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

January 13, 2009

ATC GROUP CHAIRMAN'S FACTUAL REPORT

MIA08MA203

A. AIRCRAFT ACCIDENT

Location: District Heights, Maryland

Date: September 27, 2008 Eastern Daylight Time / September 28, 2008 Coordinated Universal Time

Time: 2358 Eastern Daylight Time / 0358 Coordinated Universal Time

Aircraft: N92MD, Aerospatiale AS365 Dauphin 2, operating as Maryland State Police "Trooper 2"

B. AIR TRAFFIC CONTROL GROUP

Mr. Scott J. Dunham
National Transportation Safety Board
Washington, D.C.

Mr. Scott Proudfoot
Federal Aviation Administration
Washington, D.C.

C. SUMMARY

On September 27, 2008, at 2358 eastern daylight time, an Aerospatiale (Eurocopter) AS365N1, N92MD, call sign Trooper 2 (T2), registered to and operated by the Maryland State Police (MSP) as a medical evacuation flight, was substantially damaged when it collided with trees and terrain in Walker Mill Regional Park, District Heights, Maryland. The flight had been cleared by air traffic control (ATC) for an instrument landing system (ILS) approach to runway 19R at Andrews Air Force Base (ADW), Camp Springs, Maryland. Instrument meteorological conditions prevailed at the time of the accident, and no flight plan was filed. The MSP were using the Automatic Dependent Surveillance-Broadcast (ADS-B) global navigation system for tracking the accident flight and flight dispatch services were received prior to the initiation of the visual flight rules (VFR) flight. The commercial pilot, one flight paramedic, one field provider, and one of two automobile accident patients being transported were killed. The other patient being transported survived the helicopter accident and was taken to a local hospital with serious

injuries. The flight originated from a landing zone located at Wade Elementary School, Waldorf, Maryland, on September 27, 2008, at 2337, in VFR conditions destined for the Prince George's County Hospital (PGH), Cheverly, Maryland, and was operated under the provisions of 14 Code of Federal Regulations (CFR) Part 91.

D. DETAILS OF THE INVESTIGATION

The ATC group met at Potomac Terminal Radar Approach Control (PCT TRACON) on September 29, 2008, where we reviewed radio and radar recordings of Trooper 2's handling by PCT. We also interviewed the approach controller who handled the flight, along with the operations manager on duty at the time as well as the controller's supervisor (who was not on duty when the accident occurred.) We requested additional data and scheduled a return visit for Thursday, October 2, to review further radar replays. On September 30, the group went to Andrews AFB tower (ADW) to review recorded data, look at the working environment, and obtain information about the process for obtaining and distributing local weather observations. The ADW local controller who handled Trooper 2 was on leave and unavailable for interview, so her interview was scheduled for Friday, October 3.

On October 2, we returned to PCT to review a replay of radar data from the Tyson radar position as it was configured on the night of the accident, and discussed our findings with the facility management.

On October 3, we returned to ADW to interview the local controller on duty and retrieve additional information about the accident, as well as to obtain photos of various pieces of tower equipment.

On October 7, the group visited DCA tower to interview the controller who was in contact with Trooper 2 after the pilot departed Waldorf en route to Prince George's Hospital.

On October 9, the Group Chairman met with the Johns Hopkins University Applied Physics Laboratory staff responsible for managing the FAA's Automatic Dependent Surveillance – Broadcast (ADS-B) data in the Washington area, and also visited the MSP Syscom facility responsible for monitoring police helicopter operations in the state.

Investigation continued through October and November, with further review of recorded ATC data, Andrews AFB records, meetings with various members of the Maryland State Police (MSP), and site visits to the Forestville MSP barrack and the MSP Aviation Division hangar at Martin State Airport in Baltimore.

1. History of Flight

Trooper 2 was dispatched from ADW to a medical transport call in Waldorf, Maryland, shortly after 2300 local time. According to radar data, the helicopter left ADW at 2310, and arrived at the scene at 2320 to pick up two patients. (Figure 1) Trooper 2 departed

from the accident landing zone at approximately 2337. The pilot contacted Washington-Reagan National (DCA) tower at 2337:45, reporting off Waldorf en route to Prince George's hospital. The tower controller approved the operation.

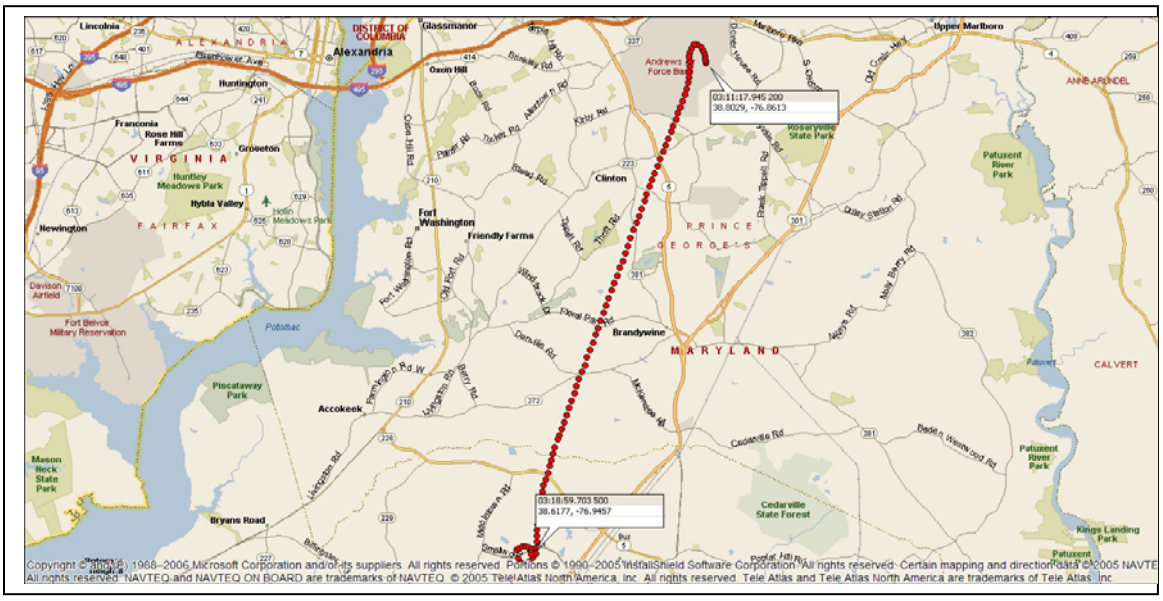

Figure 1 – Trooper 2 ground track – ADW to Waldorf

Trooper 2 entered the Washington class B airspace at 2341 at 1000 feet. (Figure 2) During the initial contact with Trooper 2, the tower controller provided a pilot report from a MedStar helicopter that had,"… passed through the highway 210/295 area 30 minutes earlier, describing cloud bases at 900 feet that lowered further north. (Figure 3)

At 2344, the pilot reported that, "...we just ran onto some heavy stuff - I don't think we're gonna be able to make it all the way to the hospital. I'd like to continue on about three more miles and see what happens, and if I don't see a hole I'll have to go IFR [instrument flight rules] back to Andrews." The controller advised the pilot that he could choose an altitude at his discretion and to advise of his intentions.

At 2347, Trooper 2 advised DCA, "...it's solid up here. I'd like to climb to 2,000 feet and go over to radar and shoot an approach over at Andrews." The controller responded, "Trooper 2 approved as requested, contact approach on… 118.95." There was no subsequent coordination about Trooper 2 between Washington tower and the Potomac Approach (PCT) controller.

At 2348:01, Trooper 2 called the PCT Krant sector, the controller acknowledged, and at 2348:08 the pilot stated, "...we tried to make a medevac up at PG hospital, we're about 7 miles northwest of Andrews, like to climb to 2,000 feet and shoot an approach to runway 1L at Andrews." The controller did not respond. At 2349:15, Trooper 2 called Potomac again, the controller responded, and the pilot stated, "Yes sir, I was waiting for a reply. Climbing to 2,000 feet and my course is uh… 200 degrees." The controller responded,

"All right Trooper 2 present position 200 degrees is approved the altimeter 2991 Washington tower 120.75." The pilot replied, "No sir, I want to shoot the approach at Andrews." The controller then transmitted, "All right tell you what go direct to the you – you want to shoot the ILS 19 what runway?" The pilot asked, "Are they using 19? Uh, runway 19R."

Figure 2 – Class B airspace and radar track overlay

At 2350:01, the controller began vectoring Trooper 2 to the ILS approach for runway 19R. After some discussion, the pilot stated that he wanted a single approach to a full stop at Andrews to drop off patients aboard. At 2351:49, the Potomac controller advised Trooper 2 that, "...the latest weather at Andrews is 7 miles uh 1,800 broken and the temperature uh right now is uh 21 dew point 19." The pilot acknowledged. (Subsequent review of ADW METAR reports showed that the METAR information provided to the pilot had been issued at 1855 local time, and was almost 5 hours old.)

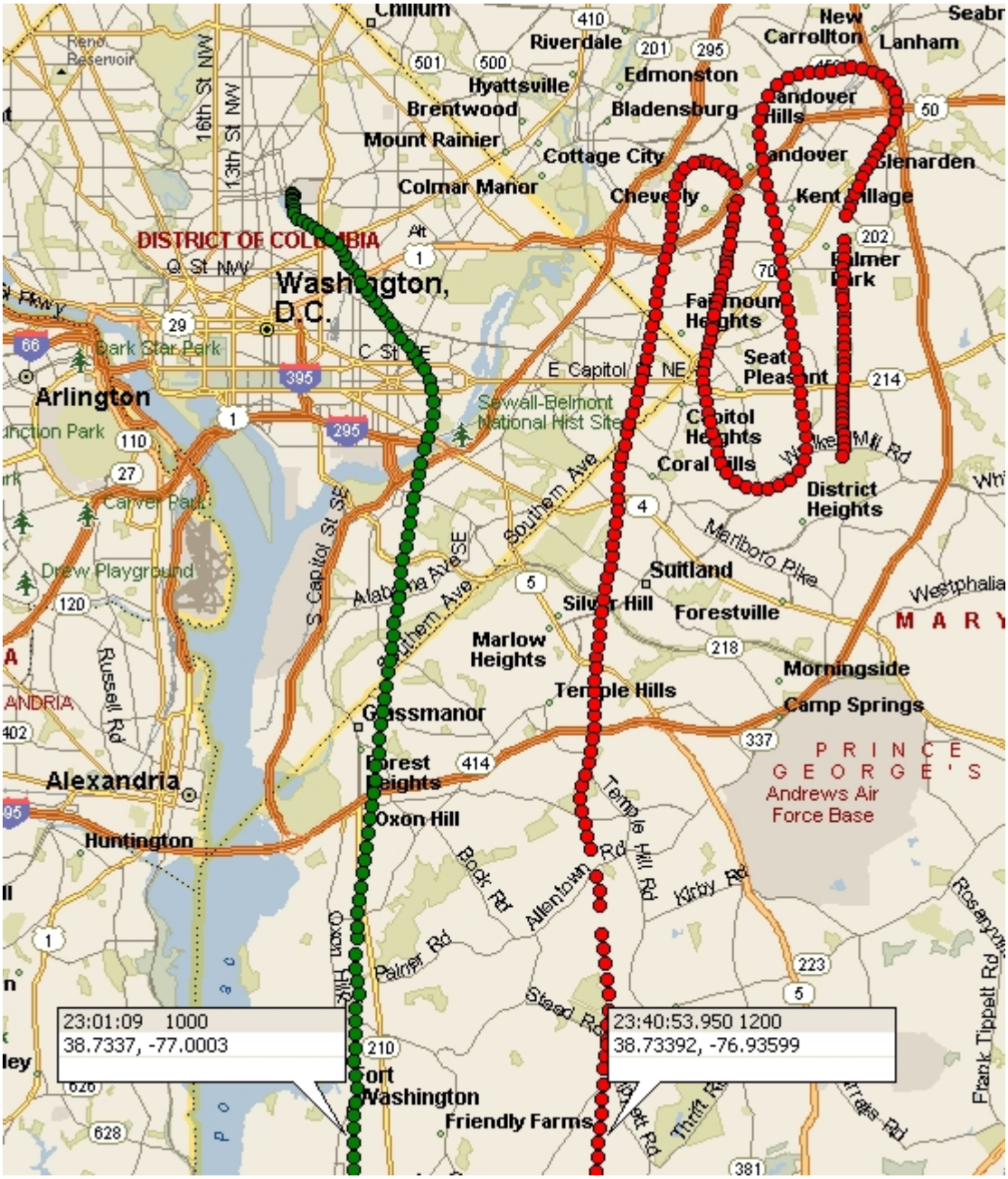

Figure 3 – Preceding MedStar flight (green) vs Trooper 2 (red) time and ground tracks.

Vectoring to final approach continued, and at 2353:46 the approach controller transmitted, "Trooper 2 mile and a half from the final approach fix turn right heading 1 uh 70 maintain 2000 until you're established on the localizer cleared ILS 1R (sic) approach into Andrews." At the time, Trooper 2 was crossing to the east side of localizer, and the 170 heading issued would not have resulted in a successful intercept. Review of radar data indicated that the pilot continued the turn to approximately 210 degrees, which resulted in intercepting the localizer about 1 mile from

PUFFE, the final approach fix. The controller asked Trooper 2 to report established on the localizer, and the pilot did so. The pilot was then instructed to contact ADW tower.

At 2355:12, Trooper 2 checked in with ADW, stating, "...Trooper 2's with you on only the localizer for runway 19R." The controller responded, "Trooper 2 roger runway 19[unintelligible] cleared for the option wind 090 at 5." At 2356:45, Trooper 2 reported, "I'm not picking up the glideslope." The controller replied, "...it's showing green on the panel but you're the only aircraft we've had in a long time so I don't really know if it's working or not." Trooper 2 then requested an airport surveillance radar (ASR) approach, but the controller replied that she was not current and qualified to provide that service. There were no further communications with Trooper 2. The last radar target for Trooper 2 was detected at 23:57:50, at 700 feet over Walker Mill Regional Park in District Heights, Maryland.

At 2359:34, Chief 74B, a member of the ADW base fire department, contacted the tower via radio to confirm that the tower controller was aware of Trooper 2's impending arrival. The tower controller responded that Trooper 2 was "somewhere out on final" but was no longer visible on the radar display. She also noted that the tower windows were "fogged up" and that she was unable to see out. Chief 74B advised that Trooper 2 was expected to meet two medical transport units from the Prince George's Fire Department at the state police hangar, and requested permission to cross the airport to go to the hangar. The controller responded, "last I heard he was coming straight to the tower so I'm not sure what's going on."

At 0000:22, the controller made the first of three attempts to contact Trooper 2. At 0001:06, the ADW controller contacted Chief 74B to ask if he saw the helicopter anywhere on the airport, stating that she had lost the aircraft on radar about 2 1/2 miles out and that the pilot was no longer answering radio calls. The fire chief responded that he did not see the helicopter and that the helicopter did not appear to be at the state police hangar. The chief advised that he would attempt contact on another radio frequency and get back to the tower controller. At 0001:37, the tower controller made another unsuccessful attempt to contact Trooper 2. At 0001:47, the tower controller asked Chief 74B to check the north side of the airport to determine if Trooper 2 had landed short, again noting that the pilot was not answering the radio and that radar contact had been lost. Chief 74B responded that he was trying to reach Trooper 2 on another frequency and for the controller to stand by.

At 0004:10, Chief 74B advised the tower controller that according to information he had received on the other frequency, Trooper 2 was planning on going to the state police hangar. Chief 74B requested permission to go to the state police hangar to check for the helicopter. The controller cleared Chief 74B to do so.

At 0006:21, the ADW tower controller contacted the base weather observer to determine if a new weather report was available. She was advised that the new weather report had just been sent. At 0008:00, the controller contacted the base fire department to report that

she was activating the generators because the new weather observation indicated that the current ceiling at the base was 500 feet.

At 0008:26, Chief 74B reported that the state police helicopter was not at the hangar, and asked the controller to again attempt to contact Trooper 2. The controller attempted to contact the pilot twice, but with no success. She again advised Chief 74B that she had lost radar contact at about 2 mile final and that she did not know what happened to the aircraft. Chief 74B replied that the two Prince George's County medical transport units were approaching the state police hangar, and that he was going to contact the state police in Forestville to determine if they knew where Trooper 2 was.

At 0012:15, Chief 74B reported that he was on the phone with the Maryland State Police in Forestville, and that they were asking if the controller knew where the helicopter had been coming from. The controller replied that she did not know where he was coming from, but that the pilot had been on an ILS approach and that she had lost contact with him about 2 miles out. She offered to contact Potomac approach to see if they could provide his departure point, and Chief 74B requested that she do so. At 0012:58, the ADW controller contacted Potomac approach to ask if they knew where Trooper 2 had departed, and advised that, "... they're looking for him right now." The two controllers had a discussion about what the helicopter had been doing and the fact that he had not arrived at Andrews. The discussion concluded at 0014:18.

At 0014:26, the Andrews controller advised Chief 74B that Potomac approach was not certain where the helicopter had departed, but that they had advised that he had called in the vicinity of Prince George's Hospital so they were assuming that he came from there.

At 0016:24, the Potomac approach controller contacted the ADW controller to ask if she had called the Maryland State Police. She advised that the base fire chief had done so. The Potomac approach controller responded that he had advised the Potomac supervisor about Trooper 2's status and that the supervisor was trying to talk to the state troopers also.

At 0016:59, the ADW tower controller contacted Chief 74B to ask that, "... either the troopers or you or somebody go check the fields north of here because I'm just afraid if he had to put it down or something he's been out there for a while and you know maybe somebody should go look up there." Chief 74B responded, "while I'm on the phone with MSP Forestville I am gonna head north on [taxiway] Echo and check up at the north end." At 0021:16, Chief 74B called the tower controller to report that he did not see anything on the north end of the airport, and asked for clearance to move around freely and take a look. The tower controller responded that Chief 74B could cross both runways as needed and again noted that she had lost the aircraft about 2 miles out, stating "... if he did have to set it down he might be a good couple miles north of the field." At 0022:45, Chief 74B confirmed the tower's phone number with the tower controller and reported that the state police in Forestville would be calling momentarily.

At 0024:10, the PCT operations manager contacted Andrews to discuss the situation. The tower controller described what had happened so far. The Potomac operations manager confirmed that the pilot had never canceled his flight plan and that the Andrews controller had lost radar contact with the helicopter about 2 miles north of the airport. The tower controller then provided an account of her contacts with the pilot of Trooper 2. She concluded by advising the operations manager, "I don't know where he is." At 0028:31, the controller at DCA also contacted Andrews to inquire about Trooper 2. The Andrews controller responded that she had lost radar contact about 2 miles from the airport and could not find the helicopter.

At 0028:53, Chief 74B advised the Andrews controller that he had been talking to Prince George's Fire Department and the state police in Forestville, and they were checking with their Syscom facility in Baltimore to attempt to locate the helicopter. He also stated, "nobody's able to put their finger on exactly where the Trooper might be located." The ADW controller replied, "... I don't know if there is any way but somebody needs to look a couple miles north of the field because he was inbound when I lost radar a couple north and he didn't turn around so I mean he might have put it down or he might be on a road or a field somewhere just north." Chief 74B replied that the state police in Forestville were asking for latitude and longitude information, and asked if the controller had provided that to them. The tower controller responded that the state police had not called, and that she wouldn't know about the latitude and longitude, "…It would be whatever two miles north of the field is." Chief 74B then stated that it might be beneficial for the controller to speak directly with the state police and provided her with their telephone number.

At 0031:26, the Potomac operations manager again contacted ADW and instructed the controller to make some notes about the situation while it was still fresh in her mind. He also noted, "we're starting to get everything rolling on this, okay?"

At 0036:08, Chief 74B transmitted, "... I'm at the north end up on [taxiway] November. I've looked all around here I don't see him here and hopefully you've passed the information you have on to MSP Forestville and we are doing some additional checking. I'm heading back over to the bear's den [the police hangar] to meet with the Prince George's units."

At 0039:55, the Potomac approach controller contacted ADW to find out if the tower controller had any further information about Trooper 2. She advised the approach controller that she had been on the phone with the Forestville barrack and that, "nobody knows where he is."

At 0042:39, the tower controller contacted base operations to report that she had lost contact with Trooper 2, "... 40 minutes ago and he never arrived and I lost him about 2 miles out. I'm notifying you he's still missing." The controller described the situation to base operations, and the call concluded at 0043:18. At 0044:02, the Andrews controller received a telephone call from the base command post asking about a possible missing aircraft. The controller described the situation involving Trooper 2, stating "he was inbound here and we lost him on radar about two miles out. And I couldn't get a hold of

him and nobody's heard from him and Chief 74B's been driving around the field and the state troopers are looking for him north of the field. I don't know if he set it down somewhere, if he crashed, or if he diverted and just..." The command post replied, "hasn't called in yet." The Andrews controller continued, "I have no idea. It's been like 45 minutes now and no one's found him yet so but that's who it was but I can't tell you much more as they haven't found him. I don't really know what's going on with him." The call concluded at 0045:02.

At 0052:16, DCA Tower called to point out Eagle 2, a Park Police helicopter that was engaged in searching for Trooper 2.

At 0054:28, Andrews ground operations contacted the tower via radio to inquire if the tower controller had coordinates for the last location of the helicopter. The controller responded that Trooper 2 had been on about a two mile final and continued with additional description of what had occurred, as well as noting that the helicopter was still missing. The exchange concluded at 0055:09

At 0055:49, Chief 74B reported that he was still at the MSP hangar with the Prince Georges medical units, and inquired about any updated information available from the tower. The tower controller responded that the only thing she knew was that Eagle 2 was out looking for Trooper 2.

At 0057:33, the Andrews command post called back to ask when the last time the tower controller had spoken with the state troopers and whether she knew if the troopers had been in contact with the helicopter. The tower controller responded, "I've talked to Syscom, their dispatch, I've talked to the Forestville barracks, matter of fact I have them on the phone now, no one's talked to him. Chief 74B has talked to them 10 times also. And no one knows where he is and no one's gotten hold of him." The command post replied, "and you said you just got off the phone with them though?" The controller responded, "no, they're waiting for this. I said hold on one second because you just called. They're on the phone right now, but they're just asking for more information they don't know... I have no guess no other information other than you know two miles out is the last time I saw him. On radar. I can't see out the window." The command post replied, "we don't have windows either." The Andrews controller continued, "... I have windows but the weather is just bad out there so I can't see." The call concluded at 0058:42.

At 0100:05, Sgt. Lipsky of the Forestville state police barrack called to ask if there was any way to contact the Coast Guard or another helicopter operator that might have some helicopters that could conduct a search under the current weather conditions. The Andrews controller responded, "... I thought Eagle was out. He didn't go out?" Sgt. Lipsky responded, "... it was too dense for Eagle to go." The Andrews controller replied, "... last I heard he was going out but maybe he didn't because I don't see him on radar. Let me call, I tell you I'll call Potomac and see if they can get a hold of them I don't..." after some brief further discussion, the call concluded at 0100:52.

At 0103:24, Corporal Noyes called from the MSP Syscom facility, stating "I need to get some information. I got people asking a lot of questions. I need to make sure I have the information correct if you can help me. When was the-can you recall the last what the time was when he last had contact with the..." The controller responded, "right around midnight I mean give or take a minute or two... 0002 yeah something like that." Cpl. Noyes and the Andrews controller then had the following exchange:

0103:56	Syscom	Now they were making an approach to the airport, to the air base, right?
0103:59	ADW	Yeah
0104:00	Syscom	And you had radio contact with him at that time?
0104:02	ADW	Yeah
0104:03	Syscom	And then what happened?
0104:04	ADW	He complained he wasn't picking up some of the equipment for the approach.
0104:08	Syscom	Umhmm.
0104:09	ADW	And um I told him that our panel was showing it's green, which means it's working but that I didn't have any other airplanes so I thought <unintelligible>
0104:16	Syscom	He was um was about three to four miles out?
0104:17	ADW	Yeah when he complained and um
0104:20	Syscom	What'd he say - what about the glideslope?
0104:21	ADW	That's what he complained about.
0104:22	Syscom	OK he had no glideslope.
0104:24	ADW	He couldn't pick it up. Yeah I don't know if you're a pilot, but that's what
0104:28	Syscom	Yeah, no I'm not a pilot I just <unintelligible> something.
0104:30	ADW	This one keeps you up and down it's not the left-right it's the up and down one it's like the line that slants down that keeps ya your altitude correct.

0104:39	Syscom	You know do you have a particular location, a north and west location?
0104:45	ADW	You know I can't do lat/longs here. I mean I don't know how to do it. All I can tell you is he was on a two mile final, which is approximately two miles north of Andrews.
0104:54	Syscom	Do you know if he was north, directly north, or northwest…
0104:57	ADW	Well, it's a 010 heading, the runway, you know, so almost due north. And um, but when he complained he was about 3 1/2 – 4 miles out
0105:08	Syscom	Uh huh
0105:09	ADW	and then um I also noticed his altitude was showing Zs, which means that there's something wrong either on our end or his end, we're not picking it up any more, so I don't know if he was having equipment problems or
0105:21	Syscom	OK. Was there – I know this – there's no way to get any kind of a bearing on what his location was as far as north and west?
0105:33	ADW	I don't know how to do that. I mean I can
0105:34	Syscom	Is there anyone there at all that knows
0105:37	ADW	I'm the only one here
0105:38	Syscom	Oh really?
0105:39	ADW	I have no idea how to figure out lat/longs. Other than I know you know I mean if I looked really hard I could find the lat/longs for the airport somewhere but I don't know how to do two miles away.
0105:52	Syscom	OK. All right.
0105:54	ADW	They don't give us that training. I wouldn't know how to do that.
0105:59	Syscom	OK so as far as you know he was in line to make the final approach course?

0106:02	ADW	Yeah he was lined up fine he was just complaining about the glideslope which is sort of the too high/too low indicator but he was on the line correctly and um and then like I said I lost him about two out and couldn't get a hold of him.
0106:18	Syscom	Now you also called the Forestville barrack too, correct?
0106:21	ADW	Yeah
0106:22	Syscom	OK and let them know that you'd lost him OK. <unintelligible>
0106:24	ADW	And the fire chief also
0106:27	Syscom	and the fire chief <unintelligible> fire
0106:29	ADW	talked to him.

At 0108:13, the ADW controller contacted Chief 74B to ask if anyone had notified the Prince George's County police. Chief 74B replied that he did not know for sure but that MSP Forestville had probably notified them. Chief 74B then stated that he would double-check that now. Chief 74B also asked if Eagle 2 was available on 119.3. The tower controller responded, "I've never talked to them. The weather is getting worse and worse here. So last I heard he turned back he wasn't able to come."

At 0110:54, the tower controller received a telephone call from base operations asking for any updates on Trooper 2. The tower controller responded that no one had found Trooper 2, his location was still unknown, and that Eagle, the Park police helicopter, was going to search for Trooper 2 but turned back because of the weather. She continued, "... he wasn't able to work. We have like a 200 foot ceiling now so it's going to be rough for anybody to get out there." She advised base ops that the Forestville barracks was aware of the situation and that the fire chief was also aware. In response to a question about the city police, she continued, "the state police no, I don't know about PG County. I asked Chief 74B if anyone has called them he didn't know but I've called their Syscom, their dispatch, state police, and also their barracks. And we still haven't found them so I don't know."

At 0112:13, the Andrews command post called for further information on the missing helicopter. They inquired about a LifeFlight coming in, and the tower controller responded that she had, "... lost him about two miles out about an hour ago." The command Post responded, "oh is that the state trooper or the life flight." The tower controller responded, "... that the only - I don't know. If you're talking about somebody else I don't know. I don't have any, any [flight progress] strips or anything. But Trooper was due in..." The command post responded, "right yeah I'm aware of that one. I just got a phone call from the emergency room and they said a family just arrived there said they got a family member en route to Andrews LifeFlight." The tower controller responded,

"Maybe they meant Trooper 2. He was putting it down here, I don't know." The command post asked if the controller had heard anything else, and she replied, "I don't haven't gotten any I don't have anything on anybody right now and with our weather I don't think anybody's going to make it in here. We're like 200 foot ceilings now. So I, anybody can try but I doubt they'd make it anyway."

At 0114:20, the tower controller received a call from a person identifying themselves as PG Air 1, asking if ADW had been talking to Trooper 2. The controller responded, "no, we've been looking for him for an hour." She provided a brief description of what had occurred with Trooper 2, and the call concluded. At 0118:36, PG Air 1 called again to ask which approach and runway Trooper 2 had been coming to. The controller informed him that Trooper 2 was arriving to runway 19R, and the call concluded.

Automatic Terminal Information Service (ATIS) Broadcasts

According to recorded ADW ATIS broadcasts, at the time Trooper 2 was en route from Waldorf to ADW, ATIS information Sierra was being transmitted. Information Sierra had been recorded about 2200 local time, and reported that the weather at ADW was wind calm, visibility 7 miles, ceiling 1,400 broken, temperature 20, dew point 20, altimeter setting 29.93. This ATIS should have been updated at 2300, but the update was not done. Information Sierra continued to broadcast until 0011, when it was replaced by information Tango. Information Tango reported ADW weather as wind 090 at 3 knots, visibility 4 miles in mist, cloud cover 200 scattered, 500 broken, temperature 20, dew point 20, altimeter 29.91. Trooper 2 did not refer to an ATIS code while in communication with PCT or ADW, so it is not possible to determine whether the pilot checked ATIS information while en route to ADW. The ADW 2300 local time METAR was wind 110 at 3 kts, visibility 7 miles, ceiling 1,300 broken, temperature 20, dew point 20, altimeter 29.92.

ATC Staffing

During the period Trooper 2 was in contact with DCA and ADW, there was one controller on duty at each facility. There were two controllers assigned to the Mount Vernon area of PCT. One was working all positions combined at the Krant sector, and the other controller was on an extended break. According to the management of the three facilities, this is standard staffing for midnight shifts.

When interviewed, the Krant controller stated that it is normal for two controllers assigned to Mount Vernon on the midnight shift to each work half of the shift alone. Position sign-on logs and facility time and attendance records for the PCT Mount Vernon area are attached to this report.

2. Air Traffic Controller Medical Certifications

The PCT operations manager, the Krant sector controller, the DCA controller, and the ADW controller all possessed current medical certifications. From November 2006 until

February 2008, the ADW controller was medically disqualified from working control positions, although she did perform staff work and classroom instructor duties during this period. The controller was medically recertified for control duties on February 7, 2008. Because of the length of her disqualification, she lost currency and had to be operationally recertified as well. She was recertified on March 3, 2008.

3. ADW ASR Approach Procedures and Currency Requirements

Andrews AFB has published ASR approaches to all runways. Availability of ASR approaches is in accordance with the "Potomac TRACON and Andrews AFB Tower" letter of agreement and Andrews AFB operations instructions. The PCT/ADW letter of agreement stated that ASR approaches are available between 0700 and 2130 local time.

FAA order 7210.3V, "Facility Operation and Administration," paragraph 2-3-3, "Requirements," defines currency requirements for controllers before they are permitted to provide ASR approach services to pilots. The order states that to be considered current and qualified to provide the service, controllers must provide three ASR approaches each quarter, one of which must be a no-gyro approach. Radar simulation may be used to satisfy the requirement. However, there is no simulation capability at ADW. The closest location to receive radar simulation training is PCT, located about 50 miles away near Warrenton, Virginia.

According to the acting manager of ADW tower, the facility was having difficulty keeping controllers current on ASR approaches because the Washington Flight Restriction Zone (FRZ) excluded aircraft based outside the FRZ from the area. Such itinerant aircraft used to provide training opportunities for controllers. In addition, for the facility to provide ASR approach services, there must be at least two fully qualified controllers in the cab. Staffing limitations, especially on nights and weekends, frequently did not permit the controllers on duty to conduct ASR approaches and thus maintain currency.

4. Radar, ADS-B, and Approach Equipment Data

Radar data for this accident was provided by PCT TRACON and was obtained from the ASR-9 sensors located at ADW and Dulles International Airport (IAD). IAD radar track information for Trooper 2 is shown in figure 19. The controller responsible for providing radar services to aircraft in the vicinity of ADW was working at the KRANT position in the Mount Vernon area of PCT. The controller was primarily using the IAD radar, but also had the ADW radar displayed on the adjoining TYSON sector display. (Figure 4) The ADW controller was using the ADW sensor on the tower radar display. In addition to FAA radar data, the group obtained ADS-B position data on Trooper 2's flight from Waldorf to ADW from the Johns Hopkins Applied Physics Laboratory, which is under contract to the FAA to manage ADS-B data transmitted by aircraft in the Washington area. Plots of radar data from the ADW and IAD sensors along with ADS-B data are shown in figures 5 through 19.

ADS-B is a system that continuously (once per second) transmits aircraft position and altitude data to ground stations for use in air traffic control and other functions such as flight following. MSP helicopters are all ADS-B equipped, and Trooper 2 was broadcasting position and altitude updates until the accident occurred. This data was aggregated by processors at APL and immediately relayed to MSP SYSCOM in Baltimore for use in monitoring the flight. In the Washington metropolitan area, ADS-B is considered a research and development system and is not currently used by ATC for any purpose.

During a post-accident visit to PCT, the ATC group was shown an FAA system known as CountOps, an automated traffic count program that interfaces with ARTS radar data and tracks the movement of aircraft through PCT airspace and sectors. Among other things, the system records the last observed position of aircraft under PCT control. CountOps was available on the night of the accident, and could have been used by either the PCT OMIC or the ADW local controller to obtain the last radar latitude/longitude position for Trooper 2. However, when interviewed the OMIC was not familiar with any way to obtain latitude/longitude positions for PCT traffic, and the location function of CountOps had not been part of training on the system at ADW, Therefore, the system was not consulted during the search for Trooper 2.

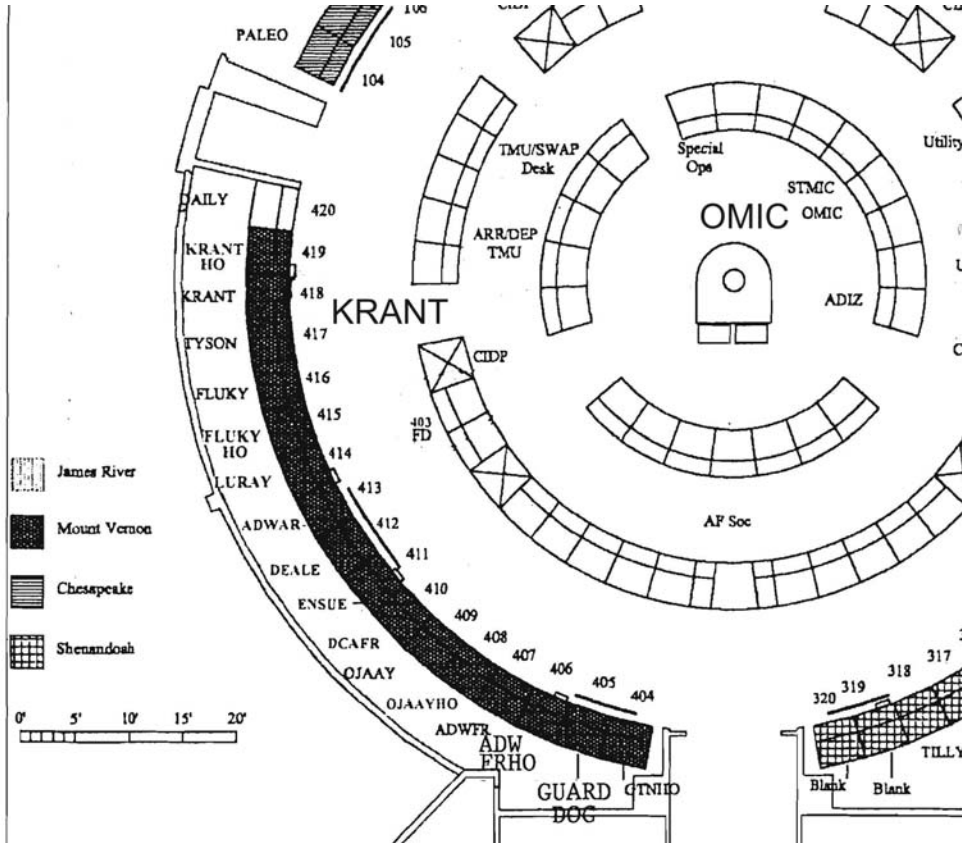

Figure 4 – Potomac TRACON control room diagram and position locations

5. PCT Flight Restriction Zone Beacon Code Assignments

The Washington, DC area is surrounded by a Flight Restriction Zone which requires that all aircraft operating within the area are uniquely identified via radar for security monitoring purposes. Aircraft that regularly operate in the FRZ generally operate under visual flight rules and are assigned special transponder codes to identify themselves. The codes assigned are not eligible for Minimum Safe Altitude Warning (MSAW) services from PCT, because many of the aircraft affected routinely operate at altitudes which would cause constant MSAW alerts. However, Trooper 2 requested and received clearance for an unrestricted IFR approach, and should therefore have been issued a new code that would make the aircraft eligible for MSAW service. The FAA has been asked to determine whether Trooper 2's trajectory would have caused an MSAW alert had the aircraft been on an MSAW-eligible code, but the response is not yet available and will be contained in an addendum to this report when received.

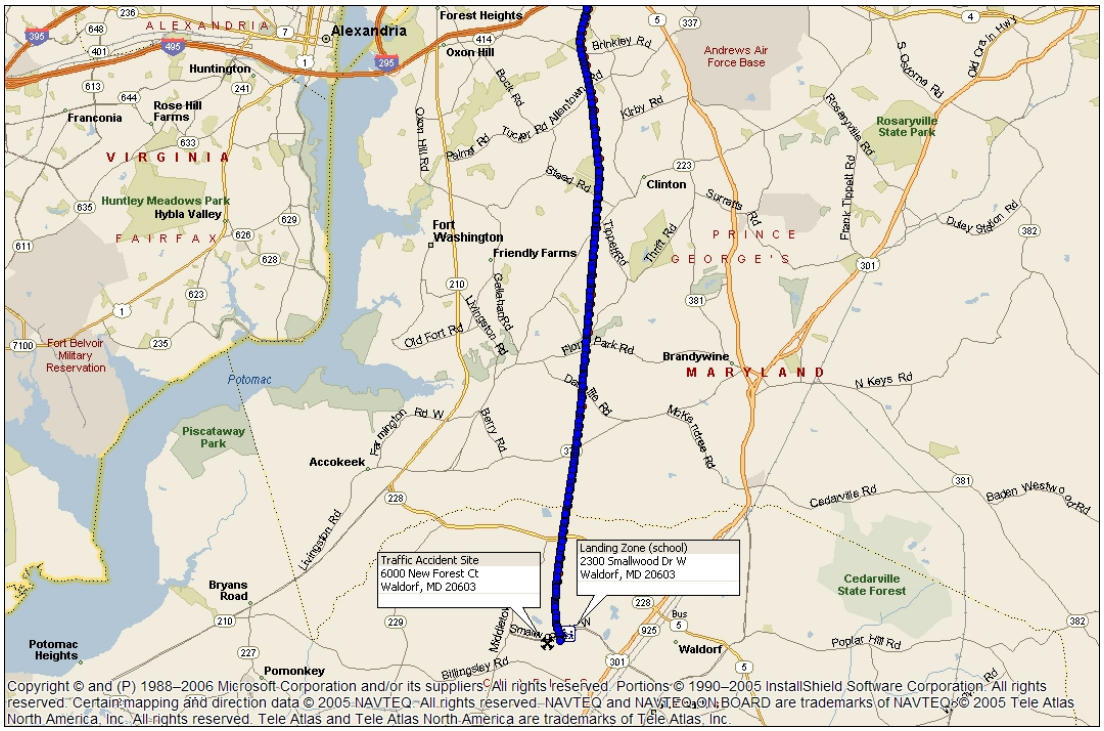

Figure 5 – ADW Radar and ADS-B data for Trooper 2's departure from Waldorf

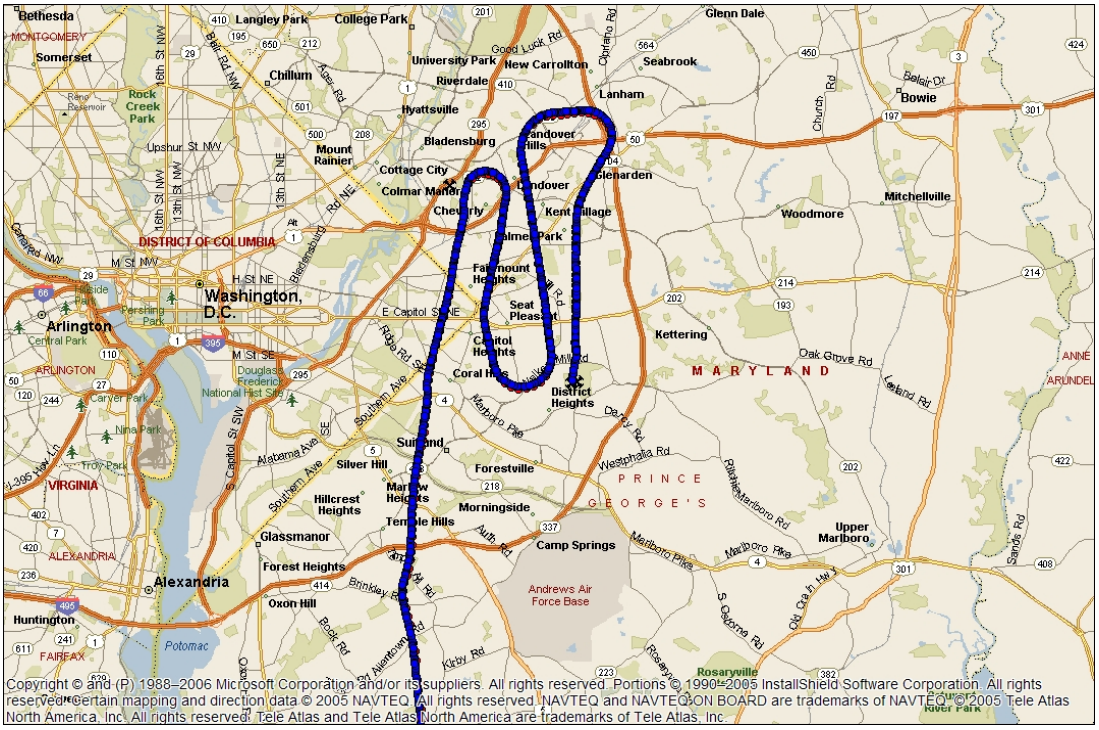

Figure 6 – ADS-B and ADW radar data for second half of the flight.

Review of air traffic in the ADW area on the evening of the accident showed that all operations were conducted in a south configuration, using runway 19R and the ramp helipad located west of runway 19R. Between 1800 and 2100 local time, there were four arrivals to runway 19R, two departures from 19R, and two aircraft conducting traffic pattern operations between 2000 and 2100 on runway 19R and the helipad. Trooper 2 was the next arrival to runway 19R, at 2355 local time.

ADW airfield operations staff checked the runway lighting system log for the period surrounding the accident, and provided the following setting information:

27 sep	21:06 L	app step 1	edge step 1
28 sep	00:03 L	app no change	edge step 2
	00:08 L	app step 2	edge step 2
	03:18 L	app step 3	edge step 4

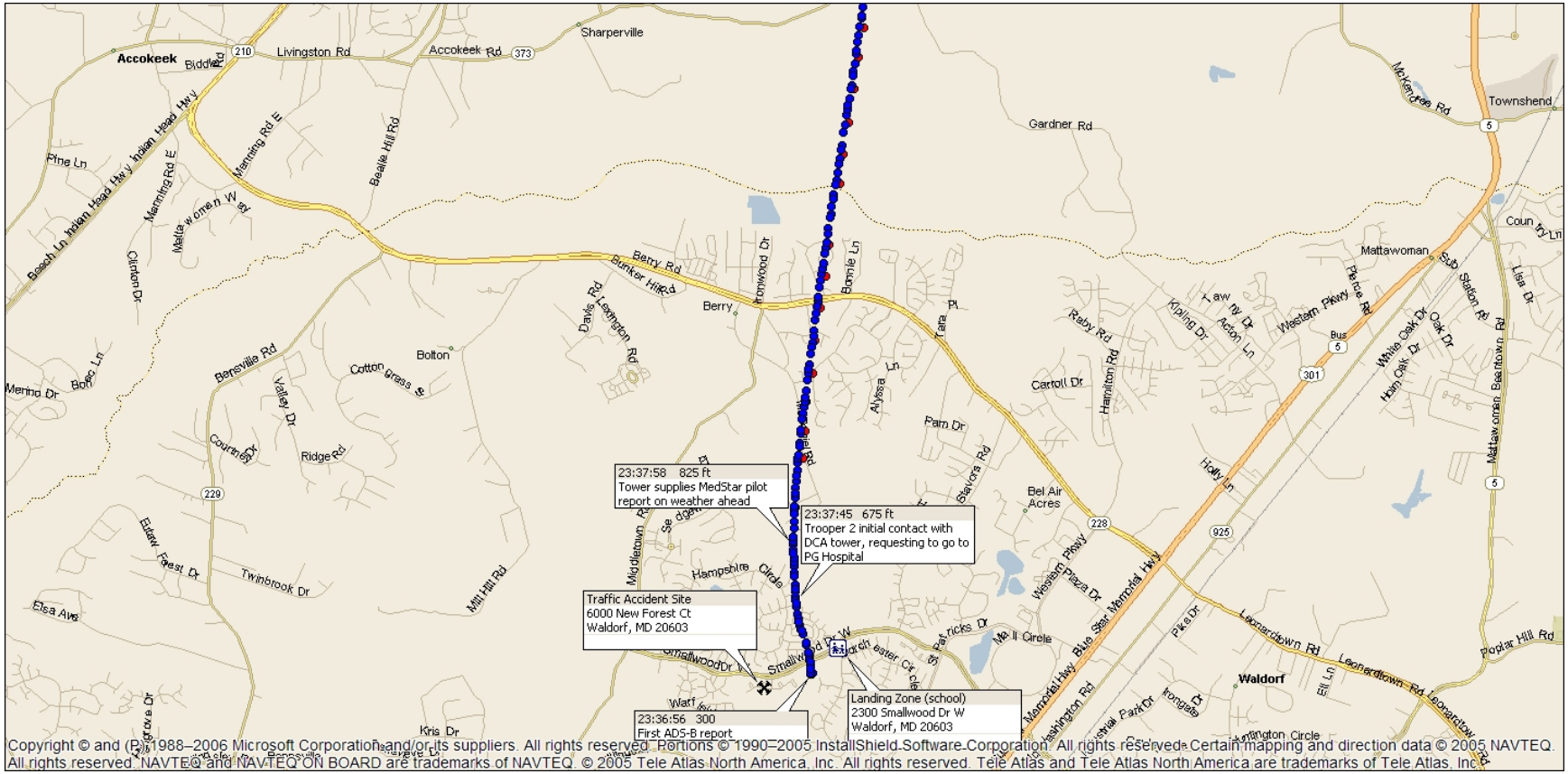

Figure 7 – Trooper 2 departure time and location

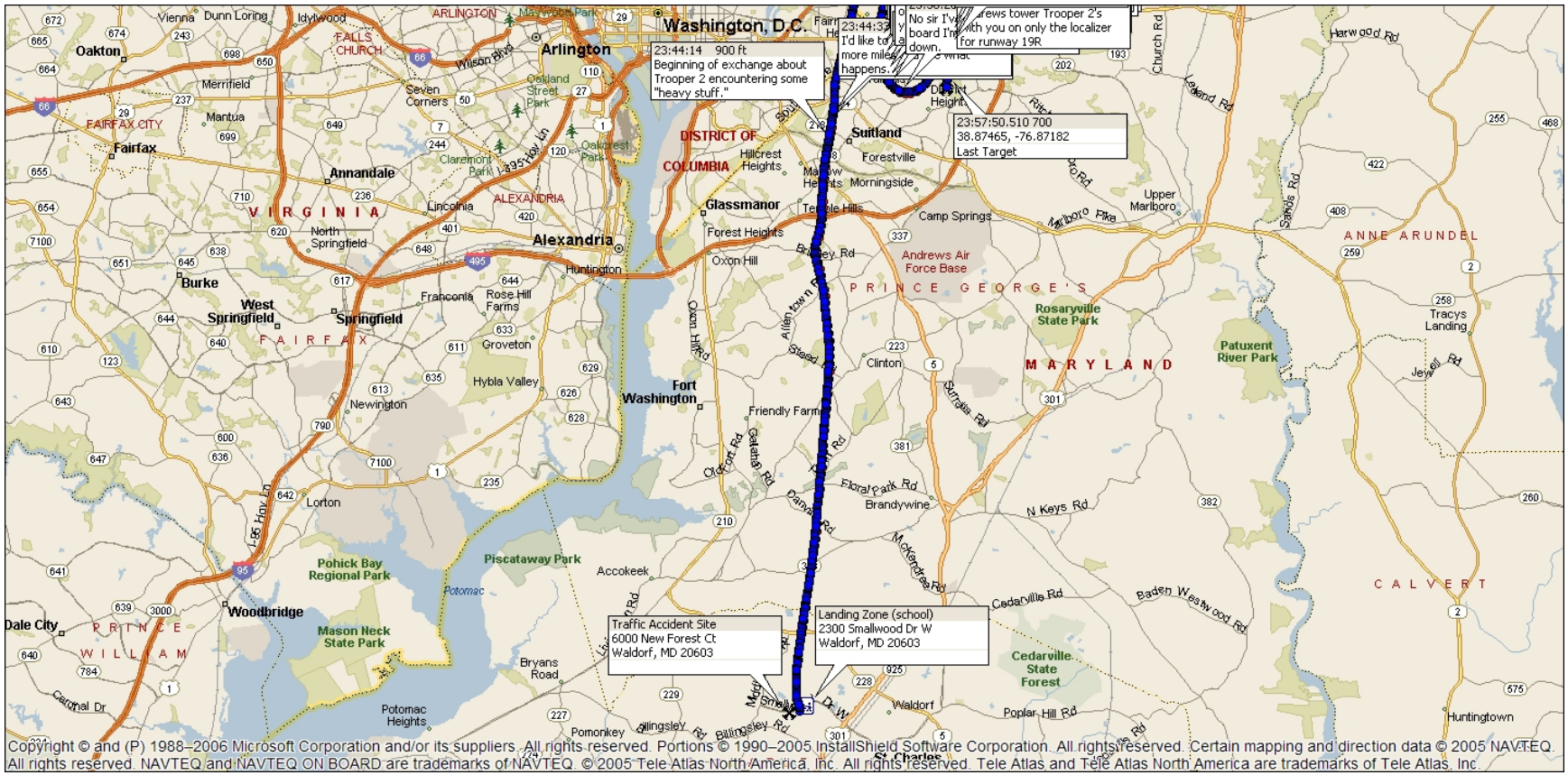

Figure 8 – Entering the DC area

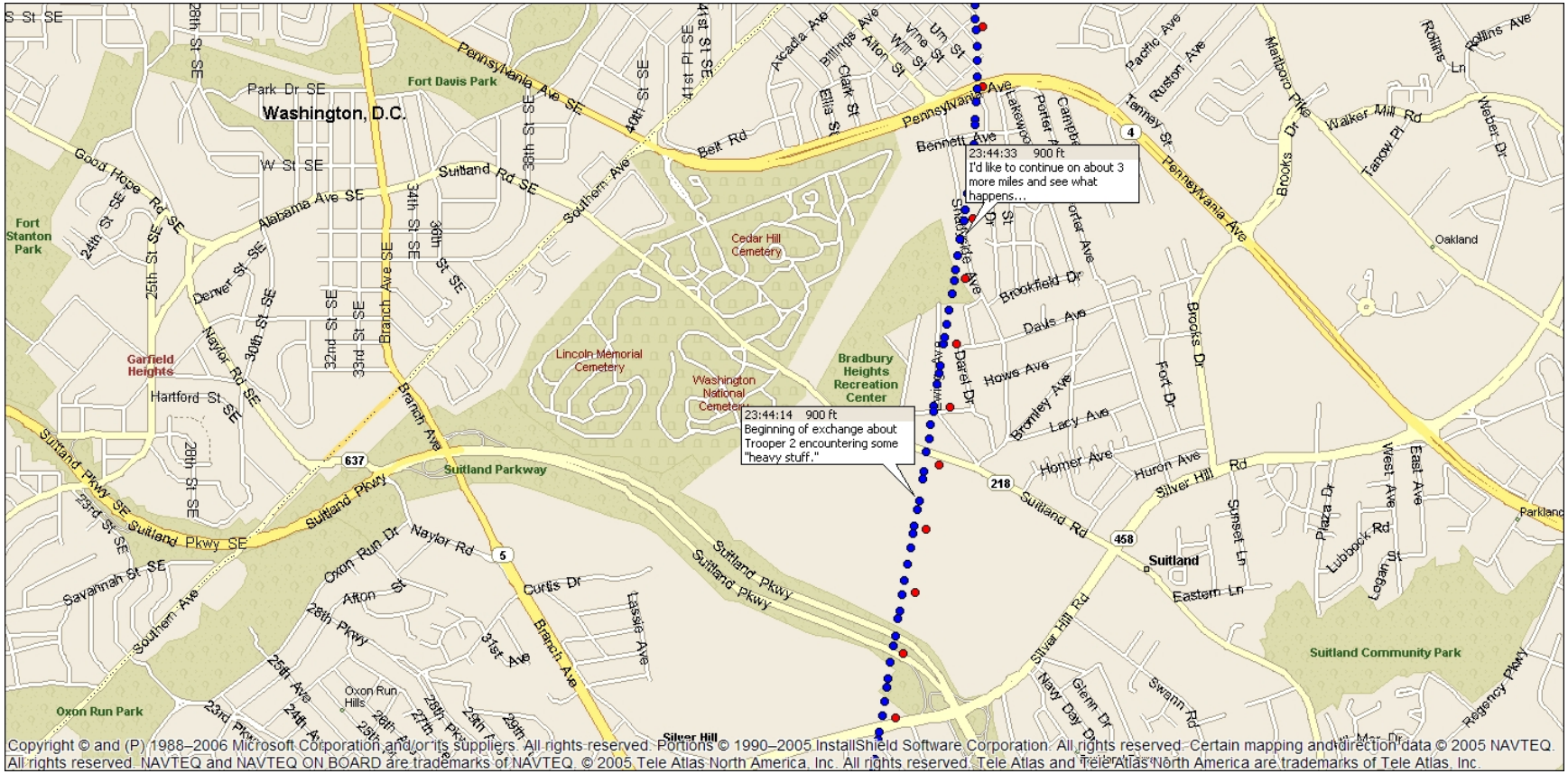

Figure 9 – First discussion of weather impact on the flight occurs

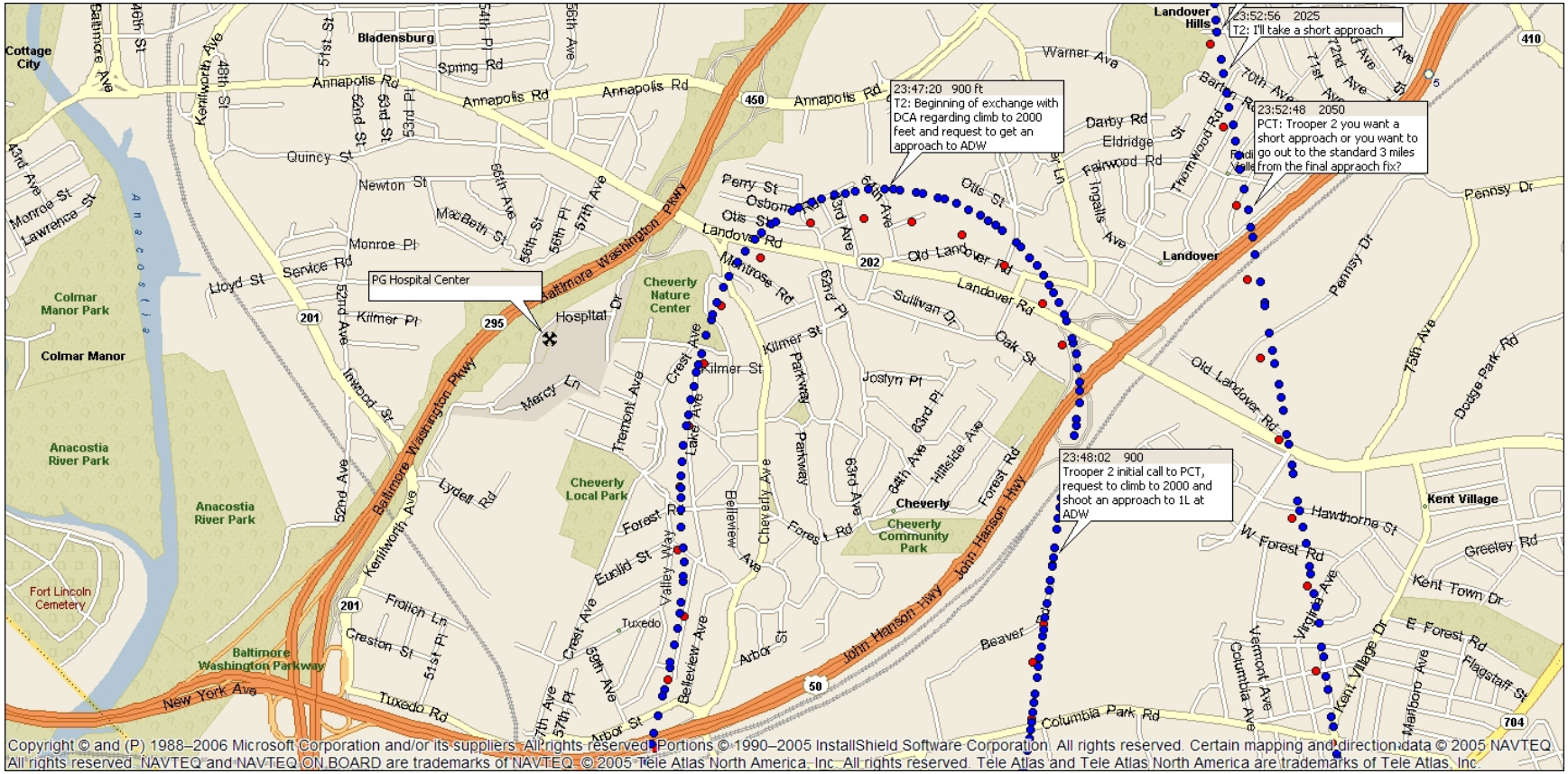

Figure 10 – Unsuccessful hospital pass and requests to DCA/PCT for an approach to ADW

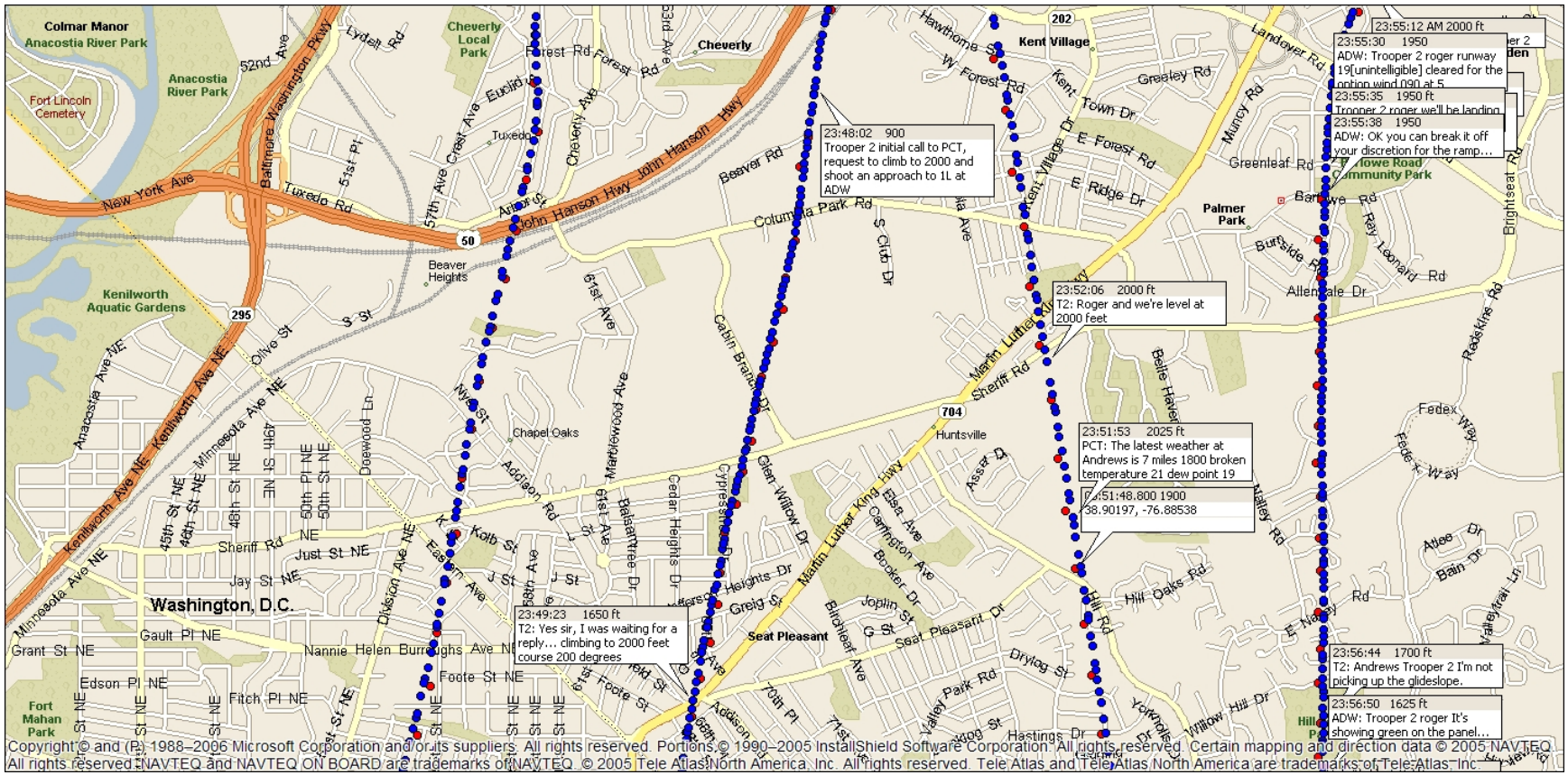

Figure 11 – Delayed response by PCT and repeated contact by Trooper 2

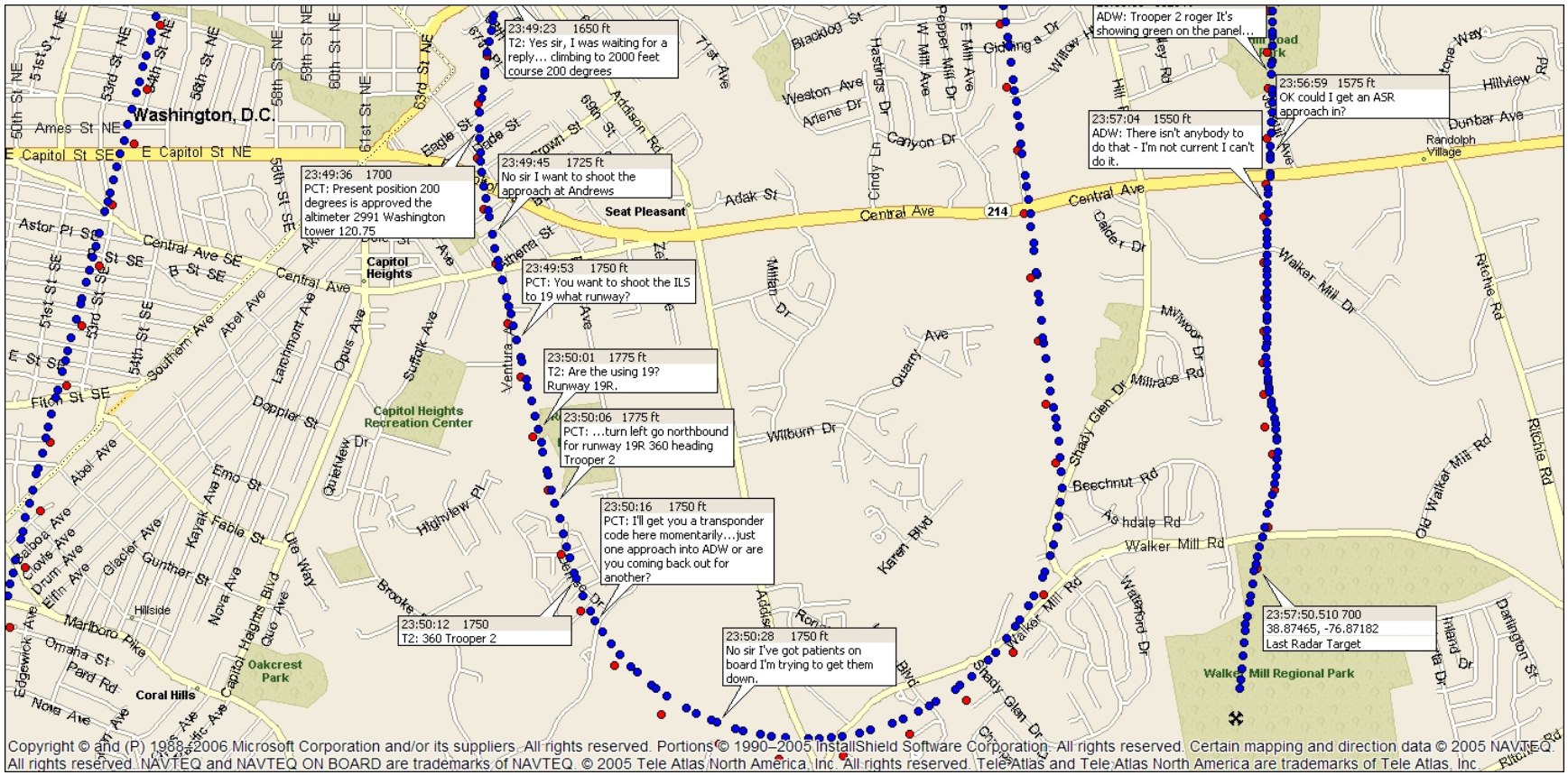

Figure 12 – PCT begins vectoring for ILS 19R at ADW

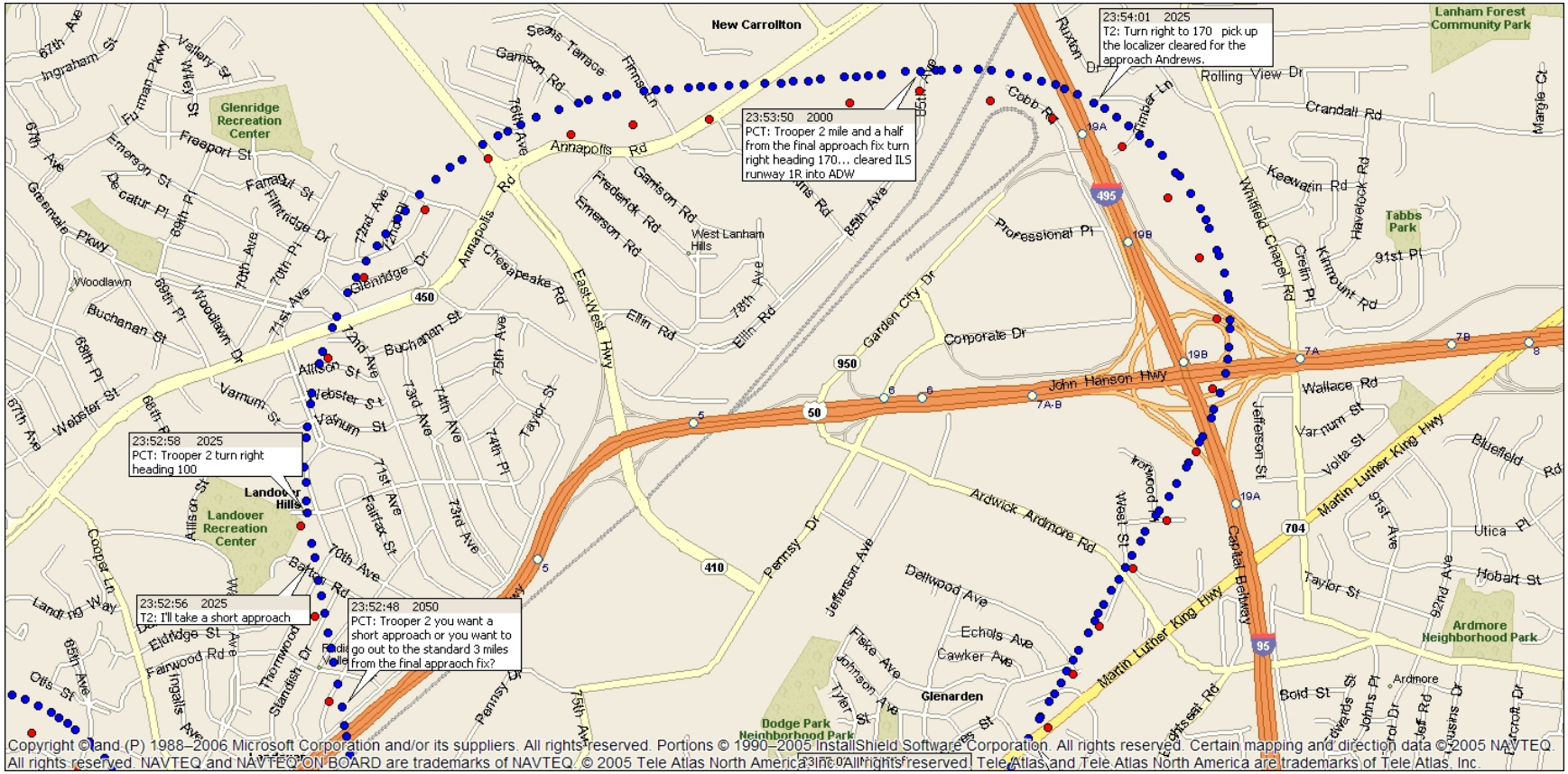

Figure 13 – Base leg vector across the localizer

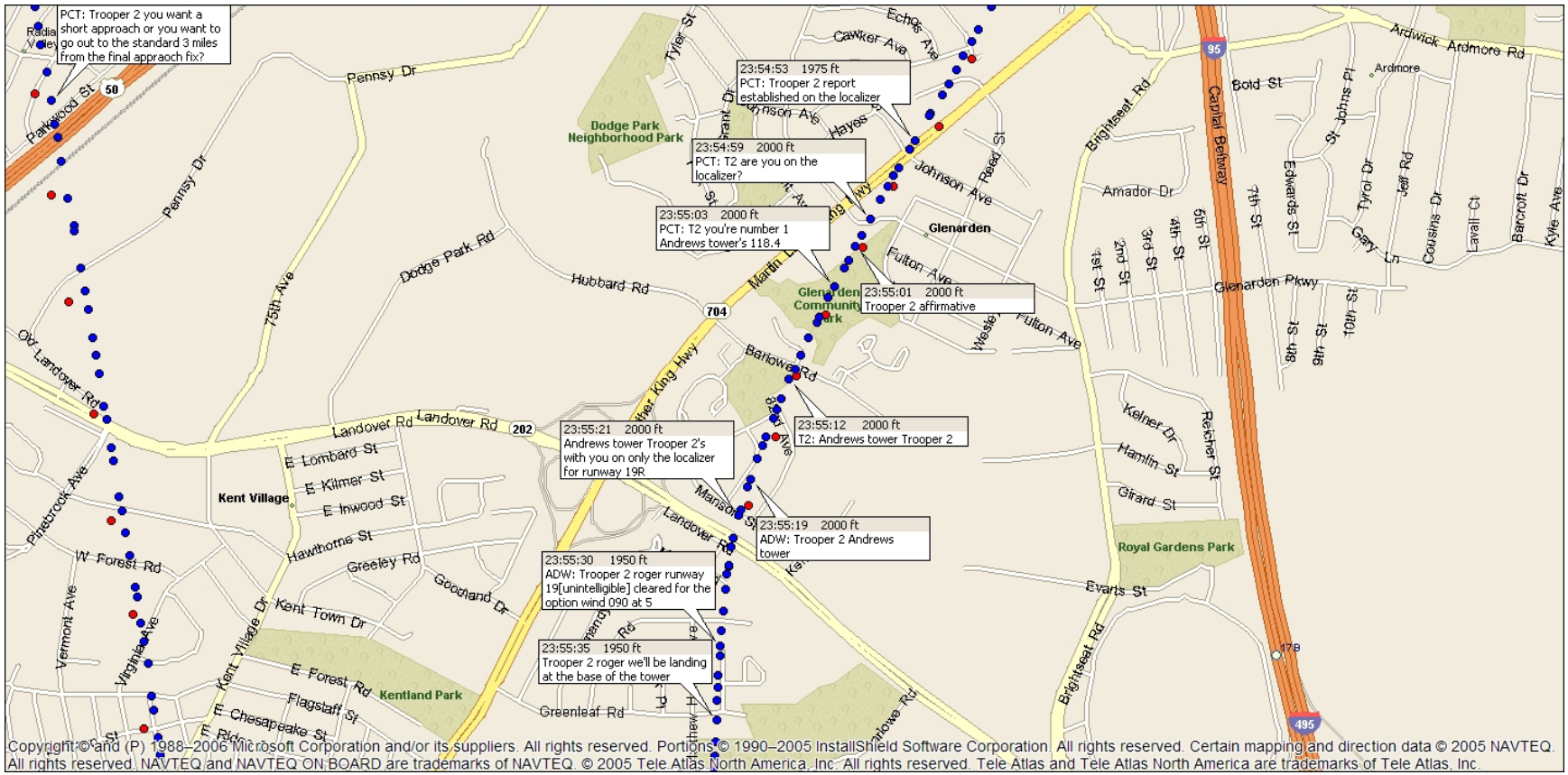

Figure 14 – Trooper 2 continues turn to intercept the localizer, initial contact with ADW tower.

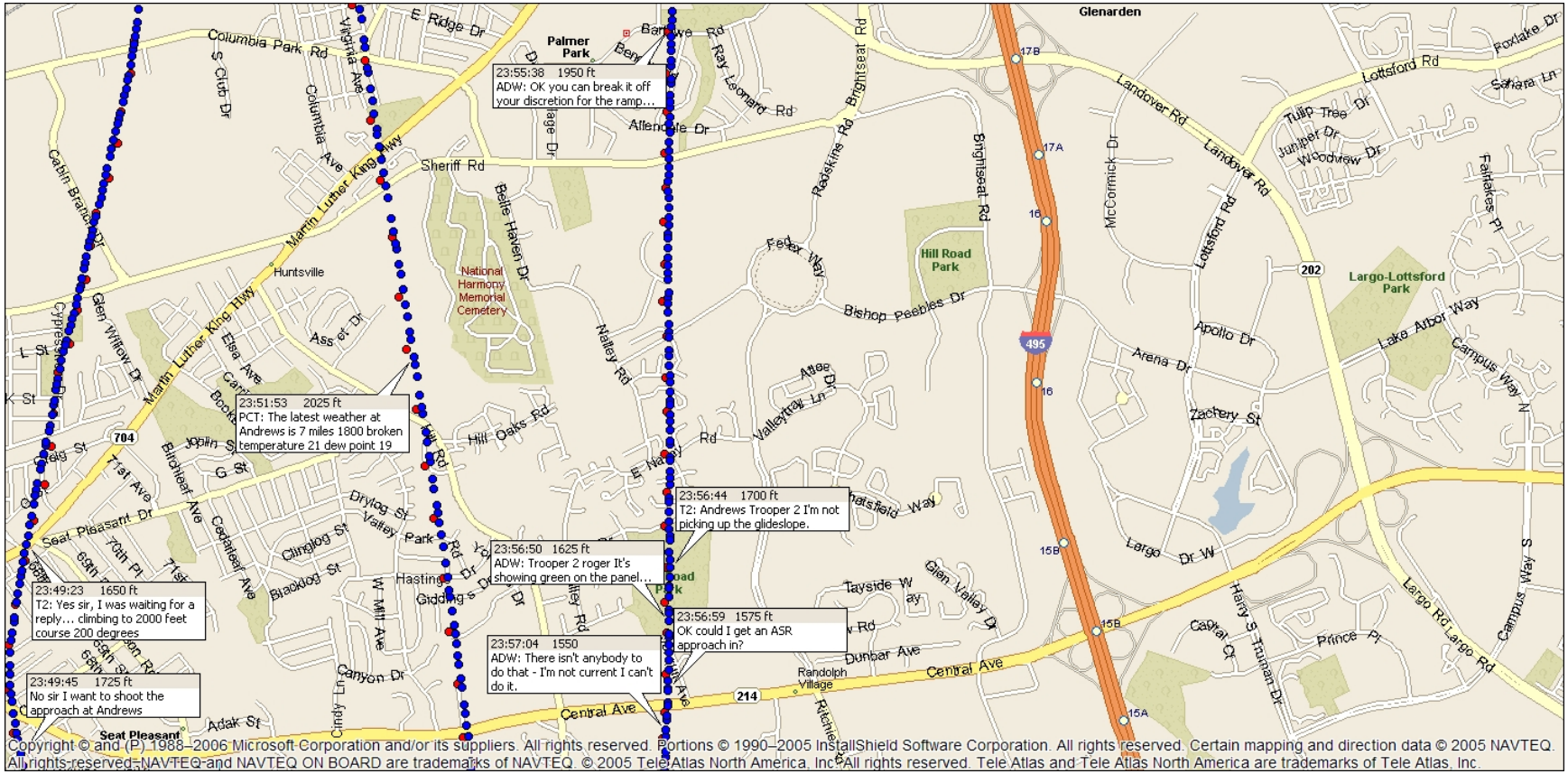

Figure 15 – Final approach and last communications with ADW tower

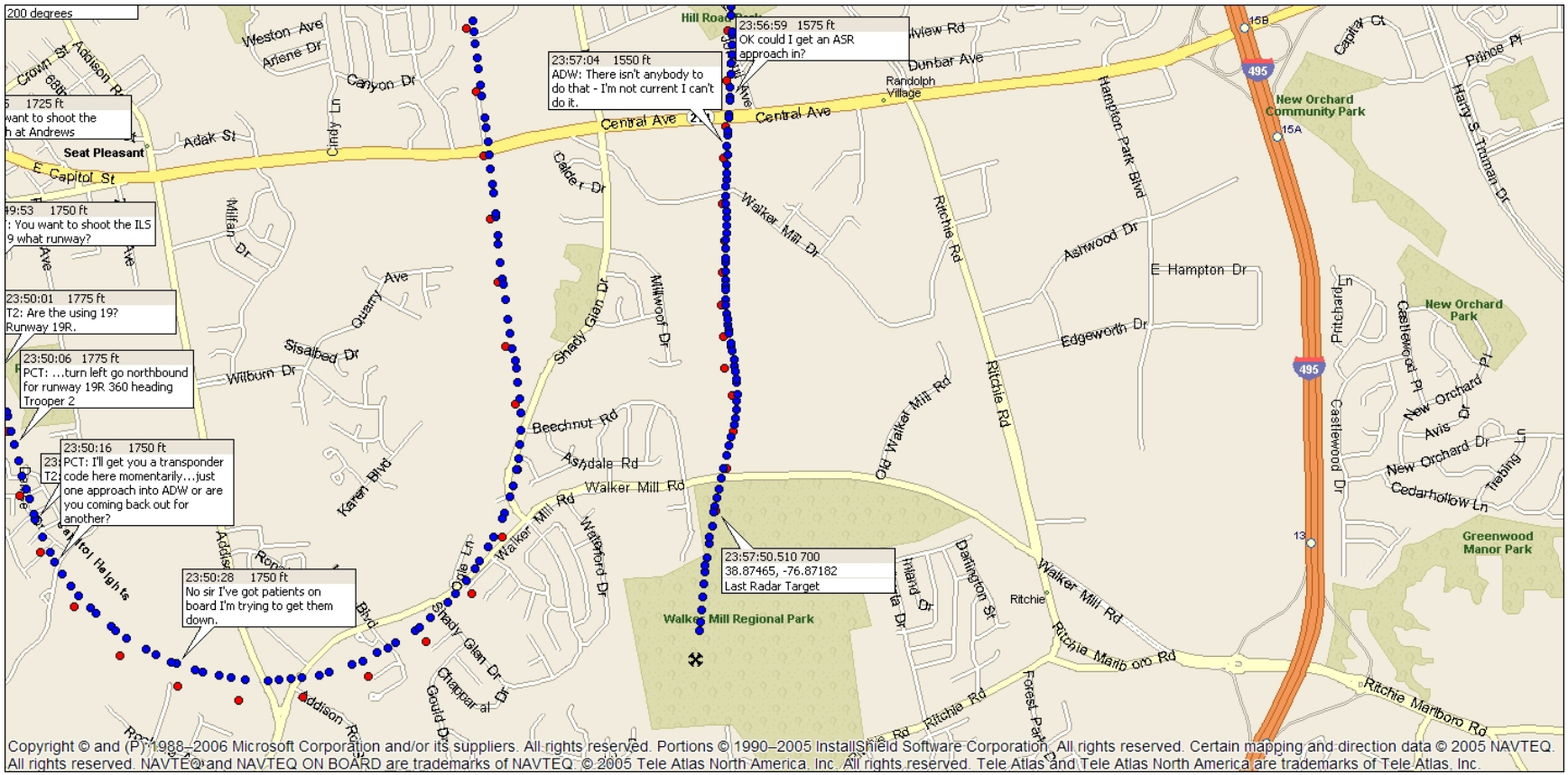

Figure 16 – Last radar target and ADS-B targets continuing to crash location

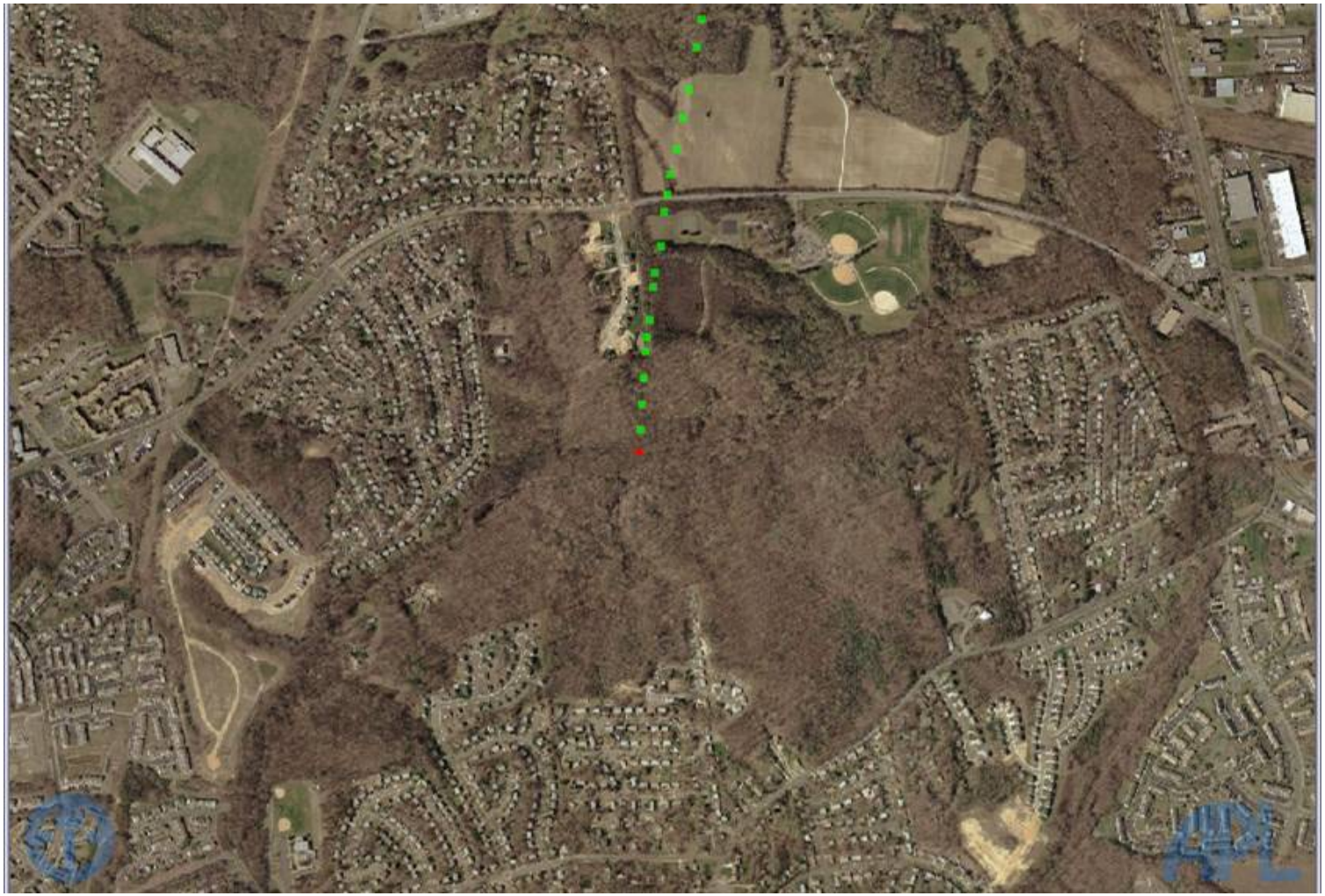

Figure 17 – Photo of Walker Mill Regional Park with ADS-B target data leading to crash site.

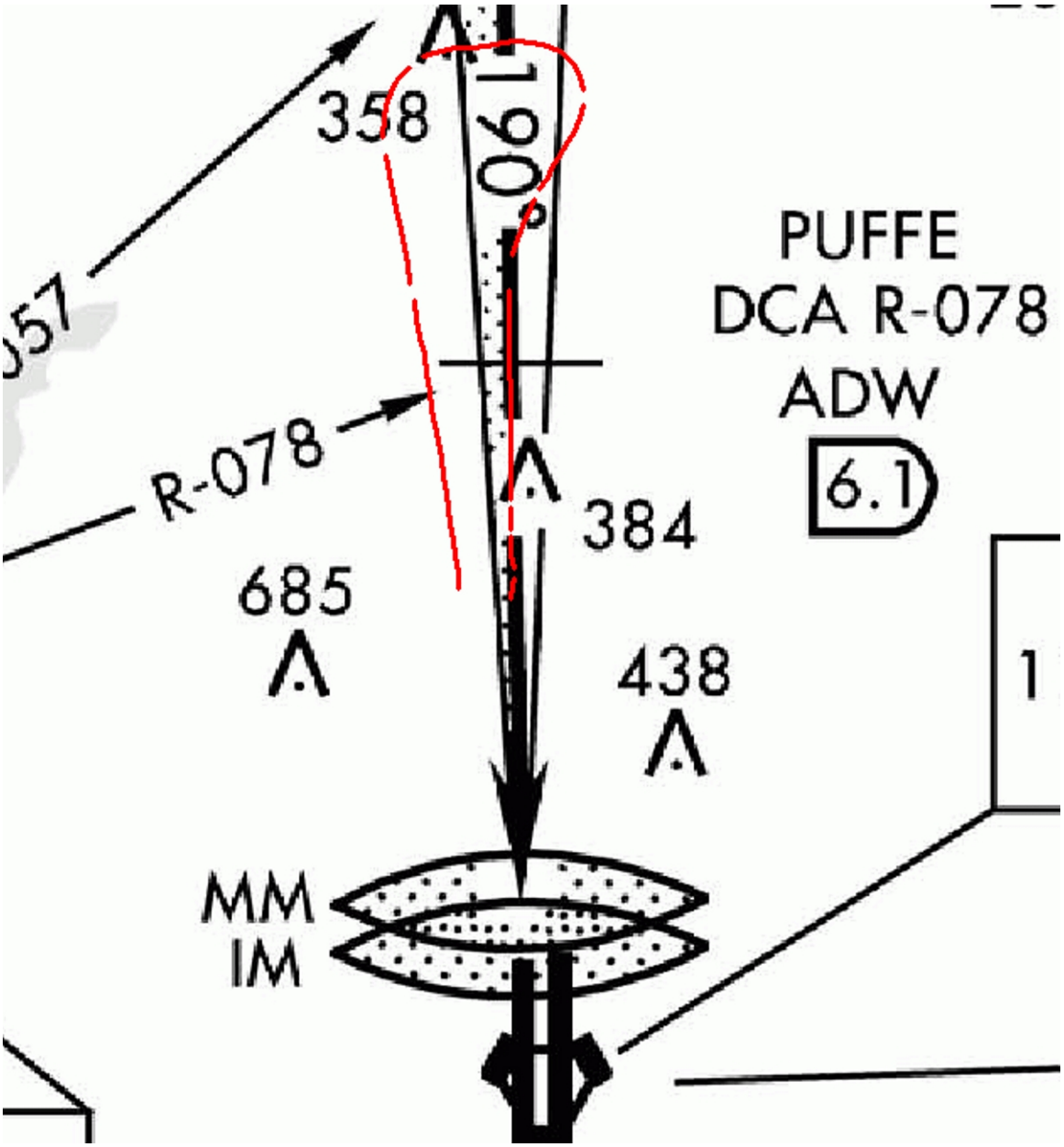

Figure 18 – Plan view of Trooper 2 ground track, 2351 until loss of radar contact.

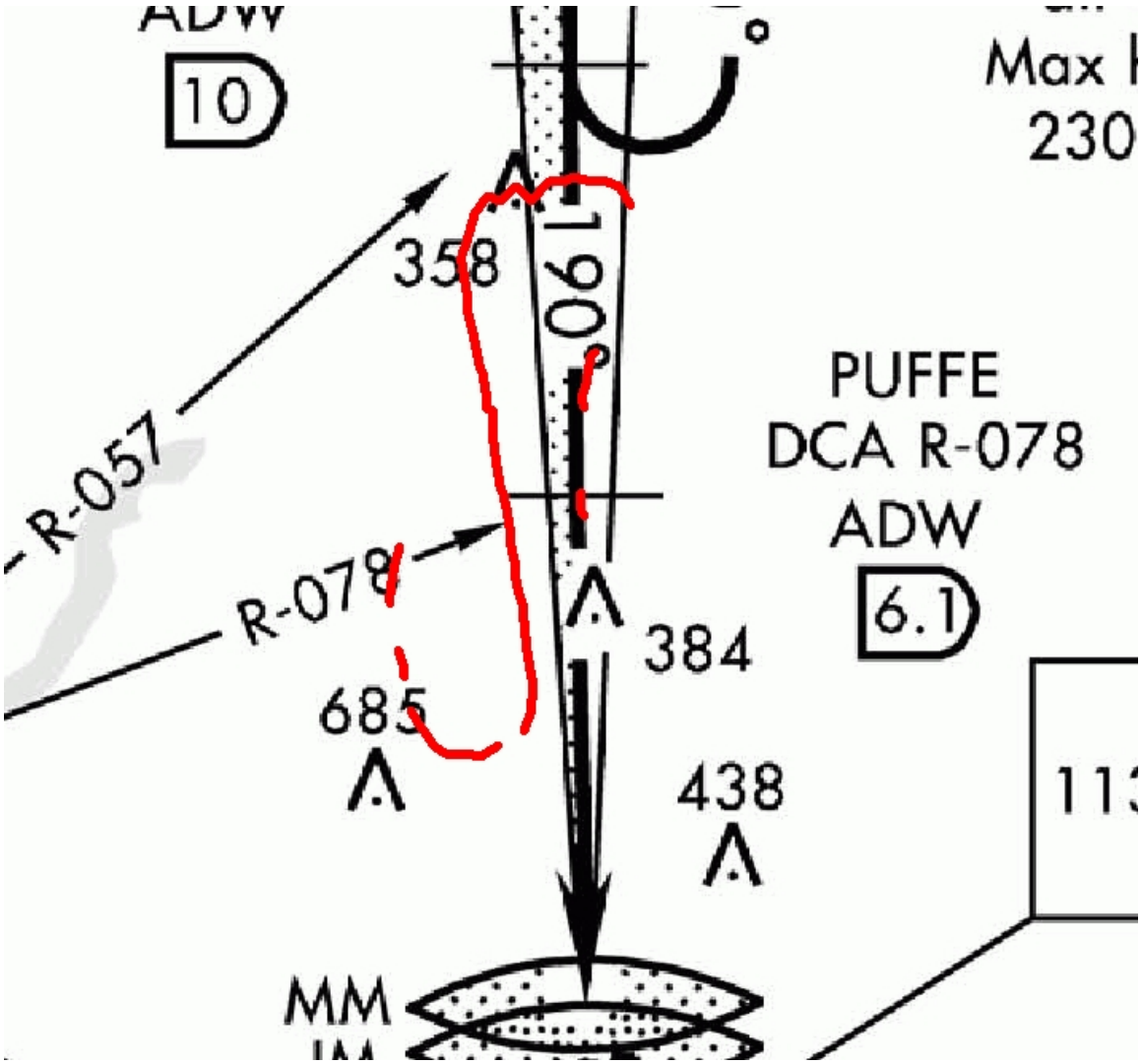

Figure 19 – Trooper 2 track as by IAD radar site. Note intermittent coverage.

As a check on the ILS status during the evening, radio and radar data for TEAL08, the last aircraft conducting an ILS approach to runway 19R before Trooper 2's arrival, was obtained from PCT and compared to Trooper 2's arrival track into ADW. The two tracks appeared essentially identical up to the point that Trooper 2 descended off the glidepath. (Figure 20) Review of PCT communications with TEAL08 revealed no pilot comments about any difficulties with vertical or lateral course guidance on the approach.

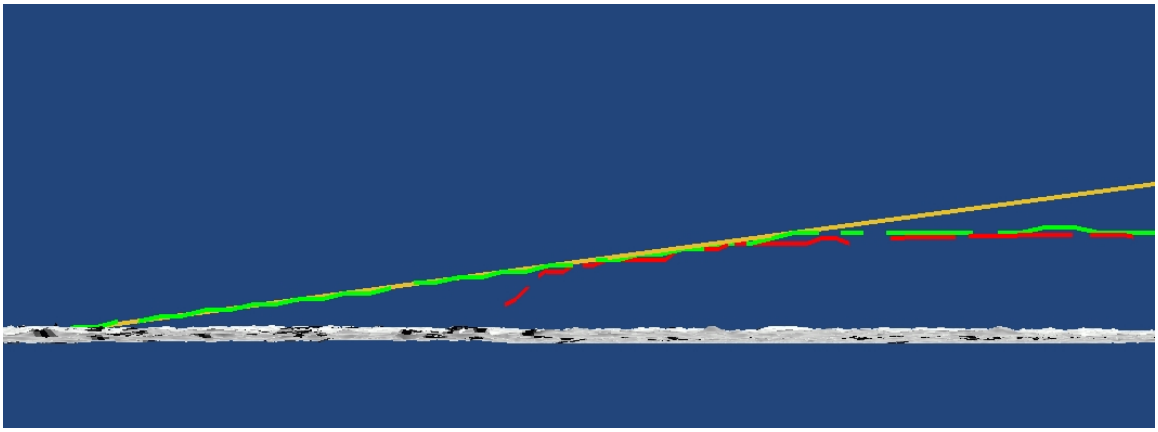

Figure 20 – Approach tracks: TEAL08 (red), Trooper 2 (green), ILS 19R glideslope (yellow)

According to the controller on duty at ADW at the time of the accident, the localizer and glideslope for runway 19R were active while Trooper 2 was on approach. The ILS control panel for runway 19R is shown in figure 21. When interviewed, the controller specifically recalled noting that the panel showed runway 19R active when the pilot inquired about the glideslope, and that all the indicator lights were green, indicating normal operation. FAA technicians conducted a post-accident certification of the ILS 19R system after the accident and found all certification parameters to be within tolerance. The post-accident recertification of the localizer and glideslope was completed successfully on September 28 at 1040. The system was also flight-checked on September 29 and again found within tolerance. The flight check report noted that the approach lights for runway 19R were locked out for maintenance. ADW base operations reported that the outage was attributable to routine runway maintenance occurring on the day of the flight check, and did not in any way affect flight operations on the evening of the accident.

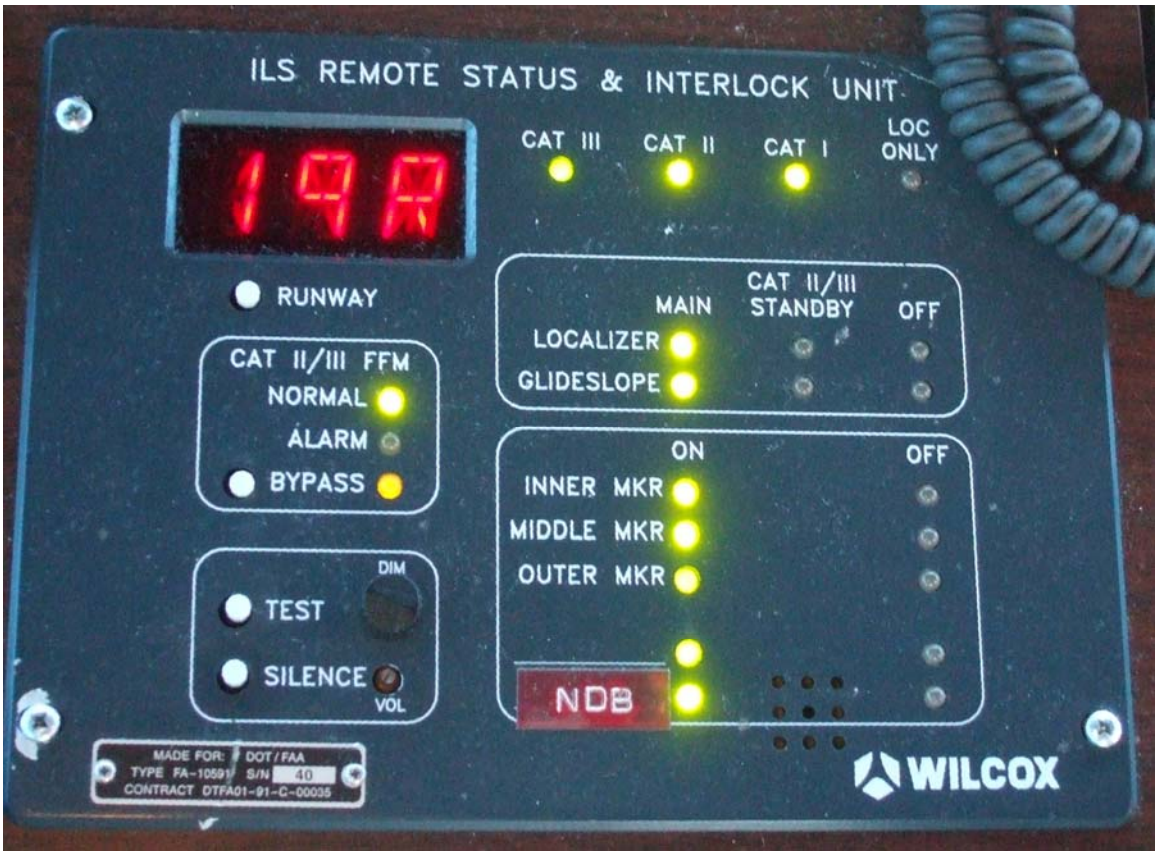

Figure 21 – ADW tower ILS status panel (photo taken 10/3/08)

On October 3, technicians performed an audio phasing check of the glideslope system. This test is intended to ensure that, along with the normal "below glidepath" 150 hz signal, the ILS system is properly providing a second reinforcing 150 hz "fly-up" signal in the area below the nominal glideslope and is not producing any false glideslope signals. The test, normally performed as part of annual maintenance, was logged as having been completed on September 7, 2008. When the test was repeated on October 3, initial indications were that the phasing between the two 150 hz signals was out of tolerance. However, because of technical limitations in the test equipment being used, the test was repeated using a higher-performance digital oscilloscope. Using the digital oscilloscope, the glideslope phasing was found to be within tolerance.

Review of maintenance and monitoring logs for the ILS 19R showed no unusual maintenance or malfunctions recorded for the system. Monitoring logs showed that the ILS 19R localizer and glideslope were activated between 1351 and 1354 local time on September 27, and continued in operation (aside from post-accident certification activities) until 1421 on September 28.

6 Runway Visual Range (RVR) Information

According to FAA equipment logs, the edge and approach lights for runway 19R were set to step 1 while Trooper 2 was on approach. The runway visual range reported by sensors along the runway began reporting values below 6000 feet about 40 minutes before the accident. The one-minute runway 19R RVR values (in hundreds of feet) for the period covering Trooper 2's ILS approach were logged as follows:

Time	Touchdown	Midfield	Rollout
2350	18	51	48
2351	15	49	49
2352	15	47	49
2353	14	48	46
2354	13	46	47
2355	13	40	43
2356	13	43	42
2357	13	40	43
2358	13	39	39
2359	13	37	37
0000	12	40	36

According to FAA technicians, because the RVR system is measuring the distance along the runway that the edge lights are visible the reported value changes when the lights are turned up or down. Dimmer lights are not as visible as brighter lights, so the low values above are partially attributable to the lights being on step 1 and do not necessarily represent a specific level of fog or other obstruction to visibility. A higher intensity setting would have likely increased the reported RVR values.

During a followup interview on December 17, the ADW local controller stated that the RVR display in the tower was not on, because it is ADW practice to not activate the RVR display until the official weather observer reports visibility of 1 mile or less. She was unable to see the runway environment because of the darkness and condensation on the windows, so she was unaware of the RVR values being detected by the system.

Figure 22 – Runway visual range display (off) at ADW local control position.

Figure 23 – Andrews local control position

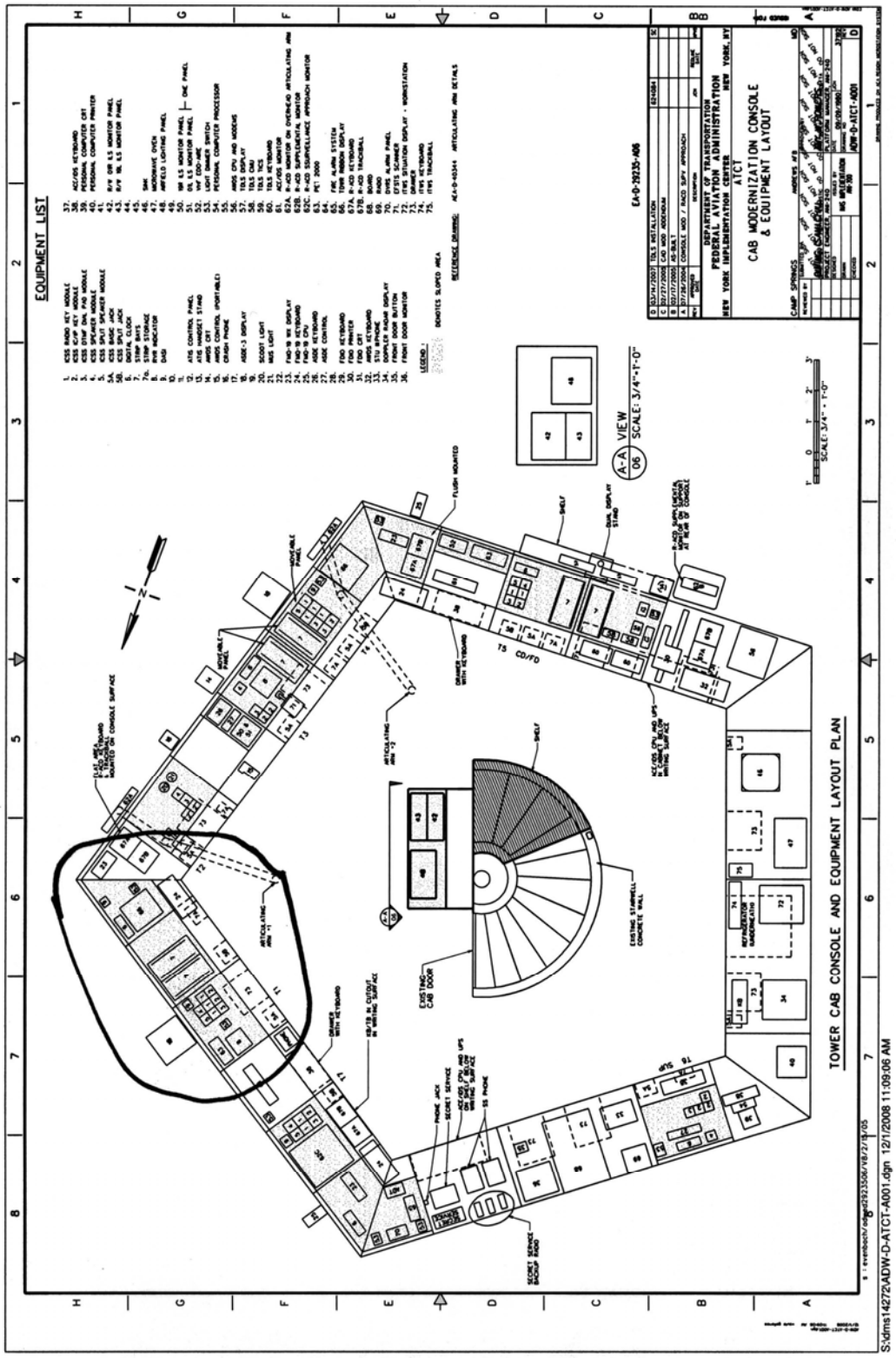

Figure 24 – ADW tower layout and equipment diagram.

7. Personnel Interviews

Alexander Ewings III **DCA Controller**

Mr. Ewings entered on duty with the FAA on January 14, 1990, as an air traffic assistant at Washington Air Route Traffic Control Center. He transferred to DCA tower on April 13, 1992, and completed training on January 3, 1995. He is currently a front-line manager. His days off are Thursday and Friday.

On the night of the accident, Mr. Ewings' shift started at 2130 and ended at 0600. He had also worked the Saturday dayshift, from 0530 until 1330. Mr. Ewings stated that he slept for 5 to 6 hours between the two shifts. There were no equipment issues or personal issues affecting his performance during the shift.

Trooper 2 called from the La Plata area, and was already tagged up on the radar display. There was nothing unusual about the initial call. The pilot said he was going to PG Hospital. The hospital is not depicted on the radar display, but Mr. Ewings knows where it is located. Mr. Ewings approved the pilot's request and issue the altimeter setting. When the helicopter first called, it was not visible through the tower windows. Mr. Ewings used the tower radar display to maintain awareness of Trooper 2's position until the helicopter reached the Wilson Bridge. At that point he was able to see the helicopter until he lost it in the lights around the Anacostia River area. Mr. Ewings said that he could not tell if the helicopter was going in or out of the clouds. What Trooper 2 was doing was not out of the ordinary. Helicopters pass that way every day, sometimes 15 or 20 times a night. They mostly fly when the weather is good.

Mr. Ewings stated that having only one person assigned to a midnight shift is common at DCA. It is a normal situation to be the only person in the building all night. The last arrival scheduled to the airport usually arrives around 0015.

The ATC group chairman noted that when Trooper 2 called, Mr. Ewings did not radar identify the aircraft and did not provide a clearance into the class B airspace. Asked about mandatory services in class B airspace, Mr. Ewings stated that traffic advisories are required. In the event of a traffic conflict, Mr. Ewings would issue advisories and instruct pilots to turn to avoid each other if necessary. However he is not certain of his obligations regarding conflicts in class B airspace. Mr. Ewings was asked if, in the event of a clear conflict between two helicopters, he would suggest a turn or instruct the pilots to turn. He said that he would suggest a turn.

Mr. Ewings stated that when Trooper 2 requested to climb to 2000 feet, that was all he was approving. He did not perform any coordination with Potomac TRACON regarding the aircraft, nor was he certain what the pilot meant when he said it was "solid." Mr. Ewings stated that he was not certain that Trooper 2 wanted an approach or to go IFR. He did note that it would have been helpful to let Potomac TRACON know what the pilot wanted. Most of the weather in the area was east of DCA, while to the west it was still okay.

After the accident the Park Police Eagle helicopter responded to assist in the search. Mr. Ewings stated that he was able to keep the helicopter in sight until it reached the area of Bolling Air Force Base. Asked what he thought the pilot of Trooper 2 meant when he said that there was a "solid layer," Mr. Ewings stated that he thought the pilot was referring to, "…rain or wind or clouds, whatever." He noted that later in the shift (after the accident), MedSTAR 2 departed from the north side of Washington and traveled south along the river, but because of the weather then had to retreat back up over Rosslyn and go west around DCA before continuing south.

Mr. Ewings was asked if the PG Hospital is contained in the ARTS hospital list. He said that it was and that he knows how to display it when needed. Mr. Ewings was asked if he has received any training on when he should or should not issue traffic. He stated that he has not. He has been trained all along to not radar identify aircraft. If there is a need to issue traffic advisories, he just looks at the targets and issues the advisory. He does not know how to get latitude and longitude data for radar targets out of the radar display system. Asked about the 5102 code assigned to Trooper 2, Mr. Ewings stated that it is only assigned to that specific aircraft, and makes the aircraft ineligible for MSAW alerts. The conflict alert system will only provide alerts to the sector handling the aircraft when the alert occurs. When aircraft leave the DCA area and need to contact Potomac TRACON, there is no specific handoff. The pilot is just instructed to contact the TRACON.

Kendall Young **Mt. Vernon Area Radar Controller**

Mr. Young entered on duty with the FAA on June 3, 1979. He began his FAA career in the Cooperative Program in Macon, GA and transferred to Rocky Mount/Wilson (RWI) FSS in 1980 as a Flight Service Specialist. From there, Mr. Young worked as a controller at the Florence, SC Airport (FLO) from 1981 to 1983, Charlottesville, VA Airport (CHO) from 1983 to 1984, Andrews Air Force Base (ADW) from 1984 until 1991, Washington National tower (DCA) from 1991 until 2003, and Potomac TRACON (PCT) since 2003.

Mr. Young was scheduled to be off on Friday and Saturday before the accident, but worked an overtime shift on Friday, September 26. On Saturday, the day of the accident, Mr. Young stated that he woke at 1000, relaxed at his residence, and then took a nap from 1800 until about 2300. Mr. Young prefers to work midnight shifts, and arrived for duty at 2245. He said that he felt fine, had no personal issues affecting his performance, and that it felt like a perfectly normal midnight shift.

He began working the Krant radar position, which is located in the Mount Vernon area of PCT TRACON. At Krant, Mr. Young was responsible for traffic in the entire Mount Vernon area, including DCA and ADW departures and arrivals, IAD departures, and sequencing arrivals to the BWI airport. It was not very busy, and traffic complexity did not warrant opening any other radar position in the area. Because Mt. Vernon was combined to a single display, Mr. Young had to primarily use the IAD ASR because it is

the only radar available that adequately covers the west side (Luray sector) of Mt. Vernon.. During normal operations, when more than one radar position is staffed, controllers working the sectors south of IAD use the DCA or the ADW ASR sensor to display their traffic because these sensors provide better radar coverage in the vicinity of DCA and ADW.

Mr. Young said that there were, "…a few airplanes" when he took the position and then there was a lull. He said that during the break in traffic, Trooper 2 called. Mr. Young was not wearing a headset. Mr. Young remembered using a handset to answer the aircraft and then walking over to the Mt. Vernon Data position to retrieve flight progress strips for arrivals he was expecting soon. Mr. Young did not wait to hear Trooper 2's request because he assumed that it would be a routine call and that he would be able to hear it over the speaker even from the Data position. He does not recall seeing Trooper 2 displayed on the Krant radar scope at the time of the call. Mr. Young said that the speaker volume was adequate for someone who was sitting at the position, but evidently was not able to be heard when away from the position. Mr. Young said that he was alone in the area because the other controller assigned to the shift was in the break room and not expected back until 0230. It is normal for controllers to "split the shift," with each controller working four hours of the shift alone while the other controller is out on an extended break.

Mr. Young stated that he was probably away from the position for about 60 to 90 seconds. When he returned to the position, Trooper 2 called again. This time, Mr. Young heard the pilot and said that he was "surprised" at the pilot's comment about waiting for a reply. Based on the pilot's comments, Mr. Young believed that Trooper 2's request was to fly a 200 degree heading. Mr. Young instructed the pilot to contact DCA tower because that heading would take the aircraft into their airspace. Trooper 2 reiterated his initial request for an ILS approach to ADW. Mr. Young asked Trooper 2 which runway the pilot wanted and then issued a 360 degree heading. Asked if the pilot could have had his choice of runways and approaches, Mr. Young stated that the aircraft could have landed either direction after coordination with ADW tower.

Mr. Young stated that he initially assumed Trooper 2 was a VFR aircraft requesting a practice ILS approach into ADW. Mr. Young asked Trooper 2 if he wanted more than one approach. Trooper 2 told Mr. Young that he had patients on board and wanted to land at ADW. Mr. Young then asked if the pilot was landing at ADW or was planning to break off the approach and land somewhere else. The pilot said that he wanted to land at ADW. Mr. Young advised the pilot of the weather at ADW, but does not recall the time of the weather observation. Mr. Young then asked Trooper 2 if he wanted a short approach or the standard three miles outside of the final approach fix, because "…Troopers usually don't want to go that far out.". Trooper 2 requested the short approach and Mr. Young issued an eastbound heading to the helicopter, and then issued a 170 heading to join the localizer. Mr. Young recalls issuing the approach clearance to Trooper 2 when the helicopter was about 1.5 miles from the final approach fix. Shortly afterward, the aircraft's ARTS data tag went into a "coast" status. (Coast indicates that he aircraft is no longer visible to the radar system.) Mr. Young stated that this occurs

when the ASR sensor does not track the aircraft correctly and that this was probably because he was using the IAD ASR to watch aircraft in the vicinity of ADW. The coverage from IAD in that area is not very good. Mr. Young said that he had the adjacent Tyson radar position set up to display the ADW ASR sensor. Mr. Young recalls looking at this display in order to see the radar return of Trooper 2. Mr. Young stated that he saw Trooper 2 go across the runway 19R localizer and asked the pilot to report established on it. Almost immediately, Trooper 2 reported established on the localizer. Mr. Young does not recall looking at the Tyson display (ADW radar) when Trooper 2 initially called from the Waldorf area.

Mr. Young said that if he cannot see an aircraft on radar when the pilot calls, he assumes that they are calling from an area that is not his responsibility. Mr. Young was asked why he didn't issue Trooper 2 an IFR clearance. Mr. Young said that the weather was VFR and that the pilot did not ask for an IFR clearance. Mr. Young stated that he and other controllers clear aircraft for approaches numerous times without issuing an IFR clearance. He said that the helicopter was never IFR, but when he issued the approach clearance, he did not instruct the aircraft to maintain VFR which is a requirement of FAAO 7110.65 when issuing VFR practice approaches. As far as Mr. Young was concerned, Trooper 2 was VFR all the way to landing. Mr. Young said that the initial altitude for the approach was 2,000 feet and that is what the helicopter climbed to. Mr. Young said that there was no coordination about Trooper 2 that took place between himself and the ADW tower controller, nor were there any ARTS entries that could be made to show the tower controller the status of the aircraft. When asked how the tower would know whether the aircraft was VFR or IFR without coordination, Mr. Young did not know. Mr. Young said he normally "radar identifies" VFR practice approach aircraft, but in this case, he failed to do so. Mr. Young did say that he considered Trooper 2 radar identified because he observed his ARTS data tag and saw the helicopter turn when instructed. Mr. Young recalls watching the Trooper 2 ARTS data tag return to a "coast" mode when the helicopter was descending from 2,000 to 1,800 feet on the localizer. Mr. Young then instructed Trooper 2 to contact ADW tower. Mr. Young does not recall observing the helicopter below 2,000 feet. Mr. Young stated that he is responsible for monitoring the approach until the helicopter is at the runway. When asked how he monitored Trooper 2 after the data tag dropped from the display, Mr. Young said that he watched the aircraft establish himself on the localizer on the TYSON display which was displaying data from the ADW ASR. Mr. Young said that no one at the PCT TRACON is authorized to do ASR approaches. He said that this responsibility is delegated to ADW tower.

Asked about radar coverage using the IAD sensor for ADW traffic, Mr. Young said that coverage depends on the size of the aircraft. He uses the Tyson scope with the ADW radar displayed to supplement the IAD coverage. It is normal to have one controller monitoring two scopes on the midnight shift.

Mr. Young recalls the ADW controller calling him and asking about the whereabouts of Trooper 2. Mr. Young thought the aircraft had landed on runway 19R and, once he discovered that he hadn't, Mr. Young advised the PCT Operational Supervisor in Charge

(OSIC). Mr. Young remembers calling DCA tower and inquiring if Trooper 2 had called them. Mr. Young also called Southern Maryland Hospital to see if Trooper 2 had landed there. Mr. Young then observed a Park Police helicopter in the area (Eagle 2) and asked if he had heard from Trooper 2. Eagle 2 attempted to proceed to the area north of ADW but stated that the weather was not good and decided to turn around. It was at this point that Mr. Young realized that the weather readout for ADW was not accurate or current. Mr. Young stated that there was no way to tell that the weather was not updating other than observing the time associated with the weather report. Mr. Young said that he may have seen the time on the weather observation and thought it was 02-something, but does not recall for certain. Mr. Young did not issue the wind to the pilot. He stated that the tower controller would do that when they talked to the helicopter because it is a military requirement.

Mr. Young recalls the OSIC asking him to write a statement regarding the sequence of events. Mr. Young also remembers receiving a phone call from Leesburg Flight Service at the Flight Data position stating that they were issuing an Alert Notice (ALNOT) on Trooper 2. Mr. Young said that no one asked him about the position of the helicopter when it was last observed. Mr. Young was able to explain operation of the Minimum Safe Altitude Warning (MSAW) system that alerts a controller of an aircraft in an unsafe proximity to the ground. He stated that if it alerts while the aircraft is talking to the ADW tower controller, he is supposed to call the tower controller and advise them of the alert. Mr. Young said that he did not receive an alert on Trooper 2 because of the beacon code that he was on. Mr. Young does not recall the time, but he does remember the OSIC telling him that they were looking for Trooper 2 as a downed aircraft. He said it might have been around 0100. Mr. Young remembers another controller in the room telling him that they had located the helicopter. He believes that time was at approximately 0200. Mr. Young said that he was left on position during the time of the investigation and was relieved at approximately 0230.

Mr. Young stated that while the search was going on, he was hoping that the aircraft was safe and shut down on the ground somewhere. He had thought it was strange that the pilot was asking for an approach when the weather was VFR, but assumed that he had his reasons. Since the accident, Mr. Young has been assigned administrative duties. He was drug tested after the accident.

Mike Matthews **Front Line Manager (FLM)**

Mr. Matthews began his career with the FAA in 1990 as an air traffic controller at Roanoke, VA airport (ROA). Mr. Matthews then moved to Richmond, VA (RIC) and came to PCT TRACON in 2003 when the facilities were consolidated. Mr. Matthews has been Mr. Young's FLM for approximately two years. Mr. Matthews immediately noted performance issues with Mr. Young, specifically his phraseology while on position, and as a result Mr. Matthews has made several on-the-spot corrections regarding landline issues and approach clearance phraseology. Additionally, Mr. Matthews has performed phraseology audits, where random voice tapes are reviewed, and has completed several "tape talks" with Mr. Young. Mr. Matthews stated that Mr. Young had made

improvements over the two years and characterized him as "a sharp individual" generally. Mr. Matthews said he was surprised at Mr. Young's performance on the night of the accident. Mr. Matthews said that as a result of this accident, he would perform additional skill checks on Mr. Young. Mr. Matthews explained that this was accomplished by monitoring Mr. Young while he was working the radar position. Mr. Matthews said that Mr. Young normally did very well during these sessions, and that he performed very well during his last skill check. .Mr. Matthews was asked if Mr. Young's performance improved when he knew he was being watched or monitored. Mr. Matthews said that he didn't think Mr. Young knew he was being monitored. Mr. Matthews believes that Mr. Young knows the right way to perform and is capable of doing so. When asked if there has been any recent complaints from pilots, Mr. Matthews recalled a pilot complaint from an American Airlines flight approximately two weeks earlier. Mr. Matthews described the event and it was determined that the complaint had little merit and did not warrant any performance discussions with Mr. Young. Mr. Matthews feels that Mr. Young is not necessarily engaged in the operation at all times.

Mr. Young was found contributory to an operational error recently for forgetting to transfer communications on an aircraft that was subsequently involved in a loss of separation.

Mr. Matthews desires more time to do performance monitoring on his employees. He said that, due to other supervisory duties, there is just not enough time. Asked what his monitoring habits are when assigned as acting operations manager on midnight shifts, Mr. Matthews stated that he regularly moves around the control room – "I can't just sit at the desk." He stated that having the supervisor walk around helps controllers stay focused and encourages them to monitor traffic. Mr. Matthew's said that it is possible that Mr. Young works too many midnight shifts and that this has contributed to sloppiness in his performance. He does monitor midnight shift tapes occasionally, because some controllers work so many midnight shifts that it is the only way to check their performance. As the workforce ages, Mr. Matthews has found that it is difficult to keep the older controllers motivated. He stated that the radar configuration being used by Mr. Young is common, with the IAD radar on the Krant position and the ADW radar on the Tyson position. Asked if controllers "splitting the shift" (working four hours out of eight and being absent from the control room for the other four hours) is common, Mr. Matthews stated that it occurs under light traffic conditions when there isn't much going on. If it is busy or there are unusual circumstances, both controllers assigned to the shift are expected to be present.

Ken Schuette **Front Line Manager / Acting Operations Manager**

Mr. Schuette was the acting operations manager on the night of the accident, in charge of the PCT control room for the midnight shift.

He recalls Mr. Young telling him (around 15 or 20 minutes after midnight) that the ADW tower controller could not find Trooper 2. He remembers Mr. Young saying that they thought the aircraft had landed somewhere. Mr. Schuette called the Maryland State

Police dispatcher and discovered that they did not have any information on the helicopter. Mr. Young returned to the OMIC position and explained that ADW tower lost the aircraft on a two mile final at about 1,300 feet. Mr. Schuette called ADW to obtain more information. Mr. Schuette was informed that the helicopter reported having problems with the glide slope and that the pilot had requested an ASR approach, but the controller was not current on the procedure. Mr. Schuette asked Mr. Young to call DCA tower to ask if they had talked to the helicopter. Mr. Schuette stated that he then called the Regional Operations Center (ROC) and advised them about the possible missing aircraft. Mr. Schuette also notified the PCT acting manager and attempted to call the PCT Quality Assurance Manager, but received no answer.

Mr. Schuette left the TRACON and proceeded to the "back room" to listen to the audio tape in order to obtain a better timeline of the incident. Mr. Schuette stated that when he returned, he kept in touch with the Maryland State Police and fielded calls from the ROC. Mr. Schuette said that he did not have access to personally review radar data and could not advise searchers of the exact location of the last radar return from Trooper 2. Mr. Schuette did talk to the PCT technical operations managers on duty and advised them that they might need to obtain radar data on the aircraft, but he did not have confidence that radar data could have been obtained if needed. Mr. Schuette stated that he received numerous phone calls and could not leave the TRACON. He said that the Operations Managers have the ability to review radar data at the OM's desk, but FLMs acting as operations managers do not.

At approximately 0200, Mr. Schuette received a phone call from the Maryland State Police saying that they had found the helicopter and reporting the status of the people on board the accident flight. Mr. Schuette then asked Mr. Young to write a statement and offered Mr. Young a chance to review the voice tape. Mr. Young did not review the tape before writing his statement. Mr. Schuette does not recall ever asking Mr. Young about his handling of the helicopter, and did not have any performance discussions with him after reviewing the tape.

Mr. Schuette said that it is his normal practice to walk around the TRACON and watch the controllers work during the midnight shift. There are normally two controllers assigned to each area, and "shift-splitting" is common. He does not recall seeing Mr. Young get up from the Krant position between 2330 and 0000, but did remember seeing him at Krant around 2300. Asked if he tried to get Mr. Young relieved from position after finding out that Trooper 2 had crashed, Mr. Schuette stated that by the time the crash was confirmed, Mr. Young's relief was almost due back anyway. Mr. Schuette did not monitor the ADW weather during the shift. He has not been trained on how to do radar data extractions.

Mr. Schuette stated that, as an FLM, he performs skills checks, audits, technical training discussions, and periodic reviews. He stated that he has never reviewed a voice tape of a controller who was working the midnight shift. Mr. Schuette feels that there is not enough time to ensure every controller's performance with the other duties that he is doing during his shift.

Teal Hyman **ADW tower controller**

Ms. Hyman began her career with the FAA on August 18, 1985 at Ann Arbor, Michigan (ARB). She subsequently worked at Elmira, New York (ELM) from 1990 to 1994, Andrews Air Force Base (ADW) from 1994 until 2003, Potomac TRACON (PCT) from February 2003 until September 2004, and then returned to ADW.

On her normal shift rotation, Ms. Hyman would have had Friday and Saturday off and then worked the midnight shift from late Saturday night into Sunday morning. Because of a swap in days off, Ms. Hyman worked on Friday and had Saturday off, and was then scheduled to return for the Saturday night midnight shift. Ms. Hyman stated that she did not sleep on Saturday in preparation for the shift that evening, but that she was feeling fine physically.

Ms. Hyman reported for duty at 2330 on the night of the accident. She stated that the equipment appeared to be operating normally, but that it was very hot in the tower. After researching the heat, she discovered that it was broken and could not be fixed. As a result, the tower windows were accumulating condensation due to a cool night and the visibility out of the tower was hindered. Trooper 2 checked in on her frequency and Ms. Hyman cleared the aircraft for the option. At the time, she did not know that the helicopter was landing at ADW. She thought that the pilot might have been doing practice approaches because such activities are not uncommon at that time of night. Ms. Hyman stated that there was nothing in the helicopter's ARTS data tag that indicated whether the aircraft was VFR or IFR, nor was there any coordination from PCT TRACON. She recalled seeing an "RF" in the data tag which is coordination from PCT telling the tower that the aircraft is a "full stop."

Trooper 2 advised her that he was going to land at the base of the tower, and she instructed the pilot that he could "break it off" whenever he wanted. Ms. Hyman stated that once she learned of the pilot's intentions, she believed that he was coming to ADW for a reason, not just for a practice approach. She said that this did not necessarily mean that the helicopter was a medevac flight, and she did not see any ambulances waiting for the helicopter near the tower at the time. Ms. Hyman said that patients are not dropped off at ADW very often and estimated that it probably happens once every couple of months. She said that the helicopters normally just take them to the hospital.

Ms. Hyman listened to the audio recording of the pilot's initial call during this interview and stated that it did not sound to her like the pilot stated that he was " on only the localizer" for 19R when he initially checked in, asking, "If that was the case, why would he say it like that? Why wouldn't he have told me he was not receiving the glide slope earlier than he did?" Ms. Hyman remembers looking directly at the ILS panel for runway 19R when the pilot stated that he was not receiving the glide slope. Ms. Hyman was sitting at the local control position toward the approach end of runway 19L/R when the pilot asked about the glide slope. She got up to look at the panel, which showed that the ILS system was operating normally. Ms. Hyman was sure that she checked the ILS panel

for runway 19R, and was positive that it said 19R in the display. Ms. Hyman said that she has never seen the panel incorrectly show that everything was operating normally when in fact it turned out that some component was broken. However, she has seen instances where the panel showed a fault but pilots reported that the system appeared to be operating normally.

Ms. Hyman stated that she was not current or qualified to provide ASR approach services. She said that it was difficult to maintain currency because there are not a lot of requests from pilots for ASR approaches. Other times, there is not enough staffing because a fully certified controller is needed to operate the ASR position and it has to be operated as a “stand-alone” position. It cannot be combined with any other position. Ms. Hyman was asked if the Coast Guard ever comes to ADW and asks to practice ASR approaches. Ms. Hyman replied that ASR approaches cannot be approved after 2000 because of Air Force restrictions. She also stated that, "…it is just not a habit here at ADW to solicit ASR approaches." Ms. Hyman was advised that the acting Air Traffic Manager was certified on ASR approaches and asked if he tries to help others become current by working a position in the tower in order to let someone else work the ASR approach position. Ms. Hyman has never seen this happen.

Ms. Hyman recalled seeing Trooper 2 on the Remote Arts Color Display (R-ACD) in the tower. She remembers his data tag being intermittent all the way down the final. She said it kept showing ZZ’s and freezing and then it would reacquire. Ms. Hyman remembers seeing altitudes of 1,800 and then saw 1,500, and then saw ZZ’s. The ZZ’s are shown in the ARTS data tag when the radar fails to track the aircraft. It “freezes” the tag in the display so that the controller does not forget about the aircraft. Ms. Hyman never saw the helicopter on radar at an altitude below about 1,400 feet, and she couldn't see outside because of the condensation. Ms. Hyman remembers giving herself a few minutes to see if the helicopter arrived. She remembers seeing the helicopter’s primary radar return drop off at approximately a 2 - 2.5 mile final. Chief 74B (ADW AFB fire department) called Ms. Hyman on the ground control frequency and asked if she knew where the aircraft was. He was coordinating efforts for the ambulance to meet the helicopter upon their arrival. Ms. Hyman replied that she had been talking to Trooper 2, but had lost him on a 2.5 mile final and no longer saw the helicopter on radar.

At that time, Ms. Hyman recalls checking for the next weather observation. She stated that it should have come out by then, so she called the observer to check on it.

Ms. Hyman asked Chief 74B if he saw the helicopter on the ramp, and he replied that he did not. Chief 74B then stated that he wanted to go over to the east side of the airport to the “Bear’s Den” (state police hangar) to check for the helicopter. Ms. Hyman said that she decided the helicopter was overdue when Chief 74B could not find the helicopter on the ramp or at the police hangar. Ms. Hyman repeatedly told Chief 74B that she had last seen the helicopter on a 2 mile final. Ms. Hyman wanted Chief 74B to go look for the aircraft at the north end of the airport.

Ms. Hyman said that there is a notification checklist to use when an aircraft accident occurs. Ms. Hyman stated that she had told Chief 74B about being unable to locate the helicopter. She knew that he was in contact with the Maryland State Police and the Prince George's County Police and therefore Ms. Hyman did not call those authorities directly. Ms. Hyman stated that she called ADW Base Operations regarding the helicopter. She said that the Base Ops is the equivalent of a Flight Service Station. Base Operations issued an ALNOT on the helicopter. At this point, Ms. Hyman began contacting outside authorities. She stated that she spoke with the PCT operational supervisor in charge (OSIC). The PCT OSIC told Ms. Hyman that they would call the Regional Operations Center (ROC) and the System Operations Center (SOC) at PCT. Ms. Hyman stated that she cannot call out of the tower on a recorded line, therefore, many of the calls are not recorded. Ms. Hyman said that she called Base Ops, the Maryland State Police Barracks, SYSCOM, Shock Trauma, and the National Capitol Region Coordination Center (NCRCC). Ms. Hyman said that she thought the NCRCC could obtain the radar data from Trooper 2 and identify his last location. She stated that SYSCOM did not know the location of the aircraft. Ms. Hyman said that the PCT OSIC never offered assistance in obtaining radar data, but that she didn't ask for assistance, either. She recalled the PCT OSIC calling and asking her to take notes on what was happening, but she did not have time to do so.

Ms. Hyman was asked about coordination with PCT regarding VFR and IFR aircraft doing approaches at ADW. She stated that she does not know very much about the aircraft coming to the base unless a flight plan has been entered into the flight data processing system. She said that there is little to no coordination with PCT on any other aircraft. Ms. Hyman is unaware if, when an aircraft is on a practice approach and does not have a flight plan entered, the aircraft is VFR or IFR. When asked what her responsibility was regarding each type of aircraft, Ms. Hyman stated that a VFR aircraft is not entitled to perform a missed approach. Ms. Hyman was able to correctly explain separation responsibilities between the different types of aircraft operations. She stated that she is responsible for providing arrival vs. departure separation and the TRACON is responsible for separation between two arrivals. Ms. Hyman said that, when the weather is IFR, there is no doubt as to the status of the aircraft and when the weather is clear, visual separation is applied. Ms. Hyman said that if an aircraft is practicing approaches, 99% of the time it doesn’t matter what the status of the aircraft is.

Ms. Hyman recalled receiving a phone call from the base Assistant Fire Chief around 0230 reporting that they had found the helicopter. Ms. Hyman talked to the PCT OSIC a few minutes later and he informed Ms. Hyman that the authorities had found Trooper 2 along with 4 fatalities.

Ms. Hyman said that when she updates the ATIS code, she rarely, if ever, looks at the IDS-5 page for ADW to ensure the weather has updated properly. This weather information is transferred automatically to the PCT IDS and displays current ADW weather information to the PCT controllers. Ms. Hyman said that the IDS page displayed at ADW is normally the page that displays the ATIS code, not the current METAR. Ms. Hyman said that she did not understand why Trooper 2 was asking her for an ASR

approach when the pilot was not receiving the glide slope. She said that she could understand if the pilot complained about not receiving the entire ILS system, but not just the glide slope. She thought that in such a case the pilot would just descend to his minimum descent altitude (MDA) and continue with the localizer approach. Ms. Hyman said that, in her opinion, she did not hear any urgency in the pilot's voice when he asked her for an ASR approach. Ms. Hyman stated that if there was urgency or an emergency was declared, she would have issued the ASR approach to the aircraft. Ms. Hyman said that she is not aware of chronic complaints regarding the glide slope on runway 19R. She said that every now and then, someone will say something about an erroneous reading, but it is very rare.

Asked for more information on ASR approaches, Ms. Hyman stated that virtually all requests for ASR approaches are declined because of staffing. There have to be two fully qualified controllers available to staff the local control and ASR positions, and that is not usually the case. In the daytime, if an ASR approach is requested, the local controller may call the acting Air Traffic Manager up to the cab to have him do the approach because he is one of the few people at ADW that are current for ASRs.

Under normal circumstances, PCT is responsible for radar monitoring aircraft landing at ADW. Ms. Hyman was not aware that Krant was using the Dulles radar site, and didn't know that the Krant configuration can affect data tags on the ADW display. Aircraft that remain on a "K" tag (Krant sector) can possibly keep ADW from receiving MSAW alerts on arriving aircraft.

Ms. Hyman concluded by noting that the pilot displayed no sense of urgency, and did not seem to be having any operational issues. If he had indicated that he was in some kind of emergency situation, she would have provided the ASR approach requested.

On December 17, 2008, Ms. Hyman was contacted via telephone to confirm additional details about runway visual range and tower visibility. She stated that the RVR display in the tower was off because the prevailing visibility was above 1 mile, and that the tower visibility was reduced because of condensation on the glass, not because of external conditions such as fog or low clouds. She also confirmed that she was working from the local control position located toward the approach end of runway 19R. She also stated that she recalled encountering no significant fog while driving to work that night.

Scott Dunham
ATC Investigator
AS-30

Attachments: Potomac TRACON, ADW Tower transcripts
ADW ILS 19R Approach Chart
ADW Tower "Lessons Learned" Briefing
Washington Tower, Potomac TRACON, Andrews Tower:
"Trooper 2, A Forensic View" briefing