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Sounding Rocket Flight Data Summary,
1977-October 1990

EDWARD F. McKENNA

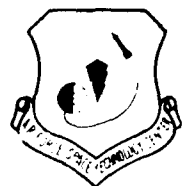


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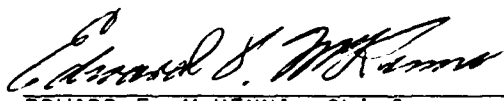
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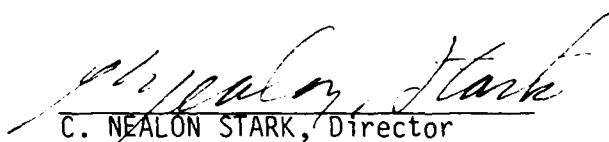


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"This technical report has been reviewed and is approved for publication"


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FOR THE COMMANDER


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13. ABSTRACT (Maximum 200 words) This report is a summary listing of all GL sounding rockets launched from 1977 to October 1990. Listed data includes launch date, rocket type, launch location, principal scientist, payload weight, payload diameter, apogee information, system performance and experiment description.			
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Sounding Rocket Flight Data Summary 1977-October 1990

1. INTRODUCTION

The sounding rocket has become the standard workhorse for carrying scientific experiments to the upper atmosphere and beyond for exploration and investigation.

Our first sounding rocket was a German V-2, launched from the White Sands Missile Range on 22 August 1946. Over 40 years have passed and the need for sounding rockets still continues.

This report is a summary of the sounding rockets flown by the Air Force Geophysics Laboratory from 1977 through October 1990. As of 15 March 1989, AFGL was redesignated Geophysics Laboratory (GL).

Those flown before this period are listed in *Summary of AFCRL Rocket and Satellite Experiments (1946-1966)*, McIntyre A., December 1966, AFCRL-66-868, AD649333, Special Reports, No. 54, and in the *Sounding Rocket Flight Data Summary (1966-1976)*, C. Nealon Stark and Capt. Alan K. Williams USAF, 15 May 1978, AFGL-TR-78-0120, ADA059005, Special Reports, No. 213..

Explanation of Vehicle and Launch Site Codes are on p. 23.

(Received for Publication 26 October 1990.)

SOUNDING ROCKET FLIGHT DATA SUMMARY

1977										Results			
Line	GL No.	Date	PROJECT	Payload	Apogee	Vehicle		Experiments		Exper.	Overall		
No.	Type	Location	Scientist	Wt. (lb)	Alt. (km)	Recovery	Support	Remarks		Performance			
1	A11.712-1	05/18	DENSITY	208	188		S	10 Inch Falling Sphere		S	100%		
	Nike-Hydac	KMR	Faire	12			S						
2	A03.509-1	08/09	SOLAR UV	304	168	S	S	UV Spectrometer		S	100%		
	Aerobee 150	WSMR	Bedo	15	219	S	S						
3	A07.707-1	09/24	DMSP CHEM.	128	178		S	Chemical Release		S	100%		
	Nike-Iroquois	WSMR	Vickery	7.8	205								
4	A10.705-1	09/24	DMSP MS SP	284	199	S	S	Neutral Composition		S	100%		
	Paiute-Tomahawk	WSMR	Philbrick	12	223	S	S						
5	A24.609-1	11/11	TEM-1	3200	228	F	S	UV/IR Target Engine Meas.		P	50%		
	ARIES	WSMR	McIntyre	38	262	P	S						
6	IC730.09-1	11/13	FWFI	740	141	S	S	Field Widened Interferometer		F	F		
	Sergeant	PFRR	Ulwick	17.3	193	S	S						

S - Success

P - Partial Success

F - Failure

SOUNDING ROCKET FLIGHT DATA SUMMARY

1978										Results			
Line	GL No.	Date	PROJECT	Payload	Apogee							Exper.	Overall
No.	Type	Location	Scientist	Wt. (lb)	Alt. (km)	ACS	Vehicle	Support	Experiments	Remarks	Performance		
1	A31.603	01/21	CHARGING	378	257		S		Vehicle Charging	S	100%		
	Astrobee-F	WSMR	Cohen	15	265	S	S						
2	IC819.08-1	02/28	MULTI	410	458	S	S		IR Instruments	S	100%		
	Sergeant-Hydac	PFRR	Ulwick	17.3	350		S						
3	A11.712-3	04/05	DENSITY	210	26		F		10 Inch Falling Sphere		F		
	Nike-Hydac	KMR	Philbrick	12									
4	A11.712-4	04/05	DENSITY	210	174		S		10 Inch Falling Sphere	P	50%		
	Nike-Hydac	KMR	Philbrick	12			S						
5	A04.606-1	05/16	EUV	415	191	S	S		UV Spectrom Photometer	F	F		
	Aerobee 170	WSMR	Heroux	15	230	S	P						
6	A45.710-1	05/20	SMOKE	548	53		S		Chemical Release	S	100%		
	Nike-Nike	WFF	Quesada	17	120								

S - Success

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SOUNDING ROCKET FLIGHT DATA SUMMARY

1978				Results								
Line	GL No.	Date	PROJECT	Payload		Apogee	ACS		Vehicle	Experiments	Exper.	Overall Performance
No.	Type	Location	Scientist	Wt. (lb)	Dia. (in.)	Alt. (km)	Time (sec)	Recovery	Support			
7	A45.710-2	05/22	SMOKE	549		54			S	Chemical Release	S	100%
	Nike-Nike	WFF	Quesada	17		120						
8	A03.604	07/25	DENSITY	376		144			S	Laser Density	P	50%
	Aerobee 150	WSMR	Bedo	15		205		S	P			
9	A45.709-1	09/13	SMOKE	668		45			S	Chemical Release	S	100%
	Nike-Nike	CRR	Quesada	17		110						
10	A45.709-2	09/13	SMOKE	650		45			S	Smoke	S	100%
	Nike-Nike	CRR	Quesada	17		110						
11	A08.708-1	09/15	CLUSTER ION	464		114		S	S	Positive/Negative MS SP	S	75%
	Nike-Tomahawk	WSMR	Nardosi	12		170		F	P			
12	A04.711-1	09/19	SOLAR UV	400		192		S	S	Spectrometer Photometer	S	100%
	Aerobee 170	WSMR	Bedo	15		231		S	S			

S - Success
P - Partial Success
F - Failure

SOUNDING ROCKET FLIGHT DATA SUMMARY

1978					Results					
Line	GL No.	Date	PROJECT	Payload	Apogee	Experiments		Exper.	Overall	
No.	Type	Location	Scientist	Wt. (lb)	Alt. (km)	ACS	Vehicle	Remarks	Performance	
13	IC807.15-1	10/26	DYNAMICS	310	122		S	Auroral Dynamics	S	90%
	Nike-Hydac	PFRR	Ulwick	12	177	F	S			
14	IC806.35-1	10/26	DYNAMICS	136			F	Chemical Release	F	F
	Nike-Javelin	PFRR	Vickery	9						
15	IR807.57-1	10/26	ENERGY	270	160		S	IR Aurora	S	100%
	Nike-Hydac	PFRR	Ulwick	12	198	F	S			
16	EX851.44-1	10/29	EXCEDE I	4470	137	S	S	Electron Guns	F	F
	Talos-Castor	PFRR	O'Neil	32	196	P	F			
17	IC830.09-1	11/13	FWIF II	745	141	S	S	Auroral IR Spectra	F	F
	Sergeant	PFRR	Ulwick	17.3	190	S	S			

S - Success
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F - Failure

SOUNDING ROCKET FLIGHT DATA SUMMARY

1979										Results			
Line	GL No.	Date	PROJECT	Payload	Apogee	ACS	Vehicle	Experiments	Exper.	Overall			
No.	Type	Location	Scientist	Wt. (lb)	Alt. (km)	Recovery	Support		Remarks	Performance			
1	A24.7S1-1	01/20	SPICE I	1832	249	F	S	IR Background		F			
	ARIES	WSMR	Price	38	340		S						
2	A12.9A1-1	02/26	ECLIPSE DEN	214	160		S	10" Falling Sphere	S	100%			
	Nike-Orion	Red Lake	Philbrick	12			S						
3	A12.9A2	02/26	ECLIPSE LWIR	272	141		S	IR Radiometer	S	100%			
	Nike-Orion	Red Lake	Unwick	12	189		S						
4	A10.802-1	02/26	ECLIPSE MS	433	115	S	S	Mass Spect. Gerdiens	S	90%			
	Paiute-Tomahawk	Red Lake	Nardisi	12	173	S	S						
5	A10.802-2	02/26	ECLIPSE MS	433	117	S	S	Mass Spect. Gerdiens	S	90%			
	Paiute-Tomahawk	Red Lake	Nardisi	12	173	P	S						
6	A07.712-2	02/26	ECLIPSE DEN	128	215		S	7" Falling Sphere	S	100%			
	Nike Iroquois	Red Lake	Faire	7.8			S						

S - Success
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F - Failure

SOUNDING ROCKET FLIGHT DATA SUMMARY

1979				Payload		Apogee		Results			
Line	GL No.	Date	PROJECT	Wt. (lb)	Alt. (km)	ACS	Vehicle	Experiments		Exper.	Overall
No.	Type	Location	Scientist	Dia. (in.)	Time (sec)	Recovery	Support			Remains	Performance
7	A31.702	08/03	FWR III	750	172		S	Field Widened Interferometer		S	50%
	Astrobee F	WSMR	Wheeler	17.3	217	S	S				
8	A18.805	08/07	POST B.O.	650	219	S	S	Post Burnout Thrust Meas.		S	90%
	Blk. Brant VC	WSMR	McKenna	17.3	235	S	S				
9	A08.705-2	08/14	DMSP MS	284	190	S	S	Neutral Mass Spectrometer		P	50%
	Nike-Tomahawk	WSMR	Philbrick	12	218	S	S				
10	A08.706-2	08/14	DMSP DENS	282	18		F	10 Inch Density Sphere			F
	Nike-Tomahawk	WSMR	Philbrick	12							
11	A04.703	08/14	DMSP UV	735	111	S	S	UV Spectrometer Photometer		P	50%
	Aerobee 170	WSMR	Heroux	15	222	S	P				
12	A51.970	10/18	EXCEDE II	5690	128	S	S	120 kW Electron Gun		P	50%
	Talos-Castor	PFRR	O'Neil	32	184	F	S				

S - Success
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SOUNDING ROCKET FLIGHT DATA SUMMARY

1979				Payload		Apogee		Results			
Line	GL No.	Date	PROJECT	Wt. (lb)	Alt. (km)	Time (sec)	Recovery	Vehicle	Experiments	Remarks	Overall Performance
No.	Type	Location	Scientist	Dia. (in.)				Support			
13	A45.803-1	10/23	SMOKE	550	50			S	Chemical Release	S	100%
	Nike-Nike	Peru	Quesada	17							
14	A45.803-2	10/24	SMOKE	550	50			S	Chemical Release	S	100%
	Nike-Nike	Peru	Quesada	17							
15	A45.803-3	10/29	SMOKE	550	50			S	Chemical Release	S	100%
	Nike-Nike	Peru	Quesada	17							

S - Success
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F - Failure

SOUNDING ROCKET FLIGHT DATA SUMMARY

1980					Results						
Line	GL No.	Date	PROJECT	Payload	Apogee	ACS		Experiments		Exper.	Overall
No.	Type	Location	Scientist	Wt. (lb)	Alt. (km)	Recovery	Support			Remarks	Performance
1	A24.609-2	05/21	TEM-2	2997	230	S	S	IR/UV Target Engine Measurements		S	100%
	ARIES	WSMR	McIntyre	38		S	S				
2	A24.6S1-1	08/18	ZIP-I	1246	401	S	S	IR Zodiacal		S	100%
	ARIES	WSMR	Murdock	20.8		S	S				
3	A04.801	09/18	UV	376	197	S	S	Solar Max UV		S	100%
	Aerobee 170	WSMR	Bedo	15		S	S				
4	A10.901-1	10/22	SPE-I	515	88	S	S	Mass Spect. Solar Protons		S	100%
	Paiute-Tomahawk	PFRR	Nardisi	12		S	S				
5	A14.021-1	10/22	SPE-IA	10	88		S	Charged Particles		S	100%
	Super-Arcas	PFRR	Nardisi	4.5			S				
6	A13.073	11/16	ENERGY B	310	195		S	IR Heating		S	100%
	Taurus-Orion	ARR	Stair	12			S				

S - Success
P - Partial Success
F - Failure

SOUNDING ROCKET FLIGHT DATA SUMMARY

1981				Payload		Apogee		Results				
Line	GL No.	Date	PROJECT	Wt. (lb)	Alt. (km)	ACS	Vehicle	Exper.	Remarks	Overall		
No.	Type	Location	Scientist	Dia. (in.)	Time (sec)	Recovery	Support			Performance		
1	A24.7S1-1	02/03	IRBS	1782	389		S		Earth limb IR Background	F		
	ARIES	WSMR	Murdock	38			Failure			F		
2	A30.072	02/05	FWIF IV	790	130	S	S		Field Widened Interferometer	F		
	Sergeant	PFRR	Wheeler	17.3		S	S					
3	A13.030	03/07	AURORAL E1	437	150	S	S		UV Aurora	100%		
	Taurus-Orion	PFRR	McMahon Vantassel	14			S					
4	A13.031	03/07	AURORAL E2	376	164	S	S		UV Aurora	100%		
	Taurus-Orion	PFRR	McMahon Paulson	14			S					
5	A13.020	03/07	AURORAL E3	324	188		S		Mass Spectrometer	100%		
	Taurus-Orion	PFRR	Nardosi	12			S					
6	A10.903	03/07	AURORAL E4	270	175		S		10" Sphere/ E-Field/Chemical	100%		
	Paiute-Tomahawk	PFRR	Many	12			S					

S - Success
P - Partial Success
F - Failure

SOUNDING ROCKET FLIGHT DATA SUMMARY

1981				Payload		Apogee		Results			
Line	GL No.	Date	PROJECT	Wt. (lb)	Alt. (km)	ACS	Vehicle	Experiments		Exper.	Overall
No.	Type	Location	Scientist	Dia. (in.)	Time (sec)	Recovery	Support			Remarks	Performance
7	A24.6S1-2	07/31	ZIP II	1260	395	S	S	IR Zodical		S	100%
	ARIES	WSMR	Murdock	20.8		S	S				
8	A10.901-2	10/26	SPE-2	501	96	S	S	Mass Spec Solar Proton		S	100%
	Palute-Tomahawk	PFRF	Narcisi	12		S	S				
9	A30.175	11/07	FWIF V	790	138	S	S	Field Widened Interferometer		Failure	F
	Sergeant	PFRF	Wheeler	17.3		S	S				

S - Success
P - Partial Success
F - Failure

SOUNDING ROCKET FLIGHT DATA SUMMARY

1982					Results							
Line	GL No.	Date	PROJECT	Payload	Apogee	ACS		Vehicle		Exper.	Overall	
No.	Type	Location	Scientist	Wt. (lb)	Alt. (km)	Dia. (in.)	Time (sec)	Recovery	Support	Remarks	Performance	
1	A24.7S2-2	01/23	FIRSSE	1484	378			S	S	FAR IR	S	100%
	ARIES	WSMR	Price	38	332			S	S			
2	A24.609-3	05/28	TEM-3	3100	236			S	S	IR/UV Target Engine Measurements	S	80%
	ARIES	WSMR	McIntyre	38	260			S	S			
3	A13.277	06/29	TRACER	402	150				S	Truth Rocket	S	100%
	Taurus-Orion	WFF	Picard	12	198				S			
4	A19.124-1	09/08	BIME	460	323				S	Ionospheric Modification	S	100%
	Blk. Brant VIII	NRR	Nardisi	17.3					S			
5	A20.123-1	09/08	BIME	175	524				S	Ionospheric Irregularities	S	100%
	Sonda III	NRR	Nardisi	11.8	384				S			
6	A20.123-2	09/13	BIME	174	549				S	Ionospheric Irregularities	Partial	50%
	Sonda III	NRR	Nardisi	11.8	388				S			

S - Success
P - Partial Success
F - Failure

SOUNDING ROCKET FLIGHT DATA SUMMARY

1982					Results						
Line	GL No.	Date	PROJECT	Payload	Apogee	ACS		Vehicle	Experiments	Exper.	Overall
No.	Type	Location	Scientist	Wt. (lb)	Alt. (km)	Recovery	Support			Remarks	Performance
7	A19.124-2	09/13	BIME	465	334		S		Ionospheric Modification	S	100%
	Blk Brant VIII	NRR	Nardisi	17.3			S				
8	A24.7S2-3	09/15	SPICE 2	1494	359	S	S		IR Celestial Background	S	100%
	ARIES	WSMR	Price	38	324	S	S				

S - Success
 P - Partial Success
 F - Failure

SOUNDING ROCKET FLIGHT DATA SUMMARY

1983										Results			
Line	GL No.	Date	PROJECT	Payload		Apogee							
No.	Type	Location	Scientist	Wt. (lb)	Dia. (in.)	Alt. (km)	ACS	Recovery	Vehicle	Experiments	Remarks	Overall Performance	
1	A31.200	03/01	SES	640		197	S		S	Sensor Ejection System	S	100%	
	Astrobe F	WSMR	McKenna	17.3			S		S				
2	A51.971	03/18	ELIAS	1492		305	S		S	Earth Limb IR Aurora	S	80%	
	Talos-Castor	PFRR	Nadile	32		280	F		S				
3	A30.276	04/12	FWIF VI	903		140	S		S	Field Widened Interferometer	S	100%	
	Sergeant	PFRR	Cook	17.3		185	S		S				
4	A04.902	04/19	UV	345		204	S		S	UV Spectrometer/ Photometer	S	100%	
	Aerobee 170	WSMR	Heroux	15		237	S		S				
5	A14.311-1	06/14	STATE	9		101			S	DC Electron Probe	S	100%	
	Super-Arcas	PFRR	Philbrick	4.5					S				
6	A11.074	06/15	STATE	336		134			S	10 inch Sphere/ Photometer, etc.	S	100%	
	Nike-Hydac	PFRR	Philbrick	9		184			S				

S - Success

P - Partial Success

F - Failure

SOUNDING ROCKET FLIGHT DATA SUMMARY

1983					Results						
Line	GL No.	Date	PROJECT	Payload	Apogee	ACS		Vehicle	Experiments	Exper.	Overall
No.	Type	Location	Scientist	Wt. (lb)	Alt. (km)	Recovery	Support			Remarks	Performance
7	A14.311-2	06/15	STATE	9	106		S		DC Electron Probe	S	100%
	Super-Arcas	PFRR	Philbrick	4.5			S				
8	A14.311-3	06/17	STATE	9	98		S		DC Electron Probe	S	100%
	Super-Arcas	PFRR	Philbrick	4.5			S				
9	A24.260	10/24	ELC-I	1315	283	S	S		IR Earth Limb Clutter	S	100%
	ARIES	WSMR	Murdock	20.8	291	S	S				
10	A20.327-1	10/31	IMS	311	81		F		Mass Spec/ E-Field, etc.	F	F
	Sonda III	WFF	Weber	11.8							
11	A08.708-2	11/09	IMS	125	348		S		Chemical Release	S	100%
	Nike-Tomahawk	WFF	Vickery	9			S				
12	A20.327-2	11/14	IMS	311	55		F		Mass Spec/ E-Field	F	F
	Sonda III	WFF	Weber	11.8							

S - Success
P - Partial Success
F - Failure

SOUNDING ROCKET FLIGHT DATA SUMMARY

1985				Payload	Apogee	Results				
Line	GL No.	Date	PROJECT	Wt. (lb)	Alt. (km)	ACS	Vehicle	Experiments	Exper.	Overall
No.	Type	Location	Scientist	Dia. (in.)	Time (sec)	Recovery	Support		Remarks	Performance
1	A21.426	03/15	PIIE	460	429	S	S	Mass Spec/ E-Field	S	100%
	Black Brant IX	GRN	Weber	12			S			
2	A19.250	06/14	BERT	880	243		S	Beam Emission/ Charging	S	90%
	Black Brant VIII	WSMR	Cohen	17.3	254		S			
3	A44.362	06/17	BEAM	544			F	Equatorial IR Astronomy	F	F
	Castor-Lance	NRR	Price	15						
4	A40.401	11/19	HARP	968	667		S	High Altitude Recovery Dev.	S	95%
	Sonda IV	NRR	McKenna	22	463	S	S			

S - Success
P - Partial Success
F - Failure

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SOUNDING ROCKET FLIGHT DATA SUMMARY

1987					Payload		Apogee		Results				
Line	GL No.	Date	PROJECT		Wt. (lb)	Alt. (km)		ACS	Vehicle		Experiments	Exper.	Overall
No.	Type	Location	Scientist		Dia. (in.)	Time (sec)		Recovery	Support			Remarks	Performance
1	A21.628	02/26	POLAR ARC		552	387		S	S		Mass Spec/ E-Field	S	98%
	Black Brant IX	GRN	Weber		12	319			S				
2	A19.427	03/21	POLAR ARC		503	354			S		Chemical Release Disc Probes	S	100%
	Black Brant VIII	GRN	Weber		17.3	310			S				
3	A12.629	08/14	COLDR		508	86			S		Sub-Sonic Mass Spec	S	100%
	Nike-Orion	WFF	Ballenthin		12	147		S	S				
4	A22.703	12/13	SPEAR I		823	367		S	S		High Voltage Discharge	S	95%
	Black Brant X	WFF	Raike		17.3				S				

S - Success
P - Partial Success
F - Failure

1988				Results						
Line	GL No.	Date	PROJECT	Payload	Apogee	ACS		Experiments	Exper.	Overall Performance
No.	Type	Location	Scientist	Wt. (lb)	Alt. (km)	Recovery	Vehicle			
1	N36.015	02/08	ECHO-7	835	292		S	Electron Gun	S	100%
	Black Brant IX	PFRR	Malcom	17.3			S			

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SOUNDING ROCKET FLIGHT DATA SUMMARY

[illegible]

S - Success
P - Partial Success
F - Failure

[illegible]

22.

GL VEHICLE CODES

The number code consists of the following: The letter "A", two digits, a decimal, three digits.

A identifies a GL rocket.

The two digits before the decimal identify the vehicle flown.

The first digit after the decimal identifies the fiscal year the rocket was approved.

The next two digits represent the using GL science branch.

Vehicle numbers starting with an "N" were GL payloads on NASA rockets. Vehicle numbers starting with IC, IR or EX were DNA sponsored rockets.

GL VEHICLE CODE

02. Mighty Mouse
03. Aerobee 150
04. Aerobee 170
07. Nike-Iroquois
08. Nike-Tomahawk
10. Paiute-Tomahawk
11. Nike-Hydac
12. Nike-Orion
13. Taurus-Orion
14. Super Arcas
18. Black Brant VC
19. Black Brant VIII

GL BRANCH CODE

01-09 LCI
10-19 OPA
20-29 LID
40-49 LIS

GL LAUNCH SITE CODE

ARR - Andoya Rocket Range, Norway
CRR - Churchill Research Range, Manitoba, Canada
GRN - Sondestrom, Greenland
KMR - Kwajalein Missile Range, Marshall Islands
NRR - Barreira Do Inferno, Natal, Brazil
PFRR - Poker Flat Research Range, AK
Red Lake - Red Lake, Ontario, Canada
WFF - NASA/GSFC Wallops Flight Facility, VA
WSMR - White Sands Missile Range, NM

GL VEHICLE CODE

20. Sonda III
21. Black Brant IX
22. Black Brant X
24. Aries
25. Minuteman I
26. TM2 (Talso-M56A1)
30. Sergeant
31. Astrobee F
40. Sonda IVstor
44. Castor-Lance
45. Nike-Nike
51. Talos-Castor

GL BRANCH CODE

50-59 PHG
60-69 OPI
70-79 OPB
80-89 LYA