July 15, 2020

Mr. Bill English
Investigator-in-Charge
National Transportation Safety Board
490 L'Enfant Plaza East, SW
Washington, DC 20594

[redacted]

RE: Accident Number: DCA20MA059, Crash of Sikorsky S76-B, Calabasas, California, January 26, 2020, 0945 PST.

Mr. English,

Enclosed with this letter is Island Express Helicopters, Inc.'s Party Submission pursuant to NTSB protocol. Enclosed are three attachments pertaining to the following areas of concern:

1. Air Traffic Control (Attachment A);
2. Weather (Attachment B); and
3. Piloting (Attachment C)

We would also like to note that, at this time, we have not been able to access the wreckage or any component parts. Accordingly, we reserve the right to submit a subsequent Party Submission should any component part malfunction be identified after this submission.

Thank you,

[redacted]

Garret Dalton
Director of Operations & Chief Pilot

Attachment A

Air Traffic Control

The pilot of N72EX communicated with 5 different air traffic control facilities the morning of the accident. Services provided by Long Beach and John Wayne Air Traffic Control Towers (ATCT's) were routine. Burbank Tower held N72EX for approximately 12 minutes, which was longer than normal, but appears to have been appropriate considering active traffic at the time. Burbank Tower did terminate radar services but instructed the pilot to remain on the discrete transponder code that had previously been assigned.

Van Nuys ATCT failed to inform N72EX that it was in radar contact, but it appears N72EX was being surveilled based on conversations between the pilot and controller. Van Nuys asked the pilot if he wanted to continue communications with the Southern California Tracon (SOCAL) and the pilot replied affirmatively. At 1739:47, Van Nuys transmitted "Helicopter two echo x-ray thank you contact SOCAL now one three four point two for flight following thirty-four two."

The pilot of N72EX next contacted the Woodland Sector of the Southern California Tracon (SOCAL) and remained on that frequency until the time of the accident. The aircraft had requested flight following and the request was denied by the controller who stated "I'm going to lose radar and comms probably pretty shortly so you can just squawk V-FR- and when you get closer go to Camarillo tower." This denial was improper because radar contact had not been lost and services were being denied based on the possibility that they might be. The fact that N72EX was able to contact SOCAL four minutes later, and his transponder was still observed by the controller, proves that the prediction of lost contact was not accurate and services could and should have been provided continuously.

> Air Traffic Control Order: JO 7110.65Y (Air Traffic Control Handbook) paragraph 2-1-1c. states: "the provision of additional services is not optional on the part of the controller but rather required when work situation permits.

Radar advisories to VFR aircraft are considered an additional service. The SOCAL controller was not too busy to provide service. NTSB Interview Summaries of both controllers from SOCAL confirmed that they both described traffic as "normal," and a "2" on a scale of 1 to 5.

Two SOCAL controllers spoke with the pilot of N72EX that morning. The first was [redacted] He was relieved by [redacted] approximately three minutes after the initial call from N72EX. Less than two minutes after [redacted] assumed the position, he was called by the pilot of N72EX who said "and SOCAL for helicopter two echo x-ray we gonna go ahead and start our climb to go above the uh layers and uh we can stay with you here."

Radar Service Termination

Because [redacted] never actually terminated radar services with N72EX, the pilot would have assumed he was still being surveilled and being provided flight following. The instruction "You can just squawk VFR" was no more than an instruction to the pilot to change his transponder setting. It is apparent that Mr. [redacted] incorrectly thought he had terminated

radar service for N72EX because he failed to brief [redacted] his replacement, about the existence of N72EX. Mr. [redacted] was totally unaware of N72EX once assuming the seat, which critically delayed N72EX's "re-identification" and provision of services to the pilot. In his interview, Mr. [redacted] admitted that "[h]e remembered the pilot [N72EX] just talking to him like he had already been in contact and was receiving services, but he had no record of him."

> Air Traffic Control Order: JO 7110.65Y (Air Traffic Control Handbook), paragraph 5-1-13 Radar Service Termination states: "Inform aircraft when radar service is being terminated. Phraseology - Radar service terminated."

This is the only method prescribed for controllers to inform an aircraft that they are/will no longer receiving radar services. This is a mandatory requirement that was not followed. And this omission clearly led the pilot of N72EX to believe that he was continuing to receive radar services.

The pilot/controller glossary contained in the Aeronautical Information Manual tells both pilots and controllers that the definition of Radar Service Terminated is "Used by ATC to inform a pilot that he/she will no longer be provided any of the services that could be received while in radar contact." In the absence of this phrase being used, the pilot would have have properly assumed that he was still in radar contact and receiving all of the services, like terrain callouts, provided during radar flight following.

Evidence that the pilot thought he was receiving radar services is clear from his transmission to SCT when he states that he is going to "climb above the layers and stay with you." Such language is the opposite of a pilot making an initial call to request services. Rather, it is consistent with continued communications with a facility from whom a pilot is receiving services.

The pilot of N72EX thought he was still receiving radar services at the time of the accident. And because the Aeronautical Information Manual defines radar monitoring as "the use of radar for the purpose of providing aircraft with information and advice relative to significant deviations from nominal flight path," the pilot would have operated the aircraft under the assumption that ATC was monitoring his flight and would have warned him of unsafe proximity to terrain.

Position Relief Briefing

When one controller relieves another, the use of a position relief checklist is mandated to assure that a full briefing is given to the new controller and that no pertinent items are overlooked. This requirement is listed in paragraph 2-1-24 Transfer of Position Responsibility, 7110.65Y. This requirement is further defined in the SOCAL Standard Operating Procedure Order 7110.65B paragraph 3-1-8 which states: "The relief briefing must involve the use of a tailored checklist… ."

During his NTSB interview, Mr. [redacted] (the departing controller) admitted that he does not normally use a checklist when conducting a position relief briefing. (See p. 12 of interview summary). Yet Mr. [redacted] (the replacement controller) claims that a relief briefing was conducted and that the briefings were recorded, and a checklist was utilized. (See p. 15 of interview summary).

The SOCAL SOP requires that the departing controller remain on position with the new controller for 2 minutes after position responsibility is transferred. This requirement is contained in 7110.65B para3-1-8 b. During his NTSB interview, Mr. [redacted] was asked if he followed that requirement to remain on position and "plugged in" to the console so he could still monitor radio transmissions. He replied that he did. It does not appear that Mr. [redacted] actually stayed "plugged in" after the relief briefing because N72EX called SOCAL (Mr. [redacted]) 95 seconds after the position relief briefing and Mr. [redacted] did not assist Mr. [redacted] in identifying the aircraft. It took Mr. [redacted] a full 9 seconds to respond to N72EX, a critical delay which would never have happened had Mr. [redacted] followed procedure and stayed "plugged in" for a full two minutes after the relief handoff.

Weather information needed to perform ATC Duties

Mr. [redacted] stated that he "noticed it was foggy and there were low ceilings when I came into work that morning." He further recalled that "the weather around the time of the accident was IFR with low ceilings and instrument approaches were being conducted. Paragraph 2-1-2-c. in Order 7110.65Y states "Controllers are responsible to become familiar with and stay aware of current weather information needed to perform ATC duties." It is clear that Mr. [redacted] was also ignoring this mandatory procedures when he cleared Southwest flight 451 for a visual approach. Fortunately, the Southwest pilot declined the instruction and notified MR. [redacted] that it was IFR conditions.

Simultaneous loss of radar contact and radio communications

Paragraph 10-2-5 of 7110.65Y states "Consider that an aircraft emergency exists and inform the RCC or ARTCC when any of the following exist…There is an unexplained loss of radar contact and radio communication with any IFR or VFR aircraft." Mr. [redacted] admitted that he would have notified the "sup" had he lost radar and radio on N72EX when he was coming over from VNY. But Mr. [redacted] admitted that he did not report this occurrence [the fact that he was unaware of N72EX] because he [N72EX] had not been tagged up yet, and therefore had not yet begun receiving flight following. Mr. [redacted] also admitted that he did not consider him radar identified because he did not advise the pilot he was "radar contact."

The fact that Mr. [redacted] was unaware of N72EX and did not consider him radar contacted was solely caused by Mr. [redacted] failure to properly terminate radar service for N72EX, which was compounded by his improper and incomplete position relief briefing. These critical errors by Mr. [redacted] caused Mr. [redacted] to inherit an aircraft that he did not know existed, which was operating in marginal weather conditions believing that it was receiving flight following services. Once startled by N72EX's call to climb above the layers, Mr. [redacted] took 9 seconds to respond to N72EX, and then proceeded to make four radio contacts, including

one instruction (Ident) and question (where say intentions) during the most critical 33-second segment of the accident flight.

Summary

1. The controller at Van Nuys failed to advise N72EX that he was "radar contact."
2. Mr. [redacted]'s reason for denying radar service to the pilot of N72EX was improper and without justification. Mr. [redacted] confirmed that traffic was light and Order 7110.65Y states the provision of services is mandatory. The theoretical possibility of losing radar contact or communications is not a valid reason for denying service, especially since identity with N72EX was maintained throughout the entire flight.
3. Mr. [redacted] failed to properly and officially terminate radar services with N72EX, which left the pilot with the false impression that he was still receiving services.
4. Mr. [redacted] admitted he did not use a checklist to perform a position relief briefing with Mr. [redacted]
5. Mr. [redacted] said he remained at the position for two minutes (after being relieved) in accordance with facility directives; however, N72EX called during this time but Mr. [redacted] failed to provide Mr. [redacted] with any assistance in responding to the call.
6. Mr. [redacted] was clearly not aware of weather conditions in his sector while handling aircraft during the critical phase of N72EX's flight.
7. The simultaneous loss of radar and radio communications with N72EX should have been immediately reported.

Attachment B

Weather

The weather conditions for the accident flight can be grouped into six separate areas or boxes, shown in Figure 1 below. Figure 1 also shows the locations of automated weather stations at the airfields in the vicinity of the flight. Readings from the automated weather stations are available at 5-minute intervals.

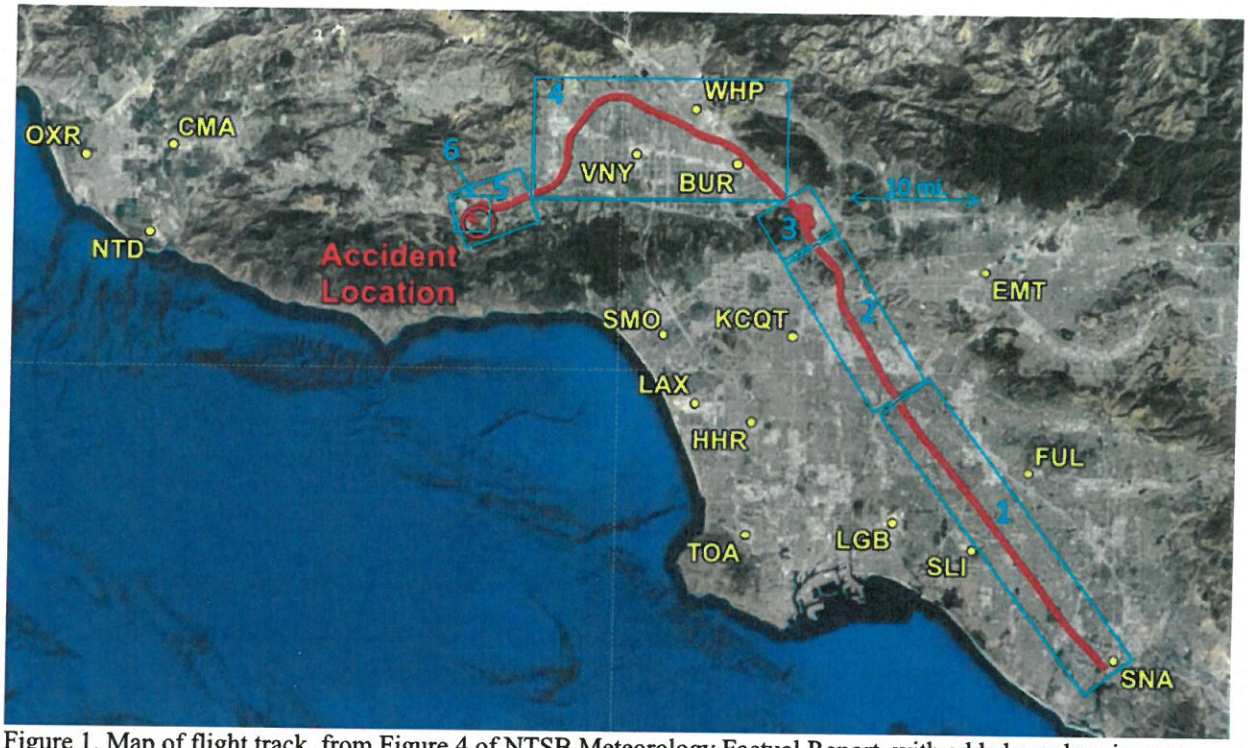

Figure 1. Map of flight track, from Figure 4 of NTSB Meteorology Factual Report, with added overlays in cyan.

The transitions in weather conditions between the boxes in Figure 1 were not as abrupt as suggested by the box boundaries. Smooth transitions likely occurred. Some variation in ceiling and visibility likely occurred within each box and the weather conditions are necessarily provided below in terms of ranges. The changes were most rapid in Box 5, which contains the smaller area (Box 6) where the accident occurred.

Box 1 - This area includes John Wayne Airport (SNA) where the flight departed at 9:07 AM. SNA was reporting visibility of 5 statute miles and an overcast at 1,000 feet AGL, at 9:05 AM and 9:10 AM. Along the part of the flight that was within Box 1, the visibility was in the range of 3 to 5 miles and the ceiling was in the range of 800 to 1,100 feet AGL (approx. 900 to 1,300 feet MSL). After ascending from SNA, the aircraft operated in the range of about 600 to 1,000 feet MSL, or about 300 feet (more or less) below the ceiling. The terrain in this area is relatively flat and very low

(generally, less than 100 feet MSL), being part of the Los Angeles Basin. The aircraft operated at about 500 to 1,000 feet AGL in this area.

Box 2 - This area includes the downtown Los Angeles area. Here the visibility was in the range of 2 ½ to 4 miles and the ceiling was in the range of 1,300 to 1,700 feet AGL (approx. 1,400 to 1,800 feet MSL). The aircraft rose from about 600 to 1,000 feet MSL while traversing this box, and operated about 800 feet (more or less) below the ceiling. The terrain, also part of the Los Angeles Basin, generally rises from about 100 feet MSL at the southern end of the box to 500 feet MSL at the northern end. The aircraft operated at about 500 feet AGL in this area.

Box 3 - This area includes the "loitering" southeast of BUR. Here the visibility was in the range of 2 ½ to 3 miles and the ceiling was in the range of 1,200 to 1,400 feet AGL (approx. 1,700 to 1,900 feet MSL). The aircraft operated in the range of approx. 950 to 1,050 feet MSL, or about 800 feet (more or less) below the ceiling. This area lies between the Los Angeles Basin and the higher San Fernando Valley in Box 4. The terrain elevation is about 500 feet MSL. The aircraft operated at about 500 feet AGL in this area.

Box 4 - This area is in the San Fernando Valley and includes BUR and VNY. Here the visibility was approximately 2 ½ miles and the ceiling was in the range of 1,000 to 1,200 feet AGL (approx. 1,800 to 2,000 feet MSL). The aircraft's altitude generally followed the variation of the terrain in Box 4, operating at approx. 1,000 feet MSL near the southeastern corner, to about 1,700 feet MSL on the northern side of the Valley, and down to about 1,400 MSL feet near the southwestern corner, while maintaining an altitude of approx. 500 feet AGL. The aircraft operated at approx. 800 feet below the ceiling near the southeastern corner, approx. 300 feet below the ceiling on the northern side, and approx. 500 feet below the ceiling near the southwestern corner, where the aircraft began following US 101.

Box 5 - In this area, the aircraft was following US 101 and operating in more complex terrain than other portions of the flight. The visibility was about 2 miles and the ceiling was approx. 900 ft AGL (1,800 feet MSL) near the eastern edge of Box 5. The visibility decreased to about 1 ½ miles and the ceiling declined to about 600 feet AGL above Highway 101 (ceiling of 1,600 feet MSL) near the center of Box 5, which is near the edge of Box 6. It was around this location that the aircraft was seen passing over a road construction site at an altitude of approx. 1,400 feet MSL (about 400 feet AGL), when it was still below the overcast ceiling, by about 200 feet.

Box 6 - Near the center of Box 6, or where the aircraft ascended and turned to follow US 101, the visibility dropped to about 1 to 1 ½ miles and the ceiling was down to 1,200 to 1,300 feet MSL. At this height, the overcast obscured the higher terrain. A topographic relief map with the portions of terrain above 1,250 feet MSL shaded in gray to indicate the areas obscured by cloud is shown in Figure 2. Slightly more or less of the terrain was obscured depending on any variation in the ceiling height. The ground track of the aircraft is included in Figure 2. Except for when the aircraft descended below the overcast toward the crash site, nearly all of this portion of the flight occurred in cloud.

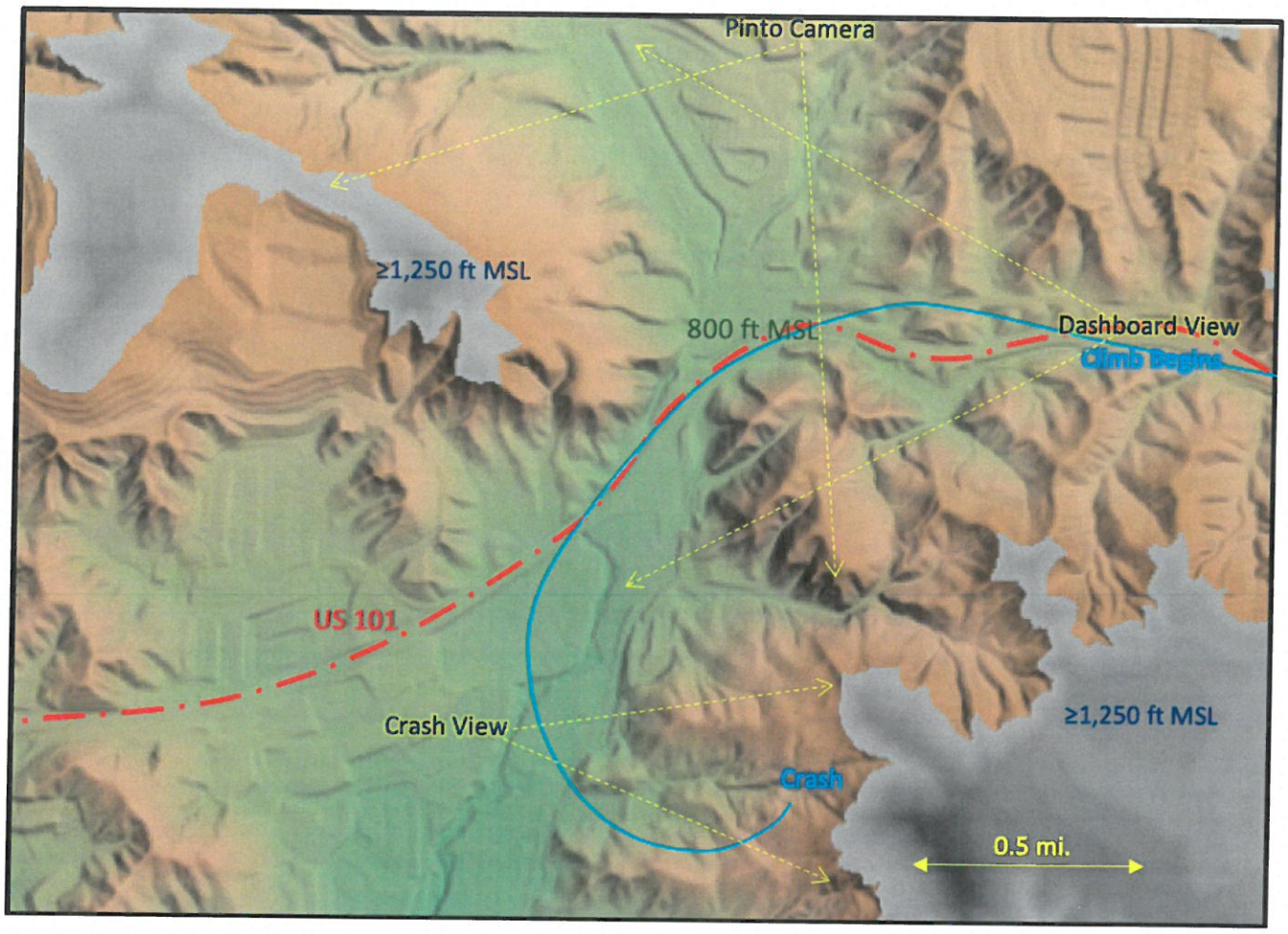

Figure 2. Topographic relief map for area of accident. Cyan curve is ground track. Approximate views of video cameras are included. Gray shaded terrain is at least 1,250 feet MSL. US 101 (in red) is about 800 feet MSL at the curve.

The hill ahead of the aircraft, as it was heading west toward the southwestward curve of US 101, was obscured by cloud. After the aircraft had just passed over the road construction site and was still below the overcast, the pilot could have seen (at about 9:44:20 AM) that the overcast was lower ahead (below the altitude of the aircraft) and that the top of the hill was shrouded in cloud. At that distance (about 1.5 miles), details of the terrain below the ceiling would have been only dimly discernible, due to the reduced visibility. The aircraft began to climb at about 9:44:33 AM.

Prior to entering Box 6, the aircraft had not entered cloud (generally remaining below the ceiling by several hundred feet) and had flown at least 500 feet above the ground. Where US 101 begins to turn southwest, the elevation is approx. 800 feet MSL (as marked in Figure 2). The overcast was at 1,200 to 1,300 feet MSL (400 to 500 feet AGL above US 101) and the visibility below the overcast was restricted to about 1 to 1 ½ miles. The NTSB Meteorology Factual Report shows the relative humidity readings in this area was 100%, higher than elsewhere along the route, which is consistent with the low ceiling and low visibility only being encountered in Box 6. The boundary between the mist (light fog) and the overcast was indistinct. At this unique location along the route it would have been difficult to impossible for the aircraft to remain at an altitude of 500 feet AGL and remain in the clear while making the turn to follow US 101.

Prior to entering Boxes 5-6, the ceiling was generally at least 1,000 feet AGL. The exception was in parts of Box 1, where the ceiling may have been as low as 800 feet AGL for brief periods. The underlying terrain in Box 1 is, however, was relatively flat, uniform, and very low. In Box 6, the aircraft encountered the lowest visibility and lowest ceiling AGL of the flight, particularly in the area where US 101 turns southwest. The pilot had not encountered comparable conditions earlier in the flight (and none were forecast) and elected to attempt to ascend through the low overcast (which had a top of approx. 2,600 feet MSL) while generally following the path of Highway 101.

Beyond Box 6, toward the destination airport CMA, the conditions improved. Dashboard video shows visibility of at least 2 miles and a ceiling over 1,400 feet MSL (over 500 feet AGL above US 101). At 9:45 AM CMA was reporting 4 miles visibility and overcast at 1,700 feet AGL (1,800 ft MSL). Just past Box 6, it would have been possible for the aircraft to fly at least 500 feet AGL and below the overcast to CMA.

The Terminal Aerodrome Forecasts (TAFs) issued prior to the departure predicted slightly higher visibilities than actually occurred at the four principal airfields along the route, namely, SNA, BUR, VNY and CMA. Prior to the flight originating, the lowest predicted visibility of the four airfields was 3 miles at BUR (the actual was 2 ½ miles). The highest predicted visibility was greater than 6 miles at CMA (the actual was 4 miles). The lowest predicted ceilings were 1,000 feet AGL at SNA and 1,100 feet AGL at BUR. Both forecasts were accurate. The highest predicted ceiling was 1,800 feet AGL at CMA (the actual was 1,700 feet). The lowest predicted conditions for the airfields along the route were 3 miles visibility at BUR and a ceiling of 1,000 feet AGL at SNA.

The National Weather Service's Los Angeles/Oxnard Forecast Office predicted in its Area Forecast Discussion that conditions "should improve to the IFR to MVFR category by 17Z" (9 AM PST). MVFR was expected at BUR, with IFR to MVFR at LAX, prior to the time the accident flight departed.

Based on all available weather data, prior to and during the accident flight, it was completely appropriate, and above all company and FAA weather minimums, to initiate and conduct the accident flight. The unforecasted and unreported deterioration of visibility encountered only in Box 6 would qualify as Inadvertent Instrument Meteorological Conditions.

Attachment C

Piloting

Initiation of the Flight

Island Express Company policy, and FAA regulation[1], requires the pilot to obtain weather reports and forecasts relevant to the proposed flight. The term "weather briefing" or "formal weather briefing" has often been interpreted as speaking directly with an FAA Flight Service Station (or contractor) employee and receiving a standard or abbreviated weather briefing for the proposed route of flight. It is also possible to download visual or printed versions of a weather briefing which can involve numerous pages of textual and visual information. Contrary to the Group Report, FAA regulations do not require a "weather briefing," only that the pilot must obtain appropriate weather reports and forecasts prior to initiating flight. There are many approved methods of obtaining the required weather information needed for flight planning. Island Express, and its pilots, utilize ForeFlight, which is an FAA-approved weather briefing source. Witness[2] and video evidence absolutely confirm that the accident pilot obtained and discussed the pertinent weather prior to departing while utilizing this approved source. Data obtained from ForeFlight confirmed that the pilot's personal iPad mini logged onto ForeFlight on Jan 26th at 15:31 GMT, and the pilot's personal iPhone 11 pro logged onto ForeFlight on Jan 26th at 16:02 GMT. Finally, front desk video, which was confirmed by witness interviews, from the Atlantic Aviation FBO at SNA revealed the pilot and owner of OC Helicopters checked the ForeFlight weather within minutes of the flight departing SNA airport. Though no formal "weather briefing" was ordered, there is absolutely no doubt that the pilot "obtained weather and forecasts relevant to the proposed flight" prior to departure.

The pilot also completed the Flight Risk Analysis Tool on the day of the accident flight in accordance with Company policy. He completed the weather section of the FRAT and filled in information confirming that ceilings were less than 2000 feet. No other weather blocks were checked. The pilot could not have filled out the weather section of the FRAT had he not obtained the weather. A comparison of the information entered into this tool with reported observed weather information prior to the flight's initiation confirms that the proposed flight was within Company and FAA weather minimums[3]. The Area Forecasts and SIGMETS issued for the time periods encompassing the proposed flight indicated IFR[4] and MVFR[5] conditions *possible*. These conditions were also within Company and FAA weather minimums. At the time the flight departed, all conditions indicated that the flight could be completed within the weather limitations required by the Company and the FAA.

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[1] §91.103 Preflight action - Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight. This information must include— (a) For a flight under IFR or a flight not in the vicinity of an airport, weather reports and forecasts, fuel requirements, alternatives available if the planned flight cannot be completed, and any known traffic delays of which the pilot in command has been advised by ATC;

[2] NTSB Interview with Rick Webb. Pages 12-15.

[3] See METARS for SNA [0753PST], BUR [0753PST], VNY [0755PST], CMA [0755PST], and TAFS SNA [0700PST], BUR [9-11PST], VNY [9-11PST], CMA [4-10PST].

[4] IFR means a ceiling 500 to less than 1,000 feet and/or visibility 1 to less than 3 miles.

[5] MVFR means Ceiling 1,000 to 3,000 feet and/or visibility 3 to 5 miles inclusive.

Enroute Conditions

The weather stations that were reporting at the time of departure indicated no significant changes in the weather were predicted during the flight. The NTSB meteorology report, based on CCTV reviews, concludes that visibility range was between 1 and 1-1/2 miles along portions of the flight path. None of this information was available to the pilot prior to or during the flight. Based on ATC communications with N72EX, the pilot continued to report VFR conditions until 0940 which indicates that the flight was proceeding normally to that point. Between 0940 and 0945 it appears the pilot encountered unforecasted and unreported conditions that prompted his decision to climb above the layers. The exact conditions he encountered between 0940 and 0945 is unknown therefore it is difficult to predict a better course of action than the one attempted. The hazards encountered if trying to land off airport or diverting toward the unknown can be greater than continuing to a location where the weather and terrain is known.

Although it is doubtful that it was of immediate consideration, the pilot may have invoked his emergency authority[6] due to inadvertent entry into instrument meteorological conditions (IIMC) or impending IIMC. IIMC is considered an emergency[7] by the FAA[8].

ATC's Contributing Factors

The pilot assumed he was flying in RADAR contact[9] based on ATC verbiage, or lack thereof[10], prior to the crash. When in RADAR contact a pilot assumes several important items: (1) traffic separation; (2) limited assistance with terrain and obstacle clearance, (3) that communication with the controlling agency is readily available, and (4) ATC is aware of his presence. At 09:45, the pilot of N72EX was abruptly and unexpectedly made aware that he was not in RADAR contact. Calculated data indicates an initial, relatively stable, climb of ±1460FPM beginning at approximately 09:44:35 with the aircraft in a controlled left bank that was slowly being corrected via a controlled right bank until ≈09:45:03. At approximately 09:45:03 the aircraft entered an aggressive left bank that continued until the final moments of the flight. The pilot's workload and stress level in deteriorating weather conditions were unnecessarily overloaded by the SOCAL

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[6] **135.19 Emergency operations**. (b) In an emergency involving the safety of persons or property, the pilot in command may deviate from the rules of this part to the extent required to meet that emergency.

[7] **8900.1, Vol.4, Ch5, Sec3_SAS 4-945 EMERGENCY PROCEDURES**. When evaluating an operator's emergency procedures for an air ambulance service, inspectors must consider the following: A. Inadvertent Instrument Meteorological Conditions (IIMC). Inspectors will evaluate *emergency* operations procedures for recovery from IIMC.

[8] **FAA-H-8083-16B-Appendix A**- This appendix discusses recognition and suggested remedies for ***emergency*** events related to un-forecasted, adverse weather, aircraft system malfunctions, communication/navigation system malfunctions, loss of SA, and inadvertent instrument meteorological conditions (IIMCs).
FAA-H-8083-21B-Helicopter Flying Handbook, Page 11-25 - If IIMC occurs, the pilot may consider a climb to a safe altitude. Once the helicopter is stabilized, the pilot should declare an ***emergency*** with air traffic control (ATC).

[9] See interview with ATC controller [redacted] *He remembered the pilot just talking to him like he had already been in contact and was receiving services, but he had no record of him.*

[10] The Woodland Sector of the Southern California Tracon (SCT) failed to use the required term "RADAR Service Terminated".

controllers' multiple errors, including the: (1) failure to properly communicate termination of radar flight following, (2) incomplete position relief briefing, (3) lack of knowledge of current weather conditions. These errors led the second SOCAL controller to monopolize the accident pilot's attention during the critical phase of the flight by making multiple radio calls, requiring transponder ident, and requesting the pilot to state where he was and what his intentions were. The combination of increased stress, workload, and distraction significantly impacts a pilot's ability to fly the aircraft. The introduction of a simple task such as tuning a radio, or a transponder, can induce an illusion[11] that can lead to loss of control.

Had the SOCAL controllers followed proper procedures then the accident pilot would not have been forced to respond to multiple ATC requests and commands during the most critical phase of the flight. The accident pilot was demonstrating controlled and appropriate flight inputs for 20 seconds of flight in IIMC conditions (≈09:44:34 – 09:44:54). During that 20-second flight segment, the pilot was performing a smooth and appropriate climb from 1375 to 1900 MSL. He also exhibited a controlled left bank for approximately 5 seconds, which was then in the process of being corrected via a controlled right bank for 10 seconds prior to ATC requiring an "ident." Prior to the SOCAL controller issuing three radio calls in a 15-second period (two questions and one command), the accident pilot was piloting the aircraft in a smooth and controlled fashion. The accident pilot demonstrated smooth and controlled flight in IIMC conditions for 24-seconds (09:44:34 – 09:45:03) prior to having his attention split, workload increased, and forced to look down and to the left to "ident." There is no indication from calculated data or radio traffic that the accident pilot was panicking or beyond his piloting capabilities and was within a few hundred feet of clearing the clouds at the time ATC required him to "ident," which likely caused the pilot to experience a coriolis effect.

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[11] The "coriolis illusion" occurs when a pilot has been in a turn long enough for the fluid in the ear canal to move at the same speed as the canal. *A movement of the head in a different plane, such as looking at something in a different part of the flight deck, may set the fluid moving, creating the illusion of turning or accelerating on an entirely different axis*. This action causes the pilot to think the aircraft is performing a maneuver it is not. The disoriented pilot may maneuver the aircraft into a dangerous attitude in an attempt to correct the aircraft's perceived attitude. For this reason, it is important that pilots develop an instrument cross-check or scan that involves minimal head movement. Take care when retrieving charts and other objects in the flight deck—if something is dropped, retrieve it with minimal head movement and be alert for the coriolis illusion.