

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

* * * * *

Investigation of:

*

*

AIR METHODS HELICOPTER CRASH

*

PERRYVILLE, MISSOURI ON

*

JULY 1, 2017

*

*

* * * * *

Interview of: DUAYNE THOMAS

Signature Flight Support
Lambert - St. Louis International
Airport
5995 James S. McDonnell Boulevard
St. Louis, Missouri

Wednesday,
September 20, 2017

APPEARANCES:

KATHERINE WILSON, Ph.D., Human Performance Investigator
National Transportation Safety Board

CHIHoon "CHICH" SHIN, Aerospace Engineer
National Transportation Safety Board

JIM SILLIMAN, Senior Air Safety Investigator
National Transportation Safety Board

MIKE STACEY, Regional Maintenance Director
Air Methods

KEITH BUCKLEY, Former Senior Lead Pilot
Air Methods
(On behalf of Mr. Thomas)

<u>ITEM</u>	<u>I N D E X</u>	<u>PAGE</u>
Interview of Duayne Thomas:		
By Dr. Wilson		5
By Mr. Silliman		28
By Mr. Shin		35
By Mr. Stacey		40
By Dr. Wilson		41
By Mr. Silliman		50
By Mr. Shin		53

I N T E R V I E W

DR. WILSON: Again, thank you for being here. This is a routine interview that we conduct. Anytime there's an accident we always want to talk to the pilot who was involved in it. So there's nothing different about this case because we're talking to you.

We are all here representing various parties to the investigation: Chich and I from the NTSB; we also have Jim Silliman on the phone from the NTSB, and then we'll go around the room for the record so that everybody can introduce themselves.

MR. STACEY: I'm Mike Stacey. I'm the regional maintenance director for Air Methods.

MR. THOMAS: Duayne Thomas. I'm the pilot in question.

MR. BUCKLEY: My name is Keith Buckley. I'm a former Air Methods pilot, senior lead pilot, and I just came up with Duayne to accompany him, to show him around. He didn't know his way right into here, and I did, so he could see it.

MR. SHIN: Chich Shin, aerospace engineer with NTSB.

DR. WILSON: Katherine Wilson. I'm a human performance investigator with the NTSB.

And, Jim, if you could introduce yourself?

MS. SILLIMAN: Yes. This is Jim Silliman with the NTSB. I'm the IIC of the investigation. Thanks for assisting us with this interview.

DR. WILSON: And I have to ask you for the record, is Keith

1 the person that you would like to have representing you today
2 during this interview?

3 MR. THOMAS: Yes.

4 DR. WILSON: And at the end of the interview we will be
5 transcribing this discussion that we have and then this record
6 will become a part of our public docket. So --

7 MR. BUCKLEY: Hey, Chich, you might lean your phone up,
8 because I think the speaker comes out the back. We might be able
9 to hear him if there's some air underneath that.

10 MR. SHIN: Like that?

11 MR. BUCKLEY: There you go.

12 INTERVIEW OF DUAYNE THOMAS

13 BY DR. WILSON:

14 Q. Okay, Duayne, if you could provide just an overview of your
15 aviation background?

16 A. Okay. I entered the military in 1985, went to flight school,
17 was a flight -- was a pilot in the military, in CH-47, for about
18 23½ years. Retired in 2010 from the military, promotable to CW-5,
19 not that that's important, but -- and then worked for Bristow in
20 Alaska for 2½ years, actually 3 years up there, and then came down
21 here with Air Methods in 2014 and started work at the Farmington
22 base. So a little over 30 years' experience.

23 Q. Okay. What certificates or ratings do you hold?

24 A. I have a commercial instrument, ATP, from the civilian side
25 for helicopter.

1 Q. And what is your total time?

2 A. Roughly about 6250, give or take.

3 Q. Is all of that helicopter time?

4 A. Yes.

5 Q. How much of that is PIC?

6 A. Probably about two-thirds of that. So we're looking at
7 probably about 4500 hours of PIC time. Probably more than that,
8 but --

9 Q. And how much time do you have in the BK117?

10 A. Roughly about 300 hours.

11 Q. Is all of that PIC time?

12 A. Yes, other than what little there was for training.

13 Q. Okay. And your current position with Air Methods?

14 A. Pilot at the Farmington base for the Children's -- St. Louis
15 Children's Hospital contract.

16 Q. Have you held any other positions at the company?

17 A. No.

18 Q. Flown any other helicopters with Air Methods?

19 A. A 145. I just got qualified in it.

20 Q. Are you an instructor pilot?

21 A. I was in the military.

22 Q. Okay. Do you know a breakdown of your day versus night
23 flight time in the BK117?

24 A. I haven't looked at it recently so I couldn't give you a good
25 accurate. It's about, probably, 50/50 on those hours.

1 Q. Okay. About how much time would you say you have flying with
2 night vision goggles?

3 A. Over 1600 hours.

4 Q. Do you know about how much of that time would be in the
5 BK117?

6 A. Probably about 70 to 100 hours, roughly. Had I known you
7 were asking these questions, I would have printed out my time,
8 then we could have had accurate numbers.

9 Q. That's okay. That's something we can request from Air
10 Methods, who I'm sure has that information.

11 A. Sure. I'm being conservative on those numbers.

12 Q. We won't hold you to them. Do you fly outside of work?

13 A. No.

14 Q. You gave us that great summary in your statement following
15 the accident, but if you could just briefly walk us through the
16 day of the accident leading up until the event occurred?

17 A. As I remember it, we had been doing some EC145 transition for
18 all the pilots at our base, so we were kind of covering each
19 other. I had been working 10 straight days on dayshift previous
20 to the day of the accident. The day of the accident was -- I was
21 transitioning from days to nights. It was my first regularly
22 scheduled shift for nights, and so I had 24 hours off from my
23 previous duty period to the time that I started duty the next day.
24 So I slept in till about 11:30 p.m. -- or a.m., got up, did my
25 normal duties that day, and then went to work at about -- left the

1 house at about 6:30 to go to work that evening, starting at 7.

2 Q. And then what did you do once you arrived on the job?

3 A. Well, per my statement, I got -- I started my preflight about
4 6:40 p.m., did my preflight; took my fuel samples, all as I
5 should. Went in the office about 3 minutes to the hour, got
6 notified that we had a pending flight.

7 I sat down, signed into the company's 411 to get my flight
8 release at 1900, was my sign-in time. I waited until I had my
9 flight release before I accepted the flight. And checked the
10 weather, asking for a 15-minute delay for being able to complete
11 the paperwork and the weather checks that I needed to do. So I
12 went through that.

13 How far do you want me to go?

14 Q. Keep going up until the actual event occurred.

15 A. Okay. Per my statement, I mean, I laid it out pretty clear
16 in there, standard, you know, we got the call, I accepted the
17 flight, met the crew out at the aircraft. We did our briefing,
18 did our walk-around, got in the aircraft. Did my standard run-up,
19 briefed everybody, or asked everybody if they were ready for
20 takeoff.

21 It was about a 25-minute flight to Cape Girardeau, where the
22 patient was, to St. Francis Medical Center down there. Standard
23 flight. Landed, released the crew, shut down the aircraft, did my
24 walk-around. Waited 35 to 40 minutes for the crew while they were
25 with the patient. Did my paperwork for the next leg of flight.

1 Somewhere around 2010, 2015 they came out with the patient.
2 We loaded the patient and, about 2020, took off from Cape
3 Girardeau. I did my standard run-up that I do. Took off. The
4 flight was uneventful till we got about 17, 18 minutes out of Cape
5 Girardeau.

6 Flying along pretty calm, had no indications that anything
7 was out of line. Aircraft did a sudden yaw to the left, with a
8 sudden real sharp bump upward. It felt like we had hit some wind
9 shear. As I said in my statement, looked over at the medic. He
10 looked at me like "What was that and where did that come from?"
11 because it was a perfectly calm night, couldn't ask for better.

12 I looked back. I started hearing the engines wind down. I
13 looked back, scanned my N1s, saw that they were below 40 percent
14 and decreasing. I stated, hey, guys, I think we've got some
15 engine failure here. Before I could even react -- or I looked
16 down at the caution panel. I saw three lights. I had a number 1
17 engine low, a number 1 generator, and a number 1 -- or a battery
18 discharge light.

19 Before I could even react to set myself up for the engine
20 failure, the aircraft suddenly pitched up. It pitched up enough
21 that I felt we were going over backwards. I honestly thought we
22 were going to end up on our back. And I immediately applied right
23 forward cyclic, right pedal, and reduced the collective to full
24 down, tried to get the aircraft into an autorotative descent.

25 Once I got the aircraft recovered and back in a normal flight

1 attitude, I maintained the autorotative descent, just adjusting my
2 flight path to avoid obstacles that I had identified on the
3 ground, which were wires and a ditch. The ditch was going to be a
4 problem because it was right at that point where I knew it was
5 going to be close to my touchdown area. So I was trying to plan
6 on decelling the aircraft enough that I could float it over that
7 ditch.

8 And I made that, but in doing that there was some rotor
9 decay, which once we came down into ground effect I felt a little
10 bit of a lift and then the rotor decayed abruptly. We were about
11 10, maybe 10 feet off the ground, if that high, and we fell
12 through. We landed on what felt to me like just a slight right
13 skid low, but it leveled out. Both skids touched the ground. I
14 thought we were going to slide out. We were getting pretty slow.
15 I thought everything was okay, and then the aircraft just went
16 over on its side.

17 At that point I reached up, pulled the power levers to stop.
18 Even though I knew the engines were dead, I wanted to shut those
19 down. I asked everybody if they were okay, got an affirmative
20 response from everybody on board except for the patient. I told
21 everybody to egress the aircraft. Once I did, the nurse
22 jettisoned the left cabin door, got out of the aircraft, made a
23 call to Air Com to report that we were down.

24 The medic in the left co-pilot seat was busy trying to get
25 the door open and get out. I waited for him to exit. Once he got

1 out, he was trying to assist one of the nurses in the back. For
2 some reason the stretcher had come dislodged and had her trapped.
3 She couldn't get her foot out from under it and couldn't egress
4 the aircraft, so he was trying to assist her. And I climbed out
5 of the cockpit and I was going to go around to the back of the
6 aircraft to open the clamshell door so I could assist lifting the
7 stretcher off of her.

8 As I came back, popped the first latch on the clamshell, I
9 noticed fuel was pouring out of the bottom of the aircraft. My
10 immediate thought was fire. I went back into the cockpit and
11 turned off all the electrical switches and the fuel switches at
12 that point. Once that was taken care of, came back and assisted
13 with the egress of the nurse and the patient. We got them out of
14 the aircraft, and then we rallied and waited for emergency
15 services.

16 Q. Thank you.

17 A. That was about a quick synopsis of --

18 Q. That was great.

19 A. My other one's a little more detailed.

20 Q. You say you started your preflight at 6:40 p.m. Is that
21 normal that you start your preflight before you check in for duty?

22 A. Yes. I think that policy has changed now, but at that time
23 they wanted us to be duty ready when we signed in to be able to
24 take an immediate flight. So I always did my preflight before I
25 went into the office.

1 Q. And then you said you asked for a 15-minute delay so that you
2 could get your paperwork. Is that also normal that you would need
3 to --

4 A. Normally, I wouldn't have asked for a delay. On this
5 particular night, because I had just walked in, the flight was
6 pending, I hadn't completed the paperwork; there were still some
7 other things. And because I had been working so long, I wanted to
8 slow things down. I didn't want to rush into this. And so I just
9 did that as kind of a precautionary measure of just slowing the
10 tempo down to make sure we dotted the I's and crossed the T's.

11 Q. When you departed from the base what was the lighting
12 conditions like?

13 A. We had taken off at about 1922, I believe. The sun was still
14 up. The sun wasn't scheduled to set until about 2016, 2017, so we
15 had plenty of light. We were unaided. I had the goggles on to
16 set up, but -- on the helmet, but I didn't -- there was plenty of
17 light. And we were flying east-southeast-bound, away from the
18 sun, so that wasn't a factor.

19 Q. When you're doing your preflight checks are you using a
20 checklist or are you doing things from memory?

21 A. As I put in my statement, Air Methods has a do/verify policy,
22 which you do the -- you conduct the inspection or the check and
23 then you back it up with the checklist. So that's how I performed
24 the preflight.

25 Q. When you say you back it up by a checklist, do you do one

1 step and you're looking at the checklist, or after you complete
2 the entire check then you look at the checklist?

3 A. You can do it either way, and I do it the latter. I did the
4 whole preflight and went back and made sure that I had hit all the
5 parts on the checklist.

6 Q. So now you're in the aircraft, you're ready to go. Are you
7 using a checklist once you're in the aircraft?

8 A. Once again, doing the do/verify policy, everybody's allowed
9 their own flow. There is no standard flow. They give us the
10 checklist to make sure everything is done. So I had developed a
11 flow that I have used for 3 years, and then I back it up.

12 I pull it out before I start the engines, make sure I've got
13 my pre-start checks all completed in accordance with the
14 checklist, put it up, start the engines according to my flow. And
15 then once the aircraft is -- prior to takeoff, I pull the
16 checklist out and make sure everything is completed, doing my
17 before takeoff check, and then we depart.

18 Q. Okay. And what is your procedure for setting the instrument
19 lights?

20 A. I'm not sure I understand the question.

21 Q. So there's the three cockpit instrument lights that are for
22 the co-pilot's side, the engine, and then the pilot's side.

23 A. Usually, I wait until it gets dark enough before I turn those
24 on. I mean, if there's enough ambient light that I can see the
25 instruments without them, I don't bother. Usually I'll wait until

1 it gets dark enough and I feel that they're needed and then I turn
2 those switches on.

3 Q. Okay. So if it's the weather conditions that you said,
4 daylight when you were taking off --

5 A. From base.

6 Q. From the base, what setting --

7 A. They were not on. They were not on.

8 Q. They would be in the off position?

9 A. Correct.

10 Q. Okay. So now you're waiting for the flight crew -- or the
11 medical crew when you're at St. Girardeau; is that --

12 A. Cape Girardeau.

13 Q. Cape Girardeau. Sorry. And did you adjust the lighting
14 then?

15 A. I did. I set some of the lighting up for takeoff. As they
16 were coming out, I went ahead and set my switches for takeoff as
17 far as the anti-collision light, the position lights, the strobe
18 lights, and the DeVore lights in the back. So --

19 Q. And did you adjust the cockpit instrument lighting?

20 A. Not at that point. I did right before I took off.

21 Q. Do you recall where you set those at?

22 A. Usually I turn them up full bright and dim them as the flight
23 goes along, as it gets darker and I need to.

24 Q. So when you took off from Cape Girardeau were you using the
25 night vision goggles?

1 A. No, it was still ambient light. Sunset hadn't quite hit; it
2 was just right on the horizon. In fact, I commented just after we
3 cleared the obstacles and got into cruise flight to the medic how
4 beautiful a night it was and a good sunset. So no, I hadn't. The
5 whole process I did not have under NVG. So --

6 Q. Had the flight proceeded as normal, were you anticipating
7 using the NVGs on that flight?

8 A. Absolutely. In fact, about another 5 minutes before -- from
9 the time things started to happen, if we had gone another 5
10 minutes, I probably would have put the goggles down.

11 Q. Is that normal to adjust the lighting prior to takeoff for an
12 anticipated use of night vision goggles?

13 A. It is for me.

14 Q. Okay.

15 A. That's one less thing I have to do in the air.

16 Q. So you did not -- to clarify -- I don't want to assume -- you
17 had them in the full bright position at takeoff and you did not
18 adjust them at any time during the flight?

19 A. No.

20 Q. When you took off were there any caution or warning lights
21 visible?

22 A. Per my statement, no.

23 Q. And when was the first time that you noticed any lights that
24 were visible?

25 A. The first time was once we had the first abrupt input and I

1 scanned the instruments, then scanned the caution panel. That's
2 when I saw the three lights noted in my statement. Up to that
3 point, I'd scanned the instrument -- or the panel three times and
4 there were no lights illuminated.

5 Q. And I believe that you discussed this in your statement, but
6 did you notice anything abnormal about the fuel levels prior to
7 the abrupt movement of the aircraft?

8 A. No. In fact, my standard practice is 10 to 15 minutes into
9 the flight I always do a fuel consumption check and a standard
10 scan of the cockpit just to scan the engine instruments,
11 transmission instruments, and then over to the fuel.

12 Fuel was indicating, at that point it had dropped from 110 at
13 takeoff down to just below 95 gallons in the main tank. The
14 supply tanks were reading just below the full mark, which they
15 usually run just below the full mark in flight. And so the answer
16 to the question is no, I did not notice any abnormalities.

17 Q. Did you happen to look at the fuel gauges once the abrupt
18 motion happened or at any time between then and the landing?

19 A. No. At that point I was little bit too busy to be worrying
20 about what was causing it.

21 Q. I understand. And when you did see lights on the panel after
22 the abrupt movement, how visible were they to you?

23 A. They were bright. They were bright enough that I could
24 identify what was on, so --

25 Q. When you first get to the aircraft do you -- is there a

1 maintenance log that you check?

2 A. Yes.

3 Q. Were there any discrepancies or anything noted in the
4 maintenance log?

5 A. None. And there were no pending inspections other than the
6 hourly and daily that are normally there, so --

7 Q. When was the last time you had flown this particular
8 aircraft?

9 A. Just a couple days prior. Well, actually, I take that back.
10 It was the night before the accident, because we had just
11 completed some major maintenance on the aircraft and I had to do
12 the maintenance check on it.

13 Q. During that flight did you use night vision goggles?

14 A. No.

15 Q. Do you know if anybody flew the helicopter between your
16 flight the night before and the next day when you got into it?

17 A. Yes. Yes, one of the pilots had brought the aircraft over
18 from the hangar after we completed the maintenance check.

19 Q. The checklist that you follow when doing your preflight
20 checks, is that physically located in the helicopter or do you
21 bring your own with you?

22 A. No, it's physically located in the helicopter.

23 Q. Any concerns about brightness of lighting in the helicopter
24 on any other occasion?

25 A. Yes, because the particular mod that we had was the ALARS

1 mod, which once you turn on the instrument panel lights it
2 automatically dims the caution panel lights. And so there were
3 times when it could be dim depending on the time of the day.

4 Q. Do you know how long this helicopter had that mod on it?

5 A. No. It came to us that way, so -- and we had had it for a
6 year and a half to 2 years.

7 Q. Have you flown this make helicopter without the mod on it?

8 A. Yes.

9 Q. Was that at Air Methods?

10 A. Yes.

11 Q. How many of this particular helicopter are at your Farmington
12 base?

13 A. (No audible response.)

14 Q. Just one. When you flew the helicopter without the mod was
15 that during training or --

16 A. Our previous aircraft didn't have the same mod. It had a
17 different mod with the panel lights which we could adjust
18 separately from the instrument lights. So most cases there was
19 never a time that we needed to turn on those instrument panel
20 lights because of the mod.

21 MR. THOMAS: Keith, what was the name of that? Do you
22 remember the different -- the one we had was the ALARS mod and the
23 other one, I don't remember what --

24 MR. BUCKLEY: It was a different manufacturer is what it was,
25 yeah.

1 BY DR. WILSON:

2 Q. And what is the location of the warning and caution lights?

3 A. They sit at the bottom, at the bottom of the instrument
4 panel, on the canted console, right at the top.

5 Q. Any problems ever seeing in flight?

6 A. Never.

7 Q. Was there any aural alert with the abrupt movement or did you
8 only get the warning and caution lights?

9 A. Only got the -- if there was an audio, I did not hear it.
10 The medic did ask me on the ground why there was no audio and why
11 there were no caution lights previous to that.

12 Q. For some alerts in the cockpit is there an aural alert?

13 A. There is.

14 Q. Did you know that this particular -- these alerts that you
15 were getting did not have -- would not have an aural sound with
16 them?

17 A. No, because anytime you have a low engine there is an audio.

18 Q. Prior to departing from Cape Girardeau did you cancel any
19 warning or caution lights?

20 A. The only time I did was because I -- I cancelled the master
21 caution because it's always on anytime the instrument panel is on,
22 and that's the last light we extinguish as we take off. There
23 were no lights on prior to that.

24 Q. Explain that a little bit more to me. So the master caution
25 is on from the time that you put power to the aircraft?

1 A. Usually it's on because your caution panel has lights
2 illuminated, which it automatically comes on. As those lights go
3 out, it doesn't necessarily come off until you physically reset
4 the master caution on that aircraft.

5 MR. BUCKLEY: Could I add something to that? I think to
6 explain that, when you're starting the engines up you'll have the
7 oil pressure lights, some of the lights are on until the engine
8 comes up to speed. That's where they go out, and then you --
9 normally the master caution will stay on, and that's the last
10 thing you push off. But you should always have some of the lights
11 identified until you get it up to operating speeds.

12 DR. WILSON: Okay.

13 MR. BUCKLEY: If that makes more sense.

14 DR. WILSON: Yes.

15 BY DR. WILSON:

16 Q. And I'm understanding with these helicopters there's fuel
17 switches or pumps that need to be turned on and off --

18 A. Correct.

19 Q. -- right around takeoff? Explain that --

20 A. Process?

21 Q. -- process to me.

22 A. Per the checklist, we start both engines, put both generators
23 on, and then turn -- well, let me back up. Prior to engine start,
24 the checklist calls for the prime pumps to be on. With the prime
25 pumps being in the on position, there is a singular caution light

1 that indicates that the prime pumps are set to the on position.

2 That functioned normally.

3 During the run-up, per the checklist, you normally start both
4 engines, turn both generators on, then turn the forward and aft
5 transfer pump on. The next step in the checklist is turning off
6 the prime pumps. So what'll happen is the prime pump will be on,
7 the transfer pump lights will be on until you physically turn them
8 on, then the transfer pump lights go out. Turn the prime pumps
9 on; the prime pump caution light then goes out.

10 Q. And prior to departing Cape Girardeau, do you remember doing
11 that process?

12 A. My standard process for running up my aircraft, okay, in the
13 do/verify was I did alter that start procedure a bit. I started
14 the number 1 engine, turned on the number 1 generator, and
15 immediately went down to the number 1 or the forward fuel transfer
16 pump, turned it on. That light would extinguish. I would do my
17 hydraulic check, then I would come back, start the number 2
18 engine, follow the same process. Once the number 2 engine was up,
19 number 2 generator on, aft transfer pump, and then I would turn
20 off the prime pump switches.

21 Q. And what is the purpose of you altering the procedure a
22 little bit?

23 A. One, I'm a fuel guy. I like fuel, and it's my friend. Two
24 things I need to fly this aircraft: I have to have generator
25 power and I have to have fuel. The reason I turned those on at

1 that point was no matter what happened after that point, those two
2 things were taken care of.

3 Q. When you went back to the aircraft after you had egressed and
4 you turned off switches, you said electrical switches and the fuel
5 pump switches, so the transfer pump switches, your recollection is
6 that they were in the on position and you turned them to the off
7 position?

8 A. Yes. They were the only two switches that I turned off.
9 They are closest to the pilot's seat. I turned them off. At that
10 point I was in a reactionary mode. My only concern was
11 preventing, to the best I could, a post-crash fire because we
12 still had two people in that aircraft that we had to get out. I
13 could care less about anything else.

14 Q. Did you notice a difference after you turned those switches
15 off with the fuel spilling from the aircraft?

16 A. No. But I did everything I could to minimize it.

17 Q. Did any information ever come from the company regarding
18 concerns about instrument panel lighting and --

19 A. No. To that date, no. After that date there was, but no.

20 Q. What did they send out since the accident?

21 A. They just put out kind of a precautionary, hey, be on the
22 alert for this mod. That's all they put out. And I don't know,
23 per se, that it came from the company. It came from one of the
24 check pilots, so --

25 Q. Okay. But anything about the fuel switch position, the

1 pumps? Anything from the company on that, either a concern to
2 make sure you've got them in the correct position --

3 A. Other than the standard checklist, no.

4 Q. Is there anything in the checklist that discusses changing
5 the light setting at the end of a flight, or is that just
6 something that's checked at the beginning of the flight?

7 A. To answer your question, no. I'm not sure I understand the
8 question.

9 Q. Well, the instrument panel lights, you've got them in the on
10 setting for using night vision goggles. You finish your flight,
11 do you turn them back to the off position or do you just leave
12 them in the position that you used them?

13 A. Is that on an intermediate flight or at the end of the total
14 mission?

15 Q. Both.

16 A. Okay. Usually if we're doing a transitory flight where we're
17 stopping at a hospital picking up a patient or landing at another
18 hospital dropping off a patient, those lights are unchanged during
19 the process.

20 Q. Okay.

21 A. Okay? We do turn them off at the end of the total flight.

22 Q. Okay.

23 A. Or at least I do. I'm not going to speak for all the pilots.

24 Q. And do you know if that's on the checklist or it's not and
25 that's just your procedure?

1 A. As part of the shutdown procedure it is, but it's not a
2 mandatory requirement.

3 Q. The switches, the instrument lighting switches, can a
4 co-pilot reach those? Or, I'm sorry, the medic sitting in the
5 co-pilot seat, can he reach those?

6 A. He can.

7 Q. Did you see him reach over and adjust those at all during the
8 flight?

9 A. To my knowledge, there is no medic that we fly with that will
10 touch anything in the cockpit unless directed.

11 Q. Did you direct him to change anything?

12 A. No, I did not. And no, he did not.

13 Q. Okay. The lighting conditions about the time of that first
14 abrupt movement of the aircraft, what was the environmental
15 lighting like? I know you said in about 5 minutes you probably
16 could have started using the NVGS, but --

17 A. It was still light enough that I could clearly see the
18 ground. I could clearly see the obstacles. So unaided visual
19 cues were -- the ambient light was not high, but it was good
20 enough to see what I could see. There was no interference. I
21 didn't have to guess what was down there.

22 Q. And what was the position of the sun in relation to --

23 A. The sun had already set.

24 Q. Okay. Had you been flying towards the sunset prior to that,
25 or where was the sun relative to the aircraft?

1 A. The sun set at approximately our 9:30 position as we were
2 taking off. We were flying about a 3-3-8 heading, so it was out
3 our quartering left front. Or it was already below the horizon,
4 well below.

5 Q. Are you wearing -- I know you're wearing a helmet. The NVGs,
6 you said, were up at the time. Were you wearing -- was there a
7 visor that was down?

8 A. No.

9 Q. Do you wear sunglasses?

10 A. I wear glasses.

11 Q. You wear just regular glasses for vision?

12 A. Correct.

13 Q. Okay. And you had them on?

14 A. Yes.

15 Q. Do you ever wear contacts?

16 A. No.

17 Q. Are you required to wear them for flying?

18 A. Yes.

19 Q. Just so I'm clear, when you turned the cockpit -- the
20 instrument panel lighting out of the off position, does that dim
21 the caution and warning lights?

22 A. It does. Once it leaves that off position they automatically
23 go to full dim despite the adjustment on the instrument panel
24 lighting.

25 Q. Okay. What training did you receive for this helicopter when

1 you first came to Air Methods and you were training on this?

2 A. I did the standard aircraft qualification, which was
3 required, I think, 10 hours, both day, night and NVG. So I can't
4 remember the hour breakdown. That's for the check pilots to worry
5 about, but I completed that.

6 Q. And this training was through Air Methods?

7 A. Yes.

8 Q. And did you receive this training in 2014, when you said you
9 started with Air Methods?

10 A. May of 2014.

11 Q. And when you trained in 2014, that was on this type
12 helicopter but did not have the NVG mod?

13 A. That's correct.

14 Q. When the mod came -- when the helicopter came with the mod,
15 did you receive any additional training or was there anything that
16 was required when the mod --

17 A. No, there's no requirement for the additional training for
18 that, those type mods.

19 Q. Was there information that you recall being shared from Air
20 Methods about what the difference was?

21 A. No, other than Keith at the time went over and said, hey,
22 this is a different mod, so --

23 Q. Okay. Was there any concern from either you or any of the
24 pilots about flying with this mod?

25 A. No. I'll answer for myself. For the other pilots, I can't

1 answer, but for myself no.

2 Q. You don't recall anybody discussing concerns that they might
3 have had?

4 A. No.

5 Q. With the pitch up of the aircraft as the event sort of
6 started to unfold, was there -- did you hear any noises or
7 anything? I know you said you didn't hear an aural alert from a
8 master caution.

9 A. The only thing that I noticed was, as it pitched up and
10 started feeling like it was going over, I did notice a rotor
11 decay.

12 Q. And I can't recall if you said this in your statement or not,
13 but was there -- did you notice one engine decaying before the
14 other? Were they decaying at the same time?

15 A. When I scanned the instruments, the only two things I saw
16 were the two N1s. Both N1s were reading exactly the same. Well,
17 I won't -- exactly, they were both below 40. Whether one was 41,
18 one was -- yeah, I can't tell you. They were both below 40
19 percent.

20 Q. Okay. When you were departing Cape Girardeau was there
21 any -- were you rushing? Was there anything -- any time pressure
22 to get off?

23 A. There was no time pressure. The patient was not in a
24 critical mode where we had to rush anything. It was standard
25 "take my time" run-up. There was no pressure to fly.

1 DR. WILSON: I'm going to have some more questions a little
2 bit later, but I'll let -- open it up to other folks to ask
3 questions. So let's have Jim ask questions first because in case
4 he has to jump off for his presentation.

5 Jim, do you have any questions for Duayne?

6 BY MR. SILLIMAN:

7 Q. Just a couple. You just said that concerning the engines and
8 the sound of the engines, you'd said you looked down and both
9 engines were at 40. So what should they normally be when you're
10 in cruise flight? What should the N1s be?

11 A. Normally, the N1 speed will be up around 96 to 97 percent for
12 that condition of flight. And anything below about a 69 percent
13 on the N1 is going to be an engine failure. The engines
14 automatically go into what we call a rollback basically. It's
15 just, they're not sustainable with less than 69 percent, to my
16 knowledge.

17 Q. And what did the engines sound like when you -- yeah, so what
18 did the engines sound like at that point?

19 A. There was just a reduction in engine noise and a decrease in
20 the audible rotor at that point.

21 Q. And was there a difference as far as timing or did they both
22 sound like they were coming down at the same time, or was there a
23 time delay between one engine coming down and the second engine
24 coming down?

25 A. If there was a delay, I did not notice it. The only thing I

1 was reacting to at that point was the N1s and the caution lights.

2 So I did not notice any delay between the two.

3 Q. So if I'm understanding you right, then, so you're in cruise
4 flight and then suddenly both engines experience a rollback
5 essentially simultaneously? Is that what you're -- is that the
6 way that you'd describe --

7 A. To the best of my knowledge, yes.

8 Q. And both engines sound like they're coming offline at the
9 same time, then --

10 A. Correct.

11 Q. -- in the noise?

12 A. Well, I don't know if it was one engine coming down. All I
13 know is there was a reduction of engine noise and both N1s were
14 indicating what they were indicating, which I would presume that
15 both engines were decreasing in noise at the same time.

16 Q. Okay. What was your reaction as far as -- I mean, the time
17 frame from the engine noise, seeing the N1, and entering the
18 autorotation, what kind of time frame are you looking at there for
19 your reaction time, do you think?

20 A. Before I could -- when I noticed the N1s, I automatically
21 looked down to the caution panel, saw the lights indicated in my
22 statement. I mentioned to the crew, I says it looks like we're
23 having an engine failure. Before I could react to anything, the
24 aircraft abruptly pitched up, and then I went into my mode. So
25 we're talking milliseconds to maybe a couple seconds, max.

1 Q. So were you reacting while you were -- entering the auto
2 while you were talking to the crewmembers, or did you enter the
3 auto after you talked to crewmembers?

4 A. As I mentioned that we were having an engine failure, I began
5 to reduce the collective to set up my power for a single engine
6 failure because at that time that's all that was indicated by the
7 caution lights. That's what I thought we had even though both N1s
8 were below 40 percent.

9 So I was setting myself up for a single engine failure when
10 all of a sudden the aircraft pitched up abruptly. And at that
11 point my decision was, okay, things are going abruptly awry; this
12 aircraft is going to the ground once I get it recovered. So
13 that's when we did -- that's when I did my control manipulation,
14 got the aircraft entered into an autorotative descent.

15 Q. So the engines were coming down at 40 percent and you kind
16 of -- and then you said you thought you were in a single eng and
17 you looked at the lights and you thought there was one engine
18 going down, but you saw both engines at 40 percent and you thought
19 it was a single engine failure because of the lights?

20 A. I reacted as if it was a single engine failure first, until
21 we had the abrupt maneuver when it pitched up, and then I just
22 went ahead and entered an autorotative descent at that point.
23 There was no power on the engines, to my recollection, but I
24 couldn't verify that because my focus was then outside to land the
25 aircraft.

1 Q. Sure. What were your procedures that you were going to start
2 for your single engine failure procedures? What were they -- what
3 was your thinking about those procedures, what you --

4 A. Well, normally you're setting up for an OEI condition, which
5 one engine inoperative, basically you're reducing the collective
6 to maintain your torque, you're getting your airspeed back. I
7 didn't have time to even adjust the flight controls at that point,
8 but I was getting ready to initiate that.

9 Q. So what did you do with the collective to set up yourself for
10 a one engine inoperative? I mean --

11 A. I didn't have time to do anything, because once I analyzed,
12 saw the lights, the aircraft abruptly pitched up. I announced --
13 I did announce that, hey, I think we've got an engine failure. As
14 soon as I announced that, the aircraft pitched up. And at that
15 point I was reacting to that more than I was the engine failure.

16 Q. Okay. And kind of going back to that time frame thing,
17 you're thinking of one engine inoperative to the pitch up to
18 entering the auto. Again, what kind of time frame were you
19 looking at there?

20 A. Seconds, if that long.

21 Q. Do you think 1 second or --

22 A. I couldn't tell you. At that point I think your brain goes
23 into micro mode and a microsecond sounds like an hour. So I
24 couldn't tell you how long.

25 Q. Okay. So the engines, it sounds like they dropped offline

1 simultaneously, the engines are going down past 40 percent. You
2 started reacting and you're thinking that -- you saw the lights,
3 you thought it was a single engine failure. You started lowering
4 -- or maybe lowering the collective. It pitched nose up, then you
5 enter the auto as you're telling people that it's -- that you have
6 engine failures or something. Is that about the right synopsis on
7 that, and it all takes about 1 or 2 seconds to do that, or --

8 A. Correct. To the best of my recollection.

9 Q. Okay. Okay. And the time from when the nose -- I think you
10 said you had -- you looked at or something happened, you heard a
11 noise or you looked at the guy -- the crewmember in the left seat
12 and was like "What was that?" How many seconds -- I mean, when
13 was that and how -- what was that; what caused you to look at each
14 other and how much time frame between?

15 A. Okay. The aircraft yawed suddenly left with an abrupt upward
16 thrust, almost like we hit some wind shear. Due to the calm
17 nature of the air up to that point, I looked -- probably we looked
18 at each other for maybe a second, 2 seconds, then I came back,
19 scanned the instrument panel, saw the N1s were at 40 percent; that
20 was probably a second. Looked down, saw the lights; that was
21 probably another second. And I said, hey, it looks like we've got
22 an engine failure. At the end of that -- which was probably
23 another second. At the end of that, I didn't even finish that
24 statement, the aircraft abruptly pitched up.

25 So we're looking at what, 3, 4, 5 seconds. I don't know.

1 Time at that point became irrelative.

2 Q. All right. And the yaw to the left that you initially --
3 initially it was yaw to the left, correct, that got your
4 attention. How many degrees to the left do you think it went?

5 A. Maybe 5 to 7 degrees, 10 degrees. It's hard to say. I'm
6 just guessing there.

7 Q. And the pitch up, what kind of -- do you have any idea the
8 degree of pitch up?

9 A. The degree of pitch up was enough that I could not see
10 anything black on the attitude indicator. All I saw was blue.

11 Q. I'm sorry. I couldn't quite hear that. What did you see?

12 A. I said the pitch up was abrupt and fast enough that as I
13 glanced at the attitude indicator as it was coming up I saw
14 nothing black on the attitude indicator. All I saw was blue.

15 Q. So you're talking like 25 degrees nose up or something?

16 A. I'm sure it was higher than that, because it felt, the
17 aircraft -- I was at a point to where -- I don't know how to
18 describe this. Have you ever been in a circumstance where you're
19 going along and you start skidding in your car and you know that
20 if you don't get it corrected, that if you take it any longer, the
21 car is going to flip on you? Then that's where we were at in the
22 pitch up. It was at that point I knew that if the aircraft went
23 any farther, it would be unrecoverable. And that's where I did my
24 best to recover the aircraft. I don't know if that makes sense,
25 but it was more of the gut feeling, flying by the seat of the

1 pants at that point.

2 Q. Okay. So you get to 40 percent, you think it's a single
3 engine, you start doing that procedure, and then the nose pitches,
4 and it sounds like what I would describe as an extreme nose up if
5 you're 25 or greater nose pitch up. Is that about how you'd
6 describe it, extreme nose up then, or --

7 A. Oh, yes.

8 Q. And did it roll to the right at the same time?

9 A. There was a slight roll to the right. And in my correction I
10 just went with that because that was the quickest way. Rather
11 than fight it and try to get it back to a level attitude, I just
12 rolled with it because it got the nose pointed toward the earth
13 quickest.

14 Q. And were you lowering the collective at the same time?

15 A. I immediately put in right forward cyclic, right pedal, and
16 reduced the collective to full down.

17 Q. And do you recall what it sounded like in the rotor RPM, or
18 did you ever get the low rotor RPM during that time?

19 A. I don't recall ever hearing an audio signal for low rotor
20 RPM. I just know that I could hear the rotor decreasing.

21 Q. How did you get your -- did you ever get your rotor RPM back
22 up?

23 A. I did. Once we came into a steady state configuration during
24 the autorotation, the rotor RPM did come back up.

25 Q. Okay. Any idea -- in your experience, any ideas of what

1 caused all that?

2 A. No. I have no clue. Even though I've gone over it and the
3 systems in my head, I can't -- I don't understand what's caused
4 those abrupt maneuvers other than maybe the yaw left with the
5 engine failures. But other than -- the other pitch attitude, I
6 don't have a clue.

7 MR. SILLIMAN: Katherine, that's all my questions at this
8 time.

9 DR. WILSON: Okay. Thanks, Jim.

10 Chich?

11 MR. SILLIMAN: Okay. Thanks.

12 BY MR. SHIN:

13 Q. Going back to the altered start-up procedure that you
14 discussed, can you go through a step-by-step? You had mentioned
15 with the number 1 engine, the number 1 generator, and then the
16 transfer pumps, but what about the prime pumps? I don't know if
17 you had mentioned the prime pumps 1 and 2, so if you could start,
18 let's say, at the start procedure before any of the engines start
19 up. Could you go step by step on your switchology?

20 A. Sure. My standard switchology was to start with my position
21 lights, my anti-collision lights, make sure that they were on.
22 Then I moved to the prime pumps, turned them on. I moved to my
23 battery switch, turned it on. I turned the bus ties on.

24 I then turned the inverters on, came back across the center
25 console, turned my artificial horizon switch on, armed the

1 emergency exit lights, ensured that the -- and then did my
2 annunciator panel or the caution panel test to make sure all the
3 lights would come on at that point, made sure the SPAS was in the
4 off position, the SPAS switch.

5 I then immediately come up to the far left top of the
6 instrument panel, checked my mast moment indicator; reset it and
7 do the calibration test on it. I come across, do my fire control
8 -- or my fire test lights to make sure that they're operative.

9 From there, I come up, make sure that the cold start switch
10 is in the off position, make sure the hydraulic switch is in the
11 neutral position, my power levers are in the off position. The
12 last thing I checked was the chip detectors on the overhead panel
13 on the side to make sure the continuity check was complete on
14 that. And then I went into engine start, after verifying it with
15 the checklist.

16 Q. Then when you start each engine, you would start the number 1
17 engine, and then turn on the number 1 generator, and then turn on
18 the forward transfer pump?

19 A. Correct.

20 Q. And then you would turn off the number 1 prime pump?

21 A. No. I did not touch the prime pumps until both generators
22 were online, both transfer pumps were online. Usually I start the
23 number 1 engine, turn on the number 1 generator, turn on the
24 forward transfer pump, do the hydraulic check, turn on the number
25 -- or start the number 2 engine, turn on the number 2 generator,

1 turn on the aft transfer pump. Then immediately I go over and
2 turn the prime pumps off at that point, once both transfer pumps
3 are on.

4 Q. Going back to the event where you had the abnormal pitch
5 attitudes, the pitch and roll attitudes, when you felt the
6 helicopter pitch up; did you feel the cyclic going back towards
7 you, towards your lap? Do you typically have your hand on the
8 cyclic?

9 A. I did have my hand on the cyclic but, no, I don't recall it
10 putting any input or feedback from the flight controls.

11 Q. And then during the recovery you did a forward right?

12 A. I right forward cyclic, because the aircraft had come up,
13 kind of came up, pitched up and rolled slightly to the right.
14 Keeping that momentum, I put the right forward cyclic in to bring
15 that nose back down toward the earth, kicked in the right pedal so
16 the tail rotor would assist me in getting that pointed back down
17 to the earth, and then I tried to level out the aircraft, reducing
18 the collective to make sure that we didn't continue to pitch over.

19 Q. Did you feel any resistance with the cyclic?

20 A. No.

21 Q. Okay. You had mentioned prior to the day of the accident you
22 were working for about 10 days straight. You were covering for
23 each other for EC145 training?

24 A. Yeah, we were transitioning. So we had just received the
25 145s. They had scheduled the training for all eight crewmembers

1 during that period of time. So what we were doing was we were
2 covering each other. So I was working basically two dayshifts in
3 a row of 7 days. I had just finished my tenth day the day prior,
4 had 24 hours off, and then was coming on my regular nightshift
5 that I was scheduled for.

6 Q. And did you take any of the EC145 training prior to the
7 accident?

8 A. I did.

9 Q. Can you go over some of the differences between the EC145
10 startup and the BK117 startup? The BK117 -- this was a B-2?

11 A. Correct.

12 Q. The startup procedure for both?

13 A. They're not even comparable.

14 Q. Are there transfer pumps and prime pumps on the EC145?

15 A. There are.

16 Q. Are they manipulated during the startup process?

17 A. They are, but at a different point in the process than in the
18 BK.

19 Q. Was this class a class in a classroom essentially, the
20 training?

21 A. Well, we had 3 days -- or 2½ days of ground training followed
22 by a flight portion of in-aircraft qualification.

23 Q. And how much of the ground training did you go through?

24 A. I went through the complete training.

25 Q. Okay.

1 A. Both ground and flight, which was approximately -- I can't
2 remember the exact dates, but it was anywhere from 5 to 8 days
3 prior to -- well, no, it was farther than that because I had been
4 working days for 10 days. So it was earlier in the month of June,
5 so mid-June.

6 Q. And did that training include any sort of NVIS portion?

7 A. Yes. Yes.

8 Q. Can you go a little bit into what was covered in the NVIS
9 training for the 145?

10 A. Standard switchology run-up, and then all the flight
11 maneuvers required for qualification during the EC145 training.

12 Q. And does the EC145 have the cockpit instrument lighting dials
13 like the BK117 B-2 does?

14 A. No, the switchology is different.

15 Q. Can you expand on how it's different? I'm not so familiar
16 with the 145.

17 A. Well, the problem is, is I can tell you it's different in
18 that it's different -- the lighting is in a different position and
19 the switchology is different, but as far as my familiarity with
20 that, I don't have enough familiarity with it yet to be able to
21 describe that to you. Because we just went through the training
22 and I haven't flown that aircraft for 2 months, so no, I really
23 can't answer that question with any semblance of --

24 Q. And then with your previous flight experience with the CH-47,
25 did you fly night vision goggles with that aircraft?

1 A. Yes.

2 Q. Can you go over some of those differences in terms of
3 instrument lighting and how adjusting instrument lighting affects
4 the caution warning panel lighting?

5 A. Yeah, we actually had a dim switch in the CH-47 which we
6 could dim the caution panel with once the lighting configuration
7 got to where it was too bright under the goggles, so it wouldn't
8 interfere with the goggles. It was a different vintage of
9 aircraft lighting. A lot of the lighting now doesn't interfere
10 with the goggles on aircraft, on the modern aircraft. But on the
11 CH-47, when they were still in that transition, there was still an
12 actual physical dim switch to be able to select dim on the caution
13 panel.

14 Q. And is that true for the instrument panel, as well, for each
15 instrument or --

16 A. No, they had rheostat adjustment on those to where you could
17 turn them down. You're going back years now, so --

18 MR. SHIN: I think that's all I have for now.

19 DR. WILSON: Okay. Mike, do you have any questions?

20 BY MR. STACEY:

21 Q. Jason sent me a bunch of questions, but everybody's already
22 asked them, so good questions. The only thing maybe you can give
23 us some clarity on is -- and maybe I missed it, do you remember
24 any rotor RPM or -- when the pitch-up initially started, do you
25 remember any rotor RPM? I think you said you had some degradation

1 in rotor, you could hear that?

2 A. That was more audio. I didn't hear the audio tone that would
3 indicate low rotor. I don't recall that. I don't recall hearing
4 any of the audio, aural sounds. I just remember hearing, as I
5 came up, the rotors begin to decay. And you just kind of hear
6 that, you know, you hear that woo, woo, woo, woo, woo. And that's
7 all I recall.

8 Q. That was all for clarity. Thank you.

9 BY DR. WILSON:

10 Q. All right. I do have a few follow-ups, and then also some
11 additional questions that I didn't ask you during the first round.
12 So you finished the EC145 training, you said, in mid-June, and
13 then you worked the 10 days straight. During that 10 days that
14 you were on duty, were you only flying the BK117 or were you also
15 flying the EC145?

16 A. Just the BK. Just this particular aircraft, November-238-
17 Bravo-Kilo. I take that back. We did have 365-Charlie-Hotel as a
18 backup because they were doing maintenance on 238-Bravo-Kilo
19 during that period of time, those last 3 days of that 10 days. So
20 it was down for maintenance at that point.

21 Q. And 365-Charlie-Hotel -- is that what you said?

22 A. Correct.

23 Q. Is that also a BK117?

24 A. Yes, it's a B-1.

25 Q. Okay, but a B-1. How does that differ from the B-2,

1 particularly in terms of the instrument lighting switches?

2 A. It had the different mod, so we had a separate NVG lighting
3 system on it which did not necessarily -- it had still the dim
4 switches, but we didn't have to turn on the instrument panel
5 lights because it had a separate NVG panel lighting system which
6 we could use as an alternative.

7 Q. And in terms of the switchology for the pumps, the fuel
8 pumps, was that the same?

9 A. It's all the same.

10 Q. The training that you received for the BK117, anything you
11 wish you had more training on?

12 A. No. It was thorough enough. It was thorough enough to get
13 you familiar enough to go out and learn and to be able to fly the
14 aircraft safely.

15 Q. So after you went through the initial training, were you
16 paired with a second pilot for a while until you built up some
17 amount of time?

18 A. I flew with Keith for about 5 hours just as a local area
19 orientation.

20 Q. In terms of the mod for the night vision system, did you wish
21 that there was training on that? Did you think that Keith telling
22 you that there was this new mod, was that ample guidance on --

23 A. At that point the mod on 238 had not been introduced to me
24 because it wasn't with the aircraft. We had the mod with the
25 separate panel lighting so we could select that. That was in

1 November-150-Kilo-Fox.

2 Q. I thought I recalled you saying that once you got the mod on
3 the particular accident helicopter that Keith just mentioned, that
4 there was a mod on it.

5 A. Correct. Correct.

6 Q. So at that point did you feel like you needed more guidance
7 or did you feel like the --

8 A. No, the caution was that he just pointed out the differences
9 between the two mods.

10 Q. And you felt that that was sufficient?

11 A. I did.

12 Q. Okay. Does the Farmington base have a pilots union?

13 A. All of Air Methods has a pilots union.

14 Q. Okay. Are you a part of that pilots union?

15 A. That is a mandatory requirement. They take out our dues
16 whether we're a member or not, so guess what? Might as well
17 become a member.

18 Q. Do you play an active role in the union?

19 A. No.

20 Q. No. Okay. So I understand that we're going back a couple of
21 months now, a month and a half or so since the accident. When you
22 say that you were on for those 10 days, I'm trying to get an
23 understanding of what your activities were in the several days
24 before the accident.

25 A. Basically I was on dayshift, which meant I worked a 12-hour

1 period, extendable up to 14, from 7 in the morning till 1900 in
2 the evening, which could be extendable to 19 -- or to 2100 should
3 we have a flight, for unplanned delays go into that period.

4 Q. Do you recall during those 10 days whether you had to be
5 extended past --

6 A. No.

7 Q. Okay. No you don't recall or no you did not have to?

8 A. I don't recall, but I do not believe I had to.

9 Q. Okay. And what is your routine after coming off duty?

10 A. Usually I close out, debrief the -- or in-brief the other
11 pilot coming on shift, and then I depart and go home. I usually
12 have a light dinner and do my normal routine. Usually, if I'm on
13 dayshift, I usually try to go to bed between 10:30 -- between 10
14 and 10:30 so that I can wake up at about 5, 5:30 to go to work the
15 next morning.

16 Q. Do you recall particularly in the 2 or 3 days before the
17 accident anything different about that schedule?

18 A. No.

19 Q. Do you recall if you had any alcohol any of the evenings?

20 A. I have not drank since I was in high school. Not one drop.
21 Nor do I smoke.

22 Q. When you wake up in the morning, do you typically have
23 breakfast or coffee?

24 A. No, I usually have a probiotic drink and a light fruit in the
25 morning before I go to work.

1 Q. Do you recall in the 3 days prior to the accident whether you
2 had any problems either falling asleep or staying asleep?

3 A. No.

4 Q. Any excessive tiredness?

5 A. No.

6 Q. Do you nap during the day?

7 A. Once in a great while when I'm on shift and there's nothing
8 going, I'll go into the room and just take a quick nap.

9 Q. Do you recall if you napped during those 10 days?

10 A. I'm sure I did. I'm sure I did, but to go back hour by hour,
11 no, I couldn't tell you, not with any certainty.

12 Q. When you're not on duty, what are your typical times you go
13 to bed and wake up?

14 A. If I'm on dayshift, I usually go to bed, like I said, between
15 10, 10:30, and usually wake up about 5, 5:10, somewhere right in
16 there, to get ready for the day's activities. Prior to that, in
17 the 3 hours from the time I get off work to the time I go to bed,
18 it's usually just taking care of the family duties, walking the
19 dogs, feeding them, whatever.

20 If I'm on nightshift, I usually come home after shift in the
21 morning, I usually try to retire to bed about 8 a.m. and usually
22 sleep until about 14- to 1500, depending on the night's
23 activities. Get up, do the standard family routine stuff, and
24 then get ready for work.

25 Q. What about when you're not working?

1 A. It's pretty mundane. My wife and I come up to St. Louis
2 quite often, or I go visit Keith.

3 Q. But in terms of your sleep and wake times?

4 A. Oh, they're standard, yeah.

5 Q. Okay. So like the 10, 10:30 and getting up at 5?

6 A. Yeah. Yeah. That's pretty routine.

7 Q. The 10 days on that you worked, is that pretty typical?

8 A. It is typical only when we're short pilots or there's other
9 things that are going on to where we have to cover the other pilot
10 positions. And at our base we're pretty good about covering each
11 other. And so, because two of our other pilots were going through
12 the training, I and another pilot were covering their normal
13 shifts, and that's why the 10 days on. I came off my shift,
14 covered their shift while they were going through the training.

15 Q. And the 24 hours off that you had, is that required per Air
16 Methods and/or the regulations, that you have 24 hours off before
17 switching to nightshift?

18 A. No, I don't recall any requirement, but I do know that we
19 have to have 10 hours off from one duty period before we can
20 report to the next duty period. The 24 hours is just a good
21 transition period where we have the time to make that transition
22 from the day period to the night period and reset our circadian
23 rhythm.

24 Q. Have you been diagnosed with a sleep disorder?

25 A. I have.

- 1 Q. Do you currently use anything like a CPAP machine or --
- 2 A. I do.
- 3 Q. -- take any medication? Okay.
- 4 A. I do not take medication but I do use a CPAP.
- 5 Q. No medication for a sleep disorder or no medication in
- 6 general?
- 7 A. If I take a pill, I've got to be pretty darn sick. I don't
- 8 even take aspirin. And I do have a special issuance for the CPAP,
- 9 so that's all cleared by the FAA.
- 10 Q. Any problems since using the CPAP with sleeping or feeling
- 11 rested?
- 12 A. Actually, I can't sleep without it.
- 13 Q. Ever been involved in another accident or incident?
- 14 A. The answer to that is yes. Many years ago, in a CH-47 in
- 15 Panama.
- 16 Q. The CliffsNotes version of the circumstances surrounding
- 17 that?
- 18 A. A fuel problem, a fuel transfer problem resulted in a dual
- 19 engine failure. Landed with minimal damage to the aircraft.
- 20 Q. Was it a system failure or --
- 21 A. A system failure.
- 22 Q. At Air Methods have you received any commendations or
- 23 attaboys for performance?
- 24 A. No.
- 25 Q. Any disciplinary actions?

- 1 A. No, to date.
- 2 Q. In the past -- in the 12 months prior to the accident, any
3 major changes in your health, either good or bad?
- 4 A. No.
- 5 Q. Any major changes in your financial situation?
- 6 A. No.
- 7 Q. How about in your personal life?
- 8 A. No.
- 9 Q. Separation, divorce, death of a family member?
- 10 A. No.
- 11 Q. And how would you rate your health?
- 12 A. Fairly healthy. I could lose a few pounds, but --
- 13 Q. Can't we all.
- 14 A. But my doc says I'm pretty healthy. I don't have high
15 cholesterol. I don't have high blood pressure except for the day
16 of the accident.
- 17 Q. Did you do a drug or alcohol screening after the accident?
- 18 A. Yes, I did, the day after the accident.
- 19 Q. So we know that you wear glasses. Any issue with color
20 vision?
- 21 A. No.
- 22 Q. How about any issues with your hearing?
- 23 A. No. I tried to get that as a disability and they said you
24 have perfect hearing, that's not going to work.
- 25 Q. You said you don't take any -- just to clarify, no

1 prescription or non-prescription medication, correct?

2 A. (No audible response.)

3 Q. All right.

4 A. At the time, no. Only when the doctor says I can.

5 Q. Okay. Any use of illicit drugs?

6 A. No. Let me say that out loud. No.

7 Q. We have to ask. How do you like working for Air Methods?

8 A. I enjoy it. I enjoy what we do. I enjoy the team.

9 Q. Ever feel like there's any external pressures from the

10 company to take a flight, something that you're not comfortable

11 with?

12 A. Quite the opposite.

13 Q. How about any external pressures from your personal life that

14 impacts performance on the job?

15 A. No.

16 Q. Any confrontations with the crew that you were flying with

17 that day?

18 A. I had the best team ever, so no. It was great.

19 Q. Okay. When you were doing your checklist procedures before

20 departing Cape Girardeau, any distractions, any interruptions to

21 the procedure or flows that you were doing?

22 A. No. In fact, the crew knows that once I start it's sterile

23 cockpit. They go into sterile cockpit mode. All talking ceases

24 until the aircraft's run up. The only talking that's encouraged

25 is if somebody is up front and they notice that something's not

1 right, they'll bring it up.

2 DR. WILSON: Okay. Jim, any final questions from you?

3 BY MR. SILLIMAN:

4 Q. Yeah, I've got a couple. One is kind of a repeat question
5 just to make sure I got it straight. You know, at the time that
6 the engines started rolling back until the time that you entered
7 the autorotation, again, I just want to be real clear on your
8 estimate on how long that took.

9 A. I'm guessing 2 to 5 seconds, max, if that long.

10 Q. Okay. And when you're waiting for the crew at Cape
11 Girardeau, how many -- about how long were you on the deck? What,
12 about 45 minutes, before the crew got back?

13 A. Roughly about 40 minutes.

14 Q. And what were you doing while the crew was attending to the
15 patient?

16 A. Once they had departed the aircraft and I got the aircraft
17 shut down, I got out, did my standard walk-around. I usually have
18 to do that because they leave all the doors open. And so I shut
19 the doors, checked the aircraft over per the requirement of Air
20 Methods, and then I began to fill out the paperwork for the next
21 leg of flight, re-computing my weight and balance and that kind of
22 stuff, and then I just waited for them to come out, at the
23 aircraft.

24 Q. Were you sitting in the helicopter during that time?

25 A. No, usually I sit --

1 Q. Did you stay at the helicopter during that time?

2 A. Usually I -- yeah, I stayed at the aircraft. I just sat on
3 the skid.

4 Q. Okay. And so you were working on the paperwork while sitting
5 on the skid, waiting for the crew to come back?

6 A. Correct.

7 Q. And do you kind of have the aircraft set up in the cockpit
8 just to, as soon as they come back --

9 A. No.

10 Q. How does that work?

11 A. No, usually I'll wait for them to get back, do my walk-around
12 before I start any switchology in the cockpit.

13 Q. And how long does it normally take to -- once the crew is
14 back in and they've got the patient in there, how long does it
15 normally take you to go through your cockpit checks before you
16 lift off?

17 A. Standard procedure, by the time I verify it with the
18 checklist, is usually 3 to 5 minutes.

19 Q. And do you have the cockpit set up to -- I don't know, like
20 do a hot start or do you have -- do you go through the whole, the
21 whole checklist?

22 A. Once I climb in the seat and get seatbelted in, I start from
23 the beginning of my flow and go through the checklist.

24 Q. Okay. So it's like the first start of the day rather than
25 like a hot start type situation?

1 A. Correct. I don't try to do the rush type starts.

2 Q. Okay. And so maybe I just missed it, but from the time you
3 get in the cockpit to the time you lift off, how much time would
4 you think would that be, going through your checklist?

5 A. I think I stated 3 to 5 minutes, somewhere like that.

6 Q. Okay. Okay. And you just -- do you lift off and do a hover
7 check at that point, then transition or --

8 A. No, I come up to a 3-foot hover, note my torque, make sure I
9 have the required 10 percent required power for takeoff, and then
10 I -- and if I don't, then I'll wait until I do, or I'll land and
11 burn off some fuel. But I didn't have to in that case because I
12 had the 10 percent.

13 Q. All right. And on that last flight, when you took off from
14 the helipad, you're confident that you had the transfer fuel
15 switches in the on position?

16 A. Yes, I am.

17 Q. And were the primer switches in the off position?

18 A. Yes.

19 MR. SILLIMAN: Okay. And, Katherine, I'm going to have to
20 drop off the line here, but that's the last questions I had. So I
21 really appreciate the opportunity to talk. Thank you for helping
22 us out here. But anyway, I'll drop off the line now, Katherine.

23 DR. WILSON: All right. Thanks, Jim.

24 MR. SILLIMAN: Thank you. Bye-bye.

25 DR. WILSON: Chich, any follow-ups?

1 BY MR. SHIN:

2 Q. Yeah, I have a couple follow-up questions. You had mentioned
3 before that prior to takeoff from Cape Girardeau that you had
4 turned the instrument lighting dials to -- from the off position
5 to the bright position?

6 A. Correct.

7 Q. Is it normal to turn all three of them to the bright position
8 or --

9 A. It doesn't matter because the one runs the co-pilot, the
10 one -- the left rheostat runs the co-pilot instrument panel, the
11 center rheostat runs the center instrument panel for the engine
12 and transmission instruments, and the right switch runs the
13 pilot's instrument panel. When you turn either the center
14 instrument panel or the pilot's instrument panel caution -- or
15 switches from the off position, it automatically dims the caution
16 panel.

17 Q. And then the co-pilot dial, what effect does that have?

18 A. It has nothing on the caution panel.

19 Q. And do you recall when specifically you had changed those
20 dials prior to takeoff?

21 A. Yeah. It was just prior to takeoff, just before I had done
22 my before-takeoff check.

23 Q. And that would have been after the annunciator lights would
24 have extinguished and the master caution light would have been
25 reset that the light dials would have been --

1 A. Yes.

2 Q. And is it standard for you to turn all three or them to the
3 bright position?

4 A. Usually I do, yes. Unless it's totally dark when I'm coming
5 out in the middle of the night; then I'll set it to an appropriate
6 level for the lighting condition. But at that point it was still
7 light in the day. I turned them full bright so that once it
8 transitioned, then I would reduce them as the night wore on.

9 Q. Okay. But it's standard for you to adjust all three of
10 them --

11 A. Yes.

12 Q. -- even though the co-pilot has no effect, you said? Okay.
13 Just for -- to make it clean and --

14 A. To me, they're my backup instrument. If everything goes
15 wrong over here, I can transition to the co-pilot's instruments
16 which indicate the same thing. So I want them lighted at the same
17 time.

18 Q. So typically all three dials would be at the same setting?

19 A. Yes.

20 Q. Okay. Any notable quirks or issues with the aircraft prior
21 to the accident flight that you can recall?

22 A. That's a loaded question. This aircraft had some particular
23 electrical nuances that could not be figured out or that displayed
24 themselves from time to time, usually as the temperatures got
25 colder.

1 Q. Can you expand upon the nuances?

2 A. One of the nuances was this had a load share. It had two
3 battery systems in it. And so the aircraft had a load share
4 system, where if you lost battery power on one system, it reduced
5 electrical requirements on the battery, on the other battery. Not
6 that that came into play here but, for instance, when we would
7 turn on the landing light, we would get a master caution and an
8 advisory light that the landing light was on, on the caution
9 panel. So that was one time where we would have to extinguish the
10 master caution.

11 The second time is when the temperatures usually drop below
12 40 degrees. Sometimes in our run-up, if I followed my standard
13 run-up, turn the number 1 generator on and then follow the
14 standard procedure for the number 2, you'd turn the number 2
15 generator on, the light -- whether the generator came on or
16 whether the light just didn't come on, the number 2 generator
17 light would not come on until you turned the number 1 generator
18 off and then turned the number 2 generator on. And then you could
19 turn the number 1 generator on and both lights would extinguish.
20 So it was those kind of nuances that even though we brought it up,
21 they were never corrected.

22 Q. And these sound like -- well, with the generator and then
23 with the batteries, those are more on-the-ground type of issues?

24 A. Yes.

25 Q. And then the landing light is something that you've

1 experienced in the air?

2 A. Oh, yeah.

3 Q. Okay.

4 A. Or anytime you turned on the landing light.

5 Q. Okay. Any issues in the air with respect to electrical
6 issues?

7 A. No.

8 Q. Had you had any previous experiences on the BK117 where the
9 transfer pumps were on but fuel was not transferring from the main
10 to the supply tanks?

11 A. To my recollection, no. Which in my statement is -- if you
12 read my statement, I didn't have any problems this time because
13 fuel was transferring between the time of takeoff and the time I
14 did my check. So I'm not sure what happened. That's one of the
15 reasons I do my check.

16 Q. Do you have any issues with seeing the caution warning
17 annunciations when there is ambient lighting like at the time of
18 the accident or at the time of takeoff?

19 A. No. Once those lights illuminated they were bright enough
20 that I could clearly see. The curious thing was that not all the
21 lights -- if I truly had an engine failure, not all of the lights
22 associated with an engine failure had illuminated. So had I had
23 just a single engine failure I would have expected to see a
24 minimum of four caution lights: an engine low, a fuel pressure
25 caution light, an engine oil pressure caution light, and a

1 generator caution light. But as I stated in my statement, the
2 only three lights that I saw was an engine low, a generator, and
3 the battery discharge. No other lights were on at that point.

4 Q. Did you notice the master caution light illuminate at that
5 time?

6 A. No, I did not notice.

7 Q. Did you look at the master caution light to see if --

8 A. No, I did not.

9 Q. Okay.

10 A. I would presume it did, but that wasn't my focus at the
11 point.

12 Q. And the lighting of those three lights on the annunciator
13 panel is what drew your attention or the event drew your
14 attention?

15 A. The event drew my attention to the engine instruments. The
16 engine instrument indications drew my attention to the caution
17 panel.

18 MR. SHIN: That's all I have for that. Actually, I think
19 that's all I have, period.

20 DR. WILSON: Okay. Mike?

21 MR. STACEY: I have nothing to follow up with.

22 DR. WILSON: All right. Thank you for the information that
23 you've given us. It's been really helpful. Is there anything
24 that you think we should have asked you that we didn't ask you
25 about?

1 MR. THOMAS: The minimum questions is okay with me.

2 DR. WILSON: Okay. Any other insights that you might have
3 into what you think might have caused the anomaly that you
4 experienced?

5 MR. THOMAS: No. I have gone over it a thousand times and
6 have looked at the systems. I just do not comprehend what
7 happened.

8 DR. WILSON: You have my contact information.

9 MR. THOMAS: I do.

10 DR. WILSON: If anything comes up, if you think of anything,
11 don't hesitate to reach out to me.

12 MR. THOMAS: Okay.

13 DR. WILSON: I'll be happy to, you know, discuss what I can
14 with you or answer any questions or take any additional
15 information that you may have.

16 MR. THOMAS: Okay.

17 (Whereupon, the interview was concluded.)

18

19

20

21

22

23

24

25

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF: AIR METHODS HELICOPTER CRASH
 PERRYVILLE, MISSOURI
 JULY 1, 2017
 Interview of Duayne Thomas

ACCIDENT NO.: CEN17LA252

PLACE: St. Louis, Missouri

DATE: September 20, 2017

was held according to the record, and that this is the original,
complete, true and accurate transcript which has been transcribed
to the best of my skill and ability.


Lisa Fuerstenberg
Transcriber