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# Aviation and Aerospace: Law and Policy Developments

LISA J. SAVITT, ANGELINE G. CHEN, AND MICHAEL J. FRANCESCONI\*

The aviation and aerospace law and policy arenas saw significant changes during the year 2001. As with all other aspects of life throughout the world, in addition to the general trends of development and evolution that naturally occur within the space of a year, these two areas experienced a drastic surge in activity in reaction to the tragic events of September 11. On the U.S. domestic side, Congress proposed, negotiated, and passed landmark legislation in record time as a direct response to the terrorist attacks on the World Trade Center and the Pentagon, including two primary pieces of legislation impacting the aviation industry. Other events captured ongoing dialogues relating to other key pieces of legislative or regulatory efforts, such as the Death on the High Seas Act and its application to certain aspects of the aviation industry.

Meanwhile, the trend towards increasing the attention paid to space law and policy—evidenced by the release of a congressionally created Commission report in January 2001 focusing on the interplay between space management and organization and national security—continued. The trend was drawn into sharper focus as the need to determine the role

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of space in the twenty-first century became more critical as a result of September 11 and the changing nature of the threats posed to democracy and free market theory by terrorism and anti-American sentiment. The aerospace industry continued to experience tremendous fluidity as a result of legislative and regulatory initiatives, as well as economic and other market-based factors. Technology transfer concerns continued to shape and impact the industry, particularly in the satellite sector, which witnessed a continuing decline of U.S. market share attributable in part to the jurisdictional shift over commercial satellites from the U.S. Department of Commerce to the U.S. Department of State.

## I. Aviation Law

The two primary pieces of legislation passed post-September 11 affecting the aviation industry are the Air Transportation Safety and System Stabilization Act<sup>1</sup> (the Stabilization Act) and the Aviation and Transportation Security Act (ATSA).<sup>2</sup>

### A. AIR TRANSPORTATION SAFETY AND SYSTEM STABILIZATION ACT

The Stabilization Act was drafted, passed by Congress and signed into public law on September 22, 2001—immediately after the terrorist attacks. It was designed to “preserve the continued viability of the United States air transportation system.”<sup>3</sup> To accomplish this, the Act provided for immediate financial relief to the aviation industry in the form of grants and loans, it established a framework for the computation of the maximum grant that an airline could claim as compensation, and it established the Air Transportation Stabilization Board to review the prospective loan applications. The Act also established the September 11th Victim Compensation Fund of 2001 to directly deal with the needs of September 11th victims’ families for financial assistance and to provide an alternative to the families of having to proceed with litigation and to wait long periods of time to receive compensation. Further, the Act contained a provision to address the possible effects on the insurance and aviation industry should claimants proceed with litigation. Particularly, the Stabilization Act limits the airlines’ liability to the extent of the available insurance, thus protecting the insurance industry as well as the aviation industry.

#### 1. *Victim Compensation*

The Act is notable for its creation of a compensation fund, the proceeds of which are earmarked for distribution to victims of September 11.<sup>4</sup> As the Stabilization Act provides, a Special Master will oversee the administration of the Victim Compensation Fund.<sup>5</sup> The fund allows for claims of individuals who were present and physically injured at one of the three accident sites, namely, the Pentagon, the World Trade Center, and the crash site in Pennsylvania of the fourth plane involved in the terrorist attacks of September 11. If claimants decide to proceed under the Victim Compensation Fund claim awards must be paid within 120 days of the claim’s submission.

1. Air Transportation Safety and System Stabilization Act, Pub. L. 107-42, 115 Stat. 230 (2001) [hereinafter Stabilization Act].

2. Aviation and Transportation Security Act, Pub. L. 107-71, 115 Stat. 597 (2001) [hereinafter ATSA].

3. See Stabilization Act, *supra* note 1.

4. September 11th Victim Compensation Fund of 2001 (title IV of Pub. L. 107-42; 49 U.S.C. 40101 note).

5. Regulations for the fund had not yet been finalized as of the writing of this paper.

One identified stumbling block to all claimants submitting claims under the fund, as set out in the preliminary regulations appears to be the reduction of any award by the amount of any collateral sources, such as pensions or life insurance proceeds. If a claimant files a claim with the Victim Compensation Fund, the claimant is precluded from civil litigation.<sup>6</sup> If the claimant does decide to proceed with a lawsuit, the U.S. District Court for the Southern District of New York has original and exclusive jurisdiction over all actions. Also, punitive damages are not recoverable under the Fund. Would-be claimants have up to two years after December 21, 2001 in which to file a claim.

It will be interesting to watch how many individuals proceed with litigation and what theories of liability they will put forth. There have already been several lawsuits filed against the airlines involved, and it is anticipated that additional lawsuits will be filed against the security companies who contracted with the airline companies for airport security, and perhaps the airport authorities as well. As expected and in keeping with responses to prior terrorist attacks such as the downing of Pan Am 103, there has already been litigation filed against various terrorist organizations and Osama bin Laden in his personal capacity.

## 2. *Air Carrier Compensation*

The Stabilization Act also made funds available to the President to compensate air carriers for direct losses suffered as a result of any federal ground stop order and incremental losses beginning September 11, 2001 and ending December 31, 2001, resulting from the September 11th terrorist attacks on the United States. A maximum of \$4.5 billion was earmarked to serve as an immediate cash payment to compensate passenger and combination (passenger and cargo) carriers; a maximum total of \$500 million was set aside accordingly for all-cargo carriers. The Stabilization Act also provided for an additional \$10 billion in loan guarantees to carriers in accordance with the Federal Credit Reform Act.<sup>7</sup>

Under the Stabilization Act, the distribution of the compensation was designed as follows: a U.S. passenger or combination carrier is entitled to the lesser of (1) its actual direct and incremental damages or (2) the product of (i) \$4.5 billion and (ii) a ratio of (a) the available seat miles of the carrier in August 2001, as reported to the Department of Transportation (DOT), to (b) the total available seat miles of all passenger and combination carriers as reported for August 2001.<sup>8</sup> Accordingly, all domestic all-cargo carriers are entitled to the lesser of (1) its actual direct and incremental damages or (2) the product of (i) \$500 million and (ii) a ratio of (a) "the revenue ton miles or other auditable measure of the air carrier for cargo for the last quarter for which data is available" as reported to the DOT, to (b) the total revenue ton miles or other auditable measure for all such all-cargo carriers for such quarter as reported to the DOT.<sup>9</sup>

In order to fulfill Congress' intent to expeditiously provide compensation to eligible air carriers, the DOT moved quickly and used procedures first set out in Program Guidance Letters in an attempt to make initial estimated payments amounting to about 50 percent of the authorized funds.<sup>10</sup> On October 18, 2001, the DOT posted a statement of payments

6. Claimants filing under the Stabilization Act will not be precluded from filing a civil action against terrorists or terrorist organizations. See ATSA, *supra* note 2.

7. *Id.* § 101(a)(1).

8. *Id.* § 103(b)(2)(A).

9. *Id.* § 103(b)(2)(B).

10. Department of Transportation, Program Guidance Letter 01, Oct. 1, 2001, available at <http://www.dot.gov/carriers.html> (last visited June 26, 2002).

to carriers totaling over \$2.4 billion.<sup>11</sup> These initial payments ranged from over \$390 million for United Air Lines, Inc., to a mere \$777 for Daystar Airways.<sup>12</sup>

On October 29, 2001, the DOT published the first of three orders establishing the regulations regarding carrier compensation and it requested comments on these rules.<sup>13</sup> These rules were promulgated in Part 330 of Title 14 of the Code of Federal Regulations.<sup>14</sup> On January 2, 2002, the DOT published amendments to the final rule (the Second Round Rules) responding to comments and establishing a deadline for submitting applications by indirect air carriers and wet lessors—or carriers that provide aircraft, crew, maintenance, and insurance (ACMI) to another air carrier.<sup>15</sup> On February 1, 2002, the DOT further amended the final rule to allow additional time for indirect air carriers and wet lessors to submit applications for compensation.<sup>16</sup> On April 11, 2002, the Department released a third order revising and amending the compensation rules (the Third Round Rules).<sup>17</sup>

The Third Round Rules amended the former rules to require that a new or “third round” application be filed in order for an eligible carrier to receive 95 percent of the compensation for which it was due. All carriers that previously had submitted a claim (including those that had received partial compensation) must file a new application under the amended rules using a revised Form 330. Significantly, eligibility for third round (95 percent) compensation required the submission of an independent public accountant’s (IPA) report and financial statements for the months July 2001 through January 2002. The Department also set forth a simplified procedure to avoid the IPA report, but it applied only to all-cargo carriers with fewer than two million RTMs in Q2 2001.

In the Third Round Rule, the Department deleted the provisions that required wet lessors and indirect air carriers to document the fact that other carriers (wet lessees or direct carriers, respectively) had not or would not duplicitously claim RTMs. Further, the DOT stated that U.S. indirect carriers may claim RTMs flown for them by foreign direct carriers.

The Third Round Rules also clarified that losses experienced before September 11, 2001, and after December 31, 2001, were not compensable. Such non-qualified claims of loss would include the devaluation of aircraft and other assets (impairment charges) based on an expectation of their diminished value after the attacks.<sup>18</sup> Carriers were to bear the burden of showing that such charges were “fully borne within the September 11 to December 31 period and are permanent, and that compensation for those costs would not be duplicative.”<sup>19</sup> In such cases, the DOT would consider such claims on a case-by-case basis.

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11. Department of Transportation, List of Carrier Payments, *available at* <http://www.dot.gov/affairs/carrierpayments.htm> (last visited Apr. 10, 2001).

12. *Id.*

13. Department of Transportation, Procedures for Compensation of Air Carriers, Final Rule, 14 C.F.R. pt. 330 (2001).

14. *Id.*

15. Procedures for Compensation of Air Carriers, 67 Fed. Reg. 250 (Jan. 2, 2002) (to be codified at 14 C.F.R. pt. 330).

16. Procedures for Compensation of Air Carriers, 67 Fed. Reg. 4899 (Feb. 1, 2002).

17. Procedures for Compensation of Air Carriers, 67 Fed. Reg. 18,468 (Apr. 16, 2002).

18. The Department has significant amount of opposition regarding certain aspects of its compensation rules. *See, e.g., Federal Express Corp. v. Department of Transportation*, Docket No. 01-1190, U.S. Court of Appeals for the D.C. Circuit (filed June 14, 2002).

19. Procedures for Compensation of Air Carriers, *supra* note 17.

## B. AVIATION AND TRANSPORTATION SECURITY ACT

The Aviation and Transportation Security Act (ATSA), which was passed subsequent to the Stabilization Act, established a new Transportation Security Administration (TSA) to oversee transportation security in all sectors of transportation. The TSA is responsible for identifying and implementing changes in processes, systems, and behavior that will keep the U.S. transportation system secure. Immediately, its mission is the replacement of security personnel in airports with newly trained federal employees.

ATSA also amended the Stabilization Act to allow civil actions against "any person who is a knowing participant in any conspiracy to hijack any aircraft or commit any terrorist act."<sup>20</sup> ATSA also amended Section 408 of the Stabilization Act by limiting the liability of air carriers, aircraft manufacturers, airport sponsors or persons with a property interest in the World Trade Center to an amount not greater than the limits of liability insurance coverage maintained by these entities. It also limited the liability of New York City to the city's insurance coverage, or \$350 million.

## C. OTHER LEGISLATIVE AND REGULATORY ITEMS

### 1. *Death on the High Seas Act*

Congress enacted the Death on the High Seas Act (DOHSA)<sup>21</sup> to provide a remedy to families who lost loved ones at sea. DOHSA has been the source of much litigation, particularly with respect to its application to aviation accidents. DOHSA applied to accidents more than a marine league from shore—approximately three nautical miles. This DOHSA provision became a source of contention following several major aviation accidents, including the TWA Flight 800 accident in 1996. DOHSA, if applicable, only allows recovery for pecuniary damages.

The TWA Flight 800 crash occurred about eight miles from the coast of Long Island, more than the three nautical miles allowed by DOHSA. The families of Flight 800's passengers filed suit against Trans World Airlines and others in the U.S. District Court for the Southern District of New York. Defendants moved to dismiss plaintiffs' claims of non-pecuniary damages, claiming DOHSA barred said damages. Plaintiffs argued that Presidential Proclamation No. 5928 issued in 1988 by President Reagan, which provided for the extension of territorial seas to twelve nautical miles, should be applicable or determinative of whether this crash occurred on the high seas or not. Judge Robert W. Sweet denied the motion to dismiss, and defendants appealed to the Second Circuit. In a lengthy opinion,<sup>22</sup> the Second Circuit upheld Judge Sweet's ruling, finding that the term "high seas" under DOHSA meant "waters where no nation is sovereign,"<sup>23</sup> and thus if the Court applied DOHSA to territorial waters it would be subverting the purpose of DOHSA. The Court found that President Reagan's Proclamation extended the three-mile boundary, which had previously been applied, and, thus, the TWA families would be entitled to non-pecuniary damages.

Because of the recent aviation disasters that occurred over the water, such as TWA 800, Swissair Flight 11 and EgyptAir 990, Congress finally amended DOHSA in 2000. Section

20. ATSA, *supra* note 2, § 201(a).

21. Death on the High Seas Act, 46 U.S.C. App. § 761 (1994).

22. *In re Air Crash Off Long Island, New York*, 209 F.3d 200 (2d Cir. 2000).

23. *Id.*

404 of the Wendell H. Ford Aviation Investment Reform Act amended Sections 761 and 762 of DOHSA for the 21st Century (Air 21).<sup>24</sup> This legislation was signed on April 5, 2000 and is applicable to DOHSA for deaths resulting from commercial aviation accidents that occurred after July 16, 1996.<sup>25</sup>

The congressional committees conducting hearings on the DOHSA amendment noted the inequities that families suffer should their loved ones die in an aircraft accident which crashes into the sea as opposed to those whose loved ones die in a plane crash on land. Noting the fortuitous nature of air travel, it was recognized that it is a matter of chance where a plane crashes, and thus a family's rights depended on pure chance.<sup>26</sup> Thus, the amendment first provides that DOHSA is no longer controlling in aviation accidents arising out of crashes into the high seas, and defined now as twelve nautical miles or closer to the shore of any state.<sup>27</sup> Should the crash occur more than twelve nautical miles away from the shore, then DOHSA was further amended to allow the recovery of nonpecuniary damages—specifically defined as damages for loss of care, comfort and companionship. Also, the amendment retained the DOHSA provision denying recovery for punitive damages.

Following the amendment of DOHSA, in a case which had been pending in the United States District Court for the Southern District of Texas, plaintiffs representing the family of a pilot whose helicopter crashed in the Gulf of Mexico approximately twenty-five miles southeast of Galveston filed a motion requesting that if DOHSA applied, that it would apply as amended. This would give the plaintiffs the right to recover non-pecuniary damages. Plaintiffs argued that the helicopter accident flight was “commercial aviation” and therefore would fall under the DOHSA amendment. Citing to the Federal Aviation Regulations, plaintiffs maintained that commercial aviation should be defined broadly as all air carriage performed for compensation or hire. At the time of the accident, the pilot was working for Petroleum Helicopters, Inc. and was operating the helicopter as an air taxi for hire under Part 135. Defendants argued to the contrary—that Congress intended the term “commercial aviation accident” to mean commercial **airline** disasters, not helicopter or general aviation aircraft.

Plaintiffs also argued that the case fell under the retroactive provision of the amendment to DOHSA, since the accident was after July 16, 1996 (the date of the accident was November 28, 1996). Defendants attempted to argue that the retroactive application of the amendment was unconstitutional.

Judge Samuel Kent granted the plaintiffs' motion.<sup>28</sup> Judge Kent only dealt with the issue of the definition of commercial aviation. Going back to basics, the court looked at the words “commercial” and “commercial activities.”<sup>29</sup> Both definitions included a connection with commerce or an activity that is carried on for profit. The court also accepted a standard definition of the term “aviation,” which was defined as “the operation of heavier-than-air

24. Wendell H. Ford Aviation Investment and Reform Act for the 21st Century, Pub. L. 106-181, 114 Stat. 61 (2000).

25. The date is one day before the TWA Flight 800 accident.

26. H. R. REP. NO. 106-32 (1999) (To Clarify the Application of the Act Popularly Known as the “Death on the High Seas Act” to Aviation Accidents).

27. DOHSA previously applied to accidents occurring more than a marine league from shore—approximately three nautical miles.

28. See *Brown v. Eurocopter*, 111 F. Supp. 2d 859 (S.D. Tex. 2000).

29. The judge relied on the terms' standard definitions, as set forth in reference materials such as Black's Law Dictionary.

aircraft.”<sup>30</sup> In its reasoning, the court found that since PHI’s business was to provide customers with on-demand air taxi service using heavier-than-air helicopters, the flight which ended in the accident was part of PHI’s commercial operations. Thus, the accident would be governed by the now amended DOHSA provision. Judge Kent also noted that he did not believe that Congress meant to favor victims of international commercial air accidents over victims of commercial aviation accidents in general. The court neither addressed nor commented on the issue of retroactivity of the amendment.

## 2. Warsaw Convention

Under Article 17 of the Warsaw Convention creating air carrier liability, the Convention sets out the circumstances under which an air carrier may be liable for injuries to passengers. Article 17 provides:

The carrier shall be liable for damage sustained in the event of the death or wounding of a passenger or any other bodily injury suffered by a passenger, if the accident which caused the damage so sustained took place on board the aircraft or in the course of any of the operations of embarking or disembarking.

Therefore for an air carrier to be liable for injuries, a plaintiff must establish that:

- (a) There has been an “accident;”
- (b) That the passenger suffered death, wounding or bodily injury; and
- (c) That the accident either took place on board the aircraft or in the course of operations of embarking or disembarking.

The Supreme Court in *Air France v. Saks* defined the term “accident” as an injury “caused by an unexpected or unusual event or happening that is external to the passenger.”<sup>31</sup> The definitions of “accident” and “bodily injury” are the focus of recent Warsaw Convention decisions. A few of the following cases highlight the confusion amongst the courts as to the meaning of these phrases.

In *Langadinos v. American Airlines, Inc.*,<sup>32</sup> the First Circuit found no accident where a male passenger alleged another male passenger sexually assaulted him. However, in *Wallace v. Korean Air*,<sup>33</sup> the Second Circuit reversed finding no accident where one passenger sexually assaulted a fellow passenger during an international flight. Interestingly, the Second Circuit found that the “characteristics of air travel,” such as sitting in a confined space next to strangers and in an unsupervised location, increased plaintiff’s vulnerability to the assault and that was considered to be an accident under Article 17.

The Second Circuit in *Sethy v. Malev Hungarian Airlines, Inc.*<sup>34</sup> affirmed the lower court’s ruling that a trip and fall over another passenger’s bag on the floor of an aircraft during the boarding process was *not* an accident under Article 17. Following the *Saks* case, the Court declined to recognize an Article 17 accident where not only was the cause of the accident not a risk characteristic of air travel, but it did not relate to the operation of the aircraft or the acts of the crew members. Because the plaintiff in this case could not show that there was any act or omission by the airline cabin crew, the Court did not find

30. MERRIAM-WEBSTER’S COLLEGIATE DICTIONARY 80 (10th ed. 1995).

31. *Air France v. Saks*, 470 U.S. 392 (1985).

32. *Langadinos v. American Airlines, Inc.*, 199 F.3d 68 (1st Cir. 2000).

33. *Wallace v. Korean Air*, 214 F.3d 293 (2d Cir. 2000), *cert. denied*, 121 S. Ct. 1079 (2001).

34. *Sethy v. Malev-Hungarian Airlines, Inc.*, 2001 WL 668586 (2d Cir. 2001).



that the incident was a departure from the normal boarding process was thus not an accident under Article 17. However, a passenger opening up a luggage bin above her seat causing a bag of liquor bottles to drop on her head was found to be an accident in *Maxwell v. Aer Lingus Ltd.*<sup>35</sup> The Court found that because the event was “unexpected and unusual” and related to the characteristic risks of air travel as airlines provide the storage of items in the overhead bin for the passengers’ amenity, that the injuries were caused by an accident under Article 17 of the Warsaw Convention.

## II. Aerospace and Space Law and Policy

The year 2001 was one fraught with advancements and significant developments in the area of aerospace/space law and policy. As is always the case in this area, the legal and policy issues were often shaped, driven and/or guided by technologically driven objectives or advancements. Many technological achievements reached during 2001 were awe-inspiring in their advancement of research and science, such as the benchmarks reached by the innovative and experimental X-33 and X-34 programs (even though both programs were cancelled by NASA in 2001) and the Air Force’s Evolved Expendable Launch Vehicle programs (which gave birth to Lockheed Martin’s Atlas 5 launch vehicle and Boeing’s Delta 4). Also notable in 2001 were other milestones of a different nature entirely—ranging from the release of an expansive U.S. Commission Report on U.S. national security intentions on use and management of outer space to the lofty aspirations of American millionaire Dennis Tito, which were realized when he paid his way into outer space aboard a Russian Soyuz rocket for a visit to the International Space Station.

Over the past several years the continuing trend of the world in general was to focus more and more on outer space and its uses as access to space became more available through both intergovernmental and private sector efforts. International treaty-based organizations—formed in an era where no one independent nation was fully capable of dominating space access or exploitation—gave way to a privatization overhaul as commercial space start-ups became more established and began successfully challenging the state-sponsored monopolies that until recently dominated the markets they had been created to establish. Entities began seeking ways to exploit and market outer space, from selling pieces of the moon to taking advance payments for private citizen seating on space transports yet to be built (or, for that matter, found technologically feasible). The U.S. Government was no exception: the U.S. military had made known in 2000 its intention to put outer space and its use at the forefront of its focus in formulating its strategy for the future of the U.S. national security.<sup>36</sup> Moreover, in the early days of his administration, President George W. Bush announced his intentions to seek the establishment of a national missile defense shield, leading U.N. Secretary-General Kofi Annan to expressly urge that space exploration be devoted solely to peaceful pursuits, such as environmental monitoring, not to the waging of war.

But the year marking the fortieth anniversary of the first human flight into outer space, that of Yuri Gagarin’s single orbit around our planet Earth in 1961, and the twentieth

35. *Maxwell v. Aer Lingus Ltd.*, 122 F. Supp. 2d 210 (D. Mass. 2000).

36. See, e.g., U.S. Department of Defense Space Technology Guide 2000–2001, available at <https://www.space.gov> (last visited June 26, 2002) (“Space-based capabilities are integral to the U.S.’s national security operational doctrines and processes.”).

anniversary of the United States Space Shuttle will be most remembered for the events of September 11. And no doubt it will be the tragic events of that day, along with the ongoing United States and international efforts to wage and win the declared war on terrorism, which will emerge as a pivotal point in shaping the policies and strategies, as well as the laws, of the United States and other space faring countries with regard to the use, management and exploitation of outer space in the twenty-first century.

#### A. THE COMMISSION TO ASSESS U.S. NATIONAL SECURITY SPACE MANAGEMENT AND ORGANIZATION

In accordance with the National Defense Authorization Act for fiscal year 2000, the Commission to Assess U.S. National Security Space Management and Organization (Space Commission) issued its final report in January 2001.<sup>37</sup> The report conveyed the Commission's findings in fulfillment of its statutory charter to "assess the organization and management of space activities that support U.S. national security interests," including taking into account the scope and functions of space activities addressed by the 1996 National Space Policy.<sup>38</sup> In addition, the report also considered civil and commercial space-based activities and assessed their relationship to and effect on national security.<sup>39</sup> The Commission's conclusions included identification of five matters of key importance, *viz.*: (1) U.S. national security space interests must be recognized as a top national security priority; (2) an overall re-organization of the U.S. institutional structure governing space management and organization is necessary; (3) development and deployment of space capabilities in war, crisis and peace required a close relationship of responsibility and accountability for space capabilities by and between the Secretary of Defense and the Director of Central Intelligence; (4) development of means to deter and defend against hostile acts via space is necessary for the United States to maintain and ensure continued superiority in space; and (5) investment in science and technology assets is essential to maintain the position of the United States as the world's leading space-faring nation.<sup>40</sup>

The initially designated chair of the Commission, Donald H. Rumsfeld, recused himself and stepped down from this position in December 2000 when he was nominated for the position of Secretary of Defense by then President-elect George W. Bush. After assuming his role as defense secretary, Rumsfeld adopted the majority of the recommendations set forth in the Commission's report. The recommendations laid out a comprehensive organizational approach, considering and discussing effects in the short-term, mid-term, and long-term. As an example, one of the key tenets of the Commission's report included an overhaul of the U.S. Government's approach to management and organization of its space policy and decision-making structure. A serious revamping of the current structure would clearly result in an immediate impact with long-reaching effects on the nation's space policies through the twenty-first century. By early 2002, Rumsfeld had already acted on the

37. National Defense Authorization Act for Fiscal Year 2000, Pub. L. 106-65, § 1623 (2000).

38. Report of the Commission to Assess United States National Security, Space Management and Organization (Jan. 11, 2001), *available at* <https://www.space.gov> [hereinafter Space Commission Report].

39. *Id.* at 2 (commenting that the United States is vulnerable to a "space Pearl Harbor" strike against satellites and stating "[s]pecifically, the U.S. must have the capability to use space as an integral part of its ability to manage crises, deter conflicts and, if deterrence fails, to prevail in conflict.").

40. *Id.* at 9-10.

Commission's overarching recommendation, implementing a number of steps to consolidate authority and accountability for the creation and implementation of space policy and strategy by the defense and intelligence communities. It can be anticipated that the Commission's findings, as laid out in its report, and adoption by the Administration of even just a few of those findings, will significantly impact key decisions regarding the U.S. Government's approach to the use, management and exploitation of outer space over the next decade and longer.

## B. THE NATIONAL AIR AND SPACE ADMINISTRATION

After tenure of nine-and-a-half years, Dan Goldin stepped down from his position as Administrator for the often beleaguered and struggling National Air and Space Administration (NASA). Sean O'Keefe, then deputy director of the Office of Management and Budget, was tapped by the Bush administration to step in to take over the reins. O'Keefe previously served as Secretary of the Navy for the first Bush's administration and also worked for Vice President Dick Cheney when Cheney was defense secretary in the 1990s.<sup>41</sup> The agency, tasked to service the civilian space policy needs of the U.S. Government, accomplishes its objectives through management of various space, aeronautics, science and technology programs. In fiscal year 2000 the agency's budget was approximately \$13.58 billion. Over the past decade NASA's focus has been on the programs designated as top priority missions, including, operation of the Space Shuttle program, development and operation of the International Space Station and continued maintenance of a strong program of science and technology management.

For NASA, the year 2001 marked a number of significant technological successes: the first year of continuous habitation of the International Space Station (ISS), six launches of the space shuttle, integration of the U.S. Destiny Laboratory Module and installation of a new joint airlock on the ISS that enabled crew members to conduct space walks independent of the presence of either the space shuttle or Soyuz spacecraft. Nevertheless, the year also saw the continuation of a tumultuous and often controversial period of the civilian space agency's existence, with budget cuts and political pressures exerting tremendous pressure on NASA's decisional and organizational processes.

### 1. *International Space Station*

In early 2001 NASA was forced to admit that the International Space Station (ISS) cost overruns exceeded its remaining budget by as much as \$4 billion—a number that alarmed the new Administration, particularly when it shortly thereafter grew to \$4.8 billion and was projected to reach over \$5 billion by the summer.

NASA's budget overruns caused newly inaugurated President Bush to call for a halt in continuing cash flow from the United States to the ISS program. Under considerable pressure from the Bush administration, NASA slimmed down the projected overrun to \$500 million by significantly cutting back NASA's contributions to the ISS, much to the dismay of the fifteen other nation-states party to the ISS partnership.<sup>42</sup>

41. Marcia Dunn, *A Relentless Cost-Cutter Tapped to Head Troubled NASA*, ASSOC. PRESS NEWSWIRE, Nov. 15, 2001).

42. Among other cutbacks, NASA shelved a habitation module and a seven-person crew rescue vehicle, effectively scaling the International Space Station (ISS) into a three-person facility.

These controversial actions prompted complaints from many of the other ISS partner countries, most notably several European countries, who asserted that the 1995 international agreement entered into by and among the sixteen ISS partner countries committed NASA to making financial contributions.<sup>43</sup> For example, in its first-ever parliamentary debate on French space policy, the French parliament strenuously objected to any European partners making fresh funding commitments to make up for the Bush administration's decision.<sup>44</sup>

Nevertheless, with the ISS in orbit and operational, in addition to its significance as a testimonial to international partnership with regard to space-based cooperation, NASA's continued participation with the ISS program is not in serious jeopardy. What will be unclear, however, is the United States' continued dominance with regard to the ISS as the other nation partners' investment and participation in the program continue being shaped and/or impacted by NASA's fluctuating level of commitment to the station. It will be interesting to observe over the coming years the impact of global focus on addressing terrorism, and how the role of space use with regard to those efforts will influence the space station's role in advancing civilian space-based research and development efforts.

### 2. Reusable Launch Vehicles

The year also saw the demise of two experimental programs involving reusable launch vehicles (RLV). Funding for the X-33 and X-44 programs was shut off, effectively killing off both programs. Development of RLVs, however, remained a stated priority goal for NASA. The decision to retain RLV development as a priority goal is critical for shaping the future of U.S. space transportation, as the RLV program remains the designated heir of the U.S. space shuttle program. To that end, in December NASA stated its intention to continue forward alone with the X-37 program despite announcements from Boeing and the U.S. Air Force that they would not invest any additional funding of their own into the program.<sup>45</sup>

In May, NASA kicked off its \$5 billion Space Launch Initiative, which allowed for nearly \$800 million to a number of U.S. companies and universities for technology development and systems engineering relating to RLV research and development. NASA deferred until 2006 its decision as to whether technology is at a state that would allow the construction of an RLV capable of replacing the space shuttle.

### 3. Astronomical/Scientific Payloads

NASA's astronomical and scientific programs saw a slow and steady report of mostly successes throughout 2001. The agency's Mars Global Surveyor capped its fourth year in Mars' orbit, conveying its 100,000th image of the red planet's surface. In October 2001, the Mars Odyssey spacecraft (launched on April 7) joined the Surveyor in orbit around Mars. February saw the landing of the Near Earth Asteroid Rendezvous (NEAR) probe on the surface of an asteroid—the first such landing ever. In addition, December 6 saw the

43. International Space Station Authorization Act of 1995, H.R. 1601, 104th Cong. 1 (1995).

44. Peter B. de Selding, *French Senate Urges No NASA Bailout for Station*, SPACE NEWS, Dec. 17, 2001, at 14.

45. The X-37 is an autonomous winged space vehicle capable of achieving orbit either from launching on an expendable rocket or deploying from the payload bay of an in-orbit space shuttle. See Brian Singer & Jeremy Berger, *NASA Commits to X-37 Flight*, SPACE NEWS, Dec. 3, 2001, at 1.

successful launching of the Jason-1 spacecraft, notable primarily due to its partnership status with the French.<sup>46</sup>

NASA did suffer the loss of the Quick Total Ozone Mapping Spectrometer spacecraft as a result of a launch failure on September 21, but otherwise, its scientific programs were chalked up as successful.

### C. MILITARY FOCUS RELATING TO OUTER SPACE

#### 1. *Re-structuring of U.S. Space Command and Control Structure*

In May, Secretary of Defense Donald Rumsfeld announced a reorganization of the Department of Defense's space command and control structure. With a few exceptions, the restructuring essentially paralleled the recommendations laid out in a report made to Congress in January 2001 by the Commission to Assess United States National Security, Space Management and Organization, which had been chaired by Rumsfeld himself until he was appointed Secretary of Defense by newly elected President George W. Bush.<sup>47</sup>

In addition to fortifying the Air Force Space Command in Colorado Springs, Colorado, Rumsfeld also announced his intent to place a four-star general in charge of designing and executing space programs and operations.<sup>48</sup> The restructuring consolidated all military space programs into two inter-locking commands. The Air Force was given full "responsibility to organize, train and equip for prompt and sustained offensive and defensive space operations."<sup>49</sup> The Defense Advanced Research Projects Agency (DARPA) was tasked with undertaking "research and demonstration of innovative space technologies and systems for dedicated military missions."<sup>50</sup>

In recent years, the U.S. military had begun focusing on space as the next potential theater of engagement. Air Force General Ralph E. Eberhart, then serving as the commander-in-chief for U.S. Space Command, had long served as a proponent for the need to commit more resources and focus to addressing the development of space, both for military and commercial purposes.<sup>51</sup>

Critics of Rumsfeld's statements and President Bush's outspoken support for a National Missile Defense system have pointed to the 1967 Outer Space Treaty and the 1972 Anti-Ballistic Missile Treaty as prohibitions on any plans of the United States to pursue what has been termed the "militarization of space."<sup>52</sup> It should be noted, however, that both the Outer Space Treaty and the ABM Treaty do not overtly prohibit space-based weapons or the development of technology intended to render harmless or destroy space-based weapons. While debate may exist regarding the full interpretation and intent of the language contained in these and other international agreements, at best agreement can only be undisputed with regard to limitation of some military-based activities in space.

46. Jason-1 is a joint United States-French mission to monitor oceanographic wave heights and circulation.

47. For example, Defense Secretary Rumsfeld elected not to follow the Commission's recommendation to create a new post of Undersecretary of Defense for space, intelligence and information.

48. Norman Kempster, *Rumsfeld Lays Out a Strategy For Space Military*, L.A. TIMES, May 5, 2001, at A1.

49. *Id.*

50. *Id.*

51. Sandra I. Erwin, *U.S. Space Command Chief Warns About Technical Complacency*, NAT'L DEFENSE, May 1, 2001, available at <http://www.nationaldefensemagazine.org> (last visited June 26, 2002).

52. See, e.g., Michael Hedges, *U.S. Defense Plan Triggers Concern of Space Warfare*, HOUSTON CHRON., May 9, 2001.

## 2. *Space Assets*

Technical problems continued to plague several high-profile projects during 2001, including the Pentagon's planned next generation of missile warning spacecraft: the Space Based Infrared System (SBIRS) High Program.<sup>53</sup> Originally planned for launch of the payloads by 2002, delays have shifted launch initiations to 2006 and are believed to have increased the original cost by nearly 2.5 billion USD.<sup>54</sup> The SBIRS spacecraft are intended to replace the Defense Support Program satellite fleet, which also utilize infrared sensors to detect the heat plumes of missiles shortly after they have been launched.<sup>55</sup>

## D. LEGISLATIVE/REGULATORY ISSUES

### 1. *Technology Transfer*

Not surprisingly, the rules and regulations governing technology transfer received significant attention from the commercial space industry. In particular, determining which U.S. governmental agency constituted the most appropriate one to administer export controls over commercial satellites remained controversial throughout 2001. The U.S. satellite industry continued to denounce the shift of jurisdiction from the U.S. Department of Commerce back to the U.S. Department of State (which was effected in 1999 via congressional mandate)—thus subjecting commercial satellites to the International Traffic in Arms Regulations (ITAR) rather than the Export Administration Regulations (EAR). Many U.S. private sector representatives voiced their belief that the application of the ITAR to commercial satellites was an instrumental factor in exacerbating their struggles within the marketplace, adversely impacting their competitiveness *vis-à-vis* non-U.S. spacecraft manufacturers.<sup>56</sup>

One situation receiving significant attention is the scenario created by the Apstar 5 satellite, under contract to California-based satellite manufacturer Space Systems/Loral from APT Satellite Co., Ltd., an Asian company with significant Chinese government ownership. In December, issues surrounding SS/Loral's inability to obtain licensing authority from the U.S. State Department to ship the satellite to China for launch by the Chinese-built LongMarch launch vehicle led APT Satellite to release a request for proposals on the street for a back-up replacement satellite for Apstar 5.<sup>57</sup>

The 2001 Space Commission predicted that the United States would be tested over time by, among other things, attempts by other nations to restrict U.S. space activities through international regulations.<sup>58</sup> The United States continues to struggle with resolving the tensions created from the necessity of balancing its national security concerns—as implemented through, among other things, its technology transfer mandates—with its need to ensure the continued viability and competitiveness of the U.S. commercial space sector. As it continues to work on resolving these critical issues, it should be kept in mind that continued contention will weaken our efforts with regard to achieving U.S. national security and

53. See Jeremy Singer, *Problems Plague SBIRS High Program*, SPACE NEWS, Dec. 17, 2001, at 1.

54. *Id.*

55. *Id.*

56. See, e.g., Sam Silverstein, *AIA: U.S. Export Law Still Hurting Space Industry*, SPACE NEWS, Dec. 17, 2001, at 20.

57. Sam Silverstein, *Awaiting U.S. Export Approval, APT Plans Backup*, SPACE NEWS, Dec. 3, 2001, at 14.

58. Space Commission Report, *supra* note 38, at 12.

foreign policy objectives by concurrently providing a window of opportunity to foreign governments to further impede U.S. industry by enacting their own regulations that amplify the adverse effects of the U.S. domestic policy and regulations.

## 2. *Federal Aviation Administration*

The Office of Space Transportation (FAA/AST), an agency embedded within the Federal Aviation Administration of the Department of Transportation, administers commercial space transportation within the United States.<sup>59</sup> Pursuant to the Commercial Space Launch Act, Congress conferred upon the FAA/AST, among other responsibilities, the task of encouraging, facilitating and promoting commercial space launches by the private sector.<sup>60</sup>

### a. Notice of Proposed Rule-Making on Licensing and Safety Requirements for Launch

In the past few years the FAA/AST has made clear its intent to take a more assertive and visible role than it has previously with regard to its involvement with the technical on-range activities conducted by U.S. launch providers, culminating in the agency's release of a Notice of Proposed Rule-making on Licensing and Safety Requirements for Launch in October of 2000 (NPRM).<sup>61</sup> The NPRM's stated intent was to amend existing regulations and to codify the license application process for launch from a non-federal launch site, as well as the safety requirements for launch operators in connection with launches from both federal launch ranges and non-federal launch sites.<sup>62</sup> In June, five of the major U.S.-based launch service providers submitted a joint response to the NPRM subject to the FAA/AST's jurisdiction. The joint industry response addressed substantial concerns raised by the NPRM. Specifically, the level of detail of the requirements, the ability to "grandfather" existing launch vehicle designs under the proposed regulations, the additional requirements imposed over those in the existing Range Safety Requirements document and the potential cost impact of implementing the NPRM were challenged by the launch service industry.<sup>63</sup> As a result, the FAA/AST withdrew the NPRM, noting its intent to release a supplemental NPRM on the same subject matter but addressing the concerns raised by the industry representatives.

### b. Indemnification and Risk Allocation Regime

The Commercial Space Transportation Competitive Act (CSTCA), passed in 2000, requires the FAA to submit a report to the U.S. Congress on or about May 1, 2002, addressing a number of issues relating to the U.S. commercial space transportation industry.<sup>64</sup> The report is intended to provide Congress with data and information regarding the appropriateness and efficiency of the current risk-sharing arrangements as they relate to commercial launches and re-entries.<sup>65</sup> In its continued efforts relating to preparing its report, the FAA

59. See generally the AST Web site, <http://www.ast.faa.gov>.

60. Commercial Space Launch Act of 1984, 49 U.S.C. § 70103(b)(1) (amended 2000).

61. FAA Licensing and Safety Requirements for Launch, 14 C.F.R. pt. 413, 415, 417 (2000).

62. *Id.*

63. The launch service providers who participated in the joint submission were The Boeing Company, International Launch Services, Inc., Lockheed Martin Corporation, Orbital Sciences Corporation and Sea Launch Company. The Consolidated Industry Submission was submitted to the FAA docket in June 2001, after the FAA/AST granted a 60-day extension for responses to the NPRM to be submitted.

64. Commercial Space Transportation Competitiveness Act, 114 Stat. 1751 (2000) (amending 49 U.S.C. 70112).

65. *Id.*

held a number of public hearings during 2001 requesting views and comments regarding, among other things, whether the U.S. Government should continue to provide assurance of financial risk-based support beyond insurance that launch service providers subject to FAA jurisdiction are required to obtain.<sup>66</sup>

Currently, the Commercial Space Launch Act of 1984, as amended (CSLA), provides for U.S. Government indemnification for amounts that exceed a minimum insurance coverage level. This indemnification provision holds a current sunset date of December 31, 2004. The risk allocation regime, as established under the CSLA, is critical to ensuring the competitiveness of the U.S. launch industry as against other foreign launch service providers. Due to the nature of the industry, all foreign launchers benefit from government-sponsored liability and risk-sharing arrangements. New entrants to the industry over the last decade likewise receive endorsement from their governments via government-sponsored risk-sharing regimes.<sup>67</sup>

A prime example of the arrangements' commercially competitive effectiveness to an industry player is the French launch provider, Arianespace. Despite suffering from a staggering loss for the second year in a row, Arianespace was able to continue touting the French government's unambiguous backing of the company by provision of an uncapped level of indemnification, as well as obtaining a significant cash influx from European governments via the European Space Agency (ESA) for the direct funding of programmatic and operational activities. ESA's approved funding of 700 million euros was earmarked for the development of a new upper stage for the Ariane 5 launch vehicle and financing of Arianespace's launch site located in Kourou, French Guiana.<sup>68</sup> In contrast, U.S.-based launch service providers are being confronted with the requirement of justifying maintenance of the *status quo* in support of the FAA's upcoming required submission to Congress under the CSTCA and concurrent struggles to accommodate transition activities affecting the administration of range operations and licensing requirements.

## E. COMMERCIAL SPACE INDUSTRY

### 1. Satellites

2001 saw the continuation of the U.S. satellite manufacturing industry's struggle against market forces driven by a number of factors, including the U.S. Government's ongoing investigations of both Space Systems Loral and Hughes' satellite division (which was sold to Boeing Company in mid-2001), ongoing debate regarding the application and implementation of U.S. technology transfer controls as to the industry, the recession's ripple effects (particularly post-9/11) and economic factors inherent in the commercial space industry as a whole which was marked by weak sales and faltering business gains and projections.

#### a. Consolidation and Market Access Trends

Partially in response to continuing global economic struggles, the satellite industry saw a significant move towards consolidation throughout 2001.<sup>69</sup> In March, Societe Europeenne

66. See, e.g., FAA Notice of Public Meeting, 66 Fed. Reg. 18,843 (Apr. 11, 2001).

67. Such new entrants include China, Russia, Japan and Australia. Each of the emergent risk-sharing regimes incorporate the respective government's commitment to payment of claims as a centerpiece in a form that is comparable to or even better than what is offered under the CSLA.

68. Peter B. de Selding, *Ministers Give ESA Most of What it Wanted*, SPACE NEWS, Nov. 19, 2001, at 8.



des Satellites (SES) of Luxembourg announced a \$4.3 billion acquisition of GE American Communications, Inc. (GE Americom). The deal was finalized in November, and resulted in the world's largest satellite fleet as a result of SES's efforts to merge satellite operators throughout Europe, the United States, Asia and Latin America.<sup>70</sup>

October saw the announcement of EchoStar Communications Corporation's triumph over News Corporation of Australia in successfully bidding for California-based Hughes Electronics Corporation (HES) in a \$26 billion deal. The merger of EchoStar and HES would result in a single direct-to-home satellite television provider for Northern America. Critics immediately challenged the proposed merger as an anti-competitive effort, resulting in a monopoly.

In May, the Mexican government announced its intent to grant its first concessions enabling foreign satellite operators with Mexican partners to offer a variety of space-based services, including video, data transmission and Internet connections. "We are going to grant concessions for satellite brokers in Mexico of U.S. partners to use satellite capacity from the U.S.," said Jorge Alvarez Hoth, deputy communications minister.<sup>71</sup> Mexico's incumbent satellite operator, Satellites Mexicanos SA (Satmex), was privatized in 1997 and remained the only satellite services provider in Mexico despite a satellite reciprocity agreement between the United States and Mexico signed that same year. With the Mexican government's holding of 25 percent, the remainder of Satmex is partly owned by New York-based Loral Space & Communications Ltd. and controlled by Mexico's Autrey family.<sup>72</sup> In addition to allowing the beaming of services via foreign-owned satellites, Mexico also announced its intention to auction another satellite orbit—seventy-seven degrees West, which covers the majority of Northern America.<sup>73</sup>

The year 2001 failed to bring closure to what was meant to be the vanguard of European Commission and the European Space Agency (ESA): Galileo, a global satellite navigational project consisting of a 30-satellite constellation. Galileo was touted as the European Union's break from dependency on the currently available Global Positioning System (GPS), which the United States currently controls. The project had received initial funding from European transport ministers. Despite a subsequent unanimous vote of support in November by research ministries of the European countries involved, on December 7 the transport ministers of those same countries placed the project in jeopardy by refusing to endorse it.<sup>74</sup> Both ESA Director-General Antonio Rodota and France's research minister, Roger-Gerard Schwanzenberg, voiced the belief that some European governments' hesitation with regard to Galileo hinged upon the military applications of the system's planned Public Restricted Service—a communications functionality of the constellation that would be encrypted for use by European security authorities.<sup>75</sup>

69. See generally Sam Silverstein, *Mergers Equal Big Changes for Satellite Industry*, SPACE NEWS, DEC. 17, 2001, at 24.

70. SES also holds ownership stakes in Asia Satellite Telecommunications Co., Ltd., Hong Kong; Argentina's Nahuelsat; Nordic Satellite AB of Sweden and Star One of Brazil.

71. David Luhnow, *Mexico to Open its Satellite Market to Foreign Firms*, WALL ST. J. EUR., May 28, 2001, at 34.

72. *Id.*

73. *Id.*

74. Peter B. De Selding, *ESA, European Union Relationship Hinges on Galileo*, SPACE NEWS, DEC. 17, 2001, at 3.

75. *Id.*

## b. Remote Sensing

In a year that marked what many believed to be the true advent of commercial remote sensing, perhaps no other sector of the aerospace and space industry was impacted by the events of September 11 as the remote imagery business. Following the commencement of U.S. armed forces activity in Afghanistan, the U.S. National Imagery and Mapping Agency (NIMA) contractually secured exclusive access to satellite imagery taken by Colorado-based Space Imaging's Ikonos satellite of the theater of engagement.<sup>76</sup> The U.S. Government's approach to dealing with privately-owned Space Imaging and, in effect, exercising shutter control over the company's remote sensing capabilities by utilizing the power of the purse rather than regulatory authority illustrated the power of privatization and market forces in an industry that until recently remained primarily in the domain and power of governments. As of December 2001, the \$1.9 million contract had already been renewed once and was gearing up for a second extension.<sup>77</sup>

Cyprus-based ImageSat International, which launched its Eros A1 satellite in December 2000, made its 1.8-meter resolution images available commercially during 2001. In October, Digital Globe saw the successful launch of its QuickBird satellite, a remote imaging satellite with the capacity of taking .61-meter resolution pictures—the sharpest remote imagery commercially available—utilizing a December 2000 U.S. government policy decision to permit the commercial sale of satellite imagery bearing a resolution as sharp as .5 meters. India also joined the ranks of nations with remote-sensing capability following its successful October launch of the Technology Experiment Satellite, with the capability of collecting images with 1-meter resolution. The fledgling industry saw its share of failures in 2001 as well. Virginia-based Orbital Imaging Corp., already struggling on the edge of bankruptcy, saw its OrbView-4 satellite destroyed in a September 21 launch failure.

## 2. Launch Vehicles

The year 2001 also marked a year in which the launch vehicle and space transportation industry continued its own struggles as well. The same year that saw continued progress of Lockheed Martin's Atlas V program and The Boeing Company's Delta IV program under the Air Force's Evolved Expendable Launch Vehicle (EELV) programs, also saw the expiration of the experimental X-33 program in a highly controversial decision by NASA to allow the partnership agreement between NASA and Lockheed Martin to expire in March. Likewise, the X-34 program was also allowed to expire, thus casting into some uncertainty the future of the United States' Reusable Launch Vehicle (RLV) program.

As a whole, the launch industry suffered setbacks as a result of continuing overcapacity and intense price competition. Corresponding decreases in profit margins, along with other factors that adversely impacted the U.S. players (such as foreign government subsidization of certain non-U.S. launchers) also affected this sector.<sup>78</sup> Delays in spacecraft delivery caused

76. Ikonos was launched in September of 1999, and is capable of 1-meter resolution imagery.

77. Warren Ferster & Gopal Ratnam, *Gulf States Consider Buying Spy Satellite*, SPACE NEWS, Dec 10, 2001, at 1.

78. The relevance of these trends to U.S. national security are significant: the Space Commission Report specifically noted that "[m]astery of space . . . requires new approaches that reduce significantly the cost of building and launching space systems. *The U.S. will not remain the world's leading space-faring nation by relying on yesterday's technology to meet today's requirements at tomorrow's prices.*" Space Commission Report, *supra* note 38, at 18 (emphasis added).

by manufacturing issues further hampered market trends. At least eleven commercial geostationary satellites were delayed from being launched in 2001 as a result of such issues.

A highly publicized failure in July of the French launcher, Arianespace's Ariane 5 launch vehicle, left two communications satellites in useless orbits. The failure marked the vehicle's third failure in ten launches. The failure led to the suspension of the Ariane 5 program for over six months, and resulted in the downstream effect of increased insurance costs for the entire industry that were even further exacerbated by the events of September 11.

#### a. Competitiveness/Industry Trends

International partnerships, both contemplated and realized, continued to dominate the commercial sector. In February, Boeing Company and Sea Launch announced their intentions to merge their marketing functions under a new entity: Boeing Launch Services. The structure mirrors the successful structuring and marketing approach of another U.S.-based launch services provider, International Launch Services, Inc. (ILS). ILS, formed in 1995 and based in McLean, Virginia, jointly markets the Atlas launch vehicle built by Lockheed Martin and the Proton and Angara launch vehicles built by Khrunichev State Research and Production Space Center and RSC Energia. The same year also saw Alliant Techsystems Inc. acquire Thiokol Propulsion, combining the two largest U.S. manufacturers of solid rocket motors.

#### b. New/Emergent Launch Vehicle Programs and Sites

(i) *U.S. Air Force Evolved Expendable Launch Vehicle.* The U.S. Government's military space launch requirements continued its transition from heritage programs under the Air Force's Evolved Expendable Launch Vehicle (EELV) program. The EELV program's acquisition objective is to develop a national expendable launch capability that reduces overall launch costs by at least 25 percent over current systems without adversely impacting the reliability and operability of existing systems.

In 1997 the Air Force decided to co-fund dual launch vehicle programs to address the identified objectives: the Atlas 5 and the Delta 4 programs are continued extensions of the existing launch vehicle families for Lockheed Martin and The Boeing Company, respectively. Lockheed's Atlas 5 program, which remained on target throughout its pathfinding and development stage, utilizes the Russian-built RD-180 engine and a significant percentage of heritage components from its successful Atlas launch vehicle family. A number of delays plagued Boeing's Delta 4 program, but the program pressed forward with a target inaugural flight date of mid-2002. Both programs were given a vote of confidence by Eutelsat, which chose to fly as the payload for the maiden flights of both of the new launch vehicles.

(ii) *Angara and Plesetsk Cosmodrome.* Russia continued its development of the Angara launch vehicle, designed to have the capacity to launch payloads weighing up to 28.5 tonnes.<sup>79</sup> The Angara represents Russia's next-generation of launchers, and is designated to launch from the Plesetsk Cosmodrome located in the northern reaches of Russia. Russian authorities have previously announced their intention to withdraw themselves from dependence on neighboring Kazakhstan's Baikonur Cosmodrome, noting that Russia intends to pull out all launches of its military payloads from Baikonur by no later than 2005.<sup>80</sup>

79. Viktoria Loginova, *Russia to Bring Satellite Launches Home After Baikonur Pullout*, AGENCE FR.-PRESSE, Feb. 9, 2002.

80. *Id.*

Currently, the Russian-built Proton launch vehicle program operates from the Baikonur Cosmodrome launch site.<sup>81</sup> The Baikonur site was built in the 1950s, when Kazakhstan was embedded in what was then the U.S.S.R. In 1994, following the U.S.S.R.'s collapse, Russia negotiated an agreement with Kazakhstan that leases the Baikonur Cosmodrome for approximately \$115 million annually. The Soyuz rocket, which supports the International Space Station, also currently launches from the Baikonur Cosmodrome.

#### E. PRIVATIZATION OF SPACE-RELATED INTERNATIONAL ORGANIZATIONS

The year 2001 also saw the culmination of privatization efforts of the few remaining space-related international and regional non-governmental organizations that were created in the 1960s and 1970s. Such efforts commenced over the last decade in recognition of the advancement of space technology and available access to space. In addition, increasing competition from private sector entities evidenced the movement away from a need for intergovernmental-sponsored and structured monopolies. As a result, the last of the heritage non-governmental organizations achieved privatization.

In July 2001, after a number of false starts and delays, the overdrawn and congressionally mandated privatization of the International Telecommunications Satellite Organization (INTELSAT) finally took place. After thirty-five years as an international treaty-based organization, what emerged after the dust settled was the formation of a Bermudan parent company, Intelsat (Bermuda) Ltd., with several wholly-owned U.S. subsidiaries including Intelsat Global Service Corporation, which essentially consisted of all of the assets and personnel residing in the same facilities that served as the Washington, D.C.-based headquarters for INTELSAT when it retained its status as a non-governmental organization. The same month also saw the privatization of the European Telecommunications Satellite Organization (EUTELSAT), which almost immediately turned around after its privatization to place a substantial investment in Hispasat SA.

In December the U.S. government agreed to a delay by Inmarsat Ltd. (previously the International Maritime Satellite Organization) of its initial public offering (IPO) of stock until December 31, 2002. Inmarsat had executed its privatization in 1999. The extension was needed by Inmarsat to avoid violating a U.S. law passed in 2000 mandating that Inmarsat conduct an IPO by no later than December 31, 2001 in order to be permitted to service the U.S. market. A flagging stock market and other negative economic indicators led Inmarsat to seek relief from the deadline.<sup>82</sup>

#### F. INTERNATIONAL AGREEMENTS

On February 17, 2000, an intergovernmental agreement on joint exploration of outer space was signed within the CIS Customs Union.<sup>83</sup> The agreement lays down a legal frame-

81. Khrunichev State Research and Production Space Center (Khrunichev) manufactures the Proton launch vehicle and U.S.-based business unit of Lockheed Martin: International Launch Services (ILS), based in McLean, Virginia, markets it. ILS is a joint venture formed by Lockheed Martin, Khrunichev and RSC Energia, and markets the Lockheed Martin-built Atlas launch vehicle as well as the Proton launcher.

82. In response to Inmarsat's lobbying efforts in this regard, Senator John Breaux (D-La) included a provision allowing the Federal Communications Commission to extend the IPO deadline in a spending bill that was passed by the Senate in September and subsequently approved by the House of Representatives and the White House.

work for cooperation between agreement members on specific projects. The areas of cooperation include space research, remote probing of the Earth, science of space materials, space medicine and biology, space communications, navigation and related technology and services. In addition, the agreement envisages research, development, production and maintenance with regard to automated and manned spacecraft, development of booster rockets and other space transport systems, providing services for launches and applying space technology to the economy. On April 26, 2001, the lower house of the Belarusian parliament ratified the agreement.<sup>84</sup>

#### G. SPACE TOURISM

In April 2001, sixty-year-old civilian Dennis Tito launched himself into history as the world's first self-paying space tourist, paying the Russian government an amount roughly equivalent to \$20 million to buy himself a seat on a Russian Soyuz destined to rendezvous with the International Space Station. Tito was able to pay his way from Russian soil with the offer of \$20 million after NASA refused to negotiate. The deal that Tito, an American, cut for himself with the Russians for an 8-day visit to the ISS was highly controversial and nearly escalated to an international tiff between the Russians and Americans, with NASA finally tamping down its challenges when it became clear that the Russians would not renege on the deal with Tito. After Tito landed in the deserts of Kazakhstan near the town of Arkalyk, along with two of his Russian cosmonaut colleagues, he remained unrepentant, toasting his safe return as "a great day for NASA."<sup>85</sup> Mark Shuttleworth, a South African native, is slated to be the next civilian, commercial "space tourist" and private citizen visitor to the International Space Station. He is scheduled to launch aboard a Soyuz rocket in April 2002. Unlike his predecessor, very little resistance was raised on Shuttleworth's planned visit to the ISS.<sup>86</sup>

#### H. OBITUARY: STEPHEN GOROVE

Lastly, the field of outer space law experienced the loss of one of its pioneers in August 2001. Hungarian-born Stephen Gorove joined the faculty of the University of Mississippi Law School in 1965, and founded the *Journal of Space Law* there in 1975. Likewise, he also was instrumental in founding the NASA-funded Remote Sensing and Space Law Center there in 2000. Gorove focused in on developing laws to address the uses of outer space in 1958, a year after the Soviet Union launched Sputnik. Gorove served as a longtime delegate to the U.N. Committee for Peaceful Uses of Outer Space and also as vice president of the International Institute of Space Law.

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83. The Integration Committee of the Customs Union of Belarus, Kazakhstan, Tajikistan, Kyrgyzstan, and Russia, which was transformed into the Eurasian Economic Community in October 2000, will coordinate the activities under the agreement.

84. BBC Monitoring, Source: BELAPAN NEWS AGENCY, Minsk, in Belarusian 1025 gmt (Apr. 26, 2001).

85. Viktoria Loginova, *Space Tourist Tito Hails 'Trip to Paradise'*, AGENCE FR.-PRESSE, May 6, 2001.

86. Natasha Yefimova, *Negotiations for Second Space Tourist Go Smoothly*, SPACE NEWS, Dec. 10, 2001, at 17.