

APPENDIX B

Successful Launches to Orbit on U.S. Launch Vehicles October 1, 1998–September 30, 1999

Launch Date Spacecraft Name COSPAR Designation Launch Vehicle	Mission Objectives	Apogee and Perigee (km), Period (min), Inclination to Equator (°)	Remarks
Oct. 3, 1998 USA 140 55A Taurus	Military satellite	Orbital parameters unavailable	
Oct. 5, 1998 USA 141 55C Taurus	Military reconnaissance satellite	Orbital parameters unavailable	
Oct. 9, 1998 Hotbird 5 57A Atlas IIA*	Communications satellite	Geosynchronous	Eutelsat consortium spacecraft
Oct. 20, 1998 UHF F/O F9 58A Atlas IIA*	Military communications satellite	Geosynchronous	
Oct. 23, 1998 SCD2 60A Pegasus*	Environmental data- relaying minispacecraft	769 km 743 km 99.9 min 25.0°	Brazilian spacecraft
Oct. 24, 1998 Deep Space 1 61A Delta II	Experimental spacecraft with ion propulsion engine	Orbital parameters unavailable	
Oct. 24, 1998 SEDSAT 1 61B Delta II	Earth-imaging student spacecraft	1,079 km 547 km 101 min 31.4°	Students for the Exploration and Development of Space
Oct. 29, 1998 Space Shuttle <i>Discovery</i> (STS-95) 64A Space Shuttle	Carried experiments on microgravity science and aging	561 km 551 km 95.8 min 28.5°	Second space flight of John Glenn
Oct. 30, 1998 Pansat 64B Space Shuttle	Communications satellite	Orbital parameters unavailable	Amateur student minisatellite
Nov. 1, 1998 Spartan 201-05 64C Space Shuttle	Solar observatory	Similar to STS-95	

APPENDIX B

(Continued)

Successful Launches to Orbit on U.S. Launch Vehicles October 1, 1998–September 30, 1999

Launch Date Spacecraft Name COSPAR Designation Launch Vehicle	Mission Objectives	Inclination to Equator (°)	Apogee and Perigee (km), Period (min),	Remarks
Nov. 6, 1998 Iridium 2, 83–86 66A–E Delta II*	Communications satellites		536 km 517 km 95 min 86°	
Nov. 22, 1998 Bonum 1 68A Delta II*	Communications satellite		Geosynchronous	Russian television satellite
Dec. 4, 1998 Space Shuttle <i>Endeavour</i> (STS-88) 69A Space Shuttle			401 km 388 km 92.4 min 51.6°	
Dec. 14, 1998 SAC-A 69B Space Shuttle	Carried a GPS receiver, magnetometer, and CCD camera	Similar to STS-88		Argentine minisatellite
Dec. 15, 1998 Mightysat 1 69C Space Shuttle	Advanced technology demonstrator experiments	Similar to STS-88		Minisatellite
Dec. 13, 1998 ISS Unity 69F Space Shuttle	U.S. module of the ISS		410 km 390 km 93 min 51.6°	
Dec. 6, 1998 SWAS 71A Pegasus-XL	Submillimeter Wave Astronomy Satellite		651 km 638 km 97.6 min 69.9°	
Dec. 11, 1998 MCO 73A Delta II	Mars Climate Orbiter			Interplanetary spacecraft
Jan. 3, 1999 MPL 1A Delta II	Mars Polar Lander			Interplanetary spacecraft
Jan. 27, 1999 Rocsat 1 2A Athena 1*	Earth resources monitoring satellite		601 km 589 km 96.6 min 35.0°	Taiwanese satellite

APPENDIX B

(Continued)

Successful Launches to Orbit on U.S. Launch Vehicles October 1, 1998–September 30, 1999

Launch Date Spacecraft Name COSPAR Designation Launch Vehicle	Mission Objectives	Apogee and Perigee (km), Period (min), Inclination to Equator (°)	Remarks
Feb. 7, 1999 Stardust 3A Delta II	Spacecraft to collect "interstellar" dust using aerogel technology	Interplanetary spacecraft	
Feb. 16, 1999 JCSAT6 6A Atlas IIAS*	Communications satellite	Geosynchronous	Japanese satellite
Feb. 23, 1999 ARGOS 8A Delta II	Advanced Research Global Observation Satellite	842 km 822 km 102 min 98.7°	Technology demonstrator that should permit some observations
Feb. 23, 1999 Ørsted 8B Delta II	Ionospheric science spacecraft	857 km 644 km 100 min 96.5°	Danish satellite
Feb. 23, 1999 Sunsat 8C Delta II	Research and education satellite	857 km 644 km 100 min 96.5°	South African satellite
Mar. 5, 1999 WIRE 11A Pegasus-XL	Astronomical research spacecraft	593 km 539 km 96 min 97.5°	Payload became inoperable because of malfunction after launch.
Apr. 9, 1999 USA 142 (DSP19) 17A Titan IVB	Military (missile warning) spacecraft	Highly elliptical and useless orbit	Planned to be geosynchronous but now useless in orbit
Apr. 12, 1999 Eutelsat W3 18A Atlas IIAS*	Communications satellite	Geosynchronous	European consortium satellite
Apr. 15, 1999 Landsat 7 20A Delta II	Remote-sensing satellite	698 km 669 km 98.4 min 98.2°	
Apr. 30, 1999 USA 143 (Milstar 2) 23A Titan IVB	Military communications satellite	4,997 km 740 km 147 min	In useless low-Earth orbit

APPENDIX B

(Continued)

Successful Launches to Orbit on U.S. Launch Vehicles October 1, 1998–September 30, 1999

Launch Date Spacecraft Name COSPAR Designation Launch Vehicle	Mission Objectives	Inclination to Equator (°)	Apogee and Perigee (km), Period (min), Remarks
May 5, 1999 Orion 3 24A Delta III*	Communications satellite		1,317 km 422 km 102 min 29° (meant to be geosynchronous)
May 18, 1999 TERRIERS 26A Pegasus-XL*	Space physics satellite		560 km 550 km 95.7 min 97.8°
May 18, 1999 MUBLCOM 26B Pegasus-XL*	Military communications satellite		790 km 775 km 100 min 97.8°
May 22, 1999 USA 144 28A Titan IVB	Military spacecraft		Orbital parameters unavailable
May 27, 1999 Space Shuttle <i>Discovery</i> (STS-96) 30A Space Shuttle	ISS supply mission		340 km 326 km 91.2 min 51.6°
June 5, 1999 Starshine 30B Space Shuttle	Student passive reflector satellite		395 km 376 km 92 min 51.6°
June 10, 1999 Globalstar 52, 49, 25, 47 31A–D Delta II*	Communications satellites		1,414 km 1,406 km 114 min 52°
June 20, 1999 QuikSCAT 34A Titan II	Oceanographic satellite		815 km 281 km 95.6 min 98.7°
June 24, 1999 FUSE 35A Delta II	Astronomical spacecraft		770 km 754 km 100 min 25°
July 10, 1999 Globalstar 32, 20, 35, 51 37A–D Delta II*	Communications satellites		1,414 km 1,413 km 114 min 52°

APPENDIX B

(Continued)

Successful Launches to Orbit on U.S. Launch Vehicles October 1, 1998–September 30, 1999

Launch Date Spacecraft Name COSPAR Designation Launch Vehicle	Mission Objectives	Apogee and Perigee (km), Period (min), Inclination to Equator (°)	Remarks
July 23, 1999 Space Shuttle <i>Columbia</i> (STS-93) 40A Space Shuttle		280 km 260 km 90 min 28.5°	
July 23, 1999 Chandra X-ray Observatory 40B Space Shuttle	Astrophysics spacecraft	140,000 km 9,942 km 64 hours 28.5°	Formerly known as Advanced X-ray Astrophysics Facility (AXAF)
July 25, 1999 Globalstar 26, 28, 43, 48 41A–D Delta II*	Communications satellites	1,382 km 1,362 km 113 min 52°	
Aug. 17, 1999 Globalstar 24, 27, 53, 54 43A–D Delta II*	Communications satellites	1,386 km 1,362 km 113.3 min 52°	
Sep. 23, 1999 EchoStar 5 50A Atlas IIAS-Centaur*	Communications satellite	Geosynchronous	
Sep. 24, 1999 Ikonos 2 51A Athena II*	Privately owned imaging satellite	682 km 678 km 98.4 min 98.2°	

* Commercial launch licensed as such by the Federal Aviation Administration.