NASA Pocket Statistics

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Contents

Foreword

Pocket Statistics is published for the use of NASA managers and their staffs. Included is a summary of the NASA goals, major mission performance, summary comparison of the US and USSR space records, and NASA financial, and manpower data.

The NASA launch record contained is based on the NASA Mission Operation Report System, HOMI 8610.1B. All launches of the Scout class vehicle and larger are counted as a major NASA launch, regardless of the mission objective. We also count vehicle and spacecraft development flights as major NASA launches. The MOR system rates the mission either successful or unsuccessful. NASA has no partial success category, therefore, the number of successful launches and payloads in this publication will not match the numbers in other publications. The Shuttle launches are counted as one launch and one payload where free flying payloads are not involved. Additional payloads are counted when they are deployed from the cargo bay and permanently placed in a separate orbit or trajectory.

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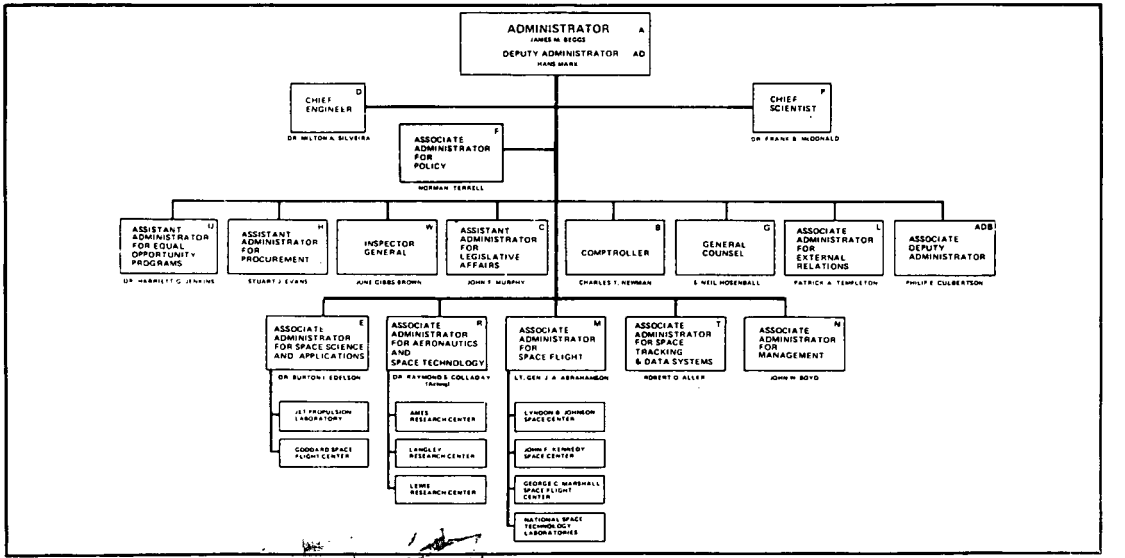
Section A

U. S. Space Policy & Program Goals

NASA ORGANIZATION



National Aeronautics And Space Act Of 1958

The Declaration of Policy and Purpose of the National Aeronautics and Space Act is outlined in Section 102 (a) through (c) of PL 85-568 as follows:

Sec. 102. (a) The Congress hereby declares that it is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all mankind.

(b) The Congress declares that the general welfare and security of the United States require that adequate provision be made for aeronautical and space activities. The Congress further declares that such activities shall be the responsibility of, and shall be directed by, a civilian agency exercising control over aeronautical and space activities sponsored by the United States, except that activities peculiar to or primarily associated with the development of weapons systems, military operations, or the defense of the United States (including the research and development necessary to make effective provision for the defense of the United States) shall be the responsibility of, and shall be directed by, the Department of Defense; and that determination as to which such agency has responsibility for and direction of any such activity shall be made by the President in conformity with section 201 (e).

(c) The aeronautical and space activities of the United States shall be conducted so as to contribute materially to one or more of the following objectives:

(1) The expansion of human knowledge of phenomena in the atmosphere and space;

(2) The improvement of the usefulness, performance, speed, safety, and efficiency of aeronautical and space vehicles;

(3) The development and operation of vehicles capable of carrying instruments, equipment, supplies, and living organisms through space;

(4) The establishment of long-range studies of the potential benefits to be gained from the opportunities for, and the problems involved in the utilization of aeronautical and space activities for peaceful and scientific purposes;

(5) The preservation of the role of the United States as a leader in aeronautical and space science and technology and in the application thereof to the conduct of peaceful activities within and outside the atmosphere;

(6) The making available to agencies directly concerned with national defense of discoveries that have military value or significance, and the furnishing by such agencies, to the civilian agency established to direct and control nonmilitary aeronautical and space activities, of information as to discoveries which have value or significance to that agency;

(7) Cooperation by the United States with other nations and groups of nations in work done pursuant to this Act and in the peaceful application of the results thereof; and

(8) The most effective utilization of the scientific and engineering resources of the United States, with close cooperation among all interested agencies of the United States in order to avoid unnecessary duplication of effort, facilities, and equipment.

NASA GOALS

- PROVIDE FOR OUR PEOPLE A CREATIVE ENVIRONMENT AND THE BEST OF FACILITIES, SUPPORT SERVICES, AND MANAGEMENT SUPPORT SO THEY CAN PERFORM WITH EXCELLENCE NASA'S RESEARCH, DEVELOPMENT, MISSION, AND OPERATIONAL RESPONSIBILITIES.

- MAKE THE SPACE TRANSPORTATION SYSTEM FULLY OPERATIONAL AND COST EFFECTIVE IN PROVIDING ROUTINE ACCESS TO SPACE FOR DOMESTIC AND FOREIGN, COMMERCIAL AND *GOVERNMENTAL USERS*.

- ESTABLISH A PERMANENT MANNED PRESENCE IN SPACE TO EXPAND THE EXPLORATION AND USE OF SPACE FOR ACTIVITIES WHICH ENHANCE THE SECURITY AND WELFARE OF MANKIND.

- CONDUCT AN EFFECTIVE AND PRODUCTIVE AERONAUTICS RESEARCH AND TECHNOLOGY PROGRAM WHICH CONTRIBUTES MATERIALLY TO THE ENDURING PREEMINENCE OF U.S. CIVIL AND MILITARY AVIATION.

- CONDUCT AN EFFECTIVE AND PRODUCTIVE SPACE AND EARTH SCIENCES PROGRAM WHICH EXPANDS HUMAN KNOWLEDGE OF THE EARTH, ITS ENVIRONMENT, THE SOLAR SYSTEM, AND THE UNIVERSE.

- CONDUCT EFFECTIVE AND PRODUCTIVE SPACE APPLICATIONS AND TECHNOLOGY PROGRAMS WHICH CONTRIBUTE MATERIALLY TOWARD U.S. LEADERSHIP AND SECURITY.

- EXPAND OPPORTUNITIES FOR U.S. PRIVATE SECTOR INVESTMENT AND INVOLVEMENT IN CIVIL SPACE AND SPACE-RELATED ACTIVITIES.

- ESTABLISH NASA AS A LEADER IN THE DEVELOPMENT AND APPLICATION OF ADVANCED TECHNOLOGY AND MANAGEMENT PRACTICES WHICH CONTRIBUTE TO SIGNIFICANT INCREASES IN BOTH AGENCY AND NATIONAL PRODUCTIVITY.

Section B

Space Flight Activity

Major Space "Firsts"

LAUNCH DATE	MISSION	EVENT DESCRIPTION	DATE	US	USSR
4 Oct 57	Sputnik 1	Man Made Earth Satellite	4 Oct 57		X
3 Nov 57	Sputnik 2	Biosatellite	3 Nov 57		X
1 Feb 58	Explorer	Discovered Radiation Belt (Van Allen)	1 Feb 58	X	
2 Jan 59	Luna 1	Escaped Earth's Gravity	2 Jan 59		X
17 Feb 59	Vanguard II	Earth Photo from Satellite	17 Feb 59	X	
12 Sep 59	Luna 2	Lunar Impact	14 Sep 59		X
4 Oct 59	Luna 3	Lunar Picture (Dark Side)	7 Oct 59		X
1 Apr 60	TIROS 1	Weather Satellite	1 Apr 60	X	
13 Apr 60	Transit 1B	Navigation Satellite	13 Apr 60	X	
12 Aug 60	ECHO-1	Communications Satellite	12 Aug 60	X	
19 Aug 60	Sputnik 5	Orbited Animals	20 Aug 60		X
12 Apr 61	Vostok 1	Manned Orbital Flight	12 Apr 61		X
26 Aug 62	Mariner 2	Interplanetary Probe - Venus Flyby	14 Dec 62	X	
1 Nov 62	Mars 1	Mars Flyby	Jun 63		X
16 Jun 63	Vostok 6	Female in Orbit	16 Jun 63		X
28 Nov 64	Mariner 4	Mars Flyby Pictures	15 Jul 65	X	
16 Nov 65	Venera 3	Venus Impact	1 Mar 66		X
31 Jan 66	Luna 9	Lunar Soft Landing	3 Feb 66		X
16 Mar 66	Gemini 8	Manned Docking of Two Craft	16 Mar 66	X	
31 Mar 66	Lunar 10	Lunar Orbiter	3 Apr 66		X
17 Apr 67	Surveyor 3	Lunar Surface Sampler	20 Apr 67	X	
14 Sep 68	Zond 5	Circumlunar of Live Animals	21 Sep 68		X
21 Dec 68	Apollo 8	Manned Lunar Orbit	24 Dec 68	X	
16 Jul 69	Apollo 11	Manned Lunar Landing	20 Jul 69	X	
16 Jul 69	Apollo 11	Lunar Soil Samples Returned	24 Jul 69	X	
17 Aug 70	Venera 7	Venus Soft Landing	15 Dec 70		X
19 May 71	Mars 2	Mars Impact	27 Nov 71		X
28 May 71	Mars 3	Mars Soft Landing	2 Dec 71		X
30 May 71	Mariner 9	Mars Orbit	13 Nov 71	X	
3 Mar 72	Pioneer 10	Jupiter Flyby	3 Dec 73	X	
3 Nov 73	Mariner 10	Mercury Flyby	16 Mar 74	X	
8 Jun 75	Venus 9	Venus Orbit	22 Oct 75		X
15 Jul 75	Apollo/Soyuz	Manned International Co-operative Mission - Rendezvous, Docking, and Transfer of Crews	17 Jul 75	X	X
20 Aug 75	Viking 1	Multiday Operation of	20 Jul 76	X	
9 Sep 75	Viking 2	Spacecraft on Surface of Another Planet	3 Sep 76	X	
	Vikings 1 & 2	In-situ analysis of surface material and biological experiments conducted on another planet (Mars)	20 Jul 76	X	
6 Apr 73	Pioneer 11	Saturn Flyby	Sep 79	X	
5 Sep 77	Voyager 1	High resolution photographs & measurements of Jupiter & Saturn	Mar 79	X	
20 Aug 77	Voyager 2		Nov 80	X	
12 Apr 81	STS-1	Space Shuttle Flight	12 Apr 81	X	
12 Nov 81	STS-2	Re-use of Launch Vehicle	12 Nov 81	X	
3 Mar 72	Pioneer 10	Pluto Flyby	Apr 83	X	
3 Mar 72	Pioneer 10	Escape Solar System	Jun 83	X	

CASE B-2 INTERNATIONAL SPACE

Summary Of USA & USSR Announced Launches

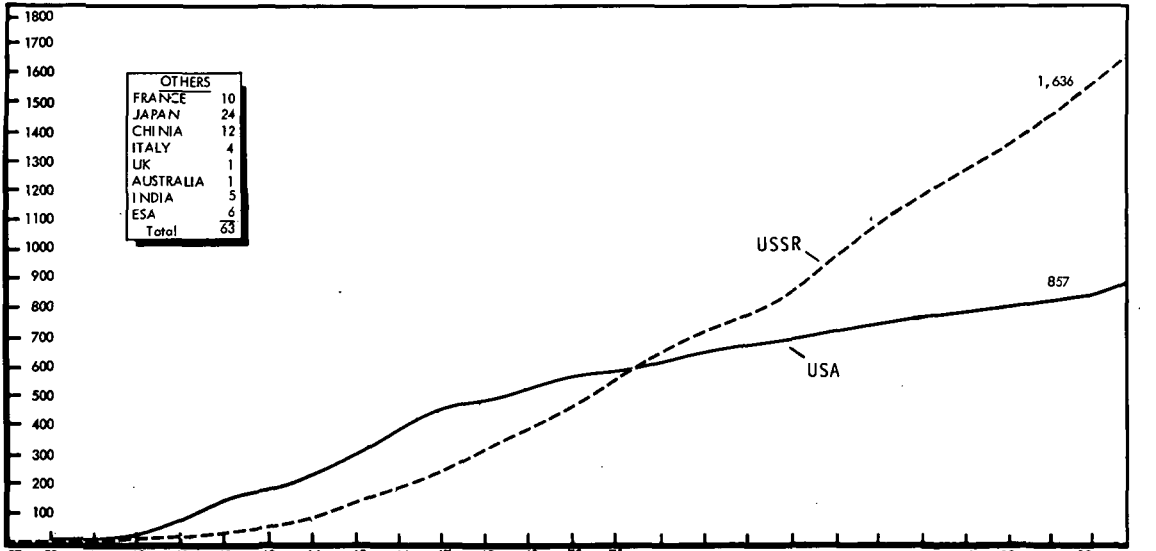
NUMBER OF SUCCESSFUL LAUNCHES

	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	Total
NASA	0	0	8	10	16	20	11	24	23	29	18	12	13	7	7	9	9	3	11	2	3	8	3	1	4	4	4	259
NASA/US Gov't	0	0	0	0	0	0	2	1	1	4	3	3	1	1	1	2	2	1	2	3	2	2	3	3	4	0	3	44
NASA/Commercial	0	0	0	0	0	1	1	0	1	1	3	1	2	3	2	2	1	3	3	7	1	3	2	2	5	6	6	56
NASA/International	0	0	0	0	0	2	0	2	1	0	2	3	4	2	6	5	1	8	3	4	7	7	1	0	0	2	2	62
TOTAL NASA	*0*	*0*	*8*	*10*	*16*	*23*	*14*	*27*	*26*	*34*	*26*	*19*	*20*	*13*	*16*	*18*	*13*	*15*	*19*	*16*	*13*	*20*	*9*	*6*	*13*	*12*	*15*	*421*
Air Force	0	1	5	8	16	31	24	31	34	39	27	25	18	16	17	13	10	8	9	11	10	13	7	6	5	6	7	397
Navy	0	1	0	2	3	3	4	4	5	4	4	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	33
Army	0	3	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
TOTAL DOD	0	5	5	11	19	34	28	35	40	43	32	26	19	17	17	13	10	8	9	11	10	13	7	6	5	6	7	436
TOTAL USA	0	5	13	21	35	57	42	62	66	77	58	45	39	30	33	31	23	23	28	27	23	33	16	12	18	18	22	857
TOTAL USSR	2	1	3	3	6	20	17	30	48	44	66	74	70	81	83	74	86	81	89	99	98	88	87	89	98	101	98	1636

NUMBER OF UNSUCCESSFUL LAUNCHES

NASA	0	4	6	7	8	4	1	3	4	2	1	3	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	48
NASA/US Gov't	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	3
NASA/Commercial	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	4
NASA/International	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	4
NASA Unsuccessful	0	4	6	7	8	4	1	3	4	2	2	4	2	1	2	0	1	2	2	0	3	0	0	1	0	0	0	59
DOD Unsuccessful	1	8	4	8	7	6	8	5	4	3	2	1	0	0	2	2	0	0	1	0	0	1	0	2	1	0	0	66

Successful USA & USSR Announced Launches



Summary Of USA & USSR Announced Payloads

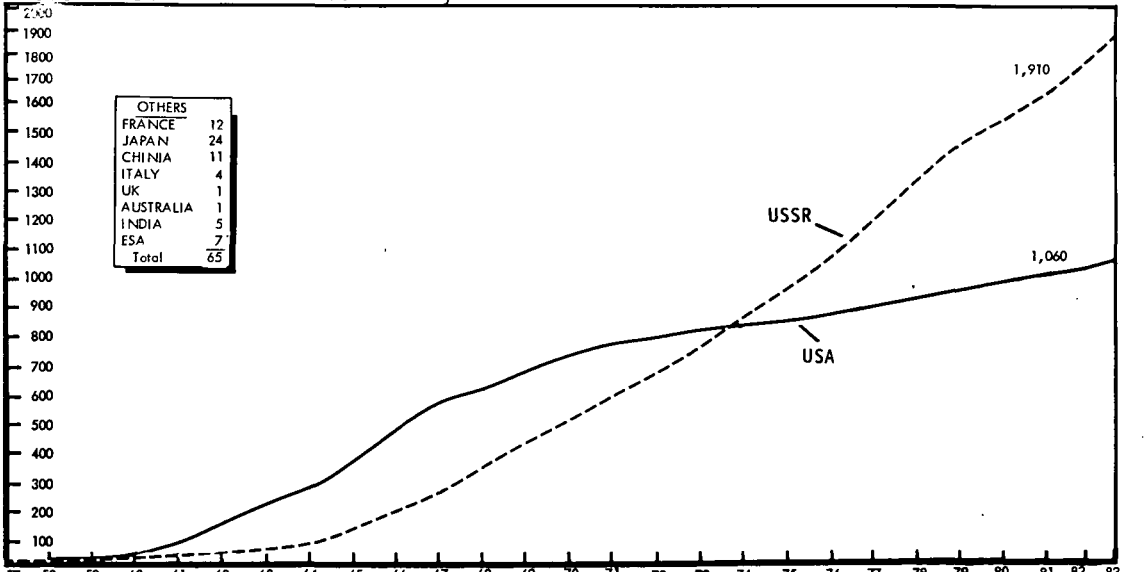
NUMBER OF SUCCESSFUL MISSIONS OR PAYLOADS

	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	Total
NASA	0	0	8	9	15	17	10	23	22	19	17	13	11	5	7	9	8	3	11	2	3	8	3	1	5	3	5	237
NASA/US Gov't	0	0	0	0	0	0	2	1	1	4	3	3	1	1	1	2	2	1	2	3	2	2	3	3	4	1	3	45
NASA/Commercial	0	0	0	0	0	1	1	0	1	0	3	1	2	2	2	2	1	3	3	7	1	3	1	2	5	7	6	54
NASA/International	0	0	0	0	0	2	0	2	2	0	2	3	4	2	6	5	1	9	3	4	8	7	1	0	0	3	5	69
TOTAL NASA	0	0	8	9	15	20	13	26	26	23	25	20	18	10	16	18	12	16	19	16	14	20	8	6	14	14	19	405
Air Force	0	1	5	8	18	33	39	39	49	63	48	42	29	20	31	17	12	7	11	18	14	14	9	9	5	6	11	558
Navy	0	1	0	3	7	7	10	11	15	4	12	1	10	1	0	0	0	1	0	0	0	0	0	0	0	0	0	83
Army	0	3	0	1	0	0	0	0	4	3	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	14
TOTAL DOD	0	5	5	12	25	40	49	50	68	70	61	43	40	22	31	17	12	8	11	18	14	14	9	9	5	6	11	655
TOTAL USA	0	5	13	21	40	60	62	76	94	93	86	63	58	32	47	35	24	24	30	34	28	34	17	15	19	20	30	1060
TOTAL USSR	2	1	3	3	6	20	17	35	64	44	66	74	70	88	97	89	107	95	111	121	105	120	102	110	125	119	116	1910

NUMBER OF UNSUCCESSFUL MISSIONS OR PAYLOADS

NASA	0	4	6	8	9	7	2	5	5	7	2	3	3	3	1	0	0	1	1	0	0	0	0	0	0	0	0	67
NASA/US Gov't	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	3
NASA/Commercial	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0	1	0	1	0	1	0	0	0	0	7
NASA/International	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2	0	0	0	0	1	0	5
NASA Unsuccessful	0	4	6	8	9	7	2	5	5	8	3	4	4	4	2	0	1	2	2	0	3	0	1	1	0	1	0	82
DOD Unsuccessful	1	8	4	8	7	6	8	5	4	3	2	1	0	0	2	2	0	0	1	0	0	2	0	4	1	0	0	69

Successful USA & USSR Announced Payloads



Summary Of United States Manned Space Flight

MISSION	NO. OF ASTRONAUTS	MISSION DURATION	MAN-HOURS
		HRS., MINS.	
MERCURY REDSTONE:			
MR-3 } Suborbital	1	0:15	0:15
MR-4 } Suborbital	1	0:16	0:16
Total 2	2	0:31	0:31
MERCURY ATLAS:			
MA-6	1	4:55	4:55
MA-7	1	4:56	4:56
MA-8	1	9:13	9:13
MA-9	1	34:20	34:20
Total 4	4	53:24	53:24
GEMINI TITAN:			
GT-3	2	4:53	9:46
GT-4	2	97:56	195:52
GT-5	2	190:55	381:50
GT-7	2	330:35	661:10
GT-6A	2	25:51	51:42
GT-8	2	10:41	21:22
GT-9A	2	72:21	144:42
GT-10	2	70:47	141:34
GT-11	2	71:17	142:34
GT-12	2	94:35	189:10
Total 10	20	969:51	1939:42
APOLLO SATURN 1:			
7	3	260:09	780:27
Total 1	3	260:09	780:27

MISSION	NO. OF ASTRONAUTS	MISSION DURATION	MAN-HOURS
		HRS., MINS.	
APOLLO SATURN V:			
8	3	147:01	441:03
9	3	241:01	723:03
10	3	192:03	576:09
11	3	195:19	585:57
12	3	244:36	733:48
13	3	142:55	428:45
14	3	216:02	648:06
15	3	295:12	885:36
16	3	265:51	797:33
17	3	301:52	905:36
Total 10	30	2241:52	6725:36
SKYLAB SL-1 SATURN V:			
SL-2 - Saturn IB	3	672:50	2018:30
SL-3 - Saturn IB	3	1427:09	4281:27
SL-4 - Saturn IB	3	2017:16	6051:48
Total 3	9	4117:15	12,351:45
APOLLO SATURN IB:			
ASTP	3	217:28	652:24
Total 1	3	217:28	652:24

Summary Of United States Manned Space Flight

MISSION (Cont'd)	NO. OF ASTRONAUTS	MISSION DURATION	MAN-HOURS
SPACE TRANS SYSTEM		HRS., MINS.	
STS-1 (Columbia)	2	54:21	108:42
STS-2 (Columbia)	2	54:13	108:26
STS-3 (Columbia)	2	192:05	384:10
STS-4 (Columbia)	2	169:10	338:20
STS-5 (Columbia)	4	122:15	489:00
STS-6 (Challenger)	4	120:24	481:36
STS-7 (Challenger)	5	146:24	732:00
STS-8 (Challenger)	5	145:09	725:45
STS-9 (Columbia)	6	247:47	1486:42
Total - 9	32	1251:48	4854:41

MISSION/TOTALS		NO. OF ASTRONAUTS	MISSION DURATION	MAN-HOURS
		SUMMARY	HRS., MINS.	
MERCURY REDSTONE	2	2	0:31	0:31
MERCURY ATLAS	4	4	53:24	53:24
GEMINI TITAN	10	20	969:51	1939:42
APOLLO SATURN 1	1	3	260:09	780:27
APOLLO SATURN V	10	30	2241:52	6725:36
SKYLAB	3	9	4117:15	12351:45
ASTP	1	3	217:28	652:24
STS	9	32	1251:48	4854:41
US Total	40	103	9112:18	27358:30

Summary Of Soviet Union Manned Space Flight

MISSION	NO. OF COSMONAUTS	MISSION DURATION	MAN-HOURS
VOSTOK:			HRS., MINS.
1	1	1:48	1:48
2	1	25:18	25:18
3	1	94:25	94:25
4	1	70:59	70:59
5	1	119:06	119:06
6	1	70:50	70:50
Total 6	6	382:26	382:26
VOSKHOD:			
1	3	24:17	72:51
2	2	26:02	52:04
Total 2	5	50:19	124:55
SOYUZ:			
1	1	26:37	26:37
3	1	94:51	94:51
*4	1	71:23	71:23
	2		95:38
*5	1	72:56	72:56
6	2	118:42	237:24
7	3	118:41	356:03
8	2	118:50	237:40
9	2	424:59	849:58
10	3	47:46	143:18
11	3	570:22	1711:06
12	2	47:16	94:32
13	2	188:55	377:50
14	2	377:30	755:00
15	2	48:12	96:24

MISSION (Cont'd)	NO. OF COSMONAUTS	MISSION DURATION	MAN-HOURS
SOYUZ (Cont'd):			HRS., MINS.
16	2	142:24	284:48
17	2	709:20	1418:40
Aborted Before Orbit	2	:20	:40
18	2	1511:20	3022:40
19 (ASTP)	2	142:31	285:02
21	2	1182:24	2364:48
22	2	189:54	379:48
23	2	48:06	96:12
24	2	425:23	850:46
25	2	48:46	97:32
*26	2	2314:00	4628:00
*27	2	142:59	285:58
28	2	190:17	380:34
*29	2	3350:48	6701:36
30	2	190:04	380:08
*31	2	188:49	377:38
*32	2	4200:36	8401:12
33	2	47:01	94:02
*35	2	4436:12	8872:24
*36	2	188:46	377:32
T-2	2	94:41	189:22
*37	2	188:42	377:24
*38	2	188:43	377:26
T-3	3	307:08	921:24
T-4	2	1074:38	2149:16
39	2	188:43	377:26
40	2	188:41	377:22

*Crews exchanged spacecraft for re-entry

Summary Of Soviet Union Manned Space Flight

MISSION (Cont'd)	NO. OF COSMONAUTS	MISSION DURATION	MAN-HOURS
		HRS., MINS.	
T-5	2	5072:05	10144:10
T-6	3	189:51	569:33
T-7	3	189:52	569:36
T-8	3	48:18	144:54
T-9	2	3585:46	7171:32
Total-46	97	33294:04	67890:05

MISSION/TOTALS		NO. OF COSMONAUTS	MISSION DURATION	MAN-HOURS
		SUMMARY		
			HRS., MINS.	
VOSTOK	6	6	382:26	382:26
VOSKHOD	2	5	50:19	124:55
SOYUZ	46	97	33294:04	67890:05
USSR Total -	54	108	33726:49	68397:26

Soviet Spacecraft Designations

COSMOS: *Cosmos appeared as a designator in 1962 to be used for explaining* many different Soviet activities in space without giving specific details.

GORIZONT: Communications Satellite

EKRAN: Television Broadcasting Satellite

ELEKTRON: Satellites launched in pairs (with apogees of 4,000 miles and 40,000 miles) to map radiation belts.

INTERCOSMOS: Scientific satellites carrying experiments from other countries which make the payloads "international."

LUNA: Unmanned payloads launched to the Moon for lunar exploration. These include lunar orbiters, lunar landers, and lunar lander return missions.

MARS: Unmanned payloads launched to explore the planet Mars.

METEOR: Earth satellites primarily for collecting and reporting worldwide meteorological (weather) data. Early weather satellites were included in the Cosmos series.

MOLNIYA: A communications satellite appearing in a highly elliptical orbit over the same portion of the Earth each day on each of its climbs to apogee, giving good coverage to the Soviet Union.

OREOL: Scientific satellite intended to study physical phenomena in upper atmosphere and for studying the nature of the polar lights. Luanched jointly with France.

POLYOT: Earth satellites incorporating onboard propulsion systems for changing orbits.

PROGNOZ: "FORECAST" - *A solar irradiation and magnetosphere satellite* for changing orbits.

PROGRESS: Cargo supply ship

RADIO and ISKRA: Amateur Radio Satellite

RADUGA: Geosynchronous Communications Satellite.

SALYUT: The first Earth orbiting space station for prolonged occupancy and revisitation by Cosmonauts.

SOYUZ: A manned spacecraft incorporating provisions for three Cosmo*nauts.*

SPUTNIK: An early designation for Soviet unmanned orbiting payloads. These included scientific payloads and unmanned tests of the Vostok spacecraft.

VENUS (VENERA): Unmanned payloads launched to explore the planet Venus.

VOSKHOD: Adaptation of the Vostok capsule to accommodate two and three Cosmonauts. Vokhod I orbited three persons and Voskhod II orbited two persons performing the first manned extravehicular activity.

VOSTOK: The Soviet's first manned capsule, roughly spherical, used to place the first six Cosmonauts in Earth orbit.

ZOND: Lunar and deep space probes not otherwise designated. Includes circumlunar spacecraft.

Unofficial Tabulation Of USSR Spaceflights

	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	Total
1. Sputnik	2	1	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
2. Luna (Lunik)	-	-	3	-	-	-	2*	-	4	5	-	1	1	2	2	1	1	2	-	1	-	-	-	-	-	-	-	25
3. Vostok, Voskhod	-	-	-	2	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
4. Cosmos	-	-	-	-	-	12	12	27	52	34	61	64	55	72	81	72	85	74	85	101	86	96	79	88	94	97	94	1521
5. Venus (Venik)	-	-	-	-	-	3*	-	-	2	-	1	-	2	1	-	1	-	-	2	-	-	2	-	-	2	-	2	18
6. Mars	-	-	-	-	-	3*	-	-	-	-	-	-	-	-	2	-	4	-	-	-	-	-	-	-	-	-	-	9
7. Polyot	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
8. Electron	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
9. Zond	-	-	-	-	-	-	-	2	1	-	-	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	8
10. Molniya	-	-	-	-	-	-	-	-	2	2	3	3	2	5	3	6	8	7	10	7	6	6	5	4	8	5	7	99
11. Proton	-	-	-	-	-	-	-	-	2	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
12. Soyuz (Union)	-	-	-	-	-	-	-	-	-	-	1	2	5	1	2	-	2	3	4	3	3	5	4	6	3	3	2	49
13. Meteor	-	-	-	-	-	-	-	-	-	-	-	-	2	4	4	3	2	5	4	3	4	-	3	2	2	2	1	41
14. Intercosmos	-	-	-	-	-	-	-	-	-	-	-	-	2	2	1	3	2	2	2	2	1	2	2	-	2	-	-	23
15. No Designation	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
16. Salyut-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	2	-	1	1	-	-	-	-	1	-	7
17. Oreol-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	1	-	-	3
18. PROGNOZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	1	1	1	1	-	1	-	-	1	9
19. Launches for Other Countries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	2	-	1	-	1	-	1	1	-	7
20. Raduga	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	2	3	1	2	13
21. Ekran	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	2	2	1	2	2	11
22. Progress	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	4	1	4	2	18
23. Radio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	6	-	-	8
24. Gorizont	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	1	-	1	2	7
25. ISKRA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-	3
26. Astron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
TOTAL	2	1	3	3	6	20	17	35	64	44	66	74	70	88	97	89	107	95	111	121	105	120	102	110	125	119	116	1910

Source: Foreign Broadcasting Information Service * Includes launches identified by the US but not announced by the USSR.

NASA Record Of Performance (Scout & Larger Vehicles)

VEHICLE	TOTAL	SUCCESSES	% SUCCESS
Space Shuttle	9	9	100
Mercury (Blue) Scout	1	0	0
Juno II	10	4	40
Jupiter C	1	0	0 1/
Thor-Able	5	3	60
Vanguard	4	1	25
Atlas-Able	3	0	0
Atlas 2/	11	9	82
Thor	2	2	100
Little Joe	7	7	100
Little Joe II	5	4	80
Scout X	1	0	0
Scout	77*	70	91
Redstone	5	5	100
Thor-Delta (Incl. TAD)	173	161	93
Thor-Agena (Incl. TAT)	13	12	92
Atlas-Agena & F	32	25	78
Atlas-Centaur	61	53	87
Saturn I	10	10	100
Titan II	12	12	100
Titan III C	1	1	100
Titan III E Centaur	7	6	86
Atlas X-259	2	2	100
Gemini (A-A Target)	6	4	67
Saturn IB	9	9	100
Saturn V	13	12	92
TOTAL	480	421	88

Includes all launches (Little Joes, Scouts, and larger), funded by NASA or for which NASA has vehicle performance responsibility, including vehicle development missions.
*Excludes 26 DOD Scouts

1982 TOTAL VEHICLE LAUNCH RECORD

	Attempts	Successes	% Successful
Space Shuttle	3	3	100
Atlas Centaur	2	2	100
Delta	7	7	100
TOTAL	12	12	100

1983 TOTAL VEHICLE LAUNCH RECORD

Space Shuttle	4	4	100
Atlas Centaur	1	1	100
Atlas-F	1	1	100
Delta	8	8	100
Scout	1	1	100
TOTAL	15	15	100

1/ Does not include three successful launches of Jupiter C made prior to creation of NASA by projects transferred to NASA in October 1958.
2/ Includes Atlas vehicle for the Gemini ATDA.

Total NASA Performance By Major Program Activity

(Excludes Reimbursables, Cooperatives and Small Piggybacks)

PROGRAM	VEHICLE SUCCESS/ ATTEMPTS	VEHICLE % SUCCESS	MISSION SUCCESS/ ATTEMPTS	MISSION % SUCCESS
Mercury	20/23	87%	18/23	78%
Gemini *	17/19	89%	10/14	71%
Apollo (Includes ASTP)	28/30	93%	27/30	90%
Skylab	4/4	100%	3/3	100%
STS	9/9	100%	9/9	100%
MANNED SPACE TOTAL	78/85	92%	67/79	85%
Geoprobes	4/4	100%	4/4	100%
Orbital Flights	62/77	81%	61/79	77%
Physics and Astronomy	66/81	81%	65/83	78%
Lunar Probes	19/28	68%	14/28	50%
Planetary and Deep Space	20/24	83%	20/24	83%
Lunar and Planetary	39/52	75%	34/52	65%
Bioscience	4/4	100%	2/4	50%
Launch Vehicle Development	8/13	62%	8/13	62%
SPACE SCIENCE TOTAL	117/150	78%	109/152	72%
Communications	14/17	82%	12/17	71%
Earth Observations	25/26	96%	25/26	96%
Special Applications	5/5	100%	5/5	100%
Applications Explorers	3/3	100%	3/3	100%
APPLICATIONS TOTAL	47/51	92%	45/51	88%
Suborbital	11/13	85%	10/13	77%
Orbital	7/9	78%	6/9	67%
SPACE TECHNOLOGY TOTAL	18/22	82%	16/22	73%
TOTAL NASA MISSIONS	260/308	84%	237/304	78%

*Does not include target vehicles

NASA REIMBURSABLE & COOPERATIVE LAUNCHES

(1958 - 1983)

COMMERCIAL

COMSAT	40
AT&T	3
WESTERN UNION	5
RCA	8
SBS	3
HUGHES	2
TOTAL (ALL REIMBURSABLE)	61

INTERNATIONAL

REIMBURSABLE LAUNCHES	38
COOPERATIVE LAUNCHES	29
TOTAL	67

U.S. GOVERNMENT

DOD	17
AEC	2
NRL	3
ESSA	9
NOAA	17
TOTAL (INCLUDES 3 COOPERATIVES)	48

SUMMARY

COMMERCIAL	61
INTERNATIONAL	67
U.S. GOVERNMENT	48
TOTAL (144 REIMBURSABLES & 32 COOPERATIVES)	176

NASA/USA Government Cooperative & Reimbursable Launches

AGENCY/SPACECRAFT	LAUNCH VEHICLE	LAUNCH DATE (GMT)
Atomic Energy Commission		
RFD-1 (Re-entry Test)	Scout	22 May 63
RFD-2 (Re-entry Test)	Scout	9 Oct 64
Naval Research Lab		
*Explorer XXX (Solar Physics)	Scout	19 Nov 65
*Explorer XXXVII (Solar Physics)	Scout	5 Mar 68
*Explorer 44 (Solar Physics)	Scout	8 Jul 71
Department of Defense		
CRL (USAF)(Geophysics)	Scout	28 Jun 63
OV-3 (USAF)(Radiation Research)	Scout	9 Jun 66
TRANSIT (USN)	Scout	2 Sep 72
TRANSIT (USN)	Scout	29 Oct 73
TRANSIT (USN)	Scout	12 Oct 75
USAF Test (Comm. Research)	Scout	22 May 76
TRANSIT (USN)	Scout	1 Sep 76
TRANSAT (USN)	Scout	28 Oct 77
FLTSATCOM A	A-Centaur	9 Feb 78
SCATHA	Delta	30 Jan 79
FLTSATCOM B	A-Centaur	4 May 79
FLTSATCOM C	A-Centaur	17 Jan 80
FLTSATCOM D	A-Centaur	31 Oct 80
NOVA-1 (USN)	Scout	15 May 81
FLTSATCOM E	A-Centaur	6 Aug 81
DOD 82-1	STS-4	27 Jun 82
USAF P83-1	Scout	27 Jun 83

AGENCY/SPACECRAFT	LAUNCH VEHICLE	LAUNCH DATE (GMT)
Environmental Science Services Agency		
ESSA I (OT-3)	Thor-Delta	3 Feb 66
ESSA II (OT-2)	Thor-Delta	28 Feb 66
ESSA III (TOS-A)	Thor-Delta	2 Oct 66
ESSA IV (TOS-B)	Thor-Delta	26 Jan 67
ESSA V (TOS-C)	Thor-Delta	20 Apr 67
ESSA VI (TOS-D)	Thor-Delta	10 Nov 67
ESSA VII (TOS-E)	Thor-Delta	16 Aug 68
ESSA VIII (TOS-F)	Thor-Delta	15 Dec 68
ESSA IX (TOS-G)	Thor-Delta	26 Feb 69
National Oceanic & Atmospheric Agency		
ITOS-A (NOAA-1)	Thor-Delta	11 Dec 70
ITOS-B (NOAA)	Thor-Delta 1/	21 Oct 71
ITOS-D (NOAA-2)	Thor-Delta	15 Oct 72
ITOS-E (NOAA)	Thor-Delta 1/	16 Jul 73
ITOS-F (NOAA-3)	Thor-Delta	6 Nov 73
ITOS-G (NOAA-4)	Delta	15 Nov 74
SMS-C (GOES-1)(NOAA)	Delta	16 Oct 75
ITOS-H (NOAA-5)	Delta	29 Jul 76
GOES-2 (NOAA)	Delta	16 Jun 77
GOES-3 (NOAA)	Delta	16 Jun 78
NOAA-6	Atlas-F	27 Jun 79
NOAA-C	Atlas-F 1/	29 May 80
GOES-4 (NOAA)	Delta	9 Sep 80
GOES-5 (NOAA)	Delta	22 May 81
NOAA-7	Atlas-F	23 Jun 81
NOAA-8	Atlas-F	28 Mar 83
GOES-6	Delta	28 Apr 83

*Cooperatives

1/ Vehicle Failure Total Launches - 48 Successful - 45

NASA/USA Commercial Reimbursable Launches

SPACECRAFT	VEHICLE	DATE (GMT)
AT&T		
Telstar	Thor-Delta	10 Jul 62
Telstar	Thor-Delta	7 May 63
Telstar	Delta	28 Jul 83
COMSAT		
Intelsat I F-1	Delta	6 Apr 65
Intelsat II F-1 2/	Delta	26 Oct 66
Intelsat II F-2	Delta	11 Jan 67
Intelsat II F-3	Delta	23 Mar 67
Intelsat II F-4	Delta	28 Sep 67
Intelsat III F-1	Delta 1/	19 Sep 68
Intelsat III F-2	Delta	19 Dec 68
Intelsat III F-3	Delta	6 Feb 69
Intelsat III F-4	Delta	22 May 69
Intelsat III F-5	Delta 1/	26 Jul 69
Intelsat III F-6	Delta	15 Jan 70
Intelsat III F-7	Delta	23 Apr 70
Intelsat III F-8 2/	Delta	23 Jul 70
Intelsat IV F-2	A-Centaur	25 Jan 71
Intelsat IV F-3	A-Centaur	19 Dec 71
Intelsat IV F-4	A-Centaur	22 Jan 72
Intelsat IV F-5	A-Centaur	13 Jun 72
Intelsat IV F-7	A-Centaur	23 Aug 73
Intelsat IV F-8	A-Centaur	21 Nov 74
Intelsat IV F-6	A-Centaur 1/	20 Feb 75
Intelsat IV F-1	A-Centaur	22 May 75
Intelsat IVA F-1	A-Centaur	25 Sep 75
Intelsat IVA F-2	A-Centaur	29 Jan 76
Comstar-A	Delta	22 Apr 76
Comstar-B	Delta	22 Jul 76
Marisat-A	Delta	19 Feb 76
Marisat-B	Delta	9 Jun 76
Marisat-C	Delta	14 Oct 76
Intelsat IVA F-4	A-Centaur	26 May 77
Intelsat IVA F-5	A-Centaur 1/	29 Sep 77
Intelsat IVA F-3	A-Centaur	7 Jan 78
Intelsat IVA F-6	A-Centaur	31 Mar 78
Comstar D-3	A-Centaur	29 Jun 78
Intelsat V-A	A-Centaur	6 Dec 80
Comstar-D	A-Centaur	21 Feb 81
Intelsat V-B	A-Centaur	23 May 81
Intelsat V-C	A-Centaur	15 Dec 81
Intelsat V-D	A-Centaur	16 Jul 82
Intelsat V-E	A-Centaur	28 Sep 82
Intelsat V-F	A-Centaur	19 May 83
Western Union		
Westar A	Delta	13 Apr 74
Westar B	Delta	10 Oct 74
Westar C	Delta	9 Aug 79
Westar IV	Delta	25 Feb 82
Westar V	Delta	8 Jun 82
RCA		
RCA-A	Delta	12 Dec 75
RCA-B	Delta	26 Mar 76
RCA-C 2/	Delta	6 Dec 79
RCA-D	Delta	19 Nov 81
RCA-IV	Delta	16 Jun 82
RCA-E	Delta	28 Oct 82
RCA-F	Delta	11 Apr 83
RCA-G	Delta	8 Sep 83
SBS		
SBS-A	Delta	15 Nov 80
SBS-B	Delta	24 Sep 81
SBS-C	STS-5	11 Nov 82
Hughes Comm. Inc.		
Galaxy 1	Delta	28 Jun 83
Galaxy 2	Delta	22 Sep 83

1/ Vehicle Failure 2/ Spacecraft Failure Total Launches - 61 Successful - 57

NASA/International Cooperative & Reimbursable Launches

(SCOUT AND LARGER VEHICLES)

YEAR	SPACECRAFT TITLE	LAUNCH VEHICLE	LAUNCH DATE(GMT)
1962	ARIEL-I (United Kingdom)	DELTA	26 Apr
	ALOUETTE -I (Canada)	THOR-AGENA-B	29 Sep
1964	ARIEL-II (United Kingdom)	SCOUT	27 Mar
	SAN MARCO-I (Italy)	SCOUT	15 Dec
1965	ALOUETTE - II (Canada) (Piggyback on Explorer XXXI)	NA	29 Nov
	FRENCH IA (France)	SCOUT	6 Dec
1967	SAN MARCO 2 (Italy)	SCOUT	26 Apr
	ARIEL-III (United Kingdom)	SCOUT	5 May
	ESRO-IIA	SCOUT 1/	29 May
1968	ESRO-IIB (IRIS)	SCOUT	17 May
	ESRO-IA (Aurorae)	SCOUT	3 Oct
	*ESRO (HEOS-A)	DELTA	5 Dec
1969	ISIS-I (Canada)	DELTA	30 Jan
	*ESRO-IB (Boreas)	SCOUT	1 Oct
	AZUR-I (German) (GRS-A)	SCOUT	8 Nov
	SKYNET-1 (United Kingdom)	DELTA	22 Nov
1970	*SKYNET-2 (United Kingdom)	DELTA	19 Aug
	*NATO-A (NATOSAT-I)	DELTA	20 Mar
1971	*NATO-B (NATOSAT-II)	DELTA	2 Feb
	ISIS-B (Canada)	DELTA	31 Mar
	SAN MARCO (C) (Italy)	SCOUT	24 Apr
	CAS/EOLE-A (France)	SCOUT	16 Aug
	BARIUM ION CLOUD (Germany)	SCOUT	20 Sep
	UK-4 (United Kingdom)	SCOUT	11 Dec
1972	*ESRO (HEOS A-2)	DELTA	31 Jan
	*ESRO (TD-1)	DELTA	12 Mar
	*TELESAT-A (ANIK-1) (Canada)	DELTA	9 Nov
	*ESRO-IV	SCOUT	21 Nov
	German A-2 (AEROS)	SCOUT	16 Dec
1973	*TELESAT B (ANIK-2) (Canada)	DELTA	20 Apr
1974	* SKYNET II A (United Kingdom)	DELTA 1/	19 Jan
	SAN MARCO C-2 (Italy)	SCOUT	18 Feb
	*UK-X4 (United Kingdom)	SCOUT	8 Mar
	*AEROS-B (Germany)	SCOUT	16 Jul
	ANS-A (Netherlands)	SCOUT	30 Aug
	UK-5/AERIEL 5 (United Kingdom)	SCOUT	15 Oct
	INTASAT (Spain-Piggyback on ITOS-G)	NA	15 Nov
	*SKYNET II-B (United Kingdom)	DELTA	22 Nov
	HELIOS-A (Germany)	TITAN III E CENTAUR	10 Dec
	*SYMPHONIE-A(France-Germany)	DELTA	18 Dec

1/ Vehicle failure *Reimbursable Launches

NASA/International Cooperative & Reimbursable Launches

(SCOUT AND LARGER VEHICLES)

YEAR	SPACECRAFT TITLE	LAUNCH VEHICLE	LAUNCH DATE (GMT)
1975	*TELESAT C (Canada)	Delta	7 May
	*COS-B (ESA)	Delta	8 Aug
	*SYMPHONIE-B (France-Germany)	Delta	26 Aug
1976	Helios-B (Germany)	T-III-Centaur	15 Jan
	CAS-CTS (Canada)	Delta	17 Jan
	*NATO III-A	Delta	22 Apr
	*Palapa-A (Indonesia)	A-Centaur	13 May
1977	*NATO III-B	Delta	27 Jan
	*Palapa-B (Indonesia)	Delta	10 Mar
	*GEOS (ESA)	Delta 1/	20 Apr
	*GMS (Japan)	Delta	14 Jul
	*SIRIO (Italy)	Delta	25 Aug
	*OTS (ESA)	Delta 1/	13 Sep
	ISEE A/B (ESA-Dual Payload)	Delta	22 Oct
	*METEOSAT (ESA)	Delta	22 Nov
	*CS (Japan)	Delta	14 Dec
1978	IUE-A (ESA)	Delta	26 Jan
	*BSE (Japan)	Delta	7 Apr.
	*OTS-B (ESA)	Delta	11 May
	*GEOS-B (ESA)	Delta	14 Jul
	ISEE-C (ESA)	Delta	12 Aug
	*NATO-III C	Delta	19 Nov
	*Telesat (Canada)	Delta	16 Dec
1979	*UK-6 (United Kingdom)	Scout	2 Jun 79
1982	*Insat 1-A (India) 2/	Delta	10 Apr 82
	*Telesat G (Canada)	Delta	26 Aug 82
	*Telesat E (Canada)	STS-5	11 Nov 82
1983	IRAS (Netherlands)	Delta	25 Jan 83
	*Exosat (ESA)	Delta	26 May 83
	Spacelab (ESA) 3/	STS-9	28 Nov 83

Total Cooperatives	29
Total Reimbursables	38
Total Launches	67

*Reimbursable Launches 1/ Vehicle Failure 2/ Spacecraft Failure 3/ Counted as Shuttle Payload

Summary Of Manned Space Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
MERCURY PROGRAM				
Suborbital Flights				
Big Joe	9 Sep 59	Atlas	S	S
Little Joe-1 - Vehicle Test	4 Oct 59	Little Joe-6	S	S
Little Joe-2	4 Nov 59	Little Joe-1A	S	S
Little Joe-3	4 Dec 59	Little Joe-2	S	S
Little Joe-4	21 Jan 60	Little Joe-1B	S	S
Mercury (MA-1)	29 Jul 60	Atlas	U	U
Little Joe-5	8 Nov 60	Little Joe-5	S	U
Mercury (MR-1A)	19 Dec 60	Redstone	S	S
Mercury (MR-2)	31 Jan 61	Redstone	S	S
Mercury (MA-2)	21 Feb 61	Atlas	S	S
Little Joe-5A	18 Mar 61	Little Joe-5A	S	U
Mercury (MR-BD) - Vehicle Test	24 Mar 61	Redstone	S	S
Little Joe-5B	28 Apr 61	Little Joe-5B*	S	S
Freedom 7- (MR-3) (Manned)	5 May 61	Redstone	S	S
Liberty Bell-7 (MR-4) (Manned)	21 Jul 61	Redstone	S	S
TOTAL (Success/Attempts)			14/15	12/15
Orbital Flights				
Mercury (MA-3)	25Apr 61	Atlas	U	U
Mercury (MA-4)	13 Sep 61	Atlas	S	S
Mercury (MS-1)	1 Nov 61	(Mercury Blue Scout)	U	U
Mercury (MA-5)	29 Nov 61	Atlas	S	S
Friendship 7 (MA-6) (Manned)	20 Feb 62	Atlas	S	S
Aurora 7 (MA-7) (Manned)	24 May 62	Atlas	S	S
Sigma 7 (MA-8) (Manned)	3 Oct 62	Atlas	S	S
Faith 7 (MA-9) (Manned)	15 May 63	Atlas	S	S
TOTAL (Success/Attempts)			6/8	6/8

Summary Of Manned Space Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
GEMINI PROGRAM (Suborbital Flights)				
Gemini II	19 Jan 65	*Titan II*	S	S
TOTAL (Success/Attempts)			1/1	1/1
Orbital Flights				
Gemini I	8 Apr 64	Titan II	S	S
Gemini III (Manned)	23 Mar 65	Titan II	S	S
Gemini IV (Manned)	3 Jun 65	Titan II	S	S
Gemini V (Manned)	21 Aug 65	Titan II	S	S
Gemini VI	25 Oct 65	Atlas-Agena	U	U
Gemini VII (Manned)	4 Dec 65	Titan II	S	S
Gemini VI-A (Manned)	15 Dec 65	Titan II	S	S
Gemini VIII (Manned)	16 Mar 66	Atlas-Agena/Titan II	S/S	U
Gemini IX	17 May 66	Atlas-Agena	U	U
Gemini IX-A (Manned)	1 Jun/3 Jun 66	Atlas/Titan II	S/S	U
Gemini X (Manned)	18 Jul 66	Atlas-Agena/Titan II	S/S	S
Gemini XI (Manned)	12 Sep 66	Atlas-Agena/Titan II	S/S	S
Gemini XII (Manned)	11 Nov 66	Atlas-Agena/Titan II	S/S	S
TOTAL (Success/Attempts)			16/18	9/13
APOLLO PROGRAM (Suborbital Flights)				
Saturn Test (SA-1)	27 Oct 61	*Saturn I	S	S
Saturn (SA-2)	25 Apr 62	*Saturn I	S	S
Saturn (SA-3)	16 Nov 62	*Saturn I	S	S
Saturn (SA-4)	28 Mar 63	*Saturn I	S	S
Little Joe II #1	28 Aug 63	*Little Joe II	S	S
Apollo Transonic Abort	13 May 64	*Little Joe II	S	S
Apollo Max Q Abort	8 Dec 64	*Little Joe II	S	S
High Altitude Abort	19 May 65	*Little Joe II	U	U
Intermediate Altitude Abort	20 Jan 66	*Little Joe II #5	S	S
Saturn (AS-201)	26 Feb 66	*Uprated Saturn I	S	S
Saturn (AS-202)	25 Aug 66	*Uprated Saturn I	S	S
TOTAL (Success/Attempts)			10/11	10/11

*Launch Vehicle Development

Summary Of Manned Space Flight Mission Performance

By Program Activities

MISSION	LAUNCH DATE	LAUNCH VEHICLE	ASSESSMENT VEHICLE	ASSESSMENT MISSION
APOLLO PROGRAM (Cont'd)				
Orbital Flights				
Saturn (SA-5)	29 Jan 64	*Saturn I	S	S
Saturn (SA-6)	28 May 64	*Saturn I	S	S
Saturn (SA-7)	18 Sep 64	*Saturn I	S	S
Saturn (AS-203)	5 Jul 66	*Uprated Saturn I	S	S
Apollo 4 (501/017)	9 Nov 67	*Saturn V	S	S
Apollo 5 (204/LM-1)	22 Jan 68	Saturn IB	S	S
Apollo 6 (502/CSM-020/LTA-2R)	4 Apr 68	*Saturn V	U	U
Apollo 7 (205/CSM-101) (Manned)	11 Oct 68	Saturn IB	S	S
Apollo 8 (503/CSM-103/LTA-B) (Manned)	21 Dec 68	Saturn V	S	S
Apollo 9 (504/CSM-104/LM-3) (Manned)	3 Mar 69	Saturn V	S	S
Apollo 10 (505/CSM-106/LM-4) (Manned)	18 May 69	Saturn V	S	S
Apollo 11 (506/CSM-107/LM-5) (Manned)	16 Jul 69	Saturn V	S	S
Apollo 12 (507/CSM-108/LM-6) (Manned)	14 Nov 69	Saturn V	S	S
Apollo 13 (508/CSM-109/LM-7) (Manned)	11 Apr 70	Saturn V	S	U
Apollo 14 (509/CSM-110/LM-8) (Manned)	31 Jan 71	Saturn V	S	S
Apollo 15 (510/CSM-112/LM-10) (Manned)	26 Jul 71	Saturn V	S	S
Apollo 16 (511/CSM-113/LM-11) (Manned)	16 Apr 72	Saturn V	S	S
Apollo 17 (512/CSM-114/LM-12) (Manned)	7 Dec 72	Saturn V	S	S
Apollo (ASTP)	15 Jul 75	Saturn IB	S	S
TOTAL (Success/Attempts)			18/19	17/19
SKYLAB PROGRAM				
Workshop SL-1 (513/S-IVB 212)	14 May 73	Saturn V	S	S
First Manned Visit SL-2 (206/CSM-116)	25 May 73	Saturn IB	S	
Second Manned Visit SL-3 (207/CSM-117)	28 Jul 73	Saturn IB	S	S
Third Manned Visit SL-4 (208/CSM-118)	16 Nov 73	Saturn IB	S	S
TOTAL (Success/Attempts)			4/4	3/3

*Launch Vehicle Development

Summary Of Manned Space Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
SPACE TRANSPORTATION SYSTEM				
Orbital Flight Test Program				
STS-1	12 Apr 81	Columbia	S	S
STS-2	12 Nov 81	Columbia	S	S
STS-3	22 Mar 82	Columbia	S	S
STS-4	27 Jun 82	Columbia	S	S
Operational Flights				
STS-5	11 Nov 82	Columbia	S	S
STS-6	4 Apr 83	Challenger	S	S
STS-7	18 Jun 83	Challenger	S	S
STS-8	30 Aug 83	Challenger	S	S
STS-9	28 Nov 83	Columbia	S	S
TOTAL (Success/Attempts)			9/9	9/9

SUMMARY OF SHUTTLE PAYLOADS AND EXPERIMENTS

FLIGHT	DATE	PAYLOADS AND EXPERIMENTS	
STS-1 (Columbia)	Apr 12, 1981	• Development Flight Instrumentation (DFI) • Passive Optical Sample Assembly (POSA) • Aerodynamic Coefficient Identification Package (ACIP)	
STS-2 (Columbia)	Nov 12, 1981	• OSTA-1 • Development Flight Instrumentation (DFI) • Induced Environment Contamination Monitor (IECM) • Aerodynamic Coefficient Identification Package (ACIP)	• OEX Tile Gap Heating Effects • OEX Catalytic Surface Effects • OEX Dynamic, Acoustic, & Thermal Environment (DAT
STS-3 (Columbia)	Mar 22, 1982	• OSS-1 • Monodisperse Latex Reactor (MLR) Experiment • Electrophoresis Equipment Verification Test (EEVT) • Get-Away Special (GAS) • Tile Gap Heating Effects Experiment • Catalytic Surface Effects Experiment • Dynamic, Acoustic, and Thermal Environment (DATE) Experiment	• Development Flight Instrumentation (DFI) • Induced Environment Contamination Monitor (IECM) • Aerodynamic Coefficient Identification Package (ACIP) • Insects in Flight Motion Study
STS-4 (Columbia)	Jun 27, 1982	• Monodisperse Latex Reactor (MLR) Experiment • Continuous Flow Electrophoresis System (CFES) • Tile Gap Heating Effects Experiment • Catalytic Surface Effects Experiment • Dynamic, Acoustic and Thermal Environment (DATE) Experiment • Development Flight Instrumentation (DFI) • Induced Environment Contamination Monitor (IECM) • Aerodynamic Coefficient Identification Package (ACIP) • Get-Away Special • The Effects of Diet, Exercise, and Zero Gravity on Lipoprotein Profiles	• The Effects of Space Travel on Levels of Trivalent Chrominum in the Body

SUMMARY OF SHUTTLE PAYLOADS AND EXPERIMENTS

FLIGHT	DATE	PAYLOADS AND EXPERIMENTS	
STS-5 (Columbia)	Nov 11, 1982	• Satellite Business Systems Satellite (SBS-C) • Telesat Canada, Ltd, Satellite (Telesat-E) • Monodisperse Latex Reactor (MLR) Experiment • Tile Gap Heating Effects Experiment • Catalytic Surface Effects Experiment • Dynamic, Acoustic and Thermal Environment (DATE) Experiment • Atmospheric Luminosities Investigation (Glow Experime	• Development Flight Instrumentation (DFI) • Aerodynamic Coefficient Identification Package (ACIP) • Formation of Crystals in Weightlessness • Growth of Porifera in Zero-Gravity • Convection in Zero-Gravity • Get-Away Special (GAS)
STS-6 (Challenger)	Apr 4, 1983	• Tracking and Data Relay Satellite (TDRS-A/IUS) • Continuous Flow Electrophoresis System (CFES) • Monodisperse Latex Reactor (MLR)	• Nighttime/Daytime Optical Survey of Lightning (NOSL) • Get-Away Special (GAS) - G-005, G-049, G-381 • Aerodynamic Coefficient Identification Package (ACIP)
STS-7 (Challenger)	Jun 18, 1983	• Telesat-F (ANIK C-2)/PAM-D • Palapa-B1/PAM-D • OSTA-2 • SPAS-01	• CFES • GAS G002, G009, G012, G033, G088, G305, G345 • MLR
STS-8 (Challenger)	Aug 30, 1983	• INSAT-1B/PAM-D • PFTA (Payload Flight Test Article) • CFES • GAS G-0346, G-0347, G-0348, G-0475	• Postal Covers • NASA Experiments: RME, Heat Pipe, OIM, Stud. Exp. (Biofeedback), ISAL, Animal Enclosure
STS-9 (Columbia)	Nov 28, 1983	• Spacelab-1 • Spacelab Attach Hdw, Tk. set, Misc	• STS Operator

Summary Of Space Science Flight Mission Performance

By Program Activities

MISSION	LAUNCH DATE	LAUNCH VEHICLE	ASSESSMENT VEHICLE	ASSESSMENT MISSION
PHYSICS AND ASTRONOMY				
Geoprobes				
Explorer 10 (P-14) (Atmosphere Physics)	25 Mar 61	Thor-Delta	S	S
Probe A (P-21) (Scientific Geoprobe)	19 Oct 61	Scout	S	S
P-21c (Scientific Geoprobe)	29 Mar 62	Scout	S	S
Gravity Probe (Gravity Measurements)	18 Jul 76	Scout	S	S
TOTAL (Success/Attempts)			4/4	4/4
Orbital Flights				
Beacon 1 (Atmosphere Physics)	23 Oct 58	Jupiter C	U	U
Beacon 2 (Atmosphere Physics)	14 Aug 59	Juno II	U	U
Beacon A (S-66) (Atmosphere Physics)	19 Mar 64	Thor-Delta	U	U
TOTAL (Success/Attempts)			0/3	0/3
Vanguard II (Meteorology)	17 Feb 59	Vanguard (SLV-4)	U	U
Vanguard (Atmosphere Physics)	13 Apr 59	Vanguard (SLV-5)	U	U
Vanguard (Solar-Earth Heating)	22 Jun 59	Vanguard (SLV-6)	U	U
Vanguard III (Magnetic Fields)	18 Sep 59	Vanguard (SLV-7)	S	S
TOTAL (Success/Attempts)			1/4	1/4
Explorer (S-1) (Energetic Particles)	16 Jul 59	Juno II	U	U
Explorer 6 (S-2) (Meteorology)	7 Aug 59	Thor-Able	S	S
Explorer 7 (S-1a) (Energetic Particles)	13 Oct 59	Juno II	S	S
Explorer (S-46) (Energetic Particles)	23 Mar 60	Juno II	U	U
Explorer 8 (S-30) (Atmosphere Physics)	3 Nov 60	Juno II	S	S
Explorer (S-56) Atmosphere Physics)	4 Dec 60	Scout	U	U
Explorer 9 (S-56a) (Atmosphere Physics)	16 Feb 61	Scout	S	S
Explorer (S-45) (Atmosphere Physics)	24 Feb 61	Juno II	U	U
Explorer 11 (S-15) (Gamma-ray Astronomy)	27 Apr 61	Juno II	S	S
Explorer (S-45a) (Atmosphere Physics)	24 May 61	Juno II	U	U

Summary Of

Space Science

Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
PHYSICS AND ASTRONOMY (Cont'd)				
Orbital Flights (Cont'd)				
Explorer 12 (S-3) (Atmosphere Physics)	16 Aug 61	Thor-Delta	S	S
Explorer 14 (S-3a) (Atmosphere Physics)	2 Oct 62	Thor-Delta	S	S
Explorer 15 (S-3b) (Atmosphere Physics)	27 Oct 62	Thor-Delta	S	S
Explorer 17 (S-6) (Aeronomy)	2 Apr 63	Thor-Delta	S	S
Explorer 18 (IMP-A)	26 Nov 63	Thor-Delta	S	S
Explorer 19 (AD-A) (Atmonphere Physics)	19 Dec 63	Scout	S	S
Explorer 20 (S-48) (Atmosphere Physics)	25 Aug 64	Scout	S	S
Explorer 21 (IMP-B)	4 Oct 64	Thor-Delta	U	U
Explorer 22 (BE-B) (Geodesy)	10 Oct 64	Scout	S	S
Explorer 24 (Air Density) } Dual Mission	21 Nov 64	Scout	S	S
Explorer 25 (Injun B) } Dual Mission			-	S
Explorer 26 (S-3C) (Atmosphere Physics)	21 Dec 64	Thor-Delta	S	S
Explorer 27 (BE-C) (Geodesy)	29 Apr 65	Scout	S	S
Explorer 28 (IMP-C)	29 May 65	Thor-Delta	S	S
Explorer 29 (GEOS)	6 Nov 65	Thor-Delta	S	S
Explorer 31 (DME-A)	29 Nov 65	Thor-Delta	S	S
Explorer 32 (AE-B)	25 May 66	Thor-Delta	S	S
Explorer 33 (IMP-D)	1 Jul 66	Thor-Delta	S	S
Explorer 34 (IMP-F)	24 May 67	Thor-Delta	S	S
Explorer 35 (IMP-E)	19 Jul 67	Thor-Delta	S	S
Explorer 38 (RAE-A)	4 Jul 68	Thor-Delta	S	S
Explorer 39 (Air Density) } Dual Mission	8 Aug 68	Scout	S	S
Explorer 40 (Injun V) } Dual Mission			-	S
Explorer 41 (IMP-G)	21 Jun 69	Thor-Delta	S	S
Explorer 42 (SAS-A)	12 Dec 70	Scout	S	S
Explorer 43 (IMP-I)	13 Mar 71	Delta	S	S

Summary Of Space Science Flight Mission Performance

By Program Activities

MISSION	LAUNCH DATE	LAUNCH VEHICLE	ASSESSMENT VEHICLE	ASSESSMENT MISSION
PHYSICS AND ASTRONOMY (Cont'd)				
Orbital Flights (Cont'd)				
Explorer 45 (SSS-A)	15 Nov 71	Scout	S	S
Explorer 47 (IMP-H)	22 Sep 72	Delta	S	S
Explorer 48 (SAS-B)	15 Nov 72	Scout	S	S
Explorer 49 (RAE-B)	10 Jun 73	Delta	S	S
Explorer 50 (IMP-J)	25 Oct 73	Delta	S	S
Explorer 51 (AE-C)	16 Dec 73	Delta	S	S
Explorer 52 (Hawkeye-1)	3 Jun 74	Scout	S	S
Explorer 53 (SAS-C)	7 May 75	Scout	S	S
Explorer 54 (AE-D)	6 Oct 75	Delta	S	S
Explorer 55 (AE-E)	19 Nov 75	Delta	S	S
Explorer (DAD-A/B)	5 Dec 75	Scout	U	U
Dynamics Explorer A/B	3 Aug 81	Delta	S	S
Solar Mesosphere Explorer	6 Oct 81	Delta	S	S
OSS-1 *	22 Mar 82	STS-3	S	S
TOTAL (Success/Attempts)			40/47	42/49
HIGH ENERGY ASTRONOMY OBSERVATORY				
HEAO-A	12 Aug 77	A-Centaur	S	S
HEAO-B	13 Nov 78	A-Centaur	S	S
HEAO-C	20 Sep 79	A-Centaur	S	S
TOTAL (Success/Attempts)			3/3	3/3
SOLAR MAXIMUM MISSION				
SMM-A	14 Feb 80	Delta	S	S
TOTAL (Success/Attempts)			1/1	1/1

* Counted as Shuttle Payload

Summary Of

Space Science

Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
PHYSICS AND ASTRONOMY (Cont'd)				
Orbiting Geophysical Observatory				
OGO-I (A) (EGO)	5 Sep 64	Atlas-Agena	S	U
OGO-II (C) (POGO)	14 Oct 65	Thor-Agena	S	U
OGO-III (B) (EGO)	7 Jun 66	Atlas-Agena	S	S
OGO-IV (D) (POGO)	28 Jul 67	Thor-Agena	S	S
OGO-V (E)	4 Mar 68	Atlas-Agena	S	S
OGO-VI (F)	5 Jun 69	Thor-Agena	S	S
TOTAL (Success/Attempts)			6/6	4/6
Orbiting Solar Observatory				
OSO-1 (S-16)	7 Mar 62	Thor-Delta	S	S
OSO-2 (B-2)	3 Feb 65	Thor-Delta	S	S
OSO-C	25 Aug 65	Thor-Delta	U	U
OSO-3 (E)	8 Mar 67	Thor-Delta	S	S
OSO-4 (D)	18 Oct 67	Thor-Delta	S	S
OSO-5 (F)	22 Jan 69	Thor-Delta	S	S
OSO-6 (G)	9 Aug 69	Thor-Delta	S	S
OSO-7 (H)	29 Sep 71	Thor-Delta	S	S
OSO-8 (I)	21 Jun 75	Delta	S	S
TOTAL (Success/Attempts)			8/9	8/9
Orbiting Astronomical Observatory				
OAO-I (A)	8 Apr 66	Atlas-Agena	S	U
OAO-II (A2)	7 Dec 68	Atlas-Centaur	S	S
OAO-B	30 Nov 70	Atlas-Centaur	U	U
OAO-C	21 Aug 72	Atlas-Centaur	S	S
TOTAL (Success/Attempts)			3/4	2/4

Summary Of Space Science Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
LUNAR & PLANETARY				
Ranger I (P- 32)	23 Aug 61	Atlas-Agena	U	U
Ranger II (P-33)	18 Nov 61	Atlas-Agena	U	U
Ranger III (P-34)	26 Jan 62	Atlas-Agena	U	U
Ranger IV (P-35)	23 Apr 62	Atlas-Agena	S	U
Ranger V (P-36)	18 Oct 62	Atlas-Agena	S	U
Ranger VI (A)	30 Jan 64	Atlas-Agena	S	U
Ranger VII (B)	28 Jul 64	Atlas-Agena	S	S
Ranger VIII (C)	17 Feb 65	Atlas-Agena	S	S
Ranger IX (D)	21 Mar 65	Atlas-Agena	S	S
TOTAL (Success/Attempts)			6/9	3/9
Lunar Orbiter I (A)	10 Aug 66	Atlas-Agena	S	S
Lunar Orbiter II (B)	6 Nov 66	Atlas-Agena	S	S
Lunar Orbiter III (C)	5 Feb 67	Atlas-Agena	S	S
Lunar Orbiter IV (D)	4 May 67	Atlas-Agena	S	S
Lunar Orbiter V (E)	1 Aug 67	Atlas-Agena	S	S
TOTAL (Success/Attempts)			5/5	5/5
Surveyor I (A)	30 May 66	Atlas-Centaur	S	S
Surveyor II (B)	20 Sep 66	Atlas-Centaur	S	U
Surveyor III (C)	17 Apr 67	Atlas-Centaur	S	S
Surveyor IV (D)	14 Jul 67	Atlas-Centaur	S	U
Surveyor V (E)	8 Sep 67	Atlas-Centaur	S	S
Surveyor VI (F)	7 Nov 67	Atlas-Centaur	S	S
Surveyor VII (G)	7 Jan 68	Atlas-Centaur	S	S
TOTAL (Success/Attempts)			7/7	5/7

Summary Of Space Science Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
LUNAR AND PLANETARY				
Pioneer I (Lunar)	11 Oct 58	Thor-Able I	U	U
Pioneer II (Lunar)	8 Nov 58	Thor-Able I	U	U
Pioneer III (Lunar)	6 Dec 58	Juno-II	U	U
Pioneer IV (Lunar)	3 Mar 59	Juno-II	S	S
Pioneer (P-3) (Lunar)	26 Nov 59	Atlas-Able	U	U
*Pioneer V (P-2)	11 Mar 60	Thor-Able IV	S	S
Pioneer (P-30) (Lunar)	25 Sep 60	Atlas-Able	U	U
Pioneer (P-31) (Lunar)	15 Dec 60	Atlas-Able	U	U
*Pioneer VI (A)	16 Dec 65	TAD	S	S
*Pioneer VII (B)	17 Aug 66	Delta	S	S
*Pioneer VIII (C)	13 Dec 67	Delta	S	S
*Pioneer IX (D)	8 Nov 68	Delta	S	S
*Pioneer E	27 Aug 69	Delta	U	U
Pioneer X (F) (Jupiter & Pluto Flyby)	3 Mar 72	A-Centaur	S	S
Pioneer XI (G) (Jupiter Flyby)	6 Apr 73	A-Centaur	S	S
Pioneer/Venus-A	20 May 78	A-Centaur	S	S
Pioneer/Venus-B	8 Aug 78	A-Centaur	S	S
TOTAL (Success/Attempts)			10/17	10/17

*Deep Space Probe

Summary Of Space Science Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
LUNAR AND PLANETARY				
Mariner I (P-37)(Venus Probe-Failed)	22 Jul 62	Atlas-Agena	U	U
Mariner II (P-38)(Venus Flyby)	27 Aug 62	Atlas-Agena	S	S
Mariner III (C)(Mars Probe-Failed)	5 Nov 64	Atlas-Agena	U	U
Mariner IV (D) (Mars Flyby)	28 Nov 64	Atlas-Agena	S	S
Mariner V (E) (Venus Flyby)	14 Jun 67	Atlas-Agena	S	S
Mariner VI (F) (Mars Flyby)	25 Feb 69	Atlas-Centaur	S	S
Mariner VII (G) (Mars Flyby)	27 Mar 69	Atlas-Centaur	S	S
Mariner VIII (H) (Mars Orbiter -Failed)	8 May 71	Atlas-Centaur	U	U
Mariner IX (I) (Mars Orbiter)	30 May 71	Atlas-Centaur	S	S
Mariner X (J) (Venus/Mercury Flyby)	3 Nov 73	Atlas-Centaur	S	S
TOTAL (Success/Attempts)			7/10	7/10
Viking I (A)(Mars Lander & Orbiter)	20 Aug 75	Titan III Centaur	S	S
Viking 2 (B)(Mars Lander & Orbiter)	9 Sep 75	Titan III Centaur	S	S
TOTAL (Success/Attempts)			2/2	2/2
Voyager 2 (Jupiter/Saturn Flyby)	20 Aug 77	Titan III Centaur	S	S
Voyager 1 (Jupiter/Saturn Flyby)	5 Sep 77	Titan III Centaur	S	S
TOTAL (Success/Attempts)			2/2	2/2

Summary Of Communications Flight Mission Performance

By Program Activities

MISSION	LAUNCH DATE	LAUNCH VEHICLE	ASSESSMENT VEHICLE	ASSESSMENT MISSION
COMMUNICATIONS PROGRAM				
Suborbital Flights				
Echo (AVT-1)	15 Jan 62	Thor	S	S
Echo (AVT-2)	18 Jul 62	Thor	S	S
TOTAL (Success/Attempts)			2/2	2/2
Orbital Flights				
Echo (A-10)	13 May 60	Thor-Delta	U	U
Echo I (A-11)	12 Aug 60	Thor-Delta	S	S
Echo II (A-12)	25 Jan 64	Thor-Agena	S	S
Relay I (A-15)	13 Dec 62	Thor-Delta	S	S
Relay II (A-16)	21 Jan 64	Thor-Delta	S	S
Syncom I (A-25)	14 Feb 63	Thor-Delta	S	U
Syncom II (A-26)	26 Jul 63	Thor-Delta	S	S
Syncom III (A-27)	19 Aug 64	Thor-Delta	S	S
TOTAL (Success/Attempts)			7/8	6/8
Applications Technology Satellites				
ATS-I (B)	6 Dec 66	Atlas-Agena	S	S
ATS-II (A)	6 Apr 67	Atlas-Agena	U	U
ATS-III (C)	5 Nov 67	Atlas-Agena	S	S
ATS-IV (D)	10 Aug 68	Atlas-Centaur	U	U
ATS-V (E)	12 Aug 69	Atlas-Centaur	S	U
ATS-VI (F)	30 May 74	Titan III C	S	S
TOTAL (Success/Attempts)			4/6	3/6
Tracking & Data				
TDRS-1	4 Apr 83	STS-6	S 1/1	S 1/1

Summary Of Earth Observations Flight Mission Performance

By Program Activities

MISSION	LAUNCH DATE	LAUNCH VEHICLE	ASSESSMENT VEHICLE	ASSESSMENT MISSION
EARTH OBSERVATIONS PROGRAM				
Tiros I (A-1	1 Apr 60	Thor-Able	S	S
Tiros II (A-2)	23 Nov 60	Thor-Delta	S	S
Tiros III (A-3)	12 Jul 61	Thor-Delta	S	S
Tiros IV (A-9)	8 Feb 62	Thor-Delta	S	S
Tiros V (A-50)	19 Jun 62	Thor-Delta	S	S
Tiros VI (A-51)	18 Sep 62	Thor-Delta	S	S
Tiros VII (A-52)	19 Jun 63	Thor-Delta	S	S
Tiros VIII (A-53)	21 Dec 63	Thor-Delta	S	S
Tiros IX (I EYE)	22 Jan 65	Thor-Delta	S	S
Tiros X (OT-1)	2 Jul 65	Thor-Delta	S	S
Tiros M (ITOS-1)	23 Jan 70	Thor-Delta	S	S
Tiros N	13 Oct 78	Atlas-F	S	S
TOTAL (Success/Attempts)			12/12	12/12
Nimbus I (A)	23 Aug 64	Thor-Agena	S	S
Nimbus II (C)	15 May 66	Thor-Agena	S	S
Nimbus B	18 May 68	Thor-Agena	U	U
Nimbus III (B-2)	14 Apr 69	Thorad-Agena	S	S
Nimbus D (4)	8 Apr 70	Thor-Agena	S	S
Nimbus E (5)	11 Dec 72	Delta	S	S
Nimbus F (6)	12 Jun 75	Delta	S	S
Nimbus G (7)	24 Oct 78	Delta	S	S
TOTAL (Success/Attempts)			7/8	7/8

Summary Of Special Applications Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
EARTH OBSERVATIONS PROGRAM (Cont'd)				
ERTS-A	23 Jul 72	Delta	S	S
Landsat-B (ERTS-B)	22 Jan 75	Delta	S	S
Landsat-C	5 Mar 78	Delta	S	S
Landsat-D	16 Jul 82	Delta	S	S
TOTAL (Success/Attempts)			4/4	4/4
SMS-A	17 May 74	Delta	S	S
SMS-B	6 Feb 75	Delta	S	S
TOTAL (Success/Attempts)			2/2	2/2
SPECIAL APPLICATION PROGRAM				
PAGEOS I (A)	24 Jun 66	Thor-Agena	S	S
Explorer 36 (GEOS-II) (GEOS-B)	11 Jan 68	Thor-Agena	S	S
GEOS-3 (C)	9 Apr 75	Delta	S	S
LAGEOS-A	4 May 76	Delta	S	S
Seasat	26 Jun 78	Atlas-F	S	S
OSTA-1*	12 Nov 81	STS-2	S	S
TOTAL (Success/Attempts)			5/5	5/5
APPLICATIONS EXPLORERS				
AEM-1 (HCMM)	26 Apr 78	Scout	S	S
AEM-2 (SAGE)	18 Feb 79	Scout	S	S
AEM-3 (MAGSAT)	30 Oct 79	Scout	S	S
TOTAL (Success/Attempts)			3/3	3/3

*Counted as Shuttle Payload

Summary Of Space Technology Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
SPACE TECHNOLOGY PROGRAM				
Suborbital Flights				
Reentry I (A)	1 Mar 62	Scout	S	U
Reentry II (B)	31 Aug 62	Scout	U	U
Reentry III (C)	20 Jul 63	Scout	U	U
Reentry IV (D)	18 Aug 64	Scout	S	S
Reentry V (E)	9 Feb 66	Scout	S	S
Reentry VI (F)	27 Apr 68	Scout	S	S
Fire I (Re-entry Test)	14 Apr 64	Atlas-X259	S	S
Fire II (Re-entry Test)	22 May 65	Atlas-X259	S	S
SERT-1A (Ion Engine Test)	20 Jul 64	Scout	S	S
RAM C-I (A) (Re-entry Test)	19 Oct 67	Scout	S	S
RAM C-II (B) (Re-entry Test)	22 Aug 68	Scout	S	S
RAM C-III (C) (Re-entry Test)	30 Sep 70	Scout	S	S
PAET (Re-entry Test)	20 Jun 71	Scout	S	S
TOTAL (Success/Attempts)			11/13	10/13
Orbital Flights				
Explorer (S-55) (Micrometeoroids)	30 Jun 61	Scout	U	U
Explorer 13 (S-55A) (Micrometeoroids)	25 Aug 61	Scout	U	U
Explorer 16 (S-55B) (Micrometeoroids)	16 Dec 62	Scout	S	S
Explorer 23 (S-55C) (Micrometeoroids)	6 Nov 64	Scout	S	S
Pegasus I (A) (Micrometeoroids)	16 Feb 65	Saturn I (SA-9)	S	S
Pegasus II (B) (Micrometeoroids)	25 May 65	Saturn I (SA-8)	S	S
Pegasus III (C) (Micrometeoroids)	30 Jul 65	Saturn I (SA-10)	S	S
SERT-II (Ion Engine Test)	4 Feb 70	Thor-Agena	S	U
Explorer 46 (MTS) (Micrometeoroids)	13 Aug 72	Scout	S	S
TOTAL (Success/Attempts)			7/9	6/9

MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Pioneer I Eta 1	Thor- Able I	11 Oct	12 Oct 58		113,783			38.28	Particles and Fields: Radial extent of radiation bands; hydromagnetic oscillation. Failed to reach moon; sent 43 hrs of data.
Beacon I Suborb	Jupiter C	23 Oct	23 Oct 58					4.20	Atmospheric Physics: 12-foot sphere; upper stages separated prior to burnout.
Pioneer II Suborb	Thor- Able I	8 Nov	8 Nov 58					39.19	Scientific Lunar Probe: Third-stage failure; reached 963 miles; its brief data indicated equatorial region had higher flux and energy levels than previously thought.
Pioneer III Theta 1	Juno II	6 Dec	7 Dec 58		102,300			5.87	Energetic Particles: Discovered second radiation belt. Failed to reach moon.

1 lb = 0.4536 kg 1 mi = 1.609 km 1 NM = 1.8515 km

MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Vanguard II Alpha 1	Vanguard (SLV-4)	17 Feb		124.9	3243	556	32.8	9.4	Meteorology: Precession of satellite prevented usable cloud cover data. First Earth photo from satellite.
Pioneer IV Nu 1	Juno II	3 Mar		HELIOCENTRIC ORBIT				6.07	Cislunar and Lunar Probe: Energetic particles, passed 37,300 miles from the moon on 4 Mar 59.
Vanguard Suborb	Vanguard (SLV-5)	13 Apr	13 Apr 59					10.56	Magnetic Fields and Atmospheric Physics: 30-inch sphere; second-stage failure.
Vanguard Suborb	Vanguard (SLV-6)	22 Jun	22 Jun 59					10.20	Solar-Earth Heating: Second-stage failure.
Explorer (S-1) Suborb	Juno II	16 Jul	16 Jul 59					41.50	Energetic Particles: Destroyed after 5-1/2 seconds by range safety officer.
Explorer VI (S-2) Delta 1	Thor-Able	7 Aug	Prior to July 61	768	42,412	252	47.0	64.41	Particles and Meteorology: Three radiation levels; crude cloud cover image; ring of electric current circling earth.
Beacon II Suborb	Juno II	14 Aug	14 Aug 59					4.53	Atmospheric Physics: 12-foot sphere; premature fuel depletion in first stage; upper-stage malfunction.
Big Joe (Mercury) Suborb	Atlas	9 Sep	9 Sep 59						Suborbital Mercury Capsule Test: Capsule successfully recovered after reentry test.

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MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Vanguard III Eta 1	Vanguard (SLV-7)	18 Sep		129.1	3659	511	33.3	45.36	Particles and Fields: Magnetic field survey, lower edge of radiation belt. Last transmission 8 Dec 59.
Little Joe 1 Suborb	Little Joe (L/V #6)	4 Oct	4 Oct 59						Suborbital Mercury Capsule Test: Qualified booster for use with Mercury test program. (WI)
Explorer VII (S-16)/Iota 1	Juno II (19A)	13 Oct		100.7	1041	548	50.3	41.5	Energetic Particles: Data on radiation and magnetic storms; first micrometeorite penetration of sensor.
Little Joe 2 Suborb	Little Joe (L/V #1A)	4 Nov	4 Nov 59						Suborbital Mercury Capsule Test: Capsule escape test. Escape rocket had a delayed thrust buildup. (WI)
Pioneer (P-3) Suborb	Atlas-Able	26 Nov	26 Nov 59					168.74	Lunar Orbiter: Shroud failure after 45 seconds.
Little Joe 3 Suborb	Little Joe (L/V #2)	4 Dec	4 Dec 59						Suborbital Mercury Capsule Test: Escape system and biomedical tests; Monkey (Sam) (High altitude abort demonstration at max. q). (WI)
1960									1960
Little Joe 4 Suborb	Little Joe (L/V #1B)	21 Jan	21 Jan 60		-				Suborbital Mercury Capsule Test: Escape system and biomedical test; Monkey (Miss Sam) aboard. (WI)
Pioneer V (P-2) Alpha 1	Thor- Able IV	11 Mar		HELIOCENTRIC ORBIT	.995 AU	.8061 AU	3.35	43	Particles and Fields: Ciscytherean space; first solar flare data; solar wind.

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Explorer (S-46) Suborb	Juno II	23 Mar	23 Mar 60					16.01	Energetic Particles: Failure in upper stages.
Tiros I Beta 2	Thor-Able	1 Apr		99.0	738	689	48.3	122.47	Meteorology: First global cloud cover pictures. Last transmission 17 Jun 60.
Scout X Suborb	Scout X	18 Apr	18 Apr 60						Launch Vehicle Development Test: Structural failure prevented third-stage ignition (dummy second and fourth stages); (WI)
Echo A-10 Suborb	Thor-Delta	13 May	13 May 60					56.24	Communications Earth Satellite: Failure in upper stages of vehicle.
Scout 1 Suborb	Scout	1 Jul	1 Jul 60						Launch Vehicle Development Test. (WI)
Mercury (MA-1) Suborb	Atlas	29 Jul	29 Jul 60						Suborbital Mercury Capsule Reentry Test: Atlas exploded.
Echo 1 (A-11) Iota 1	Thor-Delta	12 Aug	24 May 68	118.2	1692	1514	47.2	56.24	Communications Earth Satellite: First passive communications satellite. 100-foot sphere used for passive communication and air density experiments.
Pioneer (P-30) Suborb	Atlas-Able	25 Sep	25 Sep 60					175.54	Scientific Lunar Orbiter: Second-stage failure.

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	
Scout II Suborb	Scout	4 Oct	4 Oct 60						Launch Vehicle Development Test: Air Force Special Weapons Center radiation experiment payload included. (WI)
Explorer VIII (S-30)/ Xi 1	Juno II	3 Nov		112.7	2287	458	50.0	40.88	Ionosphere: Confirmed existence of helium layer in upper atmosphere. Last transmission 28 Dec 60.
Little Joe 5 Suborb	Little Joe (L/V #5)	8 Nov	8 Nov 60						Suborbital Mercury Capsule Test: Mercury capsule system qualification; premature escape-rocket firing. (WI)
Tiros II Pi 1	Thor-Delta	23 Nov		98.3	727	622	48.5	127	Meteorology: Optical and infrared photos of global cloud cover.
Explorer (S-56) Suborb	Scout	4 Dec	4 Dec 60					6.35	Atmospheric Physics/Vehicle Test: 12-foot sphere; second-stage failure. (WI)
Pioneer (P-31) Suborb	Atlas-Able	15 Dec	15 Dec 60					175.9	Scientific Lunar Orbiter: Exploded after 74 seconds.
Mercury (MR-1A) Suborb	Redstone	19 Dec	19 Dec 60						Suborbital Mercury Capsule Test: Unmanned 235-mile flight. Successful.
1961									1961
Mercury (MR-2) Suborb	Redstone	31 Jan	31 Jan 61					1315	Suborbital Mercury Capsule Test: 16-minute flight of chimpanzee (Ham)

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MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Explorer IX (S-56a)/Delta 1	Scout	16 Feb	9 Apr 64	118.3	2583	634	38.6	6.80	Atmospheric Physics/Vehicle Test: 12-foot sphere. (WI)
Mercury (MA-2) Suborb	Atlas	21 Feb	21 Feb 61					1315	Suborbital Mercury Capsule Test: Unmanned; 1425-mile flight; successful.
Explorer (S-45) Suborb	Juno II	24 Feb	24 Feb 61					32.65	Ionosphere: Second-stage malfunction prevented third- and fourth-stage firing.
Little Joe 5A Suborb	Little Joe (L/V #5A)	18 Mar	18 Mar 61					1315	Suborbital Mercury Capsule Test: Mercury escape system qualification; premature escape-rocket firing. (WI)
Mercury (MR-BD) Suborb	Redstone	24 Mar	24 Mar 61					1315	Vehicle Test for Mercury Flight: Booster development test necessitated by MR-2 flight results.
Explorer X (P-14) Kappa 1	Thor-Delta	25 Mar	Jun 68	6720	233,305	160	33.9	35.83	Particles and Fields: Interplanetary magnetic field near earth, mainly extension of sun's magnetic field.
Mercury (MA-3) Suborb	Atlas	25 Apr	25 Apr 61					907.2	Orbital Mercury Capsule Test: Failure in first stage; abort successful.
Explorer XI (S-15)/ Nu 1	Juno II (4 stages)	27 Apr		108.1	1719	483	28.8	37.19	Gamma-Ray Astronomy: Eliminated simultaneous matter-antimatter creation theory of steady-state cosmology. Last transmission 7 Dec 61.

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MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Little Joe 5B Suborb	Little Joe (L/V #5B)	28 Apr	28 Apr 61					1315	Suborbital Mercury Capsule Test: One booster engine fired late. Repeat of Mercury escape system test. (WI)
Mercury (Freedom 7) Suborb	Mercury-Redstone-3	5 May	5 May 61					1315	Manned Suborbital: Alan B. Shepard, Jr.. 15 minutes flight time.
Explorer (S-45a) Suborb	Juno II	24 May	24 May 61					34.02	Ionosphere: Second-stage failure
Meteoroid Satellite A (S-55) Suborb	Scout	30 Jun	30 Jun 61					84.82	Micrometeoroids/Vehicle Test: Third-stage failure. (WI)
Tiros III Rho 1	Thor-Delta	12 Jul		100.3	814	741	47.8	129	Meteorology: Good cloud cover picture, infrared data. Last transmission 27 Feb 62.
Liberty Bell 7 Suborb	Mercury-Redstone-4	21 Jul	21 Jul 61					1470	Manned Suborbital: Virgil I. Grissom. 16 minutes flight time.
Explorer XII (S-3) Upsilon 1	Thor-Delta	16 Aug	Sep 63	1585	77,232	292	33.3	37.64	Particles and Fields: Identified Van Allen Belt as a magnetosphere.
Ranger I Phi 1	Atlas-Agena	23 Aug	30 Aug 61	91.1	503	168	32.9	306.18	Particles and Fields: Lower earth orbit than planned.

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Explorer XIII (S-55a)/ Chi 1	Scout	25 Aug	28 Aug 61	97.3	975	281	36.4	84.82	Micrometeoroids/Vehicle Test: Premature reentry after three days. (WI)
Mercury (MA-4) A-Alpha 1	Atlas	13 Sep	13 Sep 61	88.6	255	160	32.6	1224.72	To orbit the unmanned Mercury capsule to test systems and ability to return capsule to predetermined recovery area after one orbit. All capsule tracking and recovery objectives met.
Probe A (P-21) Suborb	Scout	19 Oct	19 Oct 61						Scientific Geoprobe/Vehicle Test: Reached 4261 miles. Electron density measurement; vehicle test. (WI)
Saturn Test (SA-1)/ Suborb	Saturn I	27 Oct	27 Oct 61						Launch Vehicle Development: Test of propulsion system of the booster (S-I); verification of aerodynamic and structural design of entire vehicle.
Mercury (MS-1) Suborb	AF 609A (Blue Scout)	1 Nov	1 Nov 61					68.04	Orbital Mercury Network Check: Destroyed after 30 seconds; Air Force launched.
Ranger II A-Theta 1	Atlas-Agena	18 Nov	20 Nov 61	88.28	236	157	33.3	306.18	Particles and Fields: Agena failed to restart.
Mercury (MA-5) A-Iota 1	Atlas	29 Nov	29 Nov 61	88.3	238	160	32.5	1470	Mercury Orbital Flight: Chimpanzee Enos aboard. Recovered after two orbits.

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Echo (AVT-1) Suborb	Thor	15 Jan	15 Jan 62					256	Suborbital Communications Test: Canister ejection and opening successful but 135-foot sphere ruptured.
Ranger III (P-34) Alpha 1	Atlas-Agena	26 Jan		HELIOCENTRIC ORBIT				329.76	Lunar Exploration: TV pictures, hard instrument landing planned; second stage of Agena failed; spacecraft missed the moon by 22,862 miles on 28 Jan 62. TV pictures unusable.
Tiros IV Beta 1	Thor-Delta	8 Feb		100.4	844	709	48.3	129	Meteorology: Supported Friendship 7 flight. Transmitted cloud cover photos to 10 Jun 62.
Mercury (MA-6) (Friendship 7) Gamma 7	Atlas	20 Feb	20 Feb 62	88.5	262	160	32.5	1443	Manned: John H. Glenn, Jr.; three orbits. First manned orbital flight by US. 4 hrs 55 mins.
Reentry 1	Scout	1 Mar	1 Mar 62						Launch Vehicle Development; Reentry: Desired speed not achieved. (WI)
OSO-1 Zeta 1	Thor-Delta	7 Mar	8 Oct 81	95.2	595	553	32.8	199.58	Solar Physics: Provided data on approximately 75 solar flares. Last transmission 6 Aug 63.
Probe B (P-21a) Suborb	Scout	29 Mar	29 Mar 62						Scientific Geoprobe: Electron density measurements; reached 3910 miles. (WI)
Ranger IV Mu 1	Atlas-Agena	23 Apr	26 Apr 62					331.12	Lunar Exploration: TV pictures not obtained; loss of control 2 hours after launch; first US lunar impact (Far side).

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MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Saturn Test (SA-2)/Suborb	Saturn I	25 Apr	25 Apr 62					86,167	Launch Vehicle Test: Carried 95 tons of ballast water in upper stages released at an altitude of 65 miles in order to observe the effect on the upper region of the atmosphere ("Project High Water.")
Ariel I Omicron 1	Thor-Delta	26 Apr	24 May 76	95.9	770	361	53.8	59.87	Ionosphere: Investigated solar effects. First International Satellite. (United Kingdom Cooperative)
Centaur Test I (AC-1)/Suborb	Atlas-Centaur	8 May	8 May 62						Launch Vehicle Development Test: Centaur exploded before separation.
Aurora 7 (MA-7)/ Tau 1	Atlas	24 May	24 May 62	88.3	268	160	32.5	1349.46	Manned: M. Scott Carpenter; three orbits. 4 hrs 56 mins.
Tiros V A-Alpha 1	Thor-Delta	19 Jun		100.3	955	591	58.1	129.27	Meteorology: Infrared system inoperative; good cloud cover pictures. Last transmission 4 May 63.
Telstar I A-Epsilon 1	Thor-Delta	10 Jul		157.7	5642	944	44.8	77.11	Communications: First privately built satellite. First TV transmission. Last transmission 21 Feb 63. (Reimbursable)
Echo (AVT-2) Suborb	Thor	18 Jul	18 Jul 62					256	Suborbital Communications Test: Inflation successful; radar indicated sphere surface not as smooth as planned.
Mariner I (P-37) Suborb	Atlas-Agena	22 Jul	22 Jul 62					202.30	Scientific Venus Probe: Atlas deviated from course and was destroyed by Range Safety Officer.

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MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Mariner II (P-38) A-Rho 1	Atlas-Agena	27 Aug		HELIOCENTRIC ORBIT				202.75	Planetary Exploration: Venus; first successful interplanetary probe. Found no magnetic field; high surface temperatures of approximately 800°F. Passed Venus 14 Dec 62 at 21,648 miles, 109 days after launch.
Reentry II Suborb	Scout	31 Aug	31 Aug 62						Reentry Test (28,000 fps): Late third-stage ignition; desired speed not achieved. (WI)
Tiros VI A-Psi 1	Thor-Delta	18 Sep		98.5	698	684	58.3	127	Meteorology: Infrared sensor omitted. Last transmission 11 Oct 63.
Alouette I B-Alpha 1	Thor-Agena B	29 Sep		105.4	1032	999	80.4	145.15	Ionosphere: Radiation belt effects. Second International Satellite. (Cooperative with Canada)
Explorer XIV (S-3a) B-Gamma 1	Thor-Delta	2 Oct		2184	98,454	279	32.9	40.37	Particles and Fields: Data compared with that of Explorer XII. Last transmission 17 Feb 64.
Sigma 7 (MA-8) B-Delta 1	Altas	3 Oct	3 Oct 62	88.75	285	153	32.55	1369.87	Manned: Walter M. Schirra; 6 orbits. 9 hours 13 minutes.
Ranger V B-Eta 1	Atlas-Agena	18 Oct		HELIOCENTRIC ORBIT				342.46	Lunar Exploration: TV pictures, hard instrument landing planned. Power loss; 450 miles from moon 20 Oct 62; no TV pictures obtained.

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Explorer XV (S-3b) B-Lambda 1	Thor-Delta	27 Oct		Current Elements Not Maintained				45.36	Particles and Fields: De-spin system failed, directional detectors almost unusable. Last transmission 19 May 63.
Saturn (SA-3) Suborb	Saturn I	16 Nov	16 Nov 62					86,167	Launch Vehicle Development: Second "Project High Water" using 95 tons of water released at an altitude of 90 NM.
Relay I B-Upsilon 1	Thor-Delta	13 Dec		185	7437	1320	47.4	78.01	Communications: Initial power failure overcome. Wideband transmission; TV capability of 300 channel telephony, one way. Last transmission Feb 65.
Explorer XVI (S-55b) B-Chi 1	Scout	16 Dec		104.3	1177	747	51.9	100.69	Micrometeoroids: First statistical sample; flux level found to lie between estimated extremes; 64 penetrations of sample materials over useful life of 7 months. Sensor area 30 sq. ft. Last transmission 22 Jul 63. (WI)
~~1963~~									1963
Syncom I 1963 4A	Thor-Delta	14 Feb		1,426.6	36,931	34,102	33.5	39	Communications: First synchronous-type orbit. Radio contact lost at insertion into orbit.
				GEOSYNCHRONOUS ORBIT					
Saturn Test (SA-4) Suborb	Saturn I	28 Mar	28 Mar 63						Launch Vehicle Development: Programmed in-flight cutoff of one of eight engines in cluster; successfully demonstrated propellant utilization system function.
Explorer XVII (S-6)/1963 9A	Thor-Delta	3 Apr	24 Nov 66	96.4	913	254	57.6	184.61	Aeronomy: Discovered belt of neutral helium atoms about earth. Ceased transmitting experiment data 10 Jul 63.

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Telstar II 1963 13A	Thor-Delta	7 May		225.2	10,800	971	42.7	79.38	Communications satellite. Last transmission May 65. (Reimbursable)
Mercury (Faith 7) 1963 15A	Atlas MA-9	15 May	16 May63	88.5	267	161	32.54	1,369.87	Manned: L. Gordon Cooper; 22 orbits. Oriented manually for reentry. 34 hours 20 minutes.
RFD-1	Scout	22 May	22 May63	SUBORBITAL FLIGHT				217.6	AEC Reactor Mockup Reentry Flight (Reimbursable)
Tiros VII 1963 24A	Thor-Delta	19 Jun		97.1	630	612	58.2	134.71	Meteorology. Last transmission 3 Feb 66.
CRL (USAF) 1963 26A	Scout	28 Jun		99.6	1,074	405	49.7	118	Cambridge Research Lab - Geophysics (Reimbursable)
Reentry III Suborb	Scout	20 Jul	20 Jul 63	VEHICLE FAILED					Reentry Flight Demonstration: Attempted test of an ablation material at super-orbital reentry speeds. (WI)
Syncom II 1963 31A	Thor-Delta	26 Jul		GEOSYNCHRONOUS ORBIT				38.55	Communications: First operational satellite in a synchronous type orbit.
Little Joe II Test Suborb	Little Joe II #1	28 Aug	28 Aug63						Suborbital Apollo Launch Vehicle Test: Booster qualification test with dummy payload. (White Sands Missile Test Range)
Explorer XVIII (IMP-A) 1963 46A	Delta (DSV-3C)	27 Nov	Dec 65	5778	197,137	192	33.3	62.59	Particles and Fields: Highly elliptical orbit. Confirmed existence of solar wind shock wave on magnetosphere. First Delta with X-258 third stage. Last transmission 12 May 65.

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Centaur Test II (AC-2) 1963 47A	Atlas-Centaur	27 Nov		107.1	1717	472	30.3	4,620.8	Vehicle Development: Instrumented with 2000 lbs of sensors, equipment, and telemetry.
Explorer XIX (AD-A) 1963 53A	Scout	19 Dec	10 May 81	112	1766	877	78.9	8.07	Atmospheric Physics: 12-foot diameter sphere (Explorer IX design); polar orbit. (WTR) Two (passive) experiments.
Tiros VIII 1963 54A	Delta (DSV-3B)	21 Dec		99.2	747	698	58.4	120.20	Meteorology: Carried Automatic Picture Transmission (APT) System; allowed real-time readout of local cloud pictures using an inexpensive portable ground station. Last transmission 1 Jul 67.
1964									1964
Relay II 1964 3A	Delta (DSV-3B)	21 Jan		194.7	7448	2050	46.3	83	Communications: Wideband transmission; TV capability or 300 channel telephone, one way. Last transmission 23 May 65.
Echo II 1964 4A	Thor-Agena	25 Jan	7 Jun 69	108.8	1312	1032.9	81.5	256	Communications: Rigidized 135-foot sphere; passive. (WTR)
Saturn I (SA-5) 1964 5A	Saturn I	29 Jan	30 Apr 66	94.8	757.8	263.8	31.5	17,100	Vehicle Development: Fifth flight of Saturn I; first Block II Saturn, first live flight of the LOX/LH_2 fueled second stage (S-IV). 1146 measurements taken.
Ranger VI 1964 7A	Atlas-Agena	30 Jan	2 Feb 64					364.6	Lunar Exploration: TV pictures prior to hard landing planned; lunar impact point within 20 statute miles of target on West edge of Sea of Tranquility; TV system failed to operate.

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Beacon Exp. A (S-66)	Delta	19 Mar	19 Mar	Suborb				52.16	To study the Ionosphere - Vehicle Failed
Ariel II (UK) 1964 15A	Scout	27 Mar	18 Nov 67	101.3	1356.3	289.6	51.6	68.04	Planetary Atmosphere/Radio Astronomy - Cooperative with UK. WI
Gemini I 1964 18A	Titan II	8 Apr	12 Apr	89.2	328.2	160.9	32.6	3186.9	Vehicle Development- Successful
Fire I	Atlas	14 Apr	14 Apr	Suborb					Reentry Test - Investigated the heating environment encountered by a body entering the earth's atmosphere at high speed.
Apollo Abort	Little Joe	13 May	13 May	Suborb					Simulation of Apollo Launch Escape System - White Sands
Saturn 1 (SA-6) 1964 25A	Saturn 1	28 May	1 Jun	88.5	225.2	199.5	31.8	17,645	Vehicle Development - First flight of unmanned model of the Apollo Spacecraft
Centaur Test III AC-3	Atlas Centaur	30 Jun	30 Jun	Suborb					Vehicle Development - Successful
SERT I	Scout	20 Jul	20 Jul	Suborb					Ion Engine Test - Ion beam neutralization in space verified. WI
Ranger VII 1964 41A	Atlas Agena	28 Jul	31 Jul					365.6	Lunar Photography - Camera system yielded 4316 High Resolution TV pictures.
Reentry IV	Scout	18 Aug	18 Aug	Suborb					Reentry Test - Demonstrated ability of Apollo to withstand reentry conditions at 27,950 fps. WI

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Syncom III 1964 47A	Delta	19 Aug		1436.9	35,809 GEOSYNCHRONOUS	35,794	6.0 ORBIT	37.64	Communications - Third and last of the Syncom series.
Explorer XX 1964 51A	Scout	25 Aug		103.8	1019	866	79.9	44.45	Ionosphere - Measurement of electron density distribution in the F_2 layer by topside sounding on six fixed frequencies. WTR
Nimbus I 1964 52A	Thor Agena	28 Aug		94.4	602	387	98.7	376.48	Meteorology - Earth orientation allowed complete global cloud cover pictures each 24 hours. WTR
OGO 1 1964 54A	Atlas	5 Sep		3840.1	103,827	45,880	58.8	486.71	Orbiting Geophysical Observatory - Stabilization problems - Mission Judged Unsuccessful
Saturn 1 (SA-7) 1964 57A	Saturn 1	18 Sep	22 Sep	88.4	226,869	183,426	31.7	17,781	Vehicle Development - Seventh straight Saturn 1 Success. Demonstrated Launch Escape System
Explorer XXI 1964 60A	Delta	4 Oct	Jan 66	2100	95,338	19,629	33.5	61.23	Particles and Fields - Detailed study of environment of cislunar space through cosmic ray, solar wind, and magnetic field.
RFD-2	Scout	9 Oct	9 Oct	Suborb				217.6	AEC Reactor Mockup Reentry Flight - Reimbursable
Explorer XXII 1964 64A	Scout	10 Oct		104.6	1075	887	79.7	52.61	Ionosphere - Measurement of electron content of ionosphere. WTR
Mariner III 1964 73A	Atlas	5 Nov						260	Mars flyby attempt - Shroud failed to jettison - Vehicle failure.
Explorer XXIII 1964 74A	Scout	6 Nov	29 Jun 83	98	879	453	51.9	133.8	Micrometeoroids - First extended flight test for capacitor detector. WI

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Explorer XXIV Explorer XX V 1964 76A & B	Scout	21 Nov	18 Oct 68	116 116	2495 2468	553 530	81.4 81.3	9 41	Atmospheric Physics - First NASA Dual payload - Compared charged partical energy injection with variations in atmospheric temperature and density. WTR
Mariner IV 1964 77A	Atlas	28 Nov						260	Mars Flyby - Encounter occurred 14 Jul 65 with closest approach 6118 miles. Twenty two pictures received.
Apollo Abort	Little Joe	8 Dec	8 Dec	Suborb				42,593	First test of Apollo emergency detection system at abort altitude. White Sands
Centaur IV 1964 82A	A-Centaur	11 Dec	12 Dec 64	87	172	162	30.6	2,993	Vehicle Development - Carried mass-model of Surveyor spacecraft. Successful
San Marco I 1964 84A	Scout	15 Dec	13 Sep 65	95	820	205	37.8	113	Atmospheric Physics - Launched by an Italian Crew - NASA supplied the vehicle - Cooperative with Italy WI
Explorer XXVI 1964 86A	Delta	21 Dec						46	Particled and Fields - Study of injection, trapping, and loss mechanisms of the trapped radiation belt.
									1965
Gemini II	Titan II	19 Jan	19 Jan 65	Suborb				3122	Spacecraft Development - Unmanned reentry test at maximum heating rate.
Tiros IX 1965 4A	Delta	22 Jan		119	2581	705	96.3	138	Meteorology - First "Cartwheel" configuration for increased coverage of world cloud cover.
OSO II 1965 7A	Delta	3 Feb		96	600	533	32.8	245	Solar Physics - Continuation of OSO series with added ability to scan the solar disc and part of corona.

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	
Pegasus I 1965 9A	Saturn 1 (SA-9)	16 Feb	17 Sep 78	95	589	457	31.7	1451	Micrometeroid Detector Satellite
Ranger VIII 1965 10A	Atlas	17 Feb	20 Feb						Lunar Photography - Hard landed in Sea of Tranquility - 7,137 Pictures obtained
Centaur Test V	A-Centaur	2 Mar	2 Mar	Suborb				2548	Vehicle Development - Atlas failed 4 seconds after lift-off
Ranger IX 1965 23A	Atlas	21 Mar	24 Mar						Lunar Photography - Hard landed in Crater Alphonsus - 5,814 Pictures obtained
Gemini III 1965 24A	Titan II	23 Mar	23 Mar					3225	First Manned Gemini - First US Two-Man Crew: Virgil I. Grissom and John W. Young - 3 Orbits, 4 hours 53 minutes.
Intelsat 1 F-1-28A	Delta	6 Apr		1435	35,781	35,739	6.4	39	Comsat Communications - First Comsat Satellite - Reimbursable
Explorer XXVII 1965 32A	Scout	29 Apr		108	1,316	945	41.1	61	Geodesy - To obtain description of earth's gravitational field. WI
Apollo	Little Joe	19 May	19 May	Suborb					Apollo Development - Vehicle Failed - White Sands
Fire II	Atlas	22 May	22 May	Suborb				86	Reentry Test - Second and last flight of FIRE program.
Pegasus II 1965 39A	Saturn 1	25 May		96	622	476	31.7	1451	Micrometeoroids - Near-earth micrometeoroid environment data was obtained.
Explorer XXVIII 1965 42A	Delta	29 May	4 Jul 68	8558	263,604	194	33.9	59	Particals and Fields - Continuation of IMP study of solar terrestrial relationships.
Gemini IV 1965 43A	Titan II	3 Jun	7 Jun	89	281	162	32.0	3574	Manned-James McDivitt & Edward White - 62 Orbits 97 hours 56 min. First US EVA-36 min. First personal propulsion unit.

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Tiros X 1965 51A	Delta	2 Jul		100	835	741	98.6	132	Meteorology - First Weather Bureau funded spacecraft.
Pegasus III 1965 60A	Saturn 1	30 Jul	4 Aug 69	95	567	535	28.9	1452	Micrometeoroids - Last Pegasus spacecraft - Last Saturn 1 Vehicle - 10 out of 10 Successful.
Scout Test 1965 63A	Scout	10 Aug		122	2420	1140	69.2	20	Vehicle Development - Orbited US Army Secor Geodetic Satellite. WI
Centaur Test 1964 64A	A-Centaur	11 Aug						945	Vehicle Development - Orbited Surveyor dynamic model
Gemini V 1965 68A	Titan II	21 Aug	29 Aug					3604	MANNED: Gordon Cooper & Charles Conrad - 120 Orbits 190 hours 56 min. Successfully simulated rendezvous.
OSO-C	Delta	25 Aug	25 Aug						Solar Physics - Vehicle Failed
OGO-II 1965 81A	Thor Agena	14 Oct	17 Sep 81	104	1517	415	87.4	522	Interdisciplinary Studies - Similar to OGO -I but in Polar, low altitude orbit.
Gemini VI	Atlas Agena	25 Oct	25 Oct					3253	Rendezvous and Docking Development - Vehicle exploded at ignition.
Explorer XXIX 1965 89A	Delta	6 Nov		120	2273	1117	59.3	174	Geodesy - Investigate earth's gravitational field.
Explorer XXX 1965 93A	Scout	19 Nov		100	899	682	59.7	57	Solar Physics - Monitor solar X-rays - Cooperative with NRL WI
Explorer XXXI 1965 98B	Thor Agena	29 Nov		121	2963	507	79.8	121	Ionosphere - Dual payload for swept frequency topside sounding and direct compositional measurement. Cooperative with
Alouette II 1965 98A	NA (Piggyback)			121	2935	508	79.8	146	Canada WTR

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	
Gemini VII 1965 100A	Titan II	4 Dec	18 Dec					3663	Manned - Frank Borman and James Lovell - 206 revolutions, Mission Duration - 330 hrs. 35 min.
French 1A 1965 101A	Scout	6 Dec		99	754	742	75.8	61	Study VLF wavefield in the magnetosphere and irregularities in distribution of the ionosphere. Cooperative with France.
Gemini VI-A 1965 104A	Titan II	15 Dec	16 Dec					3545	Manned - Walter Schirra and Thomas Stafford - First rendezvous Came within six feet of Gemini VII. Duration 25 hrs. 51 min.
Pioneer VI 1965 105A	Thor Delta	16 Dec						64	Study of interplanetary phenomena in ciscytherean space to within about 0.814 AU.
Apollo Abort	Little Joe	20 Jan	20 Jan	Suborb				4989	1966 Apollo Development - Last unmanned ballistic flight. White Sands
ESSA I 1966 08A	Delta	3 Feb		100	839	701	97.8	138	Meteorology - Tiros Operational Satellite for ESSA. Reimbursable
Reentry V	Scout	9 Feb	9 Feb	Suborb				95	Reentry Heating Test at 27,000 fps. WI
Apollo Saturn	Saturn 1B	26 Feb	26 Feb	Suborb				15,331	Launch Vehicle Development - Unmanned Apollo Development
ESSA II 1966 16A	Delta	28 Feb		113	1417	1356	100.9	131	Meteorology - Advanced ESSA Satellite with Automatic Picture Transmission TV System. Reimbursable
Gemini VIII 1966 20A 1966 19A	Titan II A-Agena	16 Mar 16 Mar	17 Mar 15 Sep					3550	Manned - Neil Armstrong and David Scott - First dual launch and docking with Agena. First Pacific Landing - Mission Duration - 10 hours 42 minutes.
Centaur VII	A-Centaur	8 Apr	5 May	89	334	175	30.8	785	Vehicle Development- Carried Surveyor Model

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
OAO-1 31A	A-Agena	8 Apr		100	803	790	35	1769	Astronomy - Transmission lost - Mission Judged Unsuccessful
Nimbus II 1966 40A	Thor Agena	15 May		108	1182	1096	100.4	419	Meteorology - R&D similar to Nimbus I with AVCS, APT, and HRIR. WTR
Gemini IX	A-Agena	17 May	17 May	Suborb				3252	Target Vehicle for Gemini IX - Vehicle Failed
Explorer XXXII	Delta	25 May		110	2257	257	64.6	222	Aeronomy - Study of earth's atmosphere
Surveyor I 1966 45A	A-Centaur	30 May	2 Jun 66					995	Achieved soft lunar landing on first flight - Selenological data obtained - 11,338 pictures transmitted.
Gemini IXA 1966 47A	Titan II	3 Jun	6 Jun 66					3550	Manned - Thomas Stafford and Eugene Cernan - Failed to Dock with Target Vehicle - Vehicle shroud failed to clear
1966 46A	Atlas	1 Jun	11 Jun 66						Docking Adapter - Duration 72 hrs. 21 min.-Rated Unsuccessful
OGO-III 1966 49A	A-Agena	7 Jun		2910	103,129	19,173	77.7	514	Interdisciplinary Studies - First successful OGO - first three-axis stabilization in highly elliptical earth orbit.
Pageos I 1966 56A	Thor Agena	24 Jun		180	4903	3496	86.4	111	Geodesy - Established world-wide triangulation network by optical sighting of ECHO 1 type sphere. WTR
Explorer XXXIII 1966 58A	Thor Delta	1 Jul						94	Particles and Fields - Planned achored lunar orbit not acheived however, spacecraft proformed satisfactory.
Apollo Saturn 1966 59A	Saturn 1B	5 Jul	5 Jul	88	183	212	31.98	26,535	Launch Vehicle Development - Liquid hydrogen evaluation flight of the S-IVB stage vent and restart capability.
Gemini X 1966 66A	Titan II	18 Jul	21 Jul					3550	Manned - John Young and Michael Collins - First docked Vehicle maneuvers - Stand up EVA 87 minutes - Umbilical
1966 65A	A-Agena	18 Jul	29 Dec						EVA 27 minutes - Mission Duration 70 hours 47 minutes.

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	
Lunar Orbiter 1966 73A	Titan II	10 Aug	29 Oct					383	Lunar Photography - Total of 207 sets (frames) of medium and high resolution pictures received.
Pioneer VII 1966 75A	Delta	17 Aug						64	Continued program of measurements over the solar cycle in interplanetary space - about 1.125 AU aphelion.
Apollo Saturn	Saturn 1B	25 Aug	25 Aug	Suborb				20,275	Apollo Launch Vehicle and Spacecraft Development
Gemini XI 1966 81A	Titan II	12 Sep	15 Sep					3,550	Manned - Charles Conrad and Richard Gordon - Rendezvous and docking achieved - Gordon EVA 2 hrs. 41 min. Umbilical
1966 80A	A-Agena	12 Sep	30 Dec						EVA 44 min.- Tethered spacecraft experiment.
Surveyor II 1966 84A	A-Centaur	20 Sep	23 Sep					1,000	Lunar Soft Lander - Midcourse correction not acheived - Mission Judged Unsuccessful
ESSA III 1966 87A	Delta	2 Oct		114	1488	1388	100.9	147	ESSA Meteorology - First Advanced Vidicon Camera System - Reimbursable WTR
Centaur VIII 1966 95A	A-Centaur	25 Oct	6 Nov					738	Vehicle Development - Surveyor model injected into simulated lunar transfer orbit.
Intelsat II F-1 1966 96A	Delta	26 Oct	7 Sep 82	718	37,154	3220	16.8	87	Comsat Communications Satellite - Spacecraft apogee motor failed - Reimbursable
Lunar Orbiter 1966 100A	A-Agena	6 Nov	11 Oct67					385	Lunar Photography - Total of 211 frames of medium and high resolution pictures received.
Gemini XII 1966 104A	11 Nov	15 Nov						3550	Manned - James Lovell and Edwin Aldrin - Final Gemini
1966 103A	11 Nov	23 Dec							Mission - Rendezvous and Docking - EVA 208 min. and 122 min. -

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	
ATS-1 1966 110A	A-Agena	7 Dec		GEOSYNCHRONOUS ORBIT				352	Applications Technology Satellite - Communications and Scientific experiments acheived.
Biosatellite 1 1966 114A	Delta	14 Dec	15 Feb 67	91	317	307	33.5	431	Biology Satellite - Retrofire did not occur and recovery was not possible. Mission Judged Unsuccessful.
Intelsat II F-2 1967 01A	Delta	11 Jan		GEOSYNCHRONOUS ORBIT				87	Comsta Communications Satellite - Reimbursable
ESSA IV 1967 06A	Delta	26 Jan		113	1442	1327	102.0	132	ESSA Meteorology - Polar Sun-synchronous orbit. Reimbursable WTR
Lunar Orbiter III 1967 08A	A-Agena	5 Feb	9 Oct					385	Lunar Photography - Total of 211 frames of medium and high resolution pictures received.
OSO-III 1967 20A	Delta	8 Mar	4 Apr 82	95	533	510	32.8	284	Solar Physics for obtaining high resolution spectral data with range of 8Å - 1300Å.
Telesat II F-3 1967 26A	Delta	23 Mar		GEOSYNCHRONOUS ORBIT				87	Comsat Communications Satellite - Reimbursable
ATS-II 1967 31A	A-Agena	6 Apr	2 Sep 69	218	11,177	185	28.4	324	Improper orbit resulted in limited data - Judged Unsuccessful
Surveyor III 1967 35A	A-Centaur	17 Apr	20 Apr 67					997	Achieved Lunar Soft Landing - Returned 6315 pictures. Surface Sampler discovered pebbles and 10 psi bearing strength.
ESSA V 1967 36A	Delta	20 Apr		113	1423	1357	101.8	147	ESSA Meteorology - Advanced Vidicon Camera System - Reimbursable WTR
San Marco II	Scout	26 Apr	14 Oct 67	95	801	217	2.9	129	Atmospheric Physics - Italian payload launched from Platform in the Indiam Ocean. Cooperative with Italy.

1967

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Inct.°	(kg)	
Lunar Orbiter IV 1967 38A	A-Agena	4 May	6 Oct 67					385	Lunar Photography - Returned photos of over 99% of the front side of the moon.
Ariel III 1967 42A	Scout	5 May	14 Dec 70	94	505	443	80.1	90	Atmosphere Physics - United Kingdom payload. Cooperative with UK WTR
Explorer XXXIV 1967 51A	Delta	24 May	3 May 69	6215	207,581	3618	71.3	74	Particles and Fields - Investigate the region between the magnetosheath and the shock front. WTR
ESRO II-A	Scout	29 May	29 May					69	Vehicle Failed - Cooperative with ESRO - WTR
Mariner V 1967 60A	A-Agena	14 Jun						245	Venus Flyby - Transmitted measurements of the Venus atmosphere - Closest approach - 3946 km.
Surveyor IV 1967 68A	A-Centaur	14 Jul	17 Jul 67						Spacecraft failed attempting lunar soft landing - performance nominal until last 2 seconds of 42 second retro burn.
Explorer XXXV 1967 70A	Delta	9 Jul						104	Particles and Fields - Lunar orbit achieved - No lunar magnetic field or "bow shock wave" observed.
OGO-IV 1967 73A	Thor Agena	28 Jul	16 Aug 72	96.1	751	399	85.9	562	Interdisciplinary Studies - Emphasing atmospheric/ionospheric phenomena of near-earth environment. WTR
Lunar Orbiter V 1967 75A	A-Agena	1 Aug	31 Jan 68					385	Lunar Photography - Last in the Orbiter series - Five of Five Lunar Orbiters Successful - 212 Frames received.
Biosatellite II 1967 83A	Delta	7 Sep	9 Sep 67	90.8	326	302	33.5	430	Biology - First successful US satellite for bioscience - good data on cells, plants, and animals - Recovered by aircatch.
Surveyor V 1967 84A	A-Centaur	8 Sep	11 Sep 67					1006	First Lunar night landing - Achieved alpha scatter data - Returned 18,006 photos in first lunar day.

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	
Intelsat II F-4 1967 94A	Delta	28 Sep		GEOSYNCHRONOUS ORBIT				87	Comsat Communications Satellite - Reimbursable
OSO-IV 1967 100A	Delta	18 Oct	15 Jan 82	95.5	557	525	32.9	274	Solar Physics - Continuation and expansion of data obtained by OSO of high resolution spectral data.
RAM-C-1	Scout	19 Oct	19 Oct	Suborb				116	Reentry test - Investigate communications problems on reentry.
ATS-III 1967 111A	A-Agena	5 Nov		GEOSYNCHRONOUS ORBIT					Applications Technology Satellite - communications, navigatic meteorology and earth photography.
Surveyor VI 1967 112A	A-Centaur	7 Nov	10 Nov					1008	Lunar soft landing - First lift off from lunar surface - moved ten feet to a new location.
Apollo IV 1967 113A	Saturn V	9 Nov	9 Nov					42,506	Launch Vehicle and Spacecraft Development - First Saturn V - Unmanned Apollo recovered near Hawaii.
ESSA VI 1967 114A	Delta	10 Nov		114.8	1487	1410	102.0	129	ESSA Meteorology Satellite - Reimbursable WTR
Pioneer VIII 1967 123A	Delta	13 Dec						66	Particles and Fields - Scientific measurements of inter-planetary space about 1.09 AU Aphelion.
									1968
Surveyor VII 1968 01A	A-Centaur	7 Jan	10 Jan					1040	Lunar soft landing - Last in the Surveyor series
Explorer XXXVI 1968 02A	Delta	11 Jan		112	1570	1079	105.8	212	Geodesy - Continued support of the National Geodetic Program WTR
Apollo V 1968 07A	Saturn 1B	22 Jan	24 Jan	89.5	222	162	31.6	42,506	First flight test of the Lunar Module - verified ascent and descent propulsion systems and restart operations.

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
OGO-V 1968 14A	A-Agena	4 Mar						611	Interdisciplinary Studies - First detection of electric fields in the earth's bow shock.
Explorer XXXVI 1968 17A	Scout	5 Mar		98	870	498	59.4	88	Solar Physics - NRL/NASA Cooperative Spacecraft - provided real-time solar data to scientific community. WI
Apollo VI 1968 25A	Saturn V	4 Apr	4 Apr					42,856	Launch Vehicle and Spacecraft Development - Engine problems on the vehicle - Mission judged unsuccessful
Reentry VI	Scout	27 Apr	27 Apr	Suborb				272	Reentry Heating Test - WI
ESRO IIB 1968 41A	Scout	17 May	8 May 71	96.5	869	321	97.2	89	Radiation Experiments - Measured radiation from the sun - Cooperative with ESRO - WTR
Nimbus B	Thor Agena	18 May	18 May					617	Meteorology - Vehicle destroyed by range safety officer after 2 minutes - WTR
Explorer XXXVIII 1968 55A	Delta	4 Jul		224.3	5856	5845	120.8	275	Radio Astronomy WTR
Explorer XXXIX 1968 66A	Scout	8 Aug	22 Jun 81	117.0	2340	762	80.7	79	Dual Payload to continue the detailed scientific study of density and radiation characteristics of earth's upper
Explorer XL 66B				118.3	2529	682	80.6	83	atmosphere at a time of high solar activity. WTR
ATS-IV 1968 68A	A-Centaur	10 Aug	17 Oct 68	94.0	772	217	29.0	390	Spacecraft did not separate from vehicle - performed some experiments - Mission judged unsuccessful
ESSA-VII 1968 69A	Delta	16 Aug		114.9	1476	1432	101.7	147	ESSA Meteorology Satellite - Reimbursable WTR

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	
RAM-CII	Scout	22 Aug	22 Aug	Suborb				122	*Measure electron and ion concentrations during reentry.* WI
Intelsat III F-1	Delta	19 Sep	19 Sep					282	Comsat Communications - Vehicle Failed - Reimbursable
ESRO-1 1968 84A	Scout	3 Oct	26 Jun 70	102.4	1492	262	93.8	85	Experiments to perform an integrated study of the high latitude ionosphere. Cooperative with ESRO - WTR
Apollo VII 1968 89A	Saturn 1B	11 Oct	22 Oct					51,655	Manned - Walter Schirra, Donn Eisele, and Walter Cunningham - Earth orbit operations - 10.8 days duration
Pioneer IX 1968 100A	Delta	8 Nov						665	Deep Space Probe to collect scientific dataon the electromagnetic and plasma properties of interplanetary space.
HEOS-A 1968 109A	Delta	5 Dec	28 Oct 75	6699.7	222,263	421	28.2	109	Study of interplanetary magnetic fields and of solar cosmic ray particles. ESRO Reimbursable
OAO-II 1968 110A	A-Centaur	7 Dec		100.2	776	766	34.9	2012	Astronomy investigations of celestrial objects in the ultraviolet region of the electromagnetic spectrum.
ESSA-VIII 1968 114A	Delta	15 Dec		114.6	1467	1414	101.8	136	ESSA Meteorology - Reimbursable - WTR
Intelsat III F-2 1968 116 A	Delta	18 Dec		GEOSYNCHRONOUS ORBIT				87	Comsat Communications - Reimbursable
Apollo VIII 1968 118 A	Saturn V	21 Dec	27 Dec 68					51,655	First Manned Saturn V Flight - Frank Borman, James Lovell, and William Anders - First Manned Lunar Orbit - Accomplished ten lunar orbits - Mission Duration 147 hrs. 1 min.

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	
OSO-V 1969 006A	Delta	22 Jan		95.4	550	530	32.9	281	Solar Physics to obtain high spectral resolution data within the 1Å - 1250Å range.
ISIS-A 1969 009A	Delta	30 Jan		128.3	3522	580	88.4	235	Ionospheric Experiments - Cooperative with Canada WTR
Intelsat III F-3 1969 011A	Delta	5 Feb		GEOSYNCHRONOUS			ORBIT		Comsat Communications Satellite - Reimbursable
Mariner VI 1969 014A	A-Centaur	25 Feb	11 May 71					380	Mars Flyby - Passed within 2000 miles of Mars surface and returned TV photos of surface topography.
ESSA IX 1969 016A	Delta	26 Feb		115.2	1507	1427	101.8	136	ESSA Meteorology Satellite - Reimbursable
Apollo IX 1969 018A	Saturn V	3 Mar	13 Mar					51,655	Manned - James McDivitt, David Scott, and Russel Schweichart - First manned flight with Lunar Module in earth orbit- Mission Duration 241 hrs. 1 min.
Mariner VII 1969 030A	A-Centaur	27 Mar						380	Mars Flyby - Successful Flyby at 3518 km on 5 Aug 69 - Returned photos of surface topography.
Nimbus III 1969 037A	Thor Agena	14 Apr		107	1137	1073	99.9	616	NASA Meteorology Satellite WTR
Apollo X 1969 043A	Saturn V	18 May	26 May					51,655	Manned - E. Cernan, J. Young, and T. Stafford - Major objective to descent LM to within 50,000 feet of lunar surface - Mission Duration 192 hrs. 3 min.
Intelsat III F-4 1969 045A	Thor Delta	22 May		GEOSYNCHRONOUS			ORBIT	291	Comsat Communications Satellite - Reimbursable

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	
OGO-VI 1969 051A	Thor Agena	5 Jun	12 Oct 69	99.4	1068	396	82.0	632	Interdisciplinary Studies - Last in the series of six OGOs WTR
Explorer XLI 1969 053A	Thor Delta	21 Jun	23 Dec 72	4842.8	175,672	1208	82.8	78	Particles and Fields - Continue study of the environment within and beyond the earth's magnetosphere. WTR
Biosatellite III 1969 056A	Delta	29 Jun	7 Jul 69	91.0	331	312	33.5	703	Biology - Spacecraft recovered prior to planned mission because of physiological condition of the monkey - Monkey expired 8 hrs. after recovery - Mission Judged Unsuccessful.
Apollo XI 1969 059A	Saturn V	16 Jul	24 Jul 69					51, 655	First Manned Lunar Landing - Neil Armstrong, Michael Collins, and E. Aldrin - Landed on Lunar Surface 20 July - Returned lunar soil samples - Duration 195 hrs. 18 min.
Intelsat III F-5 1969 064A	Delta	26 Jul		146	5348	266	30.3	290	Comsat Communications Satellite - Spacecraft did not achieve desired orbit - Vehicle Failure - Reimbursable
OSO-VI 1969 068A	Delta	9 Aug	7 Mar 81	95	551	489	32.9	289	Solar Physics to obtain high spectral resolution data within the 10 to 20 Kev and 1Å to 1300Å range.
ATS-V 1969 069A	A-Centaur	12 Aug		GEOSYNCHRONOUS			ORBIT		Applications Technology - Gravity Gradient Experiment Failed - Mission Judged Unsuccessful
Pioneer E	Delta	27 Aug	27 Aug					66	Deep Space Probe - Vehicle Failed
ESRO-1B 1069 083A	Scout	1 Oct	23 Nov 69	90	311	267	85.1	85	Study of ionospheric and auroral phenomena over the northern polar regions in the darkness of winter. Reimbursable WTR
GRS-A 1969 097A	Scout	8 Nov		121.9	3149	386	102.9	72	German Research Satellite - Study of the inner Van Allen belt and the auroral zones of the Northern Hemisphere - Cooperative with Germany - WTR

MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION / REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Apollo XII 1969 099A	Saturn V	14 Nov	24 Nov 69					51,655	Second Manned Lunar Landing - Charles Conrad, Richard Gordon and Alan Bean - Deployed ALSEP - Investigated Surveyor III Spacecraft - Duration 244 hrs. 36 min.
Skynet-A 1969 101A	Delta	22 Nov			GEOSYNCHRONOUS ORBIT			242	Communications Satellite for the United Kingdom located over the Indian Ocean - Reimbursable
Intelsat III F-6	Delta	14 Jan			GEOSYNCHRONOUS ORBIT			293	Comsat Communications Satellite - Reimbursable
ITOS-I 1970 008A	Delta	23 Jan		115	1479	1433	101.9	306	Meteorology - Improved Tiros Operational Satellite
SERT-II 1970 009A	Thor Agena	4 Feb		105	1007	995	99.1	503	Ion Engine Test - Operated short of its mission objective - Mission Judged Unsuccessful
NATOSAT-1	Delta	20 Mar			GEOSYNCHRONOUS ORBIT			242	NATO Communications Satellite - Reimbursable
Nimbus IV	T-Agena	8 Apr		107.2	1108	1092	80.1	619	Meteorology Satellite
Apollo XIII 1970 29A	Saturn V	11 Apr	17 Apr 70					51,655	Third Manned Lunar Landing Attempt - Lunar landing aborted because of failure in Service Module cryogenic oxygen system - James Lovell, John Swigert, and Fred Haise - Mission duration 142 hrs. 54 min. - Mission Judged Unsuccessful
Intelsat III F-7	Delta	22 Apr			GEOSYNCHRONOUS ORBIT				Comsat Communications Satellite - Reimbursable
Intelsat III F-8	Delta	23 Jul						290	Comsat - Spacecraft Failed - Reimbursable
Skynet 2	Delta	19 Aug						242	UK Communications - Vehicle Failed - Reimbursable
RAM-C	Scout	30 Sep	Suborb					134	Reentry test of radio blackout

1970

MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION / REMARKS (All launches from ETR, unless otherwise noted.)
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	
OFO-1 1970 94A	Scout	9 Nov	9 May	93	574	300	37.7	132	Orbiting Frog Otolith - Study of frogs in a weightless condition.
OAO-B	A-Centaur	30 Nov	30 Nov					2121	Orbiting Astronomical Satellite - Vehicle Failed
ITOS-A 1970 106A	Delta	11 Dec		115	1472	1422	101.9	309	Meteorology - NOAA Reimbursable
SAS-A	Scout	12 Dec	5 Apr 79	96	572	531	3.0	145	First orbiting X-ray satellite SM
Intelsat IV F-2 1971 006A	A-Centaur	25 Jan		GEOSYNCHRONOUS ORBIT				1383	Comsat Communications Satellite - First of the larger IV series - Reimbursable 1971
Apollo 14 1971 008A	Saturn V	31 Jan	9 Feb 71					51,655	Third Manned Lunar Landing - Alan Shepard, Stuart Roosa, and Edgar Mitchell. Mission Duration 216 hrs. 2 min.
NATOSAT-2	Delta	2 Feb		GEOSYNCHRONOUS ORBIT					NATO Communications Satellite - Reimbursable
Explorer 43 1971 019A	Delta	13 Mar	2 Oct 74	5967.1	196,124	9073	37.2	224	Interplanetary Monitoring Platform to study the radiation environment of the interplanetary magnetic field.
ISIS-B 1971 024A	Delta	31 Mar		113.6	1427	1359	88.1	240	Study electron production and loss and large scale transport of ionization in ionosphere. Cooperative with Canada WTR
San Marco C 1971 036A	Scout	24 Apr	29 Nov 71	94.1	722	222	3.2	159	Scientific Satellite to investigate the atmosphere - Launched at San Marco by Italian Crew - Cooperative with Italy - SM
Mariner H Mariner I 1971 051A	A-Centaur A-Centaur	8 May 30 May						1029 1030	Mars Orbiter Missions - Mariner H failed because of vehicle malfuction - Mariner I entered Mars orbit on 13 Nov 71 - Transmitted 6,876 pictures of Mars surface.
Atmosphere EX	Scout	20 Jun	20 Jun	Suborb					Atmosphere reentry test - WI

MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION / REMARKS
Name/Desig	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Explorer 44 1971 058A	Scout	8 Jul	15 Dec 79	95.2	627	433	51.0	52	Solar Physics to monitor the sun's X-ray and ultraviolet emissions. Cooperative with NRL WI
Apollo 15 1971 063A	Saturn V	26 Jul	7 Aug 71					51,655	Foruth Manned Lunar Landing - David Scott, Alfred Worden, and James Irwin - Explored with Lunar Roving Vehicle - Mission Duration 295 hrs. 12 min.
CAS/EOLE 1971 071A	Scout	16 Aug		100.6	906	677	50.1	98	Meteorological Satellite project using instrumented ballons and a satellite - Cooperative with France - WI
GRS-B	Scout	20 Sep						32	German Research Satellite to study the outer radiation belt - Cooperative Cooperative with Germany - WI
OSO-H 1971 083A	Delta	29 Sep	9 Aug 74	93.5	564	327	33.1	635	To observe the active physical processes on the sun by which the sun influences the earth and its space environment.
ITOS-B	Delta	21 Oct	21 Oct					317	NOAA Meteorology - Reimbursable - Vehicle Failed
Explorer 45 1971 096A	Scout	15 Nov		465.4	26,783	247	3.5	44	Particles and Fields - Study magnetic storms and acceleration of charged particles within the inner magnetosphere.
UK-4 1971 109A	Scout	11 Dec	12 Dec 78	95.2	591	476	82.9	101	Investigate the upper ionosphere - Cooperative with UK WTR
Intelsat IV F-3 1971 116A	A-Centaur	19 Dec		GEOSYNCHRONOUS ORBIT				1397	Comsat Communications Satellite - Reimbursable

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Intelsat IV F-4	A-Centaur	22 Jan		GEOSYNCHRONOUS ORBIT				1397	Comsat Communications Satellite - Reimbursable
HEOS A-2 1972 005A	Delta	31 Jan	2 Aug 74	7493	235,691	5269	88.4	123	Scientific Satellite at investigate interplanetary space - ESRO Reimbursable
Pioneer 10 1972 012A	A-Centaur	3 Mar						258	Jupiter Flyby - First spacecraft to fly by Jupiter and return scientific data.
TD-1 1972 014A	T-Delta	12 Mar	9 Jan 80	95	539	531	97.5	472	Scientific satellite for ESRO - Reimbursable
Apollo 16 1972 031A	Saturn V	16 Apr	27 Apr 72					51,655	Fifth manned lunar landing - J. W. Young, T. K. Mattingly, and C. M. Duke - Used Lunar Roving Vehicle - Mission duration 265 hrs. 51 min.
Intelsat IV F-5	A-Centaur	13 Jun		GEOSYNCHRONOUS ORBIT					Comsat Communications Satellite - Reimbursable
ERTS-A 058A	Delta	23 Jul		103	915	899	99.1	816	Earth Resources Technology Satellite - WTR
Explorer 46	Scout	13 Aug		98	822	504	37.7	136	Measure meteoroid penetration rates and velocity - WI
OAO-3 065A	A-Centaur	21 Aug		100	745	740	35.0	2204	Orbiting Astronomical Observatory
Transit 069A	Scout	2 Sep		101	839	742	90.1	94	US Navy Navigation Satellite - Reimbursable WTR
Explorer 47 73A	Delta	22 Sep		17,702	235,639	201,599	17.2	376	Investigate interplanetary magnetic field
ITOS-D 1972 082A OSCAR 1972 082B	Delta	15 Oct		115	1453	1448	101.8	344	Improved Tiros Operational Satellite - Meteorological Satellite for NOAA - Carried piggyback amateur radio satellite - NOAA Reimbursable

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Telesat-A (ANIK) 1972 090A	Delta	9 Nov		1436	36,803	35,774	0.1	557.1	First of a series of Canadian Domestic Communications Satellites. It has been designed to provide transmission of television, voice, data, etc. throughout Canada. (Reimbursable)
				GEOSYNCHRONOUS ORBIT					
SAS-B (Expl. 48) 1972 091A	Scout	16 Nov	20 Aug 80	95.4	632	443	1.9	185	To perform a sky survey of high energy gamma radiation from the celestial spheres, to determine the extent of primary galactic gamma radiation and to ascertain the presence of gamma ray point sources.
		(Launched by Italy for NASA from San Marco Range Facility.)							
ESRO-IV 1972 092A	Scout	21 Nov	15 Apr 74	99.0	1187	253	91.1	114.8	Investigate and measure several phenomena in the polar ionosphere. (Reimbursable) WTR
Apollo 17 (AS-512/CSM-114/LM-12) 1972 096A	Saturn V	7 Dec	19 Dec 72					51,655	Sixth and last manned lunar landing; third of the Apollo "J" series which carried the lunar rover. Flight crew E.A. Cernan (CDR), R.E. Evans (CMP), H.H. Schmitt (LMP) spent 301 hrs 52 mins. in flight. Cernan and Schmitt during the three EVAs completed a total of 22 hrs 4 min. each. The U.S.S. Ticonderoga recovered the crew and approximately 250 lbs of samples.
Nimbus E (5) 1972 097A	Delta	11 Dec		107.3	1103	1102	99.94	772	A stabilized earth-oriented platform for the testing of advanced systems, sensing, and collecting meteorological and geological data.
AEROS (German A-2) 1972 100A	Scout	16 Dec	22 Aug 73	95	864	218	96.95	125	Study the state and behavior of the upper atmosphere and ionospheric F region, especially with regard to the influence of solar ultraviolet radiation. (WTR) (International Cooperative)

1 lb = 0.4536 kg 1 mi = 1.609 km 1 NM = 1.8515 km

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Pioneer G (11) 1973-019A	A-Centaur	6 Apr		HELIOCENTRIC ORBIT			34.9	259	To obtain precursory scientific information beyond the orbit of Mars with the following emphasis: (a) investigation of the interplanetary medium; (b) investigation of the nature of the asteroid belt; (c) exploration of Jupiter and its environment.
Telesat-B (ANIK-2) 1973-023A	Delta	20 Apr		1436	35,800	35,776	0.0	560	Second of a series of Canadian Domestic Communication Satellites. Designed to transmit TV, voice, data. (Reimbursable)
				GEOSYNCHRONOUS ORBIT					
Workshop SL-1 513/SIVB-212 1973-027A	Saturn V	14 May	11 Jul 79	93.4	440	427	50.0	71,500	Unmanned - Spacecraft is comprised of an Orbital Workshop (OWS), Airlock Module (AM), Multiple Docking Adapter(MDA), Apollo Telescope Mount (ATM), Instrument Unit (IU), and Payload Shroud (PS).
First Manned Visit SL-2 206/CSM-116 1973 032A	Saturn IB	25 May	22 Jun 73	93.2	440	425	50.0	29,750	First Manned Skylab launch. Crew: Charles Conrad, Jr., (CDR); Science Test Pilot, Joseph P. Kerwin; Pilot, Paul J. Weitz. Objectives: Establish the Skylab Orbital Assembly in earth orbit, and conduct a series of medical experiments associated with the extension of manned space flight. USS Ticonderoga recovered SL-2 from the Pacific 38.5 mins after landing. Duration of mission was 28 days, 49 mins, 49 secs. Data was obtained on 46 of 55 experiments. Crew performed 3 EVA's.
Radio Astronomy Explorer B (RAE-B) (Expl.49) 1973-039A	Delta	10 Jun		LUNAR TRANSFER TRAJECTORY				328	To make measurements of galactic and solar radio noise at frequencies below ionospheric cutoffs and external to terrestrial background interference by utilization of the moon for occultation, focusing, or aperture blocking for increased resolution and discrimination.

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR; unless otherwise noted.)
ITOS-E (NOAA)	Delta	16 July	16 July	ORBIT NOT ACHIEVED				345	Operational meteorological satellite to obtain global cloud-cover data both day and night for use in weather analysis and forecasting. NASA reimbursed by NOAA for both spacecraft and launch support. Mission failed due to vehicle second stage malfunction. Launched from Western Test Range.
Second Manned Visit SL-3 207/CSM-117 1973 - 050A	Saturn IB	28 July	25 Sep	93.2	440	423	50.0	29,750	Second Manned Skylab launch. Crew: Alan L. Bean, (CDR); Science Pilot, Owen K. Garriot; Pilot, Jack Robert Lousma. The crew performed systems and operational tests, assigned experiments, and thermal shield deployment. USS New Orleans recovered SL-3 from Pacific Ocean 43 mins. after splashdown. Mission duration was 59 days, 11 hrs, 9 min, 4 sec. Crew performed 3 EVAs.
Intelsat IV F-7 1973 - 058A	A-Centaur	23 Aug		640	31,233	474	27.3	1112.2	Global commercial communications satellite system. (Reimbursable)
IMP-J (Exp. 50) 1973-078A	Delta	25 Oct		17,279	281,500	268,900	28.7	371	To perform detailed and near continuous studies of the inter-planetary environment for orbital periods comparable to several rotations of active solar regions; and to study particle and field interactions in the distant magnetotail including cross sectional mapping of the tail and neutral sheet.
Transit(NNSS/ 0-20) 1973-081A	Scout	30 Oct		105.6	1153	891	90.2	95	US Navy Navigation Satellite (WTR) (Reimbursable)

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Mariner/Venus/ Mercury-J 1973 - 085-A	A-Centaur	3 Nov		HELIOCENTRIC ORBIT				504	To conduct exploratory investigations of the planet Mercury by obtaining measurements of its environment, atmosphere, surface, and body characteristics, and to conduct similar investigations of Venus during its flyby. First priority is assigned to Mercury investigations.
ITOS-F (NOAA-3) 1973 - 086A	Delta	6 Nov		116	1512	1504	101.8	340	Operational Meteorological Satellite to obtain global cloud-cover data both day and night for use in weather analysis and forcasting. NASA is reimbursed by NOAA for both spacecraft and launch support. (WTR) (Reimbursable)
				SUN SYNCHRONOUS					
Third Manned Visit SL-4 208/CSM-118 1973-090A	Saturn IB	16 Nov	8 Feb 74	90.0	430	450	50	29,750	Third Manned Skylab launch. Crew: Gerald Carr, commander; Edward Gibson, science pilot; William Pogue, pilot. To perform unmanned Saturn Workshop operations; reactivate the Skylab orbital assembly in earth orbit; obtain medical data on the crew for use in extending the duration of manned space flights; perform inflight experiments. USS New Orleans recovered SL-4 from Pacific Ocean appox. 40 mins. after splashdown. Mission duration was 84 days, 1 hr, 16 min. Crew performed 4 EVA's.
Atmosphere Expl.-C (Expl. 51) 1973 - 101A	Delta	16 Dec	12 Dec 78	132.5	4300	154	68.1	663	To investigate the photochemical processes accompanying the absorption of solar ultraviolet radiation in the Earth's atmosphere by making closely coordinated measurements of the reacting constituents from a spacecraft with onboard propulsion to permit perigee and apogee altitudes to be varied by command.

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Skynet II-A 1974-002A	Delta	18 Jan		106.6	2009	126	37.5	435	United Kingdom Communications Satellite - Vehicle failed due to a short circuit in the electronics package of the vehicle. (Reimbursable)
Centaur Proof	Titan III E Centaur	11 Feb	11 Feb	ORBIT NOT ACHIEVED					To demonstrate the capability of the Titan III E Centaur D-1T launch vehicle, the Centaur Standard Shroud and the ability of the Integrate, Transfer Launch Facility to support operational Titan/Centaur missions. (Vehicle failure)
San Marco C-2 (San Marco-4) 1974-009A	Scout	18 Feb	4 May 76	96	930.5	234.5	2.9	170	To obtain measurements of the diurnal variations of the equatorial neutral atmosphere density, composition, and temperature. (SM) (International Cooperative)
UK-X4 1974 013A	Scout	8 Mar		101.1	926.8	727.7	97.8	92	To demonstrate an accuracy of better than 3 arc minutes using a gas jet system; to measure the performance in orbit of components of an operational infrared sensor; to check photometric calibration of the sensor to measure the density of sun-reflecting particles near the spacecraft. (WTR) (Reimbursable)
WESTAR-A (Western Union) 1974-022A	Delta	13 Apr		1415.3	35,592	35,166	.6	572	Domestic Communications Satellite to provide transmission of communications throughout the USA. (Reimbursable)
				GEOSYNCHRONOUS ORBIT					

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
SMS-A (1) 1974-033A	Delta	17 May		1309.8	35,445	31,109	1.8	243	Part of a global network of geostationary environmental satellites with the objective of providing earth imaging in the visible and IR spectrums, monitoring space environment.
					GEOSYNCHRONOUS ORBIT				
ATS-F (6) 1974-39A	Titan III C	30 May		1436	35,808	35,768	0.7	1179	Applications Technology Satellite to provide a large antenna structure capable of providing good quality TV signal to small, inexpensive ground receivers.
					GEOSYNCHRONOUS ORBIT				
HAWKEYE (Explorer 52) 1974-40A	Scout	3 Jun	28 Apr 78	3032	125,570	470	89	30.8	To study the plasma properties of the magnetosphere in the vicinity of the magnetic neutral point over the Earth's north polar cap. (WTR)
AEROS-B (2) 1974-055A	Scout	16 Jul	25 Sept 75	94.8	807	220	97.4	125	To measure the main aeronomic parameters determining the state of the upper atmosphere and the solar ultraviolet radiation in the wavelength band of main absorption. (WTR) (Germany - Reimbursable)
ANS-A (1) 1974-070A	Scout	30 Aug	14 Jun 77	99.0	1,167	254	98.1	128	Obtain specral distribution and other data from celestial X-ray and ultraviolet sources (cooperative program with the Netherlands). (WTR)
WESTAR-B (2) 1974-075A	Delta	10 Oct		1436	35,790	35,783	0.0	572	Domestic Communications Satellite - Reimbursed and operated by Western Union.
					GEOSYNCHRONOUS ORBIT				

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted).
UK-5 (AERIEL 5) 1974-077A	Scout	15 Oct	14 Mar 80	95.4	569.5	502.0	2.86	129	To investigate galactic and extragalactic X-ray sources. (SM) (International Cooperative)
ITOS-G (NOAA-4) 1974-89A	Delta	15 Nov		115	1458	1444	101.74	345	Meteorological Satellite: Constructed and launched by NASA. Reimbursed and operated by NOAA. (WTR)
INTASAT (Piggyback on ITOS-G) 1974-89C				114.8	1468	1468	101.7	15	Scientific Satellite: To measure total electron content, ionospheric irregularities and ionospheric scintillations. Cooperative with Spain.
INTELSAT IV F-8 1974-93A	A-Centaur	21 Nov		1436	35,796	35,776	0.4	1393	Communications Satellite: Reimbursed and operated by Comsat to expand the global satellite system.
				GEOSYNCHRONOUS ORBIT					
SKYNET II-B (UK) 1974-94A	Delta	22 Nov		1436	35,781	35,762	0.8	435	Communications Satellite: United Kingdom reimbursable to provide X-Band military communications.
				GEOSYNCHRONOUS ORBIT					
Helios-A 1974-097A	Titan III-E Centaur	10 Dec		HELIOCENTRIC ORBIT				370	Scientific Satellite: To investigate the properties of and processes in interplanetary space in the direction of and close to the Sun. Cooperative with West Germany.
Symphonie-A 1974-101A	Delta	17 Dec		1436	35,801	35,772	0.4	402	Communications Satellite: Joint project by France and Germany to provide communications to Europe, Africa, and South America. Reimbursable.
				GEOSYNCHRONOUS ORBIT					

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
LANDSAT-2 (Formerly ERTS) 1975-004A	Delta	22 Jan		103.32	918.23	912.89	99.090	953	Second Earth Resources Technology Satellite to locate, map, and measure earth resources parameters from space and demonstrate the applicability of this approach to the management of the worlds resources. WTR
SMS-B (2) 1975-011A	Delta	6 Feb		1436	35,801	35,776	0.1	319	Second developmental meteorological satellite to provide continuous observation of environmental phenomena and help develop an environmental network for routine observations and early warning.
				GEOSYNCHRONOUS ORBIT					
INTELSAT IV F6	A-Centaur	20 Feb		ORBIT NOT ACHIEVED					Vehicle Failure - COMSAT Communications Sat (Reimbursable)
GEOS-C (3) 1975-027A	Delta	9 Apr		101.9	844	837	115.0	340	Oceanographic and geodetic satellite to measure ocean topography, sea state, and other features of the earth. WTR
SAS-C (Expl. 53) 1975-037A	Scout	7 May	9 Apr 79	94.9	523	502	2.9	196	Scientific satellite: To search for source radiating in the X-ray, gamma ray, ultraviolet, and other spectral regions both inside and beyond our galaxy. San Marco
Telesat-C(ANIK3) 1975-038A	Delta	7 May		1436	35,793	35,783	0.0	272	Canadian Domestic Communications Satellite - Reimbursable
				GEOSYNCHRONOUS ORBIT					
Intelsat IV F-1 1975-042A	A-Centaur	22 May		1436	35,800	35,772	0.1	1400	Comsat Communications Satellite - Last of the IV series Reimbursable
				GEOSYNCHRONOUS ORBIT					
Nimbus F (6) 1975-052A	Delta	12 Jun		107.3	1103	1093	99.96	832	Meteorological Satellite - R&D of instruments for expanding capabilities for remote sensing of the atmosphere - WTR
				SUN-SYNCHRONOUS POLAR ORBIT					

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted)
OSO-I (8) 1975-57A	Delta	21 Jun		95.74	559.8	544.4	32.94	1052	Scientific satellite to study specific features of the Sun.
Apollo (ASTP) 1975-066A	Saturn IB	15 Jul	24 Jul	89.0	230	219	51.8	14,856 (CSM & DM)	Apollo Soyuz Test Project (ASTP) Manned: T. P. Stafford, V. Brand and D. K. Slayton - Docked with Soyuz 19 on 17 July Mission duration 217 hrs. 28 minutes
COS-B 1975-072A	Delta	8 Aug		2277	101,056	343	90.2	277	Cosmic Ray Satellite to study Extraterrestrial Gamma Radiation - Launched for the European Space Agency (WTR). Reimbursable
Viking-A (1) 1975-075A	Titan III Centaur	20 Aug	Lander 20 Jul 76	TRANS-MARS TRAJECTORY				Lander 1180 Orbiter 2360	Scientific Investigation of Mars - United States' first attempt to soft land a spacecraft on another planet. Successfully soft landed on 20 Jul 76 - First in situ analysis of surface material on another planet.
Symphonie-B 1975-77A	Delta	26 Aug		1436	35,800	35,772	0.1	402	Communications Satellite - French/German Cooperative - Reimbursable
				GEOSYNCHRONOUS ORBIT					
Viking-B (2) 1975-83A	Titan III Centaur	9 Sept	Lander 3 Sep 76	TRANS-MARS TRAJECTORY				Lander 1180 Orbiter 2360	Scientific Investigation of Mars - United States' Second attempt to soft land on Mars - Successfully soft landed on 3 Sep 76. Successfully returned scientific data.
Intelsat IVA F-1 1975 - 091A	A-Centaur	25 Sept		1436	35,792	35,779	0.1	1515	First in a series of improved COMSAT Communications Satellites- Double the capacity of previous Intelsats. Reimbursable.
				GEOSYNCHRONOUS ORBIT					

1 lb = 0.4436 kg 1 mi = 1.609 km 1NM = 1.8515 km

MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
AE-D (Expl. 54) 1975-096A	Delta	6 Oct	12 Mar 76	126.9	3816	154	90.1	675	Scientific satellite to investigate the chemical processes and energy transfer mechanisms which control Earth's atmosphere-WTR
U.S. Navy 1975-099A	Scout	12 Oct		95.3	703	359	90.7	160	Navy Transit Navigation Satellite - WTR - Reimbursable
SMS-C (GOES-A) 1975-100A	Delta	16 Oct		1443	36,082	35,775	1.0	628	Geostationary Operational Environmental Satellite - Constructed and launched by NASA - Funded and Reimbursed by NOAA.
					GEOSYNCHRONOUS ORBIT				
AE-E (Expl. 55) 1975-107A	Delta	20 Nov	10 Jun 81	118.0	3025	157	19.7	720	Scientific satellite to investigate the chemical processes and energy transfer mechanisms which control Earth's atmosphere.
DAD-A/B	Scout	5 Dec			ORBIT NOT ACHIEVED			A-40 B-43	Scientific satellite to measure global density of upper atmosphere and lower exosphere - Vehicle failed - WTR
RCA-A 1975-117A	Delta	13 Dec		1439	36,085	35,625	0.3	868	Communication Satellite - First RCA Domestic Communications Satellite (Reimbursable)
					GEOSYNCHRONOUS ORBIT				

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MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Helios-B (2) 1976-003A	Titan III Centaur	15 Jan		HELIOCENTRIC ORBIT				370	Scientific satellite to investigate the properties in interplanetary space close to the Sun - Cooperative with Germany
CTS 1976-004A	Delta	17 Jan		1392	36,022	33,814	0.7	355	Experimental High Powered Communications Satellite - Cooperative with Canada
				GEOSYNCHRONOUS ORBIT					
Intelsat IVA-F2 1976-010A	A-Centaur	29 Jan		1424	35,901	35,216	0.1	1515	Comsat Communications Satellite - Reimbursable
				GEOSYNCHRONOUS ORBIT					
Marisat-A (1) 1976-017A	Delta	19 Feb		1436	35,867	35,703	2.4	317	Comsat Maritime Communications Satellite - Reimbursable
				GEOSYNCHRONOUS ORBIT					
RCA-B 1976-029A	Delta	26 Mar		1435	35,882	35,642	0.3	868	Second RCA (Satcom) Domestic Communications Satellite - Reimbursable
				GEOSYNCHRONOUS ORBIT					
NATO-III A 1976-035A	Delta	22 Apr		1436	35,791	35,783	2.2	310	Communications Satellite for the North Atlantic Treaty Organization - Reimbursable
				GEOSYNCHRONOUS ORBIT					
LAGEOS 1976-039A	Delta	4 May		225	5,944	5,835	109	411	To demonstrate the feasibility and utility of a ground-to-satellite laser system to contribute to the study of solid-earth dynamics. WTR
Comstar-1A 1976-042A	A-Centaur	13 May		1423	35,802	35,269	0.1	1490	Comsat's first Domestic Communications Satellite - Reimbursable
				GEOSYNCHRONOUS ORBIT					

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MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Air Force Test 1976-047A	Scout	22 May		105	1058	994	100	73	To evaluate certain propagation effects of disturbed plasmas on radar and communications systems. Reimbursable - WTR
					SUN SYNCHRONOUS ORBIT				
Marisat-B 1976-053A	Delta	9 Jun		1436	35,807	34,788	2.5	317	Comsat Maritime Communications Satellite - Reimbursable.
					GEOSYNCHRONOUS ORBIT				
Gravity Probe-A	Scout	18 Jun			SUB-ORBITAL FLIGHT			102	Scientific probe to test Einstein's Theory of Relativity - WI
Palapa-A 1976-066A	Delta	8 Jul			GEOSYNCHRONOUS ORBIT OVER INDONESIA			575	Indonesian Communications Satellite - Reimbursable.
Comstar-B 1976-073A	A-Centaur	22 Jul		1425	35,747	35,388	0.2	1490	Comsat's Second Domestic Communications Satellite - Reimbursable
					GEOSYNCHRONOUS ORBIT				
ITOS-H 1976-077A	Delta	29 Jul		116	1,518	1,503	102	340	Meteorological Satellite - Redesignated NOAA-5 - Reimbursable WTR
U.S. Navy TIP 3 1976-089A	Scout	1 Sep	30 May 81	96	787	341	90	166	Transit Improvement Program (TIP) U.S. Navy Navigation Satellite - Reimbursable - WTR
Marisat-C 1976-101A	Delta	14 Oct		1436	36,525	35,051	2.6	317	Comsat Maritime Communications Satellite (Reimbursable)
					GEOSYNCHRONOUS ORBIT				

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MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
NATO III B 1977 005A	Delta	27 Jan		104	35962	35463	2.8	670	NATO Communications Satellite - Reimbursable
					GEOSYNCHRONOUS ORBIT				
Palapa-B 1977 018A	Delta	10 Mar		1451	36250	35915	0.1	575	Indonesian Communications Satellite - Reimbursable
					GEOSYNCHRONOUS ORBIT				
GEOS/ESA 1977 029A	Delta	20 Apr		227	11710	241	26	575	ESA Scientific Satellite to investigate waves and particles in the magnetosphere - Rated unsuccessful by NASA - Reimbursable
					PLANNED ORBIT NOT ACHIEVED				
Intelsat IVA F-4 1977 041A	A-Centaur	26 May		1425	35755	35346	0.3	1515	Comsat Communications Satellite - Reimbursable
					GEOSYNCHRONOUS ORBIT				
GOES/NOAA 1977 048A	Delta	16 Jun		1436	36304	35267	0.9	635	Geostationary Operational Environmental Satellite - Second in a series launched for NOAA - Reimbursable
					GEOSYNCHRONOUS ORBIT				
GMS/Japan 1977 065A	Delta	14 Jul		1429	35779	35531	1.2	670	Geostationary Meteorological Satellite - First GMS launched for Japan - Reimbursable
					GEOSYNCHRONOUS ORBIT				
HEAO-A 1977 075A	A-Centaur	12 Aug		93.5	456	431	22.7	2551	Scientific Satellite - High Energy Astronomy Observatory to study and map x-rays and gamma rays.
Voyager-2 1977 076A	T-III Centaur	20 Aug		SOLAR SYSTEM ESCAPE TRAJECTORY				2080	Scientific Satellite to study Jupiter and Saturn Planetary Systems including their satellites and Saturn's rings.
SIRIO/Italy 1977 080A	Delta	25 Aug		1409	36327	34210	0.2	398	Scientific Satellite - Italian project to investigate trapped radiation flux, magnetic field intensity and variation, and the primary electron energy spectrum. Reimbursable
					GEOSYNCHRONOUS ORBIT				

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MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Voyager 1 1977 084A	T-III Centaur	5 Sep		SOLAR SYSTEM ESCAPE TRAJECTORY				2080	Scientific Satellite - Second Voyager launched to investigate Jupiter and Saturn Planetary Systems.
OTS/ESA	Delta	13 Sep		ORBIT NOT ACHIEVED				865	Orbital Test Satellite. ESA experimental communications satellite. Vehicle Failure - Reimbursable
Intelsat IVA F-5	A-Centaur	29 Sep		ORBIT NOT ACHIEVED				1515	Comsat Communications Satellite - Vehicle Failure - Reimbursable
ISEE-A/B 1977 102 A&B	Delta	22 Oct		A-2.4 B-2.4	138124 138330	280 279	28.7 28.7	329 158	International Sun-Earth Explorer. Joint NASA/ESA mission to study the interaction of the interplanetary medium with Earth's immediate environment - Dual Payload - Cooperative
Navy Transat 1977 106A	Scout	28 Oct		107	1106	1067	89.9	93	US Navy Navigation Satellite - WTR - Reimbursable
Meteosat (ESA) 1977 108A	Delta	22 Nov		1411	35,692 GEOSYNCHRONOUS ORBIT	34,913	0.7	697	ESA Meteorological Satellite - Europes contribution to the Global Atmospheric Research Program (GARP) - Reimbursable
CS/Japan 1977 118A	Delta	14 Dec		1439	36,157 GEOSYNCHRONOUS ORBIT	35,567	0.0	677	Communications Satellite (CS) - Launched for Japan Reimbursable

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Intelsat IVA F-3 1978 002A	A-Centaur	7 Jan		1436	35,794	35,780	0.3	1515	Comsat Communications Satellite - Reimbursable
					GEOSYNCHRONOUS ORBIT				
IUE-A 1978 012A	Delta	26 Jan		1436	45,869	25,722	28.6	700	International Ultraviolet Explorer to obtain high resolution data of stars and planets in the ultraviolet region of the spectrum, Cooperative with ESA.
FLTSATCOM-A 1978 016A	A-Centaur	9 Feb		1436	35,818	35,753	2.6	1863	Fleet Satellite Communications for the USN and the USAF - Reimbursable
					GEOSYNCHRONOUS ORBIT				
Landsat-C 1978 026A	Delta	5 Mar		103	914	890	99.1	900	Third NASA Earth Resources Technology Satellite - WTR Piggybacks - Oscar-8 & Plasma Experiment (PIX)
Intelsat IVA F-6 1978 035A	A-Centaur	31 Mar		1436	35,851	35,730	0.3	1515	Comsat Communications Satellite - Reimbursable
					GEOSYNCHRONOUS ORBIT				
BSE/Japan 1978 039A	Delta	7 Apr		1415	35,661	35,114	0.0	675	Broadcasting Satellite Experimental - Japanese Communications satellite for conducting TV broadcast experiments - Reimbursable
					GEOSYNCHRONOUS ORBIT				
HCMM/AEM-A 1978 041A	Scout	26 Apr	22 Dec 81	96.7	646	558	97.6	134	Heat Capacity Mapping Mission to produce thermal maps for discrimination of rock types, mineral resources, plant temperatures, soil moisture, snow fields and water runoff - WTR
OTS-B 1978 044A	Delta	11 May		1436	35,796	35,784	0.1	865	Orbital Test Satellite - ESA experimental communications satellite - Reimbursable.
					GEOSYNCHRONOUS ORBIT				

MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Pioneer/Venus-A 1978 051A	A-Centaur	20 May		TRANS-VENUS TRAJECTORY				582	Planetary mission to Venus. Orbiter to measure upper atmosphere and ionosphere, study interaction between solar wind and ionosphere and magnetic field, study atmospheric and surface characteristics, determine gravitational field harmonics.
GOES-C/NOAA 1978 062A	Delta	16 Jun		649	36,709	791	23.9	635	Part of global network of geostationary environmental satellites to provide Earth imaging, monitor the space environment, and relay meteorological data to users. Reimbursable
				GEOSYNCHRONOUS ORBIT					
Seasat-A 1978 064A	Atlas-F	26 Jun		100.6	798	775	108	2290	Sea Satellite for global monitoring of ocean geoid, wave topography, surface wind speed and direction, ocean surface temperatures, and ice field extent and dynamics - WTR
		Successful Rating to be Determined by the Seasat Review Board							
Comstar D-3 1978 068A	A-Centaur	29 Jun		629	35,852	550	21.8	1518	Third in a series of domestic communications satellites for Comsat - Reimbursable
				GEOSYNCHRONOUS ORBIT					
GEOS-B/ESA 1978 071A	Delta	14 Jul		626	35,542	213	25.8	575	ESA spacecraft to conduct scientific investigation of waves and particles in magnetosphere. Reimbursable
Pioneer/Venus-B 1978 078A	A-Centaur	8 Aug		TRANS-VENUS TRAJECTORY				898	Multiprobe - four hard landers - to determine nature and composition structure and general circulation pattern of the atmosphere of Venus from the surface to high altitudes.
ISEE-C 1978 079A	Delta	12 Aug		67,852	1,089,202	181	28.9	479	International Sun Earth Explorer. An extension of interplanetary studies with the spacecraft toward the Sun sufficiently outside the Earth's influence for comparison with results of ISEE-A and B missions and of probes to outer planets. Cooperative with ESA
Tiros-N 1978 096A	Atlas-F	13 Oct		102	865	850	98.9	1405	Polar orbiting operational spacecraft to provide improved meteorological data for NOMMS and provide support to GARP. Piggyback Payload (Oscar-7) - WTR

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Nimbus-G 1978 098A	Delta	24 Oct		104	954	953	99.28	987	Develop and flight test advanced sensors and technology basic to conducting experiments in the pollution monitoring, oceanographic and meteorological disciplines. A piggyback payload called CAMEO (Chemically Active Material Ejected in Orbit) was ejected to study the boundary structure between the polar cap and the auroral belt. WTR
HEAO-B 1978 103A	A-Centaur	13 Nov	25 Mar 82	95.3	543	522	23.5	3151	Second High Energy Astronomical Observatory to study very energetic radiation from space.
NATO-III C 1978 106A	Delta	19 Nov		632	35,891	184	27.2	706	NATO Communications Satellite - Reimbursable
					GEOSYNCHRONOUS ORBIT				
Telesat-D 1978 116A	Delta	16 Dec		632	35,896	185	27.3	442	Canadian Domestic Communications Satellite - Reimbursable
					GEOSYNCHRONOUS ORBIT				

MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
SCATHA 1979 007A	Delta	30 Jan		HIGHLY ELLIPTICAL ORBIT ELEMENTS NOT MAINTAINED				658	USAF Scientific Mission - Spacecraft Charging at High Altitudes (SCATHA) to investigate electrical static discharges that effect satellites - Reimbursable
SAGE 1979 013A	Scout	18 Feb		96.7	661	548	54.9	127	Applications Explorer Mission (AEM-2) - Stratospheric Aerosol Gas Experiment (SAGE) - to map vertical profiles of ozone, aerosol, nitrogen dioxide, and Rayleight molecular extinction around the globe. WFC
FLTSATCOM-B 1979 038A	A-Centaur	4 May		GEOSYNCHRONOUS ORBIT ELEMENTS NOT MAINTAINED				1876	Fleet Satellite Communications to provide communications for the USAF and USN - Reimbursable
UK-6 1979 047A	Scout	2 Jun		97.3	658	596	55.8	155	United Kingdom Scientific Satellite to measure ultra-heavy cosmic ray particles and study low-energy cosmic x-rays. WFC - Reimbursable
NOAA-6 1979 057A	Atlas-F	27 Jun		101.3	826	810	98.8	723	Meteorological Satellite for the National Oceanographic & Atmospheric Administration - Reimbursable - WTR
Westar-C 1979 072A	Delta	9 Aug		GEOSYNCHRONOUS ORBIT				577	Domestic Communications Satellite for Western Union - Reimbursable
HEAO-3 1979 082A	A-Centaur	20 Sep	7 Dec 81	94.5	501	486	43.6	2898	High Energy Astronomy Observatory to survey cosmic rays and gamma rays.
Magsat 1979 94A	Scout	30 Oct	11 Jun 80	93.9	352	578	96.8	183	Applications Explorer Mission (AEM-3) to map the magnetic field of the Earth - WTR
RCA-C 1979 100A	Delta	6 Dec		94.3	19,323	90	23.8	895	Domestic Communications Satellite for RCA - Lost contact at Apogee Motor Firing. Reimbursable

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Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless othewise noted.)
FLTSATCOM-C 1980 4A	A-Centaur	17 Jan		GEOSYNCHRONOUS ORBIT				1865	Fleet Satellite Communications to provide communications for the USAF and USN - Reimbursable
SMM-A 1980 14A	Delta	14 Feb		96	571	562	28.5	2315	Solar Maximum Mission to study the solar activity during the maximum of solar flares and related phenomena.
NOAA-7 1980 043A	Atlas-F	29 May		101	1434	267	92.2	1405	Meteorological Satellite for NOAA - Vehicle failed to place payload into proper orbit - WTR - Reimbursable
GOES-D 1980 074A	Delta	9 Sep		GEOSYNCHRONOUS ORBIT				832	Geostationary Operational Environmental Satellite for NOAA - Reimbursable
FLTSATCOM-D 1980 087A	A-Centaur	31 Oct		GEOSYNCHRONOUS ORBIT				1876	Fleet Satellite Communications to provide communications for the USAF and USN - Reimbursable
SBS-A 1980 091A	Delta	15 Nov		GEOSYNCHRONOUS ORBIT				1057	Satellite Business Systems (SBS) - Domestic Communications Satellite - Reimbursable
INTELSAT V-A 1980 098A	A-Centaur	6 Dec		GEOSYNCHRONOUS ORBIT				1928	Comsat Communications Satellite - Reimbursable

MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name, Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
Comstar D 1981 018A	A-Centaur	21 Feb		GEOSYNCHRONOUS ORBIT				1516	Comsat Domestic Communications Satellite - Reimbursable
STS-1 1981 034A	Shuttle (Columbia)	12 Apr	14 Apr	89.4	250	238	40.3	NA	First Orbital Flight - Commander John Young and Pilot Robert Crippen - Mission Duration 54 hrs. 21 min.
NOVA-1 1981 044A	Scout	15 May		NO ELEMENTS AVAILABLE				167	US Navy Navigation Satellite - Reimbursable - WTR
GOES-E 1981 049A	Delta	22 May		GEOSYNCHRONOUS ORBIT				837	Geosynchronous Operational Environmental Satellite for NOAA - Reimbursable
Intelsat V-B 1981 050A	A-Centaur	23 May		GEOSYNCHRONOUS ORBIT				1928	Comsat Communications Satellite - Reimbursable
NOAA-C 1981 059A	Atlas-F	23 Jun		GEOSYNCHRONOUS ORBIT				1405	NOAA Meteorological Satellite - Reimbursable - WTR
DE-A & B 1981 070 A & B	Delta	3 Aug	8-19 Feb 83	437.9 97.8	24,775 999	672 303	90.0 90.0	403 415	Dynamics Explorer - NASA scientific mission to study the Earth's electromagnetic fields. (Dual Payload) - WTR
FLTSATCOM-E 1981 073A	A-Centaur	6 Aug		GEOSYNCHRONOUS ORBIT				1876	Fleet Satellite Communications for DOD - Reimbursable
SBS-B 1981 096A	Delta	24 Sep		GEOSYNCHRONOUS ORBIT				1057	Satellite Business Systems - Domestic Communications Satellite - Reimbursable
SME 1981 100A	Delta	6 Oct		95.3	534	533	98.0	425	Solar Mesosphere Explorer - NASA scientific mission to study the nature and magnitude of changes in the mesosphere ozone.
STS-2 1981 111A	Shuttle (Columbia)	12 Nov	14 Nov	88.9	229	219	38.0	2542	Second Orbital Flight and the First Payload - Commander Joe Engle and Pilot Richard Truly-Mission Duration 54 hrs. 13 min. The OSTA-1 payload demonstrated the Shuttle's capabilities to conduct scientific research in the attached mode.
RCA-D 1981 114A	Delta	19 Nov		GEOSYNCHRONOUS ORBIT				1082	RCA Communications Satellite - Reimbursable
Intelsat V F-3 1981 119A	A-Centaur	15 Dec		GEOSYNCHRONOUS ORBIT				1928	Comsat Communications Satellite - Reimbursable

MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
RCA-IV / 004	Delta	16 Jan		GEOSYNCHRONOUS ORBIT				1082	RCA Communications Satellite - Reimbursable
Westar-IV / 014	Delta	25 Feb		GEOSYNCHRONOUS ORBIT				1072	Space Communications Company Satellite - Reimbursable
Intelsat V-D /017	A/Centaur	4 Mar		GEOSYNCHRONOUS ORBIT				1928	Comsat Communications Satellite - Reimbursable
STS-3 / 022	Shuttle (Columbia)	22 Mar	30 Mar	89.4	247	239	38.0	OSS-1 3720	Third orbital flight-Commander, Jack R. Lousma, Pilot, Charles G. Fullerton - One major payload - the OSS-1 conducted scientific experiments from the cargo bay -was not released from the Shuttle - Landed at White Sands - Mission Duration 192 hrs. 5 min.
Insat 1-A / 031	Delta	10 Apr		GEOSYNCHRONOUS ORBIT				1152	Indian Communications Satellite - Reimbursable
Westar-V / 058	Delta	8 Jun		GEOSYNCHRONOUS ORBIT				1105	Space Communications Company Satellite - Reimbursable
STS-4 / 069	Shuttle (Columbia)	27 Jun	4 Jul	90.6	307	297	28.5	DOD Classified	Fourth orbital flight-Commander, Thomas K. Mattingly, Pilot, Henry W. Hartsfield - One major payload - A Classified DOD Mission Duration - 169 hrs. 10 min.
Landsat D / 072	Delta	16 Jul		95.1	695	678	98.3	1942	NASA Spacecraft to study Earth resources - WTR
Telesat G / 082	Delta	26 Aug		GEOSYNCHRONOUS ORBIT				1238	Canadain Communications Satellite - Reimbursable
Intelsat V-D/097	A/Centaur	28 Sep		GEOSYNCHRONOUS ORBIT				1928	Comsat Communications Satellite - Reimbursable
RCA-E / 105	Delta	28 Oct		GEOSYNCHRONOUS ORBIT				1024	RCA Communications Satellite - Reimbursable
STS-5 / 110	Shuttle (Columbia)	11 Nov	16 Nov	90.0	259	257	28.5	SBS-1058 Telesat-1238	Commander, Vance Brand, Pilot, Robert Overmyer, Mission Spec Joseph Allen & William Lenoir - Two major payloads - SBS-C & the Telesat E - Mission Duration 122 hrs. 15 min.

NASA Major Launch Record

MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION / REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless otherwise noted.)
IRAS 1983 004A	Delta	25 Jan		97.6	656	627	81.2	1077	Infrared Astronomical Satellite - Cooperative with Netherlands
NOAA-8 022A	Atlas-F	28 Mar		101.2	829	806	98.8	1712	Meteorological Satellite - Reimbursable - WTR
STS-6 1983 026A	Shuttle Challenger	4 Apr	9 Apr	90.3	293	284	28.5	TDRS 2146	Commander, Paul Weitz, Pilot, Karol Bobko, Mission Specs., Donald Peterson and Story Musgrave - One Major Payload, the TDRS - Mission Duration - 120 hrs. 24 min.
RCA-F 030A	Delta	11 Apr			GEOSYNCHRONOUS ORBIT			1116	Communications Satellite - Reimbursable
GOES-6 041A	Delta	28 Apr			GEOSYNCHRONOUS ORBIT			838	NOAA Environmental Satellite - Reimbursable
Intelsat V-F 047A	A/Centaur	19 May			GEOSYNCHRONOUS ORBIT			1928	Communications Satellite - Reimbursable
Exosat 051A	Delta	26 May		5430	191570	355	72.5	510	ESA X-Ray Satellite - Reimbursable - WTR
STS-7 1983 059A	Shuttle Challenger	18 Jun	24 Jun	90.5	300	295	28.5	Telesat 4443 Palapa 4521	Commander, Robert Crippen, Pilot, Frederick Hauck, Mission Specs., John Fabian, Sally Ride, Norman Thagard - Two Communications Satellites placed in Orbit - Palapa for Indonesia and Telesat for Canada - Reimbursable - Duration 146 hrs 24 min
AF P83-1 063A	Scout	27 Jun		100.9	837	771	82.0	113	Study Communications Problems - Reimbursable - WTR
Galaxy-1 065A	Delta	28 Jun			GEOSYNCHRONOUS ORBIT			519	Hughes Communications Satellite - Reimbursable
Telstar 3A 077A	Delta	28 Jul			GEOSYNCHRONOUS ORBIT			635	AT&T Communications Satellite - Reimbursable
STS-8 1983 089A	Shuttle Challenger	30 Aug	5 Sep	90.6	310	299	28.4	INSAT 1114	Commander, R.H.Truly, Pilot, D.C. Brandenstein, Mission Specs., D.A.Gardner, W.E.Thornton, and G.S.Bluford - Major Payload - Indian Communications Satellite -Reimbursable Mission Duration - 145 hrs. 8 min. 42 sec.
RCA-G 094A	Delta	8 Sep			GEOSYNCHRONOUS ORBIT			1121	Communications Satellite - Reimbursable

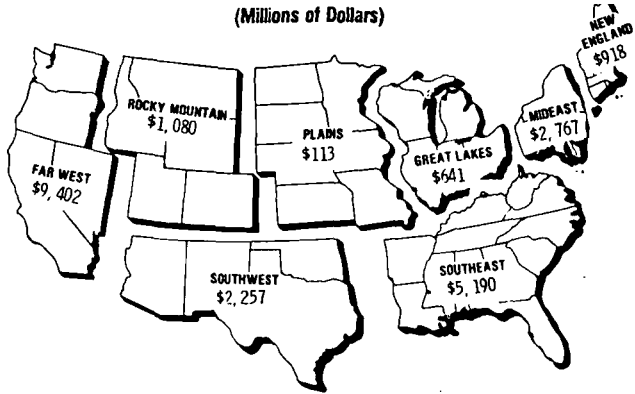
MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION / REMARKS (All launches from ETR, unless otherwise noted.)
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	
Galaxy-2 098A	Delta	22 Sep			GEOSYNCHRONOUS ORBIT			519	Hughes Communications Satellite - Reimbursable
STS-9 1983 116A	Shuttle Columbia	28 Nov	8 Dec	89.5	254	242	57.0	Spacelab 12,753	Commander, J.W.Young, Pilot, B.W.Shaw, Payload Specs., Dr. B.K.Lichtenberg & Dr. U.Merbold, Mission Specs., Dr. O.W.*Garriott* & Dr. R.A.R.*Parker* - One Major Payload - Mission Duration - 247 hrs. 47 min.

Section C

Funding, Manpower, & Facilities

U.S. GEOGRAPHICAL DISTRIBUTION OF NASA PRIME CONTRACT AWARDS*

TOTAL - FISCAL YEARS 79 THROUGH 83
(Millions of Dollars)



*Excludes smaller procurements, generally those of less than $10,000; also excludes awards placed through other Government agencies, awards outside the U.S., and actions on the JPL contracts.

NASA CONTRACT AWARDS BY STATE (FY 83)

STATE	PRIME CONTRACT AWARDS TO STATE AMOUNT	% OF TOTAL
TOTAL	**$5,667,594**	**100.0**
Alabama	117,122	2.1
Alaska	2,301	*
Arizona	29,123	0.5
Arkansas	47	*
California	2,131,242	37.6
Colorado	153,377	2.7
Connecticut	172,209	3.0
Delaware	1,647	*
District of Columbia	30,019	0.5
Florida	773,978	13.7
Georgia	11,874	0.2
Hawaii	5,469	0.1
Idaho	295	*
Illinois	12,658	0.2
Indiana	13,577	0.2
Iowa	4,076	0.1
Kansas	6,302	0.1
Kentucky	1,278	*
Louisiana	344,292	6.1
Maine	278	*
Maryland	407,970	7.2
Massachusetts	61,548	1.1
Michigan	7,317	0.1
Minnesota	6,294	0.1
Mississippi	38,451	0.7
Missouri	5,759	0.1
Montana	79	*
Nebraska	496	*
Nevada	568	*
New Hampshire	4,660	0.1
New Jersey	74,102	1.3
New Mexico	21,703	0.4
New York	51,838	0.9
North Carolina	5,701	0.1
Ohio	78,860	1.4
Oklahoma	4,353	0.1
Oregon	2,918	0.1
Pennsylvania	104,320	1.8
Rhode Island	1,243	*
South Carolina	413	*
South Dakota	324	*
Tennessee	7,891	0.1
Texas	526,331	9.3
Utah	253,518	4.5
Vermont	250	*
Virginia	157,184	2.8
Washington	21,909	0.4
West Virginia	92	*
Wisconsin	9,820	0.2
Wyoming	518	*

*Less than .05 percent.

Financial Summary

(In Millions of Dollars) As of 30 Sep 83

FISCAL YEAR	TOTAL APPROPRIATIONS	TOTAL DIRECT OBLIGATIONS	OUTLAYS			
			TOTAL	RESEARCH AND DEVELOPMENT (R&D)	CONSTRUCTION OF FACILITIES (CoF)	RESEARCH AND PROG. MGMT. (R&PM)
1959	330.9	298.7	145.5	34.0	24.8	86.7
1960	523.6	486.9	401.0	255.7	54.3	91.0
1961	966.7	908.3	744.3	487.0	98.2	159.1
1962	1,825.3	1,691.7	1,257.0	935.6	114.3	207.1
1963	3,674.1	3,448.4	2,552.4	2,308.4	225.3	18.7
1964	5,100.0	4,864.8	4,171.0	3,317.4	437.7	415.9
1965	5,250.0	5,500.7	5,092.9	3,984.5	530.9	577.5
1966	5,175.0	5,350.5	5,933.0	4,741.1	572.5	619.4
1967	4,968.0	5,011.7	5,425.7	4,487.2	288.6	649.9
1968	4,588.9	4,520.4	4,723.7	3,946.1	126.1	651.5
1969	3,995.3	4,045.2	4,251.7	3,530.2	65.3	656.2
1970	3,749.2	3,858.9	3,753.1	2,991.6	54.3	707.2
1971	3,312.6	3,324.0	3,381.9	2,630.4	43.7	707.8
1972	3,310.1	3,228.6	3,422.9	2,623.2	50.3	749.4
1973	3,407.6	3,154.0	3,315.2	2,541.4	44.7	729.1
1974	3,039.7	3,122.4	3,256.2	2,421.6	75.1	759.5
1975	3,231.2	3,265.9	3,266.5	2,420.4	85.3	760.8
1976	3,551.8	3,604.8	3,669.0	2,748.8	120.9	799.3
TQ	932.2	918.8	951.4	730.7	25.8	194.9
1977	3,819.1	3,858.1	3,945.3	2,980.7	105.0	859.6
1978	4,063.7	4,000.3	3,983.1	2,988.7	124.2	870.2
1979	4,561.2	4,557.5	4,196.5	3,138.8	132.7	925.0
1980	5,243.4	5,098.1	4,851.6	3,701.4	140.3	1,009.9
1981	5,522.7	5,606.2	5,421.2	4,223.0	146.8	1,051.4
1982	6,020.0	5,946.7	6,035.4	4,796.4	109.0	1,130.0
1983	6,837.7	6,723.9	6,663.9	5,316.2	108.1	1,239.6

R&D Funding By Program

(In Millions of Dollars) As of 30 Sep 83

	FY 1983	FY 1982	FY 1981	FY 1980	FY 1979	FY 1978	FY 1977 & Prior
OFFICE OF SPACE FLIGHT							
Space Shuttle	1,699.1	2,098.2	1,994.7	1,870.3	1,637.6	1,348.8	4,600.3
Space Flight Operations	1,772.1	902.1	676.2	446.6	299.7	263.8	3,950.6
STS Oper Capability Dev	(279.5)	(201.5)	(223.5)	(112.9)	(89.9)	(65.4)	(65.4)
Development Test & Mission Spt	(70.1)	(182.8)	(183.5)	(172.6)	(177.2)	(171.9)	(1,051.1)
Advanced Programs	(12.6)	(9.7)	(8.8)	(13.0)	(7.0)	(10.0)	(188.9)
STS Operations	(1,409.9	(508.1)	(260.4)	(148.1)	(25.6)	(16.5)	(--)
Skylab	--	(--)	(--)	(--)	(--)	(--)	(2,428.3)
Apollo Soyuz Test Project	--	(--)	(--)	(--)	(--)	(--)	(216.9)
Expendable Launch Vehicles	82.9	31.1	54.4	67.4	73.6	136.5	2,297.4
Completed Programs							22,023.5
Apollo							(20,446.7)
Gemini							(1,281.0)
Others							(295.8)
TOTAL	3,554.1	3,031.4	2,725.3	2,384.3	2,010.9	1,749.1	32,871.8

R&D Funding By Program

(In Millions of Dollars) As of 30 Sep 83	FY 1983	FY 1982	FY 1981	FY 1980	FY 1979	FY 1978	FY 1977 & Prior
OSSA							
Current Programs							
Physics & Astronomy	480.8	318.2	320.0	335.6	281.8	223.1	2,193.0
Planetary Exploration	180.0	205.0	174.1	219.4	181.9	146.7	3,551.7
Life Sciences	55.6	39.5	42.2	43.8	40.1	33.3	146.0
Space Applications	331.4	325.0	325.7	328.5	271.9	232.1	2,095.1
Prior Programs							
Manned Space Science	--	--	--	--	--	--	46.4
Launch Vehicle Dev	--	--	--	--	--	--	614.4
Bioscience	--	--	--	--	--	--	257.8
Space Flight Operations	--	--	--	--	--	4.0	58.3
Payload & Planning & Prog Integ	--	--	--	--	--	(4.0)	(58.3)
TOTAL	1,047.8	887.7	862.0	927.3	775.7	639.2	8,962.7
OSTDS							
Tracking & Data Acquisition	496.3	401.3	339.8	332.1	299.9	276.3	3,854.2
OCE							
Standards & Practices	3.0	3.0	2.1	3.8	9.0	9.0	24.2
OER							
Tech. Utilization	9.0	8.0	8.8	12.0	9.1	9.1	73.8

R&D Funding By Program

(In Millions of Dollars) As of 30 Sep 83

	FY 1983	FY 1982	FY 1981	FY 1980	FY 1979	FY 1978	FY 1977 & Prior
OAST							
Current Programs							
Space Research & Tech.	121.2	106.9	107.8	111.8	98.3	88.7	431.9
Aeronautical Research & Tech	274.2	261.1	268.8	308.3	264.1	228.0	998.4
Energy Tech. Applications	--	--	1.9	3.0	5.0	7.5	20.8
Prior Programs	—	—	—	—	—	—	—
Apollo Applications Expr.	—	—	—	--	--	--	1.0
Chemical & Solar Power	—	—	—	--	--	--	62.3
Basic Research	—	—	—	--	--	--	193.6
Space Vehicle Systems	—	—	—	--	--	--	332.4
Electronic Systems	—	—	—	--	--	--	272.0
Human Factor Systems	—	—	—	--	--	--	151.4
Space Power & Elec. Prop. Sys	—	—	—	--	--	--	385.4
Nuclear Rockets	—	—	—	--	--	--	512.9
Chemical Propulsion	—	—	—	--	--	--	365.4
Aeronautical Vehicles	—	—	—	--	--	--	451.3
Nuclear Power & Propulsion	—	—	—	—	--	--	44.2
Mission Analysis	—	--	--	--	--	--	16.0
TOTAL OAST	395.4	368.0	378.5	423.1	367.4	324.2	4,239.0
OPERATING ACCOUNT	33.4	23.6	17.8	5.5	5.2	4.7	70.0
UNIVERSITY AFFAIRS	--	—	—	--	--	--	229.2
TOTAL PROGRAM	5,539.0	4,723.0	4,334.3	4,088.1	3,477.2	3,011.6	50,324.9
Approp. Trans. & Adjustment	+3.8	+17.9	+2.0	+3.0	--	+1.4	294.3
Appropriation	5,542.8	4,740.9	4,336.3	4,091.1	3,477.2	3,013.0	50,619.2

NOTE: FY 82, 81, 80, 79, & 78 total program and appropriation amounts include unobligated balances which lapsed as follows respectively: .3, 9/30/83, .6, 9/30/82, .1, 9/30/81, .3, 9/30/80, and .3, 9/30/79.

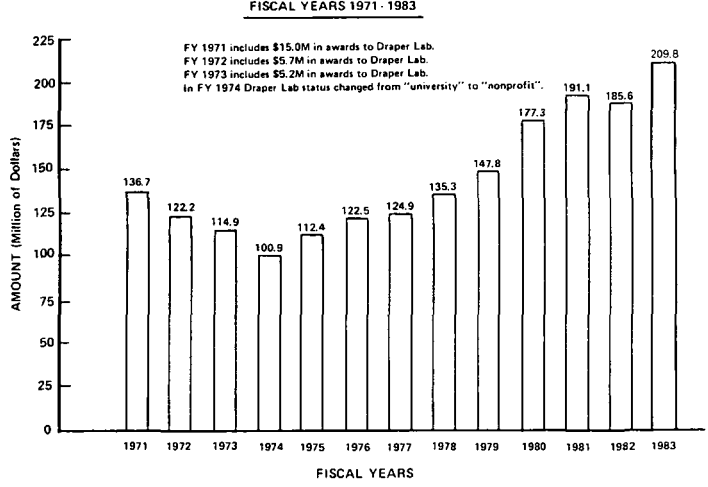
R&D Funding By Location

(In Millions of Dollars) As of 30 Sep 83

INSTALLATION	FY 1983	FY 1982	FY 1981	FY 1980	FY 1979	FY 1978	FY 1977 & Prior
NASA Headquarters	220.5	152.6	136.0	132.5	115.3	95.0	2,243.3
Ames Research Center	181.3	162.9	141.0	147.5	140.4	115.5	1,177.3
Electronics Research Center	--	--	--	--	--	--	82.5
Dryden Flight Research Facility	--	11.9	18.4	16.6	13.1	18.6	242.0
Goddard Space Flight Center	789.5	744.0	567.6	552.0	516.8	492.9	6,422.1
Jet Propulsion Laboratory	289.7	316.4	262.8	320.5	236.8	201.4	3,018.0
Kennedy Space Center	527.1	420.5	365.4	300.6	234.9	170.0	2,505.0
Langley Research Center	131.7	130.5	143.3	168.2	138.2	157.1	2,322.5
Lewis Research Center	216.4	178.4	163.3	170.4	148.5	133.6	2,852.0
Johnson Space Center	1,588.9	1,557.3	1,524.6	1,398.3	1,161.8	970.7	15,427.5
Marshall Space Flight Center	1,682.4	1,238.5	1,005.9	888.2	785.2	630.9	13,293.8
Space Nuclear Systems Office	--	--	--	--	--	--	436.2
Wallops Flight Facility	--	--	11.2	15.7	15.8	15.9	156.3
Western Support Office	--	--	--	--	--	--	119.7
National Space Technology Labs.	8.5	10.0	8.8	9.3	9.2	10.0	21.5
NaPO	--	--	--	--	--	--	4.7
PLOO	--	--	--	--	--	--	.3
Station 17	-241.5	-200.0	-14.0	-31.7	-38.8	--	--
Undistributed	144.5	--	--	--	--	--	.2
TOTAL PROGRAM	5,539.0	4,723.0	4,334.3	4,088.1	3,477.2	3,011.6	50,324.9
Appropriations Transfer & Adjustments	+3.8	+17.9	+2.0	+3.0	--	+1.4	+294.3
Appropriation	5,542.8	4,740.9	4,336.3	4,091.1	3,477.2	3,013.0	50,619.2

NOTE: FY 82, 81, 80, 79, & 78 total program and appropriation amounts include unobligated balances which lapsed as follows respectively: .3, 9/30/83, .6, 9/30/82, .1, 9/30/81, .3, 9/30/80, and .3, 9/30/79.

NASA OBLIGATIONS TO UNIVERSITIES



NOTE: Excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Construction Of Facilities

(In Millions of Dollars)

As of 30 Sep 83

INSTALLATION	FY 1983	FY 1982	FY 1981	FY 1980	FY 1979	FY 1978	FY 1977	1976/TQ	FY 1975	FY 1974	FY 1973	FY 1972	FY 1971
ARC	--	18.5	13.9	2.9	9.3	--	4.4	2.6	3.7	--	3.2	6.5	1.1
ERC	--	--	--	--	--	--	--	--	--	--	--	--	--
DFRC	3.5	--	--	--	--	.4	.8	--	--	--	--	--	--
GSFC	2.6	--	--	--	5.6	4.5	--	--	1.9	1.3	.6	.7	1.4
JPL	--	1.8	2.8	--	4.6	3.1	--	--	9.2	1.3	.5	--	1.9
KSC	--	1.3	.6	5.1	--	1.6	2.8	--	--	--	10.0	15.6	.3
LaRC	16.2	2.9	22.1	7.3	5.3	1.6	6.0	--	3.2	4.0	4.3	--	.6
LeRC	3.9	1.2	8.9	5.7	5.8	.8	2.8	--	3.7	--	10.0	.8	.7
JSC	--	3.0	--	--	--	2.0	2.2	--	.7	--	.5	--	1.1
MSFC	--	--	4.0	6.3	--	--	--	--	3.8	--	--	--	1.3
Michoud	--	--	--	--	--	--	--	--	--	--	--	--	--
NSTL	--	--	--	--	--	.6	--	--	--	--	--	--	--
Nuclear RDC	--	--	--	--	--	--	--	--	--	--	--	--	--
PLO	--	--	--	--	--	--	--	--	--	--	--	--	--
WFC	2.2	--	--	1.1	--	--	--	1.6	1.1	.9	.6	--	--
Large Aero Fac.	--	--	--	45.9	56.1	37.0	31.0	--	--	--	--	--	--
Various Locations	--	9.8	7.3	1.8	--	1.1	--	--	7.7	3.7	--	.7	22.5
Shuttle Facilities	25.2	33.9	10.0	27.5	30.6	64.8	30.3	46.6	76.5	56.4	27.8	18.5	--
Shuttle Payload Fac.	1.7	--	1.6	4.3	--	7.3	4.4	--	--	--	--	--	--
Repair	14.0	12.8	14.8	12.0	--	--	--	--	--	--	--	--	--
Rehab. & Mods.*	19.0	17.7	17.3	19.8	14.1	19.0	17.8	23.0	14.8	14.8	11.5	7.8	(17.6)
Minor Construction	3.8	2.3	4.0	3.5	4.2	6.0	2.9	6.2	4.5	4.5	1.6	--	--
Fac. Plans & Design	8.0	10.0	9.7	13.9	10.6	11.8	12.6	12.5	10.8	13.5	7.7	3.4	5.4
Unallocated Plans & Design	--	--	--	--	--	--	--	--	--	--	--	--	--
TOTAL PLAN	100.1	115.2	127.0	157.1	146.2	161.6	118.0	92.5	141.6	100.4	78.3	54.0	36.3
Approp. Trans. & Adj.	-2.6	-19.4	-12.0	-1.0	+1.3	-.7	+.1	+.4	-1.4	+.7	-1.0	-1.3	-11.3
Approp. & Availability	97.5	95.8	115.0	156.1	147.5	160.9	118.1	92.9	140.2	101.1	77.3	52.7	25.0

*Included in Various Locations Prior to FY 1972

Construction Of Facilities

As of 30 Sep 83

(In Millions of Dollars)

INSTALLATION	FY 1970	FY 1969	FY 1968	FY 1967	FY 1966	FY 1965	FY 1964	FY 1963	FY 1962	FY 1961	FY 1960	FY 1959
Ames Research Center	.3	.4	4.2	--	2.8	5.8	11.3	14.3	6.3	.6	6.1	3.8
Electronics Research Center	--	--	--	7.4	5.2	10.4	1.6	--	--	--	--	--
Dryden Flight Research Fac.	.9	--	--	--	--	--	2.5	1.8	--	--	1.8	--
Goddard Space Flight Center	.7	--	.6	.7	2.4	2.2	17.7	21.3	11.5	9.4	14.0	3.9
Jet Propulsion Laboratory	--	--	3.1	.3	.9	3.6	3.0	11.4	3.6	8.6	7.7	--
Kennedy Space Center	10.5	7.4	20.4	34.6	7.2	87.8	273.4	332.8	115.6	27.8	4.0	--
Langley Research Center	5.6	--	--	6.4	8.4	3.3	9.7	9.8	6.9	12.3	4.5	10.8
Lewis Research Center	.3	--	2.1	16.2	.9	.8	20.4	45.5	1.1	9.6	6.6	8.0
Johnson Space Center	--	1.0	.6	11.8	4.0	17.3	33.9	24.5	--	--	--	--
Marshall Space Flight Center	--	--	.9	--	1.8	12.0	28.2	40.5	30.7	26.1	--	--
Michoud Assembly Facility	--	.4	.5	.5	.3	6.2	7.3	28.5	--	--	--	--
National Space Tech Lab	1.4	--	--	--	--	58.4	102.9	77.1	--	--	--	--
Nuclear Rocket Dev. Station	--	--	--	--	--	--	4.1	11.5	--	--	--	--
Pacific Launch Ops. Office	--	--	--	--	--	.3	--	--	.6	.4	1.1	--
Wallops Flight Facility	.4	.5	.7	.2	1.0	1.7	.5	4.1	11.3	2.0	--	16.1
Various Locations	26.4	20.9	3.5	6.5	15.1	28.3	187.8	129.9	159.0	28.0	52.4	5.1
Facility Planning & Design	3.5	.9	5.4	5.5	5.0	8.8	10.4	12.9	9.8	--	--	--
Other	--	--	--	--	--	--	23.7	--	--	--	--	--
TOTAL PROGRAM PLAN	50.0	31.5	42.0	90.1	55.0	247.0	738.4	765.9	356.4	124.8	98.2	47.7
Appro. Trans. & Adj.	+3.2	-9.7	-6.1	-7.1	+5.0	+15.9	-58.4	+10.3	- 40.4	- 2.0	-13.6	+ .3
Appro. & Availability	53.2	21.8	35.9	83.0	60.0	262.9	680.0	776.2	316.0	122.8	84.6	48.0

Research And Program Management

(In Millions of Dollars) — As of 30 Sep 83

INSTALLATION	FY 83	FY 1982	FY 1981	FY 1980	FY 1979	FY 1978	FY 1977	TQ & 76	FY 1975	FY 1974	FY 1973	FY 1972	FY 1971	FY 1970
Hq 1/	104.1	109.8	96.4	89.5	84.5	81.1	78.7	88.5	68.9	63.0	61.6	61.6	64.9	63.2
ARC	107.2	76.6	72.2	67.4	62.7	57.8	53.0	64.2	48.6	46.4	42.4	42.2	40.6	37.6
ERC	--	--	--	--	--	--	--	--	--	--	--	--	--	19.1 3/
DFRF	--	24.4	22.6	20.4	19.1	18.2	17.3	19.8	13.2	12.2	11.6	11.7	11.1	10.3
GSFC	183.9	169.1	142.5	133.5	127.9	123.9	114.5	137.2	104.8	97.5	95.7	96.5	93.1	86.4
KSC	164.9	156.0	150.2	133.2	123.3	113.8	109.7	128.4	95.9	93.6	91.1	92.6	98.3	97.6
LaRC	132.7	126.6	120.8	114.0	106.6	102.0	95.2	117.3	88.6	83.8	78.6	80.2	75.3	69.8
LeRC	118.8	106.4	99.9	94.8	87.5	84.9	83.6	102.9	80.3	79.8	81.2	82.5	78.0	73.9
JSC	195.2	235.5	176.0	164.1	152.9	146.7	138.9	166.3	121.3	118.0	110.6	113.0	111.1	106.6
MSFC	184.3	172.1	165.0	155.9	149.0	143.4	138.5	167.5	129.1	136.6	137.2	138.9	145.1	125.7
NSTL	6.3	6.6	5.5	4.9	4.5	2.7	1.8	2.3	1.6	1.6	--	--	--	--
PLO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SNSO	--	--	--	--	--	--	--	--	--	--	1.1	2.2	2.4	2.3
WSO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WFF	--	--	20.0	17.7	15.8	15.0	13.2	17.1	12.4	11.5	10.7	10.9	10.3	9.7
Total Plan	1,197.4	1,183.1	1,071.1	996.0	933.8	889.5	844.4	1,012.5	764.7	744.0	721.8	732.3	730.2 2/	702.2
a/	--	.2	.3	.2	.3	.3	.2	.6	.2	.6	7.6	.3	.2	.4
b/	--	--	--	--	--	--	--	--	- 4.9	--	--	+ 2.1	- 7.7	- 12.6
Appro Total	1,197.4	1,183.3	1,071.4	996 2	934.1	889.8	844.6	1,013.1	760.0	744.6	729.4	734.7	722.7	690.0

1/ Includes NaPO

2/ Includes $10 million for basic institutional and other requirements for agencies resident at MTF/Slidell.

3/ ERC was closed on June 30, 1970.

a/ Unobligated Balance Lapsing b/ Appro Transfers, Net

Research And Program Management

(In Millions of Dollars)

As of 30 Sep 83

INSTALLATION	FY 1969	FY 1968	FY 1967	FY 1966	FY 1965	FY 1964	FY 1963	FY 1962	FY 1961	FY 1960	FY 1959
NASA Headquarters 1/	60.8	57.1	57.4	54.4	69.3	47.1	51.3	26.0	13.9	8.5	5.7
Ames Research Center	34.0	33.8	33.8	33.2	31.8	29.9	25.6	22.9	19.9	17.8	16.3
Electronics Research Center	17.2	15.4	12.2	6.4	3.2	.5	--	--	--	--	--
Dryden Flight Research Facility	9.7	9.5	9.5	9.4	10.5	9.4	7.5	7.2	5.1	4.3	3.3
Goddard Space Flight Center	73.2	68.3	71.1	64.4	93.3	61.9	52.8	39.1	20.4	15.5	1.8
Kennedy Space Center	95.8	93.1	92.7	82.0	40.8	29.8	18.8	6.4	--	--	--
Langley Research Center	63.0	62.2	64.3	63.5	59.0	52.1	51.8	46.6	39.1	33.0	31.4
Lewis Research Center	67.9	66.2	66.3	66.4	69.3	61.5	53.4	45.2	35.8	31.2	27.8
Johnson Space Center	98.9	95.7	95.7	86.5	88.7	64.7	51.0	24.1	9.2	--	--
Marshall Space Flight Center	116.3	126.2	128.7	128.4	138.7	124.3	112.6	89.2	68.6	5.1	--
Pacific Launch Operations	--	--	--	.6	.9	.9	.6	.1	--	--	--
Space Nuclear Systems Office	2.1	2.0	2.0	1.8	1.7	1.5	1.0	.3	--	--	--
Western Support Office	--	1.0	3.2	4.9	5.0	4.4	3.4	1.4	5.7	.5	--
Wallops Flight Facility	9.1	8.8	9.7	9.3	11.1	8.8	8.9	7.1	5.0	2.7	1.3
TOTAL PROGRAM PLAN	648.0	639.3	646.6	611.2	623.3	496.8	438.7	315.6	222.7	118.6	87.6
Unobligated Balance Lapsing	.1	.1	.9	.6							
Appro. Transfers, Net	- 44.9	- 11.4	- 7.5	- 27.8	+ .2	- 2.8					
Appropriation Total	603.2	628.0	640.0	584.0	623.5	494.0					

1/ Includes NaPO

Personnel Summary

Onboard At End Of Fiscal Year*

As of 30 Sep 83

INSTALLATION	FY 83	FY 82	FY 81	FY 80	FY 79	FY 78	FY 77	FY 76	FY 75	FY 74	FY 73	FY 72	FY 71	FY 70
Hq	1,636	1,614	1,638	1,658	1,534	1,606	1,619	1,708	1,673	1,734	1,747	1,755	1,894	2,187
ARC 1/	2,138	2,164	1,652	1,713	1,713	1,691	1,645	1,724	1,754	1,776	1,740	1,844	1,968	2,033
DFRF	--	--	491	499	498	514	546	566	544	531	509	539	579	583
GSFC 2/	3,794	3,746	3,431	3,535	3,562	3,641	3,666	3,808	3,871	3,936	3,852	4,178	4,459	4,487
KSC	2,180	2,199	2,224	2,291	2,264	2,234	2,270	2,404	2,377	2,408	2,516	2,568	2,704	2,895
LaRC	3,032	2,916	3,028	3,094	3,125	3,167	3,207	3,407	3,472	3,504	3,389	3,592	3,830	3,970
LeRC	2,751	2,667	2,782	2,901	2,907	2,964	3,061	3,168	3,181	3,172	3,368	3,866	4,083	4,240
JSC	3,411	3,445	3,498	3,616	3,563	3,617	3,640	3,796	3,877	3,886	3,896	3,935	4,298	4,539
MSFC	3,464	3,440	3,479	3,646	3,677	3,808	4,014	4,336	4,337	4,574	5,287	5,555	6,060	6,325
SNSO	--	--	--	--	--	--	--	-	-	-	-	45	89	103
NsPO	--	--	--	--	--	--	-	-	35	39	39	40	44	72
WFF	--	--	400	406	409	429	426	437	441	447	434	465	497	522
NSTL	128	119	113	111	108	108	94	72	76	-	-	-	-	-
NASA TOTAL	22,534	22,310	22,736	23,470	23,360	23,779	24,188	25,426	25,638	26,007	26,777	28,382	30,506	32,548

*Includes Temporary Personnel
Excludes employees in the youth programs.

1/ Includes DFRF
2/ Includes WFF

Onboard At End Of Fiscal Year*

INSTALLATION	FY 1969	FY 1968	FY 1967	FY 1966	FY 1965	FY 1964	FY 1963	FY 1962	FY 1961	FY 1960	FY 1959
NASA Headquarters	2,293	2,310	2,373	2,336	2,135	2,158	2,001	1,477	735	587	492
Ames Research Center	2,117	2,197	2,264	2,310	2,270	2,204	2,116 [b]	1,658	1,471	1,421	1,464
Electronics Res. Center	951	950	791	555	250	33 [b]	25 [b]	---	---	---	---
Dryden Flt Research Ctr	601	622	642	662	669	619	616	538	447	408	340
Goddard Sp. Flt. Cen.	4,295	4,073	3,997	3,958	3,774	3,675	3,487	2,755	1,599	1,255	398
Kennedy Space Center	3,058	3,044	2,867	2,669	2,464	1,625	1,181	339	---	---	---
Langley Research Cen.	4,087	4,219	4,405	4,485	4,371	4,330	4,220	3,894	3,338	3,203	3,624
Lewis Research Center	4,399	4,583	4,956	5,047	4,897	4,859	4,697	3,800	2,773	2,722	2,809
Johnson Space Center	4,751	4,956	5,064	4,889	4,413	4,277	3,345	1,786	794	in GSFC	---
Marshall Sp. Flt. Center	6,639	6,935	7,602	7,740	7,719	7,679	7,332	6,843	5,948	370	---
Pacific Launch Ops.	---	---	---	d/	21	22	17	---	---	---	---
Space Nuclear Sys. Ofc.	104	108	113	115	116	112	96	39	4	---	---
Western Support Ofc.	---	c/	119	294	377	376	308	136	60	37	---
NASA Pasadena Ofc.	80	79	91	85	19	a/	---	---	---	---	---
Wallops Station	554	565	576	563	554	530	493	421	302	229	171
NASA TOTAL	33,929	34,641	35,860	35,708	34,049	32,499	29,934	23,686	17,471	10,232	9,235

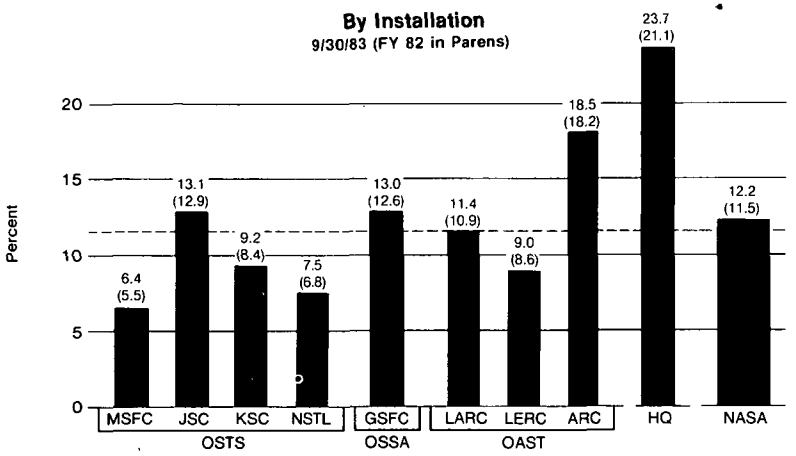
a/ Prior years figures included in WSO. * Includes Temporary Personnel

b/ Figures for North Eastern Office.

c/ Effective in 1968 WSO was disestablished and elements merged with NaPO

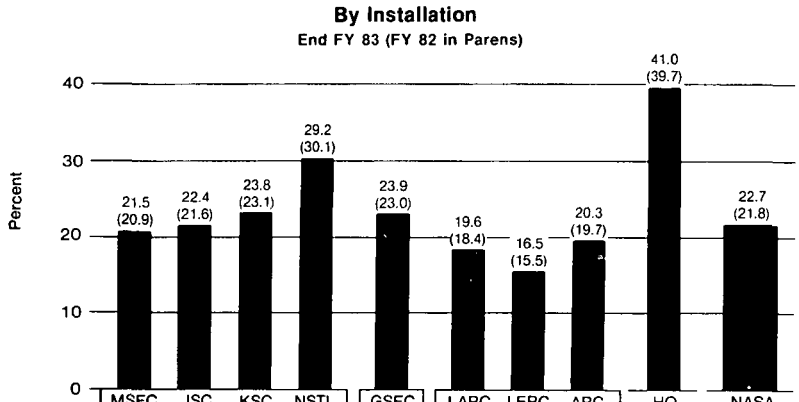
d/ Effective in 1966 PLOO activity was merged under KSC.

Minorities as Percent of Permanent Employees



Total Minorities:										
1983	215	425	192	8	476	331	236	377	334	2,614
1982	183	420	177	7	455	305	213	372	301	2,433

Women as Percent of Permanent Employees



Total Women:										
1983	722	724	495	31	875	570	433	412	612	4,874
1982	695	705	486	31	834	515	384	402	568	4,620

GLOSSARY

AD	Atmosphere Dynamics
AE	Atmosphere Explorer
AEM	Applications Explorer Mission
Apollo	Three-man Spacecraft
ATS	Applications Technology Satellite
BSE	Broadcasting Satellite Experimental
COS	Cosmic Ray Satellite
CRL	Cambridge Research Lab
CS	Communications Satellite
CTS	Communications Test Satellite
DE	Dynamic Explorer
ERTS	Earth Resources Technology Satellite
ESA	*European Space Agency*
ESRO	European Space Research Organization
ESSA	Environmental Science Services Agency
Gemini	Two-man Spacecraft
GEOS	Geodetic Earth Observations Satellite
GMS	Geostationary Meteorological Satellite
GOES	Geostationary Operational Environmental Satellite
HCMM	Heat Capacity Mapping Mission
HEAO	High Energy Astronomy Observatory
IMP	Interplantary Monitoring Platform
IRAS	Infrared Astronomical Satellite
ISEE	International Sun-Earth Explorer
ITOS	Improved Tiros Operational Satellite
IUE	International Ultraviolet Explorer
Landsat	Earth Resources Satellite
MAGSAT	Magnetic Satellite
Mercury	One-man Spacecraft
Nimbus	Meteorological Satellite
NOAA	National Oceanic & Atmospheric Agency
OT	Operational Tiros
OTS	Orbiting Test Satellite
RAE	Radio Explorer
Ranger	Lunar Probe Spacecraft
RFD	Re-entry Flight Demonstration
SAGE	Stratospheric Aerosol Gas Experiment
SAS	*Small Astronomy Satellite*
SBS	Satellite Business Systems
SCATHA	Spacecraft Charging at High Altitudes
Seasat	Ocean Research Satellite
SME	Solar Mesosphere Explorer
SMM	Solar Maximum Mission
SMS	*Synchronous Meteorological Satellite*
Surveyor	Lunar Soft Landing Spacecraft
Syncom	Synchronous Communications Satellite
Tiros	Television Infrared Observation Satellite
TOS	Tiros Operational Satellite

National Aeronautics and
Space Administration