IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF NORTH CAROLINA

LINDA D. TURNER AND WACHOVIA BANK, N.A., Co-Executors of the Estate of JEFFREY WAYNE TURNER, Plaintiffs, v. UNITED STATES OF AMERICA, Defendant.	)	1:06CV223

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DIANNE H. DORTON, as Personal Representative of the Estate of RANDALL ALEXANDER DORTON, Plaintiff, v. UNITED STATES OF AMERICA, Defendant.	)	1:07CV23

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DIANNE H. DORTON, as Personal Representative of the Estate of RANDALL ALEXANDER DORTON, Plaintiff, v. HENDRICK MOTORSPORTS, INC., JOHN P. TRACY, as Personal Representative of the Estate of RICHARD EDWARD TRACY; RICHARD M. MORRISON, as Personal Representative of the Estate of	)	1:06CV431

ELIZABETH LEE MORRISON; and)
HMS HOLDINGS LIMITED PARTNERSHIP)
)
Defendants and)
Third-Party Plaintiffs,)
)
v.)
)
UNITED STATES OF AMERICA,)
)
Third-Party Defendant.)

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TRACY A. LATHRAM, Executor)
of the Estate of SCOTT C. LATHRAM,)
Deceased,)
)
Plaintiff,)
)
v.) 1:06CV474
)
HENDRICK MOTORSPORTS, INC. and)
HMS HOLDINGS LIMITED PARTNERSHIP,)
)
Defendants and)
Third-Party Plaintiffs,)
)
v.)
)
UNITED STATES OF AMERICA,)
)
Third-Party Defendant.)

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HMS HOLDINGS LIMITED PARTNERSHIP)
and UNITED STATES AVIATION)
UNDERWRITERS, INC.)
)
Plaintiffs,)
)
v.) 1:07CV673
)
UNITED STATES OF AMERICA,)
)
Defendant.)

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MEMORANDUM OPINION AND ORDER

THOMAS D. SCHROEDER, District Judge.

These consolidated proceedings arise out of the crash of a private aircraft near Martinsville, Virginia. Pursuant to the court's April 21, 2009, Final Order Regarding Consolidation and Bifurcation, trial was divided into phases. Claims for which a jury trial was entitled were tried in April and May 2009.[1] All remaining claims against the Defendant United States of America ("United States" or "Government"), for which no jury trial right exists, were tried to the court from July 7 through 24, 2009.

Before the court is the determination of the bench trial phase in which various parties assert claims against the United States which, in turn, asserts various claims for contribution. In cases 1:06cv223 and 1:07cv23, respectively, Linda D. Turner and Wachovia Bank, N.A., co-executors of the Estate of Jeffrey

[1] The jury trial occurred in case 1:06cv431. Claims in that case were limited by this court's March 13, 2008, Order on various pending motions. (Case No. 1:07cv23, Doc. 105.) As a result of the Order, Plaintiff's claims against Hendrick Motorsports, Inc., and HMS Holdings Limited Partnership were dismissed. Plaintiff's claims against the pilots' estates were tried to a jury in April and May 2009. Because Dorton was an employee of HMS Holdings Limited Partnership, as were the pilots of the aircraft, North Carolina law applied, and because Plaintiff's claims were against her decedent's co-employees, the willful, wanton and reckless standard of Pleasant v. Johnson, 312 N.C. 710, 717, 325 S.E.2d 244, 249-50 (1985), applied. The jury found that the pilots were not liable under this heightened standard. Any claims for contribution against the Government by the pilots' estates were rendered moot. After trial, the Government stipulated to the dismissal of its counterclaims against the pilots' estates only, leaving its counterclaims against Hendrick Motorsports, Inc., and HMS Holdings Limited Partnership. (Case No. 1:07cv23, Doc. 182.)

Wayne Turner ("Turner"), and Dianne H. Dorton, as personal representative of the Estate of Randall Alexander Dorton ("Dorton"), bring actions directly against the Government. In case 1:06cv431, the only remaining claims are those by Hendrick Motorsports, Inc., against the Government for the loss of the aircraft as well as the Government's contribution and indemnity claims against third-party plaintiffs Hendrick Motorsports, Inc., and HMS Holdings Limited Partnership. In case 1:06cv474, Hendrick Motorsports, Inc., asserts a claim against the Government for property damage to the aircraft, and HMS Holdings Limited Partnership seeks contribution for payment made in settlement to the representative of Scott C. Lathram ("Lathram"), a passenger who died in the accident. In case 1:07cv673, HMS Holdings Limited Partnership and United States Aviation Underwriters, Inc., seek contribution for payment made in settlement to the representative of Joe Wayne Jackson ("Jackson"), also a passenger who died in the accident.

The matter is ripe for decision, and the court issues the following Findings of Fact and Conclusions of Law, pursuant to Rule 52(a) of the Federal Rules of Civil Procedure.

I. FINDINGS OF FACT

At approximately 12:33 p.m. (Eastern Daylight Savings Time) on October 24, 2004, a corporate twin turbo-prop aircraft owned by Hendrick Motorsports, Inc., flew into Bull Mountain,

Virginia, which was obscured by clouds, approximately ten nautical miles past the approach end of Runway 30 of the Blue Ridge Airport, also known by the call-sign "MTV" ("MTV" or "Martinsville"). The aircraft had departed from the Concord (North Carolina) airport and was en route to Martinsville, Virginia, where the passengers planned to attend a NASCAR race set to begin at 1:00 p.m. at the nearby Martinsville Speedway. On board were Lathram and Jackson, Hendrick employees Turner and Dorton, four members of the Hendrick family, and the aircraft's two pilots, Richard Edward Tracy ("Tracy") and Elizabeth Lee Morrison ("Morrison"), who were employees of HMS Holdings Limited Partnership. There were no survivors.

A. The Aircraft and Pilots

The aircraft was a Beechcraft Super King Air 200, bearing Federal Aviation Administration ("FAA") registration number N501RH ("N501RH"). N501RH did not carry flight data or cockpit voice recorders. The FAA recorded radar information relating to N501RH as well as radio transmissions to and from the aircraft made over the air traffic control ("ATC") frequency. This information permits a reconstruction of the aircraft's flight path and ATC communications.[2]

[2] The reconstructed radar came from three sources (Roanoke, Virginia radar; long-range radar for Washington (D.C.) Center; and Greensboro West Radar). Only a portion of the radar (West Radar) was available to ATC at the Greensboro Terminal Radar Approach Control facility during N501RH's approach to Martinsville.

N501RH was fully equipped with navigational instruments approved by the FAA for an "Instrument Flight Rules" ("IFR") approach for landing. N501RH utilized a "localizer approach" to land, which requires the pilots to follow certain radio and other instrumentation to orient the aircraft properly toward Runway 30 for safe landing. The localizer approach is published on a diagram in an official publication known as an "approach plate," and federal law requires that pilots flying it follow the approach as depicted. 14 C.F.R. § 91.175(a) (2004). The localizer approach begins at a known location, in this case designated "BALES," located five nautical miles southeast of the approach end of MTV Runway 30. Airplanes flying the localizer approach typically intersect the localizer course southeast of (before) BALES.

The cockpit had dual sets of instruments, one for each pilot, and the pilots were trained and expected to routinely scan them. Several of these instruments were designed to assist the pilots in navigating on this flight.

First, N501RH had an Automatic Direction Finder ("ADF") through which the pilots could receive signals from a ground-based Nondirectional Radio Beacon ("NDB"). An NDB is a radio transmitter located in this case at BALES. Each pilot had an ADF display in the cockpit, which (when within range of the beacon and tuned to the proper frequency) displays a needle

showing the direction to the BALES NDB in relation to the aircraft. The ADF needle points continuously to the direction of the beacon regardless of where the aircraft flies. If ADF is not receiving a signal it "parks" at a 90 degree angle. Thus, when an aircraft passes BALES on its approach to Runway 30, the needle swings to indicate the aircraft's location with respect to the NDB. In this fashion, it alerts the crew to whether the aircraft properly passed over the BALES NDB to line the aircraft on the proper route to land. For N501RH to conduct an IFR localizer approach to Martinsville, ADF must be used.

Second, in addition to the BALES NDB, a marker beacon transmitter, called the Outer Marker Beacon, is located at BALES. The Outer Marker Beacon sends a narrow radio beam straight up into the air (like a flashlight beam) so that when an aircraft flies through the beam a light on the aircraft instrument panel flashes and, when audio is turned on, generates an audible tone. N501RH was equipped to receive these signals.

Third, N501RH had localizer equipment by which the pilots could determine their lateral position on a specified approach to a runway, in this case MTV Runway 30. In the cockpit, the localizer course is displayed to the pilots on an instrument known as a Course Deviation Indicator ("CDI"), which is part of an instrument known as the Horizontal Situation Indicator. The CDI indicates whether the aircraft is on, to the left of, or to

the right of the specified approach as the aircraft proceeds to land. Each pilot had a CDI display on his or her instrument panel. If the CDI deflects fully to the left or to the right at any time after an aircraft passes the BALES marker on a final approach to Runway 30, the pilots must immediately implement designated "missed approach" procedures and declare a "missed approach" to ATC, thus aborting the landing attempt.

Fourth, N501RH had Distance Measuring Equipment ("DME") for each pilot from which they could determine their distance from the airport to the nearest tenth of a mile. The DME ground antenna is located in line with and 1,000 feet beyond the northwest end of MTV Runway 30. As an aircraft approaches the DME antenna, the mileage distance continually decreases. As an aircraft flies away from the DME antenna, the mileage distance continually increases. In connection with the aircraft's DME instrument, Hendrick Motorsports training materials required pilots to use a timer to further apprise the crew of its location during the approach. The approach plate provides distance measurements for pilot reference that are calculated based on the aircraft's speed.

Hendrick Motorsports policy required that pilots use DME for the Runway 30 localizer and, as required by the approach plate, ADF. However, N501RH was also equipped with a Bendix/King KLN-90B Global Positioning System ("GPS"). Another

HMS Holdings Limited Partnership pilot, James Luckwaldt ("Luckwaldt"), and the Government's piloting expert, Joseph Lintzenich ("Lintzenich"), both testified, and the court finds, that unlike the equipment listed in the preceding paragraphs, the GPS on N501RH had not been certified for use in IFR conditions as the primary navigational tool. A placard in the aircraft reminded pilots of this limitation. Using the non-certified GPS as a backup to certified navigational aids, however, was permitted and consistent with company practice in 2004.

The aircraft pilots, Tracy and Morrison, were licensed and qualified for the flight. Tracy had over 10,000 hours of flight time, including time as a commercial airline captain, and co-pilot Morrison over 2,000 hours. Neither pilot had a prior accident as defined by the FAA. Both pilots had flown into MTV previously. Tracy had flown into MTV on a clear day, and he and his co-pilot discussed the high terrain and need for care in making the approach. Co-pilot Morrison had flown into the airport on N501RH two days before the accident under overcast conditions similar to those on the day of the accident. James Edward Tobias ("Tobias"), another HMS Holdings Limited Partnership pilot at the time and Morrison's captain on that trip, discussed the terrain surrounding MTV and believed that Morrison was aware of the terrain to the northwest of MTV.

B. MTV and Approach to Runway 30

MTV consists of a single runway on which airplanes are permitted to land from either direction. When approached from the southeast, the runway is referred to as Runway 30 (denoting the first two numbers of its magnetic heading). When approached from the opposite direction, i.e., from the northwest, it is referred to as Runway 12.

MTV has no ATC facilities. Radar coverage is limited or nonexistent with respect to aircraft at low altitude because of interference from nearby terrain. Thus, it is not unusual, and in fact is expected, that aircraft will drop off Greensboro (North Carolina) radar coverage prior to landing. MTV is equipped, however, with various devices, including antennas, to assist pilots flying under Visual Flight Rules ("VFR") as well as IFR.[3]

Pilots landing from the southeast onto Runway 30 under IFR conditions by employing a localizer approach (combining CDI and ADF readings with the DME) are required to do so exactly as

[3] The following IFR ground instruments were tested the day after the accident and found to be functioning properly: BALES Outer Marker Beacon, BALES NDB, and the localizer equipment. There was at least one report by another plane that the BALES Outer Marker Beacon either did not signal in the cockpit or, if it did, the pilot did not recall it. Hendrick pilot James Tobias testified that he could not recall whether the Outer Marker Beacon light alerted on his flight into MTV on October 22, 2004. However, the Outer Marker Beacon performed as expected when the National Transportation Safety Board conducted a test flight later.

depicted on an official chart, known as an "approach plate," which pilots must have onboard. Because the GPS was not certified, any other IFR approach to Runway 30 violates federal regulations. See 14 C.F.R. § 91.175(a) (2004) ("[E]ach person operating an aircraft . . . shall use a standard instrument approach procedure prescribed for the airport . . . ."). The approach plate for MTV contains an "overhead" diagram of the courses and distances to be followed as well as a "side-view" diagram showing minimum approach altitudes to be flown throughout designated portions of the approach.

The localizer approach begins at BALES. Pilots determine the location of BALES with respect to their aircraft through the use of the cockpit instruments described above. As an aircraft flies over BALES, the Outer Marker Beacon should trigger a blinking light and tone, DME would read six nautical miles (indicating six miles to the DME antenna and thus five nautical miles to the threshold of Runway 30), and the ADF needle would swing to show BALES behind the aircraft as the aircraft proceeds toward Runway 30.

The approach plate also depicts the published holding pattern if, prior to being cleared for an approach to MTV, an aircraft is directed to enter into one. The holding pattern is a racetrack-shaped course that includes BALES as a reference point and is considered part of the published instrument

approach. An ATC controller (also "controller") may place an aircraft in a holding pattern while another aircraft is landing or taking off from the airport.

Once ATC clears an aircraft for an approach to MTV, the pilots are instructed to change from the ATC frequency to a frequency known as UNICOM to obtain local information, including local weather conditions. UNICOM is used by pilots to communicate with one another and to receive advisories from an airport without an operating tower.[4] The UNICOM frequency is different from that used by pilots when communicating with ATC; ATC does not directly communicate on the UNICOM frequency.

The approach plate for MTV sets the *minimum* altitudes that must be maintained during the approach. An aircraft cleared to fly an IFR approach to Runway 30 must be at or above a minimum altitude of 2,600 feet above mean sea level ("MSL") at BALES.[5] Because MTV lies just over 900 feet MSL, an aircraft at 2,600 feet MSL would be approximately 1,700 feet higher than the airport. Flying at an altitude above 2,600 feet MSL at BALES is not a violation of ATC clearance.

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[4] According to the Government's air traffic control expert William Douglas Turner, there are approximately 12,000 airports in the United States, of which only about 500 have air traffic control towers.

[5] References to altitude are expressed in feet above MSL, and references to miles are in nautical miles except those referring to surface visibility, which are in statute miles. A nautical mile is 6,076 feet, approximately 1.15 statute miles.

An aircraft passing BALES may not descend below 1,520 feet MSL prior to reaching a DME reading of 2.8 miles, that is, until 1.8 miles from the approach end of Runway 30.[6] At that point, the aircraft may descend further, but not below 1,340 feet MSL (known as the "Minimum Descent Altitude" or "MDA") *unless* the pilots have the runway in sight and determine that they can land safely.

When an aircraft reaches a DME of 1.0 mile, it is at the approach end of Runway 30, which is also designated on the approach plate as the "missed approach point." At the missed approach point, the pilot must determine if he has a sufficient visual view of the runway environment and is capable of landing safely; if not, he must abort the landing and *immediately* fly the published missed approach procedure. 14 C.F.R. § 91.175(d)-(e) (2004). There is only one published missed approach point for Runway 30, and that is at the runway approach threshold. Clearance by ATC to fly the localizer approach is also clearance to execute a missed approach; that is, no further permission from ATC is needed if a pilot determines he must declare a missed approach. The Hendricks Motorsports company pilot manual also directed execution of the published missed approach procedure when required.

[6] Although the DME range is a "slant" range from the aircraft in flight to the DME antenna on the ground, the overall effect compared to ground track does not materially affect DME distances in this case.

Every published approach plate has instructions on flying a missed approach. The missed approach procedure for MTV, set out at three different places on the approach plate, requires a climbing right turn to 2,600 feet MSL and a return to BALES. The repetition reflects the importance of flying a missed approach only as approved by the FAA. Although not designated as such on the approach plate, the climbing turn acknowledges the presence of Bull Mountain approximately 10 miles past the threshold of Runway 30.[7] In a Super King Air like N501RH, once a pilot decides to execute a missed approach (including increasing the throttle and turning the yoke), it should take no more than ten seconds for the aircraft to begin the right turn. A turn is typically made at three degrees per second, although a turn can be made at a greater rate. At three degrees per second, an aircraft will have turned 90 degrees in thirty seconds.

C. Greensboro Terminal Radar Approach Control Facility

Because MTV lacks an ATC tower, the controller who assisted N501RH was located in Greensboro at a Terminal Radar Approach Control facility ("TRACON") maintained by the United States through the FAA. Controllers at TRACON communicate with pilots on an ATC frequency.

[7] The approach plate simply notes a point 10 miles past Runway 30 at an altitude of "3211."

The Greensboro TRACON facility employs several radar stations on an ARTS II E system. The "West Radar" station utilizes an approximately 20-inch circular radar screen that encompasses a large geographic area that includes MTV and its immediately surrounding area. FAA controller Brian Randall Park ("Park") served in the position of West Radar during the relevant portion of the N501RH flight. Additional radar duties were combined with West Radar duties during this period. William Earl Thomson ("Thomson") was the supervisor on duty, and controller Jerry L. Wilson ("Wilson") was responsible for the flight data radar position.

ATC receives sweeping radar data approximately every 4.6 seconds, which shows the location of any aircraft that was within its coverage. A "data block" for every aircraft that has been radar-identified and is at an altitude and position sufficient for a valid radar return or "hit" is displayed on the radar screen. A data block includes an aircraft's identifier (call sign) on the top line and, on the second line, the aircraft's destination and type, which displays alternately with its altitude and ground speed. The data block is accompanied by a position symbol, but the aircraft's heading is not displayed. The West Radar screen depicted the location of the MTV runway as well as BALES immediately upon the radar sweep, which then faded until the next sweep. Neither the terrain around MTV, including

Bull Mountain, nor the racetrack-shaped holding patterns at BALES is depicted on the radar screen.

Greensboro TRACON employs a Minimum Safe Altitude Warning system ("MSAW"), which depends on information received by radar utilized by TRACON. The MSAW alerts controllers when an equipped aircraft is, or is projected to be (based on its past course as determined from radar hits), below the appropriate terrain clearance altitude. When an aircraft's radar return satisfies the parameters of the MSAW program, a blinking low altitude symbol ("LA") appears in the data block associated with the aircraft. A warning tone of five seconds duration also sounds in the TRACON radar room.

An MSAW alert is activated only if the radar is in actual radar contact with the aircraft. If an aircraft no longer receives a hard radar hit, it will be displayed in "coast" mode (designated "CST" on the radar block), meaning that the aircraft's position is predicted by computer as only an estimate. The symbol does not immediately disappear when the data block enters the "coast" mode.

The MSAW system contains one or more speakers in the TRACON facility designed so that all controllers in the room can hear the tone, and the speaker itself is tested every shift. The TRACON MSAW speaker and volume was tested every shift in this case to ensure it could be heard but would not be overbearing.

An MSAW visual and aural warning occurs only at TRACON; pilots are not aware of an MSAW alert unless informed by a controller.

D. The Accident

Weather conditions at MTV on October 24, 2004, were overcast, with a thick cloud ceiling that caused limited visibility. The cloud level was too low for even an IFR landing early that morning, which delayed N501RH's trip in this case.

Prior to takeoff, Tracy filed an IFR flight plan with the Raleigh/Durham Automated Flight Service Station of the FAA at 9:50 a.m., meaning that he and Morrison would be dependent on their instruments for the flight. Because of the low overcast skies, N501RH could not execute a VFR approach to MTV. The flight plan the pilots filed with the FAA incorrectly identified N501RH as equipped with an IFR-certified GPS. While discussing the flight with the FAA flight service briefer, Tracy was informed that a weather advisory had been issued along his intended flight route, including that the mountains would be obscured.

Tracy and Morrison waited as the low ceilings improved at MTV as the morning wore on. Though the flight plan called for a 10:30 a.m. departure, N501RH did not depart the Concord airport until approximately 11:56 a.m. N501RH headed uneventfully toward MTV for the short flight.

At 12:03 p.m., Tracy informed Park that N501RH would be using the localizer approach into MTV. Park cleared N501RH directly to the BALES outer marker. Ten minutes later, Park directed N501RH to descend to and maintain 3,000 feet MSL. Shortly thereafter, Park amended the altitude by directing N501RH to 4,000 feet MSL and informed the pilots that they would be "number two for the field," meaning another aircraft would be making an approach ahead of them. Doing so allowed a faster and closer aircraft, designated N500CG (which was approaching from the northeast), to make its approach to MTV in airspace clear of other controlled aircraft. This direction was standard for MTV, which lacked a control tower, and complied with ATC procedures. Allowing only one IFR aircraft to approach MTV at a time ensures safe separation between the aircraft. An aircraft is not cleared for an approach past BALES until the preceding aircraft reports it has either landed or declared a missed approach. This procedure, known as a "one-in, one-out" method of non-radar separation, permits exclusive use of the airspace around MTV for the cleared plane.

At 12:17 p.m., Park directed N501RH to proceed directly to BALES and to enter a holding pattern at BALES, as published (on the approach plate). Park informed N501RH to expect further clearance for an approach to MTV at 12:45 p.m. Blocking airspace provides an aircraft, such as N500CG, sufficient time

to land or fly a missed approach. N501RH confirmed the direction. Less than two minutes later, Park cleared the other aircraft, N500CG, for a localizer approach to Runway 30 and authorized that aircraft to make a frequency change to UNICOM. If N500CG declared a missed approach, it would return to BALES pursuant to the approach plate for MTV.

At 12:21 p.m., N501RH requested a five-mile holding pattern "leg," meaning that the elongated portion of the racetrack-shaped holding pattern would extend five miles. Park responded by allowing N501RH the discretion to select either five-mile or ten-mile legs. N501RH, which initially indicated a desire for a five-mile leg, opted for a ten-mile leg. Clearance to ten miles would allow N501RH's pilots, at their discretion, to fly outbound for ten miles and then to turn back to BALES.

The MSAW alerted twice at Greensboro TRACON as N500CG descended to land at MTV. Such alerts were not unusual for aircraft descending into MTV on approach because of the nature of the approach and occurred on virtually every landing there. Such alerts may occur, for example, when an aircraft is on approach to land because the computer projects the flight path below a programmed minimum altitude even though the approach is safely conducted.

At 12:24 p.m., Park confirmed that N500CG had landed. With N500CG on the ground, Martinsville airspace was clear for an

approach by N501RH. At that time, N501RH remained near its assigned altitude of 4,000 feet MSL,[8] and its pilots confirmed to Park that the aircraft was established in the holding pattern. Park then cleared N501RH for a localizer approach to Runway 30 and directed its crew to let him know when the aircraft was inbound on the approach. Park's clearance to land using the localizer approach also necessarily included approval to execute a missed approach or, if the pilots could keep the airport in view, a circling approach to land from the opposite direction. See 14 C.F.R. § 91.175 (2004). The clearance also authorized N501RH to execute the approach and to descend at the discretion of the pilot-in-command as long as the descent did not violate the minimum altitudes set forth in the approach plate. See id. Thus, the descent required no further authorization from ATC.

N501RH immediately acknowledged the clearance, turned toward BALES, and just over two minutes after receiving clearance informed Park that N501RH was "established inbound." At 12:26:52 p.m., Park authorized a frequency change to MTV's UNICOM, which meant that radar service to N501RH would be terminated, and directed N501RH to cancel with him from the remote at MTV, i.e., report when N501RH had landed. Four seconds later, N501RH acknowledged the frequency change. From

[8] The data block for N501RH at this time showed an altitude of "39" or 3,900 feet, indicating that altitude plus or minus fifty feet.

that point on, a pilot would not expect any services from a controller other than to protect the airspace around Martinsville from other IFR aircraft entering. After the frequency change, a controller would not expect to hear from the aircraft until it reported it was on the ground, as was the case for N500CG, or had declared a missed approach.

When authorizing the frequency change for N501RH, Park stated that the preceding aircraft (N500CG) "broke out [of the clouds] just below the minimums and uh he said good visibility below." Park's statement suggested that N500CG descended below the Minimum Descent Altitude –– a violation of federal regulations –- before breaking out of the clouds, rather than breaking out just above the minimum altitude. Shortly thereafter, an unknown speaker on the ATC frequency asked, "Broke out below the minimums?" Park immediately corrected, stating ". . . just below; I mean it was legal, I mean." It is not clear whether Tracy or Morrison heard this correction or had left the ATF frequency for UNICOM. In any event, N501RH would make no further transmission on the ATC frequency until around 12:33 p.m., about six minutes later.

Though the approach plate called for N501RH to begin its approach passing BALES at or above an altitude of 2,600 feet MSL, the aircraft passed BALES at 3,900 feet MSL, over one thousand feet higher (likely because it had been in its 4,000

foot holding pattern before being cleared for the approach). Park recalled seeing N501RH (after the frequency change) at about 3,600 feet MSL approximately three miles from the southeast end of Runway 30 (that is, about two miles past BALES toward the airport). Park noted to controller Wilson that he thought the aircraft was high.[9] Park admitted later that he had never seen another aircraft successfully fly the approach (and land) from that position and altitude in instrument conditions.

N501RH descended to an altitude of approximately 2,600 feet MSL when it reached the published missed approach point -- the beginning of Runway 30. At this time, N501RH likely remained in the clouds. After leveling off slightly at 2,600 feet MSL (over MTV), the aircraft continued to descend as it proceeded beyond and away from Runway 30 to the northwest.

Although there is no direct evidence in the form of a cockpit voice recorder or on-board data recorder, the experts retained by the parties agree that the pilots were situationally disoriented. The aircraft's descent path mirrors that depicted on the approach plate for Runway 30, but displaced five miles to the northwest. As Government expert Kenneth Lee Orloff testified, N501RH's actual flight path is consistent with the

[9] At trial, Park could not remember making this statement to Wilson, but Park did not deny having recounted it to the National Transportation Safety Board investigators, who recorded it in their factual report.

pilots believing they were over BALES when the aircraft was actually over the airport. The parties and their experts disagree over why this occurred (e.g., whether the pilots were relying solely on the GPS device and ignored their primary navigational instruments). The court finds that the pilots' actions are consistent with an incorrect belief, through navigational error, that they were five miles behind N501RH's actual position. In other words, the descent profile appears to have been conducted in accordance with the approach plate, with the exception that it all occurred five miles displaced to the northwest.

At approximately 12:30 p.m., when the aircraft was approximately two miles beyond the airport and three miles beyond the missed approach point, West Radar began to lose contact with N501RH, due to the aircraft's low altitude. At 12:30:03 p.m.,[10] the West Radar data block entered "coast" mode, displaying "CST" in place of altitude and ground speed data. In "coast" mode, a controller would know that radar contact had been lost such that the aircraft's location could not be identified. At virtually the same time, 12:30:03 p.m., an "LA" (low altitude) symbol appeared below "CST" and began to blink.

[10] Because the exact timing of events from this point forward can be important to the court's conclusions, most times are given to the second. The times are based upon witness testimony, not all of which agreed to the second, and the court's review of admitted evidence, including the radar screen video.

The "LA" symbol flashed in N501RH's data block but was not initially accompanied by the aural tone. At 12:30:08 p.m., the altitude and ground speed displays reappeared, replacing CST.

At around 12:30:15 p.m., an MSAW tone sounded in West Radar TRACON and continued to sound for approximately five seconds. Within two seconds after the tone began, however, the radar block re-entered the "coast" mode.[11] During the final three of the five seconds when the tone sounded and continuing to the time it disappeared from the radar screen, the data block was in "coast" mode. The letters "LA" disappeared from the data block at 12:30:27 p.m., and the data block itself disappeared from the radar screen about 30 seconds later, at 12:31:00 p.m. and never reappeared.

Greensboro TRACON air traffic was moderate or light to moderate. Park testified that he did not feel overworked. When the aural MSAW alert related to N501RH sounded, it was the only warning sounding. At the time it sounded, however, Park was directing other traffic, including vectoring (giving a heading to) a commercial jetliner, Northwestern Flight 1868, that was landing at the Greensboro airport. In vectoring Flight 1868, Park had to formulate the approach clearance to maintain separation of Flight 1868 from other aircraft, provide

[11] From this point on, the flight path of N501RH can be reconstructed from radar which scanned areas including Martinsville but which were not available to Greensboro TRACON controllers in real time.

instructions, and listen for a confirmation. This was not an unusually difficult task, but was rather routine.

The cloud ceiling at MTV reported at 12:20 p.m. and 12:40 p.m. was approximately 600 feet above the ground. Because the airport is just over 900 feet MSL,[12] the cloud ceiling was approximately 1500 to 1600 feet MSL. At approximately 12:30:35 p.m. (eight seconds after "LA" disappeared from the radar data block), N501RH descended through 1,500 feet MSL and broke through the clouds just over 3 miles northwest of the MTV DME antenna -- or approximately 4.3 miles beyond the missed approach point for Runway 30.

At around 12:31:00 p.m., N501RH was 5.1 miles beyond the published missed approach point, which N501RH had passed about 2 minutes and 20 seconds earlier. In other words, N501RH was below the clouds and if the crew mistakenly believed they were on the correct approach but were in fact 5 miles off, N501RH was at or upon the "mistaken" missed approach point and the crew should have declared a missed approach because the airport (which was behind them) could not have been in sight.

When it was five miles northwest of Runway 30, about six miles past the missed approach point, N501RH flew over Salem United Methodist Church near Cruz, Virginia, where Mark Nelson,

[12] The runway is not flat; different portions are at different elevations. The approach plate for MTV assigns 924 feet MSL.

who was in his vehicle with his family, observed it. N501RH's altitude at that time, as reconstructed by radar data not available to TRACON, was between 1,400 and 1,500 feet MSL, and thus below the base of the clouds. The aircraft was flying low and slow enough that Nelson could not only identify the aircraft as a Beechcraft but also could see its passengers in the windows. Importantly, the aircraft's gear was up.

Visibility below the cloud cover was at least one to two miles and may have been, as indicated by weather reports, between five and ten miles. N501RH continued to fly at approximately 1,500 feet MSL for another minute after passing the vicinity of the Salem United Methodist Church. (Because radar estimates altitude to the nearest 50 feet, it is possible the aircraft may have climbed only slightly during this period.) Tracy, Morrison, and the passengers would have seen the ground during this time, just as Nelson clearly saw the aircraft and at least two of its passengers. More to the point, the aircraft was almost three miles past the point it should have declared a missed approach even if the crew mistakenly believed its approach path was correct.

At approximately 12:32:13 p.m., N501RH began to climb. The aircraft was then approximately seven miles northwest of the DME antenna, or nearly eight miles past the published missed

approach point on the threshold of Runway 30. About twenty seconds later, N501RH increased its rate of climb.

At 12:33:03 p.m., six minutes after the crew had switched to the local UNICOM frequency, co-pilot Morrison verbally communicated on the ATC frequency, although incorrectly calling MTV rather than Greensboro TRACON. A few seconds later Morrison tried to contact ATC at Greensboro, correctly identifying the intended recipient. Two seconds later Park acknowledged. At 12:33:11 p.m., Morrison stated that N501RH was "going missed at this time," meaning that N501RH was initiating or had initiated a missed approach procedure.

At 12:33:21 p.m., Park instructed N501RH to climb to and maintain 4,400 feet MSL. N501RH had not yet reappeared on Park's radar, and he gave this instruction so that N501RH would climb to an altitude where it could be reacquired by radar to identify its location and provide a heading; 4,400 feet MSL was also the minimum vectoring altitude for the northwest side of the airport. N501RH did not respond, and no further communication was received from N501RH.

At approximately 12:33:24 p.m., N501RH collided with rising terrain on Bull Mountain at an altitude of around 2,400 feet, just short of its ridge line. Although the aircraft had begun to climb, radar reconstruction (not available to Greensboro TRACON) shows that N501RH continued to fly essentially straight

as it climbed for nearly two miles, never initiating a climbing right turn as required by the approach plate.

In the 30 seconds or so after directing N501RH to climb and maintain 4,400 feet MSL, Park attempted to contact the aircraft on multiple occasions over the ATC frequency. About one-half minute after his last attempt, Park requested that another aircraft attempt to contact N501RH (known as a "relay" communication) and, if successful, to direct N501RH to climb and maintain 5,000 feet MSL. Within a few seconds the other aircraft reported "no joy on that" to Park, meaning its efforts to raise N501RH had failed. Park then requested Roanoke ATC to block airspace at and below 5,000 feet and to keep an eye out for N501RH. About a minute-and-a-half later, Park made another call to N501RH. Receiving no answer, Park asked the other aircraft to try to contact N501RH on the "Guard frequency" used for emergency communications. Park was informed that N501RH did not respond. About a minute later Park requested that another aircraft attempt to reach N501RH on the Guard frequency. During this time, Supervisor Thomson telephoned Jessica Nicole Watkins, an employee at MTV, who attempted, unsuccessfully, to reach N501RH on UNICOM.[13]

[13] Later that day, controller Wilson successfully used a relay to a different frequency in order to contact another cleared aircraft (which Wilson observed to be off course and below the minimum descent altitude). When the pilot of that aircraft switched back to the ATC

The aircraft instruments certified for the IFR approach provided the pilots with multiple displays that should have shown that N501RH was not where the approach plate required it to be. Neither Tracy nor Morrison reported any problem or malfunction of their instruments. There is no evidence from which to conclude that any instrument on the aircraft was not working properly, let alone that multiple instruments were not working at the same time.[14]

First, the localizer approach required that the ADF be tuned to the BALES NDB frequency. Following ATC approach clearance by Park, N501RH turned toward BALES. When the aircraft passed BALES, the ADF needle would have swung from pointing ahead of the aircraft to pointing *behind* the aircraft. (Even if the aircraft did not pass directly over BALES, the needle would have swung in the direction of BALES, noting its position.) Importantly, the ADF needle would have continued to point *behind* the aircraft thereafter, thereby noting to the crew, in addition to the aircraft's northwest heading, that the aircraft had already passed BALES and was moving *away* from it,

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frequency, he stated that he was about to call ATC and indicated that he may not have been established on his first approach.

[14] Plaintiffs point to evidence that other aircraft reported that the Outer Marker Beacon may not have been functioning properly that day. Even if true, Tracy or Morrison should not have begun their descent from 2,600 feet because they would not have properly confirmed that they had in fact passed over BALES. Thus, whether the equipment was not working does not excuse the pilots' actions.

not toward it. Thus, the ADF would have alerted the pilots to their position relative to BALES to permit them to properly begin their descent.

Second, the DME, because it tunes to an antenna at the far end of Runway 30, would have read six miles at BALES and would have continued to count down as it approached MTV. It would have read one mile at the threshold of Runway 30, the missed approach point. Thus, a DME reading of less than six miles would have alerted a reasonably prudent pilot that he or she was *inside* BALES on an approach to Runway 30. Had the crew observed the DME, it would have realized its actual relationship to Runway 30.

Third, when N501RH was over the airport, it was at 2,600 feet, the minimum altitude the approach plate permits at BALES, and the descent path from this point onward mirrors that required by the approach plate. This suggests strongly that the crew believed they were at BALES at this time. However, had they scanned their DME equipment, as would any reasonably prudent pilot, they would have observed that the DME displayed one, not six, miles. Thus, they would have realized that the aircraft was not only not at BALES, but was in fact at or beyond the missed approach point. In either event, a missed approach should have been executed.

Fourth, as N501RH passed the DME antenna and continued flying to the northwest, the DME counter would have been counting up, not down. This would have indicated that the aircraft had passed MTV and was moving *away* from the DME antenna. Further, had the DME been consulted at any time while N501RH was flying away from the airport, its increasing DME mileage would have alerted the pilots that the aircraft had long passed the DME antenna, was beyond the missed approach point, and was significantly off course.

The following section supplements these findings of fact and, to the extent statements therein constitute findings of fact, they are incorporated in the findings of fact and are so adopted.

II. CONCLUSIONS OF LAW

A. Jurisdiction and Choice of Law

The current phase of these civil actions arises under the Federal Tort Claims Act ("FTCA"), 28 U.S.C. §§ 1346(b), 2671-80. The FTCA constitutes a waiver by the United States of the federal government's immunity from liability in tort for "the negligent or wrongful act or omission of any employee of the Government while acting within the scope of his office or employment." 28 U.S.C. § 1346(b)(1). Pursuant to the FTCA, a court must apply the whole law of the jurisdiction where the alleged act or omission occurred, including the choice of law

rules, to determine the rights and liabilities of the parties. 28 U.S.C. §§ 1346(b)(1), 2674; Richards v. United States, 369 U.S. 1, 11-13 (1962). Plaintiffs have complied with all prerequisites and conditions precedent to the filing of the civil action pursuant to 28 U.S.C. § 1346(b). Venue is proper in this court pursuant to 28 U.S.C. § 1402(b).

In this case, the parties agree that any alleged negligence of the air traffic controllers occurred in North Carolina. North Carolina applies the principle of lex loci delicti, the law of the situs of the claim, to choice of law issues in tort cases. Boudreau v. Baughman, 322 N.C. 331, 335-36, 368 S.E.2d 849, 853-54 (1988); see White v. Penske Truck Leasing Corp., 256 F. Supp. 2d 440, 445 (M.D.N.C. 2003) (citing Boudreau). The parties also agree that, because the injury in this case occurred in Virginia, North Carolina law dictates that the substantive law of Virginia governs the liability issues. Boudreau, 322 N.C. at 335-36, 368 S.E.2d at 854; White, 256 F. Supp. 2d at 445.[15]

[15] To the extent pilot negligence occurred in Virginia, Virginia also applies lex loci delicti to tort actions. Dreher v. Budget Rent-A-Car Sys., Inc., 272 Va. 390, 395, 634 S.E.2d 324, 327 (2006) (citing McMillan v. McMillan, 219 Va. 1127, 1128, 253 S.E.2d 662, 663 (1979)); Jones v. R.S. Jones & Assocs., Inc., 246 Va. 3, 5, 431 S.E.2d 33, 34 (1993) (applying substantive law of Florida, the place of the airplane crash). This phase of the litigation is distinguishable from the jury trial not involving the United States in which Pleasant v. Johnson, 312 N.C. 710, 325 S.E.2d 244 (1985), applied as an exception to the general limitation on recovery from co-employees under North Carolina workers' compensation law.

B. Virginia Negligence Law

Under Virginia law, "[t]he elements of an action in negligence are a legal duty on the part of the defendant, breach of that duty, and a showing that such breach was the proximate cause of injury, resulting in damage to the plaintiff." Blue Ridge Serv. Corp. of Va. v. Saxon Shoes, Inc., 271 Va. 206, 218, 624 S.E.2d 55, 62 (2006); accord Srock v. United States, 462 F. Supp. 2d 812, 824 (E.D. Mich. 2006) (applying Virginia law in action brought under FTCA by estate of deceased airplane passenger).[16] "[A] defendant is not liable unless the harm would not have occurred but for the defendant's act." Marchant v. Boddie-Noell Enter., Inc., 344 F. Supp. 2d 495, 497 (W.D. Va. 2004) (describing Virginia law). A simplistic "but for" argument, however, does not necessarily resolve the question of proximate cause. See Banks v. City of Richmond, 232 Va. 130, 136, 348 S.E.2d 280, 283 (1986).

[16] Although state law governs in FTCA cases, because the federal courts have exclusive jurisdiction over such claims, state courts have not had a significant opportunity to analyze the duty federal air traffic controllers owe to pilots and passengers. Thus, it is appropriate to look to other federal aviation cases for guidance on this question. Glorvigen v. Cirrus Design Corp., 581 F.3d 737, 743 (8th Cir. 2009) ("[L]ike other federal courts addressing similar claims, we are forced to look primarily to other federal cases for guidance . . . .") (discussing federally employed flight service station specialists).

Simple negligence is "the failure to exercise that degree of care which an ordinarily prudent person would exercise under the same or similar circumstances to avoid injury to another." Gossett v. Jackson, 249 Va. 549, 554, 457 S.E.2d 97, 100 (1995) (citation and internal quotation marks omitted). Proximate cause of an event "is that act or omission which, in natural and continuous sequence, unbroken by an efficient intervening cause, produces the event, and without which that event would not have occurred." Blue Ridge, 271 Va. at 218, 624 S.E.2d at 62 (quoting Beale v. Jones, 210 Va. 519, 522, 171 S.E.2d 851, 853 (1970)). Although "[p]roximate cause need not be established 'with such certainty as to exclude every other possible conclusion,'" Wooldridge v. Echelon Serv. Co., 243 Va. 458, 461, 416 S.E.2d 441, 443 (1992), the burden is on the party asserting negligence to "prove 'why and how the incident happened.'" Hodge v. Wal-Mart Stores, Inc., 360 F.3d 446, 451 (4th Cir. 2004) (quoting Town of West Point v. Evans, 224 Va. 625, 628, 299 S.E.2d 349, 351 (1983)). "[I]f the cause of the event is left to conjecture, guess, or random judgment, the plaintiff cannot recover." Hodge, 360 F.3d at 451 (quoting Evans, 224 Va. at 628, 299 S.E.2d at 351).

There may be more than one proximate cause of an event. When the evidence does not wholly exclude a defendant's negligence as a contributing cause of the plaintiff's injuries

as a matter of law, proximate causation becomes a question of fact. Molchon v. Tyler, 262 Va. 175, 182, 546 S.E.2d 691, 696 (2001); see Banks, 232 Va. at 135, 348 S.E.2d at 283 ("The more difficult problem is to apply the rules relating to proximate cause to the facts of a particular case. We have stated that '[e]ach case necessarily must be decided upon its own facts and circumstances.'" (quoting Huffman v. Sorenson, 194 Va. 932, 937, 76 S.E.2d 183, 186 (1953))). Harm which occurs in a highly extraordinary manner may prevent even a primary actor's conduct from being a proximate cause of an event. Banks, 232 Va. at 137, 348 S.E.2d at 283-84.

C. Legal Duty and Standard of Care

"The issue of whether a legal duty in tort exists is a pure question of law." Kellermann v. McDonough, 278 Va. 478, 487, 684 S.E.2d 786, 790 (2009); see Miller v. United States, 587 F.2d 991, 995 (9th Cir. 1978) (nature and extent of the duty of due care which an air traffic controller owes pilots and their passengers is a question of law). Pilots and air traffic controllers "are burdened with concurrent duties of due care for the protection of the aircraft and its occupants." Webb v. United States, 840 F. Supp. 1484, 1511 (D. Utah 1994); accord Redhead v. United States, 686 F.2d 178, 182 (3d Cir. 1982) (liability of pilot and air traffic control may be concurrent); Spaulding v. United States, 455 F.2d 222, 226-27 (9th Cir.

1972). However, "[i]t is not enough to say that the pilot and controller are concurrently responsible (for accomplishing a safe flight), they must also be concurrently liable, and one does not necessarily follow the other even if both are found negligent." Airplanes of Boca, Inc. v. United States, 254 F. Supp. 2d 1304, 1312 (S.D. Fla. 2003) (quoting Tinkler v. United States, 700 F. Supp. 1067, 1074 (D. Kan. 1988), aff'd, 982 F.2d 1456 (10th Cir. 1992)), aff'd, 112 F. App'x 4 (11th Cir. 2004) (unpublished table decision); see Mgmt. Activities, Inc. v. United States, 21 F. Supp. 2d 1157 (C.D. Cal. 1998) (same). "Necessarily, the pilot's knowledge of his own, his crew's, and his aircraft's capabilities and limitations, is of preeminent importance in this cooperative situation. None of these matters can be known by ATC." In re Aircrash Disaster at Boston, Mass. July 31, 1973, 412 F. Supp. 959, 989 (D. Mass. 1976), aff'd sub nom. Delta Air Lines, Inc. v. United States, 561 F.2d 381 (1st Cir. 1977).

Determination of the duties of pilots and air traffic controllers derives from Federal Aviation Regulations, publications of the FAA, and the common law.

The FAA promulgates regulations and publishes materials that define the duties of pilots and controllers. Pilot responsibilities are set forth in the Code of Federal Regulations, and those applying to controllers are in the

applicable version of FAA Order 7110.65, supplemented by FAA directives. Additional information is found in the Aeronautical Information Manual ("AIM"), Notice to Airmen, Advisory Circulars, the Instrument Flight Handbook, Air Traffic Bulletins, and terminal refresher training materials.

1. Federal Regulations

"The duties of pilots and air traffic controllers are prescribed by federal law," pursuant to the Federal Aviation Act of 1958, as amended ("Federal Aviation Act"). Rodriquez v. United States, 823 F.2d 735, 739 (3d Cir. 1987). The Federal Aviation Act authorizes the FAA Administrator to promulgate air traffic regulations, which are known as Federal Aviation Regulations ("FARs"). 49 U.S.C. § 106(g). FARs have "the force of law." Tilley v. United States, 375 F.2d 678, 680 (4th Cir. 1967). Even when the FARs are too general to support a finding of negligence per se, they provide "relevant and useful evidence on the standard-of-care issue." Banko v. Cont'l Motors Corp., 373 F.2d 314, 315-16 (4th Cir. 1966); accord Dyer v. United States, 832 F.2d 1062, 1069 (9th Cir. 1987).

Regulations promulgated pursuant to Virginia statutes provide that all aircraft operations shall be conducted in conformity with the FARs, as amended from time to time, such that a violation of a FAR constitutes a violation of the

Virginia regulations pertaining to airspace in the Commonwealth. 24 Va. Admin. Code § 5-20-100.

2. Air Traffic Control Manual

A controller's legal duties are defined by the Air Traffic Control Manual, FAA Order 7110.65P, in effect at the time of the accident ("ATC Manual").[17] See Rodriquez, 823 F.2d at 740; Delta, 561 F.2d at 389-90; Gill v. United States, 429 F.2d 1072, 1075 (5th Cir. 1970) (government's duty may rest either upon the requirements of procedures manuals spelling out the functions of the controller or upon general pilot reliance on the government for a given service). Although it is not clear whether the ATC Manual has the force and effect of law, the ATC Manual at least provides evidence of the standard of care for air traffic controllers. Ellen v. United States, 32 F. App'x 270, 274 (9th Cir. 2002) ("[W]hile the language of several cases may suggest that air traffic controllers are required to comply with the terms of [FAA Order 7110.65J] . . . for purposes of tort liability, [FAA Order 7110.65J] merely provides evidence of services the FAA assumes and of the ATC practices."); see Wojciechowicz v. United States, 582 F.3d 57, 64 (1st Cir. 2009) ("The controlling law of this circuit is that the ATCM [Air Traffic Control Manual] is not a statute or a regulation but an

[17] FAA Order 7110.65P, dated February 19, 2004, was in effect during the relevant period. See FAA Order 7110.65P ¶ 1-1-5.

internal FAA guideline issued to FAA controllers, which governs their conduct. As such, under our case law the ATCM is merely an indication of the standard of care."); Delta, 561 F.2d at 389-90 ("While failure to conform to every mandatory Manual procedure, however trivial the deviation, would not necessarily constitute negligence, and while it might not be negligent to deviate from established procedures in the face of a higher priority concern, nonetheless a substantial and unjustified failure to follow procedures made mandatory by the Manual is persuasive as an indication of a lack of due care.").

3. Other FAA Documents

Duties evidencing the standard of care are also articulated in other FAA publications. FARs specifically require pilots to be familiar with and abide by the provisions of the Aeronautical Information Manual ("AIM") and FAA Advisory Circulars pertaining to the pilots' particular flying activities. See Dyer, 832 F.2d at 1069; Rodriquez, 823 F.2d at 739; Barbosa v. United States, 811 F.2d 1444, 1446-47 (11th Cir. 1987); Muncie Aviation Corp. v. Party Doll Fleet, Inc., 519 F.2d 1178, 1180-81 (5th Cir. 1975).

The purpose of the AIM is to "instruct pilots about basic flight information, air traffic control procedures, and general instructional information." Mgmt. Activities, Inc. v. United States, 21 F. Supp. 2d 1157, 1175 (C.D. Cal. 1998); see In re N-

500L Cases, 691 F.2d 15, 28 (1st Cir. 1982) (stating that the AIM "explain[s] to pilots the application of the FARs in various situations"). Advisory Circulars are published "on various topics to advise pilots of methods of avoiding certain hazardous conditions." In re N-500L Cases, 691 F.2d at 28. The AIM and Advisory Circulars are evidence of the standard of care among pilots. Cappello v. Duncan Aircraft Sales of Florida, 79 F.3d 1465, 1469 n.3 (6th Cir. 1996); Dyer, 832 F.2d at 1069; In re Air Crash Disaster at John F. Kennedy Int'l Airport on June 24, 1975, 635 F.2d 67, 75-76 (2d Cir. 1980); Muncie, 519 F.2d at 1180.

The FAA Instrument Flying Handbook (2001) also provides evidence of the standard of care for pilots. This publication describes in great detail all the facets of instrument flying. As testified to by the Government's piloting expert Lintzenich, the Handbook is used to teach student pilots to fly with instruments and to refresh the memory of licensed pilots.

The FAA's Air Traffic Bulletins are further evidence of the standard of care for air traffic controllers. Air Traffic Bulletins are quarterly publications that focus on recent crashes and other events. Although the Air Traffic Bulletins do not create additional duties beyond the ATC Manual, they are thought-provoking items that are used to train or refresh controllers, including those at the Greensboro TRACON.

Finally, the FAA's terminal refresher training materials are other non-binding documents that indicate the standard of care for controllers.

D. Pilot Duties and Conduct

1. Pilot Duties

Pilots are charged with legal notice of the FARs and their content, regardless of actual knowledge, and all pilots operating in the United States must obey them. In re N-500L Cases, 691 F.2d at 28; Hartz v. United States, 387 F.2d 870, 873 (5th Cir. 1968); Thurston v. United States, 888 F. Supp. 1100, 1108-09 (D. Utah 1995), aff'd, 99 F.3d 1150 (10th Cir. 1996) (Table); Mallen v. United States, 506 F. Supp. 728, 735 (N.D. Ga. 1979), aff'd, 632 F.2d 891 (5th Cir. 1980). "The FAR's [sic] in turn require pilots to know and follow the Airman's Information Manual prepared by the FAA and FAA Advisory Circulars." Rodriquez, 823 F.2d at 739. It is assumed that all pilots have read and know their provisions. Associated Aviation Underwriters v. United States, 462 F. Supp. 674, 680 (N.D. Tex. 1979).

A clearance, instruction or request by an air traffic controller "does not relieve the pilot of the duty and responsibility to operate his aircraft in a manner consistent with the FARs and good operating practices." Thurston, 888 F. Supp. at 1109; accord Spaulding, 455 F.2d at 226-27

(controller's duty to warn does not relieve pilot of his primary duty and responsibility); Webb, 840 F. Supp. at 1511, 1513 (when a pilot believes an ATC clearance would jeopardize safety of aircraft and passengers, the pilot has an absolute duty to reject that clearance, inform the controller, and request a new clearance).

a. 14 C.F.R. § 91.3 Pilot-in-Command

The FAA regulations and case law establish that the pilot-in-command, not the air traffic controller, is directly responsible for and has final authority as to the operation of the aircraft. 14 C.F.R. § 91.3(a) (2004); see Redhead v. United States, 686 F.2d 178, 182 (3d Cir. 1982) (citing In re Air Crash Disaster at New Orleans (Morsant Field), 544 F.2d 270 (6th Cir. 1976)); Am. Airlines, Inc. v. United States, 418 F.2d 180, 193 (5th Cir. 1969).

A pilot's failure to operate the aircraft in a safe manner, as required by 14 C.F.R. § 91.3, may constitute evidence of negligence. Walsh v. Avalon Aviation, Inc., 125 F. Supp. 2d 726, 727 (D. Md. 2001), aff'd, 31 F. App'x 818 (4th Cir. 2002). Pilots have a duty to be aware of danger when they can perceive it with their eyes. Spaulding, 455 F.2d at 226-27; Associated Aviation Underwriters, 462 F. Supp. at 681. A pilot is charged with that knowledge which, in the exercise of due care, he or

she should have known. Redhead, 686 F.2d at 182; Associated Aviation Underwriters, 462 F. Supp. at 681.

b. 14 C.F.R. § 91.13 Careless or Reckless Operation

The FAA regulations prohibit pilots from "operat[ing] an aircraft in a careless or reckless manner so as to endanger the life or property of another." 14 C.F.R. § 91.13(a) (2004).

c. 14 C.F.R. § 91.175 Takeoff and Landing under IFR Conditions

"[E]ach person operating an aircraft . . . shall use a standard instrument approach procedure prescribed for the airport . . . ." 14 C.F.R § 91.175(a) (2004). "Unless otherwise authorized by ATC, you are expected to execute the complete IAP [Instrument Approach Procedures] shown on the chart" when landing at an airport with no tower. FAA Instrument Flying Handbook 10-14 (2001).

"Each pilot operating an aircraft . . . shall immediately execute an appropriate missed approach procedure . . . [u]pon arrival at the missed approach point." 14 C.F.R. § 91.175(e)(1) (2004). Moreover, "[e]ach pilot operating an aircraft . . . shall immediately execute an appropriate missed approach procedure . . . [w]henever an identifiable part of the airport is not distinctly visible to the pilot during a circling maneuver at or above MDA [Minimum Descent Altitude]" unless visibility is blocked only due to a normal bank during the

circling approach. 14 C.F.R. § 91.175(e)(2) (2004). Therefore, if an aircraft at the missed approach point can identify the airport and the pilot can safely conduct a circling approach to land from the opposite direction, he may do so; otherwise, he must declare a missed approach and follow the missed approach procedure.

d. Aeronautical Information Manual

The AIM directs as to pilots flying IFR approaches that "[w]hen operating in accordance with IFR clearance and ATC approves a change in the advisory frequency, make an expeditious change to the CTAF [Common Traffic Advisory Frequency, UNICOM in this case] and employ recommended traffic advisory procedures." AIM ¶ 4-1-10. "Whether aircraft are vectored to the appropriate final approach course or provide their own navigation on published routes to it, radar service is automatically terminated when the landing is completed *or when instructed to change to advisory frequency at uncontrolled airports*, whichever occurs first." AIM ¶ 5-4-3.b.3 (emphasis added).

e. Common Law Duty

In the absence of a statute, ordinary rules of negligence and due care apply in actions arising out of the operation of an aircraft. Mackey v. Miller, 221 Va. 715, 718, 273 S.E.2d 550, 552 (1981) (duty to other pilots and generally); accord Musick v. United States, 768 F. Supp. 183, 187 (W.D. Va. 1991) (pilot

under common law and statutory duty to exercise ordinary care and skill; applying Virginia law). A pilot has a duty to act as a reasonably prudent pilot would under the circumstances. Avemco Ins. Co. v. Elliott Aviation Flight Servs., Inc., 86 F. Supp. 2d 824, 831 (C.D. Ill. 2000) (citing Steering Comm. v. United States, 6 F.3d 572, 579 (9th Cir. 1993)).

2. Pilot Conduct

The court finds that the pilots of N501RH breached their duty and that their actions and omissions constituted a proximate cause of the accident. Proper attention to their instrument displays would have alerted the pilots that they were not properly flying the localizer approach to Runway 30 and were not in their proper location. This is particularly true of the ADF prior to passing the airport, supplemented by the DME before and after passing the airport.[18] At a minimum, the instrument displays would have indicated that immediate investigation, which would have directed a missed approach, was required.

[18] Radar reconstruction from radar not available to Greensboro TRACON at the time shows that N501RH deflected fully off the localizer approach while inbound to MTV. This would have been observable by the pilots on the aircraft's CDI. Pilots are trained to, and must, execute a missed approach if the CDI fully deflects in either direction at any time after passing the final approach fix, in this case BALES. The pilots should have noted the deflection and executed a missed approach at that time. Whether the pilots failed to notice the CDI deflection, or rather erroneously believed they had not reached BALES, is unclear.

More significantly, as noted in the discussion of superseding and intervening cause infra, in addition to the aircraft instrumentation, the pilots were eventually able to view the ground visually. As N501RH broke through the clouds at approximately 12:30:35, descending through 1,500 feet MSL approximately 4.3 miles northwest of the missed approach point (just over three miles past the MTV DME antenna), the pilots could see at least one or two (and, based on weather reports obtained later, perhaps up to five or more) miles ahead of the aircraft, based upon radar and weather data, expert testimony, and the testimony of Mark Nelson, the witness on the ground who observed the aircraft flying beneath the clouds. Even if the crew believed they were on the proper approach, they would have expected to see the approach end of Runway 30 less than one mile ahead. Thus, even if visibility had been only one mile, as N501RH continued to fly northwest the pilots would have expected to see the runway in front of them.[19]

Critically, no later than 12:31:03 p.m., the pilots, if under a mistaken belief they were on a proper flight path, would have expected to be at the approach threshold of Runway 30 or to have it in sight. Of course, because the threshold to the

[19] If the crew were improperly using the GPS for primary navigation, because the fixed point is set at the middle of Runway 30, they would have expected the missed approach point to be one and one-half miles ahead.

airport was in reality five miles behind them, they could not have observed it. Pursuant to 14 C.F.R. § 91.175 (2004) and the approach plate onboard N501RH, the pilots were required to immediately execute the published missed approach procedure because they did not have the airport, runway or other identifiable features in sight. In violation of FARs, the pilots, therefore, not only failed to execute the published missed approach procedure at the actual missed approach point but also failed to do so five miles later at the point the flight path demonstrates the pilots would have believed to be the missed approach point.

Only after N501RH was approximately six-and-one-half miles northwest of the airport (nearly eight miles beyond the published missed approach point) did the crew initiate a climb. Further, rather than executing the published missed approach, which called for a climbing right turn to 2,600 feet, the pilots reentered the clouds, made no turn, and inexplicably climbed gradually for another two miles before the aircraft impacted rising terrain at Bull Mountain.

Had the pilots initiated the published missed approach procedure as required, including the right hand turn, it is nearly certain that N501RH would not have collided with the terrain and there would have been no accident. Moreover, had the pilots executed a missed approach, even without the mandated

climbing right turn, at either the actual missed approach point or the mistaken one, the accident would have been avoided.

The evidence does not speak directly to which pilot served as pilot-in-command. In most cases, however, the pilot on the radio is not the pilot-in-command but is working the radio to remove that work from the pilot actually flying the aircraft. During all relevant periods in this case, co-pilot Morrison was on the radio, strongly indicating that pilot Tracy was flying N501RH as pilot-in-command. Both pilots, however, had the critical flight instruments before them and a duty to scan those instruments during all relevant times. The court finds, therefore, that Tracy and Morrison proceeded negligently by breaching their duty to their passengers and aircraft and that their negligence was a proximate cause of the accident.[20]

[20] As noted earlier and by way of clarification, the pilots' conduct under the jury trial phase of this litigation was assessed under Pleasant v. Johnson, 312 N.C. 710, 717, 325 S.E.2d 244, 250 (1985), which governs tort claims against a co-employee (the pilots) for willful, wanton and reckless negligence. The parties do not dispute that the heightened standard does not apply in the present context insofar as the Government is asserting pilot error. Moreover, the fact that the jury found no liability under this heightened standard does not govern or limit, nor is it necessarily inconsistent with, the court's findings here. See Lofton Ridge, LLC v. Norfolk S. Ry. Co., 268 Va. 377, 381, 601 S.E.2d 648, 650 (2004) (res judicata); Glasco v. Ballard, 249 Va. 61, 64, 452 S.E.2d 854, 655 (1995) (collateral estoppel).

E. Air Traffic Controller Duties and Conduct

1. Air Traffic Controller Duties

"The FAA has a statutory duty to promote safety in air transportation, not to insure it." United States v. S.A. Empresa de Viacao Aerea Rio Grandense (Varig Airlines), 467 U.S. 797, 821 (1984). An air traffic controller must give all the information and warnings specified in the ATC Manual. Davis, 824 F.2d 549, 550 (7th Cir. 1987); Am. Airlines, 418 F.2d 180, 193 (5th Cir. 1969). The common law may require a controller to give warnings beyond those specified in the ATC Manual.

a. ATC Manual ¶ 2-1-2

The ATC Manual requires controllers to "give first priority to separating aircraft and issuing safety alerts." ATC Manual ¶ 2-1-2. The Note to this paragraph provides as follows:

> Because there are many variables involved, it is virtually impossible to develop a standard list of duty priorities that would apply uniformly to every conceivable situation. Each set of circumstances must be evaluated on its own merit, and when more than one action is required, controllers shall exercise their best judgment based on the facts and circumstances known to them. That action which is most critical from a safety standpoint is performed first.

Id. Note.

b. ATC Manual ¶ 2-1-6

Air traffic controllers must "[i]ssue a safety alert to an aircraft if [they] are aware the aircraft is in a position/altitude which, in [their] judgment, places it in

unsafe proximity to terrain, obstructions, or other aircraft." ATC Manual ¶ 2-1-6. "The issuance of a safety alert is a first priority . . . once the controller observes and recognizes a situation of unsafe aircraft proximity to terrain . . . . While a controller cannot see immediately the development of every situation where a safety alert must be issued, the controller must remain vigilant for such situations and issue a safety alert when the situation is recognized." Id. ¶ 2-1-6 n.1. The ATC Manual also provides that "[c]onditions, such as workload, traffic volume, the quality/limitations of the radar system, and the available lead time to react are factors in determining whether it is reasonable for the controller to observe and recognize such situations." Id. "Recognition of situations of unsafe proximity may result from MSAW/E-MSAW/LAAS [Minimum Safe Altitude Warning/En Route Minimum Safe Altitude Warning/Low Altitude Alert System], automatic altitude readouts, Conflict/Mode C Intruder Alert, observations on a PAR [precision approach radar] scope, or pilot reports." Id. ¶ 2-1-6 n.2.[21]

[21] Few reported cases mention, let alone discuss, the MSAW system. See, e.g., Moss v. United States, 750 F.2d 719, 721 (8th Cir. 1984) (rejecting plaintiff-appellant's assertion that district court's finding that the MSAW alarm was not activated was clearly erroneous); Metro Aviation, Inc. v. United States, No. 10-06-M-DWM, 2010 WL 1881875 (D. Mont. May 10, 2010) (transferring venue based on location of controllers who allegedly failed to warn pilot of an MSAW alert); U.S. Aviation Underwriters Inc. v. United States, 682 F. Supp. 2d 761, 767-69 (S.D. Tex. 2010) (noting tower controller in communication with aircraft provided MSAW warning); Wojciechowicz v. United States, 530 F. Supp. 2d 421, 426 (D.P.R. 2007) (noting that plaintiffs conceded

Further, controllers are instructed not to assume "that because someone else has responsibility for the aircraft that the unsafe situation has been observed and the safety alert issued; [rather,] inform the appropriate controller." Id. ¶ 2-1-6. If a TRACON controller has given control of an aircraft to one of its remote towers "and the tower has aural and visual MSAW alert capability," the TRACON need not inform the tower controller if an alert is observed provided the aircraft is within the remote tower's aural alarm area. Id.

The ATC Manual also notes that: "The issuance of a safety alert is contingent upon the capability of the controller to have an awareness of an unsafe condition. The course of action provided will be predicated on other traffic under ATC control." Id., Pilot/Controller Glossary ("Safety Alert").

c. ATC Manual ¶¶ 5-1-1, 5-1-13, & 5-3-1

A controller may provide radar service only if the controller is "personally satisfied that the radar presentation

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they would not at trial assert that the failure of ATC to provide MSAW services was negligence or a proximate cause of the accident); Spring v. United States, 833 F. Supp. 575 (E.D. Va. 1993) (plaintiff alleged ATC failed to attempt to initiate communication with aircraft despite "numerous visible and audible [MSAW] alarms"; opinion addressed only choice of law issue); Finley v. United States, No. 86-1151-S(M), 1993 U.S. Dist. LEXIS 18949, at *18-*19 (S.D. Cal. May 5, 1993) (government could be subject to liability under FTCA if evidence is presented that pilot relied on controller to provide a low altitude warning based on MSAW; in the case, pilot did not rely on MSAW to alert TRACON controller so that, in turn, controller could alert pilot but rather relied on his visual contact with the ground and flight instruments to separate himself from the ground).

and equipment performance is adequate for the service being provided." ATC Manual ¶ 5-1-1. Before providing radar service, a controller must establish and maintain radar identification on the aircraft in question. Id. ¶ 5-3-1.

"Radar service is automatically terminated and the aircraft needs not be advised of termination when . . . [a]n aircraft conducting an instrument, visual, or contact approach has landed or has been instructed to change to advisory frequency." Id. ¶ 5-1-13.b.2; see AIM ¶ 5-4-3.b.3 (radar services automatically terminate when pilot instructed to change to advisory frequency at uncontrolled airport). "Under the ATC manual and the AIM, [ATC Manual ¶ 2-1-6 safety alert] services are considered 'radar services' that are terminated upon instruction to the aircraft to switch to an advisory frequency." Kelley v. United States, No. 1:08-cv-31, 2009 WL 1439896, at *14 (E.D. Va. March 26, 2009). A controller authorizes a change to the advisory frequency when communications are no longer required, ATC Manual ¶ 4-8-8, and pilots are directed to make an expeditious change to the advisory frequency, AIM ¶ 4-1-10. Importantly, "[f]rom this point on, there will be no contact with ATC." FAA Instrument Flying Handbook 10-14 (2001).

Further, "Radar Service" is defined in the Pilot/Controller Glossary to include radar monitoring:

> RADAR SERVICE-A term which encompasses one or more of the following services based on the use of radar which can be provided by a controller to a pilot of a radar identified aircraft.
>
> a. Radar Monitoring-The radar flight-following of aircraft, whose primary navigation is being performed by the pilot, to observe and note deviations from its authorized flight path, airway, or route. When being applied specifically to radar monitoring of instrument approaches; i.e., with precision approach radar (PAR) or radar monitoring of simultaneous ILS/MLS approaches, it includes advice and instructions whenever an aircraft nears or exceeds the prescribed PAR safety limit or simultaneous ILS/MLS no transgression zone.
>
> b. Radar Navigational Guidance-Vectoring aircraft to provide course guidance.
>
> c. Radar Separation-Radar spacing of aircraft in accordance with established minima.

ATC Manual, Pilot/Controller Glossary ("Radar Services") (cross-references omitted). The Glossary directs pilots and controllers looking for the meaning of "radar monitoring" to "See RADAR SERVICES." Id. ("Radar Monitoring").

d. Common Law Duty

"An ATC has a duty to issue all warnings that a reasonable ATC would issue under the same circumstances." In re Greenwood Air Crash, 873 F. Supp. 1257, 1265 (S.D. Ind. 1995) (citing cases). In certain circumstances, controllers are subject to a common law duty of reasonable care that arises from a pilot's

reasonable reliance on the government for a given service.[22] Ross v. United States, 640 F.2d 511, 519 (5th Cir. 1981) (quoting Gill, 429 F.2d at 1075); Webb, 840 F. Supp. at 1514-15; Srock, 462 F. Supp. 2d at 825. This duty "is based on the simple tort principle that once the Government has assumed a function or service, it is liable for negligent performance." Spaulding, 455 F.2d at 226; accord Delta, 561 F.2d at 389. "The Government cannot limit this liability solely by relying on the [ATC] Manual." In re Greenwood Crash, 924 F. Supp. 1518, 1538 (S.D. Ind. 1995); see Hartz 387 F.2d at 874 (duty of ATC not "circumscribed within the narrow limits of an operations manual and nothing more").

"The government's duty to provide services with due care to airplane pilots may rest either upon the requirements of procedures manuals spelling out the functions of its air traffic controllers or upon general pilot reliance on the government for a given service." Gill, 429 F.2d at 1075 (case involving passengers as well as pilot). "In some circumstances, an air traffic controller may be required to provide information not required by the [ATC] Handbook, but only if extreme danger is reasonably apparent to the controller and not apparent, in the

[22] The FAA acknowledges that the ATC Manual does not provide an exhaustive list of a controller's duties; rather, controllers are directed to exercise their best judgment if they encounter situations not covered by the ATC Manual. ATC Manual ¶ 1-1-1.

exercise of due care, to the pilot, such that the air traffic controller is in a superior position to perceive that the pilot is in immediate danger." Hensley v. United States, 728 F. Supp. 716, 723 (S.D. Fla. 1989) (citing Miller, 587 F.2d at 995; Am. Airlines, 418 F.2d at 180); see Spaulding, 455 F.2d at 226 n.8; Baker v. United States, 417 F. Supp. 471, 486 (W.D. Wash. 1975).

Courts have found that air traffic controllers have a common law duty to issue warnings beyond those required by the manuals in the following situations: (1) when danger to the aircraft is immediate and extreme, United States v. Furumizo, 381 F.2d 965, 968 (9th Cir. 1967) (warning required when ATC actually saw aircraft and knew the danger was extreme; whether warning required when attention diverted not addressed); (2) when the air traffic controller is able to gather more information or make more accurate observations than the pilot, Hochrein v. United States, 238 F. Supp. 317, 319-20 (E.D. Pa. 1965); (3) when the controller is better qualified than the pilot to evaluate the danger, Hartz v. United States, 387 F.2d 870, 873 (5th Cir. 1968); (4) when the pilot declares an emergency or indicates distress, Daley v. United States, 792 F.2d 1081, 1084-85 (11th Cir. 1986); (5) when danger is "reasonably apparent" to the controller but not apparent, in the exercise of due care, to the pilot, Am. Airlines, 418 F.2d at 193, and Springer v. United States, 641 F. Supp. 913, 935

(D.S.C. 1986), aff'd, 819 F.2d 1139 (4th Cir. 1987); and (6) when the controller has conveyed dangerously inaccurate or misleading information to the pilot, Rowe v. United States, 272 F. Supp. 462, 472 (W.D. Pa. 1964). See generally Spaulding, 455 F.2d at 226 n.8; accord Davis v. United States, 824 F.2d 549, 550 (7th Cir. 1987); Bieberle v. United States, 255 F. Supp. 2d 1190, 1201 (D. Kan. 2003).

Air traffic controllers may rely on the assumption that pilots know and will abide by all applicable regulations, including FARs, AIM provisions, aeronautical charts, and Advisory Circulars. In re N-500L Cases, 691 F.2d 15, 28 (1st Cir. 1982); Srock, 462 F. Supp. 2d at 825; Airplanes of Boca, 254 F. Supp. 2d at 1314. Further, controllers "are not required to foresee or anticipate the unlawful, negligent or grossly negligent acts of pilots." Beech Aircraft Corp. v. United States, 51 F.3d 834, 840 (9th Cir. 1995); accord Schuler v. United States, 868 F.2d 195, 198 (6th Cir. 1989); Biles v. United States, 848 F.2d 661, 663 (5th Cir. 1988) ("Air traffic controllers cannot be presumed to have X-ray vision and extrasensory perception."). "Controllers have no duty to warn pilots about conditions of which the pilot is or should be aware of through the pilot's training, experience, or observations." Bauer v. United States, 289 F. Supp. 2d 944, 952 (N.D. Ill. 2002), aff'd, 359 F.3d 451 (7th Cir. 2004). Nor are controllers

to give their full attention to a single aircraft. Tilley v. United States, 375 F.2d 678, 684 (4th Cir. 1967).

Although the scope of the legal duty of a controller to issue a warning is easily defined in general terms, that duty "is very fact specific and will probably require different action in every circumstance. The nature of the duty is defined by what the ATC knew at the time of the alleged breach. . . . In virtually every case what a reasonable ATC would do in the defendant's position will necessarily need to be established through expert testimony." In re Greenwood Air Crash, 873 F. Supp. at 1265-66. To determine the actions of a reasonable air traffic controller, relevant factors include higher priority duties facing the controller, radar limitations, traffic volume, frequency congestion, and controller workload. Greenwood Air Crash, 924 F. Supp. at 1539.

2. Air Traffic Controller Conduct

Plaintiffs point to several points in the flight of N501RH where they claim ATC was negligent. The determination of negligence with respect to the United States arises in an atypical factual setting, however. The alleged acts or omissions for the most part occurred after Park directed N501RH to change frequency to UNICOM, at which point radar services automatically terminated. ATC Manual ¶ 5-1-13.b.2. Plaintiffs argue that ATC had a duty to continue to monitor N501RH

thereafter because Park was aware that the aircraft was higher than normal when he authorized the frequency change and terminated radar services. Plaintiffs also argue that Park had a duty to warn as N501RH continued its approach and continuing past the MSAW and LA alerts.

Each of Plaintiffs' claims will be addressed below.

a. BALES Holding Pattern

Park directed N501RH into a holding pattern at BALES. Plaintiffs, although not directly alleging negligence at that time, noted Park's placement of N501RH into a holding pattern at 4,000 feet, only to clear it earlier than may have been anticipated by the crew so as to allegedly cause the crew to fail to properly intercept the localizer approach.

Park correctly ascertained that N500CG, a Lear Jet, was going to arrive in the vicinity of BALES prior to N501RH. Applying the concept of first-come, first-served, Park directed N501RH to enter a holding pattern upon reaching BALES. See ATC Manual ¶ 2-1-4 (with certain exceptions not present here, ATC is directed to "[p]rovide air traffic control service on a 'first come, first served' basis as circumstances permit"). Park's decision to prioritize N500CG was reasonable under the circumstances and was not a breach of duty. This conclusion is in accord with the opinion of Plaintiffs' ATC expert Henderson

that there was no problem in placing the faster and closer N500CG in front of N501RH for an approach to Runway 30.

Park's decision to assign N501RH a holding-pattern altitude of 4,000 feet MSL did not breach a duty to N501RH or its occupants. Park could reasonably anticipate he would need to use separation later on as both N500CG and N501RH approached BALES. Further, had N500CG missed its approach to MTV, it would have returned to BALES at 2,600 feet MSL in accord with the MTV approach plate. Park allowed N501RH up to a ten-mile holding pattern. Providing discretion to the N501RH pilots, who were better placed for executing the anticipated approach clearance, was appropriate and not negligent.

Park's grant of an approach clearance to N501RH shortly after an initial estimate of nearly 30 minutes did not constitute negligence. Thirty minutes provided N500CG sufficient time to execute an IFR landing and was reasonable. Park's approach clearance provided the pilots discretion to extend on the holding pattern, to use part of the holding pattern, to descend or not, or to turn immediately inbound toward BALES to begin an approach to the airport. It was the responsibility of the N501RH crew to determine when to make the turn toward BALES and, if they had any difficulty with the clearance, to contact Park.

b. Approach Toward and Past BALES

Plaintiffs assert that N501RH was unusually high as it approached and passed BALES and that Park had a duty to question the crew about their altitude. The aircraft approached BALES at 3,900 feet MSL (1,300 feet higher than the minimum required by the approach plate) and was at approximately 3,600 feet about two miles past BALES. Plaintiffs' ATC expert Henderson testified that a reasonable controller would have noticed that N501RH did not descend out of the holding pattern and failed to intercept the localizer course for Runway 30 outside of BALES. However, Henderson declined to opine that a reasonable controller had any duty to contact N501RH at BALES or issue a safety alert, noting that while the aircraft may have had to descend more rapidly, it was a light turboprop that was capable of doing so.

From the time N501RH advised Park that it was "established" in the holding pattern, Park had a reasonable expectation that N501RH's pilots knew where they were. As both Henderson and the Government's expert Turner testified, a statement that an aircraft is "established" is meant to convey that the pilot knows where he or she is. See ATC Manual, Pilot/Controller Glossary ("ESTABLISHED-To be stable or fixed on a route, route segment, altitude, heading, etc."). A reasonable controller is

entitled to rely on such an admission absent evidence it is in error.

Henderson also opined on direct examination that Park should have contacted N501RH when Morrison reported that they were "established" inbound. Although he agreed on cross-examination that a safety alert was not required, Henderson opined that a reasonable controller would have advised N501RH that he showed it three miles from the missed approach point and would have asked whether the crew believed they could make it. Henderson's primary concern was not safety, however, but rather whether the controller would have to sequence the aircraft back into traffic later. Whether the aircraft could make the approach from there was "unknown" to a reasonable controller, Henderson conceded, and a reasonable controller at this point would not anticipate that the aircraft would proceed past the missed approach point and continue northwest bound. Rather, a controller can expect a pilot to attempt to land and, if the pilot determines he is too high, the pilot would continue toward the missed approach point and execute the missed approach procedure there. See 14 C.F.R. § 91.175(e). Thus, when N501RH reported that it was "established inbound," i.e., on the localizer approach to the airport, a reasonable controller was entitled to rely on this transmission under the facts then present.

Further, the regulations do not specify warnings that are to be given if an aircraft is *above* the minimum altitude. A designated minimum altitude is specific and clear, and when mandated, a designated altitude or maximum altitude is specific and clear. At 3,900 feet MSL over BALES or 3,600 feet MSL beyond BALES, N501RH was not in danger, let alone immediate or extreme danger, for which a safety alert or other warning was required. Though a controller might question the crew about their altitude or position before the frequency change, as Henderson suggested in order to anticipate the aircraft's return to a new landing sequence, federal regulations, the ATC Manual, and common law do not impose a duty to provide a safety alert or other warning under these circumstances. Indeed, as Lintzenich testified, and the court finds, a pilot would not have reasonably expected a controller to advise him of the aircraft's altitude before a frequency change under the facts of this case.

Park's incorrect statement to N501RH when authorizing the localizer approach that the preceding aircraft broke through the clouds just below minimums, i.e., the minimum descent altitude for MTV, does not alter this determination. Park broadcast a correction, although N501RH may have switched to the UNICOM frequency by that time. The Government's piloting expert testified, and the court finds, that a reasonable pilot would have understood Park's reference to breaking through the clouds

just below the minimums to have been misspoken. A pilot would not likely have descended below the minimums while in the clouds in the first place and would be equally unlikely to admit a violation over the ATC frequency. Further, no pilot would have understood the incorrect statement as suggesting that N501RH should descend below the Minimum Descent Altitude for MTV while still in the clouds. Park's incorrect statement did not breach a duty owed N501RH or its occupants (nor, even if it did, could it have been a proximate cause of the crash).

In sum, no action or inaction by Park or any other controller up to and including clearance of N501RH to undertake a localizer approach and N501RH's approach past BALES breached any duty owed to N501RH and its occupants.

c. Monitoring N501RH from Frequency Change until MSAW Warning

Plaintiffs argue, and their expert Henderson testified, that Park breached his duty after the frequency change and before the MSAW alert by: (1) failing to notify his supervisor of the aircraft's circumstances; (2) failing to monitor N501RH as it proceeded to and past MTV; (3) failing to warn N501RH that it was too high at the missed approach point; and (4) failing to watch for a right turn as part of a missed approach procedure. Henderson's allegations of breach are grounded on his assertion that although monitoring an aircraft is a radar service,

controllers should continue to monitor all contacts in their airspace even after radar services have terminated in general and that N501RH's unusual altitude and flight path raised "red flags" that should have led to continued monitoring. The Government argues that under both the ATC Manual and the AIM, "the duty to monitor an aircraft on an instrument approach to a non-towered airport ends when the pilot is authorized to contact the local common radio frequency." (Case No. 1:07cv23, Doc. 204 at 5-6.[23]) The Government thus urges that the frequency change establishes a bright line that terminated any further controller responsibility toward N501RH until it re-contacted the controller, if ever.

Henderson identified no mandatory provisions in the ATC Manual requiring continued monitoring in these circumstances. Indeed, the ATC Manual indicates that Park had no further responsibilities after the frequency change because he terminated "radar services," which services by definition include radar monitoring, flight following, and MSAWs. ATC

[23] In support of its assertion, the Government cites ATC Manual ¶¶ 4-8-8 (authorize change to common frequency when communications no longer required) and 5-1-13 (radar services automatically terminated when aircraft is instructed to change to advisory frequency); AIM ¶¶ 4-1-10 (pilots to make expeditious change to advisory frequency) and 5-4-3.b (radar services automatically terminated when aircraft instructed to change to advisory frequency); ATC Manual and AIM Pilot-Controller Glossary ("Radar Services") (radar service includes "radar flight-following of aircraft . . . to observe and note deviations from authorized flight path, airway, or route").

Manual ¶ 5-1-13.b.2 (frequency change); id. Pilot/Controller Glossary ("Radar Services"). Henderson also admitted that, once radar services are terminated: (1) a controller has no duty to look specifically at an aircraft; (2) a pilot no longer expects to receive radar monitoring; and (3) a controller may drop the data block from his screen and actually shut down the radar entirely if no other aircraft are receiving radar services. Thus, no duty appears to exist, and Henderson (and the Government's piloting expert, Lintzenich) agreed that pilots have no reasonable reliance on ATC monitoring after the frequency change. Henderson opined, however, that as long as the data block remains, the controller has a duty to watch all targets in his airspace for anomalies.[24]

Plaintiffs rely on In re Greenwood Air Crash, 873 F. Supp. 1257 (S.D. Ind. 1995) (summary judgment determination), and 924 F. Supp. 1518 (S.D. Ind. 1995) (trial), which involved the collision of two aircraft, to argue that a duty exists under the ATC Manual and common law. This appears to be the only case to address directly whether a frequency change or a termination of radar services absolves ATC of responsibility where it is alleged that a controller subsequently becomes (or should have

[24] Plaintiffs also urge that the fact Park did not mark through N501RH on his data strip after authorizing the frequency change reflects that he did not terminate radar services to the aircraft. The court finds this argument unpersuasive.

become) aware of a claimed dangerous situation. (Case No. 1:07cv23, Doc. 205 at 3-4.) The court finds Greenwood Air Crash distinguishable.

In Greenwood Air Crash, a Saratoga aircraft flying VFR to Greenwood Airport, an uncontrolled field, had been under Indianapolis TRACON radar control. After the pilot had the Greenwood Airport in sight, the controller terminated radar service and authorized a frequency change. About 45 seconds later, a second aircraft, an MU-2, contacted the TRACON controller, noting that he was "off the ground" from the Greenwood airport. The controller communicated a beacon code so the MU-2 could be radar identified and radar services could be provided.

At the summary judgment stage, the court found that there was a genuine issue of material fact whether the second aircraft was radar identified at the time of the collision and whether there was sufficient time for the controller, who should have been aware of the impending collision, to contact it. 873 F. Supp. at 1261-62. In reaching this conclusion, the court considered duty under the relevant version of the ATC Manual, observing that, "[i]f the [second aircraft] was radar identified, the ATC would have a duty to issue a safety alert pursuant to § 2-6 of the [ATC] Manual. Safety alerts are only issued to aircraft under the ATC's control (Definition of

'Safety Alert', Pilot/Controller Glossary (June 25, 1992))."[25] 873 F. Supp. at 1263-64 (noting that "[t]his section establishes a duty to issue a safety alert to radar identified aircraft when facts and circumstances warrant it" and that the primary duty of a controller is separation of aircraft). The court also noted that controllers may have a duty to warn under common law, which the court stated recognizes a duty "that is more broad than the duty set forth in the Manual in certain instances." Id. at 1264-65. The court determined that "ATCs owe a legal duty of reasonable care to issue warnings" and that the question whether that duty was breached was one of fact, dependent upon what a reasonable controller would have done. Id. at 1266.

At trial (on allocation of fault), the court found that at the moment the MU-2 informed ATC he was "off the ground," the controller "had more information than either pilot about the possibility of a collision" and thus had a duty to warn the pilot of the MU-2, which was in radar contact with him. 924 F. Supp. at 1539. The court found that the controller "negligently failed to issue warnings to either of the pilots even though he

[25] The version of the ATC Manual in effect at the time of the accident in this case, 7110.65P, defined "Safety Alert," in relevant part, in the same manner: "A safety alert issued by ATC to aircraft under their control if ATC is aware the aircraft is at an altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain, obstructions, or other aircraft."

had time to do so." Id. at 1540. In so finding, the court stated that the nature of a duty to warn is defined by what the ATC knew at the time and is not circumscribed by the "narrow limits" of the ATC Manual. Id. at 1538-39. The court decided that the controller had "at least nineteen seconds," which was ample time, within which to warn the MU-2 pilot; the court did not address how the controller could have warned the Saratoga, which had changed to the UNICOM frequency, in that short time frame. Id. at 1540. Thus, it would appear, but is not clear from the opinion, that the court directed the duty to warn as to the MU-2 which was radar identified and in communication with the controller.

In this respect, the case is not inconsistent with a recent decision from a district court in the Eastern District of Virginia that held that, in the absence of any evidence that ATC offered to have the terminated aircraft re-contact it, radar services, including safety alerts, terminate upon a change to UNICOM. Kelley v. United States, No. 1:08-cv-31, 2009 WL 1439896, at *14 (E.D. Va. March 26, 2009) (holding that "[u]nder the ATC manual and the AIM, [ATC Manual ¶ 2-1-6 safety alert] services are considered 'radar services' that are terminated

upon instruction to the aircraft to switch to an advisory frequency").[26]

Other cases have found an air traffic controller duty to monitor or advise an aircraft after a frequency change and termination of radar services where specific information is known by the controller *before* the frequency change. For example, in Ingham v. Eastern Air Lines, Inc., 373 F.2d 227 (2d Cir. 1967), the air traffic controller was found to have negligently failed to inform the pilots of updated weather information *prior to* the frequency change. The court made clear that the weather information was made available while the ATC "was still in contact with [the aircraft], and thus had sufficient opportunity to relay this information." Id. at 233, 235 n.9. And, in Watkins v. FAA, No. 86-1742, 1987 U.S. Dist. LEXIS 15037 (W.D. La. June 26, 1987), the air traffic controller closed the airport at approximately the regularly scheduled closing time of 10:00 p.m. because he was not paid overtime. The controller handed the aircraft off to a remote facility

[26] Plaintiffs also cite Insurance Company of State of Pennsylvania v. United States, 590 F. Supp. 435 (S.D. Miss. 1984), in which the court held that had a controller properly relayed through another controller improved weather conditions at an airport which would have been available to a pilot running low on fuel, the pilot could have landed his aircraft "before the airport eventually closed in." The court concluded that the failure to contact the pilot via approach control or an ATC center to relay the information was a breach of duty owed to the pilot and a proximate cause of a crash. Id. at 441-43. In that case, however, the controller knew that the pilot was under the direct control of other ATC centers.

which could not provide radar coverage. At the time of the hand-off and radar shut-down, the controller knew that the aircraft intended to attempt an instrument approach in deteriorating weather. The controller had previously "spoon fed" the pilot information that a competent pilot should already have known, and the pilot had missed an approach at another airport and was confused and in need of assistance. The controller believed the pilot did not have an approach plate for the airport and knew the pilot would be in a position of distress in attempting an instrument landing without the appropriate approach plate. Id. at *7-*9.

Plaintiffs point to the fact that later in the day Wilson monitored another airplane (N2840Z) landing at MTV even after a frequency change and used a relay to advise its pilots they descended below the MDA. However, Wilson testified that he did so because its pilots had deviated off course on an immediately earlier approach which required Wilson to correct them while they were still on Wilson's frequency. This heightened Wilson's concern about that aircraft's performance. Thus, Wilson's subsequent monitoring of N2840Z was consistent with Ingham and Watkins, above.

In the present case, radar services terminated at 12:26:56 p.m. when Park authorized, and N501RH acknowledged, the frequency change. Under the circumstances of this case, the

court concludes that after the frequency change Park did not owe a statutory or common law duty to N501RH's crew or passengers to monitor the aircraft's location or progress in airspace which the controller cleared for the aircraft. While N501RH may have been higher than normal for an approach, the events preceding the frequency change did not indicate an obvious safety problem at the time.

The cases which find a common law duty to warn beyond that required by FAA regulations and materials do so in situations unlike that here. At the time of the frequency change, N501RH was not in immediate or extreme danger, the pilots had not declared an emergency or indicated distress, no danger was "reasonably apparent," and the controller had not conveyed any misinformation to N501RH which related to the position of the aircraft.

Air traffic controllers are not required to be pilots or be trained in instrument landings. Wilson is not a pilot and Park, although having obtained a pilot's license in college, had not flown since and never had training for an instrument rating. Park, while familiar with King Air aircraft, was not IFR certified.[27] Rather, controllers are required to know and are trained in the duties of an air traffic controller. This in

[27] An Appendix to the ATC Manual sets out descent rates for dozens, if not hundreds, of aircraft. An entry for "200, 1300 Super King Air" lists a descent rate of 2,500 feet per minute.

part is why, as Henderson testified and as reflected in case law, a controller is taught generally "to stay out of the cockpit," because the pilot-in-command is the ultimate authority. See 14 C.F.R. § 91.3 (2004).

Plaintiffs claim, and Henderson opined further, that when N501RH reached the published missed approach point at an altitude of approximately 2,500 feet a reasonable controller should "start some kind of action" to find out what is going on. According to Henderson, N501RH would be in violation of its landing clearance because it failed to declare a missed approach and (being in the clouds) was unable to see the airport to execute a circling approach to land from the opposite direction, which should be apparent to a monitoring controller. The Government's ATC expert Turner testified, on the other hand, that a reasonable controller would not be alarmed to see an aircraft at this point, even if he was monitoring it.

The ATC Manual provides no basis for the issuance of a safety alert at this time. Rather, a safety alert must be given when a controller is aware that the aircraft is in a position which, in the controller's judgment, "places it in unsafe proximity to terrain, obstructions, or other aircraft." ATC Manual ¶ 2-1-6. At this time, N501RH was in none of these. Nor was N501RH in violation of the minimum altitude requirements of the localizer approach to Runway 30. Henderson admitted on

cross-examination that a safety alert was not warranted, but rather that he would have "concern."

Insofar as Park had no duty to monitor N501RH, he was under no duty to observe that it had flown to the published missed approach point at 2,500 feet and did not make an immediate right-hand climbing turn. He therefore had no further duty to assess whether the weather prohibited the crew from seeing the airport in order to make a circling approach. His failure to monitor N501RH during this period was not negligent. Rather, Park had a duty to keep other aircraft under his control away from MTV while N501RH attempted to land, which he did.

d. MSAW Warning

At approximately 12:30:03 p.m., when N501RH was two to two-and-one-half miles past MTV, its radar flight profile automatically activated the Greensboro TRACON's MSAW system, showing a blinking "LA" (low altitude) symbol on the radar screen for approximately twelve seconds, then the five-second audible warning activated in addition to the "LA" symbol, followed by approximately six more seconds of the "LA" symbol. After activation of the MSAW, no controller communicated a warning to the pilots. Park, who was responsible for the West Radar area including MTV, testified that he did not remember hearing or seeing the MSAW. Wilson and Thomson, the supervisor,

also testified that they did not recall hearing or observing the MSAW regarding N501RH.

Plaintiffs contend, and their expert Henderson opined, that a reasonable air traffic controller would have investigated the alarm and attempted to contact N501RH.[28] The Government maintains that controllers had no duty to monitor N501RH after terminating radar services and argues that "there exists no case that extends a controller's common law duty to . . . issuing safety alerts once radar services have been terminated." (Case No. 1:07cv23, Doc. 204 at 6.) The Government's view is that a safety alert is a radar service and, once radar services to N501RH were terminated, air traffic controllers owed no duty to evaluate the source of the MSAW, much less to warn about it.

Park, Wilson, the Government's Rule 30(b)(6) witness on training (Bettie Gwyn), the Government's expert Turner, and Plaintiffs' expert Henderson all agreed that a controller has a duty to evaluate an MSAW alarm with respect to an aircraft for which the controller is providing radar services. This is consistent with the duties imposed by the ATC Manual. See ATC

[28] This opinion contradicts, in some measure, Henderson's opinion in a previous mid-air collision case. In that case, when Henderson was cross-examined during the bench trial, he opined that "ATC lacked the capability or duty to provide any services [to two aircraft] because neither aircraft was on the A-AR frequency nor known traffic to the controller at the time of the collision." One of the aircraft had been receiving radar services, but such services terminated just before the collision and the radar data block had been dropped. There is no evidence, however, that an MSAW alert sounded in that case.

Manual ¶ 2-1-6; id. Pilot/Controller Glossary ("Radar services"); Tracy/Morrison Exhs. 25, 26 (ATC Bulletins dated May 2003 and October 2004, respectively). This duty exists, if for no other reason, than to determine which aircraft set off the alert.[29]

The AIM and ATC Manual also provide that when an aircraft is cleared for approach to a non-towered airport, the aircraft must change to the local frequency and radar services are terminated. ATC Manual ¶ 5-1-13.b.2; see AIM ¶ 5-4-3.b.3. Indeed, both Henderson and Turner testified that when radar services are terminated, the controller may drop the radar data block from the screen entirely and, in fact, turn off the radar if no services are being provided to any other aircraft.

In this case, however, the radar was not turned off, and the data block for N501RH was not dropped prior to the MSAW activation. The regulations, AIM, and ATC Manual do not

[29] The Government's reliance on Kelley v. United States, No. 1:08-cv-31, 2009 WL 1439896, at *14 (E.D. Va. March 26, 2009), is misplaced. In Kelley, plaintiffs asserted, in part, that controllers should have provided a safety alert to an aircraft that descended below the minimum descent altitude following authorization of a frequency change to UNICOM. The court concluded that although safety alerts were required under ATC Manual ¶ 2-1-6, such alerts were radar services and radar services had terminated upon instruction to change frequency. The court also observed that after the frequency change "the air controllers no longer had the ability to issue any alerts." Id. at *14-*15. The court did not consider, however, possible alternate means to contact the aircraft. While Kelley sets forth a controller's general duties once radar services terminate, it does not address whether any duties may arise when an MSAW alarm activates after termination of radar services, especially after a frequency change.

directly address a controller's duty, if any, when an MSAW alarm sounds after radar services are terminated. However, paragraph 2-1-6 of the ATC Manual, which governs the issuance of safety alerts, provides some guidance in a related context. That section states that a TRACON controller need not advise pilots of an MSAW warning where the controller has transferred radar services for the aircraft to a remote tower -- as long as the aircraft is within the remote tower's aural alarm area. ATC Manual ¶ 2-1-6. The implication is that where an MSAW alarm sounds at a TRACON but not at the remote tower, the TRACON controller must either evaluate it or pass it along to the remote tower for evaluation. This is the case even though TRACON has transferred radar services to the remote tower and no longer controls the aircraft. Thus, paragraph 2-1-6 appears to presuppose that radar services have not been terminated and the aircraft is in fact receiving radar services by some controller. Indeed, the Greensboro "Terminal Radar Refresher Training" materials expressly direct the controller hearing the MSAW to "[i]nform the appropriate controller." (Turner Exh. 74 at 35; see also Tracy/Morrison Exh. 26 (October 2004 ATC Bulletin advising of fatal air crash where en route controller failed to advise terminal controller of MSAW warning)).

Paragraph 2-1-6 also directs the controller to "[i]ssue a safety alert to an aircraft if you are aware the aircraft is in

a position/altitude which, in your judgment, places it in unsafe proximity to terrain, obstructions, or other aircraft." The duty imposed by the ATC Manual requires that the controller be aware of the situation and leaves the decision whether to issue a safety alert to the controller's judgment. Wojciechowicz v. United States, 582 F.3d 57, 70 (1st Cir. 2009) ("The duty arises when the controller is 'aware that the aircraft is in a position or altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain or obstructions.'" (quoting district court)).

While a controller has no duty to monitor an aircraft after a frequency change, the court rejects the Government's argument that a controller has no duty to investigate an MSAW alarm simply because radar services have been terminated to that aircraft. Indeed, Wilson testified in response to the court's questions that his practice is to investigate the source of an MSAW alarm even after a frequency change and to "make a judgment call whether you need to do something or not." "If it's an unsafe situation," he stated, "I am going to act on it." Gwyn also testified that under the standards she taught controllers at Greensboro TRACON, a controller should investigate an MSAW alert after a frequency change and make a judgment whether the aircraft is in an unsafe proximity to terrain. Even the Government's ATC expert Turner agreed that a controller who

hears an alarm should at least assess it (if not provide a warning) even after a frequency change.

Because Park claims not to have been aware of the MSAW (and claims not to have monitored N501RH's radar position following the frequency change), the inquiry is whether a reasonable controller should have been aware of it under the circumstances. Courts have examined several factors in making this assessment.[30] Greenwood Air Crash, 924 F. Supp. at 1539. These include considerations set forth in the ATC Manual regarding the issuance of safety alerts, which provides in part that "[c]onditions, such as workload, traffic volume, the quality/limitations of the radar system, and the available lead time to react are factors in determining whether it is reasonable for the controller to observe and recognize such situations." ATC Manual ¶ 2-1-6 n.1. "Frequency congestion" is also considered. 924 F. Supp. at 1539.

Park's workload on October 24, 2004, was light to moderate, and the traffic volume was not heavy. Park admits he did not feel overworked. Though he has no recollection of hearing the

[30] The provision of radar services is governed by the ATC Manual. ATC Manual ¶ 2-1-6 and case law, including the district court in Wojciechowicz v. United States, appear to limit the duty to situations of which the controller is actually aware. Other courts, including Greenwood, look to what a controller knew or "should have known." See, e.g., Springer v. United States, 641 F. Supp. at 936; First of Am. Bank-Cent. v. United States, 639 F. Supp. 446, 455 (W.D. Mich. 1986) (duty to warn does not arise until ATC knows or should have known of a danger).

N501RH MSAW warning, he has no recollection of hearing the MSAW warning for N500CG, either, which activated at least twice on N500CG's approach (safely) to MTV. As Wilson testified, "more often than not" the MSAW warning activates for "[a]bout every airplane that goes into Martinsville."

At the precise time of N501RH's MSAW warning, Park was on the radio talking with the crew of a commercial carrier, Northwest Airlines flight 1868, and was vectoring the airplane to land at the Greensboro airport. This required Park to formulate approach clearance, maintain separation of planes as other airliners were in the vicinity, provide instructions, and listen for a confirmation. These tasks were routine but occurred during the brief five second period the MSAW tone sounded from 12:30:15 to 12:30:20 p.m. The MSAW tone occurred only this single time. The radar block for N501RH converted to "coast" mode beginning at 12:30:17 p.m., meaning that the last radar contact with N501RH was approximately five seconds before that. The flashing "LA" on the data block disappeared at 12:30:27 p.m. Park's communications on the radio to separate aircraft, including two commercial airliners, ended at 12:30:30 p.m.

The court concludes that a reasonable controller should have noted the MSAW alarm for N501RH when the audible alarm activated and, once he completed the vectoring of Northwest

1868, investigated its source.[31] See ATC Manual ¶ 2-1-2 (noting controller's co-equal duties to separate aircraft and issue safety alerts, and controller's requirement to use best judgment to prioritize them). Park's duties were not so pressing that he could not have reasonably investigated the source of the MSAW alarm after it sounded, once he completed his then present communications with other airplanes. Indeed, there are periods of silence on the radar and audio recordings following the MSAW warning during the relevant time.[32]

The more significant question is what a reasonable controller should have observed once he investigated the MSAW alarm. Because the court has found that controllers had no duty to monitor N501RH after terminating radar services, a reasonable

[31] There is no evidence that Wilson or Thomson saw or heard the MSAW. Insofar as radar services to N501RH had been terminated, the court finds that neither Wilson nor Thomson had a duty to monitor and observe the "LA" alert. Further, on this record, the court finds that neither Thomson nor Wilson breached a duty in not investigating whether the MSAW had been properly investigated and evaluated.

[32] Taken to its logical extension, the Government's argument would lead to the conclusion that a controller, upon being alerted by an aural MSAW for an aircraft whose data block shows it inexplicably out of position and headed directly toward a mountain or other aircraft in IFR conditions and thus in imminent peril, could passively observe the impending doom while not otherwise being significantly busy solely because radar services to that aircraft had been terminated. This appears to ignore the common law duty to warn of an immediate danger that is reasonably apparent to a controller and not apparent, in the exercise of due care, to the pilot. Hensley v. United States, 728 F. Supp. 716, 723 (S.D. Fla. 1989) (citing cases). It is also contrary to what Gwyn teaches controllers; she stated that if controllers believed the aircraft was in an unsafe proximity to terrain they should try to reach the pilot "if they know for sure they have a way" to do so.

controller would not be charged with having seen the progression of N501RH (including its altitude) near MTV. Thus, he would not be charged with having seen the appearance of "LA" in the data block, especially because he was giving instructions to other aircraft at the time the "LA" activated.

Once the aural MSAW sounded, however, a reasonable controller, upon completing his communication with Northwest 1868 and other aircraft, would likely have investigated the alarm. However, at that time he likely would have observed N501RH already in "coast" mode (i.e., no radar return). In "coast" mode, the data block did not display any altitude or speed.[33] As Henderson agreed, a data block in coast mode no longer reflects an aircraft that is radar identified, and the aircraft's location is unknown to the controller. In addition, the "LA" symbol would no longer have been activating, having dropped off at 12:30:27 p.m., some three seconds before the controller completed communicating his directions to the airliners.

Under these circumstances, a reasonable controller could only conclude that N501RH was no longer radar-identified, was approximately 2 to 2.5 miles beyond MTV when radar last observed

[33] The data block reflected an altitude of 1800 feet MSL immediately before the MSAW warning at 12:30:15 p.m. but dropped the altitude reference two seconds later, at 12:30:17 p.m., when the data block transitioned to "coast" mode.

it and triggered the “LA” alert and, based on the “coast” projection, had been headed away from MTV. It would not be known, however, which direction N501RH was actually headed or what its altitude was. Moreover, the data block remained in “coast” mode and dropped off the radar screen at 12:30:59 p.m.

The court is hard pressed to find that a reasonable controller, in observing these radar images, should have concluded that N501RH was in immediate and extreme danger and was unlikely to have been engaged in a circling approach to land from the northwest on Runway 12. As noted above, circling approaches are permitted at MTV provided that visibility minimums are met and the airport can be kept in view during the circling approach. A reasonably prudent controller would have known that N501RH could have broken out of the clouds above the minimums because of the report of N500CG, which had recently landed at MTV. A reasonable controller would also have been aware that N500CG had reported that visibility was good below the cloud layer. As Plaintiffs’ expert Henderson testified, if circling minimums exist and airport visibility can be maintained, then landing is within the pilot’s discretion. The pilot is only required to notify the air traffic controller a short time after landing. Here, because a controller had no duty to monitor the aircraft, he would not have been aware that it passed over MTV at 2,500 feet where it likely was in the

cloud cover, a factor the court finds was important to Henderson's opinion.

Further, Wilson testified that an aircraft in N501RH's position (as estimated by the "coast" mode) would not be at an "excessive distance" for setting up to land on Runway 12, although he has never seen a circling approach in this area in 600 foot ceilings. This is not inconsistent with the testimony of pilot Daniel Kenneth Hodge, whose plane departed the Concord airport approximately 30 minutes after N501RH, who successfully completed a circling approach to Runway 12 not long after the crash after concluding that he had not descended fast enough to permit a landing on Runway 30.

As noted earlier, the last Park is alleged to have observed N501RH was at approximately 3,600 feet MSL approximately two miles inside BALES, which is a point from which the aircraft was capable of making the approach. Thus, the court finds that a reasonable controller who had no duty to (and did not) observe N501RH's descent path after the frequency change and who found the aircraft data block in coast mode would have lacked sufficient information to mandate a safety alert to the aircraft.[34] The aircraft was not so unusually positioned that a

[34] Indeed, Henderson conceded that a controller "obviously doesn't have enough information to determine what's happening for sure." It is noteworthy that he was vague on what a controller should have said as a result of the MSAW, but rather stated that he would have provided a transmission by relay "along the lines of[:] advise N501RH observe

controller would reasonably have concluded that N501RH could not have initiated a circling approach after passing the missed approach point.[35]

Plaintiffs argue that if visibility was one to two miles and a pilot must keep the runway in sight during a circling turn, then radar showing N501RH just beyond two miles from the end of the airport would be inconsistent with a circling approach. First, a reasonable controller had no duty to monitor N501RH and would not have known that it passed over MTV at approximately 2,500 feet MSL, and there is no evidence that Park did. Second, the weather beneath the clouds had been clearing that day, and the pilot of N500CG had stated (consistent with the weather report) that visibility was good below the clouds. The controllers did not have an ability to determine the specific, current weather at MTV other than through such reports. In fact, the weather report issued at 12:40 p.m. indicated ground visibility was 5 to 10 miles. The presence of the MSAW alarm is consistent with controllers' experience on

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approximately three miles past the missed approach point; verify your position and intentions, something along these lines." Of course, verification of position was exactly what the crew should, and easily could through the exercise of due care, have done upon breaking through the clouds and reaching what it perceived to be the missed approach point.

[35] Because the standard is one of a reasonably prudent controller, this is true notwithstanding Park's erroneous personal belief that clearance to land at MTV did not include clearance to conduct a circling approach.

virtually every landing at MTV, given the landscape and approach conditions. Indeed, the sounding of an MSAW alert does not necessarily mean it is an emergency situation; it depends on the circumstances known (actually or constructively) to the controller, and routinely at MTV it is not.

To be sure, with 20/20 hindsight the complete path of N501RH can be observed to reflect loss of pilot situational awareness. However, controllers had no duty to follow the complete flight after the frequency change, nor did they do so. Controllers making decisions in real time must be judged by the information they knew or should have known at that time. Consequently, the court finds that Park did not breach any duty to N501RH or its passengers in failing to attempt to contact N501RH after the MSAW warning alerted. For the same reasons, the court finds that Wilson and Thomson did not breach a duty even if one is assumed to have existed.

F. Intervening and Superseding Cause

The court finds, as the Government asserts, that even if Park were negligent in failing to warn N501RH, the negligence of the pilots immediately following the MSAW warning constituted an intervening and superseding cause of the accident.

The burden of demonstrating intervening and superseding cause rests with the Government. See Panousos v. Allen, 245 Va. 60, 64, 425 S.E.2d 496, 499 (1993). The standard for an

intervening, superseding cause is a strict one: "In order to relieve a defendant of liability for his negligent act, the negligence intervening between the defendant's negligent act and the injury must so entirely supersede the operation of the defendant's negligence that it alone, without any contributing negligence by the defendant in the slightest degree, causes the injury. Thus, a superseding cause of an injury 'constitutes a new effective cause and operates independently of any other act, making it and it only the proximate cause of injury'." Atkinson v. Scheer, 256 Va. 448, 454, 508 S.E.2d 68, 71-72 (1998) (emphasis omitted) (citations omitted) (quoting Jenkins v. Payne, 251 Va. 122, 128-29, 465 S.E.2d 795, 799 (1996)); see Coleman v. Blankenship Oil Corp., 221 Va. 124, 131, 267 S.E.2d 143, 147 (1980); Maroulis v. Elliott, 207 Va. 503, 510-11, 151 S.E.2d 339, 345 (1966).[36] Further, reasonably foreseeable intervening acts do not break the "chain of causal connection between an original act of negligence and subsequent injury." Delawder v. Commonwealth, 214 Va. 55, 58, 196 S.E.2d 913, 915 (1973). However, "the manner in which the harm occurs may be so highly extraordinary as to prevent the actor's conduct from

[36] The negligence in this context is that alleged of third parties, in this case the pilots. The question of intervening, superseding negligence is distinct from that of contributory negligence, which could bar a pilot's recovery but not that of an ordinary passenger. See Air Crash Disaster at New Orleans (Morsant Field), 544 F.2d 270, 273 (6th Cir. 1976).

being a substantial factor in bringing it about." Banks v. City of Richmond, 232 Va. 130, 137, 348 S.E.2d 280, 284 (1986) (finding under Virginia law that repairman's decision to search for natural gas leak with cigarette lighter was "highly extraordinary," unforeseeable, and entirely superseded City's failure to turn off gas).

"Negligence by the pilot does not, in and of itself, absolve the government of liability." Redhead v. United States, 686 F.2d 178, 182 (3d Cir. 1982); accord Webb v. United States, 840 F. Supp. 1484, 1511 (D. Utah 1994). An air traffic controller "must assist even careless pilots who, based on the facts known to the controller, have placed themselves in a dangerous position." Biles v. United States, 848 F.2d 661, 664 (5th Cir. 1988). "The regulations and manual do not make mere automata of the controllers. Their job requires that they act in the interests of safety." Webb, 840 F. Supp. at 1515 (quoting Stork v. United States, 430 F.2d 1104, 1108 (9th Cir. 1970), in turn quoting United States v. Furumizo, 381 F.2d 965, 968 (9th Cir. 1967) (referencing district court observation)).

The parties agree that under Virginia law whether a second tort is intervening and superseding rather than concurrent depends on the following factors: (1) whether the harm caused was different in kind from that which would have followed from defendant's negligence; (2) whether the operation or the

consequences of the intervening cause appear after the event to be highly extraordinary rather than normal in view of the circumstances existing at the time of its operation; (3) whether the intervening force acts independently of the situation or is a normal part of the situation; and (4) whether the intervening cause is a third party's action or omission. Srock v. United States, 462 F. Supp. 2d 812, 827 (E.D. Mich. 2006) (citing Coles v. Jenkins, 34 F. Supp. 2d 381, 387 (W.D. Va. 1998)) (applying Virginia law). These factors are taken from section 442 of the Restatement (Second) of Torts. The parties also address two additional factors listed in section 442: (5) the fact that the intervening force is due to an act of a third person which is wrongful toward the other and as such subjects the third person to liability to him; and (6) the degree of culpability of a wrongful act of a third person which sets the intervening force in motion. These factors are considered below, though not necessarily in the order listed.

In this case, the timing of events following the MSAW warning is important. Although the MSAW aural alarm alerted from 12:30:15 to 12:30:20 p.m., Park did not complete his contemporaneous instructions to the commercial airliners until 12:30:30. N501RH broke out below the clouds at approximately 12:30:35 p.m. Thus, the aircraft broke out below the clouds before Park reasonably could have contacted the pilots, even

using the most expeditious communication through a relay with the crew of another plane in the area (assuming it would have been successful).

When N501RH descended below the clouds, it was approximately 3.3 miles past Runway 30. Putting aside the fact that the pilots should have executed a missed approach over four miles earlier at the published missed approach point, the court assumes that they were unaware of their actual position and did not realize they should have done so. However, because their descent precisely mirrors a stable (i.e., proper) descent, albeit displaced five miles to the northwest, it is reasonable to conclude that the crew was aware of their ground speed and distance and therefore knew where they expected Runway 30 to be. Indeed, the approach plate advised that an aircraft traveling at a ground speed of 120 knots would travel from BALES to the missed approach point in two minutes 30 seconds. Therefore, the crew should have known from their airspeed and timing that they were nearly upon the perceived missed approach point and, when N501RH broke out of the clouds, should have expected to see Runway 30 less than a mile ahead of them. Though the crew did not see Runway 30 and in total violation of 14 C.F.R. § 91.175 (2004), they continued to fly for over one minute -- approximately two-and-a-half miles or more -- past where they

would have expected their missed approach point to be before beginning an ascent from 1500 feet back into the clouds.

While the harm caused by the pilots and ATC would be the same (crash), the pilots' conduct in choosing to continue flying below the clouds *well after* they were aware that the airport was not in sight and more than two miles after they should have executed a missed approach was highly extraordinary and not reasonably foreseeable by a controller. See Rowe v. United States, 272 F. Supp. 462, 471 (W.D. Pa. 1964) (finding the conduct of the pilot, who was not rated for IFR flight, in entering clouds to be reckless, highly extraordinary, and not foreseeable by the controllers so as to become a superseding cause of the crash and the death of the passengers). The only reasonable explanation is that the crew was willing to continue to fly beyond the perceived missed approach point in the hopes of avoiding being late for the 1:00 p.m. NASCAR race.

The pilots had an independent duty to follow the rules and regulations applicable to them, upmost of which was their duty to execute a proper missed approach when Runway 30 was not in sight when they reached what they expected to be the missed approach point. An independent force is one which is not stimulated by a situation created by the actor's conduct. An act is therefore an independent force if the situation created

by the actor has not influenced the act. Restatement (Second) of Torts § 441 cmt. c (1965).

The pilots' obligation to execute a missed approach did not turn on any input from air traffic controllers.[37] Indeed, during this period the pilots had changed to the UNICOM frequency and did not expect any communications from TRACON. Thus, nothing the air traffic controllers did or did not do caused the pilots to violate FARs by failing to execute the required missed approach, both as to the pilots' decision to delay in executing the missed approach and in their failure to employ the mandated climbing right turn. Srock v. United States, 462 F. Supp. 2d 812, 827 (E.D. Mich. 2006) (finding under Virginia law that the pilot's "actions in intentionally descending toward deteriorating weather conditions (while knowing that doing so was both prohibited and dangerous) were negligent to a degree

[37] The aircraft accident cases cited by Plaintiffs regarding superseding cause, McCullough v. United States, 538 F. Supp. 694 (E.D.N.Y. 1982), Freeman v. United States, 509 F.2d 626 (6th Cir. 1975), and Ingham v. Eastern Air Lines, Inc., 373 F.2d 227 (2d Cir. 1967) (quoted by McCullough), each involved the original negligence of government employees which "set in motion the entire chain of events which finally culminated in the tragic crash." (Case No. 1:07cv23, Doc. 203 at 20-24 (quoting opinion).) A similar distinction is recognized by Virginia law which provides that "[a]n intervening act can never be a superseding cause if the intervening act was set in motion by the initial tortfeasor's negligence." Coleman v. Blankenship Oil Corp., 221 Va. 124, 131, 267 S.E.2d 143, 147 (1980). In the instant case, no act or omission of an air traffic controller set in motion the chain of events leading to the accident, including the intervening negligence. Rather, the pilots' conduct all along contributed to the accident.

not reasonably foreseeable and, therefore, constituted a superseding cause of the accident").

The pilots' decision to continue for one minute and ten seconds -- in the face of the requirement to execute an immediate missed approach –- before climbing back into the clouds also came well after any alleged failure by the controllers. Once N501RH broke below the clouds, the pilots saw with their own eyes the sufficient information about which Plaintiffs claim ATC should have warned them: namely, that Runway 30 was not in sight and they should declare a missed approach. Thus, the pilots' extraordinary negligence from the time N501RH broke beneath the clouds up to the time of the crash acted independently of any omission of a controller.

Further, a reasonable air traffic controller would not have anticipated the pilots' decision to continue flying well past the point federal law mandated that they execute a missed approach or to fail to execute the published missed approach with climbing right-hand turn.[38] The "FAA has a statutory duty to promote safety in air transportation, not to insure it."

[38] Park communicated with N501RH one last time seconds before the crash. Park at that time was not negligent. Government piloting expert Lintzenich testified, and the court finds, that the directive to climb to 4,400 feet MSL cancelled the 2,600 foot MSL clearance but not the right turn required for a missed approach. Further, Park's quick response after being informed that N501RH had already initiated a missed approach could not have been a proximate cause of the accident even if negligent given the extremely brief period between Park's direction and the accident.

United States v. S.A. Empresa de Viacao Aerea Rio Grandense (Varig Airlines), 467 U.S. 797, 821 (1984). Controllers are simply not expected to anticipate such extraordinary negligence.[39] The fact that Mr. Nelson observed N501RH *with its gear up* as it passed over the church, a location beyond that which the crew would have (mistakenly) believed to be their missed approach point, is consistent with their having made a previous decision to go missed and acknowledged that they no longer expected to land. The crews' decision to fly yet another two miles before climbing is inexplicable and underscores the extraordinary nature of their actions.

The regulations called for no judgment on the part of a pilot, and no pilot discretion existed with respect to executing a missed approach. The FARs, which have the force of law, required an immediate execution of the missed approach procedure. No grounds existed for the pilots to deviate from this requirement.

Had the pilots executed a federally-mandated missed approach (even without the required climbing right turn) after breaking through the clouds and not finding Runway 30, this accident likely would not have occurred. The court finds,

[39] Plaintiffs argue that the jury in case 1:06cv431 found that the pilots did not act recklessly. The jury's verdict, in a proceeding in which the United States did not participate, is not res judicata nor does it trigger collateral estoppel. Moreover, the jury applied the heightened standard of willful, wanton, and reckless misconduct.

therefore, that the pilots' decision to continue flying in violation of their federally-mandated requirement to execute a missed approach at a point when no reasonably prudent pilot would refuse to immediately do so, and then to execute a missed approach without the federally-mandated climbing right turn, was highly extraordinary and constituted a new effective cause that operated independently of any other assumed act or omission by air traffic controllers. Thus, the extraordinary negligence of the pilots after breaking through the clouds superseded any negligence that Plaintiffs argue was committed by the United States and was the sole legal cause of the accident.

III. CONCLUSION

This was a tragic accident caused by a series of missteps by the flight crew. Plaintiffs have failed to meet their burden of proving air traffic controller negligence. Even if the controllers were negligent, however, the United States has demonstrated that the decision of the pilots to continue to fly well beyond the missed approach point and then to execute an improper missed approach, all in violation of federal and common law, were superseding and intervening acts so as to constitute the sole proximate cause of the accident.

Rule 54(d)(1) of the Federal Rules of Civil Procedure provides that "[u]nless a federal statute, these rules, or a court order provides otherwise, costs—other than attorney's

fees—should be allowed to the prevailing party." There is a presumption in favor of an award of costs to the prevailing party. Williams v. Metro. Life Ins. Co., 609 F.3d 622, 636 (4th Cir. 2010). Rule 54(d)(1) also grants the court discretion not to allow costs to a prevailing party, but the court "must justify its decision by articulating some good reason for doing so." Teague v. Bakker, 35 F.3d 978, 996 (4th Cir. 1994) (internal quotation marks omitted). "Good reason" which may justify exercise of discretion includes good faith, excessiveness of costs in a particular case, actions taken by the prevailing party which unnecessarily prolonged trial or injected meritless issues, a recovery so small that the prevailing party is victorious in name only, the fact that the case in question was a close and difficult one, the resources of the parties, efforts to mitigate damages, and the outcome of the underlying suit. Id. Good faith on the part of the non-prevailing party, while a factor, is of itself an insufficient basis for refusing to assess costs. Rather, the good faith of a losing party is a "virtual prerequisite to a denial of costs in favor of the prevailing party." Id.

In this case, the court finds, based on the briefing and evidence presented at the bench trial, that Plaintiffs acted in good faith in bringing this action. The court also finds, as indicated in the discussion of this Memorandum and Order, that

the case in question was a close and difficult one. The court finds that it would be inequitable under all the circumstances in the case to put the burden of costs on the losing party and concludes that the presumption in favor of costs to the United States is overcome. The court, therefore, in its discretion directs that the parties bear their own costs.

For the reasons noted above,

IT IS THEREFORE ORDERED that judgment be, and the same is, hereby entered in favor of the United States and against all Plaintiffs herein. Each party shall bear his, her or its own costs.

IT IS FURTHER ORDERED that this Memorandum will constitute Findings of Fact and Conclusions of Law in accordance with Fed. R. Civ. P. 52.

A separate Judgment for each case will issue.

/s/ Thomas D. Schroeder
United States District Judge

September 8, 2010