

Commercial Space Transportation

QUARTERLY LAUNCH REPORT

Featuring the
launch results from
the 4th quarter 2003
and forecasts for the
1st quarter 2004 and
2nd quarter 2004



1st Quarter 2004

United States Department of Transportation • Federal Aviation Administration
Associate Administrator for Commercial Space Transportation
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Washington, D.C. 20591



Introduction

The First Quarter 2004 Quarterly Launch Report features launch results from the fourth quarter of 2003 (October-December 2003) and launch forecasts for the first quarter of 2004 (January-March 2004) and second quarter of 2004 (April-June 2004). 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: An Atlas 3B, marketed by International Launch Services, sends UHF F11, the last satellite of the UHF constellation, on its way to geosynchronous orbit on December 17, 2003 from Cape Canaveral Spaceport, Florida. The UHF satellites are operated by the U.S. Department of Defense.

Fourth Quarter 2003 Highlights

Scaled Composites' SpaceShipOne reusable suborbital launch vehicle completed four unpowered glide flights after separation from the White Knight carrier aircraft during the fourth quarter of 2003. Following those tests, the vehicle successfully completed its first powered flight on December 17, 2003, becoming the first privately developed vehicle to break the sound barrier.

Space Adventures signed two new space tourists on December 4 to take ten-day trips to the International Space Station (ISS) aboard a Soyuz spacecraft in October 2004 and in 2005. The company is also promoting two additional Soyuz flight opportunities over the next three years.

Lockheed Martin started working on the US\$200 million refurbishment of the SLC 3E pad at Vandenberg Air Force Base (VAFB), California, for the Atlas 5 program. The pad should be complete in 2005.

Building of a Soyuz launch pad at the Kourou, French Guiana, launch site, which was to begin in early 2004, hit a snag in late December. Some of the costs to operate the Ariane 5 and to build a Soyuz launch pad were too much for some European Space Agency (ESA) partners.

The SpaceX Falcon launch vehicle was unveiled to the public in Washington, DC on December 4. The maiden launch of the vehicle will be made from VAFB in early 2004, carrying the Air Force's TacSat 1 satellite.

FAA/AST notified XCOR Aerospace in October that its application for a commercial space launch license has been deemed "sufficiently complete." The notification started a 180-day process for AST to make a license determination. XCOR is the first RLV company to reach this milestone.

The Air Force awarded a \$560 million contract to Lockheed Martin on October 21 to conduct seven Atlas 5 Evolved Expendable Launch Vehicle launches that were previously awarded to Boeing. The transfer is part of an Air Force penalty against Boeing for misuse of Lockheed Martin EELV contract bidding documents.

China became the third nation, following the former Soviet Union and the United States, to launch a human into space on October 15. China's Shenzhou 5 carried Lt. Col Yang Liwei through 14 orbits before returning to Earth on October 16.

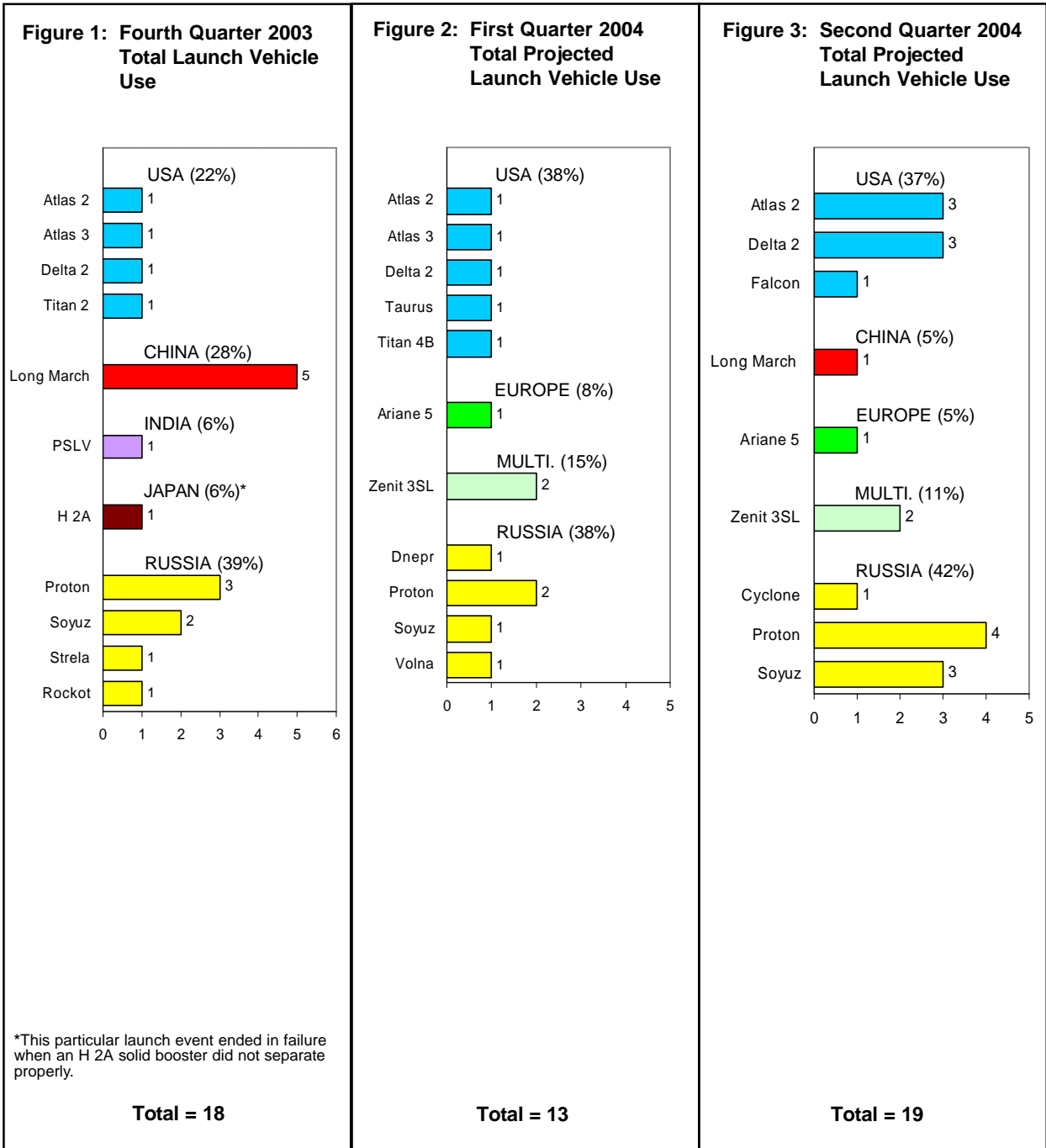
Boeing-led Sea Launch approved a plan in October to offer a Land Launch service using a vehicle similar to the Zenit 3SL launched from Baikonur, Kazakhstan. The Land Launch version will provide about 50 percent less capacity than the Zenit 3SL due to the difference in latitude.

Andrews Space was awarded an extension to its original US\$2.9 million Alternate Access to Station contract with NASA on October 24. Andrews has designed a Commercial Science and Logistics Vehicle, which would be able to carry cargo to and from the ISS. Later in the quarter, the company won two contracts from the Defense Advanced Research Projects Agency (DARPA) relating to the Force Application and Launch from CONUS (FALCON) Technology Demonstration program leading to the planned development of a horizontal-take-off small launch vehicle.

Brazil and the Ukraine signed a long-term agreement on October 23 to cooperate in space research, including the launch of Cyclone vehicles from Brazil's Alcantara launch site. The Cyclone project, including building a launch pad, will cost about US\$280 million. The first launch is planned for 2006.

Brazilian and Russian accident investigators have concluded that the explosion of Brazil's VLS rocket that killed 21 people at Alcantara on August, 22, 2003, was likely caused by an electrical discharge in a solid rocket motor rather than a design flaw.

Vehicle Use
(October 2003 – June 2004)

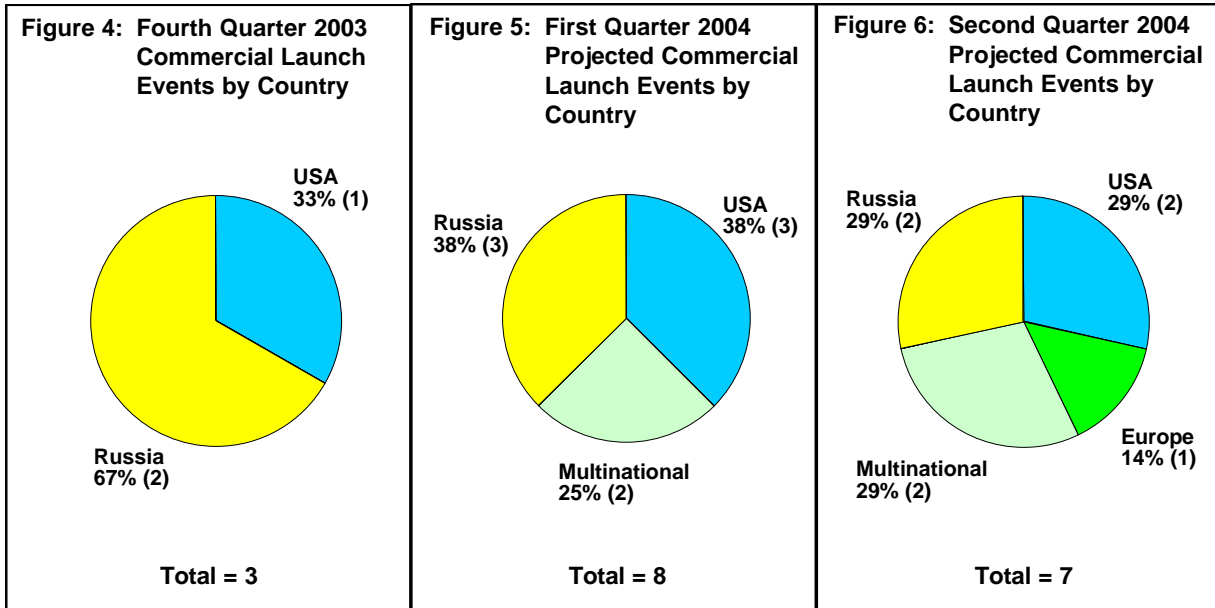


Figures 1-3 show the total number of orbital launches (commercial and government) of each launch vehicle and resulting market share that occurred in the fourth quarter of 2003 and that are projected for the first and second quarters of 2004. These launches are grouped by the country in which the primary 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

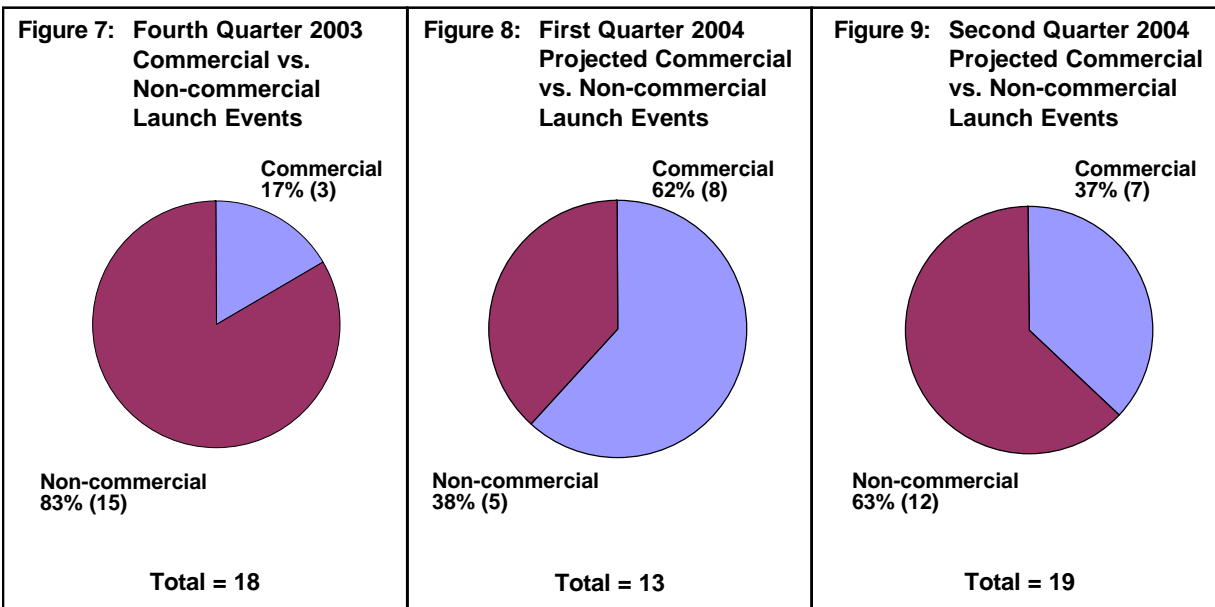
(October 2003 – June 2004)



Figures 4-6 show all *commercial* orbital launch events that occurred in the fourth quarter of 2003 and that are projected for the first and second quarters of 2004.

Commercial vs. Non-commercial Launch Events

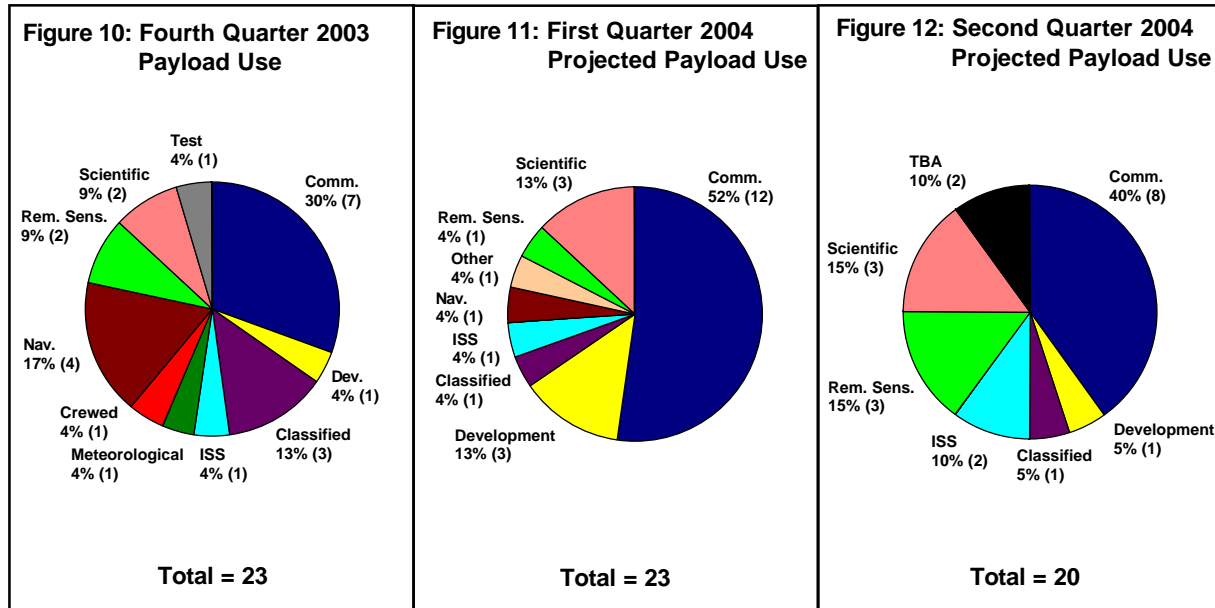
(October 2003 – June 2004)



Figures 7-9 show commercial vs. non-commercial orbital launch events that occurred in the fourth quarter of 2003 and that are projected for the first and second quarters of 2004.

Payload Use

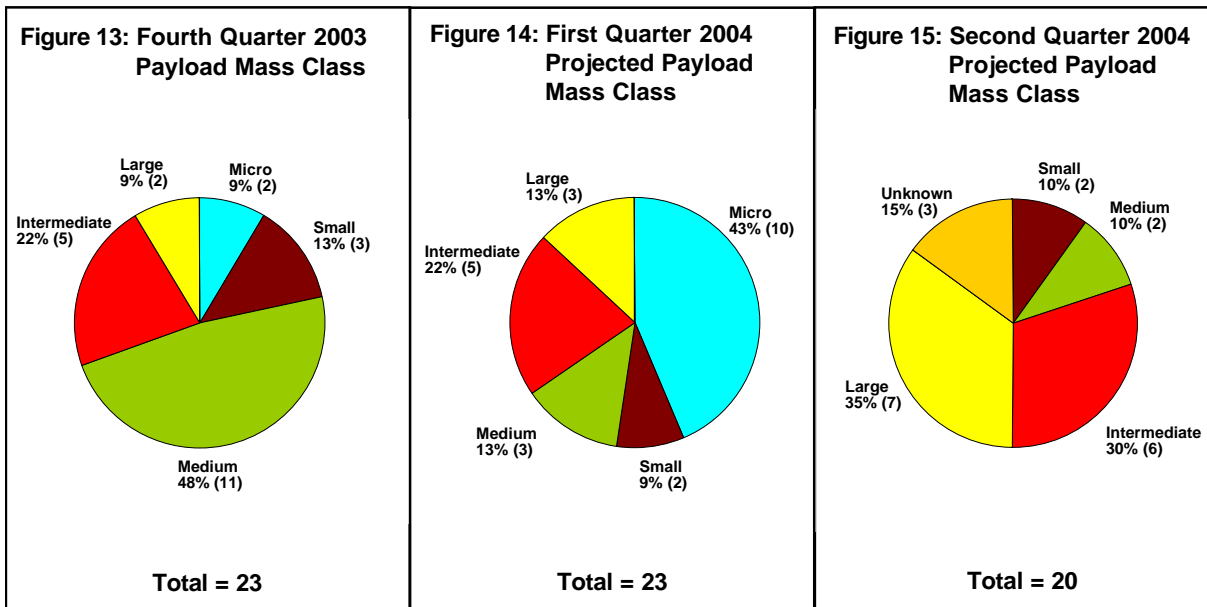
(October 2003 – June 2004)



Figures 10-12 show total payload use (commercial and government), actual for the fourth quarter of 2003 and that are projected for the first and second quarters of 2004. 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

(October 2003 – June 2004)



Figures 13-15 show total payloads by mass class (commercial and government), actual for the fourth quarter of 2003 and projected for the first and second quarters of 2004. 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
(January 2003 – December 2003)

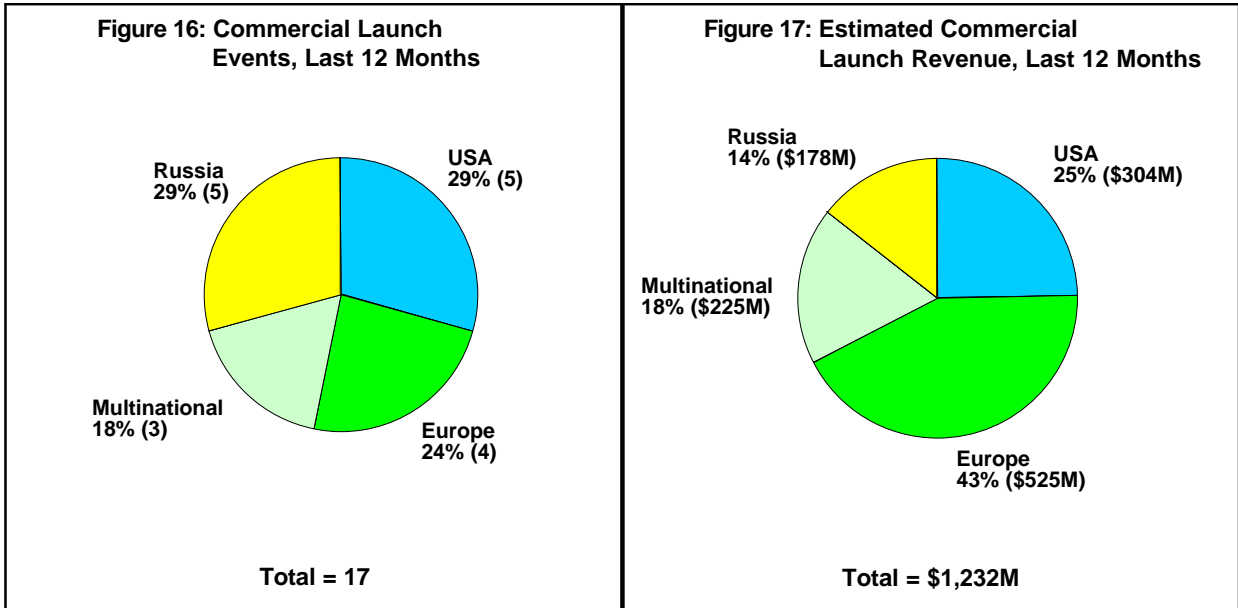


Figure 16 shows commercial launch events for the period January 2003 to December 2003 by country.

Figure 17 shows estimated commercial launch revenue for the period January 2003 to December 2003 by country.

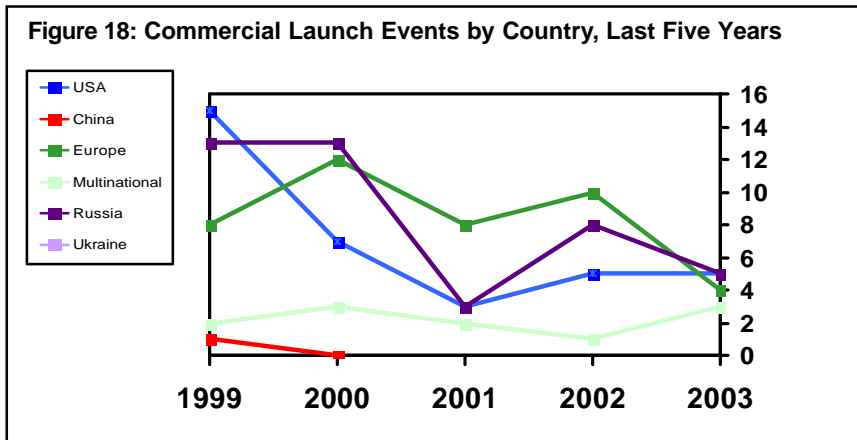


Figure 18 shows commercial launch events by country for the last five full years.

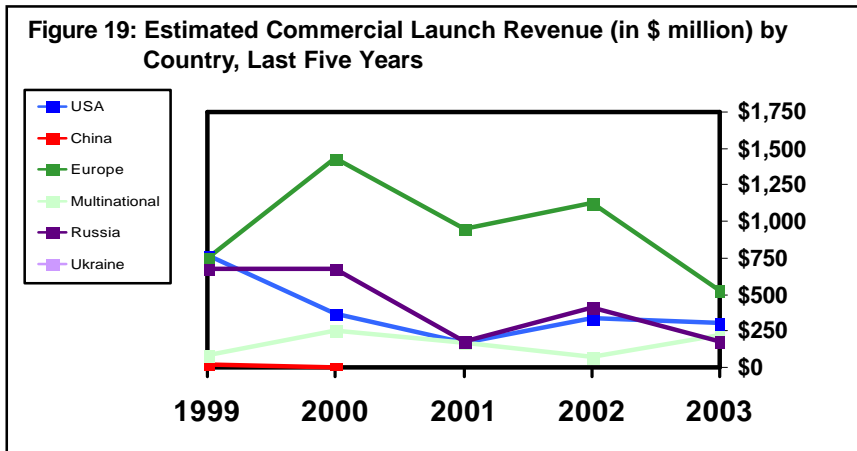


Figure 19 shows estimated commercial launch revenue by country for the last five full years.

Fourth Quarter 2003 Orbital Launch Events							
Date	Vehicle	Site	Payload or Mission	Operator	Use	Vehicle Price	L M
10/15/03	Long March 2F	Jiuquan	Shenzhou 5	Chinese National Space Administration (CNSA)	Crewed	N/A	S S
10/17/03	PSLV	Satish Dhawan Space Center	IRS P6	Indian Space Research Organization (ISRO)	Remote Sensing	\$15-17M	S S
10/18/03	Soyuz	Baikonur	Soyuz ISS 7S	Rosaviakosmos	ISS	\$65M	S S
10/18/03	Titan 2	VAFB	DMSF 5D-3-F16	USAF	Meteorological	\$30-40M	S S
10/21/03	Long March 4B	Taiyuan	CBERS/Ziyuan 2	Chinese Academy of Space Technology (CAST)	Remote Sensing	\$25-35M	S S
			Chuang Xing 1	Chinese Academy of Sciences	Communications		S
10/30/03 /	Rocket	Plesetsk	SERVIS 1	Japanese Aerospace Exploration Agency (JAXA)	Development	\$12-15M	S S
11/3/03	Long March 2D	Jiuquan	Jiangbing 4	CNSA	Scientific	\$20-25M	S S
11/15/03	Long March 3A	Xichang	Zhongxing 20	CNSA	Communications	\$45-55M	S S
11/24/03	Proton K	Baikonur	* Yamal 201	Gazkom Joint Stock	Communications	\$60-85M	S S
			* Yamal 202	Gazkom Joint Stock	Communications		S
11/29/03	H 2A 2024	Tanegashima	IGS 2A	Japan Defense Agency	Classified	\$70-100M	F F
			IGS 2B	Japan Defense Agency	Classified		F
12/2/03	Atlas 2AS	VAFB	USA 173	NRO	Classified	\$65-75M	S S
12/5/03	Strela	Baikonur	Gruzomaket	NPO Machinostroyeniya	Test	\$10M	S S
12/10/03	Proton K	Baikonur	Kosmos 2402	Russian MoD	Navigation	\$60-85M	S S
			Kosmos 2403	Russian MoD	Navigation		S
			Kosmos 2404	Russian MoD	Navigation		S
12/17/03 /	+ Atlas 3B	CCAFS	UHF F11	U.S. Navy	Communications	\$65-75M	S S
12/21/03	Delta 2 7925-10	CCAFS	Navstar GPS 2R-10	USAF	Navigation	\$45-55M	S S
12/28/03 /	Soyuz	Baikonur	* Amos 2	SpaceCom Limited	Communications	\$30-50M	S S
12/29/03	Proton K	Baikonur	* Express AM22	Russian Satellite Communciation Co.	Communications	\$60-85M	S S
12/30/03	Long March 2C	Xichang	Double Star Equator	CNSA	Scientific	\$20-25M	S 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.

First Quarter 2004 Projected Orbital Launch Events						
Date	Vehicle	Site	Payload or Mission	Operator	Use	Vehicle Price
1/10/04	✓ + Zenit 3SL	Odyssey Launch Platform	* Estrela do Sul	Loral Skynet do Brasil	Communications	\$65-85M
1/29/04	Soyuz	Baikonur	Progress ISS 13P	Rosaviakosmos	ISS	\$65M
2/5/04	✓ + Atlas 2AS	CCAFS	* AMC 10	SES Americom	Communications	\$65-75M
2/14/04	Titan 4B/IUS	CCAFS	DSP 22	USAF	Classified	\$350-450M
2/26/04	✓ + Taurus XL	VAFB	Rocsat 2	National Space Program Office (NSPO)	Remote Sensing	\$20-30M
2/26/04	Ariane 5G	Kourou	Rosetta Lander	European Space Agency (ESA)	Scientific	\$125-155M
			Rosetta Orbiter	ESA	Scientific	
2/27/04	✓ + Atlas 3A	CCAFS	* MBSAT	Mobile Broadcasting Corp.	Communications	\$65-75M
2/29/04	✓ Zenit 3SL	Odyssey Launch Platform	* DirecTV 7S	DirecTV, Inc.	Communications	\$65-85M
3/8/04	Delta 2 7925-10	CCAFS	Navstar GPS 2RM-11	USAF	Navigation	\$45-55M
3/31/04	Dnepr 1	Baikonur	Demeter	Centre National d'Etudes Spatiales (CNES)	Scientific	\$8-11M
			* AKS 1	Aerospace Systems	Development	
			AMSat-Echo	Amateur Radio Satellite Corp.	Communications	
			* Celestis 5	Celestis, Inc.	Other	
			* Latinsat 3	Aprize Satellite	Communications	
			* Latinsat 4	Aprize Satellite	Communications	
			Saudisat 3	Space Research Institute	Communications	
			Saudisat 4	Space Research Institute	Communications	
			Saudisat 5	Space Research Institute	Communications	
			Unisat 3	University of Rome	Development	
3/2004	✓ Proton M	Baikonur	* Eutelsat W3A	Eutelsat	Communications	\$70-100M
1Q/2004	✓ Proton M	Baikonur	* Intelsat 10 02	Intelsat	Communications	\$70-100M
1Q/2004	✓ Volna	Barents Sea	Cosmos 1	The Planetary Society	Development	\$0.8-1.5M

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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.

Second Quarter 2004 Projected Orbital Launch Events						
Date	Vehicle	Site	Payload or Mission	Operator	Use	Vehicle Price
4/10/04	Proton K	Baikonur	* Express AM1	Russian Satellite Communciation Co.	Communications	\$60-85M
4/16/04	/ + Atlas 2AS	CCAFS	* Superbird 6	Space Communications Corp.	Communications	\$65-75M
4/19/04	Soyuz	Baikonur	Soyuz ISS 8S	Rosaviakosmos	ISS	\$65M
4/20/04	Delta 2 7920	VAFB	Gravity Probe B	NASA	Scientific	\$45-55M
4/28/04	/ + Zenit 3SL	Odyssey Launch Platform	* APStar 5	APT Satellite Co., Ltd.	Communications	\$65-85M
5/11/04	Delta 2 7925-10	CCAFS	Messenger	NASA	Scientific	\$45-55M
5/13/04	Falcon	VAFB	TacSat 1	USAF	Development	\$6M
5/17/04	/ + Atlas 2AS	CCAFS	* AMC 11	SES Americom	Communications	\$65-75M
5/19/04	Soyuz	Baikonur	Progress ISS 14P	Rosaviakosmos	ISS	\$65M
6/20/04	Delta 2 7920	VAFB	Aura	NASA	Remote Sensing	\$45-55M
6/24/04	Atlas 2AS	CCAFS	NRO A4	USAF	Classified	\$65-75M
6/2004	Long March 2C	Taiyuan	Double Star Polar	CNSA	Scientific	\$20-25M
1Q/2004	Proton K	Baikonur	* Express AM11	Russian Satellite Communciation Co.	Communications	\$60-85M
2Q/2004	Cyclone 2	Plesetsk	Sich 1M	Ukraine Space Agency (NKAU)	Remote Sensing	\$20-25M
2Q/2004	/ + Zenit 3SL	Odyssey Launch Platform	* TBA	TBA	Communications	\$65-85M
2Q/2004	/ Proton M	Baikonur	* AMC 12	SES Americom	Communications	\$70-100M
2Q/2004	/ Proton M	Baikonur	* Amazonas 1	Hispasat	Communications	\$70-100M
2Q/2004	Soyuz	Plesetsk	Resurs DK 1	Rosaviakosmos	Remote Sensing	\$30-50M
2Q/2004	/ Ariane 5 TBA	Kourou	* TBA	TBA	TBA	\$125-155M
			* TBA	TBA	TBA	

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