



See Last Page for Important Disclosures
Member NASD

July 2006

A Look Inside...

The GEO Commercial Satellite Manufacturing Industry

includes:
Industry Overview & Characteristics
Global Demand Projections
Global Supply Trends
and other topics...

J. Armand Musey, CFA
646-452-9931
armand@nearearthllc.com

John Stone
646-290-7796
john@nearearthllc.com

Kuni Takahashi
646-843-9806
kuni@nearearthllc.com










Key Takeaways:

1. Despite a recent surge of new GEO satellite orders, commercial satellite manufacturing demand will be flat unless new applications like satellite broadband and hybrid mobile data services really take off. In the next 12 years, we expect on average 21.4 satellite orders per year.
2. Overcapacity is systemic as the industry has been bifurcated into U.S. and non-U.S. manufacturers. We estimate industry break-even quantity for commercial manufacturers to be about 30-31 satellites per year.
3. The competitive landscape has been split between manufacturers of small, "bent-pipe" designs and large, high-powered satellites.
4. The opportunities for manufacturers to consolidate are limited.
5. Government contracts dominate the industry with 71% of the entire \$7.8B satellite manufacturing industry. Manufacturers with a mix of government and commercial satellites are better positioned for the long term.

ABOUT NEAR EARTH LLC

Near Earth is a specialized Investment Bank which brings the highest quality senior level attention to companies in the greater commercial satellite/space, telecom, media, entertainment, and technology industries.

Near Earth provides a full range of capital raising, advisory and consulting services to companies and their Boards. To enhance its own capabilities, Near Earth is allied with [Thomas Weisel Partners](#) and serves as their exclusive satellite industry investment banking partner. We also work with Thomas Weisel on medium to larger transactions in our other industries of focus. This alliance gives our clients the benefits of Near Earth's unmatched industry expertise, along with the strong execution capabilities of Thomas Weisel Partners for public market transactions, large private placements and M&A deals. We are proud to highlight the following select deals:

 <p>Murray Capital Management</p> <p>Valuation of two telecom portfolio holdings</p> <p>Near Earth LLC provided in-depth valuation and industry analysis</p>	<p>\$110,000,000</p> <p>Pacific Corporate Group LLC served as the lead investor in</p>  <p>Series B Redeemable Convertible Preferred Stock</p> <p>Near Earth LLC acted as Financial Advisor to PCG</p>	 <p>International Datacasting, Corp.</p> <p>Acquisition of PROLine B.V.</p> <p>Near Earth LLC acted as strategic advisor to the acquirer</p>
 <p>HorseTV Media Group, Inc.</p> <p>Private Placement of seed equity</p> <p>The Near Earth Investment Club financed a portion of the round</p>	 <p>SES AMERICOM</p> <p>Valuation of orbital slot</p> <p>Near Earth LLC valued assets for expert witness testimony</p>	 <p>Intelsat. Ltd.</p> <p>Private sale of minority block of shares</p> <p>Near Earth LLC acted as advisor to investor group</p>
 <p>Madison Dearborn Partners</p> <p>Bid to acquire \$450 million minority stake in Inmarsat</p> <p>Near Earth LLC acted as financial advisor to the bidder</p>	 <p>XM Satellite Radio, Inc.</p> <p>Creation of Canadian joint venture</p> <p>Near Earth LLC acted as financial advisor to both parties</p>	 <p>XM Satellite Radio, Inc.</p> <p>\$435 million private placement</p> <p>Near Earth LLC acted as financial advisor to the issuer</p>

For more information about our current transactions or about Near Earth LLC, please visit our website at www.nearearthllc.com or contact us at our locations below:

Table of Contents

I. Executive Summary	4
II. Satellite Manufacturing Industry Characteristics	6
III. Satellite Manufacturing Industry Overview	8
IV. Satellite Design and Development	13
V. Satellite Manufacturing Demand	18
VI. Satellite Manufacturing Supply	23
VII. Consolidation in Satellite Manufacturing	23
VIII. Conclusion	26

Executive Summary

The \$2.2B GEO commercial satellite manufacturing industry is a low growth, low margin, and capital intensive business. Overcapacity is systemic as the industry is bifurcated by regulatory restrictions into U.S. and non-U.S. manufacturers.

Over the next 12 years, we predict about 21-22 GEO commercial satellite orders per year.

The FSS industry will continue to be the main demand driver. Due to the recent M&A activity amongst the large FSS operators, we expect these FSS operators to rationalize a part of their fleets which will decrease demand. DBS and DARS will each order 1 satellite per year, and the resurrection of the MSS industry will also garner 1 satellite order per year.

We estimate total manufacturing capacity is approximately 30-31 satellites per year for GEO satellite manufacturers.

There are 5 (Boeing, Lockheed Martin, Alcatel Alenia, EADS Astrium, SS/L) major players, 3 medium players (Israel Aircraft Industries-IAI, Orbital Sciences, Mitsubishi Electric Corp.-MELCO) and 3 national manufacturers (CAST of China, Indian Space Research Organization-ISRO, NPO PM of Russia) for a total of 11 manufacturers. The larger manufacturers need about 3-4 satellite orders per year to cover their fixed costs, and the smaller players need about 2-3 orders per year. Therefore, the breakeven quantity is roughly 30-31 satellites. We predict overcapacity will remain given the current state of the industry (see Satellite Manufacturing Supply section).

Government payloads are a necessity to the livelihood of a satellite manufacturer.

The satellite manufacturing industry is a \$7.8B industry if you include revenues from government applications. Government payloads accounted for 71% of revenues in 2005. Therefore, a satellite manufacturer must have a portion of these government revenues to offset the slow growth and low profit margins on the commercial side.

GEO Commercial Satellite Manufacturing

GEO Commercial Satellite Manufacturing Industry Characteristics

Low Growth Industry

***Annual GEO
orders will level
off at an avg. of 21
satellites***

Revenues for the satellite manufacturing industry have decreased from \$8.3 billion in 1996 to \$7.8 billion in 2005. Revenues between these years can be best characterized as “lumpy” as revenues in 1997-2000 and 2004 surpassed \$10 billion. Although satellite orders seem to have bottomed out since the telecom downturn, we do not expect a substantial change in the revenue growth rate over the long term. In the short term, we expect worldwide satellite orders to grow from 15 units in 2005 to 23 units by 2010. In the long term, annual GEO satellite orders will level off at an average of 21 units/year unless new applications like satellite broadband and hybrid mobile data services really take off.

Low-Margin Business Model

Operating margins for satellite manufacturers are in the low single digits. The business model has a fixed cost structure where economies of scale can create a measurable, but not overwhelming competitive advantage. These manufacturers’ activities mostly include integration and testing of subassemblies that they purchase from suppliers. Manufacturers that focus on more complex satellite designs rather than the typical “bent pipe” satellites can increase their profit margins.

Overcapacity

***Consolidation is
unlikely to occur
in the near term***

Consolidation has not occurred recently in this industry, and we do not expect any to happen anytime soon (please see Consolidation section). With 5 major players, several smaller manufacturers, and new regional manufacturers, we believe break-even for GEO satellites to be approximately 30-31 satellites per year. With an industry consensus of about 20 satellites per year, we expect overcapacity to continue in the GEO commercial satellite manufacturing industry. (Please see Global Demand and Supply section for details on Near Earth’s satellite manufacturing projections).

Increased Competition

Manufacturers beside the “Big 5” have started to gain traction in the commercial satellite manufacturing industry. Orbital Sciences and others like MELCO will continue to put pressure on the major players.

Bifurcation of the Industry

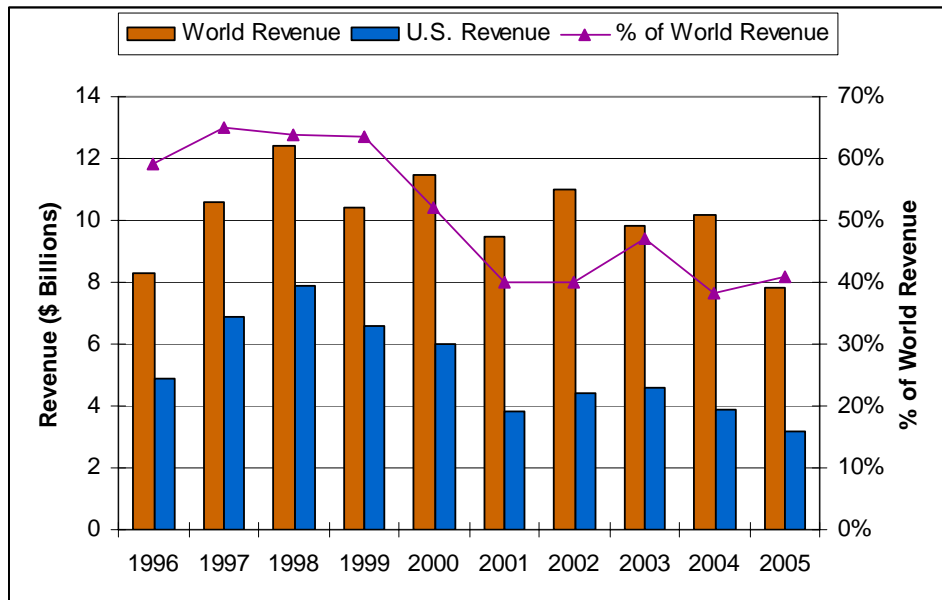
ITAR has put added pressure on the U.S. firms

The International Traffic in Arms Regulations (ITAR) has a profound effect on the satellite manufacturing industry. Regulations and restrictions on sharing intellectual property during the satellite manufacturing process have caused many non-U.S. FSS operators to avoid placing orders with US satellite manufacturers. We expect these ITAR restrictions to continue into the foreseeable future although there is speculation a new administration following the 2008 elections could loosen the restrictions somewhat.

GEO Commercial Satellite Manufacturing Industry Overview

In 2005, the global satellite manufacturing industry revenues were \$7.8 billion¹, a 24% decline in revenues from 2004 (see figure 1). However, satellite manufacturing revenues are recorded in the year the satellite is delivered/launched, not when the contract is awarded. Therefore, the decrease in 2005 revenues can be deceiving because they reflect the satellite orders for 2002-2003, the worst years after the telecom downturn. They also reflect revenues from both commercial and government customers.

Figure 1: World and U.S. Satellite Manufacturing Revenue (commercial and government)

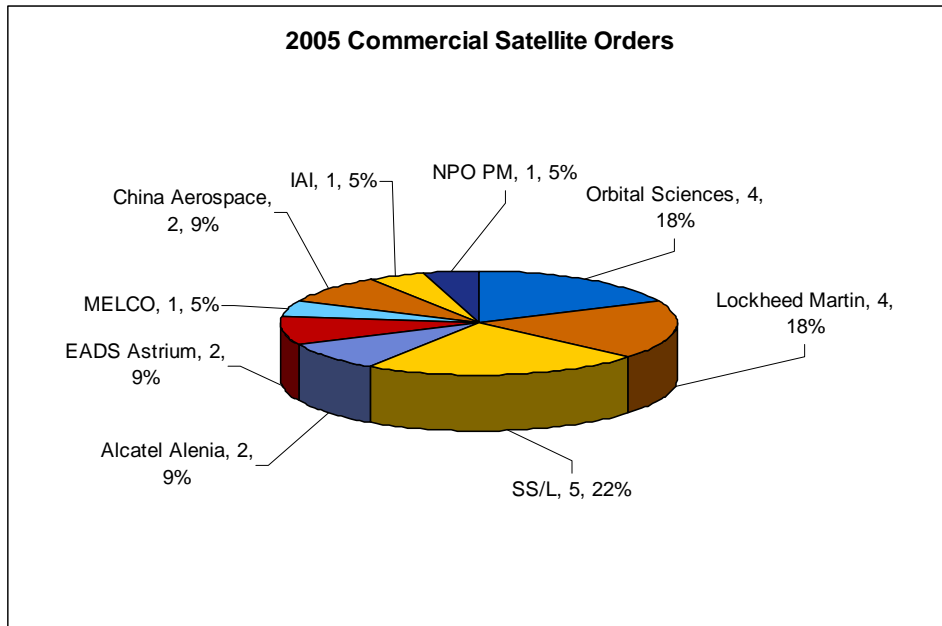


Source: Futron Corporation

In fact, global commercial satellite manufacturing revenues increased by 23% from \$1.8 billion in 2004 to \$2.2 billion in 2005 indicating that the commercial side of the business has bottomed out. In addition, 22 commercial GEO satellites were ordered in 2005 further indicating that the commercial satellite manufacturing industry has recovered and revenues will continue to increase as these new satellites are delivered and launched (see figure 2).

¹ Futron Corporation; State of the Satellite Industry Report, June 2006

Figure 2: 2005 Market Share of Commercial GEO Satellite Orders

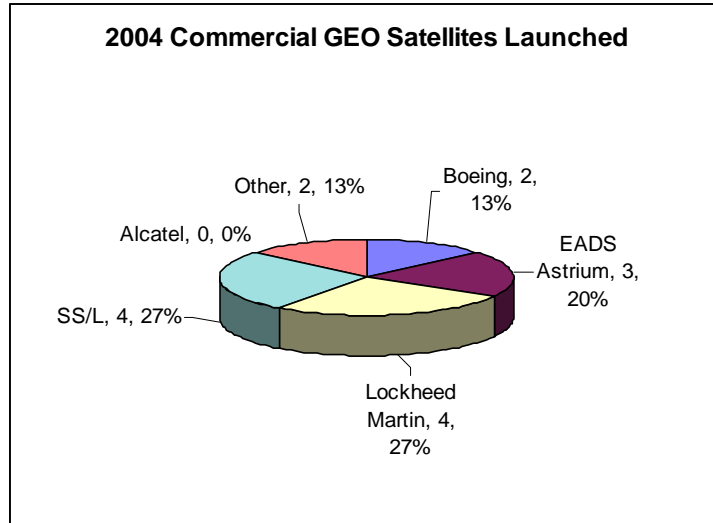


Source: Futron Corporation

Government payloads account for 71% of global revenues

In 2005, government payloads accounted for 71% of global revenues. The government business is still the “bread and butter” for the satellite manufacturing industry. In 2004, U.S. manufacturers accounted for 67% of all commercial launches (see figure 3 below), but only recognized 38% of the world’s revenue (see figure 1). This illustrates the importance of government revenues for these satellite manufacturers, as well as a growing concern for U.S. satellite manufacturers who are losing market share to the rest of the world.

Figure 3: 2004 Market Share of Commercial GEO Satellites Launched



Source: Near Earth LLC Analysis

U.S. manufacturers' share of global revenue is declining

In 2005., U.S. satellite manufacturing industry revenues, both government and commercial, were \$3.2 billion or 41% of the total market. A major concern for U.S. manufacturers is that U.S. satellite revenues as a % of world revenue have been declining in a relatively flat growth industry (see figure 1). The U.S. manufacturers are in a difficult competitive situation when they are faced with reduced U.S. government spending for GEO satellites, ITAR restrictions and increased competition from new entrants.

There are five major manufacturers of commercial GEO satellites. The U.S. manufacturers are Boeing, Lockheed Martin, and Space Systems / Loral (SS/L). Alcatel Alenia and EADS Astrium are European satellite manufacturers. With the exception of SS/L, all of the major manufacturers are divisions of larger diversified aerospace companies.

There are three mid-tier GEO manufacturers which include Israeli Aircraft Industries (IAI), Mitsubishi Electric (MELCO), and Orbital Sciences. Finally, there are 3 national manufacturers (CAST of China, Indian Space Research Organization-ISRO, and NPO PM of Russia).

Increased competition for commercial GEO satellites

There are several manufacturers of GEO satellites that are capturing market share from the five major manufacturers. Most notably, Orbital Sciences has developed their capabilities in the “smaller, cheaper” segment of this market. Orbital Sciences had a total of 3 commercial satellites launched in 2005. Many operators are looking at using Orbital satellites to replace aging larger satellites within orbital slots that require less capacity and functionality.

We expect this trend towards smaller satellites to continue as Alcatel Alenia has partnered with NPO PM of Russia to build smaller satellites. EADS Astrium formed a relationship with Antrix, the commercial division of Indian Space Research Organization -ISRO, to compete against Orbital in the smaller GEO satellite market.

Another manufacturer, Mitsubishi Electric (MELCO), is making waves as they recently won a contract from SCC, a Japanese FSS operator, to build their Superbird-7. This should get the attention of U.S. manufacturers since Japanese operators represent about 13.5% of the 74 satellite contracts announced by U.S. manufacturers since 2000.²

In figure 3, the increased competition is evident as the major satellite manufacturers only account for 58% of satellites ordered in 2005 while the new competitors, Orbital (4), China Aerospace (2), IAI (1), MELCO (1), and NPO PN (1) account for a total of 42% of the commercial satellite orders in 2005. As the market gets more crowded for GEO satellites, we expect manufacturers to compete on price leading to lower margins for the entire industry.

High powered satellites may provide higher margins

Boeing, who has been the undisputed leader in the past, is absent from figure 3. In 2005, due to poor industry characteristics, Boeing Satellite Systems decided to exit the commercial market for classic bent-pipe satellites. Boeing president Stephen T O'Neill was quoted saying that these satellites have become commodities in the way they are purchased. They've decided to focus on delivering high powered satellites for applications like mobile satellite services (MSS) and satellite broadband.

² Satellite News, Nov. 7, 2005

At the beginning of the year, Boeing announced a large contract to build three high powered satellites for Mobile Satellite Ventures (MSV), a MSS company. We expect the market for high-end satellites may provide manufacturers like Boeing with increased margins due to less competitive forces.

Satellite Design & Development

It typically takes 18 to 30 months to manufacture a satellite (depending on the size and level of customization), but manufacturing cycle times have been trending downward in recent years. Compared with the FSS business, satellite manufacturing is a relatively low-margin, highly technical, labor- and capital-intensive industry. Although each satellite manufacturer has different approaches in the design of its satellite, all geostationary satellites have certain major subsystems (see figure 4), including the following:

Communications Payload: This is the communication nerve center of the satellite and includes a series of transmitters/receivers (aka transponders) that provide the communication link between earth and the satellite. Satellites accommodate multiple transponders, each of which is typically 36, 54, or 72 MHz.

Bus Structure: The bus structure is the framework of the satellite. The bus structure is usually made of material that is strong enough to support the structure, but light enough so that the satellite can easily be lifted into orbit.

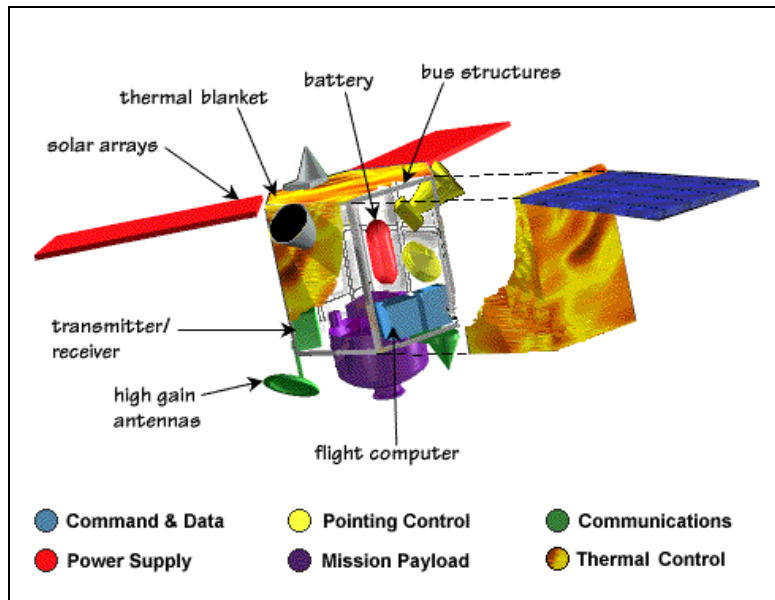
Command and Data Subsystem: The subsystem houses the flight computer, which essentially controls all satellite activity. Ground control sends commands to the satellite's computer system.

Power Supply: Most satellites use solar arrays (wing-like attachments) to generate the electricity necessary to run equipment and recharge batteries.

Pointing/Attitude Control: This is in effect the inner propulsion system of the satellite, and it keeps the satellite positioned properly. Propulsion mechanisms use up fuel supplies and are a main factor that determines the satellite's useful life.

Thermal Control: The subsystem that protects all the satellite's equipment from extreme temperatures by using heat distribution units and thermal blankets.

Figure 4: Major Subsystems of a GEO Satellite



Source: Industry Sources

A satellite manufacturer typically purchases the components that make up the sub-systems from a variety of suppliers. There are many tiers of suppliers from major systems manufacturers to niche providers of specialized sub-components. Generally, the suppliers are large aerospace companies. A sample of suppliers for both the bus and payload sub-systems can be seen in the figure 5 below (please note: this is not an exhaustive list of suppliers for a satellite manufacturer).

Figure 5: Sample of suppliers for a satellite manufacturer



Source: Near Earth LLC Analysis

Customer Considerations on Satellite Ordering

Although satellites share many of the same components, they are not all the same for customers. In fact, customers spend considerable time evaluating different satellite proposals before placing an order. Major considerations include the following:

Power Levels: This is how powerful the satellite needs to be for the specific application and is one of the most basic considerations in ordering a satellite. The higher the power levels in a satellite, the more transponders it can support at any given power level. The higher the power level on each transponder, the smaller the customer’s ground equipment needs to be and the more reliably the signal will be able to get through difficult atmospheric conditions such as rain. Higher power levels also enable customers to use higher compression levels on a signal so that more data can be passed through a transponder. Many satellites launched today have more than 100 watts of power per

transponder. IPSTAR, recently launched by Shin Satellite and manufactured by SS/L, has 87 Ku-band and 10 Ka-band transponders and about 14,000 Watts.

- High powered satellites by major manufacturers include:
 - Boeing 702
 - Loral 1300
 - Lockheed Martin 2100AX
 - EADS Astrium / Alcatel Alenia Alphaspace

Number of transponders: This depends largely on the amount of frequency a customer has and can wants to use at a given orbital slot. A standard transponder covers 36Mhz. A customer may want to use one satellite and split the transponders between Ku and C band (a “Hybrid” satellite). Alternatively, a satellite could be used for just a single band.

Beam Considerations: Satellite manufacturers are able to tailor the satellite’s beam so that the beam’s highest power levels are where the operator needs it most. When ordering a satellite, an operator has in mind a specific market where the satellite will provide service. These specific beam patterns make it more difficult to move a satellite and use it from a different orbital slot. Recently, steerable beams that can adapt to changing markets are allowing added flexibility during the life of a satellite.

Satellite Life: Most newly launched satellites have a life of between 12–15 years. Generally, the limiting factor on satellite life is the amount of fuel on the satellite although battery life and solar array performance at end of life are also key factors. The trade-off is that fuel is heavy and adding more fuel often requires that the satellite be smaller and less powerful to fit on the launch vehicle. Batteries and solar arrays are also heavy and bulky and the rocket can only launch so much weight and volume.

Redundancy: Once a satellite is launched, it is inaccessible for repair purposes, making reliability highly important. Satellite manufacturers tend to have redundancies built in for critical components. The greater the redundancy, the more comfortable an operator will likely be with the potential reliability of a satellite. However, redundant systems take up weight and force a trade-off with respect to satellite life and/or power levels.

Reprogrammable: Recently, customers have been asking for flexible and agile payloads. Reconfigurable satellites have the capability to be changed as the market demands. For example, the first two Spaceway satellites were reconfigured from broadband to video.

Commercial Satellite Manufacturing Demand

To forecast commercial GEO satellite demand, we broke down the satellite manufacturing industry into respective segments and developed a demand model for each. We then consolidated the demand for each to obtain an overall industry demand model. For purposes of modeling we consider the satellite demand market to be segmented as follows:

1. Fixed Satellite Services – this includes C, Ku and Ka band commercial satellites used for video distribution, voice and data transmission and other applications in the portions of the spectrum the FCC has designated as the Fixed Satellite Service.
2. Mobile Satellite Services – This includes voice and data services principally intended for mobile users in the L band and the 2-4 GHz S band.
3. Direct Broadcast Satellite Services – This includes distribution of video content directly to homes and other fixed users in the United States by Echostar and DirecTV.
4. Digital Audio Radio Services – This includes one way distribution of audio content to mobile users in the S band or L band from such operators as XM Radio, Sirius and Worldspace.
5. Scientific and Weather Forecasting – This includes research satellites and satellites used to gather weather information.
6. Government and Military applications – This includes communications services (fixed and mobile) that are analogous to commercial services, but in designated military spectrum bands. This also includes reconnaissance satellites, early warning, signal intelligence, global positioning and other strictly military applications. Note that some of these government lead sectors now have large and growing commercial components like DigitalGlobe and Orbimage for commercial satellite imagery and a host of GPS services for consumer and commercial applications.

As we stated above, this last category, Government and Military applications, is very substantial in scope and revenues. Since we are analyzing the commercial satellite manufacturing industry, we will not forecast demand for these applications.

Fixed Satellite Services (FSS) will order 17.7 satellites per year

By far the largest segment (on a dollar basis) is the Fixed Satellite Services segment. To project this segment, we began by compiling a database of satellites currently in service. This currently consists of 229 satellites, all located in the geosynchronous belt. Satellites in this orbit appear stationary over the earth at the equator at specific latitude. To prevent interference, satellites in these orbits are licensed to transmit from particular latitude (“orbit slot”), and as such when multiple satellites are found with licenses in the same bands in the same orbit slot, the satellite operators must take elaborate steps to avoid interference. These steps often include deactivation of some or most of the payloads, so in many cases the oldest, typically less capable satellite in an orbit slot is actually just a spare.

29 satellites that are considered on-orbit spare capacity will not be replaced.

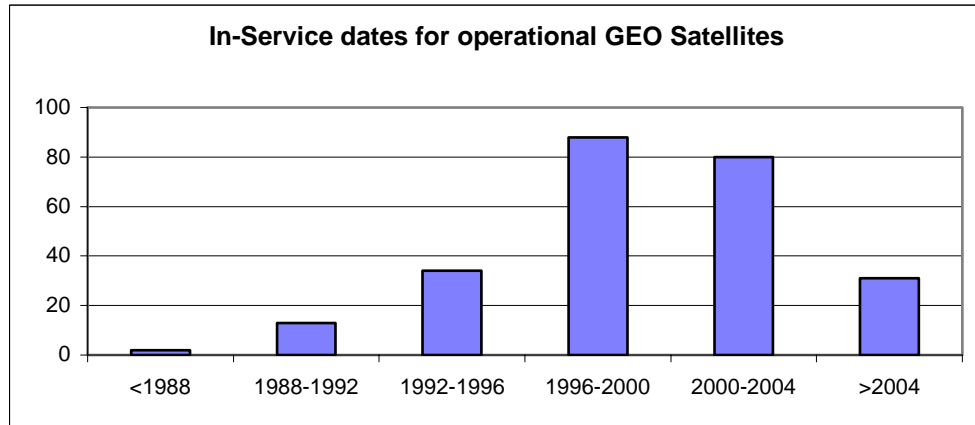
Due to consolidation with the FSS industry, and the Intelsat/Panamsat merger in particular, we expect a substantial reduction in on orbit spare capacity as the respective systems are rationalized. We therefore have identified a total of 29 of these satellites that we do not expect to be replaced. Because operators must continue to operate a satellite in each license’s orbit slot in order to retain their licenses, we do expect the remaining 200 satellites to be replaced as they reach the end of their lives.

Due to overcapacity in the FSS industry overall (which we expect to abate over time as well), we expect that some of these satellites will be replaced with smaller (i.e. less than 5 kW total power) versions, which tend to be less lucrative to the manufacturers. Because these satellites are typically designed for lifetimes of 12-15 years, we have assumed that overall demand for this sector will be $200/12 = 16.7$ satellites per year, on average.

There will be another demand “bulge” between 2007-2012.

Because historical construction and deployment rates experienced a “bulge” in the 1995-2000 time frames, we have assumed that a similar bulge in orders will occur 12 years subsequently, or in the 2007-2012 time frame. As such, our demand model shows replacement orders for this segment beginning somewhat below our projected average, increasing to value somewhat higher than this average between now and 2010. We also project an average of one satellite per year will be ordered for expansion into new FSS markets. We expect this will consist of newly licensed conventional Ku/C band satellites in less developed markets and Ka band satellites in developed markets where there is a paucity of available Ku/C band licenses.

Figure 6: Number of Satellites placed In-Service by Time Period



Source: Near Earth LLC Analysis

MSS was a very large market for satellite manufacturers

In the past, Globalstar produced 60 satellite orders for SSL.

For manufacturers like SS/L, the largest segment by installed base of satellites is the Mobile Satellite Services segment. This is principally due to Loral’s role as the vendor for the satellites in the Globalstar satellite constellation, which ultimately produced 60 orders for Low Earth Orbit (LEO) satellites for SSL. (Note: due to their substantially smaller size and complexity, the Globalstar satellites sold for much smaller prices than typical GEO satellites.) Additional LEO satellite systems for mobile services included Orbcomm (30 satellites) and Iridium (66 satellites). These systems have all proven to be slower at building subscriber bases and generating revenues than projected, and as a consequence declared bankruptcy from which they recently emerged. While subsequent operations have continued using the satellites in place and existing ground spares, with the possible exception of Orbcomm, it is not clear that the level of operations will economically justify replacement of the existing constellation as they wear out. Most likely, the MSS operators including Inmarsat will follow the FSS trend and consolidate in order to replace the systems.

MSS operators will order 6 GEO satellites to replace their aging LEO satellites

However, due to the lower cost of GEO constellations, we do expect that these operators will be able to justify launching 6 GEO satellites to replace their aging LEO satellites. We also expect an additional 7 GEO satellites (in addition to existing orders) for replacement and expansion of the Inmarsat, ACeS, Thuraya and other new GEO systems such as MSV and ICO. Total projected demand from MSS orders for the next 12 years is therefore 13 satellites, or 1.1/year on average.

DBS' replacement strategy is 1 per year

Between DIRECTV and Echostar, there are currently 12 direct broadcast satellites in service. While we expect continued increases in capacity demand (principally driven by the migration to High Definition broadcasts) for these operators, we expect that virtually all of the increase will come as less capable older satellites are replaced as they reach end of life. We therefore expect that total demand from the U.S. DBS companies will be 12 satellites over 12 years, or on average, one per year.

DARS international expansion

The newest application of communications satellites is Digital Audio Radio Services (DARS), which is offered in the United States by XM Satellite Radio and Sirius Satellite Radio, which have six satellites in orbit between them. Outside the U.S. these firms both have Canadian affiliates and Worldspace has two satellites in service in Africa and Asia with a third satellite approved for launch in 2006. Within the U.S., XM and Sirius have amassed over 9.3 million subscribers. They predict to surpass 14 million by the end of 2006, and we expect this success to attract imitators in other regions. We also note that Worldspace recently raised \$244mm through an IPO and a private placement to XM Satellite Radio. In the 12 year time frame of our projections, we expect orders for six satellites for replacements for the U.S. DARS firms, and an additional six satellites (3 per firm) for Worldspace and an unspecified new entrant.

There will be a fourth Satellite Radio provider

Weather satellite contracts

The United States, Europe, Japan, India and Russia all maintain one or more GEO weather satellites. We expect that Europe, India and Russia will choose to continue to procure their weather satellites from domestic manufacturers.

Between the U.S., Japan and potential new entrants, we project a total of 5 addressable orders for weather satellites over the next 12 years. While NASA has occasionally procured scientific and technology demonstration satellites that use the GEO orbit, its principal use of the orbit is its Tracking and Data Relay Satellite System, which consists of three satellites, the newest of which was launched in 2002. We expect all three of these satellites to need replacing within the next 12 years. Our total 12 year market projection for weather and scientific satellite sales is thus 8 satellites.

Our total projection for the next 12 years is thus:

Figure 6: Commercial GEO Satellite Manufacturing Demand Projections

Segment	Total	Annual Average
FSS Replacement	199	16.6
FSS Expansion	12	1
DBS Replacement	12	1
MSS	13	1.1
DARS	12	1
Weather/Scientific	8	0.7
Grand Total	248	21.4

Source: Near Earth LLC Analysis

For comparison, we note that Forecast International has an independent projection of 224 satellites over the next 10 years, or a somewhat more bullish 22.4 satellites per year.

Satellite Manufacturing Supply

Satellite manufacturers have high fixed costs relating primarily to labor and overhead. SS/L, based on its current cost structure, estimates it can cover fixed costs with an average of 3 – 4 satellite orders per year³. There are 5 (Boeing, Lockheed Martin, Alcatel Alenia, EADS Astrium, SS/L) major players, 3 medium players (Israel Aircraft Industries-IAI, Orbital Sciences, Mitsubishi Electric Corp.-MELCO) and 3 national manufacturers (CAST of China, Indian Space Research Organization-ISRO, NPO PM of Russia) for a total of 11 manufacturers. The smaller manufacturers will probably have to average more like 2-3 satellites to break-even. Although Boeing and Lockheed are large manufacturers, we assume that they share costs with their government satellite manufacturing operations, therefore, their break-even for the commercial business is more like 2-3 satellites. We estimate total break-even for the global GEO commercial satellite manufacturing industry is roughly 25 - 36 satellites per year. The mid-point in our estimate is 30-31 satellites per year.

Industry break-even is approx. 30-31 satellites vs. demand of 21.4

Alcatel, EADS, SS/L: (3 or 4) x 3 = 9 – 12 satellites

+ Other Mftrs.: (2 or 3) x 8 = 16 – 24 satellites

Total break-even: 25 – 36 satellites

Since our demand estimates for 2006-2010 show about 21.4 orders per year, we predict overcapacity will remain for the next five years given the current state of the industry. Nevertheless, a major consolidation would help remove some of this excess capacity.

Consolidation within Satellite Manufacturing

Due to overcapacity in the GEO satellite manufacturing industry, some sort of combination that reduces costs and capacity would make sense. We evaluate both the US and European markets in the following section.

US Market

Considering the top U.S. manufacturers, the odds of consolidation seem pretty small with a few exceptions: a Lockheed/Loral combination, an Orbital/Loral combination or a Lockheed/Orbital combination. Despite several years of overcapacity, none of these combinations has yet occurred.

³ Loral Space & Communications, Form 10-Q for the quarterly period ending Sept. 30,2005; pp.47

ITARS regulation will be barrier for cross border combinations

First, due to ITARS regulations, the odds of a non-U.S. manufacturer acquiring a U.S. based manufacturer are very small although there has been talk historically of a NATO country's aerospace company like BAE or Alcatel Alenia acquiring a purely commercial supplier like Loral. U.S. export compliance rules would effectively undermine any potential integration benefits between the respective firms, so any acquisition would have to be done using purely financial rationale at valuations well below those a strategic acquirer might pay. Likewise, all of the U.S. satellite manufacturing companies except Loral have substantial defense businesses that would probably preclude an acquisition by a foreign buyer.

Within the United States, Lockheed Martin, Boeing, Northrop Grumman, Raytheon and General Dynamics are the principal defense "supercontractors", and the Department of Defense is unlikely to approve any combination between these companies or their satellite units due to concerns about reducing competition. Furthermore, the remaining (non-merging) satellite company would be at a substantial disadvantage with respect to the putative merged entity, and as such would be likely to sue to block such a deal. Orbital Sciences, however, is small enough that it probably could secure approval for combinations with any of the larger supercontractors. Orbital's nearly unduplicated strengths in small satellites (<5kW) and launch vehicles would be complementary with any of the other manufacturers ("supercontractors" or Loral). In the case of Boeing, given their indigestion from the acquisition of Hughes Electronics satellite manufacturing operation, we think that the chance of an additional acquisition by Boeing is remote.

Resolution of industry overcapacity has proven illusive.

Loral's commercial strength may slightly be attractive to Lockheed Martin. A combination of Lockheed and Loral would probably create the greatest cost savings through synergies, due to the close geographic proximity of the respective operations in Northern California but which the industry operating at undercapacity it may be hard for either to justify buying the facilities of the other. It is also possible for a major subcontractor such as BAE, General Dynamics or Raytheon to see to acquire a major GEO manufacturer but this would not do much to consolidate the industry and would depend on large levels of government orders to justify financially. There is no obvious easy solution.

Europe

Joint ventures and cooperative strategies are the focus in Europe

In Europe, most consolidation among manufacturers seems to be taking shape through cooperative relationships or alliances. Both Alcatel Alenia and EADS Astrium have noticed the need to consolidate the European satellite industry. Although we do not expect Alcatel Alenia and EADS Astrium to merge with one another, we do expect more cooperative relationships like their recent decision to join forces to develop the Alphabus. This new satellite bus platform will be able to support an initial payload power range of 12-18 kW, a maximum launch weight of 8,000kg (17,600 lb), and accommodate up to 190 high-power transponders and large antennas. By sharing R&D expenses, these European manufacturers can keep each other's costs down and remain competitive in the global marketplace.

On July 1, 2005, Alcatel and Finmeccanica decided to join their space manufacturing and service activities to reduce overcapacity and fragmentation in the industry. This new satellite manufacturing venture was called Alcatel Alenia Space. As mentioned before, Alcatel Alenia is also exploring closer cooperation with NPO PM, the Russian manufacturer.

In addition to joint ventures and alliances, there have been some European acquisitions. In April 2006, Thales announced plans to buy Alcatel Alenia. The merger is expected to close in the second half of 2006. We believe that this represents the end of major consolidation in Europe for the near to medium term. In the event significant new competition continues to emerge in the future, such as from China and India, it could reignite the urge to merge. The price, at .63x sales reflects the pressures of continued overcapacity of the manufacturing segment of the industry.

In June 2005, a smaller merger between a pair of German space contractors, OHB and MAN Technologie, is a vertical integration play. OHB is a German small satellite manufacturer while MAN is mainly a supplier of components to launch vehicles.

We believe joint ventures/strategic alliances and smaller acquisitions to capture more of the value chain may continue. But for now, a combination of the two large manufacturers, EADS Astrium and Alcatel Alenia / Thales, seems highly unlikely.

Conclusion

The GEO commercial satellite manufacturing industry is a capital and knowledge intensive business. Satellites are complex products that require 2-3 years and a highly skilled workforce to manufacture. Due to overcapacity, increased competitive forces and flat demand for new satellites, manufacturers are competing on price and decreasing profit margins for the entire industry.

For some time, the industry has been bifurcated into U.S. and non U.S. manufacturers, and we do not expect this to change. But, more recently, the competitive landscape has been split between manufacturers of small, “bent-pipe” designs and large, high-powered satellites. We believe the FSS operators to drive the demand for smaller satellites as they look to replace and rationalize their existing fleets while satellite applications like satellite broadband and mobile satellite services could create new demand for high-powered satellites. In the next 12 years, we expect on average 21.4 satellite orders per year. With an industry breakeven value of 33-34 satellites per year, we believe overcapacity is systemic.

Although consolidation among satellite manufacturers would improve the industry’s economics, we believe the opportunity for consolidation is limited for both U.S. and non U.S. manufacturers. Therefore, manufacturers that can find a synergistic balance between commercial and government payloads will be best positioned for the long term. For example, if there is a downturn in the commercial business, then it can be complemented by the government side and vice versa.⁴

We believe the GEO commercial satellite manufacturing industry will be a challenging industry, which will require both investors and companies to have innovative ideas to succeed. Near Earth LLC professionals have a unique combination of top tier investment banking experience, industry knowledge and first hand highly ranked research expertise that is unmatched on Wall Street. This allows us to think strategically about the industry and its trends and dynamics and offer more proactive and creative ideas to our clients. Please visit our website, www.nearearthllc.com, to learn more about our professionals and our capabilities.

⁴ Satmagazine.com, July-August 2006; “Excerpts from Interview with Boeing Satellite Systems, VP of Business Development, Jim Simpson”

IMPORTANT DISCLOSURES AND INFORMATION ABOUT THE USE OF THIS DOCUMENT:

Near Earth, LLC ("Near Earth") has published this report solely for informational purposes. The report is aimed at institutional investors and investment professionals, and satellite, media and telecom industry professionals. This report is not to be construed as a recommendation or solicitation to buy or sell securities. The report was written without regard for the investment objectives, financial situation, or particular needs of any specific recipient, and it should not be regarded by recipients as a substitute for the exercise of their own judgment. The content contained herein is based on information obtained from sources believed to be reliable, but is not guaranteed as being accurate, nor is it a complete statement or summary of any of the markets or developments mentioned.

The authors of this report are employees of Near Earth, LLC, which is a member of NASD. The opinions expressed in this report accurately reflect the personal views of the authors but do not necessarily reflect the opinions of Near Earth itself or its other officers, directors, or employees.

The portions of this report produced by non-Near Earth employees are provided simply as an accommodation to readers. Near Earth is under no obligation to confirm the accuracy of statements written by others and reproduced within this report.

Near Earth and/or its directors, officers and employees may have, or have had, interests in the securities or other investment opportunities related to the companies or industries discussed herein. Employees and/or directors of Near Earth may serve or have served as officers or directors of companies mentioned in the report. Near Earth does, and seeks to do, business with companies mentioned in this report. As a result, Near Earth may have conflicts of interest that could affect the objectivity of this report.

This report is subject to change without notice and Near Earth assumes no responsibility to update or keep current the information contained herein. Near Earth accepts no liability whatsoever for any loss or damage of any kind arising out of the use of all or any part of this report.

No part of this report may be reproduced or distributed in any manner, via the Internet or otherwise, without the specific written permission of Near Earth. Near Earth accepts no liability whatsoever for the actions of third parties in this respect.