Carson Helicopter Services
Weaverville, California
August 5, 2008
LAX08PA259

National Transportation Safety Board
Washington, D.C.

Attachment 7

SR 2006-1 dated July 12, 2006,
CH-08233, dated September 19, 2008, and
FAA Forms 8110-3

25 Pages

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

STATEMENT OF COMPLIANCE WITH THE FEDERAL AVIATION REGULATIONS

DATE: July 12. 2006

AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION

MAKE	MODEL NO.	TYPE (Airplane, Radio, Helicopter, etc.)	NAME OF APPLICANT
Sikorsky	S-61L, S-61N	Helicopter	Carson Helicopters

LIST OF DATA

IDENTIFICATION	TITLE
Report No. SR 2006-1, NC, Dated July 12,2006	Stress Report, "Installation of Seat Harness"

Notes:

1) The structural aspects only of the above listed data are approved herein. This approval is only for the engineering design data and is not installation approval.

2) This approval is valid for Sikorsky:
S-61N S/N 61216
S-61N S/N 61220
S-61N S/N 61242
S-61N S/N 61465
S-61N S/N 61472
S-61N S/N 61744
S-61L S/N 51426
S-61L S/N 51453

PURPOSE OF DATA: In support of a major alteration to install shoulder harnesses. The approval is design data approval only and is not installation approval.

APPLICABLE REQUIREMENTS (List specific sections): CAR 7.200; 7.260; 7.300; 7.301; 7.302; 7.303; 7.306; 7.355

CERTIFICATION - Under authority vested by direction of the Administrator and in accordance with conditions and limitations of appointment under Part 183 of the Federal Aviation Regulations, data listed above and on attached sheets numbered N/A have been examined in accordance with established procedures and found to comply with applicable requirements of the Federal Aviation Regulations.

I (We) Therefore
- ☐ Recommend approval of these data
- ☒ Approve these data

SIGNATURE(S) OF DESIGNATED ENGINEERING REPRESENTATIVE(S)	DESIGNATION NUMBER(S)	CLASSIFICATION(S)
[redacted] David A Lawson, Jr.	DERT-830332-NE	Structures

FAA Form 8110-3 (11-70) SUPERSEDES PREVIOUS EDITION

ELECTRONIC FORMAT (7-00)

DA LAWSON
7-12-2006

INSTALLATION OF SHOULDER HARNESS

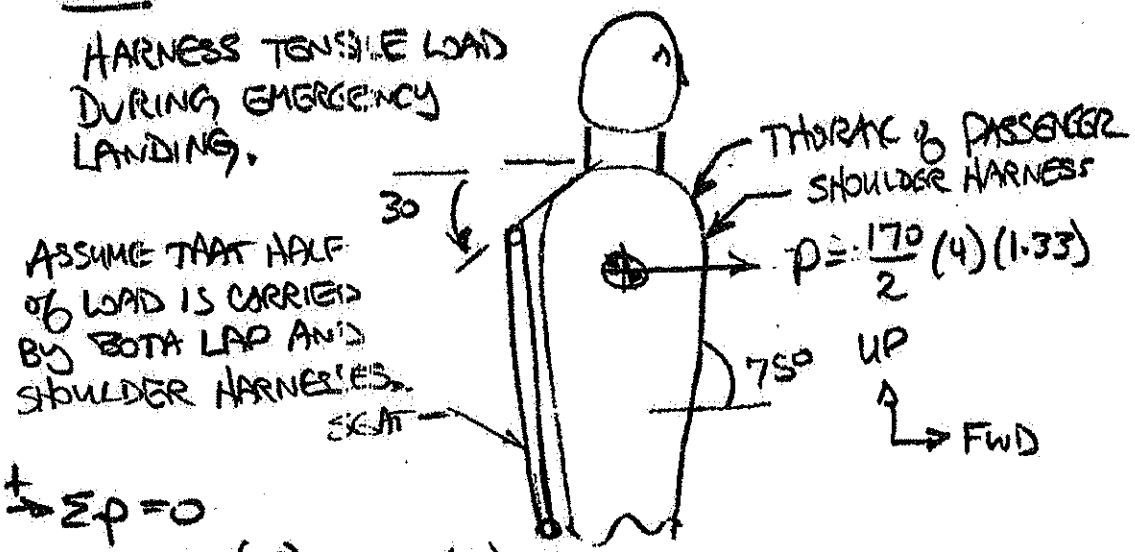
CARSON HELO
S-61 L/N

THE PURPOSE OF THIS REPORT IS TO DETERMINE THE SUITABILITY OF INSTALLING A SHOULDER HARNESS, AND TO SHOW COMPLIANCE WITH THE RULES.

THE CERTIFICATION BASIS OF THE S-61 L/N PER TCDS 1H15 IS CAR 7 AUGUST 1, 1956 INCLUDING AMENDMENTS 7-1 THROUGH 7-4.

LOADS

HARNESS TENSILE LOAD DURING EMERGENCY LANDING.



ASSUME THAT HALF OF LOAD IS CARRIED BY BOTH LAP AND SHOULDER HARNESSES.

$\overset{+}{\rightarrow} \Sigma P = 0$

$P - P_t \cos(75) - P_t \cos(30) = 0$

$P_t = \frac{P}{\cos(75) + \cos(30)} \approx .85P = \frac{1}{1}P$

TENSILE LOAD, $P_t = P = \frac{170\ LBS}{2}(4)(1.33)$

$P_t = 452$ LBS

$g_x = 4$ PER §7.260(a)(2)

$F = 1.33$ PER §7.355(c)(2)

DA LAWSON
7-17-2006

INSTALLATION of SHOULDER HARNESS

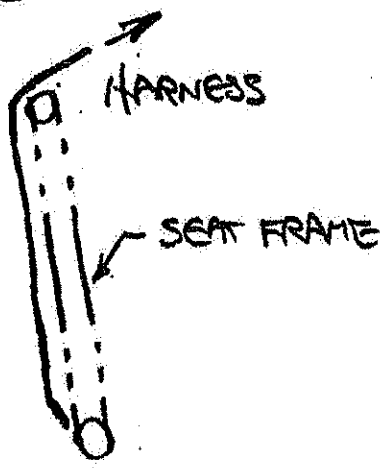
CARSON AELO
S-61 L/N

STRENGTH of TSO C22f HARNESS

P=1500 LBS

$$MS = \frac{1500}{452} - 1 = \underline{+2.32}$$ TENSION

THE HARNESS IS ATTACHED TO THE LOWER SEAT BACK HORIZONTAL TUBE AND IS ROUTED OVER THE TOP SEAT BACK HORIZONTAL TUBE.



THE TUBES ARE MADE FROM NORMALIZED 4130 STEEL WITH AN OUTER DIAMETER of Ø.75 INCH AND A WALL THICKNESS of .065 INCH

THE ELASTIC TENSILE STRENGTH F_{TU} = 190,000 PSI PER MIL-HDBK-5J.

CHECK TUBES FOR ELASTIC BENDING STRENGTH

D_o = .75 D_i = .62 IN

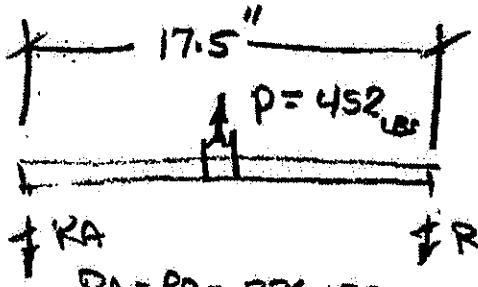
t = .065 IN

$C = \frac{D_o}{2}$ = .375 IN

$I = \frac{\pi}{4}(R_o^4 - R_i^4)$ = .0083 IN^4

$f_b = \frac{MC}{I}$ = 89620 PSI

$$MS = \frac{100000}{89620} - 1 = \underline{+.12}$$ ELASTIC BENDING



RA = RB = 226 LBS

$M = RA\left(\frac{17.5}{2}\right)$ = 1980 IN·LBS

DA LAWSON
7-12-2006

INSTALLATION & SHOULDER HARNESS

CARSON HELO
S-61 L/N

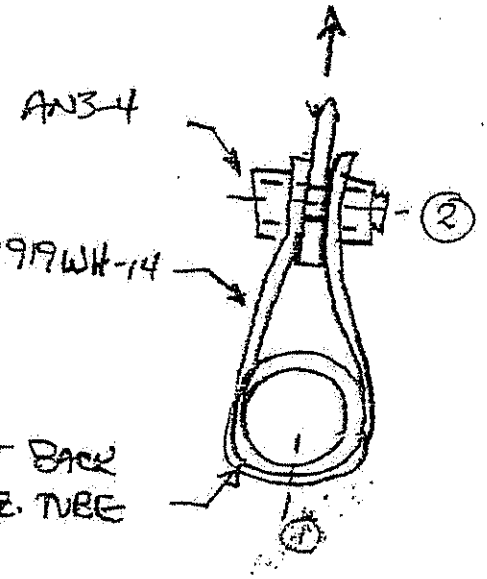
STRENGTH OF CLEVIS MS21919-WH-14

MATL AISI 301 ANNEALED

F_{tu} = 73000 PSI

F_{su} = 162000 PSI

P_t = 452 LBS



TENSILE STRENGTH (1)

$F_{tu}(W)(t)$ = 1168 LBS

W = .50 IN, t = .032 IN

$MS = \frac{1168}{452} - 1 = \frac{+1.58}{\text{TENSION}}$

AT THE BOLT HOLE (2)

$P_t = F_{tu}(W-D)(t)$ = 691 LBS

W = .50 IN, D = .204, t = .032 IN

$P_t = \frac{P_t}{2}$ = 226 LBS

$MS = \frac{691}{226} - 1 = \frac{+2.05}{\text{TENSION}}$

BOLT SHEAR STRENGTH

AN 3-4 P_s = 2070 LBS

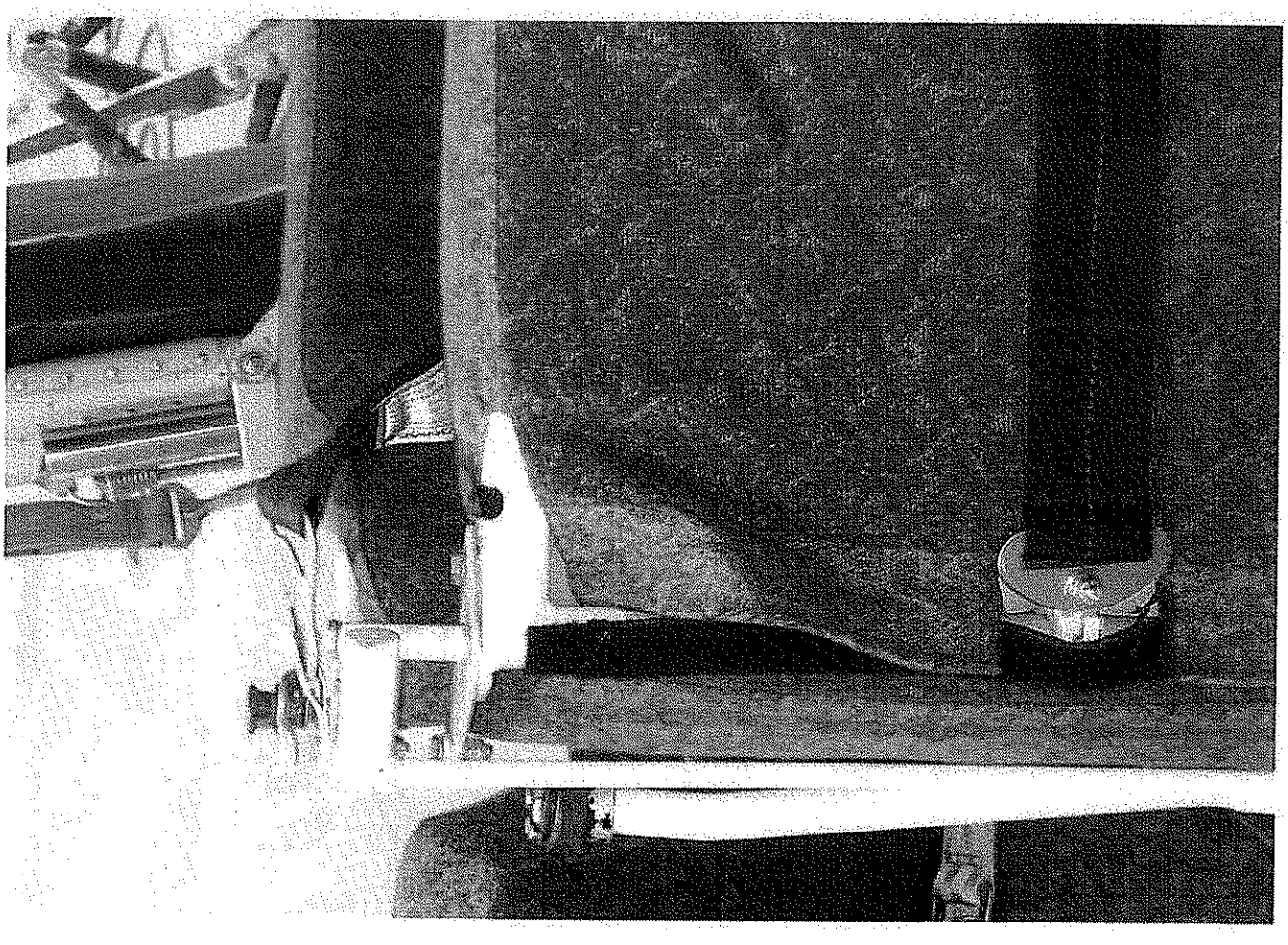
$MS = \frac{2070}{226} - 1 = \frac{\text{HIGH}}{\text{SHEAR}}$

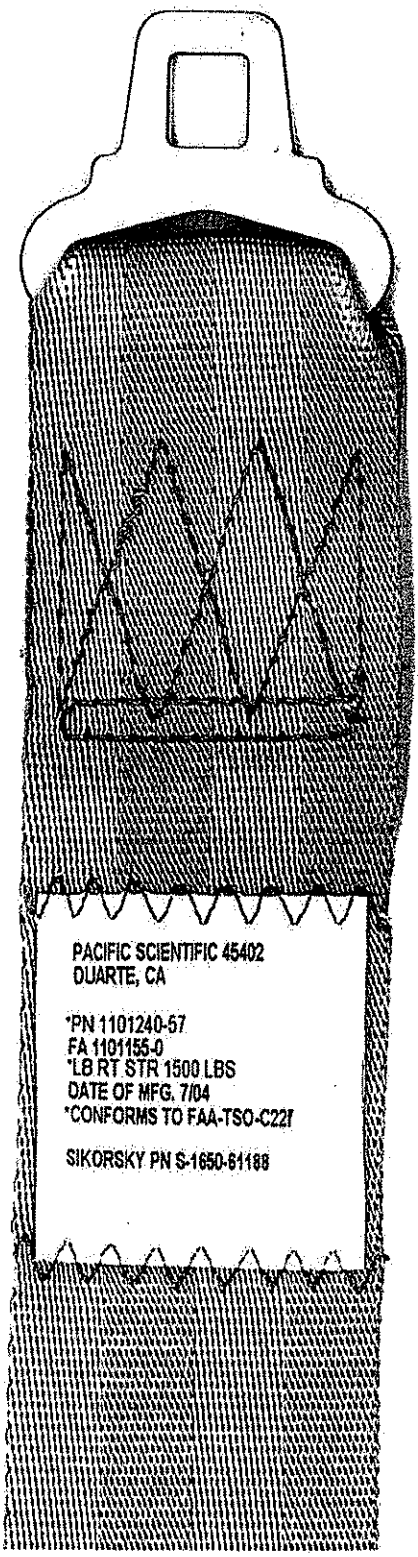
JOINT BEARING STRENGTH

$P_{BRG} = F_{bru}(D)(t)$ = 969 LBS

D = .188 IN t = .032 IN

$MS = \frac{969}{226} - 1 = \frac{+3.28}{\text{BEARING}}$

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OUARTE, CA
*PN 1101240-57
FA 1101155-0
*LB RT STR 1500 LBS
DATE OF MFG. 7/04
*CONFORMS TO FAA-TSO-C22f
SIKORSKY PN S-1650-61188

Structural substantiation report prepared by Lawson Aerospace LLC for:

CARSON HELICOPTERS, INC.

Structural Substantiation of Shoulder Harness Installation

on

Sikorsky S-61L/N Model Helicopters

Report No. CH-8233

Revision --

September 19, 2008

LOG OF REVISIONS

Date	Rev.	Description	Pages
09/19/2008	--	Original Release	All

TABLE OF CONTENTS

1. INTRODUCTION

This report demonstrates that the Shoulder Harnesses installed on the Sikorsky Model S-61L/N helicopters meets the requirements of CAR Part 7 as shown in the applicable paragraphs in Table 1.

The Shoulder harnesses are installed on the passenger seats in the passenger area of the Sikorsky Model S-61L/N.

2. LIST OF REFERENCES

1. Civil Air Regulations Part 7, Rotorcraft Airworthiness; Transport Categories.
2. Federal Aviation Administration, Type Certificate Data Sheet No. 1H15, Rev 15, 2003.
3. Metallic Materials Properties Development and Standardization, MMPDS-03, 2006.
4. Young, Roark's Formulas for Stress and Strain, 6th Ed., McGraw Hill, New York, NY, 1989.
5. Bruhn, Analysis and Design of Flight Vehicle Structures, Jacobs Publishing, Indianapolis, IN, 1973.
6. AC 21-34 Shoulder Harness-Safety Belt Installations.
7. AC 43.13-2B Chap. 9 Shoulder Harness Installations.
8. AC 91-65 Use of Shoulder Harness in Passenger Seats.
9. NAS 806 Aircraft Seats and Berths.
10. TSO C22g Safety Belts.
11. TSO C25a Aircraft Seats and Berths.
12. TSO C39b Aircraft Seats and Berths.
13. TSO C114 Torso Restraint Systems.

3. REGULATORY BASIS

A. TCDS

THE FOLLOWING DATA IS PERTINENT TO ALL MODELS OF THIS SERIES:

Certification Basis: CAR 7, August 1, 1956, including Amendments 7-1 through 7-4 and Special Conditions for Turbine Power Rotorcraft in FAA letter to Sikorsky Aircraft, March 31, 1961. FAA Administrator telegram, Performance Requirements, dated August 7, 1961.
Amendment 29-3 to Part 29 of the Federal Aviation Regulations, effective February 25, 1968, eliminated the requirements of CAR 7.350(e) by deleting FAR 29.771(e) and FAR 29.771(f).
Model S-61L: Exemption No. 178, dated August 9, 1961, and Exemption No. 186, dated October 6, 1961, and Exemption No. 244, dated January 30, 1963.
Models S-61N: Exemption No. 186A, dated November 28, 1962.
Model S-61N at 19,000 to 20,500 lbs gross weight: FAR 29.563, FAR 29.801, and FAR 29.807 of Amendment 12, effective February 1, 1977, to FAR Part 29.
Type Certificate (TC) issued: November 2, 1961
Date of Application: October 21, 1959
Production Basis: Production Certificate No. 105

B. COMPLIANCE CHECKLIST

CAR Part 7, dated August 1, 1956 Amendment 7-1 through 7-4, except as noted.				
Section	Descriptive	Amdt	Date	Method of Comp.
Sec. 7.200	Loads.		8/1/1956	Analysis
Sec. 7.201	Strength and deformation.		8/1/1956	Analysis
Sec. 7.202	Proof of structure.		8/1/1956	Analysis
Sec. 7.204	Design limitations.		8/1/1956	Analysis
Sec. 7.210	General.		8/1/1956	Analysis
Sec. 7.212	Maneuvering Conditions.		8/1/1956	Analysis
Sec. 7.260	General.		8/1/1956	Analysis
Sec. 7.300	Scope		8/1/1956	Design
Sec. 7.301	Materials.		8/1/1956	Design
Sec. 7.302	Fabrication methods.		8/1/1956	Design
Sec. 7.304	Protection.		8/1/1956	Design
Sec. 7.306	Material strength properties and design values.		8/1/1956	Design
Sec. 7.307	Special factors.		8/1/1956	Analysis
Sec. 7.355	Seat and safety belts.		8/1/1956	Design
Sec. 7.643	Safety belts.		8/1/1956	Design

Table 1, Method of Compliance.

4. DRAWING LIST

Passenger Seat Cross Tubes
650-2-39 (S6150-62903-101)
650-1-21 (S6150-62901-101)
H25E1 (S6150-62908-101)
H15-1 (S6150-62901-101)

5. SKETCHES, INSTALLATION

Figure 1, Aft View of Shoulder Harness on Passenger (Mock Up).

6. LOADS.

FLIGHT INERTIA LOADS:

The ultimate flight inertia loads are given by: [Ref. Sect. 7.260]
p = wt * nz * FS, where nz = 3.5, and the Factor of Safety = 1.5.

The (ultimate) emergency landing inertia loads are given by: [Ref. Sect. 7.355]
Forward, px = wt * nx * Fsb, where nx = -4 g's, and the safety belt factor = 1.33.
Sideways, py = wt * ny * Fsb, where ny = 2 g's.
Upward, pz = wt * nz * Fsb, where nz = 1.5 g's.
Downward, pz = wt * nz * Fsb, where nz = -4 g's.

	Wt	Fwd	Side	Up	Down	Inertia
	[g's]	[gx]	[gy]	[gz]	[gz]	[gz]
	1	**-4*1.33**	**2*1.33**	**1.5*1.33**	**-4*1.33**	**3.5*1.5**
	[lbs]	[lbs]	[lbs]	[lbs]	[lbs]	[lbs]
Payload	170	-904	452	339	-904	-893

Table 2, Ultimate Inertia Loads.

7. ALLOWABLES

A. FASTENER:

TYPE	Pss	Pt
	[lbs]	[lbs]
AN3	2,125	2,210

Table 4, Fastener Strength Allowables.

B. MATERIAL:

TYPE	Ftu	Fsu	Fbru
	[ksi]	[ksi]	[ksi]
ST 4130 Normalized	95	57	200
AL 7075-T6	79	47	126
AISI 301	73	50	162

Table 5, Material Strength Allowables.

8. ANALYSIS

A. SHOULDER HARNESS.

Assume that half of the passenger emergency landing inertia load is reacted by the lap belt and half by the TSO C22 Shoulder Harness.

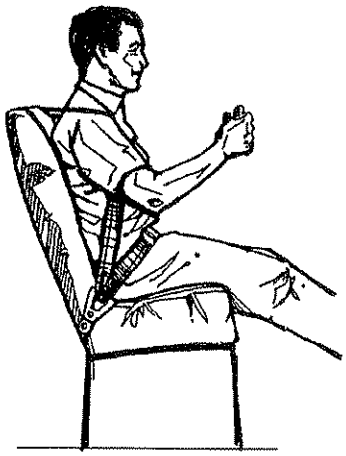

Figure 2, Free Body of the Shoulder Harness Attachment.

The tensile strength of the Shoulder Harness, Pt = 1,500 lbs.

The tensile load on the shoulder harness is given by:
pz = wt/2 * nx * Fsb = 452 lbs, where
wt = 170 lbs, nx = 4 (g's), the safety belt factor, Fsb = 1.33 per CAR 7.355

MS = Pt/pt -1 = +2.32
(Tension)

B. MS21919 CLAMP.

The Shoulder Harness routes over the (folding) seat back and attaches to the seat bottom cross tube with a MS21919 clamp.

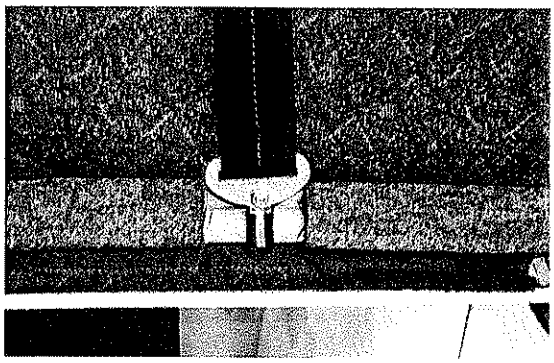

Figure 3 Shoulder Harness Attachment to Cross Tube.

The net tensile strength of the clamp at the bolt holes is given by:
Pt = Ftu * (W - D) * t = 691 lbs, where
the tensile strength of the AISI 301 annealed clamp, Ftu = 73 ksi, W = .50 in, D = .204 in, t = .032 in.

The tensile load on the MS 21919 clamp is given by:
pt = pz/2 = 226 lbs, pz = wt * nx * Fsb = 452 lbs, where
wt = 170 lbs, nx = 4 (g's), the safety belt factor, Fsb = 1.33 per CAR 7.355

MS = Pt/pt - 1 = +2.05
(Tension)

The bearing strength of the clamp at the bolt holes is given by:
Pbrg = Fbru * D * t = 969 lbs, where
the bearing strength of the AISI 301 annealed clamp, Fbru = 162 ksi, D = .204 in, t = .032 in.

The bearing load on the MS 21919 clamp is given by:
pbrg = pz/2 = 226 lbs.

MS = Pbrg/pbrg - 1 = +3.28
(Bearing)

C. AN3 BOLT.

The shear strength of the AN3 bolt is given by:
Psu = 2,125 lbs.

The shear load on the AN3 bolts is given by:
ps = pz = 452 lbs.

MS = Psu/ps - 1 = +3.70
(Shear)

D. SEAT BOTTOM CROSS TUBES.

1. 4130 NORMALIZED STEEL

P/N: 650-2-39 (S6150-62903-101), and 650-1-21 (S6150-62901-101)

The shear strength of 4130 Normalized Steel Seat Bottom Cross Tubes, Fsu = 57 ksi.

The shear stress on the Seat Bottom Cross Tubes is given by:
fs = pz/A = 1,663 psi where
pz = 452 lbs, A = Pi()/4*(Do^2 - Di^2) = 0.163 in^2, Do = .750 in, Di = Do - 2*t = .624 in, t = .063 in.

The shear ratio, Rs = Fsu/fs = .029.

The tensile strength of the 4130 Normalized Steel Seat Bottom Cross Tubes, Ftu = 95 ksi.

The elastic stress due to bending of the Seat Bottom Cross Tubes is given by:
fb = m*c/I = 91,713 psi where

m = pz * Ly = 1,978 in-lbs, pz = 452 lbs, Ly = 17.50/2 in, c = Do/2 = 0.375 in, Do = .750 in,
I = Pi/4*(Ro^4 - Ri^4) = .0081 in^4, Ro = Do/2 = .375 in, Ri = Di/2 = .312 in.

The tensile stress ratio, Rt = Ftu/fb = .965

MS = 1/SQRT(Rs^2+Rt^2) - 1 = +0.04
(Combined Tension and Shear)

2. AL 7075-T6.

P/N: H25E1 (S6150-62908-101), and H15-1 (S6150-62901-101)

The shear strength of the AL7075-T6 Seat Bottom Cross Tubes, Fsu = 47 ksi.

The shear stress on the Seat Bottom Cross Tubes is given by:
fs = pz/A = 743 psi where
pz = 452 lbs, A = Pi()/4*(Do^2 - Di^2) = 0.304 in^2, Do = 1.600 in, Di = Do - 2*t = 1.474 in,
t = .063 in.

The shear ratio, Rs = Fsu/fs = .016.

The tensile strength of AL7075-T6 Seat Bottom Cross Tubes, Ftu = 79 ksi.

The elastic stress due to bending of the Seat Bottom Cross Tubes is given by:
fb = m*c/I = 17,589 psi where
m = pz * Ly = 1,978 in-lbs, pz = 452 lbs, Ly = 17.50/2 in, c = Do/2 = 0.800 in, Do = 1.600 in,
I = Pi/4*(Ro^4 - Ri^4) = .0900 in^4, Ro = Do/2 = .800 in, Ri = Di/2 = .737 in.

The tensile stress ratio, Rt = Ftu/fb = .223

MS = 1/SQRT(Rs^2+Rt^2) - 1 = +3.48
(Combined Tension and Shear)

9. MARGIN OF SAFETY SUMMARY

SECTION	NAME	FAILURE MODE	MS
8A	Shoulder Harness	Tension	+2.32
8B	MS21919 Clamp	Tension	+2.05
8C	AN3 Bolt	Shear	+3.70
8D(1)	Seat Bottom Cross Tubes, Steel	Comb. Tension & Shear	+0.04
8D(2)	Seat Bottom Cross Tubes, AL7075-T6	Comb. Tension & Shear	+3.48

Table 10, Margin of Safety Summary

10. CONCLUSIONS

The structural aspects of the Shoulder Harness Installation meet the Federal Aviation Regulations for the certification basis of the Sikorsky Model S-61L/N helicopter. All of the margins of safety are positive using conservative methods of analysis.

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

STATEMENT OF COMPLIANCE WITH THE FEDERAL AVIATION REGULATIONS

DATE: 9-19-08

AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION

MAKE	MODEL NO.	TYPE (*Airplane, Radio, Helicopter, etc.*)	NAME OF APPLICANT
Sikorsky	S-61N	Helicopter	Carson Helicopters, Inc.

LIST OF DATA

IDENTIFICATION	TITLE
Reports: CH-08233, Rev.-, dated 9/19/2008	Stress Report, "Installation of Seat Harness";
Drawing/Sketch: Photos CH-08233, Rev.-, dated 9/19/2008	"Photographs of Seat Harness Installation";
----------	---------- End of Data ----------

Notes:

1) The structural aspects only of the above listed data are approved herein. This approval is only for the engineering design data, and is not installation approval. It indicates the data listed above demonstrates compliance only with the regulations specified by paragraph and subparagraph listed below as "Applicable Requirements".

2) This form does constitute FAA approval of all the engineering design necessary for substantiation of compliance to necessary requirements for the entire alteration.

3) This approval is valid for the Sikorsky Model S-61N S/N 61220 only.

PURPOSE OF DATA

To support the FAA Form -337 for Shoulder Harness Installation.

APPLICABLE REQUIREMENTS (*List specific sections*)

CAR 7 including Amendments 7-1 through 7-4 for CAR 7.200, 7.201, 7.202, 7.204, 7.210, 7.212, 7.260, 7.300, 7.301, 7.302, 7.304, 7.306, 7.307, 7.355, and 7.643.

CERTIFICATION – Under authority vested by direction of the Administration and in accordance with conditions and limitations of appointment under Part 183 of the Federal Aviation Regulations, data listed above and on attached sheets numbered as applicable have been examined in accordance with established procedures and found to comply with applicable requirements of the Federal Aviation Regulations.

I (~~We~~) Therefore ☐ Recommend approval of these data

☒ Approve these data

SIGNATURE(S) OF DESIGNATED ENGINEERING REPRESENTATIVE(S)	DESIGNATION NUMBER(S)	CLASSIFICATION(S)
David Lawson [redacted]	DERT-830332-NE	Structures

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

STATEMENT OF COMPLIANCE WITH THE FEDERAL AVIATION REGULATIONS

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Sikorsky	S-61N	Helicopter	Carson Helicopters, Inc.

LIST OF DATA

IDENTIFICATION	TITLE
Reports: CH-08233, Rev.-, dated 9/19/2008	Stress Report, "Installation of Seat Harness";
Drawing/Sketch: Photos CH-08233, Rev.-, dated 9/19/2008	"Photographs of Seat Harness Installation";
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2) This form does constitute FAA approval of all the engineering design necessary for substantiation of compliance to necessary requirements for the entire alteration.

3) This approval is valid for the Sikorsky Model S-61N S/N 61474 only.

PURPOSE OF DATA

To support the FAA Form -337 for Shoulder Harness Installation.

APPLICABLE REQUIREMENTS (*List specific sections*)

CAR 7 including Amendments 7-1 through 7-4 for CAR 7.200, 7.201, 7.202, 7.204, 7.210, 7.212, 7.260, 7.300, 7.301, 7.302, 7.304, 7.306, 7.307, 7.355, and 7.643.

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David Lawson [redacted]	DERT-830332-NE	Structures

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Reports: CH-08233, Rev.-, dated 9/19/2008	Stress Report, "Installation of Seat Harness";
Drawing/Sketch: Photos CH-08233, Rev.-, dated 9/19/2008	"Photographs of Seat Harness Installation";
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2) This form does constitute FAA approval of all the engineering design necessary for substantiation of compliance to necessary requirements for the entire alteration.

3) This approval is valid for the Sikorsky Model S-61N S/N 61216 only.

PURPOSE OF DATA

To support the FAA Form -337 for Shoulder Harness Installation.

APPLICABLE REQUIREMENTS (*List specific sections*)

CAR 7 including Amendments 7-1 through 7-4 for CAR 7.200, 7.201, 7.202, 7.204, 7.210, 7.212, 7.260, 7.300, 7.301, 7.302, 7.304, 7.306, 7.307, 7.355, and 7.643.

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AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION

MAKE	MODEL NO.	TYPE (*Airplane, Radio, Helicopter, etc.*)	NAME OF APPLICANT
Sikorsky	S-61N	Helicopter	Carson Helicopters, Inc.

LIST OF DATA

IDENTIFICATION	TITLE
Reports: CH-08233, Rev.-, dated 9/19/2008	Stress Report, "Installation of Seat Harness";
Drawing/Sketch: Photos CH-08233, Rev.-, dated 9/19/2008	"Photographs of Seat Harness Installation";
----------	---------- End of Data ----------

Notes:

1) The structural aspects only of the above listed data are approved herein. This approval is only for the engineering design data, and is not installation approval. It indicates the data listed above demonstrates compliance only with the regulations specified by paragraph and subparagraph listed below as "Applicable Requirements".

2) This form does constitute FAA approval of all the engineering design necessary for substantiation of compliance to necessary requirements for the entire alteration.

3) This approval is valid for the Sikorsky Model S-61N S/N 61242 only.

PURPOSE OF DATA
To support the FAA Form -337 for Shoulder Harness Installation.

APPLICABLE REQUIREMENTS (*List specific sections*)
CAR 7 including Amendments 7-1 through 7-4 for CAR 7.200, 7.201, 7.202, 7.204, 7.210, 7.212, 7.260, 7.300, 7.301, 7.302, 7.304, 7.306, 7.307, 7.355, and 7.643.

CERTIFICATION – Under authority vested by direction of the Administration and in accordance with conditions and limitations of appointment under Part 183 of the Federal Aviation Regulations, data listed above and on attached sheets numbered as applicable have been examined in accordance with established procedures and found to comply with applicable requirements of the Federal Aviation Regulations.

I (~~We~~) Therefore ☐ Recommend approval of these data

☒ Approve these data

SIGNATURE(S) OF DESIGNATED ENGINEERING REPRESENTATIVE(S)	DESIGNATION NUMBER(S)	CLASSIFICATION(S)
David Lawson [redacted]	DERT-830332-NE	Structures

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

STATEMENT OF COMPLIANCE WITH THE FEDERAL AVIATION REGULATIONS

DATE: 9-19-08

AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION

MAKE	MODEL NO.	TYPE (*Airplane, Radio, Helicopter, etc.*)	NAME OF APPLICANT
Sikorsky	S-61N	Helicopter	Carson Helicopters, Inc.

LIST OF DATA

IDENTIFICATION	TITLE
Reports: CH-08233, Rev.-, dated 9/19/2008	Stress Report, "Installation of Seat Harness";
Drawing/Sketch: Photos CH-08233, Rev.-, dated 9/19/2008	"Photographs of Seat Harness Installation";
----------	---------- End of Data ----------

Notes:

1) The structural aspects only of the above listed data are approved herein. This approval is only for the engineering design data, and is not installation approval. It indicates the data listed above demonstrates compliance only with the regulations specified by paragraph and subparagraph listed below as "Applicable Requirements".

2) This form does constitute FAA approval of all the engineering design necessary for substantiation of compliance to necessary requirements for the entire alteration.

3) This approval is valid for the Sikorsky Model S-61N S/N 61744 only.

PURPOSE OF DATA

To support the FAA Form -337 for Shoulder Harness Installation.

APPLICABLE REQUIREMENTS (*List specific sections*)

CAR 7 including Amendments 7-1 through 7-4 for CAR 7.200, 7.201, 7.202, 7.204, 7.210, 7.212, 7.260, 7.300, 7.301, 7.302, 7.304, 7.306, 7.307, 7.355, and 7.643.

CERTIFICATION – Under authority vested by direction of the Administration and in accordance with conditions and limitations of appointment under Part 183 of the Federal Aviation Regulations, data listed above and on attached sheets numbered as applicable have been examined in accordance with established procedures and found to comply with applicable requirements of the Federal Aviation Regulations.

I (~~We~~) Therefore ☐ Recommend approval of these data

☒ Approve these data

SIGNATURE(S) OF DESIGNATED ENGINEERING REPRESENTATIVE(S)	DESIGNATION NUMBER(S)	CLASSIFICATION(S)
David Lawson [redacted]	DERT-830332-NE	Structures