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# A NEW TYPE OF WAR

The Story of the FAA and NORAD Response  
to the September 11, 2001 Attacks

[Prefatory Note to the 2011 *Rutgers Law Review* Publication:

[As the team on the 9/11 Commission Staff responsible for reconstructing the facts of the day itself, Team 8 was scrupulous to heed the direction of Commission Chairman Kean and Vice-Chairman Hamilton that we present the facts as we found them as objectively as possible. In the closing days of our work, it became clear that the most objective way to present those facts – and to capture both the urgency with which decisions were being made that day and the level of command at which critical decision making was occurring – would be to allow, where possible, the various officials and others responsible for responding to the attacks to speak for themselves. Accordingly, the team prepared what we called an “audio monograph” of critical communications from the morning of 9/11, linked by narrative and graphics placing each audio clip in context. We believed that such a rendering would be the best way to enable the public to understand what happened on 9/11 – how the day was lived by those responding to the attacks.

[The raw material that went into our reconstruction of the day was not obtained easily. The Commission had heard testimony early on that no tapes were made, and we were told at one point that a technical malfunction would prevent us from hearing them. If we had not pushed as hard as we did – ultimately persuading the Commission to use its subpoena power to obtain the records – many of the critical conversations from that morning may have been lost to history.

[Before we had a chance to finalize the audio monograph, however, we were informed that there was insufficient time to put the document through the declassification process before

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the Commission's term expired. This was not surprising. The declassification process had been frustrating for virtually the entire Commission staff. We were forced to abandon the audio monograph and turn to writing a monograph that did not include the audio clips, and to drafting our portions of the Final Report.

[Thanks to the tireless effort of Staff Member Miles Kara, the draft monograph has now been released by the National Archives, as have the audio clips embedded in it. Miles – who our team awarded the Gold Headphones award at the completion of our work for his determination to hear everything on record from that morning – completed transcriptions of each clip, and worked with a team from *Rutgers Law Review* to validate those transcripts. Both the original draft and the annotated 2011 document could not have been produced without him. The Law Review staff, assisted by Andrea Manna of the Law School administration, then worked to embed the audio clips into the text, so that the monograph can be experienced interactively.

[Because the original audio monograph was left in draft form, I have thought it appropriate to annotate it in certain instances in the interest of accuracy or completeness. Every annotation is set forth clearly in brackets. I have attempted, however, to leave the audio monograph as much as possible in its original form, as an artifact of the work of Team 8. Although the audio monograph was never formally released, virtually all of its conclusions were adopted by the 9/11 Commission. The passage of time has not diminished the value of our work, or the honor I feel at having worked and become friends with such an extraordinary group of people.]

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C O N T E N T S

\*\*\*\*\**Note: page numbers will be redone when finalized*\*\*\*\*\*

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## DRAFT PREFACE

Team 8 of the National Commission on Terrorist Attacks Upon the United States has determined the operational facts of the Federal Aviation Administration's (FAA) and North American Aerospace Defense Command's (NORAD) response to [the] September 11, 2001 terrorist attacks, as reconstructed from primary sources such as logs, tape recordings, transcripts and radar data, and corroborated in interviews with key personnel involved. Set forth in this monograph is the definitive account concerning when and how the FAA gained situational awareness that each of the four commercial aircraft was hijacked by terrorists on the morning of 9/11, when and how the FAA notified the military about each of the hijacked aircraft, and when and how the military responded.

Unless otherwise noted, all times presented are rounded to the nearest minute. None of the audio excerpts in this document [was] derived from cockpit voice recorders. Where possible, individual names, phone numbers, excessive static noise, and excessive periods of "dead space" have been removed from the audio excerpts. Absolutely no content within the audio excerpts has been altered.

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### 1. THE FAA AND NORAD

On 9/11 the defense of U.S. air space depended on close interaction between two federal agencies: the FAA and the North American Aerospace Defense Command (NORAD). The last hijacking that involved U.S. air traffic controllers, FAA management, and military coordination, had occurred in 1993. In order to understand how the two agencies interacted eight years later, we will review their missions, command-and-control structures, and working relationship on the morning of 9/11.

#### 1.1 FAA Mission and Structure

As of September 11, 2001, the FAA was mandated by law to regulate the safety and security of civil aviation. The purpose of its prescribed air traffic control responsibilities [was], and remains, to minimize the risk of aircraft collisions while maximizing the capacity and efficiency of air transport. To carry out its mission, the FAA utilized 22 Air Route Traffic Control Centers, nearly 26,000 operational air traffic controllers, over 400 air traffic control towers, 195 terminal radar approach control facilities, and over 34,000 system elements for surveillance, communications, navigation and landing aids, and weather sensing.<sup>1</sup>

The primary job of Air Traffic Controllers is to maintain mandatory minimum separation between aircraft. When an airplane takes off, it reports to controllers sitting in airport control tower facilities. At major metropolitan airports the tower controllers pass control quickly to short range (but higher resolution) radar control facilities known as Terminal Radar Approach Controls (TRACONs). Once an aircraft is approximately 30 miles from its point of departure, TRACON controllers “hand off” the aircraft and its transponder tracking signal to the corresponding Traffic Control Center whose airspace the aircraft will enter next.

These Traffic Control Centers are grouped together under seven regional facilities that help manage and oversee operations within their airspace. They also operate in close coordination with the Air Traffic Control System Command Center, commonly referred to as the “Command Center.” The Command Center is located in Herndon, Virginia. Its primary responsibility is to oversee day-to-day operations within the entire airspace system, to keep traffic levels manageable for controllers working at the en-route centers.

In the FAA chain of command, the regional facilities report to FAA headquarters in Washington, DC. It is responsible for the management, operation and overall safety of the National Air System. A Washington Operations Center located at FAA headquarters receives notifications from the en route centers and the regions of incidents affecting the National Air System, including accidents and hijackings.

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FAA Centers often receive information and make operational decisions independent of one another. On 9/11, the four hijacked aircraft were monitored mainly by four of these FAA Air Route Traffic Control Centers, based in Boston, New York, Cleveland, and Indianapolis. Each Center thus had part of the knowledge of what was going on across the system. But it is important to remember that what Boston Center knew was not necessarily known by the Centers in New York, Cleveland, or Indianapolis.



Controllers track airliners like the four aircraft hijacked on 9/11 primarily by watching the data from a signal emitted by the aircraft's transponder equipment. The four aircraft hijacked on 9/11, like all aircraft traveling above 10,000 feet, were required to emit a unique transponder signal while in flight.<sup>2</sup>

On 9/11, the terrorists turned off the transponders on three of the four hijacked aircraft. With the transponder turned off, it may be possible, although more difficult, to track an aircraft by its primary radar returns. A primary radar return occurs when the signal sent from a radar site bounces off an object in the sky and indicates the presence of that object. But primary radar returns do not include the transponder data, which show the aircraft's identity and altitude. Controllers at Centers rely on transponder signals and usually do not display primary radar returns on their scopes. But they can change the configuration of their radar scopes so they can see primary radar returns. In fact, the controllers did just that on 9/11 when the transponders were turned off in three of the four hijacked aircraft. Tower or terminal approach controllers handle a wider variety of lower-flying aircraft; they often use primary radar returns as well as transponder signals.<sup>3</sup>

This overview of the FAA's organizational structure and how the FAA tracks aircraft within the NAS provides [part of] the framework for our findings concerning the operational facts of 9/11. The framework for a clear understanding of the operational facts is incomplete[, however,] without an overview of the command structure, mission and posture of NORAD as it existed on 9/11.

## 1.2 NORAD Mission and Structure

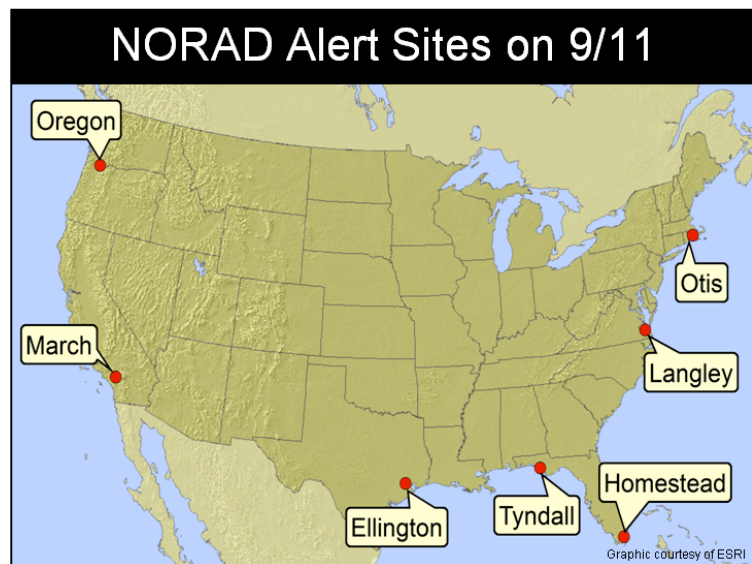
NORAD was, and is, responsible for the air defense of the continental United States. On 9/11, NORAD's air defense mission was to "destroy, nullify, or reduce the effectiveness of

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attacking enemy aircraft or missiles” by providing “Total Force Air Defense and threat warning to North America through readiness, detection and identification, and if necessary, force application.”

To perform its air defense mission, NORAD consists of three regions: Alaskan NORAD Region (ANR), Canadian NORAD Region (CANR), and the Continental U.S. NORAD Region (CONR). CONR is further broken into three sectors: Western Air Defense Sector at McChord AFB, Wash.; Northeast Air Defense Sector at Rome, N.Y.; and Southeast Air Defense Sector at Tyndall AFB, Fla., which is also the headquarters for CONR. In the deployment of U.S. air defense assets, the Sectors report to CONR, and CONR reports to NORAD Headquarters, located in Colorado Springs, CO.

On 9/11, NORAD’s continental U.S. (CONUS) air defense posture included 7 alert bases and 14 alert fighter aircraft. Each base had 2 fighter aircraft on alert. Alert aircraft were under the tactical control of the three regional sectors. NEADS, the sector that responded to all four hijacked aircraft on 9/11, had 2 alert bases and 4 alert fighter aircraft under [its] tactical control – two F-15s from the Otis Air National Guard Base in Cape Cod, Massachusetts and two F-16s from the Langley Air Force Base in Langley, Virginia.<sup>4</sup>



The key decisions in the nation’s immediate air defense response to the 9/11 attacks were made by the military personnel at NEADS. NEADS conducts operations from a Sector Operations Command Center (“SOCC”). In normal day to day operations, the SOCC is led by a Mission Crew Commander (“MCC”). The MCC monitors the SOCC floor, receives reports from numerous watch-standers manning radar consoles, and makes tactical decisions based on those reports. Normally, the MCC also directs the updating of CONR and NORAD Headquarters through a secure computer terminal communication called a “chat log.” During exercises or real-world operations, a Battle Commander assumes the highest authority at NEADS, oversees the MCC and the SOCC, and communicates directly with the Commander at CONR.

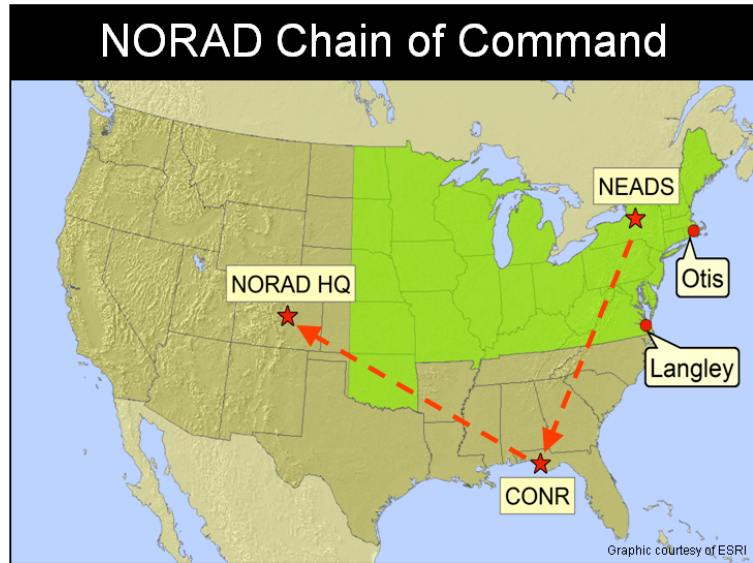
CONR is responsible for coordinating the sector commands and the air defense for CONUS. The CONR Region Commander is the highest ranking military authority at CONR, and reports to NORAD. On 9/11, the operations center at CONR was called the Regional Air Operations Center (RAOC). The highest authority at CONR is the CONR Battle Commander (CONR BC). On 9/11, the RAOC floor, unlike sector operations centers, did not utilize radar



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scopes, or any direct-feed radar data from the FAA or NORAD radar sites. Instead, it used computer terminals to display manually entered tracks, and communicated with the Sectors by both secure and unsecure phone lines and various computer-based chat logs.

NORAD Headquarters (HQ) exercises command authority over NEADS via CONR. NORAD HQ operations are run from the Cheyenne Mountain Operations Center (CMOC) which is located in Cheyenne Mountain, Colorado. NORAD's Command Director runs the CMOC and is responsible for deciding the appropriate level of response from NORAD assets, and for communicating with the National Military Command Center (NMCC) which is located at the Pentagon. CMOC did not possess direct radar picture feeds from either FAA or NORAD radar facilities.



## 2. PROTOCOLS FOR RESPONDING TO HIJACKINGS

Before we proceed to the chronology of events of 9/11, we turn to a description of the protocols of both the FAA and NORAD for response to a hijacking event. As they existed on 9/11, the protocols for the FAA to obtain military assistance from NORAD required multiple levels of notification and approval at the highest levels of government before FAA and NEADS personnel would be authorized to communicate and coordinate an operational response.<sup>5</sup>

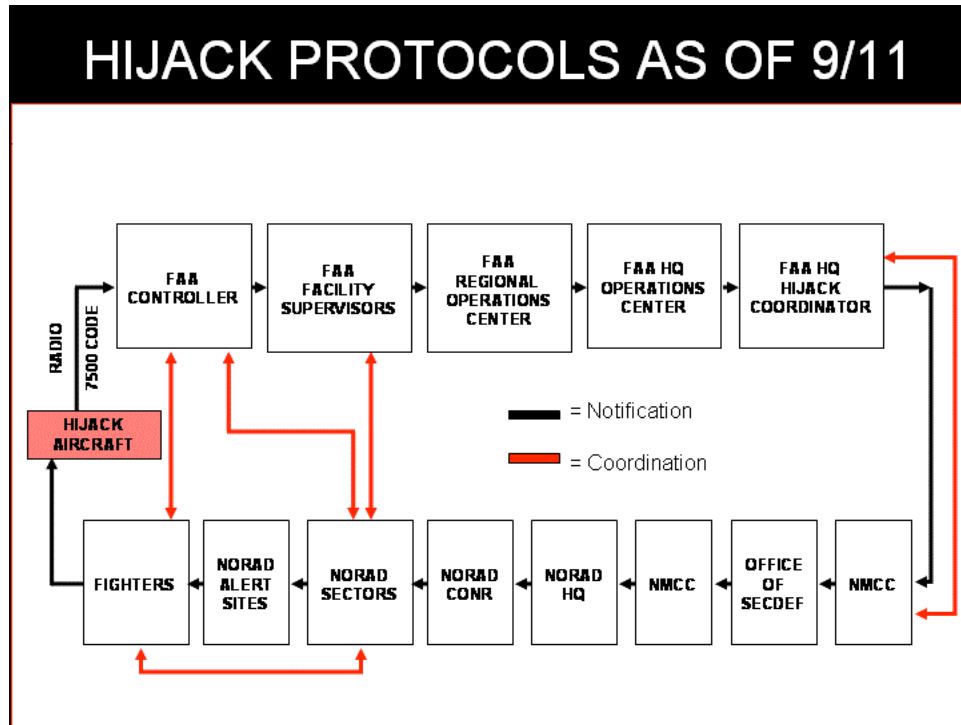
Pre-9/11, FAA guidance to ATCs on hijack procedures was predicated on the assumption that the aircraft pilot would notify the controller of the hijack via radio communication or by “squawking” a Mode 3 transponder code of 7500 – the universal code for a hijack in progress.

FAA protocols in existence on 9/11 required ATCs to notify their supervisor when a hijacking occurred, or was believed to have occurred. Supervisors were then required to notify the managers of their facility and the corresponding ROC. The ROC facility was then required to notify the WOC at FAA Headquarters.

WOC duty officers were then required to notify the FAA's senior leadership, specifically the FAA “hijack coordinator” – identified as “the Director or his designate of the FAA Office of Civil Aviation Security”. When FAA HQ receive[d] a report of a confirmed hijack, the FAA hijack coordinator on duty at HQ was required to make “direct contact” with the National Military Command Center located at the Pentagon and “request the military to provide an escort aircraft” to 1) “[a]ssure positive flight following”; 2) “[r]eport unusual observances”; and

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3) “[a]id search and rescue in the event of an emergency”. The NMCC would then seek and obtain approval from the Office of the Secretary of Defense (OSD) to provide military assistance.<sup>6</sup>



When approval for military assistance [was] granted by the OSD, the NMCC would contact the Commander-in-Chief (“CINC”) NORAD in Colorado to advise NORAD that FAA’s request for a fighter escort ha[d] been approved. NORAD HQ would then advise the NORAD region where the hijacked aircraft [was] located of the need to provide a fighter escort. If the hijacked aircraft [was] located in CONUS, as all 4 hijacked aircraft were on 9/11, NORAD officials would contact CONR in Panama City, Florida. CONR officials would then identify the appropriate NORAD Sector and assets that would be tasked to provide an operational response to the hijack event. If the hijacked aircraft was located in the northeast region of the United States, as all 4 hijacked aircraft were on 9/11, CONR would notify NEADS, in Rome, New York. NORAD HQ officials would then contact NMCC and identify NEADS as the defense sector tasked with the duty to provide a fighter escort for the hijacked aircraft.

The NMCC [would] then “advise the FAA hijack coordinator [of] the identification and location of the squadron tasked to provide escort aircraft.” NMCC would finally “authorize direct coordination between FAA and the designated military unit.” Upon completion of this approval process, the FAA en route center that [was] tracking the hijacked aircraft would be authorized to coordinate the military response with NEADS. In coordinating a timely response, the FAA facility would have to provide NEADS the following information 1) the call sign of the hijacked aircraft; 2) the time in universal time code; 3) the position of the hijacked aircraft in

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latitude and longitude; 4) the aircraft’s heading; 5) the aircraft’s speed; 6) the aircraft’s altitude; and 7) if the fighter escort has been launched, its position with respect to the hijacked aircraft if requested by NEADS. If the hijacking event was within the coverage of NORAD’s radar system, “every attempt” would be made to have the hijacked aircraft squawk 7500 to facilitate NEADS’ ability to track the aircraft.

“Except when specifically directed otherwise by FAA headquarters,” existing protocol provided the fighter escort aircraft must remain covert and be “vectored to a position five miles directly behind the hijacked aircraft.” Indeed, on 9/11, the fighter aircraft, once scrambled and launched, were prepared and trained to: 1) approach and identify the target and 2) provide a covert escort (a “shadow”) for the aircraft until it landed safely at an airport.<sup>7</sup>

Clearly, the protocol in place on 9/11 for the FAA and NORAD to respond to a hijacking was extremely time intensive. When the clock began ticking with the first hijack of American 11 on the morning of 9/11, the time needed to follow the existing protocol would not be a luxury afforded anyone that day.

3. THE OPERATIONAL FACTS OF 9/11

Despite the multitude of newspaper and other media accounts, congressional and Commission testimony, and books and periodicals devoted to the government’s response to the 9/11 attacks, the operational sequence that follows has never been told. Indeed, the facts of the morning of 9/11 directly contradict the official version of events, as presented publicly in testimony proffered before this Commission on May 23, 2003. Our chronology reveals the greatest amount of notice the military received of any of the 4 hijacked planes was the 9 minutes’ notice NEADS received of the first hijacked aircraft, American 11, prior to it crashing into the North Tower of the World Trade Center at 8:46:40. NEADS received notice of the second hijacked plane, United 175, as it exploded into the South Tower of the World Trade Center at 9:03:02. NEADS received no notice that American 77 was hijacked (it received a report that the aircraft was missing, with no mention of its having been hijacked or of its location, three-to-five minutes before American 77 crashed into the Pentagon at 9:37:46). Finally, NEADS received notice that United 93 was hijacked at 10:07, four minutes *after* the flight had crashed in a field in Pennsylvania at 10:03:11.

Flight	Impact	Notification Established by Commission Staff		Notification presented to Commission at May 2003 Hearing	
		Time	Warning	Time	Warning
AA11	8:46:40	8:38	9 minutes	8:40	7 minutes
UA175	9:03:02	9:03	0 minutes	9:05	0 minutes
AA77	9:37:46	None	0 minutes	9:24	14 minutes
UA93	10:03:11	10:07	0 minutes	9:16	47 minutes

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### 4. AMERICAN 11

#### 4.1 FAA Awareness

At 8:00 on September 11, 2001, American Airlines Flight 11 began its takeoff roll at Logan Airport in Boston. A Boeing 767, American 11 was bound for Los Angeles with 81 passengers and 11 crewmembers.<sup>8</sup> By 8:09, American 11 had been passed from air traffic control at Logan Airport to Boston's regional en route center in Nashua, NH, some fifty miles from Boston.<sup>9</sup> The Boston controller at the Boston Sector Radar Position directed the flight to "climb and maintain level two eight zero."<sup>10</sup>

080918 AA11checkin.mp3

The controller followed this, at 8:10, with an instruction to "climb maintain flight level two niner zero," which was affirmed by American 11.<sup>11</sup> At 8:13, the controller instructed the flight to "turn twenty degrees right," which the flight acknowledged: "twenty right American 11."<sup>12</sup>

081335 AA11 20 right.mp3

This was the last transmission to which the flight responded.

Sixteen seconds after receiving the acknowledgment from the pilot of the turn, the controller instructed the flight to "climb maintain level three five zero," an ultimate cruising altitude of 35,000 feet.<sup>13</sup> When there was no response, the controller repeated the command ten seconds later, and then tried repeatedly to raise the flight.

081352 AA11 lost contact.mp3

According to the controller, at that point, he thought "maybe the pilots weren't paying attention, or there's something wrong with the frequency." He used the emergency frequency to try and [reach] the pilot. There was still no response."<sup>14</sup> Indeed, numerous controllers interviewed at various FAA facilities stated it was a common occurrence prior to 9/11 to lose radio contact with pilots of commercial aircraft for a brief period of time. Controllers attributed the frequent losses of radio contact to electrical problems, pilot inattentiveness, failure to change frequencies and other examples unrelated to hijackings.<sup>15</sup>

At this point – from 8:15 until 8:24 on the transcript – the Boston sector controller attempted to contact American 11 nine times, all unsuccessfully.<sup>16</sup> At 8:21, American 11 changed course, heading northwest, and someone turned off the transponder. With a turned off transponder the information available to the controller was severely compromised: controllers could receive data on the plane's location, but could only loosely approximate its speed, had no way of knowing or even guessing its altitude, and could only identify it as a "primary radar target," not as a specific squawking flight.<sup>17</sup> The controller "very quietly turned to the supervisor

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and said, 'Would you please come over here? I think something is seriously wrong with this plane. I don't know what. It's either mechanical, electrical, I think, but I'm not sure.'" At this point, neither the controller nor his supervisor suspected hijacking.<sup>18</sup> The supervisor instructed the controller to follow the standard operating procedures for the handling of a "no radio" (known as "NORDO") aircraft.<sup>19</sup> Accordingly, the controller checked the working condition of his own equipment, then attempted to raise the flight on the 121.5 guard frequency. Boston Center controllers then tried to contact the airline to establish communication with the flight, and became more concerned when the flight began to move through the arrival route for Logan Airport, and then toward another sector's airspace.<sup>20</sup>

082350 AA11 check everything company.mp3

About five minutes after the hijacking began, Flight Attendant Betty Ong contacted the American Airlines Southeastern Reservation Office in North Carolina to report an emergency aboard the flight. Following is a portion of the tape of that call.

Gonzalez-Ong.mp3

The controllers moved "all the airplanes ... from Albany to New York to Syracuse, NY out of the way because that's the track he was going on," and searched from aircraft to aircraft on the company frequency in an effort to have another pilot contact American 11.

At 8:24:38, American 11 began a turn to the south and the following transmission came from American 11:

082444 AA11 keying 2 transmissions.mp3

This Boston Sector controller heard something unintelligible over the radio, and did not hear the specific words "[w]e have some planes" at the time. The next transmission came seconds later:

082457 Nobody move.mp3

The controller has told the media and Commission staff during interviews, when he heard this second transmission, he "felt from those voices the terror" and immediately knew something was very wrong. He knew it was a hijack."<sup>21</sup>

Controllers at Boston Center discussed attempts to contact American 11, the aircraft's altitude and whether someone had taken over the cockpit of the aircraft:

082453 AA11 check sup already Did.mp3

082542 AA11 point out enter new route.mp3

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082655 AA11 take back look west albany.mp3

The controller alerted his supervisor to the threatening communication. The supervisor assigned a senior controller to assist the American 11 controller, and redoubled efforts to ascertain the flight's altitude.<sup>22</sup> Because the initial transmission was not heard clearly, the Manager of Boston Center instructed the Center's Quality Assurance Specialist to "pull the tape" of the radio transmission, listen to it closely, and report on what he heard.<sup>23</sup> Between 8:25 and 8:32, in accordance with the FAA protocol, Boston Center managers started notifying their chain of command that American 11 had been hijacked. At 8:28, Boston Center called the Command Center in Herndon, Virginia to advise management that it believed American 11 had been hijacked and was heading toward New York Center's airspace. By this point in time, American 11 had taken a dramatic turn to the south. Command Center immediately established a teleconference between Boston, New York and Cleveland Centers to allow Boston Center to provide situational awareness to the centers that adjoined Boston in the event the rogue aircraft entered their airspace.<sup>24</sup>

082924 AA11 ZBW notification ZOB ZNY 5115 line.mp3

The Command Center subsequently provided the following update on the situation to an unknown air traffic control facility:

083053 AA11 pascione summation to unknown 5115 Line .mp3

At 8:32, the Command Center passed word of a possible hijacking to the Operations Center at FAA headquarters. The duty officer replied that security personnel at headquarters had just begun discussing the hijack situation on a conference call with the New England Regional office.

Also at 8:32, Michael Woodward of American Airlines took a call from Flight Attendant Madeline "Amy" Sweeney that lasted approximately twelve minutes. Although the call was not taped, Woodward's colleague, Nancy Wyatt, standing at his side, contacted Ray Howland in the American Airlines System Operations Center (SOC) to report the content of the ongoing call between Woodward and Amy Sweeney. Wyatt was able to relay information to the SOC as she heard Woodward's side of the conversation and read the notes he was taking. Following are two excerpts, which span several minutes, from the call to Howland.

Boston flight service segment one.mp3

Boston flight service segment two.mp3

At 8:34, as FAA headquarters received its initial notification that American 11 had been hijacked, the Boston sector controller received a third transmission from American 11.

083359 Nobody move please going back to airport.mp3

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In succeeding minutes, controllers in both Boston Center and New York Center attempted to ascertain the altitude of the southbound American 11.<sup>25</sup>

083556 AA11 ZNY Kingston point out to Kennedy.mp3

Information about what was going on within American 11 started to get conveyed within the ATC system. At 8:40, Boston Center, through the Command Center, provided a report to New York TRACON on American 11. And at 8:43, a Command Center air traffic specialist warned Washington en route center that American 11 was a “possible hijack” and would be headed towards Washington Center’s airspace if it continued on a southbound track.

083940 ZBW TRACON by Sparta.mp3

American 11 crashed into the North Tower of the World Trade Center at 8:46:40. [Word of the crash of an airplane began to work its way quickly through the FAA’s New York Center.]

084739 AA11 Discussion To First Impact Line 5114.mp3

085017 AA11 ZNY Major Fire WTC.mp3

### 4.2 Military Notification and Response

After Boston Center’s managers notified the New England Region of the events concerning American 11, they did not wait for military assistance as notification was passed up the chain of command to FAA headquarters. In an attempt to get fighter aircraft airborne to track American 11, Boston Center’s managers took the initiative and called a manager at the FAA Cape Cod facility at 8:34. They asked the Cape Cod manager to contact Otis Air Force Base in Cape Cod, Massachusetts to get fighters airborne to “tail” the hijacked aircraft.<sup>26</sup>

083355 Bueno call to Cape Tracon.mp3

Boston Center managers also tried to obtain assistance from a former alert site in Atlantic City, unaware that it had been phased out.

At 8:37:52, Boston Center’s persistence finally paid dividends. They called the North American Aerospace Defense Command’s (NORAD) Northeast Air Defense Sector (NEADS) and notified NEADS about the suspected hijacking of American 11.<sup>27</sup>

083724 AA11 ZBW call to Powell and reaction.mp3

083815 AA11 Powell Cooper Deskins.mp3

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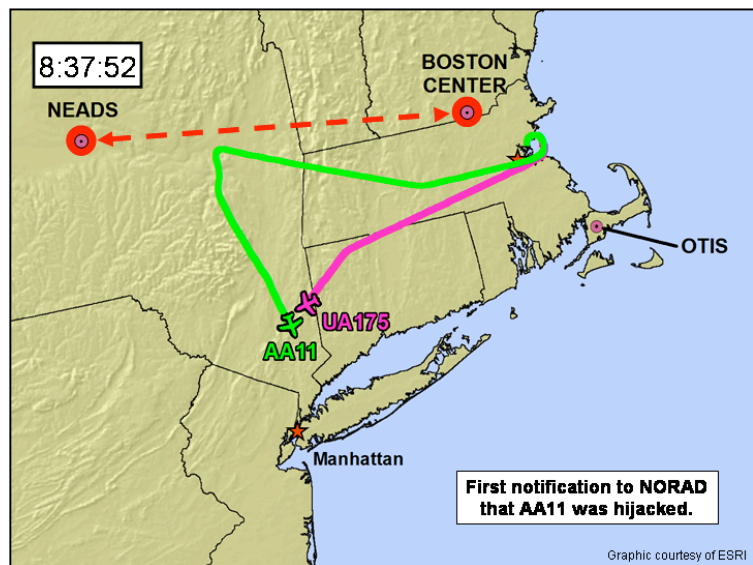
The United States' military defense of its homeland on 9/11 began with this call. Indeed, this was the first notification received by the military – at any level – that American [11] had been hijacked. NEADS promptly ordered to battle stations the two F-15 alert aircraft at Otis Air Force Base, Massachusetts, about 153 miles away from New York City.<sup>28</sup>

083922 NEADS weapons and MCC battle stations.mp3

084000 AA11 Panta 45 battle stations cape tape.mp3

At NEADS, the reported hijack was relayed immediately to Battle Commander Colonel Robert Marr, who was stationed in the Battle Cab in preparation for a scheduled NORAD exercise. Col. Marr asked the same question – confirming that the hijacking was “real-world” – then ordered fighter pilots at Otis Air Force Base in Massachusetts to battle-stations.<sup>29</sup>

He then phoned Maj. General Larry Arnold, commanding General of the First Air Force and CONR. Col. Marr advised him of the situation, and sought authorization to scramble the Otis fighters in response to the reported hijacking. General Arnold instructed Col. Marr “to go ahead and scramble the airplanes and we’d get permission later. And the reason for that is that the procedure ... if you follow the book, is they [law enforcement officials] go to the duty officer of the national military center, who in turn makes an inquiry to NORAD for the availability of fighters, who then gets permission from someone representing the Secretary of Defense. Once that is approved then we scramble an aircraft. We didn’t wait for that.”<sup>30</sup> General Arnold then picked up the phone and talked to the operations deputy up at NORAD and said, “Yeah, we’ll work with the National Military Command Center (NMCC). Go ahead and scramble the aircraft.”<sup>31</sup>



The scramble order was passed from the Battle Commander (BC) to the Mission Crew Commander (MCC), who passed the order to the Weapons Director (WD).<sup>32</sup> Almost immediately, however, a problem arose. The Weapons Director asked: “MCC. I don’t know where I’m scrambling these guys to. I need a direction, a destination.”<sup>33</sup> Because the hijackers had turned off the plane’s transponder, the plane appeared only as a primary track on radar.

084259 NEADS SOCC work to scramble.mp3



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NEADS personnel spent the next minutes searching their radar scopes for the elusive primary radar track, as NEADS' Identification (ID) Technicians contacted the Military Operations Specialist (MOS) Desk (a civilian employee position at FAA Centers) at Boston Center in an effort to locate the aircraft:

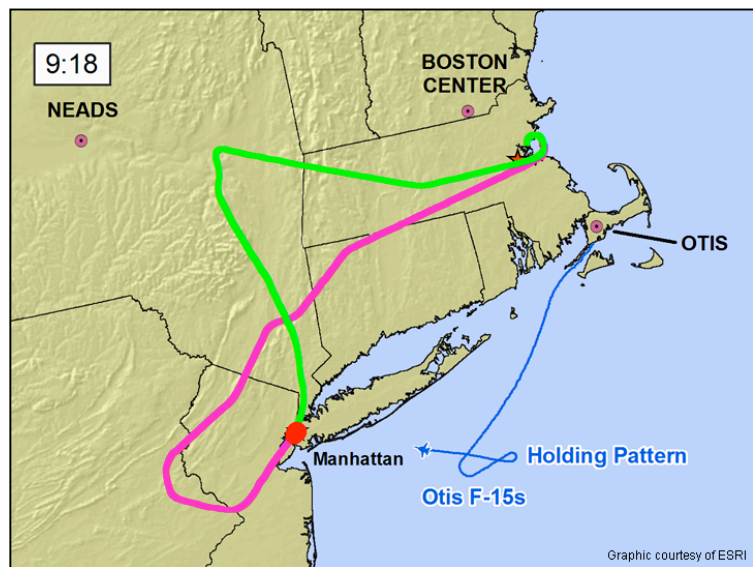
083800 AA11 NEADS ID techs react to Powell.mp3

F-15 fighters were ordered scrambled at 8:46 from Otis Air Force Base and vectored toward military airspace off the coast of Long Island.<sup>34</sup>

084555 NEADS Powell Otis scramble.mp3

As the order to scramble Otis fighters came at 8:46, American 11 was hitting the World Trade Center and United 175 was being hijacked in New York Center's airspace. The military did not hear anything about United 175 until it crashed into the South Tower of the World Trade Center.

Working over the phone with the FAA Center in Boston, at least one NEADS tracker found a primary track roughly eight miles east-northeast of Manhattan, but the track faded before he could confirm it with Boston Center.<sup>35</sup> Unbeknownst to the military, the Otis fighters were scrambled [at] nearly the exact time that American 11 crashed into the North Tower. Radar data show the Otis fighters were airborne at 8:53.<sup>36</sup>



The Mission Crew Commander explained to the Battle Cab the plan:

084629 NEADS MCC summary for BC 25 miles Z point.mp3

Shortly after 8:50, while NEADS personnel struggled to locate American 11, word reached the floor that a plane had hit the World Trade Center.<sup>37</sup>

085207 NEADS learns of WTC continues scramble.mp3

The initial reaction of the Mission Crew Commander was to send the fighters directly to New York in response to the news of the crash. Upon being advised, however, that the quickest

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route would be to bring the fighters out away from the New York area traffic, the decision was made to bring the fighters down to military air space and to “hold as needed.”<sup>38</sup>

085340 Panta hold and work with FAA DRM 1 CH 2.mp3

### 4.3 Commission Findings and Assessment

The interplay at the operational levels of the FAA and NORAD regarding American 11 is notable in several respects. First, and most important, Boston Center and NEADS took immediate actions to facilitate a quicker response than a strict following of the official protocols would have allowed for. Boston Center elected to request assistance directly from the Northeast Air Defense Sector. When the request reached NEADS, the Battle Commander and the CONR Commander, rather than seeking authorization to scramble aircraft through the chain of command and, ultimately, the Secretary of Defense, chose to authorize the action on their own and, as General Arnold (CONR Commander) put it, “seek the authorities later.” It is difficult to fault either decision. Given the emergent nature of the situation, the reports of “trouble in the cockpit,” and the fact that there was no easily identified transponder signal emitted from the aircraft, the necessity to shortcut the hijack protocols seems apparent. It is clear, moreover, that the protocols themselves were ill-suited to the American 11 event; the multi-layered notification and approval process assumed a “classic” hijack scenario in which there is ample time for notice to occur, there is no difficulty in locating the aircraft, the hijackers intend to land the aircraft somewhere, and the military’s role is limited to identification and escort of the aircraft. Indeed, the hijack protocols were not reasserted on 9/11 until the attacks were completed.

However, bypassing the established protocols for air emergencies, though justified in the case of American 11, may have had an unintended ill effect as the day wore on; leadership at the national levels at the FAA and DoD [was] not involved – or [was] involved only after the fact – in the critical decision making and the evolving situational awareness regarding American 11. As the Commission has presented in its June 2004 public hearing and in the official “9/11 Commission Report,” they [national leaders] would remain largely irrelevant to the critical decision making and unaware of the evolving situation “on the ground” until the attacks were completed.

The critical information NEADS received would continue to come from Boston Center, which relayed information as it was overheard on FAA teleconferences. Indeed, at one point that morning the Mission Crew Commander, in the absence of regular communication from anyone else at FAA, encouraged the Military position at Boston Center to continue to provide information: “if you get anything, if you – any of your controllers see anything that looks kind of squirrely, just give us a yell. We’ll get those fighters in that location.”<sup>39</sup> The NEADS ID Technicians would complain repeatedly that morning: “Washington has no clue what the hell is going on ... Washington has no clue.”<sup>40</sup>

0944 Washington has no clue.mp3

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The Boston Military FAA representative, when interviewed, expressed astonishment that he had been the principal source of information for the NEADS personnel on the morning of 9/11; he stated his belief that he must have been one of several FAA sources constantly updating NEADS that morning.<sup>41</sup> No open line was established between NEADS and CONR and either FAA headquarters or the Command Center at Herndon until the attacks were virtually over.

It is clear that, as the order to scramble came at 8:46, just as American 11 was hitting the World Trade Center, the military had insufficient notice of the hijacking to position its assets to respond. This reality would also be repeated throughout the morning. Indeed, the eight minutes' notice that NEADS had of American 11 would prove to be the most notice the sector would receive that morning of any of the hijackings, and the sector's inability to locate the primary radar track until the last few readings would also recur.

### 5. UNITED 175

#### 5.1 FAA Awareness

United Airlines Flight 175, a Boeing 767 carrying 65 passengers en route from Boston's Logan Airport to Los Angeles, took off from Logan Airport at 8:14, and made contact with the Boston Air Route Traffic Control Center at 8:19.<sup>42</sup> Five minutes later, the flight was cleared to a cruising altitude of 31,000 feet.<sup>43</sup>

At 8:37, the Kingston sector controller asked the pilots of United 175, among other flights, to look for American 11.

083818 UA175 affirms AA11 at FL29 tape 20R.mp3

The controller then turned United 175 thirty degrees to the right away from American 11.<sup>44</sup>

083942 UA175 vectored 30 right for traffic tape 20R.mp3

The controller explained to Commission staff that he turned United 175 and directed the flight to maintain an altitude of 31,000 feet because of the unpredictable behavior of American 11.<sup>45</sup>

United 175 was then passed to the New York Air Traffic Control Center at Ronkonkoma, NY, reporting in at 8:40.<sup>46</sup> The controller acknowledged United 175, then, like the Boston Center controller, engaged US Air Flight 583 in a discussion about American 11, asking whether Boston Center had asked the pilot to locate American 11. The pilot of US Air 583 responded affirmatively and gave an estimation of 29,000 feet for the altitude of American 11.<sup>47</sup> The controller noted that "it looks like they shut off their transponder that's why the question about [where it is]." At this point, at approximately 8:42, the pilot of United 175 broke in with the following transmission:

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084131 AA11 UA175 ZNY report of suspicious transmission Boston.mp3

The controller turned United 175 away from the aircraft (American 11) as a safety precaution. At this point, United 175 had entered New York Center's airspace and unfortunately, the controller responsible for United 175 was the same controller assigned the job of tracking the hijacked American 11. At 8:47, nearly simultaneously with the impact of American 11 into the World Trade Center, United 175's assigned transponder code changed from 1470 to 3020, and then again to 3321.<sup>48</sup> These changes were not noticed, however, for several minutes, as the controller was focused on trying to determine the location of American 11, which had disappeared as a primary radar track. Indeed, New York Center was completely focused on the situation with American 11, as indicated in the following report given by New York Center on a teleconference that had been established between their center, Boston Center and the Command Center. (Note that this report was made at approximately 8:48, just minutes after the impact of American 11 into the North Tower, though that was not known by the individual at the time)

084826 This is New York Center.mp3

Delta Airlines Flight 1489 radioed in at 8:50 and advised the same controller there was "a lot of smoke in lower Manhattan" and the World Trade Center looked like it was on fire.<sup>49</sup> The controller acknowledged the message at 8:51, and agreed to pass on any news, then noticed a change in the transponder reading from United 175. The controller asked United 175 to recycle its transponder to the proper code.<sup>50</sup> There was no response.

085146 UA175 ZNY recycle transponder.mp3

At 8:52, the controller made repeated attempts to reach the crew of United 175. Still, there was no response.<sup>51</sup>

At 8:53, after several unsuccessful attempts to reach United 175, the controller contacted another peer to discuss the situation.

085323 UA175 ZNY report to Sup and code 3321.mp3

The controller explained to Commission staff that he became alarmed when he saw a change of altitude along with the change in the transponder frequency; prior to the change in altitude, he assumed that the change in transponder frequency was human or mechanical error.<sup>52</sup> US Air Flight 583 then radioed in and said he was getting "reports over the radio of a commuter plane hitting the World Trade Center".<sup>53</sup> The controller spent the next several minutes handing off the other flights on his scope to other controllers and moving aircraft out of the way of the unidentified aircraft (believed to be United 175) as it moved southwest and then turned northeast toward New York City.<sup>54</sup>

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085408 UA175 ZNY Controller works UA175 and AA11 issue.mp3

At approximately 8:55, the controller-in-charge notified the Operations Manager that she believed United 175 had also been hijacked.<sup>55</sup> During interviews with Commission staff, the Air Traffic Manager (ATM) for New York Center said he made more than one attempt to notify the FAA Eastern Region Offices that United 175 may be a hijacked aircraft but was told by a staffer there that the managers were discussing a hijacked aircraft (presumably American 11) and refused to be disturbed.<sup>56</sup> At 8:58, the New York Center controller searching for United 175 told another New York controller “we might have a hijack over here, two of them.”<sup>57</sup>

085751 UA175 ZNY ID as UA175 complex traffic.mp3

Between 9:01 and 9:02, a manager from New York Center told the FAA Command Center, in Herndon, VA:

090113 Mulligan Bell escalating big time.mp3

The other situation New York Center referred to was United 175. The evidence suggests this conversation was the only notice received prior to the second crash by either FAA HQ or Command Center that there was a second hijack.

While the Command Center was told about this “other aircraft” at 9:01, New York Center contacted New York terminal approach control and asked for help in locating United 175.

090021 Hey Joe ZNY TRACON x1085 TMU.mp3

The controllers observed the plane in a rapid descent; the radar data terminated over lower Manhattan.<sup>58</sup> At 9:03:02, United 175 crashed into World Trade Center’s South Tower.<sup>59</sup>

090247 UA175 visual report into tower TRACON TMUDD.mp3

090423 UA175 ZNY 2d aircraft into WTC.mp3

As United 175 was about to strike the South Tower, in a conversation monitored by FAA Command Center, a manager from Boston Center confirmed what was said by the hijackers on board American 11 during the first radio transmission:

090234 AA11 Jones thought some planes as in plural line 5114.mp3

After the impact into the South Tower, Boston Center updated the FAA’s New England Region:

090322 AA11 Nother one just hit line 5114.mp3

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Boston Center immediately advised the New England Region that it was going to stop all aircraft scheduled to depart from any airport within Boston Center.<sup>60</sup>

0904 Boston stops all airplanes.mp3

At 9:05, Boston Center confirmed for both FAA Command Center and New England Region that the hijackers aboard American 11 said “we have *planes*.”<sup>61</sup>

090608 AA11 Confirmed on tape we have planes line 5114.mp3

At exactly the same time that the “we have planes” was confirmed, both Boston Center and New York Center closed down their airspace.<sup>62</sup> The result of this action was that aircraft were not permitted to depart from, arrive at, or travel through those Centers’ airspace until further notice.<sup>63</sup>

090401 Ground stops Boston and New York.mp3

After the second WTC crash, the Boston Center Operations Manager feared there may be additional attacks. He asked a New England Regional security representative if warnings could be sent to airborne aircraft by the airlines via a text messaging system (ACARS).

090713 ATCSCC ACARS increase security internationals line 5114.mp3

Within minutes of the second impact at the World Trade Center, Boston Center’s Operations Manager instructed all air traffic controllers in his center to use the radio frequencies to inform all aircraft in Boston Center of the events unfolding in New York and to advise the aircraft to heighten cockpit security in light of those events.<sup>64</sup> Her[e] are several examples of the cautionary radio transmissions sent by ZBW to other aircraft:

090933 Cockpit security L2431 and ZBW 31R tape.mp3

091042 Cockpit security ZBW advises 3 more planes 31R tape.mp3

At approximately 9:15, another Boston Center Manager ask[ed] Command Center to relay the message to all FAA centers in the country to use heightened cockpit security:

091532 Boston cockpit security.mp3

Commission staff has found no evidence to suggest that Command Center managers acted on Boston’s request to issue a nationwide alert to aircraft. One Command Center manager interviewed told Commission staff that the FAA mindset on 9/11 was such that they would never have relayed this message directly to all pilots. She said the FAA would pass situational awareness to the airline company representatives who, in turn, would determine if such action was necessary.<sup>65</sup>

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### 5.2 Military Notification and Response

The first indication that the NEADS air defenders had of the second hijacked aircraft, United 175, came in a phone call from New York Center at 9:03.

090230 NEADS notified of UA175.mp3

The ID Technicians were on the phone with Boston Center seeking further information on United 175 when they found out that the plane may have crashed.<sup>66</sup> Before retrieving the flight's vital statistics for NEADS, Boston Center confirmed the second crash at the Trade Center.<sup>67</sup> There had been no prior notification that the plane was hijacked, or, for that matter, missing.<sup>68</sup> The fighters from Otis Air Force Base were south of Long Island at the time.<sup>69</sup>

The Mission Crew Commander's reaction to the second explosion at the World Trade Center was to reject the idea of holding the fighters in military air space away from Manhattan.

090727 Panta over Manhattan some kind of play DRM 1 CH 2.mp3

The FAA cleared the air space. Radar data show that at 9:13, when the Otis fighters were about 115 miles away from the city, the fighters exited their holding pattern and set a course direct for Manhattan. They arrived at 9:25 and established a combat air patrol (CAP) over the city.<sup>70</sup>

Because the Otis fighters had expended a great deal of fuel in flying first to military air space and then to New York, the battle commanders were concerned about refueling. As NEADS personnel looked for refueling tankers in the vicinity of New York, the Mission Crew Commander considered scrambling the Langley fighters to New York to provide back-up for the Otis fighters until the NEADS Battle Cab ordered "[b]attle stations only at Langley."<sup>71</sup>

090830 Langley battle stations not scramble D1 CH 5.mp3

The alert fighters at Langley Air Force Base were ordered to battle stations at 9:09.

090925 Langley BS Norfolk tower.mp3

Col. Marr, the battle commander at NEADS, and General Arnold, the CONR Commander, both recall that the planes were held on battle stations, as opposed to scrambling, because they might be called upon to relieve the Otis fighters over New York City if a refueling tanker was not located, and also because of the general uncertainty of the situation in the sky.<sup>72</sup> According to retired Col. William Scott at the Commission's May 23, 2003 hearing, "At 9:09, Langley F-16s are directed to battle stations, just based on the general situation and the breaking news, and the general developing feeling about what's going on."<sup>73</sup> NORAD had no indication that any other plane had been hijacked.

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### 5.3 Commission Findings and Assessment

The most noteworthy aspect of the time sequence recounted above is a time that is not mentioned: 8:43. In the days immediately following 9/11, both NORAD and FAA identified 8:43 as the time at which NORAD was notified of the hijacking of United 175; this time was picked up by The Washington Post and other prominent media outlets, and widely disseminated in the public record. The tapes and transcripts, corroborated by witness interviews, show, however, that 8:43 could not have been the time of notification. The FAA controller did not notice the change in transponder signal from United 175 until 8:51; there is no way that FAA could have notified NORAD of the hijacking at 8:43 when it did not even realize there was a problem with the flight until eight minutes later.

The Commission has been unable to identify the source of the inaccurate 8:43 hijack notification time for United 175. Both FAA and NORAD, however, eventually dropped that notification time from their official version of events; neither can account for its original inclusion.<sup>74</sup>

The inclusion of an 8:43 notification time in the early press releases from FAA and NORAD muddied the public record by raising questions about whether the Otis fighters were vectored properly; a flight path into military air space is difficult to justify when there is a reported second hijacking and one aircraft has already crashed into the World Trade Center. The actual flight path taken by the fighters is defensible given the fact that the second hijacking was reported as it was concluding; the Mission Crew Commander wanted the fighters eventually over New York City, but in the absence of a second emergent event was willing to hold the fighters over military airspace until the FAA could clear a path.

## 6. AMERICAN 77

### 6.1 FAA Awareness

American Airlines Flight 77 began its takeoff roll from Dulles International Airport at 8:20.<sup>75</sup> The flight proceeded normally through air space controlled by the Washington Air Traffic Control Center, and was handed off to Indianapolis Center at approximately 8:40, with which it made routine radio contact.<sup>76</sup>

American 77 was acknowledged by the controller, who had fourteen other planes in his sector at the time, and later instructed American 77 to climb to thirty-five thousand feet and to turn right ten degrees.<sup>77</sup> At 8:51, American 77 acknowledged the clearance it was given to navigate direct to the Falmouth navigational aid.<sup>78</sup> This was the last transmission from American 77.

At 8:54, the flight began a left turn towards the south without authorization. Shortly after it began the turn, the aircraft was observed descending.<sup>79</sup> At 8:56, as the plane continued to



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deviate slightly to the south from its flight plan, it was lost from radar completely; the transponder signal was gone, and the plane also disappeared as a primary radar target.<sup>80</sup>

The controller tracking American 77 told the Commission he first noticed the aircraft turning to the southwest, and then saw the data disappear. The controller looked for primary radar returns. He searched along its projected flight path and the airspace to the southwest where it had started to turn. No primary targets appeared. He tried the radios, first calling the aircraft directly, then the airline. Again there was nothing. At this point, the Indianapolis controller had no knowledge of the situation in New York. He did not know that other aircraft had been hijacked. He believed American 77 had experienced serious electrical and/or mechanical failure, and was gone.

085634 AA77 ZID attempts to contact.mp3

085850 AA77 1st contact AA dispatch.mp3

In addition, the controller reached out to controllers in other sectors at Indianapolis Center to advise them of the situation.<sup>81</sup> The controllers agreed to “sterilize the air space” along the flight’s projected westerly route so that other planes would not be affected by American 77.<sup>82</sup> At 8:59, Indianapolis Center began to work with controllers in other centers to protect the airspace of American 77’s projected flight path to the west.<sup>83</sup>

After several minutes of searching, Indianapolis controllers once again contacted the airline:

090248 AA77 ZID 2d contact AA dispatch.mp3

091154 AA77 ZID 3d contact AA dispatch 2d WTC impact.mp3

At 9:08, the Indianapolis Center’s Operations Manager requested the Traffic Management Unit to notify Air Force Search and Rescue in Langley, Virginia, of a possible crash of American 77.<sup>84</sup> The Operations Manager also contacted the West Virginia State Police to advise them of the missing aircraft and ask whether they had any reports of a downed aircraft.<sup>85</sup> At 9:09, Indianapolis Center reported to the Great Lakes Regional Operations Center a possible aircraft accident involving American 77 because of the simultaneous loss of radio communications and all radar contact.<sup>86</sup> The Great Lakes Regional Operations Center passed this information along to FAA Headquarters at 9:24.<sup>87</sup>

By 9:20, Indianapolis Center learned that there were other hijacked aircraft in the system, and began to doubt their initial assumption that American 77 had crashed. A discussion of this concern between the manager at Indianapolis and the Command Center in Herndon prompted the [delete: notified] Command Center to notify some FAA field facilities that American 77 was lost. By 9:21, the Command Center, some FAA field facilities, and American Airlines had started to search for American 77. They feared it had been hijacked. At 9:25, the Command

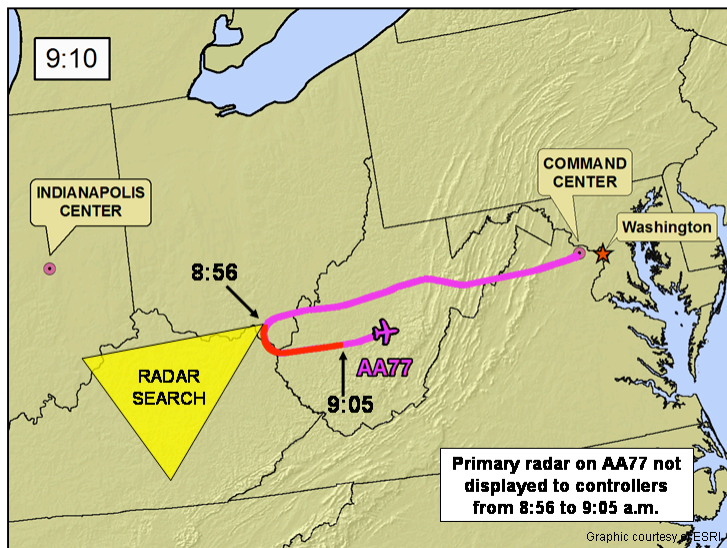
## DRAFT

Center advised FAA headquarters that American 77 was lost in Indianapolis Center's airspace, [and] that Indianapolis Center had no primary radar track and was looking for the aircraft.

The failure to find a primary radar return for American 77 led us to investigate this issue further. Radar reconstructions performed after 9/11 reveal that FAA radar equipment tracked the flight from the moment its transponder was turned off at 8:56. But for 8 minutes and 13 seconds, between 8:56 and 9:05, this primary radar information on American 77 was not displayed to controllers at Indianapolis Center. The reasons are technical, arising from the way the software processed radar information, as well as from poor primary radar coverage where American 77 was flying.

According to the radar reconstruction, American 77 re-emerged as a primary target on Indianapolis Center radar scopes at 9:05, east of its last known position. The target remained in Indianapolis Center's airspace for another six minutes, then crossed into the western portion of Washington Center's airspace at 9:10. As Indianapolis Center continued searching for the aircraft, two managers and the controller responsible for American 77 looked to the west and southwest along the flight's projected path, not east—where the aircraft was now heading. The managers did not instruct other controllers at Indianapolis Center to turn on their primary radar coverage to join in the search for American 77.<sup>88</sup>

In sum, Indianapolis Center never saw American 77 turn around. By the time it reappeared in primary radar coverage, controllers had either stopped looking for the aircraft because they thought it had crashed or were looking toward the west. In addition, while the Command Center learned American 77 was missing, neither it nor FAA headquarters issued an "all points bulletin" to surrounding centers to search for primary radar targets. American 77 traveled undetected for 36 minutes on a course heading due east for Washington, DC.<sup>89</sup>



### 6.2 Confusion Concerning the Fate of American 77

While Indianapolis Center was busy looking for American 77 to the west, some American Airlines' representatives believed that American 77 might have hit the World Trade Center. In an ensuing conversation with the FAA Command Center about the status of American 11, an American Airlines representative mentioned that American 77 was lost.<sup>90</sup>

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091626 AA11 AA77 ATCSCC King with Halleck AAL pos 34B line 5149.mp3

Even later, after 9:30, confusion surrounding American 77 still existed within at least some levels of the FAA:

093151 FAA TACNET wrong recap line 5114.mp3

American Airlines' notification to the FAA Command Center that American 77 was lost prompted Command Center representatives to call Indianapolis Center and seek further information on the aircraft:

091836 AA77 Summersall to ZID from ATCSCC ZID TMU.mp3

That conversation led Command Center to notify some FAA field facilities that American 77 was lost and could not be located on radar. By no later than 9:21, FAA's Command Center in Herndon, some FAA field facilities and American Airlines had started to search for American 77 and feared it had been hijacked. Four minutes later, at 9:25, Command Center reported to FAA Headquarters all the information Command Center had learned regarding American 77.<sup>91</sup>

As previously stated, American 77 disappeared from radar at 8:56. By no later than 9:18, FAA centers in Indianapolis, Cleveland, and Washington were aware that American 77 was missing and two aircraft had struck the World Trade Center.<sup>92</sup> By 9:15, Air Force Search and Rescue was notified of the missing plane. At 9:24, Great Lakes Regional Operations Center notified the Washington Operations Center of the simultaneous loss of radio and radar contact with American 77.<sup>93</sup> FAA Headquarters was aware American 77 was lost somewhere in the NAS.

By no later than 9:25, FAA's Herndon Command Center and FAA headquarters knew that two aircraft had crashed into the World Trade Center. They knew American 77 was lost. At least some FAA officials in Boston Center and the New England Region knew that a hijacker on board American 11 said "we have some planes." Concerns over the safety of other aircraft began to mount. A manager from Command Center specifically asked FAA Headquarters if they wanted to order a "nationwide ground stop."<sup>94</sup> While executives at FAA headquarters discussed the issuance of a national ground stop, at 9:25, Command Center exercised initiative and ordered all aircraft in the United States not to depart from any airports until further notice.<sup>95</sup> Command Center's National Operations Manager, Ben Sliney, told the Commission that he gave this order based on his belief the attacks would continue, concern that the FAA could not locate American 77 and reports that other commercial aircraft may have been hijacked. Sliney said he believed he possessed the authority to issue this order and ordered the ground stop in an attempt to mitigate any potential further damage.<sup>96</sup>

While Command Center prevented any aircraft from entering the NAS, they also continued their efforts to locate American 77. At 9:21, FAA Command Center advised a supervisor at Dulles Tracon that the FAA had lost contact with American 77 and was trying to

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find the aircraft. At 9:21, controllers at Dulles Tracon were advised by the FAA Command Center that a commercial aircraft was missing and instructed to look for primary targets.<sup>97</sup> At 9:32 they found one. Several of the Dulles controllers “observed a primary target tracking eastbound at a high rate of speed” and notified Reagan National Airport. FAA personnel at both Reagan National and Dulles Airports notified the Secret Service. The identity or aircraft type was unknown at the time. This track was later confirmed to be American 77.<sup>98</sup>

Just minutes before impact of American 77, Reagan Airport controllers vectored an unarmed National Guard C-130H cargo aircraft, which had just taken off en route to Minnesota, to identify and follow the suspicious aircraft that Dulles Tracon had pointed out to them. The cargo aircraft attempted to follow the path of the unidentified aircraft, and at 9:38, seconds after impact, reported to the control tower that the aircraft crashed into the Pentagon.

093607 Gofer 06 traffic in site 757 low altitude Tyson tape.mp3

093641 Gofer 06 vectored for traffic Tyson tape.mp3

093800 Gofer 06 aircraft is down tower Tyson tape.mp3

093826 Gofer 06 ac crashed into west side Pentagon Tyson tape.mp3

### 6.3 Military Notification and Response

By no later than 9:21, FAA’s Command Center in Herndon, some FAA field facilities and American Airlines had started to search for American 77 and feared it had been hijacked. Four minutes later, at 9:25, Command Center reported to FAA Headquarters all the information Command Center had learned regarding American 77.<sup>99</sup> The military was completely unaware the search for American 77 had begun. In fact, the military would hear once again about American 11, a plane that had already crashed, before they received any notification that American 77 was lost.

At 9:21, the military officer at Boston Center, who had been listening in on a FAA teleconference run by FAA HQ in Washington, called the NEADS ID Technician Unit:

092100 AA11 Scoggins still airborne.mp3

The mention of a “third aircraft” was not a reference to American 77. The report that American 11 was still airborne and heading toward Washington DC was relayed immediately from the Mission Crew Commander to the Battle Cab. After consulting with the Battle Commander, the MCC issued the order, at 9:23, to scramble the Langley fighters in response to American 11.

092140 AA11 Still Airborne Scramble Langley Tail Chase DRM1 CH2.mp3

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The scramble order was processed and transmitted to Langley Air Force Base at 9:24. Shortly thereafter, NEADS commanders cancelled the “tail chase” using the Otis fighters since pursuing the plane from behind would leave New York airspace unprotected. Instead, the heading of the Langley fighters would be adjusted to send them to the Baltimore area. When interviewed by Commission staff, the Mission Crew Commander explained that the purpose of this change in strategy was to continue to protect New York air space, and to vector the fighters from Langley to come between the southbound aircraft and the nation’s capital.<sup>100</sup> Radar data show the Langley fighters airborne at 9:30.

092427 NEADS BC update forget tail chase DRM CH2.mp3

Based on the mistaken report that American 11 was heading towards Washington DC, NEADS personnel were actively seeking more information to assist in their search for the aircraft:

092847 AA11 ID summary call to unknown.mp3

The military’s situational awareness was summarized on the NEADS floor at 9:27, immediately after the Langley scramble, as follows: “Three planes unaccounted for. American Airlines 11 may still be airborne but the flight that – United 175 to the World Trade Center. We’re not sure who the other one is.”<sup>101</sup>

On the floor at NEADS, the ID Technicians continued to attempt to locate American 11 after the Langley fighters were airborne. At the suggestion of the Boston Center Military Officer, the ID Technicians contacted Washington Center to ask whether they had located American 11. In that conversation, NEADS was told that Washington Center knew nothing about American 11 heading south. The NEADS ID Technicians then spoke with the Operations Manager at Washington Center:

093212 AA11 AA77 ID summary ZDC loss of AA77.mp3

This discussion was the first notice to the military that American 77 was missing, and it had come by chance.<sup>102</sup> The time was 9:34. If NEADS had not placed that call to Washington Center, the NEADS air defenders would have received no information whatsoever that American 77 was even missing, although the FAA had been searching for it. No one at FAA headquarters ever asked for military assistance with American 77.

At 9:36, the FAA’s Boston Center called NEADS and relayed the discovery about an aircraft closing in on Washington, an aircraft that still had not been linked with the missing American 77.

093536 AA77 Scoggins VFR 6 miles.mp3

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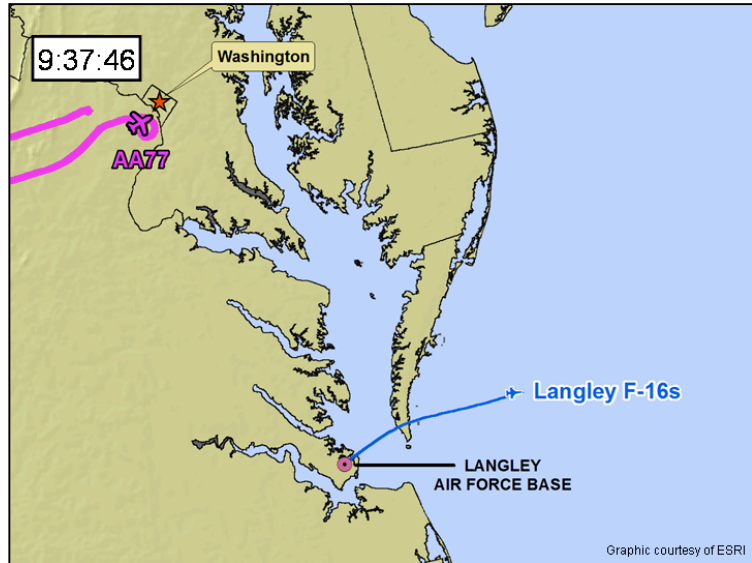
When pressed on whether the flight was in fact a deviating aircraft, Boston Center insisted that NEADS call Washington Center, which is where the aircraft was located and could actually be seen on radar. At 9:39, just moments after the impact at the Pentagon, Washington Center disclaimed any knowledge of the plane near the White House.

093836 AA77 ID call to ZDC Boston space dont know anything.mp3

It is fair to infer, from Washington Center's complete lack of knowledge concerning the aircraft approaching the White House, that Boston Center received the information about the aircraft from FAA headquarters.

The startling information that a deviating aircraft was in close proximity to the White House prompted the Mission Crew Commander to order "AFIO" (Authorization for Interceptor Operations), which entailed taking immediate control of the Langley fighters from the FAA and responsibility for the safe flight path of the Langley fighters.

093621 Langley Direct DC AFIO monster mash DRM1 CH2.mp3



The Langley fighters were ordered to proceed directly to Washington, DC. The MCC then discovered, to his surprise, that the Langley fighters were not headed north toward the Baltimore area as previously instructed, but east over the ocean.

0939 MCC windows break push back.mp3

A combination of three factors explains why the Langley fighters initially traveled so far to the east, when their initial scramble order directed them on a heading to the north.

First, the Langley scramble order did not convey complete instructions. It instructed the fighters to "Scramble immediately time 1324... Scramble on a heading of 010 flight level 290."

132230 Langley scramble Norfolk tower.mp3

Though the order did include a direction to fly – "010" and a flight altitude – 29,000 feet – it did not include a distance to the target, nor the target's location, two key components that are normally included in a scramble order. Indeed, NEADS did not know the location of the mistakenly reported southbound American 11 – at the time, there was no discernable target.

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Second, a “generic” flight plan assigned to the Langley fighters incorrectly led them to believe that they were being ordered to fly due east (090) for 60 miles. In order to launch aircraft, the Langley AFB Tower was required to file an automated flight plan specifically designating the direction and distance of intended flight. Prior to 9/11, the standard – or generic – flight plan for aircraft departing Langley AFB to the east was “090 for 60” – meaning head 90 degrees (due east) for 60 miles. The generic “090 for 60” flight plan was utilized to expeditiously get aircraft airborne and out of the base’s airspace. Langley Tower personnel assumed that once fighters got airborne they would be vectored to the target of interest by either NEADS or the FAA.

Third, both the lead Langley pilot and the FAA’s Norfolk TRACON facility – which was briefly controlling the aircraft once it departed the Langley AFB airspace – assumed the flight plan instruction to go “090 for 60” was newer guidance that superceded the original scramble order instructions. In fact, shortly after the fighters got airborne, the lead Langley pilot was asked by Norfolk TRACON in what direction he wanted to head. After brief discussion between the lead pilot (identified as “Quit 25”) and Norfolk TRACON, it was mutually decided that the fighters would follow the flight plan guidance.

093100 Langley what heading would like hand off Giant Killer.mp3

Put simply, the Langley pilots received flight direction guidance from both the scramble order and the Langley AFB departure flight plan, and continued on the latter heading for several minutes until a direction and geographic destination was provided.

Back at NEADS, controllers on the floor located an unknown primary radar track, but “it kind of faded” over Washington.<sup>103</sup> The time was 9:38. The Pentagon had been struck by American 77 at 9:37:46. The Langley fighters were approximately 150 miles away.<sup>104</sup>

### 6.4 Commission Findings and Assessment

The sequence outlined above is again noteworthy for its omission of notification times that have been widely circulated. In the official NORAD version of the events of 9/11, as presented to the Commission in May 2003, at 9:16, NORAD was notified that United 93 was a possible hijack and that notification was followed, at 9:24, by the notification that American 77 was a hijacked aircraft. According to retired Col. William Scott at the Commission’s May 23, 2003 hearing, the FAA notified NORAD of the hijacking of United 93 at 9:16 (forty-five minutes prior to crash), and of the hijacking of American 77 at 9:24 (14 minutes prior to crash). Retired Col. Scott also indicated that the fighters at Langley Air Force Base were scrambled at 9:25 to meet the threat to Washington posed by American 77.<sup>105</sup>

Retired General Larry Arnold amplified this information in testimony before the Commission, stating: “9:24 was the first time that we had been advised of American 77 as a possible hijacked airplane. Our focus – you have got to remember that there’s a lot of other things going on simultaneously here – was on United 93, which was being pointed out to us very

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aggressively I might say by the FAA. ... We were advised [American 77] was possibly hijacked. And we had launched almost simultaneously with that, we launched the aircraft out of Langley to put them over top of Washington, DC, not in response to American Airlines 77, but really to put them in position in case United 93 were to head that way.”<sup>106</sup>

Based on its review of the tapes, transcripts and other records obtained under subpoena, as corroborated by witness interviews at NEADS, Commission staff can state unequivocally that the timeline and testimony presented at the Commission’s May 23, 2003 hearing were not true. The 9:24 notification time for American 77 (as well as the claimed 9:16 notification for United 93) was inaccurately derived from a handwritten log maintained by the staff working for the Mission Crew Commander (the operational commander on watch). Called the “MCC/T Log,” it was the principal log of events kept at NEADS on 9/11. At 9:24, the log records: “American Airlines #N334AA hijacked.”<sup>107</sup> This tail number refers not to American 77 but to American 11, the first hijacked aircraft. The subpoenaed tapes confirm that this time corresponds to the receipt of the tail number information on American 11 and to reports that American 11 was still airborne and headed towards Washington DC.<sup>108</sup>

Nor were the Langley fighters scrambled to meet the threat posed by American 77. The first notification to the military (NEADS) that American 77 is missing (there is no mention of it being hijacked at this point) comes at 9:34, ten minutes after the scramble has already been ordered at Langley Air Force Base.

The Langley fighters were initially scrambled not because of United 93, which had not been hijacked, nor because of American 77, which had not been reported to NEADS, but because of the mistaken report that American 11 had in fact not hit the World Trade Center, but was heading south towards Washington, DC. The fighters were ordered scrambled initially toward New York, and then vectored toward Baltimore, in an effort to intercept that mistakenly reported aircraft. The best evidence for both this false report and the resulting scramble is the subpoenaed NEADS tape, quoted above, which records the Mission Crew Commander’s immediate reaction to the report: “Okay. American Airlines is still airborne, 11, the first guy. He’s headed towards Washington, okay? I think we need to scramble Langley right now, and I’m going to – I’m going to take the fighters from Otis and try to chase this guy down if I can find him.”<sup>109</sup> Seconds after that reaction, the Mission Crew Commander ordered the scramble of the Langley fighters.

This report of American 11 heading south – the cause of the Langley scramble – is reflected not just in taped conversations at NEADS, but in taped conversations at FAA centers, on chat logs compiled at NEADS, CONR, and NORAD, and in records extending to the highest levels of the federal government.<sup>110</sup> The false report was also readily acknowledged in interviews of operational personnel. Nonetheless, it is not recounted in a single public timeline issued by FAA or DOD, nor in a single public statement by government officials. Instead, the scramble at Langley is attributed to the reported hijacking of American 77, United 93, or some combination of the two.



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When interviewed, Col. Marr stated that he had discounted the report that American 11 was still airborne, and insisted that the Langley scramble was in response to “everything else that was going on” that morning, and referred specifically to United 93. When informed that United 93 had not been hijacked by the time of the Langley scramble, and that American 77 was not reported missing to the NEADS air defenders until after the Langley scramble had occurred, Col. Marr was unable to point to any other complicating factors that might have led to the Langley scramble.<sup>111</sup>

Col. Marr’s recollection is belied by the tapes and transcripts from the morning of 9/11, the testimony of his subordinates, and the contemporaneous records from the day. The Mission Crew Commander and the ID Technicians who were on duty that morning had no doubt that the sequence revealed on the tapes, in which the Mission Crew Commander orders Langley scrambled in immediate response to the news that American 11 is still airborne, was in fact what occurred.<sup>112</sup>

The Commission has been unable to identify the source of the mistaken information regarding American 11. The Boston Center Military Desk person who provided the information to NEADS had been listening in on an FAA teleconference out of Washington, DC. A Senior FAA official who was working at Headquarters that morning recalls having passed the information to others, but does not know its source.<sup>113</sup>

What is clear is that the introduction of a third hijacking into the FAA system proved to be extremely confusing, raising doubts as to the identities of the two planes that had crashed into the World Trade Center and leading, ultimately, to the false report that one of the original hijacked aircraft was still airborne, heading for Washington.

Overall, this sequence of events regarding American 77 again belies NORAD’s official timeline and the testimony given at the Commission’s May 23, 2003 hearing. Notification of American 77 as a missing aircraft came at 9:34, after the Langley fighters had already taken off. Remarkably, the notification, when it occurred, came completely fortuitously, not as the result of existing notification protocols between FAA and NORAD. The ID Technician at NEADS called Washington Center at the prompting of the Boston FAA Military desk, in order to find further information about American 11. If NEADS had not placed that call themselves, the NEADS air defenders would have received no notification whatsoever that American 77 was missing prior to its crash. Given the facts that there had already been two suicide hijackings and that the FAA – both at the Command Center and at several regional centers – had been searching for American 77 for over thirty minutes, the failure of FAA proactively to notify NORAD of the missing aircraft seems egregious, even in hindsight.

Even when FAA controllers at Dulles Tower did pick up the primary radar track of an unknown aircraft southwest of Washington, no one at FAA thought ask for military assistance. Once again, the NEADS air defenders received word of the unknown target from Boston Center’s Military position, which happened to overhear the discussion of the sighting on a teleconference originating from Washington

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### 7. ANOTHER MISTAKEN REPORT: DELTA FLIGHT 1989

Right after the Pentagon was hit, NEADS learned of another possible hijacked aircraft. It was an aircraft that in fact had not been hijacked at all. After the second World Trade Center crash, Boston Center managers recognized that both aircraft were transcontinental 767 jetliners that had departed Logan Airport. Remembering the “we have some planes” remark, Boston Center guessed that Delta 1989 might also be hijacked. Boston Center called NEADS at 9:41 and identified Delta 1989; a 767 jet that had left Logan Airport for Las Vegas, as a possible hijack.

093927 D1989 ID Scoggins 3d ac is D1989.mp3

Because Delta 1989 had not turned off its transponder, NEADS never lost track of the aircraft as it moved west, reversed course over Toledo, headed east, and landed in Cleveland.<sup>114</sup> NEADS even ordered fighter aircraft from Ohio and Michigan to intercept Delta 1989.

After receiving the initial report from Boston Center, the NEADS ID Technicians called several FAA facilities to share the information they had learned about Delta 1989:

094232 D1989 ID alert call to ZID.mp3

094452 D1989 ID alert call to ZOB .mp3

The ID Technician advised that all of their fighters had been scrambled on the New York and Washington events, and that NEADS was looking for other fighters to scramble to intercept the Delta flight.<sup>115</sup>

At approximately 9:45, while one NEADS ID technician was confirming 1989 as a hijack to Cleveland Center, another ID Technician received a call from the Boston Center Military position advising that Delta 1989 might not be a hijack after all:

094241 AA11 D1989 ID Scoggins extended discussion ACARS (2).mp3

NEADS informed Boston Center that they were tracking Delta 1989 as it passed over Toledo. The NEADS air defenders continued to track Delta 1989 for the next several minutes, watching its every move until it landed in Cleveland.

The Mission Crew Commander, with his full complement of alert aircraft capping New York City and heading for Washington, decided to look for non-NORAD aircraft from the midwest to intercept the Delta flight. NEADS personnel contacted Toledo and Selfridge Air Force Bases and diverted fighters from training missions to intercept Delta 1989.<sup>116</sup> Just before 10:00, the Mission Crew Commander made the following report:

095934 NEADS MCC what are we going to do DRM1 CH2.mp3

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The Mission Crew Commander was advised, at approximately 10:00, that there was no authority to shoot the plane down; the rules of engagement only authorized NEADS to direct fighter aircraft to intercept, identify, and escort other aircraft.<sup>117</sup>

The issue was moot with respect to Delta 1989, for at 9:58, the ID Technicians announced to the floor that “1989 is no hijack, landing in Cleveland as a precautionary measure.” The ID Technician called Boston Center at 9:59 and informed its military position:

0959 page 37 NEADS to ZBW D1989 not hijack.mp3

At 10:03, the ID Technicians called Indianapolis Center and informed them that the Delta 1989 flight was not a hijack, but that they had four fighters scrambled on it “just to be sure” (fighters other than Otis and Langley). The Mission Crew Commander had scrambled fighters from Otis Air Force Base to respond to the situation in New York, and fighters from Langley to respond first to the reports of American 11 heading south, and then to establish a Combat Air Patrol over Washington, DC. These scrambles exhausted NEADS’ complement of alert fighters. To intercept Delta 1989, the Mission Crew Commander scrambled fighters from Air National Guard units at Toledo, Ohio and Selfridge, Michigan.

1003 ID techs notify ZID about D1989.mp3

At that moment, United 93, an aircraft about which the NEADS air defenders had heard absolutely nothing, crashed in Pennsylvania.<sup>118</sup>

## 8. UNITED 93

### 8.1 FAA Awareness

United Airlines Flight 93 began its takeoff roll from Newark International Airport at 8:42, some forty minutes late, and checked in with air traffic control at 8:43: “United 93 fourteen hundred [feet] for twenty-five hundred.”<sup>119</sup> All communications with Newark Tower, New York Tracon, and New York Air Route Traffic Center were normal; after reporting experiencing some “light chop” at 35,000 feet, the flight was handed off to Cleveland Center at 9:23.<sup>120</sup> Several seconds later, United 93 established radio contact with Cleveland Air Route Traffic Control Center: “Morning Cleveland, United Ninety-three with you at, three-five-oh (35,000 feet), intermittent light chop.”<sup>121</sup> The controller did not respond to this initial transmission as he had sixteen flights under his control, and was issuing new routes to several aircraft based upon the decisions in New York and Boston to ground-stop all aircraft.<sup>122</sup>

United 93 again radioed Cleveland Center at 9:25, checking in at 35,000 feet. The controller replied, “United ninety-three, Cleveland, roger.”<sup>123</sup> The controller then engaged in conversation with several aircraft about the evolving situation in New York City and the

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prospects for flights to be allowed to land in Philadelphia; while the controller was extremely discreet, it was clear what he was talking about. The time was 9:26.

092556 Midex 150 Philiadelphia.mp3

The controller, who was moving planes away from each other as the traffic built in his sector from the ground stop in New York and Boston, warned several planes, including United 93: “United 93 that traffic for you is one o’clock twelve miles eastbound three seven zero.” The aircraft acknowledged: “Negative contact we’re looking United Ninety-three.”<sup>124</sup> Then, at 9:28, the controller and the pilots of several other flights heard “a radio transmission of unintelligible sounds of possible screaming or a struggle from an unknown origin ...”<sup>125</sup> The controller responded: “Somebody call Cleveland?”<sup>126</sup> This was followed, at 9:29, by a second radio transmission, with sounds of screaming and someone yelling “Get out of here, get out of here,” again from an unknown source.<sup>127</sup> The Cleveland Center controllers began to try to identify the possible source of the transmissions, and noticed that United 93 had descended some 700 feet.

0928 UA93 last normal and first trouble.mp3

The controller responsible for United 93 attempted to contact the aircraft. There was no reply. The controller attempted again to raise United 93: “United ninety-three, verify three-five-zero (thirty-five thousand feet).”<sup>128</sup> There was no reply. The controller tried to raise United 93 several more times, with no response. At 9:30, the controller began to poll the other flights on his frequency to determine the source of the noise.

At 9:32, a third radio transmission came over the frequency: “keep remaining sitting. We have a bomb on board.”<sup>129</sup>

0932 UA93 bomb on board.mp3

Between 9:34 and 9:38, the controller observed United 93 climbing to forty thousand seven hundred feet. He moved several aircraft out of the way of the non-responsive United 93, including Delta 1989.

0934 UA93 moves other traffic including D1989.mp3

Pilots radioed in confirmation that they had heard that there was a bomb on board.<sup>130</sup> The controller continued to try to contact United 93, and asked, at 9:36, whether the pilot could confirm that he had been hijacked. There was no response.

As the flight continued to climb and fly erratically, the controller moved decisively to clear the other flights in his sector from United 93’s erratic flight path.

Then, at 9:39, another radio transmission came over the frequency from United 93:

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0939 UA93 bomb on board and controller followup.mp3

When the flight did not respond, pilots on other flights confirmed that they had heard the transmission. The controller continued to move traffic out of the flight path of United 93 until, at 9:41, the center lost United 93's transponder signal:

094106 UA93 lost transponder controller talks to two airplanes.mp3

The controller located the aircraft on primary radar, and matched his reading with visual sightings from other aircraft to follow the flight as it turned east and, ultimately, south.<sup>131</sup>

While controllers at FAA's Cleveland Center tracked the path of United 93 as it headed east, it did not take long for Cleveland Center's managers to notify all levels of upper management of the grave situation developing on board United 93.

At approximately 9:39, Cleveland Center notified the Great Lakes Regional Operations Center in Chicago of the screams and statements relating to having a "bomb on board" that it believed were coming from United 93. Even before the region received notice of United 93, senior managers at both FAA headquarters and Command Center were notified of the report that United 93 had a bomb on board. Cleveland Center's notice to upper management was prompted by Command Center's request for information concerning suspicious aircraft. At approximately 9:18, the Deputy Director of Air Traffic at FAA headquarters established an open line of communication with a manager from the Command Center at Herndon.<sup>132</sup> At approximately 9:25, FAA headquarters instructed Command Center to "get an awareness up to all the traffic management coordinators or the traffic management units to report any unusual circumstances direct to the Command Center of loss of identification, or any radio, uh, any unusual radio transmissions."<sup>133</sup> At approximately 9:31, the National Traffic Management Officer on duty at Command Center executed the request from FAA Headquarters:

0931 CC inventory order.mp3

Approximately one minute after this request for information was sent to the FAA field facilities, Cleveland Center provided Command Center with the following urgent report:

0934 UA93 ZOB reports bomb on board.mp3

In less than two minutes, at 9:34, Command Center relayed the information concerning United 93 to FAA Headquarters:

0934 UA93 CC report to HQ FAA.mp3

At approximately 9:36, Cleveland Center advised Command Center that they were still tracking United 93 and inquired specifically whether someone had requested the military to launch fighter aircraft to intercept United 93. Cleveland Center even told Command Center they

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were prepared to contact a nearby military base to request fighter aircraft assistance. Command Center told Cleveland Center that FAA personnel above them in the chain of command had to make the decision to request military assistance.<sup>134</sup>

093601 ZOB call re want to scramble military here.mp3

Indeed, from 9:34 to 10:08, a Command Center facility manager provided several updates to the Deputy Administrator and other executives at FAA headquarters as United 93 approached the Washington, DC area. Specifically, at 9:41, Command Center notified headquarters that United 93 had reversed course from its intended flight path and was descending:

0941 UA93 CC to HQ FAA over Akron.mp3

At 9:42, Command Center learned through a television news report that a plane had struck the Pentagon.<sup>135</sup> FAA headquarters also knew the Pentagon had been attacked by an aircraft.<sup>136</sup> Shortly after Command Center heard about the crash at the Pentagon, Command Center's National Operations Manager, Ben Sliney, ordered all FAA facilities to instruct all airborne aircraft to land at the nearest airport.<sup>137</sup> At the time the order was given, there were approximately 4,500 commercial and general aviation aircraft in the skies over the United States. All aircraft landed without incident. This was an unprecedented order. The air traffic control system handled it with great skill.

While Command Center employees informed FAA field facilities of the order to land all aircraft, one of the Command Center managers continued to give FAA headquarters several updates on the progress and location of United 93. In fact, at 9:46, 17 minutes before impact, Command Center gave this update on United 93 to FAA headquarters:

0946 UA93 CC to HQ FAA 29 minutes out.mp3

At 9:48, FAA Command Center told headquarters United 93 was on a course for Washington, DC:

0948 UA93 CC to FAA HQ 23 minutes out.mp3

At 9:49, Command Center suggest[ed] that someone at headquarters should decide whether to request military assistance:

0949 Pulling Jeff away.mp3

[The timing of this conversation is consistent with the FAA Administrator Jane Garvey and her staff's having joined the Air Threat Conference Call run by Richard Clarke from the White House Situation Room. There is no evidence that the report passed to FAA Headquarters from the Command Center reached the military in a timely fashion.]

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At 9:53, FAA headquarters informed Command Center that the Deputy Director for Air Traffic Services was talking to Deputy Administrator Monte Belger about scrambling aircraft.<sup>138</sup> Then, at 9:56, Command Center informed headquarters they lost track of United 93 over the Pittsburgh area.<sup>139</sup> Within seconds, Command Center located United 93 and informed headquarters:

0958 UA93 20 miles Johnstown.mp3

At 10:00, Command Center advised headquarters that “United ninety three was spotted by a VFR at eight thousand feet, eleven, eleven miles south of Indianhead, just north of Cumberland, Maryland.”<sup>140</sup> At 10:01, just two minutes before United 93 crashed, Command Center provided FAA headquarters with the following update:

1000 UA93 Rocking wings.mp3

At 10:08, five minutes after United 93 crashed in a field in Pennsylvania, Command Center forwarded this update to headquarters:

100744 UA93 Report of black smoke AA77 Q re police report.mp3

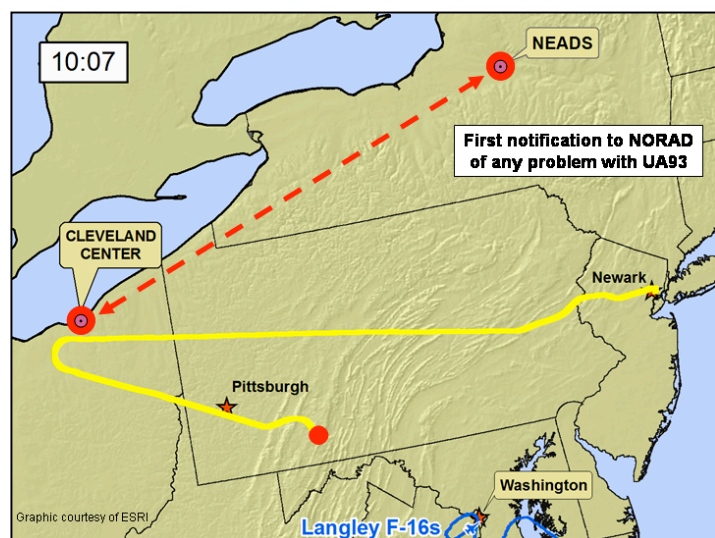
At 10:17, Command Center advised headquarters of its belief that United 93 had “crashed fifteen miles south of Johnstown, Pennsylvania”.<sup>141</sup>

No one from FAA headquarters requested military assistance regarding United 93. In fact, the executive level managers at FAA headquarters did not forward the information they received from Command Center regarding United 93 to the military.

## 8.2 Military Notification and Response

NEADS first received a call about United 93 from the military liaison at Cleveland Center, at 10:07. This call was the first notification the military – at any level – received about United 93. Unaware that the aircraft had already crashed, Cleveland passed to NEADS the aircraft’s last know latitude and longitude. NEADS was never able to locate United 93 on radar because it was already in the ground.

100701 UA93 ZOB to NEADS bomb on board.mp3



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When the information that United 93 had turned off its transponder and had a potential bomb on board reached the mission crew commander, he was dealing with the arrival of the Langley fighters over Washington and what their orders were with respect to potential targets. While NEADS searched for the radar track on United 93, the Mission Crew Commander and his Weapons Director engaged in the following conversation shortly after 10:10 concerning the rules of engagement:

100901 UA93 negative clearance to shoot.mp3

As the news of a bomb on board United 93 spread throughout the floor, the NEADS air defenders searched for the primary radar target and the Mission Crew Commander tried to locate assets to scramble toward the plane. At approximately 10:11, the commander got on the phone with an Air National Guard Unit in Syracuse:

101145 NEADS discussion with Syracuse Cdr.mp3

NEADS Identification Technicians called Washington Center to provide a “heads up” to them about United 93, but Washington Center provided NEADS with startling new information on the flight:

101418 ZDC to NEADS UA93 is down.mp3

The time was 10:15 and the call was NEADS’ first notice that United 93 had crashed.<sup>142</sup> The actual time of the crash was 10:03:11.

By 10:15, the NEADS air defenders knew that two aircraft had crashed into the World Trade Center, a third had crashed into the Pentagon, Delta 1989 had landed safely in Cleveland and was not a hijack, and United 93 had crashed in Pennsylvania.

The minutes after 10:15 were spent on the floor at NEADS attempting to mobilize other fighters from the eastern seaboard, and anticipating the arrival of Air Force One in the Washington area. The Mission Crew Commander was notified at 10:25 that “Air Force One is airborne out of Florida heading to Washington. We’ve got those four F-15s coming out of Langley. They’re done rolling. Two of them will be diverted to escort at the appropriate time.”<sup>143</sup>

Then, at 10:32, the MCC Technician read information that had just come across the Chat Log from CONR in Florida:

103200 chat log shoot-down words.mp3

The NEADS air defenders have expressed considerable confusion over the nature and effect of this order in interviews with Commission staff.<sup>144</sup> Indeed, Colonel Marr indicated to staff that he actually believes he withheld the order from the floor for several minutes because he



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was unsure of its ramifications,<sup>145</sup> while both the Mission Crew Commander and the Weapons Director indicated that they withheld the order from the pilots flying Combat Air Patrol over Washington, DC and New York City because they were unsure how the pilots would or should proceed with such an order.<sup>146</sup> The Weapons Director [struggled with repeated requests from the pilots and controllers for clarification of the rules of engagement, but ultimately responded:]

1051 Currently at peace.mp3

1053 New direction coming down.mp3

1053 Boston track of interest.mp3

1102 Controller asks for kill direction.mp3

1103 Cleared to engage.mp3

The shoot-down [authorization] order was the first official “rules of engagement” (ROE) of the morning to come down through the chain of command at DOD to NEADS. At virtually the same time, the Department of Defense elevated its alert status to DEFCON 3. This alert posture was suited more to a Cold War conflict than to al Qaeda's attack. Nonetheless, the shift to an elevated alert status signified the reassertion of authority by the national command structure. The air defense of the United States - subsequently called operation "Noble Eagle" - had at last begun.

### 8.3 Commission Findings and Assessment

The operational facts of the military response to United 93, as reflected in the tapes and transcripts as corroborated by contemporaneous logs and witness interviews, contrast sharply with the official explanations of that response. The military did not receive notice that United 93 was a hijacking at 9:16, as reported to the Commission, in May 2003, by NORAD; that notice came at 10:07.

At 9:16, the MCC/T Log records: “United tail #N612UA/75 S0B”<sup>147</sup> This tail number corresponds not with United 93 but with United 175, which had crashed into the World Trade Center. A corresponding conversation on the subpoenaed tapes confirms that at 9:16 NEADS was receiving confirmation of the tail number of the United 175 flight.<sup>148</sup>

Furthermore, at 9:16, the plane had not yet even been hijacked. In fact, the sounds of the initial struggle on board United 93 that resulted in its hijacking are not audible on the air traffic radio frequency in Cleveland Center until 9:28. As late as 9:25, moreover, according to FAA controller transcripts, the pilot of United 93 radioed in: “United ninety-three checking three-five-oh (35,000 feet).”

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The “ground truth” revealed by the tapes, as corroborated by Commission staff, also belies the official version of the response to United 93 that is built on the early notification time. “Air War Over America,” for instance, the 1<sup>st</sup> Air Force’s official history of 9/11, offers the following accounts by two of the key NORAD participants:

(Colonel Robert Marr, NEADS Commander): “With all available alert fighters in the air, Marr and his crew were still faced with United Flight 93. The plane was headed west, so controllers began looking for any other fighter jets that might be nearby. ‘We don’t have fighters that way and we think he’s headed toward Detroit or Chicago,’ Marr says. ‘I’m thinking Chicago is the target and know that Selfridge Air National Guard Base (Mich.) has F-16s in the air. We contacted them so they could head 93 off at the pass. The idea is to get in there, close in on him and convince him to turn. ... As United Airlines Flight 93 was going out, we received the clearance to kill if need be. In fact, General Arnold’s words almost verbatim were: ‘We will take lives in the air to save lives on the ground.’”<sup>149</sup>

(General Larry Arnold, CONR Commander): “...we watched the 93 track as it meandered around the Ohio-Pennsylvania area and started to turn south toward DC. By now the Pentagon has been hit and we have aircraft on orbit ... . They are now orbiting over Washington, DC, and have been for a while. As United 93 headed toward DC, the desire is to move the fighters toward that aircraft.”<sup>150</sup>

The record demonstrates, however, that no-one at any level in NORAD (or DOD) ever “watched the 93 track” start to turn south toward DC. The only track that NEADS watched was the Delta 1989 track, which turned toward Cleveland. In fact, NORAD never saw United 93 at all. The Selfridge fighters were contacted not regarding United 93, but Delta 1989. Most important, NORAD certainly never “received the clearance to kill if need be” on United 93; indeed, as determined by Commission staff, as late as 10:10 the ROE orders given by the NEADS Mission Crew Commander were “negative clearance to shoot” regarding targets over Washington, DC<sup>151</sup>

## 9. THE IMPACT OF INACCURATE STATEMENTS

Any attempt to assess the performance of the FAA and NORAD in responding to the hijackings on 9/11 must distinguish between the operational actions of that day and the government’s descriptions of those actions in the days, months, and years that have followed. Ironically, the sequence of FAA notifications and NORAD responses presented to the Commission – in which the military had 47 minutes’ notice on United 93 and 14 minutes’ notice on American 77 – raised questions about the adequacy of the military’s response that were unnecessary given the actual notice to the military on those flights (zero advance notice on either flight).

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We do not believe that understanding the truth about the events of that morning reflects discredit on the operational personnel from NEADS or FAA facilities. The NEADS commanders and floor officers actively reached out in seeking information, and made the best judgments they could based on the information they possessed. Individual FAA controllers, facility managers, and Command Center managers thought *outside the box* in recommending a nationwide alert, in ground-stopping local traffic, and, ultimately, in deciding to land all aircraft and executing that unprecedented order flawlessly.

But we have reached these conclusions about the operational facts of the day in spite of the government's version of those events, not because of it. In assessing the agencies' performance on 9/11, Commission staff has had to contend with four fundamentally inaccurate representations of fact by the government: (1) that notice was received of United 93 at 9:16; (2) that notice was received of American 77 at 9:24; (3) that the Langley fighters were scrambled to meet the threats posed by United 93 and/or American 77; and (4) that the military was following United 93 and in position to shoot the flight down if it approached Washington, DC. Although our focus has been on establishing the operational facts, and not on establishing the source of the inaccurate testimony, our research has revealed that the inaccurate statements have a tortuous history.

*Inaccurate Statement 1: The FAA notified the military at 9:16 that United 93 was hijacked.*

This inaccurate statement can be traced to the week after 9/11. NORAD's first publicly available timeline of the events of 9/11 was released on September 18, 2001, one week after the attacks. Prior to the September 18<sup>th</sup> release, NORAD Public Affairs prepared a draft release, dated September 16<sup>th</sup>. The draft release listed the time 9:16 as the notification time for United 93.

Between the September 16<sup>th</sup> draft and the September 18<sup>th</sup> final release, that time was changed. In the final release, the 9:16 notification time for United 93 is deleted, and is replaced with "N/A." The release explains that the notification time is "N/A" because the FAA informed NORAD of the hijacking of United 93 while on an open line discussing American 77.<sup>152</sup> The NORAD Public Affairs Director stated to Commission staff that he deleted the 9:16 notification time because he "lost confidence" in its accuracy, although he could not remember why he lost confidence in the time.<sup>153</sup>

An email obtained the Commission in response to the Commission's NORAD subpoena sheds some light on why NORAD may have lost confidence in the 9:16 notification time. The e-mail, sent on September 16, 2001 at 11:06 p.m. to NEADS from Brigadier General Doug Moore at CONR, commends the person at NEADS "who dug up the requested information from your logs and tapes," and indicates that it has been passed to "the proper FAA office" which will be "using this data to brief the White House tomorrow" [i.e., September 17]. The e-mail then asks for follow-up information about, among other data points, "United 93, 1408Z [i.e., 10:08], which center calls with information that United 93 ... is heading for Cleveland? ... 1415Z [i.e., 10:15], who reported to NEADS that aircraft had crashed?"<sup>154</sup>

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This e mail – and the response to it by NEADS – is significant because it reveals that someone at NEADS had searched the relevant logs and tapes during the first week after 9/11 and identified the time at which the FAA notified NEADS about United 93. It is a fair inference that, having identified the notification time, NORAD “lost confidence” in 9:16 and omitted it from the September 18 release.

The question, then, is why the discredited 9:16 notification time reappeared in NORAD’s testimony before the Commission. This question becomes more perplexing when one considers the testimony of Cherie Gott, a data analyst at NORAD headquarters, in a Commission interview. Ms. Gott related that a timeline she created based on the September 18<sup>th</sup> press release (which reflected no notification time for United 93) was forwarded to NORAD officials at CONR on May 13, 2003 – a week prior to the Commission’s hearing – in order to prepare CONR officials for their testimony.

Why was 9:16 reintroduced? The Commission has obtained an e-mail sent from Col. Marr to retired Col. Scott (who worked at CONR) after the Commission’s hearing, which sheds light on the subject. During the May hearing, Commissioner Lehman asked several questions about the flight path of the Langley fighters, who traveled directly east, over the ocean, and then north toward Baltimore, before heading west to Washington. Why, the Commissioner wanted to know, didn’t the fighters head more directly to Washington, if they had been scrambled to respond to American 77, the plane that struck the Pentagon? Col. Marr addressed this question in his e-mail response to retired Col. Scott:

“The answer on AA77 is not easy, nor is it pretty. At the time AA77 was occurring we were focused on UAL93 which was the only confirmed hijack that the FAA had identified to us. My records show UAL93 reported as hijacked at 0916L, once we found it and identified it’s [sic] westerly heading, we scrambled Langley at 0924L just in case it turned around toward DC, which it did later. At 0924L we also received a call from the FAA about AA77 with a follow-up call at 0925L. It is easiest to explain the simultaneous scramble order with the AA77 notification as the scramble being against AA77 – it takes a lot of time to explain to the public that you’re scrambling fighters against a plane heading away from the possible target.”

Col. Marr, in other words, attempts to explain the circuitous route of the Langley fighters in getting to Washington, DC by indicating that they were not in fact scrambled to respond to a report at 9:24 that American 77 was hijacked; they were scrambled in response to the earlier “report” that United 93 was hijacked. Thus, the reintroduction of the discredited 9:16 notification time enabled NORAD to explain to the Commission the odd route of the Langley fighters in reaching Washington.

There were two fundamental problems with the explanation. First, as at least some in the military have known since the week of 9/11, it is inaccurate. United 93 had not been hijacked at 9:16; the hijacking did not occur until 9:28 – after the Langley fighters were ordered scrambled –

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and NEADS was not notified until after the plane had crashed. NORAD informed Commission staff at the close of interviews at Colorado Springs (and again publicly at the Commission's hearing in June 2004) that it now accepts that notification did not occur until after the plane had crashed. Second, as we will now discuss, NEADS was not notified that American 77 was hijacked at 9:24.

*Inaccurate Statement 2: The FAA notified the military of the hijacking of American 77 at 9:24.*

Although American 77 disappeared from radar and radio at 8:56, the first notification to NEADS that American 77 was missing (there is no mention of its having been hijacked at this point) came at 9:34, ten minutes after the scramble had already been ordered at Langley Air Force Base.

One to two minutes later, NEADS received notice that an unidentified plane was six miles southwest of the White House. American 77 crashed into the Pentagon at 9:37:45.

Thus, NEADS did not receive notice that American 77 was hijacked at 9:24. In fact, NEADS never received notice that American 77 was hijacked at all, let alone at 9:24; it received reports (at 9:34) that American 77 was missing, and (at 9:35 or 9:36) that an unidentified plane was near the White House.

What notification did occur at 9:24? The Mission Crew Commander's staff at NEADS maintains a handwritten contemporaneous log of information received and actions taken (known as the "MCC/T Log"). The 9/11 entry in the log at 9:24 records: "American Airlines #N334AA hijacked." This tail number refers not to American 77 but to American 11, the first hijacked aircraft that crashed into the North Tower of the World Trade Center. The subpoenaed tapes confirm that this time corresponds to NEADS's receipt of tail number information on American 11 and to reports that American 11 was still airborne and headed towards Washington DC.

*Inaccurate Statement 3: The Langley fighters were scrambled in response to the FAA's notification to the military, at 9:24, that American 77 was hijacked.*

Contrary to testimony before the Commission, the Langley fighters were ordered scrambled not because of United 93, which had not been hijacked, nor because of American 77, which had not yet been reported to NEADS, but because of the mistaken report that American 11 – the first hijacked plane – had not hit the World Trade Center, but was heading south towards Washington, DC. The fighters were ordered scrambled initially toward New York, and then vectored toward Baltimore, in an effort to intercept that mistakenly reported aircraft. The best evidence for both this false report and the resulting scramble is the subpoenaed NEADS tape, which records that at approximately 9:21, the Mission Crew Commander spoke the following to the Battle Cab (where the Battle Commander, Colonel Marr, was located):

“Okay. American Airlines is still airborne, 11, the first guy. He's headed towards Washington, okay? I think we need to scramble Langley right now, and I'm going to –

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I'm going to take the fighters from Otis and try to chase this guy down if I can find him. Yeah. You sure? Okay. He's heading towards Langley, or I should say Washington. American 11, the original guy. He's still airborne..."

Seconds later, the Mission Crew Commander ordered the scramble of the Langley fighters.

This report of American 11 heading south – the cause of the Langley scramble – is reflected not just in taped conversations at NEADS, but in taped conversations at FAA centers, on chat logs compiled at NEADS, CONR, NORAD, and the National Military Command Center, and in other records. It is the opening report on the national level, multi-agency “Significant Event Conference” call. The mistaken report was also readily acknowledged in interviews of NORAD’s operational personnel who participated in the 9/11 response.

But in October 2001, for instance, NORAD Commanding General Ralph Eberhart testified before the Senate Armed Services Committee on the sequence of events on 9/11. General Eberhart did not mention the mistaken report about American 11 as a cause for the Langley scramble. Instead, he provided a timeline chart and verbal testimony that listed 9:24 as the notification time for American 77 and implied that this notification prompted the scramble of the Langley fighters.

The General elaborated, in responses submitted after his testimony for the record: “The FAA notified the NEADS that American Airlines Flight 77 was headed towards Washington, DC. NEADS then passed this information to NORAD’s Air Warning Center .... At 0925, the NMCC convened a Significant Event Conference and during that conference, at 0933, NORAD reported one more aircraft en route to Washington, DC.”

NORAD’s own Headquarters Intel Chat Log belies this testimony, recording at 9:24:39 “original aa flt hijack is now headed to Washington scrambled lfi,[i.e., Langley]” and then at 9:25:13 “2 acrft that hit wt bldg not repeat not the original hjk aa acrft.” Furthermore, the Air Warning Center log at NORAD, to which General Eberhart refers, records, at 9:27, that “The original hijack a/c is still a/b and head for Washington, DC Otis F15 are trying to intercept the flight.” It then records, at 9:36, that CONR has advised of the scramble at Langley: “LFI A/B Quit 25/26/27 3 A/B at time 1333 [i.e., 9:33].” The NORAD Headquarters chat log states, at 9:28: “R[eal] W[orld] Hijacking (original notification) assessed by Intel as headed to Washington DC/2XF-15s in tail chase.” [NCT 0005098]

General Eberhart’s submission for the record, moreover, that NORAD reported “one more aircraft en route to Washington, DC” on the Significant Event Conference at 9:33 may have been literally true. Consistent, however, with NORAD’s own records and the transcript of the Conference, the aircraft that NORAD reported to the Conference was *not* American 77, as the submission for the record implied, but American 11.

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General Eberhart's responses to the Senate Armed Services Committee's "Questions for the Record" were not extemporaneous answers.

*Inaccurate Statement 4: Military officials were tracking United 93 and intended to intercept the aircraft if it continued towards Washington, DC.*

At the Commission's hearing in May 2003, Vice Chairman Hamilton expressed concern that the detailed timeline presented by NORAD omitted a significant time sequence: when the shoot-down authorization was passed from the President through the chain of command to the pilots. General Arnold backed away from the claim that the order was received prior to the crash of United 93, indicating his belief that it had been received a few minutes later. Because the NORAD witnesses had testified that they had been tracking United 93 for some forty-five minutes when it crashed, however, General Arnold was able to state with assurance that the flight would have been intercepted prior to reaching Washington, DC.

The issue of whether the military had been tracking United 93, and was therefore in position to intercept the flight if it approached Washington, DC, arose within days of the 9/11 attacks. On September 15, 2001, General Paul Weaver, overall commander of the Air National Guard which provided the fighters used to scramble Otis and Langley, told reporters that no fighters were scrambled or vectored to chase United 93: "There was no notification for us to launch airplanes. We weren't even close."

That same day, however, Deputy Secretary Wolfowitz stated in a television interview that Defense Department officials had been "following" United 93 and were prepared to shoot it down if it approached Washington, DC

Officials have been steadfast since in stating that the military had been tracking United 93 and were in position to intercept and, if necessary, shoot down the flight. Notably, Col. Marr states in the U.S. Air Force's official history of 9/11, *Air War Over America*: "As United Airlines Flight 93 was going out [west toward Chicago], we received the clearance to kill if need be."<sup>155</sup> Similarly, on an ABC News Special marking the one-year anniversary of 9/11, Col. Marr made inaccurate statements about the interception of United 93.

NORAD now acknowledges that at all levels – NEADS, CONR, and NORAD headquarters – they were completely unaware of United 93 as it was "going out" toward the west. Indeed, NEADS never learned of the flight until five minutes after it had crashed. NEADS never followed or was able to find the flight on radar, and was in fact still searching for the flight at 10:15, when the MCC/T Log and the subpoenaed tapes record FAA notification that the flight had crashed.

Furthermore, NORAD did not receive any form of shoot-down authority until 10:31. Even then, that instruction was not communicated to the pilots. Eventually, there were Air National Guard pilots over Washington with rules of engagement allowing them to engage. But they had received their direction outside of the usual military chain of command and did not get

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into the skies over Washington until after 10:40. In short, the representation that military had been following United 93 as it progressed, and was by virtue of this awareness in position to intercept the plane, was inaccurate.

### 10. CONCLUSION

The primary source material from 9/11 – the contemporaneous logs, other records, and tapes obtained by the Commission largely through subpoena and set forth at length in this monograph – reveal a sequence of events that had never been made public prior to the Commission’s June 17, 2004 hearing. That sequence reveals that the military received hijack notification on American 11 nine minutes prior to its crash, and no hijack notification on any of the other flights prior to their crashes. The FAA’s failure to notify NORAD or NEADS on United 175 is explained by its preoccupation with American 11; its failure to notify NORAD or NEADS on American 77 is explained by its loss of radar and radio contact with the aircraft. More difficult to understand is the failure to notify the military or request assistance on United 93, when FAA headquarters knew about the hijacking within six minutes of its occurrence and twenty-nine minutes prior to its crash. See Summary Tables.

At 10:02 that morning, [with one of the Trade Center Towers having collapsed and the other in flames, with the Pentagon burning and confusion reigning at the highest levels of government and command, and with a desperate struggle taking place, unbeknownst to the military, in the skies over Pennsylvania,] an officer on the floor at NEADS was recorded observing, “This is a new type of war.”

New type of war.mp3

He was right. America’s air defense system was unprepared for the 9/11 attacks. FAA controllers and managers and the NEADS air defenders struggled, under difficult circumstances, to improvise a homeland defense against an unprecedented challenge they had never encountered and had never trained to meet.

[At the end of the day, however, although the decisions they had made that morning ran counter to the existing training and rules, and were made under the most intense pressure, the NORAD air defenders were well aware of the historical significance of those decisions. Prepared or not, they had ushered all of us into a new era.]

0911 National terrorist day.mp3



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SUMMARY TABLES

**Table 1: Hijack Times and FAA Awareness of Hijack**

		Hijack Time*	FAA Awareness of Hijack	
Flight	Impact	Time	Time	Time Lapse
AA11	8:46:40	8:14-8:20	8:25	5-11 minutes
UA175	9:03:02	8:42-8:46	8:55	9-13 minutes
AA77	9:37:46	8:54-8:56	9:24**	28-30 minutes
UA93	10:03:11	9:28	9:28	0 minutes

\* Estimated Hijacking Times

\*\* Between 8:56 and 9:09, the relevant FAA Center believed AA77 had crashed. Between 9:09 and 9:21, based on the events in New York, information from American Airlines and the inability to confirm the crash on the ground, the FAA began to believe that AA77 might also be hijacked. By 9:24 the belief that AA77 may have been hijacked was communicated to FAA headquarters.

**Table 2: FAA Awareness of Hijack and FAA Warning to the Military**

		FAA Awareness of Hijack	Notification to the Military	
Flight	Impact	Time	Time	Time Lapse
AA11	8:46:40	8:25	8:38	13 minutes
UA175	9:03:02	8:55	9:03	8 minutes
AA77	9:37:46	9:24**	None	-----
UA93	10:03:11	9:28	10:07	39 minutes

\*\* Between 8:56 and 9:09, the relevant FAA Center believed AA77 had crashed. Between 9:09 and 9:21, based on the events in New York, information from American Airlines and the inability to confirm the crash on the ground, the FAA began to believe that AA77 might also be hijacked. By 9:24 the belief that AA77 may have been hijacked was communicated to FAA headquarters.

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**Table 3: FAA Warning to the Military**

Flight	Impact	Notification as established by Commission Staff		Notification presented by NORAD to the Commission at May 2003 Hearing	
		Time	Warning	Time	Warning
AA11	8:46:40	8:38	9 minutes	8:40	7 minutes
UA175	9:03:02	9:03	0 minutes	9:05	0 minutes
AA77	9:37:46	None *	0 minutes	9:24	14 minutes
UA93	10:03:11	10:07	0 minutes	9:16	47 minutes

\* There was no notification received by NEADS that American 77 was hijacked. Washington Center informed NEADS at 9:34 that American 77 was lost in Indianapolis Center's airspace and could not be found. This notification was separate from and preceded the information NEADS received at 9:36 from Boston Center that there was an "aircraft VFR six miles southeast of the White House...six southwest." NEADS did not know that aircraft, which struck the Pentagon a minute later, was American 77.

1 FAA report, "Administrator's Fact Book," July 2001; Ben Sliney interview (May 21, 2004); John McCartney interview (December 17, 2003).

2 FAA regulations, Air Traffic Control transponder and altitude reporting equipment and use, 14 CFR 91.215 (2001).

3 DOD radar files, 84th Radar Evaluation Squadron, "9/11 Autoplay," undated; Charles Thomas interview (May 4, 2004); John Thomas interview (May 4, 2004); Joseph Cooper interview (Sept. 22, 2003); Tim Spence interview (Sept. 30, 2003). For general information on approaching terminals, see FAA report, "Aeronautical Information Manual," Feb. 19, 2004. Times assigned to audio transmissions were derived by the Commission from files provided by the FAA and the Northeast Air Defense Sector (NEADS) based on audio time stamps contained within the files provided by the sender. FAA tapes are certified accurate to Universal Coordinated Time by quality assurance specialists at FAA air traffic facilities. NEADS files are time-stamped as accurate to the Naval Observatory clock. Staff also compared audio times to certified transcripts when available.

4 Donald Quenneville interview (Jan. 7, 2004); Langley Air Force Base 119th Fighter Wing briefing (Oct. 6-7, 2003).

5 Collin Scoggins interviews (September 22, 2003; Jan. 8, 2004); FAA report, "Crisis Management Handbook for Significant Events," Feb. 15, 2000; DOD memo, CJCS instruction, "Aircraft Piracy (Hijacking) and Destruction of Derelict Airborne Objects," June 1, 2001.

6 See FAA regulations, Hijacked Aircraft, Order 7610.65M, para. 10-2-6 (2001); David Bottiglia interview (Oct. 1, 2003); FAA report, "Crisis Management Handbook for Significant Events," Feb. 15, 2000. From interviews at various FAA centers, we learned that an air traffic controllers first response to an aircraft incident is to notify a supervisor, who then notifies the traffic management unit and the operations manager in charge. The FAA center next notifies the appropriate regional operations center (ROC), which in turn contacts FAA headquarters. Biggio stated that for American 11, the combination of three factors – loss of radio contact, loss of transponder signal, and course deviation – was serious enough for him to contact the ROC in Burlington, Mass. However, without hearing

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the threatening communication from the cockpit, he doubts Boston Center would have recognized or labeled American 11 “a hijack.” Terry Biggio interview (September 22, 2003); see also Shirley Miller interview (Mar. 30, 2004); Monte Belger interview (Apr. 20, 2004). For the responsibilities of the FAA hijack coordinator, see FAA regulations, Special Military Operations, Requests for Service, Order 7610.4J, paras. 7-1-1, 7-1-2 (2001); For NMCCC notification procedure, see DOD memo, CJCS instruction, “Aircraft Piracy (Hijacking) and Destruction of Derelict Airborne Objects,” June 1, 2001.

7 Ralph Eberhart interview (Mar. 1, 2004); William A. Scott interview (February 4, 2004); Robert Marr interview (Jan. 23, 2004); FAA regulations, position reports within NORAD radar coverage, para. 7-4-2, Air Ground/Communications Security, para. 7-1-6, Vectors, para. 7-2-3 from Order 7610.4J.

8 William A. Scott interview (May 23, 2003); FAA Summary of Air Traffic Hijack Events, 9/11/01.

9 “Full Transcript; Aircraft Accident; AAL11; New York, NY; September 11, 2001,” 46R, at 8:09:17.

10 “Full Transcript; Aircraft Accident; AAL11; New York, NY; September 11, 2001,” 46R, at 8:09:22.

11 “Full Transcript; Aircraft Accident; AAL11; New York, NY; September 11, 2001,” 46R, at 8:10:13.

12 “Full Transcript; Aircraft Accident; AAL11; New York, NY; September 11, 2001,” 46R, at 8:13:29.

13 “Full Transcript; Aircraft Accident; AAL11; New York, NY; September 11, 2001,” 46R, at 8:13:47.

14 Peter Zalewski interview (Sept. 22, 2003).

15 Peter Zalewski interview (Sept. 22, 2003); John Schippani interview (Sept. 22, 2004).

16 “Full Transcript; Aircraft Accident; AAL11; New York, NY; September 11, 2001,” 46R, at 8:15:15, 8:15:22, 8:15:49, 8:16:32, 8:17:05, 8:17:56, 8:18:56, 8:20:08, and 8:22:27.

17 William A. Scott testimony (May 23, 2003).

18 Peter Zalewski interview (Sept. 22, 2003); John Schippani interview (Sept. 22, 2003).

19 John Schippani interview (Sept. 22, 2003).

20 Peter Zalewski interview (Sept. 22, 2003).

21 Peter Zalewski interview (Sept. 22, 2003).

22 John Schippani interview (Sept. 22, 2003).

23 Terry Biggio interviews (Sept. 22, 2003 and Jan. 8, 2004); Robert Jones interview (Sept. 22, 2003).

24 FAA audio file, Herndon Command Center, position # 15, at 8:28; Daniel Bueno interview (Sept. 22, 2003).

25 FAA audio file, Herndon Command Center, position 14, at 8:48.

26 Terry Biggio interviews (Sept. 22, 2003 and Jan. 8, 2004); Daniel Bueno interview (Sept. 22, 2003); FAA audio file, Herndon Command Center New York Center position, line 5114, September 11, 2001, from 8:30 to 8:46.

27 Published timelines from the FAA and NORAD place the notification time at 8:40. NEADS recordings indicate, however, that the actual call came in at 8:37:15 to the Weapons Director Technician position, Channel 14.

28 William A. Scott testimony (May 23, 2003).

29 Published timelines from the FAA and NORAD place the notification time at 8:40. NEADS recordings indicate, however, that the actual call came in at 8:37:15 to the Weapons Director Technician position, Channel 14. Robert Marr interview (Jan. 23, 2004).

30 Larry Arnold testimony (May 23, 2003).

31 Larry Arnold, quoted in Air War Over America, by Leslie Filson, p. 56.

32 NEADS audio file, Mission Crew Commander position, Channel 2, at 8:44:48.

33 NEADS audio file, Mission Crew Commander position, Channel 2, at 8:44:58.

34 NEADS audio file, Mission Crew Commander position, Channel 2, at 8:58:00.

35 Joseph McCain interview (Oct. 28, 2003).

36 Reported initially on NEADS audio file, Mission Crew Commander position, Channel 2, at 8:54:07. Actual airborne time: 8:53:00, as confirmed by Commission staff analysis of DOD radar files, 84th Radar Evaluation Squadron, “9/11 Autoplay,” undated.

37 NEADS audio file, Identification Technician position, channel 5, at 8:51:13; NEADS audio file, Identification Technician position, channel 7, at 8:51:20; NEADS audio file, Mission Crew Commander position, Channel 2, at 8:52:00.

38 NEADS audio file, Mission Crew Commander position, Channel 2, at 8:54:55.

39 NEADS audio file, Identification Technician position, channel 5, at 9:18:11.

40 ID Tech, Ch. 5, at 13:44:15.

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- 41 Collin Scoggins interview (Sept. 22, 2003).
- 42 In the timeline section of the FAA report, "Summary of Air Traffic Hijack Events September 11, 2001," Sept. 17, 2001, at 8:14:00: "United 175 begins takeoff roll, runway 9, Boston Logan International Airport. All communications with BOS and with Boston Departure Control are routine and normal." Also see "Full Transcript; Aircraft Accident; UAL175; New York, NY; September 11, 2001," position 47R, at 8:19:24.
- 43 "Full Transcript; Aircraft Accident; UAL175; New York, NY; September 11, 2001," position 47R, at 8:30:56: "FAA: United 175 maintain three one o and contact the Boston Center on one two five point five seven."
- 44 "Full Transcript; Aircraft Accident; UAL175; New York, NY; September 11, 2001," position 20R, at 8:38:24.
- 45 John Hartling interview (Sept. 22, 2003).
- 46 "Full Transcript; Aircraft Accident; UAL175; New York, NY; September 11, 2001," position R42, at 8:40:32.
- 47 "Full Transcript; Aircraft Accident; UAL175; New York, NY; September 11, 2001," position R42, at 8:41:07.
- 48 In the timeline section of the FAA report, "Summary of Air Traffic Hijack Events September 11, 2001," Sept. 17, 2001, "ZNY air traffic computers do not correlate either of these codes with United 175. Consequently, the secondary radar return (transponder) indicating aircraft speed, altitude, and flight information begins to coast and is no longer associated with the primary radar return. NOTE: The controller communicating with United 175 is also monitoring the flight track of AAL11. Based on coordination received from ZBW indicating a possible hijack, most of the controller's attention is focused on AAL11."
- 49 "Full Transcript; Aircraft Accident; UAL175; New York, NY; September 11, 2001," position R42, at 8:50:13.
- 50 "Full Transcript; Aircraft Accident; UAL175; New York, NY; September 11, 2001," position R42, at 8:51:43: "United 175 recycle your transponder and squawk code 1470."
- 51 "Full Transcript; Aircraft Accident; UAL175; New York, NY; September 11, 2001," position R42, at 8:52.
- 52 David Bottiglia interview (Oct. 1, 2003).
- 53 "Full Transcript; Aircraft Accident; UAL175; New York, NY; September 11, 2001," position R42, at 8:54:07.
- 54 "Full Transcript; Aircraft Accident; UAL175; New York, NY; September 11, 2001," position R42, communications occur between approximately 8:54 and 9:04. At 8:57, the following exchange between controllers occurred: "I got some handoffs for you. We got some incidents going over here. Is Delta 2433 going to be okay at thirty-three? I had to climb him for traffic. I let you United 175 just took off out of uh thing we might have a hijack over here. Two of them." "Full Transcript; Aircraft Accident; United 175; New York, NY; September 11, 2001," position R42, at 8:57:52.
- 55 FAA report, "Summary of Air Traffic Hijack Events September 11, 2001," Sept. 17, 2001; Evanna Dowis interview (Sept. 30, 2004).
- 56 Michael McCormick interview (December 15, 2003); FAA record, Personnel Statement of Michael McCormick, Oct. 17, 2001.
- 57 FAA Letterhead, "Full Transcript; Aircraft Accident; UAL175; New York, NY; September 11, 2001," position R42, at 8:57:52.
- 58 See timeline section of FAA report, "Summary of Air Traffic Hijack Events September 11, 2001," Sept. 17, 2001: "0900:00 [] This time is approximate based on personnel statements from New York Terminal Radar Approach control (N90). N90 controller stated 'at approximately 9:00 [], I observed an unknown aircraft south of the Newark, New Jersey Airport, northeast bound and descending out of twelve thousand nine hundred feet in a rapid rate of descent, the radar target terminated at the World Trade Center.'"
- 59 Note: William A. Scott testified that the time of impact was 9:02. William. A. Scott testimony (May 22, 2003).
- 60 FAA audio file, Herndon Command Center position 14, Line 5114, at 9:03.
- 61 FAA audio file, Herndon Command Center position 15, Line 5115, at 9:05
- 62 FAA record, New York Center daily record of facility operations, p. 1.
- 63 Michael McCormick interviews (October 1, 2003 and Dec. 15, 2003).
- 64 Terry Biggio interview (Sept. 22, 2003); FAA audio file, Herndon Command Center position 15, Line 5115, at 9:05 to 9:07.
- 65 Ellen King interview (April 5, 2004).
- 66 NEADS audio file, Identification Technician position , channel 4, at 9:05:51.
- 67 NEADS audio file, Identification Technician position , channel 7, at 9:03:48.
- 68 Joseph McCain interview (Oct. 28, 2003); Robert Marr interview (Oct. 27, 2003 and Jan. 23, 2004); James Fox

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interview (Oct. 27, 2003); Dawne Deskins interview (Oct. 30, 2003).

69 Daniel S. Nash interview (Oct. 14, 2003); Timothy Duffy interview (Jan. 7, 2004).

70 Daniel S. Nash interview (Oct. 14, 2003); Timothy Duffy interview (Jan. 7, 2004).

71 NEADS audio file, Mission Crew Commander position, Channel 2, at 9:08:36.

72 Robert Marr interview (Oct. 27, 2003); Larry Arnold interview (Feb. 3, 2004); Robert Marr, quoted in Air War Over America, by Leslie Filson, p. 60: “The plan was to protect New York City.”

73 William A. Scott testimony (May 23, 2003).

74 NORAD has taken the position that the error in time is accounted for by a twenty-minute mis-synchronization that occurred when the original tapes were reformatted and digitized. Because this reformatting did not occur until late 2003, however, it cannot account for the agencies’ misidentification of the time in the days immediately following 9/11.

75 FAA report, “FAA Summary of Air Traffic Hijack Events September 11, 2001,” Sept. 17, 2001, Timeline for AAL 77; “Partial Transcript; Aircraft Accident; AAL77; Washington, DC; September 11, 2001,” Dulles Air Traffic Control Tower, LCW, at 8:19:20: “American 77 your departure frequency will be one two five point zero five runway three zero. Cleared for takeoff.”

76 “Partial Transcript; Aircraft Accident; AAL77; Washington, DC; September 11, 2001,” Henderson radar position, Dec. 3, 2001, at 8:40:13.

77 FAA report, “FAA Summary of Air Traffic Hijack Events September 11, 2001,” Sept. 17, 2001; “Partial Transcript; Aircraft Accident; AAL77; Washington, DC; September 11, 2001,” Dec. 3, 2001, Henderson radar position, at 8:43:51 and 8:47:16.

78 “Partial Transcript; Aircraft Accident; AAL77; Washington, DC; September 11, 2001,” Henderson radar position, Dec. 3, 2001, at 8:50:51.

79 FAA report, “FAA Summary of Air Traffic Hijack Events September 11, 2001,” Sept. 17, 2001 indicates time at 8:54:43; Richard Byard interview (Sept. 24, 2003).

80 FAA report, “FAA Summary of Air Traffic Hijack Events September 11, 2001,” Sept. 17, 2001 indicates time at 8:56:19; Richard Byard interview (Sept. 24, 2003); Linda Povinelli interview (Sept. 24, 2003).

81 “Partial Transcript; Aircraft Accident; AAL77; Washington, DC; September 11, 2001,” Henderson radar position, at 8:57:39 (transcript dated December 3, 2001) (“This is Henderson [sector]. American 77, I don’t know what happened to him. I’m trying to reach somebody look[s] like he took a turn to the south and now I’m uh I don’t know what altitude he’s at or what he’s doing last [unintelligible] ah, heading towards Falmouth at 35[,000 feet].”

82 “Partial Transcript; Aircraft Accident; AAL77; Washington, DC; September 11, 2001,” Henderson radar position, Oct. 4, 2001, at 9:06:39: “We’re just gonna treat him like nonradar and we’ve already told the next sector they’re gonna have to sterilize for him until we find out.”

83 FAA report, “FAA Summary of Air Traffic Hijack Events September 11, 2001,” Sept. 17, 2001: “[8:59:00] ZID [Indianapolis Center] controllers began coordinating with other controllers to protect the airspace and altitude of AAL 77’s filed route of flight.”

84 John Thomas interview (Sept. 24, 2003).

85 John Thomas interview (Sept. 24, 2003).

86 FAA report, “FAA Summary of Air Traffic Hijack Events September 11, 2001,” Sept. 17, 2001: “[9:09:00] ZID notified Great Lakes Regional Operations Center a possible aircraft accident of AAL 77 due to the simultaneous loss of radio communications and radar identification.”

87 FAA report, “FAA Summary of Air Traffic Hijack Events September 11, 2001,” Sept. 17, 2001.

88 David Boon interview (May 4, 2004); Charles Thomas interview (May 4, 2004); John Thomas interview (May 4, 2004); Commission analysis of FAA radar data and air traffic control software logic.

89 John Thomas interview (May 4, 2004); Charles Thomas interview (May 4, 2004). We have reviewed all FAA documents, transcripts, and tape recordings related to American 77 and have found no evidence that FAA headquarters issued a directive to surrounding centers to search for primary radar targets. Review of the same materials also indicates that no one within FAA located American 77 until the aircraft was identified by Dulles controllers at 9:32. For much of that time, American 77 was traveling through Washington Center’s airspace. Washington Center’s controllers were looking for the flight, but they were not told to look for primary radar returns.

90 Ellen King interview (Apr. 5, 2004); Bill Halleck interview (Jan. 8, 2004); Shortly after the second hijacked

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plane hit the South Tower, the Air Traffic Control Coordinator for AAL Corp called Washington ARTCC to inquire about Flight 77. Washington ATCC told the AAL Corp ATC Coordinator that there was no transponder signal for Flight 77, and that it was lost heading westbound approaching Ohio. The AAL Corp ATC Coordinator spoke with Dulles TRACON, and was told 1) they were tracking a fast-moving target primary target; and 2) a United Airlines flight was missing. The AAL Corp ATC Coordinator immediately called his counterpart at the United Airlines Systems Operations Center (SOC) to inquire further; but United would not confirm the loss. With this information the AAL Corp ATC Coordinator called Herndon ATCSCC and told the ATCSCC personnel sitting at the National Operations Manager's position that AAL thought Flight 77 may have hit the South Tower at the World Trade Center; but AAL did not know how it was over New York City.

91 FAA memo, "Full transcription; Air Traffic Control System Command Center, National Traffic Management Officer, East position; September 11, 2001," Line 4530, p. 15.

92 John Thomas interview (Sept. 14, 2003).

93 FAA report, "Summary of Air Traffic Hijack Events September 11, 2001," Sept. 17, 2001.

94 FAA memo, "Full transcription; Air Traffic Control System Command Center, National Traffic Management Officer, East position; September 11, 2001," Line 4530, p. 14.

95 FAA memo, "Full transcription; Air Traffic Control System Command Center, National Traffic Management Officer, East position; September 11, 2001," Line 4530, p. 14 and 27.

96 Benedict Sliney interview (May 21, 2004).

97 Danielle O'Brien interview (Jan. 23, 2003).

98 FAA letterhead memorandum, "Herndon Command Center, National Traffic Management Officer position 26, Line 4530," p. 15.

99 FAA letterhead memorandum, "Herndon Command Center, National Traffic Management Officer position 26, Line 4530," p. 15.

100 Kevin J. Nasypany interview (Jan. 22, 23, 2004): "Nasypany thought to put the Langley scramble over Baltimore, and place a 'barrier cap' between the hijack and Washington, D.C."

101 NEADS audio file, Mission Crew Commander position, Channel 2, at 9:28:16.

102 NEADS audio file, Identification Technician position, Channel 5, between 9:32:10 and 9:33:58.

103 NEADS audio file, Mission Crew Commander position, Channel 2, at 9:38:02; Dawne Deskins interview (Oct. 30, 2003).

104 NEADS audio file, Mission Crew Commander, channel 2, 9:38:02; Dawne Deskins interview (Oct. 30, 2003).

The estimated time of impact of Flight 77 into the Pentagon is based on Commission analysis of FDR, air traffic control, radar, and Pentagon elevation and impact site data.

105 William A. Scott testimony (May 23, 2003).

106 Larry Arnold testimony (May 23, 2003).

107 NEADS Mission Crew Commander Technician Log, Sept. 11, 2001.

108 NEADS audio file, Identification Technician position, Channel 4, at 9:23:01.

109 NEADS audio file, Mission Crew Commander position, Channel 2, Ch. 2, at 9:21:50; Kevin J. Nasypany interview (Jan. 22, 23, 2004): The memorandum for this interview states "Nasypany thought to put the Langley scramble over Baltimore, and place a 'barrier cap' between the hijack and Washington, D.C."

110 NORAD HQ Intel Chat Log, dated September 11, 2001; NORAD Air Warning Center log, dated September 11, 2001; NORAD HQ Chat log, dated September 11, 2001.

111 Robert Marr interview (Oct. 27, 2003).

112 Kevin Nasypany interview (Jan. 22, 23, 2004).

113 Doug Davis interview (Mar. 30, 2004).

114 NEADS audio file, Mission Crew Commander position, Channel 2, at 9:42:08.

115 NEADS audio file, Identification Technician position, Channel 4, at 9:48:04.

116 NEADS audio file, Mission Crew Commander position, Channel 2, examples at 9:43:16, 9:43:59, 9:44:43, 9:45:00, 9:45:30, and 9:45:48.

117 Kevin Nasypany interview (January 22, 23, 2004).

118 FAA report, "FAA Summary of Air Traffic Hijack Events September 11, 2001," Sept. 17, 2001. The Summary notes that the primary radar target for United 93 terminated at 10:04.

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- 119 Newark Liberty Air Traffic Control Tower, Sept. 13, 2001, p. 2; FAA memo, "Full Transcript; Aircraft Accident; N591UA (UAL93) Somerset, PA; September 11, 2001," position E 155, Sept. 13, 2001, p. 5.
- 120 FAA memo, "Full Transcript; Aircraft Accident; N591UA (UAL93) Somerset, PA; September 11, 2001," position E 155, Sept. 13, 2001, p. 6 (cleared to 10,000 feet, not to exceed 250 knots); p. 7 (resume normal speed); FAA memo, "Full Transcript; Aircraft Accident; N591UA (UAL93) Somerset, PA; September 11, 2001," position E 155, B43, Sept. 13, 2001, p. 1 (heading 330; left turn); p. 2 (cleared to fourteen thousand feet; then to seventeen thousand feet); FAA memo, "Full Transcript; Aircraft Accident; N591UA (UAL93) Somerset, PA; September 11, 2001," position R39, Sept. 13, 2001, p. 6 (cleared to twenty-eight thousand feet); 9 (cleared "direct dimmo"); FAA memo, "Full Transcript; Aircraft Accident; N591UA (UAL93) Somerset, PA; September 11, 2001," position R73, Sept. 27, 2001, p. 4 (climbing to 28,000 feet); p. 7 (cleared to thirty-five thousand feet); p. 13 (United reports light chop at 9:22:39, and is passed to Cleveland Center).
- 121 FAA memo, "Full Transcript; Aircraft Accident; N591UA (UAL93) Somerset, PA; September 11, 2001," position FKL-R, Sept. 17, 2001, p. 1; LOR-R, 5/10/02, Tr. at 8.
- 122 FAA memo, "Full Transcript; Aircraft Accident; N591UA (UAL93) Somerset, PA; September 11, 2001," Lorain Radar position, May 10 2002, p. 1-8.
- 123 FAA memo, "Full Transcript; Aircraft Accident; N591UA (UAL93) Somerset, PA; September 11, 2001," Lorain Radar position, May 10 2002, p. 8 (acknowledgment at 9:25:09).
- 124 FAA memo, "Full Transcript; Aircraft Accident; N591UA (UAL93) Somerset, PA; September 11, 2001," Lorain Radar position, May 10 2002, p. 10.
- 125 FAA memo, "Full Transcript; Aircraft Accident; N591UA (UAL93) Somerset, PA; September 11, 2001," Lorain Radar position, May 10 2002, p. 10; FAA report, "FAA Summary of Air Traffic Hijack Events September 11, 2001," Sept. 17, 2001.
- 126 FAA memo, "Full Transcript; Aircraft Accident; N591UA (UAL93) Somerset, PA; September 11, 2001," Lorain Radar position, May 10, 2002, p. 10.
- 127 The United 93 timeline in FAA report, 'Summary of Air Traffic Hijack Events September 11, 2001,' Sept. 17, 2001, states that at 9:28:54 a 'second radio transmission, mostly unintelligible, again with sounds of possible screaming or a struggle and a statement, 'get out of here, get out of here' from an unknown origin was heard over the ZOB [Cleveland Center] radio.
- 128 FAA memo, "Full Transcript; Aircraft Accident; N591UA (UAL93) Somerset, PA; September 11, 2001," Lorain Radar position, May 10, 2002, p. 12-13.
- 129 FAA memo, "Full Transcript; Aircraft Accident; N591UA (UAL93) Somerset, PA; September 11, 2001," Lorain Radar position, May 10, 2002, p. 15.
- 130 FAA memo, "Full Transcript; Aircraft Accident; N591UA (UAL93) Somerset, PA; September 11, 2001," Lorain Radar position, May 10, 2002, p. 15-18. At 9:33:40, for instance, the controller instructed ExecuJet 956: "that aircraft we believe was transmitting is twelve o'clock one five miles. Turn left heading two two five. That'll get you away from him."
- 131 FAA memo, "Full Transcript; Aircraft Accident; N591UA (UAL93) Somerset, PA; September 11, 2001," Lorain Radar position, May 10, 2002, p. 26-32.
- 132 FAA memo, "Full transcription; Air Traffic Control System Command Center, National Traffic Management Officer, East position; September 11, 2001," Line 4530, p. 10.
- 133 FAA memo, "Full transcription; Air Traffic Control System Command Center, National Traffic Management Officer, East position; September 11, 2001," Line 4530, Line 4530, p. 13.
- 134 FAA memo, "Full transcription; Air Traffic Control System Command Center, National Traffic Management Officer, East position; September 11, 2001," October 31, 2003, pp. 10, 13; FAA audio file, Herndon Command Center, New York Center position, line 5154.
- 135 FAA memo, "Full transcription; Air Traffic Control System Command Center, National Traffic Management Officer, East position; September 11, 2001," Line 4530, p. 17.
- 136 FAA memo, "Full transcription; Air Traffic Control System Command Center, National Traffic Management Officer, East position; September 11, 2001," Line 4530, p. 17.
- 137 FAA memo, "Full transcription; Air Traffic Control System Command Center, National Traffic Management Officer, East position; September 11, 2001," Line 4530, p. 18-19.

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- 138 FAA memo, "Full transcription; Air Traffic Control System Command Center, National Traffic Management Officer, East position; September 11, 2001," Line 4530, p. 23.
- 139 FAA memo, "Full transcription; Air Traffic Control System Command Center, National Traffic Management Officer, East position; September 11, 2001," Line 4530, p. 24.
- 140 FAA memo, "Full transcription; Air Traffic Control System Command Center, National Traffic Management Officer, East position; September 11, 2001," Line 4530, p. 26.
- 141 FAA memo, "Full transcription; Air Traffic Control System Command Center, National Traffic Management Officer, East position; September 11, 2001," Line 4530, p. 34.
- 142 NEADS Mission Crew Commander Technician Log, Sept. 11, 2001.
- 143 NEADS audio file, Mission Crew Commander position, Channel 2, Commission transcript, pp. 59-61. [CHECK AUDIO TIME]
- 144 Kevin J. Nasypany interview (Jan. 22, 23, 2004); Robert Marr interview (Jan. 23, 2004).
- 145 Robert Marr interview (Jan. 23, 2004).
- 146 Kevin Nasypany interview (Jan. 22, 23, 2004); James Fox interview (Oct. 29, 2003).
- 147 NEADS Mission Crew Commander Technician Log, Sept. 11, 2001. SOB stands for Souls on Board, and indicates that in a hijacking event part of the protocol for the NEADS ID section was to determine the number of passengers on board the hijacked aircraft.
- 148 NEADS audio file, Identification Technician position, Channel 5, at 9:16:19.
- 149 Air War Over America, by Leslie Filson, p. 68.
- 150 Quoted in Air War Over America, by Leslie Filson, p. 71.
- 151 Kevin Nasypany interview (Jan. 22, 23, 2004).
- 152 Staff has established that the earliest discussion of creating an open-line occurred at approximately 9:50, and that the open line may not have been established until well after 10:00. NORAD now accepts that the notification of United 93 as a hijack did not occur over this open line.
- 153 See Table 2 attached for a comparison of the two releases with the facts as Team 8 has discovered them..
- 154 Three e-mail memorandums, "NEADS, EAM Booth; Subject: AMPLIFYING DATA FOR 11 SEP" dated Sept. 16, 2001, Sept. 16, 2003 and Sept. 17, 2001; Also, the NEADS Mission Crew Commander Technician Log, Sept. 11, 2001, records the time as 10:07 for the entry described by Brigadier General Moore.
- 155 Air War Over America, by Leslie Filson, p. 68.