TRANSITIONING AIR TO SPACE

II

"TOWARDS THE NEW MILLENNIUM AIRSPACE SYSTEM"

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Abstract

This Part II of two term papers continues research on the development of the new National Air Space (NAS) developments as they are structured and implemented. Part I of Transitioning Air to Space covered the construct of U.S. NAS, guidelines for pilots inside the Earth's atmosphere and the human element with respect to physiological effects of transitioning and climbing to space altitudes. A simple and crude model of an envisioned transition from Air to Space was included as a simple suggestion. The delimitation of the boundary between Air and Space was named in honor of the author's father; a WWII veteran awarded the Purple Heart. Continued research reveals that the FAA, in conjunction with other organizations, has moved forward with a plan of action that will be covered in this Part II document. For a complete understanding of the National Airspace System as it is today and will be in the future, it is recommended that both documents, in order, be read in their entirety. In doing this the reader will have a fuller understanding and visualization of the existing NAS parameters, and therefore a more complete intellectual assimilation of the future Transition from Air to Space.

Introduction

Newsgroups attempting a revamp of the National Aeronautics Act of 1958 were discussing a proposal that would replace the thirty-six year document with a new more tech-up-to-date act. The year was 1994 and the gentlemen in discussion of the new proposal had some very interesting ideas, not to mention opinions of people, policy and Government. Some of the ideas ranged from creating a new NASA to a Quasi-Government formation that all had very sound and common sense ideals. Of course, in a perfect world, people like these would be coming out of the White House woodwork with these ideas and actually be heard come congressional cost compressions. The above pushing persons may have had their say at NASA and the International Space Development Conference (ISDC), however it still remains to be seen if their proposals were even considered. For example, the invention of "A Civil Space Administration" (CSA) was a great idea and would be the organization responsible for establishing an upper atmosphere space traffic control system that would be the reference leader in this Air to Space documentation. Unfortunately, when conducting a search on the same internet engine these chaps were found on, or any other for that matter, the only links to appear for CSA are the Canadian Space Agency and of course the infamous Child Support Agency (a favorite among process servers). But there is no Civil Space Administration to speak of, so however colorful, collaborative and constitutional these persons ideas may be, it's still up to old Uncle Sam to call the last shot. The documentation in this Part II of two on Transitioning Air to Space will address main aspects of the process for petition in designation of airspace and the major Governmental

Organizations involved. Appendix A is the Concept of Operations for Commercial Space Transportation in the National Airspace System issued by the FAA in May of 2001.

1. The Qualified and the Process

After the research was undertaken for this writing it was apparent that the Federal Aviation Administration (FAA) was given the responsibility of laying the groundwork for the new National Air Space (NAS). The reasons for this are obvious when reviewing the following (1999) study by Dr. Patrick Collins and Yoshiyuki Funatsu:

> The US government's Office of Commercial Space Transportation (OCST) was moved into the Federal Aviation Administration (FAA) in October 1995, where the FAA's Associate Administrator for Commercial Space Transportation has started to develop a clear, long-term, vision of a vigorous, commercial space tourism industry that is lacking in the government-dominated space industry. In a speech to the Washington Space Business Roundtable on July 14, 1999, she spoke of developing space transportation "...into a real mode of transportation... when a multitude of entrepreneurs will open space to all kinds of activities.

The two experts go on to explain how after this action taken by the FAA in an obvious display of frontline leadership and motivated call to action, the experience necessary to handle the Airspace Issue was all theirs:

> Space Traffic Control In 1998 the FAA started a study of extending air traffic control to include vehicles in low Earth orbit (LEO) and traveling between Earth and LEO, in order to create a seamless system accommodating both air and space vehicles. This led to the publication of a draft report on this subject in 1999. This report is genuinely path breaking, proposing a range of initiatives and tackling key issues needed to realize space travel by the general public. (On line)

This report evolved into the Concept of Operations document of 2001 that can be analyzed further in Appendix A of this report. The process to establish, amend or repeal a designation of airspace is handled by the FAA. The administration posts all

documentation prior to final ruling. The categories for these posted notices are as follows:

- An advanced notice of proposed rulemaking (ANPRM)
- A notice of proposed rulemaking (NPRM)
- A supplemental notice of proposed rulemaking (SNPRM)

These notices are open for comments by the public, prior to final ruling in the Department of Transportation's electronic docket. The electronic docket and examples of current events can be viewed directly at: DMS Web - Public Comment. The FAA guidelines for general rulemaking reference "Title 14—Aeronautics and Space" in the Code of Federal Regulations (CFR) part **11—GENERAL RULEMAKING PROCEDURES.** The FAA issues new rules, makes changes to existing rules and repeals regulations under these subparts of the CFR and the United States Code of Administrative Procedures Act (APA). The final rule definitions can be found in subparts **CFR §: 11-9, 11-11 and 11-13** respectively. The guidelines specific to petitions for designating Airspace are under subpart **CFR § 11.77**.

In Part I of this Term Paper on Transitioning Air to Space, many of these requirements were highlighted prior to this research in the simple sketch depicting concept airspace. The Albert Joseph Belt (AJB) in Appendix B-Part I was to be the boundary layer altitude that would be the delimitation (where space begins) of Air Space and Space. This was only a concept but could be pursued further should the Concept of Operations not prove final and the AJ family display notable and noble interest.

It is the author's intention to be of continued support in both innovation and motivated cooperation. Together with the United States Government and private agencies, in all

2.3 CAASD and MITRE

The MITRE (from the 1959 Massachusetts Institute of Technology) corporations Center for Advanced Aviation System Development (CAASD) is working closely with the FAA to "implement the new technologies that are needed to modernize the world's air traffic management systems" (CAASD). The featured project of the CAASD is work on the National Airspace Redesign (NAR). The above link features the corporation's work and section 2.5 below highlights the scope and Phase Implementation of the NAS.

2.4 NASA

No doubt NASA will play a major role in the NAR. Their four main goals in aerospace tech are to "revolutionize aviation, advance space transportation, pioneer tech innovation and advance commercial technology" (ATE). It seems as though NASA will get the funding needed to advance their mission for an Integrated Space Transportation Plan that will undoubtedly include areas of the NAR. According to a NASA NEWS release on November 13, 2002:

> President George W. Bush submitted an amendment to his fiscal year 2003 budget request to accelerate implementation of a new Integrated Space Transportation Plan (ISTP) for NASA. Driven by the agency's new vision and mission, the Administration released details of a new, coordinated shift in three of the agency's important space flight programs.

2.5 NATCA, ALT, SALT and the NAR

The two organizational structures that handle the national projects of the NAR are known as Airspace Leadership Team (ALT) and the liaisons of the National Air Traffic Controllers Association (NATCA). The ALT has also formed a working sub group

called the SALT that review proposals affecting airspace beyond the regional boundaries. As discussed in Dr. Jeriod Patterson's class on Issues in Space Operations at Webster University in Denver, the importance of teams is evident here. There are two important teams under the ALT. The Regional Focus Leadership Teams (RoFLT) comprising members of the ALT, regional airspace branch managers and a NATCA liaison. The Facility Focus Leadership Teams (FacFLT), coordinate airspace initiatives within designated terminal facilities and Air Route traffic Control Centers (ARTCC). Finally are the Facility Design Teams that are tasked with designing changes to procedures and airspace in their local area of operation in the NAS. "The NAR Project Began in July 1998 with a kick-off meeting in Baltimore, Maryland. This meeting brought together management and bargaining unit employees to begin the process of redesigning the nation's airspace" (FAA). The team that makes up the NAR has put together a scope of operations with a three- phase (Near-Term, Mid-Term and Long-Term) plan.

Conclusion

Part II of Transitioning Air to Space has covered the qualified agencies of the United States Government on the issue of a much-needed National Airspace Redesign. A design that will accommodate not only the increasing traffic of commercial airline and other operations in the existing national airspace, but in the future transition from sub-orbital to orbital operations. These operations will include the present governmental launches that continue to serve industry, build the International Space Station, and add to and explore space. Further operations will serve the public in the commercialization and exploitation of space.

Moving ahead with this issue in space operations is imperative if such technologies as the Space Plane (outlined in Part I) are to flourish. The global economy problems can be a thing of the past if the many other aspects of space exploitation are pursued. A unification of Governments and Citizens, coupled with the extensive hard work and vision of the above and many other agencies and corporations, have within their technological grasp, if used with wisdom and respect, all the tools this planet could ever possibly need to survive in the next millennium…and beyond.

Appendix A

Concept of Operations for Commercial Space Transportation in the National Airspace System

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