



Federal Aviation Administration

Memorandum

Date: November 30, 2010

To: Tony Fazio, Director, Office of Accident Investigation and Prevention, AVP-1

From: Ali Bahrami, Manager, Transport Airplane Directorate, [REDACTED]
Aircraft Certification Service, ANM-100

Prepared by: Jean Aby, Rotorcraft Program Manager, Seattle Aircraft Certification Office, ANM-100S

Subject: National Transportation Safety Board (NTSB) Information Request 10-282

This Memorandum is in response to NTSB Information Request Number 10-282, dated August 10, 2010.

The NTSB requested that the FAA provide the following:

"The Aircraft listed below are configured with Sikorsky seats and altered by using BAE harnesses mounted to the folding seat frame. The evaluation and adequacy of this alteration will be conducted by the cognizant directorate and follow-up documented under PTRS #NM09200809082." [Listed aircraft] N103WF, N61NH, N4503E, and N7011M.

1. Please Provide a copy of PTRS # NM09200809082, and
2. The outcome of the "cognizant directorate" review of this alteration.

The Seattle Aircraft Certification Office (SACO) reviewed the original structural substantiation of the Sikorsky lap/shoulder harness (part number 1101155-1) as installed in the cabin on Sikorsky Seats, (part number 650-21). This report was in support of the two Federal Aviation Administration (FAA) form 337's dated July 19, 2006. These were transmitted to the SACO with a Memorandum from the Portland Flight Standards District Office NM-FSDO-09, dated December 3, 2008. The form 337s were for helicopters N4503E and N7011M. An FAA form 8110-3 accompanied the report, and provided a finding of compliance to the regulations appropriate to the S-61N. The 8110-3 was valid for the following Sikorsky Helicopter serial numbers: 61216, 61220, 61242, 61465, 61472, 61744, 61426 and 61453.

The SACO's review found that the structural substantiation was correct in its determination that the shoulder harness installation met the regulatory requirements.

The FSDO Memorandum additionally indicated a concern, supported by pictures, with passenger safety of the basic design and installation of the Sikorsky seats, with or without the shoulder restraint. It is difficult for SACO to comment on the certification of the Sikorsky seat design as it was approved in the 1960s.

June 24, 2009, Ms. Jean Aby from the SACO traveled with Mr. Erik Ramseyer and Mr. Curt Cowley from the Portland FSDO to Croman Helicopters Services to discuss the passenger restraint installations. Due to the insufficient number of Sikorsky lap/shoulder harnesses, part number 1101155-1, the BAE

Systems 1-10-Y30401 lap/shoulder restraint harness assemblies had been installed. This BAE harness is TSO approved.

The latch of this BAE harness is a rotating type buckle, that when properly worn, provides a central attachment point for the harness straps at the front of the pelvis area and a single rotating disconnect buckle. It was observed during the operation of this assembly that the latching/unlatching portion of the buckle, when rotated to disengage and release the straps, will rotate freely to approximately 45 degrees either side of its resting position. This initial 45 degrees of rotation requires a relatively small force. However, the remaining approximate 45 degrees of rotation required to actually unlatch the harness necessitates a significantly larger force. Under life threatening duress, an individual could mistakenly believe that having easily turned the buckle through its initial 45 degrees of rotation and hit the point at which the much larger force is required, that the initial 45 degrees of rotation is the complete motion of the buckle necessary to release the harness.

Additionally, if the ends of the harness straps that are inserted into the buckle are loaded at an angle, rather than pulling directly in the plane of the buckle, the buckle becomes very difficult to release. The force needed to rotate the buckle increases dramatically. This was tested to simulate the loading that would occur if the helicopter has rolled or is in an odd position.

Carson completed a supplemental type certificate on December 5, 2008, to replace both the seats and the lap/shoulder restraints. When at Carson, the SACO and FSDO representatives tested the new harness, (BAE 4-01-905201), which comes with the TSO'd seat assembly. Although the buckle operates in a similar rotational manner, it does not require much of a differential in force through the range of motion necessary to release the harness straps. Also, it unlatches regardless of the loads or direction of the loads placed upon the straps.

Based on the observations of the BAE systems 1-10-Y30401 harness, the SACO is notifying the office responsible for the harness TSO, requesting that the requirements of the TSO be re-evaluated.

Should you have any questions, please contact Ms. Jean Aby, ANM-100S, at (425) 917-6406.

Section I - Transmittal (1)

Record ID NM09 200809082	Inspector Office NM09 - PORTLAND FSDO NM09 / PDX FSDO
Inspector Code/Name NM09EDR - RAMSEYER, ERIK D.	Inspector Unit GAH
Inspector Phone 5036153219	Inspector Type ASI
Activity Number 3634 - SURVL/OPER/INSP ACFT RECORDS	FAR 135
Call-Up Date	Planned N
Start Date 09/08/2008	NPG
Closed Date 12/02/2008	Status Closed
ATA Chapter	Result Follow-Up

Section I - Transmittal (2)

Designator C4NA - CARSON HELICOPTER SERVICES INC	Affiliated Designator/Name
A/C Registration #	OTNA Office
Location/Point of Departure 3S8 - GRANTS PASS	Point of Arrival
Flight #	Complaint #
Make / Model / Series SK-61-N	Occurrence #
Simulator Device ID	Incident #
Non-Cert Activity Name/Company	EIR #
	Accident #

Section I - Transmittal (3)

Airman Certificate Number	Airman Name
Examiner Certificate Number	Examiner Name
Applicant Certificate Number	Applicant Name
Recommending Instructor Certificate Number	Recommending Instructor Name

Pass/Fail	Exam Kind
Foreign Certificate N	8430 13#

Section I - Transmittal (4)	
Tracking	Miscellaneous
Local Use	Numerical Miscellaneous
Regional Use	Activity Time
National Use	Assessment 0
Last District Office Update 12/10/2008 5:19:00 PM	Travel Cost 00000.00
Download Office(s)	Trigger(s)
Related Record ID	Geographic N
Originating Inspector	Foreign N
	Process Date 12/11/2008 10:57:00 PM

Section II - Personnel
No Data

Section III - Equipment
No Data

Section IV - Comments
<p>H399P (H-Aircraft 399-Records/Reports P-Potential Problem) MAINT RECORDS AND WT AND BAL REVIEWED DISCREPANCIES NOTED SEE FOLLOW-UP 12/02/2008 FOLLOW-UP COMPLETED - PREVIOUS WEIGHT OF CARSON HELICOPTERS S-61N HELICOPTERS WAS BROUGHT INTO QUESTION AFTER IT WAS DISCOVERED THAT THE SCALES THAT WERE PREVIOUSLY USED WERE INCORRECT/DAMAGED, THE AVERAGE WEIGHT DISCREPANCY WAS 500 LBS FOR THE</p>

ACTUAL WEIGHT. AS A RESULT OF THIS DISCOVERY, ALL FLEET AIRCRAFT WERE RE-WEIGHED USING CALIBRATED SCALES AND COMPANY PROCEDURES. ||

|| ALL AIRCRAFT WERE FOUND TO BE WITHIN MANUFACTURER AND AIRCARRIER FLIGHT MANUAL LIMITS. ALL AIRCRAFT MAINTENANCE RECORDS WERE AMENDED TO SHOW CORRECT WEIGHTS IAW AC PROCEDURES||

|| NO EVIDENCE OF CFR VIOLATION NOTED, HOWEVER THIS ISSUE IS A SAFETY ISSUE THAT WILL BE CLOSELY MONITORED BY THE CMT||

|| THE CMT HAS SCHEDULED A FOLLOW UP FOR JANUARY 2008. REGIONAL SPECIALISTS WILL FACILITATE AN DEPTH INSPECTION DURING THIS VISIT.||

||
||

Subactivities

No Data

Query Criteria

Record ID: NM09200809082

SPAS Feedback

For Official Use Only
Public availability to be determined under 5 U.S.C. 552



Federal Aviation
Administration

Gov Sites Readers &
USA.gov Viewers
DOT
Intranet



Updated: September 30th,
2010

NATIONAL TRANSPORTATION SAFETY BOARD

Subject: Accident / Incident Investigation Support Request
To: Federal Aviation Administration, Accident Investigation Division

From: NTSB, Name and Office: Cynthia L. Keegan, AS-60

Request Number: 10-282 **Date:** August 10, 2010

Event: LAX08PA259, Weaverville, CA, August 5, 2008

DESCRIPTION OF SUPPORT REQUESTED

PTRS entry dated September 30, 2008, (see attached copy) states the following:

“Aircraft listed below are configured with Sikorsky seats and altered by using BAE harnesses mounted to the folding seat frame. The evaluation and adequacy of this alteration will be conducted by the cognizant directorate and follow-up documented under PTRS #NM09200809082.” [Listed aircraft] N103WF, N61NH, N4503E, and N7011M.

1. Please provide a copy of PTRS #NM09200809082, and
2. The outcome of the “cognizant directorate” review of this alteration.

NTSB Contact / Telephone 202-
FAA Coordinator/IIC: Tony James

- - - - - For Federal Aviation Administration Use - - - - -

- - - - - For Federal Aviation Administration Use - - - - -

Date Received: <u>8/10/2010</u>	AAI-200 Log Number: <u>10-282</u>
To: <u>AFS-140</u>	Date Forwarded: <u>8/11/2010</u>

From: Manager, Accident Investigation Division

The above request has been received from the NTSB. Your support in providing the data not later than 15-working days or as soon as possible is appreciated. Please refer any questions on this matter to Ms. Kim Burtch at (202) 493-4812; [REDACTED]

Date returned to Accident Investigation Division _____

Received by _____ on _____



Federal Aviation Administration

Memorandum

Date: November 30, 2010

To: Tony Fazio, Director, Office of Accident Investigation and Prevention, AVP-1

From: Ali Bahrami, Manager, Transport Airplane Directorate, Aircraft Certification Service, ANM-100

Prepared by: Jean Aby, Rotorcraft Program Manager, Seattle Aircraft Certification Office, ANM-100S
Ali Bahrami

Subject: National Transportation Safety Board (NTSB) Information Request 10-282

This Memorandum is in response to NTSB Information Request Number 10-282, dated August 10, 2010.

The NTSB requested that the FAA provide the following:

"The Aircraft listed below are configured with Sikorsky seats and altered by using BAE harnesses mounted to the folding seat frame. The evaluation and adequacy of this alteration will be conducted by the cognizant directorate and follow-up documented under PTRS #NM09200809082." [Listed aircraft] N103WF, N61NH, N4503E, and N7011M.

1. Please Provide a copy of PTRS # NM09200809082, and
2. The outcome of the "cognizant directorate" review of this alteration.

The Seattle Aircraft Certification Office (SACO) reviewed the original structural substantiation of the Sikorsky lap/shoulder harness (part number 1101155-1) as installed in the cabin on Sikorsky Seats, (part number 650-21). This report was in support of the two Federal Aviation Administration (FAA) form 337's dated July 19, 2006. These were transmitted to the SACO with a Memorandum from the Portland Flight Standards District Office NM-FSDO-09, dated December 3, 2008. The form 337s were for helicopters N4503E and N7011M. An FAA form 8110-3 accompanied the report, and provided a finding of compliance to the regulations appropriate to the S-61N. The 8110-3 was valid for the following Sikorsky Helicopter serial numbers: 61216, 61220, 61242, 61465, 61472, 61744, 61426 and 61453.

The SACO's review found that the structural substantiation was correct in its determination that the shoulder harness installation met the regulatory requirements.

The FSDO Memorandum additionally indicated a concern, supported by pictures, with passenger safety of the basic design and installation of the Sikorsky seats, with or without the shoulder restraint. It is difficult for SACO to comment on the certification of the Sikorsky seat design as it was approved in the 1960s.

June 24, 2009, Ms. Jean Aby from the SACO traveled with Mr. Erik Ramseyer and Mr. Curt Cowley from the Portland FSDO to Croman Helicopters Services to discuss the passenger restraint installations. Due to the insufficient number of Sikorsky lap/shoulder harnesses, part number 1101155-1, the BAE

CONCURRENCES
ROUTING SYMBOL
ANM-100S
Bob Breneman
INITIALS/SIG
DATE
on File
11-30-10
ROUTING SYMBOL
ANM-117
Mary Schooley
INITIALS/SIG
DATE
11-30-10
ROUTING SYMBOL
ANM-100-117
Ali Bahrami
INITIALS/SIG
DATE
11/30/10
ROUTING SYMBOL
ANM-101
INITIALS/SIG
DATE
11/30/10
ROUTING SYMBOL
INITIALS/SIG
DATE
11/30/10
ROUTING SYMBOL
140S for 100S
INITIALS/SIG
PReckamp
DATE
11/30/10