Commercial Space Transportation Advisory Committee
May 18, 2007
MEETING MINUTES

COMSTAC Chairman John Vinter, International Space Brokers, Inc., Rosslyn, Virginia, convened the meeting at 8:39 a.m. He began by welcoming the Committee members and guests and introducing three new members, Timothy Hughes, chief counsel for Space Exploration Technologies Corporation, El Segundo, California; Charles Precourt, vice president for Strategy and Business Development, ATK Thiokol, Inc., Brigham City, Utah; and Tracey Knutson, Knutson and Associates of Girdwood, Alaska. Mr. Vinter noted that this was his last meeting as Committee Chair, expressed his appreciation to FAA and to the Committee members, and turned the meeting over to incoming Chairman, Wilbur C. Trafton, executive vice president, Rocketplane Kistler (RpK) of Oklahoma City.

Report on AST Activities

Patricia G. Smith, FAA Associate Administrator for Commercial Space Transportation, reported on activities of the FAA Office of Commercial Space Transportation (AST) since the October 2006 COMSTAC meeting. She introduced General James Armor, director, National Security Space Office, who was in attendance, and acknowledged COMSTAC member Billie Reed, executive director of the Mid-Atlantic Regional Spaceport (MARS) in Virginia, for the two launches from the Spaceport since December 2006. Ms. Smith reported that AST issued three experimental permits - two to Armadillo Aerospace and one to Blue Origin, for a total of 8 permitted launches. She reported on FAA's 10th Annual Commercial Space Transportation Conference in February and the 2nd Summit for RLV Entrepreneurial Developers, held in April in Colorado Springs, which is organized jointly by the FAA and the Air Force. She also reported on her two-hour conversation for the Wall Street Journal in April, along with Peter Diamandis, chief executive officer for the X Prize Foundation. In industry news, she noted the second Falcon-1 launch by SpaceX and the Sea Launch incident in January.

Ms. Smith highlighted the release of the Final Rule for Private Human Space Flight Requirements for Crew and Space Flight Participants on December 15, 2006, and the Final Rule on Experimental Permits for Reusable Launch Vehicles on April 6th and acknowledged the work of AST staff members, Ken Wong and Randy Repcheck on these Rules. Ms. Smith commended the work of the COMSTAC members and the industry. She concluded by commending John Vinter's leadership and work as Committee Chair since October 30, 2003 and presented him with a plaque. She also acknowledged incoming Committee Chairman, Will Trafton.

(To read the full AST Activities Report, go to:
http://www.faa.gov/about/office_org/headquarters_offices/ast/about/media/COMSTACmay2007.pdf)

After Ms. Smith's report, Mr. Trafton presided over the meeting. He began by also commended the work of John Vinter, acknowledging him as one of the most respected people in the industry.

United Launch Alliance

Daniel J. Collins, Chief Operating Officer for United Launch Alliance (ULA), Littleton, Colorado, provided an overview of ULA, the company established on December 1, 2006, that brought the Atlas launch vehicles from Lockheed Martin and the Delta launch vehicles from The Boeing Company. He emphasized ULA's history of 850 launches back to the 1950s and presented ULA's vision - "One team launching the quest for knowledge, peace, and freedom, " and mission - to be the best launch provider of expendable launch services, guided by five principles: ethical behavior, mission success, performance excellence, business excellence, and employee involvement.

Mr. Collins discussed the ULA management team, described the launch vehicle types, and discussed the relocation plans for all operations. He reported on three successful missions: the December 14, 2006 launch of Delta II, with the NROL-21 payload; the February 17, 2007 launch of the Delta II, carrying the NASA THEMIS (5 payloads); and the first EELV launch on March 8, 2007 of the Atlas V, with the STP-1 (6 payloads in three orbits). He also discussed the 2007, 2008 and 2009 ULA manifests, noting that in 2007, there will be a total of 17; and in 2008, 21 launches are planned (one commercial) and that more commercial launches are planned for 2009.

COMSTAC member Frank Culbertson (SAIC, McLean, Virginia) inquired about moving the assembly facilities to Decatur, Alabama and pointed out that that area is "hurricane country." Mr. Collins reported that ULA is increasing security and preparing restoration plans in the event of disasters, natural and otherwise, adding that ULA has inventory and storage at Cape Canaveral, Vandenberg, and Pueblo, Colorado. COMSTAC member Gerald Musarra (Lockheed Martin, Arlington, Virginia) inquired about storage at an inland facility at Camp Blanding in Florida, through an arrangement with Space Florida. Mr. Collins confirmed.

Mr. Hughes asked about the decreasing number of launches for the Delta II launch vehicle. Mr. Collins explained that Air Force transferred the GPS missions from the Delta II to the EELVs and that NASA science missions were also decreasing. Mr. Hughes also asked about multi-manifesting on the Atlas V. Mr. Collins noted that both the Delta IV and the Atlas V have dual-payload capacity. COMSTAC member Alex Liang (Aerospace Corporation, El Segundo, California) asked about competition/proprietary sensitivities between the Altas and Delta sides within ULA and about the production of the RD 180 engine. Mr. Collins noted that the ULA is working on producing key components of the RD 180 at Pratt and Whitney and working with the Air Force to see how far they want to go. He also responded that there is no longer a proprietary information wall between Atlas and Delta. Chairman Trafton asked when the Atlas V Heavy would fly and Mr. Collins replied that currently there are no customers for that vehicle. COMSTAC member Bob Davis (Northrup Grumman Corporation, El Segundo, California) inquired about rumors

that Atlas might be human-rated. Mr. Collins responded that ULA is focused on the carrying out its current launch manifest.
(To view the ULA presentation, go to:
http://www.faa.gov/about/office_org/headquarters_offices/ast/industry/advisory_committee/meeting_news/media/ULA%20Overview%20-%20COMSTAC%20May%202007-R1.pdf)

Special Segment: NASA and the Commercial Launch Arena

Space Station Resupply

William Gerstenmaier, NASA associate administrator for Space Operations in the Space Operations Mission Directorate, provided a briefing on the cargo supply strategy for the International Space Station (ISS). He described the current supply strategy, which uses international partners, including the Automated Transfer Vehicle (ATV) provided by the Europeans to bring pressurized cargo, propellants and water; the HTV, provided by the Japanese to carry large external, unpressurized cargo such as battery units; and the Progress launch vehicle provided by the Russians to carry water, propellant, and internal cargo. He noted that the Russian cargo services, the only proven upmass capability other than the Shuttle, provide the minimum needed for ISS survival, bridging the gap between the Shuttle and new U.S. domestic cargo service providers. He added that when U.S. services are available, no other Russian cargo delivery services will be procured.

He provided ISS cargo requirements assessment data, which included the capability currently supplied by the Shuttle and the international partners, reporting that there is a remaining shortfall of 48.8 metric tons available for the domestic market. He noted that the assessment includes 13 Shuttle flights for assembly and 2 contingency flights; 3.4 of 5 ATV flights (for U.S. cargo); 4.3 or 7 HTV flights (for U.S. cargo); and 4.2 metric tons in 2010 for the Russians and 1.4 metric tons in 2011, adding that there will be requirements for returning cargo from the ISS as well.

Mr. Gerstenmaier discussed preparations for using commercial services, including proximity operations; Station arm requirements such as grappling; berthing; hatches; and environment. He reported that NASA is looking at future requirements, system performance, and other government agencies that want to use the ISS for research including National Institutes of Health, the National Science Foundation, and the Department of Education. He added that they are also evaluating when to begin the formal procurement activities for these types of requirements.

In response to a question about developing a strategy for commercial use of the ISS, Mr. Gerstenmaier responded that there has not been much discussion about that issue. COMSTAC member Debra Lepore (AirLaunch, LLC, Kirkland, Washington) recommended that NASA begin the procurement process as soon as possible and continue to use commercial contract mechanism such as FAR Part 12, since these mechanisms provided flexibility for commercial providers and entrepreneurs to purchase from a services standpoint. Chairman Trafton inquired about extending the life of ISS. Mr. Gerstenmaier responded that ISS hardware is capable of flying beyond 2016 and that if the ISS is well utilized, there will be a market for commercial space transportation services. Mr.

Culbertson commented that NASA needs a firm plan for commercialization of the ISS and for space transportation. He also asked whether NASA had plans for outsourcing the logistical management of the ISS. Mr. Gerstenmaier responded that there have been no discussions about that issue.

(To view the Space Station Resupply presentation go to: http://www.faa.gov/about/office_org/headquarters_offices/ast/industry/advisory_committee/meeting_news/media/COMSTAC_Gerstenmaier%205_18_07.ppt)

COTS Update

Marc Timm, Acting Program Executive, Commercial Crew & Cargo Program, provided the Committee with an update on the COTS Program. He reported that NASA established the Commercial Crew and Cargo Program Office (C3PO) at Johnson Space Center, responsible for buying end to end transportation services for cargo to and from the ISS. He added that the companies own the intellectual property, the vehicles, the ground infrastructure, and the applied infrastructure, and are paid on successful completion of milestones, with no prepayments.

Mr. Timm described the C3PO organization, headed by Alan Lindenmoyer, which includes the COTS Advisory Team, a group of approximately 80 technical experts for all of the subsystems and design reviews. He also discussed the four capabilities in the solicitation: Capability A – External Cargo Delivery and Disposal; Capability B – Internal Cargo Delivery and Disposal; Capability C – Internal Cargo Delivery and Return; and Capability D – Crew Transportation, which is not yet funded. He discussed the two Program Phases: Phase I - the $500 million contract awarded in August 2006, using the Space Act Agreement, instead of the FAR contract for technical development and demonstration; and Phase II - the competitive procurement of orbital transportation services to the ISS, noting that Phase I winners can bid on Phase II, but that the competition is open. He noted that the Space Act Agreement incorporates FAA licensing and cross waiver liability provisions and that NASA and the FAA have a good working partnership.

He discussed the status of the funded partners (Phase I winners):
Rocketplane Kistler (RpK):

- Use of the K1 two-stage rocket for three orbital flight demonstrations;
- Three milestones already met;
- Next milestone is establishing financing and moving toward the design and implementation for the first launch proposed for November 2008.

Space Exploration Technologies Corporation (SpaceX):

- Use of the Falcon 9 rocket with the Dragon Capsule for three flights,
- Four milestones already completed
- Planning for the first launch in September 2008.
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He reported on the unfunded partners, including T/Space and Planetspace and he discussed the timeline for the Program, including Shuttle retirement in 2010; cargo delivery demonstration flights ending in 2009/2010, with cargo services beginning as soon as a contract is in place, followed by option crew capability in 2009-2012.

Chairman Trafton asked about the level of involvement by international partners. Mr. Timm noted that international involvement is there to the extent that the COTS winners use them. Mr. Davis asked about the procurement of Constellation. Mr. Timm explained that there are no services between the COTS Program and the Constellation Program. In response to a question about Capability D, Mr. Timm reported that Capability D could begin as early as September 2009. COMSTAC member Chris Kunstadter (XL Insurance, New York) asked whether the $300 – 700 million amount for the potential ISS market is what NASA wants to spend to fulfill the COTS mission. Mr. Timm explained that the amount was provided as a guideline for the industry. COMSTAC member George Whitesides (National Space Society, Washington, DC) asked about the incentive for unfunded partners. Mr. Timm explained that unfunded partners get access to safety requirements, ISS IRD interface requirements, documents, and other materials to better compete for Phase II. Mr. Culbertson asked whether the procurement scheduling for Phase II would meet the Station's needs. Mr. Timm and Mr. Gerstenmaier explained that NASA is still trying to make that determination.

(To view the COTS Update presentation, go to: http://www.faa.gov/about/office_org/headquarters_offices/ast/industry/advisory_committee/meeting_news/media/CCCProgram_Timm-COMSTAC_%205-16-07.ppt)

Innovative Partnerships Program Office

Douglas Comstock, Director of the Innovative Partnerships Program (IPP) Office, gave an overview of the mission and programs for the Office, noting that the IPP is tasked with facilitating partnerships with the private sector and leveraging private sector resources with the objective of providing technologies that are needed for NASA missions. He added that this is achieved by working closely with the mission directorates to ensure complementary and integrated technology plans. He reported that Strategic Goal 5 in the 2006 NASA Strategic Plan is to encourage the pursuit of appropriate partnerships with the commercial space sector, citing the COTS Program as an example.

Mr. Comstock described three program areas: Technology Infusion for direct investment in technologies beneficial to NASA programs, Small Business Innovative Research (SBIR), Small Business Technology Transfer Research Programs (STTR) and the IPPC Fund; the Innovation Incubator, which includes the Centennial Challenges Program and the Facilitated Access to the Space Environment for Technology Development and Training (FAST); and Partnership Development for technology transfer, intellectual property, and new innovative partnerships. He explained the role of the IPP Office as a facilitator and a catalyst, working to match technology needs with technology capabilities with NASA Centers, small businesses, government laboratories, emerging companies, universities, and other organizations.

Mr. Comstock reported that the goals of partnership are to provide leveraged technology investments, dual-use technology-related partnerships which create socio-economic benefits within the broader community through technology transfer, and technology solutions for NASA; to enable cost avoidance and accelerate technology maturation; and to increase NASA's connection to emerging technologies in the external communities. He also reported that during FY06, IPP facilitated over 200 partnerships with the private sector, federal and state government, academia, and other entities; over 50 license

agreements with private entities for commercial and quality of life applications; evaluation of more than 750 new technology reports for consideration of patent protection, and more than 400 software agreements for commercial application of NASA software.
He described partnership implementation; discussed what the IPP offers to the commercial space community, i.e., funding or leveraged resources, technology and software, facilities, expertise, facilitation to enable partnerships, and advocacy as a change agent to try new things; and described the SBIR/STTR programs and the Seed Fund process. He also discussed the various prizes and challenges, including the Astronaut Glove Challenge and brought in the actual astronaut glove for demonstration and the Regolith Excavation Challenge. COMSTAC member Billie Reed asked if launch infrastructure and safety systems fit into the IPP's definition of technology. Mr. Comstock responded that it did and that several of the NASA Centers are interacting with state representatives in those areas.
To view the Innovative Partnerships Program presentation, go to:
http://www.faa.gov/about/office_org/headquarters_offices/ast/industry/advisory_committee/meeting_news/

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Remarks by FAA Administrator Marion C. Blakey

Administrator Blakey congratulated Chairman Trafton on his appointment and commended FAA Associate Administrator Patti Smith and X Prize Foundation CEO Peter Diamandis on the recent Wall Street Journal interview about space tourism. She also acknowledged the work of the Committee and the industry representatives, noting the impact of the recent space flight of Stephen Hawkings. Ms. Blakey discussed the two recent FAA Final Rules (Private Human Space Flight and Experimental Permits), noting that the U.S. is leading the world in the area of private human space flight. Ms. Blakey thanked the Committee for its work and support of FAA efforts. Mr. Whitesides commented to the Administrator that the May 16th Experimental Permits Workshop, organized by AST was excellent and the type of thing that industry wants to see.

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Commercial Space Transportation Market Forecasts

2007 COMSTAC GSO Demand Model

Beth King, Director of Operations, Lockheed Martin Commercial Launch Services, presented the ***2007 COMSTAC Commercial Geosynchronous Orbit Launch Demand Model***, (2007-2016). She pointed out the stabilization in the forecast from 2006 to 2007, with an average satellite demand of 21 satellites per year and an average launch demand of 15.3. She said that the report has been done annually since 1993, using a consistent methodology to develop a 10-year forecast, reporting that the 2007 report updates the realization factor, the growth in satellite mass and transponders per satellite, the industry development that may affect demand, and the respondents' views on factors affecting demand. To gather data, the Forecast Team sent out approximately 85 letters and received inputs from 6 U.S. and 3 international manufacturers and launch service providers, 13 individual demand inputs from satellite operators, and 12 questionnaires from satellite operators responding to questions on how various factors affected plans to procure satellites.

Ms. King described the two-part methodology of the forecast, which includes the near-term forecast, a bottoms-up forecast of launch opportunities by name that covers the years 2007-2009, and a long-term forecast covering 2010-2016, which is an average of the comprehensive domestic forecasts by mass categories. She said that the working group looked at addressable commercial payloads only, i.e., those that are open for internationally competitive launch service procurement, and pointed out the increased number of dual-manifest launches by Ariane.

She discussed the satellite launch "realization" factor, which is based on an historical analysis of forecast vs. actual satellite launches for the first and second year of the forecast, noting that the 2007 model changes this factor to the last 5 years historical, making it more accurate. She explained that launches are delayed due to factors such as weather, scheduling, satellite, and manifesting delays, and that in 2006, 23 launches were forecasted with 19 actual launches, an 83% realization factor. She also discussed satellite mass, reporting that the 2007 Forecast indicates stability in the average satellite mass, the number of small satellites is decreasing, and the number of transponders per satellite is stabilizing.

Ms. King reported that satellite operators are concerned with launch vehicle availability and reliability, feel that economic conditions are improving; that U.S. Government export requirements are driving foreign operators overseas; that more international players are entering the market, e.g., Land Launch, but there is a rollout of new services such as Internet Protocol Television and the Ancillary Terrestrial Component.

Ms. King summarized the report findings:

- The forecast is becoming more reliable and more stable;
- The average satellite demand for the period 2007-2016 is 21.0 per year;
- 2007 demand for 23, between 15 and 19 for the realization factor;
- Continued trend toward heavier satellites and decrease in demand for satellites less than 2,200 kilograms;
- The availability and reliability of launch vehicles and export licensing are the biggest business factors; and
- New broadband services may spur growth in demand in the coming years, i.e., HDTV, DAR, ATC, and MSS.

Mr. Culbertson commented that there has not been any improvement in the export licensing situation since the last forecast and mentioned a survey about this issue conducted by the Department of Commerce. Mr. Hughes recommended that the Committee assist in the promotion of the survey results Ms. Lepore commended the Forecast Team on its 2007 efforts. Mr. Vinter pointed that insurance premiums were falling significantly over the last year. Mr. Collins suggested that the forecast cover other areas of the commercial market besides the addressable commercial market. Mr. Musarra reported on a newly-established coalition made up of about 18 organizations that is looking into the export licensing issue and recommended that the COMSTAC start thinking about input to the [FAA] Administrator and the [DOT] Secretary. Ms. Smith mentioned that a Defense Science Board Task Force has been examining this issue. Chairman Trafton called for a motion to

vote on adoption of the 2007 GSO Forecast, the motion was made, the vote taken and the report adopted by the full Committee.
(To view the 2007 GSO presentation, go to:
http://www.faa.gov/about/office_org/headquarters_offices/ast/industry/advisory_committee/meeting_news/media/cg%20Commercial%20GSO%202007%20report%20presentation.ppt)

2007 Non-GSO Forecast

John Sloan, senior policy analyst in AST's Space Systems Development Division, provided the briefing on FAA's *2007 Commercial Space Transportation Forecast for Non-Geosynchronous Orbits*. Mr. Sloan stated that the NGSO forecast uses payloads that are open to internationally competed launch services procurement and other commercially sponsored payloads, (e.g., a company could build, fund and launch its own satellite system), payloads that generate launch demand, and no secondary or dummy payloads. He noted a pile up of 17 launches, including 8 carried over from last year. He reported on new information in the forecast, including Globalstar's next generation constellation (6 to 8 satellites per launch); the COTS program, Boeing's Delta II has new launches of Italy's Cosmo-Skymed satellites; small increase in number of technology demonstration spacecraft; and the fact that financial conditions have been positive in the past 12 months, especially for satellite telecommunications. He reported the following Forecast results:

Satellite Forecast: 191satellites for 2007-2016, (19% higher than the 2006). This includes international scientific and other satellites (48%); telecommunications satellites (42%, exhibiting the largest growth), and commercial remote sensing satellites (10%).

Launch Forecast: 81 total launches for 2007-2016 (17% increase compared to last year, i.e., 69 launches in 2006). This is an average of 8.1 launches per year including 4.9 medium-heavy launch vehicles (an increase of over one per year compared to the 2006 forecast) and 3.2 small launch vehicles. By sector, this includes 52 scientific/other satellite launches; 15 remote sensing satellites launches; and 14 telecommunications satellite launches.

Satellite and Launch Breakout: Globalstar has 56 satellites in the forecast, ORBCOMM has 25 satellites, too early to forecast the Iridium next generation schedule (starting 2013-2014?); more commercial remote sensing satellites are in the near term; and visibility into the market fades about four to five years ahead.

For 2007 satellite mass trends, he noted 35 satellites in the 1,200 kilogram category, compared to 13 for 2006; 9 satellites in the 200-600 kg category, 8 of which are Globalstars.

He discussed the near term manifest (identified manifest) for the next four years, noting India's first commercial launch of the PSLV, which launched the AGILE astronomy satellite for Italy and the Russian Dnepr which launches the EgyptSat and the SaudiSat. He reported 17 launches scheduled in 2007 and 13 each in 2008 and 2009. He explained that because of delays in funding, new satellite and launch vehicle development, and a Dnepr launch failure, only 5 of 13 projected launches actually launched in 2006 and the remaining 8 launches carried over into 2007, adding that to close this type of gap, instead of changing

the methodology used by all previous forecasts, a "realization factor" was adopted for the current year as an additional marker, i.e., a realization of 10 to 13 launches for 2007.

Mr. Sloan discussed financial trends, noting that investment terms are favorable due to an overall increase in global private equity investments, and a healthy economy, and the fact that investors are looking broadly at telecommunications to include the NGSO sector despite previous bankruptcies. He also attributed an increased number of subscribers for NGSO telecommunication systems; an increase in smaller handsets with increased capability; and lower prices for services. He noted that initial Public Offerings have been successful, but currently FCC has little activity regarding new NGSO license applicants. For launch trends, he reported that U.S. launch market share has increased to about 40% of the near-term identified market because of the COTS program launches with private co-funding, the Delta 2 Cosmo-Skymed launches, and the additional SpaceX launches, reporting that Russia has 57%. He also noted the diversity of the international market, with only 10 of 37 identified launches from 2007-2010 that have the satellite owner/operator launching on a vehicle from their home country, mostly because of lower-priced Russian vehicles.

To view the NGSO Forecast presentation, go to:
http://www.faa.gov/about/office_org/headquarters_offices/ast/industry/advisory_committee/meeting_news/media/Sloan%20NGSO%20forecast%20May%2018%202007.ppt

Personal Spaceflight Federation

Brett Alexander, President of the Personal Spaceflight Federation (PSF), described the PSF as the industry association of leading businesses and organizations (approximately 18 members) working to make commercial human spaceflight a reality. He highlighted the PSF mission: to promote the development of commercial human spaceflight, pursue ever higher levels of safety, and share best practices and expertise throughout the industry. He provided a definition of commercial human spaceflight as systems specifically designed for passengers, using predominantly private funds, serving multiple markets, mostly private but some government. He also described two realms of activity: suborbital flights above the atmosphere and providing 3-5 minutes of weightlessness for adventure travel, scientific and industrial research, and astronaut training; and orbital flights which reach Earth orbit, providing hours or days of weightlessness for adventure travel, scientific research, manufacturing, and Space Station servicing.

He discussed plans for the suborbital and orbital systems and for spaceports, noting that suborbital systems are building on the success of SpaceShipOne and that piloted flight testing for suborbital flights is scheduled to begin in two years; the COTS program has been a catalyst for orbital systems; orbital habitats are under development, e.g. Bigelow Aerospace testbed, scheduled to launch in a few months; orbital passenger flights could occur in the next decade; and spaceports are enablers for personal spaceflight.

He discussed the PSF focus on safety, including working with the FAA and perpetuating best practices for safety; and the focus on informed consent, liability and insurance and its objective to provide a measure of liability protection, including standard waiver and release of claims to be signed by participants, and being aware of the various state laws.

Mr. Kunstadter recommended that PSF work closely with the insurance market and working with COMSTAC's Risk Management Working Group. COMSTAC member Michael S. Kelly (APFC, San Bernardino, California) asked about funding. Mr. Alexander explained that the PSF members pay dues which covers staff salaries. Mr. Culbertson asked if the PSF is unique or does it overlap other similar groups and inquired about NASA's response to the organization's advocacy. Mr. Alexander explained that PSF is unique but they work closely with other advocacy groups such as the National Space Society, as well as with government, he added that currently, PSF has made NASA aware of who they are and what they are doing. Mr. Kelly also recommended that PSF stay closely involved with the COMSTAC RLV Working Group.

To view the PSF presentation, go to:
http://www.faa.gov/about/office_org/headquarters_offices/ast/industry/advisory_committee/meeting_news/media/PSF%20-%20Intro%20Presentation%20-%20COMSTAC%2018%20May%202007.ppt

COMSTAC Working Group Reports

Launch Operations and Support Working Group (LOSWG)

Don Pettit, Executive Director, Aero Thermo Technology, Inc., reported that Lt. Colonel Tim Brown of Air Force Space Command would be leaving for Afghanistan and acknowledged his work on the LOSWG, adding that Lt. Colonel Steve White would be taking his place on the LOSWG.

Gen. Pettit reported on the spaceport presentations at the LOSWG meeting on May 17th, including Space Florida presented by Pat McCarthy, Director of Spaceport Operation; Kennedy Space Center, presented by Jim Ball, Manager for Spaceport Development; Mid-Atlantic Regional Spaceport, Wallops Island, Virginia, presented by Dr. Billie Reed, Executive Director; Kodiak Launch Complex, Alaska, presented by Pat Ladner, Executive Director of the Alaska Aerospace Development Corporation; and Spaceport America in New Mexico, presented by Lou Gomez, Program Manager for Spaceport America. He noted activities at Kodiak, including 10 launches, 9 of which were GPS and the utilization of mobile range technologies. He also reported on the presentation by Honeywell, regarding their mobile range technology systems, the Range Safety Technology System and the Ballistic Missile Range Safety Technology. He reported on the discussion about the possibility of a test bed at one of the spaceports that could provide cheaper, faster operations.

(To view presentations from the LOSWG meeting, go to:
http://www.faa.gov/about/office_org/headquarters_offices/ast/industry/advisory_committee/meeting_news/)

Risk Management Working Group (RMWG)

Janet Sadler, Senior Vice President, Aviation Division, AIG Europe, provided the report for the Risk Management Working Group, noting that there was a large attendance for the May 17th meeting. Ms. Sadler reported that the main topic of discussion was personal space flight, based on the FAA Final Rule and recent legislation in Virginia. She reported that informed consent, coantractual arrangements between space flight operators and participants, demonstration of safety standards and operational competencies, and insurance were other topics of discussion, and because of the scale of these areas, they have

established a task force to examine these issues more closely. Dr. Reed highlighted the recent Virginia legislation, which addresses suborbital flights.

RLV Working Group (RLVWG)

Michael S. Kelly, Vice President for Technology, APFC, provided the report for the RLVWG, describing the presentations given at the May 17th meeting, including briefings on reentry blackout on communications and the launch vehicle failure mode database. Most of the briefings focused on human space flight, including biomedical data collection, PSF programs and activities, training for crew and space flight participants, the development of human space flight safety performance targets, and the proposed analysis of the safety of human space flight. He reported that the RLVWG has proposed the development of a subcommittee to examine training standards for crew and space flight participants. He also reported on additional action items for the RLVWG, including;

- Submission of suggestions for biomedical data collection to AST in four weeks;
- Submission of stakeholder suggestions for structure of Human Spaceflight Safety Study to AST in two weeks; and
- Initiation of the process of defining safety targets, with goal of making recommendations by next COMSTAC.

Mr. Culbertson raised the issue of the expense of human space flight, developing industry standards and training.

(To view the RLVWG Report, go to: http://www.faa.gov/about/office_org/headquarters_offices/ast/industry/advisory_committee/meeting_news/media/RLV%20WG%20presentation%20to%20COMSTAC%2018%20May%2007.ppt)

(To view presentations from the RLVWG meeting, go to: http://www.faa.gov/about/office_org/headquarters_offices/ast/industry/advisory_committee/meeting_news/)

New Business/Wrap Up

Chairman Trafton announced that the next COMSTAC meeting would take place on October 11, 2007 (working groups on October 10th) and asked for additional discussion. Mr. Kelly and Randall Clague, (XCOR Aerospace, Mojave, California) commended AST Experimental Permits Workshop on May 16th. Chairman Trafton thanked the members of the Committee and acknowledged John Vinter as past Chairman.

Since there was no additional new business, Chairman Trafton adjourned the meeting at 1:29 p.m.

Wilbur C. Trafton
Chairman, COMSTAC