

## Commercial Space Transportation

# QUARTERLY LAUNCH REPORT

Featuring the  
launch results from  
the 2nd quarter 2002  
and forecasts for  
the 3rd and  
4th quarters 2002



## 3rd Quarter 2002

United States Department of Transportation • Federal Aviation Administration  
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Washington, D.C. 20591



## Introduction

*The Third Quarter 2002 Quarterly Launch Report features launch results from the second quarter of 2002 (April-June 2002) and launch forecasts for the third quarter of 2002 (July-September 2002) and the fourth quarter of 2002 (October-December 2002). 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 more 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 Office of the Associate Administrator for Commercial Space Transportation of the Federal Aviation Administration under U.S. Code Title 49, Section 701, Subsection 9 (previously known as the Commercial Space Launch Act)*

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Cover: A Sea Launch Zenit 3SL carries PanAmSat Corporation's Galaxy 3C into geosynchronous orbit on June 15, 2002, from the Pacific Ocean. Image courtesy of Sea Launch.

## Second Quarter 2002 Highlights

Lockheed Martin's Atlas 5, developed under the U.S. Air Force (USAF) Evolved Expendable Launch Vehicle (EELV) program, conducted two full "wet" countdown demonstrations at the newly refurbished Launch Pad 41 at Cape Canaveral, Florida. The first Atlas 5 will launch Eutelsat's Hot Bird 6 communications satellite in August 2002. Also during the quarter, Boeing rolled out the Common Core Booster of the first Delta 4 vehicle to fly a USAF EELV mission later this year. The first Delta 4 will carry the Eutelsat W5 communications satellite. Also during this quarter, the first three Boeing Delta 4 Heavy launches were finalized, each carrying military payloads.

Boeing announced that it does not expect to make any profit from its Delta 4 launches until 2006, when the new booster is expected to gain acceptance from commercial satellite customers. The company also intends to continue operating the old workhorse Delta 2 until 2010.

California-based XCOR Aerospace acquired exclusive rights to all technology developed and certain assets acquired by the Rotary Rocket Company. Rotary Rocket was developing the Roton single-stage-to-orbit vehicle until it went out of business in 2000.

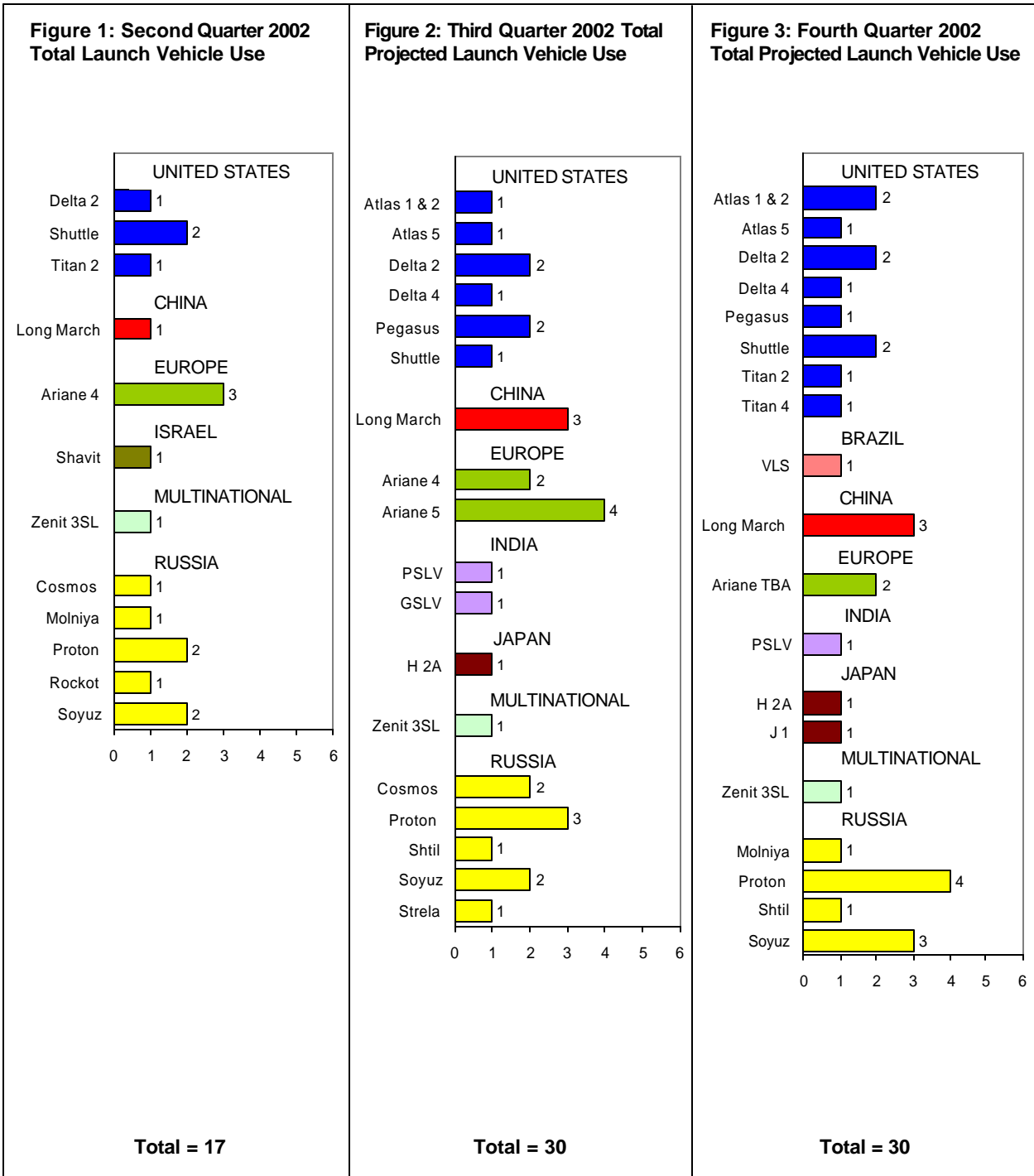
Brazil and the Ukraine signed a Memorandum of Understanding to use the Alcantara Launch Center to launch Cyclone boosters in a joint venture. The first launch of a Cyclone from Alcantara is expected sometime in 2005.

Arianespace announced sales of 807 million euros in 2001, but a loss of 193 million euros resulting from a decrease in demand for commercial launch business. The 2001 partial failure of the Ariane 5G vehicle also contributed to the loss in revenue. Arianespace plans an "aggressive action plan" allowing for a "rapid return to the break-even point." Arianespace also initiated a 50-percent cost-cutting plan in an effort to safeguard the company's future.

The Sea Launch Company successfully launched PanAmSat's Galaxy 3C communications satellite during the second quarter of 2002. This was the first launch by Sea Launch in over a year.

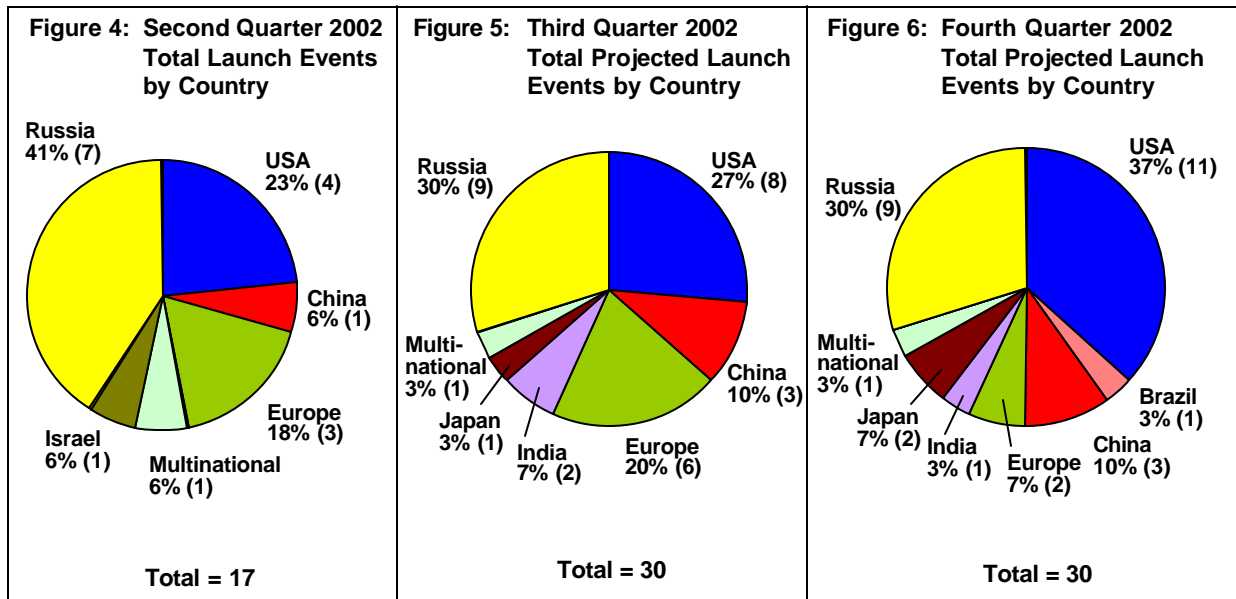
Vehicle Use

(April 2002 – December 2002)



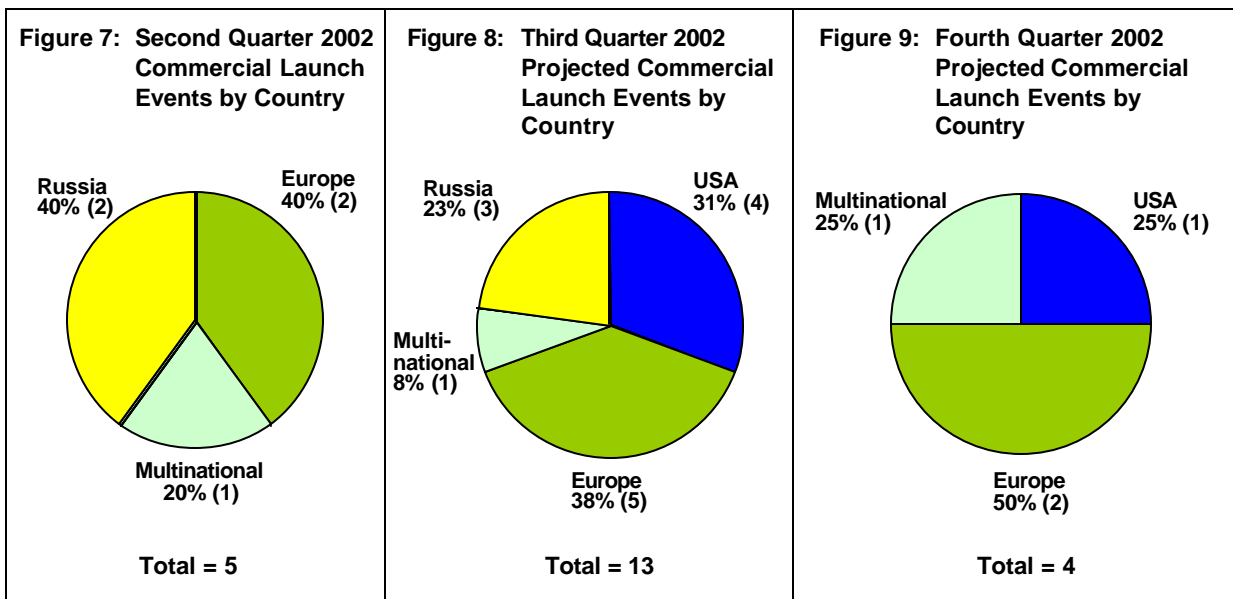
Figures 1-3 show the total number of orbital launches (commercial and government) of each launch vehicle that occurred in the second quarter of 2002 and that are projected for the third and fourth quarters of 2002. These launches are grouped by the country in which the primary vehicle manufacturer is based. Exceptions to this grouping are launches performed by Sea Launch, which are designated as multinational.

**Total Launch Events by Country**  
(April 2002 – December 2002)



Figures 4-6 show all orbital launch events (commercial and government) that occurred in the second quarter of 2002 and that are projected for the third and fourth quarters of 2002.

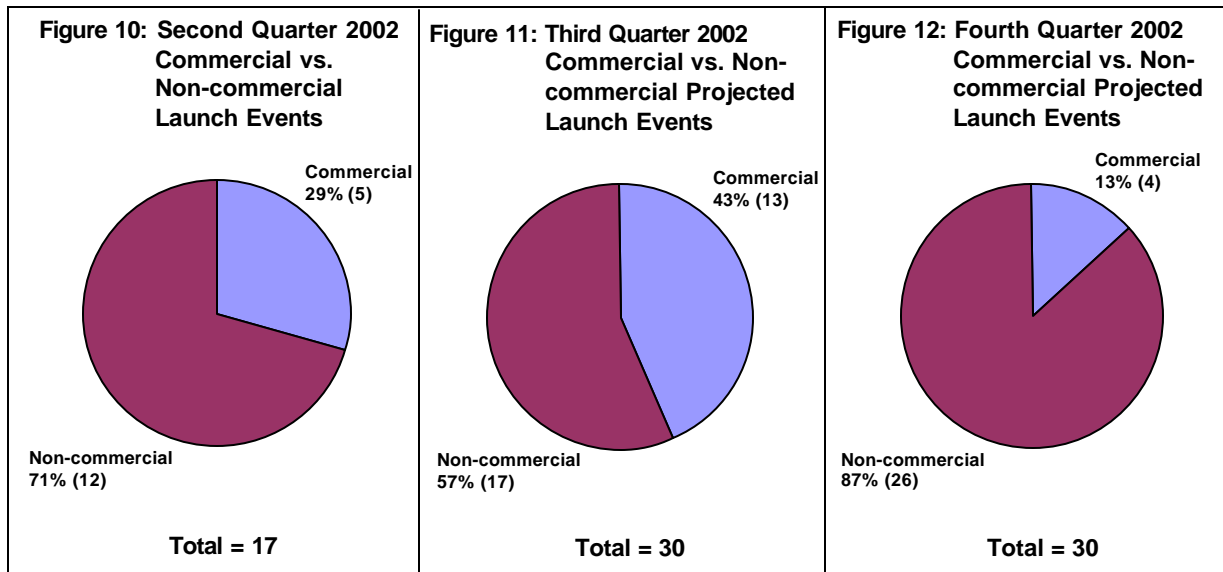
**Commercial Launch Events by Country**  
(April 2002 – December 2002)



Figures 7-9 show all *commercial* orbital launch events that occurred in the second quarter of 2002 and that are projected for the third and fourth quarters of 2002.

Commercial vs. Non-commercial Launch Events

(April 2002 – December 2002)



Figures 10-12 show commercial vs. non-commercial orbital launch events that occurred in the second quarter of 2002 and that are projected for the third and fourth quarters of 2002.

Second Quarter 2002 Launch Successes vs. Failures

(April 2002 – June 2002)

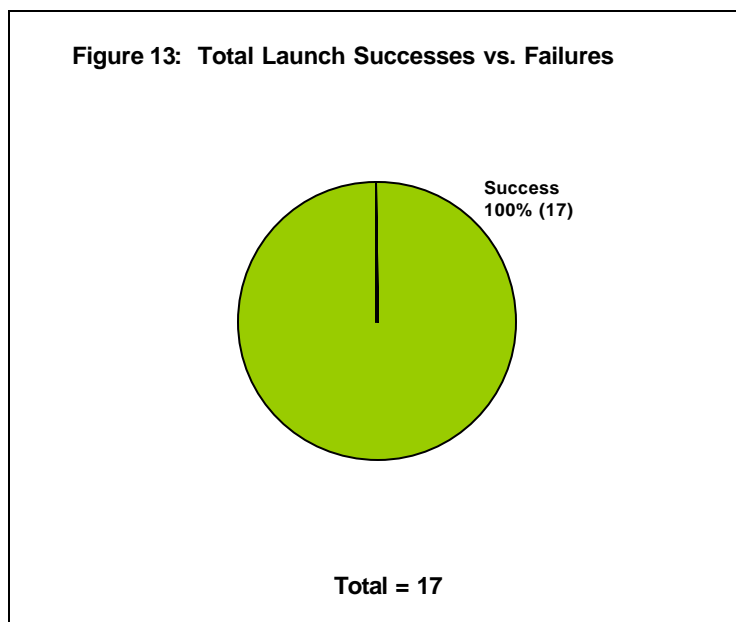
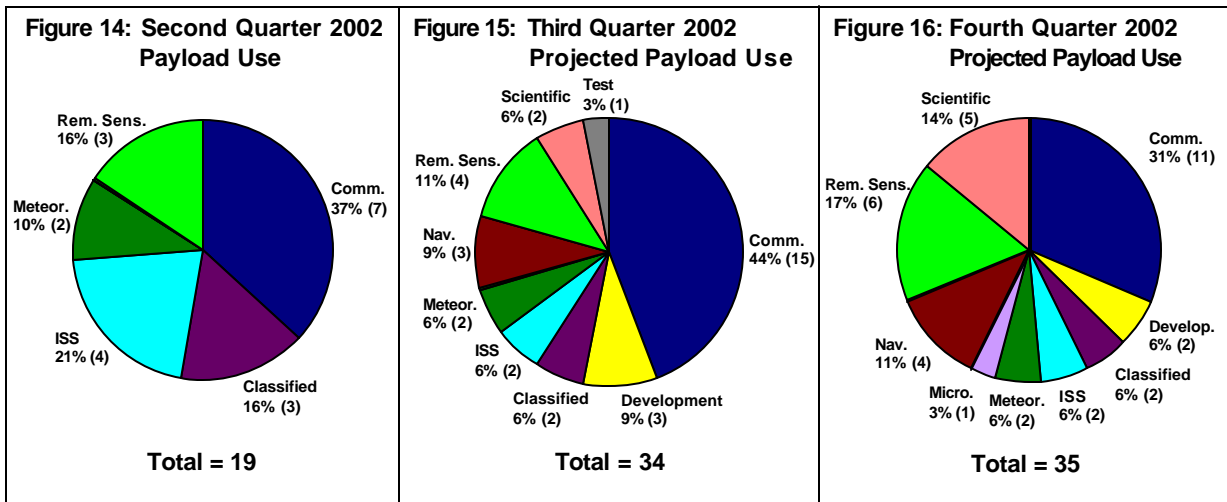


Figure 13 shows successful vs. failed orbital launch events that occurred in the second quarter of 2002. Partially-successful orbital launch events are those in which the launch vehicle fails to deploy its payload to the appropriate orbit but the payload is able to reach a useable orbit by using its own propulsion systems. Cases in which the payload is unable to reach a useable orbit or would use all of its fuel to do so are considered failures.

**Payload Use**

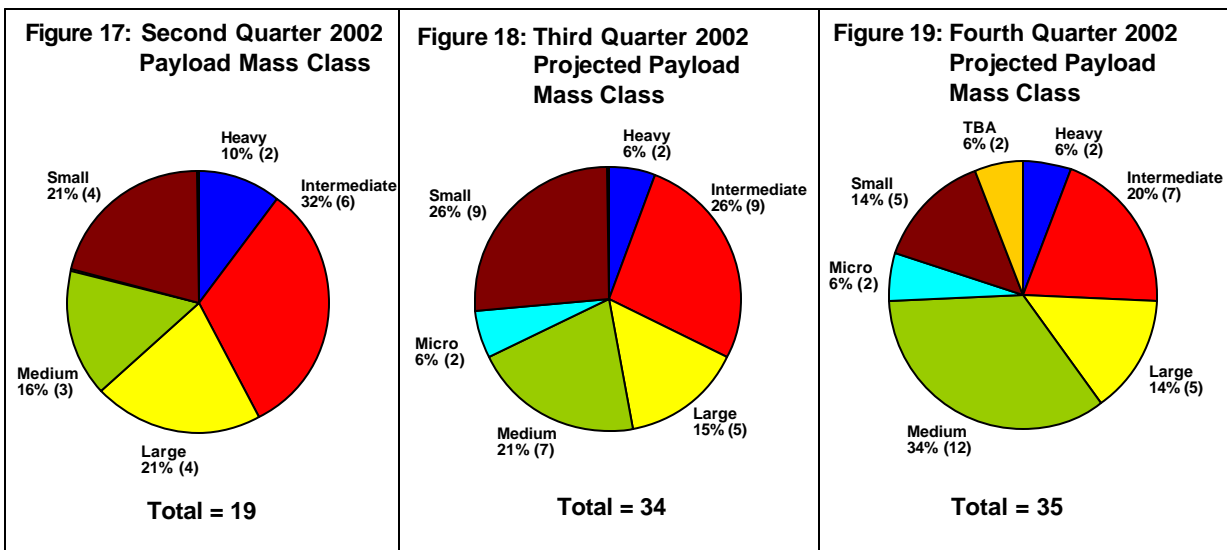
(April 2002 – December 2002)



Figures 14-16 show total payload use (commercial and government), actual for the second quarter of 2002 and that are projected for the third and fourth quarters of 2002. 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 2002 – December 2002)



Figures 17-19 show total payloads by mass class (commercial and government), actual for the second quarter of 2002 and projected for the third and fourth quarters of 2002. 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 9,073 kilograms (20,000 lbs.).

Commercial Launch Trends  
(July 2001 – June 2002)

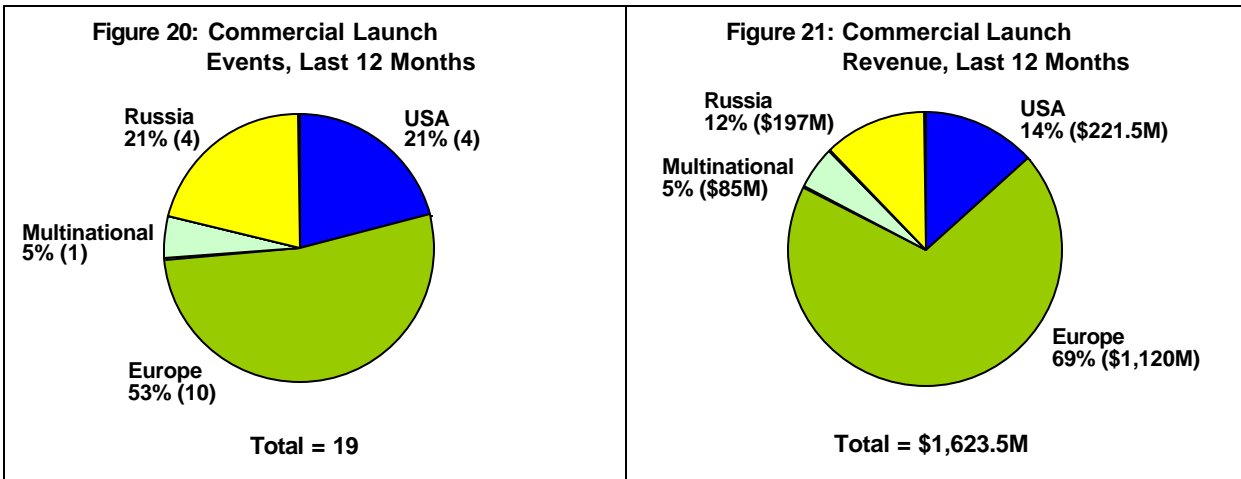


Figure 20 shows commercial launch events for the period July 2001 to June 2002 by country.

Figure 21 shows commercial launch revenue for the period July 2001 to June 2002 by country.

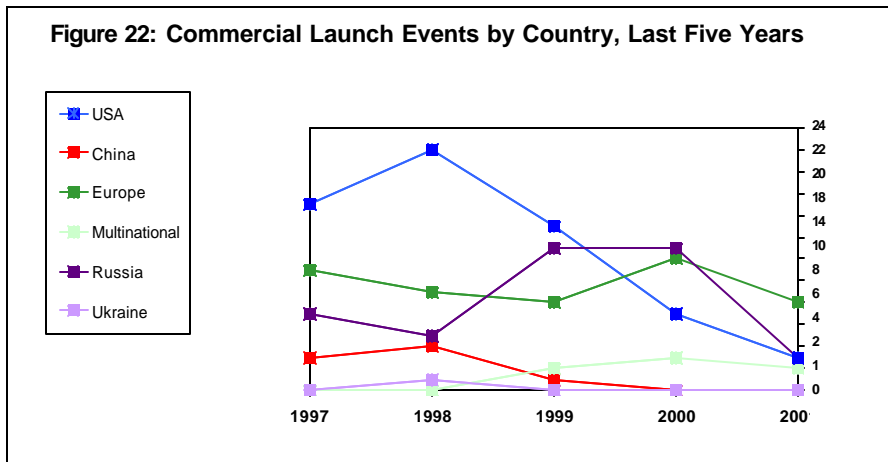


Figure 22 shows commercial launch events by country for the last five full years.

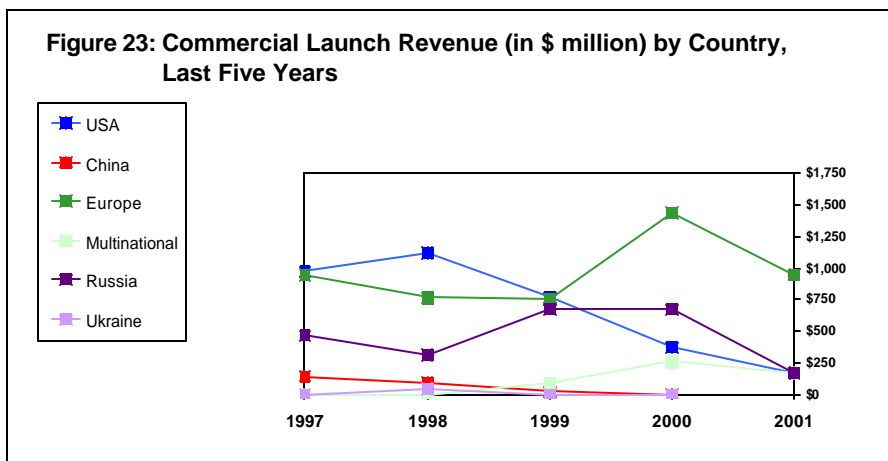


Figure 23 shows commercial launch revenue by country for the last five full years.



**THIRD QUARTER 2002  
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**APPENDIX A:  
SECOND QUARTER LAUNCH EVENTS**

Second Quarter 2002 Orbital Launch Events							
Date	Vehicle	Site	Payload or Mission	Operator	Use	Vehicle Price	L M
4/2/2002	Molniya	Plesetsk	Kosmos 2388	Russian Ministry of Defense	Classified	\$30-40M	S S
4/8/2002	Shuttle Atlantis	Kennedy Space Center	STS 110	NASA	Crewed	\$300M	S S
			ISS 8A	NASA	ISS		S
4/16/2002	V Ariane 44L	Kourou	* NSS 7	New Skies Satellites N.V.	Communications	\$100-125M	S S
4/25/2002	Soyuz	Baikonur	Soyuz ISS 4S	Rosaviakosmos/NASA	ISS	\$30-40M	S S
5/3/2002	Ariane 42P	Kourou	SPOT 5	SPOT Image	Remote Sensing	\$65-85M	S S
5/4/2002	Delta 2 7920	VAFB	Aqua	NASA	Remote Sensing	\$50-60M	S S
5/7/2002	V Proton	Baikonur	* DirecTV 5	DirecTV, Inc.	Communications	\$75-95M	S S
5/15/2002	Long March 4B	Taiyuan	Fengyun 1D	China Meteorological Administration	Meteorological	\$25-35M	S S
			Haiyang 1	China Meteorological Administration	Remote Sensing		S
5/28/2002	Shavit 1	Palmachim AFB	Ofeq 5	Israel Space Agency	Classified	\$10-15M	S S
5/28/2002	Cosmos	Plesetsk	Kosmos 2389	Russian Ministry of Defense	Classified	\$12-14M	S S
6/5/2002	V Ariane 44L	Kourou	* Intelsat 905	Intelsat	Communications	\$100-125M	S S
6/5/2002	Shuttle Endeavour	Kennedy Space Center	STS 111	NASA	Crewed	\$300M	S S
			ISS UF-2	NASA	ISS		S
6/10/2002	Proton	Baikonur	* Express A1R	Russian Satellite Communication Co.	Communications	\$75-95M	S S
6/15/2002	V + Zenit 3SL	Sea Launch Platform	* Galaxy 3C	Pan American Satellite Corp.	Communications	\$75-95M	S S
6/20/2002	V Rocket	Plesetsk	* Iridium 98	Iridium Satellite LLC	Communications	\$12-15M	S S
			* Iridium 97	Iridium Satellite LLC	Communications		S
6/24/2002	Titan 2	VAFB	NOAA 17	NOAA	Meteorological	\$30-40M	S S
6/26/2002	Soyuz	Baikonur	Progress ISS 8P	Rosaviakosmos/NASA	ISS	\$30-40M	S S

V 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 L 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 2002  
QUARTERLY LAUNCH REPORT**

**APPENDIX B:  
THIRD QUARTER PROJECTED  
LAUNCH EVENTS**

Third Quarter 2002 Projected Orbital Launch Events						
Date	Vehicle	Site	Payload or Mission	Operator	Use	Vehicle Price
7/3/2002	Delta 2 7425-10	CCAFS	Contour	NASA	Scientific	\$45-55M
7/5/2002	V Ariane 5G	Kourou	* N-Star C	NTT Mobile Communications Network	Communications	\$150-180M
			* Stellan 5	France Telecom	Communications	
7/10/2002	Cosmos	Plesetsk	Kosmos TBA 10	Russian Ministry of Defense	Navigation	\$12-14M
7/25/2002	Proton	Baikonur	Kosmos TBA 11	Russian Ministry of Defense	Classified	\$75-95M
7/2002	Long March 4B	Taiyuan	CBERS/Ziyuan 2	China/Brazil	Remote Sensing	\$25-35M
8/2/2002	H 2A 202	Tanegashima	DRTS W	National Space Development Agency (Japan)	Communications	\$75-95M
8/6/2002	V + Atlas 5 401	CCAFS	* Hot Bird 6	Eutelsat	Communications	\$85-110M
8/11/2002	Delta 2 7925-10	CCAFS	Navstar GPS 2R-8	DoD	Navigation	\$45-55M
8/14/2002	Pegasus XL	CCAFS	GALEX	NASA	Scientific	\$12-15M
8/15/2002	V Proton	Baikonur	* Astra 1K	SES Global	Communications	\$75-95M
8/22/2002	Shuttle Atlantis	Kennedy Space Center	STS 112	NASA	Crewed	\$300M
			ISS 9A	NASA	ISS	
8/27/2002	V Ariane 5G	Kourou	* Atlantic Bird 1	Eutelsat	Communications	\$150-180M
8/31/2002	V + Delta 4 Medium	CCAFS	* Eutelsat W5	Eutelsat	Communications	\$75-90M
8/2002	PSLV	Sriharikota Range (SHAR)	Metsat	Indian Space Research Organization	Meteorological	\$15-25M
9/10/2002	Soyuz	Baikonur	Progress ISS 9P	RKK Energia	ISS	\$30-40M
9/18/2002	V + Atlas 2AS	CCAFS	* Hispasat 1D	Hispasat	Communications	\$90-105M
9/22/2002	V + Pegasus XL	VAFB	* OrbView 3	Orbital Imaging Corp. (ORBIMAGE)	Remote Sensing	\$12-15M

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Third Quarter 2002 Projected Orbital Launch Events						
Date	Vehicle	Site	Payload or Mission	Operator	Use	Vehicle Price
9/2002	Cosmos	Plesetsk	Nadezhda AlSat 1	Rosaviakosmos National Center for Space Technology (Algeria)	Navigation Remote Sensing	\$12-14M
9/2002	V Ariane 5 ESC-A	Kourou	* Stentor 5 * Hot Bird 7	CNES/France Telecom Eutelsat	Communications Communications	\$150-180M
9/2002	GSLV	Sriharikota Range (SHAR)	Gsat 2	Indian Space Research Organization	Communications	\$25-45M
9/2002	Long March TBA	TBA	OlympicSat 1 OlympicSat 2	China China	Development Remote Sensing	N/A
9/2002	V Shtil	Barents Sea	Cosmos 1	The Planetary Society	Development	\$0.1-0.3M
9/2002	Long March 2F	Jiuquan	Shenzhou 4	China National Space Administration	Development	N/A
9/2002	Soyuz	Baikonur	Kosmos TBA 12	Russian Ministry of Defense	Classified	\$30-40M
3Q/2002	V Zenit 3SL	Sea Launch Platform	* Telstar 8	Loral Skynet	Communications	\$75-95M
3Q/2002	V Ariane 5G	Kourou	* eBird 1	Eutelsat	Communications	\$150-180M
3Q/2002	Strela	Baikonur	* Strela Test Payload	NPO Machinostroyeniya	Test	N/A
3Q/2002	V Ariane 44L	Kourou	* Intelsat 906	Intelsat	Communications	\$100-125M
3Q/2002	Ariane 4 TBA	Kourou	MSG 1	Eumetsat	Meteorological	N/A
3Q/2002	V Proton	Baikonur	* EchoStar 8	Echostar Communications Corporation	Communications	\$75-95M

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**APPENDIX C:  
FOURTH QUARTER PROJECTED  
LAUNCH EVENTS**

Fourth Quarter 2002 Projected Orbital Launch Events						
Date	Vehicle	Site	Payload or Mission	Operator	Use	Vehicle Price
10/6/2002	Titan 2	VAFB	DMSP 5D-3-F16	DoD	Meteorological	\$30-40M
10/6/2002	Shuttle Endeavour	Kennedy Space Center	STS 113	NASA	Crewed	\$300M
			ISS 11A	NASA	ISS	
10/17/2002	Proton	Baikonur	INTEGRAL	European Space Agency	Scientific	\$75-95M
10/22/2002	Soyuz	Baikonur	Soyuz ISS 5S	Rosaviakosmos/NASA	ISS	\$30-40M
10/29/2002	Atlas 2A	CCAFS	TDRS J	NASA	Communications	\$90-105M
10/2002	Molniya	Plesetsk	Molniya 3 TBA	Russian Ministry of Defense	Communications	\$30-40M
10/2002	VLS	Alcantara	SCD 3	Instituto Nacional de Pesquisas Espaciais	Remote Sensing	\$6-7M
10/2002	Soyuz	Plesetsk	Foton 13	Russian Ministry of Defense	Microgravity	\$30-40M
11/13/2002	Delta 4 Medium	CCAFS	DSCS 3-13	DoD	Communications	\$75-90M
11/14/2002	Delta 2 7925-10	CCAFS	Navstar GPS 2R-9 ProSEDS 2	DoD NASA	Navigation Development	\$45-55M
11/21/2002	Atlas 2AS	VAFB	NRO A3	NRO	Classified	\$90-105M
11/2002	∇ Ariane TBA	Kourou	* NSS 6	New Skies Satellites N.V.	Communications	N/A
11/2002	H 2A 202	Tanegashima	ADEOS 2	National Space Development Agency	Remote Sensing	\$75-95M
12/1/2002	Pegasus XL	CCAFS	SORCE	University of Colorado	Scientific	\$12-15M
12/17/2002	∇ + Atlas 5 TBA	CCAFS	* Nimiq 2	Telesat Canada	Communications	N/A
12/19/2002	Delta 2 7320	VAFB	CHIPSat ICESat	NASA NASA	Scientific Remote Sensing	\$45-55M
12/2002	Proton	Baikonur	Glonass M R4	Russian Ministry of Defense	Navigation	\$75-95M
			Glonass M R5	Russian Ministry of Defense	Navigation	
			Glonass M R6	Russian Ministry of Defense	Navigation	
12/2002	Titan 4B/Centaur	CCAFS	NRO T4	NRO	Classified	\$350-450M
4Q/2002	PSLV	Sriharikota Range (SHAR)	IRS P6	Indian Space Research Organization	Remote Sensing	\$15-25M

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**APPENDIX C:  
FOURTH QUARTER PROJECTED  
LAUNCH EVENTS**

Fourth Quarter 2002 Projected Orbital Launch Events						
Date	Vehicle	Site	Payload or Mission	Operator	Use	Vehicle Price
4Q/2002	/ + Zenit 3SL	Sea Launch Platform	* Horizons 1	Horizons	Communications	\$75-95M
4Q/2002	/ Ariane TBA	Kourou	* Optus C1	Optus Communications Pty.	Communications	N/A
4Q/2002	Proton	Baikonur	* Yamal 201	A/O Gazkom/Energia	Communications	\$75-95M
			* Yamal 202	A/O Gazkom/Energia	Communications	
2002	Soyuz	Plesetsk	Resurs F2	Rosaviakosmos	Remote Sensing	\$30-40M
2002	Long March 1D	Jiuquan	Tansuo 1	China Meteorological Administration	Remote Sensing	TBA
2002	J-1	Tanegashima	OICETS	National Space Development Agency	Scientific	\$40-50M
2002	Shuttle Columbia	Kennedy Space Center	STS 107	NASA	Scientific	\$300M
2002	Shtil	Barents Sea	IRDT 3	NPO Lavotchkin/ DaimlerChrysler Aerospace AG	Development	\$0.1-0.3M
2002	Proton	Baikonur	* Express A2A	Russian Satellite Communication Co.	Communications	\$75-95M
2002	Long March TBA	Taiyuan	Chuang Xing 1	Chinese Ministry of Defense	Communications	N/A
2002	Long March 4B	Taiyuan	FSW 18	China Meteorological Administration	Meteorological	\$25-35M

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