National Transportation Safety Board

Washington, DC 20594

Response to Petition for Reconsideration

Date: FEB 2 4 2015

Mr. Ed Friedman, Petitioner
Point of View Helicopter Services
42 Stevens Road
Bowdoinham, Maine 04008

In accordance with 49 *Code of Federal Regulations* (CFR) 845.41, the National Transportation Safety Board (NTSB) has reviewed the September 3, 2014, petition for reconsideration of the probable cause for the aircraft accident involving a Sikorsky 269C helicopter, N888ZW, on July 3, 2013, near Burnham, Maine (ERA13LA314). On the basis of this review, the NTSB hereby denies the petition in its entirety.

On July 3, 2013, about 1648 eastern daylight time, a Sikorsky 269C, N888ZW, operated by Point of View Helicopter Services, collided with terrain near Burnham, Maine. The pilot received serious injuries, and the passenger received minor injuries. The helicopter was substantially damaged. The flight was conducted under the provisions of 14 CFR Part 91. Visual meteorological conditions prevailed at the time of the accident. No flight plan was filed. The aerial observation flight (to track black bears) originated about 1544 from Waterville Robert LaFleur Airport (WVL), Waterville, Maine.

The findings and probable cause of the accident, which were adopted on August 7, 2014, were as follows:

Occurrences

Maneuvering—Low-alt flying—Loss of tail rotor effectiveness
Uncontrolled descent—Collision with terr/obj (non-CFIT [controlled flight into terrain])

Findings

Aircraft—Aircraft oper/perf/capability—Performance/control parameters—Directional control—Not attained/maintained (Cause)

Aircraft—Aircraft oper/perf/capability—Performance/control parameters—Altitude—Not specified (Factor)

Personnel issues—Action/decision—Info processing/decision—Decision making/judgment—Pilot (Factor)

The NTSB determined that the probable cause of the accident was "the pilot's failure to maintain directional control while maneuvering, which resulted in the loss of tail rotor effectiveness, an uncontrolled descent, and an in-flight collision with trees [sic] and terrain. Contributing to the accident was the pilot's intentional operation at an altitude too low to allow for recovery."

The petitioner is Mr. Ed Friedman of Point of View Helicopter Services, who was the pilot of the accident helicopter. He stated that the probable cause was not consistent with information in the factual report (and the brief of accident narrative) and requested that the probable cause be revised to "accurately reflect the Factual Report and what actually occurred."

Background

The NTSB's investigation of this accident found that, according to the pilot, while he was flying the helicopter about 50 feet above tree tops at an airspeed of between 10 and 20 knots and with a "fairly calm" wind and the engine instruments reading normal, he began a "fading right turn" (that is, a right turn with a sideways component of flight leading into it.) During the turn, the pilot input a "modicum" of left antitorque pedal while slowing. About 2 seconds after initiating the right turn and while the helicopter was about 30 to 40 feet above the trees, the turn escalated into a right (clockwise) spin about the main rotor axis despite the pilot's left pedal inputs, which the pilot believed was consistent with a sudden loss of tail rotor authority. The helicopter subsequently impacted trees and terrain. The passenger, who had flown only once before in a helicopter, reported that the helicopter spun counterclockwise. Postaccident examinations of the airframe, flight controls, main and tail rotor drive system components, engine, and engine accessories revealed no evidence of a preimpact failure or malfunction.

Petitioner's Claim and NTSB's Response

The petitioner stated that the probable cause was in error because it "is not supported by the Factual Report or what actually occurred." The petitioner also stated that the probable cause "appears to be inadvertently backwards, or the reverse of what occurred." To demonstrate his point, the petitioner provided the following excerpt from the History of Flight section in the factual report:

> He [the pilot] reported that perhaps 2 seconds from initiation of the right turn (with the helicopter approximately 30-40 feet above the trees), the turn escalated in the same direction into a spin (despite left pedal) about the main rotor axis consistent with [the] sudden loss of tail rotor authority. As the out of control spin began and [the] helicopter descended, his passenger asked 'what's going on?' to which he replied 'I don't know' before pulling up on the collective to ease their imminent contact with the trees (approximately 40 feet in height).

The petitioner indicated that this sequence of events was correct. He explained that "normal flight and directional control were in fact maintained until loss of tail rotor authority occurred at which time loss of yaw control did occur while pitch control was maintained as we entered the trees in a level attitude."

The petitioner further stated that the brief of accident narrative included the following statement: "therefore, the helicopter likely entered a right spin during the right turn due to the loss of tail rotor effectiveness." As with the factual report, the petitioner indicated that this sequence of events was correct (that is, the loss of tail rotor effectiveness caused the loss of yaw control). However, the petitioner indicated that the probable cause statement "reverses this [sequence of events], inaccurately stating [he] lost control of the aircraft first, resulting in LTE [loss of tail rotor effectiveness] when in fact it was loss of tail rotor authority that caused loss of directional control." In addition, the petitioner suggested a revised probable cause indicating that (1) the accident helicopter "suffered a sudden loss of tail rotor authority causing a rapid spin in a clockwise direction [which] resulted in the pilot's inability to maintain directional control while slowly descending into the trees with subsequent ground impact" and (2) the flight conditions did not "appear to be those classically preceding loss of tail rotor effectiveness (LTE) except a right turn."

The NTSB notes that the information in the factual report, indicating that the loss of tail rotor effectiveness caused the loss of yaw control, was based on information learned during the NTSB's August 2013 telephone conversation with the petitioner. Factual reports present relevant evidence gathered during an investigation but do not include the NTSB's analysis of that evidence. As a result, the petitioner's recollection of the events leading to the accident appeared in the factual report as he described them during the telephone conversation.

The NTSB recognizes that the statement in the brief of accident narrative, "therefore, the helicopter likely entered a right spin during the right turn due to the loss of tail rotor effectiveness," could imply that a loss of tail rotor effectiveness preceded a loss of yaw control. However, the brief of accident statement was intended to indicate that the helicopter spun in a clockwise direction, as reported by the pilot, and not a counterclockwise direction, as reported by the passenger, as a result of the loss of tail rotor effectiveness. The NTSB will clarify this statement accordingly.

Regarding the petitioner's claim that the probable cause "appears to be inadvertently backwards," the NTSB acknowledges that the statements in the brief of accident narrative and the probable cause were not consistent. The probable cause correctly stated the sequence of events determined by the NTSB's investigation of this accident: the pilot's failure to maintain directional control led to the loss of tail rotor effectiveness. Specifically, the pilot did not maintain precise yaw control while operating out of ground effect and at a low airspeed, which are conditions conducive to a loss of tail rotor effectiveness. As a result, the pilot should have anticipated the potential for loss of tail rotor effectiveness, especially given the helicopter's low altitude and thus the limited opportunity that would be available to make control inputs to recover the helicopter if necessary.

The Federal Aviation Administration's *Helicopter Flying Handbook* (FAA-H-8083-21A, dated 2012) states the following regarding loss of tail rotor effectiveness: "whenever possible, pilots should learn to avoid the following combinations . . . Low and slow flight outside of ground effect . . . . Pilots who put themselves in situations where the combinations above occur should know that they are likely to encounter LTE." The handbook also states, "the key is to not

put the helicopter in a compromising condition but if it does happen being educated enough to recognize the onset of LTE and be prepared to quickly react to it before the helicopter cannot be controlled."

The *Helicopter Flying Handbook* further states, "early detection of LTE followed by the immediate flight control application of corrective action . . . is the key to a safe recovery." According to the handbook, such corrective actions include "applying forward cyclic to regain airspeed" and "reducing the collective thus reducing the high power demand on the tail rotor." The factual report stated that, "because the flight was so low, [the pilot] could not lower [the] collective (increasing his rate of descent), apply forward cyclic and accelerate." The helicopter's low altitude might have prevented the pilot from lowering the collective, but he could have applied forward cyclic with no reduction in collective when the yaw to the right first began to (1) gain airspeed and (2) try to prevent a loss of tail rotor effectiveness. A loss of some altitude might have occurred, especially if the cyclic movement was rapid or large. In this case, applying forward cyclic only might have kept the helicopter above the trees, even with a possible loss of altitude. Thus, the loss of tail rotor effectiveness resulted from the helicopter's low and slow flight out of ground effect and the pilot's failure to quickly respond with the appropriate control inputs before the helicopter's altitude was too low to allow for a recovery.

Disposition

After review of the evidence, the petition for reconsideration of the NTSB's probable cause in connection with the aircraft accident involving a Sikorsky 269C helicopter, N888ZW, on July 3, 2013, near Burnham, Maine, is denied in its entirety. In addition, after review of the original case material, the NTSB determined that the probable cause statement did not clearly convey the circumstances that ultimately led to the loss of tail rotor effectiveness, As a result, the identified parts of the brief of accident have been modified as follows:

Narrative

On page 1 of the brief of accident, revise the last sentence in the second paragraph to clarify the intended meaning of the sentence. As a result, the sentence now reads as follows (with changes in italics): "Although the pilot and passenger descriptions of the direction of the spin were inconsistent, the lack of any mechanical issue with the helicopter or its engine, the pilot's comment that the engine readings were normal at the start of the turn, and *the* helicopter's flight condition when the loss of control occurred (operating out of ground effect and turning right at a low airspeed) *were* consistent with a loss of tail rotor effectiveness *during the right turn, resulting in a right (clockwise) spin.*"

Delete the sentence on page 2 of the brief of accident as a result of the changes to the sentence above.

Probable Cause

Revise the first and second sentences in the probable cause statement to clarify the events that led to the accident, as discussed previously in this response. As a result, the probable cause

now reads as follows: "The pilot's failure to maintain *yaw control while operating out of ground effect at a low airspeed*, which resulted in the loss of tail rotor effectiveness, an uncontrolled descent, and an in-flight collision with *trees* and terrain. Contributing to the accident was the pilot's *failure to recognize that the low-altitude maneuvering during the aerial observation flight could lead to a loss of tail rotor effectiveness*."

Acting Chairman HART and Members SUMWALT and WEENER concurred in the disposition of this petition for reconsideration.

Enclosures:

1. Original Brief of Accident
2. Revised Brief of Accident

National Transportation Safety Board
Washington, DC 20594

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Brief of Accident

Adopted 08/07/2014

ERA13LA314
File No. 32813 | 07/03/2013 | Burnham, ME | Aircraft Reg No. N888ZW | Time (Local): 16:48 EDT

Make/Model:	Sikorsky/269C
Engine Make/Model:	Lycoming / HIO-360-D1A
Aircraft Damage:	Substantial
Number of Engines:	1
Operating Certificate(s):	Rotorcraft External Load (133)
Type of Flight Operation:	Aerial Observation
Reg. Flight Conducted Under:	Part 91: General Aviation

	Fatal	Serious	Minor/None
Crew	0	1	0
Pass	0	0	1

Last Depart. Point:	Waterville, ME
Destination:	Local Flight, ME
Airport Proximity:	Off Airport/Airstrip

Condition of Light:	Day
Weather Info Src:	Weather Observation Facility
Basic Weather:	Visual Conditions
Lowest Ceiling:	None
Visibility:	10.00 SM
Wind Dir/Speed:	Calm
Temperature (°C):	26
Precip/Obscuration:	No Obscuration; No Precipitation

Pilot-in-Command Age: 58

Certificate(s)/Rating(s)
Commercial; Private; Multi-engine Land; Single-engine Land; Single-engine Sea; Helicopter

Instrument Ratings
Airplane

Flight Time (Hours)

Total All Aircraft:	1165
Last 90 Days:	27
Total Make/Model:	419
Total Instrument Time:	142

*** Note: NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report. ***

The pilot reported that, during a black bear-tracking flight while flying the helicopter about 50 feet above tree tops at an airspeed of between 10 and 20 knots with a "fairly calm" wind and the engine instruments reading normal, he began a "fading right turn" (that is, a right turn with a sideways component of flight leading into it.) During the turn, the pilot input a "modicum" of left antitorque pedal while slowing. About 2 seconds after initiating the right turn and while the helicopter was about 30 to 40 feet above the trees, the turn escalated into a right (or clockwise) spin about the main rotor axis despite the pilot's left pedal inputs, which is consistent with a sudden loss of tail rotor authority. The helicopter subsequently impacted trees and terrain. The passenger, who had only been flown once previously in a helicopter, reported that the helicopter spun counterclockwise.

Postaccident examinations of the airframe, flight controls, main and tail rotor drive system components, engine, and engine accessories revealed no evidence of preimpact failure or malfunction. Although the pilot and passenger descriptions of the direction of the spin were inconsistent, the lack of any mechanical issue with the helicopter or its engine, the pilot's comment that the engine readings were normal at the start of the turn, and helicopter's flight condition when the loss of control occurred (operating out of ground effect and turning right at a low airspeed) consistent with a loss of tail rotor effectiveness.

Therefore, the helicopter likely entered a right spin during the right turn due to the loss of tail rotor effectiveness.
Updated at Aug 7 2014 12:38PM

ERA13LA314
File No. 32813 | 07/03/2013 | Burnham, ME | Aircraft Reg No. N888ZW | Time (Local): 16:48 EDT

OCCURRENCES

Maneuvering-low-alt flying - Loss of tail rotor effectiveness
Uncontrolled descent - Collision with terr/obj (non-CFIT)

FINDINGS

Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Directional control-Not attained/maintained - C
Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Altitude-Not specified - F
Personnel issues-Action/decision-Info processing/decision-Decision making/judgment-Pilot - F

Findings Legend: (C) = Cause, (F) = Factor

The National Transportation Safety Board determines the probable cause(s) of this accident as follows:
The pilot's failure to maintain directional control while maneuvering, which resulted in the loss of tail rotor effectiveness, an uncontrolled descent, and an in-flight collision with tress and terrain. Contributing to the accident was the pilot's intentional operation at an altitude too low to allow for recovery.

National Transportation Safety Board
Washington, DC 20594

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Brief of Accident

Adopted 08/07/2014

ERA13LA314
File No. 32813 | 07/03/2013 | Burnham ,ME | Aircraft Reg No. N888ZW | Time (Local): 16:48 EDT

Make/Model:	Sikorsky/269C
Engine Make/Model:	Lycoming / HIO-360-D1A
Aircraft Damage:	Substantial
Number of Engines:	1
Operating Certificate(s):	Rotorcraft External Load (133)
Type of Flight Operation:	Aerial Observation
Reg. Flight Conducted Under:	Part 91: General Aviation

	Fatal	Serious	Minor/None
Crew	0	1	0
Pass	0	0	1

Last Depart. Point:	Waterville, ME
Destination:	Local Flight, ME
Airport Proximity:	Off Airport/Airstrip

Condition of Light:	Day
Weather Info Src:	Weather Observation Facility
Basic Weather:	Visual Conditions
Lowest Ceiling:	None
Visibility:	10.00 SM
Wind Dir/Speed:	Calm
Temperature (°C):	26
Precip/Obscuration:	No Obscuration; No Precipitation

Pilot-in-Command Age: 58

Certificate(s)/Rating(s)
Commercial; Private; Multi-engine Land; Single-engine Land; Single-engine Sea; Helicopter

Instrument Ratings
Airplane

Flight Time (Hours)

Total All Aircraft:	1165
Last 90 Days:	27
Total Make/Model:	419
Total Instrument Time:	142

*** Note: NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report. ***

This report was modified on February 23, 2015. Please see the public docket for this accident to view the original report.

The pilot reported that, during a black bear-tracking flight while flying the helicopter about 50 feet above tree tops at an airspeed of between 10 and 20 knots with a "fairly calm" wind and the engine instruments reading normal, he began a "fading right turn" (that is, a right turn with a sideways component of flight leading into it.) During the turn, the pilot input a "modicum" of left antitorque pedal while slowing. About 2 seconds after initiating the right turn and while the helicopter was about 30 to 40 feet above the trees, the turn escalated into a right (or clockwise) spin about the main rotor axis despite the pilot's left pedal inputs, which is consistent with a sudden loss of tail rotor authority. The helicopter subsequently impacted trees and terrain. The passenger, who had only been flown once previously in a helicopter, reported that the helicopter spun counterclockwise.

Postaccident examinations of the airframe, flight controls, main and tail rotor drive system components, engine, and engine accessories revealed no evidence of preimpact failure or malfunction.

Although the pilot and passenger descriptions of the direction of the spin were inconsistent, the lack of any mechanical issue with the helicopter or its engine, the pilot's comment that the engine readings were normal at the start of the turn, and the helicopter's flight condition when the loss of control occurred (operating out of ground effect and turning right at a low airspeed) were consistent with a loss of tail rotor effectiveness during the right turn, resulting in a right (clockwise) spin.

ERA13LA314
File No. 32813 | 07/03/2013 | Burnham ,ME | Aircraft Reg No. N888ZW | Time (Local): 16:48 EDT

OCCURRENCES

Maneuvering-low-alt flying - Loss of tail rotor effectiveness
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Personnel issues-Action/decision-Info processing/decision-Decision making/judgment-Pilot - F

Findings Legend: (C) = Cause, (F) = Factor

The National Transportation Safety Board determines the probable cause(s) of this accident as follows:
The pilot's failure to maintain yaw control while operating out of ground effect at a low airspeed, which resulted in the loss of tail rotor effectiveness, an uncontrolled descent, and an in-flight collision with trees and terrain. Contributing to the accident was the pilot's failure to recognize that the low-altitude maneuvering during the aerial observation flight could lead to a loss of tail rotor effectiveness.