

# FIRST HAND ACCOUNT OF SELECTED LEGAL ISSUES FROM THE RECOVERY AND INVESTIGATION OF THE SPACE SHUTTLE *COLUMBIA*<sup>1</sup>

*Donna M. Shafer<sup>2</sup> and Amy Voigt LeConey<sup>3</sup>*

February 1, 2003 was a day of profound sadness for the National Aeronautics and Space Administration (NASA) and the nation. The loss of the Space Shuttle *Columbia* and its crew forced NASA to take a hard look not only at how it operated the Space Shuttle Program but also how it operated as an agency. In the aftermath, the goals were to find out what happened, why it happened, fix the problem, and safely fly again. The accident recovery and investigation created many legal issues of first impression that had to be, at times, addressed immediately and almost always very quickly. This article will focus on some of the issues faced by the NASA legal community. First, we will look at NASA's immediate response to the loss and how the recovery and investigation teams were put into place. From there, we will discuss some of the primary legal frameworks within which the recovery and investigation efforts were completed. Then, we cover methods used in the collection and control of the enormous amount of data involved in the aftermath of the accident. Next, we will look separately at the recovery and investigation phases and the unique legal questions raised by each. Finally, we will touch briefly on the claims that have arisen as a result of the accident, the search and recovery efforts that followed, as well as some lessons learned.

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<sup>1</sup> The views expressed in this article are the personal views of the authors and not necessarily the views of the National Aeronautics and Space Administration or the U.S. Government.

<sup>2</sup> Attorney-Advisor, NASA Lyndon B. Johnson Space Center; J.D., 1994, University of Houston Law Center. Served as the Legal Advisor to the *Columbia* Task Force.

<sup>3</sup> Attorney-Advisor, NASA Lyndon B. Johnson Space Center, J.D., 2000, Florida State University College of Law. Served as the Legal Advisor to the NASA Mishap Investigation Team at Barksdale Air Force Base, Louisiana.

Despite the extraordinary focus and perseverance of the personnel at NASA, this is not the first time that NASA has lost an Orbiter and its crew – the Space Shuttle *Challenger* was tragically lost seventy-three seconds after liftoff from the Kennedy Space Center in 1986. NASA learned and applied many lessons from that tragic day and the Shuttle was flying again in 1989. One thing that was evident at NASA on February 1, 2003, was a strong commitment and dedication amongst the employees within the Agency to the mission and goals of space exploration. It is that commitment and dedication which will carry the Agency through this recent tragedy and back to our mission to extend human presence across the solar system.<sup>4</sup>

## I. INTRODUCTION

Before examining the legal questions raised by the accident, some background must be provided on *Columbia's* mission and the nature of the accident itself.

NASA launched the 113th Space Shuttle mission, more commonly referred to as STS-107, on January 16, 2003. It was the twenty-eighth flight of the Space Shuttle *Columbia*, the very first Orbiter flown by NASA. Over the course of *Columbia's* sixteen day mission, a wide variety of scientific experiments were completed in the areas of life science, physical science, space and earth science, and education. This mission was also historic in that the first Israeli astronaut, Ilan Ramon, was a crewmember. STS-107 was considered a dedicated science mission and *Columbia* was usually chosen to fly these missions because it was not equipped for International Space Station (ISS) missions due to its lack of a docking adaptor to mate with the ISS.<sup>5</sup> An Extended Duration Orbiter, or EDO, pallet was added to *Columbia* to extend the amount of time it could spend in space.<sup>6</sup>

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<sup>4</sup> On January 14, 2004, the President announced a new Vision for Space Exploration, starting with a human return to the moon by the year 2020. See *President Bush Offers New Vision For NASA*, NASA, available at [http://www.nasa.gov/missions/solar-system/bush\\_vision.html](http://www.nasa.gov/missions/solar-system/bush_vision.html) (Jan. 14, 2004).

<sup>5</sup> See NASA, COLUMBIA ACCIDENT INVESTIGATION BOARD REPORT 28 (Aug. 2003) [hereinafter CAIB Report].

<sup>6</sup> Typically, an Orbiter can operate in space about ten days. The addition of an EDO pallet allows missions to be extended up to sixteen days. The pallet carries cryo-

The *Columbia* Accident Investigation Board (CAIB) Report determined *Columbia* was ultimately destined to fail 81.7 seconds after liftoff. It was then that a piece of insulating foam separated from the left bipod ramp section of the External Tank and struck the leading edge of the left wing on the Reinforced Carbon-Carbon panel number eight, causing a breach in the Thermal Protection System of the Orbiter. During *Columbia's* reentry to the Earth's atmosphere on February 1, superheated plasma penetrated the left wing through the breach in the insulation, which melted the aluminum structure of the wing. This weakening of the wing continued until increasing aerodynamic forces caused its failure and the eventual breakup of the Orbiter.<sup>7</sup> While this is cited as the physical cause of the accident, the CAIB found that there is an organizational culture within NASA that was as much a cause of the accident as the foam impact. The CAIB also pointed to other likely related causes including "the original compromises that were required to gain approval for the Shuttle, subsequent years of resource constraints, fluctuating priorities, schedule pressures, mischaracterization of the Shuttle as operational rather than developmental, and lack of an agreed national vision for human space flight."<sup>8</sup> The Board also cited as a major contributing factor to the accident a safety culture within NASA that rested too much on its past successes.

## II. IMMEDIATE RESPONSE

### A. *International Space Station and Space Shuttle Mishap Interagency Investigation Board*

One of the lessons NASA learned from *Challenger* was that there needed to be a contingency plan in place, not only an overall plan of what should be done, but also a plan to have an independent assessment of what happened. At NASA, activation of an investigation board is required for any event involving

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genic tanks filled with hydrogen and oxygen, which are used to power fuel cells, creating electricity and potable water needed to extend the mission.

<sup>7</sup> See CAIB REPORT, *supra* note 5, at 9.

<sup>8</sup> See *id.*

serious injury or loss of life, significant public interest, and other serious mishaps.<sup>9</sup> NASA Administrator, Sean O'Keefe, activated the International Space Station and Space Shuttle Mishap Interagency Investigation Board at 10:30 a.m., February 1, 2003, naming Admiral Harold W. Gehman Jr., U.S. Navy, (Ret.), as its Chairman.

This particular board renamed itself the CAIB and it brought together some of the nation's most experienced investigators and safety experts from aviation, naval nuclear propulsion, medical, scientific and academic fields to assist in finding the cause of the *Columbia* accident. The CAIB membership was divided into four groups: Group One – Management and Treatment of Materials; Group Two – Training, Operations, and In-flight Performance; Group Three – Engineering and Technical Analysis; and Group Four – Organization and Policy. Additional support to the CAIB included: representatives from the office of the NASA Inspector General, the *Columbia* Task Force,<sup>10</sup> Administrative Support, Travel Coordinators, representatives from the National Transportation Safety Board, a physician, a lawyer, Public Affairs personnel, representatives from the U.S. Department of Justice, and numerous individuals working under a support contract.

In order to maintain the integrity of the investigation and avoid even the appearance of a conflict of interest, it was of utmost importance to ensure that the CAIB operated independently from NASA. The CAIB was to conduct activities in accordance with policies and procedures that it had adopted; determine both the facts and the actual or probable cause of the mishap; use the existing NASA support structure of working groups as needed; activate any necessary new working groups; conduct inquiries, hearings, and tests; develop recommendations; and provide a final written report to be released immediately to the public.<sup>11</sup> To ensure the CAIB's financial independence, NASA

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<sup>9</sup> See NASA Policy Directive 8621.1, *NASA Mishap and Close Call Reporting, Investigating, and Recordkeeping Policy* (NPG 8621.1).

<sup>10</sup> See *infra* Section VI.E.1.

<sup>11</sup> See CAIB REPORT, *supra* note 5, at 232; see also CAIB Board Charter, available at <http://www.caib.us> (last visited April 6, 2004).

established a separate operating budget for the Board's activities.

*B. Mishap Investigation Team*

The purpose of the Space Shuttle Mishap Investigation Team (MIT) is to gather evidence for the board of investigation in the event of a Space Shuttle incident. This team is not put together to play any role in determining cause, but rather is tasked with the responsibility of gathering and preserving evidence to allow the CAIB to conduct its analysis and make a causal determination.<sup>12</sup> Membership of the MIT includes a Chair; a Site Investigation Group; an Eyewitnesses, Human Factors, Crew, and Environmental Group; a photographer; and a representative from the Department of Defense Manned Space Flight Support Office (DDMS).<sup>13</sup> Rapid Response Team (RRT) members from the Kennedy Space Center (KSC) as well as contractor support supplemented the MIT.

DDMS was chartered in 1959 to provide support to NASA in the initial human space flight effort. Today, it is the single point of contact to coordinate all Department of Defense (DoD) contingency support for human space flight programs. Specifically as it relates to the Space Shuttle Program, DDMS is responsible for astronaut rescue and recovery, contingency landing site support, medical support, coordination of airlift and sea-lift for contingency operations, and other activities required during a Shuttle emergency. If NASA has a request for any type of DoD support, it is given to DDMS for validation. DDMS then chooses the assets best able to fill NASA's request and tasks those assets through the appropriate command channels.

Every time a Shuttle Orbiter lands after a mission, there are teams of individuals that are tasked with immediately beginning to inspect and prepare the Orbiter for its next flight. The RRT is activated if the landing is not completely routine

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<sup>12</sup> See NASA SPACE TRANSPORTATION SYSTEM, SPACE SHUTTLE MISHAP INVESTIGATION TEAM FIELDBOOK, NSTS 37328, at §1.0.(1999).

<sup>13</sup> *Id.* at §2.0.

and the Orbiter lands somewhere other than KSC. The RRT is composed of technicians and engineers who are technical experts on the vehicle and its systems and is sent to wherever the Orbiter lands in order to prepare the vehicle to be returned to KSC. When *Columbia* never made it back to Florida, the members of the RRT had to be ready to assist the Shuttle MIT. Less than one hour after the accident, the Chair of the MIT met with a representative from DDMS to decide on a location to set up recovery operations near the accident site. NASA's only experience with a catastrophic Shuttle mishap was during a launch, so contingencies were in place primarily to meet the needs of a recovery operation based at KSC in Florida. However, *Columbia* caused employees to alter their perceptions and think on their feet – apply the lessons learned from *Challenger* in a radically different way. The location for recovery operations management needed to provide an adequate level of security for personnel and property and had to be equipped to fly in multiple types of aircraft from C-141 transport planes and KC-135s to T-38 jets and helicopters. There also needed to be adequate space to collect and protect the integrity of all debris that was recovered, at least temporarily. It was decided that Barksdale Air Force Base in Louisiana was geographically the best place for meeting all of NASA's needs. By the evening of February 1, 2003, the MIT was already at Barksdale Air Force Base and was organizing its efforts.

Most NASA investigation boards include a legal advisor to be available to consult on any number of issues that may arise.<sup>14</sup> However, the makeup of the MIT that formed the immediate response to the crash did not initially include legal support, but that did not last long. While the MIT was not in the business of investigation, in an accident of this magnitude legal issues were bound to come quickly in the process of evidence gathering and would need to be handled efficiently. On February 2, 2003 an attorney from the Johnson Space Center (JSC) in Houston, Texas, the NASA center geographically closest to the largest

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<sup>14</sup> See *NASA Procedures and Guidelines 8621.1, NASA Procedures and Guidelines for Mishap Reporting, Investigating, and Recordkeeping*, §3.5 (NPG 8621.1).

debris location and the home of the Space Shuttle program, was sent to join the MIT in its work.

### III. LEGAL FRAMEWORK

This section will describe some of the more important laws and legal frameworks within which NASA conducted activities related to the *Columbia* mishap. This framework is by no means all-inclusive.

#### A. *Space Act*

The National Aeronautics and Space Act of 1958 (Space Act)<sup>15</sup> created NASA to carry out U.S. policy that “activities in space should be devoted to peaceful purposes for the benefit of all mankind.”<sup>16</sup> Section 2473 provides the functions of the Administration and is one of the most flexible pieces of legislation written for an agency in that it encompasses almost any situation. In the aftermath of the *Columbia* accident, authority to undertake many of the activities needed was contained in §2473(c)(3)-(6).

Section 2473(c)(3)<sup>17</sup> did not play a significant role in the recovery efforts due to the involvement of Federal Emergency Management Agency (FEMA), which will be discussed in more detail later in this article,<sup>18</sup> but was very important for investigation efforts. For example, when space was needed in Florida to try and recreate the Orbiter for analysis by the CAIB, as well as to find space for the CAIB and its staff to work, this authority was vital.

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<sup>15</sup> 42 U.S.C. §§ 2451-2465a (2003).

<sup>16</sup> 42 U.S.C. § 2452(a) (2003).

<sup>17</sup> 42 U.S.C. § 2473(c)(3) (2003) states in part:

In the performance of its functions, the Administration is authorized to acquire (by purchase, lease, condemnation, or otherwise), construct, improve, repair, and maintain laboratories, research and testing sites and facilities, aeronautical and space vehicles, quarters and related accommodations for employees and dependents of employees of the Administration, and such other real and personal property (including patents), or any interest therein, as the Administration deems necessary within and outside the continental United States.

<sup>18</sup> See *infra* Section V.A.

Section 2473(c)(4) allows NASA to accept gifts if those gifts are given without conditions attached as to how NASA can use such items.<sup>19</sup> Following the loss of *Columbia*, many individuals and companies wanted to help or provide some type of assistance. NASA was only able to accept those offers as long as NASA could decide how to use the gift.

Section 2473(c)(5) gave NASA the critical ability during the recovery operations to form agreements with agencies like FEMA as well as enter into agreements with some of the over 100 state and local agencies and individuals in Texas, Louisiana, New Mexico, Nevada, and Utah, to name a few, who assisted NASA in the search for debris.<sup>20</sup> Within the investigation, this authority enabled NASA to enter into lease agreements at JSC and KSC for office facilities for the CAIB,<sup>21</sup> as well as to equip those facilities with computers, phones, faxes, and other general office operating resources. Further, it was used in making initial preparations<sup>22</sup> for conducting investigative tests in support of the Board.

Section 2473(c)(6), in conjunction with support from DDMS and FEMA, allowed NASA to work out of Barksdale Air Force Base as well as to use assets from DoD such as helicopters and salvage divers from the U.S. Navy.<sup>23</sup> Assets from other agencies could be utilized also, such as aircraft from the Civil Air Patrol, the U.S. Air Force Auxiliary.

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<sup>19</sup> 42 U.S.C. § 2473(c)(4) (2003). In the performance of its functions, the Administration is authorized "to accept unconditional gifts or donations of services, money, or property, real, personal, or mixed, tangible or intangible".

<sup>20</sup> 42 U.S.C. § 2473(c)(5) (2003) states in part:  
[t]o enter into and perform such contracts, leases, cooperative agreements, or other transactions as may be necessary in the conduct of its work and on such terms as it may deem appropriate, with any agency or instrumentality of the United States, or with any State, territory, or possession, or with any political subdivision thereof, or with any person, firm, association, corporation, or educational institution.

<sup>21</sup> Due to numerous issues that arose, the CAIB did not utilize either of these facilities.

<sup>22</sup> As mentioned previously, NASA had set up a separate operating budget to establish financial independence of the CAIB. The total investigation costs were in excess of \$150M (USD).

<sup>23</sup> 42 U.S.C. § 2473(c)(6) (2003) states in part, "[t]o use with their consent, the services, equipment, personnel, and facilities of Federal and other agencies with or without reimbursement, and on a similar basis to cooperate with other public or private agencies and instrumentalities in the use of services, equipment, and facilities..."

*B. Freedom of Information Act*

The Freedom of Information Act (FOIA)<sup>24</sup> was enacted in 1966 and generally provides that any person has the right to request access to Federal agency records or information. All agencies of the Executive Branch of the United States Government are required to disclose records upon receiving a written request, except for those records (or portions of them) that are protected from disclosure by any of the nine exemptions of the FOIA.<sup>25</sup> For any exemption asserted by the agency to the release of any requested information, there is an administrative appeal process available to the requestor.<sup>26</sup>

A FOIA request can be made for any agency record. This does not mean, however, that a Federal agency will disclose all records sought. As noted above, there are statutory exemptions that authorize the withholding of certain information, including information of a sensitive nature. When a Federal agency does withhold information, it ordinarily must specify which exemption of the FOIA permits the withholding. In addition, the FOIA does not require agencies to do research, to analyze data, to answer written questions, or to create records in order to respond to a request.

Requests for information under the FOIA increased significantly across the Agency as a result of the *Columbia* accident. Even though the CAIB and the Agency determined to proactively release as much information as possible, without in any way disrupting or jeopardizing the integrity of the investigation, the number of requests specifically related to the accident still totaled nearly 500.

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<sup>24</sup> 5 U.S.C. § 552 (2003).

<sup>25</sup> See 5 U.S.C. § 552(d) (2003). FOIA exemptions include: 1) classified documents; 2) internal personnel rules and policies; 3) information exempt under other laws; 4) confidential business information; 5) internal Government communications; 6) Personal Privacy; 7) law enforcement; 8) financial institutions; and 9) geological information.

<sup>26</sup> The NASA appeal process regulations can be found at 14 C.F.R. § 1206.605 (2003).

### C. *Privacy Act*

The Privacy Act of 1974<sup>27</sup> is a companion to the FOIA. The Privacy Act regulates Federal Government agency recordkeeping and disclosure practices. It allows individuals to seek access to Federal agency records about themselves. The Act requires that personal information in agency files be accurate, complete, relevant, and timely. The individual who is the subject of a record may challenge the accuracy of information in the record. The Act requires that agencies obtain information directly from the subject of the record and any information gathered for one purpose cannot be used for another. As with the FOIA, the Privacy Act provides civil remedies for individuals whose rights may have been violated. To prevent agencies from keeping secret records, each Federal agency must publish a description of each system of records maintained by the agency that contains personal information. The Act also restricts the disclosure of personally identifiable information by Federal agencies.

Together with the FOIA, the Privacy Act permits disclosure of most personal files to the individual who is the subject of the files. The essential feature of both laws is that they make Federal agencies accountable for information disclosure policies and practices. If a record cannot be released, the requestor is entitled to be informed of the rationale for the denial and has a right to appeal the denial and challenge it in court. As a result of the procedural rights granted by the FOIA and the Privacy Act, the disclosure of Federal Government information cannot be controlled by arbitrary or unreviewable actions.

### D. *Export Control*

Federal agencies and their contractors must comply with the two primary U.S. Government laws controlling exports, the Arms Export Control Act<sup>28</sup> and its implementing regulations, the International Traffic in Arms Regulations (ITAR),<sup>29</sup> and the

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<sup>27</sup> 5 U.S.C. § 552a, as amended (2003).

<sup>28</sup> 22 U.S.C. § 2778 (2003).

<sup>29</sup> 22 C.F.R. §§ 120.1-130.17 (2003).

Export Administration Regulations (EAR).<sup>30</sup> Lack of compliance can result in suspension of current or future licensing privileges and criminal, civil, or administrative enforcement action against both government officials and private contractors.

The Arms Export Control Act authorizes the President to control the export and import of defense articles and defense services. The President delegated authority to promulgate regulations with respect to exports of defense articles and defense services to the Secretary of State by Executive Order 11958, as amended. The items designated as defense articles and defense services constitute the United States Munitions List (USML) in the ITAR. In general, design, development, production, manufacture, assembly, operation, repair, testing, maintenance or modification of defense articles (e.g. space launch vehicles, certain spacecraft, ground tracking systems and associated hardware and engineering units for these items) are on the USML and are controlled by the ITAR.

The EAR, administered by the Department of Commerce, covers what is commonly referred to as "dual use" items. For technical data it applies to all information in the United States that is not in the public domain<sup>31</sup> and is not under the jurisdiction of another Government agency.

The existing NASA export control process was utilized to facilitate any public releases of information by the CAIB. The Space Shuttle Program (SSP) Office Export Representative reviewed all NASA data turned over to the CAIB and made a written recommendation concerning the releasability of that information. It was important to sensitize individuals unfamiliar with NASA data to the fact that much of the Shuttle data is controlled by the ITAR. As the cognizant Agency, NASA had the authority to approve such data for public release.<sup>32</sup>

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<sup>30</sup> 15 C.F.R. §§ 730.1-774 Supplement No. 3 (2003).

<sup>31</sup> "Public domain" means information which is published and which is generally accessible or available to the public. 22 C.F.R. § 120.11.

<sup>32</sup> 22 C.F.R. § 125.4(b)(13).

*E. Federal Advisory Committee Act*

In 1972, the Federal Advisory Committee Act (FACA)<sup>33</sup> was enacted by Congress. Its purpose was to ensure that advice rendered to the Executive Branch by the various advisory committees, task forces, boards, and commissions formed over the years by Congress and the president, be both objective and accessible to the public. The Act not only formalized a process for establishing, operating, overseeing, and terminating these advisory bodies, but also created the Committee Management Secretariat, an organization whose task it is to monitor and report executive branch compliance with the Act. Through enactment of FACA, the U.S. Congress formally recognized the merits of seeking the advice and assistance of our nation's citizens.

Not long after the activation of the CAIB, consideration was given to the applicability of the Act. The formalities required by the Act were not compatible with the broadly defined, time intensive investigation or with the effective oversight of more than one hundred staff and thousands of debris searchers. For this, and a number of other practical considerations, all CAIB members who were not already employees or officers of the United States were employed as full-time Federal employees.<sup>34</sup> Even though the Act was not applicable to the CAIB's activities, the Board resolved to comply, to the maximum extent practicable, with its standards. The NASA Administrator established the Return to Flight Task Group,<sup>35</sup> consistent with FACA.

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<sup>33</sup> 5 U.S.C. apps. §§ 1-16 (2003).

<sup>34</sup> 5 U.S.C. app. § 3(2) provides that FACA does not apply to committees "comprised wholly of full-time officers or employees of the Federal Government."

<sup>35</sup> On June 13, 2003, NASA Administrator Sean O'Keefe, pursuant to FACA, appointed two veteran astronauts, Apollo commander Thomas P. Stafford and Space Shuttle commander Richard O. Covey, to lead a distinguished task force to assess the Agency's "Return to Flight" efforts and advise on the implementation plans in response to the CAIB recommendations contained in its final report.

The Task Group is performing an independent assessment of NASA's actions to implement the recommendations of the CAIB, as they relate to the safety and operational readiness of NASA's next Shuttle mission, STS-114. The Task Group functions solely as an advisory board and complies fully with the provisions of FACA. The crew of STS-114 includes: Commander Eileen Collins, Pilot James Kelly, and Mission Specialists Stephen Robinson, Soichi Noguchi, Charles Camarda, Wendy Lawrence, and Andrew Thomas. The major focus of their mission will be testing and evaluating new Space Shuttle flight safety, which includes new inspection and repair techniques, but

*F. Stafford Act*

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act)<sup>36</sup> was drafted "to provide an orderly and continuing means of assistance by the Federal Government to state and local governments in carrying out their responsibilities to alleviate the suffering and damage which result from ... disasters."<sup>37</sup> The duties under this Act have been carried out by many different agencies over the years, but today they provide the missions and functions of FEMA. Under this Act, FEMA is provided a whole array of powers to help state and local officials prepare for and respond to emergencies. Some powers that were particularly useful in the *Columbia* disaster response included the ability to lease and take immediate possession of facilities from which to carry out emergency response activities; the ability to buy and distribute materials and equipment (everything from cell phones to office supplies); and the power to task any Federal agency to assist in response activity through the provision of personnel, services, or equipment, and reimburse those agencies for their assistance.

## IV. INFORMATION

*A. Collection/Archival*

With any investigation quickly comes the compilation of data and the CAIB soon came to realize that the sheer volume of available data involved with the technically complex Space Shuttle could quite easily overwhelm them if not properly cataloged. As a result, the U.S. Department of Justice (DOJ) was enlisted to assist with the collection and control of the data for the CAIB.<sup>38</sup> Configuration management between the CAIB and NASA was accomplished through the *Columbia* Task Force

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will also include delivering supplies to the ISS. The anticipated launch date is either January or March 2005. See <http://spaceflight.nasa.gov/shuttle/index.html>.

<sup>36</sup> 42 U.S.C. §§ 5121-5206 (2003).

<sup>37</sup> 42 U.S.C. § 5121(b) (2003).

<sup>38</sup> The U.S. Department of Justice, Office of Litigation Support, was brought in due to their vast experience in collecting and controlling evidence for the U.S. Attorneys conducting litigation on behalf of the U.S. Government.

(CTF).<sup>39</sup> Processes and procedures were adopted by the CTF to track the data being provided to the CAIB by NASA and DOJ assisted with the control of the CAIB data. A records schedule<sup>40</sup> was created to specify the legal disposition of the records associated with the *Columbia* accident investigation because the data provided to and created by the CAIB are Government records. Access restrictions to these records were specified in correspondence between the chairman of the Board, the NASA Administrator, and the Archivist of the United States, as well as on the Standard Form 258, *Agreement to Transfer Records to the National Archives of the United States*. The eight categories of CAIB records as well as the disposition of them are discussed below.

### 1. CAIB Document Database

The CAIB Document Database contains over 35,000 records created or received by the CAIB during its investigation. Records in the database include testing reports, reports and related records from the CAIB Independent Analysis Team, interim recommendations, independent assessment team reports, presentations, photographic images, drawings, and correspondence. Also included are substantive electronic mail messages that were created and received by, but are not necessarily limited to, the Board Members, Principal Investigators, and senior-level CAIB staff. This includes those messages that document procedures, opinions, advice and guidance, and other matters that relate to the work of the CAIB. These records are permanent Government records that transferred to the custody of the National Archives and Records Administration (NARA) following the completion of the work of the CAIB.

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<sup>39</sup> The CTF served as the formal interface between NASA and the CAIB. Section VI.E., *infra*, provides additional information on the CTF.

<sup>40</sup> General Records Schedules are issued by the Archivist of the United States to provide disposal authorization for temporary administrative records common to several or all agencies of the Federal Government. They include records relating to civilian personnel, fiscal accounting, procurement, communications, printing, and other common functions, and certain non-textual records.

## 2. CTF Document Database

The *Columbia* Task Force (CTF) Document Database contains approximately 45,000 records that were requested by the Board, scanned into NASA's Process Based Mission Assurance (PBMA) database at JSC, and then retrieved by the Board. Generally, these are the records that the Board requested, reviewed, and utilized during its investigation into the *Columbia* accident. They included CAIB requests for information from NASA, reports and presentations, hardware release and debris test approval forms, images, drawings and links to files that were too large to be stored in either CTF or CAIB databases. It is important to note that there is minimal duplication between the CTF and CAIB databases. These are permanent Government records that transferred to the custody of NARA following the completion of the work of the CAIB.

## 3. Interview Records

Witness testimonies in the format of audio recordings, electronic transcripts, and interview notes were created and controlled by the CAIB. In order to allay fears that can prevent individuals from revealing damaging or even embarrassing information, the Board decided to grant confidentiality to individuals who were interviewed individually by Board members. The Board's grant of confidentiality was consistent with longstanding practice in investigating aircraft accidents. Confidential statements made to air crash safety investigators have been found privileged with respect to pretrial discovery.<sup>41</sup> The Supreme Court has also recognized the privilege as exempting such statements from disclosure under FOIA.<sup>42</sup> Protecting the witness statements from disclosure under FOIA did not prevent an accounting of personal responsibility for the cause of the accident, but merely meant that any accounting must arise from a separate investigation.<sup>43</sup> Also included in these records are the

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<sup>41</sup> See *Machin v. Zukert*, 316 F.2d 336, 340 (D.C. Cir. 1963) *cert. denied*, 375 U.S. 896 (1963).

<sup>42</sup> See *United States v. Weber Aircraft Corp et al.*, 465 U.S. 792, 798 (1984).

<sup>43</sup> See CAIB REPORT, *supra* note 5, Appendix A, at 233.

copies of the written statements that were made by the staff of NASA's Mission Control Center and other NASA staff and contractors immediately following the *Columbia* accident. All of the approximately 280 interviews and written statements are permanent Government records that transferred to the custody of NARA following the completion of the work of the CAIB.<sup>44</sup>

#### 4. Interim and Final Report Records

Volume I of the CAIB's final report was released in August 2003. The remaining five volumes were all released in October 2003. Volumes II-VI contain supporting documentation and were released with a Board statement that the conclusions and recommendations are not necessarily reflective of the views of the CAIB but are included for the record. An electronic and a paper copy (one each) are permanent Government records that transferred to the custody of NARA following the completion of the work of the CAIB.

In completing the investigation, the CAIB created working files and notes. These were temporary records and were to be destroyed or deleted upon verification that the information was contained in the final report, or upon the completion of the work of the CAIB, whichever was later.

#### 5. Public Affairs Records

The public affairs records include: audio-visual and textual formats on compact discs (CDs and DVDs) and on VHS that contain still photographs with captions, video recordings of United States Senate briefings, lectures, conferences, press conferences, transcripts of public hearings, captioned copies of all digital photographs taken by CAIB Public Affairs, and a computer-animated presentation of the Shuttle damage. These are per-

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<sup>44</sup> NARA pre-acquisitioned these records for archival purposes at the end of the work of the CAIB. Legal custody will transfer at the end of the term of the 109<sup>th</sup> Congress in 2006. To preserve the effectiveness of the privilege for future aircraft accident investigations, the Archivist of the U.S. acceded to the CAIB's request to restrict access to the statements for a period of fifty years.

manent Government records that transferred to the custody of NARA following the completion of the work of the CAIB.

#### 6. Public Comment Records

Over 3,500 electronic and paper records were received from the public and science experts. These records were divided into two groups and each had different dispositions.

The first group consisted of electronic mail messages received by the CAIB via its website, scanned images of letters received via surface mail, and electronic transcripts of telephone communications with the public. These are permanent Government records and were transferred to the custody of NARA following the completion of the work of the CAIB.

The second group was made up of original textual correspondence received via surface mail, textual notes and transcripts of telephone communications with the public, and paper printouts made for reference purposes from the Public Comment Database. These documents were temporary records and were destroyed or deleted upon verification by the CAIB that the information was contained in the Public Comment Database.

#### 7. CAIB Web Content and Web Management records

The CAIB maintained a web site that contained information about the activities of the Board and its members. Included in this set of records are electronic and paper copies of the CAIB's web pages, associated documentation, web site policy and planning files, records created during the implementation of the web site, electronic copies of inputs to the site, web site page content files and code (HTML-encoded pages), electronic images that the end user of the site sees (outputs), web site use and control reports (logs and statistical compilations, web site map), web site screen printouts (archives), system documentation, web design records, web site change control records, web site migration records, and system commercial off the shelf configuration software. These were all temporary records and were destroyed or deleted upon completion of the CAIB's work.

### 8. Electronic Mail and Word Processing System Copies

The CAIB produced electronic copies of records that were created on electronic mail and word processing systems and were used solely to generate a record-keeping copy of a record. These electronic records were temporary and were deleted after recordkeeping copies were produced.

#### *B. Recovery Data Management*

In the midst of coordinating search teams and locating debris, large amounts of documentation and data were created to describe the processes and procedures used by agencies in the recovery operation. Maps were generated to track the reporting and locating of debris. Status reports were created to appraise agency headquarters of resources used and progress made. There needed to be a way to collect, catalog, and archive all this data necessary to assist in the investigation. NASA had initiated a Data and Records Handling Working Group that developed a process for the impoundment of data related to STS-107 in order to preserve evidence related to the accident. Any data created during the course of recovery and investigation was specifically included in this process. Implementation of this policy within the recovery operation was logistically complex on a couple of different levels.

The first level was geography. The recovery operation initiated at Barksdale, but expanded quickly into Texas field offices in Lufkin, Carswell, Palestine, Nacogdoches, and Hemp-hill, as well as the Office of Emergency Preparedness in Louisiana, and multiple makeshift offices in several Western states where debris sightings were reported. The challenge was disseminating the guidelines to the necessary people and then explaining them in such a way as to allow for effective implementation at each specific recovery site. This was very different than simply impounding files in an office. As the search efforts progressed and narrowed, beginning at the end of February when Carswell then Barksdale consolidated into Lufkin, the necessity to begin securing data became critical. Data, once secured at these facilities, could not always be impounded right away because it was still being used, but it had to be at a mini-

mum collected, cataloged, and boxed up for the move. This consolidation of records made things a bit easier in May when the Lufkin office was shut down and remaining operations were shifted to the *Columbia* Recovery Office at the Johnson Space Center. FEMA and NASA took the lead in ensuring that all data related to operations at various field offices were backed up, saved, and moved to the appropriate location for use and eventual impoundment.

The second level was interagency coordination. The policy that was developed by NASA was relatively easy to implement by and within NASA. However, there were substantial amounts of data generated by FEMA, the EPA, the FBI, the Texas Forest Service, and many others that also needed to be impounded to preserve as evidence for the investigation. To address this issue, representatives of all the affected agencies gathered together to form their own data working group to decide what data needed to be saved, how best to retrieve information from computers and files, and who would have responsibility for ensuring this activity was completed. After much effort, this interagency coordination group was able to come to resolution on these matters and all data covered by the guidelines were saved for the investigation and later archival purposes.

### *C. Dissemination*

#### 1. Freedom of Information Act (FOIA)

At JSC there were nearly 200 FOIA requests submitted and processed as a result of the accident and nearly half of those came in before the month of February had come to an end.<sup>45</sup> The existing NASA FOIA process was utilized to respond to the incoming requests. NASA legal counsel and NASA FOIA Officers formed a team and met daily to discuss the incoming FOIA requests as well as the most expeditious manner to handle the large volume of requests. The FOIA team worked with the *Columbia* Task Force (CTF) and the *Columbia* Accident Investiga-

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<sup>45</sup> As stated previously, there were nearly 500 FOIA requests across the Agency as a result of the accident.

tion Board (CAIB) legal advisors to facilitate responses to any requests addressed to both the CAIB and NASA. The *Columbia* Accident Rapid Reaction Team (CARRT)<sup>46</sup> was created to facilitate FOIA responses in a consistent manner across the Agency. In coordination with the CAIB, they provided authority for release of any *Columbia* related records by NASA. This team approach enabled well-coordinated FOIA responses.

The general rules on records releasability during the investigation were that pre-accident records would be released, waiving any deliberative process privilege.<sup>47</sup> However, due to the ongoing investigation, post-accident records were generally withheld in reliance on this deliberative process FOIA exemption. Information protected by other non-discretionary FOIA exemptions was withheld, such as personal privacy, national security, and company proprietary information. Although NASA and the CAIB were independently responsible for records release determinations, the CARRT notified the CAIB of all approved pending NASA releases and the CAIB, in turn, notified NASA of planned sensitive releases.

## 2. Payload Information

Under normal circumstances, the payloads flown on STS-107 would have been returned to the appropriate party; e.g., principal investigators of scientific experiments. However, due to the *Columbia* accident, NASA impounded all recovered Shuttle material as part of the investigation and this included the payloads. The mission included thirty science facilities in the *SPACEHAB* module and six Freestar experiment facilities, which together supported over eighty scientific investigations. More than 2,200 recovered pieces of debris were identified as payload items. For many reasons, NASA wanted to preclude the use of recovered STS-107 payload material for purposes that would be inconsistent with their originally intended scientific purposes. Of particular concern to NASA was the use or sale of

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<sup>46</sup> See *infra* Section VI.E.3.

<sup>47</sup> See 5 U.S.C. § 552(b)(5) (2003).

payload hardware as memorabilia to those who would exploit the STS-107 accident.

NASA did not initially release any recovered hardware except for science recovery purposes. STS-107 payload customers could submit a Test Approval Release (TAR) Form to get temporary access to the recovered hardware related to their specific payload. The STS-107 CAIB Impounded Hardware and Debris [and Data] TAR was utilized for any internal as well as external releases. The TARs required approval from NASA as well as the CAIB. This process worked well and ensured that no releases were made which would in any way compromise the investigation. Additional coordination was necessary for external releases (e.g., to payload customers) resulting in a longer period of time for release approval.

To facilitate the investigation, NASA preferred that any payload customers who conducted science recovery operations do so at KSC, but some exceptions were made to send items to other NASA Centers with the understanding that the hardware would be returned to the Reusable Launch Vehicle Hangar Facility, which was being used as a "reconstruction" site, and remain there until completion of the investigation. For science recovery operations not conducted at KSC, the unique payload TARs was presented to the NASA Accident Investigation Team (NAIT)<sup>48</sup> and, if approved, sent to the CAIB for final approval.

## V. RECOVERY

### A. *Federal Emergency Management Agency*

As the media played images of the *Columbia* vehicle breaking up over the skies of the western and southwestern United States, it became clear that the debris, upon impact, would likely cause damage to people, livestock, and property. President Bush chose to exercise his authority to declare a state of emergency in Texas almost immediately to allow for Federal assistance to be used to help the state of Texas in responding to

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<sup>48</sup> See *infra* Section VI.E.4 for a discussion of the NAIT.

the disaster.<sup>49</sup> The President can exercise this Stafford Act authority "when he determines that an emergency exists for which the primary responsibility for response rests with the United States."<sup>50</sup> The agency tasked to actually provide this Federal assistance is FEMA.<sup>51</sup> Once an emergency is declared, FEMA has the broad power to direct the resources, personnel, and equipment of any Federal agency to assist state and local emergency management authorities in saving lives, protecting property, and averting further threats of harm.<sup>52</sup> On February 1, 2003, when the President made this declaration, a Federal Coordinating Officer was assigned and a team was sent to meet with NASA to begin response activities. FEMA has very few full-time employees; with most of its support personnel being called in only after a disaster has occurred.

It was soon discovered that debris had landed not only in East Texas, but also in parts of Louisiana, and emergency assistance was needed there as well. However, FEMA can only enter a state if an emergency has been declared. Accordingly, President Bush amended his emergency declaration on February 6<sup>th</sup> to allow FEMA to provide Federal assistance in Louisiana and any other state that it determined was impacted by the *Columbia* accident.<sup>53</sup> Because of the ground track that the Orbiter covered as it came in for its landing approach, there was the possibility that more states west of Texas could also be affected. In fact, within the first week, there were reports of debris being found in 29 states and three foreign countries.<sup>54</sup> This was ad-

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<sup>49</sup> See President George W. Bush, *Memorandum for the Director of FEMA*, available at <http://www.whitehouse.gov/news/releases/2003/02/20030201-8.html> (Feb. 1, 2003).

<sup>50</sup> 42 U.S.C. § 5191(b) (2003).

<sup>51</sup> See 42 U.S.C. § 5195(b) (2003).

<sup>52</sup> See 42 U.S.C. § 5192 (2003).

<sup>53</sup> See Office of the White House Press Secretary, *Emergency Declaration on Shuttle Columbia*, available at <http://www.whitehouse.gov/news/releases/2003/02/20030206-18.html> (Feb. 6, 2003).

<sup>54</sup> NASA received debris reports from the following three foreign countries: Jamaica, Canada, and Grand Bahama. There were also two reports of debris in the Gulf of Mexico itself. All of these reports were closed through telephone calls to the reporting party and digital pictures sent to the MIT via e-mail. Shuttle technicians were able to rule out from the pictures that the reported material was Shuttle debris and no further action was taken. As a result, no treaty issues were identified.

mittedly the largest single response action that FEMA had ever helped undertake.<sup>55</sup>

### *B. FEMA/NASA Coordination*

While the Space Shuttle and the U.S. space program were the province of NASA, the ability to command resources and react quickly to a potential threat to public safety belonged to FEMA. Throughout the recovery operation, both of these agencies worked as partners and equal leaders of one of the largest emergency response operations in our nation's history. The primary search corridor in Texas and Louisiana alone was 10 miles wide by 240 miles long. NASA supervised the search for Shuttle material and FEMA coordinated the response and recovery operations. Whereas NASA's goal was to find the Orbiter and figure out why the accident occurred, FEMA's goal was to help the states respond to an emergency situation and protect its citizens from harm. These goals and the staff chosen to implement them complemented each other extremely well.

Within Texas and Louisiana, events happened very quickly. NASA had begun to set up operations at Barksdale Air Force Base and FEMA arrived soon after to assist. NASA had already made arrangements with the Air Force for utilization of a supply building, along with hangar space, from which to work. Within a day, FEMA had set up computers and telephone lines in the supply building to enable teams to begin tracking down where the debris landed.

FEMA was also already in contact with the Governor of Texas and was coordinating search and response activities with the Texas Department of Emergency Management under a FEMA-State agreement.<sup>56</sup> A hotline number was established and routed through the JSC Emergency Operations Center and searchers began receiving debris calls from all over the country.

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<sup>55</sup> As of May 5, 2003, ground, water, and air searches combined covered more than 2.28 million acres and approximately 25,000 personnel took part in the recovery operation. See FEMA, *Recap of the Search for Columbia Shuttle Material*, available at <http://www.fema.gov/news/newsrelease.fema?id=2808> (May 5, 2003) [hereinafter *Recap*].

<sup>56</sup> The authority for FEMA to enter into these agreements can be found at 44 C.F.R. § 206.44 (2003).

As it was seen that the majority of reports received during the first couple of days were concentrated in the Lufkin/Nacogdoches/Hemphill area, the NASA MIT and FEMA decided a field office needed to be located closer to coordinate the search. So representatives from NASA and FEMA were dispatched to Lufkin, Texas where FEMA used its authority to set up operations in the Lufkin Civic Center.

FEMA also began entering into mission assignment agreements with various Federal agencies to help with the recovery of debris. One example of this was with the Environmental Protection Agency (EPA). FEMA tasked EPA to help NASA and other state and local agencies with the collection and transport of debris consistent with environmental regulations. The Orbiter vehicle and its payloads contained some hazardous materials, hypergolic fuels, and explosive bolts, which had to be handled in accordance with EPA regulations regarding the transportation of hazardous materials.<sup>57</sup> NASA immediately sent out press releases asking citizens who found any debris not to handle it and to call the authorities immediately because of its hazardous nature. This raised one of the first pressing legal issues to be dealt with – the transportation of potentially hazardous debris across state lines without violating EPA regulations. Tied to this was whether there were any problems with storing this material at the base, possibly exposing the Air Force to liability under the Resource Conservation and Recovery Act (RCRA).<sup>58</sup> If debris was found in Texas, it was tagged and logged into a database by the EPA and sent to the main collection hangar at Barksdale. The Air Force was aware of this concern as well and took steps to work with EPA to address it. It was eventually determined by EPA that debris could be moved from Texas to Louisiana without incurring any penalties under RCRA since both states were within the declared emergency site.<sup>59</sup>

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<sup>57</sup> See 49 C.F.R. §§ 397.1-397.225 (2003).

<sup>58</sup> See 42 U.S.C. §§ 6901-6908a (2003).

<sup>59</sup> See Zachary Berman, *The Legal Cleanup: Lawyers Consider Issues Stemming from Crash of Space Shuttle Columbia*, 89 A.B.A. J 19,19-20, (2003).

Once the President extended the emergency declaration to cover Louisiana and any other state where debris was found, FEMA entered into a FEMA-State agreement with the Governor of Louisiana and established a line of communication with the Louisiana Office of Emergency Preparedness to facilitate the recovery of debris. These agreements with the states allowed FEMA to enter a state, provide assistance, and access public/private land in order to accomplish its work. The agreements also provided the U.S. Government a waiver of liability for damages resulting from the work done under the request of the state along with indemnity for the U.S. Government against any claims arising from such work.

After about two weeks, it became apparent that search teams and recovery operations needed a more permanent place to operate the Texas search effort. FEMA took the lead in leasing space in the Bank of America building in Lufkin and in a weekend moved the entire Texas search operation from its initial base in the Lufkin Civic Center. The Texas operation was unique in that this was the state where the majority of debris was recovered and, by far, had the largest amount of state and local agencies with which to coordinate. At one count, approximately 130 different agencies were involved.<sup>60</sup>

Meanwhile, more debris reports were coming in daily from twenty-eight states outside of Texas and three foreign countries. Because debris had been found in Louisiana, FEMA could use state resources to assist NASA there, but until debris had been located in another state, FEMA had no authority to enter a state and act.<sup>61</sup> However, NASA had the primary responsibility to follow up on all the debris reports received and it was critical to the investigation to find as much of the Orbiter as possible. This effort was handled out of Barksdale Air Force Base for the first month and then eventually was transferred to the Lufkin field office when all operations were moved there. Closing many of the debris reports was as simple as a phone call to the person

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<sup>60</sup> See, *Recap*, *supra* note 54.

<sup>61</sup> See Office of the White House Press Secretary, *Emergency Declaration on Shuttle Columbia*, available at <http://www.whitehouse.gov/news/releases/2003/02/20030206-18.html> (Feb. 6, 2003).

who made the sighting and requesting they send a picture of the alleged piece of debris for one of the NASA engineers to review. This was especially true for reports in states that were far from the ground track of the Orbiter vehicle. But for those states in the West who reported debris, NASA was very interested in confirming any sightings because pieces that fell earlier from the Orbiter would provide the CAIB more information about how the Shuttle broke apart and why. NASA did not have the resources and capability to undertake large ground searches in states like New Mexico, Nevada, Utah, Arizona, and California, which would require not only support from large numbers of state police and emergency management personnel to form search teams, but also the assets to airlift teams to isolated areas to search for and collect debris. In addition, assets would be needed to move teams into search areas on the ground, office space would be needed for the teams to coordinate their efforts and a central collection site would need to be created for any debris found. NASA and FEMA, therefore, joined together under a mission assignment agreement wherein FEMA directed NASA to locate, identify, secure, and transport materials from the Orbiter vehicle in any states where debris was located. While operating under a FEMA mission assignment in the Western states, NASA utilized FEMA's connections with the various state departments of emergency management to coordinate search parties, made up of people from firefighters to prison inmates. If material was found, then FEMA could go in under the authority of the February 6<sup>th</sup> emergency declaration and provide assistance, as needed.

The seamless nature of operations between FEMA and NASA as co-leaders of this operation was truly a model for interagency cooperation in a time of crisis.

### *C. The Search*

#### 1. Chain of Command

One of the critical issues during the recovery effort was maintaining a clear chain of command to lead the NASA operation in the field. While this might not seem like a strictly legal

issue, the legal advisor noted that management confusion could lead to a multitude of problems and a legal advisor's role is not only to react to a situation, but also to be able to think strategically to assist the manager in carrying out his or her duties.

The recovery operations began at Barksdale Air Force Base, where the MIT leadership worked. The field offices set up by the MIT and FEMA were driven by the concentrations of reported debris sightings and actual debris sightings. Within the first few weeks, field offices were set up around Texas in Lufkin, Carswell Air Force Base outside Dallas, Nacogdoches, Hemphill, and Palestine. In addition, field teams searched in Louisiana out of the Department of Emergency Management offices in Baton Rouge, and in Western states such as Nevada, Utah, New Mexico, Arizona, and California, many times using the local law enforcement offices as a base of operations. Lufkin was designated the main Disaster Field Office (DFO) by FEMA for its operations since that was where the Texas debris search was coordinated from, whereas NASA's MIT leadership remained in Barksdale and orchestrated all other search efforts from there. NASA assigned representatives from the MIT to the Lufkin DFO to work closely with FEMA in aiding the Texas communities in the recovery and response efforts. Before February had come to a close, there was some confusion within NASA about who within the Agency was leading the recovery effort and from where. Although the MIT had been designated to be in charge of recovery, geography caused delays in decision-making and personnel often looked to whoever was conveniently located, rather than contacting the designated MIT management, in order to quickly get the job done.

By March, a hangar was set up at KSC, with the assistance of the National Transportation Safety Board, to receive debris and the intermediate collection point at Barksdale was no longer necessary. So this problem solved itself in the beginning of March when the Barksdale operation was consolidated with the DFO in Lufkin and managers could then interface directly.

## 2. Theft of Debris

Another big issue that was confronted involved the theft of debris. Shuttle material had fallen over an extensive area and while many citizens who found debris called the local authorities or called the Debris Reporting Hotline to report it, there were some people who apparently thought they would rather have a souvenir from a historic event, either for their own personal use or to make some money from it by selling it on the Internet. In an attempt to curb this, the U.S. Attorneys for the Southern and Eastern Districts of Texas issued a one-day moratorium from prosecution for anyone who had Shuttle debris and had not reported it or had not turned it in to the authorities.<sup>62</sup> Outside of the moratorium, the Department of Justice had authority to prosecute individuals for theft of Government property under 18 U.S.C. § 641, an offense punishable by up to ten years in prison and fines up to \$250,000.

During the moratorium there were quite a few calls from individuals to turn property in to NASA. Interestingly, some of those calls came from people not with debris from *Columbia*, but from *Challenger*, wanting to know if the moratorium also applied to them. They were told it applied and were advised to return the Government property in their possession immediately. Other calls were from well-intentioned citizens who had found debris, picked it up, but then feared being accused of tampering with evidence for picking up the debris in the first place, so they held onto it. When the moratorium was announced, the debris they had picked up was quickly turned in to the authorities without incident. All calls received were followed up on and closed out by either the NASA Inspector General's Office or the Department of Justice. The likelihood that all debris found was actually turned in to NASA is small. Even after the moratorium was over, Federal, state, and local officials received reports about debris that had been stolen. However,

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<sup>62</sup> See Press Release, U.S. Department of Justice, U.S. Attorney Eastern District of Texas, First Indictments in Shuttle Debris Recovery, Limited Prosecution Moratorium Announced, available at <http://www.usdoj.gov/usao/txs/releases/February2003/030205-columbiamoratorium.htm> (Feb. 5, 2003).

this moratorium announced by the Department of Justice proved to be an effective step in assisting the recovery efforts.

### 3. Volunteers

When tragedy struck NASA, many private groups and individuals were eager to volunteer their time and energy to help with the search in any way they could. These volunteers were not asked to help by NASA, but took it upon themselves to act. An illustration of this spirit of good will was a local light flyers club in east Texas that wanted to use their machines, which strongly resembled flying go carts with a hang gliding-like sail on top, to fly over areas of east Texas to see if they could locate any debris on the ground. Despite their best of intentions, these types of volunteers created a potential liability for NASA in conducting the search.

If one of these volunteers were to be injured while searching for debris, a claim against NASA could be filed under the argument that but for the Space Shuttle breaking apart, they would not have been out looking for debris and would not have been injured. These volunteers signed no waiver of liability against the U.S. Government before they undertook the search in the woods, so what is to preclude them from filing a claim? Under negligence law, there was no duty that NASA owed these volunteers. NASA did not ask them to participate in the search. Often times, NASA was not even consulted prior to many volunteers going out to help with the search. At the time of the recovery things happened very quickly and it was imperative that managers and others directing search efforts be made aware that volunteer help should not be accepted unless there was a real need for that support and, if possible, a waiver of liability could be obtained. It is important to note that most of the searchers involved were not volunteers in the sense described above.

### 4. Unconditional Gifts

Aside from people around the country willing to volunteer their time, NASA received many offers of support from businesses that wanted to donate equipment to help with the search

efforts. Section 2473(c)(4) of the Space Act, as mentioned earlier, allows NASA to accept gifts or donations as long as they are unconditional and NASA may use them in any manner it chooses.<sup>63</sup> Using this authority and appropriate documentation, NASA was able to provide supplies and equipment to FEMA, EPA, and other state and local agencies like cameras from Nikon to use for debris recordation and mapping software from Microsoft to use in plotting where debris was reported and/or located, which allowed recovery management to make more informed decisions about where to use its limited resources to search. There was also the ever-present issue of morale among the recovery workers many of whom were away from home and working long hours. NASA recognized this need when it accepted freezers full of pints of Blue Bell Ice Cream, which were placed at the command centers in Barksdale, Lufkin, and Carswell.

### 5. Helicopter Crash

Searching for debris out in the woods and swampy areas of east Texas and Louisiana and the rocky desert areas of Nevada, Utah, and other Western states was no easy task for the search crews, both on the ground and in the air. That truth hit home for everyone on the afternoon of March 27, 2003, when a helicopter crashed into the Angelina National Forest in San Augustine County, Texas while searching for debris, killing two people and injuring three others.<sup>64</sup> The two workers who died were the pilot from a private company in Arizona and a Texas Forest Service employee. The three injured workers from the U.S. Forest Service, NASA, and United Space Alliance,<sup>65</sup> were helped from the wreckage by a local fisherman and his nephew.<sup>66</sup>

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<sup>63</sup> See *supra* Section III.A.

<sup>64</sup> See Megan Olecki, *Shuttle search chopper crashes; two die, three injured*, THE DAILY SENTINEL, Mar. 28, 2003, available at <http://www.dailysentinel.com/news/newsfd/auto/feed/news/2003/03/28/1048831061.00353.7595.5240.html>.

<sup>65</sup> United Space Alliance is the current NASA prime Shuttle contractor.

<sup>66</sup> See *Air searches for Shuttle debris suspended*, THE DAILY SENTINEL, Mar. 28, 2003, available at <http://www.dailysentinel.com/news/newsfd/auto/feed/news/2003/03/28/1048874006.00353.8709.5347.html> (last visited May 4, 2004).

From that day, all air search operations were discontinued until an investigation could be completed as to the cause of the accident and ensure that any similar incidents in the future would be prevented. Discontinuing air search operations was a significant blow to the speed of the recovery efforts. From the beginning of the recovery operation through March 27<sup>th</sup>, aircrews throughout east Texas and Louisiana had searched approximately 1.3 million acres looking for debris and had discovered over 900 pieces of debris.<sup>67</sup> The stand down of aircrews lasted until April 9, 2003.

#### *D. Debris Management*

As of this writing, approximately 82,500 individual pieces of debris have been located, representing about forty percent of the Orbiter's dry weight.<sup>68</sup> A challenge for the recovery operation was how to track the debris after it was found. A piece of debris, once it was found, would be tagged with a GPS location and sent to a building where it was initially gathered with other pieces of debris to be later driven to a hangar at Barksdale Air Force Base. Once at Barksdale, the debris was frequently identified with its location on the Orbiter and packaged to be shipped to the reconstruction hangar at KSC. This appeared to be a straight-forward process, except that there was no one database that had been pre-developed to be used for this work. Even if there had been, there were so many agencies initially picking up debris and tracking it themselves, that the overlapping data became unmanageable. Several of the agencies that had their own debris tracking databases – such as the EPA, Texas Forest Service, NASA, and the FBI – got together and agreed that one unified database to track material would be best. The next question was which database should be used as a foundation and how could several different databases with different numbering systems for the debris and organization for

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<sup>67</sup> See Louisiana Office of Emergency Preparedness, *Columbia Shuttle Recovery Helicopter Air Operations Resume*, available at [http://www.ohsep.louisiana.gov/news\\_related/ShuttleRecoveryHelioOpsResume.htm](http://www.ohsep.louisiana.gov/news_related/ShuttleRecoveryHelioOpsResume.htm) (Apr. 9, 2003).

<sup>68</sup> See, *Recap*, *supra* note 54.

the various fields of information be consolidated into a meaningful system useful to everyone.

Eventually, the concept was developed for the Shuttle Interagency Debris Database (SIDD), which used the EPA database as a foundation. Within this system, recovery workers were able to identify a piece of debris by a unique number. Information that could be found on a piece included: the latitude and longitude coordinates of where the debris was discovered; a picture of the piece if it was available; who reported the debris location; how it was received; where it was at any point along the route between the field operation and the reconstruction hangar; and where the piece eventually fit into the reconstruction grid at KSC. Any difficulties with this system were addressed real time as SIDD was being developed. By the time formal recovery operations were completed in May, SIDD was still not perfect. However, the ability to gather and track this information was critical not only to the success of the recovery operation, but for the investigation as well.

#### *E. Exit Strategies*

Agencies could not stay in the field for an indeterminate amount of time in the hopes that 100 percent of the Orbiter would be found. No one had the financial or personnel resources to undertake such a task and the geography was such that this was a nearly impossible task. As the number of debris reports that remained open dwindled, FEMA and NASA together decided on an exit strategy for each of the twenty-nine states and three countries that were contacted about a debris sighting. The purpose of an exit strategy was to inform state and local officials that all debris reports made in their state, county, or city had been closed, and that operations in their locality were ending, but if any additional debris was found, there was still a way to contact NASA and receive the necessary response action.

Early in these discussions, it became clear that one exit strategy was being developed at Barksdale whereas another exit strategy was being developed in Lufkin in parallel, but only applicable to the counties in Texas where search workers oper-

ated.<sup>69</sup> Once this was discovered by the group in Barksdale, a meeting was called with personnel in Lufkin to decide how best to coordinate this effort. It was acknowledged that activities undertaken in Texas and Louisiana were more extensive than in any of the other states or countries because all of the debris located was actually found there, and so an exit strategy in Texas and Louisiana would need to be more involved than in the rest of the country. A third interested party, JSC, was also brought into the discussion because once field operations ceased, JSC would be where any long-term recovery response effort would come from.

Utilizing FEMA's expertise and connections with each locality's emergency management officials, two separate exit strategy procedures were developed and disseminated, with the input of all parties taken into consideration. One procedure covered Texas and Louisiana and the other procedure applied to all states other than Texas and Louisiana. The primary difference with the strategies was in the types of claims that would be received by NASA and/or FEMA. Since no debris had been located outside of Texas and Louisiana, there was no foreseen potential for property damage claims to come from these areas. However, reimbursement for assistance provided in the search was a possibility anywhere there was a search effort and information was provided to contact the appropriate NASA legal office to make a claim. Other information that was provided in these procedures was whom local authorities should contact if suspected debris was found, where to send pictures and a description so identification could be made, and where suspected debris should be sent.

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<sup>69</sup> This was another activity that highlighted issues in communication and the chain of command mentioned in Section V.C.1, *infra*.

## VI. INVESTIGATION

## A. CAIB

## 1. Facilities

Upon learning that the CAIB would primarily work from offices at or near JSC, the JSC Center Operations Directorate began checking on available space. To maintain its independence, the CAIB determined that its personnel should not work out of offices physically located on JSC property, therefore, JSC leased additional space for the CAIB in Nassau Bay, Texas. However, the CAIB decided a facility located near the JSC and formerly utilized under the prime Shuttle contract by the Space Shuttle Program Office for conferences would best suit their needs. This permitted the CAIB to have easy access to JSC, but also facilitated the independence of the CAIB from NASA. KSC leased additional space for the CAIB to work out of while they were in Florida, however, this facility proved to be physically too remote from the work the CAIB needed to complete and it proved easier for them to occasionally utilize conference rooms in the KSC Headquarters building for interviews or other investigative matters that required more space.

## 2. Resources/Logistics

Initially the CAIB's resource needs were met through the existing NASA procurement system. This included facility preparations for the CAIB's use. Phones, faxes, computers, and office supplies were provided under a NASA contract with United Space Alliance. NASA also initially issued travel orders to physically get the Board members to Houston and to/from the many other NASA facilities and recovery/investigation sites visited. Once the CAIB was able to put into place a support contractor, through a General Services Administration supervised bidding process, it took over these responsibilities. Valador, Inc. was selected to provide the CAIB's administrative and technical support. Valador arranged to provide for the CAIB support staff, technical experts, support for public hearings and press

conferences, maintenance of the public-input database, and the publication of the final reports.

### 3. Guidelines

Guidelines were created to cover some of the areas needing to be addressed by the CAIB. Two of these areas were witness interviews and handling FOIA requests. To ensure consistency in interviews and interviewing techniques and documentation, guidelines for conducting witness interviews were created. The CAIB also established a process to handle incoming FOIA requests received by the Board to ensure consistency with the existing NASA FOIA process and to ensure the integrity of the appeals process.

Witness interview guidelines were created to assist CAIB members with the completion of interviews. The guidelines were developed to define the purpose of conducting interviews and provide: guidance for what to do prior to conducting an interview; interview techniques; protection of witness statements to promote full and complete disclosures of information by the interviewees;<sup>70</sup> how to conclude interviews, and a witness worksheet to obtain information to be able to contact witnesses to obtain additional information.

On April 14, 2003, NASA Administrator Sean O'Keefe, to help ensure the independence of the CAIB and appropriate responses to FOIA requests, agreed with Admiral Gehman that FOIA determinations regarding the release of CAIB generated records should be delegated to the Board.<sup>71</sup> Thereafter, the CAIB was to process initial and final determinations in a manner consistent with NASA FOIA regulations<sup>72</sup> and that FOIA requests to the Board for NASA records would be promptly forwarded to NASA Headquarters for Agency initial and final determinations regarding releasability.

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<sup>70</sup> See *NPG 8621.1*.

<sup>71</sup> FOIA letter from NASA to CAIB (Apr. 14, 2003) (on file with author).

<sup>72</sup> 14 C.F.R. §§ 1206.100-1206.900 (2003).

## B. CAIB Witnesses

### 1. Public Hearings

The CAIB was aware of the public's interest in its activities and it recognized its responsibility for objectively, promptly, and efficiently completing the investigation. The CAIB took steps to increase public input and awareness by opening certain of its activities to the public consistent with conducting an efficient safety investigation. Public hearings were arranged during the fact-gathering phase of the investigation. The CAIB also maintained a toll free number providing an opportunity for the public to give information directly to the CAIB. In addition, the CAIB maintained a publicly accessible web site containing information concerning the Board and its activities. Witnesses who had technical, organizational or other insights of particular interest to the public were scheduled to appear before the CAIB at the public hearings. NASA employees and employees of NASA contractors who could provide insight into the SSP, the flight of STS-107, and/or the investigation into the loss of *Columbia* were also scheduled to appear.

### 2. Individual Interviews

The CAIB had a principal focus on identifying and correcting threats to the safe flight of the Space Shuttle and this made full and complete disclosure about every aspect of the accident of utmost importance. Individuals may have a tendency to be reluctant to disclose embarrassing or damaging information and, to assure that this did not happen, the Board decided to grant confidentiality to the witnesses who were interviewed. The *Columbia* Task Force Legal Advisor, who coordinated with legal representatives across NASA and contractor companies, facilitated witness interview schedules. Generally, a Board member conducted most of the interviews with another Group representative present in a private setting. When more than one CAIB Group desired to interview a particular individual, the Groups would coordinate and conduct the interview together to ensure minimal disruption to the interviewee's schedule.

The CAIB decided to tape record interviews with witnesses and have the tapes transcribed following the interview. The method selected of conducting interviews turned out to be the most resource intensive and least accurate manner to complete the interviews. The poor recording quality resulted in a considerable amount of erroneous information in the written transcripts which, in turn, resulted in a highly labor intensive review process for interviewees who attempted to reconstruct the interview. The lesson learned was that if transcripts are intended to be official records and will be later relied upon as accurate, court reporters should be utilized.

### *C. Intellectual Property issues*

Other unique legal situations related to intellectual property rights and procurements of individually owned property arose as a result of the Space Shuttle *Columbia* accident.

#### 1. Help from sky-watchers

The Shuttle flew just north of San Francisco around 5:50 a.m. Pacific Standard Time and broke up over eastern Texas around 8:00 a.m. Central Standard Time. Any imagery, especially video, taken of *Columbia's* path along reentry could have aided the CAIB in determining the cause of the accident. Therefore, media and private citizens who had video or still images of *Columbia's* entry path were encouraged to send it to investigators. To allay concerns, NASA made assurances that the videotapes and photos would be returned upon request and that the materials would not be released to the media without the submitter's permission. As a result of the request, photos and videos came pouring in from all across the United States. Some of those images sent in by the public became essential pieces of information used in discovering the cause of the accident.

Because NASA and the CAIB sought to keep the public informed as the investigation progressed, they released images obtained from media and the public as quickly as possible. For the CAIB or NASA to be able to publicly utilize the images, permission from the author was obtained. One example is a reentry debris shedding video. In order for the CAIB to show

the video to Congress, verbal agreement was obtained from the author. Prior to releasing the video to the House Science Committee and to the media, a written release was also obtained. With a limited exception, this process went smoothly and individuals who were contacted were more than willing to provide any assistance they could.

## 2. Procurement of cameras from individuals

The Imagery Analysis Team utilized video and still imagery to time sequence the debris shedding and conclude all of the subsequent trajectory work. Once all the useful information from those images was obtained, the next task of this Team was to acquire the cameras that took the images as the settings and lenses also contained vital clues in determining the cause of the accident. The CTF Legal Advisor was asked by the Team to expedite procuring all the cameras and worked with the JSC Procurement Office to do so. NASA procured nearly twenty video cameras, approximately ten still cameras, and a telescope, which were all used by twenty-seven photographers. Most of the individuals contacted were more than willing to provide whatever assistance they could, including selling their personal cameras to the Government. The rationale behind the procurement of the cameras was the Team would need to literally break them down to obtain the information they needed. A list of individuals was provided to the JSC Procurement Office and they were able to determine the fair market value of the cameras and worked with the individual owners to ensure that the property the Government needed to assist it in determining the cause of the accident could be replaced with new property of like value. There was an overwhelming willingness on the part of most of these individuals to go through the inconvenience of sending their personal cameras to NASA when they realized they had something that could help determine the cause of the accident.

### *D. Teams*

This section will describe some of the teams created as a result of the *Columbia* accident in which the NASA legal community participated. This listing is by no means all-inclusive.

### 1. Columbia Task Force (CTF)

Within seventy-two hours of activation of the CAIB, the CTF was selected, recommended to, and approved by the CAIB Chairman and appointed by the NASA Administrator. The CAIB established the charter for the CTF including: service as the formal interface between the CAIB and NASA; establishing appropriate processes and procedures to assure the CAIB controlled every aspect of the NASA part of the investigation; monitoring, collecting, documenting, filing, and making immediately available to the CAIB all data and analyses generated by NASA; assuring full and timely cooperation by NASA personnel and any persons or entities under contract to NASA; and assisting the CAIB in making factual information available to the public in a timely and orderly manner while assuring the integrity of the investigation by not releasing any pre-decisional information.

The Task Force was set up in mirror image of the CAIB. A CTF lead for each of the CAIB Groups was assigned and those leads assembled the teams necessary to respond to any requests from the Board. The CTF also included a Configuration Management Team whose responsibilities included tracking each CAIB request from the moment it was made until the data, interview, or testing was satisfactorily provided.<sup>73</sup> The CAIB initiated more than 600 Requests for Action or Information during the *Columbia* investigation. In addition to legal counsel, the CTF also included representatives from Safety, Medical, Procurement, Public Affairs, Configuration Management, and Information Technology areas. The Task Force met early each morning so the Chairman and Leads would be available to the Board when they began their workday. It should be noted that most everyone involved with any aspect of supporting the investigation worked very long hours, typically seven days a week.

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<sup>73</sup> The CAIB member who submitted the request either noted by signature that the response was satisfactory or resubmitted the request for further action.

## 2. Columbia Families First (CFF)

To ensure that NASA does everything it can to assist the *Columbia* astronauts' families in an expeditious manner, the CFF working group was created. This Team includes very senior level NASA officials along with active participation of the astronaut corps at JSC. The senior level participation ensures that any issues can be addressed by individuals who understand the entire scope of available Agency resources. The sole purpose of this group is to ensure the complete and comprehensive coordination of all NASA's actions on behalf of the families of the Space Shuttle *Columbia* crew. Their focus related to survivor benefits, memorials, honors, and other associated legislative issues. The CFF continues to meet and address issues as of this writing.

## 3. Columbia Accident Rapid Reaction Team (CARRT)

To address an Agency desire to rapidly, accurately, and uniformly respond to requests for information about *Columbia*, the CARRT was established. The CARRT was granted authority to redirect Agency priorities and resources regarding *Columbia* records dissemination. The existence of the CARRT also assured consistency across the Agency in the application of regulations and statutes concerning dissemination of information. As with most *Columbia* teams, the CARRT met daily until the volume of FOIA and other *Columbia* related data requests subsided.

## 4. NASA Accident Investigation Team (NAIT)

By mid-March of 2003, the NASA working group supporting the CAIB was reorganized appointing NASA leadership made up of "Senior Agency Officials who were not involved in the SSP Office during the [Flight Readiness Review] Process, nor during the *Columbia* STS-107 Mission."<sup>74</sup> This came about because the

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<sup>74</sup> See NASA Letter from Sean O'Keefe to Admiral Gehman, March 6, 2003, available at [http://spaceflight.nasa.gov/shuttle/archives/sts-107/investigation/Gehman\\_letter\\_030603.pdf](http://spaceflight.nasa.gov/shuttle/archives/sts-107/investigation/Gehman_letter_030603.pdf) (last visited May 5, 2004).

CAIB requested that personnel who were involved with either the preparation or the operation of *Columbia* return to their regular duties to prevent an actual or perceived conflict of interest. This transition was completed in a manner that minimized impact to existing teams and processes. Although senior SSP Office officials no longer led the NASA effort, their knowledge, experience and continued involvement were key to the success of the investigation. The NAIT was structured more like the CAIB, including a designated Group One - Materials; Group Two - Operations; and Group Three - Engineering.

The NAIT utilized "fault trees" to graphically represent every conceivable sequence of events that could cause a system to fail. As a result of the investigation, over 3,000 individual elements were examined. This was done so every potential chain of causation could be diagrammed and every subsystem that was not a precipitating cause could be eliminated from consideration.

## VII. CLAIMS

The claims that NASA has dealt with since February 2003 have been of a completely different character than those experienced after *Challenger*. The *Challenger* accident occurred off of the coast of the United States over the Atlantic Ocean. The potential for damage for third parties was minimal and the number of agencies involved in the recovery was very small compared to the *Columbia* recovery. This section will discuss FEMA's Public Assistance program and the Space Act, authorities used by FEMA and NASA to address the variety of claims that arose as a result of recovery efforts, and the number of claims that have been reviewed as of the writing of this article.

### A. *Public Assistance*

Within Texas and Louisiana, where FEMA had authority to enter and act, FEMA implemented and managed its Public Assistance program, which awarded grants to assist State and local government agencies as well as some nonprofit entities with the response to and recovery from the *Columbia* accident. Specifically, FEMA may award grant monies for assistance with

debris removal and implementation of emergency restoration of infrastructure.<sup>75</sup> In order to be eligible for the program, four main criteria needed to be met. First, an entity must be an eligible applicant. Four types of entities are eligible applicants:

- State government agencies;
- Local governments;
- Indian Tribes or authorized tribal organizations; or
- Private nonprofit organizations or institutions that own or operate facilities that provide certain services otherwise performed by a government facility.

These applicants must also be located within an area of a state that FEMA had designated was part of the emergency response area.<sup>76</sup> Second, the facility that is the subject of the public assistance request must be eligible. Examples of eligible facilities include roads, airports, schools, utilities, and buildings owned by the applicant.<sup>77</sup> Third, the work must be eligible. The type of work that would be eligible is mentioned above, but this work must be required as a direct result of the declared event, completed within the declared emergency response area, and it must be the legal responsibility of the applicant at the time of the emergency.<sup>78</sup> Finally, the cost of the work done must be eligible in that the costs are reasonable and necessary to accomplish the work; comply with Federal, state, and local requirements for procurement; and do not include insurance proceeds, salvage values, and other credits. One notable cost that is not eligible is the straight time pay and benefits<sup>79</sup> of employees of an eligible applicant.<sup>80</sup>

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<sup>75</sup> See *Public Assistance Guide*, FEMA 322, at 23-33, available at <http://www.fema.gov/rrr/pa/padocs.shtm> (*PA Guide*).

<sup>76</sup> See 44 C.F.R. §§ 206.228, 250-253 (2003); see also *PA Guide*, *supra* note 74, at 9-15.

<sup>77</sup> See 44 C.F.R. §§ 206.228, 250-253 (2003); see also *PA Guide*, *supra* note 74, at 16-22.

<sup>78</sup> See 44 C.F.R. §§ 206.228, 250-253 (2003); see also *PA Guide*, *supra* note 74, at 23-25.

<sup>79</sup> This was an issue that was raised by many of the state and local law enforcement and other agencies, not just in Texas and Louisiana, whose employees were taken away

Administration of this program is the joint effort of FEMA and the state and local officials in an emergency area. FEMA manages the program, approves grants, and provides technical assistance to the state and applicants. The state is responsible for educating potential applicants on the grants process, working with FEMA to manage the program, and implementing and monitoring the grants awarded. Local officials identify the damage, provide all necessary information to FEMA to approve the grants, and manage the projects funded by the grants.<sup>81</sup> As a result of the response to *Columbia*, FEMA has projected reimbursable payments within Texas and Louisiana totaling \$10.5 million. FEMA worked very closely with NASA to try and meet the needs of anyone and everyone who provided support or who suffered damage as a result of recovery efforts. However, the parameters of the Public Assistance program were such that many groups were not eligible for FEMA support, so they turned to NASA.

#### *B. NASA Reimbursement Claims*

There were many state and local agencies across the country along with nonprofit organizations, local businesses, and concerned individuals who provided their time, services, facilities, and equipment to aid NASA in the search and recovery of debris. These groups were not harmed or damaged in the usual sense by the accident, but expended much of their resources allocated for the year in order to help NASA complete its recovery mission. They, therefore, needed to be reimbursed for their unanticipated use of resources to be able to operate during the remainder of the year. NASA did not have a preexisting process in place to provide funds to entities that provided support in a recovery situation, like FEMA did in its Public Assistance program. Accordingly, a process was developed to triage claims for

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from their regular duties to work long hours in support of the search effort. After internal analysis of NASA's authority, it was determined that these expenses could be reimbursed by NASA, as mentioned in Section VII.B., *infra*, with appropriate documentation.

<sup>80</sup> See 44 C.F.R. §§ 206.228, 250-253; see also *PA Guide*, *supra* note 74, at 33-36.

<sup>81</sup> See *PA Guide*, *supra* note 74, at 3.

reimbursement as they came in, document that the activity undertaken was authorized and necessary to carry out the recovery mission of NASA, and pay claimants for the services rendered to assist NASA. In addition, there was also the mission assignment agreement between NASA and FEMA to cover those costs incurred for activities in the western search areas that FEMA did not have the authority to pay. Using its Space Act authority<sup>82</sup> and its agreement with FEMA, NASA was able to review 70 requests for reimbursement from various entities and provide compensation totaling approximately \$1,239,830.<sup>83</sup>

### C. NASA Property Damage Claims

The Orbiter broke apart over populated areas of the United States, so it was to be expected that there would be damage caused to people's property by falling debris. Despite the huge footprint of the debris field, fortunately no one on the ground was injured or killed as a direct result of falling debris. However, NASA received numerous reports of debris injuring cattle, horses, and deer. As the recovery efforts progressed, reports were received of damage to private roads, fences, and other property as a result of search teams coming through the area.

A few of the early claims received came under the Federal Tort Claims Act.<sup>84</sup> However, this authority focuses on the causation of the damage, which was a murky question at that time. In many instances, it was clear that the damage asserted in a claim was as a result of Shuttle debris and the Shuttle debris is clearly Government property. Eventually, it was determined that a better authority to use to handle these types of claims was NASA's Space Act authority.<sup>85</sup> Claims could be validated if it was shown that actual debris was located at the site where the damage was reported.<sup>86</sup> As of the writing of this article, and

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<sup>82</sup> See 42 U.S.C. § 2473(c)(5)-(6) (2003).

<sup>83</sup> This claim number is based on a NASA internal spreadsheet created to track the closure of claims as they arrived (unpublished spreadsheet, on file with authors) [hereinafter NASA Spreadsheet].

<sup>84</sup> 28 U.S.C. § 2672 (2003).

<sup>85</sup> See 42 U.S.C. § 2473(c)(11) (2003).

<sup>86</sup> In order to accomplish this, NASA contracted with a private insurance assessment firm to inspect damage allegedly caused from debris or recovery activities and to

using the authority under the Space Act, NASA has reviewed 153 property damage claims and has provided compensation totaling \$89,407.<sup>87</sup>

#### D. SPACEHAB

NASA occasionally offers Space Shuttle flight opportunities in support of research in the fields of materials science/processing, biological research, and fluid dynamics. To provide flight opportunities for research missions, NASA obtained pressurized habitable modules with integration services from the private sector to augment the present Orbiter mid-deck capabilities. SPACEHAB entered into a contract with NASA to provide a Research Double Module (RDM) payload carrier with end-to-end payload and mission management as well as integration and operations services for STS-107. Under the contract, SPACEHAB was allowed to market and contract with international partners as well as the non-NASA sector for its portion of the module resources. In addition, NASA agreed to utilize, either directly for a full complement of NASA-provided payloads, or in combination with the contractor in a payload sharing arrangement, the full volumetric and/or mass capabilities of the SPACEHAB module, to the extent allowable by center of gravity and ascent performance considerations.

As of the writing of this article, SPACEHAB has made a claim under its NASA contract for \$87,712,927 for the loss of their module in the Space Shuttle *Columbia* accident.<sup>88</sup>

#### E. Official Flight Kit and Personal Preference Kit

The Official Flight Kit (OFK) on a particular Shuttle flight enables mementos to be flown. There are regulations in place that outline the limitations and necessary approvals of using

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provide its recommendations to NASA in order that a determination of payment could be made.

<sup>87</sup> NASA Spreadsheet, *supra* note 83.

<sup>88</sup> Letter from SPACEHAB to NASA JSC, RE: Contract No. NAS9-97199; Request for Payment (Dec. 17, 2003) (letter on file with authors) (this letter accompanied SPACEHAB's formal claim documentation to NASA for the loss of SPACEHAB's Research Double Module under Contract No. NAS9-97199)

this authority.<sup>89</sup> A container approximately two cubic feet in size is reserved for carrying official mementos. Mementos are flown as a courtesy and not as an entitlement and no personal items are to be carried in this container. Additionally, there are regulations in place that govern the Personal Preference Kit (PPK) which permits astronauts to carry personal items for use as mementos on Shuttle flights.<sup>90</sup> The contents of each PPK are limited to twenty separate items with a total weight of 1.5 pounds. The NASA regulations also cover the preflight packing and storing of OFK and PPK items as well as their post-flight disposition.<sup>91</sup> Most importantly, the regulations establish who bears the responsibility for those items if they are lost or stolen. The Agency is not responsible for the loss or theft, or damage to items carried in the OFK or PPKs. For example, if an astronaut chooses to fly jewelry for a friend as part of his or her PPK, he or she could potentially be taking on personal responsibility for anything that might happen to that item during flight. Following *Columbia*, the Agency was contacted by an insurance company that wished to verify that specific jewelry was on-board STS-107. NASA could confirm that information, but if a claim for reimbursement were to be made, the Agency would not be in a position to do anything additional with respect to OFK and PPK items.

#### VIII. FINAL THOUGHTS: LESSONS LEARNED

As a result of the accident recovery and investigation processes, NASA gained valuable insight as to how to respond to a major space flight accident. Even though NASA understood fairly early on the cause of the *Challenger* accident, it was not proactive in getting information out to the public. Following *Columbia*, the lengthy investigation into the cause of the accident was conducted in an open, thorough, and timely manner, and records were released as quickly as possible. Another major difference in the Agency's response to the two accidents is the

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<sup>89</sup> See 14 C.F.R. § 1214.603 (2003).

<sup>90</sup> See 14 C.F.R. § 1214.604 (2003).

<sup>91</sup> See 14 C.F.R. §§ 1214.605-606 (2003).

resources the Agency is expending in doing all that can be done to assist the *Columbia* families. Astronauts worked closely with each family and served as a vital connection to ensure needs were met. The CFF group, largely due to the senior level of the participants, is also able to expeditiously address issues as they occur. Additionally, deploying attorneys to the field and including them in *Columbia* teams worked extremely well to help anticipate and address legal matters in a proactive, rather than reactive, fashion.<sup>92</sup>

Areas that can be improved upon include: documentation of authority for the payment of claims; understanding how to obtain complete and accurate witness statements; maintaining a clear chain of command to lead operations in the field; the ability to gather and track large volumes of information; and reviewing our internal guidance on existing regulations such as those on the Official Flight Kit and Personal Preference Kits.<sup>93</sup>

Being an integral part of the *Columbia* teams as they were formed enabled us to provide proactive legal advice to our clients. Active involvement of attorneys who are experts in specific legal areas added invaluable efficiencies to the accident recovery and investigation. Attorneys who are familiar with FOIA, its exemptions, as well as the Agency's ability to make discretionary releases of information enabled the widest and most timely dissemination of information to the public. Attorney experts in the flexibilities of the Space Act assured continued smooth recovery and investigation operations. These flexibilities also enabled the Agency to pay, not only for the damage caused to individual property on the ground, but also for the time of individuals who so willingly assisted in the recovery efforts. Vigorous attorney involvement from the beginning enabled the legal issues to be identified and addressed as they arose. NASA scientists, researchers, engineers, astronauts, and others served an essential role in the debris recovery, testing, and *Shuttle* reconstruction operations and they continue their

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<sup>92</sup> Initial thoughts from the team leaders we each worked with were "why do I need a lawyer on my team" and by the completion of our work, those sentiments were changed to "I wonder why I thought I didn't need a lawyer."

<sup>93</sup> 14 C.F.R. §§ 1214.603-604.

highly visible and important work so it can safely fly again. The work performed by NASA attorneys, while less visible to the public, was no less important. The NASA legal team's knowledge and expertise of the Space Act, FOIA, Privacy Act, Export Administration Regulations, International Traffic in Arms Regulations, FACA, and Stafford Act, allowed for expeditious recognition and resolution of the legal issues which otherwise might have encumbered progress. NASA has an exceptional team of attorneys in place and through this process all have learned that having team members who will immediately recognize and react to legal issues is a vast improvement in the way NASA does business.

On a more personal level, it appears to us that NASA employees are taking the CAIB's findings to heart when following the *Columbia* tragedy, the Mission Operations Directorate at the Johnson Space Center, created a tribute to several NASA missions. Those missions include: *Apollo 1*, *Challenger* (STS-51L), *Columbia* (STS-107) and *Apollo XIII*. On the tribute, below the images of the mission patches, are some of the words that are foundations of Mission Operations for the Mission Control Center in Houston - "...to always be aware that suddenly and unexpectedly we may find ourselves in a role where our performance has ultimate consequences." On an individual level each of us is accountable to do our jobs to the very best of our ability; to stand up and be heard. We feel we owe it to our Country, to ourselves, and most importantly, to our colleagues who bravely take risks, so we can all live better lives.