~~SECRET/E~~

8 August 1969

To: [redacted] cc: D. Bradburn (6) [redacted] 50X1

[redacted]

Subject: SIGINT Mission/P-989 Program
Historical Summary

A historical summary of SIGINT satellite missions and P-989 systems has been prepared. The SIGINT summary includes the payload name, booster or host program name, target type and frequency, vehicle and mission numbers, dates of launch and mission termination, and payload contractor. The P-989 summary adds to this the orbit parameters, system weight, tape recorder performance, antennas and techniques used, and times of various subsystem failures. Also given are the future P-989 schedule and mission concepts which are under active consideration. Some historical concepts which did not progress to orbital systems (at least not in their original form) are included at the end.

DRS:cm [redacted] Poppy (Reentry)

72XX 770 Streamer (cancelled)

73XX - 989 [redacted] 50X1

[redacted]

CONTROL SYSTEM ONLY

~~SECRET/E~~

WORKING PAPERS

Mission No.	Name	Ride	RF Range (MHz)	Launch-Death	Life (Days)	P/L Contr.	Target/Other
				1960 (4 MISSIONS)			
-	Grab I = Solrad I	Transit 2A	2600-3250	22 June-14 Sept.	~~84~~ 90	NRL	GS 330x565 NM, 66.7°
-	Soctop I	Discoverer 13	2500-3200	10-11 Aug.	1	AIL	Vulnerability
-	Soctop II	Discoverer 15	300-3200	13-14 Sept.	1	AIL	Vulnerability
-	Soctop III	Discoverer 17	1000-9000	12-14 Nov.	2	AIL	Vulnerability
-	Dyno 1 = Solrad II	Transit 3A	2-4/8-10 gHz	30 Nov	0	NRL	Booster failure
				11 Oct. 60 1961 (13 MISSIONS)			
-	698 BK I	Samos 2 = P-102	F1=2600-10,000	31 Jan.	0	AIL	GS
-	Dyno = Lofti I	Transit 3B	F1=EK	30 Mar.	0	NRL	Vulnerability) booster
-	Soctop V	Discoverer 22	100-1000	30 Mar.	0	AIL	Vulnerability) failed
-	Soctop IV	Discoverer 24	1000-6000	8 June	0	AIL	Vulnerability
-	Taki I	Discoverer 25	100-6000	16-18 June	2	SEL	ABM/GCI
-	Grab II = Solrad 3	Transit IV	520-550	29 June-~~27 Dec.~~	~~183~~ 14 mos	NRL	ABM 475x540 NM, 66.8°
-	~~Poppy I~~ Sajum I	Thor-Able Star	Not given	29 June	0	NRL	ABM (failed to separate)
-	Wildbill I	Discoverer 26	40-130	7-9 July	2	SEL	ABM
-	Texas Pint I	Discoverer 29	100-150	30 Aug.-1 Sept.	2	AIL	AM/FM environment
-	Topsoc I	Discoverer 30	400-1600	12-17 Sept.	5	AIL	ABM
-	Topsoc II	Discoverer 31	400-1600	17-21 Sept.	5	AIL	ABM
-	Topsoc III	Discoverer 32	400-1600	13-15 Oct.	2	AIL	ABM
-	Topsoc IV	Discoverer 34	400-1600	5-7 Nov.	2	AIL	ABM
-	Grape Juice I	Discoverer 36	60-70	13-18 Dec.	5	HRB	[redacted] 25X1
				1962 (11 MISSIONS)			
7151	698 BK II	Thor Agena B	2500-10,000	21-27 Feb.	6	AIL	[redacted] Booster failure GS-91 x 202 NM R-3/4/62
-	Grape Juice II	Thor Agena B	66-70	17-23 Apr.	6	HRB	[redacted] 25X1
-	Taki II	Thor Agena B	160-175	28 Apr.-5 May	7	ATI	ABM [redacted] 25X1
7152	698 BK III	Thor Agena B (2312)	2500-12,140	18 June	1	AIL	GS-203 x 212 NM R-10/29/63
-	New Jersey I	Thor Agena B	100-200	27 July-1 Aug.	5	Sanders	[redacted] 25X1
-	Grape Juice III	Thor Agena B	66-70	17-22 Sept.	5	HRB	
7201	Plymouth Rock I	Thor Agena B	2000-4000	24-30 Nov.	6	SEL	GS
7203	Vino I	162 Thor Agena D	66-70	4-7 Dec.	3	HRB	[redacted] 25X1
7202	Wildbill II	Poppy Launch	550-620	12 Dec.	0	ATI	ABM

First Assigned Mission No.

SECRET/E

Mission No.	Name	Ride	RF Range (MHz)	Launch - Death	Life (Days)	P/L Contr.	Target/Other
			A = 165-200/320-390/510-610/2000-2950	1962 (continued)			
7101	Poppy III	Thor Agena D	B = 192-237/380-480/570-710/2600-3250 ~~165-2750~~ Solid RF = 165-237/320-480/510-710/2000-3250	12 Dec.-Mar. 65	720	NRL	GS [redacted] Poppy 120 x 1500 NM, 70.3°
7204	Taki III	162 Thor Agena D	160-175	14-20 Dec.	6	ATI	[redacted] 25X1
				1963 (11 MISSIONS)			
7205	New Jersey II	162 Thor Agena D	100-200	7-13 Jan.	6	Sanders	[redacted] 25X1
7153	698 BK IV (2313)	Th-Ag D(2313)	2500-3250	16-18 Jan.	2	AIL	EOB-258 x 280 NM at 82°
7207	Wildbill III	162 Tat-Agena D	150-230	12-26 June	14	ATI	ABM
7216	Wildbill IV	Thor Agena D	150-230	15 June-22 July	37	ATI	ABM-Rode on Poppy
7102	Poppy IV	Thor Agena D	90-4100	15 June-~~25~~ July	40	NRL	EW-GCI - 96 x 495 NM, 69.4° R-8/1/63
7154	698 BK V	Tat-Ag (2314)	A = 260-320/450-550/830-1080/2500-3120 B = 230-240/480-580/665-855/3000-3650 C = 40-105/170-205/1300-1750/3250-4100	29 June-9 July	10	AIL	EOB-270 x 312 NM @ 82.4°
7208	Plymouth Rock II	698 BK add-on	2000-4000	29 June-11 July	12	ATI	Solid RF = 90-105/170-205/230-320/450-590/665-1080/1300-1750/2500-4100 GS
7201	Pundit I(4001)	162 Tat-Ag. D	61, 66, 71, 76	29 Oct-23 Jun 64	237	EDL	Pad T/M, 1st [redacted] 25X1
7219	Long John II	162 Thor Ag. D	153-163 1 mile FLTR for RF	27 Nov-12 Dec.	15	ATI	[redacted] 25X1
7218	Long John I	162 Tat-Agena D	150-170	21 Dec-10 Jan 64	20	ATI	
7302	Pundit II(4101)	162 Tat-Agena D	61, 66, 71, 76	21 Dec-12 Mar64	81	EDL	Pad TLM-170 x 213 NM R-11/7/64
			Solid RF = 105-125/156-205/482-1360/1580-2020/2560-3120/3800-5150	1964 (15 MISSIONS)			
7103	Poppy V	Tat-Agena D	105-5150	11 Jan.		NRL	GS 490 x 506 NM, 69.9°
	Balls A, B, C		in many segments with PW	A-3/27/65 spin	75		1st good Poppy orbit
	A-20"x65# 170-205/575-720/820-1080/3800-4800			B-7/28/65 Tumble	200		
	B-24"x84# 156-180/482-610/660-865/2500-3120			C-1/19/68 66°	1470		
	C-20"x64# 105-125/1050-1360/1580-2020/4650-5150						
7210	Hayloft	Rode with Poppy	550-610	11-30 Jan.	19	HRB	ABM
7222	Long John III	162 Tat-Agena D	153-163	15 Feb-9 Mar.	23	ATI	[redacted] 25X1
7156	698 BK VII	Tat-Ag. D(2316)	2500-3250	27 Feb-9 Mar.	11	AIL	EOB-272 x 276 NM, 32.1°
7212	Bird Dog II	Tat-Ag. D(2316)	4930-5057	27 Feb-9 Mar.	11	LTV	EOB [redacted] 25X1
7224	Long John IV	162 Tat-Agena	153-163	13-26 June	13	ATI	[redacted] 25X1
7155	698 BK VI	Tat-Ag. D (2315)	2500-12,400	2-7 July	5	AIL	EW/GCI
7211	Bird Dog I	Tat-Ag. D(2315)	4930-5057	2-7 July	5	LTV	EOB [redacted] 25X1
7304	Noah's Ark	206 AT-Ag. D (4301)	~~4450-5077~~ (LTV) says 154-550	6 July-2 Oct.	88	ATI	ABM-156 x 187 NM, 93° R-1/3/65

7223 - Hampshire

Mission No.	Name	Ride	RF Range (MHz)	Launch - Death	Life (Days)	P/L Contr.	Target/Other
				1964 (continued)			
7215	Opperknockity I	162 Tat-Agena D	66-72	21 Aug-13 Oct.	23	HRB	[redacted] 25X1
7303	Pundit III	206 At-Ag. D(4102)	61,66,71,76	8 Oct.	0	EDL	Pad TLM Booster failed
7305	Step 13	206 At-Ag. D(4302)	150-230	23 Oct-23 Feb65	123	HRB	ABM-168 x 185, 95.5° R-2/23/65
7306	Plymouth Rock III	206 At-Ag. D(4302)	1000-2650	23 Oct-23 Feb65	123	ATI	GS "
7157	698 BK VIII	Tat-Ag. D (2317)	620-8200	3-7 Nov.	4	AIL	EOB Agena batteries blew up
7213	Bird Dog III	Tat-Ag. D (2317)	4930-5057	3-7 Nov.	4	LTV	EOB [redacted] 25X1 Battery type blew up?

By 1965 Program 770 started with the AIL carbon copy series / Aerospace SET D, P-11 went to dual rocket motors, 270 NM orbits, H/S and sun sensor for attitude reconstruction. Start of Stoppers from EDL for vulnerability monitoring — followed by the [redacted] series. The Stopper and [redacted] missions are omitted from this summary. (15 boosters left for 4 L) Eardrop/Poppy → Earpop

SECRET

				1965 (8 MISSIONS)			
7104	Poppy VI	Thor-Ag. D(2701)	155-9500 solid in many segments	9 Mar.		NRL	490 x 506 NM, 70.1° GS-No [redacted] 50X1 after 8-31-66 1st 8 object space launch
	[redacted]			B on 7-5-66 Tip Mast	A-1000		
	[redacted]			D on 8-31-66 66 Mast	B-485		
	[redacted]			A in late 68 spin	C----		
	[redacted]			C OK 2-axis 66	D-537		[redacted] 25X1
7309	Pundit IV (encrypted - IIRB Key Gradator)	206 AT Ag. D (4401)	61,66,71,76 & 60-80 MC search	28 Apr-July 67	810	EDL	Pad TLM, 263 x 303 NM, 95.3°
7307	Fanion I	206 At Ag. D (4402)	4900-5100	25 June-17 Mar. 1967	630	SEL	EOB [redacted] 25X1 268 x 274 NM, 107.6°
7308	Tripos I		4000-8000			ATI	GS " R-8/22/68
7158	Prog. 770 CC		640-8280	16 July-5 Sept.	49	AIL	EOB 253 x 278 NM, 70.2°, R-12-18-68
7226	Bird Dog IV	Tat-Ag. D(2702)	550-678 ~~521-648~~	16 July	0	LTV	EOB "Elephant Balls" arced over on 1st turn-on

ABM notes p.11 A-24"x103" B-24"x106" C-24"x130" D-24"x130" — Pwr. 550-650 in 1½ dB steps

PWR-20dB in 1½ dB steps, 550-650 MHz, sup to 700 MHz (150-200 is opt.)

SECRET

Mission No.	Name	Ride	RF Range (MHz)	Launch - Death	Life (Days)	P/L Contr.	Target/Other
				1965 (continued)			
7312	Magnum	206 At-Ag. D (4403)	100-250	3 Aug-9 Mar. 67	585	ATI	[redacted], 272 x 275 NM R-6/17/68 25X1
7225	Square Twenty	241 Tat Agena	1550-1750	28 Oct-8 Nov.	11	LTV	[redacted] Microwave map and sample 25X1
				1966 (10 MISSIONS)			
7160	Prog. 770 CC	Tat-Ag. D(2703)	650-8330	9 Feb-6 Sept.	209	AIL	EOB/TI-274 x 276 NM 1st Pre-D
7223	Setter 1	Tat-Ag. D(2703)	2679-2935	9 Feb-20 Mar.	39	LTV	EOB-burned out LO - 10 NM accuracy
7310	Leige	206 (4404)	168-178	14 May (short in R/O circ.)	0	ATI	[redacted] D/F by antenna null 25X1
7311	Plicat	"	153-162	"	0	ATI	[redacted] PRF Dopple expmt. 25X1
7314	Sampan I	" (4405)	2100-4000	16 Aug. -14 Oct.	424	SEL	GS-H/S out at Rev. 3
7315	Sousea I	"	8000-12,000	" 1967	424	ATI	GS-No D/F from pencil beams
7317	Fanion II	" (4406)	4900-5100	16 Sept. -7 Dec.	82	EDL	EOB [redacted] 253 x 265 NM, 94°, R-5/9/68 25X1
7313	Tripos II	"	4000-8000	"	82	ATI	GS "
7161	Multigroup 1	Tat-Ag. D (2731)	125-2100	28 Dec-19 Jun67	172	AIL	EOB TI, 261 x 286 NM, 74°
7229	Setter 1A	"	2960-3215		172	LTV	EOB, 10 NM(accuracy limited by Agena attitude)
				1967 (8 MISSIONS)			
7319	Fanion III	LTTAT 846 Thorad-Agena D	4900-5150	9 May-23 July	75	EDL	EOB [redacted] P/L power supply failed 25X1
7316	Slewto	1st L (4408)	154-162	9 May-10 Aug.	94	ESL	[redacted] TI, 1st Pre-D on P-11 25X1
7105	Poppy VII	Thor. Ag. D(2704) (1st 8 SAT. Launch)	153-14,800 (9500)	31 May - ?	--	NRL	GS, all [redacted] still working 50X1

P-82 in Notes gives sensitivities

A 153-165-200/550-650-850-920/920-1100/2580-2680-2930-3120-3300 3340-3600
B " " " " "
C 200-350-550/920-1800-2500/3600-4050 Gap 4900-5070 Gap 6450-6700 Gap 7850-8100-8600
D " " " " 6700-7300 " 9340-9500
14,500-14,800

Cmd thumbnail a line per [redacted]
PWE, PWR-1-2-4-9 code
16 levels to 1¼ dB
[redacted] by chopping

Mission No.	Name	Ride	RF Range (MHz)	Launch - Death	Life (Days)	P/L Contr.	Target/Other
				1967 (continued)			5 min AB warm-up
7320	Savant I	846 Thorad-Ag. (4409)	61,66,71,76, 165, 181,240	16 June-22 Oct. 1968	474	ESL	PAD TLM, 272 x 279 R-10/22/68
7230	Setter 1B	Tat-Ag. D(2732)	2604-3215	24 July-30 Dec.	159	LTV	EOB limited to 15 NM by Ag. attitude
7231	Donkey	"	3350-3850	24 July-24 Jan. 1968	184	EDL	[redacted] map & sample
7162	Multigroup II	"	125-260/ 530-4200	24 July-30 Dec.	159	AIL	EOB/TI, 257 x 371 NM 75°, (bad orbit)
7321	Facade	846 Th. Ag(4410)	250-2250	2 Nov-7 Feb.	97	EDL	ABM, 244 x 284, 82°, R-Apr. 69 Produced large amount of ABM intelligence.
				1968 (12 MISSIONS)			
7163	Multigroup III	Tat-Ag. D(2733)	250-4200	17 Jan-3 Apr 69	442 ~~437~~	AIL	EOB/TI, 247 x 291 NM, 75.1° (bad orbit)
7232	Setter 1B	"	2604-3215	"	442	LTV	EOB Lim. to 10 NM by Ag. attitude
7324	Tivoli 1	846 Th. Ag. (4412)	100-4000	24 Jan-8 May 69	469	ESL	TI, 269 x 290 NM, 81.6° 5 min AB warmup
7322	Lampan 1	" (4411)	1000-2100)	R-49Jan70-661D 14 Mar-7 Mar69	358	ATI	GS-267 x 297 NM, 83.1°
7323	Sampan II	" "	2100-4000)			SEL	GS-Kill plan left link 4 on
7326	Tripos III	" (4420)	4000-8000	20 June - 10Jan 70	569	AIL	GS-236 x 278 NM, 85.1°
7327	Sousea II	" (")	8000-12,000	20 June - 10Jan 70		AIL	GS-1st LMSC P-11 processing
7325	Vampan I	846 Th. Ag. (4413)	100-1000	18 Sept. - 27Sept 69	374	EDL	ABM, 271 x 276 NM, 83.2°
7164	Thresher 1	Th. Ag. D(2734)	125-2100	5 Oct. Turned-off 27Sept.69	357 ~~374~~	AIL	EOB/TI, 261 x 274 NM, 75°
7233	Reaper 1	"	1800-3300	5 Oct.		LTV	EOB/TI, 4 NM accuracy due to good orbit
7238	Convoy 1	"	382-425	5 Oct.		ESL	TI, Dog House, 1st good Dog House pattern data 250x290 NM when Turned off

~~SECRET/E~~

~~SECRET/E~~

25X1

50X1

Mission No.	Name	Ride	RF Range (MHz)	Launch - Death	Life (Days)	P/L Contr.	Target/Other
				1969 (10 LAUNCHES MISSIONS)			
7330	Tivoli II	846 Th. Ag. (4418)	50-4000	19 Mar. - 21 aug 70	520	ESL	Δ3 warmup (tones) TI, 1 of 8 LO banks
7328	Lampan II	846 Th. Ag(4419)	1000-2100	1 May } Re-entry	291	ATI	GS 1200-1470 MHz TR6 - 1 mo microwave map
7329	Sampan III	"	2100-4000	1 May } 16 Feb 70		ATI	GS SEL filter to dump PRF of 374
7165	Thresher II	Th. Ag. D (2735)	125-2100	31 July } 26 aug 70	391	AIL	EOB/TI
7234	Reaper II	"	1800-3300	31 July }		LTV	EOB/TI - freq unable & 1 DSU
7239	Convoy II	"	~~160/400/700~~ 154-162/386-426/865-96	31 July - 13 acts (2nd DSU failed	75	LTV	TI-HH/DH/BUGH failed - 1ST wk ~250 x 300 NM
7336	Savant II	846 Th. Ag. (4419) (1653)	66, 66, 71, 76, 163.8, 165.8, 181.1, 192.4, 2	22 sept - 10 Mar	595	ESL	Pad TLM - 30 deg ± South - 1 wk Δ2.3 warmup
7313	WESTON (1407)	Thread/Tagua 770 Poppy (2706)	60-70/360-420	30 Sept - 1 Aug 70	321	HRB	
	Poppy VIII secrets - R311	25 Feb	53-165-200-240 / 350-450-550-650-750-840-920-1080/1800-	2100-2580-2680-2930-3120-3300/5250-	≈148	NRL	GS - intelsat → 60 or 180 accretion 5850-6700/9400-9340-9500-10,000
		53-165-200/240 ≈ 275 #	350-450/550-650/835-990/1080-1950-1	00-2100-2580/2680-2930-3120-3300-30			0-4050-4850-5250/67-73-77-86 14.5-14.9 & 14.8-15.1
				1970 (8 MISSIONS)			
7335	Tivoli III	846 Th. Ag. (4422)	50-4020	4 MAR 70 - late entry	577	ESL	
From	EDL URSALA	Proposal - 65 BIT	BOXES FLOWN SINCE 1964 (13 Apr. 70)			EDL	
7332	Tripos IV	846 Th. Ag (4421)	4000-8000	20 may 70 -	977	AIL	GS and CW
7333	Sousa III		8000-12000	22 Jun 73		AIL	Sick - Down - Killed
7166	Thresher III	Th. Ag. D (2736)	125-2100	3AM 26 aug -	525	AIL	Relay Hang-ups - No ALL Beep
7235	Reaper III	"	1400-3300	shut down 1 Feb 72		LTV	
733-1	Tophat	846 Th. Ag. (4423)	450-1000	18 Nov -		ETV	
7167	Thresher IV	Th. Ag D (2737)	125-2100	16 July 71 - 24 Mar 73	(277)	AIL	First Battery Failed
7236	Reaper IV		1400-3300		(150)	LTV	Resurrected using 8273 & X-pond
	Harvester				no DSU	ESL	2-8ft Flex rib failed to deploy

SECRET

25X1

50X1

7337	Lima / Arrego (4421)	Rida / 346 Th-Dg (1662)	1200-12000/5400-5900	9/10/71 - {10/10 - Black Synthesizer}	30 (30)	AIL	w-wwww - 266x27-100 @ 75.1°
7407	Poppy IX	HAT/Ag -	153-18000 33000-34000	21:30 AM / 14 Dec 71	Dec 73	NRL	
7535-1	Mirabel	467 TIIB (4424)	151-163/387-426	1827 Zulu			2.54 x 24 MHz
7558	Ursala - I	467 TIIB (4425)	2000-12000	Time = 28 Jan 73	205		
7980	Ursula II (4426)	467 TIIB (4425)	2000-12000	10 Nov 73 -		Motorola	

50X1

P-11 SYSTEMS SUMMARY

Veh. No. Launch Date Mission # Launch #	Name(s) P/L Contr. Ride	Life-Days Date: Death Reentry	Orb. per/Ap/ Incl. Wt-P/L System LAUNCHER	T/R BW, Ratio Life-Days/Cycles	Mission(s), Freq's., Antennas, Failures, Other
4051 3-18-63	(A) Labs 162 Tat, Ag. D 1164	0 3-18-63	No orbit	Leach 12/1-100 KHz	Van Allen Probe - booster failed. First Tat-Agena D launch.
4201 6-26-63	Hitch-Hiker 1 (A) Labs 162 Tat, Ag. D 1166	75 9-10-63 Still in orbit	175 x 2230 NM, 82° 43.1/230.8# (40# launcher) 398	Leach 100 KHz, 12/1 37D/247~ Single recorder	Van Allen Probe - status commutator - 25 days, Recorder 37D, Pwr. supply (LVCO)-75D Single Rocket Motor on P-11 No Attitude sensing)
← Pundits and SEL P/Ls were SP-8 associate contracts					
4001 10-29-63 7301	Pundit I EDL ~~162~~ Tat Ag. D ~~1165~~ 1161 ~~1168~~	237 6-23-64 5-23-65	167 x 304 NM, 90° 32.3/163.5# (40# launcher) ✓	L-100 KHz-4/1 237D/1502~ 2/1-9D/56~	Pad TLM-61, 66, 71, 76 MHz 18" monopole, 12" VHF CMD/TLM Recorders failed Few usable intercepts
4101 12-21-63 7302	Pundit II EDL 162 Tat-Ag. D 1168 8 orbits to separation	81 3-12-64 11-7-64	170 x 213 NM, 64.5° 32.3/170#~~155~~ ? +40# L ✓ S/A monitored launch	L-100 KHz-4/1 4/1-77D/220~ 2/1-3D/8~	Pad-TLM-61, 66, 71, 76 MHz 18" monopole 12" VHF CMD/TLM Recorders failed, One xmtr. 6 days Few usable intercepts
4301 7-6-64 7304	Noahs Ark (46K) ATI 206 Atlas-Ag. D 3 receivers 4807 154-162 169-177 230-550	~~126~~ ~~88~~ 10-2-64 1-3-65 TWO LMSC Xmtrs	156 x 187 NM, 93° ~~30~~/164.2# +40# L	PIC-~~100~~ 46 KHz-8/1 Both ~~failed~~ at 8D/ sticky ~~350~~ ~ at 126 days, 350 cycles on Both were taping up to 1000 seconds to RO Syst Turned off	The PIC's were ~~sig. accurated~~ only non Leach use by P-11 ABM-154-550 MHz, P/L ~~38~~ 8D, one xmtr-105D 22 x 40" windowshade Aux. Timer-1D, turned off-126D, 1st deployable antenna and 1st deployable solar arrays

SECRET E/T 50X1

Page 8 of 10 pages

Veh. No. Launch Date Mission # Item #	Name(s) P/L Contr. Ride	Life-Days Date: Death Reentry	Orb. Per/Ap/ Incl. Wt-P/L System LAUNCHER	T/R BW, Ratio Life-Days/Cycles	Mission(s), Freq's. Antennas, Failures, Other
4202 3-14-64	Radiation satellite Ⓐ Labs 206 At-Ag. D 4808	730 8-14-66 Still in orbit	142 x 2030 NM, 96° Still in orbit 43.1/230.8# + 40 #L	L-100 KHz-12/1 22D/359~	Van Allen Probe - 3rd and last non [redacted] P-11 to launch, commutator-14D, T/R-22D, Transponded till turned off
4102 10-8-64 7303	Pundit III EDL 206 Atlas-Ag. D 4810	0 10-8-64 10-8-64	No orbit 32.3/168# +40# L	Leach 100 KHz 2/1 & 4/1 T/R's	Pad TLM-61, 66, 71, 76 MHz, Booster failed. 18" monopole, (2nd & last booster failure), 12" VHF CMD/TLM
4302 10-23-64 7305	Step 13 (HRB) Plymouth Rock (ATI) 206 Atlas. Ag. D 4811	123 123 2-23-55	168 x 185 NM, 95.5° --/164.2# +40# L	100 KHz - 1/1 100 KHz - 4/1 1/1-41D/360~ 4/1-OK @ 490~	ABM-150-230 MHz, 30 x 52" windowshade - 2 arm spiral GS-1000-2650 MHz, ~~short monopole~~ 4 arm spiral on Und. ext. Aux. Timer - 70D, reentered still working.
					Block change to H/S, sun sensor for attitude, Back to back rocket motors for 270 NM orbits. Interchangeable recorders and 4 links at 228, 232, 238, 242 MHz
4401 4-28-65 7307	Pundit IV EDL 4814 206 At. Ag. D HRB Key Generator 100 KBPS 54.28 rpm	810 7-67 ~~Still in orbit~~ 31 Oct 69	263 x 303 NM, 95.3° 59.2/212# +40# L Intermittent osc. in H/S	100 KHz - 4/1 OK at 1495~ 2/1 OK at 578 ~ S/S - command RI triggers all zeros - went to shielded lead for 4402. (12" from eye to register)	Few intercepts - Pad TLM, Last Pundit, encrypted, 52" windowshade, Bad H/S circuit. Later redesign, P/L clock skipping problem - changed TI for Sprague IC's. System turned of in 2 years-badly degraded.

50X1

SECRET/E

Gen. No. / Launch Date / Mission # / Transit #	Name(s) / P/L Contr. / Ride	Life-Days / Date: Death / Reentry	Orb. per/Ap/ Incl. / Wt-P/L System / LAUNCHER	T/R BW, Ratio / Life-Days/Cycles	Mission(s), Freq's. Antennas, Failures, Other
4402 6-25-65 7307/8	prop. 18 Feb 64 (70K) Fanion I (SEL) Tripos I (ATI) (98K) 206 At. Ag. D 286+64 (4817 #105K) 13 Jan TWX-3 Feb 1965 ←	630 630 3-17-67 8-22-68 ← del. Apr, fly in June	268 x 274 NM, 108° 45.7/206# +40# L 49.18 rpm 560 w-hr/day max	100 KHz- 4/1 100 KHz- 4/1 330D/1818 ~ 630D/2422 ~	EOB [redacted] 4900-5100 M 25X1 Two 48" troughs as mils cross. GS-4000-8000 MHz, 36" flex rib. 1st pencil beam, 1st D/F P-11, Fanion highly successful, Fanion Ant. deployment monitor failed (bad T/M pt.)
24K for 2nd Nuclear Mod Noahs are 4403 39K to mod 8-3-65 7312	Magnum ATI 206 At. Ag. D 4818	585 ← 15K → 63K 9 Mar. 67 6-17-68	272 x 275 NM, 107° 260/48? +40# L 61.77 rpm	100 KHz, 1/1 & 4/1 1/1-221D/2459 ~ 4/1-585D/3362 ~ H/S - 265 days (intermit.)	start intermittent 1080 cy 52" windowshade - failed to deploy for 1st 2 weeks. ABM 100-250 MHz - 1st good [redacted] 25X1 [redacted] data. H/S-265D, multicoupler detuned - 142D 25X1
4404 5-14-66 7310/11	Leige (ATI) 75K Plicat (ATI) 133K 206 At. Ag. D 4824	0 0 Still in orbit	280 x 299 NM, 110° (49.3/230.3# +40# L 50.2 rpm	150 KHz 2/1 & 2/1) 150 KHz 1/1))) 1st 150 KHz T/Rs	168-178 MHz DC [redacted] D/F by antenna null. 153-162 MHz DC [redacted] D/F by PRF doppler 25X1 2 pairs of 40" monopoles, short circuit at 1st turn-on in T/R R/O circuitry.
4405 8-16-66 7314/15 7313 ~ Weston	Sampan I(SEL) Sousea I (ATI) 206 At. Ag. D 4829	424 424 10-14-67 ~~Still in orbit~~ 5 Mar 70	278 x 281 NM, 93.2° 90.6/267# +43# L 39.14 rpm 1st ΔVs drift program 1st mag bal. S/A limit sw. failed	150 KHz 2/1 150 KHz 2/1 424D/2878 ~ 400D/2727 ~	GS-2100-4000 MHz GS-8000-12,000 MHz 3 ft. flex rib with SL inhibit H/S destroyed at launch - No D/F One solar array failed to deploy for 9 revs. 1st P-11 magnetic balance Killed -- Link came back one in 1969

No. / Launch Date / Mission Type	Name(s) P/L Contr. Ride	Life-Days Date: Death Reentry	Orb. per/Ap/ Incl. Wt-P/L System LAUNCHER	T/R BW, Ratio Life-Days/Cycles	Mission(s), Freq's. Antennas Failures, Other
4106 9-16-66 7317/12	Fanion II (EDL) Tripos II(ATI) 206 At. Ag. D 4828	82 82 12-7-66 5-9-68	253 x 265 NM, 94° 50.4/223# Last 40# launcher	150 KHz 4/1 150 KHz-4/1 53D/~~223~~ ~ 297 82D/~~297~~ ~ 530	EOB [redacted] 4900-5100 orthog.- 48" trough antennas. GS-4000-8000 MHz, 3 ft. flex rib with omnis. Three sun sensors to measure spin-axis/body offset. Noisy bird, Stiction problem with 150 KHz T/R's in test. 25X1
	846 rides started	ESL formed by EDL people	Start of heavy P-11 development (4417, 18 = 1st)	1 MHz T/R developed	24 hr. AN/GSQ-53A clock replaced 16,384 sec. binary clock. Reconfiguration to solid vs. cold gas spin system, 39 cmd at 375 MHz vs. old [redacted] EIMAC xmtrs. at 2232 or 2282 MHz for 1 MHz T/R P/B 25X1 SECRET
4108 5-9-67 7319/16	Fanion III(EDL) Slewto (ESL) 846 Thorad-Ag. D 1634	75 94 (95) 8-10-67 Still in orbit	300 x 437 NM, 85° 56.8/223.9# 45# launcher	4/1-150 KHz 1/1-150 KHz & 1 MHz All OK - 872 ~ 775 ~ 368 ~	EOB [redacted] 4900-5150, orthog.- 48" troughs, last Fanion, 154-162 MHz [redacted] TI, 12" monopole, 8 MHz RF by folding, 1 MHz lost by Xmtr. arc-over - Day 3, Fanion pwr. supp. - Day 75, System died of unknown cause - Day 94, bad launch. 25X1 25X1
4109 6-16-67 7320 Trm 1873	Savant I FSL 846 Th. Ag. D 1635	~~494~~ (492) ~~10-22-68~~ 10-22-68	272 x 279 NM, 80° 54.8/242.5# Large drag area S/N 002-2231.5 mHz - good 004-2281.5, wvp-rev50 max = 430 sec	Two 1 MHz - 1/1 259D/724 ~ (257D) OK at 494D/1505 ~ (492)	Up to 5 min. xmtr. warm-up on 2282 MHz link. Pre-D on Pad TLM, 61, 66, 71, 76, 165, 181, 240 MHz, very successful. 5' x 7' window-shade. Reentered st[illegible] playing a CMD logic IC Day 36' T/R broke its tape - Day 259. Erratic CMD problem, high false alarm rate in recognizer.

Sat. No. Launch Date Mission # Iron #	Name(s) P/L Contr. Ride #	Life-Days Date: Death Reentry	Orb. Per/Ap/ Incl. Wt-P/L System LAUNCHER	T/R BW, Ratio Life-Days/Cycles	Mission(s), Freq's. Antennas Failures, Other
4410 11-2-67 7321 Iron ?	Facade EDL 846 Th. Ag. D 1638	97 2-7-68 ~~4-69~~ 3-28-69	244 x 284 NM, 82° 64.3/228.4# +45# L	150 KHz, 2/1 OK 97D/863~ ✓ on up to 881 ea (106 days)	ABM RF search-250-2200 MHz 3' x 4' windowshade to 1000, 6" conical spiral 1000-2200, pwr supplies failed, D75 & D97, 989/827 investigation of EDL pwr. supp. design. outstanding intercept success.
4412 1-24-68 7324 Iron 6236	Tivoli I ESL 846 Th. Ag. D. ~~1648~~	469 ✓ 150 pr. ~~5-8-~~69 ~~1975~~ 4 mar 70	269 x 290 NM, 81.6° 79/275# 45# L 006-223/.5-good 005-228/.5-sqveg. fm L 400 sec. max	Two 1 MHz - 1/1 211D/644 ~ (2/2) 469D/~~2000~~ 1067~	ABM T1-100-4020 MHz, 1 MHz/ 4 sec. steps over CMD range. 100-500-3' x 4' windowshade, 500-2000-18" conical spiral, 2000-4000-dual 6" spirals. Excellent success. EDL clock 330D, Xmtr. warmup problem, 2nd. recorder interm. after 6 Jan.
4411 3-14-68 7322/23 Iron 9076	Lampan I (ATI) Sampan II (SEL) 846 Th. Ag. D ~~#1638 1640~~ 1641	358 3-7-69 ~~3/70~~ 1-4-70 (661D orbit)	267 x 297 NM, 83.1° 64.3/254.8# + 45# L ~~006-223/.5-good~~ ~~005-228/.5-sqveg.fm L~~ ~~400sec max~~ (cmd rcvr	Two 150 KHz 2/1 144D/1146~ ✓ 358D/3068~ ✓ (368?)	ABM-1000-2100 MHz ABM-2100-2000 MHz 6' flex rib, flat spiral feed, pair of 1000-4000 MHz spiral inhibits. Strong spin modulation on links, both T/R's failed, Short in T/R R/O ampl. at launch, strong link 3 noise. Kill plan failed 238 MHz xmtr. on continuously.

SECRET/E

Seq. No. / Launch Date / Mission No. / Item No.	Name(s) / P/L Contr. / Ride No.	Life-Days / Date: Death / Reentry	Orb. Per/Ap/ Incl. / Wt-P/L System / LAUNCHER	T/R BW, Ratio / Life-Days/Cycles	Mission(s), Freq's. Antennas, Failures, Other
4420 6-20-68 7326/27 Item 5569	Tripos III (AIL) Sousca II (AIL) 846 Th. Ag. D No. 1643 Δ3 Xmtr-Day 510 PCU-end syst Test- Replaced by 13's	569 1-10-70 ~~R-3170~~ 1-10-70	236 x 278 NM, 85.1° 97.4/278.7 +46# L Bad S/A connection-Low Pwr Δ3 Xmtr-510D	Two 150 KHz 2/1 ~~3504/4502~~ ∩ MSN's 7326/27 4644∩/569D to R (both) 569D to R	ABM 4000-8000 MHz, 3' flex rib, pair of spirals for inhibit. ABM 8000-12000 MHz, 1.5' dish, pair of inhibits Sousea PCM subsystem (freq) failed 5-9-69 (335D) First LMSC P-11 P/L processing, [redacted] 50X1 D/F near nadir. Originally called PANSAM/XYLENE
4413 9-18-68 7325 Item 5575/5014 New 12/12/68 2/5/69	Vampan I EDL 846 Th. Ag. D. No. 1545? 846 Power 1st 801 on 1648? 2nd 801 on 1650?!	374 9/24/69 ~~R-10/69~~ 9/24/69 System — No more Heavy Weight	271 x 276 NM, 83.2° 76.9/259.4# +46# L SAS shift reg. bits intermit. Solar array hung up for 1st day 750x795 NM @ 80.3° 753x778 NM @ 80.4°	Two 150 KHz 2/1 3334/3125∩ MSN 7325 374 Days to R	ABM 100-1000 MHz Also EOB claimed 100-400 4'x4' windowshade spirals; 400-1000 spirals on 4' ext. to windowshade Multiple sys. test problems, EDL nearly black listed. Spinning interferometer D/F (1st). [redacted] DF over 600 NM. 50X1 LMSC processing.
4418 3-19-69 7330 Item 5585	Tivoli II ESI 846 Th. Ag. D #1649 PCU-end sys Test Repl. by 17's	520D R-1975	270 x 288 NM, 83.1° 85/330# +55# L LVCO failed closed 6 mos can't do Batt. Experience 009-2231.5-Rec 1620-195sec 011-2281.5 - 1000 - 195 max (66D) Some spurious and 32's	Two 1 MHz 1/1 202D/792∩ MSN 7330 Other-1601 & OK	T1-50-4020 MHz, 7-[redacted] antennas, 3-TT&C antennas, 13% of frequencies out - LO failed in 1st week. 1st heavy P-11, two batteries, 500W-hr/day (prev. max. ≈ 300) 50-100 MHz added for chicom TLM search, 74-81 MHz radar found. Δ3 warmup disrupted by Tower Batt Discharge ckt. failed 13 Sept. (176D)

No. / Launch Date / Mission # / Iron #	Name(s) / P/L Contr. / Ride #	Life-Days / Date: Death / Reentry	Orb. per/Ap/ Incl. / Wt-P/L System / LAUNCHER	T/R BW, Ratio / Life-Days/ Cycles	Mission(s), Freq's. Antennas, Failure, Others
4417 5-1-69 7328/29 Iron 1721 7/23/69 MODS = 290K	Lampan II(ATI) Sampan II(ATI) 846 Th. Ag. D #1651 #1652	(291) 2/16/70 R ~~3/70~~ Two H/S's failed in Sys. Test	225 x 252 NM, 65.3° 110/360# +55# L TR6 - 55D Strong 100pps noise from CW waveguide TR6 took out 3975p/s rej.	Two 150 KHz 2/1 291D/2308 ~ MSN's 7328/29 291 D to R	ABM 1000-2100 + CW 1200-1470, ABM 2100-4000 with 374 PRF reject. 6' flex rib, pair of inhibits. Heaviest P-11, lowest inclination, 20° spin axis error. EDL clock failed - Rev 55D 634 6-28-69, Low orbit due to bad spin axis. T/R Spiral Variable 18 Nov. 69 200D
4419 9-22-69 7336 Iron 1710	Savant II(ESL) 846 Th. Ag. D TR6 - 70 Day 3 #1653 Xmtr 2~~30~~ Days Switch - 7 Days H/S ~ 190 days (Rev 3058)	601 (=R) 5-16-71 5-16-71 321D/R= Contract 345D	318.2/62.1/51.5# 265x268 NM, 85.1° 010 - 228.5 - good 013 - 232.5 - ~~drop~~, to all bad 250x253 NM, 69.6°	Three 1 MHz 1/1 MSN 7336 recovered in Feb ✓ Jan 26, Two 150 KHz 2/1	Pad TLM 61, 66, 71, 76, 163.8, 165.8, 181.1, 192.4, 240.2, 247.8 MHz. 5'x7' windowshade above 160, 3' monopole - 60-80 MHz, Recognition turn-on of T/R xmtr warm-up ~ Helium Link Switch Failed South - 7 Days 60-70 MHz, flat spiral) 25X1 360-420, log periodic). Encrypted voice, many development problems. Recognition dwell on signal.
4407 9/30/69 7313 Iron 1807	Weston (HRB) 770 Poppy Launch 2706 #1654 #1655	Let 8-2-65 10-30-70 (19 days)	89.5/255.8/42.2# 11/S osc. - 50D 7 MOS - Very Sick Battery ~~osc. in #~~	MSN 7313 ~~321D~~ 118D/570 ~ other 957 s OK. may 70 Stack - July 13	
4421 ~~3/70~~ 5/20/70 7332/33 Iron 8520 OBJ. 1410-40B 4400 ~~4417-4424~~	Tripos IV(AIL) Sousea III(AIL) 846 Th. Ag. D #1657 1659 was 6 Jan Vampan II is MSN #7331	9 Mo. incentive contract on all P-11s since 4409	100/345# +55# L 010 - 228° with 38 bad 4090's T/R Fuse - June 16 Suneye 1 - at launch 7° W/S error - aye 2 out of sun till July 14	Three 1 MHz 2/1 (.5m bit P/B PCM) MSN's 7332/33 ~~T/R failed Jan 26~~ oiled in Test	GS with CW, 4000-8000 MHz, 3' flex rib with beam sharpening. GS with CW, 4000-8000 MHz, 1.5' rigid dish, + omni's. Up to 3 freq's. (beams) measured to + 30 MHz ea. pulse. P/L's share PCM (freq/PW) sub-system (250 KBps rate).

FUTURE P-11 SCHEDULE

Veh. No. Launch Date	Name, P/L Contr.	T/R, BW-Ratio Ride #	Mission, Freq., Antennas, Other
4422 3/4/70 ~~5/70~~ 846 2wk Ld	Tivoli III ESL, Iron 5628 MSN 7335	65N, 325N, other OK in Mid Three 1 MHz - 1/1 846 Th. Ag. D. #1656 396.9# with 55#L	014-2232.5-900 ℓ 014-2282.5-900 ℓ T1- 50-4020 MHz, 7 P/L antennas, dual TLM ant., 375 MHz CMD ant. Active spin axis torqueing to c/o for 4427. Brad TK-T/R 2-5 days & multicoupler arc-Δ1 cleared 38 days & T/R-3 below June arcing again in Gulf Sem - 8 June Rev 94 -700
4423 9/70-~~11/70~~ 8/70 7334, Iron 6829	Tophat LTV MSN 7334	Two 150 KHz 1/1 846 Th. Ag. D #1658 #1659	Troposcatter map and copy, 450-1000 MHz, dual conical spirals - interferometer CMD windows for RF search, dwell on recognition, copy 24 chan. baseband-1.5 m bit encryption.
4427 ~~2/71~~ 11/71 2/71 9/10/71 7337, Iron 7681	Arroyo A/L ~~(Proposal due 7-14-69)~~ MSN 7338	Two 150 KHz 2/1 846 Th. Ag. D #1662	1200-2200/3400-3900 MHz microwave map (perm freq., PWR, format, D/F) 6' dish down spin axis with dual spiral feeds, aim spin axis, [ ] D/F desired.
4424 MABEL I 5/19/71 ~~as of 11/71~~ 7339, Iron 7719	MABEL I ESL ~~Vampan II EDL~~ MSN 7331	(410# 9/1 #P/L) Two 150 KHz 2/1 846 Th. Ag. D #1661 ~~of 1663~~	EOB? 100-1000 MHz, Improved antennas under study for interferometer. Not yet approved for this launch.

SECRET

NEW P/L CONCEPTS (NOT APPROVED NOR TIED TO LAUNCH SCHEDULE)

4425 7/71	Gully ~~disapproved~~ vs 770 add-on - 10/69	Three 1 MHz 1/1 846 Th. Ag. D	1200-2200/3400-3900 MHz microwave copy, 3' dish down each spin axis, Active attitude control to aim spin axis at horizon.
4428 1/72 (First 467)	Valley	Three 1 MHz 1/1 467 dual ride	50-3000 MHz Chicom TLM to 10 watt ERP, 6'dish down aimed spin axis, 5'x7' windowshade for 50-300 MHz, flexible tasking, recognition dwells.
4425 9/1/71 7339 Iron 1803	URSALA MSN. 7338	846 #1662	2000-12000 MHz EOB to [ ], cw to [ ]

50X1

Veh. No. Launch Date	Name, P/L Contr.	T/R, BW Ratio Ride	Mission, Freq., Antennas, Other
	Super-Poppy	Three 1 MHz 4/1	Main beam 1000-10,000 MHz for pwr. to 3 db, polarization, RF, PW, angle of arrival for signal sorting, exotic scan pattern determination
	~~Abmacs~~ MABEL I	Three 1 MHz 1/1	Polarization and power to 3 db on [redacted] Dog House, big screen, tryadd, Track RF, 10 MHz Pre-D by A/D/A conversion if desired. 25X1

Launch schedules (22 June 1970)

1654	aug 70 6/10→	29 July	
58	Nov	23 sept (to that?)	
59	Jan 71	Nov	
60	Mar	Jan 71	
61	may	Mar	
62	Sept	May	
63	Nov	sept	
469	#1 Dec 6/22/70→	Mar 71	
	2 Mar 71	June	
	3 June 71	sept	
	4 sept 71	Dec	
2707 →	sept 71 6/12/70→	Nov 71 (was 14 Dec 71)	

Launch Schedules - Oct 72

989- 26(U-II), 28(TH-II), 30(U-III), 29(Req.), 3[redacted](U-IV)
4/73 1/74 [redacted]/74 3/74 1/75

[redacted]

50X1

SYSTEMS WHICH WEREN'T LAUNCHED

Original Planning Schedule	Name	Mission, Freq., Other
~~4405~~ 1965 770 Aft Rack (2nd Q - never launched)	New Hampshire MSN 7223	Sander's failed to produce acceptable system. 100-150 MHz [redacted] D/F signal by RF doppler (used successfully on New Jersey aft rack P/L's.
4406 (L = 9/66)	Dipper	Tie together SAM signals - 700-1000, 2900-3100, 4900-5100, & 7000-9000 MHz. Not approved. 4406 became Fanion/Tripos
4407 (L = 1/67)	Donkey	3500-3900 MHz map and copy [redacted], 3 axis stabilized P-11 with 6' dish - EDL. Became 2732-770 add-on with 10' gimbaled dish, MSN 7231, 7-24-67, 4407 became Weston
4411 (L = 3/68)	Hamper	Last attempt to D/F [redacted] signal, 100-200 MHz - not approved. 4411 reassigned to Lampan/Sampan
4412 (L = 1/68)	Aryjan	ABM 500-2000 MHz with 10' dish, picked up by Vampan and Lampan ABM series defined in early 1967 and approved for Vehicles 4410, 11, 12, 13, 20, 17, 18, 19. 4412 reassigned to Tivoli I
4414) 4415)	Aztek's (Wright-Patt.)	Measure long term space effects on reflectivity of various mirror surfaces. All rides pre-empted by ABM series, 4414 and 15 returned to [redacted] for spare parts.
4416	Calsat (Sat. Control)	Flashing light and beacons - to be tracked by SCF/AMR net/Camera sites Sponsored by NRD for range calibration, returned to [redacted] for spare parts.

25X1
25X1
25X1
25X1
50X1

SECRET/E

Original Planning Schedule	Name	Mission, Freq., Other
4419 9/69	Vampan II MSN 7331	EDL-100-1000 MHz spinning interferometer, only ABM bird dropped from schedule. 4419 reassigned to Savant II, Vampan II now assigned to 4424
4421 3/70	Edison	[redacted] Weston follow-on with 1.5 Mbit encrypted data. Not approved.
4422 5/70	Seiche	Chicom TLM search 50-250 MHz for 10 watt signals -- replaced by Valley concept (50-3000 MHz)

25X1

50X1

[redacted]

Strawman – 36 = May 70, 37 = ~~16 Jul~~ 71, Drop 38 and re-allocate Roost for

Poppy – ~~Sept~~ Nov 71/sept 73, 5, etc ← Find new rides (atlas)

(2 Yr cirs)

[redacted]

50X1

989 – ~~20 Jan 72~~ ~~23 Nov~~ 71/~~16 Mar 72~~ ~~Sept 71~~/~~4 June 72~~ ~~Dec 71~~/Mar 72/~~4 June 72~~ sept 72/~~Dec 72~~/~~Mar 73~~ – miss June rides

Topkt = 18 Nov 70 carryo = 10 Sept 71 / Mabeli 24 / ursula 25 / (Tixaco) 26 / QRC 28 / ursula II 29 / (Tixaco) 30 / QRC 31