FLIGHT LOG #2: AF/NASA/NAVY X-15 FLIGHT RESEARCH PROGRAM

8 February 1961 -

Note: Flight log #1 covered 10 March 1959 - 7 February 1961 reporting the first 59 times the X-15 was in the air (26 captive, 1 glide, and 32 powered). Roll-out was 15 October 1958. First captive followed 10 March 1959, only glide was 8 June 1959, and the first powered flight was 17 September 1959. Three of the 32 powered flights were contractor demonstration using the XLR-99 57,000 pound thrust rocket engine on 15 November, 22 November, and 6 December 1960. The other 29 powered flights were accomplished with dual XLR-11 engines of 8,000 pounds thrust each. Top speed and altitude with interim engines: 2,275 miles per hour on 7 February 1961 and 136,500 feet on 12 August 1960. Pilots participating in this portion of the program were Scott Crossfield of North American Aviation, Commander Forrest S. Petersen of the Navy, AFFTC test pilots Major Robert M. White and Major Robert A. Rushworth, and Joseph A. Walker, John B. McKay, and Neil A. Armstrong all of NASA. The 7 February 1961 flight of Major White was the last with small interim engines.

Prepared by the Historical Division
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Notes: All landings on Rogers Dry Lake, AFFTC.
X-15 equipped with the XLR-99 engine.

FLIGHT LOG #2: AF/NASA/NAVY X-15 FLIGHT RESEARCH PROGRAM
8 February 1961 –

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
1	Feb 21 1961	Captive	671	White	B-52B -008	Fulton/ Kuyk	1135 - 1305	No drop	First AF/NASA/Navy flight attempt with XLR-99 engine powering X-15. Drop cancelled three minutes to launch, lack of cabin pressure.
2	Feb 24	Captive	671	White	B-52B -008	Fulton/ Cole	1510 - 1635	No drop	Second AF/NASA/Navy flight attempt with XLR-99 engine. Drop cancelled two minutes to launch, stable platform malfunction.
3	Mar 7	Power	671	White	B-52B -008	Kuyk/ Cole	0950 - 1055	1029 - 1036	First AF/NASA/Navy flight with XLR-99 engine completed. Attained 2,905 mph at 75,000 ft. Max alt. 77,450 ft. burnout time: 125 seconds. Max. temp. measured 675 degrees.
4	Mar 21	Captive	671	Walker	B-52B -008	Allavie/ Fulton	1000 - 1030	No drop	Mission: alt. attempt. Drop cancelled, electrical failure between B-52 and X-15. When landing, brake parachute deployed but disintegrated. Braking of B-52 caused fire in wheel carriage. Fire satisfactorily extinguished.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
5	Mar 30 1961	Power	671	Walker	B-52B -008	Kuyk/ Fulton	0920 - 1025	1005 - 1015	Launched near Hidden Hills at 45,000 ft. attained 2,760 (M 3.95). Engine at 75 percent--burned for 79 seconds at 100,000 ft. and X-15 zoomed to 169,600 ft, max alt. to date. Pilot weightless for 2 min. Temp. measured 530°.
6	Apr 21	Power	671	White	B-52A -003	Allavie/ Mosley	0910 - 1040	1005 - 1016	Launched at 45,000 ft. over Hidden Hills. Drop to 37,000 ft while Maj White attempted to start engine. Engine ignited at 37,000 ft. 30 sec. after launch. Achieved 3,074 mph (M 4.62) at 79,000 ft. Max alt: 105,000 ft. Acft under full power for 67 sec. Pilot weightless 60 sec. as he nosed over for return to Rogers Dry Lake. Tail surfaces registered 657° temp.
7	May 19	Captive	671	Walker	B-52A -003	Allavie/ Kuyk	0900 - 1045	No Drop	Drop cancelled two seconds to launch when radar beacon failed along with an APU following cabin pressure difficulties.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
8	May 25 1961	Power	671	Walker	B-52A -003	Allavie/ Fulton	1130 - 1300	1216 - 1229	Max. speed achieved: 3,307 mph (M 4.90) at 90,000 ft. Acft flew to 107,500 ft. Engine operated 73 seconds from start to burnout. Longest flight in time to date- 13 mins.
9	Jun 20	Captive	671	White	B-52A -003	Allavie/ Sturmthal	1000 - 1140	No Drop	Drop cancelled 9 min. to launch drop, malfunction in auxiliary power unit #1.
10	Jun 23	Power	671	White	B-52A -003	Allavie/	1309 - 1445	1401 - 1412	Max. speed flight to date with XLR-99 engine. Max speed 3,603 (M 5.27) at 97,170 ft. Max alt 107,700 ft. Max heating to date - 830°. Full throttle for 75 sec. of 87 sec max. At max speed, acft flying 5,285 ft. per sec.
11	Aug 10	Power	670	Peter-sen	B-52A -003	Allavie/ Kuyk	0942 - 1052	1027 - 1035	Checkout flight at half throttle. Max. speed: 2,735 (M 4.11), max. alt: 78,200 ft. Malfunction in cabin pressure - pressure suit over-inflated. Engine burned 115 sec.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
12	Sep 12 1961	Power	671	Walker	B-52B -008	Archer/ Allavie	1344 - 1510	1440 - 1449	Loss of fuel Pressure, leak in cabin pressure, and other technical difficulties cut flight short. Max speed 3,618 mph (M5.21). Max alt 114,300 ft. Burn time 85 sec. Temp 850°.
13	Sep 28	Power	671	Peter-sen	B-52B -008	Allavie/ Archer	0900 - 1030	0950 - 0959	Mission: heat build-up. Attained 3,600 (M 5.30) at 82,000 ft. Test successful with 1,000° Fahrenheit achieved. Max alt 101,800 ft.
14	Sep 29	Captive	670	Rush-worth	B-52A -003	Allavie/ White	1240 - 1400	No Drop	Mission: Study stability and control of X-15 with lower ventral removed. Launch was cancelled four minutes prior to drop, flight control problems.
15	Oct 4	Power	670	Rush-worth	B-52A -003	Allavie/ Archer	1000 - 1110	1041 - 1049	Mission: Same as Sept 28. Achieved 2,830 mph (M 4.30) at 74,000 ft. alt. Max alt 78,000 ft. Burning time 120 sec. at 50 percent thrust.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
16	Oct 11 1961	Power	671	White	B-52A -003	Allavie/1120 Fulton	- 1300	1218 - 1229	Mission: Study use of ballistic control and re-entry characteristics. Speed of 3,647 mph (M 5.21). Max alt was highest yet at 217,000 ft. Burn out at 130,000 ft. Burning time 81 sec. Heat buildup 900°. Pilot 120 sec weightless and took four gs. At 60-70,000 ft alt on re-entry left outer cockpit windshield shattered.
17	Oct 17	Power	670	Walker	B-52A -003	Allavie/1000 Archer	- 1230	1057 - 1108	Mission: Speed research involving pressures and air friction and determine X-15 controllability without automatic stability augmentation. Launched over 200 mi east of Edwards AFB. Climbed to 102,000 ft, at full throttle for 80 sec, and used speed brakes to retard speed. Max speed 3,900 (M 5.74) at 102,000 ft alt. Max alt 108,600 ft. Heat 1,100°.
18	Oct 27	Captive	670	White	B-52A -003	Allavie/1015 Archer	- 1145	No Drop	Mission: Achieve Max design speed and to evaluate X-15's handling qualities without using the stability augmentation system. Cancelled, weather.
19	Nov 2	Captive	670	White	B-52A -003	Allavie/0830 Archer	- 0940	No Drop	Mission: Same as 27 October. Mission cancelled one minute before launch, cabin pressure malfunction.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
20	Nov 3 1961	Captive	670	White	B-52A -003	Allavie/ Archer	0905 - 1040	No Drop	Mission: Same as 27 October. Mission cancelled 10 sec prior to launch, igniter malfunction on engine.
21	Nov 9	Power	671	White	B-52B -008	Allavie/ Archer	0900 - 1030	0957 - 1007	Mission: Achieve design speed, and to evaluate the X-15's handling qualities without using the stability-augmentation system. Max speed 4,093 mph (M 6.04) at 95,300 ft. alt. Max alt 101,600 ft. Burning time 86 sec. Heat build-up 1,100°. Design speed achieved.
22	Dec 19	Captive	672	Arm-strong	B-52A -003	Allavie/ Bement	1340 - 1500	No Drop	Mission: Systems check-out flight including a new Minneapolis-Honeywell (MH) adaptive flight control system employed only in the Nr. 3 X-15. Drop cancelled one minute to launch, failure of inertial guidance system.
23	Dec 20	Power	672	Arm-Strong	B-52A -003	Allavie/ Bement	1400 - 1505	1445 - 1456	Mission: Same as 19 Dec. Attained 2,502 (M 3.76). Max alt 81,000 ft. Burning time 104 sec. at 50% thrust. First powered flight of X-15 S/N 672 (#3).

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
24	Jan 10 1962	Power	670	Peter-sen	B-52A -003	Allavie/ Bement	1130 - 1320	1228 - 1232	Mission: High angle of attack stability, control and aerodynamic heating. After launch engine failed to light, pilot jettisoned propellants and landed at Mud Lake. No injury to pilot and no damage to X-15.
25	Jan 17	Power	672	Arm-strong	B-52A -003	Allavie/ Bement	1105 - 1234	1200 - 1211	Mission: Same as 19 Dec. Max speed 3,765 (M 5.51), max alt 133,500 ft. Burn time 97 sec.
(RAIN & WEATHER)									
26	Mar 29	Captive	672	Arm-strong	B-52A -003	Fulton/ Campbell	1004 - 1107	No Drop	Mission: Same as 17 January. Drop cancelled one minute to launch, stable platform malfunction.
27	Mar 30	Captive	672	Arm-strong	B-52A -003	Fulton/ Campbell	1104 - 1205	No Drop	Mission: Same as 17 January. Drop cancelled at zero to launch when engine ignitor failed.
28	Mar 31	Captive	672	Arm-strong	B-52A -003	Fulton/ Campbell	0933 - 1040	No Drop	Mission: Same as 17 January. Drop cancelled four minutes to launch, malfunction of adaptive flight system.
29	Apr 5	Power	672	Arm-strong	B-52A -003	Allavie/ Fulton	0923 - 1027	1005 - 1017	Mission: Same as 17 January. Speed attained 2,850 (M 4.12) at 110,000 ft. Max alt 180,000 ft.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
30	Apr 18 1962	Captive	670	Walker	B-52A -003	Allavie/ Archer	1132 - 1257	No Drop	Mission: Evaluate a new back up pilot control system. Drop cancelled, poor visibility.
31	Apr 19	Power	670	Walker	B-52A -003	Allavie/ Archer	0858 - 1037	1003 - 1012	Mission: Same as 18 April. Speed 3,866 (M 5.69). Max alt 154,000 ft. Burning time 83 sec.
32	Apr 20	Power	672	Arm-strong	B-52B -008	Allavie/ Bement	1034 - 1258	1127 - 1139	Mission to evaluate the MH self-adaptive flight control system. Speed attained 3,789 (M 5.31) at 130,000 ft. Max alt 207,500 ft. Burning time 81 sec.
33	Apr 25	Captive	671	White	B-52A -003	Allavie/ Yeager	1231 - 1346	No Drop	Mission to checkout new alternate SAS and attain a speed of 4,020 and an alt. of 168,000. Cancelled, bad weather in drop area.
34	Apr 26	Captive	671	White	B-52A -003	Allavie/ Anderson	0957 - 1120	No Drop	Mission: Same as 25 April. Cancelled, failed to ignite engine.
35	Apr 27	Captive	670	Walker	B-52B -008	Allavie/ Archer	0839 - 0924	No Drop	Mission: Design altitude 255,000 ft. Cancelled, bad weather in launch area.
36	Apr 30	Power	670	Walker	B-52B -008	Allavie/ Bement	0932 - 1051	1022 - 1032	Mission: Same as 27 April. Max alt 246,700 ft. Max speed 3,489 (M 4.94). Burning time 81 sec. Design altitude flight.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
37	May 8 1962	Power	671	Rush-worth	B-52B -008	Allavie/ Bement	0907 - 1037	1000 - 1010	Mission: Aerodynamic heating research. Speed 3,524 mph (M 5.34). Burning time 99 sec. Max alt 70,400 ft. Max temp: Speed brakes 1,250° and 1,000 degrees F. on wings and fuselage.
38	May 22	Power	670	Rush-worth	B-52A -003	Allavie/ Campbell	0922 - 1025	1003 - 1013	Mission: Boundary layer flow study. Speed 3,450 (M 5.03) at 95,000 ft. Max alt 100,400 ft. Burning time 79 seconds.
39	May 25	Captive	671	White	B-52B -008	Fulton/ Bement	1125 - 1254	No Drop	Mission to evaluate an alternate stability-augmentation system. Also to study characteristics of X-15 at higher angles of attack. Cancelled one min. to launch, heating of stable platform.
40	May 29	Captive	671	White	B-52B -008	Fulton/ Bement	0756 - 0900	No Drop	Mission: Same as 25 May. Cancelled, inertial platform malfunction.
41	Jun 1	Power	671	White	B-52B -008	Fulton/ Bement	0959 - 1128	1050 - 1101	Mission: Same as 25 May. First launch from Delamar Dry Lake 60 miles north of Las Vegas, Nev., and 218 miles from Edwards AFB. Burning time 91 sec., speed 3,675 (M 5.42) at 93,000 ft. Max alt 132,600 ft. 100th flight (captive and launch).

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
42	Jun 7 1962	Power	670	Walker	B-52A -003	Allavie/Bement	0945 - 1053	1029 - 1038	Mission: Extend current knowledge of local air flow over surfaces. An almost 90-degree right turn at a speed of 2,500 mph was maneuvered over Daggett, Calif. Max. speed 3,672 (M 5.39). Max altitude 103,600 ft. Temp over 1,000°.
43	Jun 12	Power	672	White	B-52B -008	Allavie/Fulton	1056 - 1240	1204 - 1213	Mission: Checkout Maj. White in No. 3 X-15 and evaluate a new adaptive control system. Burning time 77 sec, speed 3,517 (M 5.02) at 115,000 ft alt. Max alt 184,600 ft.
44	Jun 21	Power	672	White	B-52B -008	Allavie/Lewis	0901 - 1022	0947 - 0957	Mission: Evaluate the MH-96 adaptive control system. Burning time 82 sec, speed 3,641 (M 5.08) at 142,000 ft. Max alt 246,700 ft, identical to the alt of Walker's on 30 April in X-15 670 (#1).
45	Jun 27	Power	670	Walker	B-52A -003	Allavie/Townsend	1213 - 1338	1308 - 1317	Mission: Evaluate stability at high angles of attack, planned angle of attack--23 degrees. Max speed 4,104 (M 5.92) at 96,000 ft. Max alt 123,700 ft. Burning time 89 sec. Unofficial world speed record.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
46	Jun 29 1962	Power	671	McKay	B-52B -008	Allavie/ Archer	0957 - 1105	1041 - 1050	Mission: Evaluate heating rates at low angle of attack and low Mach number--evaluation of notch filter. Temperature reached 1,000° on parts of the outer surface. Max speed 3,280 (M 4.95) at 73,000 ft altitude. Max altitude 83,200 ft. Burning time 115 sec.
47	Jul 10	Captive	672	White	B-52A -003	Allavie/ Archer	0854 - 1015	No Drop	Mission: Attain alt of 280,000 ft using MH self-adaptive flight control system. Cancelled, mechanical malfunction in B-52.
48	Jul 11	Captive	672	White	B-52A -003	Allavie/ Archer	1116 - 1230	No Drop	Mission: Same as 10 July. Cancelled, lack of pressurization in X-15 fuel system.
49	Jul 16	Captive	672	White	B-52A -003	Allavie/ Archer	0927 - 1044	No Drop	Mission: Same as 11 July. Cancelled, X-15 gyro problems.
50	Jul 16	Power	670	Walker	B-52B -008	Allavie/ Archer	1323 - 1440	1410 - 1420	Mission: Check aircraft stability with alternate stability augmentation system, aerodynamic drag, and investigation of a notch filter at high dynamic pressure. Max alt 107,200 ft. Max speed 3,674 (M 5.37) at 95,000 ft. Burning time 84 sec.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
51	Jul 17 1962	Power	672	White	B-52A -003	Allavie/ Archer	0846 - 1003	0930 - 0941	Mission: Attain design alt of 280,000 ft using MH self-adaptive flight control system. Max alt 314,750 ft. (59.61 miles). Max speed 3,832 (M 5.45). FAI world alt record. 82 sec. engine burn - 42° climb
52	Jul 19	Power	671	McKay	B-52B -008	Fulton/ Bement	0911 - 1020	0955 - 1004	Mission: Evaluate heating rates at low angles of attack and high speed. Max speed 3,474 (M 5.18) at 72,000 ft. Max alt 82,250 ft. Burning time 115 sec.
53	Jul 26	Power	670	Armstrong	B-52A -003	Fulton/ Bement	1034 - 1157	1123 - 1133	Mission: Evaluate aerodynamic stability and drag handling qualities. Max speed 3,989 (M 5.74) at 94,000 ft. Max altitude 98,900 ft. No. 1 X-15 trucked to NAA Los Angeles for installation of cameras and then be modified for induced turbulence studies.
54	Aug 1	Captive	672	Walker	B-52A -003	Fulton/ Bement	1035 - 1228	No Drop	Mission: Evaluate fixed gain modification. (Maj white after his max alt flight of 17 July suggested a check be made of the X-15's tendency to nose off course--termed yawing). The self-adaptive flight control system fixed gain was modified. Cancelled, technical difficulties.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff	B-52 Landing	X-15 Drop	X-15 Landing	Purpose and Remarks
55	Aug 2 1962	Power	672	Walker	B-52A -003	Fulton/ Bement	0905	1031	0957	1006	Mission: Same as 1 Aug. Max speed 3,438 (M 5.07), max alt 144,500. Burning time 81 sec. Adaptive flight control checked okay.
56	Aug 8	Power	671	Rush-worth	B-52B -008	Fulton/ Sturmthal	0915	1033	1008	1016	Mission: Measure aerodynamic heating at moderate velocity, low altitudes, and at moderate angles of attack. Max speed 2,943 (M 4.40) at 71,000 ft. Max alt 90,877 ft.
57	Aug 10	Captive	672	Walker	B-52A -003	Fulton/ Bement	1307	1437	No Drop		Mission: Evaluate a new reentry technique for the X-15 as it returns to heavier atmosphere from high altitude and to evaluate control characteristics of the adaptive control system. Failed to launch, defective ballistic control system.
58	Aug 14	Power	672	Walker	B-52A -003	Fulton/ Crews	0945	1116	1041	1050	Mission: Same as 10 Aug. Experienced control difficulties when roll damper disengaged. Went to manual control for return. Max speed 3,747 (M 5.25). Max alt 193,600 ft. Engine burning time 83 sec. Reason for low speed and alt, low engine fuel pressure.

Flight No	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
59	Aug 20 1962	Power	671	Rush-worth	B-52B -008	Fulton/ Andonian	0920 - 1034	1009 - 1018	Mission: Measure aerodynamic heating rates at relatively high speeds and moderate angles of attack. Max speed 3,534 (M 5.24) at 78,000 feet alt. Max alt 88,900 feet. Burning time 88 sec. Heat 1,200 degrees F. Electrocardiogram (ECG) data successfully telemetered for the first time.
60	Aug 29	Power	671	Rush-worth	B-52B -008	Fulton/ Bement	0950 - 1100	1036 - 1045	Mission: Measure aerodynamic heating at moderate airspeeds and high angles of attack. Speed 3,447 (M 5.12) at 85,000 feet alt. Max alt 97,200 feet. Burning time 73 sec. Heat 1,100 degrees.
61	Sep 27	Captive	671	McKay	B-52B -008	Bement/ Sturmthal	0934 - 1042	No Drop	Mission: Investigate heat transfer rates at low angles of attack and relatively low airspeeds and investigation of stability with the ventral fin (the lower part of the vertical tail) removed. Aborted, pilot triggered ejection seat handle by mistake.
62	Sep 28	Power	671	McKay	B-52B -008	Bement/ Sturmthal	0917 - 1034	1005 - 1014	Mission: Same as 27 Sep. By not using more than 75% power and reducing thrust to 40%, McKay had the longest burning time to date--127 sec. Max speed 2,765 (M 4.22) at 64,000 feet alt. Max alt was 68,200 feet. All following flights without lower ventral.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
63	Oct 4 1962	Power	672	Rush-worth	B-52B -008	Fulton/ Lewis	0926 - 1053	1011 - 1020	Mission: Pilot check-out and investigation of "ventral off"stability. Max speed 3,493 mph (M 5.17) at 105,000 ft. Max alt 112,200 ft. Burning time 104 sec.
64	Oct 9	Power	671	McKay	B-52A -003	Fulton/ Lewis	1010 - 1140	1100 - 1110	Mission: Ventral off stability investi-gation. Max speed 3,716 (M 5.46) at 107,000 ft. Max alt 130,200 ft. Burning time 81 sec.
65	Oct 23	Power	672	Rush-worth	B-52B -008	Bement/ Cross	1031 - 1228	1131 - 1141	Mission: Same as 9 Oct. Max speed 3,764 (M 5.47) at 113,000 ft. Max alt 134,500 ft. Burning time 79 sec. This was the first flight under a 79 sec restric-tion for max burning time at 100% thrust imposed due to second stage igniter deton-ation caused by LOX depletion at burn-out.
66	Nov 9	Power	671	McKay	B-52B -008	Bement/ Lewis	0929 - 1145	1023 Crash	Mission: Same as 9 Oct. Engine did not develop power after launch due to a governor failure causing fuel starvation. Attempted emergency landing on Mud Lake, but crashed when main landing gear (skids) failed from fast approach. Pilot received minor injuries. X-15 was damaged severely. Max speed 1,019 (M 1.49). Max alt 53,950.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
67	Dec 13 1962	Captive	672	White	B-52A -003	Fulton/ Bement	0946 - 1113	No Drop	Mission: Investigate ventral off stability, checkout of Ultra Violet photometer and heading vernier. Drop cancelled 30 seconds before launch, loss of pressure source for heat & ventral system.
68	Dec 14	Power	672	White	B-52B -008	Bement/ Cross	0947 - 1200	1044 - 1054	Mission: Same as 13 Dec. Flight characteristics to 23 degrees angle of attack were verified as satisfactory. Max speed 3,742 (M 5.65) at 98,000 ft. Max alt 141,400 ft. Burning time 78 sec.
69	Dec 20	Power	672	Walker	B-52B -008	Bement/ Fulton	1030 - 1155	1125 - 1134	Mission: Investigate ventral off stability of aircraft. Max speed 3,793 (M 5.73) at 100,000 ft. alt. Max alt 160,400 ft. Burning time 80 sec.
70	Jan 17 1963	Power	672	Walker	B-52B -008	Bement/ Archer	1007 - 1208	1059 - 1109	Mission: Investigate ventral off altitude buildup and I. R. experiment. Max speed 3,677 (M 5.47) at 146,000 ft. Max alt 271,700 ft. Burning time 81 sec. First civilian flight above 50 miles.
71	Apr 11	Power	670	Rushworth	B-52B -008	Bement/ Archer	0921 - 1040	1005 - 1014	Mission: Camera mounted on underside to measure optical degradation caused by (1) faster than sound shockwaves generated by speeding plane and (2) friction heated air flowing past the fuselage. Max speed 2,864 (M 4.25). Max alt 74,400 feet. Burning time 121 sec.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
72	Apr 18 1963	Power	672	Walker	B-52B -008	Fulton/ Archer	1137 - 1310	1218 - 1225	Mission: Measure flow of heat over the X-15 at dynamic pressures equivalent to reentry from 300,000 to 400,000 feet altitude. First test of a new "Q Meter" for measuring dynamic Pressure. (Q symbol for dynamic pressure). Max speed 3,770 (M 5.51). Alt 92,500 feet. Burning time 80 sec.
73	Apr 25	Power	670	McKay	B-52B -008	Bement/ Fulton	1314 - 1445	1404 - 1415	Mission: Measure distortion in photography caused by high speeds. Max speed 3,654 (M 5.32) at 94,000 feet. Max alt 105,500 feet. Burning time 86 sec.
74	May 2	Power	672	Walker	B-52B -008	Bement/ Archer	0908 - 1040	1000 - 1009	Mission: Auxiliary power unit checkout, infra red and ultra violet experiment, and high angle of attack aerodynamic flow investigation. Launched from Mud Lake. Max speed 3,488 (M 4.73) at 130,000 feet. Max alt 209,400. Burning time 79 sec.
75	May 10	Captive	672	Rushworth	B-52B -008	Bement/ Archer	0938 - 1050	No Drop	Mission: Aerodynamic heating rates at high mach number and high angle of attack as well as infra red and ultra violet experiment. Aborted less than 10 minutes to launch, low hydraulic pressure in #1 system.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
76	May 14 1963	Power	672	Rush-worth	B-52B -008	Bement/ Archer	1130 - 1240	1212 - 1219	Mission: Aerodynamic heating rates not in degree of temperature but how fast X-15 skin absorbed heat from air friction. Also made a 50 degree right turn bank about mid-point of flight. Max speed 3,600 (M 5.20). Max alt 95,600 feet. Burning time 84 sec.
77	May 15	Power	670	McKay	B-52A -003	Bement/ Archer	0957 - 1129	1051 - 1102	Mission: Aerodynamic heating effect on X-15. A traversing probe used to determine measurements of local air flow over X-15 surface extended itself every four sec. Data will assist in the proper correlation of heating. Max speed 3,856 (M 5.57). Max alt 124,200.
78	May 29	Power	672	Walker	B-52B -008	Bement/ Fulton	0953 - 1122	1043 - 1055	Mission: Aerodynamic heating rates--determine how fast the X-15 heats up under conditions similar to those which will be imposed later during reentry from high alt. Max speed was 3,858 (M 5.52). Max alt 92,000 feet. Burning time 86 sec. left inner windshield cracked at about engine burn out.
79	Jun 18	Power	672	Rush-worth	B-52B -008	Bement/ Archer	0942 - 1125	1033 - 1043	Mission: Altitude buildup for Max Alt flights to follow. Max speed 3,539 (M 4.97) Max alt 223,700 ft. Burning time 81 sec.
80	Jun 25	Power	670	Walker	B-52A -003	Bement/ Archer	0906 - 1030	0957 - 1007	Mission: Study of local air-flow (heat build-up). Max 3,911 (M 5.51). Max alt 111,800 ft. Burning time 93 seconds.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
81	Jun 27 1963	Power	672	Rush-worth	B-52B -008	Bement/ Archer	0907 - 1033	0956 - 1007	Mission: Alttitude build-up. Launched over Delamar Dry Lake and went up to 285,000 feet, almost 55 miles. Max speed 3,425 (M 4.89). Burning time 80 sec. Maj Rushworth became the second winged astronaut by exceeding 50 miles alt. Maj Robert M. White was first on 17 July 1962 when he flew to 314,750 feet alt or 59.61 miles. Rushworth's flight was the 87th X-15 flight beginning with the first glide 8 June 1959 and counting 86 powered flights since.
82	Jul 2	Captive	670	Walker	B-52B -008	Bement/ Bock	0911 - 1028	No Launch	Mission: Optical degradation. Aborted 12 minutes prior to launch, X-15 communications problem.
83	Jul 9	Power	670	Walker	B-52B -008	Archer/ Lewis	1117 - 1249	1210 - 1219	Mission: Same as 2 Jul. Max speed 3,631 (M 5.07). Max alt 226,400 ft. Burning time 84 sec.
84	Jul 17	Captive	670	Rush-worth	B-52A -003	Fulton/ Bock	0902 - 0944	No Launch	Mission: Stability investigation with ventral off. X-15 lost B-52 carrier oxygen on take-off.
85	Jul 18	Power	670	Rush-worth	B-52A -003	Fulton/ Lewis	0917 - 1042	1007 - 1017	Mission: Same as 17 Jul. Max speed 3,925 (M 5.63). Max alt 104,800 ft. Burning time 84 sec. Flew without automatic systems during this flight.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
86	Jul 19 1963	Power	672	Walker	B-52B -008	Fulton/ Bement	0919 - 1104	1020 - 1031	Mission: Expansion of ventral off re-entry investigation, towed balloon experiment, horizon scanner, photometer, infra red and ultra violet experiments. Launched over Smith Ranch. Emergency dry lakes: Mud, Grapevine, and Cuddeback. Launch weight 33,000 pounds. Burnout weight 15,000 pounds. Max alt 347,800 ft. Max speed 3,710 (M 5.50). Burning time 85 sec.
87	Aug 6	Captive	672	Walker	B-52B -008	Bement/ Lewis	1241 - 1356	No Launch	Mission: Alt flight to 360,000 feet. aborted at 1316, weather, and heating of inertial computer.
88	Aug 13	Captive	672	Walker	B-52B -008	Bement/ Lewis	1058 - 1240	No Launch	Mission: Alt expansion. Aborted 12 minutes to launch, APU failure.
89	Aug 15	Captive	672	Walker	B-52B -008	Bement/ Lewis	1002 - 1145	No Launch	Mission: Alt expansion. Aborted 11 minutes to launch, weather, and APU difficulty.
90	Aug 22	Power	672	Walker	B-52A -003	Bement/ Lewis	0909 - 1056	1006 - 1016	Mission: Alt to 360,000 feet. Launched over Smith Ranch, Nevada, and achieved 354,200 ft alt. Speed 3,794 (M 5.58). Burning time 85.5 sec. Unofficial world alt record.
RAIN AND WEATHER									
91	Oct 4	Captive	670	Engle	B-52B -008	Bement/ Jones	0916 - 1030	No Launch	Mission: Check out for Capt Joe Engle. Lost radio contact between X-15 and B-52 carrier and aborted prior to launch.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
92	Oct 7 1963	Power	670	Engle	B-52B -008	Bement/ Jones	1122 - 1300	1223 - 1231	Mission: Checkout for Capt Engle. Max speed 2,834 (M 4.21). Max alt 77,800 feet. Burning time 118 Sec.
93	Oct 14	Captive	672	Rush-worth	B-52B -008	Fulton/ Lewis	0934 - 1019	No Launch	Mission: Heat experiment. Blunt vertical tail sharpened to reduce drag. (split wind). Launch aborted, inertial guidance system problem.
94	Oct 25	Captive	672	Rush-worth	B-52B -008	Fulton/ Bock	1046 - 1151	No Launch	Mission: New vertical fin investigations. Aborted--Inertial guidance system problems.
95	Oct 29	Power	670	Thomp-son	B-52B -008	Fulton/ Jones	1159 - 1309	1242 - 1250	Mission: Pilot check out on first flight. Speed 2,712 (M 4.10). Max alt 74,400.
96	Nov 7	Power	672	Rush-worth	B-52B -008	Bement/ Jones	0924 - 1041	1009 - 1018	Mission: Heat transfer and damper off stability. Speed 2,925 (M 4.40) at 66,000 feet. Max alt 82,300.
97	Nov 14	Power	670	Engle	B-52B -008	Bement/ Jones	1036 - 1155	1120 - 1128	Mission: Pilot checkout. Max speed 3,286 (M 4.75). Max alt 90,800 feet.
98	Nov 19	Captive	672	Thomp-son	B-52B -008	Bement/ Fulton	0905 - 1012	No Drop	Mission: Pilot checkout. Aborted about one minute to launch, weather over launch area.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
RAIN AND WEATHER									
99	Nov 27 1963	Power	672	Thompson	B-52B -008	Fulton/ Lewis	1134 - 1259	1218 - 1225	Mission: Pilot check-out. Max speed 3,310 (M 4.94). Max alt 89,800 feet.
100	Dec 3	Captive	670	Rushworth	B-52B -008	Fulton/ Lewis	1255 - 1415	No Drop	Mission: Optical degradation. Aborted X-15 radio trouble.
101	Dec 5	Power	670	Rushworth	B-52B -008	Bement/ Jones	1011 - 1139	1104 - 1114	Mission: Optical degradation--effect of high speed flight on photographic techniques, and Delta cross range indicator check out. Speed 4,018 (M 6.06), Max alt 101,000.
102	Dec 18	Captive	670	Rushworth	B-52B -008	Bement/ Jones	0914 - 1018	No Drop	Mission: Optical degradation and ballistic control. A test malfunction caused abort.
103	Jan 8 1964	Power	670	Engle	B-52B -008	Fulton/ Lewis	1115 - 1244	1210 - 1219	Mission: High angle of attack handling qualities (stability) with SAS off. Speed 3,616 (M 5.32). Max alt 139,900 feet.
104	Jan 16	Power	672	Thompson	B-52B -008	Fulton/ Lewis	0920 - 1030	1003 - 1012	Mission: Investigate heat transfer rates and effect of heat transfer on a sharp ventral. Speed 3,242 (M 4.92). Max alt 71,000 feet.
RAIN AND WEATHER									

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
105	Jan 28 1964	Power	670	Rush-worth	B-52B -008	Bement Gen Branch	1114 - 1255	1211 - 1222	Mission: Stability evaluation using upper speed brakes only. Speed 3,618 (M 5.34). Alt 107,400 ft. max. Burning time 76 sec. 100th launch beginning with glide on 8 Jun 1959.
106	Feb 19	Power	672	Thomp-son	B-52A -003	Fulton/ Jones	0916 - 1055	0956 - 1005	Mission: Heat transfer experiment with sharp upper vertical fin and boundary layer noise experiment (record noise of air). Speed 3,519 (M 5.29). Alt 78,600 feet.
107	Mar 13	Power	672	McKay	B-52A -003	Bement/ Lewis	0901 - 1013	0946 - 0954	Mission: Heat transfer pressure survey, and pilot check out with MH-96. Speed 3,392 (M 5.11). Max alt 76,000 ft.
108	Mar 17	Captive	670	Rush-worth	B-52A -003	Bement/ Fulton	0926 - 1021	No drop	Mission: Optical degradation experiment.
109	Mar 27	Power	670	Rush-worth	B-52A -003	Bement/ Lewis	0916 - 1130	1009 - 1019	Mission: Same as Mar 17. Speed 3,827 (M 5.63). Alt 101,500 ft.
110	Mar 31	Captive	672	McKay	B-52A -003	Bement/ Jones	0914 - 1031	No drop	Mission: Heat transfer and pressure survey. Aborted when inertial guidance system failed.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
111	Apr 8 1964	Power	670	Engle	B-52A -003	Bement/ Lewis	0910 - 1038	1002 - 1012	Mission: Optical degradation experiment and altitude buildup. Speed 3,468 (M 5.01). Alt 175,000 ft, highest for Engle to date.
112	Apr 29	Power	670	Rush-worth	B-52A -003	Fulton/ Bock	0909 - 1040	1000 - 1010	Mission: Optical degradation at high velocity. Speed 3,906 (M 5.72). Alt 101,600 ft. Inner panel of right windshield cracked during flight.
113	May 11	Captive	672	McKay	B-52A -003	Bement/ Jones	1125 - 1234	No Drop	Mission: Heat transfer and pressure survey. Aborted prior tc launch due to high liquid oxygen pressure.
114	May 12	Power	672	McKay	B-52A -003	Bement/ Jones	0907 - 1040	0952 - 1000	Mission: Same as 11 May. Speed 3,084 (M 4.66) and 72,800 feet. The inertial guidance system computer failed leaving McKay with no velocity, altitude, and rate of climb information. Pitch and roll channels of the stability augmentation system (SAS) also tripped out and could not be re-engaged.
115	May 19	Power	670	Engle	B-52A -003	Fulton/ Jones	0935 - 1105	1026 - 1035	Mission: Optical degradation. Speed 3,494 (M 5.02). Alt 195,800 ft. Engle flew a nearly perfect profile.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
116	May 21 1964	Power Emergency Landing	672	Thompson	B-52A -003	Fulton/ Jones	0858 - 1040	0940 - 0948	Mission: Skin friction experiment. Launched from Silver Lake, made engine light, and emergency landed at Cuddeback Lake after engine failed from a defective second stage fuel line switch. Max speed: 1,865 (M2.90). Alt 64,200 ft.
WEATHER (CLOUD COVER AND WINDS)									
117	Jun 11	Captive	670	Thompson	B-52A -003	Bement/ Jones	0910 - 1050	No Drop	Mission: Optical degradation. Aborted when radio failed.
118	Jun 15	Captive	671	Rushworth	B-52A -003	Fulton/ Lewis	1017 - 1123	Planned Captive	Mission: Flight Environment Systems check of newly rebuilt and modified X-15 USAF S/N 56-6671 which had crash landed at Mud Lake, Nevada, 9 Nov 1962.
119	Jun 23	Captive	671	Rushworth	B-52A -003	Bement/ Lewis	0859 - 1008	No Drop	Mission: Aircraft checkout and stability at low angle of attack. Aborted due to APU difficulty.
120	Jun 25	Power	671	Rushworth	B-52A -003	Fulton/ Bement	0850 - 0958	0935 - 0944	Mission: Same as 23 Jun. Speed 3,104 (M 4.59) Alt 83,300 ft. This was first flight of the newly modified #2 X-15.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
121	Jun 30 1964	Power	670	McKay	B-52A -003	Fulton/ Lewis	0859 - 1027	0950 - 1001	Mission: Optical Degradation. Inertial guidance system power supply failed at launch resulting in loss of all attitude, position, and velocity data. Speed 3,334 (M 4.96). Max Alt: 99,600 ft.
122	Jul 2	Captive	672	Engle	B-52A -003	Fulton/ Lewis	0920 - 1046	No Drop	Mission: First flight in #3 for Engle and scientific experiment to high altitude with a horizon indicator. Aborted due to a control system problem.
123	Jul 8	Power	672	Engle	B-52A -003	Fulton/ Bement	1159 - 1345	1303 - 1313	Mission: Same as 2 Jul. Speed 3,520 (M 5.05). Alt 170,400 ft.
Flights suspended to rework ejection seat booms. Also, Honeywell Inertial Guidance System installed in #1 (670) which should eliminate problems experienced on 30 Jun. HB-52B (008) ret fr Wichita 23 Jul 64.									
124	Jul 28	Captive	672	Engle	B-52A -003	Bement/ Fulton	0925 - 1040	No Drop	Mission: Conduct local air flow measurements, investigate heat transfer rates, and evaluate different type ablative material. Aborted due to an engine instrumentation malfunction.
125	Jul 29	Power	672	Engle	B-52A -003	Bement/ Fulton	1112 - 1220	1155 - 1203	Mission: Same as Jul 28. Speed 3,623 (M 5.38). Alt 78,000 ft.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
126	Aug 12 1964	Power	672	Thompson	B-52A -003	Bement/ Fulton	0930 - 1035	1012 - 1019	Mission: Same as 29 Jul. At relatively high Q and with speed brakes at 30°, pilot experienced very high vibrations. Speed 3,535 (M 5.24). Max Alt 81,200 ft.
127	Aug 14	Power	671	Rushworth	B-52A -003	Fulton/ Bement	0904 - 1032	0954 - 1005	Mission: Obtain stability data. Nose gear inadvertently extended at about Mach 4.3. Pilot made glide to Edwards where nose gear tires failed after touchdown. Max speed: 3,590 (M 5.23). Max Alt 103,300 ft.
128	Aug 26	Power	672	McKay	B-52A -003	Fulton/ Bement	1000 - 1123	1042 - 1050	Mission: Aerodynamic heating flight. Max speed 3,863 (M 5.65). Max Alt 91,000 ft.
129	Sep 3	Power	672	Thompson	B-52A -003	Bement/ Jones	0910 - 1016	0955 - 1001	Mission: Determine heat transfer rate and effect over distorted panels attached to X-15. Speed 3,615 (M 5.34). Max alt 77,000 ft.
130	Sep 23	Captive	672	Engle	B-52A -003	Fulton/ Lewis	0952 - 1120	No Launch	Mission: Heat buildup to determine characteristics of new ablative to be used on #2 newly modified X-15, and to gather data on boundary layer noise and local flow. Aborted because of cabin pressure difficulty.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
131	Sep 28 1964	Power	672	Engle	B-52A -003	Fulton/ Lewis	1224 - 1354	1316 - 1326	Mission: Same as 23 Sep. Max speed: 3,888 (M 5.59). Max alt: 97,000 ft.
132	Sep 29	Power	671	Rush-worth	B-52B -008	Fulton/ Townsend	1210 - 1330	1300 - 1310	Mission: Check out stability and control. Nose gear came down inadvertently at M 4.5, but main gear stayed up until landing. Max speed: 3,542 (M 5.20). Max alt: 97,800 ft.
133	Oct 2	Captive	670	McKay	B-52A -003	Fulton/ Jones	1342 - 1456	No Launch	Mission: First flight of No. 1 since modification to conduct high altitude research. Check-out inertial guidance system built for X-20.
134	Oct 15	Power	670	McKay	B-52B -008	Fulton/ Cotton	1231 - 1350	1315 - 1324	Mission: Same as 2 Oct. No. 1 X-15 had been modified by addition of a 200 pound container on each wing tip filled with instrumentation for high altitude research. Also checked out X-20 inertial guidance system built for X-20. Max speed: 3,048 mph (M 4.56). Alt: 84,900 ft.
135	Oct 29	Planned Captive	672	Thomp-son	B-52B -008	Bement/ Jones	1551 - 1653	No Launch	Mission: Check effect of cold soak on newly modified nose gear.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
136	Oct 30 1964	Power	672	Thompson	B-52B -008	Bement/ Lewis	0912 - 1027	0952 - 1000	Mission: Check nose gear modification, gather data on boundary layer noise, check shear layer instrumentation, and evaluate the center stick controller. Max speed: 3,113 mph (M 4.66). Alt: 84,600 ft.
137	Nov 6	Planned Captive	671	McKay	B-52A -003	Bement/ Jones	1428 - 1530	No Launch	Mission: Check nose gear actuation after it had been cold soaked.
138	Nov 16	Planned Captive	671	McKay	B-52B -008	Bement/ Cotton	0930 - 1031	No Launch	Mission: Same as 6 Nov.
WEATHER									
139	Nov 30	Power	671	McKay	B-52B -008	Bement/ Bock	1130 - 1242	1209 - 1218	Mission: Check landing gear modification, stability and control, and star tracker. Max speed: 3,089 mph (M 4.66). Alt: 87,200 ft.
140	Dec 4	Captive	670	Engle	B-52A -003	Bement/ Fulton	1159 - 1234	No Launch	Mission: Honeywell X-20 guidance system checks on X-15 with tip pods, and obtain MIT Horizon Photometer and scoop-door hook data. Aborted. Emergency vent valve failed.
141	Dec 9	Power	672	Thompson	B-52B -008	Fulton/ Lewis	0956 - 1105	1037 - 1044	Mission: Gather airflow and skin friction data. Max speed: 3,723 mph (M 5.42). Alt. 92,400 ft.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
142	Dec 10 1964	Power	670	Engle	B-52A -003	Fulton/ Bock	1002 - 1148	1110 - 1120	Mission: Check X-20 inertial guidance platform and evaluate dampers-off lateral directional control. Max speed: 3,675 mph (M 5.35). Alt: 113,200 ft.
143	Dec 22	Power	672	Rush-worth	B-52A -003	Fulton/ Bock	0954 - 1108	1044 - 1052	Mission: Obtain skin friction data. Max speed: 3,593 mph (M 5.55). Alt: 81,200 ft.
144	Jan 13 1965	Power	672	Thomp-son	B-52A -003	Bement/ Fulton	1003 - 1115	1050 - 1057	Mission: Gather airflow and skin friction data. Max speed: 3,712 mph (M 5.48). Alt: 99,400. This was 125th flight beginning with first launch on 8 June 1959.
145	Feb 2	Power	672	Engle	B-52B -008	Fulton/ Bement	1200 - 1315	1250 - 1300	Mission: Ablative materials research. Speed 3,886 mph (M 5.71). Alt: 98,200 ft.
146	Feb 15	Captive	671	Rush-worth	B-52B -008	Bement/ Lewis	1052 - 1116	No Drop.	Mission: Captive flight to check main landing gear. Photography failed to get photo.
147	Feb 15	Captive	671	Rush-worth	B-52B -008	Bement/ Bock	1445 - 1508	No Drop.	Mission: Same as above with photography of gear.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
148	Feb 17 1965	Power	671	Rush-worth	B-52B -008	Fulton/ Bement	0954 - 1115	1045 - 1054	Mission: Landing gear checkout, star tracker checkout, stability and control evaluation. Speed 3,511 mph (M 5.27). Alt: 95,100 ft. Right main landing gear extended inadvertantly shortly after engine shutdown.
149	Feb 19	Captive	670	McKay	B-52B -008	Jones/ Bement	1114 - 1247	No drop.	Mission: Guidance System checkout, reaction control system checkout, and altitude flight indoctrination. Aborted when #2 APU malfunctioned.
150	Feb 25	Captive	670	McKay	B-52B -008	Bement/ Bock	0907 - 1030	No Drop.	Mission: Same as 19 Feb. Aborted because of weather.
151	Feb 26	Power	670	McKay	B-52B -008	Fulton/ Bock	1057 - 1216	1146 - 1155	Mission: Same as 19 Feb. Speed 3,750 mph (M 5.40). Alt: 153,600 ft.
152	Mar 26	Power	670	Rush-worth	B-52B -008	Fulton/ Bock	1016 - 1144	1101 - 1113	Mission: Obtain infra-red scanner pictures and checkout the MH inertial guidance. Speed 3,580 mph (M 5.17). Alt: 101,900 ft.
153	Apr 23	Power	672	Engle	B-52B -008	Fulton/ Cotton	0904 - 1013	0945 - 0953	Mission: Heat transfer and ablative materials test. Speed 3,580 mph (M 5.48). Alt: 79,700 ft.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
154	Apr 28 1965	Power	671	McKay	B-52B -008	Bock/ Townsend	1128 - 1245	1227 - 1235	Mission: Landing gear checkout and stability and control evaluation. Speed 3,273 mph (M 4.80). Alt: 92,600 ft.
155	May 11	Captive	670	Thomp-son	B-52B -008	Fulton/ Bement	0845 - 0923	No Drop.	Mission: MIT scanner, RAS checkout, and inertial system check. Aborted with trouble in the stability augmentation system, difficulty with APU's, and cockpit could not be pressurized.
156	May 13	Captive	671	McKay	B-52B -008	Fulton/ Bement	0856 - 0944	No Drop.	Mission: Landing gear check and stability and control evaluation. Aborted when cockpit could not be pressurized.
157	May 18	Power	671	McKay	B-52B -008	Fulton/ Jones	0906 - 1035	0957 - 1008	Mission: Check landing gear modification, obtain stability data, and check star tracker experiment. Speed 3,541 mph (M 5.17). Alt: 102,100 ft.
158	May 25	Power	670	Thomp-son	B-52B -008	Fulton/ Jones	0922 - 1035	1011 - 1020	Mission: Same as 11 May. Speed 3,418 mph (M 4.87). Alt: 179,800 ft.
159	May 28	Power	672	Engle	B-52B -008	Fulton/ Jones	0856 - 1024	0944 - 0954	Mission: Obtain spectral data on the earth's horizon with a Langley Research Center scanner installed on rear portion of X-15, and experiments with Northrop Space Lab Radiometer and boundary layer noise. Speed 3,754 mph (M 5.17). Alt: 209,600 ft.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
160	Jun 4 1965	Captive	671	McKay	B-52B -008	Bock/ Cotton	0913 - 1035	No Drop.	Mission: Startracker checkout, RAS checkout, and High Alpha Stability. Aborted when cabin pressure regulator malfunctioned.
161	Jun 8	Captive	671	McKay	B-52B -008	Bock/ Cotton	0856 - 1015	No Drop.	Mission: Same as 4 June. Aborted. Loss of main source pressure.
162	Jun 11	Captive	671	McKay	B-52B -008	Fulton/ Cotton	1011 - 1129	No Drop.	Mission: Same as 4 June. Leak in main source pressure.
163	Jun 16	Power	672	Engle	B-52A -003	Fulton/ Cretney	0938 - 1100	1026 - 1036	Mission: Measure ultra violet radiation transmitted from the earth through the atmosphere with a scanning device installed on tail of X-15 No. 3. Speed 3,404 mph (M 4.69). Alt: 244,700 ft.
164	Jun 17	Power	670	Thompson	B-52B -008	Fulton/ Cotton	0856 - 1023	0940 - 0949	Mission: Measure infrared radiation transmitted from earth and measure reflected solar radiation. Speed 3,541 mph (M 5.14). Alt: 108,500 ft.
165	Jun 22	Power	671	McKay	B-52B -008	Fulton/ Bock	0858 - 1015	0944 - 0954	Mission: Startracker checkout, landing gear check, and RAS checkout. Speed 3,938 (M 5.64). Alt: 155,900 ft.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
166	Jun 29 1965	Power	672	Engle	B-52B -008	Fulton/ Andonian	0937 - 1105	1021 - 1032	Mission: Obtain data on boundary layer noise, on the Langley Research Center Horizon scanner, and on the Northrop Space Lab's Radiometer. Speed 3,432 mph (M 4.94). Alt: 280,600 ft.
		(Engle became third winged aerospace craft astronaut).							
167	Jul 2	Captive	671	McKay	B-52A -003	Bock/ Cotton	0851 - 1017	No Drop	Mission: Star Tracker experiment. Aborted--Inertial platform malfunction.
168	Jul 8	Power	671	McKay	B-52A -003	Fulton/ Cotton	0829 - 0950	0917 - 0926	Mission: Star Tracker Experiment; determine advanced X-15 landing dynamics. Star tracker doors opened but no data taken due to excessive variations in roll and yaw axis. Speed 3,659 mph (M5.19). Alt: 212,000 ft.
169	Jul 13	Captive	672	Rush-worth	B-52B -008	Fulton/ Jones	0931 - 1049	No Drop	Mission: Obtain Boundary layer noise data. Aborted when cabin pressure malfunctioned.
170	Jul 20	Power	672	Rush-worth	B-52B -008	Jones/ Andonian	0908 - 1038	0959 - 1010	Mission: Boundary layer noise experiment. Objectives met. Speed 3,760 mph (M 5.40) Alt: 105,400 ft.
171	Jul 23	Captive	670	Thomp-son	B-52A -003	Bock/ Andonian	0933 - 1058	No Drop	Mission: Measure and record infrared radiation transmitted from the earth. Aborted due to pilot suit pressure malfunction.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
172	Jul 27 1965	Captive	670	Thompson	B-52A -003	Bock/ Andonian	0939 - 1041	No Drop	Mission: Same as 23 July Aborted. Radio problem.
173	Jul 28	Captive	670	Thompson	B-52A -003	Bock/ Andonian	0842 - 1012	No Drop	Mission: Same as 23 July. Aborted. Ball nose malfunction.
174	Aug 3	Power	671	Rushworth	B-52B -008	Bock/ Andonian	1151 - 1305	1239 - 1249	Mission: Check out stability of ballistic control system for star tracking experiments. Speed: 3,602 mph (M 5.16). Alt: 208,700 ft.
175	Aug 6	Power	670	Thompson	B-52B -008	Fulton/ Andonian	0851 - 1056	0942 - 0951	Mission: Stability and control tests; obtain data on the Northrop Space Lab Infrared Scanner Speed: 3,534 mph (5.15). Alt: 103,200 ft.
176	Aug 10	Power	672	Engle	B-52A -003	Jones/ Andonian	1028 - 1200	1124 - 1134	Mission: Northrop Space Lab IR Scanner and boundary layer noise experiment. Yaw damper disengaged and had to be reset 13 times during flight. Speed 3,550 mph (M 5.20). Alt: 271,000 ft.
177	Aug 20	Captive	670	Thompson	B-52A -003	Bock/ Jones	0841 - 0957	No Drop	Mission: MIT Horizon Scanner experiment. Aborted due to cabin pressure problems.
178	Aug 24	Captive	670	Thompson	B-52A -003	Fulton/ Andonian	0904 - 1039	No Drop	Mission: Same as 20 Aug. Aborted when computer malfunction.
179	Aug 25	Power	670	Thompson	B-52A -003	Fulton/ Cotton	0905 - 1038	0954 - 1003	Mission: Same as 20 Aug. Speed: 3,604 mph (M 5.11) Alt: 214,100 ft.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
180	Aug 26 1965	Power	672	Rush-worth	B-52B -008	Cotton/ Bock	0901 - 1030	0951 - 1002	Mission: Nortronics Space Lab radiometer and boundary layer noise. Speed: 3,372 mph (M 4.79). Alt: 239,600 ft.
181	Sep 2	Power	671	McKay	B-52B -008	Bock/ Jones	0852 - 1015	0941 - 0950	Mission: Star tracker, RAS System checkout, X-15 landing dynamics, pilot altitude buildup. Speed: 3,570 mph (M 5.16). Alt: 239,800 ft.
182	Sep 9	Power	670	Rush-sorth	B-52B -008	Bock/ Jones	0910 - 1040	0956 - 1007	Mission: Obtain data on the ablative heat protection panel and the Northrop Space Lab IR scanner. Speed: 3,534 mph (M 5.25). Alt: 97,200 ft.
183	Sep 14	Power	672	McKay	B-52B -008	Bock/ Jones	0912 - 1039	1001 - 1011	Mission: Obtain data on boundary layer experiment and the Northrop Space Lab Infrared Scanner. Speed: 3,519 mph (M 5.03). Alt: 239,000 ft.
184	Sep 22	Power	670	Rush-worth	B-52A -003	Bock/ Jones	1007 - 1138	1059 - 1110	Mission: Northrop Space Lab IR Scanner experiment. Speed: 3,550 mph (M 5.18). Alt: 100,300.
185	Sep 28	Power	672	McKay	B-52A -003	Bock/ Andonian	0924 - 1042	1008 - 1020	Mission: Obtain boundary layer noise. Stabilizer load data, and Northrop Space Lab Horizon Scanner. Speed: 3,732 mph (M 5.33). Alt: 295,600 ft.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
186	Sep 30 1965	Power	670	Knight	B-52A -003	Bock/ Fulton	0855 - 1010	0944 - 0953	Mission: Capt Knight's first checkout flight. AFFTC Test Pilot.
187	Oct 8	Captive	670	Engle	B-52A -003	Fulton/ Jones	0933 - 1100	No Drop	Mission: MIT Scanner. Aborted-ballistic control leak.
188	Oct 12	Power	672	Knight	B-52B -008	Jones/ Fulton	0902 - 1022	0943 - 0950	Mission: 2nd pilot check-out.
189	Oct 14	Power	672	Engle	B-52A -003	Bock/ Jones	1154 - 1326	1247 - 1256	Mission: MIT Horizon Photometer and Pace transducer Tests.
190	Oct 27	Power	672	McKay	B-52A -003	Fulton/ Jones	0956 - 1120	1049 - 1059	Mission: Obtain data on boundary layer noise, Northrop Space Lab's Infrared Scanner and horizontal stabilizer loads. Speed: 5,100 fps. Alt: 237,000 ft.
191	Nov 2	Captive	670	Dana	B-52B -008	Bock/ Doryland	0852 - 0957	No Drop	Mission: Checkout for NASA pilot William H. Dana, and tail loads check.
192	Nov 3	Power	671	Rush-worth	B-52A -003	Bock/ Doryland	0826 - 0933	0909 - 0914	Mission: To test the external tank separation and parachute deployment systems and to determine X-15 handling qualities. Separation of both tanks was clean & uneventful. Ammonia tank parachute deployed properly; the tank impacted with minimum damage. Lox tank main chute failed to deploy; resulting impact caused extensive damage to tank. Alt; 70,600 ft.

Flight No.	Date	Type Flight	X-15 No.	Pilot	B-52	Pilot	B-52 Takeoff Landing	X-15 Drop Landing	Purpose and Remarks
193	Nov 4 1965	Power	670	Dana	B-52B -008	Bock/ Boryland	0827 - 0940	0911 - 0920	Mission: Same as 2 Nov 65. Speed: 2,795 mph. Alt: 80,200 ft.

RAIN AND WEATHER