Office of Commercial Space Transportation, FAA AST

Commercial Space Transportation Advisory Committee (COMSTAC)
May 8, 2014
Meeting Minutes

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OPENING REMARKS BY THE CHAIRMAN

– Michael N. Gold, COMSTAC Chair, Bigelow Aerospace

Chairman Gold welcomed attendees to the second day of COMSTAC's meeting and reviewed some of the developments in the commercial space transportation sector since the group's previous meeting in February. These developments include Blue Origin's FAA licensing of additional launch pads, Virgin Galactic's successful third supersonic test flight of SpaceShipTwo and firing of a new liquid rocket engine for LauncherOne, XCOR Aerospace's announcement that the Lynx Mark I cockpit is ready and delivered, United Launch Alliance's successful Delta IV launch and three Atlas V launches, Orbital's successful berthing of the Cygnus and successful launch of the Antares, SpaceX's success with the CRS-3, berthing of the Dragon, and the soft-landing tests of the Falcon 9 Reusable. Chair Gold then introduced the participants for the day's meeting.

KEY ISSUES FACING AST AND INDUSTRY

- Dr. George C. Nield, Associate Administrator for Commercial Space Transportation

Dr. Nield began his presentation by discussing the 210th anniversary of Lewis and Clark's expedition to discover a northwestern passage and its primary purposes of supporting commerce, engaging with local Indian tribes, and cataloging the fauna, flora, and weather. The Corps of Discovery Expedition was one of the most important expeditions of the 19th century, as the Apollo moon landing was likely the most important of the 20th century. Looking forward, what can we expect to achieve during the 21st century? The National Space Policy calls for crewed missions beyond the moon, including sending humans to an asteroid by 2025 and human missions to orbit Mars and return safely to Earth by the mid-2030s. Based on the history of space programs to date, one may assume that these missions will be designed, directed, and operated by the government with the assistance of its support contractors. NASA is currently hard at work on a heavy lift booster, space launch system, and a multi-purpose crew vehicle, Orion, to be able to accomplish these kinds of missions. Given the current budgetary environment, it will be important to keep in mind how to take advantage of public-private partnerships and other forms of cooperation and involvement by industry, even for missions beyond low-Earth orbit. The National Space Transportation Policy mentions some of the capabilities that may be needed, including in-space refueling technologies and more efficient in-space transportation systems, coupled with measures to enhance the long-term affordability and sustainability of the exploration initiative itself. Significant commercial participation may be the best way of achieving these goals.

Dr. Nield discussed three major categories that he imagines commercial involvement will fall into over the next ten years: operating suborbital reusable vehicles, providing transportation to and from low Earth orbit, and providing the government with complimentary capabilities. Several suborbital reusable vehicles are being tested right now without any government

investment. SpaceX and Orbital are already conducting delivery missions to the International Space Station and NASA will soon be selecting a company to transport crews to the ISS by 2017. Providing the government with complimentary capabilities is the most uncertain and most tenuous of the categories and everyone may not agree that it makes sense, but there are many possible advantages for the government of having private involvement as well as sources of revenue for private companies.

The four key issues currently facing the Office of Commercial Space Transportation and the industry are as follows:

1) The pace of activity. In FY2012, there were three FAA permitted launches; in FY2013, there were 18. That number is expected to be exceeded in FY2014 and increase by an order of magnitude over the next few years as the new suborbital reusable vehicles become operational. The FAA is in talks with several states to add additional US spaceports. Much of the essential work has been done without delaying any launches, but the current processes are not sustainable. FAA is looking to streamline the processes and increase efficiencies were possible, but is likely facing the need to use some kind of prioritization to decide which programs to focus on. The current budgetary situation is not good for anyone and Dr. Nield would appreciate COMSTAC's suggestions for any approach they feel should be considered.
2) Closing the gap. The FAA believes it is time to close the current regulatory and safety gap between launch and reentry. The goal would be to promote orbital transportation safety, including for orbital debris mitigation, for a spacecraft whose primary function is transportation. Another reason for closing the gap would be to decrease regulatory uncertainty. Private industry needs to know exactly what the regulations are before it can line up investors. Regulatory uncertainty translates into business risk which investors tend to dislike. AST's mission would make it a logical choice for oversight of overall missions, occurring between launch and reentry.
3) International leadership. An increasing number of foreign countries are developing or upgrading their space systems and capabilities. Some are developing spaceports to accommodate US and foreign suborbital vehicles and are beginning to develop their own laws and regulations governing space transportation. The 2013 National Space Transportation Policy instructs the Secretary of Transportation to advocate internationally for the adoption of US government safety regulations, standards, and licensing measures to enhance the global interoperability and safety of international commercial space transportation activity. The FAA has found that it makes sense to be involved with international organizations in order to influence the development of an appropriate regulatory philosophy as well as ensuring that US companies will be able to compete in foreign markets.

4) The quest for the continual improvement of human space flight safety. It is Dr. Nield's preference to let the moratorium on crew and space flight safety regulations expire in 2015, as it relates to orbital space flight. A mature space transportation program should be able to develop a regulatory framework that excludes bad actors and allows developers and operators to defend themselves against frivolous lawsuits after an accident. After receiving comments on the draft version of Established Practices for Human Space Flight Occupant Safety, the AST is in the process of revising and updating the document. The intent is to issue a top-level framework and benchmarks for all of the things that should be considered when designing and operating a human space flight vehicle. The AST would like to pick up the pace on industry consensus standards and see better data sharing, especially on information related to close calls, pilot error, and potentially hazardous test results.

Dr. Nield thanked the members of COMSTAC for the work they do and insisted that the industry and the nation as a whole benefit greatly from their participation.

COMSTAC members encouraged the FAA to do more on the international front and appreciated the desire for picking up the pace of industry standards and data sharing, recognizing that carrots and sticks will be necessary tools. When asked about the mood on the Hill about space transportation activities, Dr. Nield responded that, in terms of resources, there is an urgent need for education and getting Congress to understand what is being done today.

SPACE INTEGRATION

– Dr. Michael Romanowski, Director of Space Integration, Office of Commercial Space Transportation

Dr. Romanowski noted that many of the challenges Dr. Nield discussed are rooted in positive things, such as industry growth and increased responsibilities for AST, but some of them are rooted in that old nemesis: resources. Not all resource news is bad right now. For the first time, Congress appropriated a million dollars to FAA's research and engineering developments account to support the Space Center of Excellence allowing for a more stable R&D funding stream and a program that is more focused on the critical needs and emerging issues affecting both the FAA and the industry. The growing number of launches is just the most visible indication of the increasing activity that comes with growing a dynamic commercial space industry. In addition to licensing and permits, AST is seeing increased activity and complexity related to reentry, concepts, locations, and the interaction of space vehicles in the national airspace. Despite the industry growth and six-fold increase in the number of launches, AST's budgets have remained relatively flat and its staff is about the same size as it was in 2012. With no expectations of a change in staffing through 2015, a prime focus has been on evaluating how AST can perform more efficiently with its limited resources to continue to meet its obligations. The agency is committed to working more effectively with industry and being more responsive,

transparent, and strategic in their approach, so that they are able to do what is needed to support the industry. It is critical that applicants' and operators' expectations be clarified regarding schedule, information flow, response times, etc. The AST will work to remove ambiguities from application licensing processes and identify any issues that may be associated with a particular concept so applicants know exactly what needs to be submitted and AST knows what to expect. Despite the slow pace of rulemaking, guidance and regulatory structures must keep pace with the technological and operational developments that we are seeing in the space industry in order to remain effective. Given the current workload, it will be unlikely that decisions will be made in less than 180 days if the AST fails to maximize the flexibility of the regulatory structures.

Dr. Romanowski discussed the safety approval authority given to the FAA by CSLA which have not been applied in the licensing and permitting context yet. In this framework, at the company's request, FAA could review and approve certain processes which the company would then reflect in their application and attest that they followed those approved processes. Compliance would be reviewed and that would be sufficient for the licensing review. This could significantly streamline the application review process and move the industry and regulators to a more mature state, putting AST into process oversight mode instead of oversight by positive inspection. This process may not be attractive for every company, but Dr. Romanowski encouraged any company that would be interested to let the FAA know so they can begin discussions.

The commercial space industry has many supporters across the federal government, state and local governments, economic development councils, and the general public, but it is important to recognize that it also has its detractors, some of whom are becoming increasingly vocal and disruptive, particularly the aviation community that is concerned about operations that interfere with their airspace. FAA Administrator Michael Huerta has announced a series of new initiatives, including tasking the FAA with safely and efficiently integrating commercial space into the National Airspace System (NAS) and real progress is being made working to embed space requirements into NextGen and working with Air Traffic Control System Command Center to integrate into the NAS. A series of workshops are being scheduled, one for commercial space vehicle operators and spaceport operators, and another for ranges at the Command Center, with a goal of improving the planning and operations by improving an understanding of the operations and the goals of each of the participants and their respective constraints. It will also be important to make sure the commercial space industry has representation at the National Customer Forum. Orbital debris mitigation affects the efficiency and safety of the National Airspace and the 2013 National Space Transportation Policy calls for the FAA to address orbital debris mitigation practices for US licensed commercial launches. The FAA is currently working on how to integrate orbital debris mitigation into licensing and NAS planning processes which will impact the on-orbit safety gap.

COMSTAC members asked about the reaction Dr. Romanowski and Dr. Nield get from Congress regarding expectations of the AST with the limited resources it has. Dr. Nield said that the response has historically been "We'll believe there's growth when we see it" and now AST's

message will be "Here it is and what can we do to adjust the resources appropriately?" Dr. Romanowski added that the industry and COMSTAC have to pay attention if they want licenses regularly issued on time, and they cannot stand by while the FAA budget remains flat.

NASA HUMAN SPACEFLIGHT

– Bill Gerstenmaier, Associate Administrator, NASA Human Exploration & Operations

Mr. Gerstenmaier discussed the six key strategic principles to providing a sustainable spaceflight program:

1) Focus on what is implementable in the near-term with the buying power of current budgets and in the longer term with budgets commensurate with economic growth;
2) Applying high Technology Readiness Level (TRL) technologies for the near-term, while focusing research on technologies to address challenges of future missions;
3) Using near-term mission opportunities with a defined cadence of compelling missions providing for an incremental buildup of capabilities for more complex missions over time;
4) Look for opportunities for public-private partnerships with US commercial business to further enhance the experience and business base learned from the ISS logistics and crew market;
5) Multi-use, evolvable space infrastructure; and
6) Significant international and commercial participation leveraging current ISS partnerships.

Mr. Gerstenmaier discussed the future research and exploration steps on the way to Mars-class missions and the need to shift the discussion from "exploration" to "pioneering." NASA is looking into what commercial opportunities the industry is interested in developing and where NASA could partner with them, instead of the other way around. NASA has releases several RFIs and BAAs and, thus far, industry interest has mostly been in lower-Earth orbit research. NASA is also looking into the possibilities of expanding international cooperation; the Orion service module is already being provided by European Space System and the Japanese have a great deal of interest in the asteroid regime. All of NASA's international partners are interested in the moon as part of a global exploration roadmap.

When asked to say a word on what issues NASA is struggling with on termination liability reform, Mr. Gertenmaier responded that it is a difficult problem because of the need to protect for termination of contracts. The problem is that funds are being withheld to protect for termination instead of being spent on hardware. The law is also difficult to read and may have unintended consequences. NASA would like to do away with termination liability, but how to get it through the legal regime will require some discussion.

When asked about the concept of affordability translating into other parts of NASA Mr. Gertenmaier emphasized that this is an experiment for the agency. If the requirements are well-understood, you have a fighting chance in a fixed-price environment. If you do not have a clear understanding upfront, fixed-price is not going to work. Fixed-price might not be the way to go in the science realm where the requirements are more demanding and even less certain.

NASA ADVANCED EXPLORATION SYSTEMS DIVISION

– Jason Crusan, Director, NASA Advanced Exploration Systems Division

Mr. Crusan discussed the Advanced Exploration Systems (AES) program, a relatively new organization formed when the Space Operations Director and the Exploration Systems side came together three years ago. AES found themselves with a significant workforce ability within NASA and wanted to figure out how to best utilize that workforce to advance the capabilities needed for exploration. A large number of in-house projects have developed which has left little money for external procurement, forcing them to design new acquisition models and new ways of engaging the private sector. A key question for the AES is, as we get further into space, how do we get more autonomous and reduce the supply chain?

In the past, exploration has been conceived of as big monolithic efforts with a single destination. This has been to our detriment in many ways. The dialogue is now being framed as a series of capabilities and, as those capabilities advance, more destinations open up. This is part of an evolvable Mars campaign with a series of trade spaces and multiple destinations/off-ramps on our way to Mars. The developments will build on the successes in lower Earth orbit and involve commercial space industry in what the next steps should be.

About 75% of ongoing technology efforts involve Small Business Innovative Research. NASA is interested in new kinds of service contracts, such as those used for the Sabatier reactor that was developed for the ISS under a fixed-price service contract with incentives for performance. NASA never took possession of the hardware. It has been operating for five years and has had the cleanest performance record of any piece of equipment on the ISS. NASA will be sending a 3D printer up to the ISS and, once it is up there, NASA will transition into being one of several customers. NASA is very interested in developing more cost-sharing relationships as a future model for lower earth orbit and expanding it further as market demands advance. Mr. Crusan stressed the importance of fair competition in acquisition.

The fundamental thing AES is trying to accomplish is to accelerate the pace at which technical capabilities are made ready for NASA and the industry use. The major shift is that they are now asking industry first before deciding what pathway s to follow and trying to work with industry in collaborative ways under a highly tailor-able acquisition framework.

In response to COMSTAC questions, Mr. Cusan commented on the process for transitioning NASA developed technologies into collaborative efforts with industry and on the importance of the commercial sector understanding the value of microgravity experiments.

OMB PERSPECTIVE

– Paul Shawcross, Chief of Science and Space Branch, OMB

Mr. Shawcross discussed the President's budget for FY2015 and the Opportunity Growth and Security Initiative (OGSI), which supports investments that the Administration believes are needed in education, infrastructure, research, national security and other areas. OGSI is split evenly between defense and non-defense and is fully paid for by spending reforms and the closing of tax loopholes. NASA would stand to receive $855 million out of this initiative, but action on the budget has now moved to Congress. There are still several steps in the process before any funding is appropriated. It is very difficult to tell what will happen with budgets for the next few fiscal years but conventional wisdom says that budgets bottomed out in FY2013 and are headed back up, though big increases are not likely over the next few years.

NASA's FY2015 base budget was about $17.5 billion, down 1% from last year. Highlights include budget for a commercial crew of $848 million, the intent of which is to get the capability by 2017 and to allow competition. Advanced exploration is funded at $183 million. The budget proposes $706 million for space technology, which supports a wide array of game changing technologies, many of which are applicable to commercial programs.

FCC LICENSING AND COMMERCIAL SPACE OPERATIONS

– Karl Kensinger, Deputy Chief, Satellite Division, International Bureau, FCC

Mr. Kensinger discussed the FFC's role in commercial space operations and the variety of licenses it issues. The FCC can be a confusing place for emerging industries and new spectrum users. Of all the licensing processes in place, each tailored to the needs of the particular type of spectrum used, the licensing authority comes from one place: the Communications Act of 1934. In regards to the question of FCC's authority with respect to on-orbit activities, there is a direct connection between the radio communication function that the FCC is charged with licensing and the physical operations of spacecraft. The core principle of the Communications Act requires finding that the public interest will be served by the activity that the license enables. FCC rules on orbital debris were adopted in 2004 in an effort to support larger US government policy goals. The Commission observed at the time that debris mitigation was relevant to the particular operations of satellite systems and radio communication links for unmanned spacecraft.

Mr. Kensinger discussed radio frequency allocations, specifically the radio frequencies used for launch and on-orbit operations for commercial space transportation vehicles. The currently used

frequency bands are all allocated exclusively for federal purposes within the US radio allocation scheme, which have been limited to experimental licenses. About a year ago, the FCC issued a notice of proposed rulemaking to consider whether, in order to better support commercial space launches, it might be possible to provide a firmer status for launch operations within the frequency allocation regulations. At the same time, the Commission was considering broader questions related to the radio spectrum needs for space transportation. The FCC staff is now analyzing the comments that were received and will make a recommendation to the full Commission. It will be an iterative process, however there were proposals for specific actions to be taken in the near term. Some broader questions have been asked about what the commercial space sector is looking for and it is likely there will be a continuing dialogue on what those needs are over the coming years.

OVERVIEW OF THE USAF RD-180 ALTERNATE ENGINE STUDY

– Dr. Michael Griffin, Deputy/Chair, RD-180 Study Group/President, American Institute of Aeronautics and Astronautics

Dr. Griffin framed the issues around the RD-180 engine and its use by the US and raised a number of the issues and constraints that were dealt with in coming up with findings and recommendations. The study is the result of a decision made around 1994 to better understand the technology of a clearly superior engine and how to build it ourselves. For reasons of money, investments were not made and there is currently no alternative, no other one-million-pound thrust class LOX/hydrocarbon engine worldwide, and there will not be one for 5 or 6 years even in the best case scenario. We need to consider what the impacts would be if the US no longer had access to the RD-180 engine. Atlas is dependent on the RD-180 engine. We currently have 16 engines in-country and at the rate we use them, those will run out sometime in 2016 if we are unable to continue purchasing the engines from Russia. As payloads are transferred to Delta IV Heavys, there will be multi-year and multi-billions dollar delays.

For national security purposes, two independent families of launch vehicles are required to be maintained. We have never actually followed this policy for a variety of reasons, but primarily due to the cost associated with it. If it is decided that the nation does wish to maintain a second family of vehicles, there are key questions that emerge:

- What are the requirements?
- What should future launch designs look like?
- What hardware will they require, specifically in the form of engines?

It will ultimately come down to what policymakers decide they want for our national security launch infrastructure. Another choice to be made is whether or not to do without LOX/hydrocarbon engines, which will influence the launch vehicle designs and launch architectures that follow whether they are commercial or government-based. Dr. Griffin added

that competitively sourced contracts do exist in NASA and the Air Force which have scope and ceiling that would allow a two or three year risk reduction in the LOX/hydrocarbon arena.

COMSTAC members asked Dr. Griffin if he envisions a non-cost-plus competitive program should there an appetite to undertake the development. Dr. Griffin responded that if such an investment were made, there would be many beneficiaries of it, but no single beneficiary could afford to undertake developing it unless the US government puts up the vast majority of funding. Replicating the RD-180 is possible, it's just a question of should we replicate a 40-year old piece of technology.

Before breaking for lunch, Chairman Gold noted that Greg Rasnake will be leaving FAA/AST. Chair Gold acknowledged the work of Mr. Rasnake and presented him with a baseball from Red Sox player Will Middlebrooks, signed by the members of the COMSTAC.

OPERATIONS WORKING GROUP REPORT

– Janet Karika, Chair

Working Group Chair Karika reported on the OWG session from the previous day. Maj. Brad Myers briefed the group on the new Title 10 legislation that allows commercial users to invest money into the federal launch ranges. The group found that this provision could allow private industry to enable "smart business" contributions to launch/range infrastructure and recommended that the FAA/AST continue to monitor this effort and request COMSTAC briefings once the provision begins being leveraged by the private sector to better assess the commercial industry's interest. COMSTAC voted to approve the recommendation.

Maj. Myers also updated the OWG on Space Command's Capability-Based Assessment (CBA) for launch ranges for opportunities to decrease cost and maintain same risk levels. OWG observed that, because 30SW and 45SW are the busiest ranges in the US, their effectiveness affects all users, and the decisions resulting from the CBA matter to all users. Therefore, the group recommends that the FAA/AST continue to advocate for commercial users and for outbriefs to stakeholders to occur before decisions are finalized by AFSPC. COMSTAC voted to approve the recommendation.

Dr. Mark Campbell briefed the OWG on medical issues for commercial suborbital space flight crewmembers. Due to the minimal operational experience above 100km, the OWG found that the database needs to be expanded and that medical evaluations and an independent data repository would be helpful. The group recommended that the FAA/AST should require an FAA First Class medical certificate for pilots with a well-defined, documented, and communicated waiver process inherent to medical certification similar to past spaceflight experience; that FAA/AST should periodically re-evaluate medical standards for flight critical crewmembers; the FAA/AST should advocate to the suborbital industry for investigation and documentation on the effects on flight critical crewmembers performance from effects of multiple suborbital flights;

and that the FAA/AST should establish a non-attributable repository for the flight critical crewmember medical data. The COMTAC voted to approve the recommendations.

BUSINESS/LEGAL WORKING GROUP REPORT

– Chris Kunstadter, Chair

Working Group Chair Kunstadter reported on the BLWG session. In general, the underlying space business was found to be quite robust, with Geostationary Satellite Orbit (GSO) forecasts flat to slightly increasing and a bright future for Non-Geostationary Satellite Orbit (NGSO). The group recommends that FAA/AST continue to support the annual GSO/NGSO forecast, as they provide a valuable resource for FAA/AST, the global commercial space industry, US government agencies and offices and many others. COMSTAC voted to approve the recommendation.

The BLWG recommended that FAA/AST, in its communications with the Administration, NASA, and Congress, support universal termination liability reform for all NASA programs. Observations will be prepared to provide the context for this recommendation. COMSTAC voted to approve the recommendation.

The BLWG recommended that FAA/AST, in its communications with the Administration and Congress, support the amendment of commercial space launch licensing requirements to allow for experimental permits to be issued after a suborbital rocket or rocket design has been licensed, and for any existing experimental permits to remain valid after a suborbital rocket or rocket design has been licensed. COMSTAC voted to approve the recommendation.

The BLWG observed that prospective space flight participants may be deterred from participating in commercial spaceflight activity due to the remote possibility of incurring personal liability in the event of damage to third parties as a result of a flight anomaly. They found that including participants in the Commercial Space Launch Act (CSLA) indemnification regime would likely have beneficial effect on the industry at no additional cost to the federal government and recommended that space flight participants be included in the CSLA indemnification regime in order to limit the potential liability of space flight participants in the event of damage to third parties as a result of a flight anomaly. COMSTAC voted to approve the recommendation.

The BLWG recommended that FAA/AST expeditiously move forward with publishing its proposed Notice of Proposed Rulemaking (NPRM) to update and rationalize its cross-waiver regime, including Spaceflight Participants (SFPs) to the extent permitted by statute. COMSTAC voted to approve the recommendation.

SYSTEMS WORKING GROUP REPORT

– Charles Precourt, Working Group Vice-Chair

Working Group Vice-Chair Precourt reported that the SWG received a briefing on the Space Transportation Analysis and Research (STAR) database and were updated on the lessons learned data base development. He noted that concerns about proprietary information may keep the database from being adequately populated and problems with accuracy of data on open source databases will need to be addressed. The SWG received an update on the Center of Excellence, which seems to be a very well-orchestrated group of activities for commercial space transportation. The group received a briefing on the International Association for the Advancement of Space Safety (IAASS) and found that there are distinct differences in the approach taken by IAASS regarding spaceflight safety and future regulation than that taken by the United States. COMSTAC voted to approve the finding. The SWG and ISPWG will continue to follow this and make a recommendation at a future COMSTAC meeting.

LEGISLATIVE UPDATE

– Robert LaBranche, Senior Legislative Assistant to Congressman Culberson

Mr. LaBranche updated the COMSTAC on some of the legislative matters regarding space systems. Congressman Wolf has asked that the commercial crew program be pared down to one provider. It is incredibly important that Americans are launching their own vehicles from American soil as soon as possible and having only one provider would help move that along by not splitting the funding. The Commerce, Justice, State (CJS) appropriations bill was just passed at Full Committee, possibly to see floor action on it by the end of the month. As they await action on the NASA Authorization Act, NASA is in a precarious position: building a space launch system and the Orion capsule without a compelling destination. Commercial partners could assist in developing an overall strategy, which will probably be a lunar mission on the way to Mars and not an asteroid retrieval mission, the prospect of which has failed to inspire much excitement. Mr. LaBranche has seen encouraging activity on RD-180 engines.

Commercial space is starting to look very different than it has previously. Private companies were critical in providing the necessary hardware to go to the moon and for the Space Shuttle missions. Space has always been an endeavor of a partnership between commercial and government, which is important to remember during the combat over the question of "what is commercial space?" It is also important to note that the more people are excited about space, the better off space programs are. Reaching out to Americans in a way they can appreciate and grab onto – national security, scientific exploration, and national prestige – will be critical. Space exploration is difficult and America is looking to commercial companies to advance our entry into space.

COMSTAC comments focused primarily on the issue of paring down to one commercial crew provider. COMSTAC members were insistent that competition will provide the best value for the nation and that a single provider's failure would make us dependent on the Russians for future space missions. Chair Gold noted that it is not only a matter of urgency but a problem of demand. If there was greater demand, there would be no problem having multiple providers.

INTERNATIONAL SPACE POLICY WORKING GROUP REPORT

– Dr. Mark Sundahl, Chair

Working Group Chair Sundahl reported on ISPWG's meeting and presented its observation that national and international standard initiatives are of material interest to COMSTAC members and industry. Although all such standards are developed as voluntary documents, US federal, state, or local bodies are increasingly referring to them for regulatory or procurement purposes. The group observed that to further the FAA/AST's mission of safety and industry promotion, it would be beneficial to directly monitor the activities of the Technical Advisory Group for the International Standards Organization Technical Committee 20 (Aircraft and Space Vehicle) and communicate to the COMSTAC and the broader industry any relevant national and international "consensus" standards that are or might be adopted as early as possible in the development process. The ISPWG recommended that the FAA/AST should work with the COMSTAC to influence the formulation of new standards that are beneficial to US industry and to oppose the development of standards that are detrimental. The ISPWG recommended that the FAA AST engage with American National Standards Institute (ANSI) as a government member and proactively monitor and/or participate on Technical Committee 20 as a Technical Advisory Group member. COMSTAC voted to approve both recommendations.

The ISPWG also received a briefing from the European Space Agency on the status of the regulation of suborbital spaceflight in Europe. It is viewed as falling into either the aviation or the transport baskets of regulation in Europe which are given joint competency of regulation by either the EU or domestic states. Some states have already taken actions to exclude suborbital spacecraft from their national space legislation, making it subject to aviation regulations. The recommendation that emerged from the briefing was that the FAA/AST work with foreign legislative bodies and regulatory agencies to reduce the aggregate regulatory burden on space transportation operators. COMSTAC voted to approve the recommendation.

The ISPWG discussed property rights and non-interference and recommended that FAA/AST work to build consensus abroad regarding the right of private entities to operate without interference on celestial bodies and to assert ownership over extracted natural resources. COMSTAC voted to approve the recommendation.

The ISPWG tabled its recommendations from its briefing on FAA/AST outreach efforts for collaborations with foreign governments. On export controls, the group proposed recommending that the FAA/AST, in its communications with the Administration and Congress, emphasize that

human-rating should not be used as a metric for export control. Instead, export control regulations should focus on the nature of specific systems and subsystems, not on whether a spacecraft has been human-rated. COMSTAC voted to approve the recommendation.

NEW BUSINESS

– Michael Gold, COMSTAC Chair

Chair Gold discussed the funding level for FAA/AST and suggested that the COMSTAC pass an observation relative to the issue. Part of the problem is simply a lack of awareness; it is a relatively small amount of money and Congress cares a great deal about safety. The proposed observation would be that COMSTAC supports full funding of the FY2015 Presidential Budge request for the FAA Office of commercial space transportation to ensure that the FAA/AST can meet its responsibilities in an effective and timely fashion. COMSTAC voted to approve the observation.

PUBLIC COMMENT

- Michael Gold, COMSTAC Chair

A public commenter invited interested COMSTAC members to the Space Traffic Management Conference that will be held this November in Daytona Beach, Florida. There is a call for papers on several areas of interest.

A public commenter from the Centers of Excellence expressed a desire to keep open the lines of dialogue between the Centers of Excellence and the industry. All of their working groups are held via teleconference, research tasks are available on their website and any questions or input to help direct research that the universities are doing to benefit the commercial space industry would be greatly appreciated.

ADJOURNMENT

– Michael Gold, COMSTAC Chair

Chair Gold thanked everyone for attending and adjourned the meeting to move into administrative executive session.

COMSTAC Members Present

1. Mike Gold, Bigelow Aerospace, Chairman
2. Michael López-Alegría, Commercial Spaceflight Federation, Deputy Chair
3. Charles Precourt, ATK Launch Systems, Systems Working Group
4. Janet C. Karika, Jacobs-NASA, Operations Working Group
5. Chris Kunstadter, XL Insurance, Business/Legal Working Group
6. Mark Sundahl, Cleveland State University, International Space Policy Working Group
7. Debra Facktor Lepore, Ball Aerospace
8. Patricia Cooper, Satellite Industry Association
9. Jennifer A. Warren, Lockheed Martin Washington Operations
10. Brett Alexander, Blue Origin
11. Christine Anderson, New Mexico Spaceport Authority
12. Mark Campbell, M.D., Aerospace Medical Association
13. Daniel Collins, United Launch Alliance
14. Peter Fahrenthold, Northrop Grumman
15. Oscar Garcia, Interflight Global
16. Jeff Greason, XCOR Aerospace
17. Russ McMurry, Boeing
18. Carl Rising, Stellar Solutions
19. Will Trafton, Will Trafton & Associates
20. Michael Griffin, Schafer Corporation
21. Ray Johnson, The Aerospace Corporation
22. Bill Khourie, Oklahoma Space Industry Development Authority

COMSTAC Members Absent

1. Livingston Holder, Holder Aerospace
2. Timothy Hughes, SpaceX
3. Steve Isakowitz, Virgin Galactic

Federal Aviation Administration Representatives

1. Dr. George C. Nield, Associate Administrator, Office of Commercial Space Transportation
2. George Zamka, Deputy Associate Administrator, Office of Commercial Space Transportation
3. Dr. Michael Romanowski, Director of Space Operations, Office of Commercial Space Transportation

Other Speakers

1. The Honorable Bill Gerstenmaier, NASA Associate Administrator, Human Exploration &
2. Operations
3. Jason Crusan, Director, NASA Advanced Exploration Systems Division
4. Paul Shawcross, Office of Management & Budget Chief of Science and Space Branch
5. Karl Kensinger, Deputy Chief, Satellite Division, International Bureau, Federal Communication Commission
6. Robert La Branche, Senior Legislative Assistant to Congressman Culberson

Signed by

Mike Gold
Chairman, COMSTAC