
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	213	94.5 st.mi.	

Impact: Time 415 secs, Range 56.4 n.mi., Azimuth 94°

ROCKET INFORMATION

NASA No. 4.40 NP

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	277.5	84.5	Nose tip	123.12
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total	557.5	149.5		315.12

ROCKET-BORNE EQUIPMENT

Telemetry PPM/AM (AN/DKT-7) (240.2 Mc)

AN/DRW-13 cutoff receiver

Programmer, camera, magnetic aspect sensors (2), accelerometers (4), hydrogen filled Dewar, turntable, parachute recovery package

GROUND-BASED EQUIPMENT

PPM ground station, cutoff transmitter

Tracking radars

RESULTS

Rocket performance as predicted. Telemetry data good. Radar tracking good. Payload was recovered. Complete photographic data of hydrogen Dewar was obtained.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Aerobee 150A

NASA No.: 4.42 NP
 Date: 12 Aug. 1961
 Time: 1057 Z

Wallops No. G2-641

INSTRUMENTING AGENCY

NASA Lewis Research Center

KEY PERSONNEL

H. W. Plohr (Lewis), Project Scientist; E. C. Pressly (GSFC), Vehicle Manager

EXPERIMENT

Determine heat transfer coefficients for liquid hydrogen in the absence of gravity and obtain photographs of the liquid hydrogen in the partially filled Dewar.

FLIGHT INFORMATION

Launcher Setting:

Azimuth _____
 Elevation _____

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	2.5	900	700
Stage 2	Ignition			
	Burnout	52	105,000	5000
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	210	95 st.mi.	

Impact: Time 410 secs, Range 50.4 n.mi., Azimuth 100°

ROCKET INFORMATION

NASA No. 4.42 NP

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	283			123.12
Extensions				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
Total	563	151		315.5

ROCKET-BORNE EQUIPMENT

Telemetry PPM/AM (AN/DKT-7) (240.2 Mc)

AN/DRW-13 cutoff receiver

Programmer, camera, magnetic aspect sensors (2), accelerometers (4), hydrogen filled Dewar, turntable, parachute recovery package

GROUND-BASED EQUIPMENT

PPM ground station, cutoff transmitter

Tracking radars

RESULTS

Rocket performance as predicted. Telemetry data good. Radar tracking adequate. Payload recovered. Power failure in rocket caused loss of rocket performance, accelerometer, fuel, oxidizer and chamber press. gages and part of photographic data.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft
Latitude 58.7° N
Longitude 93.8° W

ROCKET: Aerobee 150

NASA No.: 4.43 GP
Date: 5 Oct. 1960
Time: 1952 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

R. C. Baumann (GSFC), Project Scientist; H. E. Evans (GSFC), Project Scientist; M. W. Oleson (NRL), Vibration Measurements

EXPERIMENT

(A) Take high altitude photographs of a vigorous synoptic weather situation (wide variety and heavy clouds) with enough clear ground control points for photogrammetric data. (B) Evaluate two special types of film. (C) Test payload recovery system. (D) Measure vibration forces on rocket while ascending tower.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 140°
Elevation 84.4°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.6	1539 (sl range)	808
Stage 2	Ignition			
	Burnout	53	103,000 (sl range)	6173
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	253.6	140.1 st.mi.	

Impact: Time 433.4 secs , Range 18.9 n.mi. , Azimuth 189°

ROCKET INFORMATION

NASA No. 4.43 GP

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	154.5			103
Extensions				
Stage 1	600			78
Stage 2	1332			190.6
Stage 3				
Stage 4				
Total	2087			371.6

ROCKET-BORNE EQUIPMENT

Two 70 mm aerial cameras with B and W and infrared film, two SARAH beacons, parachute, vibration accelerometer pack
Two FM/FM telemeters (227.5 and 242 Mc), two fin notch antennas
DRW 3 cutoff RCVR (54.5 Mc), fin notch antenna, two magnetometers
DOVAP transponder (38.-31 and 76.-62 Mc), four DOVAP antennas

GROUND-BASED EQUIPMENT

FM/FM ground stations (227.5 and 242 Mc)
DOVAP ground stations (38.03 and 76.062 Mc), radar (skin track)
Cutoff XMTR (54.5 Mc)

RESULTS

Payload successfully recovered. Complete data recovery. Satisfactory rocket vehicle performance. Complete DOVAP tracking.

REPORTS

See Reference P-3, P-4.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
Latitude 37.8° N
Longitude 75.5° W

ROCKET: Iris

NASA No.: 5.01 GT
Date: 22 July 1960
Time: 1205 Z

Wallops No.: G2-306

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

E. F. Sorgnit (GSFC), Project Scientist; J. H. Lane (GSFC) Project Scientist

EXPERIMENT

(1) First of 3 test flights (5.01 GT thru 5.03 GT) to determine performance of new rocket vehicle; telemetered data includes acceleration, attitude, chamber pressure and nosecone-fin temperatures. (2) Investigate impact prediction methods.

FLIGHT INFORMATION

Launcher Setting:
Azimuth 144°
Elevation 83°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	0.81	150	300
Stage 2	Ignition	0.015	1	4
	Burnout	57	120,000	6600
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	256	139 st.mi.	

Impact: Time 471 secs, Range 182.4 n.mi., Azimuth 148.5°

ROCKET INFORMATION

NASA No. 5.01 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	152.5	60.5	Nose tip (Yaw Bird)	82.5
Extensions				
Stage 1	205			40.6
Stage 2	1373.5	148.6	Nose tip	242.25
Stage 3				
Stage 4				
Total	1579			281

ROCKET-BORNE EQUIPMENT

Pitch-yaw gage, long. and lat. accelerometers, Pc gage, six nosecone and four fin resistance temperature gages, lat magnetometer
FM/FM (235 Mc band), two flush mounted quadraloop antennas

GROUND-BASED EQUIPMENT

FM/FM stations
MIT Mainland, FPS-16 and MOD II radars (skin track), motion picture cameras

RESULTS

Excellent rocket performance; rocket met design altitude requirements by reaching predicted peak for 152 lb payload and 7° launch; designed to carry 100 lbs to 187 miles for vertical firing; 5.02 GT checked stability requirements. Complete data recovery. Complete tracking with MIT radar; 106 secs of position and velocity FPS-16 tabulated data.

REPORTS

See Reference T-3.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Iris

NASA No.: 5.02 GT
 Date: 18 Oct. 1960
 Time: 1417 Z

Wallops No.: G2-451

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

E. F. Sornnit (GSFC) Project Scientist; J. H. Lane (GSFC), Project Scientist

EXPERIMENT

- (1) Second of 3 performance test flights (5.01 GT through 5.03 GT) of new rocket vehicle.
- (2) Determine stability characteristics of vehicle. (3) Telemetered data includes acceleration, attitude, chamber pressure and nosecone-fin temperatures.

FLIGHT INFORMATION

Launcher Setting:		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Azimuth 145°				
Elevation 84.3°				
Stage 1	Burnout	1.0	160	300
Stage 2	Ignition	0.015	0	0
	Burnout	62.0	150,000	6950
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	258	140 + st.mi.	

Impact: Time 495 secs, Range 199 n.mi., Azimuth 135°

ROCKET INFORMATION

NASA No. 5.02 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	124	27.3	Fwd of NC-motor parting line	83.75
Extensions				
Stage 1	206			40.59
Stage 2	1345.2	66.8	Aft of NC-motor parting line	243.5
Stage 3				
Stage 4				
Total	1551			284

ROCKET-BORNE EQUIPMENT

Pitch-yaw gage, lat. and long. magnetometers, lat. and long. accelerometers, solar aspect cell, Pc gage, six nosecone and four fin resistance temperature gages
FM/FM (240.2 Mc), two flush-mounted quadraloop antennas, PPM/AM (SMT-10) (235.0 Mc), single PPM/AM antenna rear of fin 3

GROUND-BASED EQUIPMENT

Telemetry: FM/FM and PPM/AM stations
Tracking: FPS-16, MOD II and 584 radars (skin track), motion picture cameras

RESULTS

Rocket showed good static and dynamic stability characteristics. Booster and sustainer operation were normal and rocket reached predicted peak. Complete data recovery; FM/FM went for 491 seconds; PPM/AM went out at 170 seconds. Adequate tracking; FPS-16 tracked to 526,000 ft.

REPORTS

See Reference T-4.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Iris

NASA No.: 5.03 GT
 Date: 19 Jan. 1961
 Time: 1242 Z

Wallops No. G2-480

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

E. F. Sornit (GSFC), Project Scientist; J. H. Lane (GSFC) Project Scientist

EXPERIMENT

Performance test of Iris rocket.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 143°

Elevation 83.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	1	160	300
Stage 2	Ignition			
	Burnout	53.1	110,000	5900
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	200	86 st.mi.	

Impact: Time 400 secs, Range 105.1 n.mi., Azimuth 150°

ROCKET INFORMATION

NASA No. 5.03 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	100	-23.3	Motor head	84.25
Extensions				
Stage 1	206			40.59
Stage 2	1324	+74.4	Motor head	243.5
Stage 3				
Stage 4				
Total	1324	74.4	Motor head	243.5

ROCKET-BORNE EQUIPMENT

Telemetry PPM/AM (235.0 Mc), FM/FM (240.2 Mc), angle of attack gage, magnetometers (3), temperature gages (6), accelerometers (2), chamber pressure gage, fin temperature gages (4)

GROUND-BASED EQUIPMENT

PPM ground station, FM ground station, Tracking radars, FPS-16, MOD II, 584, MIT, photo coverage.

RESULTS

Rocket performance below predicted. PPM telemetry failed at 53.1 seconds. Radar reported multiple targets. FM/FM telemetry good to 190 seconds.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7°N

Longitude 93.8°W

ROCKET: Spaerobee 300

NASA No.: 6.01 UI

Date: 16 March 1960

Time: 2125:17 Z

INSTRUMENTING AGENCY

University of Michigan

KEY PERSONNEL

N. W. Spencer (U of M), Scientist; R. E. Bourdeau (GSFC), Scientist; E. C. Pressly (GSFC), Vehicle Manager

EXPERIMENT

Determine ionosphere electron temperature and positive ion density by electrostatic probe ejected at 80 seconds. Density and temperature are computed from the probe voltampere characteristics measured and telemetered during probe flight. Same experiment in 6.02 UI.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 100°

Elevation 83.8°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	50.7	99,772	4783
Stage 3	Ignition			
	Burnout		115,272	7883
Stage 4	Ignition			
	Burnout			
	Peak	310	210 st.mi.	

Impact: Time _____, Range _____, Azimuth _____

ROCKET INFORMATION

NASA No. 6.01 UI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	65.5			
Extensions				
Stage 1	600			78
Stage 2	1369.5			328.75 (stage 2,3 & pl)
Stage 3	201.5			
Stage 4				
Total	2171			406.75

ROCKET-BORNE EQUIPMENT

Dumbbell shaped electrostatic probe (6" spheres and 3-1/4 cyl.)

FM/FM (inside dumbbell) (227.5 Mc)

DOVAP beacon (76.062 Mc); radar beacon DPN41 TX (2937) mc RX (2860 Mc); two quadraloop antennas

Cutoff RCVR DRW 3, fin notch antenna

GROUND-BASED EQUIPMENT

Ionosphere station

FM/FM stations

DOVAP stations (38.031 Mc); Radar TX (2860 Mc) RX (2937 Mc)

Cutoff XMTR (54.5 Mc)

RESULTS

Experiment was successful. Complete data recovery; excellent data from ejection to 750 seconds. Tracking adequate. Rocket performance: Peak altitude about 15% low due to early Sparrow (3rd stage) ignition.

REPORTS

See Reference I-13.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft
 Latitude 58.7° N
 Longitude 93.8° W

ROCKET: Spaerobee 300

NASA No.: 6.02 UI
 Date: 15 June 1960
 Time: 2256 Z

INSTRUMENTING AGENCY

University of Michigan

KEY PERSONNEL

N. W. Spencer (U of M), Scientist; R. E. Bourdeau (GSFC), Scientist; E. C. Pressly (GSFC), Vehicle Manager

EXPERIMENT

Determine normal ionosphere electron temperature and positive ion density by electrostatic probe ejected at 80 seconds. Density and temperature are computed from the probe voltampere characteristics measured and telemetered during probe flight. Same experiment in 6.01 UI.

FLIGHT INFORMATION

Launcher Setting:
 Azimuth 124°
 Elevation _____

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	54.2	110,986	5450
Stage 3	Ignition			
	Burnout	56.8	131,736	7775
Stage 4	Ignition			
	Burnout			
	Peak	307	≈ 200 st.mi.	

Impact: Time _____, Range 92.9 n.mi., Azimuth 62°

ROCKET INFORMATION

NASA No. 6.02 UI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	64.75			
Extensions				
Stage 1	600			78
Stage 2	1365.5			329-3/4 (stage 2,3 & pl)
Stage 3	200.8			
Stage 4				
Total	2166			407-3/4

ROCKET-BORNE EQUIPMENT

Dumbbel shaped electrostatic probe (6" spheres and 3-1/4" cyl.)
FM/FM (inside dumbbel) (227.5 Mc)
DOVAP and DPN41 radar beacons; two quadraloop antennas
Cutoff RCVR DRW 3, fin notch antenna

GROUND-BASED EQUIPMENT

Ionosphere station
FM/FM stations
DOVAP stations
Cutoff XMTR

RESULTS

The experiment was successful. Complete data recovery; excellent data from ejection to 532 seconds. Peak rocket altitude about 20% low, attributed to 3rd stage low Δv caused by large yawing observed during burning.

REPORTS

See Reference I-13.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
Latitude 37.8° N
Longitude 75.5° W

ROCKET: Spaerobee 300

NASA No.: 6.03 UI
Date: 3 Aug. 1960
Time: 1526:30 Z

Wallops No.: G3-414

INSTRUMENTING AGENCY

University of Michigan and Aberdeen Ballistic Research Laboratory

KEY PERSONNEL

N. W. Spencer (U of M), Scientist; W. W. Berning (BRL), Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

Measure ion density, electron temperature and electron density in ionosphere by means of (A) ejected bi-polar Langmuir probe (dumbbell shaped) and (B) two frequency cw beacon for dispersive doppler measurements and Faraday rotation.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 112°

Elevation 82.3°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout			
Stage 3	Ignition	53	122,000	
	Burnout	55	139,000	8800
Stage 4	Ignition			
	Burnout			
	Peak	370	258 st.mi.	

Impact: Time _____, Range 180 n.mi., Azimuth 123°

ROCKET INFORMATION

NASA No. 6.03 UI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	55.5			60.5
Extensions				
Stage 1	600	38	Thrust structure fwd parting line	78.04
Stage 2	1360			203.25
Stage 3	191.5			119
Stage 4				
Total	2152			400.29

ROCKET-BORNE EQUIPMENT

Bi-polar Langmuir probe (dumbbell shaped), double axis magnetometer (inside probe); BRL
2-freq. ionosphere beacon (36.94 and 147.76 Mc), four DOVAP antennas
FM/FM (240 Mc) (inside probe)
Cutoff RCVR DRW 13, fin notch antenna

GROUND-BASED EQUIPMENT

BRL ionosphere beacon station
FM/FM stations
MIT Millstone, FPS-16, MOD II and 584 radars (skin track), motion picture cameras
Cutoff XMTR

RESULTS

The experiment was successful. Complete data recovery. Rocket performance excellent.
Good tracking past 3rd stage BO; Millstone tracked to impact MOD II tabulated data from
17 to 47 seconds; nine minutes of Millstone tabulated data.

REPORTS

See Reference I-13.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel

Latitude 37.8°N

Longitude 75.5°W

ROCKET: Spaerobee 300A

NASA No.: 6.04 UI

Date: 26 March 1961

Time: 1654 Z

Wallops No. G3-548

INSTRUMENTING AGENCY

University of Michigan, BRL, Aberdeen Proving Grounds

KEY PERSONNEL

C. H. Brace (U of M), Chief Scientist; W. L. Phillips (GSFC), Vehicle Manager

EXPERIMENT

Dumbell form of an electrostatic probe for measurement of electron temperature and ion density. Unequal area bipolar probe system for measurements of electrons. Electron density measurement by means of two frequency beacon for comparison with the probe systems.

FLIGHT INFORMATION

Launcher Setting:

Azimuth NA

Elevation NA

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	55.4	130,000	8600
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	NA	240 st.mi.	

Impact: Time NA, Range 147.6 n.mi., Azimuth NA

ROCKET INFORMATION

NASA No. 6.04 UI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	61			
Extensions				
Stage 1				
Stage 2	261			203
Stage 3	205	69	Nose tip	119.25
Stage 4				
Total	2160			401

ROCKET-BORNE EQUIPMENT

Dumbell (227.5 Mc), two-frequency beacon (38 Mc and 76 Mc)
FM/FM (227.5 Mc)
AN/DRW-13 cutoff receiver
Nosecone opening primers

GROUND-BASED EQUIPMENT

FM ground station (227.5 Mc)
BRL trailer (38 Mc and 76 Mc)
Cutoff transmitter (400 Mc band)
Radar tracking, ionosphere ground station

RESULTS

The dumbell ejected properly from nosecone at +70 seconds. Good data was attained during the entire flight. The two-frequency beacon data was satisfactory.

REPORTS

See Reference I-13.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
Latitude 37.8° N
Longitude 75.5° W

ROCKET: Spaerobee 300A

NASA No.: 6.05 UI
Date: 22 Dec. 1961
Time: 0424 Z

Wallops No. G3-716

INSTRUMENTING AGENCY

University of Michigan, BRL, Aberdeen Proving Grounds

KEY PERSONNEL

C. H. Brace (U of M), Chief Scientist; W. L. Phillips (GSFC), Vehicle Manager

EXPERIMENT

Dumbell form of an electrostatic probe for measurement of electron temperature and ion density. Unequal area bipolar probe system for measurements of electrons. Electron density measurement by means of two frequency beacon for comparison with the probe systems.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 135°
Elevation 86°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	52.5	110,670	5311
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	327	227 st.mi.	

Impact: Time 703 secs, Range 196 n.mi., Azimuth 132°

ROCKET INFORMATION

NASA No. 6.05 UI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	61			61
Extensions				
Stage 1				
Stage 2	281			203
Stage 3	196	68.5	Nose tip	119.25
Stage 4				
Total	2160			401

ROCKET-BORNE EQUIPMENT

Dumbell (227.5 Mc), two-frequency beacon (38 Mc and 76 Mc)
FM/FM (227.5 Mc)
AN/DRW-13 cutoff receiver
Nosecone opening primers

GROUND-BASED EQUIPMENT

FM ground station (227.5 Mc and 231.4 Mc)
Cutoff transmitter (400 Mc)
Radar and optical tracking
Ionosphere ground station

RESULTS

Rocket performance as predicted. The dumbell ejected properly and good data was obtained. Radar tracking good, weak signal was obtained on sparrow extension and little data was obtained.

REPORTS

See Reference I-13.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.
 Elevation \approx Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Javelin (D-4)
 NASA No.: 8.01 GT
 Date: 22 Dec. 1959
 Time: 0756:17 Z
 Wallops No.: G4-204

INSTRUMENTING AGENCY

GSFC, NRL, CDRTE

KEY PERSONNEL

L. Winkler (GSFC), Project Scientist; M. W. Oleson (NRL), Vibration Experimenter

EXPERIMENT

(A) Primary objective: Measure vibration characteristics of 248 motor thrusting in vacuum.
 (B) Secondary objectives: (1) measure vehicle acceleration; (2) measure acceleration, after 248 normal burnout (tailoff) caused by ignition of unburned propellant; (3) measure reentry deceleration and vibration; (4) measure radio emission intensity from cosmic sources, below the normal ionospheric cutoff.

FLIGHT INFORMATION

Launcher Setting:		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Azimuth <u>90°</u>				
Elevation <u>83°</u>				
Stage 1	Burnout	5.0	4,190	1,793
Stage 2	Ignition	10.0	11,400	1,402
	Burnout	13.7	18,510	2,824
Stage 3	Ignition	25.0	42,700	2,005
	Burnout	28.5	53,750	4,970
Stage 4	Ignition	62.8	184,500	3,720
	Burnout	100	408,900	10,970
	Peak	561	560 st.mi.	

Impact: Time 1200 secs , Range 530 n.mi. , Azimuth 81°

ROCKET INFORMATION

NASA No. 8.01 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	84			
Extensions				
Stage 1	4082			205
Stage 2	1298			140
Stage 3	1278			142
Stage 4	595			99
Total	7337			586

ROCKET-BORNE EQUIPMENT

Seven vibration and two vehicle (thrust) accelerometers, dynamic microphone (acoustic noise levels); cosmic radio emission RCVR and two antennas
FM/FM telemeter (240.2 Mc), spike antenna

GROUND-BASED EQUIPMENT

Six FM/FM ground stations (240.2 Mc)
FPS-16, 584, MOD II and MIT Mainland and Millstone radars (skin track).

RESULTS

Experiment was successful, except galactic noise experiment did not give any results. Good vibration data was obtained. Complete data recovery. Rocket performance slightly below predicted peak. Complete tracking; 126 seconds of FPS-16 tabulated data.

REPORTS

See Reference T-5, T-6.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Javelin (D-4)

NASA No.: 8.02 GT
 Date: 26 Jan. 1960
 Time: 0542:47 Z

Wallops No.: G4-

INSTRUMENTING AGENCY

GSFC; NRL; CDRTE

KEY PERSONNEL

L. Winkler (GSFC), Project Scientist; M. W. Oleson (NRL), Vibration Experimenter

EXPERIMENT

(A) Primary objective: Measure vibration characteristics of 248 motor thrusting in vacuum.
 (B) Secondary objectives: (1) measure vehicle acceleration; (2) measure acceleration, after 248 normal burnout (tailoff), caused by ignition of unburned propellant, (3) measure reentry deceleration and vibration; (4) measure radio emission intensity, from cosmic sources, below the normal ionosphere cutoff.

FLIGHT INFORMATION

Launcher Setting:

Azimuth
 Elevation 80.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	5.3	4,340	1,690
Stage 2	Ignition	10.1	11,490	1,350
	Burnout	13.7	18,900	2,700
Stage 3	Ignition	25	43,500	1,850
	Burnout	28.7	53,600	4,580
Stage 4	Ignition	63.5	192,300	3,390
	Burnout	100	430,800	11,330
	Peak		591 st.mi.	

Impact: Time 1120 secs , Range 360.4 n.mi. , Azimuth 150°

ROCKET INFORMATION

NASA No. 8.02 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	84			
Extensions				
Stage 1	4082			205
Stage 2	1298			140
Stage 3	1278			142
Stage 4	595			99
Total	7337			586

ROCKET-BORNE EQUIPMENT

Seven vibration and two vehicle (thrust) accelerometers, dynamic microphone (acoustic noise levels); cosmic radio emission RCVR and two antennas
FM/FM telemeter (240.2 Mc), spike antenna

GROUND-BASED EQUIPMENT

Six FM/FM ground stations (240.2 Mc)
FPS-16, 584, MOD II and MIT Mainland and Millstone radar (skin track), doppler radar (2640 Mc)

RESULTS

Experiment was successful. Complete data recovery. Rocket performance: Normal peak altitude. Considerable azimuth flight deviation, planned azimuth 105°, 4th stage impact 150°. Complete tracking; Millstone tracked from approximately t + 40 to t + 1060 seconds.

REPORTS

See Reference T-5, T-6.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Javelin (D4)

NASA No.: 8.04 CA

Date: 10 Nov. 1960

Time: 0144 Z

Wallops No.: G4-462

INSTRUMENTING AGENCY

Lockheed Missiles and Space Div.

KEY PERSONNEL

M. Dubin (NASA), Scientist; W. B. Hanson (LMSD), Scientist; M. Hertzberg (LMSD), Scientist;
L. N. Perry (LMSD), Engineer; E. C. Pressly (GSFC), Vehicle Manager

EXPERIMENT

(1) Measure mass spectrometer composition of ambient positive ions between 100 and 1600 km altitude in the ranges 1 to 4 and 12 to 48 atomic mass units. (2) Measure (charged particle energy analyzer) total concentration and energy distribution of these ions in the range -2 to +6 electron volts.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 90°

Elevation 83°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	13.3	18,500	2,800
Stage 3	Ignition	25	44,500	2,000
	Burnout	28	52,648	4,400
Stage 4	Ignition	52	148,835	4,000
	Burnout	90	419,115	12,300
	Peak	565	606.3 st.mi.	

Impact: Time 1103 secs , Range 336.8 n.mi. , Azimuth N.A.; Lat. 32.9 N, Long. 72.2 W

ROCKET INFORMATION

NASA No. 8.04 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	85			
Extensions				
Stage 1	4178	88.43	Front face	
Stage 2	1317			
Stage 3	1321	59.375	Front thrust face	
Stage 4	565			
Total	7470			

ROCKET-BORNE EQUIPMENT

Strong focusing mass spectrometer, charged particle energy analyzer, accelerometer -10 to +50g

FM/FM telemeter (244.3 Mc), nosecone antenna, four antennas extended after NC ejection.

GROUND-BASED EQUIPMENT

Ionosphere ground station

FM/FM ground stations (244.3 Mc)

MIT Millstone, FPS-16, 584 and MOD II radars (skin track); doppler radar (2640 Mc), motion picture cameras

RESULTS

Ion currents were not detected by the mass spectrometer. The charged particle energy analyzer provided good data. Rocket performance slightly below predicted peak; actual flight azimuth at $t = 95$ seconds was 128.8° . Complete data recovery. Complete tracking; MIT radar tracked to splash; 170 seconds of FPS-16 position tabulated data.

REPORTS

See Reference A-46.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.
 Elevation ≈ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Javelin (D4)
 NASA No.: 8.05 CA
 Date: 10 Dec. 1960
 Time: 2230 Z
 Wallops No.: G4-487

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

M. Dubin (NASA), Scientist; J. F. Bedinger (GCA), Scientist; E. C. Pressly (GSFC),
 Vehicle Manager

EXPERIMENT

(1) Measure atmospheric winds and diffusivity at approximately 400 km altitude by triangulation photographs of twilight sunlit sodium vapor trail. (2) Determine temperatures by optical measurements of "D" lines emitted by excited atoms in the sodium cloud.

FLIGHT INFORMATION

Launcher Setting:
 Azimuth 90°
 Elevation 83°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	5.2	4,250	
Stage 2	Ignition	11	12,600	
	Burnout	14	20,000	2,420
Stage 3	Ignition	26	45,000	2,000
	Burnout	29	56,000	5,000
Stage 4	Ignition	50	140,000	4,000
	Burnout	95	445,360	10,398
	Peak	474	444.5 st.mi.	

Impact: Time 909 secs, Range 229 n.mi., Azimuth N.A. Lat 38.83° N, Long 70.79° W

ROCKET INFORMATION

NASA No. 8.05 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	200			
Extensions				
Stage 1	4156.51	104.5	NEP	205
Stage 2	1327.82	74.5	NEP	140
Stage 3	1321.50	74.5	NEP	142
Stage 4	564			
Total	7570			585

ROCKET-BORNE EQUIPMENT

Three st. stl. vaporizers containing sodium and thermite mixture (total of 2.5 kg, Na and 10 kg thermite), small vaporizer containing 77 g lithium and 1 kg thermite

GROUND-BASED EQUIPMENT

Camera stations at Dover AFB, Andrews AFB, Camp A. P. Hill and Dam Neck Naval Station, long range camera sites in Long Island, Georgia and Ohio, optical temperature instrumentation
MIT Millstone, FPS-16, 584 and MOD II radars (skin track); doppler radar (2640 Mc), motion picture cameras

RESULTS

Normal rocket performance except for azimuth deviation. Actual flight azimuth at $t + 95$ seconds was 69.7° . Excellent tracking by all radars; 133 seconds of FPS-16 tabulated position and velocity data. Sodium vapor was ejected at 400 km and at 650 km. All camera stations were clear and good data was obtained.

REPORTS

See Reference A-9, A-46.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Javelin

NASA No.: 8.06 CA
 Date: 13 Sept. 1961
 Time: 0932 Z

Wallops No. G4-430

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. E. F. Manring (GCA), Project Scientist; W. S. Smith (GSFC), Project Scientist; N. E. Peterson, Jr. (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds, diffusivity and temperatures at 200 km and 400 km by observation of sodium vapor ejected at these altitudes.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 81°
 Elevation 75°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	5.2	5,000	1,700
Stage 2	Ignition	9	11,000	1,400
	Burnout	12.9	17,000	2,500
Stage 3	Ignition	25.9	44,000	2,200
	Burnout	29.1	55,000	4,500
Stage 4	Ignition	60	155,000	3,500
	Burnout	101	342,000	10,200
	Peak	385	260 st.mi.	

Impact: Time 770 secs, Range 730 n.mi., Azimuth _____

ROCKET INFORMATION

NASA No. 8.06 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	150			
Extensions				
Stage 1	4173.43	104-5/16	NEP	
Stage 2	1327.51	74-3/4	NEP	
Stage 3	1342.11	75	NEP	
Stage 4	515.5	36-11/16	NEP	
Total	7508.55			

ROCKET-BORNE EQUIPMENT

Nosecone ejection squib, 3 payload cylinders containing a mixture of iron oxide, aluminum thermite and sodium

GROUND-BASED EQUIPMENT

Radar tracking FPS-16, MIT, MOD II, SCR-584, SPANDAR Camera sites located at Wallops Island, Dover Air Force Base, Andrews Air Force Base, Camp A. P. Hill, Va., Dam Neck Training Station, Atlanta, Georgia, Springfield, Ohio

RESULTS

Rocket performance as predicted. Good radar tracking. All camera sites were clear and good photographic data was obtained.

REPORTS

See Reference A-9, A-46.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Javelin (D-4)

NASA No.: 8.07 GE
 Date: 30 June 1960
 Time: 2025 Z

Wallops No.: G4-378

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

J. P. Heppner (GSFC), Project Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

(1) Test electronic systems to be used in the P14 magnetic field space probe. (2) Measure magnetic fields and hydromagnetic waves between the base of the ionosphere and the inner edge of the outer radiation belt. (3) Same experiment flown in 8.08 GE.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 98°

Elevation 80.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition	9.3		1410
	Burnout	12.6	17,950	2780
Stage 3	Ignition			
	Burnout	28.4	56,719	4710
Stage 4	Ignition	Did not ignite		
	Burnout			
	Peak	125	40.6 st.mi.	

Impact: Time 315 secs, Range 13.8 n.mi., Azimuth 100°

ROCKET INFORMATION

NASA No. 8.07 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	53			
Extensions				
Stage 1	4082			193
Stage 2	1298			134.75
Stage 3	1300			134.75
Stage 4	571			
Total	7304			597

ROCKET-BORNE EQUIPMENT

Rb vapor and two flux gate magnetometers, optical aspect sensor with computer, three thermistors
Phase modulated 108.00 Mc XMTR; turnstile antenna (extended after nosecone ejection)

GROUND-BASED EQUIPMENT

Wide band 108.00 Mc RCVRS and video tape recording
FPS-16, 584 and MOD II radars (skin track), doppler radar, motion picture cameras

RESULTS

No data due to rocket failure. AGC signals received to rocket breakup and from 136 to 146 seconds. Rocket broke up around 3rd stage BO. Complete tracking; lead target tracked after breakup; 280 seconds of radar tabulated position and velocity data.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Javelin (D-4)

NASA No.: 8.08 GE
 Date: 12 Dec. 1960
 Time: 2236 Z

Wallops No.: G4-384

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

J. P. Heppner (GSFC), Project Scientist; E. C. Pressly (GSFC) Vehicle Manager

EXPERIMENT

(1) Test electronic systems to be used in the P14 magnetic field space probe. (2) Measure magnetic fields and hydromagnetic waves between the base of the ionosphere and the inner edge of the outer radiation belt. (3) Same experiment flown in 8.07 GE.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 90°

Elevation 80°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	5.2	4,945	1,793
Stage 2	Ignition	9.7	12,196	1,484
	Burnout	13.7	18,301	2,630
Stage 3	Ignition	24.0	41,952	1,902
	Burnout	28.7	54,966	4,715
Stage 4	Ignition	50.0	141,726	3,811
	Burnout	95.1	485,916	13,142
	Peak	616	709.0 st.mi.	

Impact: Time 1206 secs, Range 291.7 n.mi., Azimuth N.A. Lat 41.4° N, Long 70.8° W

ROCKET INFORMATION

NASA No. 8.08 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	53			
Extensions				
Stage 1	4082			193
Stage 2	1298			134.75
Stage 3	1300			134.75
Stage 4	571			
Total	7480			597

ROCKET-BORNE EQUIPMENT

Rb vapor and two flux gate magnetometers, optical aspect sensor with computer, three thermistors

Phase-modulated 108.00 Mc XMTR, turnstile antenna (extended after nosecone ejection)

GROUND-BASED EQUIPMENT

Wide band 108.00 Mc RCVRS and video tape recording

FPS-16, 584 and MOD II radars (skin track), motion picture cameras

RESULTS

All experiments functioned normally. Good data was received. Telemetry excellent throughout flight. Considerable azimuth flight deviation but excellent altitude performance; azimuth heading was 43.8° (planned 90°) at $t = 95$ seconds. Complete tracking; 181 seconds of FPS-16 tabulated position and velocity data.

REPORTS

See Reference E-2.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Javelin

NASA No.: 8.09 GI
 Date: 13 June 1961
 Time: 0512 Z

Wallops No. G4-568

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

J. E. Jackson (GSFC), Project Scientist; N. E. Peterson (GSFC), Vehicle Manager; J. C. Seddon (GSFC) SSD

EXPERIMENT

Electron density and radio wave propagation phenomena detect and measurement of electro-acoustic plasma oscillations test of single-station DOVAP facility.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 95°
 Elevation 80°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	5.2	5,000	1,800
Stage 2	Ignition	9.7	12,000	1,400
	Burnout	12.9	20,000	2,600
Stage 3	Ignition	25.9	52,000	2,000
	Burnout	29.1	62,000	5,200
Stage 4	Ignition	53.8	148,000	3,800
	Burnout	94.0	420,000	13,030
	Peak	513	539 st.mi.	

Impact: Time 972 secs, Range 800 n.mi., Azimuth 92°

ROCKET INFORMATION

NASA No. 8.09 GI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	59	8.42	Tel. base plate	
Extensions				
Stage 1	4205	104.062	NEP	
Stage 2	1308	60.437	FTF	
Stage 3	1318	59.687	FTF	
Stage 4	517	36.75	NEP	
Total	7407			

ROCKET-BORNE EQUIPMENT

Telemetry FM (73.6 Mc)
12.3 Mc transmitter
73.6 transmitters
Electro-acoustic probe
Antenna opening mechanism, nosecone ejection mechanism

GROUND-BASED EQUIPMENT

FM ground station (73.6 Mc)
Single station DOVAP
Radar: FPS-16, MIT, MOD II
Ionosphere ground station

RESULTS

Rocket performance below predicted. Nosecone did not eject. Radar tracking adequate. No telemetry data received. Payload electronics functioned properly but signals were too weak due to failure of antenna deployment. SSD station had excellent results. Ionosphere ground station performance was excellent.

REPORTS

See Reference I-21 and I-20.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.
 Elevation \approx Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Javelin
 NASA No.: 8.10 GI
 Date: 27 April 1961
 Time: 2002 Z

Wallops No. G4-567

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

J. E. Jackson (GSFC), Project Scientist; N. E. Peterson (GSFC), Vehicle Manager; J. C. Seddon (GSFC) SSD

EXPERIMENT

Electron density and radio wave propagation phenomena detect and measurement of electro-acoustic plasma oscillations test of single-station DOVAP facility.

FLIGHT INFORMATION

Launcher Setting:		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Azimuth <u>83°</u>				
Elevation <u>81.8°</u>				
Stage 1	Burnout	5.2	4,500	1,397
Stage 2	Ignition	9.7	10,950	1,511
	Burnout	12.9	16,560	2,550
Stage 3	Ignition	25.9	44,275	2,407
	Burnout	29.1	55,870	4,585
Stage 4	Ignition	53.8	145,000	4,031
	Burnout	87.9	354,065	11,370
	Peak	486	450 st.mi.	

Impact: Time 972 secs , Range 508 n.mi. , Azimuth 96°

ROCKET INFORMATION

NASA No. 8.10 GI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	59.25	8-2/5	Tel. base pl.	
Extensions				
Stage 1	4161.74	104-1/4	NEP	
Stage 2	1333.13	75-1/4	NEP	
Stage 3	1349.55	75-3/4	NEP	
Stage 4	517.30	56-3/4	NEP	
Total	7420.97			

ROCKET-BORNE EQUIPMENT

Telemetry FM (73.6 Mc)
12.3 mc transmitter
73.6 transmitters
Electro-acoustic probe
Antenna opening mechanism, nosecone ejection mechanism

GROUND-BASED EQUIPMENT

FM ground station (73.6 Mc)
Single station DOVAP
Radar: FPS-16, MIT, MOD II
Ionosphere ground station

RESULTS

Rocket performance below predicted. Telemetry data recovery good on 12.3 mc, poor on 73.6 mc. Radar tracking good. Antenna system test good. Electron density test good. Electro-acoustic experiment failed due to failure of 73.6 Mc tel. Test of SSD station good.

REPORTS

See References I-1, I-2, I-14, I-20.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Javelin

NASA No.: 8.13 IT
 Date: 15 June 1961
 Time: 0003 Z

Wallops No. G4-627

INSTRUMENTING AGENCY

DRTE

KEY PERSONNEL

Dr. A. R. Molozzi (DRTE), Chief Scientist; N. E. Peterson (GSFC), Vehcile Manager

EXPERIMENT

To test mechanical and electrical characteristics of 150 ft antenna system. Observe the effectiveness of a depolarizing potential.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 90°
 Elevation 80°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	5.2	5,000	1,700
	Ignition	9.7	9,000	1,500
Stage 2	Burnout	12.9	20,500	3,000
	Ignition	25.9	44,000	1,900
Stage 3	Burnout	29.1	58,800	4,800
	Ignition	53.3	148,000	3,700
Stage 4	Burnout	93	405,000	12,900
	Peak	557	560 st.mi.	

Impact: Time 1047 secs , Range 713.8 n.mi. , Azimuth

ROCKET INFORMATION

NASA No. 8.13 IT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	81	9.1	Ext. tube interface	
Extensions				
Stage 1	4140.11	104	NEP	
Stage 2	1307.62	74.5	NEP	
Stage 3	1321.55	74.5	NEP	
Stage 4	514	36.8	NEP	
Total	7364.28			

ROCKET-BORNE EQUIPMENT

Telemetry FM-PM (244.301 Mc)
DRTE transmitters (14 Mc) on way up. 4.0 Mc on way down
Antenna deployment equipment
Nosecone ejection equipment
Yo-Yo despin mechanism, solar aspect sensors, magnetometers

GROUND-BASED EQUIPMENT

FM ground station (244.3 Mc)
DRTE ground station (13.998 Mc)
Tracking radars: FPS-16, Millstone Hill, MIT, MOD II

RESULTS

Rocket performance below predicted. Despin was from 600 rpm to 10 rpm. Complete telemetry data recovery FM-PM, Faraday rotation — complete radar tracking, by MIT, MOD II Millstone Hill, Mass., FPS-16. One antenna deployed properly with the other out only 76%. Electrical impedance and depolarizing were not measured. Excellent data from Faraday rotation experiment.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Javelin

NASA No.: 8.15 AI
 Date: 24 June 1961
 Time: 2317 Z

Wallops No. G4-626

INSTRUMENTING AGENCY

National Bureau of Standards, Central Radio Propagation Laboratory and Airborne Instrument Laboratory

KEY PERSONNEL

R. W. Knecht (CRPL), Project Scientist; S. Russell (AIL), Project Engineer; N. E. Peterson (GSFC), Vehicle Manager

EXPERIMENT

Test of fixed-frequency topside sounder system. Scientific investigation of the ionosphere. The determination of the height profile of electron density between 300 km and 800 km by means of radio pulse soundings.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 90°

Elevation 80°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	5.2	5,000	1,800
Stage 2	Ignition	9.2	12,300	1,500
	Burnout	12.9	18,600	3,000
Stage 3	Ignition	25.9	46,000	2,000
	Burnout	29.1	60,900	5,000
Stage 4	Ignition	53.3	153,500	4,000
	Burnout	94	429,000	14,900
	Peak	590	633 st.mi.	

Impact: Time 1135 secs , Range 946.6 n.mi. , Azimuth 103°

ROCKET INFORMATION

NASA No. 8.15 AI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	48	8-1/5	Ext. tube mtg face	
Extensions				
Stage 1	4198	104-3/16	NEP	
Stage 2	1317	60-11/16	NEP	
Stage 3	1317	60-1/4	FTF	
Stage 4	514.25	36-15/16	NEP	
Total	7394.25			

ROCKET-BORNE EQUIPMENT

Telemetry-FM/FM(244.3 Mc). Sounder transmitters (4.07 Mc and 5.97 Mc)
Nose ejection mechanism, antenna deployment mechanism
16 ft telescoping antenna poles (2)

GROUND-BASED EQUIPMENT

FM ground station GSFC VAN
FM ground station TIPSy
FM ground station Cape Hatteras
Tracking radars: FPS-16, MIT, MOD II

RESULTS

Rocket performance below predicted. Telemetry—complete coverage from Wallops Island, Bermuda and GE, Schenectady. Radar tracking good. Good data obtained on 6 Mc frequency of the sounder and fair echoes were received on the 4 Mc frequency.

REPORTS

See References I-3, I-16, I-20.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Javelin

NASA No.: 8.17 AI

Date: 14 Oct. 1961

Time: 0426 Z

Wallops No. G4-686

INSTRUMENTING AGENCY

NBS, CRPL and Airborne Instruments Laboratory

KEY PERSONNEL

R. W. Knecht (CRPL), Project Scientist; S. Russell (AIL), Project Engineer; N. E. Peterson (GSFC), Vehicle Manager

EXPERIMENT

Operate a topside sounder in the presence of disturbed ionospheric conditions, scientific investigation of the ionosphere.

FLIGHT INFORMATION

Launcher Setting:

Azimuth NA

Elevation NA

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	5.2	4,500	1,800
Stage 2	Ignition	11	13,000	1,200
	Burnout	14	19,500	2,800
Stage 3	Ignition	26	46,000	2,000
	Burnout	29.5	60,000	4,600
Stage 4	Ignition	53.5	152,000	3,500
	Burnout	94	420,000	13,500
	Peak	610	656 st.mi.	

Impact: Time 1180 secs, Range 641.4 n.mi., Azimuth 97°

ROCKET INFORMATION

NASA No. 8.17 AI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	50.5	8-1/4	Fd ext. tube face	
Extensions				
Stage 1	4171	104-3/16	NEP	
Stage 2	1316	60-3/8	FTF	
Stage 3	1314	60-1/16	FTF	
Stage 4	517.5	36-7/8	NEP	
Total	7318.0			

ROCKET-BORNE EQUIPMENT

Telemetry—FM/FM (244.3 Mc). Sounder transmitters (4.07 Mc and 5.97 Mc)
Nose ejection mechanism, antenna deployment mechanism
16 ft telescoping antenna poles (2)

GROUND-BASED EQUIPMENT

FM ground stations at Wallops Island, Chincoteague and Bermuda
FPS-16, MOD II, SCR 584, SPANDAR tracking radars
Ionospheres ground station

RESULTS

Rocket performance as predicted. Complete radar tracking. Complete telemetry data recovery. Topside sounding equipment worked perfectly. DC ion trap operated until telescoping squib-actuated sounding antennas were extended at T + 132 seconds, giving only 12 seconds of useful ion trap data.

REPORTS

See Reference I-3, I-17, I-18, I-20.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

ROCKET: Javelin

Elevation \approx Sealevel

NASA No.: 8.22 CA

Latitude 37.8°N

Date: 13 Sept. 1961

Longitude 75.5°W

Time: 2353 Z

Wallops No. G4-696

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. E. F. Manring (GCA), Project Scientist; W. S. Smith (GSFC), Project Scientist; N. E. Peterson, Jr. (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds, diffusivity and temperatures at 200 km and 400 km by observation of sodium vapor ejected at these altitudes.

FLIGHT INFORMATION

Launcher Setting:		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Azimuth	<u> 90°N </u>			
Elevation	<u> 75° </u>			
Stage 1	Burnout	5.2	5,000	1,700
Stage 2	Ignition	9.7	11,000	1,400
	Burnout	12.9	17,000	2,500
Stage 3	Ignition	25.9	43,000	2,200
	Burnout	29.1	56,000	4,500
Stage 4	Ignition	60	154,000	3,500
	Burnout	101	345,000	10,275
	Peak	377	268 st.mi.	

Impact: Time 754 secs , Range 700 n.mi. , Azimuth

ROCKET INFORMATION

NASA No. 8.22 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	157.6	15-1/3		
Extensions				
Stage 1	514.5	36-11/16	NEP	
Stage 2	1326.09	75-1/2	Aft th. face	
Stage 3	1336.09	75-1/8	NEP	
Stage 4	4206.33	104-1/8	NEP	
Total	7540.61			

ROCKET-BORNE EQUIPMENT

Nosecone ejection squib, 3 payload cylinders containing a mixture of iron oxide, aluminum thermite and sodium

GROUND-BASED EQUIPMENT

Tracking radars: FPS-16, MIT, MOD II, SCR 584, SPANDAR

Camera sites located at Wallops Island, Va., Dover Air Force Base, Andrews Air Force Base, Camp A. P. Hill, Dam Neck Training site

RESULTS

Rocket performance as predicted. Good radar tracking. All sites, except Dam Neck were clear and good photo coverage was obtained.

REPORTS

See Reference A-9, A-46.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Javelin

NASA No.: 8.23 GA

Date: 10 Oct. 1961

Time: 1740 Z

Wallops No. G4-697

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

N. W. Spencer (GSFC), Field Director, H. A. Taylor, Jr. (GSFC), Project Scientist; N. E. Peterson (GSFC), Vehicle Manager

EXPERIMENT

To measure helium and hydrogen positive ions to 1000 km altitude. To measure electron temperature and ion density, to measure aspect.

FLIGHT INFORMATION

Launcher Setting:		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Azimuth	<u>90°</u>			
Elevation	<u>80°</u>			
Stage 1	Burnout		4,500	1,750
Stage 2	Ignition	9.7	11,500	1,380
	Burnout	13	17,600	2,700
Stage 3	Ignition	25.0	43,500	1,850
	Burnout	29	52,500	4,550
Stage 4	Ignition	53.5	147,413	3,633
	Burnout	96	424,084	12,710
	Peak	570	960 km	

Impact: Time 1056 secs , Range 635 n.mi. , Azimuth 91.1°

ROCKET INFORMATION

NASA No. 8.23 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	109			
Extensions				
Stage 1	4155.62	104-1/8	NEP	
Stage 2	1344.25	74-5/16	FTF	
Stage 3	1321.70	75	FTF	
Stage 4	513.5	36-4/5	NEP	
Total	7444.07			

ROCKET-BORNE EQUIPMENT

Telemetry FM/FM (231.4 Mc)

Radio frequency ion spectrometer, electrostatic probe, digitized sun sensor and a narrow aperture earth telescope, Schoenstedt magnetometers

Giannini accelerometers

GROUND-BASED EQUIPMENT

FM ground station, Wallops Telemetry Station

Tracking radars: FPS-16, SCR-584, MOD II

Optical cameras

Ionosphere ground station

RESULTS

Rocket performance as predicted. Complete telemetry data recovery, radar tracking adequate. Ion spectrometer functioned well. Electron temperature probe functioned well. Solar aspect systems functioned well.

REPORTS

See Reference A-46.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Woomera, Australia

Elevation \approx Sealevel

Latitude 31°S

Longitude 137°E

ROCKET: Skylark

NASA No.: 9.01 GG

Date: 18 Sept. 1961

Time: 1215 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

A. Boggess (GSFC), Project Scientist

EXPERIMENT

To measure ultraviolet fluxes from stars in the southern hemisphere using ten telescopes with photo multipliers and ion chamber detectors.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 288°

Elevation 85°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	50	132,000	5900
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		120 st.mi.	

Impact: Time , Range 55 n.mi. , Azimuth 287°

ROCKET INFORMATION

NASA No. 9.01 GG

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	300			95
Extensions				
Stage 1	557			
Stage 2	2338			
Stage 3				
Stage 4				
Total	3195			370

ROCKET-BORNE EQUIPMENT

10 telescopes, magnetometers, telemetry PPM/AM

GROUND-BASED EQUIPMENT

Telemetry ground station

RESULTS

Rocket performance was good. Telemetry data was good. Satisfactory data was obtained, although spin control and door ejection malfunctioned.

REPORTS

See Reference G-1.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Woomera, Australia

Elevation \approx Sealevel

Latitude 31° S

Longitude 137° E

ROCKET: Skylark

NASA No.: 9.02 GG

Date: 4 Oct. 1961

Time: 1119 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

A. Boggess (GSFC), Project Scientist

EXPERIMENT

To measure ultraviolet fluxes from stars in the southern hemisphere using ten telescopes with photo multipliers and ion chamber detectors.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 313°

Elevation 85°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	43	113,500	5600
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		121 st.mi.	

Impact: Time , Range , Azimuth

ROCKET INFORMATION

NASA No. 9.02 GG

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	300			95
Extensions				
Stage 1	557			
Stage 2	2338			
Stage 3				
Stage 4				
Total	3195			370

ROCKET-BORNE EQUIPMENT

10 telescopes, magnetometers, telemetry PPM/AM

GROUND-BASED EQUIPMENT

Telemetry ground station

RESULTS

Rocket performance was good. Telemetry data excellent. Good stellar signals were obtained, except for ethelene oxide chamber which did not survive.

REPORTS

See Reference G-1.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Woomera, Australia

Elevation ~ Sealevel
 Latitude 31°S
 Longitude 137°E

ROCKET: Skylark

NASA No.: 9.03 GG
 Date: 1 Nov. 1961
 Time: 1756 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

A. Boggess (GSFC), Project Scientist

EXPERIMENT

To measure ultraviolet fluxes from stars in the southern hemisphere using ten telescopes with photo multipliers and ion chamber detectors.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 317°
 Elevation 85°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	47	128,000	6000
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		120 st.mi.	

Impact: Time _____, Range _____, Azimuth _____

ROCKET INFORMATION

NASA No. 9.03 GG

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	300			95
Extensions				
Stage 1	557			
Stage 2	2338			
Stage 3				
Stage 4				
Total	3195			370

ROCKET-BORNE EQUIPMENT

10 telescopes, magnetometers, telemetry PPM/AM

GROUND-BASED EQUIPMENT

Telemetry ground station

RESULTS

Rocket performance was good. Door ejection was good, spin control was good. Pressurization was lost on all but two of the photomultipliers, the ion chambers were saturated most of the time, probably due to high voltage supply malfunction. About six stars were seen with acetone and no.

REPORTS

See Reference G-1.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Woomera, Australia

Elevation \approx Sealevel

Latitude 31° S

Longitude 137° E

ROCKET: Skylark

NASA No.: 9.04 GG

Date: 20 Nov. 1961

Time: 1804 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

A. Boggess (GSFC), Project Scientist

EXPERIMENT

To measure ultraviolet fluxes from stars in the southern hemisphere using ten telescopes with photo multipliers and ion chamber detectors.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 276°

Elevation 85°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout	45	14,000	5950
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		130 st.mi.	

Impact: Time , Range , Azimuth

ROCKET INFORMATION

NASA No. 9.04 GG

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	300			95
Extensions				
Stage 1	557			
Stage 2	2338			
Stage 3				
Stage 4				
Total	3195			370

ROCKET-BORNE EQUIPMENT

10 telescopes, magnetometers, telemetry PPM/AM

GROUND-BASED EQUIPMENT

Telemetry ground station

RESULTS

Rocket performance was excellent. Door ejection was good. Spin control functioned well. Some stellar signals were received with acetone and NO, about 30 degrees across. The constellation ORION was overhead during the flight.

REPORTS

See Reference G-1.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Nike Cajun

NASA No.: 10.01 GA

Date: 14 July 1960

Time: 0044:24.5 Z

Wallops No.: G2-308

INSTRUMENTING AGENCY

GSFC and University of Michigan

KEY PERSONNEL

W. Nordberg (GSFC), Scientist; H. F. Allen (U of M), Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

(1) Determine temperature, pressure, density and winds up to 100 km altitude by exploding 12 grenades during rocket ascent and recording time and direction of sound arrival on an array of sensitive ground microphones. (2) Test instrumentation for future Fort Churchill firings.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 78°

Elevation 83.3°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.4	5,000	3300
Stage 2	Ignition	18.6	29,258	830
	Burnout	22.0	37,408	4819
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	73	17.3 st.mi.	

Impact: Time _____, Range 78.7 n.mi., Azimuth 120°

ROCKET INFORMATION

NASA No. 10.01 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	60	28	Nose tip	56.0
Extensions				
Stage 1				
Stage 2	265	96.6	Nose tip	163.1
Stage 3				
Stage 4				
Total	1590			317

ROCKET-BORNE EQUIPMENT

Nine 1 lb and three 2 lb grenades, three infrared flash detectors
DOVAP tracking transponder also transmitted FM/AM telemetry signal at 73.6 Mc
DOVAP F10A transponder (73.6 Mc), two pairs of DOVAP antennas

GROUND-BASED EQUIPMENT

Six microphone sound ranging network, flash detectors
FM/AM stations
Single station DOVAP (36.8 Mc), FPS-16, MOD II and 584 radars (skin track), single-station ballistic camera

RESULTS

Apparent explosion of one grenade at T + 4.2 seconds caused failure of experiment. Telemetry normal until payload exploded at 4.2 seconds. Low peak altitude due to high drag after payload exploded. Complete radar tracking; DOVAP also out at 4.2 seconds; 78 seconds of position and velocity radar tabulated data.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Cajun

NASA No.: 10.02 GA
 Date: 5 May 1961
 Time: 2300 Z

Wallops No. G2-580

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

W. Smith (GSFC), Project Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds, temperatures, pressures and densities up to 100 km by means of exploding 12 grenades during the ascent of the rocket.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 103°
 Elevation 80.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition	20	36,000	1390
	Burnout	23.4	48,833	5268
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	166	70.4 st.mi.	

Impact: Time 348 secs , Range 47.24 n.mi. , Azimuth 114°

ROCKET INFORMATION

NASA No. 10.02 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	64			58
Extensions				
Stage 1	1414 incl.	94 lbs lead in booster		
Stage 2	202			
Stage 3				
Stage 4				
Total	1680			317

ROCKET-BORNE EQUIPMENT

DOVAP (73.6 Mc)
9 each 1 lb grenades
3 each 2 lb grenades
three infrared flash detectors

GROUND-BASED EQUIPMENT

Single station DOVAP (73.6 Mc)
Tracking radars FPS-16, MOD II, 584
Sound ranging network of 6 microphones

RESULTS

Rocket performance as predicted. All grenades exploded. Good data recovery. Complete tracking by DOVAP and FPS-16.

REPORTS

See References A-20, A-21, A-22, A-23, A-24, A-25, A-27, A-30.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Nike Cajun

NASA No.: 10.03 GA
 Date: 16 June 1960
 Time: 0529 Z

Wallops No.: G2-310

INSTRUMENTING AGENCY

GSFC and University of Michigan

KEY PERSONNEL

W. Nordberg (GSFC), Project Scientist; H. F. Allen (U of M), Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

Determine temperature, pressure, density and winds up to 100 km altitude by exploding 12 grenades during the rocket ascent and recording time and direction of sound arrival on an array of sensitive ground microphones.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 106°
 Elevation 83°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.1	4,300	3180
Stage 2	Ignition	19.5	38,000	1200
	Burnout	22.5	65,000	5200
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	155	60 st.mi.	

Impact: Time 310 secs , Range 19.5 n.mi. , Azimuth 112°

ROCKET INFORMATION

NASA No. 10.03 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	60	29.0	Nose tip	55.5
Extensions				
Stage 1	1323.3			
Stage 2	266.7	96.4	Nose tip	163.1
Stage 3				
Stage 4				
Total	1590			317

ROCKET-BORNE EQUIPMENT

Nine 1 lb and three 2 lb grenades, three infrared flash detectors
DOVAP tracking transponder also transmitted FM/AM telemetry signal at 73.6 Mc
DOVAP T-10A transponder (73.6 Mc), two pairs of DOVAP antennas

GROUND-BASED EQUIPMENT

Six microphone sound ranging network, flash detectors
FM/AM ground stations
Single station DOVAP (SSD) (36.8 Mc), radar (skin track); single station ballistic camera

RESULTS

Only one grenade exploded. Sound ranging equipment worked satisfactorily. Complete data recovery until transponder failed. Peak altitude slightly below normal. Tracking: adequate radar and ballistic camera tracking; DOVAP transponder signal deteriorated at 4.4 seconds and was lost completely at 25 seconds.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Nike Cajun

NASA No.: 10.04 GA

Date: 9 July 1960

Time: 0359:59.12 Z

Wallops No.: G2-311

INSTRUMENTING AGENCY

GSFC and University of Michigan

KEY PERSONNEL

W. Nordberg (GSFC), Project Scientist; K. R. Medrow (GSFC), Vehicle Manager; H. F. Allen (U of M), Scientist

EXPERIMENT

Determine temperature, pressure, density and winds up to 100 km altitude by exploding 12 grenades during the rocket ascent and recording time and direction of sound arrival on an array of sensitive ground microphones.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 80°

Elevation 82.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.4	4,000	3200
Stage 2	Ignition	19.4	37,102	1267
	Burnout	23.2	48,386	5082
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	161	65.5 st.mi.	

Impact: Time 320 secs , Range 25.2 n.mi. , Azimuth 84°

ROCKET INFORMATION

NASA No. 10.04 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	62	28	Nose tip	55.7
Extensions				
Stage 1	1322.5			
Stage 2	267.5	96.6	Nose tip	163.2
Stage 3				
Stage 4				
Total	1590			317

ROCKET-BORNE EQUIPMENT

Nine 1 lb and three 2 lb grenades; three infrared flash detectors
DOVAP tracking transponder also transmitted FM/AM telemetry signal at 73.6 Mc
DOVAP T-10A transponder (73.6 Mc); two pairs of DOVAP antennas

GROUND-BASED EQUIPMENT

Six microphone sound ranging network, flash detectors
FM/AM stations
Single station DOVAP (SSD) (36.8 Mc), FPS-16, MOD II and 584 radars (skin track); single station ballistic camera, motion picture cameras

RESULTS

Eight of 12 grenades exploded successfully. Good data was obtained up to 85 km. Adequate data recovery. Complete DOVAP and FPS-16 tracking; 158 seconds of position and velocity FPS-16 tabulated data. Rocket performance normal.

REPORTS

See Reference A-20, A-21, A-22, A-23, A-24, A-25, A-26, A-30.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Nike Cajun

NASA No.: 10.05 GA
 Date: 20 Sept. 1960
 Time: 2018 Z

Wallops No.: G2-428

INSTRUMENTING AGENCY

GSFC and University of Michigan

KEY PERSONNEL

W. Nordberg (GSFC), Scientist; W. S. Smith (GSFC), Scientist; K. R. Medrow (GSFC), Vehicle Manager; H. F. Allen (U of M), Scientist

EXPERIMENT

(1) Determine reason for failure of previous grenade experiment. (2) Qualify instrumentation for subsequent series of flights to determine temperatures, pressures, densities and winds up to 90 km altitude.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 80°
 Elevation 83°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.3		
Stage 2	Ignition	19.6	29,708	740
	Burnout	22.8	37,168	4660
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	60	12 st.mi.	

Impact: Time 150 secs , Range 6.9 n.mi. , Azimuth 100°

ROCKET INFORMATION

NASA No. 10.05 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	62	28	Nose tip	55.7
Extensions				
Stage 1	1322.5			
Stage 2	267.5	96.6	Nose tip	163
Stage 3				
Stage 4				
Total	1590			317

ROCKET-BORNE EQUIPMENT

Nine 1 lb grenades, three infrared flash detectors, long. and lat. accelerometers, yawbird, temperature gages

DOVAP tracking transponder also transmitted telemetry FM/AM signal at 73.6 Mc

DOVAP T-10A transponder (73.6 Mc), two pairs of DOVAP antennas

GROUND-BASED EQUIPMENT

Six microphone sound ranging network, flash detectors

FM/AM stations

Single station DOVAP (36.8 Mc), type 5 motion picture cameras, FPS-16, MOD II and 584 radars (skin track)

RESULTS

The experiment failed due to explosions of grenades at T + 4.5 seconds. Complete data recovery up to 4.5 seconds when payload exploded. Complete DOVAP tracking to impact, transponder survived explosion; 50 seconds of position and velocity tabulated data. Low peak altitude due to increased drag after payload exploded.

REPORTS

See Reference A-27.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Cajun

NASA No.: 10.06 GA
 Date: 14 Dec. 1960
 Time: 1652 Z

Wallops No.: G2-429

INSTRUMENTING AGENCY

GSFC and University of Michigan

KEY PERSONNEL

W. Nordberg (GSFC), Scientist; K. R. Medrow (GSFC), Vehicle Manager; H. F. Allen (U of M), Scientist; W. L. Long (GSFC), Wallops Engineer

EXPERIMENT

(1) Determine temperature, pressure, density and winds up to 100 km altitude by exploding 9 grenades during rocket ascent and recording time and direction of sound arrival on an array of sensitive ground microphones. (2) Measure rocket acceleration and check timer performance and grenade ejection.

FLIGHT INFORMATION

Launcher Setting: Azimuth 95° Elevation 80°		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage	Event			
Stage 1	Burnout	3.35	4,000	3050
Stage 2	Ignition	20.1	37,821	1270
	Burnout	24.3	50,531	5305
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	164	68.6 st. mi.	

Impact: Time 380 secs, Range 39.1 n.mi., Azimuth 85°

ROCKET INFORMATION

NASA No. 10.06 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	62	28	Nose tip	55.7
Extensions				
Stage 1	1414	With 94 lbs Ballast in Adapter		
Stage 2	267.5	96.6	Nose tip	163.2
Stage 3				
Stage 4				
Total	1682			317

ROCKET-BORNE EQUIPMENT

Nine 1 lb grenades, three infrared flash detectors, long. and lat. accelerometers, instruments to check timer performance and grenade ejection

DOVAP tracking transponder also transmitted FM/AM telemetry signal at 73.6 Mc

DOVAP T-10A transponder 73.6 Mc, two pairs of DOVAP antennas

GROUND-BASED EQUIPMENT

Six microphone sound ranging network, flash detectors

FM/AM stations

Single station DOVAP (36.8 Mc), FPS-16, MOD II and 584 radars (skin track); Doppler velocimeter, motion picture cameras

RESULTS

Six of the nine grenades exploded. Data is of limited value. Adequate data recovery. Complete DOVAP and FPS-16 tracking; 172 seconds of positions and 140 seconds of velocity FPS-16 tabulated data; 105 seconds of position DOVAP tabulated data. Rocket performance normal.

REPORTS

See Reference A-20, A-21, A-22, A-23, A-24, A-25, A-27.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Cajun

NASA No.: 10.07 GA
 Date: 14 Feb. 1961
 Time: 2350 Z
 Wallops No. G2-438

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

W. Nordberg (GSFC), Project Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds, temperatures, pressures and densities up to 100 km by means of exploding 12 grenades during the ascent of the rocket.

FLIGHT INFORMATION

Launcher Setting: Azimuth <u>97°</u> Elevation <u>80°</u>		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.5		
Stage 2	Ignition	20.6	39,000	1520
	Burnout	23.8	49,576	5400
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	181	81 st.mi.	

Impact: Time 370 secs, Range 26.1 n.mi., Azimuth 108°

ROCKET INFORMATION

NASA No. 10.07 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	64			58
Extensions				
Stage 1	1413 incl.	92.5 lbs lead in booster		312
Stage 2	202.5			107
Stage 3				
Stage 4				
Total	1679.5			317

ROCKET-BORNE EQUIPMENT

DOVAP (73.6 Mc)
9 each 1 lb grenades
3 each 2 lb grenades
three infrared flash detectors

GROUND-BASED EQUIPMENT

Single station DOVAP (73.6 Mc)
Tracking radars FPS-16, MOD II, 584
Sound ranging network of 7 microphones

RESULTS

Rocket performance above predicted. All grenades except #12 exploded. Complete tracking and data recovery.

REPORTS

See References A-20, A-21, A-22, A-23, A-24, A-25, A-30.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Nike Cajun

NASA No.: 10.08 GA

Date: 17 Feb. 1961

Time: 0226 Z

Wallops No. G2-532

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

W. Nordberg (GSFC), Project Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds, temperatures, pressures and densities up to 100 km by means of exploding 12 grenades during the ascent of the rocket.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 113

Elevation 83.7°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	NA	NA	NA
Stage 2	Ignition	23.7	38,000	1000
	Burnout	NA	45,000	4600
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	147	52.3 st.mi.	

Impact: Time 310 secs, Range 20 n.mi., Azimuth 68°

ROCKET INFORMATION

NASA No. 10.08 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	64			58
Extensions				
Stage 1	1414 incl.	94 lbs lead in booster		
Stage 2	205.25			
Stage 3				
Stage 4				
Total	1683.25			317

ROCKET-BORNE EQUIPMENT

DOVAP (73.6 Mc)
9 each 1 lb grenades
3 each 2 lb grenades
three infrared flash detectors

GROUND-BASED EQUIPMENT

Single station DOVAP (73.6 Mc)
Tracking radars FPS-16, MOD II, 584
Sound ranging network of 7 microphones

RESULTS

Rocket performance below predicted — high roll rate. Complete tracking and data recovery.
All grenades except #11 were exploded. Good data recovery.

REPORTS

See References A-20, A-21, A-22, A-23, A-24, A-25, A-27, A-30.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.
 Elevation Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Cajun
 NASA No.: 10.09 UA
 Date: 2 Nov. 1960
 Time: 2225 Z
 Wallops No.: G2-464

INSTRUMENTING AGENCY

University of Michigan

KEY PERSONNEL

M. Dubin (NASA Hdq.), Scientist; E. J. Schaefer (U of M), Scientist; L. M. Jones (U of M), Scientist; D. W. Dembrow (GSFC), Vehicle Manager

EXPERIMENT

Measure the neutral particle composition of major components of the atmosphere from 85 to 140 km by using a mass spectrometer covering mass numbers from 4 to 40. Same experiment in 10.10 UA.

FLIGHT INFORMATION

Launcher Setting:		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Azimuth	<u>80°</u>			
Elevation	<u>80</u>			
Stage 1	Burnout	NA	NA	NA
Stage 2	Ignition	21	45,821	1716
	Burnout	24.4	57,612	5600
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	177	79.2 st.mi.	

Impact: Time 360 secs, Range 45 n.mi., Azimuth _____

ROCKET INFORMATION

NASA No. 10.09 UA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	72			
Extensions				
Stage 1				
Stage 2	272	70-3/16	Aft thrust face	
Stage 3				
Stage 4				
Total	1590			325

ROCKET-BORNE EQUIPMENT

Paul Massenfilter mass spectrometer; evacuated "data cylinder" container
FM/FM (240.2 Mc); dipole antenna extended after "data cylinder" separation

GROUND-BASED EQUIPMENT

FM/FM stations
FPS-16, MIT (Mainland), MOD II and 584 radars (skin track); fixed and motion optical
tracking (including cameras)

RESULTS

No results apparently due to failure of payload to separate. No data for same reason.
Rocket performance satisfactory. Adequate radar and camera tracking, 268 seconds of
position FPS-16 tabulated data.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Nike Cajun

NASA No.: 10.10 UA

Date: 16 Nov. 1960

Time: 1737:18 Z

Wallops No.: G2-465

INSTRUMENTING AGENCY

University of Michigan

KEY PERSONNEL

M. Dubin (NASA Hdq.), Scientist; E. J. Schaefer (U of M), Scientist; L. M. Jones (U of M), Scientist; D. W. Dembrow (GSFC), Vehicle Manager

EXPERIMENT

Measure the neutral particle composition of major components of the atmosphere from 85 to 140 km by using a mass spectrometer covering mass numbers from 4 to 40. Same experiment in 10.09 UA.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 78°

Elevation 80°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	NA	NA	NA
Stage 2	Ignition	19.9	NA	NA
	Burnout	NA	NA	NA
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	190.5	94.7 st.mi.	

Impact: Time 385 secs, Range 53 n.mi., Azimuth 100°

ROCKET INFORMATION

NASA No. 10.10 UA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	72	45-3/10	From tip	69-1/4
Extensions				
Stage 1				
Stage 2	272	70-3/16	From tail	
Stage 3				
Stage 4				
Total	1590			325

ROCKET-BORNE EQUIPMENT

Paul Massenfilter mass spectrometer; evacuated "data cylinder" container
FM/FM (240.2 Mc), dipole antenna extended after "data cylinder" separation, cheater antenna

GROUND-BASED EQUIPMENT

FM/FM stations
FPS-16, MOD II, 584 and Millstone radars (skin track), motion picture cameras

RESULTS

No results apparently due to failure of payload to separate. No data for same reason.
Rocket performance above normal. Adequate FPS-16 tracking; 128 seconds of position
FPS-16 tabulated data.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Nike Cajun

NASA No.: 10.11 CA

Date: 9 Dec. 1960

Time: 2215 Z

Wallops No.: G2-485

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

M. Dubin (NASA Hdq.), Project Scientist; J. F. Bedinger (GCA), Scientist; D. W. Dembrow (GSFC), Vehicle Manager

EXPERIMENT

(1) Determine atmospheric winds and diffusivity between 70 and 135 km altitude by triangulation photographs of twilight sunlit sodium vapor trail. (2) Determine temperatures by optical measurements of "D" lines emitted by excited atoms in sodium cloud. (3) 10.12 was launched during morning twilight.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 103.5°

Elevation 80.1°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3	4507	3698
Stage 2	Ignition	Did not ignite		
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	67.0	15.1 st.mi.	

Impact: Time 145 secs , Range 7 n.mi. , Azimuth 116°

ROCKET INFORMATION

NASA No. 10.11 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	78			65.4
Extensions				
Stage 1	1320			151
Stage 2	279	69-3/32	NEP	172.5
Stage 3				
Stage 4				
Total	1599			323.5

ROCKET-BORNE EQUIPMENT

Sodium vaporizer containing 5 lbs sodium and 15 lbs thermite

GROUND-BASED EQUIPMENT

Cameras at Wallops, Dover AFB, Camp A. P. Hill, Andrews AFB and Dam Neck Naval Station, interferometer and sodium absorption cells operated by French scientists at Wallops

FPS-16, MOD II and 584 radars (skin track), motion picture cameras

RESULTS

No useful data was obtained. Second stage Cajun did not ignite due to faulty programmer relay. Complete tracking; 143 seconds of position FPS-16 tabulated data.

REPORTS

See Reference A-9.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Nike Cajun

NASA No.: 10.12 CA

Date: 9 Dec. 1960

Time: 1120 Z

Wallops No.: G2-486

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

M. Dubin (NASA Hdq.), Project Scientist; J. F. Bedinger (GCA), Scientist; D. W. Dembrow (GSFC), Vehicle Manager

EXPERIMENT

(1) Measure atmospheric winds and diffusivity between 70 and 135 km altitude by triangulation photographs of twilight sunlit sodium vapor trail. (2) Determine temperatures by optical measurements of "D" lines emitted by excited atoms in the sodium cloud. (3) 10.11 CA was launched during evening twilight.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 125°

Elevation 79°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3	4,507	3698
Stage 2	Ignition	20.6	43,676	1655
	Burnout	24.8	57,546	5480
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	190	90.9 st.mi.	

Impact: Time 363 secs , Range 47.1 n.mi. , Azimuth 122°

ROCKET INFORMATION

NASA No. 10.12 CA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	78			65.4
Extensions				
Stage 1	1515	79-5/8	NEP	151
Stage 2	281	69-5/16	NEP	172.5
Stage 3				
Stage 4				
Total	1796			323.5

ROCKET-BORNE EQUIPMENT

Sodium vaporizer containing 5 lbs sodium and 15 lbs thermite

GROUND-BASED EQUIPMENT

Cameras at Wallops, Dover AFB, Camp A. P. Hill, Andrews AFB and Dam Neck Naval Station; interferometers and sodium absorption cells operated by French scientists at Wallops

FPS-16, MOD II and 584 radars (skin track), motion picture cameras

RESULTS

The sodium vapor was ejected over the altitude range of 70 to 135 km. All camera sites acquired good data. Rocket performance good. Tracking adequate; 118 seconds of position and velocity FPS-16 tabulated data.

REPORTS

See References A-1, A-2, A-3, A-4, A-5, A-9.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft
 Latitude 58.7°N
 Longitude 93.8°W

ROCKET: Nike Cajun

NASA No.: 10.13 GE
 Date: 16 Nov. 1960
 Time: 1951:19 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

C. E. Fichtel (GSFC), Scientist; L. R. Davis (GSFC), Scientist; K. R. Medrow (GSFC),
 Vehicle Manager

EXPERIMENT

Study of major solar beam event starting 12 Nov. Determine flux, energy spectra and angular distribution of beam particles during recovery phase; 5 db absorption on riometer at liftoff. 10.24 GE, 10.15 GE and 10.16 GE fired into height of same solar storm.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 150°

Elevation 84.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.5	NA	3085
Stage 2	Ignition	19.7	NA	2855
	Burnout	23.1	NA	6586
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	170	80 st.mi.	

Impact: Time _____, Range 10.4 n.mi., Azimuth 128°

ROCKET INFORMATION

NASA No. 10.13 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	86.4	38.4	NC tip	70
Extensions				
Stage 1				154.3
Stage 2	206	55.1	Front of head cap	107
Stage 3				
Stage 4				
Total	1600			331.3

ROCKET-BORNE EQUIPMENT

Ilford G-5 nuclear emulsions, Anton 302 Geiger counter, temperature sensor; 5 mg/cm² ZnS scintillation counter, 0.5 mg CsI scintillation counter
Long. accelerometer, magnetometer
FM/FM (226 Mc), four 13-1/2" 30° sweep antennas
Parachute, SARAH beacon (243 Mc); dye markers

GROUND-BASED EQUIPMENT

Riometer
FM/FM stations
S-band radar (skin track); sound tracking stations (SOTIM)
Aircraft with SARAH RCVR

RESULTS

All instrumentation functioned well and nuclear emulsion packages were recovered. Complete data recovery. Event times and acceleration from telemetry indicated normal rocket performance. Complete sound tracking. Emulsions recovered in good condition; aircraft directed to impact area by SOTIM; SARAH signal picked up and recovery made t + 64 minutes.

REPORTS

See References E-10, E-12, E-14, E-15.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft
 Latitude 58.7°N
 Longitude 93.8°W

ROCKET: Nike Cajun

NASA No.: 10.14 GE
 Date: 17 Nov. 1960
 Time: 0600:09 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

C. E. Fichtel (GSFC), Scientist; L. R. Davis (GSFC), Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

Study of major solar beam event starting 12 Nov. Determine flux, energy spectra and angular distribution of the beam particles at midnight. Riometer absorption was 2 db at night and 5 db during previous and following daytimes.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 140°
 Elevation 84°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.43	NA	2912
Stage 2	Ignition	19.8	NA	2420
	Burnout	23.2	NA	6101
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	170	80 st.mi.	

Impact: Time _____, Range 10.4 n.mi., Azimuth 203°

ROCKET INFORMATION

NASA No. 10.14 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	86.4	38.4	NC tip	70
Extensions				
Stage 1	1307.6			
Stage 2	206	55.1	Front of head cap	154.3
Stage 3				
Stage 4				
Total	1600			331.3

ROCKET-BORNE EQUIPMENT

Ilford G5 nuclear emulsions, Anton 302 Geiger counter, 5 mg/cm² ZnS scintillation counter, 0.5 g/cm² CsI scintillation counter, temperature sensor
FM/FM (226 Mc), four 13-1/2" 30° sweep antennas
Long. accelerometer, magnetometer
Parachute, SARAH beacon (243 Mc)

GROUND-BASED EQUIPMENT

Riometer
FM/FM stations
S-band radar (skin track), sound tracking stations (SOTIM)
Helicopter with SARAH RCVR

RESULTS

All instrumentation functioned well and nuclear emulsion package was recovered. Event times and acceleration from telemetry indicated normal rocket performance. Complete data recovery. Complete radar and sound tracking; both impact points under mile apart; radar tracked descending payload even though parachute wasn't metalized. Payload recovered in good condition at t + 9 hours; helicopter took off at t + 8-1/4 hours (delayed by night clouds) and picked up SARAH signal at impact point.

REPORTS

See References E-10, E-12, E-14, E-15.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7° N

Longitude 93.8° W

ROCKET: Nike Cajun

NASA No.: 10.15 GE

Date: 12 Nov. 1960

Time: 2332:05 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

C. E. Fichtel (GSFC), Scientist; L. R. Davis (GSFC), Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

Study of major solar beam event starting 12 Nov. Determine flux, energy spectra and angular distribution of the beam particles. Riometer saturated (> 15 db) at liftoff; 10.24 GE fired earlier same day and 10.16 GE following day.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 130°

Elevation 86°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	4.1	4100	4300
Stage 2	Ignition	NA	NA	NA
	Burnout	27.0	NA	5200
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	170	80 st.mi	

Impact: Time _____, Range 6.9 n.mi., Azimuth ≈ 70°

ROCKET INFORMATION

NASA No. 10.15 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	86.4	38.4	NC tip	70
Extensions				
Stage 1	1307.6			154.3
Stage 2	206	55.1	Front of head cap	107
Stage 3				
Stage 4				
Total	1600			331.3

ROCKET-BORNE EQUIPMENT

Ilford G5 nuclear emulsions, Anton 302 Geiger counter, temperature sensor, 5 mg/cm² ZnS scintillation counter, 0.5 g/cm² CsI scintillation counter
Long. accelerometer, magnetometer
FM/FM (222 Mc), four 13-1/2" 30° seep antennas
Metalized parachute, SARAH beacon (243 Mc)

GROUND-BASED EQUIPMENT

Riometer
FM/FM stations
Radar S-band (skin track); sound tracking stations (SOTIM)
Helicopter with SARAH RCVR

RESULTS

All instrumentation functioned well. Complete data recovery. Rocket performance normal based on event times and acceleration from telemetry. Complete sound tracking; radar adequate. Emulsions not recovered; SARAH beacon failed, detected for only part of descent.

REPORTS

See References E-7, E-8, E-10, E-11, E-12, E-16.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7° N

Longitude 93.8° W

ROCKET: Nike Cajun

NASA No.: 10.16 GE

Date: 13 Nov. 1960

Time: 1602:40 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

C. E. Fichtel (GSFC), Scientist; L. R. Davis (GSFC), Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

Study of major solar beam event starting 12 Nov. Determine flux, energy spectra and angular distribution of the beam particles. Riometer saturated (> 15 db) at liftoff. 10.24 GE and 10.15 GE fired previous day same conditions.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 90°

Elevation 86°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.27	NA	3224
Stage 2	Ignition	20.3	NA	1487
	Burnout	23.8	NA	5088
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	170	80 st.mi.	

Impact: Time _____, Range 23.7 n.mi., Azimuth 138°

ROCKET INFORMATION

NASA No. 10.16 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	86.4	38.4	NC tip	70
Extensions				
Stage 1	1307.6			154.3
Stage 2	206	55.1	Front of head cap	107
Stage 3				
Stage 4				
Total	1600			331.3

ROCKET-BORNE EQUIPMENT

Ilford G5 nuclear emulsions, Anton 302 Geiger counter, 5 mg/cm² ZnS scintillation counter, 0.5 g/cm² CsI scintillation counter, temperature sensor
Long. accelerometer, magnetometer
FM/FM (226 Mc), four 13-1/2" 30° sweep antennas
Parachute, SARAH beacon 243 mc, dye markers

GROUND-BASED EQUIPMENT

Riometer
FM/FM stations
S-band radar (skin track), sound tracking stations (SOTIM)
Helicopter with SARAH RCVR

RESULTS

All instrumentation functioned well. Emulsion packages were recovered. Complete data recovery. Rocket performance normal based on event times and acceleration from telemetry. Complete radar and sound tracking; SOTIM impact within 1 mile of actual. Payload recovered t + 48 minutes. Helicopter picked up SARAH signal during descent. Emulsions in excellent condition.

REPORTS

See References E-7, E-8, E-10, E-11, E-12, E-16.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7°N

Longitude 93.8°W

ROCKET: Nike Cajun

NASA No.: 10.17 GE

Date: 6 June 1960

Time: 1710 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

C. E. Fichtel (GSFC), Scientist; L. R. Davis (GSFC), Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

Solar beam study. This flight to be fired during a quiet period to check the recovery system, to get information on the detectors and to acquire background data for comparison with solar beam results.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 150°

Elevation 86°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.16	4,500	3700
Stage 2	Ignition	21.6	50,000	1700
	Burnout	24.6	61,000	5300
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	169	76 st.mi.	

Impact: Time 1080 secs, Range 23.4 n.mi., Azimuth 160°

ROCKET INFORMATION

NASA No. 10.17 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	86.4	38.4	NC tip	70
Extensions				
Stage 1	1310			154.3
Stage 2	206	55.1	Front of head cap	107
Stage 3				
Stage 4				
Total	1600			331.3

ROCKET-BORNE EQUIPMENT

Temperature sensor, Anton 302 Geiger counter, 5 mg/cm² ZnS scintillation counter, 0.5 g/cm² CsI scintillation counter, Ilford G5 nuclear emulsions
FM/FM (121.0 Mc), four 13-1/2" 30° sweep antennas
Metalized parachute, SARAH beacon (243 Mc), dye markers
Long. accelerometer, magnetometer

GROUND-BASED EQUIPMENT

FM/FM stations
S-band radar (skin track)
Aircraft with SARAH RCVRS

RESULTS

All instrumentation functioned well. Emulsions were recovered. Complete data recovery. Event times and acceleration data from telemetry indicated performance as predicted. Surveillance radar obtained position on parachute but tracking radar couldn't pick it up because of confusion with search aircraft. RCAF Otter homed on beacon and recovered payload (excellent condition).

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7° N

Longitude 93.8° W

ROCKET: Nike Cajun

NASA No.: 10.18 GE

Date: 22 July 1960

Time: 0453 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

C. E. Fichtel (GSFC), Scientist; L. R. Davis (GSFC), Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

This flight to be made during an auroral type radio absorption event to examine intensity of particles vs. altitude, to determine energy spectrum and angular distribution of electrons and to determine if other particle types are present.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 130°

Elevation 86°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.1	4,500	3700
Stage 2	Ignition	23.2	50,000	1700
	Burnout	26.1	61,000	5300
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	182	80 st.mi.	

Impact: Time _____, Range 6.9 n.mi., Azimuth 132°

ROCKET INFORMATION

NASA No. 10.18 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	86	38.4	NC tip	70
Extensions				
Stage 1	1310			154.3
Stage 2	206	55.1	Front of head cap	107
Stage 3				
Stage 4				
Total	1600			331.3

ROCKET-BORNE EQUIPMENT

Temperature sensor, Anton 302 Geiger counter, 5 mg/cm² ZnS scintillation counter, 0.25 g/cm² CsI scintillation counter, Ilford G5 nuclear emulsions
FM/FM (127 Mc), four 13-1/2" 30° sweep antennas
Metalized parachute, SARAH beacon (243 Mc)
Long. accelerometer, magnetometer

GROUND-BASED EQUIPMENT

Riometer
FM/FM stations
Radars (2729 and 2931 Mc) (skin track)
Aircraft with SARAH RCVRs

RESULTS

All instrumentation functioned well. Adequate data recovery. Telemetry data indicated rocket performed as predicted. Radar failed to track parachute. Recovery: Failed; radio fixes obtained from telemetry stations but aircraft search delayed till daybreak.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft
 Latitude 58.7° N
 Longitude 93.8° W

ROCKET: Nike Cajun

NASA No.: 10.19 GE
 Date: 3 Sept. 1960
 Time: 1408 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

C. E. Fichtel (GSFC), Scientist; L. R. Davis (GSFC), Scientist; K. E. Ogilvie (GSFC), Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

Solar beam experiment to determine particle flux and angular distribution vs. altitude during a class 3 solar flare; 10.20 GE (identical experiment) flown same day.

FLIGHT INFORMATION

Launcher Setting:
 Azimuth 130°
 Elevation 83°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.3	3,500	3750
Stage 2	Ignition	23	NA	NA
	Burnout	25.8	59,900	5125
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	170	75.7 st.mi.	

Impact: Time _____, Range 14.8 n.mi., Azimuth 135°

ROCKET INFORMATION

NASA No. 10.19 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	83			70.12
Extensions				
Stage 1	1282			155
Stage 2	207.9			107
Stage 3				
Stage 4				
Total	1598.9			332.12

ROCKET-BORNE EQUIPMENT

Temperature sensor, Anton 302 Geiger counter, 5 mg/cm² ZnS scintillation counter, 0.5 g/cm² CsI scintillation counter, Ilford 600 G5 nuclear emulsion package
Metalized parachute, SARAH beacon (243.0 Mc), dye markers
FM/FM (224.0 Mc), four 13-1/2" 30° sweep antennas
Long. accelerometer, magnetometer

GROUND-BASED EQUIPMENT

Ionosphere station (1-17 Mc), Riometer (30 Mc),
FM/FM stations
MPQ 18 (2810 Mc) and MPQ 12 (2860 Mc) radars (skin track), sound tracking stations (SOTIM)
Helicopter with SARAH RCVR

RESULTS

All instrumentation functioned well. Complete data recovery; good signal strength to 430 seconds (cont. after impact). Telemetry records indicated normal rocket performance. Adequate sound tracking. Radar did not pickup rocket. Helicopter recovered payload 3 hours after launch. Payload showed no damage.

REPORTS

See Reference E-9.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7° N

Longitude 93.8° W

ROCKET: Nike Cajun

NASA No.: 10.20 GE

Date: 3 Sept. 1960

Time: 1729Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

C. E. Fichtel (GSFC), Scientist; L. R. Davis (GSFC), Scientist; K. E. Ogilvie (GSFC), Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

Solar beam experiment to determine particle flux and angular distribution vs. altitude during a class 3 solar flare. 10.19 GE (identical experiment) flown same day.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 130°

Elevation 83°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.3	NA	3175
Stage 2	Ignition	23.4	NA	2000
	Burnout	26.8	NA	5700
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	170	75.7 st.mi.	

Impact: Time NA, Range NA, Azimuth NA

ROCKET INFORMATION

NASA No. 10.20 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	83			70
Extensions				
Stage 1	1310.5			155
Stage 2	206			107
Stage 3				
Stage 4				
Total	1599.5			332.2

ROCKET-BORNE EQUIPMENT

Temperature sensor, Anton 302 Geiger counter, 5 mg/cm² ZnS scintillation counter, 0.5 g/cm² CsI scintillation counter, Ilford 600 G5 nuclear emulsion package
FM/FM (221.0 Mc), four 13-1/2" 30° sweep antennas
Metalized parachute, SARAH beacon (243 Mc), dye markers
Long accelerometer, magnetometer

GROUND-BASED EQUIPMENT

Ionosphere station 1-17 mc; Riometer (30 Mc),
FM/FM stations
MPQ 18 (2810 Mc) and MPQ 12 (2860 Mc) radar (skin track), sound tracking stations (SOTIM)
Helicopters with SARAH RCVRS

RESULTS

All instrumentation functioned well. Complete data recovery, good telemetry with good signal strength to 430 seconds. Telemetry records indicated normal rocket performance and payload descent. Adequate sound tracking. Radar did not pickup rocket. Payload not recovered; beacon failed shortly after predicted impact.

REPORTS

See Reference E-3, E-8, E-9.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7°N

Longitude 93.8°W

ROCKET: Nike Cajun

NASA No.: 10.21 GE

Date: 27 Sept. 1960

Time: 1444:12.7 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

C. E. Fichtel (GSFC), Scientist; L. R. Davis (GSFC), Scientist; K. E. Ogilvie (GSFC), Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

Solar beam study. Determine particle type, flux and energy spectrum of the particles producing a polar cap absorption event.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 145°

Elevation 83°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.2	5,500	3700
Stage 2	Ignition	22.56	50,000	1700
	Burnout	25.60	61,000	5300
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	180	80 st.mi.	

Impact: Time 1020 secs , Range 11.7 n.mi. , Azimuth 157°

ROCKET INFORMATION

NASA No. 10.21 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	83	33.4	Nose tip	70
Extensions				
Stage 1	1311			
Stage 2	206	55.1	Head cap	107
Stage 3				
Stage 4				
Total	1600			331

ROCKET-BORNE EQUIPMENT

Thermistor, GM counter, two scintillation counters, Ilford G5 emulsions
Long. accelerometer, magnetometer
FM/FM (229 Mc), four 13-1/2" 30° sweep antennas
Metalized parachute, SARAH beacon (243 Mc), dye markers

GROUND-BASED EQUIPMENT

Riometer
FM/FM stations
Radars (2729 and 2931 Mc) (skin track), sound tracking stations (SOTIM)
Helicopter with SARAH RCVR

RESULTS

All instrumentation functioned well. Emulsions were recovered. Poor data recovery. Camp station obtained no signal and launch station lost power from 113.5 to 296 seconds. Accelerometer and magnetometer data showed rocket performed as predicted. Complete radar tracking. Radar impact point coincided with PL recovery point. Recovery successful; helicopter homed on beacon for recovery.

REPORTS

See Reference E-13.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7°N

Longitude 93.8°W

ROCKET: Nike Cajun

NASA No.: 10.22 GE

Date: 11 Nov. 1960

Time: 1121:45 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

C. E. Fichtel (GSFC), Scientist; L. R. Davis (GSFC), Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

Determine flux, composition and energy spectra of the particles causing an auroral absorption event for which the absorption detected on the riometer was greater than 1 db. 10.23 GE fired later into same aurora.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 110°

Elevation 84.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.5	3,900	4100
Stage 2	Ignition	22	50,000	1700
	Burnout	26.5	55,000	5200
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	170	80 st.mi.	

Impact: Time 370 secs, Range 18.2 n.mi., Azimuth 120°

ROCKET INFORMATION

NASA No. 10.22 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	86.4	38.4	NC tip	70
Extensions				
Stage 1	1308			154.3
Stage 2	206	55.1	Front of head cap	107
Stage 3				
Stage 4				
Total	1600			331.3

ROCKET-BORNE EQUIPMENT

Ilford G5 nuclear emulsions, Anton 302 Geiger counter, 5 mg/cm² ZnS scintillation counter, 0.5 g/cm² CsI scintillation counter, temperature sensor
Long. accelerometer, magnetometer
FM/FM (224 Mc), four 13-1/2" 30° sweep antennas
Parachute, SARAH beacon 243 Mc) dye markers

GROUND-BASED EQUIPMENT

Riometer
FM/FM stations
Radar S-band (skin track), sound tracking stations (SOTIM)
Helicopter with SARAH RCVR

RESULTS

All instrumentation functioned well. Emulsions were recovered. Complete data recovery. Analysis of event times and acceleration from telemetry indicated rocket performed as predicted. Complete sound tracking; sound impact within 1 mile of actual. Helicopter recovered payload t + 3-1/2 hours; nuclear emulsions in excellent condition.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft
 Latitude 58.7° N
 Longitude 93.8° W

ROCKET: Nike Cajun

NASA No.: 10,23 GE
 Date: 11 Nov. 1960
 Time: 1210:32 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

C. E. Fichtel (GSFC), Scientist; L. R. Davis (GSFC), Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

(A) Determine flux, composition, angular distribution and energy spectra of the particles causing an auroral absorption event for which the maximum absorption detected on the riometer was greater than 1 db. (B) Compare results with 10.22 GE fired earlier into center of same aurora.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 110°
 Elevation 84.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.5	3,900	4100
Stage 2	Ignition	22	50,177	1700
	Burnout	26.5	55,000	5200
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	170	80 st.mi.	

Impact: Time 370 secs, Range 17.4 n.mi., Azimuth 120°

ROCKET INFORMATION

NASA No. 10.23 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	86.4	38.4	NC tip	70
Extensions				
Stage 1	1310			154.3
Stage 2	206	55.1	Front of head cap	107
Stage 3				
Stage 4				
Total	1600			331.3

ROCKET-BORNE EQUIPMENT

Ilford G5 nuclear emulsions, Anton 302 Geiger counter, 5 mg/cm² ZnS scintillation counter, 0.5 g/cm² CsI scintillation counter, temperature sensor
Long. accelerometer, magnetometer
FM/FM (223 Mc), four 13-1/2" 30° sweep antennas
Parachute, SARAH beacon (243 Mc), dye markers

GROUND-BASED EQUIPMENT

Riometer
FM/FM stations
Radar S-band (skin track), sound tracking stations (SOTIM)
Helicopter with SARAH RCVR

RESULTS

No telemetry data obtained. Emulsions were recovered. XMTR failed at 2.5 seconds. Rocket performance normal. Complete sound tracking; sound impact within 1 mile of actual. Helicopter recovered PL t + 4-1/3 hours, emulsions in good condition.

REPORTS

No. reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7°N

Longitude 93.8°W

ROCKET: Nike Cajun

NASA No.: 10.24 GE

Date: 12 Nov. 1960

Time: 1839:34 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

C. E. Fichtel (GSFC), Scientist; L. R. Davis (GSFC), Scientist; K. R. Medrow (GSFC), Vehicle Manager

EXPERIMENT

Study of major solar beam event starting 12 Nov. Determine flux, energy spectra and angular distribution of the beam particles. Riometer indicated absorption greater than 15 db during firing; 10.15 GE fired later same day.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 125°

Elevation 85°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	4.0	3,600	4100
Stage 2	Ignition	NA	NA	NA
	Burnout	27.0	55,000	5200
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	170	80 st.mi.	

Impact: Time 960 secs , Range 22.6 n.mi. , Azimuth 130°

ROCKET INFORMATION

NASA No. 10.24 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	86.4	38.4	NC tip	70
Extensions				
Stage 1	1310			154.3
Stage 2	206	55.1	Front of head cap	107
Stage 3				
Stage 4				
Total	1600			331.3

ROCKET-BORNE EQUIPMENT

Ilford G5 nuclear emulsions, Anton 302 Geiger counter, 5 mg/cm² ZnS scintillation counter, 0.5 g/cm² CsI scintillation counter, temperature sensor
Long. accelerometer, magnetometer
FM/FM (226 Mc), four 13-1/2" 30° sweep antennas
Metalized parachute, SARAH RCVR (243 Mc), dye markers

GROUND-BASED EQUIPMENT

Riometer
FM/FM stations
Radar S-band (skin track), sound tracking stations (SOTIM)
Helicopter with SARAH RCVR

RESULTS

All instrumentation functioned well. Emulsions were recovered. Complete data recovery. Event times and acceleration from telemetry indicated rocket performed as predicted. Complete radar and sound tracking. Payload recovered t + 1 hour; helicopter picked up SARAH signal by using radar and sound tracking data.

REPORTS

See References E-7, E-10, E-12, E-16.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Nike Cajun

NASA No.: 10.25 CI
 Date: 8 Dec. 1960
 Time: 1652:09 Z

Wallops No.: G2-488

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

R. E. Bourdeau (GSFC), Project Scientist; D. W. Dembrow (GSFC) Vehicle Manager;
 L. G. Smith (GCA), Scientist

EXPERIMENT

(1) Measure electron density and electron temperature in the ionosphere by the Langmuir double probe technique. (2) Determine the influence of the telemetering transmitter on the electron measurements.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 106°
 Elevation 81°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	NA	NA	NA
Stage 2	Ignition	20.5	43,509	1603
	Burnout	23.9	56,396	5768
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	193	94.4 st.mi.	

Impact: Time 379 secs, Range 17 n.mi., Azimuth 50°

ROCKET INFORMATION

NASA NO. 10.25 CI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	63			67
Extensions				
Stage 1	1310			154.3
Stage 2	201			107
Stage 3				
Stage 4				
Total	1574			324

ROCKET-BORNE EQUIPMENT

Langmuir probe using nose tip and side electrodes, long. and lat. magnetometers
FM/FM (231.4 Mc), two radial quadraloop antennas

GROUND-BASED EQUIPMENT

FM/FM stations
FPS-16, MOD II and 584 radars (skin track), optical tracking including motion picture cameras

RESULTS

All instrumentation functioned well. Complete data recovery to impact. Rocket performance excellent. Complete tracking; 122 seconds of position FPS-16 tabulated data.

REPORTS

See Reference I-7.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7°N

Longitude 93.8°W

ROCKET: Nike Cajun

NASA No.: 10.26 GE

Date: 18 Nov. 1960

Time: 0338:48 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

C. E. Fichtel (GSFC), Project Scientist; L. R. Davis (GSFC), Project Scientist; E. C. Pressly (GSFC), Vehicle Manager

EXPERIMENT

Study of major solar beam event starting 12 Nov. Determine flux, energy spectra and angular distribution of the beam particles during nighttime recovery. During flight riometer absorption was 1.4 db. Reading was about 3 db just before recovery began.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 130°

Elevation 86°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.5	NA	2772
Stage 2	Ignition	22.7	NA	2639
	Burnout	26.3	NA	5715
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	170	80 st.mi.	

Impact: Time _____, Range 19.2 n.mi., Azimuth 182°

ROCKET INFORMATION

NASA No. 10.26 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	86.4	38.4	NC tip	70
Extensions				
Stage 1	1308			154.3
Stage 2	206	55.1	Front of head cap	107
Stage 3				
Stage 4				
Total	1600			331.3

ROCKET-BORNE EQUIPMENT

Ilford G5 nuclear emulsions; Anton 302 Geiger counter, 5 mg/cm² ZnS scintillation counter, 0.5 g/cm² CsI scintillation counter, temperature sensor
Long. accelerometer, magnetometer
FM/FM (226 Mc), four 13-1/2" 30° sweep antennas
Parachute, SARAH beacon (243 Mc)

GROUND-BASED EQUIPMENT

Riometer
FM/FM stations
S-band radar (skin track), sound tracking stations (SOTIM)
Helicopter with SARAH RCVR

RESULTS

All instrumentation functioned well. Emulsions were recovered. Complete data recovery. Event times and acceleration from telemetry indicated normal rocket performance. Complete radar and sound tracking; both impact points under mile apart. Payload sighted and recovered following day. Helicopter couldn't pick up SARAH signal although camp telemetry station received it during descent.

REPORTS

See References E-5, E-10, E-12, E-14.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft
 Latitude 58.7°N
 Longitude 93.8°W

ROCKET: Nike Cajun

NASA No.: 10.27 GE
 Date: 18 Nov. 1960
 Time: 2338:37 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

C. E. Fichtel (GSFC), Project Scientist; L. R. Davis (GSFC), Project Scientist; E. C. Pressly (GSFC), Vehicle Manager

EXPERIMENT

Study of major solar beam event starting 12 Nov. Determine flux, energy spectra and angular distribution of the beam particles during last phase of event.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 40°
 Elevation 87°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	2.9	4,508	3698
Stage 2	Ignition	22	50,177	1700
	Burnout	25.2	60,480	5191
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	170	80 st.mi.	

Impact: Time _____, Range 14.8 n.mi., Azimuth 119°

ROCKET INFORMATION

NASA No. 10.27 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	86.4	38.4	NC tip	70
Extensions				
Stage 1	1307.6			154.3
Stage 2	206	55.1	Front of head cap	107
Stage 3				
Stage 4				
Total	1600			331.3

ROCKET-BORNE EQUIPMENT

Ilford G5 nuclear emulsions, Anton 302 Geiger counter, 5 mg/cm² ZnS scintillation counter, 0.5 g/cm² CsI scintillation counter, temperature sensor
Long. accelerometer, magnetometer
FM/FM (226 Mc), four 13-1/2" 30° sweep antennas
Parachute, SARAH beacon (243 Mc)

GROUND-BASED EQUIPMENT

Riometer
FM/FM stations
S-band radar (skin track), sound tracking stations (SOTIM)
Helicopter with SARAH RCVR

RESULTS

All instrumentation functioned well. Complete data recovery. Event times and acceleration from telemetry indicated normal rocket performance. Complete sound tracking. Recovery unsuccessful. Impact point predicted by SOTIM; SARAH signal picked up during descent but not after impact.

REPORTS

See References E-5, E-10, E-12, E-14.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Nike Cajun

NASA No.: 10.28 GA
 Date: 6 May 1961
 Time: 0454 Z

Wallops No.: G2-553

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

W. Smith (GSFC), Project Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds, temperatures, pressures and densities up to 100 km by means of exploding 12 grenades during the ascent of the rocket.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 103°
 Elevation 80.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	NA	NA	NA
Stage 2	Ignition	18	34,400	1460
	Burnout	21.5	44,910	5321
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	170	71.9 st.mi.	

Impact: Time 352 secs, Range 48.1 n.mi., Azimuth 122°

ROCKET INFORMATION

NASA No. 10.28 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	64			58
Extensions				
Stage 1	1414 incl	94 lbs lead in booster		154
Stage 2	200			107
Stage 3				
Stage 4				
Total	1678			317

ROCKET-BORNE EQUIPMENT

DOVAP (73.6 Mc)
9 each 1 lb grenades
3 each 2 lb grenades
three infrared flash detectors

GROUND-BASED EQUIPMENT

Single station DOVAP (73.6 Mc)
Tracking radars FPS-16, MOD II, 584
Sound ranging network of 6 microphones

RESULTS

Rocket performance as predicted. Complete tracking and good data recovery. All 12 grenades exploded.

REPORTS

See References A-20, A-21, A-22, A-23, A-24, A-25, A-27, A-30.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Nike Cajun

NASA No.: 10.29 GA

Date: 9 May 1961

Time: 1153 Z

Wallops No.: G2-610

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

W. Smith (GSFC), Project Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds, temperatures, pressures and densities up to 100 km by means of exploding 12 grenades during the ascent of the rocket.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 80

Elevation 77°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.2 (est)	4,000 (est)	3050 (est)
Stage 2	Ignition	19	35,000	1430
	Burnout	21.6	45,500	5284
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	167	72.5 st.mi.	

Impact: Time 340 secs , Range 38.6 n.mi. , Azimuth 92°

ROCKET INFORMATION

NASA No. 10.29 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	64			58
Extensions				
Stage 1	1413 incl	93 lbs lead in booster		154
Stage 2	203			107
Stage 3				
Stage 4				
Total	1680			317

ROCKET-BORNE EQUIPMENT

DOVAP (73.6 Mc)
9 each 1 lb grenades
3 each 2 lb grenades
three infrared flash detectors

GROUND-BASED EQUIPMENT

Single station DOVAP (73.6 Mc)
Tracking radars FPS-16, MOD II, 584
Sound ranging network of 6 microphones

RESULTS

Rocket performance as predicted. Complete tracking by radar and DOVAP. Programmer stopped with the explosion of 3rd grenade. Two data points, under 50 km available from this flight.

REPORTS

See References A-20, A-21, A-22, A-23, A-24, A-25, A-27, A-30.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.
 Elevation ~Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Nike Cajun
 NASA No.: 10.30 GA
 Date: 13 July 1961
 Time: 2207 Z
 Wallops No.: G2-611

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

W. Smith (GSFC), Project Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds, temperatures, pressures and densities up to 100 km by means of exploding 12 grenades during the ascent of the rocket.

FLIGHT INFORMATION

Launcher Setting:				
Azimuth <u> 93 </u>				
Elevation <u> 78.2 </u>				
		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	4 (est)	4,000 (est)	3050 (est)
Stage 2	Ignition	20.5	34,900	1250
	Burnout	23.7	48,283	5510
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	171	73.7 st.mi.	

Impact: Time 340 secs , Range 47 n.mi. , Azimuth 124°

ROCKET INFORMATION

NASA No. 10.30 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	64			58
Extensions				
Stage 1	1413 incl	93 lbs lead in booster		154
Stage 2	201			107
Stage 3				
Stage 4				
Total	1678			317

ROCKET-BORNE EQUIPMENT

DOVAP (73.6 Mc)
9 each 1 lb grenades
3 each 2 lb grenades
three infrared flash detectors

GROUND-BASED EQUIPMENT

Single station DOVAP (73.6 Mc)
Tracking radars FPS-16, MOD II, 584
Sound ranging network of 6 microphones

RESULTS

Rocket performance as predicted. Complete tracking and data recovery. All 12 grenades exploded.

REPORTS

See References A-20, A-21, A-22, A-23, A-24, A-25, A-27, A-30.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Nike Cajun

NASA No.: 10.31 GA
 Date: 14 July 1961
 Time: 1602 Z
 Wallops No.: G2-637

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

W. Smith (GSFC), Project Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds, temperatures, pressures and densities up to 100 km by means of exploding 12 grenades during the ascent of the rocket.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 123°
 Elevation 78.5

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	4 (est)	4,000 (est)	3050 (est)
Stage 2	Ignition	19.3	37,500	1450
	Burnout	22.4	47,073	5445
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	155	62.8 st.mi.	

Impact: Time 332 secs, Range 32.2 n.mi., Azimuth 124°

ROCKET INFORMATION

NASA No. 10.31 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	64			58
Extensions				
Stage 1	1413 incl	93 lbs lead in booster		154
Stage 2	202			107
Stage 3				
Stage 4				
Total	1679			317

ROCKET-BORNE EQUIPMENT

DOVAP (73.6 Mc)
9 each 1 lb grenades
3 each 2 lb grenades
three infrared flash detectors

GROUND-BASED EQUIPMENT

Single station DOVAP (73.6 Mc)
Tracking radars FPS-16, MOD II, 584
Sound ranging network of 6 microphones

RESULTS

Rocket performance below predicted. Complete tracking by radar and SS DOVAP. 10 of 12 grenades exploded. Data to 77 km.

REPORTS

See References A-20, A-21, A-22, A-23, A-24, A-25, A-27, A-30.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Nike Cajun

NASA No.: 10.32 GA

Date: 20 July 1961

Time: 1030 Z

Wallops No.: G2-638

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

W. Smith (GSFC), Project Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds, temperatures, pressures and densities up to 100 km by means of exploding 12 grenades during the ascent of the rocket.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 86

Elevation 75.5

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3 (est)	4,000 (est)	3050 (est)
Stage 2	Ignition	21.5	40,700	1260
	Burnout	24.7	48,751	5512
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	175	77 st.mi.	

Impact: Time 350 secs , Range 65.1 n.mi. , Azimuth 114°

ROCKET INFORMATION

NASA No. 10.32 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	64			58
Extensions				
Stage 1	1414 incl	94 lbs lead in booster		154
Stage 2	201.4			107
Stage 3				
Stage 4				
Total	1679.4			317

ROCKET-BORNE EQUIPMENT

DOVAP (73.6 Mc)
9 each 1 lb grenades
3 each 2 lb grenades
three infrared flash detectors

GROUND-BASED EQUIPMENT

Single station DOVAP (73.6 Mc)
Tracking radars FPS-16, MOD II, 584
Sound ranging network of 6 microphones

RESULTS

Rocket performance as predicted. Complete tracking and data recovery. All grenades exploded as programmed.

REPORTS

See References A-20, A-21, A-22, A-23, A-24, A-25, A-27, A-30.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Cajun

NASA No.: 10.33 GA
 Date: 5 April 1961
 Time: 1257 Z
 Wallops No.: G2-551

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

W. Smith (GSFC), Project Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds, temperatures, pressures and densities up to 100 km by means of exploding 12 grenades during the ascent of the rocket.

FLIGHT INFORMATION

Launcher Setting:
 Azimuth 130°
 Elevation 77°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.2 (est)	4,000 (est)	3050 (est)
Stage 2	Ignition	19.5	36,000	1300
	Burnout	22.4	46,880	5394
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	167	72.2 st.mi.	

Impact: Time 350 secs, Range 51.2 n.mi., Azimuth 140°

ROCKET INFORMATION

NASA No. 10.33 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	64			58
Extensions				
Stage 1	1423 incl	93 lbs lead in booster		154
Stage 2	203.5			107
Stage 3				
Stage 4				
Total	1690.5			317

ROCKET-BORNE EQUIPMENT

DOVAP (73.6 Mc)
9 each 1 lb grenades
3 each 2 lb grenades
three infrared flash detectors

GROUND-BASED EQUIPMENT

Single station DOVAP (73.6 Mc)
Tracking radars FPS-16, MOD II, 584
Sound ranging network of 6 microphones

RESULTS

Rocket performance as predicted. Complete tracking FPS-16 radar. DOVAP transponder failed at launch. Sound ranging records indicate 7 grenades exploded.

REPORTS

See References A-20, A-21, A-22, A-23, A-24, A-25, A-27, A-30.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Nike Cajun

NASA No.: 10.34 GA

Date: 27 April 1961

Time: 2232 Z

Wallops No.: G2-552

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

W. Smith (GSFC), Project Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds, temperatures, pressures and densities up to 100 km by means of exploding 12 grenades during the ascent of the rocket.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 100

Elevation 83°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition	Did not fire		
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	55	10.9 st.mi.	

Impact: Time 128 secs, Range 8.3 n.mi., Azimuth 100°

ROCKET INFORMATION

NASA No. 10.34 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	64			58
Extensions				
Stage 1	1413 incl	93 lbs lead in booster		154
Stage 2	203.3			107
Stage 3				
Stage 4				
Total	1680.3			317

ROCKET-BORNE EQUIPMENT

DOVAP (73.6 Mc)
9 each 1 lb grenades
3 each 2 lb grenades
three infrared flash detectors

GROUND-BASED EQUIPMENT

Single station DOVAP (73.6 Mc)
Tracking radars FPS-16, MOD II, 584
Sound ranging network of 6 microphones

RESULTS

Rocket performance below predicted. Second stage did not ignite. 11 of 12 grenades exploded.
Test objectives not obtained.

REPORTS

No report published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel

Latitude 37.8°N

Longitude 75.5°W

ROCKET: Nike Cajun

NASA No.: 10.35 GA

Date: 21 July 1961

Time: 0350 Z

Wallops No.: G2-553

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

W. Smith (GSFC), Project Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds, temperatures, pressures and densities up to 100 km by means of exploding 12 grenades during the ascent of the rocket.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 106°

Elevation 81°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	NA	NA	NA
Stage 2	Ignition	21.24	40,000	1148
	Burnout	24.5	48,595	5434
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	120	42.2 st.mi.	

Impact: Time NA, Range NA, Azimuth NA

ROCKET INFORMATION

NASA No. 10.35 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	64			58
Extensions				
Stage 1	1414 incl	94 lbs lead in booster		154
Stage 2	202.2			107
Stage 3				
Stage 4				
Total	1680.2			317

ROCKET-BORNE EQUIPMENT

DOVAP (73.6 Mc)
9 each 1 lb grenades
3 each 2 lb grenades
three infrared flash detectors

GROUND-BASED EQUIPMENT

Single station DOVAP (73.6 Mc)
Tracking radars FPS-16, MOD II, 584
Sound ranging network of 6 microphones

RESULTS

Rocket performance below predicted. Radar tracking adequate. All grenades exploded at time of first grenade explosion. No data recovery.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel

Latitude 37.8°N

Longitude 75.5°W

ROCKET: Nike Cajun

NASA No.: 10.36 GA

Date: 16 Sept. 1961

Time: 2355 Z

Wallops No.: G2-680

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

W. Smith (GSFC), Project Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

To measure temperature, pressure, densities and winds up to 100 km by exploding 11 grenades during the ascent of the rocket. A mylar inflatable sphere will be ejected at peak altitude to measure density from 100 km and wind from 60 km during its descent.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 108°

Elevation 80.3°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.5	4,000	3050
Stage 2	Ignition	21.8	35,559	942
	Burnout	25.2	44,482	4942
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	149	55 st.mi.	

Impact: Time 298 secs, Range 35.6 n.mi., Azimuth 105°

ROCKET INFORMATION

NASA No. 10.36 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	39.3			58
Extensions				
Stage 1	1424.75	79.5	NEP	154
Stage 2	224.5	54	NEP	107
Stage 3				
Stage 4				
Total	1688.55			317

ROCKET-BORNE EQUIPMENT

SS DOVAP (73.6 Mc)
9 each 1 lb grenades
2 each 2 lb grenades
1 inflatable sphere

GROUND-BASED EQUIPMENT

Telemetry FM ground station (73.6 Mc), SS DOVAP (73.6 Mc)
Sound ranging network — 6 microphones
Tracking radars FPS-16, MOD II, 584

RESULTS

Rocket performance below predicted. Five grenades exploded between 38 and 65 km. A 4 ft inflatable sphere was ejected at 85 km and tracked down to 100,000 ft. Good comparative data was obtained.

REPORTS

See References A-20, A-21, A-22, A-23, A-24, A-25, A-27, A-30.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel

Latitude 37.8°N

Longitude 75.5°W

ROCKET: Nike Cajun

NASA No.: 10.37 GA

Date: 17 Sept. 1961

Time: 1013 Z

Wallops No.: G2-703

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

W. Smith (GSFC), Project Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of winds, temperatures, pressures and densities up to 100 km by means of exploding 12 grenades during the ascent of the rocket.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 113°

Elevation 81°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.5 (est)	4,000 (est)	3050 (est)
Stage 2	Ignition	16.9	31,950	1550
	Burnout	20.3	43,533	5441
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	145	57.4 st.mi.	

Impact: Time 445 secs, Range 26.9 n.mi., Azimuth 90°

ROCKET INFORMATION

NASA No. 10.37 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	64			58
Extensions				
Stage 1	1421.69	incl 94 lbs lead in booster		154
Stage 2	223			107
Stage 3				
Stage 4				
Total	1708.69			317

ROCKET-BORNE EQUIPMENT

DOVAP (73.6 Mc)
9 each 1 lb grenades
3 each 2 lb grenades
three infrared flash detectors

GROUND-BASED EQUIPMENT

Single station DOVAP (73.6 Mc)
Tracking radars FPS-16, MOD II, 584
Sound ranging network of 6 microphones

RESULTS

Rocket performance below predicted. Payload exploded at about 48 seconds. Complete radar tracking. Grenade No. 3 caused explosion of remaining grenades. Data obtained to approximately 50 km.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8°N
 Longitude 75.5°W

ROCKET: Nike Cajun

NASA No.: 10.49 GT
 Date: 15 March 1961
 Time: 1747 Z
 Wallops No.: G2-309

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

E. F. Sornit (GSFC), Chief Scientist; D. Dembrow (GSFC), Coordinator; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

To flight test new Nike Cajun hardware, consisting of Nike fins, Cajun fins and Nike Cajun adapter.

FLIGHT INFORMATION

Launcher Setting:
 Azimuth 83°
 Elevation 77°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	NA	NA	NA
Stage 2	Ignition	17.6	36,000	1600
	Burnout	21.3	48,014	5752
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	178	80.7 st.mi.	

Impact: Time 348 secs , Range 72.1 n.mi. , Azimuth 102°

ROCKET INFORMATION

NASA No. 10.49 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	57	47	Nose tip	67.2
Extensions				
Stage 1	1321	60	FTP	134-5/8
Stage 2	201.3	58-3/4	MPL	107-1/8
Stage 3				
Stage 4				
Total	1579			

ROCKET-BORNE EQUIPMENT

Telemetry FM/FM (240.2 Mc)

Lateral magnetometer, pitch-yaw gage, long. accelerometer, fin temp. gages (2)

GROUND-BASED EQUIPMENT

Telemetry — FM ground station

Radar tracking — FPS-16, 584, MOD II

Cameras

RESULTS

Rocket performance as predicted. Radar tracking adequate. Telemetry data adequate.
Test was successful and new hardware is considered suitable.

REPORTS

See References T-7, T-8.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel

Latitude 37.8°N

Longitude 75.5°W

ROCKET: Nike Cajun

NASA No.: 10.50 UA

Date: 6 June 1961

Time: 2148 Z

Wallops No.: G2-577

INSTRUMENTING AGENCY

University of Michigan

KEY PERSONNEL

H. F. Schulte (U of M), Chief Scientist; L. M. Jones (U of M), Project Director, J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of upper atmosphere density, temperature and pressure with U of M 7 inch diameter falling sphere system and with mylar inflatable spheres, one 3' diameter, one 4' diameter and tracked by radar. Comparison of the two measurements will be made.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 85°

Elevation 77°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	NA	NA	NA
Stage 2	Ignition	17	38,500	2300
	Burnout	20.5	49,357	6051
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	187	93.3 st.mi.	

Impact: Time NA, Range 52.1 n.mi., Azimuth NA

ROCKET INFORMATION

NASA No. 10.50 UA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	56			
Extensions				
Stage 1	1364			
Stage 2	203			
Stage 3				
Stage 4				
Total	1623			300

ROCKET-BORNE EQUIPMENT

Telemetry PPM (400 Mc)

One 7" diameter sphere with accelerometers and telemetering

Two inflatable spheres — passive-reflective

Sphere ejection system

GROUND-BASED EQUIPMENT

Telemetry — U of M ground station (400 Mc)

Radar tracking — FPS-16, 584, MOD II, doppler

RESULTS

Rocket performance as predicted. Complete radar tracking of all spheres. Telemetry data recovery adequate.

REPORTS

See Reference A-42.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel

Latitude 37.8°N

Longitude 75.5°W

ROCKET: Nike Cajun

NASA No.: 10.51 CI

Date: 18 Aug. 1961

Time: 0306 Z

Wallops No.: G2-682

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. L. G. Smith (GCA), Chief Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of electron density and electron temperature in the lower ionosphere under nighttime conditions using the Langmuir probe technique.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 105°

Elevation 81.7°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition	17.5	36,500	1800
	Burnout	20.8	48,326	6033
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	185	88 st.mi.	

Impact: Time 365 secs, Range 75.6 n.mi., Azimuth 94°

ROCKET INFORMATION

NASA No. 10.51 CI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	58			65.5
Extensions				
Stage 1	1334	75-1/4	NEP	149.7
Stage 2	199	48-3/8	NEP	107.1
Stage 3				
Stage 4				
Total	1591			322.2

ROCKET-BORNE EQUIPMENT

- Telemetry FM/FM (231.4 Mc)
- Two Langmuir probes (nose and side electrodes)
- Two magnetic aspect sensors
- Two thermistors
- Explosive bolt umbilical disconnect fitting

GROUND-BASED EQUIPMENT

- Telemetry ground station
- Radar tracking

RESULTS

Rocket performance above predicted. Complete telemetry data recovery. Complete radar tracking. Excellent data obtained from Langmuir probes. The magnetic aspect and temperature measurements and the commutator operated perfectly. Good temperature data was obtained from the thermistors.

REPORTS

See References I-7, I-8, I-36.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel

Latitude 37.8°N

Longitude 75.5°W

ROCKET: Nike Cajun

NASA No.: 10.52 CI

Date: 27 Oct. 1961

Time: 0935 Z

Wallops No.: G2-685

INSTRUMENTING AGENCY

Geophysics Corp. of America

KEY PERSONNEL

Dr. L. G. Smith (GCA), Chief Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of electron density and electron temperature in the lower ionosphere under nighttime conditions using the Langmuir probe technique.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 97°

Elevation 76.6°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition	17.5	33,500	1900
	Burnout	20.3	48,678	5893
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	188	91.8 st.mi.	

Impact: Time 371 secs, Range 52.1 n.mi., Azimuth 86°

ROCKET INFORMATION

NASA No. 10.52 CI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	58			65.5
Extensions				
Stage 1	1334.5	75-1/4	NEP	149.7
Stage 2	202			107
Stage 3				
Stage 4				
Total	1594.5			322.2

ROCKET-BORNE EQUIPMENT

- Telemetry FM/FM (231.4 Mc)
- Two Langmuir probes (nose and side electrodes)
- Two magnetic aspect sensors
- Two thermistors
- Explosive bolt umbilical disconnect fitting

GROUND-BASED EQUIPMENT

- Telemetry ground station
- Radar tracking

RESULTS

Rocket performance above predicted. Complete telemetry data recovery. Complete radar tracking. Excellent data were obtained from the nose probe of the structure of the "D" and lower "E" region. The side probe did not give significant data.

REPORTS

See References I-7, I-8, I-36.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation \approx Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Cajun

NASA No.: 10.56 UA
 Date: 9 June 1961
 Time: 1802 Z
 Wallops No.: G2-621

INSTRUMENTING AGENCY

University of Michigan

KEY PERSONNEL

E. J. Schaefer (U of M), Chief Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

To measure upper air density and composition from 95 km to peak altitude using a Paul Massenfilter.

FLIGHT INFORMATION

Launcher Setting:
 Azimuth 80°
 Elevation 79°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition	24	49,700	2000
	Burnout	27.3	59,086	5522
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	202	88.4 st.mi.	

Impact: Time 364 secs , Range 75 n.mi. , Azimuth 100°

ROCKET INFORMATION

NASA No. 10.56 UA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	72.5	23.38	Thrust face	69
Extensions				
Stage 1	1320	75	NEP	148.9
Stage 2	202	48.69	NEP	107.1
Stage 3				
Stage 4				
Total	1594			325.1

ROCKET-BORNE EQUIPMENT

Telemetry FM/FM (240.2 Mc), two BRL shroud antennas
Nosecone and cannister ejection mechanism
Paul Massenfilter and supporting circuitry

GROUND-BASED EQUIPMENT

Telemetry ground station
Tracking radars — FPS-16, MOD II, 584

RESULTS

Rocket performance above predicted. Complete telemetry data recovery. Adequate radar tracking. Nosecone and cannister did not eject and no useful data was obtained.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel

Latitude 37.8°N

Longitude 75.5°W

ROCKET: Nike Cajun

NASA No.: 10.57 UA

Date: 26 July 1951

Time: 1922 Z

Wallops No.: G2-622

INSTRUMENTING AGENCY

University of Michigan

KEY PERSONNEL

E. J. Schaefer (U of M), Chief Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

To measure upper air density and composition from 95 km to peak altitude using a Paul Massenfilter.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 115.5°

Elevation 76.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition	17	37,500	1830
	Burnout	20.2	48,741	5810
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	185	88.7 st.mi.	

Impact: Time 360 secs, Range 65.1 n.mi., Azimuth 118°

ROCKET INFORMATION

NASA No. 10.57 UA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	72.5	45.62	Nose tip	69
Extensions				
Stage 1	1323	74.88	NEP	148.9
Stage 2	203	48.63	NEP	107.1
Stage 3				
Stage 4				
Total	1598.2	99.8	NEP	325.1

ROCKET-BORNE EQUIPMENT

Telemetry FM/FM (240.2 Mc), two BRL shroud antennas
Nosecone and cannister ejection mechanism
Paul Massen filter and supporting circuitry

GROUND-BASED EQUIPMENT

Telemetry ground station
Tracking radars — FPS-16, MOD II, 584

RESULTS

Rocket performance above predicted. Complete radar tracking. Power loss at T + 6.1 seconds caused failure of telemetry. No data was obtained.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.
 Elevation \approx Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Cajun
 NASA No.: 10.64 GA
 Date: 21 Dec. 1961
 Time: 1954 Z
 Wallops No.: G2-772

INSTRUMENTING AGENCY

GSFC and University of Michigan

KEY PERSONNEL

N. W. Spencer (GSFC), Project Scientist; L. H. Brace (U of M), Chief Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

To test thermal coating of SiO coated surfaces.

FLIGHT INFORMATION

Launcher Setting:				
Azimuth <u> </u> 102°				
Elevation <u> </u> 75°				
		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition	17	37,000	1900
	Burnout	22	58,200	5750
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	177	81.8 st.mi.	

Impact: Time 350 secs , Range 71.2 n.mi. , Azimuth 111°

ROCKET INFORMATION

NASA No. 10.64 GA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	74.5			65
Extensions				
Stage 1	1331.21	74-3/8	NEP	149.7
Stage 2	199	48-5/8	NEP	107.1
Stage 3				
Stage 4				
Total	1604.71			321.8

ROCKET-BORNE EQUIPMENT

Telemetry FM/FM (240.2 Mc)
Two S-L type electron temperature probe electronic unit
Six SiO coated electron temperature probes
Door opening mechanism

GROUND-BASED EQUIPMENT

Telemetry ground station
Tracking radars – FPS-16, MOD II, Spandar, MIT
Ionosonde

RESULTS

Rocket performance as predicted. Complete telemetry data recovery. Complete radar tracking, 584, FPS-16, MOD II, Spandar. All scientific objectives were fulfilled.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Cajun

NASA No.: 10.72 NA
 Date: 18 Nov 1961
 Time: 0630 Z
 Wallops No.: L2-688

INSTRUMENTING AGENCY

Langley Research Center, Langley Field, Va.

KEY PERSONNEL

R. A. Hord (LRC), Project Scientist; H. B. Tolefson (LRC), Project Scientist; W. E. Lanford (LRC), Experimenter

EXPERIMENT

To obtain a persistent and visible light emission at altitudes of 100 and 107.5 km. through the release of vaporous bismuth into the atmosphere.

FLIGHT INFORMATION

Launcher Setting:

Azimuth No data
 Elevation No data

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition			
	Burnout		No data available	
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak		88 st.mi.	

Impact: Time _____, Range _____, Azimuth _____

ROCKET INFORMATION

NASA No. 10.72 NA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload				
Extensions				
Stage 1		No data		
Stage 2				
Stage 3				
Stage 4				
Total				

ROCKET-BORNE EQUIPMENT

Vaporous bismuth

GROUND-BASED EQUIPMENT

Photographic stations

RESULTS

Rocket performance was satisfactory. Bismuth vapor was released at approximately 110 km and 120 km. The photographic station had clear viewing and reported good results.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Nike Cajun

NASA No.: 10.74 GI

Date: 21 Dec. 1961

Time: 2131 Z

Wallops No.: G2-744

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

Dr. J. A. Kane (GSFC), Project Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Measurement of electron density and electron collision frequency under undisturbed conditions. Positive ion conductivity will also be measured.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 96°

Elevation 76.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition	18	35,400	2800
	Burnout	20.3	45,382	5121
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	153	62 st.mi.	

Impact: Time 306 secs, Range 42.6 n.mi., Azimuth 96°

ROCKET INFORMATION

NASA No. 10.74 GI

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	95.5			79.5
Extensions				
Stage 1	1329.66	75	NEP	154
Stage 2	200	48.5	NEP	107
Stage 3				
Stage 4				
Total	1625.16			335.8

ROCKET-BORNE EQUIPMENT

Telemetry FM/FM (240.2 Mc)
Faraday rotation receiver (4900 kc)
Differential absorption receiver (3030 kc)
Nose probe, impedance probe oscillator, solar aspect sensor
Antenna door operating mechanism — 2 Raymond 10' antenna

GROUND-BASED EQUIPMENT

Telemetry ground station (240.2 Mc)
Transmitter (3030 kc)
Transmitter (4900 kc)
Tracking radar: FPS-16, 584, MOD II, Spandar

RESULTS

Rocket performance below predicted. Rocket went into flat spin. Complete telemetry data recovery. Complete radar tracking. All electronic instruments worked as expected. Due to low spin rate electron density probe antennas did not deploy properly.

REPORTS

See Reference E-24.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Fort Churchill, Canada

Elevation 70 ft

Latitude 58.7°N

Longitude 93.8°W

ROCKET: Nike Cajun

NASA No.: 10.76 GE

Date: 10 Dec. 1961

Time: 1701 Z

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

Dr. K. Ogilvie (GSFC), Project Scientist; Dr. C. Fichtel (GSFC), Project Scientist; J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

To obtain background information on auroral zone radiations in the principal energy region.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 124°

Elevation 88°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.6	4,500	3700
	Ignition	21.4	50,000	1700
Stage 2	Burnout	24.6	61,000	5300
	Ignition			
Stage 3	Burnout			
	Ignition			
Stage 4	Burnout			
	Ignition			
Peak			82 st.mi.	

Impact: Time 370 secs, Range 21.9 n.mi., Azimuth 141°

ROCKET INFORMATION

NASA No. 10.76 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	84	38.4	Nose tip	70
Extensions				
Stage 1	1279.5			154.3
Stage 2	201	55.1	FHC	107
Stage 3				
Stage 4				
Total	1564.5			331.3

ROCKET-BORNE EQUIPMENT

Telemetry FM/FM (225 Mc)

SARAH beacon (243 Mc), temperature sensor, accelerometer, magnetometer, anton 302

Geiger counter, ZnS scintillation counter, CsI scintillation counter. Ilford G-5 and G-2 nuclear emulsions. Parachute recovery package.

GROUND-BASED EQUIPMENT

Telemetry ground station, SARAH receivers

Radar tracking, SARAH beacon

Ionosphere ground station, sound ranging network

RESULTS

Rocket performance as predicted. Telemetry data recovery adequate. Radar tracking adequate. All electronic instrumentation functioned well. Nuclear emulsion were recovered in good condition. All recovery aids functioned well.

REPORTS

No report issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Pacific Missile Range
Point Arguello, Calif.
Elevation \approx Sealevel
Latitude 34.7° N
Longitude 120.6° W

ROCKET: Journeyman (D8)
NASA No.: 11.01 GE (NERV)
Date: 19 Sept. 1960
Time: 1635 Z
PMR No.: SL-29-60

INSTRUMENTING AGENCY

GSFC and Florida State University

KEY PERSONNEL

J. E. Naugle (GSFC), Project Scientist; C. F. Fichtel (GSFC), Project Scientist; C. E. Campbell (GSFC), Rocket Vehicle Manager; Prof. Debusque (FSU), Spore Expert; R. A. Christiansen (PMR), Engineer

EXPERIMENT

Primary objective – Measure flux, energy spectra and composition of inner Van Allen radiation belt by recovering nuclear emulsions. Secondary objectives – (1) Determine radiation effect on biological material (spores), (2) Increase the state of the art technology for reentry and recovery of small space vehicles.

FLIGHT INFORMATION

Launcher Setting:		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Azimuth	<u> </u> 193°			
Elevation	<u> </u> 83°			
Stage 1	Burnout	28.1	46,814	2,948
Stage 2	Ignition	37	68,351	2,476
	Burnout	43.5	90,000	4,460
Stage 3	Ignition	43.5	90,000	4,460
	Burnout	50.4	132,240	8,618
Stage 4	Ignition	57	191,000	9,233
	Burnout	103.1	717,000	17,000
	Peak	830	1171 st.mi.	

Impact: Time 1700 secs , Range 1159 n.mi. , Azimuth Coordinates 15.3° N, 126.4° W

ROCKET INFORMATION

NASA No. 11.01 GE

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	125.16	15.54	Nose tip	
Extensions				
Stage 1	see total			
Stage 2, 3, 4 & PL	6,396	383	Nose tip	482.85
Stage 3, 4 & PL	2,475	154	Nose tip	295.25
Stage 4 & PL	647	48	Nose tip	114.65
Total	13,927	503	Nose tip	751.75

ROCKET-BORNE EQUIPMENT

Stack of twenty one G-5 nuclear emulsions with programmed rotation in retractable cylinder, three packages of mold spores inside recovery vehicle

C-band radar beacon

Radar reflective parachute, UHF radio beacon, flashing light; sea dye markers

GROUND-BASED EQUIPMENT

FPS-16 radars (C beacon and skin track) at Pt. Arguello and San Nicholas Is., Bowen acceleration cameras, impact prediction system using tracking data, motion picture cameras

Two WV-2 aircraft with UHF direction finder and APS20 radar;

Three destroyers and one destroyer tender (1st Fleet) with DF and radar

RESULTS

All experiments functioned well. Completely successful, recovery vehicle contacted during descent and recovery made by $t + 3$ hours. Rocket vehicle performance excellent. Impacted within pre-flight predicted nominal area. Excellent performance by impact prediction system using tracking data, 124 seconds of position and velocity FPS-16 tabulated data.

REPORTS

See Reference E-6.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Pacific Missile Range, Point
Arguello, Calif.

Elevation ≈ Sealevel
Latitude 34.7°N
Longitude 120.6°W

ROCKET: Journeyman

NASA No.: 11.04 GB
Date: 15 Nov. 1961
Time: 1449 Z

INSTRUMENTING AGENCY

Florida State University, AEC, University of Bern Switzerland, GE, GSFC, Ames Research Center

KEY PERSONNEL

Dr. R. Young (Ames), Project Scientist; D. Kniffen (GSFC), Project Scientist; O. Berg (GSFC), Project Scientist; C. E. Campbell (GSFC), Vehicle Manager

EXPERIMENT

To make biological dosimetry evaluations of the inner Van Allen belt. To make nuclear emulsion studies. To record, collect and recover extraterrestrial interplanetary matter, to measure absorbed dose of ionizing radiation encountered in flight.

FLIGHT INFORMATION

Launcher Setting: Azimuth <u>193° N</u> Elevation <u>83°</u>		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	26.95	40,895	2,874
Stage 2	Ignition	36.7	67,000	2,571
	Burnout	44.95	95,449	5,073
Stage 3	Ignition	45.45	97,939	5,336
	Burnout	52.45	148,745	8,494
Stage 4	Ignition	56.2	179,749	8,445
	Burnout	102.2	708,928	16,271
	Peak	828	1115.9 st.mi.	

Impact: Time 1595.7 secs, Range _____, Azimuth NA; Lat. 28.5N,
long. 129.6W

ROCKET INFORMATION

NASA No. 11.04 GB

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	135			42.3
Extensions				
Stage 1	9,811.9	619.1	Nose	268.9
Stage 2	1,871.9	382.6	Nose	187.6
Stage 3	1,860.5	204.3	Nose	194.4
Stage 4	562.5	51.53	Nose	53.1
Total	14,241.8	506.45		746.3

ROCKET-BORNE EQUIPMENT

Emulsion experiment, micrometeorite experiment
Biological experiment, C-band radar beacon
Recovery package with S-band chaff and flashing light.

GROUND-BASED EQUIPMENT

No telemetry — radar tracking
Recovery force — four ships, two helicopters and WV-2 aircraft

RESULTS

Rocket performance as predicted but did not fly on course and recovery was not effected.
No data was obtained.

REPORTS

See Reference B-1.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Pacific Missile Range, Point
Arguello, Calif.

Elevation ~ Sealevel
Latitude 34.7° N
Longitude 120.6° W

ROCKET: Journeyman

NASA No.: 11.05 GB
Date: 18 Nov. 1961
Time: 1342 Z

INSTRUMENTING AGENCY

Florida State University, AEC, University of Bern Switzerland, GE, GSFC, Ames Research Center

KEY PERSONNEL

Dr. R. S. Young (Ames), Project Scientist; D. A. Kniffen (AEC), Project Scientist; O. Berg (GSFC), Project Scientist; C. E. Campbell (GSFC), Vehicle Manager

EXPERIMENT

To make biological dosimetry evaluations of the inner Van Allen belt. To make nuclear emulsion studies. To record, collect and recover extraterrestrial interplanetary matter, to measure absorbed dose of ionizing radiation encountered in flight.

FLIGHT INFORMATION

Launcher Setting:
Azimuth 190.5°
Elevation 83°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	27.36	41,164	2,883
Stage 2	Ignition	38.11	70,334	2,591
	Burnout	45.61	99,016	5,050
Stage 3	Ignition	46.16	101,428	5,050
	Burnout	50.36	125,769	6,750
Stage 4	Ignition	61.61	197,438	6,520
	Burnout	100.6	548,571	13,544
	Peak	602	657 st.mi.	

Impact: Time 1145 secs, Range _____, Azimuth NA lat. 20°08'30"N
long. 117°48'07"W

ROCKET INFORMATION

NASA No. 11.05 GB

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	135			42.3
Extensions				
Stage 1	9,811.9	619.1	Nose	268.9
Stage 2	1,871.9	382.6	Nose	187.6
Stage 3	1,860.5	204.3	Nose	194.4
Stage 4	562.5	51.53	Nose	53.1
Total	14,241.8	506.45		746.3

ROCKET-BORNE EQUIPMENT

Emulsion experiment, micrometeorite experiment
Biological experiment, C-band radar beacon
Recovery package with S-band chaff and flashing light.

GROUND-BASED EQUIPMENT

No telemetry – radar tracking.
Recovery force – four ships, two helicopters and WV-2 aircraft

RESULTS

Burnout velocity and peak altitude were low. 4th stage veered off course. Radar tracking was inadequate. Payload was not recovered.

REPORTS

See Reference B-1.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Special Projects

NASA No.: 12.01 GT

Date: 2 May 1961

Time: 2115 Z

Wallops No.: G1-554

INSTRUMENTING AGENCY

University of Michigan

KEY PERSONNEL

N. W. Spencer (GSFC), Chief Scientist; G. R. Carignan (U of M), Scientist; N. E. Peterson (GSFC), Vehicle Manager

EXPERIMENT

Flight test of a split, ejectable, fiberglass nosecone on a standard Nike booster for evaluation of air loading and operation of ejection system.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 135°

Elevation 87.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3	4500 (est)	2700 (est)
Stage 2	Ignition			
	Burnout			
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	54	8.5 st.mi.	

Impact: Time 114 secs, Range .8 n.mi., Azimuth 90°

ROCKET INFORMATION

NASA No. 12.01 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	700			69
Extensions				
Stage 1	1312			
Stage 2				
Stage 3				
Stage 4				
Total	2012	102	Nose tip	204.5

ROCKET-BORNE EQUIPMENT

Telemetry FM/FM (240 Mc)
Nosecone ejection mechanism
Magnetometers

GROUND-BASED EQUIPMENT

Telemetry ground station
Photographic coverage — 7 camera stations
All Wallops radar

RESULTS

Rocket performance as predicted. Radar data good. Complete telemetry data. Nosecone halves were recovered. Clamshell for later Argo D-4 flights is apparently satisfactory.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Nike Apache

NASA No.: 14.01 GT

Date: 25 May 1961

Time: 1703 Z

Wallops No.: G2-614

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

E. F. Sornit (GSFC), Project Scientist; R. B. Jenkins (GSFC), Vehicle Manager;

L. K. Barker

EXPERIMENT

Performance test of Nike Apache rocket. Apache was furnished at no cost by Thiokol, in return for motor pressure vs. time data from the flight. Payload section was made of fiberglass.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 108°

Elevation 80.5°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.4	5,000	3200
Stage 2	Ignition	18	35,000	1600
	Burnout	23.6	60,122	6624
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	215	120 st.mi.	

Impact: Time 422 secs, Range 72.1 n.mi., Azimuth 145°

ROCKET INFORMATION

NASA No. 14.01 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	54.4	52	Nose tip	78
Extensions				
Stage 1				
Stage 2	268.75	120.20	Nose tip	185-1/4
Stage 3				
Stage 4				
Total	1589			335-5/8

ROCKET-BORNE EQUIPMENT

Pitch-yaw gage, three accelerometers, two magnetometers
Chamber pressure gage, ten temperature gages, five strain gages
FM/FM telemetry (240.2 Mc)
Radar skin tracked

GROUND-BASED EQUIPMENT

FM/FM ground station (240.2 Mc)
Tracking radars — MIT, FPS-16, MOD II, 584

RESULTS

Rocket performance was normal. Good data recovery. Good radar tracking.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ≈ Sealevel

Latitude 37.8° N

Longitude 75.5° W

ROCKET: Nike Apache

NASA No.: 14.02 GT

Date: 16 Aug. 1961

Time: 2027 Z

Wallops No.: G2-615

INSTRUMENTING AGENCY

GSFC

KEY PERSONNEL

E. F. Sornit (GSFC), Project Scientist; R. B. Jenkins (GSFC), Vehicle Manager

EXPERIMENT

Performance test of Nike Apache rocket.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 110°

Elevation 80.8°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout			
Stage 2	Ignition	20	40,000	1400
	Burnout	26	80,000	6300
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	210	113 st.mi.	

Impact: Time 420 secs, Range 110° n.mi., Azimuth 122°

ROCKET INFORMATION

NASA No. 14.02 GT

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	59.4	57	Tip	78
Extensions				
Stage 1	1274			150-5/8
Stage 2	214	119-3/4	Tip	107
Stage 3				
Stage 4				
Total	1594			335-5/8

ROCKET-BORNE EQUIPMENT

Telemetry FM/FM (240.2 Mc)

GROUND-BASED EQUIPMENT

FM ground station

Radar S-band, C-band, Spandar, MIT, FPS-16, MOD II, 584

Optical — 35 mm high speed cameras

RESULTS

Complete data recovery. Good telemetry data to splash. Rocket fins were slotted for C-band radar reflection. This technique apparently did not work.

REPORTS

No reports published.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel

Latitude 37.8°N

Longitude 75.5°W

ROCKET: Nike Apache

NASA No.: 14.03 UA

Date: 14 July 1961

Time: 0257 Z

Wallops No.: G2-647

INSTRUMENTING AGENCY

University of New Hampshire

KEY PERSONNEL

Dr. L. J. Cahill, Jr. (U of N.H.), Project Scientist; J. P. Heppner (GSFC), Scientist;
J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Determine the altitude and intensity of electric current system in the ionosphere over Wallops Island, Va. Also evaluate a new method of altitude determination during rocket flight.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 77°

Elevation 76°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.5 (est)	4,000 (est)	3050 (est)
Stage 2	Ignition	20		
	Burnout	26	76,000	6200
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	219	122 st.mi.	

Impact: Time 428 secs , Range 99 n.mi. , Azimuth 92.5°

ROCKET INFORMATION

NASA No. 14.03 UA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	54			70
Extensions				
Stage 1	1317.72	74-11/16	NEP	
Stage 2	216			
Stage 3				
Stage 4				
Total	1587			326

ROCKET-BORNE EQUIPMENT

Telemetry FM/FM (240.2 Mc)
Magnetometer coil
Geiger counter
Densitometer
Aspect sensor

GROUND-BASED EQUIPMENT

FM ground station (240.2 Mc)
Radar — MOD II, 584, FPS-16, MIT
Optical camera stations #1 and #3, type 40"—35 mm

RESULTS

Rocket was very stable, little change in orientation of spin axis until reentry into the atmosphere. Telemetry data recovery was adequate. Complete radar tracking. Magnetometer data has low S/N ratio due to orientation of rocket spin axis close in direction to magnetic field direction.

REPORTS

No reports issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.
 Elevation ~ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Apache
 NASA No.: 14.04 UA
 Date: 14 July 1961
 Time: 1500 Z
 Wallops No.: G2-648

INSTRUMENTING AGENCY

University of New Hampshire

KEY PERSONNEL

Dr. L. J. Cahill, Jr. (U of N.H.), Project Scientist; J. P. Heppner (GSFC), Scientist;
 J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Determine the altitude and intensity of electric current system in the ionosphere over Wallops Island, Va. Also evaluate a new method of altitude determination during rocket flight.

FLIGHT INFORMATION

Launcher Setting:

Azimuth 87°

Elevation 81°

		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Stage 1	Burnout	3.5	4,000 (est)	3050 (est)
Stage 2	Ignition	20	41,500	1500
	Burnout	25.6	64,381	6590
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	222	124.2 st.mi.	

Impact: Time 440 secs , Range 58.6 n.mi. , Azimuth 88°

ROCKET INFORMATION

NASA No. 14.04 UA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	54			70
Extensions				
Stage 1	1330	74-3/4	NEP	134-3/4
Stage 2	216			
Stage 3				
Stage 4				
Total	1600			

ROCKET-BORNE EQUIPMENT

Telemetry FM/FM (240.2 Mc)
Magnetometer coil
Geiger counter
Densitometer — NRC Equipment Corp., Newton, Mass.
Aspect sensor

GROUND-BASED EQUIPMENT

FM ground station
Radar 584, MOD II, FPS-16, MIT
Optical camera stations #1, 2 and 3, Type 40" 35 mm, 20" 35 mm, 40" 35 mm

RESULTS

Rocket was very stable, little change in orientation of spin axis until reentry into the atmosphere. Telemetry data recovery was adequate, magnetometer data has low S/N ratio due to orientation of rocket spin axis close in direction to magnetic field direction. Complete radar skin tracking.

REPORTS

No reports Issued.

NASA SOUNDING ROCKET SUMMARY

IDENTIFICATION

LAUNCH SITE: Wallops Island, Va.

Elevation ~ Sealevel
 Latitude 37.8° N
 Longitude 75.5° W

ROCKET: Nike Apache

NASA No.: 14.05 UA
 Date: 20 July 1961
 Time: 1312 Z
 Wallops No.: G2-649

INSTRUMENTING AGENCY

University of New Hampshire

KEY PERSONNEL

Dr. L. J. Cahill, Jr. (U of N.H.), Project Scientist; J. P. Heppner (GSFC), Scientist;
 J. A. Sterhardt (GSFC), Vehicle Manager

EXPERIMENT

Determine the altitude and intensity of electric current system in the ionosphere over Wallops Island, Va. Also evaluate a new method of altitude determination during rocket flight.

FLIGHT INFORMATION

Launcher Setting:		Time (seconds)	Altitude (feet)	Vertical Velocity (feet/second)
Azimuth	<u>84°</u>			
Elevation	<u>79°</u>			
Stage 1	Burnout			
Stage 2	Ignition	21	42,845	2200
	Burnout	25.6	61,516	6523
Stage 3	Ignition			
	Burnout			
Stage 4	Ignition			
	Burnout			
	Peak	218	120 st.mi.	

Impact: Time 427 secs, Range 80.8 n.mi., Azimuth 85°

ROCKET INFORMATION

NASA No. 14.05 UA

	Weight (pounds)	Center of Gravity (inches)	Center of Gravity Reference	Length (inches)
Payload	54			70
Extensions				
Stage 1	1333	75-1/8	NEP	134-3/4
Stage 2	216			
Stage 3				
Stage 4				
Total	1603			326

ROCKET-BORNE EQUIPMENT

Telemetry FM/FM (240.2 Mc)
Magnetometer coil
Geiger counter
Densitometer — NRC Equipment Corp., Newton, Mass.
Aspect sensor

GROUND-BASED EQUIPMENT

FM ground station
Radar — 584, MOD II, FPS-16, MIT
Optical camera station #1, #3, type 40" 35 mm

RESULTS

Rocket performance as predicted. Adequate telemetry recovery. Complete radar skin tracking. The stability of this rocket was not as high as on 14.03 UA and 14.04 UA. The spin axis rotated to a considerable angle with the magnetic field and good S/N ratio was obtained during much of this flight.

REPORTS

No reports issued.

REFERENCES

REFERENCE CODE LETTERS

Ref. Code Letter and Number	Discipline	Experiment
A-1 to A-19	Aeronomy	Sodium Experiment
A-20 to A-39	Aeronomy	Grenade Experiment
A-40	Aeronomy	
E-1	Energetic Particles and Fields	
I-1	Ionospheric Physics	
S-1	Solar Physics	
G-1	Galactic Astronomy	
R-1	Radio Astronomy	
B-1	Biological	
P-1	Special Projects	
T-1	Test and Support	

REFERENCES – AERONOMY – METEOROLOGY

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A-2	R.J. Levy E.R. Manring	Photography of Luminous External Objects Against a Twilight Sky	GCA Tech. Report 61-4-N	General Sodium
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A-21	W. Nordberg W. Smith	A Manual Describing the Rocket Grenade Experiment	GSFC X-651-63-17	Grenade— General
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A-23	W. Nordberg	Aero Elastic Stability of Nike Cajun With Grenade Experiment Instrumentation	GSFC Tech. Note	Grenade— General
A-24	W. Smith P. Sacher P. Swartz J. Theon	Temperature, Pressure, Density and Wind Measurements With the Rocket Grenade Experiment 1960-1963	GSFC X651-64-106	Grenade— General
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REFERENCES — IONOSPHERIC PHYSICS

Ref. No.	Authors	Title	Publisher & Report No.	NASA Rocket No.
I-1	J.E. Jackson S.J. Bauer	Rocket Measurement of a Daytime Electron Density Up to 620 km	GSFC NASA TN D-413	8.10GI
I-2	S.J. Bauer J.E. Jackson	Rocket Measurement of the Upper Ionosphere by a Radio Propagation Technique	NASA TN D-1123	8.10GI
I-3	J.E. Jackson R.W. Knecht S. Russell	First Topside Sounding of the Ionosphere	GSFC NASA TN D-1538	8.15AI 8.17AI
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S-2	W.E. Behring W.N. Neupert J.C. Lindsay	Preliminary Solar Flare Observations with a Soft X-ray Spectrometer on the Orbiting Solar Observatory	GSFC X-614-62-29	4.25GS
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G-2	E. Reed R. Scolnik	Nighttime Measurement of Ozone Above 40 km	GSFC X-613-64-267	4.05GG
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G-7	NMSU	Rocket Performance Telemetry Data Report No. 32	NMSU	4.08GI
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G-9	NMSU	Rocket Performance Telemetry Data Report No. 11	NMSU	4.11GA
G-10	NMSU	Rocket Performance Telemetry Data Report	NMSU	4.12GT
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T-2	R.B. Jenkins	Preliminary Reduction of and Comments on 3.36 Flight Data	GSFC Memo	3.36GT
T-3	NMSU	Rocket Performance Telemetry Data	NMSU	5.01GT
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T-5		Acceleration and Vibration Data NRL Memo Report 1024	NRL	8.01GT 8.02GT
T-6		Flight Analysis Report 11406	Martin Co.	8.01, 802
T-7	NMSU	Rocket Performance Telemetry Report No. 19	NMSU	10.49GT
T-8	GSFC	Post Flight Summary	GSFC	10.49GT
T-9	NMSU	Rocket Performance Telemetry Report No. 15	NMSU	3.29GT

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