0.1 KH-8 GAMBIT-3

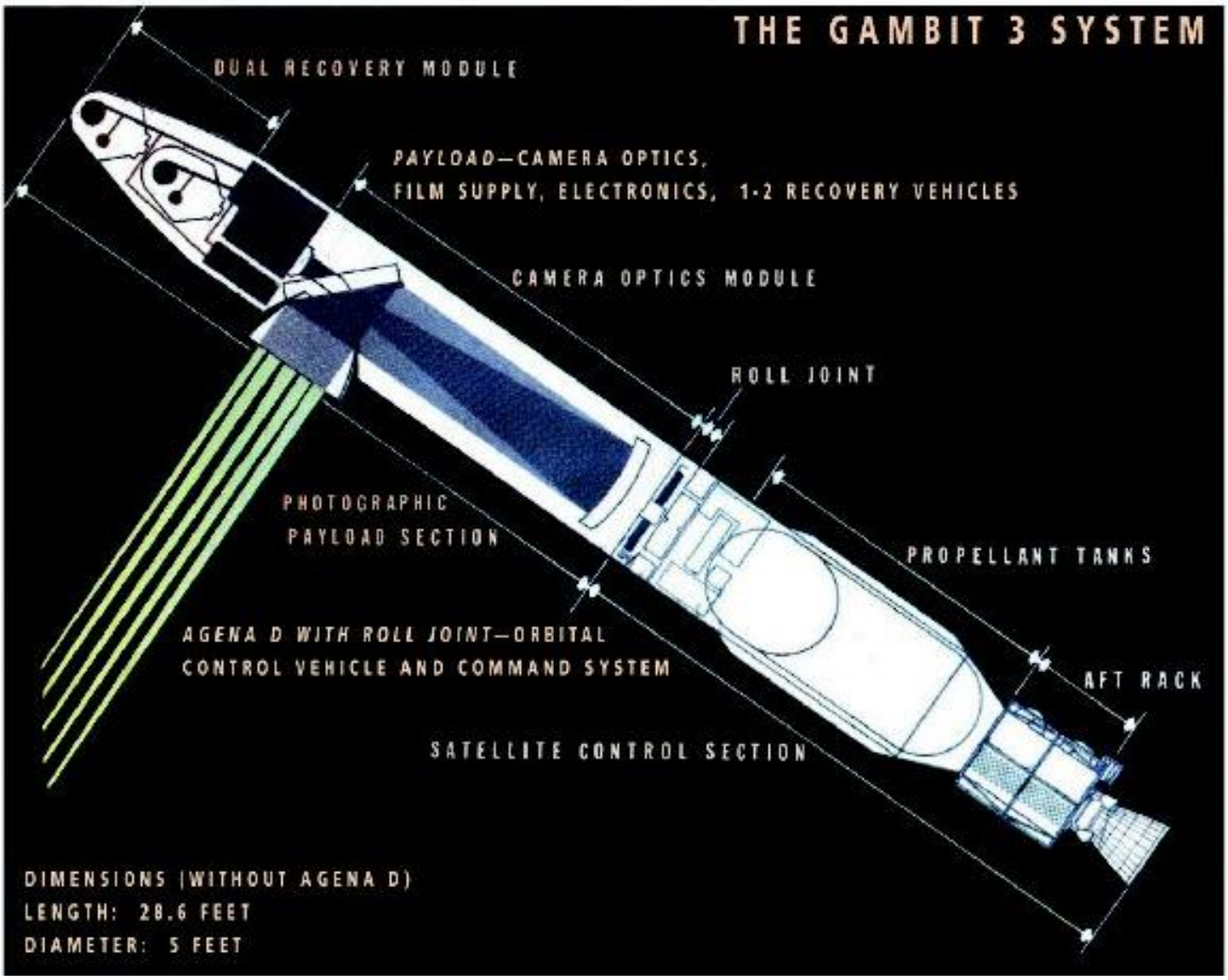
After three years of Program 206-type flights with the Atlas Agena D, launches with the Titan IIIB first stage began in Jul 1966. The Titan IIIB is substantially more powerful than Atlas, and only one object was cataloged for each flight, [1] confirming that the Agena stage remained attached to the payload. The PPS (photographic payload section) payload was attached to the SCS (satellite control section) Agena by a roll joint, as on the LANYARD program, allowing the satellite to image off-nadir targets. The combined PPS and SCS make up the PSV (Photographic Satellite Vehicle). The switch of booster and the upgrade to the new KH-8 payload are correlated, in contrast to the phasing in of the KH-4B and Thorad booster in the CORONA program. The aperture of the GAMBIT-3 telescope was 1.10m diameter.

The new program was originally Program 206-II, Program 110, or GAMBIT 3 (G^3), also referred to as 'G-Cubed'; in 1967 it became known simply as GAMBIT once the earlier (KH-7) GAMBIT program was retired, although the G-Cubed name was still used informally [**?**]. It carried an improved Kodak imaging system with a fused silica mirror. The initial version had a 4.06m focal length [**?**]. The final R-5 version, flown starting in Aug 1971, had a focal length of 4.45m, at f/4.09. The aperture was 1.10m, and ground resolution is still classified but reported to be better than 0.6m.

The satellite included the APTC (Astro Position Terrain Camera) system with a frame terrain camera of 0.08m focal length and two stellar mapping cameras, and returned 55m resolution mapping data; this

[1] Three flights in Jan, Aug and Oct 1971 jettisoned some kind of object into orbit at the end of their missions, possibly associated with the recovery vehicle.

system was retired in Nov 1973. [?], [?].



GAMBIT 3 system (NRO graphic)

The GAMBIT STORY history emphasizes the increasing capability of the Agena/PPS roll joint to support large numbers of roll manuevers:

Vehicle	Roll Joint capacity
LANYARD	100? (p180)
Block I/G-3 No. 1	?
Block I/G-3 No. 12	2250 (p75)
Block II/G-3 No. 22	7000 (p75)
Block III/G-3 No. 37	18000 (p81)
Block IV	20000 (p84)

After orbit insertion, a viewport hatch was ejected; this was never cataloged. The Block II KH-8 (with the KH-8B camera system), starting in 1969, carried two SRVs. After recovery of SRV-1, a fairing was ejected prior to separation of SRV-2, as in the CORONA satellites. The Agena and payload were deorbited about a day after the SRV-2 recovery. SRV recovery, as with CORONA, involved a 180 deg yaw and a 60 deg pitch down prior to ejection. In 1972 the Block III series introduced an improved roll joint.

The long mission durations from 1970 onwards suggested that the KH-8 GAMBIT had solar panels but in fact these were introduced only with Block IV in 1977. [?]. NASA's SERT 2 satellite launched in 1970

had such solar panels attached to the Agena D aft rack and a declassified diagram existis of a late KH-4B CORONA with such solar panels.

The first few flights had lifetimes of one to two weeks; starting in 1970 this was gradually increased to three and then four weeks, with 30 day flights becoming standard in 1972. Program flights 56, 57, and 62 in 1968-69 are anomalous, with high apogees ranging from 730 to 1090 km. The 42nd KH-8 mission (GAMBIT program flight 80) in Jun 1974 saw a jump of mission duration to seven weeks. This jump probably corresponded to a major system upgrade, possibly including an extra recovery vehicle. By the time of the last GAMBIT flight in 1984, on-orbit life had been extended to four months.

The first 22 KH-8 missions, up to June 1969, carried a single SRV. The satellites were made up of: (letter designations for sections are mine; dimensions are probably accurate to the worse of 5 percent and 0.1m).

- - (A) the SRV, 0.84m in diameter and 1.1m long including the retrorocket. About 0.5m of length was visible above the adapter.
- - (B) the forward adapter, a cone frustrum 1.1m long with diameter decreasing from 1.5m (the Agena diameter) to 0.8m (the SRV diameter).
- - (C) the payload vehicle, a cylinder 5.2m long and 1.5m dia.
- - (D) the Agena forward section, a cylinder 1.3m long and 1.5m dia containing Agena avionics and batteries.
- - (E) the Agena tank section, a cylinder 2.8m long and 1.5m dia.
- - (F) the Agena adapter forward part, a cylinder 0.2m long and 1.5m dia
- - (G) the Agena aft adapter, a cone frustrum 1.5m long with diameter from 1.5m (the Agena diameter) to 3.0m (the Titan diameter), concealing the Agena engine section.

Total length of the vehicle from SRV to Agena aft adapter is 12.8m. The Agena part is 5.8m, a little shorter than other estimates of Agena size.

Starting with a least the Oct 1969 flight, and possibly the Aug 1969 flight, a second SRV was added. The new configuration consisted of:

- - (A1) SRV-1.
- - (B1) The SRV fairing, a cone frustrum 0.8m long and 0.7 to 1.2m in diameter. Within errors, this is the same size and shape as the CORONA SRV fairing and I speculate that it is exactly the same.
- - (A2) SRV-2, concealed within the SRV fairing.
- - (B2) The new forward adapter, a cone frustrum 0.8m long and 1.2 to 1.5m in diameter.
- - (C1) A new cylindrical section, 1.1m long and 1.5m diameter.
- - The unchanged KH-8 payload vehicle and Agena, sections C, D, E, F, G.

This increased the length of the vehicle by 1.6m to 14.4m. The GAMBIT 3 fact sheet quotes the length without Agena as 8.7m. The VAST reentry study revealed that the payload was 7.2m long and the full KH-8/Agena was 14.0m long at reentry.

The capability of the Titan 3B to LEO is a 3300-3700 kg payload, presumably not including the 600 kg basic Agena (not including batteries etc) so a total of 3900-4300 kg. (Early plans were for it to have 600 kg more payload than the KH-7, thought to be around a 2000 kg satellite). The fact sheet reports a payload mass of 1873 kg, but it's not clear what that includes.

On orbit mass was reported as 4100 kg (9000 lb) with 136 kg expendables, 181 kg SRV plus 73 kg film, 2400 kg PPS/PAS, 7847 kg SCS at launch. giving:

PPS 2400 kg minus 2 SRV 362 kg gives 2038 kg. Agena 7847 kg full, 1700 kg on orbit The item between SRV 1 and 2 is called the Ejectable Adapter (EA).

For early flights we have typically 4 orbit raises of 5 m/s each corresponding to a total of 24 kg of prop. Later flights may have used as much of 100 kg of prop. The Agena probably used the Secondary Propulsion System (SPS) used originally on E-6 and GATV.

The SRV masses were 171 and 179 kg at ejection, 82 and 91 kg at recovery. After ejection it took 10 min to parachute deploy and 23 min to recovery.

The EA (Ejectable Adapter) is 0.83m long, 0.83 to 1.29m dia and is ejected before SRV2, usually 1 (and at most 3) orbits before it. At recovery the GAMBIT yaws 180 deg and then pitches down. SRV forebody is 0.701m long 0.853m dia. Internal capsule is 0.496m long 0.649m dia. SRV has a thrust cone which separates after deorbit burn. T/C is 0.269m long without nozzle, and 0.353 to 0.846m dia.

Part of GAMBIT is built at BRIDGEHEAD, the Kodak Hawkeye facility in Rochester, NY., BIF-008 builds the COM (Camera Optics Module) and SEM (Supply Electronics Module), and the PPS (Photographic Payload Section).

The COA (Camera Optics Assembly) is demagnetized at NASA GSFC.

Sequence is:

T0	Disconnect
T0+1.8s	Ejection
T0+3.8s	Spin
T0+11.4s	Retro
T0+23.2s	Despin
T0+25.2s	T/C sep
Tg	G switch
Tg + 26s	Thermal cover eject
Tg+26s	drogue out, forebody sep
Tg+ 36s	Main chute
Tg+40s	Main chute disreef
-	Air recovery 1.5 to 4.5km

Estimated mass: (guess, excludes aft adapter which did not reach orbit)

	Component	KH-8	KH-8A	KH-8 EAC
SRV-1		171 kg	171	213f 181 em
SRV-2		0	179 kg	
B1	SRV fairing	0	50	38
B2/C1	Fwd adapter/cylinder	0	200?	) 59
B	Fwd adapter	50	0	)
C	Payload	1873?	1873?	1382
D/E/F	Agena D	1200?	1250?	
Total		3650?	4100?	

FM-52 EAC data from the 2017 NRO release of the photo system reference handbook: PPS 1831 kg made of recovery module 450 kg (2 SRV 177 each, EA 36, fixed adapter 59 kg); SEM Supply Electronics Module 358 kg (structure 117 kg, 9-inch supply unit 106 kg, 5" supply unit 33 kg, electronic control units 93 kg, misc. 8 kg); COM Camera Optics Module 1024 kg (forward barrel assy 92, aft barrel assy 126, camera optics assy 777, thermal blankets 24, misc 5).

The quoted mass for the later missions (vehicle 52) was 10900 kg at launch and 4500 kg at orbit insertion, with 984 kg of propellant remaining.

GAMBIT ground stations were BOSS (New Boston), COOK (Vandenberg), GUAM, HULA (Hawaii), INDI (Seychelles) and POGO (Thule).

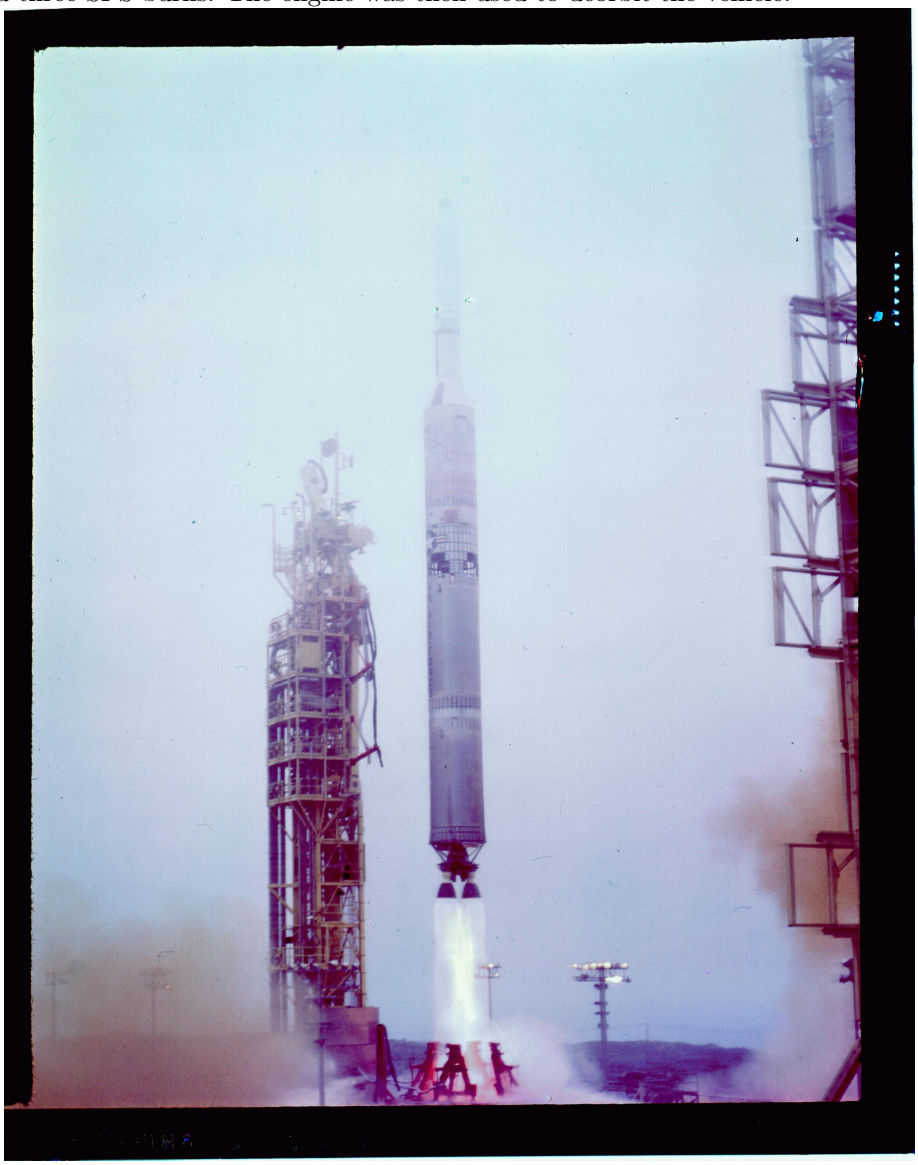
0.2 KH-8 mission logs

0.2.1 GAMBIT-3 Mission 4301 (1966-69A)

The first GAMIT-3 KH-8 satellite, Mission 4301, was launched on 1966 Jul 29. It was the 31st flight in the GAMBIT program. The week long test flight was in a low 158 x 250 km orbit, at an inclination of 94 degrees. The launch saw the introduction of the three-stage Titan IIIB Agena D launch vehicle. A single pad at Vandenberg, Space Launch Complex 4-West, was dedicated to the Titan IIIB missions. The pad was previously known as PALC2-3 and had been used for KH-7 GAMBIT launches.

The SRV was similar to those flown on CORONA missions.

A Lockheed report [**?**] described the first Program 206-II mission with SLV-5B (i.e. Titan 3B) 66-8131, satellite control section 58205/4751, and a forward satellite vehicle section (FSVS) with a recovery capsule. The PPS was flight model FM-1. Insertion was accomplished with a 2.7 m/s underspeed. The SRV was recovered in mid-air on orbit 83. Following this, the spacecraft was tested for three days with three yaw manuevers and three SPS burns. The engine was then used to deorbit the vehicle.



KH-8 Mission 1701

Date	Time	Event	Orbit
1966 Jul 29	1830:19	Launch by Titan IIIB Agena D	V SLC4W
	1832	T+2:46? Stage 1 sep	
		T+2:46 Stage 2 ignition	
	1836	T+6:50? Stage 2 sep	
	1836	T+6:52 Agena MES	

KH-8 Mission 1701

Date	Time	Event	Orbit
	1840	T+10:35 Agena MECO	88.6 158 x 250 x 94.1
1966 Jul 29	2354		88.66 150 x 266 x 94.1
1966 Jul 31	2312		88.53 157 x 246 x 94.1
1966 Aug 3	2104?	SRV recovered rev 83	
	2109?	Entry	
	2130?	Recovered	
1966 Aug 3	0421		88.42 145 x 247 x 94.1
1966 Aug 3	1440		88.32 149 x 233 x 94.1
1966 Aug 4	0530?	TCM rev 89	
1966 Aug 4	1700?	TCM rev 97	
1966 Aug 5	2120		88.76 151 x 274 x 94.1
1966 Aug 6	0600?	TCM rev 122	
1966 Aug 6		Reentered after 7 d	
1966 Aug 6	1840?	Deboost on orbit 130.	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.2 GAMBIT-3 Mission 4302 (1966-86A)

The second KH-8, Mission 4302, GAMBIT 34, was launched on 1966 Sep 28 on a Titan IIIB Agena D from Vandenberg. Like the first, this satellite entered a 94 degree inclination orbit and flew a 9 day test mission. The imagery returned was severely out of focus [**?**] at 0.9m [**?**]. The APTC was launched disabled on this mission because of schedule slips [**?**]. The roll joint was tested extensively on this mission.

KH-8 2

Date	Time	Event	Orbit
1966 Sep 28	1907	Launch by Titan IIIB Agena D	V SLC4W
	1912	Agena MES	
	1917?	MECO	
			89.0 151 x 296 x 94.0
1966 Oct 5	2146?	SRV recovered rev 115	
		Agena deboost rev 147	
1966 Oct 7	2040?	Reentered after 9d	

PAYLOAD
KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.3 GAMBIT-3 Mission 4303 (1966-113A)

KH-8 flight 4303 (GAMBIT 38) was launched on 1966 Dec 14 by Titan 3B Agena D from Vandenberg. The spacecraft entered a 138 x 368 km x 110 degree orbit, parameters which would remain typical of KH-8 missions for a decade. The orbit was lowered during the 8-day primary flight. The Agena was deorbited after 9 days.

On this mission the 'ultra-thin base' film was introduced which increased film capacity [**?**].

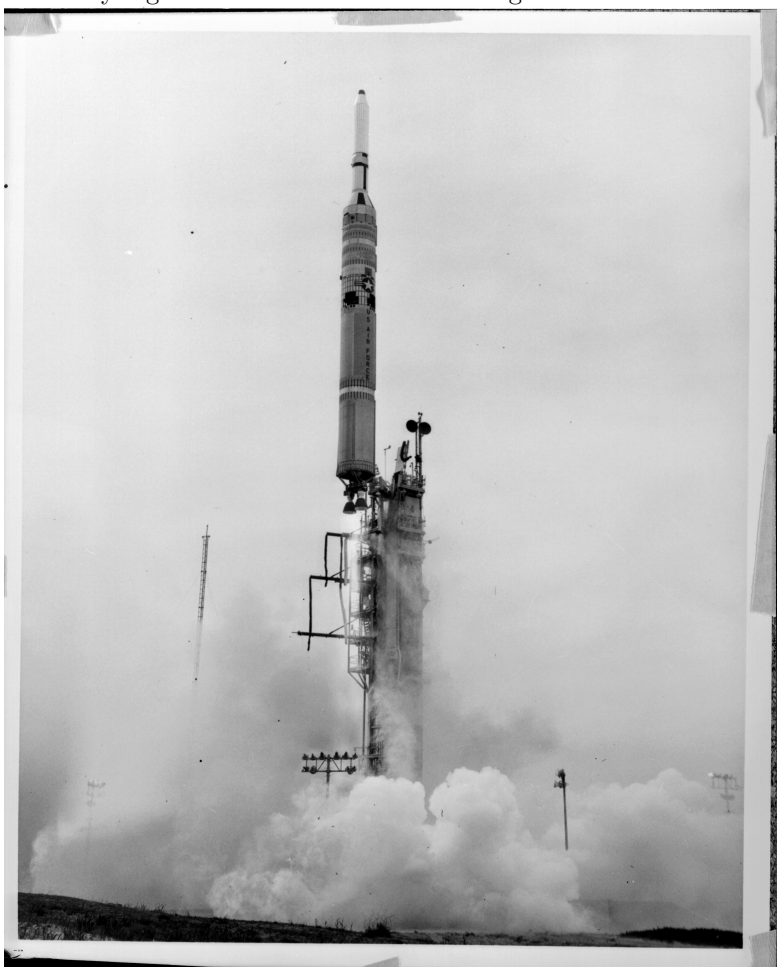
KH-8 3

Date	Time	Event	Orbit
1966 Dec 14	1814	Launch by Titan 3B Agena D	V SLC4W
	1819	Agena MES	
	1824	Agena MECO	
		TCM1, lower peri from 153 km	
		TCM2, lower peri to 141 km	89.6 138 x 368 x 109.6
1966 Dec 22	2302?	SRV recovered rev 131	
1966 Dec 24	1945?	Deboost rev 162	
1966 Dec 24		Reentered after 9 days	

PAYLOAD
KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.4 GAMBIT-3 Mission 4304 (1967-16A)

KH-8 4 (GAMBIT-3 4304) was launched on 1967 Feb 24 by Titan 3B Agena D from Vandenberg. The satellite operated for a 10 day flight in a 135 x 414 km x 107 deg orbit.



KH-8 4

Date	Time	Event	Orbit
1967 Feb 24	1959	Launch by Titan IIIB Agena D	V SLC4W
	2004	Agena MES	
	2009	Agena MECO	
			90.0 135 x 414 x 107.0
1967 Feb 25	0129	(dubious)	89.96 126 x 418 x 107.0
	0859		89.98 135 x 411 x 107.0
1967 Mar 2	1909		89.48 135 x 361 x 107.0
1967 Mar 5	0122?	SRV rec rev 131	
1967 Mar 7	0100?	Deboost rev 163	

PAYLOAD
KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.5 GAMBIT-3 Mission 4305 (1967-F04)

The 5th KH-8 flight, GAMBIT flight 41, was lost during launch from Vandenberg on 1967 Apr 26. It was followed by the final two KH-7 missions while the Titan 3B Agena D launch vehicle was requalified for flight. The Titan second stage malfunctioned 16 seconds into its burn, and velocity was 2.4 km/s too low at Titan/Agena separation.

KH-8 5

Date	Time	Event	Orbit
1967 Apr 26	1800	Launch by Titan IIIB Agena D	V SLC4W
		T+2:28? Titan stage 1 sep	
		T+2:28? Titan stage 2 burn	
		T+2:44? Stage 2 problem	
		T+5:53? Stage 2 MECO	
		T+5:55? Titan stage 2 sep	
		T+6:00? Agena burn	
	1813?	Impact S of Hawaii	

PAYLOAD
KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.6 GAMBIT-3 Mission 4306 (1967-64A)

KH-8 no. 6 (mission 4306) was GAMBIT program flight 44, following the final KH-7 flight. It flew a 10 day mission in a 127 x 325 km x 111 deg orbit after launch from Vandenberg on 1967 Jun 20. The Titan second stage had problems again, but in a much more minor key: part of the engine skirt blew off [**?**] leading to a 27 m/s underspeed; orbit was 4 x 85 km lower than planned. The orbit was adjusted on rev 32 but the Agena engine suffered a chamber pressure loss. Another Agena burn on rev 98 tweaked the orbit when the mission was extended from 8 days to 10 [**?**].

The mission orbit with a perigee at high northern latitudes and an early morning launch, allowing daytime imagery on ascending as well as descending passes over the northern hemisphere.

The success of this mission led to the cancellation of the early GAMBIT 1 program on 1967 Jun 30.

KH-8 6

Date	Time	Event	Orbit
1967 Jun 20	1615	Launch by Titan IIIB Agena D	V SLC4W
	1620	Agena burn	
	1625	Agena MECO	
			89.0 127 x 325 x 111.4
1967 Jun 20	2312		89.19 129 x 339 x 111.4
1967 Jun 22	1518		88.99 128 x 320 x 111.4
1967 Jun 22	1700?	Rev 32 orbit raise	

KH-8 6

Date	Time	Event	Orbit
1967 Jun 26	0156		89.22 133 x 338 x 111.4
1967 Jun		Rev 98 orbit tweak	
1967 Jun 30	2310?	SRV deorbit	
	2350?	SRV recovered?	
1967 Jun 30	2141?	SRV recovered rev 164	
1967 Jun 30	2315?	Deboost rev 165	
1967 Jun 30		Reentered after 10d	

PAYLOAD
KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.7 GAMBIT-3 Mission 4307 (1967-79A)

KH-8 7 (GAMBIT 4307) was launched on 1967 Aug 16 by Titan 3B Agena D from Vandenberg. Perigee was 148.7 km, 11 km higher than planned due to a 7,6m/s overspeed. By rev 31 the perigee had decayed to 147.8 km and an orbit adjust reduced this to 139 km. The roll joint locked up initially but was freed after four hours [**?**].

The mission was deboosted after solo-mode operation with ample power and control gas reserves still remaining [**?**].

KH-8 7

Date	Time	Event	Orbit
1967 Aug 16	1707	Launch by Titan IIIB Agena D	V SLC4W
	1712	Agena burn	
	1717	MECO	90.4 142 x 449 x 111.9
1967 Aug 17	0742		90.42 143 x 446 x 111.9
		Rev 31 Perigee lower	
	1644		90.38 140 x 446 x 111.6
1967 Aug 21	2030?	Rev 81, TCM2	
1967 Aug 26	2130?	Rev 162, TCM3	
1967 Aug 26	2306?	SRV rev 163	
1967 Aug 27	1031		89.39 122 x 365 x 111.6
1967 Aug 28	2250?	Deboost rev 195	

PAYLOAD
KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.8 GAMBIT-3 Mission 4308 (1967-90A)

KH-8 no. 8 (GAMBIT 4308) was launched on 1967 Sep 19 by Titan 3B Agena D from Vandenberg. The later season precluded use of high sun angles so a later launch time was used, and the orbit was selected for lower latitude targets on descending passes.

Initial perigee was 7 km lower than planned. The satellite orbited for 10 days. The orbit was apparently raised slightly between Sep 22 and Sep 26.

KH-8 8

Date	Time	Event	Orbit
1967 Sep 19	1837	Launch by Titan IIIB Agena D	V SLC4W
	1842	Agena burn	
	1847	MECO	89.8 122 x 401 x 106.1
1967 Sep 20	0737		89.93 119 x 422 x 106.1
1967 Sep 21	1035		89.72 121 x 399 x 106.1
1967 Sep 21			131 x ?
1967 Sep 21		Orbit adjust	
1967 Sep 22	0730		89.53 119 x 382 x 106.1
1971 Sep 24		Orbit adjust	
1967 Sep 26	1618		89.64 125 x 388 x 106.1
1967 Sep 29	0954		89.15 121 x 342 x 106.1
	2348?	Deorbit opp rev 163	

KH-8 8

Date	Time	Event	Orbit
1967 Sep 30	0020?	SRV recovered	
1967 Sep 30		Reentered after 10d	
1967 Sep 30	0120?	Deboost Rev 164	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.9 GAMBIT-3 Mission 4309 (1967-103A)

KH-8 no. 9 (GAMBIT Mission 4309) was launched on 1967 Oct 25 by Titan 3B Agena D from Vandenberg on a 9 day mission. The orbit steadily decayed during the mission. The RAE quoted a Nov 4 decay date but the SSR gives Nov 5. The last half-day of imagery was lost due to failure of the film takeup system [**?**].

KH-8 9

Date	Time	Event	Orbit
1967 Oct 25	1915	Launch by Titan IIIB Agena D	V SLC4W
	1920	Agena burn	
	1925?	Agena MECO	
1967 Oct 26	0216		90.16 132 x 431 x 111.6
1967 Nov 3	1958		89.55 127 x 376 x 111.5
1967 Nov 5	0050?	SRV recovered?	
		Reentered after 10d	
		SRV rev 163	
	0220?	Deboost rev 164	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.10 GAMBIT Mission 4310 (1967-121A)

KH-8 10 (GAMBIT-3 mission 4310) was launched on 1967 Dec 5 by Titan 3B Agena D from Vandenberg. The mission lasted 11 days. The orbit height was adjusted on Dec 11-12 to counteract decay.

KH-8 10

Date	Time	Event	Orbit
1967 Dec 5	1845	Launch by Titan IIIB Agena D	V SLC4W
	1850	Agena burn	
	1855	Agena MECO	
1967 Dec 6	0317		90.34 139 x 442 x 109.6
1967 Dec 6	1820		90.27 138 x 437 x 109.6
1967 Dec 7	2130?	Rev 33 orbit adjust	
1967 Dec 9	0754		89.88 126 x 410 x 109.5
1967 Dec 9	1825		89.84 130 x 402 x 109.6
1967 Dec 11	1816		89.60 129 x 379 x 109.6
1967 Dec 11	1846?	Rev 96 orbit adjust 2	
1967 Dec 12	0146		90.04 134 x 418 x 109.6
1967 Dec 16	1204		89.55 130 x 374 x 109.5
1967 Dec 16	2302?	SRV-1 deorbit rev 178	
1967 Dec 16		Reentered after 11.2d	
1967 Dec 17	0033?	Deboost rev 179	

Payload
KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.11 GAMBIT Mission 4311 (1968-05A)

KH-8 11 (GAMBIT 4311) was launched on 1968 Jan 18 by Titan 3B Agena D from Vandenberg on a 17 day flight, which would remain a record duration for the KH-8 until late 1970. The imagery mission lasted 10 days; However, the SRV parachute failed and all the data from the mission was lost [**?**]. The remaining seven days of solo operation demonstrated spacecraft capability for the double-SRV GAMBIT then being planned.

KH-8 11

Date	Time	Event	Orbit
1968 Jan 18	1904	Launch by Titan IIIB Agena D	V SLC4W
	1906	Titan stage 1 sep	
	1909	Titan stage 2 sep	
	1909	Agena burn	
	1914?	Agena MECO	
1968 Jan 18	2304		90.03 126 x 425 x 111.4
1968 Jan 20	1103		89.72 136 x 384 x 111.5
	2030?	Orbit raise rev 32, correct low orbit	
1968 Jan 21	1535		90.14 132 x 430 x 111.5
1968 Jan 24	0805		89.82 122 x 408 x 111.5
	2030?	Orbit raise, rev 96	
1968 Jan 25	0205		90.16 133 x 431 x 111.5

KH-8 11

Date	Time	Event	Orbit
1968 Jan 28	2332?	SRV deorbit rev 163	
		Entry	
		Parachute cover ejected	
		Capsule impact ocean, lost	
1968 Jan 29	0330		89.64 127 x 386 x 111.5
		Orbit raise	
1968 Jan 30	0343		90.08 122 x 433 x 111.5
1968 Jan 30	1358		90.14 135 x 427 x 111.5
1968 Feb 4	2115		90.53 131 x 370 x 111.5
1968 Feb 4	2204?	Reentered after 17.13d (RAE)	
1968 Feb 4	2320?	Deboost Rev 274	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.12 GAMBIT Mission 4312 (1968-18A)

KH-8 flight 12 (GAMBIT 4312) was launched on 1968 Mar 13 by Titan 3B Agena D from Vandenberg into a 100 degree orbit, an unusually low inclination by KH-8 standards. The mission lasted 11 days, with capsule recovery on day 10. One orbit raise burn was made the day before the end of mission. The mission was notable for experiments on thermal effects on imaging focus.

KH-8 12

Date	Time	Event	Orbit
1968 Mar 13	1951	Launch by Titan IIIB Agena D	V SLC4W
	1953	Titan stage 1 sep	
	1956	Titan stge 2 sep	
	1956	Agena burn	
	2001?	Agena MECO	
1968 Mar 14	0251		90.03 158 x 392 x 99.9
1968 Mar 23	0309		88.86 129 x 307 x 99.9
1968 Mar 23	1641	Orbit raise	89.04 130 x 323 x 99.9
1968 Mar 24		Reentered after 11 days	
	0038?	SRV rev 163	
	0042?	Entry	
	0102?	Recovered?	
	0210?	Deboost rev 164	

Payload
KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.13 GAMBIT Mission 4313 (1968-31A)

KH-8 13 (GAMBIT 4313) was launched on 1968 Apr 17 by Titan 3B Agena D from Vandenberg. The flight lasted 12 days, with the final perigee unusually low at less than 110 km. A two day solo mission studied thermal effects of low altitude flight. During the primary mission, two groundtrack maintenance burns were carried out. The returned imagery and number of targets were a record.

KH-8 13

Date	Time	Event	Orbit
1968 Apr 17	1700	Launch by Titan IIIB Agena D	V SLC4W
	1702	Titan stage 1 sep	
	1705	Titan stge 2 sep	
	1705	Agena burn	
	1710?	Agena MECO	
1968 Apr 21	0428		89.69 128 x 389 x 111.5
	1800?	Orbit raise rev 64	
1968 Apr 22	1158		90.12 126 x 434 x 111.5
1968 Apr 24	1627		89.75 126 x 398 x 111.5
	1930?	Orbit raise rev 113	
1968 Apr 26	0731		90.03 122 x 429 x 111.5
1968 Apr 27	2259?	SRV recovered rev 163	
1968 Apr 28	1752		89.11 112 x 348 x 111.5
1968 Apr 29	1738		88.90 108 x 332 x 111.5
1968 Apr 29		Reentered after 12 days	
		Deboost rev 196	
1968 Apr 29	2240?	Deorbited rev 196	

PAYLOAD
KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.14 GAMBIT Mission 4314 (1968-47A)

KH-8 14 (GAMBIT 4314) was launched on 1968 Jun 5 by Titan 3B Agena D from Vandenberg into a 123 x 456 km x 110 deg orbit, a slightly higher apogee than normal. This was soon corrected (if it was not a measurement error). The flight lasted 12 days with 10 days of primary mission.

KH-8 14

Date	Time	Event	Orbit
1968 Jun 5	1733	Launch by Titan IIIB Agena D	V SLC4W
	1735	Titan stage 1 sep	
	1738	Titan stge 2 sep	
	1738	Agena burn	
	1743	Agena MECO	
1968 Jun 5	2304		90.30 124 x 454 x 110.5
		Orbit lower?	
1968 Jun 6	1705		90.02 133 x 417 x 110.5
		Orbit raise	
1968 Jun 7	0335		89.92 120 x 420 x 110.5
		Orbit raise	
1968 Jun 9	1702		90.06 120 x 434 x 110.5
1968 Jun 11	0800		89.69 117 x 400 x 110.5
1968 Jun 12	1831		90.03 121 x 430 x 110.5
1968 Jun 15		SRV recovered rev 163	

KH-8 14

Date	Time	Event	Orbit
	2146?	Deorbit	
	2150?	Entry	
	2210?	Recovered	
1968 Jun 17	0139		89.49 109 x 389 x 110.5
1968 Jun 17		Reentered after 12d	
1968 Jun 17	2306?	Deboost rev 196	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.15 GAMBIT Mission 4315 (1968-64A)

KH-8 15 (GAMBIT 4315) was launched on 1968 Aug 6 by Titan 3B Agena D from Vandenberg. The spacecraft reentered after only 9 days, and Richelson suggested that it performed poorly [**?**], but the short lifetime is not inconsistent with other missions around this time and the Perry history reports a nominal flight with good resolution imagery [**?**].

KH-8 15

Date	Time	Event	Orbit
1968 Aug 6	1630	Launch by Titan IIIB Agena D	V SLC4W
	1632	Titan stage 1 sep	
	1632	Titan stge 2 sep	
	1635	Agena burn	
	1640	Agena MECO	
1968 Aug 6	2331		90.13 120 x 441 x 110.0
1968 Aug 11	0057		89.63 118 x 393 x 110.0
		Orbit adjust	
1968 Aug 14	0104		90.14 109 x 452 x 110.0
		Orbit adjust	
1968 Aug 14	1723		90.07 118 x 436 x 110.0
1968 Aug 16		Reentered after 9d	
		SRV rev 162	
	2055?	SRV-1 sep	

KH-8 15

Date	Time	Event	Orbit
	2102?	Entry	
	2130?	SRV-1 recovered	
	2235?	Deboost rev 163	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.16 GAMBIT Mission 4316 (1968-74A)

KH-8 16 (GAMBIT Mission 4316) was launched 1968 Sep 10 by Titan 3B Agena D from Vandenberg on a 15 day flight which epxerimented with color photography and tested an improved roll joint. It also introduced the RACS backup attitude control system, which was tested during the solo mission.

KH-8 16

Date	Time	Event	Orbit
1968 Sep 10	1830	Launch by Titan 3B Agena D	V SLC4W
	1832?	Titan stage 1 sep	
	1832?	Titan stge 2 sep	
	1835?	Agena burn	
	1840?	Agena MECO	
1968 Sep 10	1930		89.93 129 x 412 x 106.0
1968 Sep 13	1917		89.44 122 x 370 x 106.1
	2047		89.95 135 x 407 x 106.1
1968 Sep 15	2041		89.59 126 x 381 x 106.0
1968 Sep 17	1903		89.82 129 x 402 x 106.0
1968 Sep 20	2217?	SRV deorbit rev 163	
1968 Sep 21	0805		89.07 117 x 338 x 106.0
	2000		89.29 138 x 339 x 106.0
1968 Sep 23	1638		89.12 142 x 320 x 106.0
1968 Sep 25		Reentered after 15d	

KH-8 16

Date	Time	Event	Orbit
	2238?	SRV-1 ejected	
	2245?	Entry	
	2310?	SRV-1 recovered	
	1400?	Deboost rev 238	

PAYLOAD
KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.17 GAMBIT Mission 4317 (1968-99A)

KH-8 17 (GAMBIT 4317) was launched on 1968 Nov 6 by Titan 3B Agena D from Vandenberg. The flight lasted 14 days. It's not clear whether decay was on rev 213 or a day later on rev 229.

On this mission the primary attitude control system (PACS) failed on rev 40 and the redundant RACS system, fortunately introduced on the previous mission, saved the flight.

KH-8 17/OPS 5296

Date	Time	Event	Orbit
1968 Nov 6	1910	Launch by Titan 3B Agena D	V SLC4W
	1912?	Titan stage 1 sep	
	1912	Titan stge 2 sep	
	1915	Agena burn	
	1920	Agena MECO	
			89.7 130 x 390 x 106.0
1968 Nov 16			
	2252?	SRV rev 163	
1968 Nov 18			134 x 338 x 105.9
1968 Nov 19	2013?		132 x 316 x 106.0
	2338?	SRV-1 ejected rev 213?	
	2345?	Entry	
1968 Nov 20	0010?	SRV-1 recovered	
1968 Nov 20		Reentered after 14d	

KH-8 17/OPS 5296

Date	Time	Event	Orbit
	0110?	Deboost rev 212	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.18 GAMBIT Mission 4318 (1968-108A)

KH-8 18 (GAMBIT 4318) was launched on 1968 Dec 4 by Titan IIIB Agena D from Vandenberg. This mission, which lasted 8 days, was the first of three that would use a much higher apogee. When the program was declassified in 2011 it was revealed that these high apogee missions were unintentional; on this flight it was the Titan second stage that burned to depletion instead of cutting off, adding extra energy. This happened because the Vandenberg ground station was unable to send commands to the Titan. The orbit was adjusted on rev 93 with an SPS single-engine burn. A later problem with orbit adjust caused mission termination on day 7 [**?**].

KH-8 18

Date	Time	Event	Orbit
1968 Dec 4	1923	Launch by Titan 3B Agena D	V SLC4W
	1925?	Titan stage 1 sep	
	1925?	Titan stge 2 sep	
	1928?	Agena burn	
	1933?	Agena MECO	
			93.30 136 x 736 x 106.2
1968 Dec 4	2332		93.26 126 x 741 x 106.3
1968 Dec 5	0851		93.27 132 x 736 x 106.2
1968 Dec 6	0459		92.37 127 x 654 x 106.2
1968 Dec 9	0341		91.98 124 x 619 x 106.2

KH-8 18

Date	Time	Event	Orbit
		Perigee raise, SPS, rev 93	
1968 Dec 11	0311		91.90 133 x 602 x 106.2
	2205?	SRV deorbited rev 111	
1968 Dec 12	0209		91.83 135 x 593 x 106.2
1968 Dec 12		Reentered after 8d	
1968 Dec 12	2240?	Deboost rev 127	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.19 GAMBIT 4319 (1969-07A)

KH-8 19 (GAMBIT 4319) was launched on 1969 Jan 22 by Titan IIIB Agena D from Vandenberg. It entered an orbit with an unusually high apogee of 1090 km, because the Agena D failed to shut down on time.

A debris object, 1969-07B, was tracked in a 130 x 694 km x 106.1 deg orbit on Jan 23; it may be a camera cover.

At the end of January an event 'caused concern among policy makers in Washington' [**?**] - the Kosmos-264 satellite made orbital manuevers and passed within 24 km of Mission 4319 [**?**]. There was some worry it was an ASAT, but in fact it was the second Zenit-4M/Rotor spy satellite, testing out its KDU orbit adjust engine.

The SRV was recovered on Feb 2. At this time the perigee was over 33N. A rev 161 reentry (as per the history) would require an ascending pass with deorbit at apogee and a long coast down which seems unlikely (or a descending pass Atlantic recovery, even more so). I suspect a problem with the rev numbering; the likely Feb 2 recovery time is instead around 2318 UTC on Feb 2 which I calculate as rev 165.

KH-8 19

Date	Time	Event	Orbit
1969 Jan 22	1910	Launch by Titan IIIB Agena D	V SLC4W
	1912?	Titan stage 1 sep	
	1915?	Titan stage 2 sep	

KH-8 19

Date	Time	Event	Orbit
	1915?	Agena burn	
	1920?	Agena MECO	
1969 Jan 23	1843		96.96 131 x 1094 x 106.2
1968 Jan 28	0851		96.85 137 x 1078 x 106.1
1969 Feb 1	0310		96.62 136 x 1056 x 106.1
1969 Feb 2		SRV rev 161?	
	2314?	SRV deorbit	
1969 Feb 3		Reentered after 12 days	
1969 Feb 3	2325?	Deboost rev 181	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.20 GAMBIT Mission 4320 (1969-19A)

KH-8 20 (GAMBIT 4320) was launched by Titan IIIB Agena D from Vandenberg SLC4W into a 92 degree orbit, the lowest inclination (closest to polar) flight of any KH-8 mission. A high priority target was probably the China/USSR border region.

On this mission the PACS again failed and RACS took over on rev 52.

KH-8 20

Date	Time	Event	Orbit
1969 Mar 4	1930	Launch by Titan IIIB Agena D	V SLC4W
	1932?	Titan stage 1 sep	
	1935?	Titan stage 2 sep	
	1935?	Agena burn	
	1940?	Agena MECO	
1969 Mar 5	0402		90.43 132 x 459 x 92.0
1969 Mar 8	1448		89.98 128 x 417 x 92.0
		Orbit raise	
	2244		90.21 121 x 448 x 92.0
		Orbit raise	
1969 Mar 9	0422		90.46 127 x 466 x 92.0
1969 Mar 10	1803		90.23 130 x 440 x 92.0
		Orbit raise	
	2234	90.57 136 x 468 x 92.0	

KH-8 20

Date	Time	Event	Orbit
		Lower perigee	
1969 Mar 11	1210		90.24 114 x 458 x 92.0
1969 Mar 12	1217	Raise orbit	90.31 125 x 453 x 92.1
1969 Mar 14			
	2200?	SRV recovered rev 161	
1969 Mar 16	0923		89.72 132 x 388 x 92.0
1969 Mar 17	1945		89.47 125 x 371 x 92.0
1969 Mar 18		Reentered after 14d	
	2145?	Deboost rev 224	

PAYLOAD
KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.21 GAMBIT Mission 4321 (1969-39A)

KH-8 21 (GAMBIT 4321) was launched on 1969 Apr 15 by Titan 3B Agena D from Vandenberg on a 15 day flight. It was injected with a slight inclination error because of ground guidance problems [**?**]. A small apogee raise was made around Apr 20.

KH-8 21

Date	Time	Event	Orbit
1969 Apr 15	1730	Launched by Titan IIIB Agena D	V SLC4W
	1732?	Titan stage 1 sep	
	1735?	Titan stage 2 sep	
	1735?	Agena burn	
	1740?	Agena MECO	
1969 Apr 16	0213		90.49 126 x 470 x 108.8
1969 Apr 18	0506		89.76 132 x 393 x 108.8
1969 Apr 20?		Apogee tweak	
1969 Apr 21	0157		89.81 130 x 398 x 108.8
1969 Apr 25			
	2310?	SRV deorbit rev 163	
1969 Apr 27	1024		89.28 126 x 350 x 108.8
1969 Apr 30		Reentered after 15 d	
	2346?	Deboost rev 244	

Payload
KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.22 GAMBIT Mission 4322 (1969-50A)

KH-8 22 (GAMBIT 4322) was launched on 1969 Jun 3 by Titan 3B Agena D from Vandenberg SLC4W. It reentered after only 11 days. It was the last 1-SRV mission.

KH-8 22

Date	Time	Event	Orbit
1969 Jun 3	1649	Launch by Titan IIIB Agena D	V SLC4W
	1651?	Titan stage 1 sep	
	1654?	Titan stage 2 sep	
	1654?	Agena burn	
	1659?	Agena MECO	
			90.17 132 x 432 x 110.0
1969 Jun 4	0250		90.01 136 x 413 x 110.0
1969 Jun 5	1919		89.86 131 x 403 x 110.0
1969 Jun 8	1142		89.92 133 x 406 x 110.0
	1612		89.87 127 x 408 x 110.0
1969 Jun 12	0107		90.04 128 x 424 x 110.0
1969 Jun 13	1937?	SRV rev 163	
1969 Jun 14	0234		89.71 125 x 394 x 110.0
	1730		89.54 128 x 374 x 110.0
1969 Jun 14		Reentered after 11.2d	
	1936?	Deboost rev 179	

Payload
KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.23 GAMBIT Mission 4322 (1969-74A)

KH-8 23 (GAMBIT 4322) was launched on 1969 Aug 23 by Titan 3B Agena D from Vandenberg. The flight lasted 16 days. At least 4 orbit raising burns were made, keeping apogee between 350 and 400 km. This was the first Block II mission with two SRVs and the KH-8B camera system. (The Block II nomenclature appears to be an invention of the Perry history [**?**]). The Block II vehicles also carried an extra battery to extend mission life to 14 days, and the RACS was improved.

The RAE tables give a launch date of Aug 22, but multiple other sources confirm that this is an error.

KH-8 23

Date	Time	Event	Orbit
1969 Aug 23	1600	Launch by Titan IIIB Agena D	V SLC4W
	1602?	Titan stage 1 sep	
	1605?	Titan stage 2 sep	
	1605?	Agena burn	
	1610?	Agena MECO	
1969 Aug 23	1958		89.55 130 x 373 x 108.0
1969 Aug 24	1652		89.47 131 x 365 x 108.0
		Raise apo	
1969 Aug 25	1049		89.67 131 x 384 x 108.0
1969 Aug 29	2348		89.33 130 x 352 x 108.0
		Raise apo	
1969 Aug 30	1615		89.51 132 x 368 x 108.0
1969 Sep 1	0231		89.27 129 x 348 x 108.0
		Raise apo	
1969 Sep 2	0224		89.81 128 x 401 x 108.0
1969 Sep 2	1924?	SRV-1 fiducial	
	1929?	Entry	
	1955?	Recovered	
1969 Sep 6	0030		89.35 128 x 356 x 108.0
		Raise apo	
1969 Sep 6	0201		89.74 132 x 390 x 108.0
1969 Sep 6	1230		89.70 131 x 387 x 108.0
1969 Sep 7		Reentered after 16d	
	2024?	SRV-2 ejected	
	2031?	Reentry	
	2100?	SRV-2 recovered	
1969 Sep 7	2200?	Deboost	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle

0.2.24 GAMBIT Mission 4324 (1969-95A)

KH-8 24 (GAMBIT 4324) was launched on 1969 Oct 24 by Titan 3B Agena D from Vandenberg. The mission lasted 15 days. It was the third and last mission to be marred by an unplanned high apogee; the Agena failed to shut down and orbit control had to use the secondary propulsion system.

KH-8 24

Date	Time	Event	Orbit
1969 Oct 24	1810	Titan IIIB Agena D	V SLC4W
	1812?	Titan stage 1 sep	
	1815?	Titan stage 2 sep	
	1815?	Agena burn	
	1820?	Agena MECO	
1969 Oct 25	0259		93.52 136 x 757 x 108.0
	1833		83.29 134 x 736 x 108.0
	2313		92.46 123 x 666 x 108.0
1969 Oct 28	1852		91.98 124 x 618 x 108.0
1969 Oct 29?		Small perigee raise?	
1969 Oct 30	0131		91.78 131 x 591 x 108.0
1969 Nov 1	0657		91.33 121 x 557 x 108.0
	2110	SRV-1 recovery opp	
	2117?	Entry	
	2145?	SRV-1 recovered? (NOTIONAL)	

KH-8 24

Date	Time	Event	Orbit
		Small peri raise?	
1969 Nov 2	0415		91.17 124 x 539 x 108.0
	2130	SRV-1 recovery opp	
1969 Nov 5	1841		90.71 123 x 494 x 108.0
1969 Nov 7	2029		90.15 114 x 448 x 108.0
1969 Nov 7		SRV-2 recovery after 14 days	
	2230?	SRV-2 ejected	
	2234?	Entry	
	2300?	SRV-2 recovered	
1969 Nov 8		Reentered after 15d	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.25 GAMBIT Mission 4325 (1970-02A)

KH-8 25 (GAMBIT 4325) was launched by 1970 Jan 14 by Titan 3B Agena D from Vandenberg on an 18 day mission. After periodic apogee raises, the perigee was raised on Jan 28 prior to reentry.

The second SRV was lost on this mission when its parachute failed and the capsule sank.

KH-8 25 (OPS 6531)

Date	Time	Event	Orbit
1970 Jan 14	1843	Launch by Titan 3B Agena D	V SLC4W
	1845	Titan stage 1 sep	
	1848	Titan stage 2 sep	
	1848	Agena burn	
	1853?	Agena MECO	
1970 Jan 15	0012		89.68 134 x 383 x 110.0
1970 Jan 18	1752		89.53 131 x 370 x 110.0
		Orb raise	
1970 Jan 19	0251		89.81 132 x 397 x 110.0
1970 Jan 21	1906		89.42 126 x 365 x 110.0
		Orb raise	
	2236?	SRV-1 opp (fiducial)	
1970 Jan 22	2155		89.88 122 x 413 x 110.0
1970 Jan 24	0950		89.65 125 x 389 x 110.0
		Orb raise	

KH-8 25 (OPS 6531)

Date	Time	Event	Orbit
1970 Jan 26	0510		89.83 125 x 405 x 110.0
1970 Jan 28	1657		89.45 124 x 370 x 109.9
		Raise perigee	
1970 Jan 28		SRV-2 recovery after 14 days	
	2327?	eject	
	2332?	Entry	
	2340?	Parachute failed	
	2350?	SRV-2 sank	
1970 Jan 30	0313		89.45 153 x 341 x 109.9
1970 Jan 30	1937		89.43 149 x 343 x 110.0
1970 Feb 1		Reentered after 18d	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.26 GAMBIT Mission 4326 (1970-31A)

KH-8 26 was launched by Titan 3B Agena D from Vandenberg on 1970 Apr 15. It remained in orbit for 21 days, with a 14-day photo mission. The perigee was raised on May 1 for a solo mission of some kind. The resolution for this mission was poorer than normal.

KH-8 26

Date	Time	Event	Orbit
1970 Apr 15	1552	Launch by Titan 3B Agena D	V SLC4W
	1554	Titan stage 1 sep	
	1557	Titan stage 2 sep	
	1557	Agena burn	
	1602?	Agena MECO	
1970 Apr 16	0022		89.76 132 x 392 x 111.0
1970 Apr 17	0017		89.62 128 x 382 x 111.0
		Orbit raise	
1970 Apr 18	0441		89.79 127 x 400 x 111.0
1970 Apr 20	0002		89.88 126 x 409 x 111.0
1970 Apr 22	0551		89.50 128 x 370 x 111.0
		Orbit raise	
1970 Apr 22	1949?	SRV-1 fiducial	
1970 Apr 24	0704		89.88 130 x 406 x 111.0
1970 Apr 27	0052		89.55 120 x 384 x 110.9

KH-8 26

Date	Time	Event	Orbit
		Orbit raise	
	1722		89.88 135 x 401 x 110.9
1970 Apr 29		SRV-2 recovered after 14 days	
1970 May 1	0502		89.32 128 x 353 x 110.9
		Raise perigee	
1970 May 2	0749		89.28 141 x 335 x 110.9
1970 May 6	0521		88.81 140 x 290 x 111.0
1970 May 6		Reentered after 21d	
	2216?	Entry (deboost)	

Payload

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.27 GAMBIT 65 (1970-48A)

KH-8 27 (GAMBIT 65) was launched on 1970 Jun 25 by Titan 3B Agena D from Vandenberg. According to Richelson [**?**] it observed SS-9 (Soviet designation R-36) missile silos. KH-8 27 also carried a MESA accelerometer to study the density of the upper atmosphere, which operated until Jul 5 [**?**]. The mission lasted only 11 days.

The first SRV was successfully recovered in mid-air, even though the heat shield had not separated.

The second SRV was not recovered because of a command system failure soon after RV-1 came down (the Extended Command System oscillator overheated). An emergency recovery attempt using the MCS (Minimal Command System) was unsuccessful and the SRV was lost on reentry, still attached to the main spacecraft ([**?**], p303-304) which was actively deorbited under MCS control.

KH-8 27

Date	Time	Event	Orbit
1970 Jun 25	1450	Launch by Titan IIIB Agena D	V SLC4W
	1452	Titan stage 1 sep	
	1455	Titan stage 2 sep	
	1455	Agena burn	
	1500?	Agena MECO	
	2149		89.78 126 x 401 x 108.9
1970 Jun 26	2145		89.66 128 x 387 x 108.9

KH-8 27

Date	Time	Event	Orbit
1970 Jun 28	0039		89.80 128 x 400 x 108.9
	0938		89.70 139 x 379 x 108.9
		Raise apo	
1970 Jun 29	1745		89.98 125 x 421 x 108.9
1970 Jul 1	0626		89.65 127 x 387 x 108.9
	1721?	SRV-1 ejected (NOTIONAL)	
	1728?	Entry	
	1755?	SRV-1 recovered	
		Small apo raise	
1970 Jul 2	0022		89.74 127 x 396 x 108.9
1970 Jul 4	1206		89.34 126 x 357 x 108.9
1970 Jul 5		SRV recovered according to [?]	
1970 Jul 6	0116		88.76 126 x 300 x 108.9
1970 Jul 6		Reentered after 11 days	
		SRV-2 fairing ejected	
	1802?	SRV-2/Agena deorbited	
	1804?	SRV-2 failed to eject	
	1809?	Entry, SRV-2/Agena destroyed	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle
MESA accelerometer (air density study) (Aerospace/Rugge)

0.2.28 GAMBIT Mission 4328 (1970-61A)

KH-8 28 (GAMBIT 4328) was launched on 1970 Aug 18 by Titan 3B Agena D from Vandenberg. In addition to its close-look imaging mission, it also carried an accelerometer to study the density of the Earth's atmosphere. Perigee of this mission, at 151 km, was higher than for any other KH-8 flight bar the first two test flights. Mission 4328 remained in orbit for 16 days of a planned 18-day mission, returning imagery of the Middle East including the Aug 1970 Suez ceasefire zone [**?**]. that ended the War of Attrition of 1967-70.

RAE gives a Sep 3 decay date but the SATCAT says Sep 4, consistent with the last element set.

KH-8 28

Date	Time	Event	Orbit
1970 Aug 18	1445	Launch by Titan 3B Agena D	V SLC4W
	1447	Titan stage 1 sep	
	1450	Titan stage 2 sep	
	1450	Agena burn	
	1455?	Agena MECO	
	2312		89.48 130 x 366 x 111.0
1970 Aug 19	0341		89.49 139 x 358 x 111.0
		Raise apo	
1970 Aug 21	0459		89.64 149 x 363 x 110.9
1970 Aug 23	1215		89.53 148 x 354 x 111.0
		Raise apo	
1970 Aug 24	1513		89.94 149 x 393 x 110.9
		Raise orbit	
1970 Aug 25	0016		90.46 151 x 442 x 111.0
	1849?	SRV-1 recovery opp rev 116 (NOTIONAL)	
	1856?	Entry	
	1925?	SRV-1 recovered (NOTIONAL)	
1970 Aug 25	2251		90.00 149 x 399 x 111.0
1970 Aug 29	0017		89.60 147 x 361 x 111.0
		Raise apo	
1970 Aug 30	2235		89.97 150 x 395 x 111.0
1970 Sep 3	0430		89.77 150 x 376 x 111.0
1970 Sep 4	0123		88.48 137 x 260 x 111.0
1970 Sep 4		Reentered after 16 days	
	1936?	SRV-2 recovery opp rev 277	
	1943?	Entry	
	2010?	SRV-2 recovered	
	2108?	Deboost (guess)	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle
MESA accelerometer for air density study (Aerospace/Rugge)

0.2.29 GAMBIT Mission 4329 (1970-90A)

KH-8 29 (GAMBIT 4329) was launched on 1970 Oct 23 by Titan IIIB Agena D from Vandenberg on a 19 day flight. Its mission probably included imaging of missile silos for the R-36 (SS-9) missile. Major orbit raising burns were carried out on Oct 24 and around Nov 5.

KH-8 29

Date	Time	Event	Orbit
1970 Oct 23	1740	Launch by Titan IIIB Agena D	V SLC4W
	1742	Titan stage 1 sep	
	1745	Titan stage 2 sep	
	1745	Agena burn	
	1750?	Agena MECO	
	1902		89.63 125 x 386 x 111.1
1970 Oct 24	0638		89.80 133 x 394 x 111.1
		Orbit raise	
1970 Oct 25	1741		90.10 135 x 423 x 111.0
1970 Oct 27	2257		89.86 131 x 403 x 111.0
1970 Nov 1	0742		89.61 122 x 387 x 111.0
	2138?	SRV-1 recovery opp (NOTIONAL)	
	2145?	Entry	
	2210?	SRV-1 recovered (NOTIONAL)	
		Orbit raise	
1970 Nov 2	2107		89.81 135 x 394 x 111.0
		Orbit raise	
1970 Nov 5	2219		90.35 149 x 433 x 111.0
1970 Nov 10	1035		90.04 145 x 407 x 111.0
1970 Nov 10		SRV-2 recovered after planned 18 day mission	
1970 Nov 11		Reentered after 19d	
	2311?	Deboost	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.30 GAMBIT 4330 (1971-05A)

KH-8 OM-30 (GAMBIT 4330) was launched on 1971 Jan 21 by Titan IIIB Agena D from Vandenberg on a 19 day flight. According to Richelson [**?**] the spacecraft returned images of Soviet construction of a new type of missile silo for the R-36 (SS-9) ICBM. A second object was cataloged with a slightly higher perigee; it may be a sensor cover.

KH-8 30 (OPS 7776)

Date	Time	Event	Orbit
1971 Jan 21	1820	Launch by Titan IIIB Agena D	V SLC4W
	1822	Titan stage 1 sep	
	1825	Titan stage 2 sep	
	1825	Agena burn	
	1830?	Agena MECO	
	2050		90.07 138 x 416 x 110.9
	2050	05B	89.78 161 x 366 x 110.7 (05B)
1971 Jan 22	2221		89.99 138 x 408 x 110.9
1971 Jan 24	1746		89.63 130 x 381 x 110.8
		Adjust orbit	
1971 Jan 26	0837		89.68 129 x 388 x 110.8
1971 Jan 27	1001		89.54 129 x 374 x 110.8
		Orbit raise	
1971 Jan 28	0228		89.99 130 x 417 x 110.8

KH-8 30 (OPS 7776)

Date	Time	Event	Orbit
1971 Jan 29	2225?	SRV-1 recovery guess (NOTIONAL)	
	2232?	Entry	
	2300?	SRV-1 recovered	
1971 Jan 30	0054		89.71 130 x 389 x 110.8
		Orbit raise	
	2150		89.94 132 x 410 x 110.8
1971 Feb 2	0813		89.73 129 x 392 x 110.8
1971 Feb 3	0938		89.58 129 x 378 x 110.8
		Orbit raise	
1971 Feb 5	0501		89.72 131 x 390 x 110.8
		Orbit raise	
1971 Feb 6	1358		89.97 130 x 415 x 110.8
1971 Feb 8	0456		89.77 130 x 395 x 110.8
1971 Feb 8?		1971-05C cataloged	141 x 396 x 110.7
1971 Feb 8	2323?	SRV-2 Deorbit opp rev 293	
	2330?	Entry	
1971 Feb 9	0000?	SRV-2 recovered	
1971 Feb 9		Reentered after 19 days	
	0056?	VAST 1 controlled deorbit test	
1971 Feb 9		1971-05C reentered	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.31 GAMBIT Mission 4331 (1971-33A)

KH-8 31 (GAMBIT 4331) was launched on 1971 Apr 22 by Titan IIIB Agena D from Vandenberg on a 21 day flight. The last orbital maneuver was made on May 7 and the primary mission lasted 19 days.

The last of the Drag Measurement System experiments was carried on this mission.

KH-8 31

Date	Time	Event	Orbit
1971 Apr 22	1530	Launch by Titan IIIB Agena D	V SLC4W
	1532	Titan stage 1 sep	
	1535	Titan stage 2 sep	
	1535	Agena burn	
	1540?	Agena MECO	
1971 Apr 24	2052		90.07 134 x 421 x 110.9
1971 Apr 28	1740		89.59 130 x 378 x 110.9
		Orbit adjust	
1971 May 1	0533		89.64 131 x 382 x 110.9
		Orbit raise	
	1930?	SRV-1 ejected (NOTIONAL)	
	1937?	Entry	
	2005?	SRV-1 recovered	
	2159		89.84 131 x 401 x 110.9
1971 May 2	1557		89.84 130 x 392 x 110.9

KH-8 31

Date	Time	Event	Orbit
		Orbit raise	
1971 May 3	2151		89.92 131 x 409 x 110.9
1971 May 5	0049		89.78 131 x 395 x 110.9
		Orbit adjust	
	2315		89.83 131 x 400 x 110.9
1971 May 7	0810		89.65 130 x 383 x 110.9
		Orbit raise	
1971 May 8	0208		89.96 131 x 413 x 110.9
1971 May 11	0157		89.56 129 x 375 x 110.9
	2123?	SRV-2 ejected (nominal 19 days)	
	2130?	Entry	
	2158?	SRV-2 recovered	
1971 May 13	0305		88.99 126 x 321 x 110.9
1971 May 13		Reentered after 21d	
	2130?	OM-31 VAST 2 controlled reentry	

PAYLOAD

KH-8 camera system
DMS Drag Measurement System experiment
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.32 GAMBIT Mission 4332 (1971-70A)

KH-8 OM 32 (GAMBIT 4332) was launched on 1971 Aug 12 by Titan IIIB Agena D from Vandenberg on a 22 day flight. This flight was the first to fly the longer focal length R-5 optical system, and marked the transition of the long tank Titan 24B.

The vehicle was deorbited over Alaska as part of the VAST 3 experiment to recover a 'payload sensor'.

KH-8 32

Date	Time	Event	Orbit
1971 Aug 12	1530	Launch by Titan 3B Agena D	V SLC4W
	1532	Titan stage 1 sep	
	1535	Titan stage 2 sep	
	1535	Agena burn	
	1540?	Agena MECO	
	1630		90.20 137 x 431 x 111.0
1971 Aug 13	0431		90.10 136 x 422 x 111.0
1971 Aug 15	2358		89.68 127 x 389 x 111.0
		Orbit raise	
1971 Aug 16	2224		90.04 129 x 423 x 111.0
1971 Aug 19	1623		89.87 130 x 405 x 111.0
		Orbit raise	
1971 Aug 20	2220		90.05 131 x 422 x 111.0
1971 Aug 23	1017		89.74 131 x 391 x 111.0
	1946	SRV-1 deorbit opp NOTIONAL	
	1953	Entry	
	2020?	SRV-1 recovered NOTIONAL	
		Orbit raise	
1971 Aug 24	0847		90.06 134 x 420 x 111.0
1971 Aug 28	2045		89.83 132 x 399 x 111.0
		Orbit raise	
1971 Aug 29	2042		89.98 134 x 412 x 111.0
1971 Sep 1	0238		89.76 133 x 391 x 111.0
1971 Sep 3	2023		89.48 132 x 365 x 111.0
1971 Sep 3		Reentered after 22d	
	2223?	SRV-2 ejected	
	2230?	Entry	
	2255?	SRV-2 recovered	
	2347?	VAST 3 controlled reentry in Alaska	

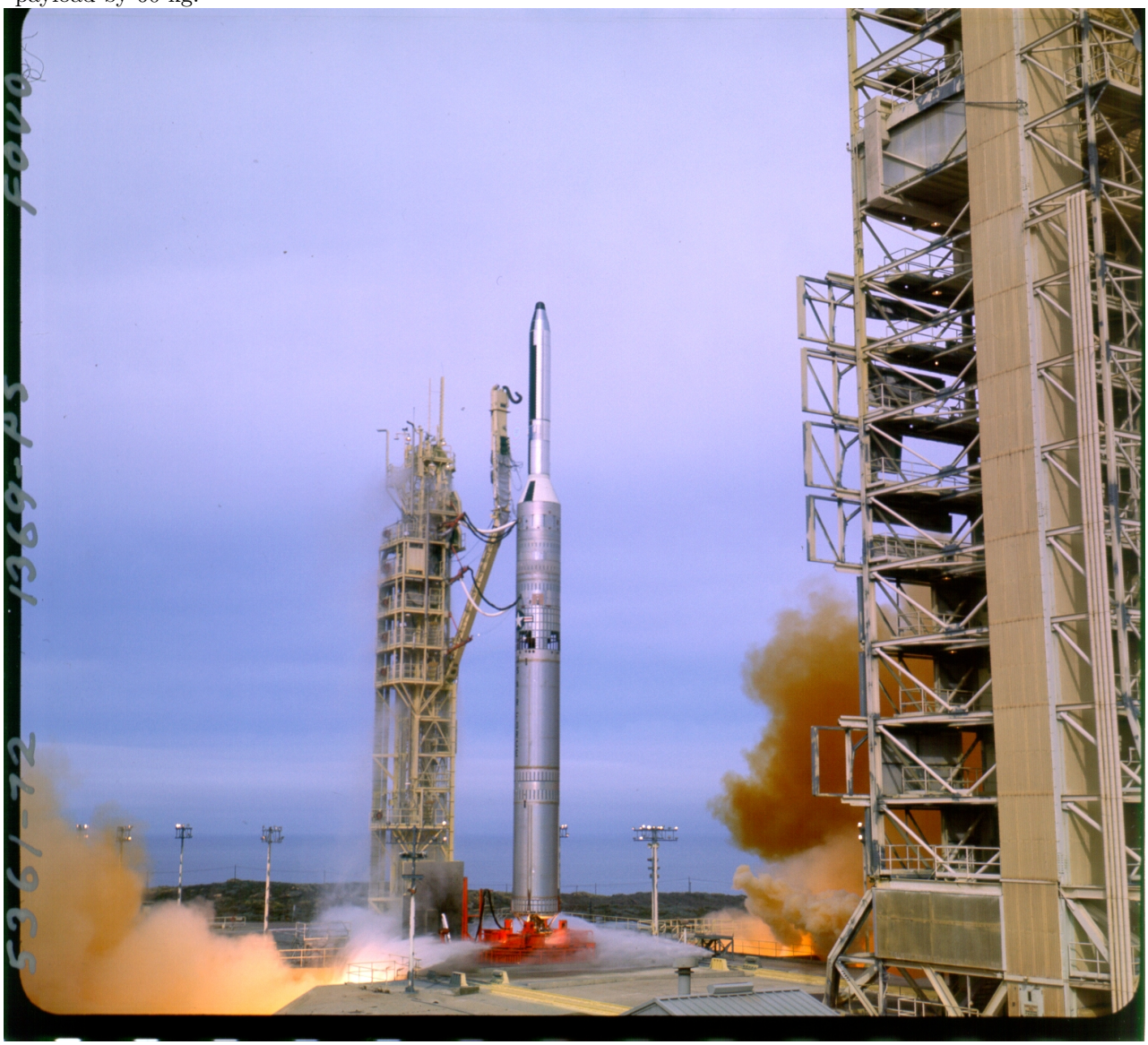
Payload

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.33 GAMBIT Mission 4333 (1971-92A)

KH-8 33 was launched on GAMBIT flight 71 by Titan IIIB Agena D from Vandenberg on 1971 Oct 23. The flight lasted 25 days using new batteries. Object 1971-92B, with a single low-perigee element set on Nov 17, may be the inter-SRV adapter, or possibly an SRV which had an incomplete reentry.

The flight introduced a modified Agena which used HDA (high density acid) as oxidizer, increasing payload by 60 kg.



KH-8 33

Date	Time	Event	Orbit
1971 Oct 23	1710	Launch by Titan IIIB Agena D	V SLC4W
	1712	Titan stage 1 sep	
	1715	Titan stage 2 sep	
	1715	Agena burn	
	1720?	Agena MECO	
	1940		90.01 131 x 419 x 111.0
1971 Oct 26	0437		89.76 132 x 392 x 111.0
		Raise orbit	
1971 Oct 27	0004		89.96 129 x 415 x 111.0
1971 Oct 30	1157		89.75 130 x 393 x 111.0
		Raise orbit	
1971 Oct 31	0426		89.95 132 x 412 x 111.0

KH-8 33

Date	Time	Event	Orbit
1971 Nov 2	1150		89.70 130 x 388 x 111.0
		Raise orbit	
	2349		90.00 133 x 414 x 111.0
1971 Nov 4			
	2116?	SRV-1 deorbit opp NOTIONAL	
	2123?	Entry	
	2350?	SRV-1 recovered NOTIONAL	
1971 Nov 5	0415		89.73 132 x 390 x 111.0
		Raise orbit	
	2342		89.95 133 x 410 x 111.0
1971 Nov 7	0240		89.82 133 x 398 x 110.9
		Raise orbit	
	2208		89.95 131 x 412 x 110.9
1971 Nov 10	1301		89.70 134 x 384 x 110.9
		Adjust orbit	
1971 Nov 11	2157		89.79 135 x 392 x 110.9
1971 Nov 13	2148		89.68 137 x 379 x 110.9
		Raise orbit	
1971 Nov 14	1417		89.79 135 x 392 x 110.9
1971 Nov 16	2336?	SRV-2 ejected?	
	2343?	Entry	
1971 Nov 17	0010?	SRV-2 recovered	
1971 Nov 17	0034	(92B orbit)	88.74 93 x 330 x 110.9
1971 Nov 17	2259		89.47 134 x 362 x 110.9
1971 Nov 17	2332?	Deboost	
		Reentered after 25d	

Payload

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.34 GAMBIT Mission 4334 (1972-16A)

The first GAMBIT flight of 1972, KH-8 no. 34, was launched on Mar 17 from Vandenberg. The mission lasted 25 days (24 days photographic). Launch vehicle for this flight was the Titan 23B Agena D according to Martin Marietta documents; this is probably just a new designation for the IIIB rather than a new variant of the vehicle. A fifth 'magnum' battery was used to extend life [**?**].

The vehicle was deorbited over Eniwetok as part of the VAST 4 reentry-survival experiment.

KH-8 OM 34

Date	Time	Event	Orbit
1972 Mar 17	1700	Launch by Titan 23B Agena D	V SLC4W
	1702	Titan stage 1 sep	
	1705	Titan stage 2 sep	
	1705	Agena burn	
	1710?	Agena MECO	
	1930		89.95 128 x 415 x 111.0
1972 Mar 19	0557		89.76 130 x 393 x 111.0
		Orbit raise	
	2224		89.84 130 x 402 x 111.0
		Orbit raise	
1972 Mar 21	2046		89.98 133 x 413 x 111.0
1972 Mar 26	0534		89.60 132 x 376 x 111.0

KH-8 OM 34

Date	Time	Event	Orbit
		Orbit raise	
	2329		89.94 141 x 400 x 111.0
1972 Mar 29	1123		89.70 139 x 379 x 111.0
		Orbit raise	
1972 Mar 30	0221		89.88 140 x 396 x 111.0
	2050?	SRV-1 deorbit opp rev 212 (NOTIONAL)	
	2057?	Entry	
	2125?	SRV-1 recovered (NOTIONAL)	
1972 Mar 31	0519		89.77 140 x 385 x 111.0
		Orbit raise	
1972 Mar 31	2146		89.85 140 x 393 x 111.0
1972 Apr 3	0508		89.63 138 x 374 x 110.9
		Orbit raise	
1972 Apr 4	1403		89.88 143 x 393 x 110.9
1972 Apr 5	2300		89.77 143 x 382 x 110.9
		Orbit raise	
1972 Apr 6	2256		89.85 142 x 391 x 110.95
1972 Apr 8	0622		89.75 142 x 381 x 110.9
		Orbit raise	
1972 Apr 8	2250		89.88 142 x 394 x 110.9
1972 Apr 9	1349		89.83 142 x 389 x 110.9
1972 Apr 10	2315?	SRV-2 deorbit opp	
	2322?	Entry	
	2350?	SRV-2 recovery opp (guess)	
1972 Apr 11		Reentered after 25 days	
	0044?	Agena deorbit over Alaska, perhaps -120 to -150 m/s ?	
	0057	VAST 4 controlled reentry at Eniwetok	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.35 GAMBIT Mission 4335 (1972-F03)

Mission 4335 introduced an improved GUMR (Gemini Uniform Mixture Ratio) engine in the Agena SPS, increasing payload capacity by 90 kg, and changed all ten Agena batteries to the larger 'magnum' models, allowing a 30 day orbital life. [**?**]

The system included SCS 4785, payload adapter 1085, and payload FM-35.

KH-8 35 (GAMBIT 73) was launched by Titan 23B Agena D from Space Launch Complex 4-West at Vandenberg on 1972 May 20. The Agena stage failed and the spacecraft did not reach orbit. A defective pneumatic regulator prevented the delivery of control gas during the burn [**?**]; there was an attitude error starting at Agena staging. Predicted impact point was somewhere in South Africa. In Jun 1972 it was suggested by NRO that reentry was in a corridor of the south east coast of a redacted country (memo declassified mid 2018). In fact, however, debris was recovered in England 120 km north of London and transferred to RAE Farnborough, eventually to be returned to NRO.

I can reconstruct a reentry over the UK by assuming that the velocity at Agena cutoff was low by 50 to 80 m/s and the flight path angle was high by 0.5 to 1.5 deg, leading to an apogee of 200-400 km over the Antarctic and a perigee of 50 to 80 km over the UK.

KH-8 35

Date	Time	Event	Orbit
1972 May 20	1530	Launch by Titan 23B Agena D	V SLC4W
	1532?	Titan stage 1 sep	
	1535?	Titan stage 2 sep	
	1535?	Agena D burn	
		Agena D failed	
	1604?	Apogee	
	1643?	Entry over UK	
		Impact in England	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.36 GAMBIT Mission 4336 (1972-68A)

KH-8 36 (GAMBIT 4336) was launched by Titan 23B Agena D from Vandenberg on 1972 Sep 1. The flight lasted 27 days (primary mission) with 1 further day of SCS solo operations; all systems operated well.

KH-8 36

Date	Time	Event	Orbit
1972 Sep 1	1736	Launch by Titan 23B Agena D	V SLC4W
	1738	Titan stage 1 sep	
	1741	Titan stage 2 sep	
	1741	Agena burn	
	1746?	Agena MECO	
	1836		89.62 127 x 383 x 110.5
1972 Sep 2	0634		89.77 142 x 383 x 110.4
		Raise apogee	
1972 Sep 3	2128		89.80 143 x 386 x 110.4
1972 Sep 4	1056		89.77 143 x 382 x 110.4
1972 Sep 5	2121		89.80 146 x 383 x 110.4
1972 Sep 6	2118		89.79 144 x 382 x 110.4
		Perigee raise	
1972 Sep 8	0015		89.84 150 x 382 x 110.4
1972 Sep 10	0308		89.71 145 x 374 x 110.4
		Raise apogee	
1972 Sep 10	2105		89.80 142 x 386 x 110.4
1972 Sep 12	0900		89.70 141 x 377 x 110.4
		Raise apogee	
	2357		89.77 142 x 383 x 110.4
1972 Sep 15	0120		89.70 140 x 379 x 110.4
		Raise orbit	
1972 Sep 16	0115		89.85 150 x 383 x 110.4
		Lower perigee	
	2343		89.79 141 x 387 x 110.4
1972 Sep 18	1307		89.67 139 x 376 x 110.5
	2240?	SRV-1 notional eject	
		Raise orbit	
	2035	(Spurious?)	90.53 172 x 427 x 110.4
	2335		89.82 145 x 385 x 110.4
1972 Sep 19	1004		89.77 146 x 379 x 110.4
1972 Sep 21	1256		89.65 143 x 371 x 110.4
		Orbit riase	
	2324		89.85 154 x 379 x 110.4
1972 Sep 23	2018		89.72 142 x 378 x 110.4
		Raise apogee	
1972 Sep 24	0048		89.85 143 x 389 x 110.4
1972 Sep 28	2130		89.61 147 x 362 x 110.4
		Orbit lower	
	2332?	SRV-2 deorbit after 27 days	
	2337?	Entry	
1972 Sep 29	0002?	Recovered	
1972 Sep 29	0457		89.30 133 x 346 x 110.3
	2248		89.01 130 x 320 x 110.2
1972 Sep 30	0054?	KH-8/Agena Reentered after 29d	

Payload

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.37 GAMBIT MIssion 4337 (1972-103A)

Mission 4337, KH-8 37 (GAMBIT 4337) was launched on 1972 Dec 21 by Titan 23B Agena D from Vandenberg. It remained in orbit for a record 33 days (31 photo and 2 solo). It was the first Block III vehicle, with an improved roll joint that supported 18000 maneuvers per mission.

KH-8 37

Date	Time	Event	Orbit
1972 Dec 21	1745	Launch by Titan 23B Agena D	V SLC4W
	1747	Titan stage 1 sep	
	1750	Titan stage 2 sep	
	1750	Agena burn	
	1755?	Agena MECO	
1972 Dec 22	0514		89.94 138 x 404 x 110.5
1972 Dec 4	0810		89.73 135 x 387 x 110.4
1972 Dec 25	1704		89.65 138 x 376 x 110.4
		Orbit raise	
1972 Dec 26	2130		89.81 139 x 390 x 110.4
1972 Dec 30	0019		89.70 135 x 383 x 110.4
		Orbit raise	
1972 Dec 30	2115		89.80 132 x 396 x 110.4
1973 Jan 22	0101	SRV-2 deorbit?	
	0106?	Entry	
	0130?	Recovered	
1973 Jan 23	2314?	Reentered after 33d	

Payload

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.38 GAMBIT Mission 4338 (1973-28A)

KH-8 Mission 4038 (G3 No. 38) was launched on 1973 May 16 by Titan 23B Agena D from Vandenberg on a 28 day mission. At the last minute a new target was added to the mission: imaging the Skylab space station, which had been damaged during launch. This required orienting the GAMBIT at an attitude for which it had not been designed, but the operation was successful and the recovered film provided key information for the Skylab repair crew. The first SRV was recovered 9 days earlier than scheduled to give NASA timely information [**?**]. 1973 saw a drop in the frequency of GAMBIT missions to only three a year; by 1979 this would be down to one a year.

KH-8 38

Date	Time	Event	Orbit
1973 May 16	1640	Launch by Titan 3B Agena D	V SLC4W
	1642	Titan stage 1 sep	
	1645	Titan stage 2 sep	
	1645	Agena burn	
	1650?	Agena MECO	
			89.4 136 x 352 x 110.5
1973 May 20?		Imaged Skylab	
1973 May 21			89.75 135 x 389 x 100.5
	2050?	SRV-1 ejected	
	2101	SRV-1 mid-air recovery	
1973 May 22		Orbit raise	
1973 May 29			89.71 132 x 387 x 110.5
1973 May 31		Orbit raise	89.88 132 x 404 x 110.5
1973 Jun 4		Orbit raise	89.78 134 x 393 x110.5
1973 Jun 6			136 x 371 x 110.5
1973 Jun 6	Orbit raise	89.81 141 x 389 x 110.5	
1973 Jun 12			89.74 140 x 382 x 110.5
1973 Jun 13			89.75 139 x 384 x 110.5
1973 Jun 13	2236?	SRV-2 recovered	
1973 Jun 13		Reentered after 28d	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.39 GAMBIT Mission 4339 (1973-F04)

KH-8 flight 39 (GAMBIT program flight 77) was launched on 1973 Jun 26 by Titan 23B Agena D from Vandenberg. It did not reach orbit.

According to the Perry history [**?**], 12 seconds after launch, the Titan fuel tank ruptured and the rocket debris fell in the Pacific south of Vandenberg. However, this is probably an error for another launch.

The launch was recorded as a success in Martin Marietta's Titan launch lists, which had suggested an Agena failure to analysts prior to declassification of the Perry document. The GAMBIT STORY says it was the Agena's Bell engine fuel value that failed and this seems more plausible. In late 1973 an NRO document classified it as 'tentatively Agena propulsion system failure'.

KH-8 39

Date	Time	Event	Orbit
1973 Jun 26	1700	Launch by Titan 23B Agena D	V SLC4W
	1700:12	Failed	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.40 GAMBIT Mission 4340 (1973-68A)

KH-8 40 (GAMBIT 4340) was launched on 1973 Sep 27 by Titan 23B Agena D from Vandenberg. The spacecraft was in flight for 32 days and probably observed the Middle East region during the Yom Kippur War.

KH-8 40

Date	Time	Event	Orbit
1973 Sep 27	1715	Launch by Titan 23B Agena D	V SLC4W
	1717	Titan stage 1 sep	
	1720	Titan stage 2 sep	
	1720	Agena burn	
	1725?	Agena MECO	
			89.7 131 x 385 x 110.5
1973 Sep 30			89.77 136 x 389 x 110.5
1973 Oct 4			89.84 128 x 404 x 110.5
1973 Oct 7	1901		89.47 129 x 367 x 110.5
1973 Oct 7	2100?	SRV-1 recovery opp	
1973 Oct 9	2139		89.10 124 x 335 x 110.4
1973 Oct 10		Orbit raise	
1973 Oct 10	1830		90.00 129 x 419 x 110.4
1973 Oct 16			89.75 144 x 380 x 110.4
1973 Oct 27	0213		89.41 112 x 377 x 110.4
	2006		89.33 133 x 349 x 110.4
1973 Oct 27	2336?	SRV-2 recovered after 30 day photo mission	
1973 Oct 28	0759		89.04 116 x 338 x 100.4
1973 Oct 29	0052?	Reentered after 32d (1d solo)	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.41 GAMBIT Mission 4341 (1974-07A)

KH-8 no. 41 (GAMBIT 4341) was launched on 1974 Feb 13 by Titan 23B Agena D from Vandenberg. THe mission lasted 32 days.

KH-8 41

Date	Time	Event	Orbit
1974 Feb 13	1800?	Launch by Titan 23B Agena D	V SLC4W
	1802	Titan stage 1 sep	
	1805	Titan stage 2 sep	
	1805	Agena burn	
	1810?	Agena MECO	
1974 Feb 13	2029		89.88 129 x 406 x 110.4
		Raise perigee	
1974 Feb 14	1128		89.80 131 x 397 x 110.4
1974 Feb 15	0226		89.76 132 x 391 x 110.4
		Raise apogee	
	2319		89.79 126 x 401 x 110.4
		Raise perigee	
1974 Feb 16	2319		89.81 130 x 401 x 110.4
1974 Feb 18	0046		89.79 129 x 398 x 110.4
1974 Feb 18	2143		89.81 134 x 395 x 110.42
1974 Feb 19	2309		89.81 130 x 399 x 110.42
1974 Feb 20	0938		89.76 129 x 394 x 110.42
		Raise perigee	
1974 Feb 20	2136		89.81 135 x 394 x 110.41
1974 Feb 21	0206		89.78 129 x 397 x 110.42
1974 Feb 21	2303		89.77 130 x 396 x 110.42
		Raise perigee	
1974 Feb 22	2259		89.81 138 x 391 x 110.41
		Adjust orbit	
1974 Feb 23	0159		89.78 126 x 400 x 110.41
1974 Feb 23	2255		89.82 135 x 396 x 110.42
		Adjust orbit	
1974 Feb 24	0325		89.79 126 x 401 x 110.41
1974 Feb 24	2252		89.82 135 x 396 x 110.41
		Adjust orbit	
1974 Feb 25	2149?	SRV-1 recovery opp	
	2156?	Entry	
	2225?	SRV-1 recovered?	
1974 Feb 26	0019		89.82 127 x 403 x 110.40
1974 Feb 26	1646		89.71 127 x 392 x 110.41
		Raise apogee	
1974 Feb 26	2246		89.86 126 x 408 x 110.41
1974 Feb 27	0145		89.84 126 x 407 x 110.40
1974 Feb 28	1040		89.65 127 x 386 x 110.42
		Raise perigee	
1974 Mar 1	0007		89.92 145 x 395 x 110.40
1974 Mar 1	0307		89.89 144 x 393 x 110.40
		Lower peri, raise apogee	
1974 Mar 1	0907		89.83 126 x 405 x 110.39
1974 Mar 2	0005		89.83 126 x 405 x 110.41
1974 Mar 3	0002		89.82 127 x 403 x 110.42
1974 Mar 3	2358		89.82 126 x 403 x 110.40
1974 Mar 4	0128		89.79 127 x 400 x 110.40
1974 Mar 4	0428		89.79 126 x 401 x 110.39
1974 Mar 4	2355		89.81 129 x 400 x 110.40
1974 Mar 5	2351		89.83 127 x 404 x 110.39
		Raise perigee	
1974 Mar 7	0118		89.81 134 x 394 x 110.39
		Lower perigee	
1974 Mar 8	0244		89.70 126 x 392 x 110.39
1974 Mar 8	1910		89.60 126 x 383 x 110.40
		Raise apogee	
1974 Mar 9	0109		89.93 126 x 415 x 110.42
1974 Mar 9	1908		89.82 126 x 403 x 110.39
1974 Mar 10	0237		89.80 128 x 400 x 110.38
		Raise perigee	
1974 Mar 11	0234		89.82 136 x 394 x 110.39

KH-8 41

Date	Time	Event	Orbit
1974 Mar 13	0227		89.78 129 x 397 x 110.39
		Adjust perigee	
1974 Mar 14	0224		89.81 131 x 399 x 110.40
1974 Mar 14	2021		89.72 131 x 389 x 110.38
1974 Mar 15	0220		89.79 130 x 397 x 110.39
1974 Mar 15	2018		89.70 130 x 389 x 110.39
1974 Mar 15	2348?	SRV-2 eject after 30 photo days	
1974 Mar 16	0124?	Lower perigee	
1974 Mar 16	0346		89.50 116 x 383 x 110.38
1974 Mar 16	1243		89.48 114 x 382 x 110.39
1974 Mar 17	0038		89.29 114 x 364 x 110.42
1974 Mar 17	0112?	Reentered after 32d (guess)	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.42 GAMBIT Mission 4342 (1974-42A)

KH-8 42 (GAMBIT 4342) was launched on 1974 Jun 6 by Titan 23B Agena D from Vandenberg. This mission lasted 47 days (45 days photo), which was almost half again as long as the previous record flight, but is not indicated in the histories as a spacecraft systems upgrade - perhaps extra batteres were added. The next 5 missions were all around 50 days.

A first day cover associated with the launch tagged it as a Navy ocean surveillance launch, but this association is likely to be spurious.

KH-8 42

Date	Time	Event	Orbit
1974 Jun 6	1630	Launch by Titan 3B Agena D	V SLC4W
	1632	Titan stage 1 sep	
	1635	Titan stage 2 sep	
	1635	Agena burn	
	1640?	Agena MECO	
1974 Jun 7	0229	89.84 135 x 397 x 110.49	
1974 Jun 7	0958	89.81 136 x 393 x 110.49	
1974 Jun 7	1427	89.79 136 x 391 x 110.48	
1974 Jun 7	1857	89.99 147 x 399 x 110.47	
1974 Jun 7	2027	89.91 146 x 393 x 110.45	
1974 Jun 8	0656	89.87 133 x 402 x 110.50	
1974 Jun 8	2025	89.87 141 x 394 x 110.50	
		Adjust orbit	
1974 Jun 9	2023	89.92 127 x 413 x 110.51	
1974 Jun 10	2021	89.93 132 x 409 x 110.50	
1974 Jun 11	2019	89.91 124 x 416 x 110.49	
1974 Jun 12	1118	89.84 119 x 413 x 110.50	
1974 Jun 13	0946	89.82 124 x 407 x 110.49	
1974 Jun 14	0944	89.82 124 x 406 x 110.49	
1974 Jun 15	0942	89.82 124 x 406 x 110.48	
1974 Jun 15	2141	89.89 121 x 416 x 110.49	
1974 Jun 15	2141	89.92 123 x 417 x 110.50	
1974 Jun 16	0940	89.80 123 x 406 x 110.49	
1974 Jun 16	1240	89.79 123 x 403 x 110.48	
1974 Jun 16	2009	89.92 126 x 414 x 110.50	
1974 Jun 17	1238	89.80 124 x 405 x 110.48	
1974 Jun 17	2307	89.90 124 x 413 x 110.47	
1974 Jun 18	2305	89.90 124 x 415 x 110.49	
1974 Jun 19	2133	89.89 124 x 413 x 110.47	
1974 Jun 20	0632	89.82 123 x 407 x 110.48	
1974 Jun 20	2130	89.91 124 x 414 x 110.47	
1974 Jun 21	2258	89.91 124 x 415 x 110.48	
1974 Jun 22	1057	89.83 121 x 410 x 110.46	
1974 Jun 23	2125	89.92 132 x 409 x 110.48	
1974 Jun 24	1224	89.84 124 x 408 x 110.48	
1974 Jun 25	0022	89.87 124 x 411 x 110.46	
1974 Jun 25	0452	89.84 123 x 409 x 110.47	
1974 Jun 25	1051	89.81 124 x 405 x 110.47	
1974 Jun 26	0020	89.92 119 x 421 x 110.48	
1974 Jun 27	0448	89.86 120 x 414 x 110.49	
1974 Jun 27	1047	89.79 119 x 408 x 110.48	
1974 Jun 28	0016	89.92 118 x 422 x 110.47	
1974 Jun 29	0014	89.88 117 x 419 x 110.48	
1974 Jun 29	2142?	SRV-1 deorbit opp	
1974 Jun 30	0312	89.96 116 x 428 x 110.48	
1974 Jun 30	1940	89.75 116 x 407 x 110.48	
1974 Jun 30	2140?	SRV-1 deorbit opp	
		Record low perigee	
1974 Jun 30	2240	89.91 115 x 424 x 110.46	
1974 Jul 2	0007	89.96 117 x 427 x 110.48	
1974 Jul 2	1806	89.78 117 x 409 x 110.48	
1974 Jul 3	0436	89.97 118 x 427 x 110.47	
1974 Jul 3	1206	89.90 119 x 418 x 110.48	
1974 Jul 3	2235	89.87 118 x 418 x 110.49	
1974 Jul 4	1034	89.75 118 x 405 x 110.47	
1974 Jul 4	2232	89.95 117 x 426 x 110.48	

KH-8 42

Date	Time	Event	Orbit
1974 Jul 5	0602	89.88 120 x 416 x 110.48	
1974 Jul 6	0000	89.91 120 x 419 x 110.47	
1974 Jul 6	2358	89.98 125 x 421 x 110.48	
1974 Jul 7	1327	89.87 123 x 411 x 110.47	
1974 Jul 7	2356	89.89 129 x 408 x 110.47	
1974 Jul 8	1025	89.81 123 x 406 x 110.47	
1974 Jul 8	2354	89.95 124 x 419 x 110.48	
1974 Jul 10	0122	89.85 122 x 411 x 110.47	
1974 Jul 10	1021	89.78 123 x 403 x 110.46	
1974 Jul 11	0119	89.96 122 x 422 x 110.47	
1974 Jul 12	0118	89.97 130 x 415 x 110.45	
1974 Jul 12	0848	89.91 123 x 416 x 110.46	
1974 Jul 14	0843	89.87 122 x 413 x 110.46	
1974 Jul 15	0241	89.89 122 x 415 x 110.47	
1974 Jul 15	0711	89.87 123 x 412 x 110.47	
1974 Jul 16	0239	89.92 122 x 418 x 110.46	
1974 Jul 16	1738	89.81 122 x 407 x 110.46	
1974 Jul 17	0107	89.89 120 x 416 x 110.45	
1974 Jul 17	1137	89.81 121 x 408 x 110.46	
1974 Jul 18	0105	89.97 128 x 417 x 110.46	
1974 Jul 19	0703	89.85 121 x 412 x 110.45	
1974 Jul 20	0231	89.91 121 x 418 x 110.47	
1974 Jul 20	1001	89.87 120 x 414 x 110.46	
1974 Jul 21	0959	89.95 120 x 423 x 110.46	
1974 Jul 22	0128?	SRV-2 deorbit opp	
	0200?	SRV-2 recovered	
1974 Jul 22	0228	89.81 121 x 409 x 110.46	
1974 Jul 22	0658	89.76 120 x 404 x 110.47	
1974 Jul 22	0957	89.72 120 x 400 x 110.47	
1974 Jul 22	2324	89.60 120 x 388 x 110.45	
1974 Jul 23	0130?	Reentered after 47 days	

Payload

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.43 GAMBIT Mission 4343 (1974-65A)

KH-8 43 (GAMBIT 4343) was launched on 1974 Aug 14 by Titan 23B Agena D from Vandenberg. It may have observed the Turkish invasion of Cyprus during its 45-day photographic mission.

KH-8 43

Date	Time	Event	Orbit
1974 Aug 14	1545	Launch by Titan 23B Agena D	V SLC4W
	1547	Titan stage 1 sep	
	1550	Titan stage 2 sep	
	1550	Agena burn	
	1555?	Agena MECO	
1974 Aug 14	1814	89.83 135 x 397 x 110.51	
1974 Aug 15	0913	89.82 136 x 394 x 110.50	
1974 Aug 15	1812	89.91 128 x 411 x 110.51	
1974 Aug 16	1041	89.86 134 x 400 x 110.51	
1974 Aug 16	1940	89.89 135 x 401 x 110.52	
1974 Aug 17	0909	89.86 133 x 401 x 110.51	
		Lower perigee, raise apo	
1974 Aug 17	2108	89.91 123 x 417 x 110.51	
1974 Aug 18	0438	89.87 122 x 413 x 110.51	
1974 Aug 18	2106	89.89 124 x 413 x 110.52	
1974 Aug 19	0905	89.83 123 x 408 x 110.50	
1974 Aug 19	1934	89.92 127 x 413 x 110.51	
1974 Aug 20	1033	89.80 122 x 406 x 110.51	
1974 Aug 20	2232	89.93 123 x 418 x 110.50	
1974 Aug 21	0902	89.86 123 x 411 x 110.51	
1974 Aug 21	1931	89.92 123 x 417 x 110.53	
1974 Aug 22	1030	89.80 123 x 405 x 110.48	
1974 Aug 22	1929	89.94 124 x 418 x 110.53	
1974 Aug 23	0858	89.84 122 x 410 x 110.50	
1974 Aug 23	2057	89.86 133 x 401 x 110.52	
1974 Aug 24	0855	89.76 122 x 402 x 110.50	
1974 Aug 27	1019	89.83 123 x 408 x 110.51	
1974 Aug 27	2048	89.92 124 x 416 x 110.50	
1974 Aug 28	1017	89.82 124 x 406 x 110.50	
1974 Aug 28	2046	89.93 124 x 417 x 110.51	
1974 Aug 29	1015	89.83 124 x 408 x 110.49	
1974 Aug 29	2044	89.93 132 x 408 x 110.52	
1974 Aug 30	1143	89.82 124 x 406 x 110.50	
1974 Aug 30	2043	89.93 122 x 419 x 110.46	
1974 Aug 31	0712	89.86 123 x 411 x 110.50	
1974 Sep 1	2110?	SRV-1 deorbit opp?	
	2145?	SRV-1 recovered	
1974 Sep 1	2338	89.83 123 x 409 x 110.50	
1974 Sep 2	1007	89.76 125 x 400 x 110.49	
1974 Sep 3	0105	89.98 124 x 422 x 110.49	
1974 Sep 3	2034	89.88 127 x 410 x 110.52	
1974 Sep 4	0234	89.86 125 x 409 x 110.49	
1974 Sep 4	2332	89.91 124 x 415 x 110.50	
1974 Sep 5	1131	89.83 124 x 406 x 110.49	
1974 Sep 5	2200	89.92 132 x 407 x 110.49	
1974 Sep 6	0659	89.87 124 x 411 x 110.49	
1974 Sep 6	2158	89.91 132 x 407 x 110.48	
1974 Sep 7	0827	89.85 124 x 408 x 110.48	
1974 Sep 7	2156	89.90 132 x 406 x 110.49	
1974 Sep 8	0955	89.83 133 x 398 x 110.48	
1974 Sep 8	2154	89.93 124 x 417 x 110.48	
1974 Sep 9	1123	89.83 126 x 405 x 110.48	
1974 Sep 9	2152	89.94 126 x 416 x 110.49	
1974 Sep 10	0652	89.87 126 x 410 x 110.49	
1974 Sep 10	2320	89.84 125 x 407 x 110.50	
1974 Sep 11	1718	89.72 125 x 395 x 110.49	
1974 Sep 12	0047	89.91 124 x 416 x 110.47	
1974 Sep 12	0817	89.86 125 x 409 x 110.48	
1974 Sep 13	0045	89.90 133 x 405 x 110.49	
1974 Sep 13	0645	89.87 126 x 409 x 110.49	
1974 Sep 13	2313	89.90 126 x 412 x 110.48	
1974 Sep 15	0041	89.93 127 x 414 x 110.49	

KH-8 43

Date	Time	Event	Orbit
1974 Sep 15	0811	89.88 126 x 410 x 110.48	
1974 Sep 15	2310	89.91 125 x 414 x 110.48	
1974 Sep 17	0038	89.92 126 x 414 x 110.49	
1974 Sep 18	0036	89.93 126 x 415 x 110.49	
1974 Sep 19	0034	89.89 124 x 412 x 110.45	
1974 Sep 20	0331	89.81 125 x 404 x 110.48	
1974 Sep 21	0329	89.90 126 x 412 x 110.47	
1974 Sep 21	0758	89.87 126 x 409 x 110.50	
1974 Sep 22	0027	89.94 129 x 412 x 110.48	
1974 Sep 23	0155	89.91 126 x 412 x 110.47	
1974 Sep 24	0023	89.93 126 x 415 x 110.47	
1974 Sep 25	0022	89.91 125 x 414 x 110.48	
1974 Sep 26	0149	89.90 127 x 411 x 110.48	
1974 Sep 27	0317	89.91 125 x 414 x 110.47	
1974 Sep 28	0016	89.92 125 x 415 x 110.49	
1974 Sep 28	1515	89.83 125 x 405 x 110.48	
1974 Sep 29	0046?	SRV-2 deorbit	
1974 Sep 29		Reentered after 46d	
	0218?	Deboost	

Payload

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.44 GAMBIT Mission 4344 (1975-32A)

KH-8 no. 44 (GAMBIT 4344) was launched on 1975 Apr 18 by Titan 23B Agena D from Vandenberg. It was the last GAMBIT flight to use the highly retrograde 110.5 degree orbit and remained operational for 46 photo days and 1 solo day.

The orbital height was maintained within small variations until Apr 28, and then allowed to range more widely with boosts to 450 km apogee followed by decay to 390 km and then another reboost. The last orbit raising burn was on May 30, to 119 x 432 km, followed by steady decay until reentry on Jun 5; the last elset is on Jun 4 at 1000 UTC.

KH-8 44

Date	Time	Event	Orbit
1975 Apr 18	1645?	Launch by Titan 23B Agena D	V SLC4W
	1647?	Titan stage 1 sep	
	1650	Titan stage 2 sep	
	1650	Agena burn	
	1655?	Agena MECO	
			89.9 134 x 401 x 110.5
1975 Apr 22			89.78 125 x 409 x 110.5
1975 Apr 28			89.80 126 x 402 x 110.5
	2048?	SRV-1 recovery opp	
1975 Apr 30		Orbit raise	90.04 121 x 430 x 110.5
1975 May 17			89.61 118 x 391 x 110.5
1975 May 18			90.23 117 x 453 x 110.5
1975 May 26			89.65 118 x 395 x 110.5
1975 May 27			90.15 123 x 440 x 110.5
1975 Jun 1			89.65 120 x 393 x 110.5
1975 Jun 2	0252		89.56 124 x 381 x 110.49
1975 Jun 4	0136?	SRV-2 recovered after 46 days photo	
1975 Jun 4	1000		89.12 121 x 339 x 110.5
1975 Jun 5		Reentered after 48d	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.45 GAMBIT Mission 4345 (1975-98A)

KH-8 no. 45 (GAMBIT 4345) was launched on 1975 Oct 9 by Titan 23B Agena D from Vandenberg into a new type of orbit: 125 x 356 km x 96.4 degrees. The perigee was 10 km lower than previous missions in the 1970s the apogee 50 km lower, and the inclination reverted to the 96 degrees used by the Atlas Agena flights of the 1960s. This new inclination would be used by the remainder of the GAMBIT series, and the low perigee would also become the norm, requiring almost daily reboosts with the Agena engine.

KH-8 45

Date	Time	Event	Orbit
1975 Oct 9 1915		Launch by Titan 23B Agena D	V SLC4W
	1917?	Titan stage 1 sep	
	1920	Titan stage 2 sep	
	1920	Agena burn	
	1925?	Agena MECO	
			89.3 125 x 356 x 96.4
1975 Nov 2	0655		89.23 121 x 350 x 96.4
1975 Nov 3	2208?	SRV-1 deorbit opp	
	2215?	Reentry	
	2240?	SRV-1 recovered?	
1975 Nov 4	1230		89.24 123 x 350 x 96.4
1975 Nov 6	0013		89.35 122 x 362 x 96.4
1975 Nov 25	0243		89.25 126 x 348 x 96.4
1975 Nov 26	2321		89.39 125 x 362 x 96.4
1975 Nov 27	1117		89.33 126 x 356 x 96.4
1975 Nov 28	2203?	SRV-2 down after 50 day photo mission	
1975 Nov 30	2136?	Reentered after 52d	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.46 GAMBIT Mission 4346 (1976-27A)

KH-8 flight 46 (GAMBIT 4346) was launched on 1976 Mar 27 by Titan 23B Agena D from Vandenberg. The mission lasted 57 days (56 days photo), and again used the new 125 km perigee and 96.4 deg inclination.

Rapid orbital decay set in on May 11.

KH-8 46

Date	Time	Event	Orbit
1976 Mar 22	1814?	Launch by Titan 23B Agena D	V SLC4W
	1816?	Titan stage 1 sep	
	1819	Titan stage 2 sep	
	1819	Agena burn	
	1824?	Agena MECO	
			89.3 125 x 347 x 96.4
1976 Apr 7			89.21 125 x 344 x 96.4
1976 Apr 18			89.21 124 x 346 x 96.4
1976 Apr 18	2029?	SRV-1 deorbit opp	
1976 Apr 19	0921		89.22 128 x 343 x 96.4
1976 Apr 19	2114	Orbit raise	89.42 123 x 367 x 96.4
1976 Apr 25			89.29 121 x 356 x 96.4
1976 May 7			89.18 128 x 339 x 96.4
1976 May 9			89.27 128 x 348 x 96.5
1976 May 10	2011	Last orbit raise	89.34 132 x 351 x 96.4
1976 May 11	2129		89.25 127 x 347 x 96.4
1976 May 15	1013		88.96 127 x 318 x 96.4
1976 May 16	0659		88.85 127 x 307 x 96.4
1976 May 17	2030?	SRV-2 deorbit after 56 days	
1976 May 18	1214		88.51 124 x 277 x 96.4
1976 May 18	2233		87.38 65 x 223 x 96.4
1976 May 18	2302?	Deboosted/reentered after 57d	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.47 GAMBIT Mission 4347 (1976-94A)

KH-8 flight 47 (GAMBIT 4347) was launched 1976 Sep 15 from Vandenberg. This flight introduced the use of the Titan 24B Agena D; it's not clear what the difference between the 23B and the 24B are, but it's probably a matter of avionics.

The Titan 24B second stage shut down incorrectly; on separating from the Agena, instead of backing off it remained with Agena nestled in the booster adapter propelling the stack with a thrust of 5 kN. On Agena ignition, separation was completed but the thermal insulation on the SPS propellant was burnt to a crisp by the confinement of the PPS engine's flame. This led to freezing of the SPS hydrazine supply. The GAMBIT was flown tail-first with plumbing heated by the Sun, and reoriented to nose-first operations for photography for one revolution at a time. In the end the mission lasted 51 days with a 30 percent cut in operational efficiency [**?**].

KH-8 47

Date	Time	Event	Orbit
1976 Sep 15	1850	Launch by Titan 24B Agena D	V SLC4W
	1852	Titan stage 1 sep	
	1855	Titan stage 2 sep	
	1855	Agena burn	
	1900?	Agena MECO	
			89.2 135 x 330 x 96.4
1976 Sep 21			89.35 132 x 351 x 96.4
1976 Oct 9			89.33 130 x 352 x 96.4
1976 Oct 8	2135?	SRV-1 reentry opp	
1976 Oct 29			89.06 128 x 326 x 96.4
1976 Nov 4	2156?	SRV-2 reentry opp	
1976 Nov 5		Reentered after 51d	

PAYLOAD
KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.48 GAMBIT Mission 4348 (1977-19A)

KH-8 flight 48 (GAMBIT 4348) was launched 1977 Mar 13 by Titan 23B Agena D from Vandenberg on a 74 day long mission, a new 30 percent increase in mission duration. It was a Block IV vehicle which introduced solar arrays, as well as a dual platen camera which could expose two different strips of film at once, a new film drive and focus system, and for the SRV, a better heat shield and parachute thermal cover.

On rev 45 a battery exploded and caused GAMBIT to switch to the backup attitude control system [**?**], but the mission was completed successfully.

The second SRV was recovered on day 69.

KH-8 48

Date	Time	Event	Orbit
1977 Mar 13	1841:10	Launch by Titan 23B Agena D	V SLC4W
	1843	Titan stage 1 sep	
	1846	Titan stage 2 sep	
	1846	Agena burn	
	1851?	Agena MECO	
1977 Mar 14			89.08 133 x 324 x 96.4
	2353		89.29 122 x 356 x 96.39
1977 Mar 19			89.26 121 x 354 x 96.40
1977 Mar 26			89.20 120 x 349 x 96.39
1977 Mar 30			89.29 120 x 357 x 96.39

KH-8 48

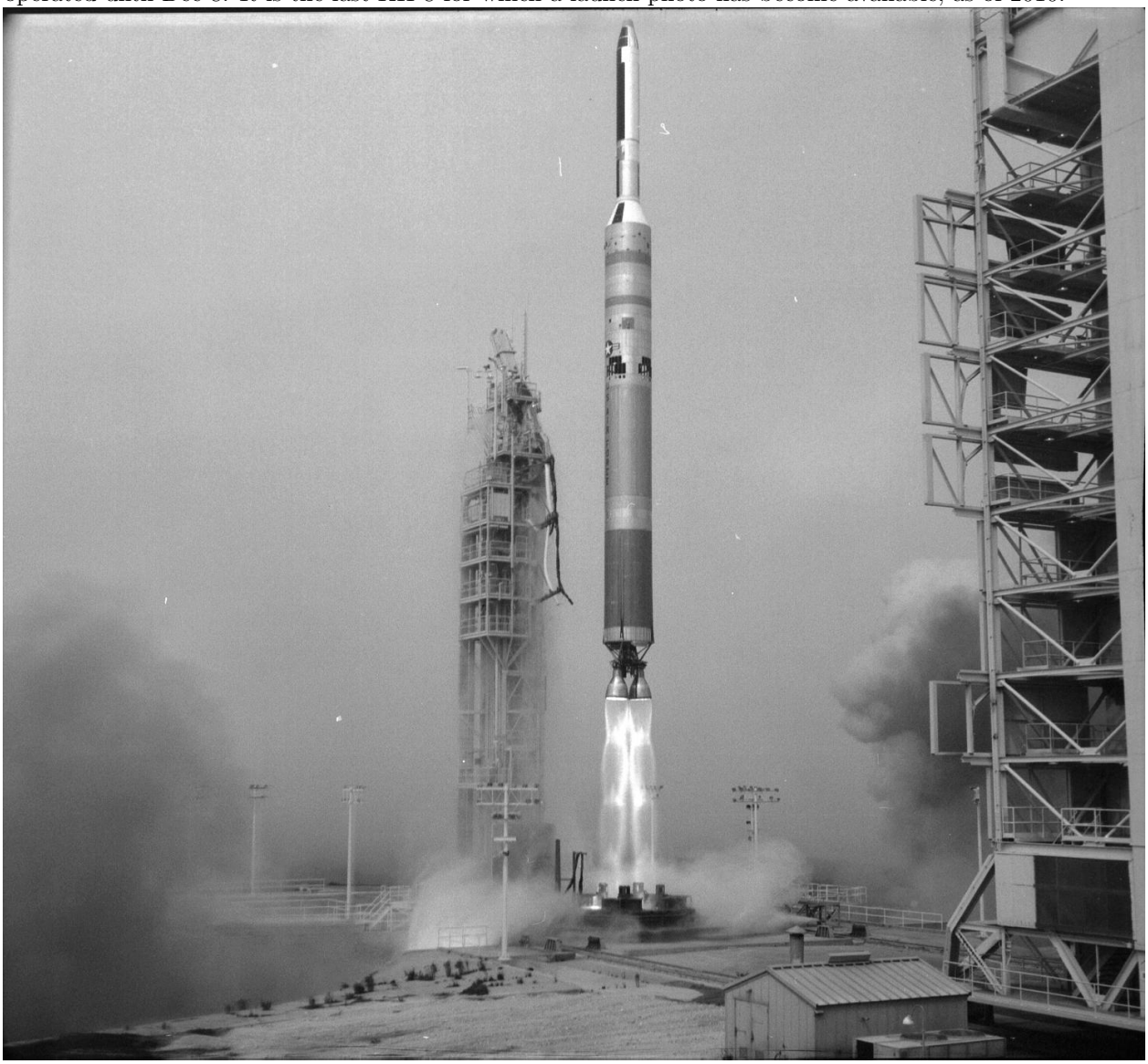
Date	Time	Event	Orbit
1977 Apr 2			89.25 119 x 354 x 96.41
1977 Apr 13			89.23 120 x 352 x 96.40
1977 Apr 17	2033	SRV-1 deorbit opp	
1977 Apr 18	2118		89.29 120 x 358 x 96.41
1977 Apr 22			89.16 122 x 344 x 96.40
1977 May 7			89.35 122 x 362 x 96.41
1977 May 14			89.18 122 x 344 x 96.43
1977 May 21		Object B (adapter) ejected	
1977 May 21	2107?	SRV-2 deorbit after 69d photo mission	
1977 May 22			89.13 131 x 331 x 96.43
1977 May 26	1031		88.96 125 x 321 x 96.43
1977 May 26	2130?	Reentered after 74d (5 d solo)	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.49 GAMBIT Mission 4349 (1977-94A)

KH-8 flight 49 (GAMBIT 4349) was launched on 1977 Sep 23 by Titan 23B Agena D from Vandenberg and operated until Dec 8. It is the last KH-8 for which a launch photo has become available, as of 2010.



KH-8 49

Date	Time	Event	Orbit
1977 Sep 23	1834	Launch by Titan 23B Agena D	V SLC4W
	1836	Titan stage 1 sep	
	1839	Titan stage 2 sep	
	1839	Agena burn	
	1844?	Agena MECO	
	1932		88.75 119 x 305 x 96.53
	2101		89.14 129 x 334 x 96.49
1977 Sep 24	0129		89.19 134 x 334 x 96.49
1977 Sep 26	0405		89.25 123 x 351 x 96.49
1977 Sep 28			89.16 122 x 343 x 96.47
1977 Oct 10			89.26 122 x 353 x 96.48
1977 Oct 20			89.20 121 x 348 x 96.49
1977 Oct 30			89.36 124 x 361 x 96.49
1977 Oct 31			89.17 121 x 345 x 96.49
		SRV-1 down (fiducial)	
1977 Nov 10			89.24 120 x 352 x 96.48

KH-8 49

Date	Time	Event	Orbit
1977 Nov 17			89.31 125 x 354 x 96.48
1977 Nov 25			89.26 126 x 349 x 96.50
1977 Dec 4	0416?	Last orbit raise	89.33 123 x 358 x 96.50
	2112?	SRV-2 deorbit opp	
1977 Dec 5		SRV-2 deorbit after 73 days	
1977 Dec 7	2253		88.72 125 x 296 x 96.48
1977 Dec 8		Reentered	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.50 GAMBIT Mission 4350 (1979-44A)

KH-8 No. 50 was launched on 1979 May 28 into a 135 x 293 km x 96.4 deg orbit. For the first week after insertion, the orbit gradually was made more eccentric; during its 90 day life the spacecraft made orbital adjustments approximately every two days, with perigee ranging from 119 km to 134 km and apogee ranging from 287 km to 314 km. The vehicle was deboosted at the end of the 90 day photo mission.

KH-8 Mission 50

Date	Time	Event	Orbit
1979 May 28	1830?	Launch by Titan 24B Agena D	V SLC4W
	1832?	Titan stage 1 sep	
	1835?	Titan stage 2 sep	
	1835?	Agena burn	
	1840?	MECO	
			88.8 135x293x96.4
1979 May 29			88.7 134 x 287 x 96.4
			88.85 135 x 298 x 96.4
1979 May 30			135 x 294 x 96.4
			133 x 298 x 96.4
1979 May 31			133 x 291 x 96.4
			128 x 325 x 96.4
1979 Jun 2			124 x 306 x 96.4
1979 Jun 2			124 x 311 x 96.4
1979 Jun			119-134 x 292-314 x 96.4
1979 Jul 3?		SRV-1 recovered	
1979 Jul 11			88.70 122 x 297 x 96.4
1979 Jul 15?		Reactivated	
1979 Aug 26	2032?	SRV-2 deorbit	
1979 Aug 26		88.64 125 x 289 x 96.4	
1979 Aug 26	2205?	Reentered after 90d	

PAYLOAD
KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.51 GAMBIT Mission 4351 (1981-19A)

KH-8 number 51 (GAMBIT mission 4351) was launched on 1981 Feb 28 by Titan 24B Agena D from Vandenberg. It maintained an orbit of around 135 x 260 km x 96.3 deg until it was deorbited after 112 days after a 110-day photo mission.

KH-8 Mission 1751?

Date	Time	Event	Orbit
1981 Feb 28	1910?	Launch by Titan 24B Agena D	V SLC4W
	1912?	Titan stage 1 sep	
	1915?	Titan stage 2 sep	
	1915?	Agena burn	
	1920?	MECO	
1981 Mar 1			172 x 334 x 96.4
	1830?	Lower perigee	
			136 x 335 x 96.4
1981 Mar 2			135x333 x 96.3
1981 Mar 6			127x267 x 96.3
1981 Mar 15			133x264 x 96.3
1981 Mar 31			130x268 x 96.3
1981 Apr 5			131x257 x 96.3
1981 Apr 20			134x264 x 96.3
1981 Apr 29	2142?	SRV-1 deorbit opp	
	2149?	Entry	
	2215?	SRV-1 recovered?	
1981 Apr 30			130x266 x 96.3
1981 May 15			136x258 x 96.3
1981 May 31			136x249 x 96.3
1981 Jun 10			135x257 x 96.3
1981 Jun 17	1956	Orbit tweak	137 x 260 x 96.26
1981 Jun 18		SRV-2 deorbit after 110 d	
1981 Jun 20	1930	deorbited after 112d	137 x 250 x 96.3

PAYLOAD
KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.52 GAMBIT Mission 4352 (1982-06A)

Mission 4352/82.

This satellite was a standard GAMBIT but used for an area survey mission instead of close-look on point targets. The Dual-Mode (HIGHER BOY) modifications included increasing retro impulse by 20 percent, and improved main propulsion system restart capability. The payload adapter joint was modified so that it could survive a restart of the main engine.

The photo mission lasted 119 days. The mission report says that the high mode portion lasted 97 days and the low mode was 23 days.

After the first day, 1982-06A circularized its orbit at 600 km. Successive orbital adjustments raised the orbit to 624 x 657 km by Mar 10. One object left in the initial orbit is listed as a rocket body in the Satellite Catalog, but this seems unlikely - it is probably the viewport hatch. It reentered on the second day.

On Mar 20, the first SRV recovery was commanded, but the SRV failed to separate. The SRV was then commanded to separate from its heat shield and thrust cone, to get it off the Agena. Three new objects were cataloged in orbit around Mar 21, presumably two of these are the bucket and the heat shield; the third may be the thrust cone if it had then separated from the Agena, or the parachute system.

On around Apr 28, the spacecraft was moved to a low orbit. However, archived TLEs show the 1982-06A object moving to a higher 633 x 644 km orbit and steadily decaying - this is rather surprising and appears to be deliberate misinformation, or possibly tracking confusion with the SRV debris.

A fourth object cataloged in April is probably the fairing separating SRV-1 from SRV-2. To ensure its recovery despite its faulty motor, on May 23 the second SRV was deorbited with the entire spacecraft, using the Agena's propulsion. [**?**], [**?**].

It was originally intended to use the main propulsion system for the deorbit burn. The prop isolation valves were opened on rev 1792, but this caused attitude contrl problems and the valves were closed on rev 1794. It took some time to recover control of the vehicle, and three days later the ISPS secondary propulsion system was used for the deorbit on rev 1845. The impact point was recored as 11.91N, 188.09E.

GAMBIT 4352

Date	Time	Event	Orbit
1982 Jan 21	1930:01	Launch by Titan 34B Agena D	V SLC4W
	1932?	Titan stage 1 sep	
	1935?	Titan stage 2 sep	
	1935?	Agena burn	
	1940?	Agena D cutoff	91.40 146 x 537 x 97.4
			91.3 147 x 543 x 97.3 (NRO)
		Fairing separated (82-06B, decayed in 11h)	
1982 Jan 22	0510?	OA-1 Rev 6	91.82 179 x 552 x 97.3
1982 Jan 22		Agena D burn 2	91.83 176 x 550 x 97.3 (TLE)
	0930?	OA-2 Rev 9	92.73 269 x 553 x 97.3
	1300?	OA-3 Rev 12	94.67 455 x 566 x 97.3
	1630?	OA-4 Rev 15	96.73 561 x 648 x 97.3
1982 Jan 22			96.79 561 x 646 x 97.3 (TLE)
1982 Jan 23			96.74 555 x 647 x 97.2
1982 Jan 29			96.74 555 x 647 x 97.2
1982 Jan 29	2130?	OA-5 Rev 121	97.03 583 x 647 x 97.3
			97.02 601 x 649 x 97.3 (NRO)
1982 Feb 5	2000?	OA-6 Rev 224	97.10 618 x 656 x 97.3 (NRO)
		Orbit adjust	97.13 592x647
1982 Feb 12	2100?	OA-7 Rev 329	97.20 626 x 656 x 97.3 (NRO)
			97.14 600 x 643 x 97.3 (TLE)
1982 Feb 19	2350?	OA-8 Rev 434 Orbit adjust	97.30 607x647x97.0 (TLE)
			97.28 628 x 648 x 97.3 (NRO)
1982 Feb 24	0800?	OA-9 Rev 498 Orbit adjust	97.39 608x656x97.0 (TLE)
			97.37 620 x 655 x 97.3 (NRO)
1982 Mar 2	2100?	OA-10 Rev 595 Orbit adjust	97.47 619 x 656 x 97.3 (NRO)
			97.48 616x657x97.0 from 97.39 608x656
1982 Mar 9	2030?	OA-11 Rev 698 Orbit adjust	97.55 629 x 661 x 97.3 (NRO)
		97.57 624x657x97.0 from 97.48 616x657	
1982 Mar 16	2130?	OA-12 Rev 802 Orbit adjust	97.45 630 x 656 x 97.3 (NRO)
			97.47 622x650x97.0 from 97.57 624x657
1982 Mar 20	2133?	SRV-1 ejected, failed to deorbit	97.40 620 x 648 x 97.24
1982 Mar 20		8206C,D,E released	
1982 Mar 24	1300?	OA-13 Rev 915	97.43 632 x 662 x 97.3 (NRO)

GAMBIT 4352

Date	Time	Event	Orbit
1982 Mar 25	2230?	OA-14/15 Rev 935 Orbit adjust	97.25 623 x 655 x 97.3 (NRO)
			97.27 613x640x97.0 from 97.46 621x649
1982 Apr 1	2200?	OA-16 Rev 1039 Orbit adjust	97.15 624 x 652 x 97.3 (NRO)
			97.17 612x631x97.0 from 97.27 612x640
1982 Apr 8	2100?	OA-17 Rev 1142 Orbit adjust	97.07 624 x 649 x 97.3 (NRO)
			97.09 608x627x97.0 from 97.17 613x631
1982 Apr 15	2115?	OA-18 Rev 1246 Orbit adjust	96.97 622 x 632 x 97.3 (NRO)
			96.98 609x616x97.0 from 97.07 612x622
1982 Apr 22	2115?	OA-19 Rev 1350 Orbit adjust	96.90 619 x 619 x 97.3 (NRO)
			96.91 603x615x97.0 from 96.98 609x616
1982 Apr 27	0414		96.85 601 x 613 x 97.2
1982 Apr 27	1415?	OA-20 Rev 1420 Orbit raise	96.82 606 x 628 x 97.3 (NRO)
1982 Apr 27?		8206F released (fairing?) (first elset May 10)	
	2100?	OA-21 Rev 1424	96.23 565 x 616 x 97.3
1982 Apr 28		Mission day 97, end of high mode?	
1982 Apr 28	0307		97.51 633 x 645 x 97.2 (TLE)
	1200?	OA-22	95.02 503 x 561 x 97.3
	1500?	OA-23	93.97 397 x 565 x 97.3
	1800?	OA-24	92.87 289 x 565 x 97.3
	2100?	OA-25	91.77 182 x 565 x 97.3
1982 Apr 29	0015?	OA-26	91.48 155 x 564 x 97.3
	1100?	OA-27	90.32 155 x 450 x 97.3
1982 Apr 30	1700?	OA-28	89.20 150 x 343 x 97.3
1982 May 3	2100?	OA-29	88.85 152 x 308 x 97.3
1982 May 4	2030?	OA-30	88.85 151 x 308 x 97.3
1982 May 5	2000?	OA-31	88.83 151 x 306 x 97.3
1982 May 6	2000?	OA-32	88.83 151 x 307 x 97.3
1982 May 7	2100?	OA-33	88.82 150 x 306 x 97.3
1982 May 8	2100?	OA-34	88.83 150 x 308 x 97.3
1982 May 9	2030?	OA-35	88.83 150 x 308 x 97.3
1982 May 10	2000?	OA-36	89.02 165 x 311 x 97.3
1982 May 10	2300?	OA-37	88.80 154 x 300 x 97.3
1982 May 11	2100?	OA-38	88.82 153 x 303 x 97.3
1982 May 12	2100?	OA-39	88.83 153 x 304 x 97.3
1982 May 13	2100?	OA-40	88.83 153 x 305 x 97.3
1982 May 14	2200?	OA-41	88.83 153 x 305 x 97.3
1982 May 15	2000?	OA-42	88.82 152 x 304 x 97.3
1982 May 16	0000	06E at 165.7E 43.1N 646 km	
		06D at 59.42W 77.4N 646 km	
		06C at 148.9E 53.9S 638 km	
1982 May 16	2000?	OA-43	88.93 157 x 310 x 97.3
1982 May 16	2300?	OA-44	88.82 149 x 307 x 97.3
1982 May 17	2100?	OA-45	88.90 148 x 316 x 97.3
1982 May 18	0000?	OA-46	88.85 145 x 315 x 97.3
1982 May 18	2200?	OA-47	88.90 146 x 318 x 97.3
1982 May 19	2330?	OA-48	88.85 142 x 317 x 97.3
1982 May 19	2200?	OA-49	88.87 142 x 319 x 97.3
1982 May 20		End of photo mission?	
1982 May 20	1700?	Rev 1792 valves open	
		MPS deboost/recovery aborted	
	2000?	Rev 1794 valves closed	
1982 May 22	0430?	OA-50	88.27 142 x 259 x 97.3
1982 May 22	0600?	OA-51	88.32 151 x 255 x 97.3
1982 May 22	1030?	OA-52	88.35 153 x 256 x 97.3
1982 May 22	2100?	OA-53	88.45 160 x 260 x 97.3
1982 May 23		Deorbited rev 1845	
		REV 1845	
	2225?	Eject SRV	
	2225?	SRV thrust cone sep	
	2235?	Reentry	
	2246	Mid-air recovery (PER)	
1982 Nov 10	0000	06E at 154.5E 56.4N 618 km	
		06D at 139.9E 24.5S 627 km	
		06C at 33.5W 19.8S 636 km	

PAYLOAD
KH-8 camera system S/N FM-52

SRV-1 satellite recovery vehicle, with RMP (radiation monitoring packet)
SRV-2 satellite recovery vehicle, with RMP (radiation monitoring packet)

0.2.53 SRV 4352-1 (1982-06E)

The first SRV from Mission 4352 was stranded in orbit.

0.2.54 GAMBIT Mission 4353 (1983-32A)

GAMBIT mission 4353 was launched in Apr 1983 into low orbit from Vandenberg SLC 4W. It operated for 4 months. One day after launch the spacecraft was placed in a 134 x 308 km orbit, from which the apogee decayed over a period of 4 days to 126 x 270 km, an operational orbit in which it remained with frequent orbit-maintenance burns until the end of the mission on 1983 Aug 18; the perigee was then raised to 136 x 248 km, and the spacecraft reentered or was deorbited on Aug 21. The GAMBIT Story reported a 126 day photo mission with 3 solo days, although this total is 1 day more than the orbit lifetime according to Space-Track.org. The 126 day value would imply SRV-2 ejection at around 2136 UTC on Aug 19, a day after the orbit change which was around 1946 UTC on Aug 18. To accommodate an SRV-2 recovery before the orbit change we would have to assume an Aug 17 recovery for only 124 days of photo mission. We may hope that records will emerge to clarify this.

KH-8 Mission 1753?

Date	Time	Event	Orbit
1983 Apr 15	1845	Launch by Titan 24B Agena D	
	1847	Titan stage 1 sep	
	1850	Titan stage 2 sep	
	1850	Agena burn	
	1855?	Agena D cutoff	
1983 Apr 15	1943		88.88 122 x 315 x 96.6
1983 Apr 16	0139	Raise perigee	88.93 134 x 308 x 96.5
1983 Apr 18	0827		88.64 132 x 281 x 96.5
1983 Apr 19	0806		88.63 131 x 282 x 96.5
1983 Apr 20	1338	Lower perigee	88.45 129 x 266 x 96.5
1983 Apr 21	2203	Apogee boost	88.49 126 x 273 x 96.5
1983 Apr 30			88.37 126 x 262 x 96.5
1983 May 23			88.33 126 x 257 x 96.5
1983 Jun 1			88.44 127 x 266 x 96.5
1983 Jun 15			SRV-1 notional recovery opp
1983 Jul 1			88.46 127 x 269 x 96.5
1983 Jul 24			88.41 127 x 264 x 96.5
1983 Aug 1			88.46 128 x 267 x 96.5
1983 Aug 18			88.30 127 x 252 x 96.5
1983 Aug 18	1946?	Perigee raise	
1983 Aug 19	2136?	SRV-2 recovered after 126 days	
1983 Aug 19			88.35 136 x 248 x 96.5
1983 Aug 21	0530		88.39 137 x 252 x 96.5
1983 Aug 21	2220?		reentered after 128d

PAYLOAD
KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.2.55 GAMBIT Mission 4353 (1984-39A)

The final GAMBIT mission was launched in Apr 1984 and operated for 4 months. No orbital data were released.

My notional reconstruction of the mission assumes a similar profile to the previous flight, and guesses SRV recoveries in mid-June and a few days before reentry. Indeed the declassified GAMBIT Story shows a planned 116 day photo mission (of the 118 days in orbit).

Studies In Intelligence Vol 58 No 2, p 23 reports a launch time of 1854 UTC.

KH-8 Mission 4353

Date	Time	Event	Orbit
1984 Apr 17	1845	Launch by Titan 24B Agena D	V SLC4W
	1847	T+2:46 Titan stage 1 sep	
		T+4:20 Fairing	
	1851	T+6:14 Stage 2 MECO	
	1851	T+6:28 Titan stage 2 sep	
	1851	T+6:32 Agena burn	
	1855	T+10:30 Agena D cutoff	127 x 235 x 96.4 (UN)
			139 x (SiI)
1984 May 14		Orbit lower	135 x (SiI)
1984 Jun 11		SRV-1 recovered, rev 897	
1984 Aug 11		SRV-2 fairing sep	
	2142	SRV-2 recovered	
1984 Aug 13		Deorbited after 118d	

PAYLOAD

KH-8 camera system
SRV-1 satellite recovery vehicle
SRV-2 satellite recovery vehicle

0.3 KH-8 missions summary

Table 55: KH-8 GAMBIT 3

Payload	Name	Launch Veh.	Site	Launch Date	Reentry Date	Dur	Orbit	Designation
GAMBIT 3/1 (31) FM-1	KH-8 4301	Titan 3B Agena D (4751)	V SLC4W	1966 Jul 29	1966 Aug 6	7d	158 x 250 x 94.1	1966-69A
GAMBIT 3/2 (34) FM-2	KH-8 4302	Titan 3B Agena D (4752)	V SLC4W	1966 Sep 28	1966 Oct 6	9.1d	151 x 296 x 94.0	1966-86A
GAMBIT 3/3 (38) FM-3	KH-8 4303	Titan 3B Agena D (4753)	V SLC4W	1966 Dec 14	1966 Dec 24	9d	138 x 368 x 109.6	1966-113A
GAMBIT 3/4 (40) FM-4	KH-8 4304	Titan 3B Agena D (4754)	V SLC4W	1967 Feb 24	1967 Mar 6	10.2d	135 x 414 x 107.0	1967-16A
GAMBIT 3/5 (41) FM-5	KH-8 4305	Titan 3B Agena D (4755)	V SLC4W	1967 Apr 26	1967 Apr 26	0	-	-
GAMBIT 3/6 (44) FM-6	KH-8 4306	Titan 3B Agena D (4756)	V SLC4W	1967 Jun 20	1967 Jun 30	10.2d	127 x 325 x 111.4	1967-64A
GAMBIT 3/7 (45)	KH-8 4307	Titan 3B Agena D (4757)	V SLC4W	1967 Aug 16	1967 Aug 29	13d	142 x 449 x 111.9	1967-79A
GAMBIT 3/8 (46)	KH-8 4308	Titan 3B Agena D (4758)	V SLC4W	1967 Sep 19	1967 Sep 30	10.2d	122 x 401 x 106.1	1967-90A
GAMBIT 3/9 (47)	KH-8 4309?/4534	Titan 3B Agena D (4759)	V SLC4W	1967 Oct 25	1967 Nov 4	9d	136 x 429 x 111.6	1967-103A
GAMBIT 3/10 (48)	KH-8 4310	Titan 3B Agena D (4760)	V SLC4W	1967 Dec 5	1967 Dec 16	11.2d	137 x 430 x 109.6	1967-121A
GAMBIT 3/11 (49)	KH-8 4311	Titan 3B Agena D (4761)	V SLC4W	1968 Jan 18	1968 Feb 4	17.1d	138 x 404 x 111.5	1968-05A
GAMBIT 3/12 (50)	KH-8 4312	Titan 3B Agena D (4762)	V SLC4W	1968 Mar 13	1968 Mar 24	11d	128 x 407 x 99.8	1968-18A
GAMBIT 3/13 (51)	KH-8 4313	Titan 3B Agena D (4763)	V SLC4W	1968 Apr 17	1968 Apr 29	12d	134 x 427 x 111.5	1968-31A
GAMBIT 3/14 (52)	KH-8 4314	Titan 3B Agena D (4764)	V SLC4W	1968 Jun 5	1968 Jun 17	12.2d	123 x 456 x 110.5	1968-47A
GAMBIT 3/15 (53)	KH-8 4315	Titan 3B Agena D (4765)	V SLC4W	1968 Aug 6	1968 Aug 16	9d	142 x 395 x 110.0	1968-64A
GAMBIT 3/16 (54)	KH-8 4316	Titan 3B Agena D (4766)	V SLC4W	1968 Sep 10	1968 Sep 25	15d	125 x 404 x 106.1	1968-74A
GAMBIT 3/17 (55)	KH-8 4317	Titan 3B Agena D (4767)	V SLC4W	1968 Nov 6	1968 Nov 20	14d	130 x 390 x 106.0	1968-99A
GAMBIT 3/18 (56)	KH-8 4318	Titan 3B Agena D (4768)	V SLC4W	1968 Dec 4	1968 Dec 12	8d	136 x 736 x 106.2	1968-108A
GAMBIT 3/19 (57)	KH-8 4319	Titan 3B Agena D (4769)	V SLC4W	1969 Jan 22	1969 Feb 3	12d	142 x 1090 x 106.2	1969-07A
GAMBIT 3/20 (58)	KH-8 4320?	Titan 3B Agena D (4770)	V SLC4W	1969 Mar 4	1969 Mar 18	14d	134 x 461 x 92.0	1969-19A
GAMBIT 3/21 (59)	KH-8 4321	Titan 3B Agena D (4771)	V SLC4W	1969 Apr 15	1969 Apr 30	15d	135 x 410 x 108.8	1969-39A
GAMBIT 3/22 (60)	KH-8 4322	Titan 3B Agena D (4772?)	V SLC4W	1969 Jun 3	1969 Jun 14	11.2d	137 x 414 x 110.0	1969-50A
Block 2 vehicle (dual bucket)								
GAMBIT 3/23 (61)	KH-8B 4323	Titan 3B Agena D (4773?)	V SLC4W	1969 Aug 22	1969 Sep 7	16d	133 x 366 x 108.0	1969-74A
GAMBIT 3/24 (62)	KH-8B 4324	Titan 3B Agena D (4774?)	V SLC4W	1969 Oct 24	1969 Nov 8	15d	136 x 740 x 108.0	1969-95A
GAMBIT 3/25 (63)	KH-8B 4325	Titan 3B Agena D (4776)	V SLC4W	1970 Jan 14	1970 Feb 1	18d	134 x 383 x 110.0	1970-02A
GAMBIT 3/26 (64)	KH-8B 4326	Titan 3B Agena D (4777)	V SLC4W	1970 Apr 15	1970 May 6	21d	130 x 388 x 111.0	1970-31A
GAMBIT 3/27 (65)	KH-8B 4327	Titan 3B Agena D (4774?)	V SLC4W	1970 Jun 25	1970 Jul 6	11d	129 x 389 x 108.9	1970-48A
GAMBIT 3/28 (66)	KH-8B 4328	Titan 3B Agena D (4775?)	V SLC4W	1970 Aug 18	1970 Sep 3	16d	151 x 365 x 111.0	1970-61A
GAMBIT 3/29 (67)	KH-8B 4329	Titan 3B Agena D (4779?)	V SLC4W	1970 Oct 23	1970 Nov 11	19d	135 x 396 x 111.1	1970-90A
GAMBIT 3/30 (68)	KH-8B 4330	Titan 23B Agena D (4780?)	V SLC4W	1971 Jan 21	1971 Feb 9	19d	139 x 418 x 110.9	1971-05A
GAMBIT 3/31 (69)	KH-8B 4331	Titan 23B Agena D (4781?)	V SLC4W	1971 Apr 22	1971 May 13	21d	132 x 401 x 110.9	1971-33A
Block 2 vehicle (dual bucket) with R-5 optical system								
GAMBIT 3/32 (70)	KH-8B 4332	Titan 24B Agena D (4782?)	V SLC4W	1971 Aug 12	1971 Sep 3	22d	137 x 424 x 111.0	1971-70A
GAMBIT 3/33 (71)	KH-8B 4333	Titan 24B Agena D (4783?	V SLC4W	1971 Oct 23	1971 Nov 17	25d	134 x 416 x 110.9	1971-92A
GAMBIT 3/34 (72)	KH-8B 4334	Titan 24B Agena D (4784?)	V SLC4W	1972 Mar 17	1972 Apr 11	25d	131 x 409 x 111.0	1972-16A
GAMBIT 3/35 (73)	KH-8B 4335	Titan 24B Agena D (4785)	V SLC4W	1972 May 20	1972 May 20	0	-	1972-F03
GAMBIT 3/36 (74)	KH-8B 4336	Titan 24B Agena D (4786?)	V SLC4W	1972 Sep 1	1972 Sep 30	29d	140 x 380 x 110.5	1972-68A
Block 3 vehicle (improved roll joint)								
GAMBIT 3/37 (75)	KH-8B 4337	Titan 24B Agena D	V SLC4W	1972 Dec 21	1973 Jan 23	33d	139 x 378 x 110.5	1972-103A
GAMBIT 3/38 (76)	KH-8B 4338	Titan 24B Agena D	V SLC4W	1973 May 16	1973 Jun 13	28d	136 x 352 x 110.5	1973-28A
GAMBIT 3/39 (77)	KH-8B 4339	Titan 24B Agena D	V SLC4W	1973 Jun 26	1973 Jun 26	0	-	-
GAMBIT 3/40 (78)	KH-8B 4340	Titan 24B Agena D	V SLC4W	1973 Sep 27	1973 Oct 29	32d	131 x 385 x 110.5	1973-68A
GAMBIT 3/41 (79)	KH-8B 4341	Titan 24B Agena D	V SLC4W	1974 Feb 13	1974 Mar 17	32d	134 x 393 x 110.4	1974-07A
GAMBIT 3/42 (80)	KH-8B 4342	Titan 24B Agena D	V SLC4W	1974 Jun 6	1974 Jul 23	47d	136 x 394 x 110.5	1974-42A
GAMBIT 3/43 (81)	KH-8B 4343	Titan 24B Agena D	V SLC4W	1974 Aug 14	1974 Sep 29	46d	135 x 402 x 110.5	1974-65A
GAMBIT 3/44 (82)	KH-8B 4344	Titan 24B Agena D	V SLC4W	1975 Apr 18	1975 Jun 5	48d	134 x 401 x 110.5	1975-32A
GAMBIT 3/45 (83)	KH-8B 4345	Titan 24B Agena D	V SLC4W	1975 Oct 9	1975 Nov 30	52d	125 x 356 x 96.4	1975-98A

Table 55: KH-8 GAMBIT 3

Payload	Name	Launch Veh.	Site	Launch Date	Reentry Date	Dur	Orbit	Designation
GAMBIT 3/46 (84)	KH-8B 4346	Titan 24B Agena D	V SLC4W	1976 Mar 22	1976 May 18	57d	125 x 347 x 96.4	1976-27A
GAMBIT 3/47 (85)	KH-8B 4347	Titan 24B Agena D	V SLC4W	1976 Sep 15	1976 Nov 5	51d	135 x 330 x 96.4	1976-94A
Block 4 vehicle (solar arrays)								
GAMBIT 3/48 (86)	KH-8B 4348	Titan 24B Agena D	V SLC4W	1977 Mar 13	1977 May 26	74d	124 x 348 x 96.4	1977-19A
GAMBIT 3/49 (87)	KH-8B 4349	Titan 24B Agena D	V SLC4W	1977 Sep 23	1977 Dec 8	76d	125 x 352 x 96.5	1977-94A
GAMBIT 3/50 (88)	KH-8B 4350	Titan 24B Agena D	V SLC4W	1979 May 28	1979 Aug 26	90d	131 x 285 x 96.4	1979-44A
GAMBIT 3/51 (89)	KH-8B 4351	Titan 24B Agena D	V SLC4W	1981 Feb 28	1981 Jun 20	112d	138 x 336 x 96.4	1981-19A
GAMBIT 3/52 (90)	KH-8B 4352	Titan 24B Agena D	V SLC4W	1982 Jan 21	1982 May 23	122d	553 x 646 x 97.3	1982-06A
GAMBIT 3/53 (91)	KH-8B 4353	Titan 24B Agena D	V SLC4W	1983 Apr 15	1983 Aug 21	128d	136 x 297 x 96.5	1983-32A
GAMBIT 3/54 (92)	KH-8B 4354	Titan 24B Agena D	V SLC4W	1984 Apr 17	1984 Aug 13	118d	127 x 311 x 96.4	1984-39A