NOAA P-3 N42RF
GHOSTNET Ferry Flight
KMCF-KMHR

Flight ID: 050317H

Sensor or system	Number or Name
INE	1
Accelerometer	1
Temperature Probe	1
Dew Point Probe	1 (General Eastern)
Altitude (for vertical wind)	Pressure Altitude
Static Pressure	Rosemount Fuselage
Dynamic Pressure	Rosemount Fuselage 1281
Time Source	Micro 99
Constants File	CO2052.CON

Notes:
There were numerous time/data gaps during this flight. These occurred during the following times, 163331Z-163720Z, 170101Z-170230Z, 171111Z-171250Z, and 171511Z-172310Z.

From 151401Z-151930Z, Collins GPS altitude values were substituted into radar altimeter 159. Radar altimeter 232 was inoperative from takeoff until 1740Z.

Due to moisture freezing in the radome pressure sensor lines during the first hour of flight, PQR began reporting erroneous values from 1623Z through the end of the flight, while PDAR began reporting erroneous values from 2028Z through the end of the flight. No corrections were made to these values.

Dewpoint sensor number two exhibited rhythmic oscillations and random spikes throughout the flight. It also tended to flat line at -52 degrees Celsius which is unrepresentative of the environment in which the aircraft was flying.

There were numerous times during the flight where the dewpoint temperature exceeded ambient temperature resulting in an RH>100%. This was likely due to heavy rain, a wet-bulb effect on the total temperature sensor, and/or an artificial warming of the dewpoint sensor as it tried to burn off excess moisture. Most of these events occurred from takeoff through 1653Z. However, when the relative humidity exceed 130%, corrections were made to dewpoint values to reduce these excessive relative humidity values. One of these corrections was made to dewpoint number one during the times 233351Z.

The King Liquid Water sensor was inoperative throughout the flight.

The aircraft INE positions were re-navigated with respect to GPS.

SPECIAL NOTE!!! Locations 80, 81 and 82 of record five on the standard tape contain vertical ground, vertical air and vertical speeds, respectively, computed using Dave Jorgensen's vertical wind algorithm.
It is recommended that these values be used for vertical wind analysis.

	Takeoff	**Landing**
Aircraft Static Pressure	1011.6 mb	1011.2 mb

Corrected Tower Pressure	1010.5 mb	1014.1 mb
Flight Director:	Martin Mayeaux	(813) 828-3310 ext. 3086

U.S. Dept. of Commerce / NMAO / NOAA / Aircraft Operations Center

Flt ID: 050317H	From: KMCF	To: KMTR
Flt. No: 05 - 013	Blk In: 0007 Z	Time On: 0003 Z
ETD: 1500 Z	Blk Out: 1501 Z	Time Off: 1517 Z
ETE: 9 + 00	Blk Time: 9 + 06 (9.1) Hrs	Flt Time: 8 + 46 (8.8) Hrs
Sponsoring Org: NOAA/ETL	Program: Ghostnet	Purpose: Ferry

AOC Flight Crew

Aircraft Commander: Choy	Data System: Mcmillan
Co-Pilot: Strong	AVAPS: Delgado
Navigator: Gallagher, Siegel	System Eng:
Flight Eng: Wade, Floyd	A A:
Flight Director: Mayeaux	A A:
Avionics: Rogers	Crew Chief: Torrey

Participating Scientists / Visitors

Name (Last, First)	Activity on Aircraft	Affiliation
Vleenstra, T	PT	Airborne Technologies
Madsen, W	Sci	Noaa/ETL
Wilson, J	Sci	NOAA/ETL

Remarks (Storm Name, Mission ID, Recco Times, Fix Times)

Recco Times

Fix # Fix Time

Storm Name:

Mission ID:

Penetration number and time

Flew over lake at end of flight to test cameras

14
3
42

(See reverse for additional remarks)

U.S. Dept. of Commerce / NMAO / NOAA / Aircraft Operations Center

Flight ID: 050317H	Time Off: 1517 Z	Time On: 0003Z Z

[redacted]	A/C - Takeoff	Wx Station - Takeoff	A/C - Land	Wx Station - Land
Pressure	1011.6 mb	2984 (1010.5) mb	1011.2 mb	2997 (1014.9) mb 2996 (1014.6)

ATIS	Time	Observation
Takeoff	1355Z	22010KT 2 1/2 SM RA FG 20/19 A2984 PA+93 RZZ
Land	2255Z	18007KT 10SM OVC120 19/03 A2997

	Number	Data Disposition / Date / Quality
Flight Level Tapes	4	
Radar Tapes		
Cloud Physics Tapes / CDs		
Video Tapes		
Dropsondes	3	Good: 3 Bad:
AXBT		
AXCP		
AXCTD		

Remarks:

RA159 was off until 1519Z
Dewpoint occasionally higher than ambient, 1548Z, 1651Z, 2130
Data System freeze 163331 - Returned ~1638Z, went down 171112Z. Restart system Back up 1720Z
Dew point #3 is out to lunch. It has tremendous spikes (1658Z)
PQ4M on nose froze up. 173740Z
Radar (LF) down 1730-1756Z
TD1 & TD2 separation 7 degrees at 1811Z
TD3 Dead 1812Z - Back 1902Z
TD2 spike c 1822Z
FBO - 916-368-1455 - Transportation - 14 people
LWCJW - guestmusk Marriot

KMHR - 124.675 -
17004KT 10 095 18 2999
020Z 8000 SCT 16000 BKN VR303KT
200-400 Turb

Flight ID: 050317A

Page ___ of ___

U.S. Dept. of Commerce / NOAA / Aircraft Operations Center — Form 413-50

Time	Lat	Long	Trk	Hdg	Wind Dir	Wind Spd	T_a	T_d	Press. Alt	Geo. Alt	Sfc Press.	Press. Sfc	Dyn. Press	Remarks
1519	2746	8233	189	193	288	10	18.5	17.4	529	4	1009.2	950.6	96.2	Rain
1536	2740	8329	260	270	235	69	-2.7	-3.4	4527	4678	1004.5	573.3	55.8	Clouds below
154236	2743	8353	278	266	227	81.2	-4.6	-4.6	4892	5052	1003.8	548.1	67.7	Clouds below
155316	2747	8434	276	269	229	62.8	-5.1	-4.7	4905	5054	1002.9	547.2	77.1	Drop 1 & 2 good
161443	2808	8606	289	280	232	60.8	-7.3	-8.2	4918	5049	1005.7	546.1	79.6	clouds below
163331	2831	8725	287	279	243	71.1	-10.1	-10.8	4919	5027	1009.3	546.1	81.9	In Clouds Data System freeze at 163331
		Drop 3 occured at Data system freeze												
165511	2904	8853	302	290	240	76.1	-15.9	-17.3	5500	5607	1012.6	505.1	70.4	Clouds below
173155	3027	9122	302	298	254	36.1	-18.5	-40.9	5498	5535	1610.9	504.9	78.4	Low Clouds
175923	3129	9319	303	302	278	30.5	-26.7	-49.7	6102	6013	1010.9	465.2	68.8	Clr
183119	3237	9536	302	302	295	32.9	25.4	-52.4	6099	5471	1001.7	465.4	66.3	CIR
190200	3339	9753	293	294	289	20.3	-24.8	-46.1	6098	5818	982.2	465.4	71.6	CIR
193659	3435	10031	294	295	291	35.0	-23.5	-34.3	6075	5535	945.0	465.5	75.5	CIR
200804	3527	10307	292	295	305	35.5	-21.0	-41.6	6096	4928	873.4	465.7	75.7	CIR
204001	3610	10545	282	288	306	61.6	-31.1	-49.9	7313	5247	785.1	392.7	78.8	CIR
210800	3649	10802	289	292	297	67.4	-30.9	-36.6	7312	5598	818.2	392.8	80.9	CIR
213635	3724	11023	289	291	293	72.1	-30.6	-37.5	7311	5716	836.7	392.8	77.7	CIR
221030	3802	11308	285	287	291	77.6	-29.4	-42.2	7312	5626	819.9	392.8	79.9	End fire drill
223952	3822	11533	277	280	289	61.3	-25.3	-50.8	6724	5091	840.6	426.8	82.8	Clr
231043	3832	11809	270	277	299	57.5	-23.9	-51.3	6714	5381	852.6	427.3	67.0	Clouds above/Below
234840	3840	12108	331	329	190	7.6	13.8	-0.3	795	377	997.8	959.2	44.8	First 1000 ft Pass over lake 30 w Sacramento
235147	3849	12106												End leg
235346	3850	12105												Start Return leg South
235649	3842	12111												End leg Start Sacramento

1517
930
0047

RANGE CONTROL GRAPH

TIME REMAINING: 2315 2215 2115 2015 1912 1815 1715 1620 1515

11+00 10+00 9+00 8+00 7+00 6+00 5+00 4+00 3+00 2+00 1+00

FUEL REMAINING: 60K 55K 50K 45K 40K 35K 30K 25K 20K 15K 10K 5K 0

TIME	FUEL	BURN	USE	ETR	ETA
1515	58.8				
1620	51.7	5.7	41.7	7+20	2342/0047
1715	46.9	5.4	36.9	6+50	0035/0047
1815	42.2	4.7	32.2	6+50	0105/0047
1912	38.1	4.7	28.1	6+50	0142/0047
2015	33.0	4.8	23.0	4+50	0165/0047
2115	28.5	4.5	18.5	4+10	0175
2215	24.0	4.5	14.0	3+10	0125
2315	19.6	4.4	9.6	2+10	0125

DISTANCE REMAINING

ETP = .5(TOTAL DISTANCE x OUTBOUND WIND FACTOR)

(916) 368 1455
TRACEY

WIND FACTOR		
WINDSPEED	HEADWIND	TAILWIND
10	1.03	.97
20	1.06	.94
30	1.10	.92
40	1.14	.89
50	1.18	.87
60	1.22	.85

ENROUTE FUEL	
ENROUTE TIME	9+30
ENROUTE FUEL (6K, 5K, 4.5K RULE)	48.0
RESERVE AT DESTINATION	10.0
REQUIRED RAMP	58.0
ACTUAL RAMP FUEL	58.8

TACTICAL (OFFSTA TO DESTINATION)	4 ENG	3 ENG
DISTANCE (OFFSTA TO DEST)		
ENROUTE TIME (OFFSTA TO DEST)		
BURN RATE (LBS/HR)	4500	5500
ENROUTE FUEL REQUIRED		
RESERVE AT DESTINATION		
FUEL AT OFFSTA		

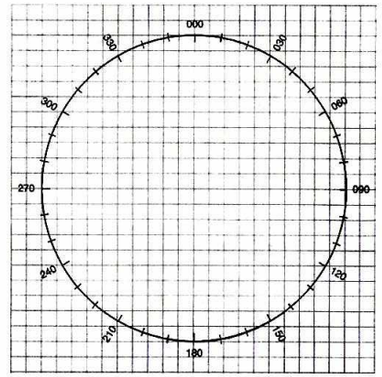
POINT OF SAFE RETURN	4 ENG	3 ENG
ETP DISTANCE (TO DEPARTURE)		
ENROUTE TIME (TO DEPARTURE)		
BURN RATE (LBS/HR)	4500	5500
FUEL REQUIRED		
RESERVE AT DEPARTURE		
PSR FUEL		

"F" FACTOR	200	250	300	350
10,000	1.0	1.0	.99	.99
20,000	.99	.98	.97	.97
30,000	.97	.96	.95	.94
40,000	.96	.94	.92	.90

CEX - TRUE BEARING METHOD	INS1	INS2	WET
COMPASS TYPE			
MCH (READING)			
- MTH (SEXTANT)			
CE			
- VAR			
DEV			

CEX - ERB METHOD	INS1	INS2	WET
COMPASS TYPE			
MERB (DIAL 000)			
+ ZN			
= MTH			
MCH (READING)			
CE			
- VAR			
= DEV			

CEX SIGHT	
GMT	
GHA	
CORR	
GHA	
LONG +W -E	
EXACT LHA	
LAT	
BODY	
DEC	
HC / D	
CORR	
HC	
Z	
ZN	



TRUE AIRSPEED CROSS-CHECK							
TIME	IAS	PRESS ALT	"F" FACTOR	EAS	OAT	TAS	ITAS
1640	212	160			+2	~~275~~	255 275

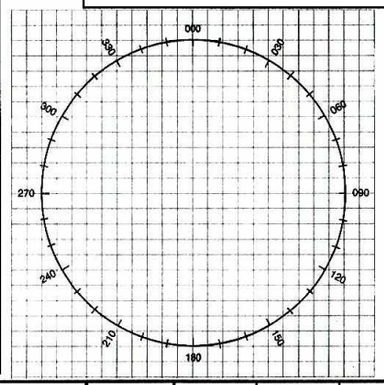
6
40
4
8.5
5

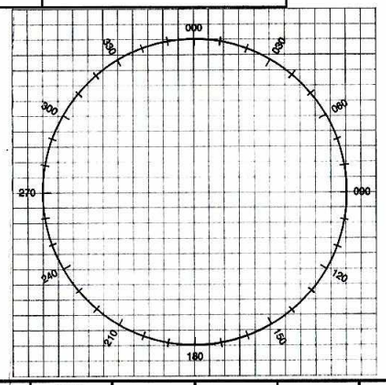
11
31.5

17+2 19 −3 16

CLEARANCES			
FREQ	ALT	HDG	MHR OTHER
			CAF L 190 ↑1600 FL180
			119.65 SQ 3747
			~~J58 316 aft SPS~~

MISSION LOG | **PAGE ___ OF ___**





POSITION REPORT

1. POSITION
2. TIME
3. ALTITUDE
4. NEXT POSITION
5. ETA
6. NEXT POSITION

EMERGENCY MESSAGE

TRANSMIT THE FOLLOWING MESSAGE TO ANY AGENCY ON THE AIR-GROUND FREQUENCY IN USE. IF UNABLE TO ESTABLISH COMMS, ATTEMPT CONTACT ON ANY OF THE FOLLOWING EMERGENCY FREQUENCIES:

UHF/VOICE	VHF/VOICE	MF/VOICE	HF/CW	MF/CW
243.0	121.5	2182 KHZ	8364 KHZ	500 KHZ

MAYDAY, MAYDAY, MAYDAY
THIS IS NOAA _____, NOAA _____, NOAA 42

- POSITION _____ N / S
  _____ E / W AT _____ Z
- HEADING _____ TRUE/MAG
- AT _____ KTS TRUE/INDICATED
- FLIGHT LEVEL OR ALTITUDE _____
- WE ARE A P-3 AIRCRAFT WITH 14 SOULS ON BOARD
- NATURE OF EMERGENCY
- ASSISTANCE DESIRED
- PILOT INTENTIONS
- WE HAVE _____ ENDURANCE REMAINING

TIME	FIX TYPE	POSITION	INS 1 POSITION	K ERR	INS 2 POSITION	K ERR	MH	VAR +E==>	TH	DR +R==>	TRK	GS	WD	WS	ALT	TAS	NEXT PT	DIST	TIME	ETA	REMARKS
1455	START																				
1502	TAXI																				
1502	~~ROCK~~																				
1517	T/O																				
1522	✕✓	N 27 35.6 W 87 39.8	27 35.4 87 39.8	+.2 0	27 35.7 87 39.7	-.1 +.1	~~259~~	1W	~~259~~	2R	259	163	254	43	7120	228					206/18
1610	△	28 01.4 85 44.6	28 01.7 85 44.0	-.3 +.6	28 02.0 85 44.6	-.6 0	278	1E	279	10R	289	243	210	43	160	254					
1710	△	29 36.6 89 52.6	29 36.6 89 50.9	0 +1.7	29 37.3 89 51.9	-.7 +.7	289	3E	292	9R	301	259	217	40	180	267					
1750	C △	31 08.4 92 39.7	31 09.0 92 38.7	-.6 +1.0	31 09.6 92 39.7	+1.2 0	293	5E	298	1R	299	256	204	3	180	260					
1830	C △	32 34.7 95 30.3	32 34.6 95 27.8	+.1 +2.5	32 35.7 95 29.1	-1.0 +1.2	298	6E	302	2L	300	242	341	11	200	249					
1930	△	34 26.5 100 07.7	34 26.7 100 05.7	-.2 +2.0	34 27.4 100 06.9	-0.9 +.8	283	9E	292	1L	291	250	304	16	200	267					
2010	C △	35 30.5 103 20.0	35 30.9 103 15.8	-.4 +4.2	35 32.3 103 17.9	-1.8 +2.1	282	10E	292	3L	289	254	326	20	200	270					
2110	△	~~36 52.4~~ ~~108 15.1~~	~~36 52.5~~ ~~108 09.6~~	~~-.1~~ ~~+5.5~~	~~36 53.6~~ ~~108 11.0~~	~~-1.2~~ ~~+2.1~~	277	13E	290	2L	288	250	300	48	~~7~~ 240	318					
2210	△	~~38 00.9~~ ~~113 04.7~~	~~38 01.5~~ ~~113 00.7~~	~~-.6~~ ~~+4.0~~	~~38 01.8~~ ~~113 01.8~~	~~-.9~~ ~~+2.9~~	277	14E	291	3L	288	237	297	62	240	301					
2310	△	38 32.0 118 04.4	38 32.8 117 58.3	-.8 +6.1	38 33.4 118 01.7	-1.4 +2.7	261	16E	277	7L	270	235	317	44	220	267					
0003	LAND	38 33.4 121 17.9	38 34.1 121 13.2	-.7 +4.7	38 32.7 121 15.6	+.7 +2.3															
	KMHR																				

MISSION LOG	PAGE ___ OF ___

FIX TYPES
(G) - GPS (I) - INS (R) - RADIO (V) - VISUAL (C) - CELESTIAL (D) - DR

TIME	FIX TYPE	POSITION	INS 1 POSITION	K ERR	INS 2 POSITION	K ERR	MH	VAR +E==>	TH	DR +R==>	TRK	GS	WD	WS	ALT	TAS	NEXT PT	DIST	TIME	ETA	REMARKS
✓	ILC	N 38 15.0 W 114 23.7	5																		
✓	KLOST	38 25.3 116 11.9	6																		
✓	MNA	38 33.9 118 02.0	7																		
✓	BABIT	38 30.7 118 23.1	8																		
✓	SONNY	38 20.1 119 29.1	9																		
✓	SAC	38 26.6 121 33.1	1																		
✓	KMHR	38 33.2 121 17.9	2																		

NOAA FORM 56-49
(2-95)

MISSION PREFLIGHT LOG

DESTINATION	MISSION	NAVIGATOR	AIRCRAFT COMMANDER	FLIGHT DIRECTOR	SCHEDULED / ACTUAL TAKEOFF Z	DATE OF TAKEOFF
KMHR	GIN Transit	SIEGEL	STRONG	MAYEAUX	1500 / 1517	17 MAR 05

WP	LAT / LON	RTE	MH	VAR +E==>	TH	DR +R==>	TRK	GS	WD	WS	ALT	TAS	LEG / TOT DIST	LEG / TOT TIME	PROP ETA	ETA	ATA	REMARKS
KMCF	N 27 51.0 W 82 31.3				274				L	V								→
RUDDF	27 55.2 83 48.9				269													
REMIS	27 53.0 85 15.5				289													
28721	28 18.9 86 42.3				288													
REDFN	28 53.0 88 42.1				311													
FATSO	29 41.4 89 47.1				310													
HRV	29 51.0 90 00.2				304													
PEBBY	30 40.2 91 26.4				303													
AEY	31 15.4 92 30.1				294													
FOGIN	31 30.8 93 11.7				293													
TURNN	31 40.5 93 38.3				293													
MOTLY	31 50.6 94 06.3				293													
FUZ	32 53.4 97 10.8				313													
BATIK	33 26.9 97 53.6				313													
SPS	33 59.2 98 35.6				288													
SONYA	34 14.7 99 35.4				287													
TCC	35 10.9 103 35.9				291													
LVS	35 39.5 105 08.1				295													
ESPAN	36 07.2 106 21.4				295													
RGINA	36 27.8 107 17.8				294													
RSK	36 44.9 108 05.9				294													
MLF	38 21.6 113 00.8				294													

INS PERFORMANCE	INS 1	INS 2
BEGIN ALIGN TIME		
ALIGN STATUS (0-5)	0	0
END NAV TIME	0003	0003
START NAV TIME	1439	1439
DELTA T	9+24	9+24

TERMINAL ERRORS	INS 1	INS 2
DELTA LAT	-.7	+.7
DELTA LON	+4.7	+2.3
RGS	4	1
RADIAL ERROR	4	2

REMARKS

Lost Comms: JAX @ Remis 174.17
How @ Redfn 132.17

NOAA · AOC · SED

N42RF AVAPS DROP LOG

Project : GNet/AtRiv '05Mission : Flight ID : 050317H GhostNet 05

Take Off : Landing : Ferry Tampa – California

Drop #	Sonde Serial #	Rcvr #	Press Offset	Launch Time	Winds Time	Operator	Comments	Good ?
test drop	1/5 OLD							
	6&7 UBLOX							
	5-8 UBLOX							
~~test~~	~~042415057~~	~~1~~						
	~~044535173~~							
old	1 042215057	1		1553	±40	JCH		✓
old	2 ~~044535173~~	5		1553	±40	JCH		✓
new	3 044535173	6		1554	1.25	JCH		✓
	4 044535173	7		1554	1.25	JCH		✓
	5 044535434	5	no Telem	Try	/ no drop			
no drop	6 044535434	8	"	"		/ no drop		
	System Rebooted.							
7	044535434	~~5~~		1633	1.10	JCH		✓
8	044535434	~~6~~		1633	1.10	JCH		✓
9	044535434	~~7~~		1633	1.10	JCH		✓
10	044535434	~~8~~		1630	1.10	JCH		✓

403.32

405.32