

NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety
Washington, DC 20594

SURVIVAL FACTORS SPECIALIST'S FACTUAL REPORT

January 9, 2009

I. ACCIDENT

Operator : Maryland State Police
Aircraft : Aerospatiale (Eurocopter) AS365N1 [N92MD]
Location : District Heights, MD
Date : September 27, 2008
Time : 2358 EDT¹
NTSB # : MIA08MA203

II. SURVIVAL FACTORS SPECIALIST

Specialist : Jason T. Fedok
National Transportation Safety Board
Washington, DC

III. SUMMARY

On September 27, 2008, at 2358 eastern daylight time (EDT) a Aerospatiale (Eurocopter) AS365N1, N92MD, call sign Trooper 2 (T2), registered to and operated by the Maryland State Police (MSP) as a Public Use medical evacuation flight, collided with trees and the ground after being cleared by air traffic control for an instrument landing system approach to runway 19R at Andrews Air Force Base (ADW), Camp Springs, Maryland. Visual meteorological conditions prevailed at the time of departure and no flight plan was filed.

IV. DETAILS OF THE INVESTIGATION

1.0 Helicopter Configuration

According to the Maryland State Police, N92MD (S/N 6311) was delivered fully equipped in May 1989. The helicopter service area (HSA) was originally installed by Custom Aircraft Completions, Inc in 1989 under Supplemental Type Certificate SH644NE. In 1997, the interior was modified with new cabinets in an effort to reduce weight and improve visibility through the windows. The work was accomplished by

¹ All times herein are reported in Eastern Daylight Time and based on the 24-hour clock unless otherwise noted.

MSP maintenance personnel under STC SR00580NY issued to Keystone Helicopter Corp. in 1997. FAA authorized the work in February 1998 via Form 337.

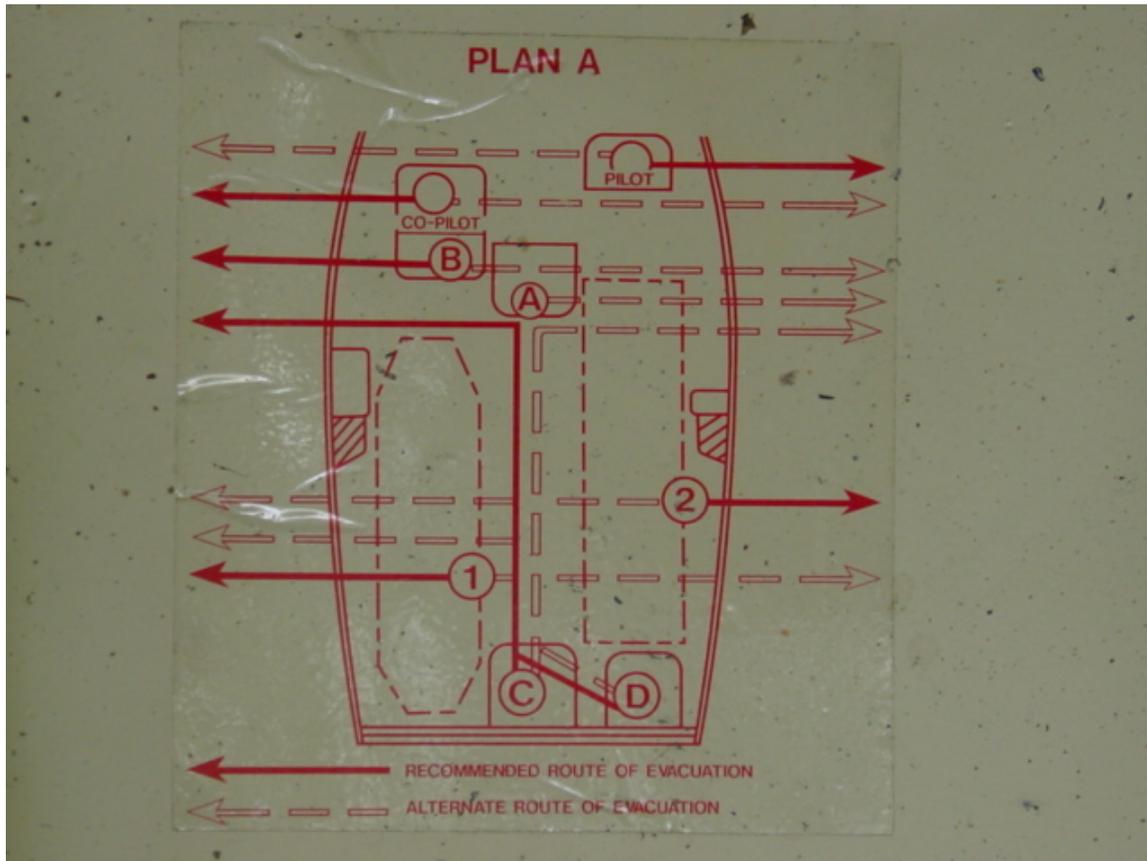


Figure 1. An interior placard showing the seating configuration of N92MD as well as evacuation routes for the occupants.

The helicopter was equipped with two forward-facing pilot seats adjacent to two automotive-type, forward-hinged doors. There was an aft-facing medic seat (A) positioned just aft and between the two the pilot seats. The medic seat had an integral four-point inertia reel restraint. There was a small aft-facing jumpseat (B) directly behind the copilot's seat next to an emergency exit door on the left side of the helicopter. There were two litter positions (1 & 2) - one each on the left and right side of the helicopter. According to Corporal Jon Longest, Maryland State Police flight paramedic, the primary litter position was on the left side of the helicopter. The primary patient was loaded through a sliding door on a litter, which slid and locked into a floor-mounted fixture. The locking mechanism was a circular handle which, when turned 180 degrees, grasps the tubular frame of the litter. According to Cpl. Longest, standard operating procedures were for the primary patient to be loaded headfirst so that the patient's head is near the medic seat.

On the right side of the helicopter there was a small door just aft of the pilot door. According to Cpl. Longest that door had been deactivated and a cabinet placed in front of the door. Behind the deactivated door on the right side was a smaller sliding door used

for loading and unloading a secondary patient when necessary. A second litter (2) was stowed on the floor in this location. The litter had four wheels and was secured in the helicopter by fitting a triangular protrusion from the litter into a floor-mounted receptacle. The litter was then secured to the sidewall of the helicopter via a pin on the litter frame that was inserted into a spring-loaded “claw.” The “claw” could then be secured in a closed position by inserting a cotter pin connected to a short lanyard. According to Cpl. Longest, standard operating procedures were for a secondary patient to be loaded first so that the patient’s feet were forward and the patient’s head was near the field provider.

There were two seats on the aft bulkhead: a field provider seat (C) and a hoist operator seat (D). The field provider seat consisted of a simple seat cushion that was fitted into a depression in the floor and affixed to the aft bulkhead with a Velcro strip. It was fitted with a four-point restraint. The lap belts were affixed to two D-rings mounted in the floor. The two shoulder harnesses were secured to the bulkhead via inertia reels. The hoist operator seat was also forward facing and was on the right side of the helicopter. It consisted of a hinged seat pan and two short seat legs. It had a three-point restraint. The two lap belts were affixed to two seatbelt attachment points on the seat legs. The shoulder harness was secured to the aft bulkhead via an inertia reel.

Interior photographs of a sister ship, N97MD, are included in Attachment 1. N97MD had an identical interior configuration as N92MD.

2.0 On-Scene Documentation

The Survival Factors specialist arrived on-scene at approximately 1400 on September 29, 2008. The helicopter was found lying on its left side on an asphalt path in Walker Mill State Park. For an overall description of the scene and the damage to the helicopter, please see the Airworthiness Group Chairman’s Factual Report. Photographs of many of the items described below can be found in Attachment 1.

2.1 Litters/Backboards

There were two patients being transported at the time of the accident. According to Cpl. Longest, double transports were conducted at the request of ground EMS personnel. He stated that such missions were infrequent and that it was unlikely for a double transport to be two critical patients. Generally, the more seriously injured individual was considered the primary patient and loaded into the primary litter position (head forward) on the left side of the helicopter. The secondary patient would normally be loaded first (additional room is needed to swing the secondary litter into the smaller door opening on the right side of the helicopter) and locked into position in a feet forward orientation.

The primary litter consisted of a flat aluminum plate riveted to an aluminum tubular frame. The underside contained flat hockey puck-shaped feet that were designed to fit into floor receptacles and lock into place. The upper portion of the litter was hinged

to allow the patient to sit up, if desired. According to Cpl. Longest, standard operating procedure was for a patient to be placed onto the litter while already strapped to a backboard provided by local EMS personnel. The patient and the backboard were secured to the litter via bright, green plastic straps that were threaded through the handholds of the litter.

The primary litter (P/N M65-401-01, no mfg. info) was found outside the helicopter in the debris field. It was undamaged except for a 4" section of aluminum plate that was bent upwards on the inboard side and three rivets were sheared. Two bright green "Bioplastics" restraints were present at the lower end of the litter. One of the restraints was buckled while the other was not.

The secondary litter (no identifying information except the number '1' painted on the underside) was also found in the debris field. It consisted of a flat aluminum plate riveted to an aluminum tubular frame. It also contained four swiveling casters on the underside. The upper portion of the litter was hinged to allow the patient to sit up, if desired. This 3' portion was relatively undamaged except for the incline mechanism that was bent. The lower portion of the plate was bent upwards approximately 90 degrees and the tubular aluminum tubes were fractured and separated. One of the support tubes was pinched and fractured while the other showed a clean, shiny separation. Only one caster remained attached to the litter. The other three were identified at various locations in the debris field. The triangular protrusion used to secure the litter in place was identified attached to a section of separated aluminum tubing in the cockpit area of the debris field. (The floor-mounted bracket was also identified in the debris field. It was still bolted to an 8" by 8" section of structural floor beam. It was deformed in an outboard direction.) One bright green "Bioplastics" strap remained attached to the upper portion of the litter. The strap was buckled but was separated. The separated ends showed evidence of fraying. Three unassociated bright green "Bioplastics" straps were found in the aft portion of the cabin.

Two backboards were identified. A blue, plastic backboard labeled "Laurel Rescue" was found in the debris field. Attached to it were a red fabric strap labeled "WVFD" and five yellow 'sticky-tape' disposable securing restraints. The backboard was undamaged except for a fracture of the right-side handle at the head end.

Mr. Kevin Roberts of Prince George's Fire Department identified himself and stated that he had possession of a plastic, yellow backboard that was used to transport the survivor away from the wreckage. He brought the litter to the scene. It was a yellow "Ultra-Loc" litter marked with "WVFD EMS-12." It was manufactured by Iron Duck Intl, Chicopee, MA. The underside of the litter had two wooden structural supports encased in plastic that ran the length of the board. The left support was fractured approximately 16" from the toe end of the board. Associated with this fracture the board was bent upwards slightly. Both of plastic handles at the toe end of the board were also fractured.

2.2 Seats and Restraint Systems

2.2.1 Pilot Seat

The pilot seat was found in the debris field approximately 15' from the main wreckage. The seat remained attached to both seat rails. The seat rails were still attached to sections of floor structure. The inboard seat rail was bent upwards near the midpoint. The positional sliders were located 5 inches from the forward terminus of the seat rails. There was massive disruption of the seat pan and seatback. The seat pan was pushed up and aft and the structure beneath it was extensively fractured. The seatback was bent, partially fractured, and twisted.

The following information was found on the seat identification data plate:

Ste. Charentaise d'Equit Aero (ISOSEA)
17300 Rochefort France
Designation Siegee S 106
Code 704A4
No de Serie 447
Date de Fab 04/86
Poids Equipe 13,700 KG
Siege Vers AV 9G
Norme: Conforme A TSO C39A

The seat was equipped with a four-point 'Autoflug' seatbelt. It had a central round buckle into which inserted a lapbelt restraint and two shoulder harness fittings. The two shoulder harnesses were stitched together and threaded into a single inertia reel mounted in the back of the seat. Each shoulder harness terminated in a metal fitting that could be snapped into the central buckle. Neither shoulder harness restraint fitting was engaged in the central buckle. Neither shoulder harness fitting showed any evidence of deformation or impact damage. The right lap belt contained the buckle. The left lapbelt had a linear separation 8" from the shackle. The insert tab of the left lapbelt remained engaged in the central buckle. When the lift tab of the central buckle was pulled the insert tab of the left lapbelt easily released confirming that it was still operational.

The following information was found on the restraints:

Aircraft Belts Keman, TX 77565
TSO C22f
Model – Autoflug
P/N – AFG0313670
Rated strength 1500 lbs.
Rev. Date 5/07

Beltmaster Corp. Ashland, OR
P/N G6570H-A

Date of mfg 1-05
FAA TSO C22f
Rated strength 1500 lbs.

The following information was found on the inertia reel:

Mod # AGB-2A-R1112080
P/N AFG0356409
S/N 19937
Mfg. RA12 06

2.2.2 Copilot Seat

The copilot seat was identified in the wreckage but was only partially observable. It was covered by cockpit instruments and partially buried in the ground. It was possible to observe that the aft portion of the seat was still secured to the cockpit seat rails. The observed portions of the seatback and headrest did not appear to be extensively damaged.

2.2.3 Medic Seat

The aft-facing medic seat consisted of a retractable seat pan and a vertical seatback that was affixed to the floor by two seatback support brackets. (A portion of the upper support and headrest was not located.) The seatback was mounted to the floor via a floor plate that is secured with eight bolts.

The seat was heavily damaged and, although no longer attached to the floor, it was found in its approximate location within the cabin, just aft of the flight crew seats. The seatback remained connected to the left support bracket; however, all of the rivets of the right support bracket were sheared. The left support bracket remained connected to the floor plate but the right support bracket had fractured at the floor plate. The four bolts on the aft side of the floor plate were undamaged. Three of the four bolts on the forward portion of the plate were missing. The forward, right corner of the plate itself was bent upwards. Both seat pan support arms were deformed to the right. The left seat pan support arm was separated from the seat pan and all eight rivets were sheared. The right seat pan was fractured at the hinge. The seat pan itself was not deformed. There were numerous tears and abrasion to both the setback and seat pan cushions.

The seat was equipped with an integral four-point restraint. The shoulder harnesses were inertia reel-type with the reels affixed to a metal plate on the forward portion of the seat. The buckle and insert portions of the lap belt were each permanently affixed to a shoulder harness strap. The following information was obtained from the restraints:

Beltmaster Corp. Ashland, Oregon
TSO C22f Rated Strength 1500 lbs. FAR #43
P/N 66579H-SA RNV. 8/03
FAA Cert Repair Sta. BR4R086M

The following information was obtained from the inertia reels:

AmSafe Phoenix, AZ
P/N 501580-401
1.90G +/- .5G
A2593

The restraint was undamaged and found unbuckled. There was no evidence of belt stretch or warping. One of the inertia reels rotated freely while the other did not rotate.

A tether with a carabineer threaded through a handhold was located in its stowed position, near the ceiling on the right side of the helicopter (just above a seated medic's left shoulder). According to Cpl. Longest, medics were permitted to get up during flight to attend to patient needs. (He stated that it was not necessary to inform the pilot that the medic would be getting out of the seat.) He stated that the medic had to secure himself to a fixed point by securing a tether to his belt prior to moving about the cabin. The tether was also used to secure the medic during hoist operations. The following information was obtained from the tether:

Life Support International Inc.
P/N RES-1060-A
[No date of mfg was listed]

2.2.4 Forward Jumpseat

The seat pan of the forward jumpseat was found in the debris field. It was undamaged except that both hinges had fractured at their attachment points to the seat pan. No restraint was identified. According to MSP personnel, the seat was equipped with a four-point restraint. According to Cpl. Longest, the seat was rarely used for occupants. Usually equipment was stowed on it and belted in.

2.2.5 Field Provider Seat

The seat cushion was found in the debris field. It was undamaged. The right D-ring and lapbelt remained attached to the floor. The 14" section of the left lapbelt and D-ring were found lying loose in the cabin area of the wreckage. The lapbelt had an angled linear separation. The seatbelt buckle was engaged with the lapbelt. Both shoulder harness webbings displayed linear separations just above the seatbelt buckle. Both webbings were hanging from the ceiling area of the aft bulkhead and could be extended and retracted without difficulty. Both had linear separations that matched with the left

lap belt separation near the buckle. The inertia reels were located behind the aft bulkhead and were not observed. The following information was obtained from the restraints:

Beltmaster Corp. Ashland, Oregon
TSO C22f Rated strength 1500 lbs.
P/N 6579H 9A RNV 2/01

2.2.6 Hoist Operator Seat

The seat pan was found in the debris field outside the helicopter. The seat pan itself was undamaged but the outboard floor support had fractured and had been pulled from the floor. The inboard floor support was fractured and separated from the seat pan. It remained attached to the aft bulkhead but was pulled free from the floor structure. The inboard lapbelt shackle was undamaged and there was an approximately 12" long section of webbing attached. It terminated in an angled linear separation. There was a second inboard shackle that, according to Cpl. Longest, was used during hoist operations.² The shoulder harness was permanently affixed to the buckle and was undamaged. The webbing extended and retracted easily from the inertia reel. The inertia reel was located behind the aft bulkhead and was not observed. The outboard shackle and section of lapbelt with the insert tab were not identified. The following information was obtained from the restraints:

Beltmaster Corp. Ashland, Oregon
P/N G6579H-SA Mfd 7/04
FAA TSO C22f

2.3 Doors

The helicopter was equipped with 6 doors. The four forward doors (two on each side of the helicopter) were forward-hinged automotive-type doors.³ The aft two doors (one on each side of the helicopter) were sliding doors that opened to the rear.

2.3.1 Copilot door

The door was identified embedded in the ground beneath the wreckage. The frame appeared to be intact although heavily damaged.

² There were two additional webbing straps found in the wreckage that terminated in carabineers and seatbelt shackles. One was rolled into a ball and stowed in a compartment on the aft bulkhead. The other was affixed to a D-ring on the floor of the cabin, at the base of the aft bulkhead.

³ As stated previously, the door in the second position on the right side had been deactivated according to Cpl. Longest. A cabinet for supplies was installed in front of it.

2.3.2 Left-side Emergency Exit

Portions of the door and door frame were identified. They were embedded in the ground beneath the wreckage just aft of the copilot door. The frame was disrupted and fragmented.

2.3.3 Left-side Patient Entry Door

The 4' by 3.5' door was found across the asphalt path from the main helicopter wreckage. The door was completely undamaged with the exception of some minor composite material crushing on the edges of the door and the separation of some of the attachment fittings. The door handle was in the locked position and could not be moved.

2.3.4 Right-side Pilot Door

The door was not identified in the wreckage.

2.3.5 Right-side Middle (Deactivated) Door

The door was found at the base of a tree approximately 20-25' from the main wreckage. It was crushed and buckled with numerous tears in the fuselage skin, but remained in one piece. Both forward hinges were still connected to a structural member of the helicopter. The upper portion of the doorframe was severely disrupted and twisted.

2.3.6 Ride-side Patient Entry Door

The door was found in the same location as the right-side middle door. The door was in one piece but was bent inward. The upper frame was bent, twisted, and fractured. The exterior handle had been sheared off.

3.0 Emergency Locator Transmitter (ELT)

The ELT was identified in a pile of other components near the wreckage. MSP personnel indicated that it had been removed from the wreckage prior to the arrival of the Survival Factors specialist. It was crushed and partially separated from the omnidirectional impact sensor. The switch was in the armed position. The following information was obtained from the ELT:

Dorne & Margolin
DM T2-1-1 transmitter
S/N 12890

The following information was obtained from the omnidirectional impact sensor:

DM Omnidirectional Impact Sensor
DS1-3-1
S/N 515

4.0 Crew Helmets

The Maryland State Police provided access to the crew helmets that they had retained in their custody. MSP photographs indicated that both helmets were initially located on the asphalt path forward of the helicopter's nose. (See Attachment 1) One of the helmets was white in color and had the name "Bunker" printed on the back. There was a four-inch crack in the shell above the right earflap. The right visor track was fractured and the clear, plastic visor was deformed to the left. The fabric chinstrap was a double-snap fastener style and was undone and undamaged. The microphone was fractured and not present. The following information was obtained from the interior of the helmet:

Cobra Helmet
2872-1005
Reg. 7-89
Gentex Corp.
Carbondale, PA

The second helmet was white with yellow stripes. It had a three-inch crack above the left earflap. The left visor track was fractured and the visors had separated. The fabric chinstrap was a double D-ring type that was undone and undamaged. The microphone was damaged but present. The coiled communication cable was separated about 6 inches from the origination of the coiled section. The following information was obtained from the interior of the helmet:

Gentex Corp.
Carbondale, PA
HGU-84/P Helmet, White
XL-Wide
97427/01840097
Order No. 28119
11/07

5.0 Interviews

TFC John Preston
Paramedic, Maryland State Police
Aviation Command

He was working as a paramedic with Pilot Scott Russell on the night of the accident. They received a phone call from Corporal George Noyes (MSP Systems Communications Center (SYSCOM) duty officer) at approximately 0020 who told them

that they had lost contact with Trooper 2 and asked if they were able to launch to search for them. He put Cpl. Noyes on hold and consulted with Mr. Russell who looked at the weather. They accepted the mission. They were not provided with any coordinates but were told T2 was in the general vicinity of ADW. He “was still trying to get them [the coordinates] off the system.” It was not unusual for them to launch to an accident scene without knowing the exact coordinates until they were in the air.

They launched but the weather was not good so the helicopter returned to base. It was about a 10-minute flight including startup. It took them about 5-6 additional minutes to secure the helicopter. He then called SYSCOM back and received coordinates for Trooper 2’s last known position at approximately 0040-0045. He used the computer and plotted the coordinates near the north entrance to Walker Mill Regional Park. (See Maps 1 and 2 at the end of this report) He and Mr. Russell got into a marked police car (unit AV18) and drove to that location “not quite hitting triple digits.” The car was not equipped with a computer or GPS system. He estimated that they arrived at the park’s north entrance at approximately 0100. There were several other officers there and they heard from them about “pings” from one of the trooper’s cell phones. He believed the location of the search was being narrowed. They drove to the new location that was near Central Ave. and the Beltway. It was the parking lot of a well lit commercial area. A quick visual search indicated that the helicopter was not at that location. They met Sgt. Perkins (AV16) in the parking lot. He believed that they received notification of a second “ping” that led them to the location of a school just off Ritchie Rd. Two other units were already at that location and had previously looked in the fields behind the school’s parking lot.

At that point they decided to attempt to reorganize their search effort. The phone number for ADW tower was obtained and Mr. Russell called and spoke with the controller on duty. While he made this call Trooper Preston called MSP HQ to request additional resources for the search. Mr. Russell reported that ADW tower had lost Trooper 2 on the final approach to runway 19. They used an ADC⁴ map from Trooper Preston’s car and drew a straight line out from runway 19. Previously, on their drive down from Section 8 they discussed where Trooper 8 might be and Mr. Russell was certain that they had to be down in a “black hole.” The line they drew intersected with Walker Mill State Park, the same location where Trooper Preston had plotted the original coordinates. Trooper Preston drove toward the southern entrance of the park, guided by Mr. Russell. They lost Sgt. Perkins and the other units when they had to make a U-turn and they approached Berry Lane alone. They took that road because it looked like it provided the closest access to the park. They drove as far as they could and then proceeded on foot into the park. After several hundred yards they began to smell jet fuel. After another 50 yards they heard a voice. They continued running down the path and saw the helicopter.

The survivor was lying on the path in front of the helicopter. Mr. Russell stopped to attend to her while Trooper Preston continued to the helicopter to look for additional

⁴ ADC is part of the Langenscheidt Publishing Group and publishes a popular series of maps, atlases, and guidebooks in the Mid-Atlantic region.

survivors. He walked around the wreckage and the only visible individual was the deceased pilot. There were no signs of life from the wreckage itself. Trooper Preston ran back to his vehicle to retrieve his EMT bag. When he arrived at the car Sgt. Perkins and other units were arriving. He returned to the scene and they decided to remove the patient because of the large amount of jet fuel on the ground and in the air. They removed the yellow backboard that was “poking out” from the wreckage near the patient and put her on it and carried it away from the wreckage up the path. He continued treating the patient and stated that her most serious visible injuries were to her lower legs. She had obvious bilateral tibia/fibula fractures but there was no bleeding. When a fire truck arrived he removed the rest of her clothing and used the hose to decontaminate her. She was placed on a new backboard and transported to the hospital in a waiting ambulance. He accompanied her to the hospital in the ambulance.

After arrival in the emergency room he transferred care of the patient to the doctors. He began collecting his items when a nurse supervisor approached him and told him that family members of one of the victims were there. There had been no official notification about the status of their loved one. He saw them asking questions of the ambulance crew. He called MSP HQ to ask what, if anything, he could tell them officially. He received permission to tell them that there was one survivor of the accident and that was the person he had arrived with earlier. He stated that the family drew their own, correct conclusion from that information.

When asked about the cell phone information that was received while they were at Walker Mill Regional Park the first time he stated that, “it definitely was a distraction.” He “had no doubt that [they] would have been out on foot in the park” if they had not received that information. Because they were at the north side of the park, it may have taken them a while, but they probably would have started smelling the jet fuel much earlier than they actually did.

When asked about his use of his cell phone he stated that he was on the phone with Sgt. Perkins (who was at the north entrance to the park) when he began smelling jet fuel and heard the survivor’s screams. It was less than a minute later that they came upon the wreckage. About the same time he also recalled receiving a phone call from Tobin Triebel at the MSP Forestville command post asking him where he was and he told him that “I have the aircraft.”

A typed, unsigned statement prepared by Trooper Preston the day after the accident is included as Attachment 2.

Mr. Scott Russell
Pilot, Maryland State Police
Aviation Command

Mr. Russell was working the overnight shift from 1800-0600 on the night of the accident. He did not remember receiving any requests for service during the hours prior to the accident. He had been monitoring Helicopter Emergency Medical Services

(HEMS) weather data constantly throughout his shift. He was in the office between 2330-0000 doing his midnight reports and was monitoring the conversation between Paramedic Lippy and SYSCOM and heard that Trooper 2 was diverting to ADW. He looked at the HEMS screen and noticed that ADW “was not up.” DCA was VFR. College Park was 500-600 overcast. He recalled thinking that they would not have any trouble getting into ADW with the weather he was seeing at the time. He noticed that the dew points that night were zeroing out and the winds were calm so he knew they were going to get fog, but he did not think it would affect Trooper 2 going into ADW based on what he was seeing on the HEMS screen.

Approximately 20-25 minutes after midnight he had sat down to read a book when Trooper Preston answered a call from SYSCOM stating that Trooper 2 was missing. He realized at that point that the aircraft probably had crashed. SYSCOM asked if they could take a search mission. Trooper Preston put the call on hold and they both looked at HEMS. He already had good situational awareness about the weather and knew that it was going to be “iffy” between Section 8 (Norwood) and ADW but they thought they could certainly give it a try.

They launched and contacted DCA tower to see if they knew anything about the whereabouts of Trooper 2, which they did not. They did not get far enough along to contact ADW. They got about 2 miles south of Norwood when they encountered a “thin layer” and they had difficulty seeing the ground lights. They have an enroute minimum of 500 feet agl. They decided not to risk it and returned to Norwood.

He felt that it was important for them to “get down there” because he knew how pilots think and would be helpful in the search. He retrieved a 121.5 MHz receiver and a flashlight and tried to call both Mr. Bunker and Paramedic Lippy on their cell phones. He did not get an answer on either phone.⁵ While he was doing that, he believed Trooper Preston called SYSCOM and received coordinates⁶ that he plotted in Google Earth. They got into Trooper Preston’s car to drive to the area of the last known position that Trooper Preston plotted. They did not have a portable GPS device. He believed there was only a portable GPS device in the mishap kit for extended searches.

They encountered very little traffic. They exited the Beltway on Ritchie-Marlboro Rd., and then turned onto Walker Mill Rd. They eventually arrived at the north entrance to Walker Mill Regional Park where they encountered county officers driving around the parking lot. They put the 121.5 receiver out the window in an attempt to receive an ELT signal, but did not hear anything. They were considering searching the woods, but it was a “pretty daunting task” requiring a lot of people because “there were a lot of woods.” At that time one of the county officers received information about a hit from one of the troopers’ cell phones. They responded to the location provided and ended up in a mall parking lot near a cell phone tower. (He remembered seeing clouds

⁵ When he arrived on scene he found one of the cell phones near the helicopter wreckage and noted that it was still functional and had received numerous missed phone calls.

⁶ He stated that they were relying on a “300 foot ADS-B lat long” from the SYSCOM CRABS system. He believed the ADS-B coordinates were not “dead-on accurate.”

just at the top of the cell phone tower.) He realized that was not where the helicopter was going to be and, in retrospect, believed that the information about the cell phones was a distraction.

They met up with MSP Sgt. Perkins at the parking lot who asked if anyone had talked to ADW tower. Mr. Russell had not thought of that so they obtained the phone number for ADW tower from one of the county officers. He called and spoke with the controller on duty who told him that she lost the helicopter 2 miles out on approach to runway 19R. (His cell phone records indicate that the call was placed at 0142.) They got out an ADC map and drew a pencil line out from the centerline of 19R and the location was “exactly north of Berry Lane” in Walker Mill Regional Park. They immediately drove to that location. He believed they arrived at the end of Berry Lane at approximately 0150 to 0155. They used the 121.5 receiver and did not hear an ELT. They were about to walk into the woods when they saw a path that they decided to follow. A short way down the path they began to smell jet fuel and they began yelling the names of the crew. They heard a female voice respond weakly. They ran down the path and came upon the helicopter. The survivor was lying on a white sheet on the path. She was separated from the yellow backboard which was nearby. She was communicating “really well.” He looked for other survivors and saw the deceased pilot. He did not see any other victims but it was very still and quiet and there no other signs of life or movement from the wreckage. Trooper Preston had a trauma bag in his car and ran back to retrieve it. Mr. Russell stayed with the survivor, held her hand, and provided “moral support.” She was complaining of lower body pain. He noticed that both of her ankles were “twisted” and appeared to be broken. She was cool to the touch. Trooper Preston returned with Sgt. Perkins right behind. They pulled the yellow backboard from the wreckage next to her and placed her on it. While Trooper Preston worked on the patient, Mr. Russell, Sgt. Perkins, and 1st Sgt. Lewis performed a more detailed search of the area and identified the bodies of the other victims.

At that point, Mr. Russell put himself in “mishap mode” and began making notifications and phone calls. He called to get the mishap kit on scene and spoke with SYSCOM.

He stated that he had been a “strong voice within the command for a long time” as an instructor pilot and a maintenance pilot. Mr. Russell stated that the risk matrix in the MSP Health and Safety Plan was the one he personally developed based on his flying in the Marine Corps. It was produced for new pilots and paramedics to “help them stay in the box.” It was not a “numbers-based risk matrix, there’s a lot of gray area.” MSP Sgt. Kevin Straight played no part in what was actually in the Health & Safety plan. He noted that the temperature/dew point spread was a factor in the plan and increased the risk. The risk matrix was not a form they were required to fill out. He was “not a big believer in filling out a lot of paperwork” when pilots come on shift, but they found that a lot of paramedics did not know about it, and pilots were not following it. Therefore, in 2007 he really made an emphasis about it. He told the pilots that if they had an accident and they were “outside the box,” he would not support them as the safety pilot. He said that was not received particularly well by some of the pilots. He said there was not any resistance

from Command, it was just a natural reaction by pilots and paramedics who did not like being told what to do. He and Sgt. Straight thought about doing a poster for all the different Sections on the subject before he left but never got to it. He wanted pilots to be held accountable for continuing to monitor risk. He “also had a hand” in writing the Flight Ops Standard Operating Procedures in 2005. It stated that “pilots will ensure that decision height is set and no flights under 500 agl without radio altimeter.” They also have TCAS on their aircraft which, he believed, helped prevent a midair collision that involved Pilot Bunker when two aircraft approached a landing zone at night. He informed an NTSB representative about that event at a safety meeting in the days before the September 27th accident.

He estimated that about 75% of the time they would have landing zone coordinates prior to launch. It was not uncommon to launch and get the coordinates in the air.

A handwritten, signed statement prepared by Mr. Russell the day after the accident is included as Attachment 2.

Sgt. Mike Perkins
Section Supervisor, Maryland State Police
Aviation Command (Frederick Section)

Sgt. Perkins (AV16) was notified that Trooper 2 was missing at 0101 via a phone call from Sgt. Bob Adams. At the time, Sgt. Perkins was working a second job in Rockville, MD. Sgt. Adams was driving to SYSCOM and asked him to report there immediately. From his location in Rockville the fastest way to drive to SYSCOM was to drive on I-270 and east on the Beltway to I-95 north. While he was on the Beltway he called Sgt. Adams back and asked if they had found the helicopter. Sgt. Adams put him on hold and then told him it had not yet been located. Although he did not have extensive search management experience, he felt he would be better utilized actively searching for the helicopter. Sgt. Adams agreed and he continued around the Beltway to PG County. He was monitoring the Forestville radio frequency and heard about a cell phone “ping” near Rt. 214. He had just passed Rt. 214 and turned around at the next exit. He got on the radio to report his location and asked those more familiar with the area to guide him to the location. He finally arrived at a mall parking lot but the helicopter was not there. AV18 arrived along with officers from PG Park Police, PG county police, and an off-duty Forestville trooper.

Trooper Preston kept saying something about “Walker Mill.” One of the PG officers said that there was a Walker Mill school nearby. Sgt. Perkins asked them to take them there. It was a short drive to the location off Ritchie Rd. When they arrived two other PG units were already coming out from behind the school and the helicopter was not there. Sgt. Perkins told everyone that they need to “stop chasing our tails” and set up an organized search so that they did not have a repeat of the difficulty experienced finding a crashed MSP helicopter in 1986. He called Sgt. Adams at SYSCOM to try to get a better location and he “kept giving latitude and longitude.” He told Sgt. Adams that

did not help him because all he had was an ADC map book that did not have latitude and longitude. He needed a map grid location and attempted to have him obtain one by using an online tool like MapQuest. He asked Sgt. Adams for a phone number to ADW tower and had Mr. Russell call and talk to the tower controller. Sgt. Adams told them that he thought that the helicopter was approaching from the south and was set up to land on runway 1L. Once Mr. Russell talked to the controller they learned that Trooper 2 had been lost 2 miles out on approach to runway 19. He believed that Sgt. Adams was able to provide information that the last ADS-B position was in Walker Mill Regional Park. They plotted the location 2 miles from runway 19 and drew a straight line. The locations were tightly clustered near Walker Mill Regional Park. He found the closest major intersection (D'Arcy Rd. and Ritchie Rd.) and told the PG officer to take them there. The intersection turned out to be a residential area. AV18 suddenly made a hard U-turn and went back the opposite direction. He radioed and asked where they were going and they told him to hold on. He knew Mr. Russell had an ELT receiver and he thought that they may have received a signal. AV18 eventually responded that they were going to Walker Mill Regional Park. Sgt. Perkins asked the PG officers who were with him to take him there. They drove him to the north entrance of the park off Walker Mill Rd. They started walking around some softball fields and he called Trooper Preston and asked where he was. He responded that he was at Walker Mill Regional Park. In the background Sgt. Perkins heard Mr. Russell say, "You smell that? That's fuel. They're here." Trooper Preston said they would call back. Two minutes later he called and said he heard screaming. Sgt. Perkins again asked where he was and this time he said it was the Berry Lane entrance to Walker Mill Regional Park. He told the PG officers to drive to that location. When they arrived, Trooper Preston was at his car getting his EMT bag. He followed him down the path and saw Mr. Russell with a flashlight near the survivor. She was out of the helicopter but her legs were partially entangled in the wreckage. They extricated her and placed her on the backboard that was sticking out of the wreckage. She was cold and screaming in pain.

Sgt. Perkins was very concerned about the possibility of a fire with the large amount of atomized fuel in the air. He told them that they had to remove her from the area immediately. They carried the backboard back up the hill and Trooper Preston began patient care. He and Mr. Russell went back to the wreckage to see if there were other survivors. The pilot was outside the wreckage and deceased. They walked around the other side of the helicopter, near the underside, and looked inside. He saw the black flight suit of the paramedic and realized he was deceased as well. At that point they set up a perimeter and treated the area as a hazardous crime scene. A short time later 1st Sergeant J.C. Lewis arrived on scene and asked if they had everyone accounted for. They said they had accounted for the pilot, paramedic, and the patient. First Sergeant Lewis said it had been a double lift and there was a field provider on board. That was the first they had heard that it was a double lift. They went back to the wreckage and he saw a blue EMS pant leg and identified the field provider. Mr. Russell then identified the other patient. They reestablished the secure perimeter and waited for additional personnel to arrive. He eventually left the scene later that morning at approximately 1130.

A typed, unsigned statement that was prepared by Sgt. Perkins the day after the accident is included as Attachment 2.

Asst. Chief Paul Tackish
Fire Department
Andrews Air Force Base

Chief Tackish was working a normal 24-hour shift on the night of the accident. He had started his duty day at 0730 on September 27th. At approximately 2350 the direct line from Prince George's County rang at the station. He answered the phone and was told that Trooper 2 was returning to their hangar at ADW with two patients on board and that two PG basic life support (BLS) units were enroute to pick up the patients. He knew that getting PG units on the base could be "a little rough" so he immediately got into his vehicle and was prepared to radio the gate if they reported any difficulty. The fire station was located approximately 200' from the control tower and as he pulled out he contacted the controller to inform her that T2 was inbound to the MSP hangar. She was aware that T2 was inbound but stated that it was her understanding that they were going to land at the base of the tower. He could see that T2 had not landed near the tower, because that was where he was. He looked across the field and could not see T2 at the MSP hangar. He described the weather as "foggy" and "soupy." He estimated visibility at ¼ mile, "but in some places it was less." He stated that he could see the high intensity lights on the hangars on the opposite side of the base. However, without the lights, he would have had trouble seeing the hangars at all. The ceiling "was really down."

He asked the tower controller if she was still talking to T2 and if she could find out where they were. She stated that she was not sure where T2 was. She had lost them off radar two miles north of the field and thought they might have landed somewhere else. She tried to radio T2 again but received no response. He told her to keep trying and asked to be cleared across the field to the MSP hangar. When he arrived there and did not see the helicopter he got out of his vehicle and looked into the hangar windows. He reported to the tower that T2 was not inside either. He asked for (and received) permission to drive to the north end of the field on taxiway Echo. When he arrived he did not see the helicopter and turned off his vehicle to listen for the sound of a rotor. The only noise he could hear was the traffic on I-95. He tuned his radio to 121.5 MHz to see if he could hear an ELT but he "didn't hear a thing." Visibility was slightly better there and he could see all the way down the sloping terrain to Suitland Parkway. He notified both the tower and PG Communications that T2 was not at the north end of the field. The PG units were arriving and he told them to proceed to the MSP hangar and he would meet them there. He had a "sinking feeling" about the whereabouts of T2 and called MSP Forestville barrack. He asked them if they knew anything about T2 and they did not. They tried to call T2 on the radio and did not get a response. He told them that ADW tower lost T2 on radar two miles north of the field. He asked if anyone had talked to SYSCOM and MSP Forestville called while he stayed on the line. SYSCOM did not have any additional information. Chief Tackish drove back to the MSP hangar and met the two ambulance crews. They monitored the radio traffic until approximately 0200

when they learned that T2 had been located and it had crashed in Walker Mill Regional Park.

Chief Tackish stated that he had been outside about 2250 and remarked to someone that the field was “really socked in.” He was standing 200’ from the 13-story tower and said that the top of the cab was “shrouded in fog.” If an aircraft had been taxiing on taxiway Echo at that time he believed he would have been able to see the aircraft’s strobe, but probably would not have been able to determine what type of aircraft it was.

Sgt. Robert Adams
Maryland State Police
Operations Supervisor – SYSCOM

Sgt Adams was initially interviewed by NTSB investigators Jason Fedok and Scott Dunham on October 9, 2008. First Sgt. Pat King and Sgt. Dave Kitzinger were also present. A summary of that interview is below. A second, more in-depth interview was conducted with the Operations Group on November 5, 2008. A summary of that interview is included as an attachment to the Operations Group Factual Report.

Sgt. Adams stated that the SYSCOM duty officer was responsible for dispatching and tracking the movement of all MSP helicopters in the state. On the night of the accident the duty officer was Corporal George Noyes. Sgt. Adams was not on duty at the time but responded to SYSCOM around 0100. He also contacted Sgt. Mike Perkins and told him to respond to SYSCOM to assist. Sgt. Perkins eventually responded to PG County and assisted with finding the helicopter.

Sgt. Adams explained that a call came in to SYSCOM from PG county 911 informing the duty officer that they had two ambulances waiting for Trooper 2 at ADW and that Trooper 2 had not arrived. There was some initial confusion because they thought that Trooper 2 may have landed somewhere else at ADW. After they could not be found, the duty officer contacted the officer of the day, 1st Sgt. Tobin Triebel, who contacted MSP Captain Dan Cornwell, who got in touch with Sgt. Adams.

When Sgt. Adams arrived at SYSCOM he had difficulty believing there had been an accident. He felt that T2 must have been set down somewhere with perhaps some chipped rotor blades and were not able to call out on their cell phones. In retrospect, there was “an inability to accept that something bad had happened,” but he also explained that there were other factors to consider. He stated that the GDL-90 equipment installed on the helicopters for ADS-B tracking “does not function well at low levels.” There had been many, many examples of when the ADS-B position stopped at the end of a runway and it turned out that the helicopter actually landed at the other end of the runway or somewhere else. This led to a type of “conditioning” among personnel and a “lack of confidence in the low level position.” He also mentioned a previous event when maintenance personnel at Martin State Airport called SYSCOM to report that a helicopter had not arrived. A short time later the helicopter was located at a different location on

the airport that was within sight from a window in the office where the call to SYSCOM had been placed. These things added to the sense of disbelief that an accident had happened and had MSP personnel focused on “finding out where he went.”

Adding to this mindset was the fact that the video display showing the ADS-B data could only show the last position output on a sectional chart. A latitude/longitude position could be obtained by putting the mouse over the last ADS-B icon, but there was no way for the duty officer to know that the location was over a park. One of their thoughts was that the helicopter could not have crashed because PG County was an urban environment and someone would have called 911 if there had been an accident. Since the accident, and as part of a previously scheduled upgrade, new software that allows Google Earth-type street level mapping has been added to the SYSCOM duty officer position.

Sgt. Adams said that a loss of ADS-B signal with a helicopter required the duty officer to make contact with the helicopter immediately. (The helicopter icon on the screen turned red and an audible alarm was heard when the signal was lost.) However, in practice, because of the problems with the low level position, this was only done when the signal was lost in cruise flight. Also, because the software program they were using “was not completely functional” he did not believe they had the ability to go into the program and retrieve past ADS-B track positions.

Flight crews were not required to call back into SYSCOM when they landed, although they often did. However, it might be 7-12 minutes until the helicopter was refueled before the call would come in. There were also very few places in the state where the FM radios work when the helicopter was on the ground. He stated that they even had difficulty getting a hold of the crews for a second mission if the helicopter was at the fuel pumps. Although the officers carry Nextel phones, coverage is limited, especially in the rural, western areas of the state. An operational decision was made several years ago that they were “sticking with Verizon digital phones” for use on the aircraft. He was not sure if SYSCOM had tried to call the troopers’ cell phones, but knew that PG County had gotten the phone numbers and attempted to get a location through the cell phone carrier.

In summary, Sgt. Adams said that “assumptions were made and opportunities were lost.” While it was the duty officer’s job to watch the aircraft, he had “no effective way to track his task management.” There was also no pre-mishap checklist in place that would have enabled the duty officer to have a “definitive line-in-the-sand” about when to consider an aircraft down.

First Sergeant King stated that an unannounced training drill was done for SYSCOM controllers in early 2005. In the exercise, a helicopter on a maintenance flight made an unexpected, unannounced landing (not at an airport) while enroute to its destination. The goal was to see how and when SYSCOM personnel would identify the helicopter as not being where it was supposed to be. Although he was not in charge of SYSCOM at the time, Sgt Adams provided the following information:

“The flight following system in use at the time indicated a loss of signal alert but the operator on duty at that time did not initiate radio calls for status check. The other two operators on duty at the time believed the aircraft had landed back at their base and also made no radio calls. The problem was identified as poor situational awareness on the part of all three [people] on duty. That NCO was later removed from SYSCOM and reassigned. A related issue was the flight following system in use at the time only provided a statewide view which allowed the staff to confuse the final landing site.”

Sgt. Adams became Operations Supervisor approximately three months after that exercise. He “concentrated on in house practice sessions until the new ADS-B system went on line in late 2005. For the next two years the drill procedure involved random site selection and identification by the staff. A geographic target was identified and a response plan was briefed by the staff in the center.” However, these drills “did not involve direct interaction with a flight crew.”

Sgt. Adams provided the SYSCOM duty roster for the evening of the accident. In addition to Cpl. Noyes there were five Maryland Institute for Emergency Medical Services Systems (MIEMSS) employees on duty: Mr. Jeffrey Stinchcomb (supervisor), Ms. Caroline Higgins, Ms. Brandy Krediet, Ms. Kelly McCaffery, and Ms. Chrystal Sanders.

Corporal George Noyes
Duty Officer
Maryland State Police - SYSCOM

Corporal Noyes was the MSP duty officer at SYSCOM on the night of the accident. He was interviewed on December 16, 2008 at Martin State Airport. Sgt. Bob Adams was present for the interview at Corporal Noyes’ request. [In the weeks prior to the interview, Cpl. Noyes took the opportunity to review the SYSCOM audio recordings from the night of the accident to refresh his memory about what took place that evening.]

Cpl. Noyes had been employed by MSP for the past 18 years. He spent a majority of that time assigned to the Westminster and Glen Burnie barracks on road patrol. He knew Sgt. Adams personally from their time at the State Police Academy. Approximately two years ago they saw one another at a meeting and “got to talking” about SYSCOM. Cpl. Noyes believed it was a good opportunity to do something different than he had for the past 16 years. He described the transition into aviation as a “big change.” As part of his training, Cpl. Noyes spent approximately two months spending time at the different MSP sections and flying missions as an observer in the aft seat. He thought this training was very valuable as it gave him an understanding of how the crews interacted and performed their jobs. This training was accomplished when he got accepted into the Aviation Command and even before he set foot in SYSCOM.

Once he got to SYSCOM he was instructed about all of the policies and procedures relating to the position of duty officer. He spent approximately one month sitting next to an experienced controller and becoming familiar with the console and the different hardware and software applications he needed to learn. He worked with Sgt. Chad Gainey almost exclusively during that time, although when scheduling did not allow, he worked with some of the other personnel. He stated that he felt very comfortable and confident with all of the systems by the end of the one month period. There was a checklist that Sgt. Gainey used during the training period to ensure that they covered all the necessary topics. Before he was “cut loose” to work solo as a duty officer, Sgt. Gainey went over the checklist with him again to ensure nothing was missed. He believed his first solo shift was in May 2007.

Cpl. Noyes worked as a regular SYSCOM duty officer from May 2007 through the night of the accident, with the exception of a six month period from approximately February 2008 through August 2008. Cpl. Noyes explained that he was looking for a promotion and had put a transfer request in so that he could remain at a working location of his choice – either Westminster barrack or SYSCOM. (Sgt. Adams explained further that Cpl. Noyes was filling a sergeant’s slot at SYSCOM and the concern was that if Cpl. Noyes did not have paperwork indicating where he wanted to go, the Command could move him anywhere in the state once he was promoted to sergeant. Therefore, employees often put a transfer request in when they nearing a promotion so that “if I can’t stay where I’m at, send me somewhere I want to go.”) Cpl. Noyes eventually rescinded his transfer request; however, he was told that it was too late and he was transferred to Westminster barrack. He then put in a transfer request to return to SYSCOM which was granted in August 2008. Cpl. Noyes never received the promotion, which have been placed on hold for budgetary reasons. When he returned Cpl. Noyes had to be requalified. He characterized the process as a “review and refresh,” although he had to ensure he was up-to-date with any new policies and procedures. Operationally he was “able to pick up right where he left off.” He worked 12-hour shifts usually three, and rarely four, times per week. He enjoyed working at SYSCOM.

The night of the accident was not busy. He remembered that almost the entire state was on “conditional” status due to weather. When Charles County called for a helicopter to be dispatched to a motor vehicle accident he used the ADC map page provided by the dispatcher to determine the approximate coordinates of the call. This is accomplished through the use of a Microsoft Access program. Cpl. Noyes explained that the duty officer would enter in the county of the call and the ADC map page and the program will provide a set of coordinates in ‘degrees, minutes, seconds’ format. The coordinates will get the crew “in the ball park” of the scene and further coordination about the actual landing zone would take place with the ground units on scene.

Cpl. Noyes called Trooper 2 and spoke to Pilot Steve Bunker. He stated that he provided the county location and told him that it was a motor vehicle accident. When asked about his comment that ‘Waldorf never wants to drive to the hospital,’ Cpl. Noyes stated that he was expressing his frustration with the call. From his experience he could tell that the patients probably were not that injured and, looking at the weather, he “just

thought that maybe they shouldn't be calling us for a helicopter, that's all." He added, "I can't sit there and tell Steve 'you can't take this,' it's his call. All I can do is relay the information to him." When Mr. Bunker accepted that mission and Cpl. Noyes said that he was "a little surprised." He also believed that Mr. Bunker's comment about MedStar flying to MedStar, ('if they can do it, we can do it') was more of a PIREP, rather than some sort of a competitive comment. That is, if MedStar was flying in the same area he needed to fly to, doing the same sort of mission, he could probably fly there as well.

When asked what additional information is normally passed in the mission package to pilots he stated that he normally just provided the location and type of call. When asked if he provided the number of patients he said, "I wouldn't say I do it all the time, but usually, since 90% of the all the calls are usually one patient, but I might say they have the potential for two patients." He could not specifically recall what he said that night.

Cpl. Noyes provided Trooper 2 with coordinates once they were airborne. When asked if that was normal, Cpl. Noyes responded, "sometimes I do." Audio recordings indicated the coordinates he provided T2 were N38 36 70, W 76 57 39. Because '70' is not a valid number for 'seconds,' Cpl. Noyes was asked to explain the discrepancy. He stated that most likely the crew realized he had made a mistake and just truncated the coordinate or replaced '70' with '7'. He stated that the crew was supposed to contact SYSCOM when they are getting ready to land. He did not recall that taking place prior to their landing in Waldorf. He believed that they did notify SYSCOM that they were enroute to PG Hospital.

When Trooper 2 radioed that they were unable to land at PG due to fog, it was the first time in Cpl. Noyes' career that had happened to a helicopter. Mr. Jeff Stinchcomb (MIEMSS supervisor) then made arrangements to have PG County ambulances meet T2 at ADW. He recalled the paramedic providing a 10 minute ETA to ADW. The next event he recalled that evening was a phone call from Sgt. Lipsky at MSP Forestville who asked if he knew where T2 was. Cpl. Noyes responded, "I have him at Andrews." Sgt. Lipsky stated that ADW tower had lost him off radar and Cpl. Noyes was surprised and "little red flags" went up. He attempted to contact T2 via radio and got no response. When he looked at the screen displaying the ADS-B data, it "showed that the aircraft was not moving any longer." He stated that the aircraft had turned red and that there was an audible alarm associated with it. When asked if that was the first time he noticed the icon was red and heard the alarm he stated, "I really don't recall specifically right off the top of my head."

Cpl. Noyes remembered saying something to Mr. Stinchcomb about contacting PG County and asking Sgt. Lipsky to have some troopers search the area around ADW. He believed they called they hangar at ADW and pulled up their cell phone numbers. He did not remember actually calling the cell phones but he did remember providing them to PG County so they could 'ping' them. After about 20 minutes, he decided he needed to call the Officer of the Day, First Sergeant Tobin Triebel, who initiated the contact of the Command. He considered this notification as the start of the SYSCOM Mishap Plan.

Cpl. Noyes “had a pretty good idea they’re somewhere between the hospital and Andrews” and deployed resources to that location. He stated he could zoom in on the ADS-B screen, but the only thing on it that would be a landmark was FedEx Field. He remembered speaking with someone from PG County and told them that the icon looked like it was two miles southwest of the stadium. He obtained coordinates from the ADS-B screen by using the mouse to hover over the helicopter icon denoting T2’s last position. He provided those coordinates to both air and ground resources. At the time he did not recognize the importance of specifically stating that the coordinates he was providing were in ‘degrees, minutes, seconds’ format. Since the accident he had learned that there was a general lack of understanding about coordinates and their formats in the field. He later used Microsoft Streets & Trips to plot the coordinates and provide ground resources with a better location, although he was not certain exactly when he did this. He thought it might have been sometime shortly after his conversation with 1st Sgt. Triebel. He remembered that the location plotted to Walker Mill Regional Park in Streets & Trips.

Because he was the only MSP employee on duty at the time that he initiated the mishap plan, Cpl. Noyes considered himself the manager of the search effort until higher ranking personnel arrived at SYSCOM. He contacted Trooper 8 who attempted to fly to the area but had to turn back due to weather. They ended up responding by ground. He also attempted to have the U.S Park Police fly to the area but weather prevented them as well.

Once he had disseminated the information he had to PG County, MSP Forestville, T8, U.S. Park Police, and 1st Sgt. Triebel, his primary task was to continue to monitor the situation. He felt that he had provided the best information he had to multiple resources. He knew Sgt. Lipsky was very familiar with PG County and “in [his] mind” believed that searchers had responded to the locations he provided. He remembered getting a phone call from the Prince Frederick duty officer who reported that he had heard one of the MSP helicopters was down near Calvert Cliffs. Cpl. Noyes stated that they were looking for a helicopter near FedEx Field and did not need to send any resources to Calvert Cliffs.

Cpl. Noyes stated the he did not know Mr. Bunker very well. He may have met him briefly at some point, but did not know him personally. He could not recall anything unusual about him or how he operated as a pilot.

Cpl. Noyes stated that he received a lot of phone calls from individuals at different levels within MSP who wanted briefings on what was going on. He stated that it was part of his personality to be respectful but that he should have pushed some of them aside and asked them to leave him alone. He thought that 1st Sgt. Triebel would take care of some of that, but said that he did not always know all of the information. In retrospect, he believed that MSP needs to create a “bubble and only draw into the bubble those that we think we need.” The “bubble” should only have one external conduit, in this case, it would have been 1st Sgt. Triebel.

Cpl. Noyes stated that he has been reassigned since the accident and now worked in Materials Management. He did not know whether his reassignment would be made permanent, but stated that, if given the opportunity, he would like to return to SYSCOM in the future.

A typed, unsigned statement that was prepared by Cpl. Noyes in the days following the accident is included in Attachment 2. The ADS-B trip history log obtained from Cpl. Noyes' duty officer position computer is included as Attachment 3.

Sgt. Robert Lipsky
Maryland State Police
Barrack "L" – Forestville, MD

Sgt. Lipsky has been employed by the Maryland State Police for the past 37 years. He spent some time on the road as a trooper and some time as an investigator. He had been a sergeant since 1996 and had been assigned to Forestville barrack for approximately 3 ½ years. In his current position at Forestville he served as a shift supervisor and, in the absence of Lieutenant Bonnie Morris and First Sergeant Robbie Morris, is in charge of the barrack. Sgt. Lipsky was interviewed by NTSB investigators Jason Fedok and Scott Dunham on November 20, 2008.

Sgt. Lipsky was asked to provide a narrative of his activities on the evening of September 27th. He had five troopers on duty on the night of the accident. Of those, Cpl. Krysiak and TFC Jefferies were with him in that barrack. He did not remember whether the first phone call about T2 came from ADW tower or PG County. PG had units waiting for T2 to arrive at ADW with patients. He called SYSCOM to check with them because he was not aware that T2 was flying a mission. He was told by the state police duty officer at SYSCOM that T2 had already landed at ADW. Sgt. Lipsky asked him if he was sure because ADW tower was saying that they lost T2 off radar two miles out. When SYSCOM could not contact T2 and it had not landed he got a "bad feeling" because he had been on duty on the night of the 1986 accident and he could see the foggy conditions outside. He called MSP HQ and Lt. Morris to notify them that T2 was missing. He remembered receiving coordinates from someone at some point which "came down to Calvert County." When asked if he plotted the coordinates to check their location he stated that he "wouldn't know what the coordinates meant." He "relied on Andrews or SYSCOM" to provide him with the last known location of the helicopter. He felt "they would be looking at it" while it was in the air and should give him the best location to search.

He immediately dispatched units to the area of Rt. 4 and Westphalia Rd., just north of the field and east of the Beltway. He was concerned because he knew that the MSP helicopter crews were good pilots, the weather was bad, and that it was unusual they had not called in. He knew something was wrong no later than 0020. He remembered that he attempted to obtain additional coordinates from Potomac TRACON at some point. He also talked to PG County and had them check FedEx Field to see if

they had landed there because it was the only other big, lighted place in the area. He remembered having AV18 check the area near the Beltway and Ritchie-Marlboro Rd.

He spoke with PG County who was going to check the troopers' cell phone numbers and try to get a position that way. At 0150 there was a "ping" received at 9100 E. Hampton Blvd. and he sent units there. (See Map 3) He was told the "ping" was in the SW corridor of the cell tower. At the time of the accident, Sgt. Lipsky was not specifically familiar with the flight path inbound to Andrews Air Force Base. Therefore he was unable to tailor the search to the area directly along the flight path. He was just having troopers check the unpopulated areas that were about 2 miles north of the base. (See Map 4) Sgt. Lipsky stated that he had no previous experience with using cell phones as a means of determining location. During the search he was referring to a bound 8"x10" ADC regional road atlas. The area north of ADW was split onto two different pages so he had to keep flipping back and forth.

While they were trying to manage the search, all three officers (Lipsky, Krysiak, and Jefferies) were in the duty officer room together, and could all hear what each other were doing. Sgt. Lipsky did not recall sending anyone to Walker Mill Regional Park because the park was further away from ADW than two miles. Since all the initial indications were that the helicopter was missing within two miles of ADW, he tried to confine the search to that area.

Standard procedure was for the officer in charge of the barrack to notify state police headquarters and the barrack commander about any major incident. Sgt. Lipsky did so, and Lt. Morris responded to the Forestville barrack to take charge of the incident and set up a command post. The troopers at the barrack were responsible for handling any incident that occurs within their area of responsibility, not SYSCOM or anyone else.

Sgt. Lipsky believed that there was a written policy that the helicopters were supposed to report when they launched to and returned from a mission to the barrack in their area. He stated that was not always done and that Trooper 2 did not inform the Forestville barrack of the mission on the night of the accident. If they would have called in it would have been noted in the radio log. He did not know how to confirm or get a copy of the policy he referred to. He suggested that Lt. Morris might know.

TFC Adrian Jeffries
Maryland State Police
Barrack "L" – Forestville, MD

Trooper Jeffries had been employed by the Maryland State Police for the past 5 years, with the last 3 ½ years spent at the Forestville barrack. His current position was as a road trooper and he generally spent most of his time on the road responding to accidents and making traffic stops. The barrack was short one Public Communications Officer (PCO) so he had been working that position one or two times a week for approximately the past nine months. He had been a certified PCO for 2 ½ years. To be certified, new trainees must work with a trained PCO for two months. The main duties of the PCO are

to answer phones and make entries into the CAD system and radio logs. Trooper Jeffries was working the (PCO) position at Forestville barrack on the night of the accident. He was interviewed by NTSB investigators Jason Fedok and Scott Dunham on November 20, 2008.

He was working the 2300-0700 shift.⁷ He usually called “in service” after leaving his house and approaching the area of Rt. 50. It was at that point he was notified that he would be needed for PCO duty for the evening and he responded to the Forestville barrack. He believed he arrived a few minutes after 2300. He reported the weather conditions were “a light mist, not foggy” when he arrived. He did not recall exactly when or how he learned T2 was missing, but remembered Sgt. Lipsky telling him to attempt to contact T2 in the air and keep trying. He was instructed to make a log of the attempts he made. He called MSP College Park barrack and asked if they could get in touch with Trooper 2, but they could not. He did not recall any direct communications with Trooper 2 on the night of the accident, either proceeding to or returning from Waldorf during the accident mission. He did not know that Trooper 2 was out on a mission until they began looking for them.

At the direction of Sgt. Lipsky they sent units to locations north of ADW. Between 0000 and 0100 someone from the PG fire department came to the Forestville barrack. He remembered they were calling the Coast Guard and ADW to try to get another helicopter up to look for T2. One of the victims’ mothers kept calling and looking for information, but he had none to provide. PG County was “pinging” the troopers’ cell phones and eventually got a return in the Hampton area. He remembered people talking about coordinates “coming back to Calvert County” and they contacted Calvert County. He did not know anything about how to deal with GPS coordinates. When asked what he would do if given latitude and longitude location for an incident, Trooper Jeffries stated that he has never been trained in that and had no idea what to do with such information. ADC maps and landmarks are the most commonly used way to find things. He did know that his car had a street mapping program and he believed GPS coordinates could be entered into that, but he did not know how to do that. He thought that the program was installed in 2007. He stated that the PCO desk had internet access but he had never heard of Google Earth. He did not speak with anyone from SYSCOM during the search. He spoke with SYSCOM when they called to notify the barrack that Trooper 2 had crashed and had been located.

After the interview, the group went to Trooper Jeffries' patrol car in the barrack parking lot to examine the computer in the car and the mapping software available to troopers while they were working. Trooper Jeffries car was equipped with a laptop running DeLorme Street Atlas 2008. Examination of the software showed that it was capable of accepting latitude/ longitude coordinate input and showing the location of the coordinates on a map screen in the car. The coordinates provided to the barrack by SYSCOM on the night of the accident were entered, and the program correctly placed the

⁷ The barrack was staffed in three shifts, 2300-0700, 0700-1500, and 1500-2300. Personnel will generally stay on the same shift for seven consecutive days. The first sergeant is in charge of making the schedule, which is done once at the beginning of the year.

coordinates in Walker Mill Regional Park. Trooper Jeffries stated that he had never been trained on how to use latitude and longitude locations, and was not familiar with the software's capability to use such information.

Lt. Bonnie Morris
Maryland State Police
Commander, Barrack "L" – Forestville, MD

Lt. Morris was notified that Trooper 2 was missing by Sgt. Lipsky at approximately 0020. Within approximately 10 minutes, she left her house and was responding to the Forestville barrack. While enroute, she called the barrack and asked about the coordinates. She was told they were plotting to Calvert Cliffs. That did not make sense with the other information that they had been lost on approach to ADW. She called the Calvert Control Center from her car and provided them with the coordinates she had received (38 52 17, 76 52 26) to ensure they were correct. That was in the area of Calvert Cliffs State Park and the nuclear power plant nearby. Because of the heavy security around the nuclear power plant she felt that if the helicopter crashed in the area someone would have noticed. The coordinates themselves "did not mean anything" to her. She did not have a GPS in her car and would not have known how to plot them. She was relying on someone else to provide her a location to go along with those coordinates.

She spoke with Sgt. Lipsky again and was informed that the helicopter's last known location was approximately 2 miles from FedEx Field and that the helicopter was coming from Prince George's Hospital. Sgt. Lipsky advised that he was trying to get military assistance, and that AV18 was trying to help as well. In addition, Sgt. Lipsky notified her that PG County was trying to obtain a location for the helicopter by using cell phone information supplied by Verizon.

Lt. Morris also called SYSCOM and spoke with Corporal Noyes, who had no new information. She called the College Park barrack and talked to Lt. Miller, the barrack commander, to have him notify Capt. Martin about the possible helicopter accident and have him respond to the general area.

Lt. Morris stated that this was all a new experience, she had not worked any similar accidents, and the troopers at the Forestville barrack certainly have not been involved in anything similar. The last helicopter crash in the area occurred near the Wilson Bridge in January 2005, and was witnessed by people in the area. There was no issue with having to find that helicopter. Lt. Morris stated that as time passed she felt "worse and worse about this," because the state police helicopter pilots are responsible and would call in if they were able to.

When she arrived at the barrack about 0100, a major from the PG county police and a battalion chief (837A) from Prince George's Fire Department were already there along with 1st Sgt. Tobin Triebel from the Aviation Command. It took about 15 minutes to figure out what was going on. The best communications coverage for everyone was outside the barrack in the parking lot, so that was where she set up the command post.

Lt. Morris stated that she was in overall command, because it was her area. They monitored the police radios and what roads were being checked. They checked an area near the new Chick-Fil-A where a witness may have seen lights go down and people were smelling diesel fuel. There was poor visibility at the time. She did not know how AV18 found the scene but assumed they must have received different coordinates or knew how the helicopters flew into ADW.

There were no jurisdictional issues, and the fire department officer was very good at incident management. He kept people on task, and helped to sort out who was necessary and who was not needed. There was also a volunteer from Civil Air Patrol named Cole Brown, who helped manage the scene. She felt his incident management process was very helpful. Once the crash site was located, the command post moved to Walker Mill Regional Park. Lt. Morris stated that she was at the park until approximately 2000 Sunday night.

Approximately a year ago, Lt. Morris attended a MSP search management training class run by Eric Fogel that she thought was beneficial. Mr. Fogel was a member of the MSP Special Operations Division and also had worked on the Potomac River accident scene.

When asked about if MSP routinely used cell phone “pinging,” she stated that the Criminal Investigations Division (CID) performed that function and she did not know much about it.

When asked about training on the use of latitude/longitude information, Lt. Morris stated that it was not part of normal training for troopers, but that she would ensure that the troopers assigned to the Forestville barrack were trained on how to use latitude/longitude information and the associated functions of the mapping software in their cars as soon as possible.

Mr. Keith Glenn
Dispatcher
PG County Communications Center

Mr. Glenn had been employed by PG County Communications for 30 years. He described the communications center as consisting of two main rooms. One of the rooms housed the fire department and police department dispatchers. The two distinct units were separated by a “half wall.” A second room housed the 911 dispatchers, where he was on duty the night of the accident.

The first he heard about Trooper 2 being missing was when Mr. Nello Burian, one of the fire department dispatchers, notified him that they were looking for Trooper 2 and had a set of coordinates that they needed to plot. Mr. Burian provided Mr. Glenn and Mr. Chad Baugus (another 911 dispatcher that evening) with “six numbers” and asked them to plot them, but did not say anything about the numbers being in ‘degrees, minutes, seconds’ format.

They attempted to plot the coordinates into two different systems: the VESTA 911 system, and the CAD system. Both of these systems were routinely used to plot lat/long coordinates received from cell phone ‘pings.’ The systems have a “geo base” that allows a set of coordinates to be plotted on a street level map so that they could provide a street address to responding officers. When they plotted the set of coordinates provided by Mr. Burian neither program was able to return a location. Mr. Glenn believed that Mr. Baugus then attempted to plot the coordinates in an internet-based Google mapping program and the location returned was somewhere in Calvert County. At first Mr. Glenn thought that the location “might be a possibility,” but he later realized that the location could not be correct due to the other information that T2 was lost off radar approximately three miles north of ADW.

Mr. Glenn spoke with Sgt. Lipsky at MSP Forestville barrack and attempted to determine a good starting location for the search. They decided to send units to the area near Rt.4, the Beltway, and Westphalia Rd. He and Mr. Baugus continued to handle a “pretty busy” call volume of 911 calls while the search continued. Ms. Venecia Collins, another PG Fire dispatcher, suggested that they attempt to ‘ping’ the troopers’ cell phones and obtain a location that way. Mr. Baugus called the phones so that the cell carrier could provide a location from the nearest cell tower. One of the phones was not on or was damaged. They were eventually told that the nearest tower to the working phone was on E. Hampton Dr. and it “pointed in the area of Ritchie Rd.”

Mr. Glenn explained that PG County 911 dispatchers routinely receive cell phone calls and need to obtain information about for a caller in possible distress. He estimated that this occurred on a daily basis (usually to obtain subscriber information). There were two ways of obtaining a location. On older cell phones, dispatchers must determine the cell phone carrier and then call the carrier to request the phone be ‘pinged.’ After the proper paperwork has been completed, the cell carrier was authorized to provide the closest cell tower(s) to the phone. They could also provide a quadrant (e.g. northeast, southwest, etc.) where the signal was coming from. The accuracy was approximately 3 miles. On newer, Phase II cell phones, dispatchers had the ability to press a ‘retransmit’ button on their console which would immediately provide a lat/long location (in decimal degrees format) of the cell phone within approximately 50-100 feet. However, for this technology to work the cell phone must have called the 911 center.

Helicopter Passenger

The surviving passenger was a 19-year-old female who was the driver of a car involved in an accident on Smallwood Rd. in Waldorf, MD. She was interviewed on November 25, 2008 at a rehabilitation facility near Baltimore, MD. Present for the interview were Jason Fedok (NTSB), Jill Demko (NTSB), Dave Sexton (MSP-Homicide), her parents, and her attorney, Mr. Gregory Winton.

She remembered the car accident and recalled that it was raining “pretty bad” at the time. It was also “very foggy.” She was leaving Westlake High School and traveling

eastbound on Smallwood Rd. toward the Westlake Dash In. She stated that her car departed the road, entered the median, “sideswiped” a tree, spun around, and entered the opposite lane of traffic where they were struck in the rear by another car. She felt that a majority of the damage to her car was caused by the collision with the vehicle, not the tree. She recalled several citizens arriving at the scene while waiting for the paramedics to arrive. They held her hand and comforted her. She stated that her only injury was a sore neck. Her friend, seated in the front passenger seat, was also experiencing neck pain. The paramedics arrived and flattened the tires of the car and had to bend back the car doors to get them out. A paramedic went into the back seat and held her head so she did not move. They took her out of the vehicle on a backboard and took her to an ambulance. Her friend was taken to a different ambulance. They cut off her clothes and put on a hospital gown and a neck brace. They checked her vital signs and “did something painful” that may have been starting an IV. She asked them to call her parents and eventually someone told her they had been notified, which was not true. Her parents were not notified about the accidents until approximately 0400 on September 28, 2008.

They were driving to the hospital when a paramedic told her that “someone had changed their mind” and they wanted to take her by helicopter. They asked her permission and she said yes. The ambulance turned around and took her to Wade Elementary School. She waited for a while because she was placed in the helicopter last. She did not realize at the time that her friend was on the same helicopter. She was placed in the right side of the helicopter with her feet facing forward. An field provider named Tonya was seated on a forward-facing seat near her head. The provider leaned over and told her everything was going to be okay and that she would be there for her. She remembered that the provider was wearing a headset. She could see the MSP paramedic in the front of the helicopter and believed he was wearing a headset as well. She did not remember seeing a white helmet with a visor on the front and remembered that he had brown hair.

The helicopter took off. The field provider was holding her hand. She tried to say something to her but the provider could not hear what she was saying because it was so loud. She saw some trees and a building outside the window. There were some street lights near the building. She stated that it was foggy, but was not certain if she observed fog outside the window of the helicopter or if she just remembered that it was foggy when she was outside at Wade Elementary School. Later, the field provider leaned over and told her that they could not land and they were going to southern Maryland. She may have said something about the weather.

She “blanked out” near the time of the accident. She remembered “hitting tree branches” and the helicopter “moving side to side.” She demonstrated this by holding out her arms and rocking back and forth in a wobbling motion. She remembered the field provider and paramedic screaming and trying to hold onto something. She did not remember hearing any alarms, bells, or whistles. She did not remember hearing the pilot say anything. She woke up on the ground lying on her back on a sheet. She was later told by the first responders that the backboard was nearby and it was as if she had simply slid right off of it. She was in a lot of pain and was screaming. She tried to stay awake

but passed out at some point. She was wearing jeans and tried to pull them up to see what was wrong with her legs. She remembered seeing “bones and blood.” She tried to put her hands under her legs to move them but it was too painful. She could see the destroyed helicopter nearby. She prayed to God that she would be saved. She realized that she needed to yell for help so she started crying out. She heard someone say “She’s over here!” Mr. Scott Russell stayed with her and talked to her. She was in excruciating pain. They eventually placed her back on the backboard and took her out of the woods. They took the rest of her clothing off and sprayed her with a fire hose to try to clean the jet fuel off of her before taking her to the hospital.

Her mother stated that her injuries included the following: right orbit fracture, C1 fracture, right scapula fracture, T4, T5, T6, and T12 fractures (stable, non-displaced), left humerus fracture (at elbow), bruised right lung, tibia/fibula fractures of both legs, multiple broken bones in both feet, ligament damage in both feet, chemical-type burns on the back of both legs, and a “hot metal burn” near her right hip. Her right foot was eventually amputated after developing several infections. Her mother stated that the infections were due to the large amount of debris (dirt, leaves, pine needles, denim material, etc.) that had to be removed from the wound over several days.

5.0 Medical and Pathological Information

5.1 Injury Table

	CREW	PASSENGERS	OTHER	TOTAL
Fatal	2	1	1	4
Serious⁸	0	1	0	1
Minor	0	0	0	0
None	0	0	0	0
Total	2	2	1	5

5.2 Injury Information

The surviving passenger was transported by ground ambulance to Prince George’s Hospital where she was treated for multiple traumatic injuries. At approximately noon on September 28th, she was transported by ground ambulance to R. Adams Cowley Shock Trauma Center in Baltimore, MD for additional treatment. She was discharged to a rehabilitation center on November 5th and was finally discharged to home on November 26, 2008.

⁸ 49 *CFR* § 830.2 defines serious injury as “any injury which: (1) requires hospitalization for more than 48 hours, commencing within 7 days from the date of the injury was received; (2) results in a fracture of any bone (except simple fractures of the fingers, toes, or nose); (3) severe hemorrhages, nerve, muscle, or tendon damage; (4) involves any internal organ; (5) involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.”

Autopsies were performed on the four fatally injured occupants by the State of Maryland's Office of the Chief Medical Examiner on September 29th. The cause of death for all four individuals was listed as "multiple injuries." The manner of death for all four individuals was listed as "accident." A chart containing detailed medical and pathological information for all of the occupants can be found in Attachment 4.

6.0 Aviation Command Operational Policies

Maryland State Police provided a copy of the Aviation Command Operations Manual dated November 2005. The manual was current at the time of the accident. Excerpts from the manual are summarized below:

6.1 SYSCOM

Chapter 3, SYSCOM, is included in its entirety as Attachment 5. One excerpt of the material is included below.

"Aircraft/Crew Accountability: The SDO [SYSCOM duty officer] is primarily responsible for the whereabouts of helicopters and crew members at all times. While the GIS Flight Tracking System, ADS-B, RightCad, or other tools may assist in this process, technical errors do not relieve the SDO of this responsibility."

6.2 Use of Helmets

"A Command approved helmet should be worn at all times in the helicopter to ensure safety and enhance communications. The flight paramedic may remove his helmet to facilitate patient care; however, during rescue or other operations the helmet will be worn. The helmet will be worn properly fitted with the chin strap fastened. The face shield will be utilized and will be in the down position during flight."

6.3 Use of Seatbelts

"In order to comply with command regulations and FAR Part 91 during takeoff and landing, all persons will be provided with a regular aircraft seat and seatbelt and must occupy the seat with the seatbelt properly secured. When provided, the harness must also be secured... While in flight the flight paramedic and/or ground provider, while attending a patient, shall either keep the seatbelt fastened or wear the harness which is installed in every aircraft right behind the rear seat.

6.4 Communication

"During the absence or malfunction of the flight following system, the following policy is established:

a. ...The MSP SYSCOM duty officer will make radio checks with participating aircraft every (10) minutes to confirm aircraft status. This will only be

required when the expected duration of any portion of the flight exceeds twenty (20) minutes. Crews will communicate with barracks when the flight following is inoperative.”

6.5 Flight Crew Responsibilities

“Crews will (time permitting) make a “courtesy” radio call to the local barrack when handling missions within the installation area, regardless of which agency initiated the call.”

“Flight crews will call SYSCOM by telephone when they arrive at their office or destination when practical.”

7.0 SYSCOM Operational Policies

Sgt. Adams provided a Microsoft Word document entitled, “SYSCOM Ops Policies 1-08, Joint Operations Center Policy & Procedures DRAFT.” (See Attachment 6) In email communication he stated that this document’s “draft” status was primarily due to the fact that:

“Flight Operations policies & procedures in SYSCOM were going through a review and enhancement process... Because many areas would benefit from immediate improvement, any policy or procedure that was considered a direct mission enhancement would be used in daily operations unless it presented a conflict. These policies were listed as ‘draft’ but because of the enhanced benefit they were directed to be used by the SYSCOM duty officer for normal ops pending the completion and approval of the new SOPs.”

He confirmed that the policies included in the document were in place on the night of the accident. Excerpts from the document sections are included below:

7.1 Flight Tracking

“The SDO retains responsibility to insure that all MDSP Aviation Command helicopters are positively identified & tracked throughout each mission.”

“The flight tracking system (ADS-B) vehicle status alert function will remain fully functional at both the SDO and SYSCOM-B work stations. This will allow positive status alert monitoring & resets to be completed in the event an operator or SDO is temporarily unavailable.”

“At no time will the audio level on the flight tracking work stations be altered to a point where alerts will not be detected at all stations within the center.”

“Aircraft ADS-B failures will be identified and confirmed with flight crew.”

“Loss of ADS-B position reporting will be identified and immediate contact made with flight crew to confirm status. In the event of a GDL-90 failure, crew will be directed to provide radio position reports at 5 min. intervals throughout the mission.”

7.2 Aircraft Emergency

“Loss of radio/flight track contact. SYSCOM will confirm aircraft condition, status and position.

- a. Establish contact or verify position by available means including ATC if in airport environment, local 911 center if on arrival to field incident.
- b. Other radio contact points
- c. Presence of Traffic Information Broadcast (TIS) target visible on last known aircraft heading & alt.
- d. SDO will initiate emergency services and Command staff alert notifications if unable to confirm position.
- e. SDO will deploy available MSP and allied resources to assist in aircraft contact and location tasks”

8.0 Health and Safety Plan

The Maryland State Police Aviation Command’s Health and Safety Plan contained a Pre-Mishap Plan as Appendix E. (See Attachment 7) The plan provided the SYSCOM duty officer with a list of information that he was to obtain “upon receiving notification that an aviation related incident/accident has occurred involving Department personnel, equipment or aircraft.” It also provided a list of notifications that were to be made. It did not provide any guidance for SYSCOM duty officers about how to deal with a missing or overdue aircraft.

9.0 Sequence Of Events

In an attempt to better understand the sequence of events surrounding the helicopter’s disappearance from radar/ADS-B and eventual location, the NTSB requested written records and audio recordings from many of the agencies involved in the mission and search. A sequence of events timeline was created using information from the following sources:

- SYSCOM digital audio files
- PG county digital audio files
- Charles county digital audio files
- MSP Forestville digital audio files
- PG County CAD log⁹
- Charles county CAD log

⁹ PG County’s incident report is included as Attachment 8.

- Cell phone records for MSP Sgt. Mike Perkins

The timeline is included as Attachment 9.

Jason T, Fedok
Survival Factors Investigator

Attachments

- 1.) Photographs
- 2.) Personnel Statements
- 3.) ADS-B Trip History Log
- 4.) Injury Chart
- 5.) MSP Command Manual Chapter 3 (SYSCOM)
- 6.) SYSCOM Operational Policies
- 7.) MSP Mishap Plan
- 8.) PG County Incident Report
- 9.) Sequence of Events Timeline