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Satellites  
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**Space Launch Services:  
The Competitive Scene**

West Europe's Ariespace, several private US companies, the USSR, and China are all competing to launch the large backlog of some 110 to 120 commercial satellites that developed following the failures of shuttle and Free World expendable launch vehicles (ELVs). We believe that Ariespace and US private companies will emerge as the major competitors. For the USSR and China, the picture is not bright: Soviet success depends on the relaxation of COCOM and US export controls; China has little experience, limited payload capabilities, and uncertain launch rates. Over the longer term, as the current backlog of commercial payloads dwindles, we expect that launch capacity will greatly exceed the likely commercial demand of only 10 to 15 payloads annually. In this environment, US ELV firms—bolstered by the US Government demand for defense and other satellite launches—will have an inherent advantage over Ariespace, which is heavily dependent on demand from the civil sector.

**Space Launch Commercial Demand**

US and West European space launch systems were rocked by a series of failures during 1985 and 1986 that crippled the Free World's space launch capabilities. As a result, both civil/commercial and military/national security payloads face launch delays. The launch failures, the recent high demand for communications satellites, a delay of two years in startup of US ELV production lines, and the US decision to take the shuttle out of the commercial market has led to a large backlog of satellites awaiting launch.

We estimate that 110 to 120 satellites—primarily for telecommunications and scientific applications—are currently waiting to be launched. Most have reservations or contracts with at least one launch service: Ariane has contracts to launch about 48; US ELVs already have reservations for at least 20 payloads; some 18, because of size or foreign policy considerations, probably will be launched as planned by the

**Western Nonmilitary Satellites Awaiting Launch**

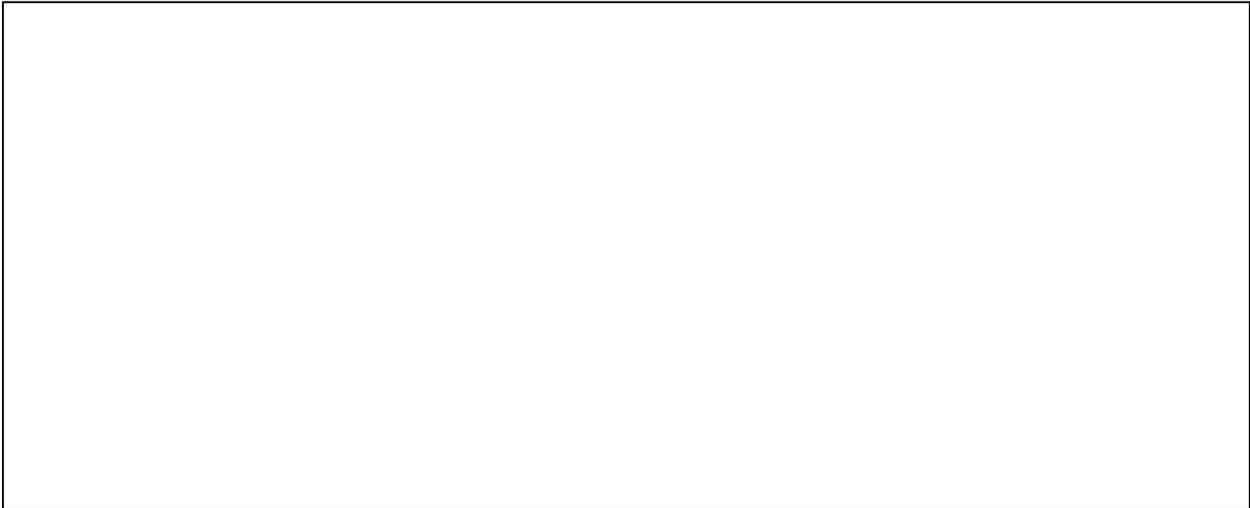
Category	Number of Satellites	Number With Launch Reservations
<b>Total</b>	<b>117</b>	<b>93</b>
<b>US commercial</b>	<b>28</b>	<b>17</b>
Telecommunication	21	14
Direct broadcast TV	2	0
Mobile satellite	2	0
Radio navigation	2	2
Separate systems	1	1
Remote sensing	0	0
<b>US Government</b>	<b>21</b>	<b>18</b>
Data relay	4	4
Weather	7	6
Scientific	10	8
<b>International</b>	<b>10</b>	<b>10</b>
INTELSAT	7	7
INMARSAT	3	3
<b>Foreign</b>	<b>58</b>	<b>48</b>
Telecommunication	30	24
Direct broadcast	10	8
Remote sensing	4	3
Weather	5	5
Scientific	9	8

shuttle; eight Japanese payloads will be launched on Japanese launchers; and two satellites have reservations with China.

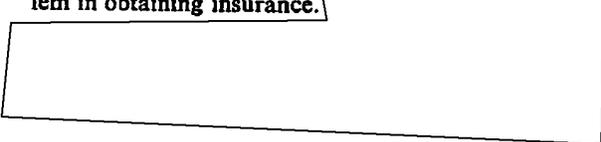
After the current backlog has been launched, market analyses by government agencies and private companies indicate that demand for commercial satellites is

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**Worldwide Commercial Space Launch Capacity**



likely to fall to approximately 10 to 15 per year.<sup>1</sup> In the area of telecommunication satellites, the largest component of the commercial satellite market, competition from optical fibers, higher capacity and longer lived satellites, higher costs, and unused capacity on satellites already in orbit will combine to restrict launch demand. Satellite operators also face a problem in obtaining insurance.



**Launch Services: Future Glut?**

Six major providers capable of launch to geosynchronous orbit should be offering space launches on ELVs by 1989. These include the West European consortium, the Soviet Union, China, and three private US

<sup>1</sup> Long-term forecasts are speculative because of the possibility of new applications. For example, this estimate does not include any launches that might arise from commercial materials processing in space.

companies—a commercial Japanese launch vehicle will not be available until about 1994. We believe that this proliferation of launch services could result in surplus launch capacity after the current commercial backlog is launched. We estimate, for example, that worldwide commercial space launch capacity is between 37 and 50 satellites annually during the next few years without the shuttle. The Soviet capacity may not be available for Western use, however, because current US regulations forbid the delivery of telecommunications satellites to the Soviet Union for launch. The United States and its allies, through COCOM, also control export of other Western-built satellites.

Western Europe, the Soviet Union (despite US policy on export controls), and China are aggressively marketing their space launch services. Arianespace, which has the most signed contracts, is attempting to keep its present customers and to win new ones by stressing

price, insurance availability, and its equatorial launch site. Moscow has been stressing Soviet technical achievements and reliability, offering low-cost launches and emphasizing security arrangements designed to overcome Western embargos. China hopes to establish itself as a Third World leader in space technology and to earn hard currency with launch sales. Although Japan could enter the launch market for small payloads in the late-1980s and for geosynchronous satellites in the mid-1990s, caution over the uncertain launch market continues to hold down an all-out Japanese effort. [redacted]

**Prospects**

On the basis of [redacted] open source reporting, we believe that the West European and US launch services will capture the major part of the commercial space launch market through the early 1990s:

- Assuming that Ariespace's technical and reliability problems are solved, it scores quite well on the other factors influencing customers, including availability, flexibility, price, equatorial launch, and the ability to supply affordable insurance. The West European service also has an advantage over the Soviet Union and China in that customers do not have to worry that export licenses for satellites with US technology may be turned down.
- We expect that US firms will capture the majority of the uncommitted payloads; two US companies have sufficient production runs based on defense orders to keep prices competitive; US companies have obtained early launch reservations; and Ariane is heavily booked. [redacted]

For their part, we expect that the Soviet Union and China may win a few launch contracts, primarily from the Third World. In addition, China's cutrate prices will attract financially troubled US companies. As long as US policy on satellite technology export controls holds firm, however, Soviet sales will be limited. Chinese success is dependent on demonstrating reliability. Nonetheless, prestige factors, the

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**Launch Insurance: A Potential Obstacle**

*Because of the many failures, launch insurance is virtually impossible to obtain as most insurers have stopped issuing new policies: those still in the business are requiring premiums in excess of 30 percent of the launch and payload value. Recently, some satellites have been launched without insurance, but this is a difficult option for customers who may have to absorb losses of \$50-100 million.* [redacted]

*For its part, Ariespace is offering a new insurance scheme which is subsidized by the French Government. Although the company is supposed to absorb the losses if there is more than one failure in 15 launches, a French state-owned insurance company will pay any claims for the next two failures. The insurance is for the launch phase only. For the first batch of 15 launches, premiums are 11 percent if a relaunch is bought on Ariane and 13.2 percent if another launcher is used. For the next batch of 15 launches, premiums are projected to be 12.9 percent if a relaunch is bought on Ariane and 14.4 percent if another launcher is used.* [redacted]

*The Soviet Union is providing insurance but, at a premium of 30 percent of the launch and payload value, the rates are no better than those of commercial insurers. Initial Chinese offers included a free relaunch in case of failure but no payment for the lost satellite. Recent offers have included the involvement of the People's Insurance Company to insure the launch up to separation from the rocket and attempts to start an insurance pool for coverage at a 15-percent discount from Western premiums. Chinese press reports indicate that conventional insurance will be provided as part of the recent contract to launch the Pacific Star.* [redacted]

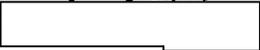
prospect of some foreign exchange earnings, and access to Western technology probably will keep these two countries active in the competition.



tions—particularly US—and space station usage will be growing.



We believe, for example, that the surplus US launch capacity available after the backlog is launched will be used to meet the demand for US government launches, both civil and military, providing a steady stream of business to ensure that US satellite operators do not become completely dependent on foreign launch services.



Although new markets may emerge, the commercial market alone probably will be insufficient to support all Western launch providers. Nonetheless, we believe that, while the growth of traditional commercial space markets is declining, military space-related applica-