

Weather Study – Attachment 1

Interview with Honolulu National Weather Service employees

METEOROLOGY

ANC20MA010

*Submitted by: Mike Richards
NTSB, AS-30*

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

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Investigation of: *

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AIRBUS AS350 B2 HELICOPTER *

CRASH NEAR LIHUE, HAWAII, *

ON DECEMBER 26, 2019 *

*

Accident No.: ANC20MA010

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Interviews of: JOHN BRAVENDER, Warning Coordination Meteorologist
National Weather Service, Weather Forecast Office

ROBERT BALLARD, Science and Operations Officer
National Weather Service, Weather Forecast Office

Via telephone

Monday,
March 23, 2020

APPEARANCES:

MICHAEL RICHARDS, Air Safety Investigator
National Transportation Safety Board

MATTHEW FOSTER, Aviation Focal Point
National Weather Service, Honolulu Forecast Office

TINA STALL, Assistant Aviation Focal Point
National Weather Service, Honolulu Forecast Office

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I N T E R V I E W

(10:02 a.m.)

MR. RICHARDS: We're going on the record now. It's about 10:02 a.m., Hawaii Standard Time, on March 23, 2020, and this interview is being conducted by telephone. My name is Mike Richards, R-i-c-h-a-r-d-s, and I'm an Air Safety Investigator with the National Transportation Safety Board.

This interview is related to a helicopter accident that occurred on the island of Kauai on December 26, 2019. I am here with several people from the National Weather Service's Weather Forecast Office in Honolulu, Hawaii.

And let's start with John. John, would you please state your name, and spell your last name?

MR. BRAVENDER: Sure. It's John, J-o-h-n, B-r-a-v-e-n-d-e-r. And I'm the Warning Coordination Meteorologist at WFO Honolulu.

MR. RICHARDS: Thanks. And how long have you been -- how long have you worked for the Weather Service?

MR. BRAVENDER: Weather Service, I've worked for going on almost 21 years now. In Honolulu, since 2006. I came here in 2006 as a forecaster. And as WCM, as a manager, since 2017.

MR. RICHARDS: Thanks. And are you aware of and okay with the fact that this conversation is being recorded?

MR. BRAVENDER: Yeah. I am aware, and I am okay with it.

MR. RICHARDS: Thanks. So, Bob, same questions for you. Would you please state your name and spell your last name?

1 MR. BALLARD: Yes. My name is Robert Ballard, and that's
2 Bravo-Alpha-Lima-Lima-Alpha-Romeo-Delta.

3 MR. RICHARDS: And, Bob, what --

4 MR. BALLARD: And I am the Science and -- go ahead. I'm
5 sorry.

6 MR. RICHARDS: No. I cut you off. I was going to ask, what
7 is your current position?

8 MR. BALLARD: My current position is Science and Operations
9 Officer.

10 MR. RICHARDS: And how long have you worked for the Weather
11 Service?

12 MR. BALLARD: I have worked for the Weather Service since
13 1993, so 20 years.

14 MR. RICHARDS: Okay. And are you aware of and okay with the
15 fact that this conversation is being recorded?

16 MR. BALLARD: I am aware of and I am okay with that.

17 MR. RICHARDS: Thank you.

18 And for the record, their representatives have not joined the
19 call at this point. If they do, we'll ask them to introduce
20 themselves as well.

21 Okay. So --

22 MR. BRAVENDER: They've come in, in the background there.

23 MR. FOSTER: Yes. We have myself and Tina are both here on
24 the call.

25 MR. RICHARDS: Whoever is speaking, can you state your name

1 again?

2 MR. FOSTER: My name is Matthew Foster. I'm an Aviation
3 Focal Point at Honolulu Forecast Office.

4 MR. RICHARDS: Okay. And that's Foster, F-o-s-t-e-r?

5 MR. FOSTER: Yeah. It's F-o-s-t-e-r.

6 MR. RICHARDS: And who is with you on that call?

7 MR. FOSTER: I'll let her introduce herself here.

8 MR. RICHARDS: Okay.

9 MS. STALL: I'm Tina Stall, Sierra-Tango-Alpha-Lima-Lima.
10 And I'm Assistant Aviation Focal Point.

11 MR. RICHARDS: Okay. So all right, thank you very much. So,
12 John -- and if you guys would mute the phone. Thanks.

13 So John and Bob, we're doing this -- normally we do things
14 separately. I'm just trying to be a little more efficient since
15 you guys are both -- we consider subject matter experts here, I
16 suppose, for the operations and the climatology up in Hawaii.

17 So I'm not sure how you guys want to do this or who each
18 question should be directed to. So I'm just going to throw it
19 out, and we can go from there.

20 INTERVIEW OF JOHN BRAVENDER AND ROBERT BALLARD

21 MR. RICHARDS: My first basic question is because with the
22 accident we're focusing on the island of Kauai. Accident occurred
23 on the northwest portion of Kauai. Are you guys familiar with the
24 accident as much -- so much as it happened, and have you reviewed
25 any of the meteorology from that day?

1 MR. BALLARD: This is Bob. I am familiar with the accident,
2 and I did review the meteorology for that day.

3 MR. RICHARDS: Okay. Great. So in general, how do you guys
4 get surface information from that part of Kauai? In my review I
5 noticed I would call the observation density very high. So how
6 are you guys aware of conditions in real time up in that area just
7 in general?

8 MR. BALLARD: This is Bob again.

9 MR. RICHARDS: Sure.

10 MR. BALLARD: That's a difficult area. You're right that the
11 observation density is really slim. There is Barking Sands, BHBK,
12 on the western side of the island there at the western tip. But
13 then there's no observations really from the north side of the
14 island all the way around the east side until you get to Lihue.
15 So there's only two METAR sites on Kauai.

16 Of course, we have satellite imagery, but satellite imagery
17 doesn't give you information about visibility or cloud bases. And
18 then we have some limited radar coverage, but the radar imagery is
19 partially blocked when you get to the northern half of Kauai from
20 the terrain. You can only see some of the elevation angles which
21 are a little higher.

22 MR. RICHARDS: So how are you guys observing ceiling and
23 visibility? I mean, how are you getting, how are you getting
24 truth out there?

25 MR. BALLARD: Yeah. That's not an easy one. Sometimes you

1 can use satellite imagery as a proxy or you can use the METAR
2 sites as a proxy for what's going on. But it's not an easy task.
3 And it's a meteorologist's educated guess sometimes as to what's
4 going on in those data sparse areas like that.

5 MR. RICHARDS: Do you have cameras out there that you can --
6 I mean, private, government, private, any type of cameras that are
7 reliable that you can use?

8 MR. BALLARD: There are some areas like hotels and some
9 beaches that have webcams, but those are not necessarily ideal for
10 what we would use them for, for aviation. So not a lot. I don't
11 know if John wants to jump in there and has any ideas on that.

12 MR. BRAVENDER: Sure. I can jump in. It's -- there's
13 several cameras around the state, but they're usually surf-
14 focused. So a lot of them would be at a hotel looking out towards
15 the ocean, which would help us get an idea of maybe rain showers
16 moving in, but not with a clear reference as to cloud bases or
17 anything like that.

18 And because they're facing away from land, it doesn't give us
19 any indication of cloud heights or (indiscernible) or anything
20 like that, that would be occurring on the back side of the camera.

21 MR. RICHARDS: Okay. Do you guys have anybody -- do you guys
22 have any local folks out there that give you a call or you think
23 you can call them? Not necessarily at an airport, just anybody --
24 observer types, I guess, if you will.

25 MR. BRAVENDER: I guess -- this is John. We will -- we do

1 have two data collection offices. On Kauai we have one in Lihue.
2 And there are times where we'll call the meteorologist working --
3 or the technician working there to get an idea kind of -- we have
4 the ASOS from the airport, but also can call the staff onsite to
5 get additional information that might not be picked up by the
6 automated site. But besides that, we don't really have a spotter
7 network or anything that we would call from an aviation
8 standpoint.

9 MR. RICHARDS: Okay. Thanks for that. So if we go back to
10 December 26th -- Bob, you said you had reviewed the weather.
11 John, I'm not sure if you have. So there was a front moving
12 across the islands, I believe, from the northeast that stalled
13 over the Big Island, and the wind condition in Kauai, or over
14 Kauai, was mainly from the east-northeast, and there were also
15 some showers moving in from the northeast.

16 Was this pattern something that is normal and could be
17 expected for December -- or for the season, or was this something
18 more unusual?

19 MR. BALLARD: So this is Bob again. And just -- I just want
20 to make sure that we're clear. This is December 26th, correct?

21 MR. RICHARDS: Correct.

22 MR. BALLARD: Okay. So the wind flow on December 26th behind
23 that front was not east-northeast.

24 MR. RICHARDS: Oh, excuse me. I meant west. Sorry.

25 MR. BALLARD: It was from the northwest.

1 MR. RICHARDS: Sorry. My bad. West-northwest. Sorry.

2 MR. BALLARD: Yeah. So, for example, the winds at that point
3 at Barking Sands were from 320 degrees, 330 degrees, so northwest
4 or north-northwest, which is what you would expect to see in the
5 wake of that front. Stronger fronts that come through the islands
6 will turn our winds around for a time to the west or northwest or
7 even north sometimes.

8 MR. RICHARDS: Is frontal passage from the northwest common
9 in December?

10 MR. BALLARD: No, it's not super common. It happens a few
11 times a winter. I think the long-term average for fronts is
12 something like 8 to 10 coming down the island. So it's a, that's
13 a -- it's an unusual event, but certainly not unheard of by any
14 stretch for the wintertime in the main Hawaiian Islands.

15 MR. RICHARDS: Okay. What about IFR conditions in that part
16 of the island -- in that part of Kauai? Is it -- I mean, I think
17 I know the answer to this, but I just want to ask. Is it pretty
18 normal to have IFR conditions on that part of Kauai?

19 MR. BALLARD: The basic answer there is that we don't know.
20 Because we don't have any observations on that part of the island,
21 there's really no way to be able to tell when they are in VFR or
22 IFR per se.

23 Now, we know if you were to use Barking Sands as a proxy --
24 and this would work in some situations, but not in others -- that
25 on the west side of the islands, that IFR is relatively uncommon,

1 and when it occurs, it's usually pretty brief. But as far as when
2 you go clockwise around to the northwest side, we don't really
3 have any good climatology of aviation parameters on that part of
4 the island.

5 MR. RICHARDS: So how does that feed back into forecasting
6 skill? If you don't -- and I, and I'm going to tell you, I've
7 never been an operational meteorologist, so I've never done
8 professional forecasting. So please educate me as best you can
9 here.

10 How does -- when you don't have some type of verification of
11 what's existing -- and let's just talk in context of ceiling and
12 visibility here. How does that feed back into forecasting? I
13 mean, are you guys -- do you feel there is adequate skill in being
14 able to forecast ceiling and visibility for that area of the
15 island given the limitation of observations? How does that work
16 together?

17 MR. BALLARD: I mean, it's difficult. We -- you know, we're
18 tasked with providing an aviation forecast for the entire state
19 via our area forecast product and of course advisories via AIRMET.
20 You have, again, you have some proxies available to you. The
21 GOES-17 satellite imagery offers very high resolution imagery at
22 high time scales, and that's going to help you with some aspects
23 of the aviation forecasting.

24 Like I said, there's limited radar coverage up there, and
25 there are some places where the radar is not very helpful at all.

1 You do the best you can with the data that you have, but it's
2 pretty limited, and there are places where I would say that we're
3 making an educated guess as to what's going on in the absence of
4 having good ceiling and visibility data.

5 MR. BRAVENDER: This is John. I'll chime in, too, about
6 this.

7 MR. RICHARDS: Sure.

8 MR. BRAVENDER: Just from, I guess, a broader, operational
9 forecasting, how do we do it sort of thing, we forecasters will
10 kind of meld everything together. We have a few observations
11 across the state, and we have -- like Bob said, we have satellite
12 coverage that covers everything.

13 So our job as forecasters is to try to -- based on the few
14 observations that we do have, interpret what to -- and based on
15 what computer models are showing, and what we -- how we expect it
16 to evolve, then translate that into a forecast for the entire
17 area. Somewhat, maybe, calibrating based on the observations,
18 comparing, okay, well, if it's doing this on this island, and the
19 satellite signature or the radar signature looks similar over
20 here, we'll infer that there are similar conditions going on for
21 that area as well.

22 From a verification standpoint, it makes it very hard to know
23 whether you made the right inference in that forecast if you don't
24 know how the ground truth actually pans out. We'll do that for
25 the few locations that we have.

1 MR. RICHARDS: Right.

2 MR. BRAVENDER: But even those airports that we do have, it
3 seems like frequency of IFR, it happens so -- such a small segment
4 of the time that our verification numbers are pretty low. Because
5 I think our false alarm rate is extremely high in TAFs because it
6 happens briefly, and it doesn't happen that often. So we try to
7 capture it, and we end up with very high false alarm rates.

8 That's just -- all we really have to verify are the TAFs, the
9 Terminal Aerodrome Forecasts, for the ASOS locations. And I guess
10 we try to, in our heads, extrapolate that out to what that would
11 mean across the rest of the state.

12 MR. RICHARDS: Yeah. That's tough. Do you guys, do you guys
13 get any volume of pilot reports out there that really make a
14 difference, or is it pretty limited? I mean, you guys got a lot
15 of tour helicopter traffic at low altitude. I'm just wondering if
16 you see any PIREPs from those guys, relatively speaking?

17 MR. BRAVENDER: This is John. We see most of our pilot
18 reports from -- I don't know how often we get tour helicopter
19 reports. A lot from the commercial aircraft, the scheduled
20 flights, inter-island flights, several smaller -- whether they're
21 charter planes or cargo planes, several of those. And it seems
22 like they're mostly -- we get them a lot nearer the airport and in
23 the channels between the islands and not necessarily someplace
24 like northwest Kauai or any place remote like that.

25 MR. RICHARDS: Okay.

1 MR. BALLARD: Yeah. I would agree with that, John. And I
2 would say that, in general, our forecasters are hungry for more
3 PIREPs.

4 MR. RICHARDS: Yeah. I hear you, man. We've been working on
5 that problem for a while. I'm sure you guys have been talking to
6 people too.

7 So the FAA is planning on installing weather cameras in
8 Hawaii just -- similar to how they have it in Alaska. The most
9 recent information I've heard was 23 sites have been identified
10 that cover most of the islands in the chain, and they're just
11 working on securing the right -- whatever they need to start that
12 project going.

13 Do you think these aviation weather cameras -- I mean, of
14 course, it's going to be dependent on where they are, et cetera,
15 et cetera. But do these have the potential to provide helpful
16 information to you guys for your forecasts or for verification of
17 your forecast? Maybe you guys don't have an answer, because if
18 you've never worked with them, you don't know. But any candid
19 thoughts on that, that may help be another piece of validation for
20 the FAA to move forward with those?

21 MR. BALLARD: This is Bob. I mean, depending on where
22 they're located and where they're pointed, I think, you know,
23 that's more data, you know, that's something. So it would have
24 the potential to help. I don't think it would be the final answer
25 or everything that we could use but, you know, we'll take that.

1 Yeah, sure.

2 MR. RICHARDS: Okay.

3 MR. BRAVENDER: This is John as well. I'll chime in real
4 fast.

5 MR. RICHARDS: Yeah.

6 MR. BRAVENDER: That's great to hear that they're moving
7 ahead. I remember just being in a discussion after the -- one of
8 the Molokai helicopter crashes about the ability of that. So
9 that's great that it's getting funded again.

10 And, like Bob said, any new -- any sort of data like that
11 will be helpful to the forecast process. Kind of like, even when
12 I mentioned about using observations and extrapolating those out.
13 If we can get a weather cam showing what area and equate that with
14 a satellite signature, a radar signature, that could help other
15 areas as well.

16 MR. RICHARDS: Right.

17 MR. BRAVENDER: The one thing I was wondering about is how we
18 would tackle rapidly changing conditions. I know this program has
19 been extremely popular in Alaska talking to the people that work
20 up there. And they have a lot of large-scale weather systems that
21 could shutdown a pass for a prolonged period of time, so checking
22 a webcam before they leave to know whether they can make it
23 through the pass is extremely good information.

24 Here, it seems like a lot of our IFR conditions are very
25 brief; it's a shower moving through and is, most of the time,

1 quickly gone. So I wonder from an operator standpoint, if they
2 check the cameras before they leave to see how a valley looks,
3 whether that would still be the case once they get to the valley,
4 how (indiscernible) that would be.

5 MR. RICHARDS: That's interesting. If the FAA was interested
6 in talking about that -- I'm guessing they haven't reached out to
7 you -- would that be a conversation you'd be interested in having,
8 John?

9 MR. BRAVENDER: Sure. I'll talk to them about that, yeah.

10 MR. RICHARDS: Okay. It's, I guess, digressing a little bit
11 from the topic, but I'll keep that in mind, and talk to you about
12 that after our call. Thanks, man.

13 Okay. So I think I just have one more question on this topic
14 because I'm getting the flick -- I'm getting the picture here
15 that, with the void of observations, that really impacts a lot, as
16 it does make sense.

17 And maybe, Bob, this question is for you first. Is there
18 anything about the day, the setup on December 26th, as it was
19 impacting Kauai, that was unusual, out of the ordinary, surprising
20 -- anything that stood out to you as a meteorologist? I know you
21 said it's not extremely common that you have a frontal passage --
22 a front impact from the northwest, but is there anything else that
23 you can think of that was unique or stands out to you about that
24 day, for that part of the island?

25 MR. BALLARD: I'm glad you came back to that question because

1 it was a point I wanted to make, was that for most of the day --
2 and this is not uncommon in a post-frontal flow -- that behind the
3 front the weather was actually pretty nice on Kauai most of the
4 day. The satellite showed that there were not a lot of clouds,
5 and that the day had been, you know, overall mostly sunny.

6 We did see, when you looked at the archived satellite
7 imagery, there was a small area of showers to the northwest.
8 Really not something that, as a meteorologist, that we would give
9 a lot of thought to. It's not uncommon for us to have small areas
10 of showers -- clouds and showers that are moving through that are
11 fairly transient, like John said. They come, they might drop the
12 visibility and the ceiling for a short time, and then they pass on
13 through.

14 So this small area of clouds and showers came in after what
15 was a pretty nice day on Kauai until then. And it looks like that
16 had moved ashore, at least at Barking Sands. And based on some of
17 the radar imagery, it did lower the visibility and ceiling for a
18 while as it was coming through, and then let up.

19 But, you know, compared to a lot of the cloud and shower
20 areas that we see, it was not very significant. It looked pretty
21 small, and it looked like -- it wasn't something that we would pay
22 a lot of attention to here in the tropics. Usually, we're looking
23 for -- when we're looking for persistent lower ceilings and
24 visibilities, we're looking for certain satellite signatures that
25 show some organization to the cloud structure, and this one didn't

1 have a lot of that.

2 MR. RICHARDS: So the pattern for this system wasn't one that
3 would lead you to think about prolonged low ceilings or lowered
4 visibility. Is that -- am I hearing that correctly?

5 MR. BALLARD: Correct. Yeah. Going back over the imagery,
6 it looked like something that was relatively small, and it would
7 be pretty transient. You know, might briefly reduce ceiling and
8 visibility, but not anything that would, would be persistent for
9 any length of time at all.

10 MR. RICHARDS: That's good information. Thank you. That's
11 interesting. Because one of the questions I was going to ask, but
12 then I disregarded based on verification conversation, was about
13 pattern recognition.

14 Are there certain patterns that you will see 24 to 48 hours
15 or something and say, oh, okay, this is probably going to bring a
16 lot of low visibilities or low ceilings or something like that?
17 And it sounds like there are, but this system --

18 MR. BALLARD: Right, well --

19 MR. RICHARDS: Go ahead.

20 MR. BALLARD: Right. This system would be much too small to
21 be detected. We'll use computer model data in that 24 to 48-hour
22 time period to look for organized features like fronts or
23 convergence bands. And the models do a decent job with those, and
24 we know for certain that, when these features are coming through,
25 they're going to reduce visibility and ceiling.

1 But you also have these really small features in the tropics,
2 which the models do not detect well -- they do a very poor job
3 with it, in fact -- that can reduce ceiling and visibility. But
4 usually these are for much shorter time periods.

5 Now, one other difficulty that we have is that, of course, on
6 the mainland you can monitor upstream observations and see how
7 things are evolving in ceiling and visibility space as a weather
8 system is approaching an area of interest. You have upstream
9 observations, at least in a lot of it -- a lot of the mainland.
10 Maybe not so much on the West Coast.

11 But for almost everything in Hawaii, anything that's coming
12 in off the water, you don't get any in situ observations of
13 ceiling and visibility until it reaches the island. So, again,
14 like John and I had said before, we're pretty dependent on pattern
15 recognition in the satellite imagery to try and determine whether
16 or not something is going to be a problem in terms of ceiling and
17 visibility for pilots.

18 MR. RICHARDS: That's a great point. Now, are there any
19 buoys up -- below the -- in this case upstream, northwest of the
20 islands? Is there anything out there?

21 MR. BALLARD: Not much. I mean, we do have some buoys out
22 there, very few. And they don't give us any information on
23 ceiling and visibility, just --

24 MR. RICHARDS: Certainly.

25 MR. BALLARD: -- you know, wind and swell and temperature and

1 dew point. They don't, they don't have parameters that are of
2 interest to the aviation world really.

3 MR. RICHARDS: Yeah.

4 MR. BALLARD: Except for maybe wind.

5 MR. RICHARDS: That's really interesting. Thank you.

6 MR. BALLARD: So that makes it difficult to try to determine
7 what's coming in.

8 MR. RICHARDS: Yeah.

9 John, do you have anything else to add before -- I just had a
10 couple of questions about AIRMETS, and then I think we can -- I
11 can let you guys go.

12 MR. BRAVENDER: No. That sounds good. I'm glad that Bob
13 made that point about that pattern. So I'm good with that.
14 Thanks.

15 MR. RICHARDS: Okay. Thanks. Well, then let me ask -- let
16 move on. A couple questions about AIRMETS. And, John, maybe this
17 first one is directed at you just because I know you're -- or used
18 to be, at least, an aviation guy.

19 So I understand there's National Weather Service instruction
20 that dictates criteria for AIRMETS, but it leaves a little -- we
21 can get into the language a little bit. There's a bit of wiggle
22 room as far as, let's call it forecaster discretion that's allowed
23 from the National Weather Service instruction, specifically
24 10-811.

25 What's your office policy as far as criteria and when thou

1 shalt issue an AIRMET? And we can keep it to IFR mountain
2 obscuration. So when shall your forecasters issue an AIRMET for
3 IFR mountain obscuration?

4 MR. BRAVENDER: So we're, we're looking at -- I don't know if
5 impactful is the right word. The 10-811 directives, the national
6 directive, actually just went through a recent update. Up to
7 maybe a few years ago, it had a distance requirement minimum, like
8 a 3,000 square mile minimum --

9 MR. RICHARDS: Right.

10 MR. BRAVENDER: -- that something had to be that large. And
11 they pulled that and made it -- "significant impact" was the
12 wording they used instead. We actually never were constrained by
13 that 3,000 square mile minimum. We had -- they call it regional
14 supplements that exempted us from it because, by the nature of our
15 islands, we couldn't really get to mountain obscuration covering
16 3,000 square miles unless it was, for example, all of the Big
17 Island.

18 MR. RICHARDS: Fair enough.

19 MR. BRAVENDER: Something like that.

20 MR. RICHARDS: Fair enough.

21 MR. BRAVENDER: So our -- even before this change to the
22 national policy, we were going more -- going by more of that, I
23 guess, "significant impact" wording that they're using now
24 nationally.

25 From a local office policy, in addition to area coverage, it

1 also -- there seems to be a time component too. One of the --
2 John kind of mentioned this when you were talking about the
3 weather cams. But the -- sometimes, especially during a windy
4 day, showers will move through pretty fast, so you could only
5 have -- well, at times even just a couple minutes of lowered
6 ceilings.

7 Trying to balance capturing that in an aviation safety
8 standpoint, alerting pilots via AIRMETS, but also balance that
9 with the idea that we don't want to have an AIRMET out all the
10 time. We want to use that to highlight significant events that
11 they need to be aware of and pay attention to, and not over
12 advise. For example, having an AIRMET out for showers that come
13 through briefly, but the bulk of the time still being clear.

14 So that's where -- I don't know how to describe it so much in
15 words. Just trying to find that balance between capturing the
16 events and communicating it -- communicating what we expect to the
17 pilots that are flying out there.

18 MR. RICHARDS: So let me ask you this: Is that balance
19 codified in any type of memorandum or local office instruction or
20 something that's not subjective? Or is that balance generally
21 type of something that's learned by new people, maybe OJT? Or how
22 does that process within the office? Is there -- if that makes
23 sense, is there an answer for that?

24 MR. BRAVENDER: Well, the wording that we used in our local
25 policy directives is an AIRMET will be issued for significant

1 areas of obscuration regardless of size. So significant is the, I
2 guess, the word that's open to interpretation.

3 MR. RICHARDS: Got you.

4 MR. BRAVENDER: And it's mostly through, like you said,
5 on-the-job training. As new forecasters come in, trying to teach
6 them the pattern recognition of, these are the situations that are
7 most significant or most prolonged, and these other ones are more
8 transient and less significant, I suppose.

9 And because of it being hard to put down in black and white
10 trying to capture all those possible different patterns on paper,
11 that's mostly handled through on-the-job training and through
12 collaboration, even on a shift during -- as the weather is ongoing
13 between the other forecasters on shift and the shift lead.

14 MR. RICHARDS: I got you. So the key word is significant.
15 And that's subjective; there's no way around that. I mean,
16 there's forecaster discretion here as to determine what's
17 significant and what's not. Is that fair to say?

18 MR. BRAVENDER: Yep.

19 MR. RICHARDS: Okay.

20 MR. BRAVENDER: Yes, it is.

21 MR. RICHARDS: So my last question --

22 MR. BALLARD: I, I would --

23 MR. RICHARDS: Go ahead.

24 MR. BALLARD: I would add to what John said, just that it's
25 hard to be objective when you don't have objective measurements.

1 MR. RICHARDS: Yeah.

2 MR. BALLARD: So that's one, that's one of the challenges,
3 going back to what we talked about before with observation
4 network. And so that's why there is some subjectivity there, I
5 think.

6 MR. RICHARDS: Certainly. Okay. I just have one more
7 question, or at least one more topic of inquiry here, and I
8 alluded to this in an e-mail that I sent initially setting up this
9 interview, which was --

10 So on December 26th, for the time -- for the period
11 applicable to the accident time, when you look in the area
12 forecast for Kauai, there was a forecast of isolated broken clouds
13 at 3,000 above MSL. For the island of Kauai, that certainly
14 includes areas that are less than 1,000 feet AGL. There was not
15 an AIRMET issued for Kauai.

16 And I'm looking at this, and I'm not necessarily thinking,
17 well, there should have been. But I'm just trying to wrap my head
18 around how -- and you guys are helping me do this -- how do we
19 get to where something in the area forecast is forecasting
20 ceilings that are going to trigger IFR conditions, but there's not
21 an AIRMET that's issued for IFR conditions?

22 I don't know if you guys have anything you could add to help
23 me understand that. Or would it be common for the FAA to forecast
24 conditions that meet IFR criteria, but there not being an AIRMET
25 based on what you guys just talked about, about longevity of

1 conditions or other things that might impact a determination of
2 significant -- I'm getting a little wordy here, but I think --
3 yeah. Do you guys have any thoughts on this?

4 MR. BRAVENDER: I get the question.

5 MR. RICHARDS: Yeah.

6 MR. BRAVENDER: Yeah. I get the question here. The rough
7 guideline that we use is isolated conditions would not trigger an
8 AIRMET, but TEMPO or scattered conditions would. So it's more of
9 a duration/coverage that -- if it's just isolated impacts, we
10 would mention that in the area forecast so pilots would know that
11 it's out there, but it wouldn't be significant enough, for either
12 area or duration, to issue an AIRMET. Whereas a TEMPO, scattered
13 or numerous, would equate with an AIRMET in effect as well.

14 MR. RICHARDS: Okay. So if the forecast had said scattered
15 broken clouds at 3,000 or lower, one could reasonably expect an
16 AIRMET would be issued. But because these are isolated broken
17 clouds, and there's a question of, I guess, longevity or the real
18 impact of that, you wouldn't necessarily expect an AIRMET for IFR
19 conditions. Isolated is the key --

20 MR. BALLARD: I would agree with what John said, and I think
21 that, that's pretty much the way things work in practice, yeah.

22 MR. RICHARDS: Okay. Is that codified anywhere? Is that in
23 a local policy? I'm just wondering if there's something that we
24 can refer back to that's written to establish that, beyond the
25 transcript of this interview of course.

1 MR. BALLARD: I'd have to look and see if that's in the area
2 forecast local reference. I don't know if you all remember
3 offhand. I don't have it up in front of me right now.

4 MR. RICHARDS: Okay. No problem, Bob. I appreciate it.
5 What I'll do is, later I'll send an e-mail through Laura at
6 National Weather Service Headquarters that's just kind of a formal
7 request for information. And that will trickle down, and if you
8 guys are able to fulfill that, that would be great.

9 MR. BALLARD: Okay. John, do you know offhand if that's
10 documented in the FAA local reference?

11 MR. BRAVENDER: No. "Departures from the" -- I'm just
12 reading the text here. "Departures from the above examples are
13 allowed when operationally significant. For example, IFR ceilings
14 may be included in the VFR cloud weather section if, in the
15 communities forecasted, the area covered does not meet the AIRMET
16 criteria. The conditional term TEMPO ISL may also be used to
17 describe cloud bases with less aerial coverage than prevailing."
18 So not explicitly.

19 MR. RICHARDS: Okay. Well, I'll tell you what, John, I'll
20 just lob that request over the fence, and if there's any
21 documentation that is out there or anything else you could add as
22 far as some type of policy goes, that's great. If there's not,
23 that's fine too. But I just want to kind of cover the base there.

24 MR. BRAVENDER: Yeah. I'll do it.

25 MR. RICHARDS: Thank you. Thank you. Okay. Well, you know

1 what, guys, this has been a very helpful 45 minutes. I don't have
2 any additional questions. Before we go off the record, is there
3 anything else that, John or Bob, you want to add?

4 MR. BALLARD: No, I don't think so. I mean, I feel like
5 we've done a pretty nice job of covering the situation as it stood
6 that day, what we know about the climatology, and the state of the
7 local documentation that is on it. So I don't think there's
8 anything I would want to add offhand.

9 MR. RICHARDS: Okay. John?

10 MR. BRAVENDER: Yeah. I think I'm good too. It seems like
11 we've -- yeah. It seems like we've covered the gamut. I'm good.

12 MR. RICHARDS: Perfect. All right. Thanks, guys. Stand by.
13 We'll go off the record at 10:44, Hawaiian Standard Time.

14 (Whereupon, at 10:44 a.m., the interview was concluded.)
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CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF: AIRBUS AS350 B2 HELICOPTER
 CRASH NEAR LIHUE, HAWAII,
 ON DECEMBER 26, 2019
 Interviews of John Bravender
 and Robert Ballard

ACCIDENT NO.: ANC20MA010

PLACE: Via telephone

DATE: March 23, 2020

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.



Katherine Motley
Transcriber