Commercial Space Transportation Advisory Committee
May 26, 2005
MEETING MINUTES

COMSTAC Chair John Vinter, Chairman, International Space Brokers, Inc., Rosslyn, Virginia, convened the meeting at approximately 8:50 a.m. He reported that Secretary of Transportation Norman Y. Mineta had appointed 12 new members and reappointed 13 incumbents since the October 2004 meeting, noting that the recent appointments and reappointments have given the Committee its full complement of 25 members for the first time in several years. Mr. Vinter asked members to introduce themselves and he acknowledged the membership of returning members. He also asked new COMSTAC member George Whitesides, Executive Director of the National Space Society (NSS), to provide a brief summary of the NSS 24th International Space Development Conference, held in Washington, DC on May 19-22.

AST Activity Report

Patricia Grace Smith, FAA Associate Administrator for Commercial Space Transportation, provided an update of the activities of FAA's Office of Commercial Space Transportation (AST) since the October 2004 meeting. She reported that the findings in the AST Quarterly Launch Report (2nd Quarter 2005), show about $165 million in investments in non-federal launch sites throughout the U.S. with additional funding for new development on the way, driven by the potentially lucrative market for suborbital space tourism. She noted that the COMSTAC members received a copy of the FAA 2005 National Aviation Research Plan, which provides information on the programs and budget for FAA R&D efforts.

Ms. Smith described AST's activities with the word "momentum," noting that the prize-winning flights of SpaceShipOne were the "spark that set the emerging commercial personal spaceflight industry in motion.... and will drive yet another leap forward-orbital commercial spaceflight." She added that the President and Congress laid the framework for this momentum with the President's U.S. Space Transportation Policy, which emphasizes the importance of using commercial launch capabilities and encourages the U.S. Government to take advantage of the industry's entrepreneurial spirit; and the passing of the Commercial Space Launch Amendments Act of 2004 (the Act) in December, which gives the Department of Transportation (DOT) the responsibility for commercial human space flight and for creating a new experimental permit for R&D testing of new reusable launch vehicles (RLV).

She reported that the Act requires AST to issue proposed human space flight regulations by December 2005 and final rules by June 2006; that guidelines for flight crew and space flight participants were issued February 11, 2005; and that guidelines for the experimental permit were released at the RLV Working Group meeting the day before

(Wednesday, May 25). She outlined elements of the experimental permits, noting they will be available for operators of reusable suborbital rockets to conduct R&D and testing, show compliance with requirements for a launch license and crew training prior to obtaining a license, granted in a 120-day period making them easier to obtain than a license, and modeled to some degree after the Experimental Airworthiness Certificate commonly used in aviation R&D. She listed additional AST activities and milestones, including progress in the partnership with the Air Force to develop common launch safety standards for operating at federal and non-federal ranges, the public meeting in March to discuss the draft final rule on Licensing and Safety Requirements for Launch, 171 commercial launches to date with a perfect safety record, the development of a regulatory regime to issue commercial space transportation safety approvals for critical launch vehicle safety systems and processes, and the initiation of a one-stop shop for RLV licensing that draws on the resources of other FAA lines of business.

Ms. Smith also highlighted industry achievements, including:

- Virgin Galactic's plans to operate a fleet of five vehicles starting in 2007 at a price of about $200,000 per person per flight, and for which they have already received more than 7,000 requests for initial reservations, and secured full advance payments from the first 100 passengers to fly on SpaceShipTwo;
- Rocketplane and Aera Corporation's announcement of ticket sales;
- Space Adventures' report that that it has received more than $2 million in deposits for suborbital flights;
- The award to SpaceX of a $100 million contract by the Air Force for a series of Falcon launches. (AST received a launch license application from SpaceX);
- XCOR Aerospace's receipt of a NASA contract worth up to $7 million to develop a composite cryogenic tank to hold liquid oxygen;
- Lockheed Martin and Boeing's announcement of the creation of a joint venture to consolidate their EELV manufacturing and operations known as United Launch Alliance, intended to reduce overhead costs and pass those savings on to the government;
- Investments by the X Prize Foundation and the state of New Mexico for the X Prize Cup events, starting this year; and
- Efforts by T/Space and Kistler Aerospace to provide commercial crew and cargo delivery services to NASA in the near future.

Ms. Smith also encouraged the industry's participation in the upcoming FAA Second Annual International Aviation Safety Forum ("Working Together to Achieve Greater Safety") on October 20 and 21 at the Westfields Marriott in Chantilly, Virginia.

Transportation Market Forecasts: GSO Forecast Report

Ethan Haase, Senior Analyst for Strategic Planning at International Launch Services, presented the ***2005 COMSTAC Commercial Geosynchronous Orbit Launch Demand Model***. He reported that the forecast covers the years 2005 to 2014 and that the average annual demand is similar to the 2004 forecast (20.5 satellites per year vs. 21.1 for last year). He stated that the 2005 report provides updates on the estimate of a "realization"

of demand; the growth in satellite mass and transponders per satellite; respondents' views on the factors affecting demand; and industry developments that may affect demand.

Mr. Haase explained the two-part methodology of the forecast, noting that the near-term forecast is a bottoms-up forecast of launch opportunities by name that covers the years 2005-2007); and the long-term forecast covers 2008-2014, an average of the comprehensive domestic forecasts by mass categories. He said that the working group looked at addressable commercial payloads only, i.e., those that are open for internationally competitive launch service procurement. He also reported that 26 responses were received from spacecraft manufacturers, launch service providers, and satellite service providers, both international and domestic, adding that 15 companies responded to questions on how various factors affected their plans to procure new satellites.

He noted that the COMSTAC GSO Forecast projects demand for launches of satellites, but that launches are delayed due to factors such as launch failures, launch vehicle delays, manifesting delays, manufacturing delays, satellite component issues, and regulatory delays. He pointed out that because of this, the GSO forecast includes a historically-based "realization factor," which is an estimate of actual satellites launched. The methodology has evolved to present realization factor for the first two years of the forecast.

He also discussed the international input from Arianespace, Alcatel, and Mitsubishi, pointing out that the significant difference between the GSO Forecast and inputs from international companies was the projection of more satellites in the 2,200kg to 4,200kg range by the international companies. He also noted that the rollout of new services such as HDTV and broadband services and the private equity firms' buy-ins of major satellite operators have had and will have impacts on demand.

Mr. Haase summarized the report findings:

- The average satellite demand for the period 2005-2014 is 20.5 per year;
- Near-term demand is 22 satellites in 2005 (expected realization is 13-19); and 19 satellites in 2007;
- Transponders-per-satellite and mass-per-satellite launched continue to increase (Compared to last year's forecast, the 2005 forecast includes fewer satellites below 2,200kg and more satellites between 4,200kg and 5,400kg);
- Economic and market conditions continue to be challenging, with some improvement; and
- The success of new broadband services and the strategies of new owners should have significant impact on demand in the coming years.

COMSTAC member John Logsdon asked about the 100 percent variance used in the GSO Forecast and Mr. Haase explained that the "realization factor" attributed to the range.

Transportation Market Forecasts: Non-Geosynchronous Orbits (NGSO) Forecast

John Sloan, senior policy analyst in AST's Space Systems Development Division, provided the briefing on FAA's ***2005 Commercial Space Transportation Forecast for Non-Geosynchronous Orbits***. Mr. Sloan reported that there is a potential for moderate increase in NGSO launch activity, and that the NGSO forecast uses payloads that are open to internationally competed launch services procurement and other commercially sponsored payloads, including payloads that generate launch demand, and no secondary or dummy payloads. He described a 7-step methodology:

Step 1 – Identification and research of all current and proposed NGSO systems;
Step 2 – Review of business and financial progress, satellite specifications, launch plans, and overall market status;
Step 3 – Examination of companies' FCC licensing status;
Step 4 – Interviews with companies, the FCC, and survey of launch providers on their near-term manifests;
Step 5 – Development of an Excel-based traffic model using constellation configuration and deployment schedule;
Step 6 – Review of data with companies, updating the model, writing the report; and
Step 7 – Peer review of the final text

Next Mr. Sloan reported the Forecast results:

Baseline Satellite Forecast: 144 satellites for 2005-2014, an average of 14.4 per year (36% higher than the 2004). This includes international scientific and other satellites (60%); telecommunications satellites (28%), and commercial remote sensing satellites (12%).

Baseline Launch Forecast: 64 total launches for 2005-2014 (25% increase compared to last year, i.e., 51 launches in 2004 and 2003). This is an average of 6.4 launches per year including 2.5 medium-heavy launch vehicles and 3.9 small launch vehicles. By sector, this includes 44 scientific/other satellite launches; 13 remote sensing satellites launches; and 7 telecommunications satellite launches.

He reported that the near-term satellites and launches are higher than the far-term and the increase comes from international/scientific/other and that for the far-term international, the FAA increased the number of scientific/other satellites. He also highlighted several trends:

- More "Other" satellites, including 5 SAR-Lupe radar satellites for the German Defense Ministry and 4 demonstration launches for Bigelow inflatable space habitat;
- Several systems making progress to enter future forecasts, including Globalstar (2 upcoming launches), Iridium (1-2 launches per year for 10 years), Satellite Radio for Europe could be in NGSO, and orbital commercial human space flight, including the America's Space Prize by 2010, sponsored by Bigelow Aerospace; and

- Dnepr launch vehicle increase in activity, with twice as many launches in near-term forecast as last year, low prices, and a new launch site under development at Dombarovsky.

Mr. Sloan listed several factors affecting launch demand, including:

- Strength of the U.S. and international economies;
- Investor confidence;
- Government purchase of commercial services;
- Satellite lifespan;
- Need for replacement satellites;
- Business case changes;
- Regulatory and political changes; and
- New markets.

COMSTAC member Lou Gomez asked if there are plans to do a forecast for the suborbital market and Mr. Sloan replied that there are plans to develop a forecast for suborbital missions by the end of 2005. COMSTAC member John Logsdon expressed concern regarding commercial versus government launches, since only "internationally-competed" launches are considered in the NGSO forecast. With regards to launches such as NASA's procurement for launches to the International Space Station, Mr. Sloan advised that those would not be counted. COMSTAC member Debra Lepore suggested comparing the actual Low Earth Orbit satellites with the data from the year in review. COMSTAC member Livingston Holder asked if companies were more open in providing data than in the past. Mr. Sloan replied that companies were more willing to share information. COMSTAC member Alex Liang commented that the working group (Technology and Innovation) will revisit the definition for commercial launches for the next forecast.

Defense Trade Controls Policy

Ann Ganzer, Director of the Office of Defense Trade Controls Policy (ODTCP), U.S. Department of States, provided information about her office, explaining that ODTCP is part of the State Department's Bureau of Political/Military Affairs, whose mission is regional stability directed by the President's national security strategy. She listed the responsibilities of the Bureau, including acting as a liaison with the Department of Defense, negotiating basing rights, sponsoring military training programs, conducting humanitarian demining efforts, and export controls and arms transfers, which is where her office comes in. She reported that it is unlikely that the control policies of her office would change, including controls for launch vehicles, the 1999 law mandating that satellites would be controlled as munitions (nonproliferation), and especially the China policies, called the Tiannamen Sanctions, which prohibit the launch of U.S.-built satellites from China. She explained that these sanctions can be waived, but only by the President, and the last such waiver occurred in 1988. She also reported that the ODTCP is working to prevent the European Union from lifting their China arms embargo.

Ms. Ganzer discussed the ODTCP's work with companies proposing space tourism ventures, noting that the launch vehicles for these ventures will be controlled technology. She urged company representatives to begin the export licensing process as early as possible. She added that companies must get ODTCP permission to provide insurance information to their clients.

COMSTAC member Livingston Holder inquired as to whether the ODTCP would lift controls for certain suborbital reusable launch vehicles (RLVs) which would have some differences from missile technologies. Ms. Ganzer advised him that if the technology is controlled by the Missile Technology Control Regime (MTCR), it will be licensed, especially if a U.S. company is planning a venture with an international company. Gerald Musarra, representing Lockheed Martin Corporation, asked which European satellites are subject to U.S. licensing. Ms. Ganzer explained that any satellite that contains a Munitions-List item would be subject to the ODTCP policy. COMSTAC member George Whitesides inquired about the best way for the industry to approach the issue and Ms. Ganzer advised one-on-one meetings and having COMSTAC interface with the State Department's Defense Trade Advisory Group.

COMSTAC member Jeff Greason expressed his opinion that most of the technical information that he needs to discuss with international companies is available in the public domain and should not be subject to ODTCP policies. Ms. Ganzer advised that to prevent any violation of the ODTCP policies, companies should get a Technical Assistance Agreement (TAA) before talking with international entities on any level.

COMSTAC member Chris Kundstater commented that the insurance industry is not certain what the State Department's policy goals are, i.e., what the ODTCP is "trying to stop," and what issues the ODTCP has with insurance companies, both domestic and international. COMSTAC Chairman Vinter also commented that he is aware of some programs that use French systems to avoid the U.S. control policies.

COMSTAC member Frank Culbertson expressed the concern that TAAs are becoming so specific that they don't cover unanticipated discussions or problems, leaving a company at risk to violations, even if they have a TAA. At the request of Larry Williams, representing Space Explorations Technologies, Ms. Ganzer explained some ODTCP terms, including TAAs (Technical Assistance Agreements), DSP5 (export license), and TTCP (Technology Transfer Control Plan).

Update on the JPDO/Implications for the Commercial Space Transportation Industry

Robert Pierce, Deputy Director for the Joint Planning and Development Office (JPDO), provided an update on JPDO activities, reporting that the JPDO delivered a report to Congress in December 2004, entitled ***Next Generation Air Transportation System: Integrated Plan***, which establishes national goals and sets the context for transformation for the next generation air transportation system, noting that the JPDO is responsible for the implementation of the Plan. He explained that the motivation for these efforts was the congestion and other critical issues facing the air transportation system.

Mr. Pierce reported that the JPDO's Senior Policy Committee is chaired by the Secretary of Transportation with participation from the department secretaries for DOD, Commerce, Air Force, and Homeland Security; the Administrators for NASA, NOAA, and the FAA; and the President's Science Advisor. He listed the interagency integrated product teams and their functions:

- **FAA** - development of airport infrastructure to meet future demand;
- **Department of Homeland Security** - establishment of an effective security System without limiting mobility or civil liberties;
- **NASA** – establishment of an agile air traffic system;
- **Department of Defense** - establish user-specific situational awareness;
- **FAA** - establishment of a comprehensive proactive safety management approach;
- **FAA** - environmental protection that allows sustained aviation growth;
- **Department of Commerce/NOAA** – development of a system-wide capability to reduce weather impacts;
- **FAA** - harmonization of equipage and operations globally.

Mr. Pierce noted that through the IPTs, the JPDO is examining the possibility of tripling the overall capacity of the air transportation system in terms of operations, employment, reducing costs on a per-unit basis, and reducing wait times at airports. He also discussed each of the capabilities of the Next Generation Air Transportation System, including global secure access to net centric information, airborne information web, broad-area precision navigation, required total system performance – equip for service, national dynamic airspace, 4D trajectory management, seamless weather assimilation into decision loop, equivalent visual operations, and super density operations. He pointed out that the areas of national dynamic airspace and 4D trajectory management will probably impact commercial space transportation operations, explaining that dynamic airspace will provide a flexible environment to allow different types of operations and speed regimes, including launch and reentry.

COMSTAC member Livingston Holder asked whether a pilot's in-flight location information could be transmitted to the ground and to other aircraft in the local area for air traffic management, about the equipment for such a capability, and about the similarities and differences in equipment for the U.S. and for other countries. Mr. Pearce replied that such capability is available and that the JPDO is looking at the harmonization of this type of equipment. COMSTAC member asked whether the JPDO is incorporating 4D trajectory functions for reentry. Mr. Pearce stated that the 4D trajectory should work for reentry operations. COMSTAC member Jeff Greason asked about test cases for reentry and how companies could provide information on mechanisms for test cases to the JPDO. He was advised that companies could contact AST's JPDO liaison, Shelia Helton-Ingram.

Space Insurance Experience and Outlook

Christopher Kunstadter, Executive Vice President for U.S. Aviation Underwriters, Inc., began his presentation on launch and in-orbit space insurance (not liability) by explaining the business cycle for the insurance industry, emphasizing the volatility for the insurance business. He listed increased complexity of risks, lower investment income, an uncertain global economic situation, (i.e., globalization, oil, consumer prices, terrorism), and more scrutiny by regulators and rating agencies as factors affecting insurance volatility. He described space insurance as simple, covering losses due to failure (hardware failure) and/or physical damage to satellites, launch vehicles, and other space payloads with launch or in-orbit coverage, i.e., launch vehicle flight, initial operations of the satellite and the ongoing in-orbit commercial operations of the satellite, and in-orbit operations of rockets and satellites, and space payloads. He added the fact that GEO communications satellites make up 85-90% of the insurance business volume, and clients are launch vehicle and satellite manufacturers, operators, and users. He listed constantly changing technology, unique risk, serial or generic failure, and a volatility of underwriting results (e.g., one year can be very good and the next year can be very bad), as the four characteristics of space insurance. Mr. Kunstadter discussed the following market factors:

- A flat market for GEO launches for almost 10 years;
- An unchanging failure rate in spite of the appearance of several new launch vehicles;
- The decrease in insurance for on-orbit satellites, i.e., about 150 out of 250, due to more back-up satellites;
- Lower rates for the insured satellites, causing clients to take more of the risk;
- In 2004, 30% of the GEO satellites launched suffered a failure; and
- The difference in satellite reliability.

He reported that in the late 90s, losses were high because the activity was high; however, the insurance industry didn't raise its premium rates; the profit over the last 11 years was barely $200,000 on $8 or $9 billion worth of premiums; there was significant over-capacity in the late 90s and earth 2000s which went away as the insurance industry suffered losses; and currently there is sufficient capacity to insure all but the largest risks. He emphasized price as the biggest concern for clients, followed by exclusions for generic anomalies, and claims handling and scope of coverage. He concluded that currently there is plenty of capacity for growth among launch vehicle and satellite manufacturers and operators with strong growth areas in DTH/HD, mobile radio and mobile communications, and that new technologies and market pressures dominate industry. He emphasized the point that space insurance is a catastrophe business, where products are priced before knowing the cost, insurers recognize that their capital can be much more effectively deployed elsewhere, which means that insurance companies require larger operating margins to justify the allocation of capital to this volatile business.

Larry Williams (Space X) commented that the cumulative profit for the launch and the satellite manufacturing industries is less that than of the insurance industry. COMSTAC

member Jeff Greason commented that the third party liability insurance business has been good for insurance companies because launch companies are required to purchase it but no claims have been paid. Mr. Kunstadter agreed but added that now insurers are faced with new launch vehicles, especially the small ones that haven't been too successful. COMSTAC member Frank Culbertson commented that the new missions would expose more of the U.S. population. Mr. Kunstadter agreed and encouraged companies to come in and talk to insurers and provide information on missions and proposals for launch and reentry.

COMSTAC member Lou Gomez asked if insurance rates would be lower for overflight of states with very low populations. Mr. Kunstadter replied that that situation would probably need to be examined and the risks assessed on an individual basis. COMSTAC member Mike Kelly asked about the volatility for the aviation industry. Mr. Kunstadter pointed out that fortunately there have been no airline accidents for a few years, but when it does happen there is a spike in the insurance business.

Trends in Satellite Financing

Hoyt Davidson, CEO and Managing Member for Near Earth, LLC, discussed the latest trends in satellite financing, focusing on commercial satellite financing and the subsequent impacts on the commercial launch industry, and highlighting the commercial launch demand for four sectors. He began with the characteristics and performance of the Fixed Satellite Service (FSS) industry, noting that acquisition by private equity firms have driven the values up and that for the first time in years, the FSS sector unseated the DBS as the biggest consumers of capital. He pointed out several key factors for the FSS sector, describing it as a low growth, high cash flow sector, with significant overcapacity, i.e., 65-70% capacity utilization, but with promising growth sectors for government services, HDTV, and broadband. He added that because the large fleets are being controlled by private equity firms, there will be consolidations and these companies will hold expenditures down for the next 3-5 years, reduce costs and deleverage their balancing sheets. He explained that the impact for the commercial launch industry would be fewer GEO launches over the next 3-5 years, and moderate small GEO demand.

In describing the Consumer Sectors, (i.e., DBS, DARS, Voice and broadband), he noted some important contrasts, including high growth, low cash flow, spectrum constraints and the fact that there are large players controlled by publicly-traded firms, and that the promising growth for this sector will be in HDTV, niche content, satellite broadband (fixed and mobile), and enhanced mobility. He stated that the consumer sector is also building its subscriber base, enhancing content offerings, adding bundled services, expanding geographically (interest in Asia, Latin America and Africa), and increasing mobility. He pointed out that the launch industry impact would be steady, then declining launch rates after 3-5 years for the U.S. and Europe unless satellite broadband or hybrid networks succeed and more launches in 3-5 years for the rest of the world.

In describing the characteristics of the ground segment sectors, consisting of system integrators, teleport owners/operators, space segment capacity resellers (fixed and mobile), and remote sensing value added resellers, Mr. Davidson listed massive

overcapacity, profit margins in low single digits, engineering "hobby shops" owned by founders, roll-up opportunities waiting for strategic consolidators, and small sizes, low growth and low margins which make leveraged acquisitions difficult for private equity firms. He noted that the promising growth sectors are government products and services, IP video services, IP datacasting, and geospatial information, adding that the impact to the launch industry will be increasing transponder demand for IP-based services for the U.S. and Europe, increasing transponder demand for government services for the rest of the world, and a slowly growing need for higher resolution satellite imagery.

He summarized by listing several issues including the high cost of space access, insurance, high U.S. launch costs, and high regulatory burdens pushing companies to use international companies. He concluded that public capital markets are wide open for proven commercial satellite businesses, with over $20 billion raised in 2004; private capital markets funding select new entrants and technologies; and launch reliability is back but the launch costs and regulatory burdens need to decrease. COMSTAC member Lou Gomez asked about the percentage of total launch costs for insurance. Mr. Davidson replied about 25%.

WORKING GROUP REPORTS

Risk Management Working Group (RMWG)

Chairman John Vinter discussed the issue of indemnification extension under Public Law 108-428, which extends the liability indemnification regime for the commercial space transportation industry for a period of five years to December 31, 2009, and which requires and independent comprehensive study by a non-profit entity on the continuing need for indemnification authority, adding that the FAA has selected The Aerospace Corporation to conduct the study. He reported that the RMWG is planning to submit its previous 2001 report on the continuing need for indemnification to The Aerospace Corporation and would work with The Aerospace Corporation as appropriate. Chairman Vinter also reported on the status of the space insurance market, noting that this year is better for the user than last year, since the user can now buy a launcher one-year policy. He reported that the market wants a greater margin, in terms of propellant and fuel, and if not margin, there will be an equivalent of deductible. He added that there is a constructive total loss point of 75% or greater, capacity is up at $425 million for launch, $240 million for in-orbit, $500 million for third-party liability; and coverage is still restrictive and ITAR is still an issue.

RLV Working Group (RLVWG)

RLVWG Chair Mike Kelly reported provided a summary of the RLVWG meeting on Wednesday, reporting on the presentations at that meeting and the action items. For action items, he reported that the RLVWG would provide comments on the AST's experimental permit guidelines, which would be an ongoing process prior to the issuance of a Notice of Proposed Rulemaking.

Technology and Innovation Working Group (TIWG)

Alex Liang, TIWG Chair, urged members to support the efforts of the TIWG in developing the annual GSO market forecast, and noted that the TIWG usually meets at least twice in

April and October to work on the forecast. He added that the TIWG has the action of looking at the definition of commercial launches.

Launch Operations and Support Working Group (LOSWG)
Dr. Billie Reed, Acting LOSWG Chair, reported that new COMSTAC member Don Pettit will be taking over the LOSWG chairmanship. He also reported that the LOSWG will be contacting industry representatives and having discussions to frame issues for the future, including the issue of rapid response for launching from Federal and non-Federal sites, and the related regulatory aspects.

Closing Remarks by U.S. Secretary of Transportation Norman Y. Mineta
Secretary Mineta greeted the COMSTAC members and introduced Melissa Sabatine, his Policy Assistant. He welcomed the new COMSTAC members and thanked Chairman Vinter for his leadership and the Committee for giving their time and expertise to the work of the Department of Transportation and the FAA. He spoke about the momentum in the U.S. commercial space transportation industry, especially as a result of the 2004 events and activities by Scaled Composites, X Prize and Virgin Galactic, emphasizing that such activity coincides with the Bush Administration's shift in national space policy to encourage private sector participation. Secretary Mineta also reported on the development of the new Research and Innovative Technology Administration within DOT, designed to foster research and technologies that cut across various modes of transportation, to improve safety and efficiency in the American transportation system, including commercial space transportation.

FAA Administrator Marion Blakey also stopped by to greet Committee members and meet the new COMSTAC members.

New Business and Wrap Up
COMSTAC members Alex Liang, Livingston Holder, and Jeff Greason expressed concern regarding the issues related to ITAR, especially its impact on the RLV sector, and discussed the possibility of working with the State Department's Office of Defense Trade Control Policy. It was pointed out that the RLVWG would take the lead on the ITAR issue. COMSTAC member Billie Reed suggested inviting Ann Ganzer and representatives from her office to attend a COMSTAC working group meeting. Since there was no additional new business, Mr. Vinter adjourned the meeting at 2:34 p.m.

John W. Vinter, Chairman, COMSTAC

ATTENDEES

COMSTAC Members/Alternates
John Vinter, COMSTAC Chair, International Space Brokers, Inc.
Eleanor Aldrich, American Institute of Aeronautics and Astronautics
Louis Gomez, New Mexico Office of Space Commercialization
Dr. Alex Liang, The Aerospace Corporation
Livingston Holder, Holder Consulting Group
Frank L. Culbertson, Jr., Science Applications International Corporation
Robert M. Davis, Northrup Grumman Corporation
Frank A. DiBello, Florida Aerospace Finance Corporation
Jeffrey K. Greason, XCOR Aerospace
Michael Kelly, Northrup Grumman Corporation
David Keslow, Orbital Sciences Corporation
Christopher Kunstadter, United States Aviation Underwriters, Inc.
Debra F. Lepore, Kistler Aerospace Corporation
Dr. John M. Logsdon, George Washington University
Gen. Donald Pettit, Aero Thermal Technologies
Dr. Billie Reed, Virginia Commercial Space Flight Authority
Janet Sadler, Redholm Underwriting Agents, Ltd.
George T. Whitesides, National Space Society
Larry Williams, Space Exploration Technologies (Alternate for Elon Musk)
Robert Bocek, The Boeing Company (Alternate for James Maser, Sea Launch Corporation)
Lisa Hague, The Boeing Company (Alternate for Dan Collins)
Gerald Musarra, Lockheed Martin Corporation (Alternate for Mark Albrecht and Thomas Marsh)

U.S. Department of Transportation
The Honorable Norman Y. Mineta, Secretary of Transportation

The Federal Aviation Administration
The Honorable Marion C. Blakey, Administrator

FAA Office of Commercial Space Transportation
Patricia G. Smith, Associate Administrator for Commercial Space Transportation
George Nield, Deputy Associate Administrator for Commercial Space Transportation