



**Federal Aviation
Administration**

Quarterly Launch Report 1st Quarter 2008

**Featuring Launch Results from the 4th Quarter 2007 and
Forecasts for the 1st and 2nd Quarter 2008**

Introduction

The *First Quarter 2008 Quarterly Launch Report* features launch results from the fourth quarter of 2007 (October-December 2007) and forecasts for the first quarter of 2008 (January- March 2008) and the second quarter of 2008 (April - June 2008). This report contains information on worldwide commercial, civil, and military orbital and commercial suborbital space launch events. Projected launches have been identified from open sources, including industry contacts, 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 Office of 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 photo by Tom Baur courtesy of the The Boeing Company, copyright © 2007. All rights reserved. The Boeing Company, through its commercial launch business, launched the second of four Italian Constellation of Small Satellites for Mediterranean basin Observation (COSMO) SkyMed spacecraft aboard a Delta II rocket for Thales Alenia Space Italia. The launch took place from Vandenberg Air Force Base in California on December 8, 2007 at 6:31 p.m. Pacific time.

Fourth Quarter 2007 Highlights

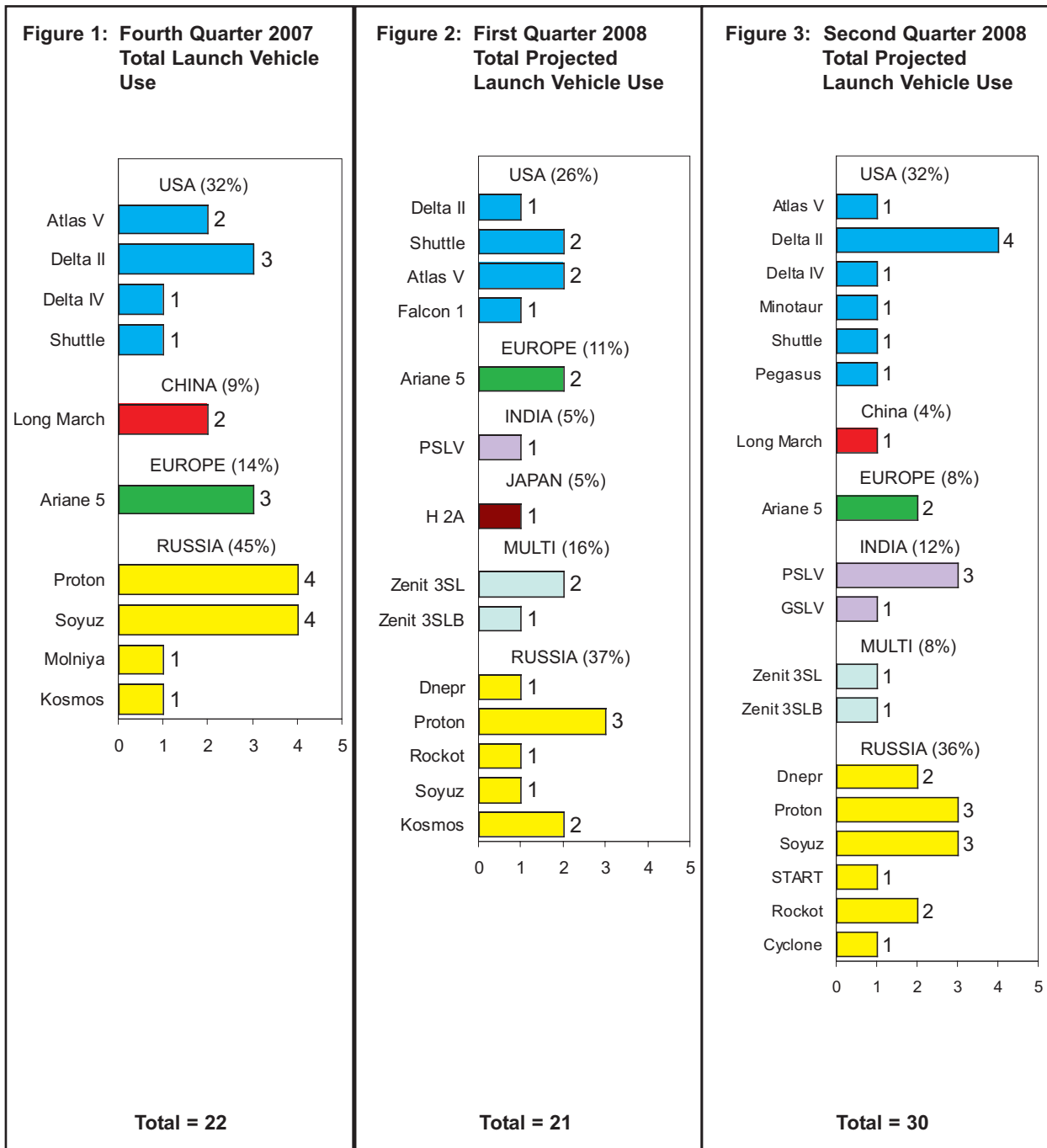
ULA Launches USAF Communications Satellite	A United Launch Alliance (ULA) Atlas V rocket launched from Cape Canaveral, Florida on October 10. The Atlas V successfully placed the U.S. Air Force's first Wideband Global SATCOM satellite into orbit.
ULA Launches USAF GPS Satellite	On October 17, a ULA Delta II launched from Cape Canaveral, Florida, and successfully deployed a U.S. Air Force Global Positioning System (GPS) satellite.
NASA Launches Space Shuttle	NASA's Space Shuttle Discovery (STS 120) successfully launched from Kennedy Space Center, Florida on October 23. STS 120 delivered the Harmony module and reconfigured a portion of the station in preparation for future assembly missions.
NASA Stops Funding COTS Participant	On October 18, NASA terminated an agreement with Rocketplane Kistler (RpK) to help fund development of a reusable launch vehicle after the 30-day notice of termination the agency had given RpK in September expired. The company was one of two to win Commercial Orbital Transportation Services (COTS) demonstration awards. RpK had taken over the development of the K-1 vehicle originally proposed by Kistler Aerospace, but had missed several milestones in its agreement due to the company's difficulty raising an estimated \$500 million from the private sector. NASA announced plans to hold a competition to award the remaining money in the RpK award, \$174.7 million, with results to be announced in early 2008.
2007 X PRIZE Cup	The 2007 X PRIZE Cup was held October 27-28 at Holloman Air Force Base, New Mexico. An estimated 85,000 people over two days attended the 2007 Holloman Air and Space Expo featuring the second X PRIZE Cup. The X PRIZE Cup is an air and space show conceived to highlight the emerging personal spaceflight industry and stage technology competitions. One of those competitions, the Northrop Grumman Lunar Lander Challenge, featured the Federal Aviation Administration-permitted flights of Armadillo's MOD 1 & Pixel rocket powered vehicles. None of the prize money for the two stages within the Northrop Grumman Lunar Lander Challenge was successfully claimed so the competition will be held again in 2008.
KSC Strike Ends	On November 6, striking machinists involved with Space Shuttle operations at the Kennedy Space Center (KSC) reached an agreement with their employer, United Space Alliance, on a new three-year contract that provided workers with a substantial portion of the wage increases they had sought and more limited concessions on benefits.
ULA Launches USAF Missile Warning Satellite	On November 10, a ULA Delta IV Heavy, launched from Cape Canaveral, Florida, successfully placed the U.S. Defense Support Program-23 satellite into orbit.

Fourth Quarter 2007 Highlights

SpaceX Completes Engine Development	SpaceX announced on November 12 that it has completed development of its Merlin 1C next generation liquid-fueled rocket booster engine. The Merlin 1C will be used to power upcoming launches of the Falcon 1 and Falcon 9 rockets. In 2008, SpaceX plans to manufacture approximately 50 booster engines, a number that exceeds the output of any country except Russia.
Russia Announces New Spaceport	Russia announced plans for a new spaceport, the Vostochny (“Eastern”) cosmodrome, in the Amur region located in the Far East of the country, on November 22. The precise location of the spaceport will be decided by 2010, with unmanned launches slated to begin from there by 2015, followed by manned missions in 2018.
New Galileo Funding Agreement	On November 24, European Union (EU) member nations reached an agreement on funding the Galileo satellite navigation system after the decision was made to divide development of the constellation into six contracts and prohibit any one company from winning more than two of them. The proposal funds Galileo at €2.4 billion (US\$3.5 billion) using unspent agricultural subsidies.
First Google Lunar X PRIZE Competitor Announced	Odyssey Moon, an international lunar enterprise based in the Isle of Man, announced on December 6, it will seek the \$30-million Google Lunar X PRIZE, making the company the first entrant into the competition.
Boeing Launches Italian Spacecraft	Boeing Launch Services launched a Delta II rocket from Vandenberg Air Force Base in California on December 8. The launch carried the second COSMO SkyMed spacecraft into orbit for Thales Alenia Space.
ULA Launches Reconnaissance Satellite	The ULA launched an Atlas V from Cape Canaveral, Florida, carrying a U.S. National Reconnaissance Office satellite on December 10.
NASA Awards Ares I Avionics Contract	On December 17, NASA awarded The Boeing Company a contract to build and outfit an avionics ring that will control the Ares I rocket in flight. The contract is cost-plus-award-fee and valued initially at \$265 million for the development of one instrument unit avionics ground test article, three flight test units, and six production flight units to support flight tests through 2016. Additional tasks beyond the original scope of work may add up to a maximum value of \$420 million.
ULA Launches USAF GPS Satellite	On December 20, a ULA Delta II launched from Cape Canaveral, Florida, and successfully deployed a U.S. Air Force GPS satellite.

Vehicle Use

(October 2007 – June 2008)

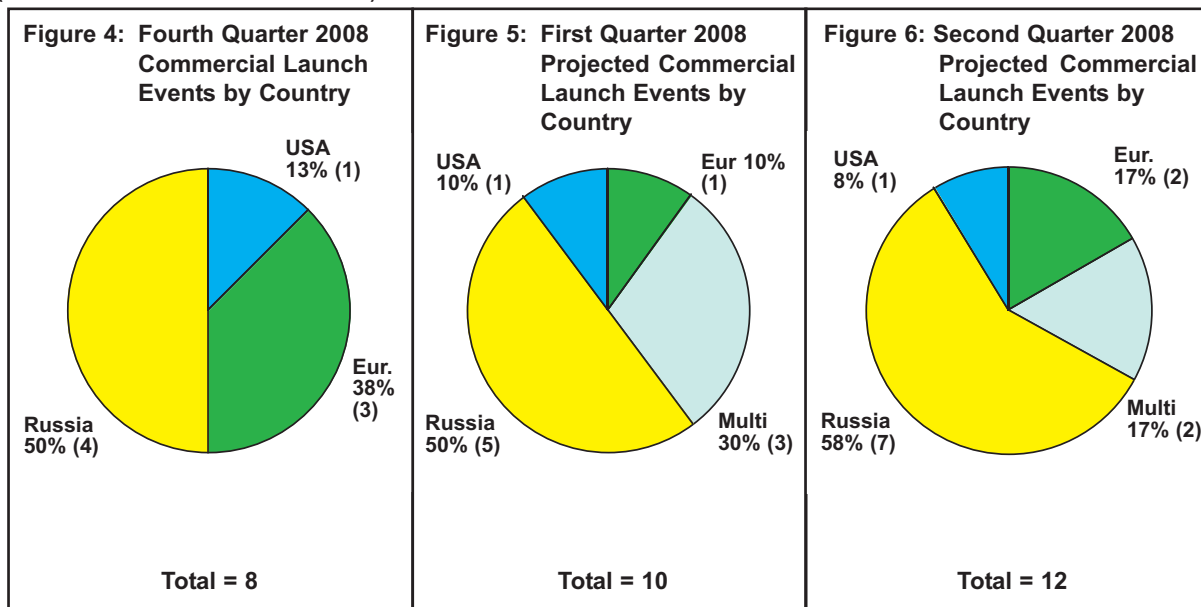


Figures 1-3 show the total number of orbital and commercial suborbital launches of each launch vehicle and the resulting market share that occurred in the fourth quarter of 2007. They also project this information for the first quarter of 2008 and second quarter of 2008. The launches are grouped by the 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

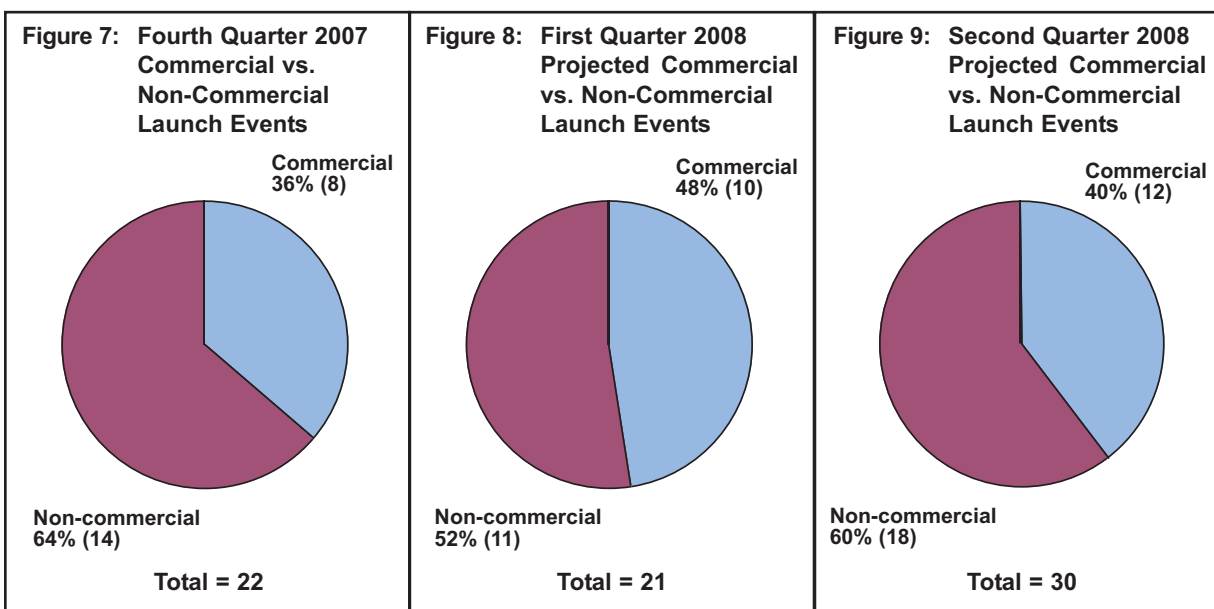
(October 2007 – June 2008)



Figures 4-6 show all commercial orbital and suborbital launch events that occurred in the fourth quarter of 2007 and that are projected for the first quarter of 2008 and second quarter of 2008.

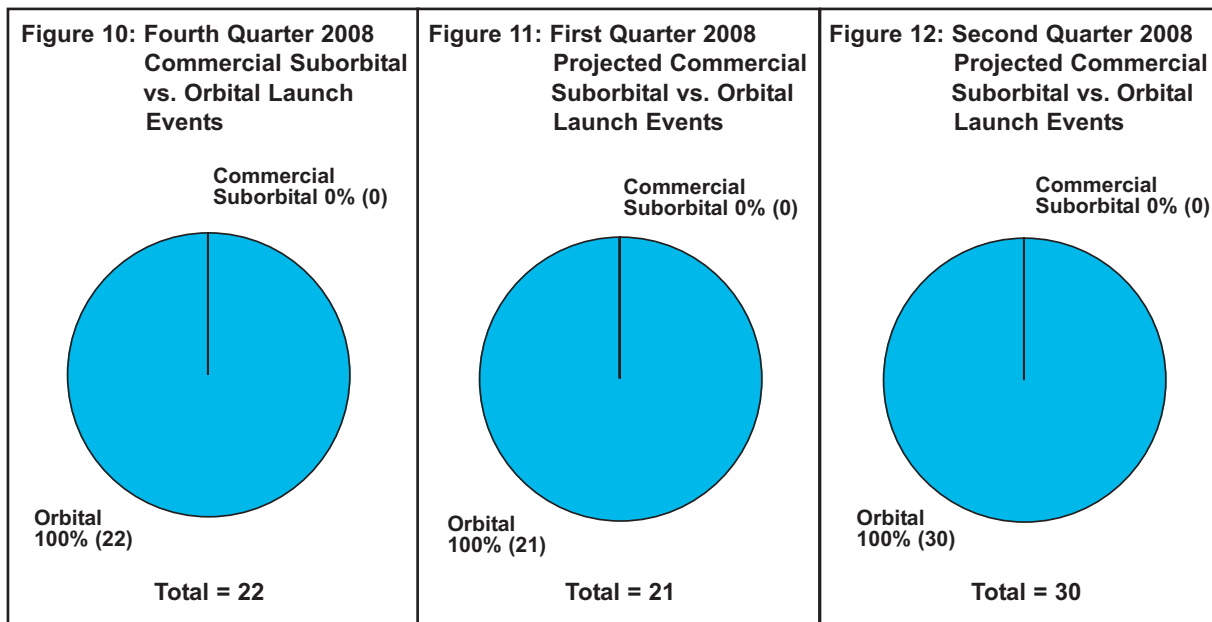
Commercial vs. Non-Commercial Launch Events

(October 2007 – June 2008)



Figures 7-9 show commercial vs. non-commercial orbital and suborbital launch events that occurred in the fourth quarter of 2007 and that are projected for the first quarter of 2008 and second quarter of 2008.

Orbital vs. Commercial Suborbital Launch Events
(October 2007 – June 2008)



Figures 10-12 show orbital vs. FAA-licensed commercial suborbital launch events (or their international equivalents) that occurred in the fourth quarter of 2007 and that are projected for the first quarter of 2008 and second quarter of 2008.

Launch Successes vs. Failures
(October 2007 – December 2007)

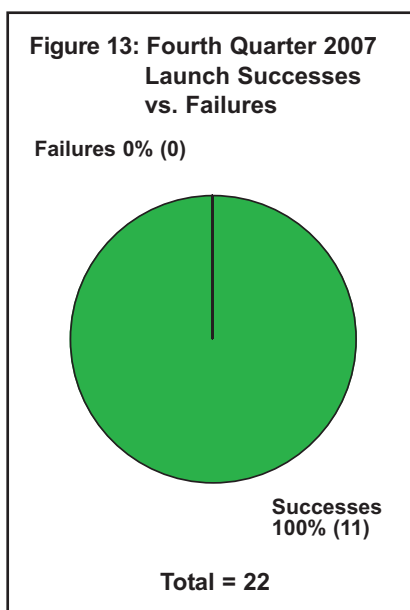
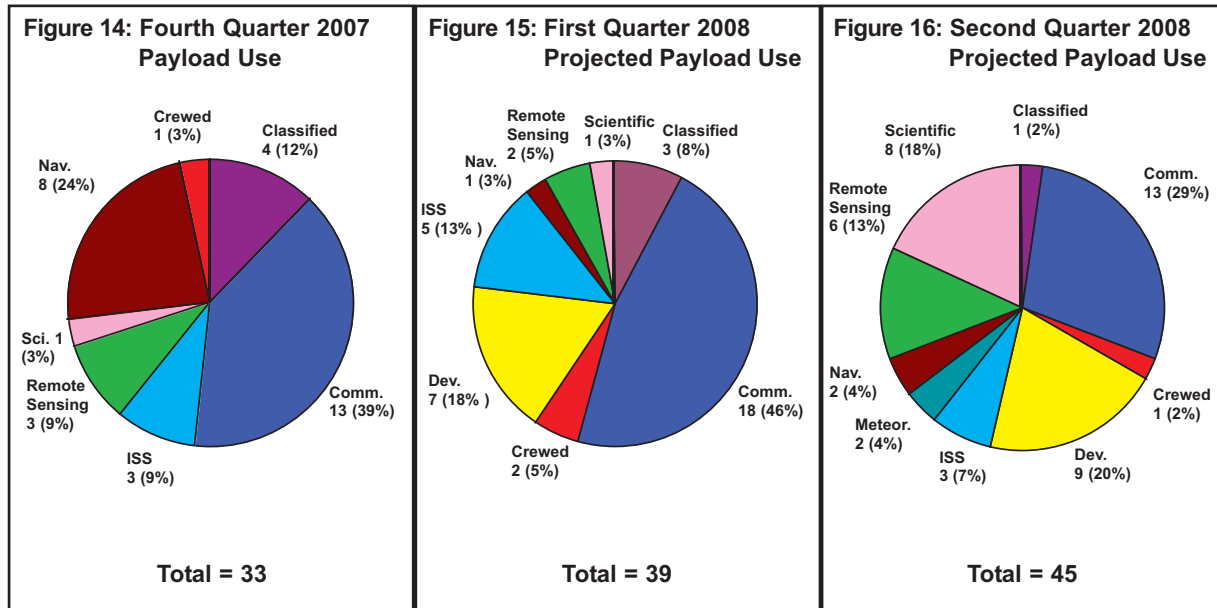


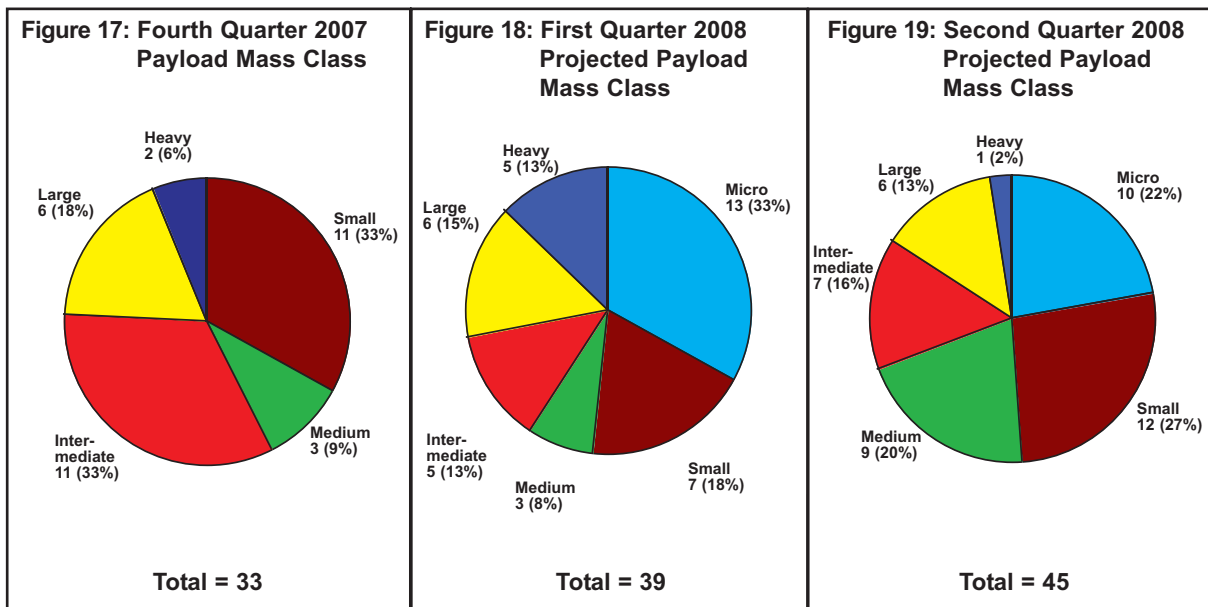
Figure 13 shows orbital and commercial suborbital launch successes vs. failures for the period from October 2007 to December 2007. Partially-successful orbital launch events are those where the launch vehicle fails to deploy its payload to the appropriate orbit, but the payload is able to reach a useable orbit via its own propulsion systems. Cases in which the payload does not reach a useable orbit or would use all of its fuel to do so are considered failures.

Payload Use (Orbital Launches Only)
(October 2007 – June 2008)



Figures 14-16 show total payload use (commercial and government), actual for the fourth quarter of 2007 and projected for the first quarter of 2008 and second quarter of 2008. The total number of payloads launched may not equal the total number of launches due to multiple manifesting, i.e., the launching of more than one payload by a single launch vehicle.

Payload Mass Class (Orbital Launches Only)
(October 2007 – June 2008)



Figures 17-19 show total payloads by mass class (commercial and government), actual for the fourth quarter of 2007 and projected for the first quarter of 2008 and second quarter of 2008. The total number of payloads launched may not equal the total number of launches due to multiple 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 (Orbital Launches Only)
(January 2007 – December 2007)

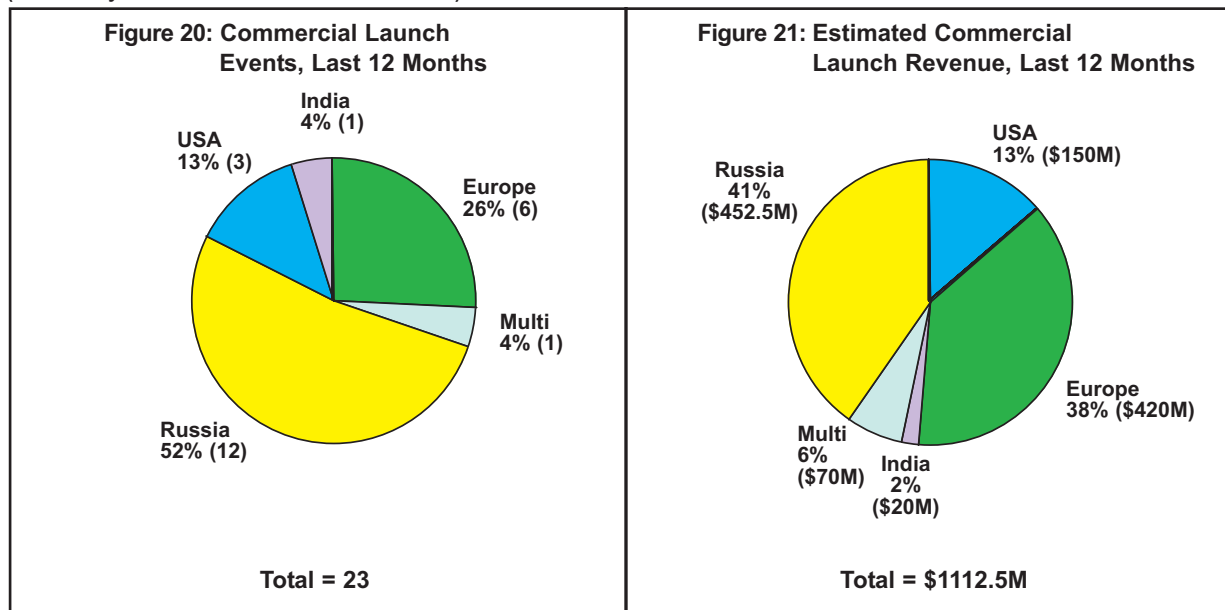


Figure 20 shows commercial orbital launch events for the period of January 2007 to December 2007 by country.

Figure 21 shows estimated commercial launch revenue for orbital launches for the period of January 2007 to December 2007 by country.

Commercial Launch Trends (Suborbital Launches and Experimental Permits)
(January 2007 – December 2007)

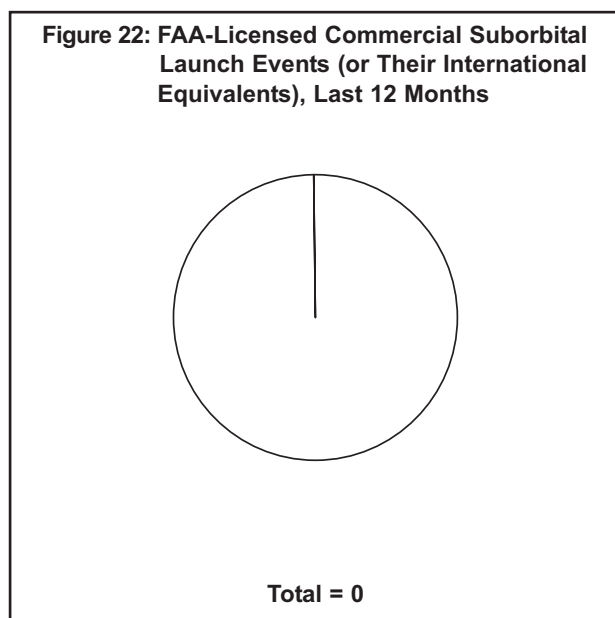


Figure 22 shows FAA-licensed commercial suborbital launch events (or their international equivalents) for the period of January 2007 to December 2007 by country.

Figure 23: FAA Experimental Permit Flights, Last 12 Months

Flight Date	Operator	Vehicle	Launch Site
3/22/2007	Blue Origin	Goddard	West Texas Launch Site, TX
4/19/2007	Blue Origin	Goddard	West Texas Launch Site, TX
6/2/2007	Armadillo Aerospace	Pixel	Oklahoma Spaceport, OK
6/2/2007	Armadillo Aerospace	Pixel	Oklahoma Spaceport, OK
10/20/2007	Armadillo Aerospace	MOD 1	Oklahoma Spaceport, OK
10/27/2007	Armadillo Aerospace	MOD 1	Holloman AFB, NM
10/27/2007	Armadillo Aerospace	MOD 1	Holloman AFB, NM
10/28/2007	Armadillo Aerospace	MOD 1	Holloman AFB, NM
10/28/2007	Armadillo Aerospace	MOD 1	Holloman AFB, NM

Figure 23 shows suborbital flights conducted under FAA experimental permits for the period of January 2007 to December 2007.

Commercial Launch History
(January 2003 – December 2007)

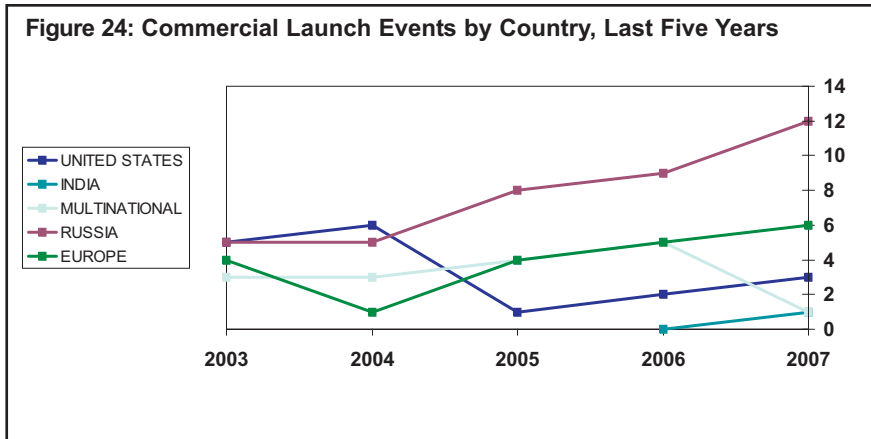


Figure 24 shows commercial launch events by country for the last five full calendar years.

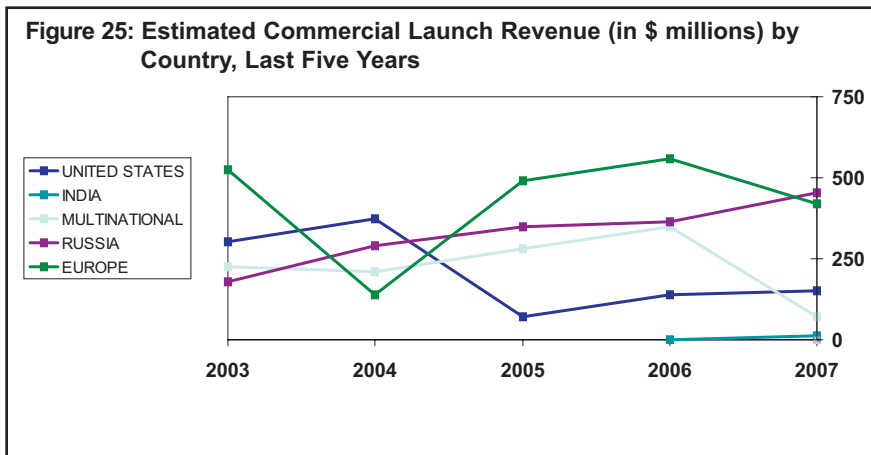


Figure 25 shows estimated commercial launch revenue by country for the last five full calendar years.

Fourth Quarter 2007 Orbital and Suborbital Launch Events							
Date	Vehicle	Site	Payload or Mission	Operator	Use	Vehicle Price	L M
10/5/2007	√ Ariane 5 GS	Kourou	* Optus D2 * Intelsat 11	Singtel/Optus Intelsat	Communications Communications	\$140M	S S S
10/10/2007	Soyuz	Baikonur	Soyuz ISS 15S	Roscosmos	ISS	\$40M	S S
10/10/2007	Atlas V 421	CCAFS	WGS 1	DoD	Communications	\$75M	S S
10/17/2007	Delta II 7925-10	CCAFS	Navstar GPS 2RM-4	USAF	Navigation	\$50M	S S
10/21/2007	√ Soyuz	Baikonur	* Globalstar Replacement 5 * Globalstar Replacement 6 * Globalstar Replacement 7 * Globalstar Replacement 8	Globalstar Globalstar Globalstar Globalstar	Communications Communications Communications Communications	\$40M	S S S S S
10/23/2007	Shuttle Discovery	KSC	STS 120 ISS 10A	NASA NASA	Crewed ISS	N/A	S S S
10/23/2007	Molniya	Plesetsk	Kosmos 2430	Russian MoD	Classified	\$35M	S S
10/24/2007	Long March 3A	Xichang	Chang'e 1	CNSA	Scientific	\$50M	S S
10/26/2007	Proton (SL-12)	Baikonur	Glonass K R7 Glonass K R8 Glonass K R9	Russian MoD Russian MoD Russian MoD	Navigation Navigation Navigation	\$72.5M	S S S S
11/1/2007	√ Kosmos 3M	Plesetsk	SAR Lupe 3	German MoD	Classified	\$12M	S S
11/10/2007	Delta IV Heavy	CCAFS	DSP 23	USAF	Classified	\$155M	S S
11/12/2007	Long March 4C	Taiyuan	Yaogan 3	CNSA	Remote Sensing	\$50M	S S
11/14/2007	√ Ariane 5 ECA	Kourou	Skynet 5B * Star One C1	Paradigm Secure Communications Star One	Communications Communications	\$140M	S S S
11/18/2007	√ Proton M	Baikonur	* Sirius 4	SES Sirius	Communications	\$70M	S S
12/8/2007	√ Delta II 7420-10	VAFB	Cosmo-Skymed 2	ASI	Remote Sensing	\$50M	S S
12/9/2007	Proton M	Baikonur	Kosmos 2434	Russian MoD	Communications	\$75M	S S
12/10/2007	Atlas V 401	CCAFS	NRO L-24	NRO	Classified	\$75M	S S
12/14/2007	√ Soyuz	Baikonur	* RADARSAT 2	MacDonald, Dettwiler and Associates	Remote Sensing	\$40M	S S
12/20/2007	Delta II 7925-10	CCAFS	Navstar GPS 2RM-5	USAF	Navigation	\$50M	S S
12/21/2007	√ Ariane 5 GS	Kourou	* RASCOM 1 * Horizons 2	Rascom/QAF Joint Venture Intelsat	Communications Communications	\$140M	S P S
12/23/2007	Soyuz	Baikonur	Progress ISS 27P	Roscosmos	ISS	\$40M	S S
12/25/2007	Proton (SL-12)	Baikonur	Glonass K R10 Glonass K R11 Glonass K R12	Russian MoD Russian MoD Russian MoD	Navigation Navigation Navigation	\$72.5M	S S S S

√ Denotes commercial launch, defined as a launch that is internationally competed or FAA-licensed. For multiple manifested launches, certain secondary payloads whose launches were commercially procured may also constitute a commercial launch. Appendix includes suborbital launches only when such launches are commercial.

+ Denotes FAA-licensed launch.

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

Notes: All prices are estimates, and vary for every commercial launch. Government mission prices may be higher than commercial prices.

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

First Quarter 2008 Projected Orbital and Suborbital Launch Events						
Date	Vehicle	Site	Payload or Mission	Operator	Use	Vehicle Price
1/15/2008	✓ + Zenit 3SL	Odyssey Launch Platform	* Thuraya 3	Thuraya Satellite Communications Company	Communications	\$70M
1/28/2008	Proton M	Baikonur	* Express AM33	RSCC	Communications	\$72.5M
1/30/2008	✓ Dnepr 1	Dombarovskiy	THEOS	GISTDA	Remote Sensing	\$9.5M
1/1/2008	PSLV	Satish Dhawan	Cartosat 2A AAUsat 2 CanX-2 Cute 1.7 + APD 2 Delfi C3 Polaris	ISRO Aalborg University University of Toronto Tokyo Institute of Technology Delft University Israeli MoD	Remote Sensing Development Development Development Development Classified	\$20M
2/7/2008	Shuttle Atlantis	KSC	STS 122 Columbus Laboratory ISS 1E	NASA ESA NASA	Crewed ISS ISS	N/A
2/7/2008	Soyuz	Baikonur	Progress ISS 28P	Roscosmos	ISS	\$40M
2/10/2008	✓ Proton M	Baikonur	* Thor 5	Telenor AS	Communications	\$70M
2/15/2008	H 2A 2024	Tanegashima	WINDS	JAXA	Development	\$85M
2/22/2008	Ariane 5 ES-ATV	Kourou	ATV 1	ESA	ISS	\$100M
2/26/2008	Atlas V 411	VAFB	NRO L-28	NRO	Classified	\$75M
2/28/2008	Rockot	Plesetsk	* Gonets D1M 2 * Gonets D1M 3 * Gonets D1M 4	Roscosmos Roscosmos Roscosmos	Communications Communications Communications	\$13.5M
3/2008	✓ Proton M	Baikonur	* AMC 14	SES Americom	Communications	\$70M
3/12/2008	✓ Zenit 3SLB	Baikonur	* Amos 3	SpaceCom Limited	Communications	TBA
3/13/2008	Delta II 7925-10	CCAFS	Navstar GPS 2RM-19	USAF	Navigation	\$50M
3/18/2008	✓ + Atlas V 421	CCAFS	* ICO G1	ICO Global Communications	Communications	\$70M
3/27/2008	✓ Kosmos 3M	Plesetsk	SAR Lupe 4	German MoD	Classified	\$12M
3/28/2008	✓ Ariane 5 ECA	Kourou	TBA 1 TBA 2	TBA TBA	Communications Communications	\$140M
3/1/2008	✓ + Zenit 3SL	Odyssey Launch Platform	* DirecTV 11	DIRECTV	Communications	\$70M
1Q/2008	Falcon 1	Kwajalein Island	* Flight 3	SpaceX	Development	\$7M
1Q/2008	✓ Kosmos 3M	Kapustin Yar	* Orbcomm CDS 3 * Orbcomm Replacement 1 * Orbcomm Replacement 2 * Orbcomm Replacement 3 * Orbcomm Replacement 4 * Orbcomm Replacement 5 * Orbcomm Replacement 6 UGATUSAT	ORBCOMM ORBCOMM ORBCOMM ORBCOMM ORBCOMM ORBCOMM ORBCOMM UGATU	Development Communications Communications Communications Communications Communications Communications Scientific	\$12M
1Q/2008	Shuttle Endeavour	KSC	STS 123 Kibo	NASA JAXA	Crewed ISS	N/A

✓ Denotes commercial launch, defined as a launch that is internationally competed or FAA-licensed. For multiple manifested launches, certain secondary payloads whose launches were commercially procured may also constitute a commercial launch. Appendix includes suborbital launches only when such launches are commercial.

+ Denotes FAA-licensed launch.

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

Notes: All prices are estimates, and vary for every commercial launch. Government mission prices may be higher than commercial prices.

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

Second Quarter 2008 Projected Orbital and Suborbital Launch Events						
Date	Vehicle	Site	Payload or Mission	Operator	Use	Vehicle Price
4/8/2008	Soyuz	Baikonur	Soyuz ISS 16S	Roscosmos	ISS	\$40M
4/9/2008	PSLV	Satish Dhawan	Chandrayaan 1	ISRO	Scientific	\$20M
4/14/2008	Soyuz	Baikonur	GIOVE B	ESA	Navigation	\$40M
4/17/2008	Delta II 7920	VAFB	STSS-ATRR	Missile Defense Agency	Development	\$50M
4/24/2008	Shuttle Discovery	KSC	STS 124 JEM RMS	NASA NASA	Crewed ISS	N/A N/A
4/1/2008	^v Proton M	Baikonur	* Inmarsat-4 F3	Inmarsat	Communications	\$70M
4/1/2008	PSLV	Satish Dhawan	Megha Tropiques	CNES	Scientific	\$20M
4/1/2008	^v START 1	Svobodny	* EROS C	Imagesat International	Remote Sensing	\$8.5M
4/1/2008	^v Ariane 5 ECA	Kourou	* TBA 1 * TBA 2	TBA TBA	Communications Communications	\$140M
4/1/2008	GSLV Mark 2	Satish Dhawan	Gsat 4	ISRO	Communications	TBA
5/1/2008	^v Ariane 5 ECA	Kourou	* TBA 1 * TBA 2	TBA TBA	Communications Communications	\$140M
5/1/2008	^v Rockot	Plesetsk	SMOS Proba 2	ESA ESA	Remote Sensing Development	\$13.5M
5/1/2008	^v Dnepr 1	Baikonur	AKS 1 AKS 2 Almasat AtmoCube Funsat KatySat 1 KiwiSat Mea Huaka'l UCISat 1	CNES CNES University of Bologna University of Trieste University of Florida Stanford University AMSAT University of Hawaii University of California Irvine	Development Development Development Scientific Development Development Communications Scientific Development	\$9.5M
5/1/2008	^v Rockot	Plesetsk	GOCE	ESA	Scientific	\$13.5M
5/1/2008	Soyuz	Baikonur	Progress ISS 29P	Roscosmos	ISS	\$40M
5/15/2008	Delta IV Heavy	CCAFS	NRO L-26	NRO	Intelligence	\$155M
5/16/2008	Delta II 7920H	CCAFS	GLAST	NASA	Scientific	\$50M

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Second Quarter 2008 Projected Orbital and Suborbital Launch Events (continued)						
Date	Vehicle	Site	Payload or Mission	Operator	Use	Vehicle Price
6/15/2008	Delta II 7320	VAFB	Jason 2	Eumetsat	Meteorological	\$50M
6/18/2008	V + Pegasus XL	Kwajalein Island	C/NOFS	USAF	Scientific	\$16M
6/25/2008	Minotaur	Wallops Flight Facility	TacSat 3	USAF	Development	\$14.5M
6/1/2008	Proton M	Baikonur	* Zohreh 1	Telecommunications Company of Iran	Communications	\$70M
6/1/2008	V Dnepr 1	Dombarovskiy	DubaiSat-1 DEIMOS Nanosat 1B UK DMC 2	EIAST Deimos Imaging SL INTA British National Space Centre	Remote Sensing Remote Sensing Communications Remote Sensing	\$9.5M
6/1/2008	Delta II 7925	CCAFS	Navstar GPS 2RM-20	USAF	Navigation	\$50M
6/1/2008	V Proton M	Baikonur	* CMBStar	Echostar	Communications	\$70M
6/1/2008	Cyclone 3	Plesetsk	Koronas Foton	Russia - TBA	Scientific	\$22.5M
6/1/2008	V + Zenit 3SL	Odyssey Launch Platform	* Echostar XI	Echostar	Communications	\$70M
2Q/2008	Atlas V 421	CCAFS	WGS 2	DoD	Communications	\$75M
2Q/2008	V Zenit 3SLB	Baikonur	* Telstar 11N	Loral Skynet	Communications	TBA
2Q/2008	Long March 4B	Taiyuan	Fengyun 3A	China Meteorological Administration	Meteorological	\$50M
2Q/2008	PSLV	Satish Dhawan	Risat	ISRO	Remote Sensing	\$20M

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