DISCOVERER I

MISSILE: AGENA #1022 - THOR #163

LAUNCHED: 1349 PST, 28 Feb 59, Pad #4

COUNTDOWN HISTORY:

1. First Attempt — Scrubbed at 1628, 25 Feb 59 due to first stage pressurization and propellant loading problems.

2. Second Attempt — Launched at 1349, 28 Feb 59. Hold Time of 49 minutes in terminal count due to sensor problems and a check on the fuel transfer to the missile.

FLIGHT PERFORMANCE:

	Event/Time	Difference
1. MECO	160 seconds	+ 160 main
VECO	169 seconds	+ 9 vernier
Separation	174 seconds	+ 5 delay
Ignition	338 seconds	+ 164 coast
Burnout	435 seconds	+ 97 hustler

2. All airborne systems operated satisfactorily.

3. Separation velocity	13,825 fps
Agena velocity	25,600 fps
Apogee	558 smi
Perigee	145 smi
Agena Orbit weight	1,604 lbs.

GROUND SUPPORT EQUIPMENT PERFORMANCE:

AGENA — All GSE systems operated normally

THOR — All GSE systems operated normally with the exception of the liquid sensors and the free standing wall.

REMARKS:

1. Liquid sensor problem solved by removing liquid sensors and replacing with mechanical timers.
2. Free standing wall was split by the blast, but the wall will be removed before subsequent firings.
3. Injection angle of -2.5 degress caused lifetime of under seven days. No telemetry or radar orbit contacts made. Sporadic doppler sightings confirmed orbit. Vehicle believed damaged structurally and/or thermally at injection or during first pass.

CONFIDENTIAL [redacted] 1595-63-0600

MISSILE: AGENA #1018 - THOR #170

LAUNCHED: 1319 PST, 13 Apr 59, Pad #4

COUNTDOWN HISTORY:

1. First Attempt — Launched at 1319, 13 Apr 59. Hold Time of 139 minutes due to an electrical short in the LMSD fuel truck, a clogged filter in the fuel truck, extremely slow gyro heater warm-up, trains, and weather.

FLIGHT PERFORMANCE:

	Event/Time	Difference
1. MECO	159 seconds	+ 159 main
VECO	168 seconds	+ 9 vernier
Separation	171 seconds	+ 3 delay
Ignition	299 seconds	+ 128 coast
Burnout	418 seconds	+ 120 hustler

2. All airborne systems operated satisfactory.

3. Separation velocity	13,024 fps
Agena velocity	25,530 fps
Apogee	157 smi
Perigee	215 smi
Agena orbit weight	1,728 lbs.

GROUND SUPPORT EQUIPMENT PERFORMANCE:

AGENA All GSE systems operated normally.
THOR All GSE systems operated normally.

REMARKS:

1. Engine shutdown by command-source unknown - believed due to relay malfunction.
2. Orbit achieved and confirmed.
3. Capsule ejected, but not recovered - Spitzbergen affair
4. Two weeks lifetime.

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28 Sep 64 EPW

595-63-0601

[redacted]

MISSILE: AGENA #1020 - THOR #174

LAUNCHED: 1310 PDT, 3 Jun 59, Pad #4

COUNTDOWN HISTORY:

1. First Attempt — Scrubbed at 1416, 21 May 59, due to cloudy weather.
2. Second Attempt — Scrubbed at 1302, 23 May 59, due to helium regulator failure.
3. Third Attempt — Scrubbed at 1715, 24 May 59, due to the 95% LOX switch not picking up.
4. Fourth Attempt — Launched at 1310, 3 Jun 59. Hold Time of 190 minutes, due to cloudy weather.

FLIGHT PERFORMANCE:

	Event/Time	Difference
1. MECO	159 seconds	+ 159 main
VECO	169 seconds	+ 10 vernier
Separation	172 seconds	+ 3 delay
Ignition	311 seconds	+ 139 coast
Burnout	426 seconds	+ 115 hustler

2. All airborne systems operated satisfactory.

3. Separation velocity	13,420 fps
Agena velocity	24,850 fps
Apogee	No orbit
Perigee	No orbit
Agena orbit weight	1,859 lbs.

GROUND SUPPORT EQUIPMENT PERFORMANCE:

AGENA — All GSE systems operated normally except for J - 900 which pulled loose 1.5 seconds early.

THOR — All GSE systems operated normally.

REMARKS:

1. Mice on board.
2. Premature engine burnout due to fuel exhaustion.
3. Insufficient velocity to attain orbit.
4. Under-nominal performance by Agena engine, but within specifications.

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28 Sep 64

6575-63-0602

D I S C O V E R E R   I V

MISSILE: AGENA #1023 - THOR #179

LAUNCHED: 1548 PDT, 25 Jun 59, Pad #5

COUNTDOWN HISTORY:

1. First Attempt — Scrubbed at 1208, 23 Jun 59, due to Range Safety Communications inoperable.

2. Second Attempt — Launched at 1548, 25 Jun 59. Hold Time of 282 minutes due to a LOX stinger leak, beacon non verification (beacon flop), and premature release of the fuel vent umbilical.

FLIGHT PERFORMANCE:

		Event/Time	Difference
1.	MECO	158 seconds	+ 158 main
	VECO	168 seconds	+ 10 vernier
	Separation	173 seconds	+ 5 delay
	Ignition	240 seconds	+ 67 coast
	Burnout	357 seconds	+ 117 hustler

2. All airborne systems operated satisfactory.

3.	Separation velocity	13,450 fps
	Agena velocity	25,600 fps
	Apogee	No orbit
	Perigee	No orbit
	Agena orbit weight	1,896 lbs.

GROUND SUPPORT EQUIPMENT PERFORMANCE:

AGENA All GSE systems operated normally.
THOR All GSE systems operated normally, except for the umbilical mast which failed to retract.

REMARKS:

1. Mice on board.
2. Premature engine burnout believed due to vortexing of fuel.
3. Insufficient velocity to attain orbit.
4. Under-nominal performance by Agena engine, but within specifications.
5. Engine exhaust blew down through air conditioning duct and caused considerable fire damage in the cable trench.

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6575-63-0603

MISSILE: AGENA #1029 - THOR #192

LAUNCHED: 1200 PDT, 13 Aug 59, Pad #4

COUNTDOWN HISTORY:

1. First Attempt — Scrubbed at 1100, 28 Jul 59, due to cloudy weather.
2. Second Attempt — Scrubbed at 0950, 29 Jul 59, due to cloudy weather.
3. Third Attempt — Scrubbed at 1645, 30 Jul 59, due to failure of main engine ignitor.
4. Fourth Attempt — Scrubbed at 1406, 11 Aug 59, due to cloudy weather.
5. Fifth Attempt — Scrubbed at 1343, 12 Aug 59, due to cloudy weather.
6. Sixth Attempt — Launched at 1200, 13 Aug 59. Hold Time of 60 minutes due to air conditioner problems and trains.

FLIGHT PERFORMANCE:

	Event/Time	Difference
1. MECO	162 seconds	+ 158 main
VECO	171 seconds	+ 9 vernier
Separation	178 seconds	+ 7 delay
Ignition	286 seconds	+ 108 coast
Burnout	403 seconds	+ 117 hustler

2. All airborne systems operated satisfactorily except for the mercury batteries in the payload which did not function due to low temperatures.

3. Separation velocity	12,796 fps
Agena velocity	25,973 fps
Apogee	456 smi
Perigee	137 smi
Agena orbit weight	1,919 lbs.

GROUND SUPPORT EQUIPMENT:

AGENA — All GSE systems operated normally.
THOR — All GSE systems operated normally.

REMARKS:

1. Burnout due to propellant exhaustion.
2. Capsule ejected, but not recovered.

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D I S C O V E R E R V I

MISSILE: AGENA #1028 - THOR #200

LAUNCHED: 1225 PDT, 19 Aug 59, Pad #5

COUNTDOWN HISTORY:

1. First Attempt — Scrubbed at 0930, 18 Agu 59, due to orbital stage telemetry malfunction.

2. Second Attempt — Launched at 1225, 19 Aug 59. Hold Time of 115 minutes due to GSE power problems, trains, and first stage fuel counter malfunction.

FLIGHT PERFORMANCE:

	Event/Time	Difference
1. MECO	164 seconds	+ 164 main
VECO	173 seconds	+ 9 vernier
Separation	179 seconds	+ 6 delay
Ignition	276 seconds	+ 97 coast
Burnout	391 seconds	+ 115 hustler

2. All airborne systems operated satisfactory.

3. Separation velocity	13,060 fps
Agena velocity	25,985 fps
Apogee	556 smi
Perigee	134 smi
Agena orbit weight	1,901 lbs.

GROUND SUPPORT EQUIPMENT PERFORMANCE:

AGENA — All GSE systems operated normally, except for fuel fill line which had a leak and fuel interflow valve which failed to lock up.

THOR — All GSE systems operated normally.

REMARKS:

1. Burnout due to propellant exhaustion.
2. Capsule ejected, but not recovered.
3. Azimuth incorrectly set at 175° T rather than 172°T.

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D I S C O V E R E R VII

MISSILE: AGENA #1051 - THOR #206

LAUNCHED: 1229 PDT, 7 Nov 59, Pad #4

COUNTDOWN HISTORY:

1. First Attempt — Scrubbed at 0900, 3 Nov 59, due to cloudy weather.
2. Second Attempt — Scrubbed at 0330, 6 Nov 59, due to oxidizer pump contamination.
3. Third Attempt — Launched at 1229, 7 Nov 59. Hold Time of 59 minutes due to small fuel leak.

FLIGHT PERFORMANCE:

	Event/Time	Difference
1. MECO	163 seconds	+ 163 main
VECO	173 seconds	+ 10 vernier
Separation	179 seconds	+ 6 delay
Ignition	251 seconds	+ 72 coast
Burnout	373 seconds	+ 122 hustler

2. All airborne systems operated satisfactory, except for the 400 cycle power supply which was lost on the first orbit and the retro rockets which failed to fire.

3. Separation velocity	13,620 fps
Agena velocity	26,040 fps
Apogee	525 smi
Perigee	100 smi
Agena orbit weight	2,029 lbs.

GROUND SUPPORT EQUIPMENT PERFORMANCE:

AGENA — All GSE systems operated normally.

THOR — All GSE systems operated normally, except for the new launch mount with the short flame deflectors which was ineffective. Old style launch mount used subsequently.

REMARKS:

1. Tumbling of vehicle due to loss of 400 cycle power supply, and nitrogen gas was exhausted prior to orbit 2.
2. Capsule could not be ejected.
3. Engine shutdown due to integration. First time integrator operated normally.

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MISSILE: AGENA #1050 - THOR #212

LAUNCHED: 1125 PST, 20 Nov 59, Pad #5

COUNTDOWN HISTORY:

First Attempt — Launched 1125, 20 Nov 59. Hold Time of 25 minutes due to engine slew malfunction and 97% fuel malfunction.

FLIGHT PERFORMANCE:

	Event/Time	Difference
1. MECO	164 seconds	+ 164 main
VECO	174 seconds	+ 10 vernier
Separation	182 seconds	+ 8 delay
Ignition	273 seconds	+ 91 coast
Burnout	393 seconds	+ 120 hustler

2. All airborne systems operated satisfactory, except for the velocity-to-be-gained integrator which failed to shut down the engine. This becomes critical on this flight due to excess velocity and caused an extreme eliptical orbit.

3. Separation velocity	13,860 fps
Agena velocity	26,890 fps
Apogee	1,056 smi
Perigee	120 smi
Agena orbit weight	1,841 lbs.

GROUND SUPPORT EQUIPMENT PERFORMANCE:

AGENA — All GSE systems operated normally.
THOR — All GSE systems operated normally, except for umbilical mast which failed to fully retract.

REMARKS:

1. Burnout due to propellant exhaustion.
2. 103.7 minut orbit period due to eliptical orbit, thus capsule separation occurred on 15th orbit, rather than on 17th.
3. Capsule sequence normal, but no beacon or recovery.

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D I S C O V E R E R I X

MISSILE: AGENA #1052 - THOR #218

LAUNCHED: 1052 PST, 4 Feb 60, Pad #4

COUNTDOWN HISTORY:

1. First Attempt — Scrubbed at 1344, 29 Jan 60, due to main stage ignitor relay.
2. Second Attempt — Scrubbed at 0930, 31 Jan 60, due to defective umbilical cable.
3. Third Attempt — Scrubbed at 1000, 3 Feb 60, due to cloudy weather.
4. Fourth Attempt — Launched at 1052, 4 Feb 60. Hold Time of 0 minutes. Time was actually jumped 8 minutes.

FLIGHT PERFORMANCE:

	Event/Time	Difference
1. MECO	145 seconds	+ 145 main
VECO	155 seconds	+ 10 vernier
Separation	179 seconds	+ 24 delay
Ignition	251 seconds	+ 72 coast
Burnout	267 seconds	+ 16 hustler

2. Thor airborne systems - main engine cut-off occurred at MECO enable, approximately 17 seconds early.
   Agena airborne systems - attitude control on the Agena engine was lost at engine ignition.

3. Separation velocity	9,400 fps
Agena velocity	not achieved
Apogee	no orbit
Perigee	no orbit
Agena orbit weight	unknown (no orbit)

GROUND SUPPORT EQUIPMENT PERFORMANCE:

AGENA — Helium quick disconnect pulled out of vehicle causing loss of tank helium pressure.

THOR — Umbilical mast failed to retract.

REMARKS:

1. Vehicle failed to orbit as a result of major malfunctions in both stages either of which would have been sufficient within itself to have caused the failure to orbit.

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D I S C O V E R E R X

MISSILE: AGENA #1054 - THOR #223

LAUNCHED: 1215 PST, 19 Feb 60, Pad #5

COUNTDOWN HISTORY:

First Attempt Launch at 1215, 19 Feb 60. Hold Time of 75 minutes due to high lift malfunction and overload of fuel in orbital stage.

FLIGHT PERFORMANCE:

	Event/Time
1. MECO	not achieved
VECO	not achieved
Separation	not achieved
Ignition	not achieved
Burnout	not achieved

2. Thor airborne systems - the flight control system had a pitch oscillation which eventually caused the missile to exceed range safety limits and be destroyed.

3. Separation velocity	not achieved
Agena velocity	not achieved
Apogee	no orbit
Perigee	no orbit
Agena orbit weight	unknown (no orbit)

GROUND SUPPORT EQUIPMENT PERFORMANCE:

AGENA	All GSE systems operated normally
THOR	All GSE systems operated normally

REMARKS:

1. Missile destructed at 56.4 seconds at an altitude of 22,000 feet.

2. All major missile parts impacted within 2,500 feet of the launch pad and were recovered.

~~CONFIDENTIAL~~

28 Sep 64 [redacted]

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DISCOVERER XI

MISSILE: AGENA #1055 - THOR #234

LAUNCHED: 1230 PST, 15 April 1960, Pad 5

COUNTDOWN HISTORY:

First Attempt - Launched at 12:30:37 PST, 15 Apr 60. Hold time of 90 minutes due to range interference from Southern Pacific trains.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	163 sec	∤163 main
	VECO	172 sec	∤9 vernier
	Separation	186 sec	∤14 delay
	Ignition	255 sec	∤69 coast
	Burnout	371 sec	∤115 hustler

2. All airborne systems operated satisfactorily.

3.	Separation velocity	13,560 FPS
	Orbit velocity	25,770 FPS
	Apogee	380 SM
	Perigee	110 SM
	Agena orbit weight	1,721 lbs

GROUND SUPPORT EQUIPMENT PERFORMANCE:

AGENA - All GSE systems operated normally.
THOR - All GSE systems operated normally.

REMARKS:

1. Agena shutdown was accomplished by the integrator.

2. Capsule sequence was normal but no recovery was accomplished. Analysis of the data available indicates this was perhaps the most successful Discoverer to date from launch throughout the recovery sequence. Attitude control was excellent and all electronic links were excellent.

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28 Sep 64 AFS

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DISCOVERER XII

MISSILE: Agena 1053 - Thor 160

LAUNCHED: 1501 PDT, 29 June 1960

COUNTDOWN HISTORY:

First Attempt — Launched at 1501, 29 June 1960 from Pad 4. Hold time of 241 minutes due to acid and fuel truck malfunctions and weather.

FLIGHT PERFORMANCE:

Event	Time	Difference
1. MECO	162 seconds	+ 162 main
VECO	171 seconds	+ 9 vernier
Separation	184 seconds	+ 13 delay
Ignition	279 seconds	+ 95 coast
Burnout	398 seconds	+ 119 hustler

2. Thor Airborne Systems operated satisfactorily.

   Agena Airborne Systems - All systems operated satisfactorily except the attitude control system which failed to properly orient the vehicle for injection.

3. MECO Inertial Velocity	13,300 FPS
Agena Inertial Velocity	25,650 FPS
Apogee	No orbit
Perigee	No orbit
Agena orbit weight	unknown (no orbit)

GROUND SUPPORT EQUIPMENT PERFORMANCE:

AGENA — The acid truck pump motor failed to start and a valve failed to open in the fuel truck when attempting to load propellants. The acid truck was replaced.

THOR — All GSE Systems operated normally.

REMARKS:

1. Vehicle failed to orbit as a result of a horizon scanner malfunction and consequent -6° injection angle.
2. The Agena propulsion system was shut down by integrator.

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DISCOVERER XIII

MISSILE: Agena 1057 - Thor 231

LAUNCHED: 1338 PDT, 10 August 1960

COUNTDOWN HISTORY:

First Attempt — Launched at 1338, 10 August 1960, from Pad 5. Hold time of 83 minutes was due to excessive time needed for Task 3, replacement of a booster destruct receiver, a technical hold in Phase I of the terminal count, and a range hold in Phase V of the terminal count.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	163 sec	+163 main
	VECO	172 sec	+9 vernier
	Separation	182 sec	+10 delay
	Ignition	302 sec	+120 coast
	Burnout	422 sec	+120 hustler

2. All airborne systems operated satisfactorily.

3.

MECO Inertial Velocity	13,600 FPS
Agena Inertial Velocity	25,855 FPS
Apogee	437 SM
Perigee	159 SM
Agena orbit weight	1,701 lbs

GROUND SUPPORT EQUIPMENT PERFORMANCE:

AGENA - All GSE systems operated normally.

THOR - The GSE and missile power circuit breakers were overloaded at terminal countdown initiation. They were immediately reset and the countdown proceeded.

REMARKS:

1. All aspects of the trajectory, and orbit, were excellent.

2. The payload was ejected and was successfully recovered from the water during the 17th orbit. FIRST SUCCESSFUL RECOVERY!!

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DISCOVERER XIV

MISSILE: Agena 1056 - Thor 237

LAUNCHED: 1257 PDT, 18 August 1960

COUNTDOWN HISTORY:

First Attempt - Launched at 1257 PDT, 18 August 1960, from Pad 4. Hold time of 72 minutes was due to a malfunction of the water deluge system and its resultant subsequent problems, a malfunction in the blockhouse control circuit controlling fuel loading, and the passage of Discoverer XIII.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	165 seconds	/ 165 main
	VECO	174 seconds	/ 9 vernier
	Separation	182 seconds	/ 8 delay
	Ignition	278 seconds	/ 96 coast
	Burnout	393 seconds	/ 115 hustler

2. All airborne systems operated satisfactorily.

3.	MECO Inertial Velocity	13,490 FPS
	Agena Inertial Velocity	26,150 FPS
	Apogee	501 SM
	Perigee	116 SM
	Agena Orbit Weight	1,786 lbs

GROUND SUPPORT EQUIPMENT PERFORMANCE:

AGENA - The loading valve in the fuel truck could not be controlled from the blockhouse during propellant loading. The valve was actuated from the truck and the loading proceeded normally.

THOR - The pad water deluge system activated during Task 9 causing some circuitry problems in the LMSD GSE. All such problems were either corrected or circumvented as they were encountered.

REMARKS:

1. Initial trajectory and orbit injection were excellent.

2. Some instabilities noted during early orbits.

3. Payload ejected and air snatched by a C-119 during the 17th orbit. FIRST AIR SNATCH!!!

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DISCOVERER XV

MISSILE: Agena 1058 - Thor 246

LAUNCHED: 1514 PDT, 13 September 1960

COUNTDOWN HISTORY:

First Attempt - Launched at 1514 PDT, 13 September 1960 from Pad 5. Hold time of 184 minutes was due to: (a) GFE mating problem, (b) mast/mast support alignment problem, (c) a special review and certification of a change in the booster destruct system, (d) an interflow valve problem at the missile, and (e) a subsequent acid leak and consequent inspection and corrections.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	162 seconds	∕ 162 main
	VECO	172 seconds	∕ 10 vernier
	Separation	181 seconds	∕ 9 delay
	Ignition	279 seconds	∕ 98 coast
	Burnout	396 seconds	∕ 117 hustler

2. All airborne systems operated satisfactorily.

3.	MECO Inertial Velocity	13,480 FPS
	Agena Inertial Velocity	26,060 FPS
	Apogee	474 SM
	Perigee	125 SM
	Agena Orbit Weight	1,785 lbs

GROUND SUPPORT EQUIPMENT PERFORMANCE:

AGENA - The interflow valve at the missile stuck shut and delayed loading. A loose B-nut at the Acid QD caused an acid leak.

THOR - All GSE systems operated normally.

REMARKS:

1. Excellent launch and orbit injection.

2. Excessive use of control gas in orbit left below minimum amount for 60° pitch down orientation. Capsule consequently landed near Christmas Island.

3. Capsule was sighted, but apparently sunk before recovery could be made.

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26 SEP 64

MISSILE: Agena 1061 · Thor 253

LAUNCHED: 1226 PST, 26 October 1960

COUNTDOWN HISTORY:

1. First Attempt — Scrubbed at 1135, 25 October 1960, due to payload beacon and TM interference.

2. Second Attempt — Launched at 1226 PST, 26 October 1960 from Pad 4. Hold time of 86 minutes was due to: (a) replacement of a range safety receiver battery, (b) a malfunction of the weighing mechanism on Acid Truck #1, and (c) lack of N_2 pressure in the LMSD pneumatic system to support freon loading.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	162 seconds	162 main
	VECO	162.02 seconds	0.02 vernier
	Separation	Not achieved	
	Ignition	Not achieved	
	Burnout	Not achieved	

2. Thor Airborne Systems - VECO occurred only 0.02 seconds after MECO instead of a nominal 9 seconds.
Agena Airborne Systems - No "D" timer events occurred.

3.	MECO Inertial Velocity	10,740 FPS
	Agena Inertial Velocity	Not achieved
	Apogee	No orbit
	Perigee	No orbit
	Agena Orbit Weight	No orbit

GROUND SUPPORT EQUIPMENT PERFORMANCE:

AGENA - The #1 Acid Truck scales malfunctioned allowing an overload of acid. Control was switched to Truck #2 and the loading continued.
THOR - All GSE systems operated satisfactorily.

REMARKS:

1. The abnormally short VE solo time is attributed to transients activating the delay relay which allows a nominal 9 second VE solo.

2. A momentary interruption of power to the "D" timer apparently caused it to stop at lift-off, thus no separation or any other "D" functions.

DISCOVERER XVII [redacted]

MISSILE: Agena 1062 - Thor 297

LAUNCHED: 1243 PST, 12 November 1960

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COUNTDOWN HISTORY:

1. First Attempt: Scrubbed at 1342, 11 Nov 60, after 55 seconds in Phase V. LMSD umbilical, J-900, was pulled when the transporter erector lowered.

2. Second Attempt: Launched at 1243 PST, 12 Nov 60, from Pad 5. Countdown was started with the vehicle vertical and second stage propellants loaded at 0555 PST. Hold time of 103 minutes was due to: (a) trains, (b) COTAR checkout, (c) wind shear computation, and (d) failure of GSE to start "D" timer.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	163	163 main
	VECO	173	10 vernier
	Separation	185	12 delay
	Ignition	232	47 coast
	Burnout	475	243 hustler

2. All airborne systems operated satisfactorily.

3.	MECO Inertial Velocity	10,530 FPS
	Agena Inertial Velocity	26,270 FPS
	Apogee	616 SM
	Perigee	116 SM
	Agena Orbit Weight	2197 lbs.

GROUND SUPPORT EQUIPMENT PERFORMANCE:

AGENA During the launch countdown, the "D" timer motor could not be started from the blocl house. Batteries were used to increase the voltage and the motor was subsequently started and left running through launch. On the first launch attempt, 11 lbs of fuel were unaccounted for after the first half was loaded; therefore, it was dumped and the complete loading was re-accomplished.

THOR All GSE systems operated satisfactorily.

REMARKS:

1. Good launch and orbit injection. Second stage engine burned longer than predicted giving a highly eliptical orbit.

2. First two day orbit. Dumped on 31st pass.

3. Capsule dump sequence excellent, second air snatch.

~~CONFIDENTIAL~~

23 Sep 64

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DISCOVERER XVIII

MISSILE: Agena #1103 - Thor #296

LAUNCHED: 1220:58.5 PST, 7 Dec 60

COUNTDOWN HISTORY:

First Attempt - Launched at 1221 PST, 7 Dec 60, from Pad 4. Total hold time was 41 minutes. One hold was called to allow trains to clear hazard area; an additional hold of 16 min was required for investigation and correction of a fuel loading computer problem during terminal count.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	149.3 Sec	149.3 Main
	VECO	158.6 Sec	9.3 Vernier
	Separation	170.7 Sec	12.1 Delay
	Ignition	256.2 Sec	85.5 Coast
	Burnout	490.9 Sec	234.7 Hustler

2. All airborne systems operated satisfactorily.

3.	Meco Inertial Velocity	11,050 FPS
	Agena Inertial Velocity	25,860 FPS
	Apogee	437 SMI
	Perigee	153 SMI
	Agena Orbit Weight	2,300 lbs

GROUND SUPPORT EQUIPMENT PERFORMANCE:

Agena - Acid flow meter did not function during Line Fill Task.

Thor - Fuel computer did not function on first terminal count attempt.

REMARKS:

1. Good launch and orbit injection.

2. First three-day orbit, dumped on 48th pass.

3. Capsule dump sequence excellent. Third air snatch!

~~SECRET~~ ~~CONFIDENTIAL~~

28 SEP 60

DISCOVERER XIX

MISSILE: Agena #1101, Thor #258

LAUNCHED: 1232 PST, 20 December 1960

COUNTDOWN HISTORY:

First Attempt -- Scrubbed at 1000, 19 Dec 60, due to a short in the Range Safety system.

Second Attempt -- Launched at 1232 PST, 20 December 1960, from Pad 5. Hold time of 62 minutes was due primarily to train schedules and a power loss at the Tracking Station during terminal count.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	161 Sec	161 Main
	VECO	170 Sec	9 Vernier
	Separation	182 Sec	12 Delay
	Ignition	255 Sec	73 Coast
	Burnout	493 Sec	238 Hustler

2. Agena Airborne Systems -- Control gas was lost rapidly during Agena engine burn, apparently due to a leak in the system.

   Thor Airborne Systems -- Operated satisfactorily.

3.	MECO Inertial Velocity	10,760 FPS
	Agena Inertial Velocity	25,850 FPS
	Apogee	395 SMI
	Perigee	120 SMI
	Agena Orbit Weight	2,086 lbs

GROUND SUPPORT EQUIPMENT PERFORMANCE:

All GSE systems operated satisfactorily.

REMARKS:

1. Good launch and orbit injection.
2. Loss of control gas resulted in an unstable satellite; 90% usable data.
3. Midas prototype payload not designed for recovery.

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DISCOVERER XX

MISSILE: Agena #1104, Thor #298 LAUNCHED: 1225 PST, 17 Feb 1961

COUNTDOWN HISTORY:

First Attempt -- Scrubbed at 1030 PST, 10 February 1961, due to an excessive drift in the Agena pitch gyro.

Second Attempt -- Launched 1225 PST, 17 February 1961. The only hold was imposed at T-83 minutes at which time the count was advanced to T-15 minutes, in an attempt to launch prior to trains entering the hazard area. This could not be accomplished and the count resumed at 1210 PST.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	148.8 Sec	148.8 main
	VECO	158.3 Sec	9.5 vernier
	Separation	163.6 Sec	5.3 delay
	Ignition	223.5 Sec	59.9 coast
	Burnout	471.0 Sec	247.5 hustler

2. Thor Airborne Systems -- Operated satisfactorily; however, 20 cps oscillations were noted in the LOX and fuel pump inlet between T+128 and T+147 seconds.

Agena Airborne Systems -- Unusual transients occurred in pitch and yaw and the output from the horizon scanner was irregular, but these problems resolved themselves during the first few orbits. Orbital timer and/or S-Band Beacon apparently failed on 31st pass.

3.	MECO Inertial Velocity	10,910 FPS
	Agena Inertial Velocity	25,630 FPS
	Apogee	477 SMI
	Perigee	202 SMI
	Agena Orbital Weight	2,311 lbs

GROUND SUPPORT EQUIPMENT PERFORMANCE:

All GSE systems operated satisfactorily.

REMARKS:

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1. Good launch and orbit injection.

2. Dump and recovery could not be accomplished due to orbital timer or S-Band Beacon failures.

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DISCOVERER XXI

MISSILE: Agena #1102, Thor #261 LAUNCHED: 1458 PST, 18 Feb 1961

COUNTDOWN HISTORY:

First Attempt -- Launched at 1458 PST, 18 February 1961, from 75-3-5. Total hold time was 203 minutes. 195 minutes of this was called at T-60 to adjust the launch time so that the overlap of Discoverer XX and Discoverer XXI orbital tracking would be minimized. The remaining 8 minutes were imposed to await the passage of a train and to ascertain that the range hazard area was clear of ships.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	162.9 Sec	162.9 main
	VECO	172.5 Sec	9.6 vernier
	Separation	185.7 Sec	13.2 delay
	Ignition	239.9 Sec	54.2 coast
	Burnout	481.2 Sec	241.3 hustler

2. Thor Airborne Systems -- Operated satisfactorily, however, 16-21 cps oscillations were noted in the LOX pump inlet.

Agena Airborne Systems -- Operated satisfactorily until 400 cycle inverter failed on 9th pass.

3.	MECO Inertial Velocity	10,810 FPS
	Agena Inertial Velocity	26,010 FPS
	Apogee (before/after restart)	452/660 SMI
	Perigee (before/after restart)	127/159 SMI
	Length of 2d Burn	1.05 Seconds
	Velocity Gain During 2d Burn	350 FPS

GROUND SUPPORT EQUIPMENT PERFORMANCE:

All GSE operated satisfactorily.

REMARKS:

1. Good launch and orbit injection.
2. This was the first agena engine programmed for restart on orbit and the restart was satisfactorily accomplished on the first pass.
3. Midas prototype payload was not designed for recovery.

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~~CONFIDENTIAL~~ DISCOVERER XXII ~~SECRET~~ [redacted]

MISSILE: Agena #1105, Thor #300 LAUNCHED: 1234:43 PST, 30 Mar 61

COUNTDOWN HISTORY:

First Attempt -- Launched at 1234:43 PST, 30 March 1961, from 75-3-4. The total hold time was 97 minutes. The major portion of the hold was used to repair the horizon scanner test light and to replace a regulator in the orbital stage propellant tank vent system. Another hold was called prior to terminal count when the "Talker" PA failed. A final scheduled three minute hold was imposed in Phase V to allow the LOX tank top pressure to drop.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	149 Sec	149 main
	VECO	158 Sec	9 vernier
	Separation	165 Sec	7 delay
	Ignition	210 Sec	45 coast
	Burnout	442 Sec	232 hustler

2. Thor Airborne Systems -- Operated satisfactorily.

Agena Airborne Systems -- A loss in the hydraulic pressure caused uncontrolled engine movement and violent vehicle attitude changes.

3.	MECO Inertial Velocity	10,500 FPS
	Agena Inertial Velocity	24,200 FPS
	Apogee	no orbit
	Perigee	no orbit
	Agena Orbital Weight	unknown (no orbit)

GROUND SUPPORT EQUIPMENT PERFORMANCE:

Thor -- All GSE systems operated satisfactorily.

Agena -- The horizon scanner test light did not function during checkout and a regulator in the propellant tank vent system required replacement.

REMARKS:

1. Because of the violent attitude changes in the Agena, it did not attain sufficient velocity to enter into orbit.

2. Discoverer Booster #300 was the first to utilize the BTL guidance system for steering and event time commands. The BTL guidance system functioned satisfactory.

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DISCOVERER XXIII

MISSILE: Agena #1106, Thor #307

LAUNCHED: 1121 PST, 8 April 1961, Pad 5

COUNTDOWN HISTORY:

First Attempt -- Launched at 1121 PST, 8 April 1961. Three holds with a total of 21 minutes were incurred during the countdown.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	150 Sec	160 main
	VECO	159 Sec	9 vernier
	Separation	166 Sec	7 delay
	Ignition	221 Sec	55 coast
	Burnout	463 Sec	242 hustler

2. All airborne systems operated satisfactorily except the control gas valve on the side opposite the sun.

3.	Separation Velocity	10,750 FPS
	Agena Velocity	25,660 FPS
	Apogee	405 SM
	Perigee	187 SM
	Agena Orbital Weight	2,340 lbs

GROUND SUPPORT EQUIPMENT:

All GSE operated satisfactorily.

REMARKS:

The control gas valve on the side opposite the sun failed (Theory -- because of the extreme negative temperature). The escaping gas caused the vehicle to tumble and then spin, beginning on the ninth pass. Recovery was attempted on the 32 pass, but was not accomplished.

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DISCOVERER XXIV

MISSILE: Agena #1108, Thor #302 LAUNCHED: 1416 PDT, 8 Jun 61, Pad 75-3-4

COUNTDOWN HISTORY:

First Attempt -- Launched at 1416 PDT, 8 June 1961. One hold was imposed in Phase V for 15 minutes to permit the manual retraction of a launcher pin and to allow the Thor LOX top tank pressure to vent to nominal pressure. The count was recycled to T-2 minutes when it was resumed.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	147	149 main
	VECO	156	9 vernier
	Separation	162	7 delay
	Ignition	--	--
	Burnout	--	--

2. Thor Airborne Systems -- Operated satisfactorily.

Agena Airborne Systems -- Prior to the complete loss of TM at T + 144 seconds, severe transients in the 2kc electrical system indicated a malfunction in the 2kc power supply or its load; also, abnormal high temperatures were noted in the Agena engine section which may have indicated the presence of a fire.

3.	MECO Inertial Velocity	10,450 FPS
	Agena Inertial Velocity	unknown
	Apogee	no orbit
	Perigee	no orbit
	Agena Orbital Weight	unknown (no orbit)

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

Thor -- A launcher pin did not completely retract in the automatic mode and required manual retraction.

Agena -- All AGE Systems operated satisfactorily.

REMARKS:

1. Because of the Agena malfunction during the Thor boost phase no Agena functions were indicated after T + 144 seconds.

2. Discoverer Agena #1108 was the first to utilize the stationary propellant transfer sets. The propellant transfer sets operated satisfactorily.

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MISSILE: Agena #1107, Thor #303 LAUNCHED: 1602 PDT, 16 Jun 61, Pad 75-1-1

COUNTDOWN HISTORY:

First Attempt -- Three holds, with a total of 93 minutes, were incurred in the countdown. The main problems were a leaking Agena acid fill coupling during Task 15 and a malfunctioning vent valve in the Agena acid venting system during Task 17. The count was held at T-15 for 86 minutes due to the above problems. Hold #2 (5 minutes at T-10) was used to complete preparations for the terminal count. Hold #3 (2 minutes in Phase II) was due to a sticking nitrogen control manifold valve.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	149	150 main
	VECO	158	9 vernier
	Separation	167	3.5 delay
	Ignition	213	46 coast
	Burnout	456	245 hustler

2. Thor Airborne Systems -- Operated satisfactorily.

Agena Airborne Systems -- Difficulty was realized with Command 3 (reset monitor commands). 10 Command 3's were sent in rapid succession and only one of these commands were acknowledged.

3.	MECO Inertial Velocity	10,688 FPS
	Agena Inertial Velocity	25,650 FPS
	Apogee	223 N.M.
	Perigee	122 N.M.
	Agena Orbital Weight	2,479 lbs.

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

Thor -- A nitrogen manifold valve required several actuations before arriving open.

Agena -- An acid fill coupling and an acid vent valve required replacement.

REMARKS:

1. Discoverer XXV was the first Discoverer firing off of Pad 75-1-1. Pad 75-1-1 was modified from a SM-75 configuration to a Discoverer configuration prior to this launch.

2. The free standing wall was rolled to the left of its permanent position and the doors were secured in the open position for this launch. This method worked satisfactorily.

3. The payload was ejected and recovered from the water during the 33 orbits.

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DISCOVERER XXVI

MISSILE: Agena 1109 - Thor 308

LAUNCHED: 1629 PDT, 7 July 1961, Pad 75-3-5

COUNTDOWN HISTORY:

First Attempt -- One hold of 30 minutes duration was imposed at T-60 minutes to complete work generated by difficulties in Task 15. In this Task the payload nitrogen purge QD became loose due to either improper installation, or the constant expansion and contraction of the payload air-conditioning blanket during the leak checks (air-conditioning "ON" and "OFF"). A gasket in the LOX storage tank pressurization system also required replacement at this time.

FLIGHT PERFORMANCE

Event	Time	Difference
1. MECO	145.2	148 main
VECO	154.3	9 vernier
Separation	158.8	4 delay
Ignition	212.2	51 coast
Burnout	452.3	241 hustler

2. All airborne systems operated satisfactorily.

3. MECO Velocity	10,710 FPS
Agena Velocity	26,000 FPS
Apogee	438 NM
Perigee	127 NM
Agena Orbital Weight	2,480 lbs

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

Thor -- A gasket in the LOX storage tank pressurization system required replacement.

Agena -- The payload nitrogen purge QD required reinstallation.

REMARKS:

The payload was ejected and snatched from the air on the second day during the 32nd orbit.

DISCOVERER XXVII

MISSILE: Agena 1110 - Thor 322

LAUNCHED: 1535 PDT, 21 July 1961, Pad 4

COUNTDOWN HISTORY:

First Attempt -- Launched at 1535 PDT, 21 July 1961. A total hold time of 50 minutes was imposed during the countdown operation, 40 minutes was due to the passage of a train, 8 minutes was imposed to correct a range safety instrumentation problem. A planned hold of 2 minutes was called to thoroughly chill the Thor engine LOX system and to allow the Thor LOX tank top pressure to decay to the specified level.

FLIGHT PERFORMANCE:

Event	Time	Difference
1. MECO	Not achieved	Not achieved
VECO	" "	" "
Separation	" "	" "
Ignition	" "	" "
Burnout	" "	" "

2. Thor Airborne Systems -- The flight control system had a pitch oscillation, which began immediately after liftoff. The oscillations increased, causing the vehicle to destroy itself.

3. MECO Velocity	Not achieved
Agena Velocity	" "
Apogee	No orbit
Perigee	" "
Agena Orbit Weight	Unknown (no orbit)

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

Thor -- All AGE systems operated normally.

Agena -- All AGE systems operated normally.

REMARKS:

1. The vehicle was enveloped by flames at T + 61 seconds and exploded at T + 79 seconds. It reached an altitude of approximately 34,500 feet.

2. The major parts of the vehicle impacted approximately 13,000 feet downrange.

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MISSILE: Agena 1111 - Thor 309

LAUNCHED: 1701 PDT, 3 August 1961

COUNTDOWN HISTORY:

First Attempt -- The first attempt on 2 August 1961 was aborted at T - 60 minutes because of an Agena horizon scanner problem.

Second Attempt -- Launched at 1701 PDT, 3 August 1961. Hold No. 1 was imposed at T - 60 minutes for one hour to allow evaluation of payload data. Hold No. 2 was imposed at T - 5 for approximately one minute to adjust the Thor fuel load.

FLIGHT PERFORMANCE:

Event	Time	Difference
1. MECO	149.2	149.7 main
VECO	158.5	9.3 vernier
Separation	162.6	4.1 delay
Ignition	211.2	486 coast
Burnout	437.7	226.5 hustler

2. Thor Airborne Systems -- operated satisfactorily.

Agena Airborne Systems -- Vehicle system performance was satisfactory until T + 398.3 seconds at which time the hydraulic pressure started to decay. Following this, hydraulic control was lost and the shift in the engine position caused the Agena to tumble. Due to the changes in the vehicle attitude a premature engine shutdown occurred 18.5 seconds too soon. This made it impossible to obtain orbit.

3. MECO Velocity	10,555 FPS
Agena Velocity	24,405 FPS
Apogee	No orbit
Perigee	No orbit
Agena Orbital Weight	Unknown (no orbit)

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

Thor -- All AGE Systems operated satisfactorily. However, the use of lower storage tank pressures to allow sufficient VE chilldown made the length of the terminal count uncertain.

Agena -- All AGE Systems operated satisfactorily.

REMARKS: None.

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DISCOVERER 29

MISSILE: Agena 1112 - Thor 323

LAUNCHED: 1300 PDT, 30 August 1961

COUNTDOWN HISTORY:

First Attempt -- The first attempt on 29 August 1961 was aborted at T-240 minutes because the separation destruct switch was grounded.

Second Attempt -- Launched at 1300 PDT on 30 August 1961. The countdown started with the payload mated and the missile vertical. It was very smooth with no holds.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	146.5	146.4 main
	VECO	155.4	8.9 vernier
	Separation	160.6	5.2 delay
	Ignition	208.5	47.9 coast
	Burnout	450.9	242.4 hustler

2. Thor Airborne Systems -- operated satisfactorily.

   Agena Airborne Systems -- operated satisfactorily.

3.	MECO Velocity	10,900 FPS
	Agena Velocity	25,570 FPS
	Apogee	302 N.M.
	Perigee	85 N.M.
	Agena Orbital Weight	2,504 lbs.

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

Thor -- All AGE Systems operated satisfactorily.

Agena -- All AGE Systems operated satisfactorily.

REMARKS:

The payload was ejected on the 33rd pass. Aerial recovery was unsuccessful; however, a water recovery was affected on 1 September 1961. The impact point was approximately 120 N.M. north of the predicted impact area.

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DISCOVERER 30

MISSILE: Agena 1113 - Thor 310

LAUNCHED: 1259 PDT, 12 September 1961

COUNTDOWN HISTORY:

First Attempt -- Launched at 1259 PDT, 12 September 1961. A hold of 50 minutes duration was called at T-410 minutes to paint one of the Agena orbital stage compartment doors. Lost time was made up and the clock was recycled to T-180 minutes at 1000 PDT.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	147.56 Sec	147.56 main
	VECO	156.56 Sec	9.0 vernier
	Separation	162.80 Sec	7.24 delay
	Ignition	210.97 Sec	48.17 coast
	Burnout	450.91 Sec	239.94 hustler

2. Thor Airborne Systems -- operated satisfactorily.

   Agena Airborne Systems -- operated satisfactorily.

3.	MECO Velocity	10,860 FPS
	Agena Velocity	25,676 FPS
	Apogee	299.2 N.M.
	Perigee	130.3 N.M.
	Agena Orbital Weight	2,500 lbs

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

Thor -- All AGE systems operated satisfactorily.

Agena -- All AGE systems operated satisfactorily.

REMARKS:

The capsule was ejected on the 33rd pass and aerial recovery was accomplished by the C-130 recovery aircraft on its first pass on 14 September 1961.

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DISCOVERER 31

MISSILE: Agena 1114 - Thor 324

LAUNCHED: 1400 PDT, 17 September 1961

COUNTDOWN HISTORY:

First Attempt -- Launched 1400 PDT, on 17 September 1961. The countdown started at 0530 PDT on 17 September 1961 and progressed to liftoff with no holds.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	146.8 Sec	146.8 main
	VECO	156.1 Sec	9.3 vernier
	Separation	161.5 Sec	5.4 delay
	Ignition	210.9 Sec	49.4 coast
	Burnout	450.1 Sec	239.2 hustler

2. Thor Airborne Systems -- operated satisfactorily.

   Agena Airborne Systems -- operated satisfactorily.

3.	MECO Velocity	10,890 FPS
	Agena Velocity	25,615 FPS
	Apogee	221.8 N.M.
	Perigee	130.6 N.M.
	Agena Orbital Weight	2,563 lbs.

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

Thor -- All AGE systems operated satisfactorily.

Agena -- All AGE systems operated satisfactorily.

REMARKS:

Recovery attempt on 19 September 1961 failed when the capsule failed to eject due to a failure of the Agena 400 cycle power supply during orbit.

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DISCOVERER 32

MISSILE: Agena 1115/Thor 328

LAUNCHED: 1122 PST, 13 October 1961

COUNTDOWN HISTORY:

First Attempt: Launched 1122 PST, 13 October 1961. Two holds were called for a total duration of 23 minutes. Hold No. 1 was called for 21 minutes as a result of accumulated delays in correcting ground support equipment malfunctions and an extended S Band Beacon check. Hold No. 2 was called in Phase V for 2 minutes to check the BTL battery voltage.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	148.4	148.4 main
	VECO	157.4	9.0 vernier
	Separation	163.2	5.8 delay
	Ignition	203.3	40.1 coast
	Burnout	439.3	236.0 hustler

2. Thor Airborne Systems: Operated satisfactorily.

   Agena Airborne Systems: Operated satisfactorily.

3.	MECO Velocity	10,763 fps
	Agena Velocity	25,451 fps
	Apogee	218 n.m.
	Perigee	125 n.m.
	Agena Orbital Weight	2548 lbs

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

Thor: All AGE Systems operated satisfactorily.

Agena: The following problems were encountered.

1. The K-4 relay in the Fuel Transfer Set malfunctioned and was replaced.
2. The acid loading rate was about one-half normal.
3. The Agena was loaded light on both propellants because of a procedural misunderstanding.

REMARKS: The capsule was ejected on the 18th pass and aeriel recovery was accomplished by the C-130 recovery aircraft on 14 October 1961.

MISSILE: Agena 1116/Thor 329

LAUNCHED: 1123 PST, 23 October 1961

COUNTDOWN HISTORY:

First Attempt: Launched 1123 PST on 23 October 1961. The countdown started at 0330 PST and progressed to liftoff with two holds totaling 22 minutes because of range clearance problems with trains. Hold No. 1 was called at T-60 minutes and lasted for 19 minutes. Hold No. 2 was called at T-15 minutes and lasted for 3 minutes.

FLIGHT PERFORMANCE:

	Event	Time	Difference	
1.	MECO	148.1	148.1	main
	VECO	157.1	9.0	vernier
	Separation	165.5	8.4	delay
	Ignition	205.6	40.1	coast
	Burnout	378.4	172.8	hustler

2. Thor Airborne Systems: operated satisfactorily

Agena Airborne Systems: During the Agena engine ignition sequence the hydraulic pressure rose to normal and immediately fell to an abnormally low value. This caused the vehicle to become violently unstable in the pitch plane for approximately 11 seconds, at which time the hydraulic pressure rose to normal. After approximately 160 seconds of apparently normal control, the hydraulic pressure was again lost accompanied by a complete loss of control. High angular rates were attained which apparently caused premature engine shutdown. The Agena engine did not provide sufficient impulse to attain orbit at the flight altitude.

3.	MECO Velocity	10,894 fps
	Agena Velocity	20.210 fps
	Apogee	No Orbit
	Perigee	No Orbit
	Agena Orbital Wieght	Unknown (No Orbit)

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

Thor: All AGE Systems operated satisfactorily

Agena: All AGE Systems operated satisfactorily

REMARKS:

None

DISCOVERER 34

MISSILE: Agena 1117 / Thor 330

LAUNCHED: 1200 PST, 5 November 1961, Pad 1

COUNTDOWN HISTORY:

First Attempt: The first attempt on 1 November 1961 was aborted during the Thor Engine Start Sequence when an electrical malfunction occurred in the Thor engine "J" box. Holds during this countdown totaled 85 minutes and were due to Range Clearance problems with trains.

Second Attempt: The countdown started at 0330 PST on 5 November 1961 and progressed to liftoff with no holds.

FLIGHT PERFORMANCE:

	Event	Time	Difference	
1.	MECO	147.7	147.7	main
	VECO	156.7	9.0	vernier
	Separation	162.8	6.1	delay
	Ignition	204.8	42.0	coast
	Burnout	442.8	238.0	hustler

2. Thor Airborne Systems -- operated satisfactorily

Agena Airborne Systems -- The Agena engine provided more than its nominal thrust during orbital boost and therefore the integrator sensed the proscribed velocity gain and sent the engine shutdown signal before the D-Timer had armed the engine shutdown circuitry. This resulted in engine shutdown at propellant depletion and an excess velocity of over 400 fps at burnout. This caused the orbital period to be 6.1 minutes longer than nominal and the orbital parameters to be as listed below.

3.	MECO Velocity	10,894	fps
	Agena Velocity	25,947	fps
	Apogee	542	n.m.
	Perigee	132	n.m.
	Agena Orbital Wieght	2586	lbs

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

Thor -- All AGE Systems operated satisfactorily

Agena -- All AGE Systems operated satisfactorily

REMARKS:

Recovery was not attempted due to the complete loss of control gas about the 9th pass.

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DISCOVERER 35

MISSILE: Agena 1118 / Thor 326

LAUNCHED: 1323 PST, 15 November 1961, Pad 4

COUNTDOWN HISTORY:

First Attempt: Launched 1323 PST on 15 November 1961. The countdown started at 0330 PST and progressed to liftoff with 3 holds totaling 83 minutes. Hold No. 1 was a duration of 78 minutes with 50 minutes due to trains in the hazard corridor and 28 minutes due to a helium leak in the Agena AGE and a faulty indication on the Start Tank Pressure Regulator Monitor in the blockhouse.

FLIGHT PERFORMANCE:

	Event	Time	Difference	
1.	MECO	147.6	147.6	main
	VECO	156.4	8.8	vernier
	Separation	162.2	5.8	delay
	Ignition	202.8	40.6	coast
	Burnout	440.1	237.3	hustler

2. Thor Airborne Systems -- operated satisfactorily

   Agena Airborne Systems -- operated satisfactorily

3.	MECO Velocity	10,914 fps
	Agena Velocity	25520 fps
	Apogee	167.4 n.m.
	Perigee	132.5 n.m.
	Agena Orbital Wieght	2590 lbs

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

Thor -- All AGE Systems operated satisfactorily

Agena -- All AGE Systems operated satisfactorily

REMARKS:

The capsule was ejected on the 18th pass and aerial recovery was accomplished on 16 November 1961.

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DISCOVERER 36

MISSILE: Agena 1119 / Thor 325

LAUNCHED: 1240 PST, 12 December 1961, Pad 4

COUNTDOWN HISTORY:

First Attempt: The countdown started at 0335 PST on 12 December 1961 and progressed to liftoff with 3 holds totaling 71 minutes due to range clearance problems with trains. Hold No. 1 was imposed at T-60 minutes for a 45 minute duration. Hold No. 2 was imposed at T-15 minutes for a 20 minute duration. Hold No. 3 was imposed for 6 minutes during Phase V of the terminal count.

FLIGHT PERFORMANCE:

	Event	Time	Difference
1.	MECO	149.2	149.2 main
	VECO	158.3	9.1 vernier
	Separation	167.1	8.8 delay
	Ignition	204.0	36.9 coast
	Burnout	441.1	237.1 hustler

2. Agena Airborne Systems -- operated satisfactorily

   Thor Airborne Systems -- operated satisfactorily

3.	MECO Velocity	10,896 fps
	Agena Velocity	25661 fps
	Apogee	223 n.m.
	Perigee	130 n.m.
	Agena Orbital Weight	2885 lbs

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

Agena - All AGE Systems operated satisfactorily

Thor - All AGE Systems operated satisfactorily

REMARKS:

The recoverable capsule was ejected on the 64th orbit and a water recovery made on 16 December 1961. This was the first Discoverer to attain the planned active orbit life of four days.