

Commercial Space Transportation

QUARTERLY LAUNCH REPORT

Featuring the
launch results from
the 2nd quarter 2003
and forecasts for
the 3rd quarter 2003
and 4th quarter 2003



3rd Quarter 2003

United States Department of Transportation • Federal Aviation Administration
Associate Administrator for Commercial Space Transportation
800 Independence Ave. SW • Room 331
Washington, D.C. 20591



Introduction

The Third Quarter 2003 Quarterly Launch Report features launch results from the second quarter of 2003 (April-June 2003) and launch forecasts for the third quarter of 2003 (July-September 2003) and fourth quarter of 2003 (October-December 2003). This report contains information on worldwide commercial, civil, and military orbital space launch events. Projected launches have been identified from open sources, including industry references, company manifests, periodicals, and government sources. Projected launches are subject to change.

This report highlights commercial launch activities, classifying commercial launches as one or both of the following:

- Internationally-competed launch events (i.e., launch opportunities considered available in principle to competitors in the international launch services market)
- Any launches licensed by the Associate Administrator for Commercial Space Transportation of the Federal Aviation Administration under 49 United States Code Subtitle IX, Chapter 701 (formerly the Commercial Space Launch Act)

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Cover: A Zenit 3SL, marketed by Boeing Launch Services and launched by the multinational consortium Sea Launch, sends Thuraya 2 on its way to geosynchronous orbit on June 10, 2003 from the central Pacific Ocean.

Second Quarter 2003 Highlights

U.S.-based Scaled Composites unveiled its entry for the X PRIZE competition during the second quarter of 2003. The two-stage vehicle, capable of flying three people on a 63-mile-high suborbital spaceflight, is composed of the White Knight twin-engine carrier aircraft, which made its first flight in August 2002, and SpaceShipOne, the suborbital reusable launch vehicle that would be air-launched at 50,000 ft. While Scaled Composites has no plans to provide tourist flights with the vehicle combination, another company may be established for that purpose later. The UK's Starchaser company unveiled its one-seater Nova II prototype suborbital space capsule near Manchester, England, in April 2003. The craft is a prototype of the Starchaser Nova vehicle, the company's X PRIZE entrant. Ontario-based Canadian Arrow selected six commercial astronauts as the first step to selecting two-person crews for the team's two-stage rocket. The rocket, called Canadian Arrow, will be launched from a "barge pad" on Lake Huron, and will also be a contender for the X PRIZE. Also during the second quarter of 2003, the Canadian-based Da Vinci Project team announced its plan to launch its first crewed mission from Kindersley, Saskatchewan.

Arianespace confirmed its order with EADS worth three billion euros for 30 Ariane 5 launch vehicles. Up to four boosters will be Ariane 5G models and the rest will be the new Ariane 5 ECA. The first deliveries will be made in 2005. Four Ariane 5G vehicles were ordered earlier to backfill missions delayed by the failure of the Ariane 5 ECA in 2002.

RSC Energia signed a contract with the U.S.-based Space Adventures to fly two more tourists to the International Space Station (ISS) in 2004 or 2005. The first dedicated space tourist flight aboard a Soyuz vehicle is expected in 2005. The projected 10-day Soyuz TMA mission to the ISS will carry two fare-paying tourists and a spacecraft commander.

Arianespace, Boeing Launch Services, and Mitsubishi are considering an informal arrangement to allow a customer to switch to one of two alternative launch providers. The Ariane 5, the Zenit 3SL, and the H 2A will be part of the service.

The European Space Agency (ESA) is planning a \$370 million investment to build a launch pad at Kourou, French Guiana, for the Russian Soyuz booster. The Soyuz will be provided mainly as a commercial alternative for government payloads destined for low and medium Earth orbits. Also during the quarter, Ukraine and Brazil announced plans to sign an agreement to begin a \$180 million joint commercial launcher program using Tsyklon 4 boosters launched from the Alcantara Launch Center, starting in 2005.

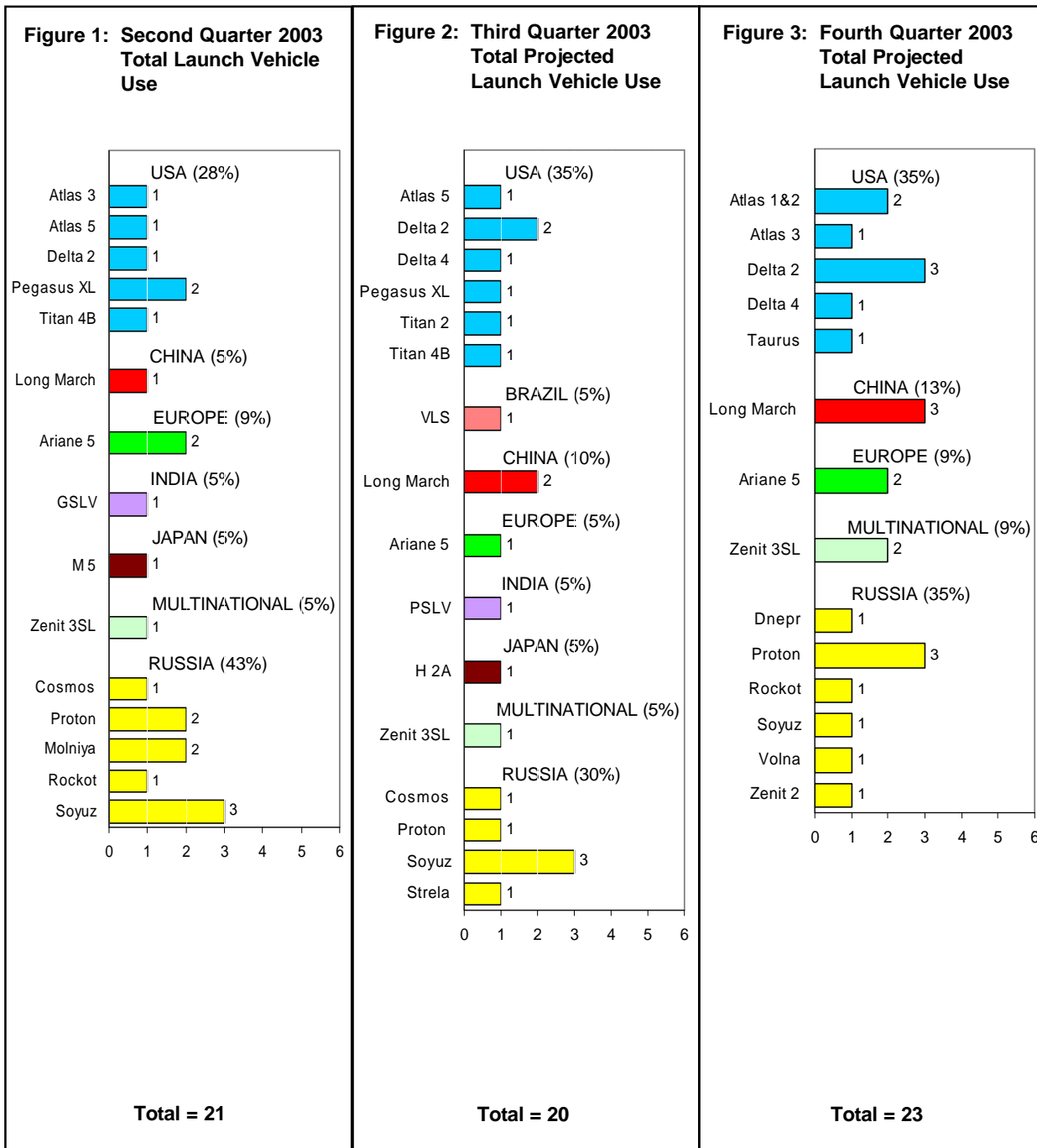
Arianespace is planning a flight qualification test of the Ariane 5 ECA in March 2004. The vehicle suffered a failure in late 2002 due to a malfunctioning Vulcain 2 main engine.

Boeing's Rocketdyne division, with the U.S. Air Force and NASA, has conducted a hot fire test of a state-of-the-art liquid oxygen turbopump for next-generation rocket engines. This is part of the Department of Defense Integrated High Performance Rocket Propulsion Technology program, which could find applications in future-generation launchers by 2010.

U.S.-based SpaceDev will be developing a low-cost, low Earth orbit (LEO) small-satellite launch vehicle, the Streaker. The booster, powered by solid fuel, will be able to place 450 kilograms into LEO at a cost "less than existing or planned small launch vehicles," the company says.

Vehicle Use

(April – December 2003)

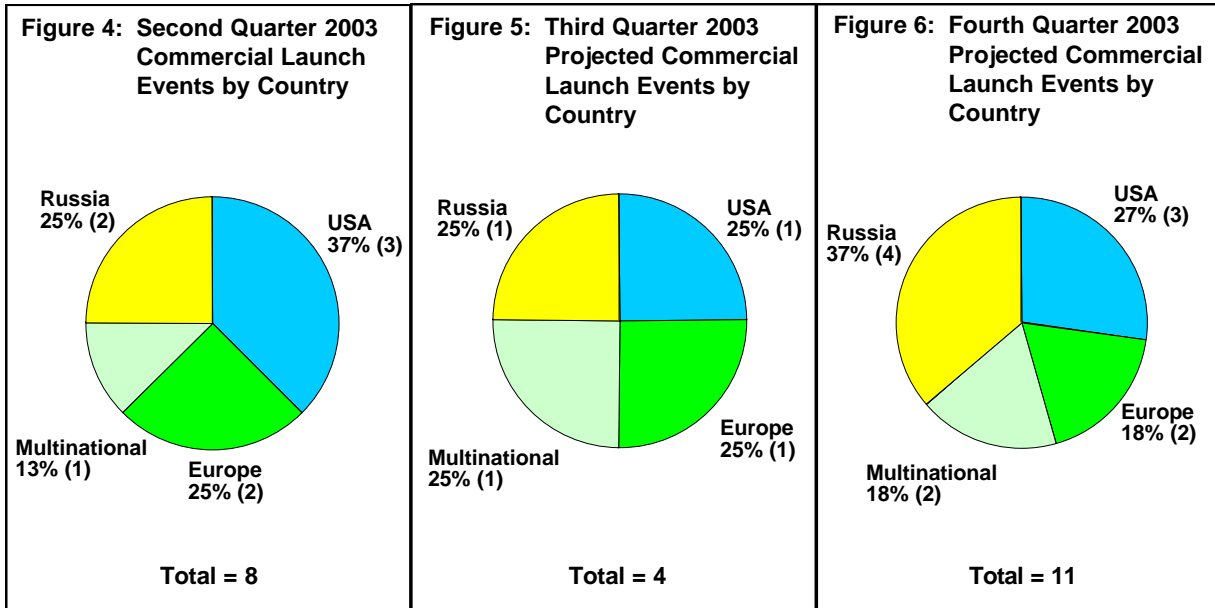


Figures 1-3 show the total number of orbital launches (commercial and government) of each launch vehicle and resulting market share that occurred in the second quarter of 2003 and that are projected for the third and fourth quarters of 2003. These launches are grouped by the country in which the primary vehicle manufacturer is based. Exceptions to this grouping are launches performed by Sea Launch, which are designated as multinational.

Note: Percentages for these and subsequent figures may not add up to 100 percent due to rounding of individual values.

Commercial Launch Events by Country

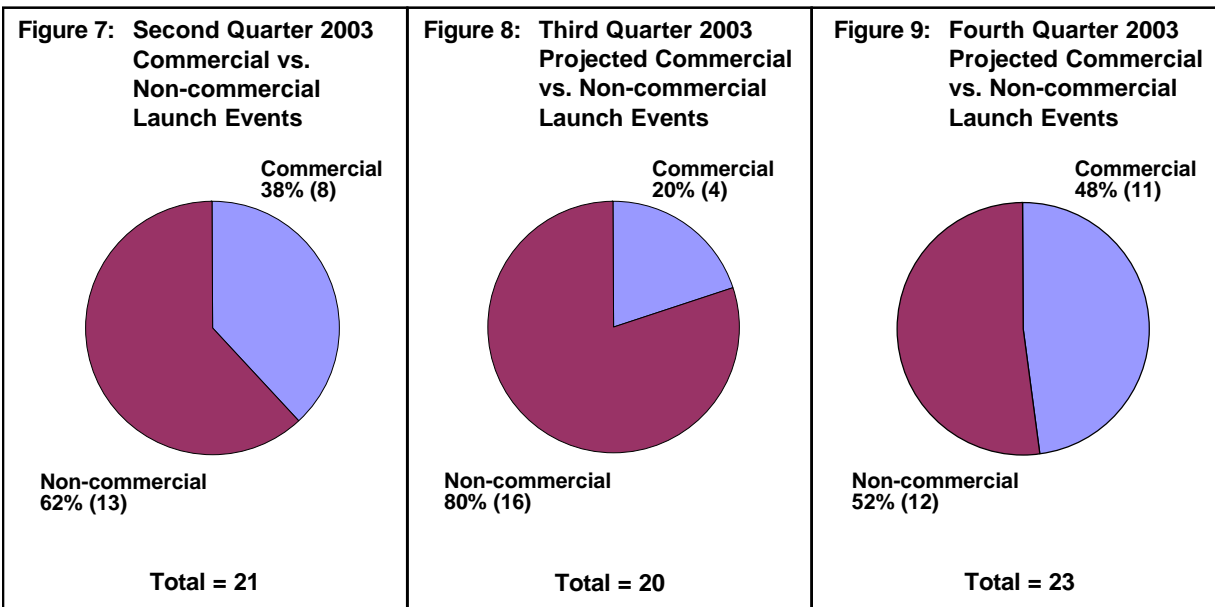
(April – December 2003)



Figures 4-6 show all *commercial* orbital launch events that occurred in the second quarter of 2003 and that are projected for the third and fourth quarters of 2003.

Commercial vs. Non-commercial Launch Events

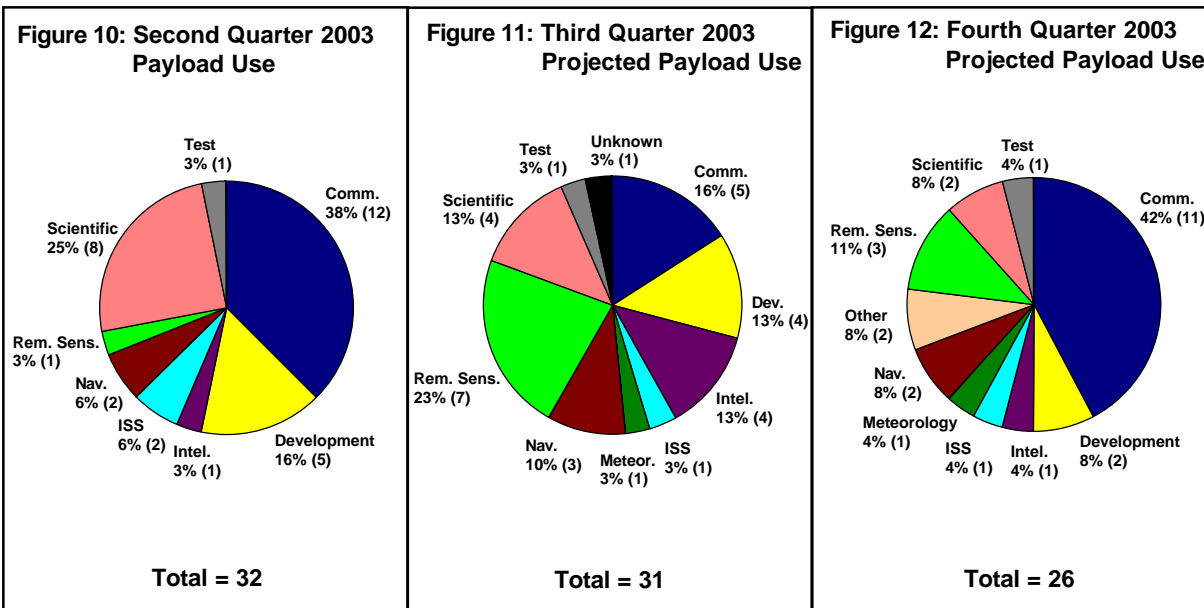
(April – December 2003)



Figures 7-9 show commercial vs. non-commercial orbital launch events that occurred in the second quarter of 2003 and that are projected for the third and fourth quarters of 2003.

Payload Use

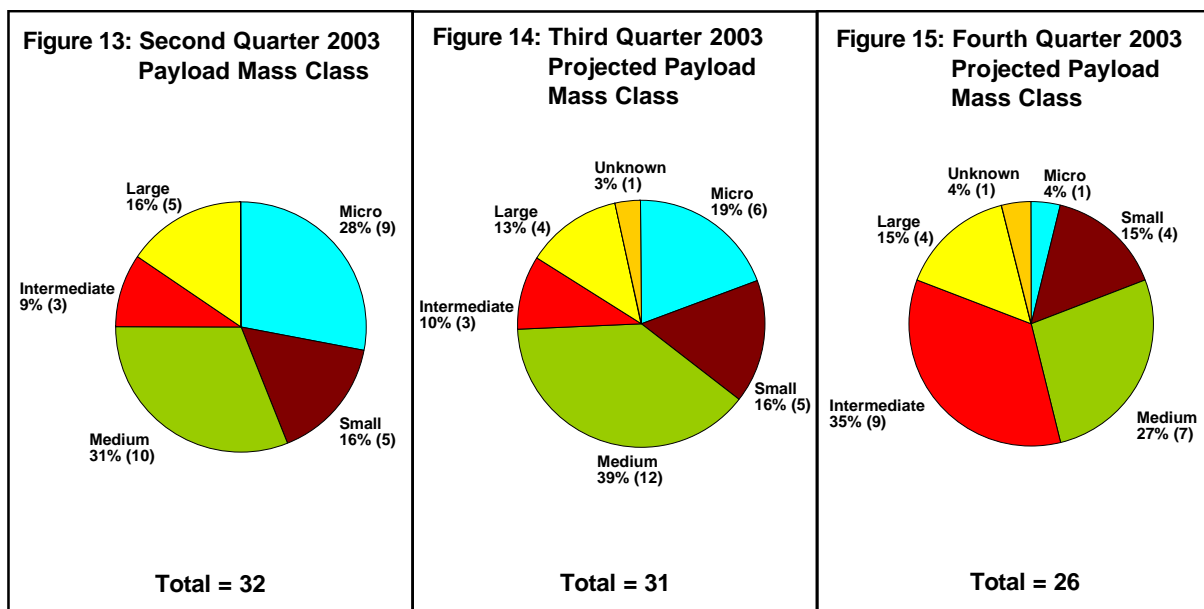
(April – December 2003)



Figures 10-12 show total payload use (commercial and government), actual for the second quarter of 2003 and that are projected for the third and fourth quarters of 2003. The total number of payloads launched may not equal the total number of launches due to multi-manifesting, i.e., the launching of more than one payload by a single launch vehicle.

Payload Mass Class

(April – December 2003)



Figures 13-15 show total payloads by mass class (commercial and government), actual for the second quarter of 2003 and projected for the third and fourth quarters of 2003. The total number of payloads launched may not equal the total number of launches due to multi-manifesting, i.e., the launching of more than one payload by a single launch vehicle. Payload mass classes are defined as Micro: 0 to 91 kilograms (0 to 200 lbs.); Small: 92 to 907 kilograms (201 to 2,000 lbs.); Medium: 908 to 2,268 kilograms (2,001 to 5,000 lbs.); Intermediate: 2,269 to 4,536 kilograms (5,001 to 10,000 lbs.); Large: 4,537 to 9,072 kilograms (10,001 to 20,000 lbs.); and Heavy: over 9,072 kilograms (20,000 lbs.).

Commercial Launch Trends

(July 2002 – June 2003)

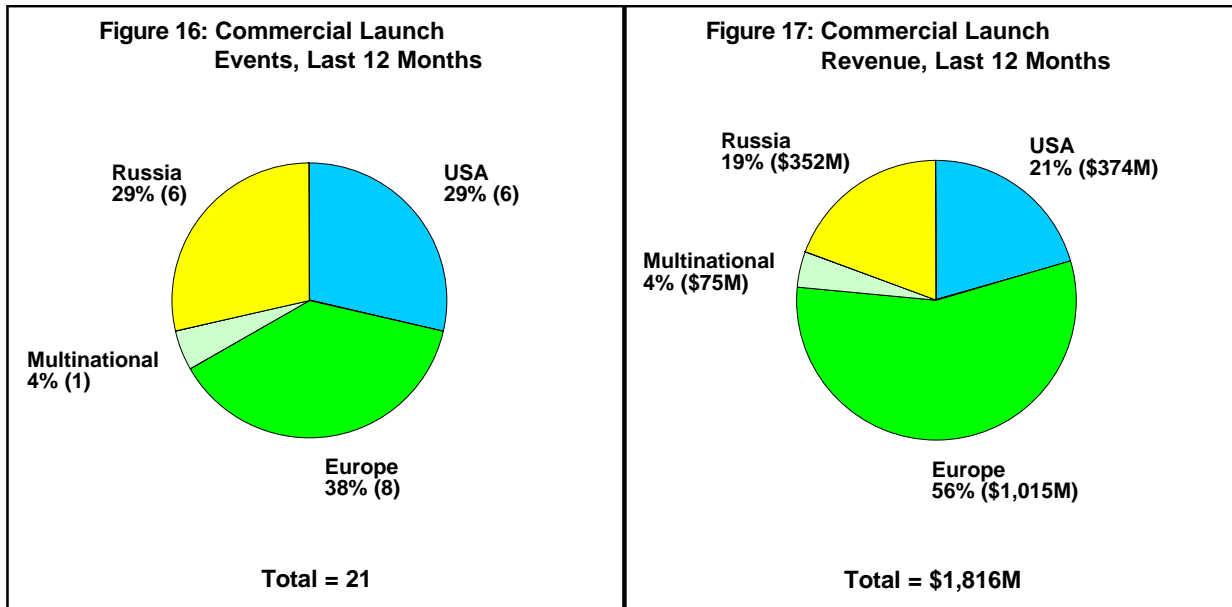


Figure 16 shows commercial launch events for the period July 2002 to June 2003 by country.

Figure 17 shows commercial launch revenue for the period July 2002 to June 2003 by country.

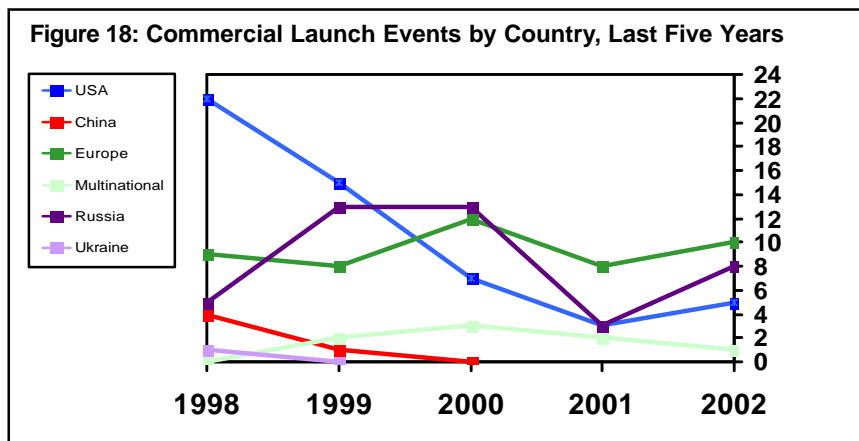


Figure 18 shows commercial launch events by country for the last five full years.

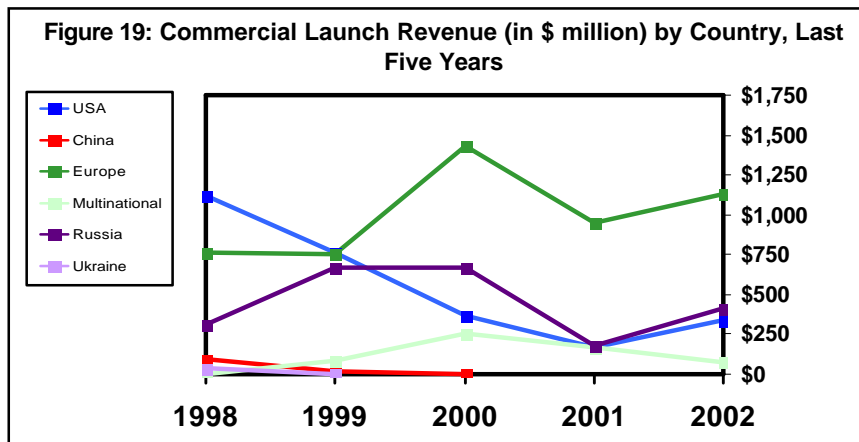


Figure 19 shows commercial launch revenue by country for the last five full years.

Second Quarter 2003 Orbital Launch Events							
Date	Vehicle	Site	Payload or Mission	Operator	Use	Vehicle Price	L M
4/2/03	Molniya	Plesetsk	Molniya 1T	Russian Ministry of Defense	Communications	\$30-40M	S S
4/8/03	Titan 4B/Centaur	CCAFS	Milstar F6	United States Air Force	Communications	\$350-450M	S S
4/9/03	/ Ariane 5G	Kourou	* Insat 3A	Indian Space Research Organization	Communications	\$125-155M	S S
			* Galaxy 12	Pan American Satellite Corp.	Communications		S
4/11/03	/ + Atlas 3B	CCAFS	* AsiaSat 4	Asia Satellite Telecommunications Company	Communications	\$65-75M	S S
4/24/03	Proton K	Plesetsk	Kosmos 2397	Russian Ministry of Defense	Intelligence	\$60-85M	S S
4/26/03	Soyuz	Baikonur	Soyuz ISS 6S	Rosaviakosmos	ISS	\$65M	S S
4/28/03	Pegasus XL	CCAFS	GALEX	NASA	Scientific	\$14-18M	S S
5/8/03	GSLV	Satish Dhawan Space Center	Gsat 2	Indian Space Research Organization	Communications	\$30-40M	S S
5/9/03	M 5	Kagoshima	Hayabusa	Institute for Space and Astronautical Sciences	Scientific	\$50-60M	S S
5/13/03	/ + Atlas 5 401	CCAFS	* Hellas-Sat 2	Hellas Sat Consortium, Ltd.	Communications	\$65-75M	S S
5/25/03	Long March 3A	Xichang	Beidou 3	China Academy of Space Technology	Navigation	\$45-55M	S S
6/2/03	/ Soyuz	Baikonur	Mars Express Orbiter Beagle 2	European Space Agency	Scientific	\$30-50M	S S
				European Space Agency	Scientific		S
6/4/03	Cosmos	Plesetsk	Kosmos 2398	Russian Ministry of Defense	Navigation	\$12M	S S
6/7/03	/ Proton K	Baikonur	* AMC 9	SES Americom	Communications	\$60-85M	S S
6/8/03	Soyuz	Baikonur	Progress ISS 11P	Rosaviakosmos	ISS	\$65M	S S
6/10/03	/ + Zenit 3SL	Odyssey Launch Platform	* Thuraya 2	Thuraya Satellite Communications Company	Communications	\$65-85M	S S
6/10/03	Delta 2 7925-10	CCAFS	Spirit	National Aeronautics and Space Administration	Scientific	\$45-55M	S S
6/11/03	/ Ariane 5G	Kourou	* Optus C1	Optus Communications Pty. Ltd.	Communications	\$125-155M	S S
			* BSat 2C	Broadcasting Satellite System Corporation	Communications		S S
6/19/03	Molniya	Plesetsk	Molniya 3-53	Russian Ministry of Defense	Communications	\$30-40M	S S
6/26/03	/ + Pegasus XL	VAFB	* OrbView 3	ORBIMAGE	Remote Sensing	\$14-18M	S S
6/30/03	Rocket	Plesetsk	Monitor E Mockup	Khronichev State Research and Production Space Center	Test	\$12-15M	S S
			MOST	Canadian Space Agency	Scientific		S
			Mimosa	Czech Academy of Sciences	Scientific		S
			* QuakeSat	QuakeFinder LLC	Scientific		S
			CanX-1	University of Toronto	Development		S
			AAU Cubesat	Aalborg University	Development		S
			DTUsat	Danish Technical University	Development		S
			CUTE	Tokyo Institute of Technology	Development		S
			Cubesat XI	University of Tokyo ISSL	Development		S

√ Denotes commercial launch, defined as a launch that is internationally competed or FAA-licensed.

+ Denotes FAA-licensed launch.

* Denotes a commercial payload, defined as a spacecraft that serves a commercial function or is operated by a commercial entity.

L and M refer to the outcome of the Launch and Mission (immediate status of the payload upon reaching orbit): S = success, P = partial success, F = failure

Note: All launch dates are based on local time at the launch site at the time of launch.

Third Quarter 2003 Projected Orbital Launch Events						
Date	Vehicle	Site	Payload or Mission	Operator	Use	Vehicle Price
7/7/03	Delta 2 7925H	CCAFS	Opportunity	National Aeronautics and Space Administration	Scientific	\$45-55M
7/17/03 /	+Atlas 5 521	CCAFS	* Rainbow 1	Cablevision Systems Corporation	Communications	\$70-85M
7/23/03	Delta 4 Medium	CCAFS	DSCS 3-14	United States Air Force	Communications	\$65-75M
7/28/03 /	Cosmos	Plesetsk	Kaistsat 4	Korea Advanced Institute of Science and Technology	Remote Sensing	\$12M
			NigeriaSat 1	National Space Research and Development Agency (Nigeria)	Remote Sensing	
			Mozhayets 4	Mozhaiskiy Military Space Engineering Academy	Development	
			Larets	Russia - TBA	Unknown	
			BNSCSat	British National Space Centre	Remote Sensing	
			BilSat 1	Tubitak-Bilten (Turkey)	Remote Sensing	
7/2003	Strela	Baikonur	* Gruzomaket	NPO Machinostroyeniya	Test	\$10M
7/2003	Long March 2C	Taiyuan	FSW 18	China Aerospace Corporation	Scientific	\$20-25M
8/2/03	Pegasus XL	VAFB	Scisat 1	Canadian Space Agency	Scientific	\$14-18M
8/12/03	Soyuz	Baikonur	Kosmos TBA 12	Russian Ministry of Defense	Intelligence	\$30-50M
8/18/03	Titan 4B/Centaur	CCAFS	NRO T4	National Reconnaissance Office	Intelligence	\$350-450M
8/23/03	Delta 2 7920H	CCAFS	SIRTF	National Aeronautics and Space Administration	Scientific	\$45-55M
8/28/03 /	Ariane 5G	Kourou	* Insat 3E	Indian Space Research Organization	Communications	\$125-155M
			SMART 1	European Space Agency	Development	
			*eBird	Eutelsat	Communications	
8/30/03	Soyuz	Baikonur	Progress ISS 12P	Rosaviakosmos	ISS	\$65M
8/2003 /	+Zenit 3SL	Odyssey Launch Platform	* EchoStar 9	Echostar Communications Corporation	Communications	\$65-85M
8/2003	VLS	Alcantara	Unosat SATEC	Universidade Norte do Parana Instituto Nacional de Pesquisas Espaciais (Brazil)	Development Development	\$8M
9/10/03	H 2A 2024	Tanegashima	IGS 2A IGS 2B	Japan Defense Agency Japan Defense Agency	Intelligence Intelligence	\$70-100M
9/14/03	Titan 2	VAFB	DMSP 5D-3-F16	United States Air Force	Meteorological	\$30-40M
9/2003	Long March 4B	Taiyuan	CBERS/Ziyuan 2	Chinese Academy of Space Technology	Remote Sensing	\$25-35M
9/2003	Soyuz	Plesetsk	Resurs DK 1	Rosaviakosmos	Remote Sensing	\$30-50M
9/2003	Proton K	Baikonur	Glonass M R8 Glonass M R9 Glonass M R7	Russian Ministry of Defense Russian Ministry of Defense Russian Ministry of Defense	Navigation Navigation Navigation	\$60-85M
3Q/2003	PSLV	Satish Dhawan Space Center	IRS P6	Indian Space Research Organization	Remote Sensing	\$15-17M

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Note: Ariane 5 payloads are usually multi-manifested, but the pairing of satellites scheduled for each launch is sometimes undisclosed for proprietary reasons until shortly before the launch date.

Fourth Quarter 2003 Projected Orbital Launch Events						
Date	Vehicle	Site	Payload or Mission	Operator	Use	Vehicle Price
12/1/03	/ + Atlas 3B	CCAFS	UHF-F11	United States Air Force	Communications	\$65-75M
10/8/03	/ Rocket	Plesetsk	SERVIS 1	National Space Development Agency	Development	\$12-15M
10/17/03	Delta 2 7925-10	CCAFS	Navstar GPS 2R-10	United States Air Force	Navigation	\$45-55M
10/18/03	Soyuz	Baikonur	Soyuz ISS 7S	Rosaviakosmos	ISS	\$65M
10/30/03	/ Ariane 5G	Kourou	* SatMex 6	Satelites Mexicanos S.A. de C.V.	Communications	\$125-155M
10/2003	/ Dnepr 1	Baikonur	* Trailblazer	TransOrbital, Inc.	Other	\$8-11M
10/2003	/ + Taurus XL	VAFB	Rocsat 2	National Space Program Office	Remote Sensing	\$20-30M
11/13/03	Delta 2 7920	VAFB	Gravity Probe B	National Aeronautics and Space Administration	Scientific	\$45-55M
12/19/03	Delta 2 7925-10	CCAFS	Navstar GPS 2RM-11	United States Air Force	Navigation	\$45-55M
12/2003	Long March 2C	Jiuquan	Double Star Equator	Chinese National Space Administration	Scientific	\$20-25M
12/2003	Proton K	Baikonur	* Express AM1	Russian Satellite Communication Co.	Communications	\$60-85M
12/2003	Zenit 2	Plesetsk	Sich 1M	Ukraine Space Agency	Remote Sensing	\$30-45M
12/2003	Long March 2F	Jiuquan	Shenzhou 5	Chinese National Space Administration	Other	\$50-65M
			OlympicSat 2	Chinese National Space Administration	Remote Sensing	
12/2003	Delta 4 Heavy	CCAFS	* Delta 4 Heavy Demosat	Boeing	Test	\$140-170M
4Q/2003	/ Proton M	Baikonur	* Eutelsat W3A	Eutelsat	Communications	\$70-100M
4Q/2003	/ Volna	Barents Sea	Cosmos 1	The Planetary Society	Development	\$0.8-1.5M
4Q/2003	Proton K	Baikonur	* Yamal 201	Russian Ministry of Defense	Communications	\$60-85M
			* Yamal 202	Russian Ministry of Defense	Communications	
11/20/03	Atlas 2AS	VAFB	NRO A3	National Reconnaissance Office	Intelligence	\$65-75M
12/15/03	/ + Atlas 2AS	CCAFS	* Superbird 6	JSAT Corporation	Communications	\$65-75M
2003	/ + Zenit 3SL	Odyssey Launch Platform	* Horizons 1	Horizons	Communications	\$65-85M
2003	/ Ariane 5G	Kourou	* TBA	TBA	Communications	\$125-155M
			* TBA	TBA	Communications	
2003	/ + Zenit 3SL	Odyssey Launch Platform	* APStar 5	APT Satellite Co., Ltd.	Communications	\$65-85M
2003	Long March 3A	Taiyuan	Fengyun 2C	China Meteorological Administration	Meteorological	\$45-55M

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* Denotes a commercial payload, defined as a spacecraft that serves a commercial function or is operated by a commercial entity.

Note: Ariane 5 payloads are usually multi-manifested, but the pairing of satellites scheduled for each launch is sometimes undisclosed for proprietary reasons until shortly before the launch date.