

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

| | | |
|----------------------------|-------------------------|------------------------|
| Flt ID: 040831 I | From: TBPB | To: TBPB |
| Flt. No: 04-054 | Blk In: 2142Z | Time On: 2139Z |
| ETD: 1500Z | Blk Out: 1447Z | Time Off: 1456Z |
| ETE: 7+00 | Blk Time: 6+55 6.9 Hrs | Flt Time: 6+43 6.7 Hrs |
| Sponsoring Org: NOAA / NHC | Program: HURRICANE 2004 | Purpose: H. FRANCES |

AOC Flight Crew

| | |
|--|-------------------------|
| Aircraft Commander: TERBEST, R ✓ | Data System: LYNCH, T ✓ |
| Co-Pilot: CHOY, B STRONG, T | AVAPS: TONG, R ✓ |
| Navigator: GALLAGHER, T ✓ ADLER, J ✓ | System Eng: SMITH, J ✓ |
| Flight Eng: BAST, G ✓ FLOYD, D ✓ | A A: |
| Flight Director: SHEPHERD, T ✓ | A A: |
| Avionics: SANS SOUCI, D ✓ | Crew Chief: |

Participating Scientists / Visitors

| Name (Last, First) | Activity on Aircraft | Affiliation |
|--------------------|----------------------|-------------|
| ROGERS, R ✓ | PI | NOAA / HRD |
| ULHURN, E ✓ | SFMR | |
| DODGE, P ✓ | RADAR | |
| LASWELL, J ✓ | Sci | SCRIPPS |
| WALSH, E ✓ | | NASA GSC |
| LITCHEADORE, T ✓ | | APL |
| | | |
| | | |
| | | |

| | | | |
|---|--------------------|--------------|-----------------|
| Remarks (Storm Name, Mission ID, Recco Times, Fix Times) | Recco Times | Fix # | Fix Time |
| Storm Name: H. FRANCES | 1526-2 | | |
| | 1558-3 | | |
| Mission ID: NOAA3 1106A FRANCES | 1626-4 | | |
| | 1653-5 | | |
| Penetration number and time | 1728-6 | | |
| 1 - 1721 2019 0453 | 1848-13 | | |
| 2 - 1923 2026 0524 | 1931-14 | | |

(See reverse for additional remarks)

25
150
75

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Flight ID: 040831I Time Off: 1456Z Time On: 2139Z

| | | | | |
|----------|------------------|--------------------------------------|------------------|-------------------|
| | A/C - Takeoff | Wx Station - Takeoff | A/C - Land | Wx Station - Land |
| Pressure | <u>1008.4</u> mb | ^{1014.0} <u>29.94</u> mb | <u>1006.1</u> mb | <u>129.92</u> mb |

| ATIS | Time | Observation |
|---------|------|-------------|
| Takeoff | Z | |
| Land | Z | |

| | Number | Data Disposition / Date / Quality |
|---------------------------|--------|---|
| Flight Level Tapes | 2 | |
| Radar Tapes | 2 | |
| Cloud Physics Tapes / CDs | | |
| Video Tapes | 4 | |
| Dropsondes | 18 | Good: 14 Bad: <u>includes (2) prototype 16 chg to HRD</u> |
| AXBT | 0 | |
| AXCP | 1 | |
| AXCTD | | |

Remarks:

IP 1813 06619 30Y 93Y $\frac{33M \sim 3.346}{32/1690}$
 TBPB 1304 5930 160
 90

- NOTICED RAIS9 T.U. @ ~1533 SWITCHED TO 232
- 1604 B&I DP1
- SWITCH BACK TO RAIS9 ~1600
- 1910 Switch to Quadrant SFMR → ASDL
- J-w ↓ ~2007-2012 "Comp Adj" Needs work



**NOAA P-3 N43RF
CBLAST 2004
FLIGHT #2**

Flight ID: I040831

Sensor or system

Number or Name

| | |
|-------------------------------|----------------------|
| INE | 1 |
| Accelerometer | 1 |
| Temperature Probe | 1 |
| Dew Point Probe | 2 |
| Altimeter (for vertical wind) | RA-159 |
| Static Pressure | Rosemount (fuselage) |
| Dynamic Pressure | Rosemount (fuselage) |
| Time Source | Micro 99 |
| Constants File | CO3043.con |

Local Met. Data: Not copied at takeoff

Take off: 1456Z

Land: 2139Z

The RA-232 was substituted for the RA-159 during take off and landing due to spiking (T.O. 145301-145655; 213822-214200 Land)

The RA-159 had multiple spikes and dropouts during high altitude ferry to the storm. The RA-159 was replaced by the Collins GPS altitude in this data region (151110-163303).

There were data gaps noted: 183730-183742; 211012-211028; 211034-211038.

Dew pointer #2 had a spike that was removed and patched (171954-172043).

There were multiple times during heavy precipitation events (e.g. eye wall penetrations) when the dew point exceeded ambient temperature yielding a RH of greater than 100%. This is probably due to a wet bulb effect on the total temperature probe and/or the dew pointer over heating while trying to remove excess moisture. In these instances, no corrections were attempted.

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

SPECIAL NOTE: Locations 80, 81, and 82 of record 5 in the standard data contain vertical ground speed, vertical air speed, and vertical wind speed computed using Dr. Dave Jorgensen's vertical wind algorithm. It is recommended that these values be used for vertical wind analysis.

| | Take off | Land |
|--------------------------|-----------------|-------------|
| Aircraft Static Pressure | 1008.4 mb | 1006.1 mb |
| Corrected Tower Pressure | 1013.9 mb | 1013.2 mb |

Flight Director: Tom Shepherd
813-828-3310 x3053

Mission FRANCIS - SFMR Fit ID 040831I

SED Crew LYNCH, SANS SOUCL, SMITH, TONG

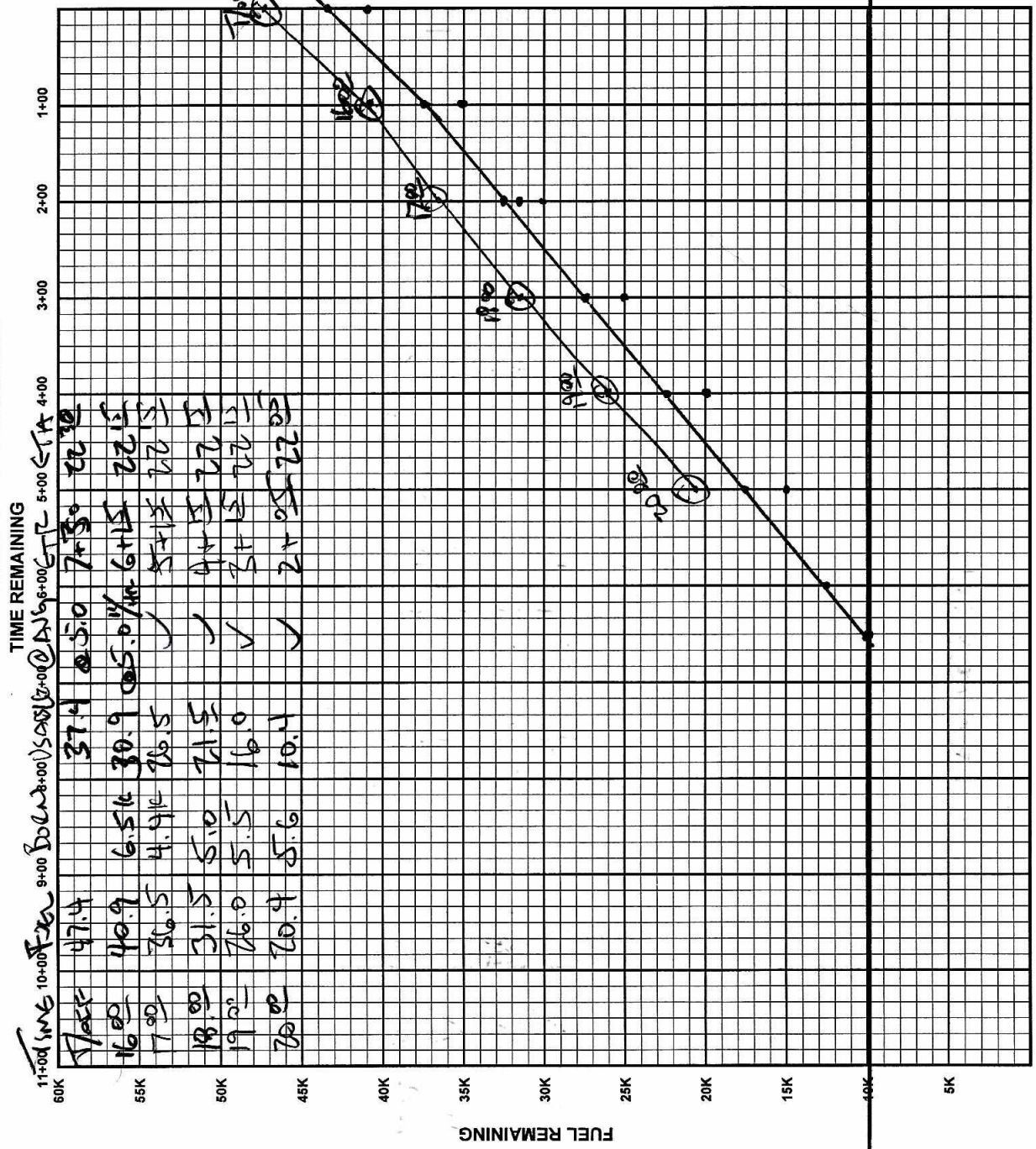
Pre-Flight 1305Z Take-Off 14:56 Landing 21:39

| System | | Pre-Flight | | In-Flight | | | Post-Flight | | | |
|-------------------------|--|---|-------------------|----------------------|-----------------------|-----------------------|---|---|-----------|-------------|
| NAV | GPS | FM: 1 | | <u>OK</u> | | | LAT | Lon | CS | RE |
| | INE #1 | Time On: | <u>1310Z</u> | Aligned to: | | | <u>-6.8</u> | <u>-1.5</u> | <u>2</u> | <u>7</u> |
| | INE #2 | Time On: | <u>1310Z</u> | Aligned to: | | | <u>-23.0</u> | <u>5.9</u> | <u>3</u> | <u>24</u> |
| | Diff GPS | | | <u>JS</u> | | | | | | |
| RADAR | MARS Data | Start | Stop | Ready? | HRD? | | # DATs ? <u>2</u> Given To: <u>Rob</u> | | | |
| | MARS | <u>15:05</u> | <u>17:44</u> | <u>TL</u> | <u>DN</u> | | | | | |
| | MARS Data / Tape Status | <u>2016 2016</u> | | | LFRec | TARec | EOF's | | | |
| | MARS LU8 | <u>Clean</u> | | <u>TL</u> | <u>1458</u> | <u>22251</u> | <u>25</u> | | | |
| | MARS LU9 | <u>Clean</u> | | <u>TL</u> | | | | | | |
| PMS | RADAR R/T SN | Tail <u>202/102</u> | LF <u>102</u> | <u>TL</u> | Mod Switches | <u>ON</u> | Mod Switches <u>OFF</u> | | | |
| | Nose | | | <u>OK</u> | | | Power | <u>OFF</u> | | |
| | FSSP Ref VDC: | Covers | <u>OFF</u> | <u>Nu</u> | | | Covers | <u>ON</u> | | |
| | Cloud Mono | Covers | <u>OFF</u> | <u>Nu</u> | | | Covers | <u>ON</u> | | |
| SEAS | CIP | Covers | <u>OFF</u> | <u>Nu</u> | | | Covers | <u>ON</u> | | |
| | SEA Data DAT | Start | Stop | Ready? | #DATS | Errors | Disk Write | Given To: | | |
| | DAT | Clean? | | <u>---</u> | | | Y / N | | | |
| TEMP | | Cal High | Cal Low | | | | Cal High | Cal Low | | |
| | Temp #1 | <u>30.6</u> | <u>-30.4</u> | <u>JS</u> | | | <u>30.7</u> | <u>-30.2</u> | | |
| | Temp #2 | | | <u>JS</u> | | | Power | <u>OFF</u> | | |
| | Temp #3 | | | <u>Nu</u> | | | Power | <u>OFF</u> | | |
| | Dewpoint | #1 #2 #3 (BDL) | | <u>JS</u> | | | Power | <u>OFF</u> | | |
| PRESS | Attack / Slip Angle | <u>AP</u> <u>DAP</u> <u>BP</u> <u>DBP</u> | | <u>JS</u> | | | Power | <u>OFF</u> | | |
| | Differential | <u>P01</u> <u>P02</u> <u>P03</u> <u>P04</u> | | <u>TL</u> | | | Power | <u>OFF</u> | | |
| | Absolute | <u>PS1</u> <u>PS2</u> <u>CBPS</u> | | <u>3</u> <u>JS</u> | | | Power | <u>OFF</u> | | |
| FLTLVL | Apn-159 SN: | <u>660241</u> | | <u>JS</u> | | | Power | <u>OFF</u> | | |
| | Apn-232 SN: | <u>1761</u> | | <u>JS</u> | | | Power | <u>OFF</u> | | |
| | Liquid Water | J&W <u>King</u> | | <u>TL</u> | 28V WOW: | <u>ON?</u> <u>(7)</u> | Power | <u>OFF</u> | | |
| | Radiometer | <u>CO2</u> <u>SST</u> | | <u>JS</u> | 28V WOW: | <u>ON?</u> | Power | <u>OFF</u> | | |
| | RAMS | RAMS Data | Start | Stop | Ready? | Errors 8: | Errors 9: | # DATs ? <u>2</u> Given To: <u>Shap</u> | | |
| CPU: (A) B | | <u>14:44</u> | <u>21:42</u> | <u>TL</u> | <u>1</u> | <u>1</u> | Power | <u>OFF</u> | | |
| RAMS Data / Tape Status | | | | | Slow Rec | Fast Rec | Disk Records: <u>2518</u> | | | |
| RAMS LU8 | | <u>Clean</u> | | <u>TL</u> | <u>2518</u> | <u>25105</u> | | | | |
| RAMS LU9 | | <u>Clean</u> | | <u>TL</u> | <u>2518</u> | <u>25105</u> | | | | |
| Flight Director Laptop | | | | <u>JS</u> | | | Power | <u>OFF</u> | | |
| Network | | | | <u>Nu</u> | | | | | | |
| ASDL Mission #: | | <u>1106A</u> | Name: | <u>Francis</u> | <u>TL</u> | Freq: | <u>30</u> | Block: | <u>10</u> | |
| MISC | C.I. Printer | Start | Stop | Ready? | Paper Bin Stores | | Given To: <u>Rob</u> | | | |
| | PRATE: | <u>10</u> | <u>14:43</u> | <u>21:42</u> | <u>TL</u> | 0% | 25% | 50% | 75% | <u>100%</u> |
| | Exterior Walk Around | <u>Plugs</u> | <u>Covers</u> | <u>JS</u> <u>(1)</u> | | | Plugs | <u>✓</u> <u>Covers</u> <u>✓</u> | | |
| | SATCOM | W/S <u>Inmarsat</u> | <u>GlobalStar</u> | <u>JS</u> | | | Power | <u>OFF</u> | | |
| | AXBT Internal | # Loaded: | <u>0</u> | <u>OK</u> | | | # Launched: | <u>0</u> | | |
| USER | AXBT External | # Loaded: | <u>0</u> | <u>NA</u> | 28V WOW | | # Launched: | <u>0</u> | | |
| | AVAPS | # On Board: | <u>85</u> | <u>JS</u> | <u>(6)</u> | | # Dropped: | <u>18</u> | | |
| | Video Cameras | Start | Stop | Ready? | Cameras | Mode | # Tapes ? <u>4</u> Given To: <u>Rob</u> | | | |
| | VHS SVHS | <u>14:43</u> | <u>21:43</u> | <u>TL</u> | <u>(OVER)</u> | <u>2 / 12</u> | Lens Cap?: <u>JAS</u> | | | |
| | FCU | <u>B</u> <u>C</u> <u>D</u> <u>-</u> | | <u>JS</u> | | | UPS | <u>OFF</u> | | |
| SFMR | SFMR | <u>FRD</u> <u>AOC</u> | | <u>TL</u> | <u>(A)</u> <u>(B)</u> | | Accelerometers | | | |
| | NASA SRA | | | <u>EW</u> | | | #1 (2 G): | <u>B702</u> | | |
| | ARL BAT Probe, SST & IBSA | | | <u>Nu</u> | | | #2 (2.5 G): | <u>6687</u> | | |
| | UW PDA | | | <u>TL</u> | | | #3 (3 G): | <u>5967</u> | | |
| | Scripps MASS, Laser Alt, IR Cam & Sora | | | <u>TL</u> | | | #4 (3.5 G): | <u>2892</u> | | |
| RSMAS Licor | | | <u>TL</u> | | | | | | | |

2111012

11
10
10
40.4

RANGE CONTROL GRAPH



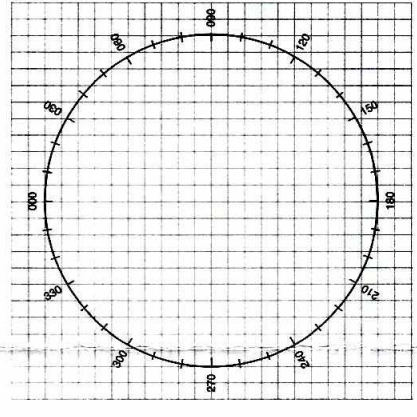
| ENROUTE FUEL | |
|---------------------------|--------|
| ENROUTE TIME | 6 + 30 |
| ENROUTE FUEL (6K/5K RULE) | 33.5 |
| RESERVE AT DESTINATION | 10L |
| REQUIRED RAMP | 43.5 |
| ACTUAL RAMP FUEL | 47.4 |

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

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

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

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



| 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 |

| PRESS ALT | | | | | |
|-----------|-----|-----|-----|-----|-----|
| 10,000 | 200 | 250 | 300 | 350 | |
| 20,000 | 1.0 | 1.0 | .99 | .99 | .99 |
| 30,000 | .99 | .98 | .97 | .97 | .97 |
| 40,000 | .97 | .96 | .95 | .95 | .94 |
| | .96 | .94 | .92 | .92 | .90 |

| TRUE AIRSPEED CROSS-CHECK | | | | | | | |
|---------------------------|-----|-----------|------------|-----|-----|-----|------|
| TIME | IAS | PRESS ALT | "F" FACTOR | EAS | OAT | TAS | ITAS |
| | | | | | | | |

DISTANCE REMAINING

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