

Commercial Space Transportation Advisory Committee

October 21, 1999

MEETING MINUTES

COMSTAC Chair, Steve Flajser, convened the meeting at 8:30 a.m., and welcomed COMSTAC members and guests. He began the meeting by introducing Mr. Kenneth Gordon, Professional Staff Member, House Committee on Science, Subcommittee on Space and Aeronautics. Mr. Gordon provided an update on the major legislative activities affecting the U.S. commercial space transportation industry.

Commercial Launch Legislative Update

Mr. Gordon reported on two pieces of legislation relating to NASA, H. R. 1654, the NASA Authorization Act, passed by the House; and the Veterans Administration/Housing and Urban Development Appropriations Bill (VA/HUD Bill), signed by the President on October 20. He reported next on H. R. 2607, the Commercial Space Transportation Competitiveness Act of 1999, noting that it provided additional funding for the FAA's Associate Administrator for Commercial Space Transportation (AST), especially in connection with AST's excellent work in "getting the RLV [reusable launch vehicle] industry off to a solid footing, at least from a regulatory point of view." He noted that H. R. 2607 also provided authorization funding for the Department of Commerce's Office of Space Commercialization to continue its task of promotion for the U.S. commercial space transportation industry, and a five-year extension for commercial launch indemnification on the House side.

Mr. Gordon explained that the VA/HUD Bill has a provision to extend commercial launch indemnification for one year, which will be extremely useful in the event that H.R. 2607 is not passed in time. He noted, however, that both Subcommittee Chairman, Dana Rohrabacher, and Full Committee Chairman, James Sensenbrenner, have a strong commitment to see H. R. 2607 through.

Mr. Gordon also discussed the Space Bill Investment Act and the State Department Authorization Bill. He reported that the Space Bill Investment Act, was introduced by Senator Bob Graham of Florida on June 17 and its companion piece was introduced on the House side by Dave Weldon of Florida on June 18. He noted that the Bill has approximately 15 sponsors on the House side and 10 sponsors on the Senate side and would grant spaceports the ability to offer funds and financial incentives in a manner similar to airports.

Mr. Gordon concluded his presentation by reporting that the State Department Authorization Bill was currently in conference, and noted that the controversial bill is receiving attention and support from Congressman Rohrabacher, who is also on the International Relations Committee. He mentioned the Bill's importance in relation to the issue of State Department's approval of export licenses.

Before introducing the next presenter, Chairman Flajser noted that Mr. Roger Chamberlain was present representing the Lockheed Martin Corporation. He also congratulated the Sea Launch team on the recent successful launch of a commercial payload (DIRECTV-1R on October 10th).

Report on AST Activities

Ms. Patricia G. Smith, Associate Administrator for Commercial Space Transportation, provided a comprehensive update of AST activities. She began by reporting 18 licensed commercial launches for fiscal year 1999, an amount down from 22 successful launches for FY98, also down from AST's forecast of 28 launches. She noted that this amount included 15 launches for commercial clients, 2 launches for the U. S. Government and 1 by the Sea Launch Company. She also noted that the number of launches was down primarily due to the failures that had occurred over the last year (Delta III and Athena II), adverse weather conditions and other problems. She added that the 18 FAA-

licensed commercial launches brought in \$950 million in revenues, resulting in a 39.5% share of the world market by the U. S. commercial launch industry.

Ms. Smith reported that AST is currently in pre-application consultation with 11 RLV companies, 5 of which testified at hearings of the Space and Aeronautics Subcommittee, House Science Committee. She stated that, among these companies, the one issue that recurs is that of the difficulty of raising private capital for RLV development. She recommended that RLV companies invite their investors or financial advisors along to meetings with AST, so that they can understand the FAA licensing process and the importance of RLV development to the Nation's international competitiveness.

Ms. Smith highlighted several milestones for AST regulatory activities including:

- the publication of a Notice of Proposed Rulemaking (NPRM) on licensing and safety requirements for operation of a launch site in June;
- the publication of a NPRM on financial responsibility requirements for reentry vehicles and sites in October;
- the development of an experimental Internet-based "virtual meeting" on exempted class launch vehicles in lieu of the usual advanced NPRM; and
- the publication of a notice seeking comments on a Programmatic Environmental Impact Statement, identifying environmental impacts relating to commercial launch vehicles.

She also noted the departure of Manny Vega, former AST chief of regulations and reported that AST Deputy Associate Administrator, Joe Hawkins, would be assuming the duties included in Mr. Vega's former position.

Ms. Smith reported on her participation in several international meetings including the World Summit on Space Transportation Business in Paris (May), meetings with the British National Space Center to discuss the U.S.-British approach to the second license application for Sea Launch (May) and with Lloyds of London to discuss insurance issues for the commercial launch industry (May), and participation as a U.S. delegate for the UNISPACE III Conference in Vienna.

She mentioned several additional AST activities including the continuing monitoring of the activities of Beal Aerospace and Kistler Aerospace, both proposing to launch from international locations, and AST's work with the Air Force on exploring the future of the national space ranges especially in light of the growing number of commercial launches. She also noted that review of the existing international launch trade agreements with China, Russia, and Ukraine would begin in 2000, led by the Office of the U.S. Trade Representative since the three agreements will be expiring in 2000 (China) and 2001 (Russia and Ukraine).

She concluded her presentation by urging representatives from the commercial space industries to attend FAA's Annual Challenger Session, on November 30. She stressed the importance of representation by the commercial space community to ensure that industry issues and concerns be brought to the attention of the FAA Administrator and other high-ranking FAA officials.

OSTP/NSC Interagency Review

Vic Villhard, Senior Advisor in the White House Office of Science and Technology Policy (OSTP), provided the Committee with an update on the Interagency Review on the Future Management and Use of the U.S. Space Launch Bases and Ranges, headed by the OSTP and the National Security Council (NSC). He stated that the primary purpose of the Review is the development of a national strategy for future management and use of U.S. space launch bases and ranges, focusing on the appropriate division of roles and responsibilities between the U.S. Government and the U.S. commercial space sector including spaceports. He also stated that the Review began March 1999, in response to the fact that commercial launches now outnumber launches from the other U. S. space sectors.

He reported on the progress and activities to date, including:

- development of a common baseline understanding for the working group from foreign launch site comparisons, spaceport comparisons, and visits to U.S. launch bases;
- publication of an announcement in the Commerce Business Daily (Summer 1999);
- receipt of inputs from the Air Force, the FAA and NASA through formal briefings;
- development of a six-chapter report consisting of information on the direction of the Review, a history of the development of U.S. launch ranges and bases, the current roles and responsibilities for these facilities, a policy/legal framework, and a series of recommendations (not yet releasable).

Lt. Col. Villhard discussed specifics of the policy framework based on the goals and guidelines of the commercial space provisions in the President's 1996 National Space Policy, (i.e. to enhance U.S. economic competitiveness, provide access to launch facilities to meet national needs, encourage states, local and private investment in developing and improving U.S. space systems and infrastructure); and the legal framework based on the Commercial Space Launch Act (49 USC Subtitle IX, Chapter 701) which is designed to strengthen and expand launch infrastructure, the recognition of space transportation as an important element of the U.S. transportation system; and the provision of excess capacity and definition of direct costs.

Lt. Col. Villhard pointed out that the U.S. commercial launch industry has maintained a leading or substantial market share due to this policy and legal framework; however, "recently, the success enabled and encouraged by this stable policy and legal framework has led to some symptoms indicating the need to re-examine its adequacy for the future." Lt. Col. Villhard discussed the current and planned division of roles and responsibilities at Cape Canaveral and Vandenberg AFB, for base ownership, supporting infrastructure, space launch operations facilities and systems, range facilities and systems, and safety responsibility and systems. He noted that the interagency group is currently trying to come up with a series of near-term, specific recommendations that further expand the partnership among the Federal Government, the commercial sector, and the states and develop a transition path.

He concluded by reporting that the interagency group would revise the current report based on the direction from the Senior Executive Steering Group, followed by coordination through the appropriate departments and agencies, delivery to OSTP and the NSC, and final recommendations to the President.

COMSTAC member, Lou Gomez, commented that the OSTP/NSC review should take into account the inland launch sites such as the Southwest Regional Spaceport in New Mexico, especially because of the potential such sites can have on commercial operations. Lt. Col. Villhard responded that these sites have been examined in terms of the kinds of possibilities that exist for the future.

Commercial Space Transportation Policy Review

Member, John Logsdon, provided an update on his review of the policy framework underpinning the U.S. commercial space transportation industry and reported on activities for this review since its beginning in May 1999. He noted that he requested responses from COMSTAC members on three questions:

- what current policy issues are essential to the success of the U.S. commercial space transportation industry?;
- which current policies are not working well, and should be either modified or abolished for the industry to thrive; and
- what is missing from the current policy mix?

Dr. Logsdon reported the comments and responses to the questions including:

(Question 1)

- top-level policies are well-conceived but need to have effective and consistent implementation;
- indemnification needs a longer term approach;

- the U.S. Government must maintain and expand its role as a purchaser of commercial launch services, continue to prohibit the Space Shuttle from entering the commercial launch market, continue to protect the U. S. commercial space transportation industry from unfair international trade practices, should invest in improved launch infrastructure, maintain marginal pricing policy for its commercial use, maintain policy of non-preemption by government launches, and maintain and increase its concern for the space launch industrial base;
- government-industry partnerships for new technology, systems, and software are essential.

(Question 2)

- export controls should be more predictable and strategic;
- the Air Force modernization review is too influenced by budget concerns;
- the need for more objective regulations and less discretion for AST under current laws and regulations, more open failure investigations for military and commercial launches, and the need to streamline the current licensing process to reduce opportunity and transaction costs.

(Question 3)

- the ranges need to be commercialized or private ranges need to be developed;
- private investments need to be protected from excessively stringent state regulations through national standards, foreign and state licensing processes and should be examined for innovative ideas and improvements in the Federal process;
- the procurement policies need to be streamlined and there should be multi-year procurement ;
- consideration should be given to allowing non-U.S. vehicles use of U.S. launch sites and licensed U.S. launch vehicles to use non-U.S. sites;
- the need for an appropriate trade regime for international joint ventures and entry of new competitors;
- the need for incentives and effective government/industry partnerships;
- need for the government to support new markets for launches such as space tourism; and
- the need for a regulatory regime for RLV certification and overflight.

Dr. Logsdon explained that he was providing a description of the comments received without any analysis of those comments at that point. He concluded his presentation by observing that space launch should be treated like other transportation systems with national capability and economic benefits. He also said that there is a need for continuing policy review as the commercial launch industry changes and matures, and there must be lower cost of access to space.

COMSTAC member, Alex Liang, inquired as to how the policy review would be used. He also expressed his opinion that the U.S. Government must maintain access to space, and that if failure investigations are too open, then the root cause of an accident would never be determined, primarily because the people involved would never come forward.

In response to Dr. Liang's inquiry about the review, Chairman Flajser responded that the policy review is an opportunity to take advantage of Dr. Logsdon's space policy expertise in order to examine policy deficiencies for the U.S. commercial space transportation industry and to help determine whether the COMSTAC should address any issues that might be identified.

Member Bob Cows pointed out that the policy review is a good idea since it can help educate COMSTAC members on the major policy issues for the commercial space transportation industry. Member Lou Gomez commented that the COMSTAC should be an advocate for the industry and that Dr. Logsdon's policy review contributes to that advocacy role.

Export Control Issues for Commercial Space Industries

Clay Mowry, Executive Director, Satellite Industry Association (SIA), reported on the issue of export licensing as a result of the transfer of that function from the Commerce Department to the State Department under the National Defense Authorization Act, March 15, 1998. He began by pointing out that the export licensing issue is affecting both the satellite and commercial launch industries in the United States and abroad, including U.S. allies--Canada, Europe and Japan, due to the use of foreign components in satellites. He pointed out that now a U.S. company must get a license to share basic marketing materials with companies from friendly nations not considered to be security threats.

He noted that for the launch of a U.S.-built satellite on a U.S.-built rocket from a U.S. launch facility for a foreign customer, the requirements now include an export license, which also needs Defense and Intelligence reviews, and a technical assistance agreement from the State Department. He added that, often, a technology transfer control plan, an extensive plan which requires State and Defense Departments approval, must be filed; and finally, if the product is valued at over 50 million dollars, congressional notification and approval is also required. He said that, depending on the type of license, the entire process can take as long as 10 months to complete.

Mr. Mowry explained that one of the main problems with the export licensing process within the State Department is the amount of resources allotted for this purpose. He noted that approximately 12 staff members in the State Department's Office of Defense Trade Controls (ODTC) are responsible for processing approximately 45,000 products (including satellites) on the U.S. munitions list. He reported that SIA and other organizations have been meeting with congressional representatives, including the Armed Services and Foreign Relations Committees and the Appropriation subcommittees to request increased funding for the export licensing function and have been in getting funding increased to approximately \$9 million, from current ODTC funding of \$5.9 million. He noted that the State Department also needs additional staff, upgraded computer systems which can interface with the satellite manufacturers computer systems, and higher salaries to hire and maintain qualified licensing officers.

Mr. Mowry reported that discussions are now taking place among U.S. industry, the U.S. Government, and European and other NATO allies regarding the export licensing issue, focusing often on the scrutiny that U.S. allies are now under, similar to nations which represent a security threat. He also reported on language included in the State Department Authorization Bill by Congressman Dana Rohrabacher which focus four areas for satellite export licensing, i.e., responding to RFPs, obtaining insurance, on-orbit failure of a satellite and return of damaged parts. He noted that Congressman Rohrabacher is attempting to find other legislation for this language if the State Bill doesn't pass.

Update on NASA X Programs

William Claybaugh, Business Advisor, NASA RLV Program Office, provided a status report on the NASA X programs. He reported that after 3 years in final assembly, the X-34 has started its initial flight testing. He also reported that the X-37 program has just been initiated. For X-33, he indicated the type of tests that are in progress or completed including the first flight engine test and the helium gas leak check of the starboard liquid hydrogen tank. He also noted that 2 liquid oxygen tanks had been built.

For X-34, Mr. Claybaugh reported that initial captive carry tests had been completed and that flight controls, i.e., hydraulics, were currently being added to the A-1 and that the A-2 was in final assembly at Orbital Sciences Corporation's facility in Dulles, Virginia.

Finally, he reported that X-37 design was underway, with an initial design review scheduled for February 2000 and a final design review scheduled for September 2000.

COMSTAC member, Lou Gomez, inquired about the location for X-34 testing and Mr. Claybaugh responded that drop test flights and possibly some power flights would take place at White Sands Missile Range in New Mexico.

WORKING GROUP REPORTS

Technology and Innovation Working Group

Paul Fuller, Chairman of the Technology and Innovation Working Group (TIWG) reported on activities since the May 1999 COMSTAC meeting. He summarized the results of the 1999 Commercial Spacecraft Mission Model, which was released at the May 1999 COMSTAC meeting. He mentioned that the work on the 1999 report was led by Don McKenzie of Hughes, and he noted that, for the first time, the GEO mission model was combined with AST's LEO Market Projections report to form one report [entitled 1999 Commercial Space Transportation Forecasts]. He reported that preparations for the 2000 report would begin with a January 13th meeting in Sunnyvale, California and that Lockheed Martin would be the lead for the report.

Mr. Fuller reported on the TIWG's seventh meeting with the Air Force EELV Special Program Office (SPO), in September, where members learned that both the Delta IV and the Atlas V are both on track and that the next meeting with the SPO would be in the Spring 2000.

He noted that two TIWG members, Joe Hawkins of Boeing and Josh Hopkins of Lockheed Martin, had been asked to edit the AIAA report on launch systems,.

Reusable Launch Vehicle (RLV) Working Group

Michael Kelly, Chairman of the Reusable Launch Vehicle Working Group (RLVWG), reported that the RLV Working Group held two meetings since the May 1999 COMSTAC meeting September 22 and October 20. He reported that the highest priority for the RLVWG was to review and comment on two FAA notices of proposed rulemaking on RLV and reentry licensing and on launch site operators licensing, and added that comments were submitted on an individual basis (rather than by the working group).

He discussed RLVWG activities including the origin, meeting and applicability of expectation of casualties criterion (E_c), review and comments on risk analysis, review of and comment on the risk and analysis report, and the FAA system safety engineering process, and the Zapata report (a NASA report on RLV certification). Mr. Kelly expressed concern regarding the impact of the export licensing issue on the daily business of all RLV companies. He also discussed the possibility of including RLV interest in the AST forecasts.

Risk Management Working Group (RMWG)

Mr. Bob Cowsls presented the report on the RMWG, Chair. He reported that the RMWG would continue to work on the issue of a 5-10 year extension for commercial space launch indemnification. He noted also that the RMWG is reviewing and providing comments on the NPRM for Financial Responsibility Requirements for licensed reentry activities. Finally, he reported that the RMWG thought it was a good accomplishment that the regulatory definition of launch in the Final Rule for Commercial Space Transportation Licensing was narrowed to clearly delineate licensed (FAA) and unlicensed (i.e., Air Force administered RIP allocation under CSOSA) activity, as it relates to financial responsibility and risk management.

Chairman Flajser inquired about the extent that the export licensing issue was affecting the launch insurance community. Mr. Cowsls replied that, although the RMWG did not specifically address the export licensing issue, he believes that it is having a serious impact on the launch insurance business.

Launch Operations and Support Working Group (LO&SWG)

Mr. Russ Turner, Chair of the LO&SWG, reported on the meeting held on the previous day. He said that the group discussed its charter and goals, heard reports from Vic Villhard, on the OSTP/NSC Interagency Review and from Joe Hawkins, Deputy Associate Administrator, AST regarding AST regulatory activities, and identified some of the issues that the group would address, including spaceports, launch and landing sites, and upgrades at national ranges.

He reported that the LW&SWG would conduct meetings electronically throughout November and possibly have a meeting in December. He encouraged participation in the LO&SWG.

Wrap Up

Since there was no new business, the meeting was adjourned at 11:53 a.m., subject to the call of the Chair.

Steven Flajser, Chairman, COMSTAC

ATTENDEES

COMSTAC Members

Steven Flajser, COMSTAC Chairman, Loral Space and Communications, Ltd.

Livingston Holder, COMSTAC Deputy Chairman, The Boeing Company

Eleanor Aldrich, AIAA

Mark Bitterman, Orbital Sciences Corporation

Robert Cowls, The Boeing Company

Patricia Fresh, MoonSpace

Paul Fuller, Rocket Systems Services

Louis Gomez, New Mexico Office of Space Commercialization

Michael Kelly, Kelly Space & Technology, Inc.

Alex Liang, The Aerospace Corporation

John Logsdon, George Washington University

Roscoe Moore, Law Student, Georgetown University

Tom Moyer, State of Alaska, Governor's Office

Russell Turner, United Space Alliance

Alternates

Roger Chamberlain, Lockheed Martin Corporation

FAA/Associate Administrator for Commercial Space Transportation

Patricia G. Smith, Associate Administrator for Commercial Space Transportation

Joseph Hawkins, Deputy Associate Administrator for Commercial Space Transportation

Brenda Parker, COMSTAC Executive Director

Brett Alexander

Herb Bachner

Kelvin Coleman

Michael Etchart

Carole Flores

Ronald Gress

Nikos Himaras

Stewart Jackson

Chuck Kline

Chuck Larsen

Randy Maday

Patrick Martin

Carl Rappaport

Ruben Van Mitchell

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• Boyland, Jack	United Space Alliance
• Bradley, Andrew	USRA
• Brandt, David	Lockheed Martin Venture Star
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• Brecher, Aviva	DOT/RSPA, Volpe Transportation Systems Center
• Buhrig, Amy	The Boeing Company
• Cassidy, Daniel E.	Attorney at Law, Burke, VA
• Catania, Robert	The Boeing Company
• Chefer, Barry	45 th Space Wing, Patrick AFB, FL
• Claybaugh, William R.	NASA RLV Program Office
• Cofer, Walt	TRW / ASD
• Collins, Jon D.	ACTA, Inc.

• Copfer, Dennis M.	FAA / ATP-410
• Davis, Bob	R V Davis & Associates
• Dinkins, Cynthia M.	T. Howard Foundation
• Divis, Dee Ann	Aviation Week Online
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• Kerr, Michael	Praxair, Inc.
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• Larsen, Steven	The Boeing Company
• Lenz, Brad	The Boeing Company
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• Macaw, H. G.	Booz, Allen & Hamilton
• Mace, Casey	Futron
• MacKenzie, Don	Hughes Space and Communication
• Mahone, Bruce	Aerospace Industries Association
• Manning, Frank	GMV-CCP
• McAlister, Philip	Futron Corporation
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• Minami, Henry	The Boeing Company
• Miner, Cheryl	FAA, Statistics and Forecasts Branch
• Mitsis, Nick	Phillips Business Information
• Morris, Ron	ASA Florida Delegate, Spaceport Florida Authority
• Mowry, Clay	Satellite Industry Association
• Mueller, Gary	The Aerospace Corporation
• Myers, Tim	SMC/MV US Air Force
• Nance, Marc	Boeing Sea Launch, Seattle
• Naudins, Nicolas	French Embassy, Washington, DC

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• Otto, Stan	U.S. Department of State
• Pao, Cary	Orbital Sciences Corporation
• Parker, Rosalind	Space and Telecommunications Consultant
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• Plum, Frank	OSD/ASD (C3I)
• Randall, Kathy	Hughes Space and Communications
• Ratcliff, Ben (Capt.)	FAA / AND-300
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