CARSON HELICOPTERS INC.

Date: 30 October 2008

TO: Mr. Jim Struhsaker, NTSB Lead Investigator, Iron 44 accident,-N612AZ

FROM: Carson Helicopters NTSB Investigation Team members

RE: Formal Request for Flight Testing of S61 helicopter

Jim,

Carson Helicopters would like to submit to you and appropriate NTSB parties a Test Flight Plan for your review and approval . The purpose of the test flight plan would be to provide useful and appropriate flight data from a Carson S61 Fire King helicopter similarly equipped to N612AZ (the accident aircraft). Carson will provide the aircraft, pilots, and flight time free of charge to NTSB members.

Rationale for the Test Data

The NTSB investigative team is appropriately looking into all available evidence and possibilities for the crash of N612AZ. There has been investigation and discussion regarding possibilities of both the aircraft being heavier than originally recorded and/or the idea that the pilots may have pulled in too much collective and drooped the main rotor blades past the point of recovery. There has also been discussion regarding the idea that the aircraft was not producing full power from the engines and the resultant power loss caused rotor RPM to drop off precipitously.

Carson has conducted two completely unofficial flight tests on our own initiative. This was done to satisfy some of our own internal questions regarding aircraft performance and accident possibilities. Our preliminary flight testing indicates to us that even with an aircraft that is a full 1,500 lbs. heavier than the agreed gross a/c weight of N612AZ, at the same density altitude the aircraft would not droop the composite rotor blades enough to lose altitude or suffer the steady loss of rotor RPM experienced by the accident aircraft. The most minimal movement by the collective under similar flight conditions restored rotor RPM immediately. This informal testing indicates to us that it is very unlikely that the aircraft would have exhibited the flight behavior it did if it had two engines performing at normal minimum spec. power.

Flight Testing

We believe that a formalized test plan utilizing an identical sister aircraft to N612AZ that is flown and witnessed by appropriate NTSB investigative team members will be very helpful. At a minimum, it will provide hard physical data of record that may help eliminate some possibilities and be useful in

combination with other existing data. The aircraft be piloted by Steve Metheny and John Harris, Carson senior pilots who are already members of the NTSB team. We feel it would be useful to have the lead investigator (Jim Struhsaker), the Sikorsky representative (Chris Lowenstein), and an airworthiness representative (Mike Hoff) from the team be witness to the flight tests. A type-rated S61 pilot from the USFS (Boyce Bingham) would also be a good addition, since he is already a member of the team. We will be prepared to accommodate any appropriate and reasonable measures or personnel the NTSB deems important to the flight testing. We are prepared to do the flight test at a place that will allow easier duplicaton of the density altitude than Oregon in late fall.

Test Plan

We suggest a preliminary plan as follows:

1) We will provide an exemplar aircraft with tank and snorkel and passenger interior. We suggest adjusting the weight by precise metering of water into the tank to provide a jettisonable load (in addition to whoever is actually onboard the aircraft). We will adjust the weight ballast to duplicate the agreed gross weight of N612AZ.
2) Adjust engine topping Ng and T5 to the same readings as the last power check recorded for N612AZ.
3) Duplicate the flight profile from the CVR including time and distance and flight attitude.
4) Demonstrate Nr droop at full collective travel. Measure amount of droop, rate of climb or descent, amount of collective movement required to restore full Nr.
5) Set power to 106 % and perform takeoff.
6) Repeat tests with an additional 1500 lbs. onboard.
7) Data will be recorded with the onboard CVR, manual data recording by NTSB personnel onboard, and video recording of cockpit.
8) The first set of test flights should be done with only the two pilots, as a safety measure. After safety of the flight profile is assured, then subsequent flights would be done with NTSB personnel and recording aboard.
9) We currently recommend Showlow, Arizona as a possible airport location. It is 6400 ' above sea level, and still fairly warm in November.

We will formalize this more as we receive input back from you and your staff on items you would like to see included/changed in this test.

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SIKORSKY S-61N
CHART A
EMPTY WEIGHT CHECK LIST

TYPE	SIKORSKY S-61N																	
AIRCRAFT MODEL : S61N SERIAL NO.: 61297 DATE:	Rev: 22 April 2003				CHECK		CHECK		CHECK		CHECK		CHECK		CHECK	
	C-FOKP				1		2		3		4		5		6	
ITEM NUMBER	ITEMS AND LOCATION GROUPED BY COMPARTMENT	WEIGHT	ARM	MOMENT / 100	DELIVERY EQUIPMENT	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY
A	COCKPIT COMPARTMENT (32-110)																	
A-1	AUTOTRANSFORMERS (906-1A)																	
	(2) (WINDSHIELD DE-ICING)	10	42	4.2		✓		✓										
A-2	BATTERY (SAFT 4076)	82	45	3690		✓		✓										
A-3	CONTROLLER (1378-1B)																	
	(WINDSHIELD DE-ICING)	8	45	3.6		✓		✓										
A-4	WINDSHIELD WIPER INSTL																	
	(S6120-71117)	11	52	5.7		✓		✓										
A-5	AIRSPEED IND. AEROSONIC																	
	S-15-KAW (2)	2	61	1.2		✓		✓										
A-6	ALTIMETER-BAROMETRIC (2)																	
	A-35-MA-10-L / 101635-11839	3	61	1.8		✓		✓										
A-7	GAS GEN. TACH. 8DJ81 CAA2 (2)	3	61	1.8		✓		✓										
A-8	COURSE IN. (36109-1AG-22 BENDIX)																	
	(C-14A COMPASS)	6	62	3.7		o		✓										
A-9	MISCELLANEOUS INSTRUMENTS																	
	HYDRAULIC PRESS IND.																	
	(SR-152A) (2)	1	63	0.6		✓		✓										
	XMSN OIL TEMP. IND. (163B21D)	0.5	63	0.3		✓		✓										
	XMSN OIL PRESS. IND.																	
	(SR-152A)	0.5	63	0.3		✓		✓										
	ENGINE OIL PRESS. IND.																	
	(SR-151A) (2)	1.0	62	0.6		✓		✓										
	ENGINE OIL TEMP. IND.																	
	(163B2) (2)	1.0	62	0.6		✓		✓										
	FUEL PRESS IND.																	
	(SR-151A) (2)	1.0	62	0.6		✓		✓										
	POWER TURB. INLET TEMP IND.																	
	(BH-185R-154C)	1	62	0.62		✓		o										
	POWER TURB. INLET TEMP IND.																	
	H2900K-416 (2) CHS 61-77-002	1.0	62	62.0				✓										
	Note: o means not installed in a/c																	

SIKORSKY S-61N
CHART A
EMPTY WEIGHT CHECK LIST

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AIRCRAFT MODEL : S61N SERIAL NO.: 61297 DATE:		Rev: 22 April 2003				CHECK 1		CHECK 2		CHECK 3		CHECK 4		CHECK 5		CHECK 6						
	C-FOKP																					
ITEM NUMBER	ITEMS AND LOCATION GROUPED BY COMPARTMENT	WEIGHT	ARM	MOMENT / 100	DELIVERY EQUIPMENT	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY					
A	COCKPIT COMPARTMENT (32-110)																					
	FUEL QUANTITY IND. (FWD AFT																					
	TANKS) (393004-01884) (2)	2	62	1.2		✓		✓														
A-9	FUEL QUANTITY IND. (CNTR TANK)																					
	393085-43708	1	62	0.6		✓		✓														
	A C VOLTMETER	1	63	0.6		✓		✓														
	D C VOLT/AMMETER IND	1	63	0.6		✓		✓														
	STANDBY COMPASS (CB2100T4)	1	63	0.6		✓		✓														
A-10	TORQUEMETER 357-1320-0010																					
	(6300-C49A-155 B1)	3	63	1.9		✓		✓														
A-11	TRIPLE TACHOMETER																					
	(8DJ131-AAB-1) B3152110-008 (2)	6	64	3.8		✓		✓														
A-12	INSTATENOUS VERTICAL																					
	SPEED IND. (RC-30-V-10) (2)	3	64	1.9		✓		✓														
A-13	ATTITUDE IND.111303-4 (2)	7	61	4.2		✓		✓														
	(142640-01-01)																					
A-14	CLOCK W33-7540-10 & 86000-1107 (2)	2	64	1.3		✓		✓														
A-15	CUSHIONS,SEAT,PILOT & COPILOT (2)	6	92	5.5		✓		✓														
A-16	SAFETY BELT (1101155-0) (2) (142640-01-01	4	97	3.9		✓		✓														
A-17	SEATS,PILOT & CO-PILOT (677810000)	44	99	43.6		✓		✓														
A-18	CUSHIONS,BACK,PILOT & COPILOT (2)	4	103	4.1		✓		✓														
A-19	SHOULDER HARNESS																					
	(1101155-0) (2)	2	103	2.1		✓		✓														
A-20	JUMP SEAT & SAFETY BELT	~~19.4~~	104	~~7.3~~ 20.2		○		○														
A-21	FIRST AID KIT	2	108	2.2		✓		✓														
A-22	PORTABLE FIRE EXT. (KIDDE 2TA)	7	108	7.6		✓		✓														
A-24	SEA ANCHOR AND DROGUE		~~78.0~~	~~8.2~~																		
	CHUTE (CPT)	19 ~~10.5~~	108	~~20.5~~		○		✓														
A-26	CONTROL PANEL (A.F.C.S.)																					
	S6190-6060-41	2	78	1.6		✓		✓														
A-27	CONTROL PANEL-CHANNEL																					
	MONITOR (A.F.C.S.) S6190-60045-5	3	74	2.2		✓		✓														
A-28	CONTROL PANEL (S6160-71038)	1	84	0.8		✓		✓														

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	C-FOKP					1		2		3		4		5		6	
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A	COCKPIT COMPARTMENT (32-110)																
A-29	POWER ASSURANCE CHECK																
	CHART (S6150-61095)																
A-30	POWER TURBINE INLET TEMP. IND.																
	BH 185 R-77	1	62	0.62		o		o									
A-31	CONTROL PANEL A301-61A	1	95	0.95		✓		✓									
A-32	CARGO SLING PANEL	1	90	0.9		✓		✓									
A-33	FUEL JETTISON CON. PANEL	1.2	84	1		✓		✓									
A-34	INDICATOR IN-1402B																
	4000833-0207	7.8	85	6.6		✓		✓									
A-35	REAR VIEW MIRRORS OHS61-25-008																
	P88-1402	1.3	85.9	1.11													
A-36	G.P.S. TRIMBLE 2100T 3401330	2.8	64.0	1.8		✓		o									
A-37	H.S.I. 111302-5 (2)	6.5	62.0	4.03		✓		✓									
A-38	ADI 504-0017-901	3.2	64.0	2.04		o		o									
A-39	ADF CONT. 622-4526-016	1.8	78	1.4		✓		✓									
A-40	VHF CONT. 622-4523-016	1.2	75	0.9		✓		✓									
A-41	VHF CONT. 622-4524-016	1.2	75	0.9		✓		✓									
A-42	NAV CONT. 622-4524-063	1.2	75	0.9		✓		✓									
A-43	NAV CONT. 622-4524-063	1.2	75	0.9		✓		✓									
A-44	XPNDR CONT. 622-4527-016	1.2	80	0.96		✓		✓									
A-45	HF CONT. 622-4545-003	1	87	0.9		✓		✓									
A-46	ICS CONT. A301-61A	3	91	2.73		✓		✓									
A-47	ICS CONT. A301-61A	1.2	94	1.13		✓		✓									
A-48	FM CONTROL 921012 (1)	2.5	90.0	2.3		✓		✓									
A-49	HUMS CONTROL PANEL 2231321-2	1	64	0.64		✓		o									
A-50	COCKPIT FANS CHS61-25-016 (2)	9.9	48.2	4.77		✓		✓									
A-51	MAP LIGHTS CHS61-25-014	1	73.0	0.73		✓		✓									
A-52	CHECK LIST HOLDER CHS61-25-014	1	55.0	0.55		✓		✓									
A-53	C/B LIGHTS OHS61-33--001	0.5	95.0	47.5		✓		✓									
A-54	STBY ATTITUDE IND.	3	64.0	192.0		✓		✓									
A-83	cub FOR cont hand DS1616-102	1.16	74	.85		o		o									

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A	COCKPIT COMPARTMENT (32-110)																
A-55	FLASH LIGHTS CH61-25-020	2	98.0	196.0		✓		✓									
A-56	RAD/ALT IND (2))																
	622-1204-001 / 622-1204-003		75.0			✓		✓									
A-57	DME IND 622-2176-001	1.6	64.0	1.02		✓		✓									
A-58	V.S.I. SLZ9066 (2)	3	64.0	1.9		✓		✓									
A59	CVR CONTROLLER 93A152-70	1-2	74.0			✓		✓									
A-60	HOMING UNIT 406-2-053	2	64.0	1.3		✓		✓									
A-61	POWER SUPPLY 212-075-962-001		64.0			✓		✓									
A-62	CTR.FUEL XPER PANEL	1	60.0	0.6		✓		✓									
A-63	ENG.OIL TEMP/PRESS. PNL	1	61.0	0.6													
	P/N 6145-61102-2					✓		✓									
A-64	LANDING GEAR IND. S6145-61159-101	0.5	61.0	0.3		✓		✓									
A-65	LANDING GEAR IND. S6145-61159-101	0.5	61.0	0.3		✓		✓									
A-66	LANDING GEAR CONT. A4503M8-1	2	90.0	1.8		✓		✓									
A-67	CAUTION PANEL 80-0331-1	0.5	60.0	0.3		✓		✓									
A-68	ADVISORY PANEL 75-0074-201	0.8	64.0	0.5		✓											
A-69	CAUTION PANEL 80-0092-101	0.8	64.0	0.5		✓		✓									
A-70	GARMIN 155XL GPS	2.05	64.0	1.3		o		o									
A-71	HOMING UNIT 406-2-053	2.0	85.0	1.7		o		✓									
A-72	CIRCUIT BREAKER SUB PANEL CHS61-24-010	0.7	78.0	0.55		o		✓									
A-73	BATTERY TRAY CHS61-53-015	4	45.0	1.8		o		✓									
A-74	NAV ALERT NA 5000X2	0.46	63.0	0.29		o		✓									
A-75	PILOT'S ARM RESTS	3.16	99.0	3.13		o		o									
A-76	ADF CONTROL (2ND UNIT) P/N 622-4526-016	1.2	78.0	0.93		o		✓									
A-77	STOWAGE BOXES (CHS 61-25-017)	2	103.0	2.1		o		✓									
A-78	GARMIN GPS 400	3.0	68.0	2.04		o		✓									
A-79	FLIGHT MANUAL	9.3	104.0	9.67		✓		✓									
A-80	COCKPIT UTILITY LIGHTS & BRACKETS																
	CHS 61-2S-14/EO-001	1.0	71.0	7.1		o		✓									
A-81	THIRD STATION INTERCOM WARNING	1.75	140.0	245.0				o									
A82	ENGINE CHIP DETECTOR PANEL (ASB 61B30-15A)	.5	71.2	.36		o		o									
A-84	Lead Acid Battery	88.5	45	39.82		o		o									
A-85	SATCOM CMASCV Phone	2-3	87.0	2-0		o		o									

CHI-018C

SIKORSKY S-61N

CHART A

EMPTY WEIGHT CHECK LIST

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B	ELECTRONICS COMPARTMENT (32-110)																			
B-1	RELAY (HARTMAN A770N) (2)	4	42	1.7		✓		✓												
B-2	LANDING LIGHTS																			
	(GRIMES 45-0013) (2)	15	66	9.9		✓		✓												
B-3	OVERVOLT RELAY (E-1597)-2	3	74.75	2.24		✓		✓												
B-4	AMPLIFIER & MOUNT (BENDIX																			
	AMA-10A)	6	82	4.9		o		o												
B-5	GYROSYN, COMPASS																			
	(C14A) (1) 4019190-3	4.7	85.75	4.03		✓		✓												
B-6	CONVERTER (6RW162YF1) (1)	21	73.25	15.38		✓		✓												
B-7	INVERTER (SE16-3) MGH159-200	14	85.75	12.0		✓		✓												
B-8	CONTROL GYRO (LEAR)	14	86.5	12.1																
	121672-01-15/17 (2)					✓		✓												
B-9	AMPLIFIER GYRO (LEAR-137698) (2)	10	89	8.9		✓		✓												
B-10	AMPLIFIER-AFCS-LAG(6192-61090) (1)	2	81	1.62		✓		✓												
B-11	CONTROL UNIT, HEATER																			
	(CYL2-1886-40)	3	94.12	2.82		✓		✓												
B-12	AMPLIFIER - AFCS (6190-60056-1)	18	99	17.82		✓		✓												
B-13	MOUNTING AMPLIFIER (AFCS)	3	99	3.0		✓		✓												
B-14	CONTROL UNIT ANTI-ICE 10690-1 (2)	5.5	99.5	5.47		✓		✓												
B-15	CRUISE LIGHT # 9371 (STOWED																			
	POSITION)	3	106	3.2		o		o												
B-16	CONVERTER (28Y5200Y-13)	21	84	17.6		o		o												
B-17	SUPERVISORY PANEL (MGH-229-																			
	100) (2)	14	88	12.3		✓		✓												
B-18	POWER SUPPLY JET. 501-1228-02	11	87.75	9.65		✓		✓												
B-19	VHF#1&#2	6	72.6	4.35		✓		✓												
	VOR#1&#2	6	72.6	4.35		✓		✓												
B-20	TRANSPONDER 662-1270-001	3.9	72.5	2.83		✓		✓												
B-21	TURN & SLIP GYRO A2850-5	1.5	85.10	1.27		✓		✓												
	TURN & SLIP GYRO	1.5	89.75	1.34		✓		✓												
B-22	RADAR 1400 RT1401B	14.5	87.25	12.65		✓		✓												
B-23	VOLTAGE REG. VR-1010-24-1A	3	68	2.04		✓		✓												

SIKORSKY S-61N
CHART A
EMPTY WEIGHT CHECK LIST

TSWE	SIKORSKY S-61N																			
AIRCRAFT MODEL : S61N SERIAL NO.: 61297 DATE:		Rev: 22 April 2003				CHECK 1		CHECK 2		CHECK 3		CHECK 4		CHECK 5		CHECK 6				
	C-FOKP																			
ITEM NUMBER	ITEMS AND LOCATION GROUPED BY COMPARTMENT	WEIGHT	ARM	MOMENT / 100	DELIVERY EQUIPMENT	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY			
B	ELECTRONICS COMPARTMENT (32-110)																			
B-24	HF TCR 220 622-5337-001	6.8	71.4	4.85		✓		✓												
B-25	HF PWR AMP 622-2883-001	7.6	71.4	5.43		✓		✓												
B-26	DME 40 622-1233-001	7.7	71.3	5.49																
B-27	ADF 60A 622-2362-001	4.2	71.3	2.99		✓		✓												
B-28	ALT 50A XCVR 622-3201-001	5.6	71.3	3.99		✓		✓												
B-29	NAV. RCVR 622-0876-011 (2)	11.6	85	9.86		✓		✓												
B-30	NAV. SWITCH ACRO 61-34-32-003-301	7.0	71.0	4.97		✓		✓												
B-31	ICS BOX ACRO 61-23-40-001-301	3.5	71.0	2.48		✓		✓												
B-32	RMI CON (2) 622-1032-001	3.0	68.75	2.06		✓		✓												
B-33	P.A. AMP M1050-BDAA-01	5.5	82.5	4.53		✓		✓												
B-34	DFDAU & TRAY (HUMS) 2237000-2A	29.8	93.0	27.71		✓		✓												
B-35	ALT XDUCR D601927SS1	1.5	87	1.3		✓		✓												
B-36	AIRSPD XDUCR D11925 (MK1)	1.5	96	1.44		✓		✓												
B-37	INVERTER (HUMS) SPC-10F	5.3	92	4.88		✓		✓												
B-38	TRANS CONTROL ADAPTER 3000U	0.5	72	0.36		✓		o												
B-39	BLIND ENCODER AK350	0.5	71	0.36		✓		✓												
B-40	TRANSFORMER 9JY21AA1 (2)	2	77	1.54		✓		✓												
B-41	SUPERVISORY PANEL 21B17-10B	7	30	2.1		✓		✓												
B-42	SUPERVISORY PANEL 21B17-10B	7	28.6	2		✓		✓												
B-43	AC VOLT.REGULATOR 20B63-1		30			o		o												
B-44	AC VOLT.REGULATOR 20B63-1		28.6			o		o												
B-45	AC LINE CONTACTOR B138BH	1	60	0.6		✓		✓												
B-46	AC LINE CONTACTOR B138BH	1	62	0.62		✓		✓												
B-47	AC LINE CONTACTOR B138BH	1	65	0.65		✓		✓												
B-48	AC LINE CONTACTOR B136BH	1	67	0.67		✓		✓												
B-49	FIELD & OVERVOLT RELAY A-927C	2.2	60	1.3		✓		✓												
B-50	AVAD PROVISIONS CHS 61-31-005	1.5	88	1.3		o		✓												
B-51	AVAD VOICE ADVISOR VA-100	3.5	88	3.81		o		✓												
B-52	OSAT TRAY & WIRING (TIL# ORE283)	2.67	99	2.64		o		✓												
B-53	OSAT - 100 P/N 001109-1	4.2	99	4.16		o		✓												
B-54	Static Inverter P/N AA-1020-24-950-C4	14.5	85.25	12.0		o		o												
B-55	Airborne Data Communicator ISAT-100	5.1	100	510.0		o		o												
B-56	AUDIO INTERFACE AA34-300 (ISAT 100)	.63	88	.554		o		o												
B-57	ISAT DVI CONTROL HEAD	.5	89	.445		o		o												
B-58	AUDIO INTERFACE AA34-300 (ISAT-100)	+1.0	82.25	0.8225		o		o												
B-59	SATCOM (ADAPTOR	4.0	99.0	3.96																

SIKORSKY S-61N
CHART A
EMPTY WEIGHT CHECK LIST

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	C-FOKP																
ITEM NUMBER	ITEMS AND LOCATION GROUPED BY COMPARTMENT	WEIGHT	ARM	MOMENT / 100	DELIVERY EQUIPMENT	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY
C	CABIN (110-493)																
C-1	SLIDING DOOR, COCKPIT TO CABIN	8	110	8.8		o		o									
C-2	HEATING SYSTEM:																
	FUEL CONTROL UNIT (B54-000)	8	117	9.4		✓		✓									
	HEATER A90C13 JANITROL	33	118	38.9		✓		✓									
	BLOWER (JOY 500702-5440)	15	118	17.7		✓		✓									
	SWITCH, AIR PRESSURE	1	123	1.2		✓		✓									
	IGNITION UNIT (A11C30)	6	124	7.44		✓		✓									
	DUCT (WARM WEATHER CABIN																
	HEATER CONVERSION) (OPP)	5	118	5.9		o		o									
C-3	PASSENGER SEAT & BELTS																
	(2 PLACE) (S6150-62900-101)	26	124	32.2		o		✓									
C-4	BAGGAGE ENCLOSURE																
	(S6109-51327)	38	201	76.4		o		✓									
C-5	AUXILIARY BATTERY																
	(SAFT 4076)	82	120	9840		✓		✓									
C-6	PASSENGER SEAT & BELT																
	(1 PLACE) (S6150-62901-101)	19	171	32.5		o		✓									
C-7	PASSENGER SEAT & BELTS																
	(2 PLACE) (650B-2-39) (OPT)	30	171	51.3		o		o									
C-8	UNUSABLE FUEL - FWD TANK	2	204	4.1		✓		o									
C-9	PASSENGER SEAT & BELTS																
	(2 PLACE) (S6150-62903-101)	30	205	61.5		o		o									
C-10	PASSENGER SEAT & BELT																
	(1 PLACE) (S6150-62901-101)	19	205	38.9		o		✓									
C-11	PASSENGER SEAT & BELTS																
	(2 PLACE) (S6150-62903-101)	30	239	71.7		o		o									
C-12	PASSENGER SEAT & BELT																
	(1 PLACE) (S6150-62901-101)	19	239	45.4		o		✓									
C-13	UNUSABLE FUEL - CNTR TANK	2	252	5.04		✓		o									
C-14	PASSENGER SEAT & BELTS																
	(2 PLACE) (S6150-62903-101)	30	273	81.9		o		o									

SIKORSKY S-61N
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	C-FOKP																
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C	CABIN (110-493)																
C-15	PASSENGER SEAT & BELTS																
	(1 PLACE) (S6150-62901-101)	19	273	51.9		o		✓									
C-16	UNUSABLE FUEL - AFT TANK	3	306	9.2		✓		o									
C-17	PASSENGER SEAT & BELTS																
	(2 PLACE) (S6150-62903-101)	30	307	92.1		o		o									
C-18	PASSENGER SEAT & BELTS																
	(1 PLACE) (S6150-62901-101)	19	307	58.3		o		✓									
C-19	HAND FIRE EXTINGUISHER																
	(CHARGED)	7	319	22.3		✓		✓									
C-20	FIRST AID KIT #1C	2	320	6.4		✓		✓									
C-21	ATTENDANT'S SEAT & BELT	15	322	48.3		o		o									
C-22	PASSENGER SEAT & BELT																
	(1 PLACE) (S6150-62901-101)	19	341	64.8		o		✓									
C-23	PASSENGER SEAT & BELTS																
	(2 PLACE) (S6150-62904-101)	36	371	133.6		o		✓									
C-24	PASSENGER SEAT & BELTS																
	(1 PLACE) (S6150-62901-101)	19	375	71.3		o		✓									
C-25	PASSENGER SEAT & BELTS																
	(2 PLACE) (S6150-62906-101)	29	409	118.6		o		✓									
C-26	PASSENGER SEAT & BELT																
	(1 PLACE) (S6150-62905-101)	18	409	73.6		o		✓									
C-27	PASSENGER SEAT & BELTS																
	(2 PLACE) (S6150-62907-101)	29	443	128.5		o		✓									
C-28	PASSENGER SEAT & BELTS																
	(2 PLACE) (S6150-62908-101)	24	472	113.3		o		✓									
C-29	UPHOLSTERED INTERIOR: SOFT																
	FORWARD PANELS	136	251	341.4		✓		✓									
	CARPET					o		o									
	CEILING UPHOLSTERY					✓		✓									
	UNDER CARPET PADDING					o		o									
	UPHOLSTERED PANELS R H					✓		✓									
	UPHOLSTERED PANELS L H					✓		✓									

SIKORSKY S-61N
CHART A
EMPTY WEIGHT CHECK LIST

TYWE	SIKORSKY S-61N																
AIRCRAFT MODEL : **S61N** SERIAL NO.: **61297** DATE:		Rev: 22 April 2003				CHECK		CHECK		CHECK		CHECK		CHECK		CHECK	
	C-FOKP					1		2		3		4		5		6	
ITEM NUMBER	ITEMS AND LOCATION GROUPED BY COMPARTMENT.	WEIGHT	ARM	MOMENT / 100	DELIVERY EQUIPMENT	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY	IN AIRCRAFT	CHART C ENTRY
C	CABIN (110-493)																
	BATTING - SOUNDPROOFING					✓		✓									
	AFT PANELS					✓		✓									
C-30	BAGGAGE COMPARTMENT FLOOR	19	148	28.1		o											
C-31	FUEL JETTISON PIPING &																
	JETTISON VALUE	20.5	232	47.5		✓		✓									
C-32	GRAB LINE INST. OH961-045	4.0	275	1100		✓		✓									
C-33	CONTROL ICS A301-16A	1.75	140	2.45		✓		✓									
C-34	XMTR (UNDERWATER DK100)	0.5	275	1.37		✓		✓									
C-35	YAW RATE GYRO	0.5	294	147.0		✓		✓									
C-36	POSITION TX's	1	175	175.0		o		o									
C-37	ELT 4000	1.7	405.0	6.9		✓		✓									
C-38	RESCUE 99 607690-2	3.6	108	3.9		✓		✓									
C-39	JANTROL HOURMETER OHS61-044-1	1	117	117.0		✓		✓									
C-40	PUSH OUT WINDOW KIT	16.7	247	4124.9		✓		✓									
C-41	EXIS LIGHTING	2.2	193	424.6		o		o									
		2.2	370	814.0		o		o									
C-42	CARGO DOOR PROTECTOR																
	(MOD S61-3630)	16	160	2560.0		✓		✓									
C-43	SPEAKERS (16) 5C3FR	4	300	12		✓		✓									
C-44	RELAY PANEL 6188-60576-001	1.2	120	1.44		✓		✓									
C-45	LIFERAFT	68.5	110	75.4		o		✓									
C-46	LIFERAFT	68.5	430	294.6		o		✓									
C-47	L/H AUX TANK	94	287	269.8		o		o									
C-48	R/H AUX TANK LSTC-O-LSH00-055 [illegible]	200	280	560		o		✓									
C-49	LEES EMERGENCY LIGHTING CHS61-33-005	6.05	253.30	15.3		o		o									
C-50	BAGGAGE FLOOR BOARD	13.5	201.0	27.1		o		✓									
C-51	REPLACEMENT VAPOUR BARRIER	20	243	48.6		o		✓									
C-52	EMERGENCY AXE	3.6	128	4.61		✓		o									
C-53	EMERGENCY AXE	3.6	110	3.96				✓									
C-54	ENGINE CHIP DETECTOR RELAY PANEL	4.0	119.0	4.76		o		o									
	(ASB 61B30-15A)																
C-55	Blacklite exit batteries (4) 6958-2	5.0	286.13	14.3		o		o									
C-56	Aux Lead Acid Battery	88.5	120.0	106.2		o		o									

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D	ENGINE & TRANSMISSION COMPT. (160-350)																
D-1	STARTER (G.E. 2CM270D3) (2)	35	179	62.6		✓		✓									
D-2	OIL TANK (S6130-80205) (2)	8	181	14.5		✓		✓									
D-3	OIL UNUSABLE (0.67 GAL)	5	200	10.0		✓		✓									
D-4	ENGINE (CT58-140-1, -2) LH	324	207	670.7		✓		✓									
D-5	ENGINE (CT58-140-1, -2) RH	325	207	670.8		✓		✓									
D-6	OIL, MAIN GEARBOX &																
	COOLER	77	274	211.0		✓		✓									
D-7	HYDRAULIC PUMP (66WAP200) (2)	18	292	52.6		✓		✓									
D-8	GENERATOR (BENDIX 28E-20-27A) (2)	96	295	283.2		o		o									
D-9	GENERATOR (BENDIX 30E20-39)	47	300	141.0		✓		✓									
D-10	BLOWER, OIL COOLER (A15008)	8	317	25.4		✓		✓									
D-11	FIRE EXT. ENGINE (CHARGED)																
	(891134) (2)	19	329	62.5		✓		✓									
D-12	TRANSMISSION OIL COOLER																
	(DRY) (8528061)	28	332	93.0		✓		✓									
D-13	GENERATOR (2)	98	295	289.1		✓		✓									
D-14	ACCELEROMETER (HUMS)																
	3001-01-111	1.4	260	3.64		✓		o									
D-15	TEMP.BULB (XMSN) 56B19C	0.5	275	1.38		✓		✓									
D-16	MOTOR GENERATOR MGH229-100	47	300	141		✓		✓									
D-17	IGV MONITORING SYS. SB61B55 37	3	144.33	4.33		o		✓									

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E	TAIL CONE & PYLON (493-705)																		
E-1	BLOWER, FRESH AIR																		
	(JOY 500702-5440)	15	497	74.5		o		o											
E-2	FLUX VALVE & COMPENSATOR																		
	CHECK # 245945	2	543	10.9		✓		✓											
E-3	CATWALK	4	543	21.7		✓		✓											
E-4	OIL, INTERMED, & TAIL																		
	GEARBOXES	5	687	34.4		✓		✓											
E-5	HEATING SYSTEM - AFT (OPT)																		
	FUEL CONTROL UNIT (B54C00)	8	521	41.7		o		o											
	HEATER (JANITROL A90C13)	33	522	172.3		o		o											
	BLOWER (JOY 500702)	15	522	78.3		o		o											
	SWITCH, AIR PRESSURE	1	534	5.3		o		o											
	IGNITION UNIT (A11C30)	6	535	32.1		o		o											
E-6	CVFDR & TRAY D51508	21.7	525	113.9		✓		✓											
E-7	ADF RECEIVER (2ND UNIT) P/N 622-2362-001	42	525	22.05		✓		✓											
E-8	VXP ACQUISITION UNIT	6.6	523	34.52		o		✓											
E-9	VXP HUMS SYSTEM CHS61-31-006	28.7	370.5	10634				✓											
E10	CVR FDR 051615-102	7.0	525	36.75		O		O											
E-11	SATCOM ANTENNA	.7	410.0	2.87		O		O											

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F	EXTERNAL EQUIPMENT																
F-1	MAIN TIRES 6.50 X 10 (4)	50	221	110.5		✓		✓									
F-2	TAIL TIRE 6.00 X 6	9	505	45.4		✓		✓									
F-3	CARGO SLING (OPP)	85	267	226.9		o		o									
F-4	RESCUE HOIST (OPT)	57	154	87.8		o		o									
F-5	HOMER ANTENNA 10-155-2 (2)	4	145	5.8		✓		✓									
F-6	HF ANTENNA PAC200	13	85.0	1.11		✓		✓									
F-7	TRANSPONDER ANT. DMN-170-2	0.25	70	0.18		✓		✓									
F-8	DME DMNI-70-2 ANT	0.25	70	0.18		✓		✓									
F-9	ADF 622-2363-001 ANT	2.8	277	7.76		✓		✓									
F-10	G.P.S. 16248-10 ANT	0.8	102	0.82		✓		✓									
F-11	MRK BEACON 522-0854-003 ANT	1	140	0.14		✓		✓									
F-12	#2 VHF 522-1135-012	1.6	630	10.1		✓		✓									
F-13	#1 VHF 522-1135-012	1.6	519	8.3		✓		✓									
F-14	FM ANTENNA	1	98	0.98		✓		✓									
F-15	ANTENNA RADAR 4000525-4512	6.1	26	1.6		✓		✓									
F-16	RADOME	6	22	1.3		✓		✓									
F-17	GLIDE SLOPE ANTENNA	1	48	0.5		✓		✓									
F-18	VOR ANTENNA (2)	4	602	24.1		✓		✓									
F-19	INLET SCREENS	20	168	33.6		✓		✓									
F-20	OAT (HUMS) E22304-2-1	0.5	85	0.43		✓		✓									
F-21	INLET FOD SHIELD	34	154	52.4		o		✓									
F-22	NORTH SEA, SEA ANCHOR PROVISION																
	MP8-00-29 (MARSHALL INSTALLATION)	4.0	85.0	340.0		o		o									
F-23	ELT ANT.3003 REV.D	0.3	447.0	1.1		✓		✓									
F-24	NO.1 RAD ALT ANT.622-3698-001	1.25	90	1.13		✓		✓									
F-25	NO.2 RAD ALT ANT.622-3698-001	1.25	90	1.13		✓		✓									
F-26	GARMIN GPS ANTENNA 011-00147-00	0.25	102.0	0.26		o		✓									
F-27	ADF ANTENNA (2ND UNIT) P/N 622-2363-001	3.1	372.0	11.53		o		✓									
F-28	OSAT COMBO ANTENNA (P/N CI2480-100)	0.6	114	0.68		o		o									
F-29	OSAT COMBO ANTENNA (P/N CI4510-700)	0.6	114	0.68		o		✓									
F-30	ADF WIRING HARNESS CHS-34-018	5	301.5	1507.5				✓									
F-31	SAMANT GPS ANTENNA (C1405-206)	~~38.3~~	115	34.5		o		o									
F-32	Iridium Antenna ($67-1575-109)	0.4	97	38.8		o		o									

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G	ROTOR & ROTOR EQUIPMENT																
G-1	MAIN ROTOR BLADES (B.I.M.)	1051.1	267.4	2810.6		✓		✓									
G-2	MAIN ROTOR FAIRING	8	267	21.4		✓		✓									
G-3	TAIL ROTOR BLADES	31	705	218.6		✓		✓									
G-4	BIFILAR ASSY (WITH COVERS)	178	267	475.3		o		o									
G-5	BIFILAR ASSY (LESS COVERS)	166	267	443.9		✓		✓									

CHC

CHC HELICOPTERS INTERNATIONAL
APPROVAL 1-94
WEIGHT AND BALANCE RECORD
CHART "B"

Aircraft Reg.: C-FOKP	Aircraft Type: S61N
Serial Number: 61297	Date Weighed: 22 April 2003
Scales:	Last Calibrated:

SCALE READINGS

	Flt. Station	Scale	Tare	Net
L/H JACK POINT	221.0	5419.0	-	5419.0
R/H JACK POINT	221.0	5684.0	-	5684.0
TAIL JACK POINT	459.0	2403.0	-	2403.0
	TOTAL	13506.0	-	13506.0

Horizontal C.G. As Weighed:

As Per Flight Manual

C.G. = $\frac{(221 \times 11.103.0) + (459 \times 2403.0)}{13506.0} = 263.35$

Lateral C.G. As Weighed:

As Per Flight Manual

C.G. = _____

EMPTY WEIGHT

All oils in unusable fuel out

		Horizontal		Lateral	
	Weight	Arm	Moment	Arm	Moment
As weighed	13506.0	263.35	3556805.1		
Add: Unusable fuel fwd.	+2.0	204.0	408.0		
Unusable fuel cent.	+2.0	252.0	504.0		
Unusable fuel aft.	+3.0	306.0	918.0		
Subtract: Blade Stops	-1.0	267.0	-267.0		
	13512.0	263.35	3558368.1		

Weight Empty Wheel Configuration

Total Ballast This Configuration: At Sta. _____ Weight
At Sta. _____ Weight
At Sta. _____ Weight

MOST FORWARD C.G.

MOST AFT C.G.

CHC

CHC HELICOPTER INTERNATIONAL
APPROVAL 1-94
EMPTY WEIGHT AND BALANCE
CHART "C"

Registration C-FOKP	Last Weighed Date 22 April 2003
Type S61N	Empty Weight: 13512.0
Serial Number 61297	C of G: 263.35
	Moment: 3558368.1

1	2	3	4	5	6					7		8
Rev No.	Date	In/ Out	Drawing No. & Approval No.	Description of Alteration or Modification	Weight Change					Total Ballast		The maintenance described in columns 1 to 7 has been performed in accordance with applicable standards of airworthiness SIGNATURE & 1-94#
					Weight	Horizontal Arm	Horizontal Moment	Lateral Arm	Lateral Moment	STA	Weight	
	22 April 2003			As Weighed	13512.0	263.35	3558368.1					
1	30 APRIL 03	IN		CARGO SLING (F-3)	+ 85.0	267.0	22695.0					
1	30 APRIL 03			NEW EMPTY WEIGHT REV 1	13594.0	263.43	3581063.1					
2	7 MAY 03	OUT		CARGO SLING (F-3)	- 85.0	267.0	22695.0					
2	7 MAY 03			NEW EMPTY WEIGHT REV 2	13512.0	263.35	3558368.1					
3	4 JUNE 03	IN		CARGO HOOK (F-3)	+ 85.0	267.0	22695.0					
3	4 JUNE 03			NEW EMPTY WEIGHT REV 3	13594.0	263.43	3581063.1					
4	4 JUNE 03	OUT		CARGO SLING (F-3)	- 85.0	267.0	22695.0					
4	4 JUNE 03			NEW EMPTY WEIGHT REV 4	13512.0	263.35	3558368.1					
5	17 JUNE 03	OUT		FOD SHIELDS (F-21)	34.0	154.0	5236.0					
5	17 JUNE 03	IN		INLET SCREENS (F-19)	20.0	168.0	3360.0					
5	17 JUNE 03			NEW EMPTY WEIGHT REV 5	13498.0	263.48	3556192.1					
6	11 July 03	Out	A-60	Remove homer cont head	- 2.0	64.0	-128.0					
6	11 July 03			New empty weight Rev 6	13496.0	263.51	3556364.1					
7	21 Aug 03	Out	STC SR09232 Rc	Replace relay with static inverter	- 14.0	85.75	-1200.5					
7		In		Static inverter B54	+ 14.5	85.75	+ 1243.38					
7				New empty weight Rev 7	13496.5	263.51	3556406.98					
8	12.9.03	OUT		INLET SCREENS (F-19)	+ 20.0	168.0	- 3360.0					
8	12.9.03	IN		FOD SHIELDS (F-21)	+ 34.0	154.0	+ 5236.0					

CANADIAN HELICOPTERS INTERNATIONAL

AF... VAL 1-94

EMPTY WEIGHT AND BALANCE
CHART "C"

Registration [illegible] | Last Weighed Date: 04
Type: S61N | Empty Weight: 13510.5
Serial Number: 61297 | C of G: 263.35
Moment: 3558368.1

1 Rev No.	2 Date	3 In/ Out	4 Drawing No. & Approval No.	5 Description of Alteration or Modification	6 Weight Change			7		Total Ballast STA	Total Ballast Weight	8 The maintenance described in columns 1 to 7 has been performed in accordance with applicable standards of airworthiness SIGNATURE & 1-94#
					Weight	Horizontal Arm	Horizontal Moment	Lateral Arm	Lateral Moment			
8	12.9.03			NEW EMPTY WEIGHT REV 8	13510.5	263.37	3558388.98					
9	2004 03	OUT	01RE283	0-SAT 100 (C.S.)	2.67	99	264.33					
9	2004 03			New Empty weight Rev #9	13507.83	263.40	3558010.65					
9	2004 03	OUT	T.L # 01RE283	0-SAT 100 (C.S.)	4.2	99	415.8					
9	2004 03			New Empty Weight Rev #9	13506.3	263.42	3557867.18					
10	27.10.03	IN	AS361A30-15A	CHIP DETECTOR WARNING PANEL	.5	71.0	35.5					
10	27.10.03	IN	AS361A30-15A	CHIP DETECTOR REMOTE PANEL	3.5	119.0	416.5					
10	27.10.03	OUT		OSAT 100 COMBO ANTENNA	.6	114.0	68.4					
10	27.10.03	OUT		OSAT MOUNTING TRAY	.5	99.0	49.5					
10	27.10.03			E.W. REV 10	13509.2	263.39	3558001.28					
11	29 Oct 03	IN	C55	Inst qty 4 lectric batteries 69582	+5	286.13	1430.60					
		OUT	A59	Remove CVR FOR cont. head	-1.2	74.0	-88.8					
		IN	A83	Inst CVR FOR cont head DS1616-102	+1.16	74.0	+85.84					
		OUT	E6	Remove CVR FOR + Tray DS1509	-21.7	525.0	-11392.5					
		IN	E10	Install CVR FOR DS1615-102	+7.0	525.0	+3675.0					
11	29 Oct 03			New empty weight REV 11	13499.46	263.12	3551911.42					
12	23 Nov 03	IN	S2003 002	Install ISAT 100 system	7.4	103.1	763.3					
				Empty weight rev #12	13506.86	263.03	3552674.72					
13	23 Nov 03	OUT	S2003 002	Remove ISAT 100 system	-7.4	103.1	763.3					
				New Empty weight Rev #13	13499.46	263.12	3551911.42					

CANADIAN HELICOPTERS INTERNATIONAL

CANADIAN HELICOPTERS INTERNATIONAL
APPROVAL I-94
EMPTY WEIGHT AND BALANCE
CHART "C"

Reg.:	C-FOKP	Last Weighed Date:	22-04-03
Type:	56IN	Empty Weight:	13512.0
		C of G.:	263.35
Serial No.:	61297	Moment:	3558368.1

1	2	3	4	5	6					7		8
Rev. No.	Date	In/ Out	Drawing No. & Approval No.	Description of Alternation or Modification	Weight Change					Total Ballast		The maintenance described in columns 1 to 7 has been performed in accordance with applicable standards of airworthiness
					Weight	Horizontal		Lateral		ST	Weight	SIGNATURE & I-94#
						Arm	Moment	Arm	Moment			
13	23 Nov 03			Carried forward	13495.46	263.12	3551911.42					[redacted]
14	7 Dec 03	In	A-60	Reinstall homing unit	+2.0	64.0	+128.00					
14				New empty weight Rev #14	13501.46	263.09	3552039.42					
15	11 Dec 03	IN	SH03-30	ISAT-100 new installation	+7.4	103.1	+763.3					
15	11 Dec 03			New empty weight Rev #15	13508.86	262.99	3552802.72					
16	19 June 04	OUT	F-21	Fwd Shield	-34.0	-154.0	-5236.0					
16		IN	F-19	Bird Screens	+20.0	+168.0	+3360.0					
16				New Empty weight Rev 16	13494.86	263.13	3550926.72					
17	6 OCT 04	OUT		INLET SCREENS (F-19)	-20.0	168.0	-3360.0					
17	6 OCT 04	IN		FWD SHIELD F-21	+34.0	154.0	+5236.0					
17	6 OCT 04	-		Pier Revision #17	13508.86	263.0	3552802.72					
18	2 NOV 04	IN		Cargo Sling (F-3)	+85.0	267.0	+22695.0					
18	2 NOV 04			New Empty weight Rev #18	13593.86	263.01	3575497.72					
19	2 NOV 04	OUT		Cargo Sling (F-3)	-85.0	267.0	-22695.0					
19	2 NOV 04			New Empty Weight Rev #19	13508.86	263.0	3552802.72					
20	19 APR 05	IN	F-3	CARGO SLING	+85.0	267.0	+22695					
20	19 APR 05			NEW EMPTY WEIGHT Rev #20	13593.86	263.02	3575497.7					
21	30 APR 05	OUT	F-3	Cargo Sling (F-3)	-85.0	267.0	-22695.0					
21	30 APR 05			New Empty weight Rev #21	13508.86	263.0	3552802.72					
22	25 June 05	out	F-21	Fwd shield	-34.0	-154.0	-5236.0					

Canadian Helicopters International
Approval 1 - 94
Empty Weight and Balance
Chart "C"

Registration: C-FOKP Last Weighed Date: 22-04-05
Type: S61N Empty Weight: 13512.0
Serial Number: 61297 Cof G: 263.35
Moment: 3558368.1

1 Rev No.	2 Date	3 In/ Out	4 Drawing No. & Approval No.	5 Description of Alteration or Modification	6 Weight Change Weight	Horizontal Arm	Horizontal Moment	Lateral Arm	Lateral Moment	7 Total Ballast Station	Total Ballast Weight	The Maintenance described in columns 1 to 7 has been performed in accordance with the applicable standards of airworthiness. Signature & I-94#
22	25Sept05	IN	E-19	Inlet screens	20	168	3360					
22				Rev Empty weight Rev #22	13494.84	263.13	3550926.72					
23	11Nov05	IN	SI-03-30	Voice upgrade to ISAT 100 system (AA34-300)	+1.63	88	+.564					
23	11Nov05	IN		ISAT DVE control head	+.5	89	+.445					
23	11Nov05			New Empty Wt. Rev #23	13499.99	263.11	3550727.71					
23	11Nov05	IN	SI-03-30	Using upgraded to ISAT 100 system (AA34-300)	+.63	88.0	55.44					
23	11Nov05	IN	SI-03-30	ISAT DVE control (HC-AN) (B-57)	+.50	89.0	44.5					
23	11Nov05	IN		New Empty Weight (Rev) #23	13495.99	263.12	3551006.66					
24	20Sept05	IN	E3	Cargo Sling	+850	267.0	226950					
24	20Sept05		—	New Empty Wt. Rev. # 24	13580.99	263.14	3573721.66					
25	21Sept05	OUT	E-3	Cargo Sling	-85	267.0	22695.0					
				New # 25	13495.99	263.12	3551026.6					
26	12Oct.	Out	E-19	Inlet Screens	-20	168	3360					
					13475.99		3547666.4					
26		IN	E-21	FOD Shield	34	154	5236					
				New Empty Weight and CofG Amment # 26	13509.99	262.98	3552902.6					
27	15Nov05	IN	E3	CARGO SLING	+85.0	267.0	22695.0					
				NEW REV # 27	13594.99	263.01	3575597.6					
28	16Nov05	Out	E3	Cargo Sling	-85.0	267.0	-22695.0					
				New Rev # 28	13509.99	262.98	3552902.4					
29	28Nov	OUT	CH86-74-016	NiCad Battery Removal Fwd Sta. 45	-82.0	45	-3690					
	"	OUT	"	" Aux Sta. 120	-82.0	120	-9840					
	"	IN	"	Lead Acid Battery Install Main Sta. 45	+88.5	45	+3982.5					
	"	IN	"	" Aux. Sta. 120	88.5	120	+10620					
	"	IN	"	Wt. + Bal. Ammendment # 29.	13527.99	262.81	3553975.1					
30	15Dec05	IN	061/25-11-041	INSTALLATION OF COCKPIT SEAT ARM RESTS	+3.16	+99.0	+3.13					
30				NEW EMPTY WT REV # 30	13526.15	262.77	3554280.1					
31	31Jan06	IN	STC# SH03-30	VOLUME BOOST ISAT-100 (INSTALLATION OF 2ND AA34-300)	+1.0	+87.25	+87.25					
31	31Jan06		STC# SH03-30	NEW EMPTY WT REV # 31	13527.15	262.76	3554325.3					
32	15March06	OUT		HF CONTROL	-1.0	87.0	-90.0					
32		OUT		HF TCR 220	-6.8	71.4	-485.0					
32		OUT		HF Power AMP	-7.6	71.4	-543.0					
32		OUT		HF ANTENNA	-8.0	85.0	-680.0					
32				New Rev #32	13503.75	262.88	3552522.3					

Form: CHI-016
Issued: 30 April 1995

MISSING #32 SAT PHONE.

REMEMBER TO SIGN →

CANADIAN HELICOPTERS INTERNATIONAL

AF /AL 1-94

EMPTY WEIGHT AND BALANCE
CHART "C"

Registration: C-FKEK | Last Weighed Date: 22 A
Type: 561N | Empty Weight: 13512.0
Serial Number: 61297 | C of G: 263.35
Moment: 3558368.1

1 Rev No.	2 Date	3 In/ Out	4 Drawing No. & Approval No.	5 Description of Alteration or Modification	6 Weight Change			7 Total Ballast		8 The maintenance described in columns 1 to 7 has been performed in accordance with applicable standards of airworthiness SIGNATURE & 1-94#
					Weight	Horizontal Arm	Horizontal Moment	Lateral Arm	Lateral Moment	STA: Weight	
33	16MAR06	IN	STC # SH01-45	SATCOM ADAPTER UNIT	+4.0	99.0	396.0				
33	16MAR06	IN	DRAWING # BAS-SAT-1	SATCOM ANTENNA	+0.7	410.0	287.0				
33	16MAR06	IN		SATCOM CRADLE (W PHONE)	+2.3	87.0	200.1				
33	16MAR06			AS PER REV # 33	13510.8	263.0	3553460.4				
34	16MAY06	OUT	F-21	FOD SHIELD	-34.0	154.0	5236.0				
34	16MAY06	IN	F-19	INLET SCREENS	+20.0	168.0	3360.0				
34	16 MAY06			PCM REV 34	13496.8	263.14	3551524.4				
35	19OCT06	OUT	F-19	INLET SCREENS	+20.0	168.0	3360.0				
35	19OCT06	IN	F-21	FOD SHIELD	+34.0	154.0	5236.0				
35	19OCT06			REV # 35	13510.8	263.0	3553460.4				
36	29~~OCT06~~ APR 07	OUT	STC SH01-45	SATCOM ADAPTOR UNIT	-4.0	99.0	396.0				
36	29~~OCT06~~ APR 07	OUT	STC SH01-45	SATCOM ANTENNA	-.7	410.0	287.0				
36	29~~OCT06~~ APR 07	OUT	STC SH01-45	SATCOM CRADLE + PHONE	-2.3	87.0	200.1				
36	29~~OCT06~~ APR 07	OUT		SEA ANCHOR & ROPE	-10.5	78.0	819.0				
36	29~~OCT06~~ APR 07			PCM REVISION 36	13493.3	263.22	3551158.3				
37	31MAY07	OUT	F21	FOD SHIELD	-34.0	154.0	5236.0				
37	31MAY07	IN	F19	INLET SCREENS	+20.0	168.0	3360.0				
37	31MAY07			REV # 37	13479.3	263.4	3549882.3				
38	21JUN07	OUT	C-48	RH AUX FUEL CELL TANK	-200.0	280.0	56000.0				
38	21 JUN07			REVISION # 38	13279.3	263.1	3493882.3				

CANADIAN HELICOPTERS INTERNATIONAL

EMPTY W... AND BALANCE
C... ...RT "C"

Type: [illegible]
Serial Number: 61297
Empty Weight: 13522.5
C of G: 263.35
Moment: 3558368.1

1 Rev No.	2 Date	3 In/ Out	4 Drawing No. & Approval No.	5 Description of Alteration or Modification	6 Weight Change					7 Total Ballast		8 The maintenance described in columns 1 to 7 has been performed in accordance with applicable standards of airworthiness SIGNATURE & 1-94#
						Horizontal		Lateral		STA:	Weight	
					Weight	Arm	Moment	Arm	Moment			
33	16MAR06	IN	STC # SH01-45	SATCOM ADAPTER UNIT	+4.0	99.0	396.0					
33	16MAR06	IN	DRAWING # AAI-SAT-1	SATCOM ANTENNA	+0.7	410.0	287.0					
33	16MAR06	IN		SATCOM CRADLE (W PHONE)	+2.3	87.0	200.1					
33	16MAR06			AS PER REV # 33	13510.8	263.0	3553460.4					
34	16APR06	OUT	F-21	FOD SHIELD	-34.0	154.0	5236.0					
34	16 MAY06	IN	F-19	INLET SCREENS	+20.0	168.0	3360.0					
34	16 MAY06			PER ACN 34	13496.8	263.14	3551584.1					
35	19 OCT 06	OUT	F-19	INLET SCREENS	-20.0	168.0	3360.0					
35	19 OCT 06	IN	F21	FOD SHIELD	+34.0	154.0	5236.0					
35	19 OCT 06			REV # 35	13510.8	263.0	3553460.4					
36	29 APR 07	OUT	STC SH01-45	SATCOM ADAPTER UNIT	-4.0	99.0	396.0					
36	29 APR 07	OUT	STC SH01-45	SATCOM ANTENNA	-.7	410.0	287.0					
36	29 APR 07	OUT	STC SH01-45	SATCOM CRADLE & PHONE	-2.3	87.0	200.1					
36	29 APR 07	OUT		SCA ANCHOR + ROPE	-10.5	78.0	819.0					
36	29 APR 07	OUT		PER REVISION 36	13493.3	263.22	3551758.3					
37	31MAY07	OUT	F21	FOD SHIELD	-34.0	154.0	5236.0					
37	31MAY07	IN	F19	INLET SCREENS	+20.0	168.0	3360.0					
~~37~~	~~31MAY07~~			~~REV # 37~~	~~13479.3~~		~~3502783~~					
37	31MAY07			REV # 37	13479.3	263.4	3549882.3					

CHC

CHC HELICOPTERS INTERNATIONAL
APPROVAL 1-94
EMPTY WEIGHT AND BALANCE
CHART "C"

Registration: CFOKP	Last Weighed Date 22-04-03
Type: S61N	Empty Weight 13512.0
Serial Number: 61297	C of G: 263.35
	Moment: 3558368.1

1	2	3	4	5	6			7		8		
Rev No.	Date	In/ Out	Drawing No. & Approval No.	Description of Alteration or Modification	Weight Change					Total Ballast		The maintenance described in columns 1 to 7 has been performed in accordance with applicable standards of airworthiness SIGNATURE & 1-94#
						Horizontal		Lateral		STA:	Weight	
					Weight	Arm	Moment	Arm	Moment			
37	31MAY07			CARRIED FORWARD	13479.3	263.4	3549882.3					
38	21JUNE07	OUT	C-48	R/H AUX FUEL TANK	-200.0	280.0	56000.0					
38	21JUNE07			REVISION #38	13279.3	263.1	3493882.3					

CHI-016
Rev. 11-April 2001

FAA OKC

Conformity Inspection Record

1. Project Number, TIA/Request Date: AIRWORTHINESS CERTIFICATION

2. SHEET 1 of Sheets 2

plicant/Manufacturer: SIKORSKY

4. Beginning Date: 08-09-07

5. Ending Date: 08-10-07

del: S-61N S/N 61297

7. Inspected By: NICHOLAS MIRALES DART 950020EA

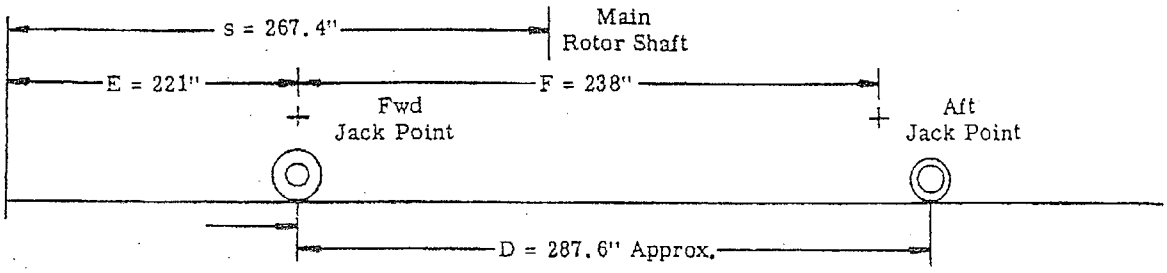
m	9. Nomenclature of Item Inspected	10. Drawing, Document, Specification, etc.	11. Revision and Date	12. No. of Items Determined SAT.	12. No. of Items Determined UNSAT.	13. Comments
	APPLICATION FOR AIRWORTHINESS CERTIFICATE	FAA FORM 8130-06	08-09-07	X		
	TYPE CERTIFICATE , AIRFRAME	TC# 1H15	Rev 15	X		T.T 35131.5 hrs
	TYPE CERTIFICATE, ENGINE	TC# 1E3 GE-CT-140-1	Rev 15	X		1 POS S/N 295-208-T.T. 23494.2 h 2 POS S/N 295-176-TT 20702.3 h
	TYPE CERTIFICATE, PROPELLER	TC#				
	REGISTRATION MARKING	CFR PART 45.21		X		N 612 AZ
	DATA PLATES	CFR PART 45.11 AIRFR. ENG.	1H-15 1E3	X		
	AIRCRAFT FLIGHT MANUAL	CFR PART 23,25,& 27.1581 (a)	Rev 49	X		
	WEIGHT & BALANCE	ORDER 8130-2D PAR.46	08-06-07	X		Empty WT 18491 lb CG 266.6
	EQUIPMENT LIST	ORDER 8130-2D PAR.46		X		
)	OPERATION LIMITATIONS	CFR PART 91.9 (a)		X		
l	PLACARDS & MARKINGS	CFR PART 91.9 (a)		X		
2	INSRTRUMENT MARKINGS	CFR PART 91.9 (a)		X		
3	AIRWORTHINESS DIRECTOES	CFR PART 91.417(a)(2)(V)		X		Biweekly 200716
4	SUPPLEMENTAL TYPE CERTIFICATE (STC)	FORM 8130-6 SECTION III, BOX B		X		NONE
5	FAA FORM 337	APPENDIX B TO PART 43		X		3-337 WERE INSTALLED AND REMOVED
6	MAJOR ALTERNATIONS	CFR PART 91.417 (a) (2) (VI)		X		None
7	MAJOR REPAIRS	APPENDIX B (b) TO PART 43		X		None
8	LIFE LIMITED PARTS AIRFRAME	CFR PART 91.417 (a) (2) (II)		X		
9	LIFE LIMITED PARTS ENGINE	CFR PART 91.417 (a) (2) (II)		X		

AIRCRAFT ACTUAL WEIGHT AND HORIZONTAL BALANCE FOR S-61N MODEL HELICOPTER

Prepared By David Wolf
Date 8-15-07

Reg. No. N612AZ Serial No. 61297

SCALE POSITION	SCALE NO.	SCALE READING (LB)	TARE	SCALE ERROR	SYMBOL	NET WEIGHT
LEFT MAIN POINT		5144			W_L	5144
RIGHT MAIN POINT		5683			W_R	5683
POINT TAIL		2246			W_T	2246
TOTAL WEIGHT		13073			W	13073



CENTER OF GRAVITY TO FORWARD DATUM (HORIZ. DIST. - AS WEIGHED)

Weighing ~~XXXXXXXXXXXX~~ $E + \frac{W_T \times D}{W}$

Weighing on Jack Points $E + \frac{W_T \times F}{W}$ $221 + \frac{2246 \times 238}{13073} = 261.9$

CORRECTED WEIGHT AND HORIZONTAL BALANCE

ITEMS ADDED & SUBTRACTED	WEIGHT (LB)	HORIZONTAL DIST (in) C.G. TO FWD DATUM	MOMENT (lb in.)
Aircraft as Weighed	13073	261.9	3423818.7
Plus -			
Minus -			
TOTAL ~~GROSS~~ EMPTY WEIGHT	13073	261.9	3423818.7
BALANCE 261.9 (Corrected) Horizontal Dist. - s = 5.5 in. ~~Aft~~ Fwd of Main Rotor Centroid			

S 5654 (R2)

Witnessed By [redacted]

Figure 4-10

FLTS. 1, 2, 4, 5, 6

N612AZ CG	WEIGHT	ARM	MOMENT
N612AZ	13073	261.9	3423818.7
PILOT	225	88.6	19935
TEST PILOT	165	88.6	14619
C6 STA OPERATOR	270	167	45090
C7 STA OPERATOR	160	201	32160
FWD FUEL	900	203.9	183510
AFT FUEL	900	305.9	275310
CTR FUEL		264.8	0
LOAD ON HOIST	600	154	92400
C16 BALLAST	300	439	131700
A/C TOTAL WEIGHT	16593	254.2362864	4218542.7
CG Range 16000 & under 254.0-280			
16500 = 254.7- 279.3			
17000 = 255.3 - 278.7			
17500 = 256.0 - 278.0			
18000 = 256.6 - 277.4			

2/5

FLT. 3

N612AZ CG	WEIGHT	ARM	MOMENT
N612AZ	13073	261.9	3423818.7
PILOT	225	88.6	19935
TEST PILOT	165	88.6	14619
C6 STA OPERATOR		167	0
C7 STA OPERATOR		201	0
FWD FUEL	600	203.9	122340
AFT FUEL	600	305.9	183540
CTR FUEL		264.8	0
LOAD ON HOIST		154	0
C16 BALLAST		439	0
A/C TOTAL WEIGHT	14663	256.7177726	3764252.7
CG Range 16000 & under 254.0-280			
16500 = 254.7- 279.3			
17000 = 255.3 - 278.7			
17500 = 256.0 - 278.0			
18000 = 256.6 - 277.4			

3/5

FLT. 7

N612AZ CG	WEIGHT	ARM	MOMENT
N612AZ	13073	261.9	3423818.7
PILOT	225	88.6	19935
TEST PILOT	165	88.6	14619
C6 STA OPERATOR		167	0
C7 STA OPERATOR		201	0
FWD FUEL	300	203.9	61170
AFT FUEL	300	305.9	91770
CTR FUEL	0	264.8	0
LOAD ON HOIST	600	154	92400
C16 BALLAST	125	439	54875
A/C TOTAL WEIGHT	14788	254.1647079	3758587.7
CG Range 16000 & under 254.0-280			
16500 = 254.7- 279.3			
17000 = 255.3 - 278.7			
17500 = 256.0 - 278.0			
18000 = 256.6 - 277.4			
18500 = 257.3 - 276.7			
19000 = 258.0 - 276.0			

4/5

FLT. 8

N612AZ CG	WEIGHT	ARM	MOMENT
N612AZ	13073	261.9	3423818.7
PILOT	225	88.6	19935
TEST PILOT	165	88.6	14619
C6 STA OPERATOR	270	167	45090
C7 STA OPERATOR	160	201	32160
FWD FUEL	1400	203.9	285460
AFT FUEL	1300	305.9	397670
CTR FUEL	1600	264.8	423680
LOAD ON HOIST	600	154	92400
C16 BALLAST	400	439	175600
C15 BALLAST	300	405	121500
A/C TOTAL WEIGHT	19493	258.1404966	5031932.7
CG Range 16000 & under 254.0-280			
16500 = 254.7- 279.3			
17000 = 255.3 - 278.7			
17500 = 256.0 - 278.0			
18000 = 256.6 - 277.4			
18500 = 257.3 - 276.7			
19000 = 258.0 - 276.0			
19500 = 258.0 - 275.8			
20000 = 258.0 - 275.6			

5/5

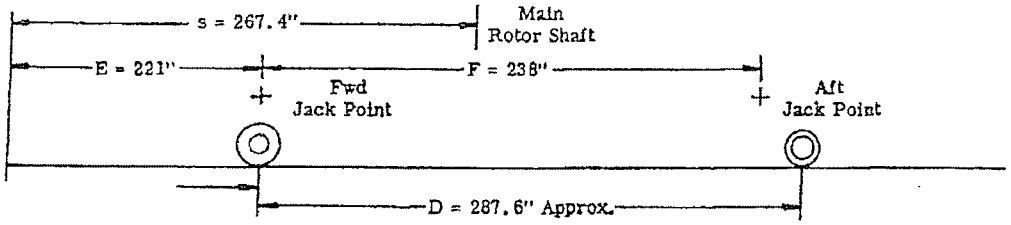
Sheet 1 of 1

AIRCRAFT ACTUAL WEIGHT AND HORIZONTAL BALANCE FOR S-61N MODEL HELICOPTER

Prepared By David Wolf
Date 1-4-08

Reg. No. N612AZ Serial No. 61297

SCALE POSITION	SCALE NO.	SCALE READING (LB)	TARE	SCALE ERROR	SYMBOL	NET WEIGHT
LEFT MAIN POINT		5015			W_L	5015
RIGHT MAIN POINT		5132			W_R	5132
POINT TAIL		2181			W_T	2181
TOTAL WEIGHT		12328			W	12328



CENTER OF GRAVITY TO FORWARD DATUM (HORIZ. DIST. - AS WEIGHED)

Weighing on Wheels $E + \frac{W_T \times D}{W}$

Weighing on Jack Points $E + \frac{W_T \times F}{W}$ $\quad 221 + \frac{2181 \times 238}{12328} = 263.1$

CORRECTED WEIGHT AND HORIZONTAL BALANCE

ITEMS ADDED & SUBTRACTED	WEIGHT (LB)	HORIZONTAL DIST (in) C.G. TO FWD DATUM	MOMENT (lb in.)
Aircraft as Weighed	12328	263.1	3243496.8
Plus -			
Minus -			
TOTAL ~~GROSS~~ EMPTY WEIGHT	12328	263.1	3243496.8
BALANCE 263.1 (Corrected) Horizontal Dist. - s = 4.3 in. Fwd ~~Aft~~ of Main Rotor Centroid			

S 5654 (R2)

Witnessed By Rodney Manogue

Figure 4-10

WeatherExtreme Ltd.

August 17, 2009

Andy Mills
Director of Helicopter Operations
Carson Helicopters, Inc.
828 Brookside Blvd.
Grants Pass, OR 97526

REFERENCE: Sikorsky S-61N, Registration N612AZ
Accident near Weaverville, California
August 5, 2008

Dear Mr. Mills:

The Sikorsky registration N612AZ crashed at 1941 Pacific Daylight Time (PDT) on August 5, 2008 (0241 UTC August 6, 2008). Figure 1 shows the terrain, the accident location and the weather stations in the region. The terrain in the region is mountainous and the closest station to the accident location is the Backbone RAWS (Remote Automated Weather Station). This station is 6.03 miles east southeast of the accident site and is at an elevation of 4,700 feet MSL (mean sea level). The accident site is at an elevation of 5,950 feet MSL or 1,250 feet higher in elevation than the Backbone RAWS (Figure 2).

Most of the RAWS stations are owned by wildland fire agencies and are used for fire weather purposes. As such, these stations record wind speed from a height of 20 feet above the ground (as opposed to FAA mandated stations at airports of 32.8 feet above the ground). Thus, the RAWS stations reported winds are generally lower in speed then those reported by weather stations at airports. The RAWS (as with the airport stations) report air temperature from 6 to 8 feet above the ground.

The RAWS wind speed (sometimes reported as mean wind speed) and wind direction (sometimes reported as mean wind direction) is a 10-minute average (the previous 10-minutes just prior to reporting). The peak wind speed (sometimes reported as maximum wind gust) and peak wind direction is the maximum from the previous hour.

The temperature and wind data as reported by the Backbone RAWS on August 5, 2008 surrounding the accident time were as follows.

Time (PDT)	Wind Speed (mph)	Wind Direction (degrees true)	Wind Gust (mph)	Air Temperature (°C)
1849	5	155	13	27.8
1949	6	151	12	25.0
2049	9	154	13	22.2

1745 Catalpa Lane, Reno, Nevada 89511
Tel: 775-636-8553 / Fax: 775-636-8430
www.weatherextreme.com

So the wind speed and direction reported at 1949 PDT was the mean wind speed and direction from 1939 – 1949 PDT and thus encompasses the accident time. The wind gust is the peak gust from the previous hour. The wind speeds reported at 1849 PDT, 1949 PDT and 2040 PDT were increasing during this time period and their wind directions were very similar 151° to 155° (or south southeasterly).

Figure 3 is a wind rose of the mean wind speeds and direction on August 5, 2008. This figure shows that the mean wind speeds ranged from calm to 9 miles per hour and the wind directions were from the south to southeast.

Figures 4 and 5 are the time series plots of the mean wind speeds and directions from the Backbone RAWS on August 5, 2008 (note that times are LST and one hour must be added to get PDT). These graphs show that the mean wind speeds had not been calm since the early morning hours and the wind directions had been southeasterly since 1300 PDT.

Figures 6 and 7 are the time series plots of the maximum wind gusts and the direction of these gusts. These figures also show that from 1300 PDT on until the time of the accident the wind gusts were 10 mph or greater and the directions were east southeasterly to easterly.

Regarding the air temperature data, the RAWS station records air temperature at 6 to 8 feet above the ground. The air temperature at the Backbone RAWS was reported to be 25.0°C at 1949 PDT on August 5, 2008. Figure 8 is a plot of the air temperatures at the 2 meter (or ~6.6 feet above the ground) level. This plot is at 0300 UTC August 6, 2008 (2000 PDT on August 5, 2008) or approximately 11 minutes after the RAWS reporting time. This plot is from the National Center for Environmental Prediction (NCEP) reanalysis data for the U.S. These data are digital data and include assimilation of many weather data such as: official U.S. surface observing sites, satellite data, ship & buoy data, precipitation assimilation, surface characteristics, heat fluxes and vegetation. The data are available every three hours. This figure shows that the 2-meter air temperature range for the Backbone RAWS was 22°C to 24°C and for the accident location was 20°C to 22°C. The reanalysis air temperature at the 825mb level (or approximately 5,800 feet MSL) the temperatures at the accident site region were in the 20.5 to 21.0°C range (Figure 9). The 825mb level reanalysis winds show that the accident site was in the 2 to 3 knot range from the south (Figure 10). However, the resolution of these data is 32 kilometers. Thus, taking this into account, the accident site air temperature was in the 19.5 to 21.5°C range and the winds were in the 2 to 4 knot range from the south.

The National Transportation Safety Board (NTSB) Meteorological Factual Report dated June 15, 2009, utilizes data from the North American Model (NAM). These data are 12-kilometer resolution data and the analysis files are available every six hours (0000Z, 0600Z, 1200Z and 1800Z). The closest NAM analysis times that bracket the time of the accident are the 0000Z and the 0600Z August 6, 2008 times. The closest analysis time to the accident time is the 0000Z August 6, 2008. These winds and temperatures from these analyses files were plotted. Figures 11 and 12 are the 850mb (or approximately 4,950 feet MSL over the region) winds at 0000Z and 0600Z august 6, 2008, respectively. These

figures show southerly flow at 0000Z turning to southeasterly at 0600Z and increasing in speed. The 0000Z winds were in the 4 to 5 knot range. However, given the resolution of the NAM data (12 km) this gives the range of wind speeds from 3 to 6 knots. The 0600Z wind speeds are in the 6 to 8 knot range.

The 0000Z and 0600Z August 6, 2008, 850mb (or 850 hPa) level temperature analysis are plotted in Figures 13 and 14, respectively. The 0000Z air temperatures range from 23°C to 25°C (with the ±12km range) and the 0600Z air temperatures range from 20.5°C to 22°C (with the ±12km range).

The 0000Z and 0600Z 825mb level (or ~5,800 feet MSL over the region) winds and temperatures the region were as follows:
0000Z August 6, 2008: Air Temp = 21.5°C to 22°C, Winds 6 to 8 knots south southeasterly
0600Z August 6, 2008: Air Temp = 19.5°C to 20°C, Winds 8 to 10 knots southeasterly

The supporting figures for the NAM 825mb winds are shown in Figures 15 and 16, and the air temperatures are shown in Figures 17 and 18.

The NTSB Meteorological Factual Report utilizes the NAM 0300Z August 6, 2008 forecast product, not an analysis product due to the proximity in time to the accident time (0241Z August 6, 2008). In addition, the NTSB uses a single point sounding from this forecast product and does not analyze what is going on regionally and discusses the temperature and winds at the 850mb level and not the 825mb level, which is closer in altitude to the accident site elevation. This is important due to the fact that this is a forecast product and also the data resolution. The regional plots of the 0300Z August 6, 2008, 825mb level (or 5,800 feet MSL level over the region) forecast winds and temperatures are in figures 19 and 20, respectively. These plots show that at the 5,800 feet MSL level (or ~150 feet below the accident site) the winds were 8 to 10 knots from 109° and the air temperature was in the 19 to 21°C range.

The NTSB report also states that the density altitudes were derived using streamline analysis of the Mesowest data (which are just the station observations in the region). These streamline analyses are using very few stations in the region and any conclusions drawn from this type of analysis should be taken to have high uncertainty values.

Every dataset used to analyze the situation in question has issues in terms of resolution, location and timing. Given the mountainous terrain in the region, the distance of over 6 miles to the nearest surface weather station, and the timing of the measurements, the wind and temperature information from the copilot and helitak manager as relayed to me by Carson should be considered the most representative of the conditions just prior to and at the time of the accident. In fact, the 3 to 5 knot wind (3 to 6 mph) out of the south is consistent with the 6 mph at 151° (or south southeast) as recorded by the Backbone RAWS between 1939 PDT and 1949 PDT.

In order to gain further insight into the air temperatures, air flow, winds and density altitudes in the region of the subject flight a mesoscale atmospheric model such as the

MM5 or the WRF which uses atmospheric reanalysis data along with terrain and vegetation should be considered.

Please call should you have any questions.

Yours truly,

Elizabeth J. Austin, Ph.D., C.C.M.
President

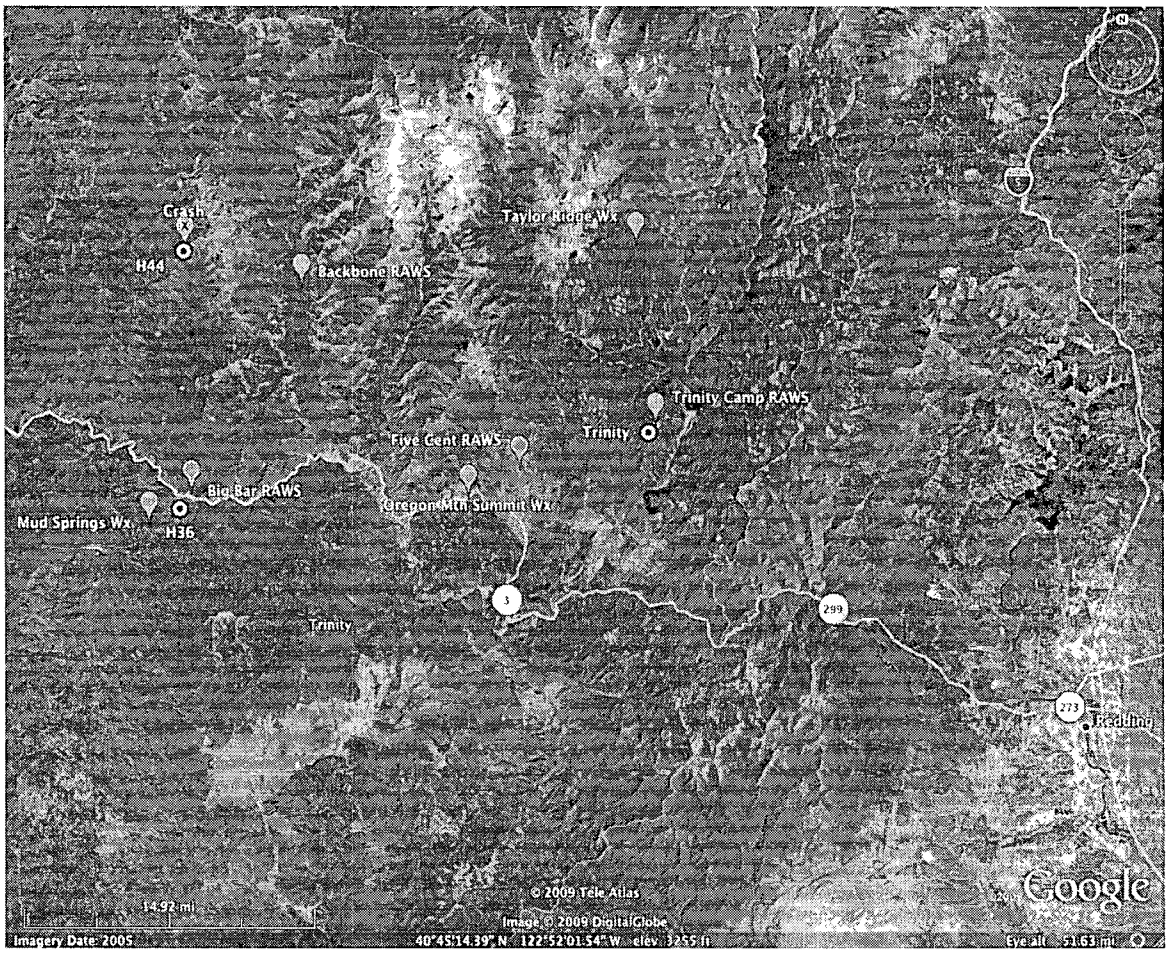


Figure 1. Terrain, accident location, helicopter landing sites and weather stations in the region (source: Google Earth).

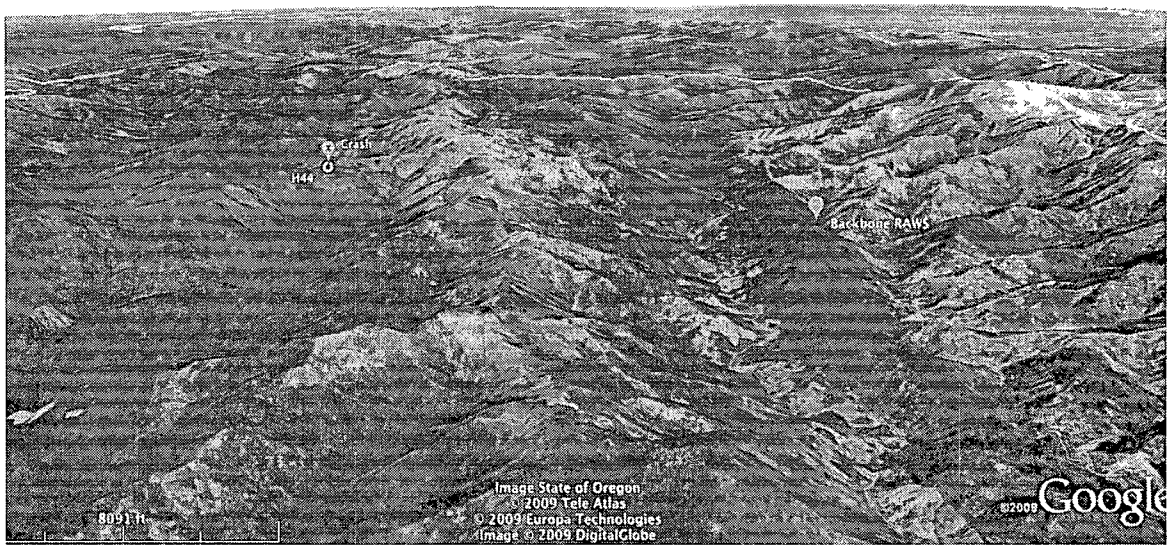


Figure 2. Terrain, accident location, helicopter landing sites and weather stations in the region (source: Google Earth).

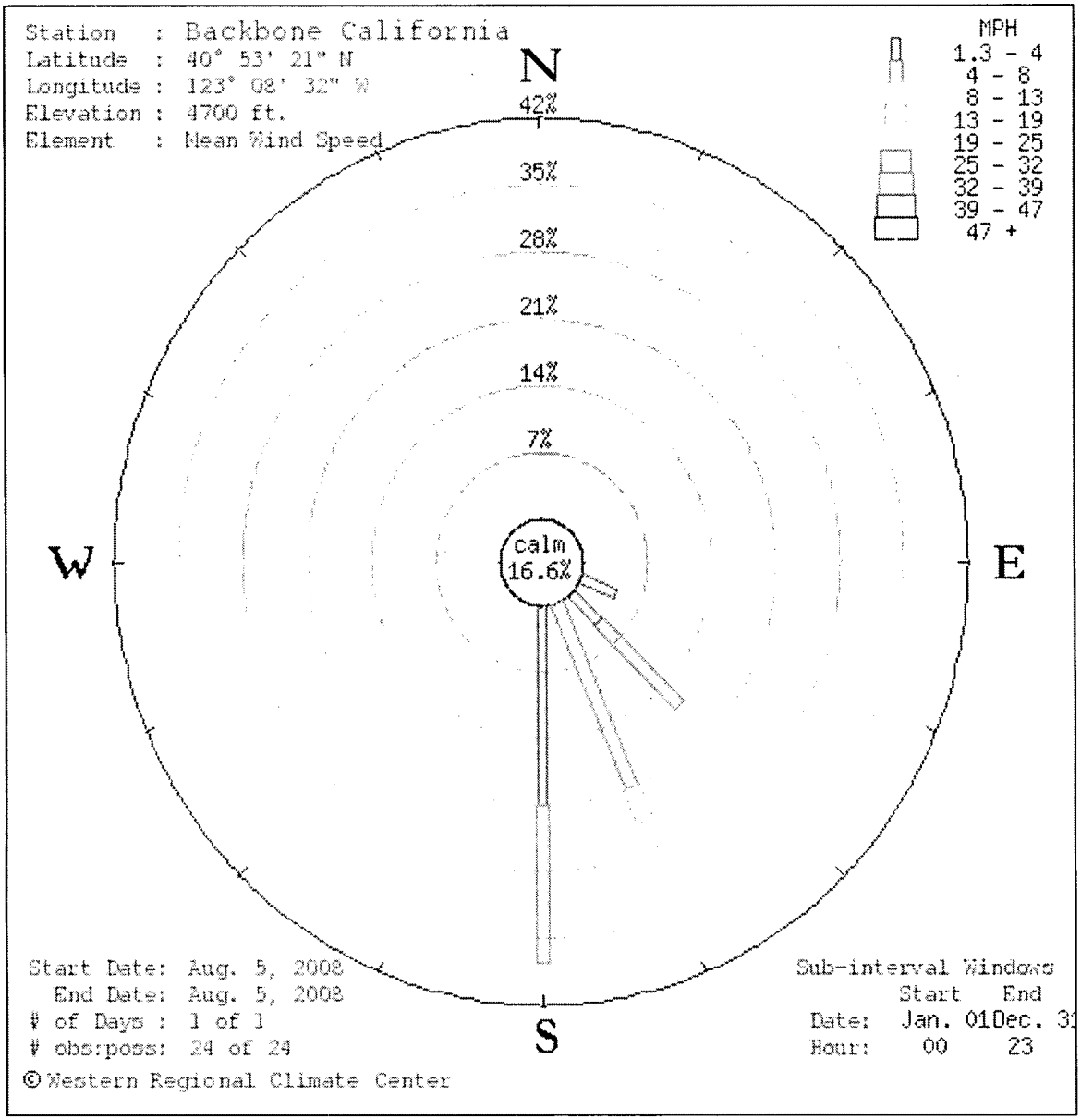


Figure 3. Backbone RAWS wind rose of mean wind speed and mean wind directions on August 5, 2008 (source: Western Regional Climate Center).

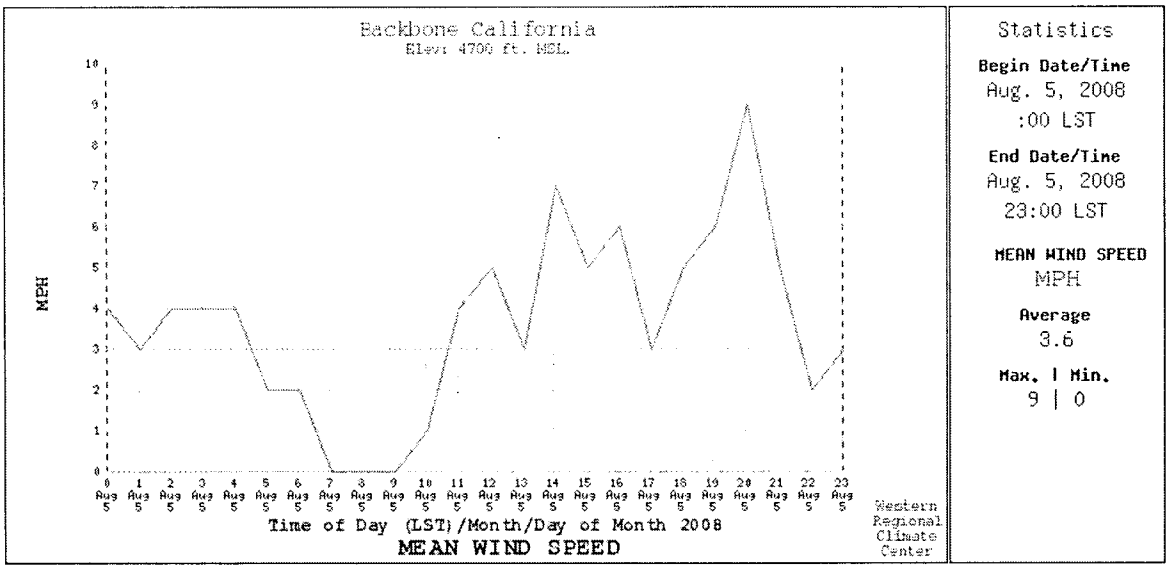


Figure 4. Backbone RAWS wind mean wind speeds on August 5, 2008 (source: Western Regional Climate Center).

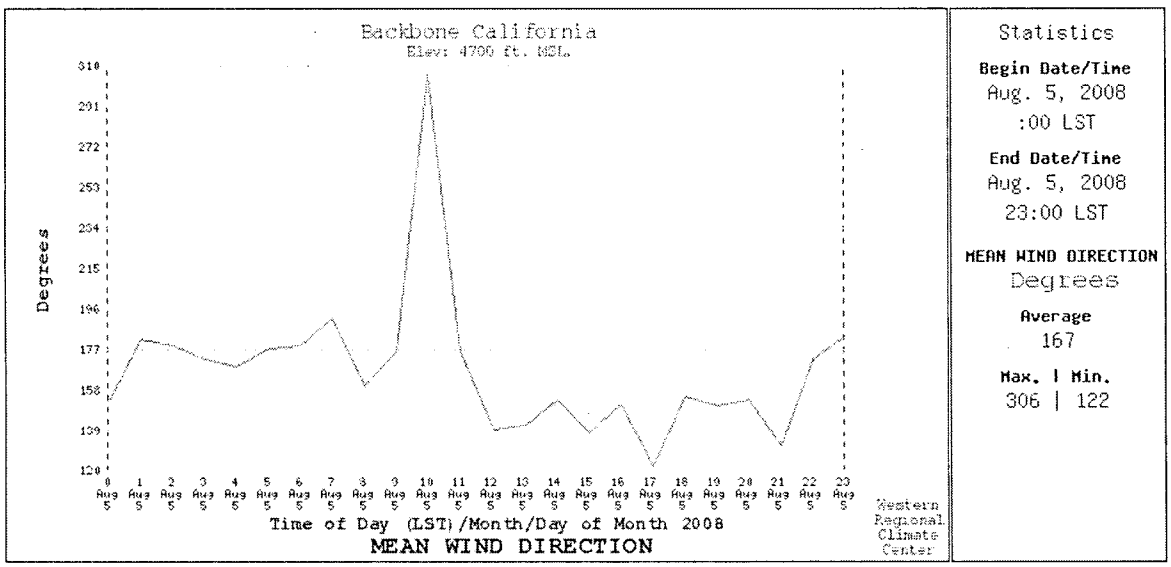


Figure 5. Backbone RAWS wind mean wind directions on August 5, 2008 (source: Western Regional Climate Center).

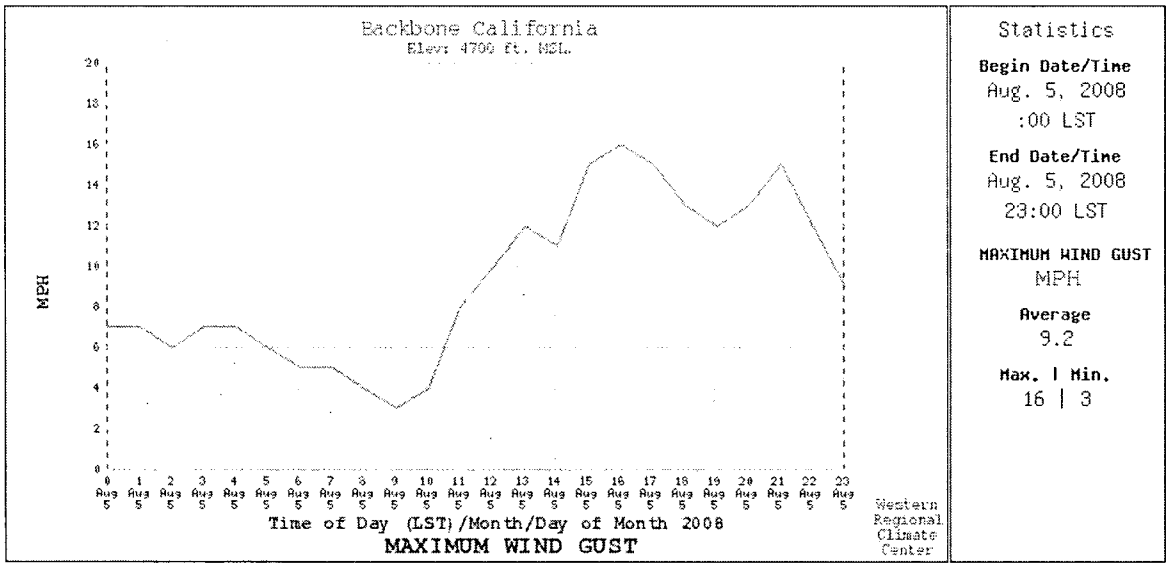


Figure 6. Backbone RAWS wind gusts on August 5, 2008 (source: Western Regional Climate Center).

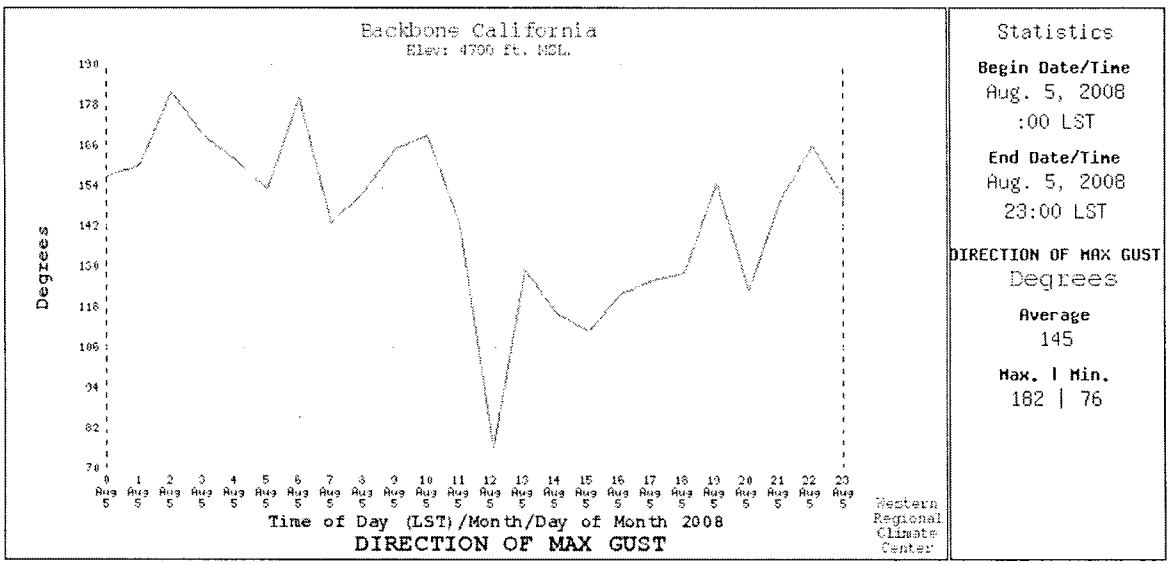


Figure 7. Backbone RAWS wind gust direction on August 5, 2008 (source: Western Regional Climate Center).

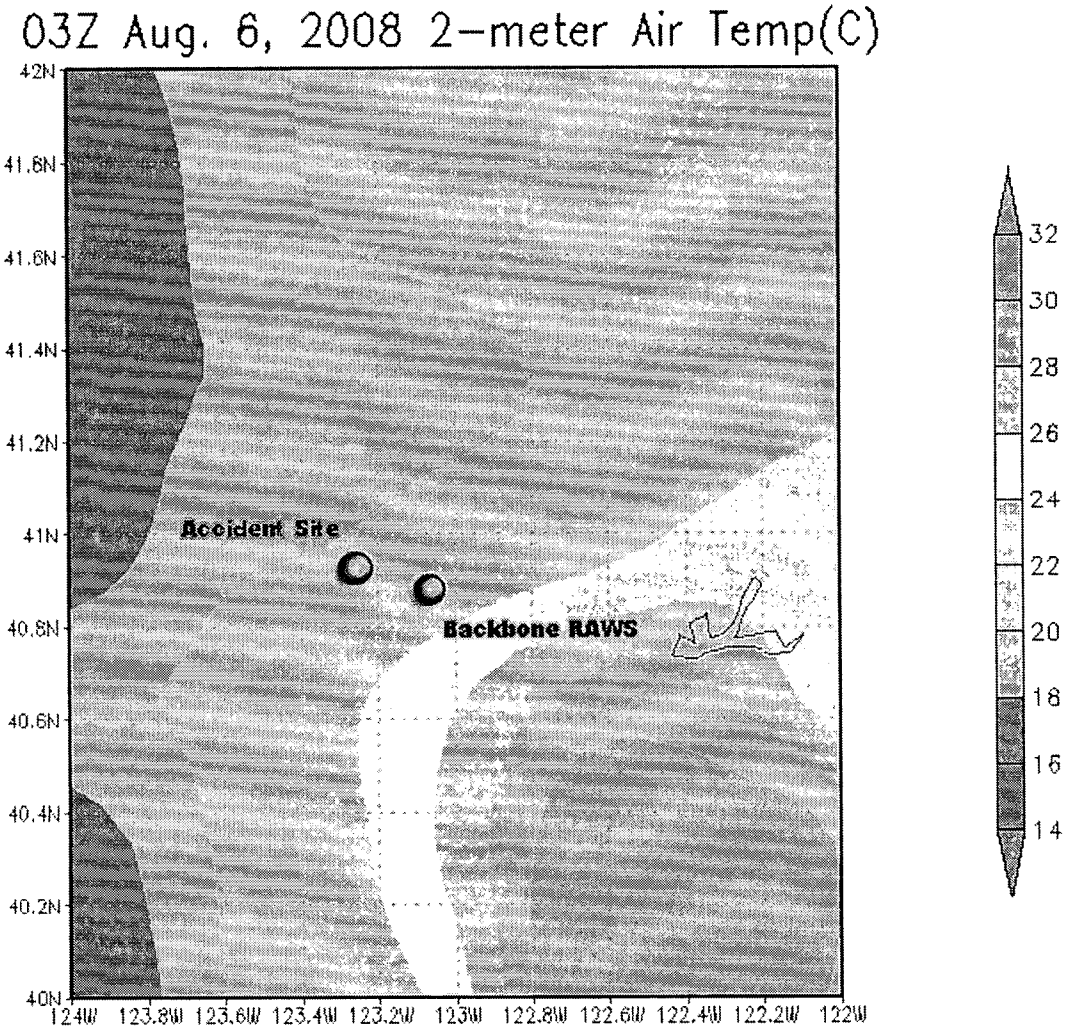


Figure 8. NCEP digital reanalysis data of 2-meter air temperature over the region at 0300 UTC on August 6, 2008 (2000 PDT August 5, 2008).

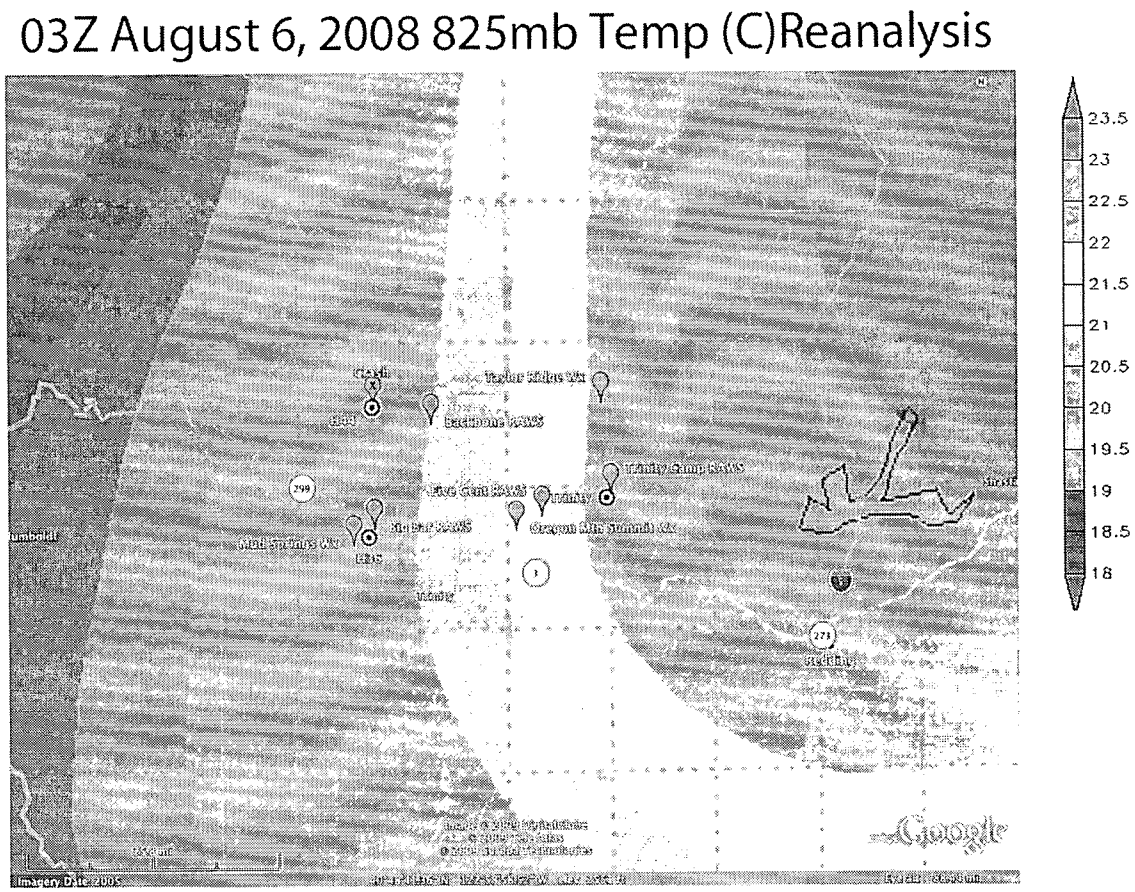


Figure 9. NCEP digital reanalysis data of the 825mb (~5,800 feet MSL) air temperature over the region at 0300 UTC on August 6, 2008 (2000 PDT August 5, 2008).

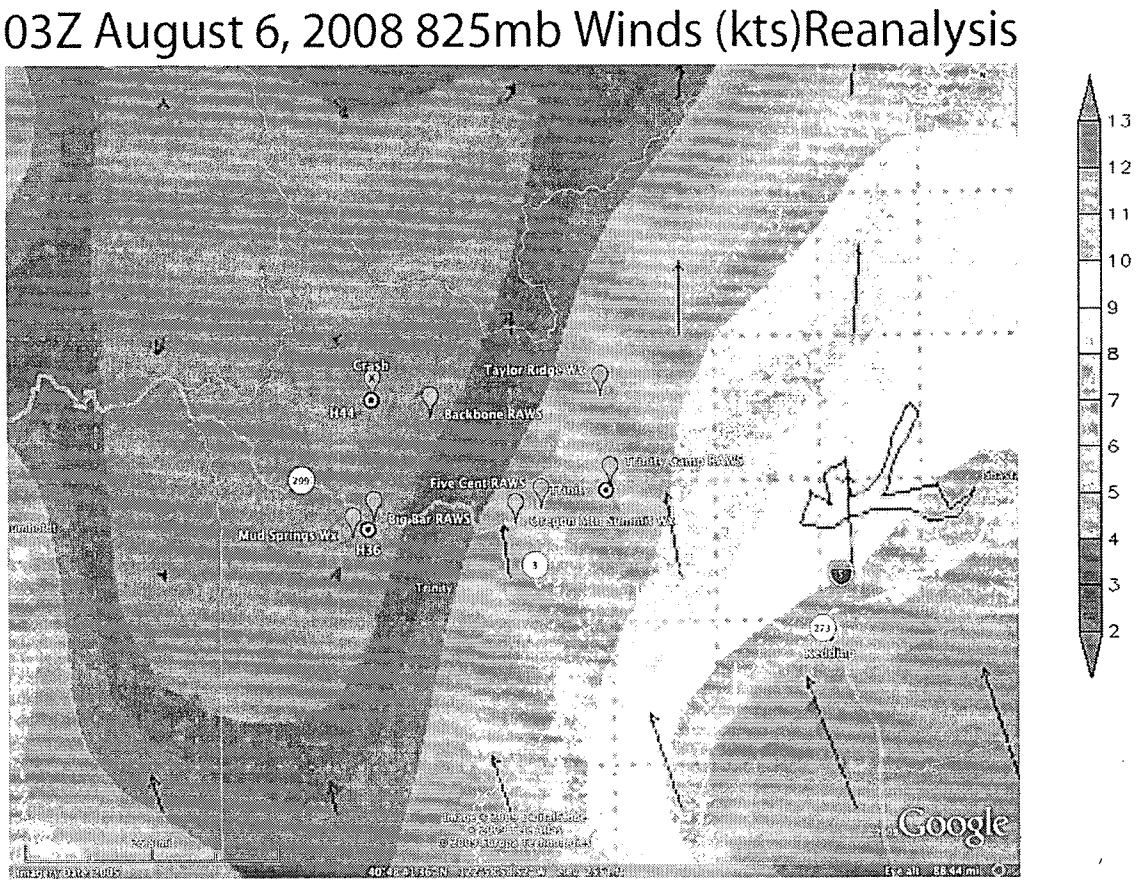


Figure 10. NCEP digital reanalysis data of the 825mb (~5,800 feet MSL) winds over the region at 0300 UTC on August 6, 2008 (2000 PDT August 5, 2008).

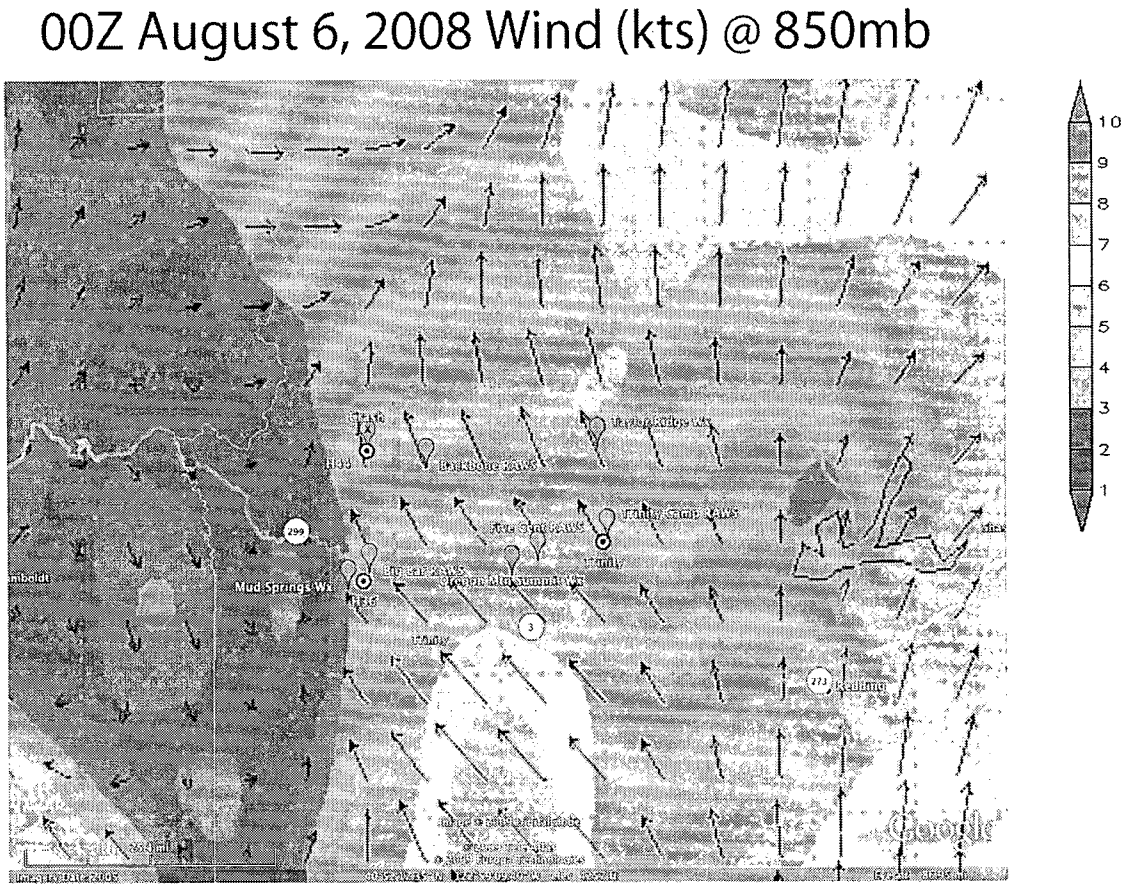


Figure 11. NAM analysis data of the 850mb (~4,950 feet MSL) winds over the region at 0000 UTC on August 6, 2008 (1700 PDT August 5, 2008).

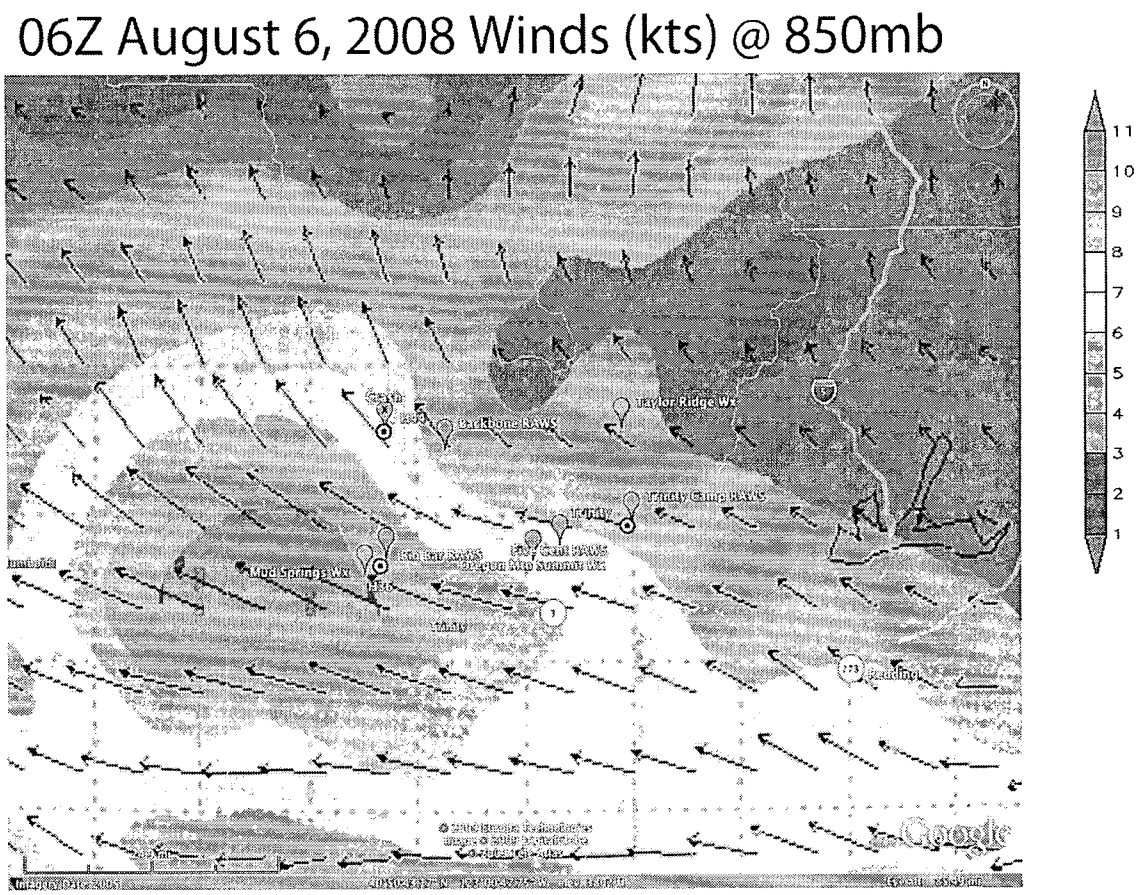


Figure 12. NAM analysis data of the 850mb (~4,950 feet MSL) winds over the region at 0600 UTC on August 6, 2008 (2300 PDT August 5, 2008).

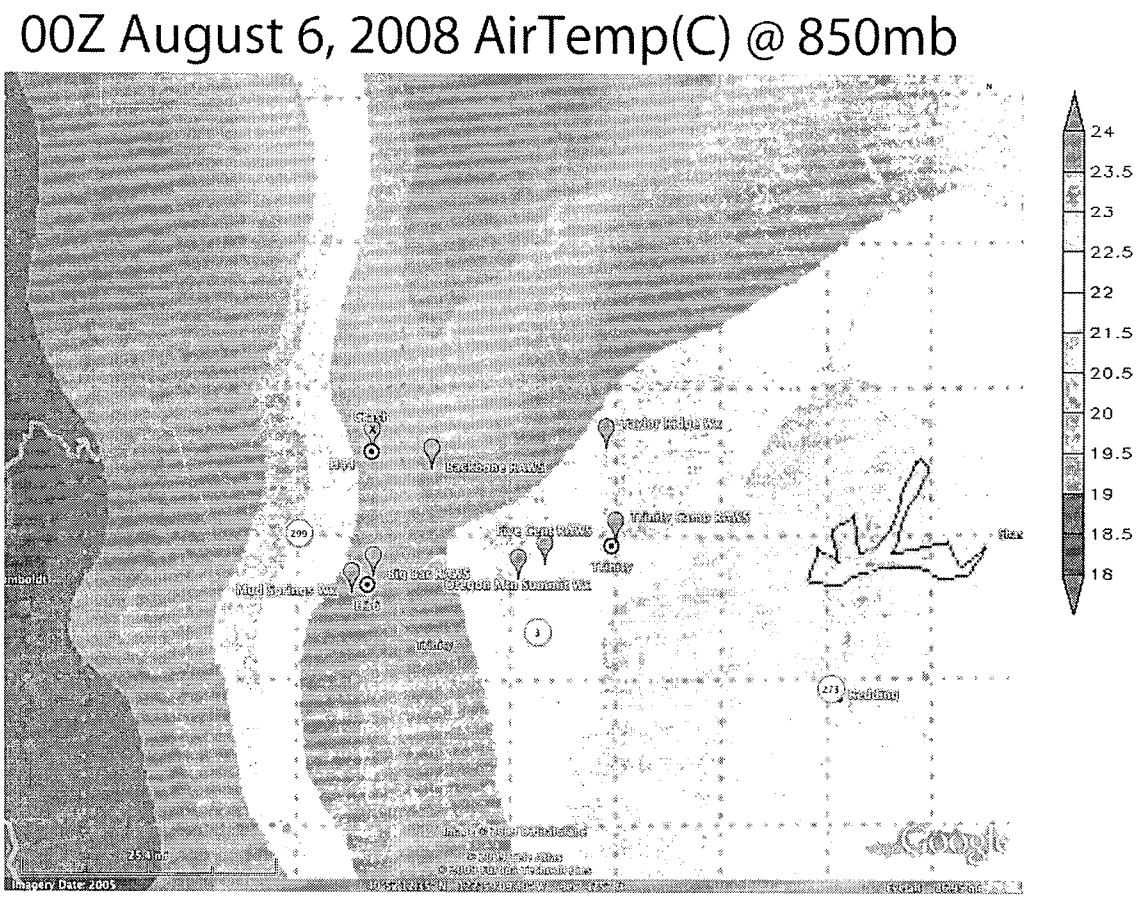


Figure 13. NAM analysis data of the 850mb (~4,950 feet MSL) air temperature over the region at 0000 UTC on August 6, 2008 (1700 PDT August 5, 2008).

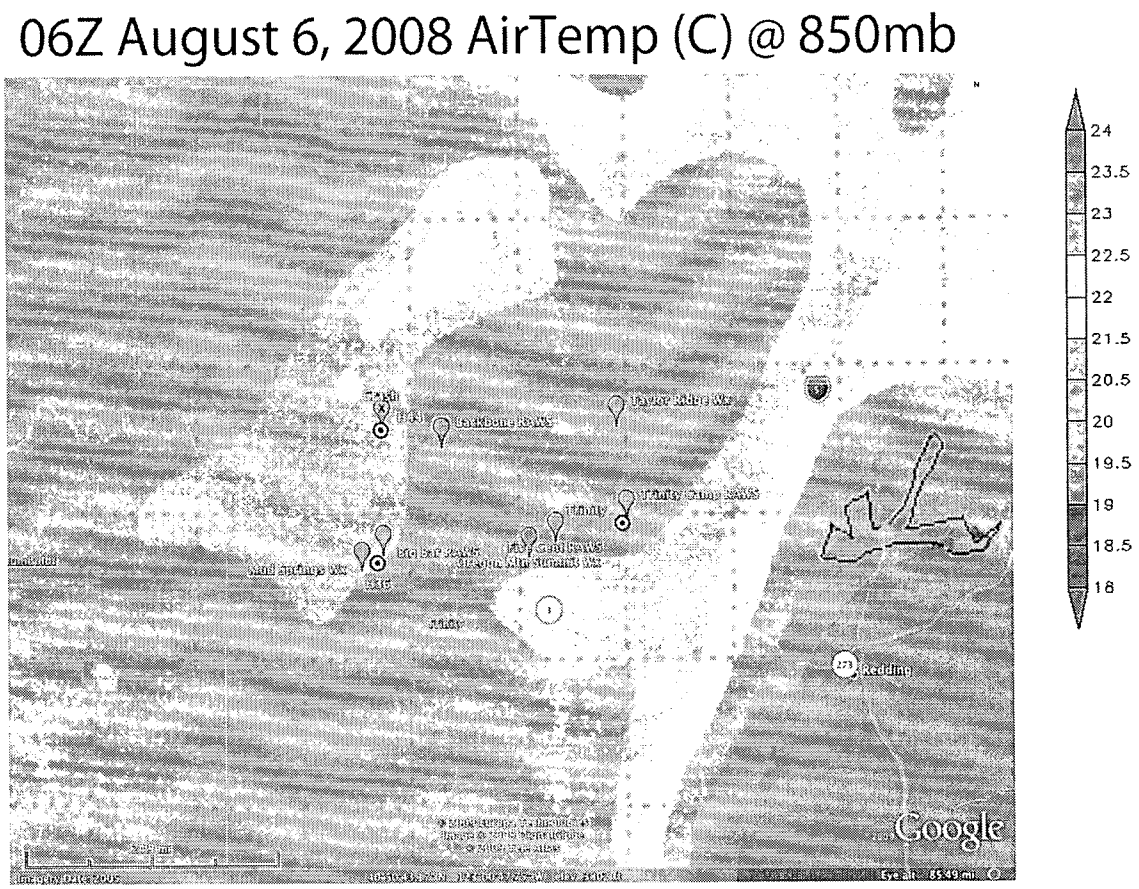


Figure 14. NAM analysis data of the 850mb (~4,950 feet MSL) air temperature over the region at 0600 UTC on August 6, 2008 (2300 PDT August 5, 2008).

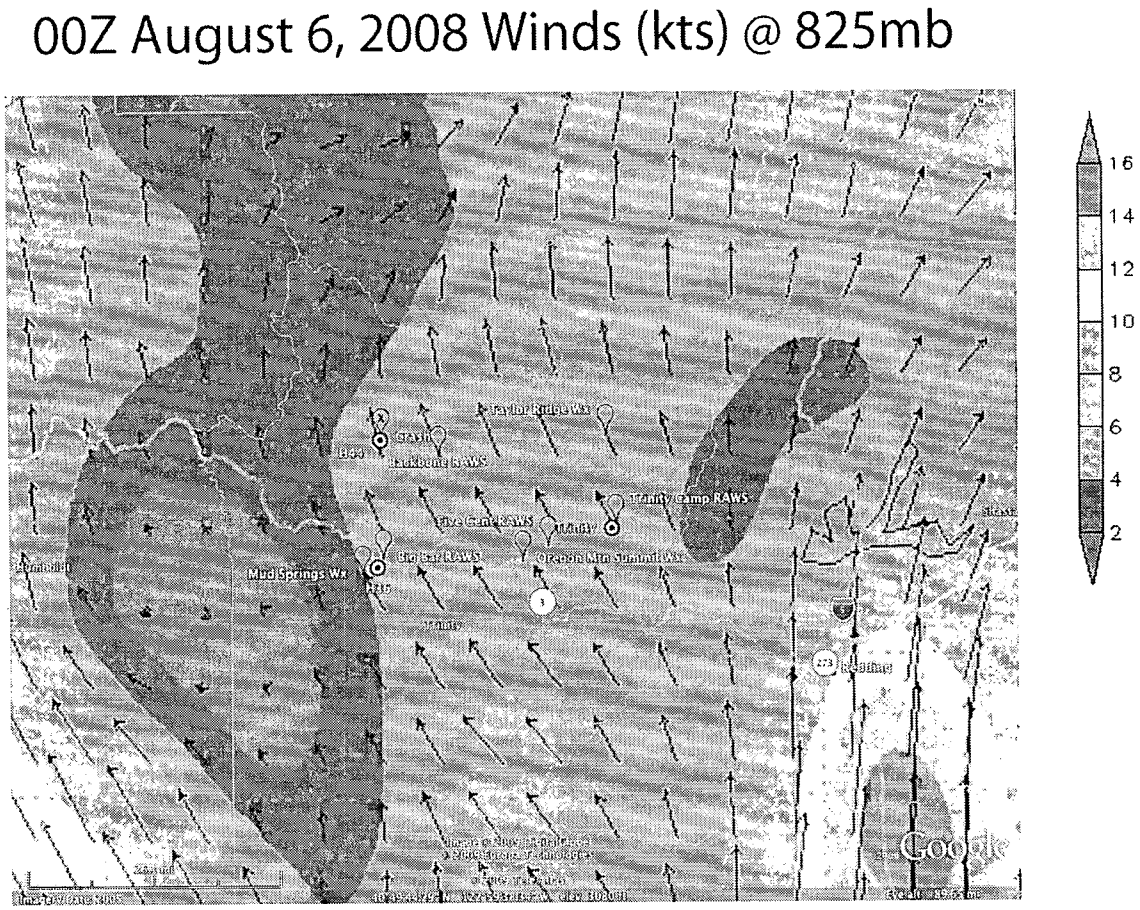


Figure 15. NAM analysis data of the 825mb (~5,800 feet MSL) winds over the region at 0000 UTC on August 6, 2008 (1700 PDT August 5, 2008).

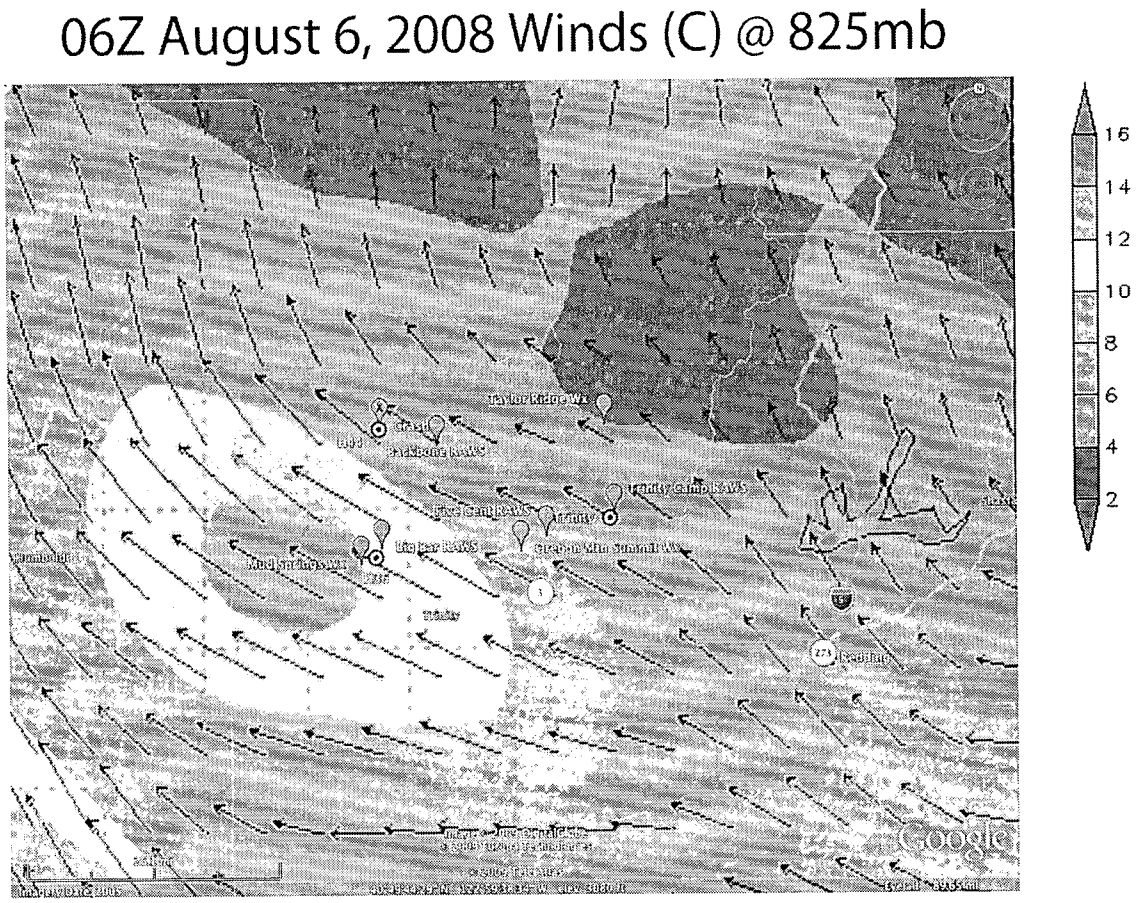


Figure 16. NAM analysis data of the 825mb (~5,800 feet MSL) winds over the region at 0600 UTC on August 6, 2008 (2300 PDT August 5, 2008).

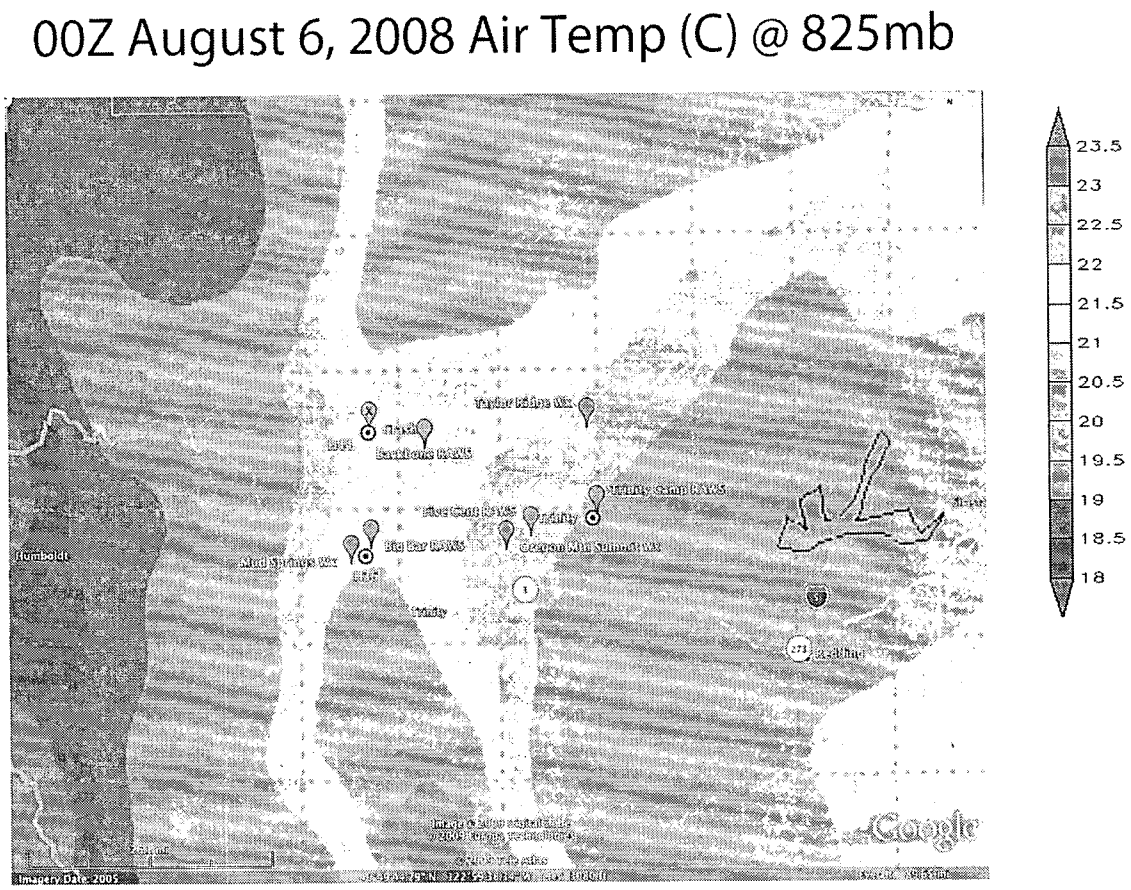


Figure 17. NAM analysis data of the 825mb (~5,800 feet MSL) air temperature over the region at 0000 UTC on August 6, 2008 (1700 PDT August 5, 2008).

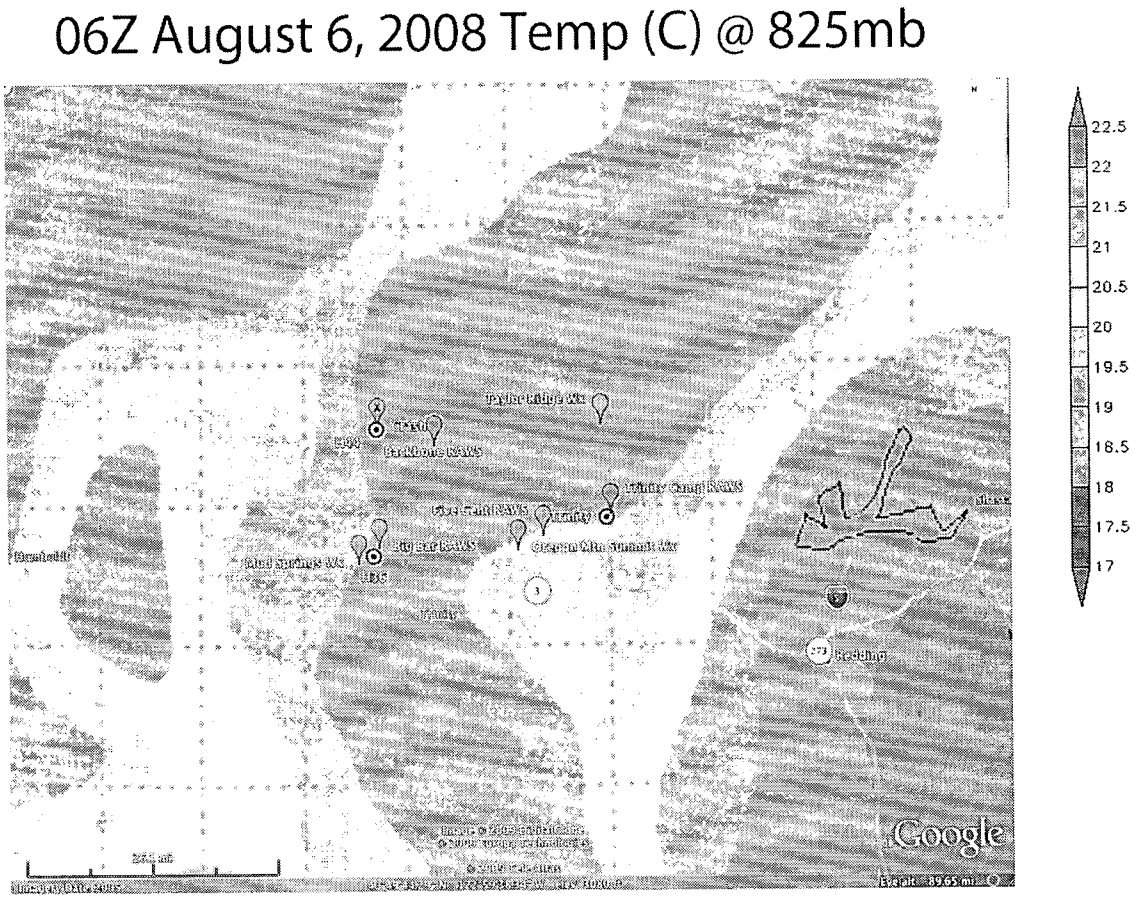


Figure 18. NAM analysis data of the 825mb (~5,800 feet MSL) air temperature over the region at 0600 UTC on August 6, 2008 (2300 PDT August 5, 2008).

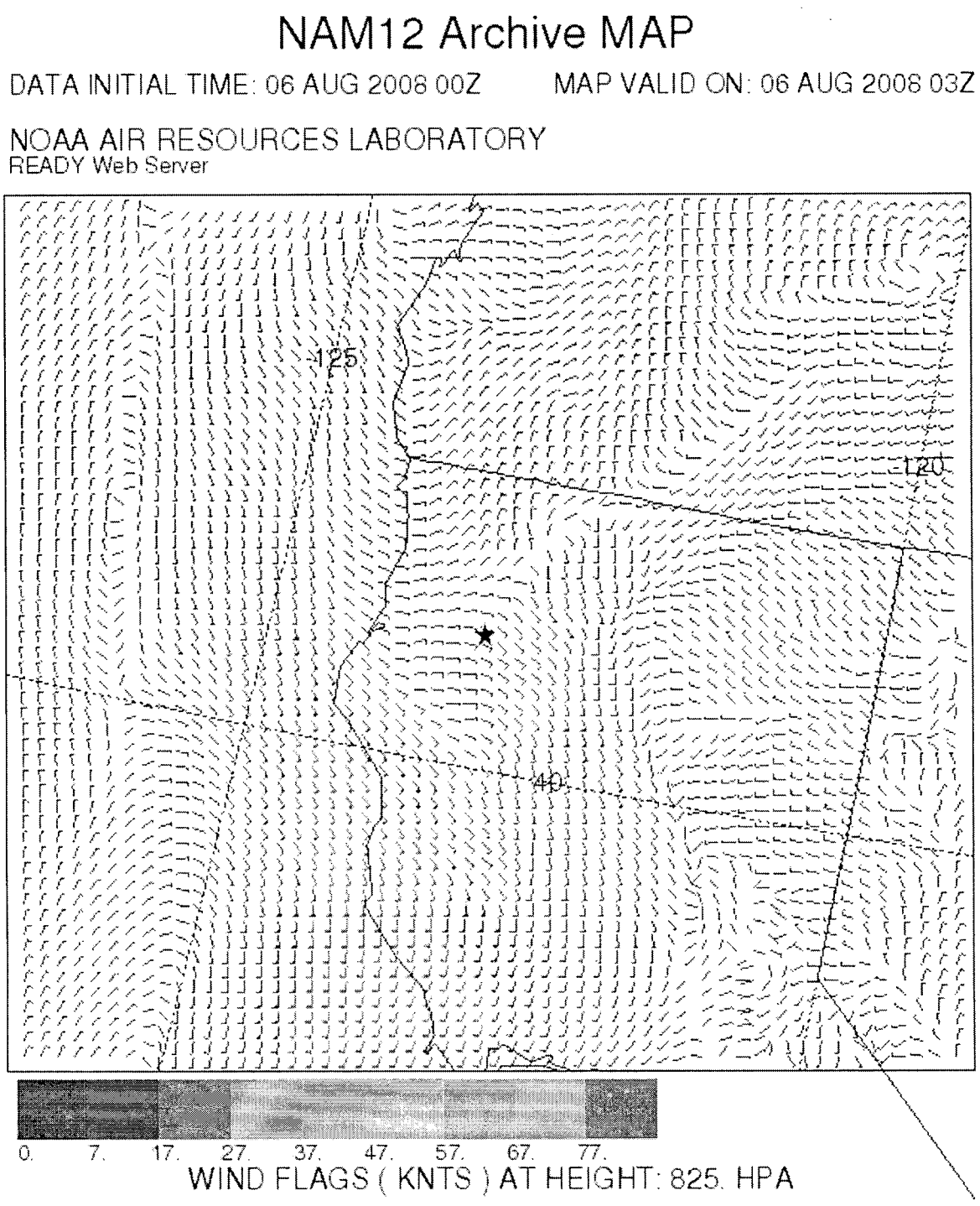


Figure 19. NAM forecast data of the 825mb (~5,800 feet MSL) winds over the region at 0300 UTC on August 6, 2008 (2000 PDT August 5, 2008).

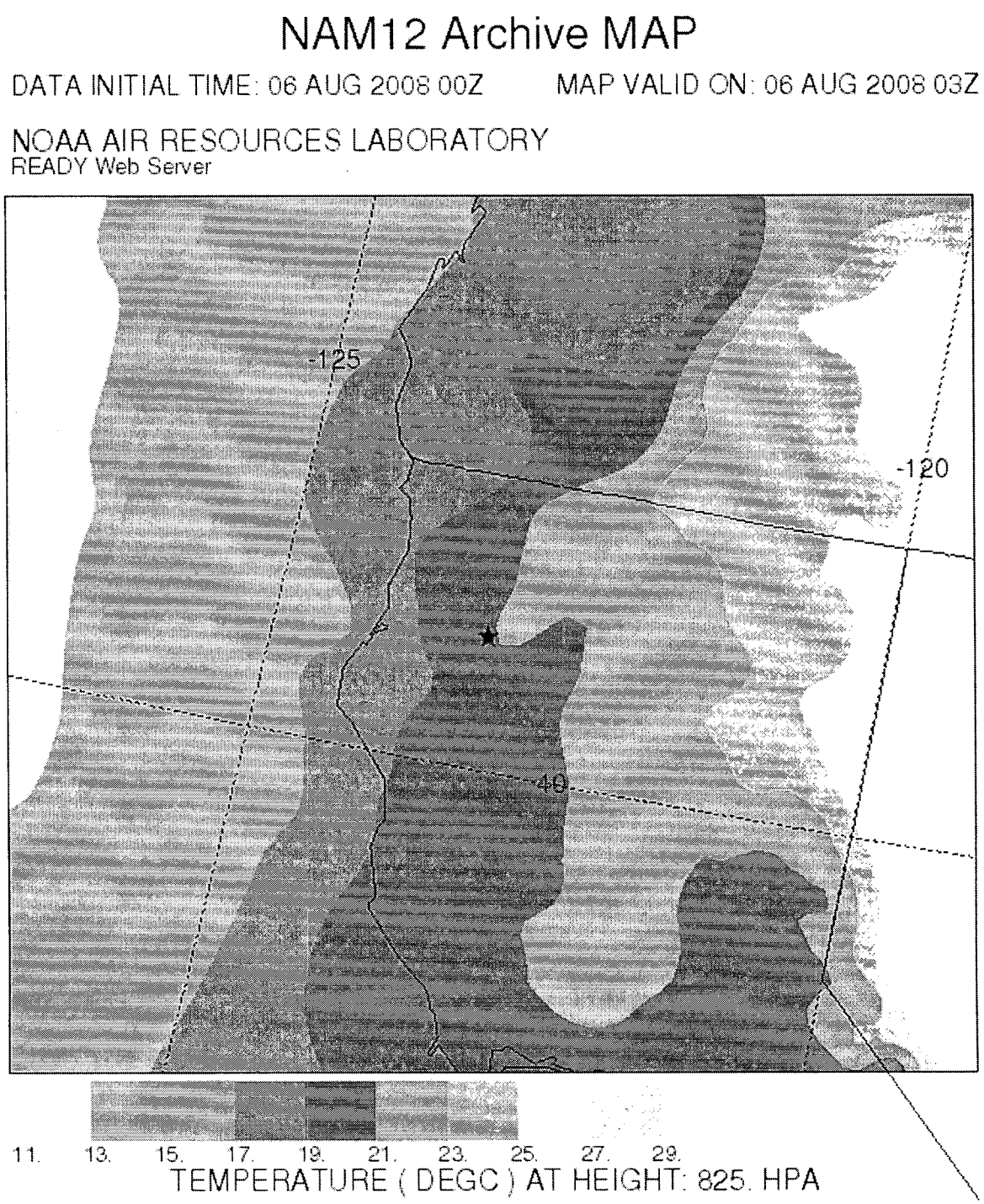


Figure 20. NAM forecast data of the 825mb (~5,800 feet MSL) air temperature over the region at 0300 UTC on August 6, 2008 (2000 PDT August 5, 2008).