

# Hurricane 1999

## Tropical Storm Dennis Synoptic Flow

Flight #3: 990825H

| <u>Sensor or system</u>      | <u>Number or Name</u> |
|------------------------------|-----------------------|
| INE                          | 2                     |
| Accelerometer                | 2                     |
| Temperature Probe            | 1                     |
| Dew Point Probe              | 1                     |
| Altitude (for vertical wind) | RA-159                |
| Static Pressure              | Rosemount Fuselage    |
| Dynamic Pressure             | Rosemount Fuselage    |
| Time Source                  | Micro 99              |
| Constants File               | CO2991.CON            |

### Notes:

There was one time gap 0013:51-0014:10.

The radar altimeter (RA159) had a spike at takeoff and was replaced by RA232 from 1722:01-1728:21. Several spikes in RA159 were removed and patched (1916:30-1917:30, 0107:00-0108:00, 0116:30-0117:00, 0120:00-0125:00, 0133:30-0134:30, 0139:30-0140:30, 0154:30-0155:30, 0207:30-0208:30, 0217:01-0217:30, 0218:00-0219:00, 0219:30-0220:00 and 0220:00-0221:00). A spike also occurred at landing and RA159 was replaced by RA232 (0222:50-0227:00).

Dewpoint (DW1) had a spike removed and patched 0011:30-0014:00. Dewpoint (DW2) exceeded ambient temperature (AT2) several times due to heavy precipitation.

Total temperature (TT1) had dropouts due to heavy precipitation and was replaced by total temperature (TT2) from 1942:00-2005:00 with an offset of -0.25 and from 2020:00-2058:00 with an offset of -0.35.

Static pressure (PSF) had a spike removed and patched 2048:30-2049:30. PSF was replaced by the wingtip static pressure (PSW) from 2059:45-2110:00 with an offset of +3.3.

|                          | <u>Takeoff</u> | <u>Landing</u> |
|--------------------------|----------------|----------------|
| Aircraft static pressure | 1014.2         | 1012.9         |
| Corrected tower pressure | 1014.9         | 1013.2         |

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.

Flight Meteorologist: Stan Czyzyk, (813) 828-3310 ext. 3086

105 917

45

|                    |                        |                    |
|--------------------|------------------------|--------------------|
| FLT ID: 790825 H   | FM: KMCF               | TO: KMIA           |
| FLT NO: 99-015     | BLK IN: 1517Z / 0236Z  | RTA: 1508Z / 0224Z |
| ETD: 1400Z / 1730Z | DLK OUT: 1412Z / 1719Z | RTD: 1423Z / 1726Z |
| ETE: 1506Z / 2230Z | BLK TIME: 10.22 10.4   | FLT TIME: 9.43 9.7 |
| SPONSOR ORG: NOAA  | PROGRAM: NHC           | PURPOSE: SYN. FLOW |

OAO PERSONNEL

|                   |                       |
|-------------------|-----------------------|
| AC TENNESSEN D ✓  | SYS ENG McMILLAN, S ✓ |
| CP KENUL, P ✓     | DATA SYS HILL, J ✓    |
| NAV RATHBUN D ✓   | RADAR                 |
| FE BAST, G ✓      | DT/ODW Hornbrook, C ✓ |
| RADIO ROGERS, M ✓ | CLD PHYS              |
| FD CZYZYK, S ✓    | DOPPLER CURRY, J ✓    |

PARTICIPATING SCIENTIST/VISITORS/OAO

| LAST, FIRST NAME | ACTIVITY ON A/C | AFFILIATION |
|------------------|-----------------|-------------|
| ABERSON, S -     | P. I.           | HALD        |
| MARKS, F -       | SCIENTIST       | "           |
| LEIGHTON, P -    | "               | "           |
| DORST, N -       | "               | "           |
| LANDSEA, C -     | "               | "           |
| CASWELL, J -     | CSCAT / RUSCAT  | UMASS       |
| MARTINEZ, R ✓    |                 | CARCAH      |
| CARLSON, K       | N. M            | WABI        |

PROPOSED/ACTUAL MISSION/REMARKS (RECCO, FIXES, STORM, PENET, NHOP #)

2 PENETRATIONS

2

U.S. DEPT. COMM./NOAA/OAO - DATA SECTION WORK FORM NO.2 OAOWF2 F

FLT ID: 990825H TIME OFF: 1423Z/1726Z TIME ON: 1508Z/0224Z

|          | A/C T/O | WX STN      | A/C LAND      | WX STN       |
|----------|---------|-------------|---------------|--------------|
| PRESSURE | /1014.2 | 29.98/29.97 | 1014.0/1012.9 | 29.94/29.92✓ |

NO DATA DISPOSITION/DATE/QUALITY

|                     |    |  |
|---------------------|----|--|
| 1/SEC FLT LVL TAPES | 2  |  |
| FAST FLT LVL TAPES  |    |  |
| RADAR TAPES         |    |  |
| DOPPLER TAPES       |    |  |
| ODW CASSETTES       |    |  |
| HARD COPIES         | 1  |  |
|                     |    |  |
|                     |    |  |
|                     |    |  |
|                     |    |  |
| AXDT                | 6  |  |
| AXCP                |    |  |
| ODW                 |    |  |
| GPB                 |    |  |
|                     |    |  |
|                     | 22 |  |

PHOTOGRAPHY

|      | FWD | LS | RS | VERT |
|------|-----|----|----|------|
| ON   |     |    |    |      |
| OFF  |     |    |    |      |
| RATE |     |    |    |      |

REMARKS

790825H

| TIME   | LAT  | LONG | T/L | H/O | TA    | TO    | WD  | WS   | PA   | GA   | PS    | SP     | REMARKS                  |
|--------|------|------|-----|-----|-------|-------|-----|------|------|------|-------|--------|--------------------------|
| 728    | 2546 | 8009 |     |     |       |       |     |      |      |      |       |        |                          |
| 72830  | 2546 | 8007 |     |     |       |       |     |      |      |      | 945.8 |        | IN SHOWER                |
| 75305  | 2448 | 8853 | 157 | 158 | -1.7  | -7.0  | 34  | 4.6  | 5015 | 5307 | 539.7 | 1009.7 | IN CLEEN LEVEL 16.5 ft   |
| 1919   | 2257 | 7956 | 120 | 122 | -1.3  | -16.0 | 298 | 5.6  | 5053 | 5349 | 536.4 | 1008.9 | DROP #1                  |
| 2324   | 2130 | 7528 | 36  | 34  | -2.0  | -14.9 | 228 | 15.4 | 5050 | 5338 | 536.6 | 1010.9 | DROP #2                  |
| 71610  | 2243 | 7413 |     |     |       |       |     |      |      |      |       |        | DESCEND                  |
| 12400  | 2258 | 7338 | 63  | 61  | 3.8   | -1.2  | 30  | 21.6 | 4346 | 4570 | 589.0 | 1004.5 | LEVEL 14 RA.             |
| 22650  | 2303 | 7325 |     |     |       |       |     |      |      |      |       |        | THICK CLOUDS A.          |
| 3602   | 2314 | 7244 | 69  | 64  | 3.3   | -0.2  | 344 | 26.0 | 4345 | 4544 | 509.2 | 100.8  | DROP #3                  |
| 146    | 2324 | 7156 |     |     |       |       |     |      |      |      |       |        |                          |
| 00142  | 2349 | 7100 | 290 | 286 | 1.4   | 2.5   | 155 | 27.5 | 4194 | 4390 | 601.4 | 1007.5 | DROP #4                  |
| 01821  | 2406 | 7215 | 151 | 146 | 4.2   | 0.5   | 56  | 72.8 | 4215 | 4403 | 599.1 | 1001.9 | DROP #5                  |
| 04503  | 2235 | 7260 |     |     |       |       |     |      |      |      |       |        | BT                       |
| 027    | 2331 | 7204 |     |     |       |       |     |      |      |      |       |        | DROP #8                  |
| 100 -  |      |      |     |     |       |       |     |      |      |      |       |        | 2030Z DROP 7             |
| 0720   | 2118 | 7223 | 117 | 118 | -6.8  | -13.6 | 304 | 22.7 | 5912 | 6250 | 476.5 | 1006.3 | CLIMB 3.2 KI             |
| 3129   | 2035 | 7026 | 1   | 0   | -11.2 | -24.4 | 226 | 16.1 | 6403 | 6777 | 446.3 | 1009.6 | DROP #9                  |
| 3344   | 2046 | 7026 | 0   | 358 | -11.4 | -18.8 | 230 | 17.0 | 6403 | 6778 | 446.3 | 1009.9 | DROP #10                 |
| 15908  | 2300 | 7028 | 341 | 338 | -10.9 | -9.5  | 205 | 32.2 | 6402 | 6711 | 446.3 | 1009.8 | DROP #11                 |
| 2050   | 2450 | 7110 | 342 | 348 | -9.0  | -16.1 | 97  | 28.9 | 6404 | 6775 | 446.3 | 1001.8 | DROP #12                 |
| 2450   | 2510 | 7116 |     |     |       |       |     |      |      |      |       |        | DROP #13                 |
| 24905  | 2642 | 7150 | 340 | 345 | -9.1  | -19.7 | 66  | 21.8 | 6268 | 6650 | 454.7 | 1007.5 | DESCEND 20.5             |
| 3041   | 2830 | 7230 | 356 | 352 | -10.0 | -17.7 | 124 | 8.3  | 6265 | 6656 | 454.8 | 1011.1 | DROP #14                 |
| 33149  | 3038 | 7238 | 0   | 0   | -10.7 | -15.3 | 210 | 11.6 | 6269 | 6658 | 454.7 | 1013.0 | DROP #15                 |
| 35900  | 3215 | 7236 | 195 | 198 | -11.0 | -12.6 | 259 | 13.7 | 6269 | 6656 | 454.7 | 1013.7 | DROP #16                 |
| 02754  | 3033 | 7350 | 209 | 210 | -10.5 | -14.3 | 201 | 4.0  | 6269 | 6659 | 454.7 | 1012.4 | DROP #17                 |
| 0173   | 2932 | 7424 | 209 | 210 | -11.4 | -14.3 | 235 | 3.5  | 6270 | 6661 | 454.6 | 1013.7 | DROP #18                 |
| 05615  | 2925 | 7504 | 207 | 207 | -10.9 | -13.6 | 159 | 7.3  | 6269 | 6659 | 454.7 | 1012.8 | BT 2                     |
| 1000   | 2721 | 7577 | 207 | 206 | -9.2  | -11.9 | 92  | 6.0  | 6118 | 6500 | 464.2 | 1010.1 | BT 3                     |
| 12455  | 2614 | 7617 | 262 | 263 | -8.1  | -9.1  | 64  | 7.4  | 6116 | 6500 | 464.3 | 1010.1 | DROP #19                 |
| 1347   | 2601 | 7800 | 261 | 263 | -8.0  | -17.8 | 7   | 5.7  | 6109 |      |       |        | BT 4                     |
| 4305   |      |      |     |     |       |       |     |      |      |      |       |        | NORMAL DROP #21          |
| 140554 | 2559 | 7817 | 263 | 265 | -7.0  |       |     |      |      |      |       |        | DESCEND                  |
|        |      |      |     |     |       |       |     |      |      |      |       |        | NO LAUNCH DROPS DROP #22 |

NOAA FORM 56-49  
(2-95)

MISSION PREFLIGHT LOG

DESTINATION

MISSION

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

DATE OF TAKEOFF

REMARKS

1

~~MUNDO~~

~~27 20~~

~~8 2 20~~

2

~~26 09.2~~

~~8 1 46.7~~

3

~~25 55~~

~~8 0 58~~

4

~~25 47.6~~

~~8 0 17.4~~

5

~~25 45.1~~

~~8 0 04.3~~

6

~~25 37.3~~

~~7 59 16.5~~

7

~~23 00~~

~~7 50 00~~

8

~~21 50~~

~~7 53 30~~

9

~~22 00~~

~~7 44 00~~

10

~~23 42~~

~~7 42 58~~

11

~~24 12~~

~~7 21 16~~

12

~~22 39~~

~~7 26 00~~

13

~~21 00~~

~~7 13 00~~

14

~~20 30~~

~~7 03 00~~

15

~~23 00~~

~~7 03 00~~

16

~~28 30~~

~~7 23 00~~

17

~~32 45~~

~~7 23 00~~

18

~~26 15~~

~~7 16 15~~

19

~~25 48.0~~

~~8 0 20.9~~

20

~~25 47.6~~

~~8 0 17.4~~

21

~~25 51.1~~

~~7 59 37.9~~

22

~~26 05.7~~

~~7 59 38.0~~

23

24

6745  
2125  
9110

| INS PERFORMANCE    |         |
|--------------------|---------|
| INS 1              | INS 2   |
| BEGIN ALIGN TIME   | 15242 → |
| ALIGN STATUS (0-5) | 0       |
| END NAV TIME       | 02252 → |
| START NAV TIME     | 17152 → |
| DELTA T            | 9410 →  |

| TERMINAL ERRORS |           |
|-----------------|-----------|
| INS 1           | INS 2     |
| DELTA LAT       | +4.3 -7.3 |
| DELTA LON       | +1.3 -1.4 |
| RGS             | 3 3       |
| RADIAL ERROR    | 4 7       |

| REMARKS |  |
|---------|--|
|         |  |
|         |  |
|         |  |
|         |  |
|         |  |
|         |  |

U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
AIRCRAFT OPERATIONS CENTER

30.5 78

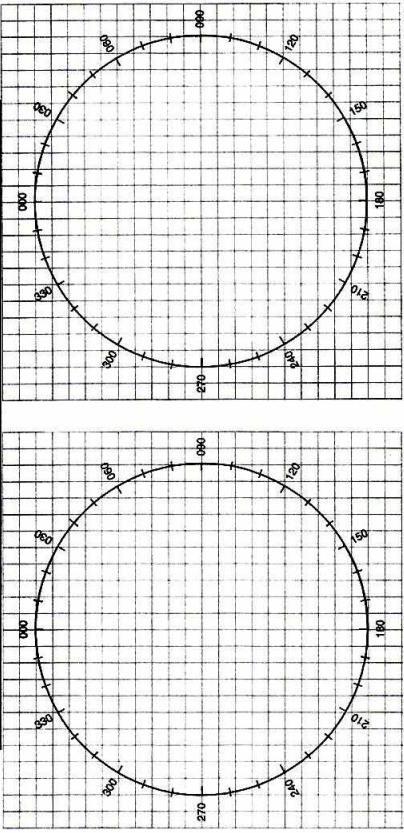
23.5 72.7

26.25 76.25

| CLEARANCES |     |     |                   |
|------------|-----|-----|-------------------|
| FREQ       | ALT | HDG | OTHER             |
| 700L23     |     |     | 5K10PS            |
|            |     |     | VK2 2545.1        |
|            |     |     | 8009.3            |
| 06040TANUS |     |     | 5K1PS 2533.2      |
|            |     |     | 7916.5            |
|            |     |     | 1941 2324N 07156W |
|            |     |     |                   |
|            |     |     |                   |

MISSION LOG

PAGE 1 OF 1



| 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:

UHFVOICE VHFVOICE MFVOICE HF/CW MF/CW  
243.0 121.5 2182 KHZ 8364 KHZ 500 KHZ

MAYDAY, MAYDAY, MAYDAY  
THIS IS NOAA, NOAA, NOAA

- 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 \_\_\_\_\_ 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        | VAR +E=> | TH  | DR +R=> | TRK | GS  | WD  | WS | ALT   | TAS | NEXT PT | DIST | TIME | ETA | REMARKS                            |
|------|----------|------------------|------------------|--------------|------------------|--------------|----------|-----|---------|-----|-----|-----|----|-------|-----|---------|------|------|-----|------------------------------------|
| 1408 |          |                  |                  |              |                  |              |          |     |         |     |     |     |    |       |     |         |      |      |     |                                    |
| 1412 |          |                  |                  |              |                  |              |          |     |         |     |     |     |    |       |     |         |      |      |     |                                    |
| 1422 |          |                  |                  |              |                  |              |          |     |         |     |     |     |    |       |     |         |      |      |     |                                    |
| 1443 | Fm1      | 2637.6<br>8150.3 | 2637.6<br>8150.2 | +1.1<br>+1.1 | 2637.6<br>8150.1 | +1.2         |          | 142 | 12      | 143 | 305 | 090 | 3  | 151   | 303 |         |      |      |     | ENG START<br>BLOCK OUT<br>TAKE OFF |
| 1508 |          |                  |                  |              |                  |              |          |     |         |     |     |     |    |       |     |         |      |      |     |                                    |
| 1517 |          |                  |                  |              |                  |              |          |     |         |     |     |     |    |       |     |         |      |      |     |                                    |
| 1518 |          |                  |                  |              |                  |              |          |     |         |     |     |     |    |       |     |         |      |      |     |                                    |
| 1525 |          |                  |                  |              |                  |              |          |     |         |     |     |     |    |       |     |         |      |      |     |                                    |
| 1813 | Fm1      | 2326.3<br>7809.4 | 2327.1<br>7809.4 | -1.8<br>0    | 2326.3<br>7810.1 | -1.7         |          | 155 | 22      | 153 | 280 | 285 | 10 | 16.5  | 274 |         |      |      |     | LAND                               |
| 1900 |          | 2154.6<br>7509.3 | 2155.9<br>7508.4 | -1.3<br>+1.9 | 2154.4<br>7510.1 | +1.2<br>-1.8 |          | 038 | 12      | 039 | 260 | 014 | 10 | 16.5  | 278 |         |      |      |     | BLOCK IN                           |
| 1956 |          | 2334.9<br>7114.5 | 2338.1<br>7113.3 | -3.2<br>+1.2 | 2335.4<br>7115.7 | -1.5<br>-1.2 |          | 076 | 62      | 070 | 272 | 190 | 22 | 1450A | 260 |         |      |      |     |                                    |
| 2027 |          | 2331.6<br>7204.5 | 2333.9<br>7203.6 | -2.3<br>+1.9 | 2331.2<br>7206.1 | +1.4<br>-1.6 |          |     |         |     |     |     |    |       |     |         |      |      |     |                                    |
| 2030 |          | 2332.6<br>7207.4 | 2335.1<br>7206.4 | -2.5<br>+1.0 | 2332.4<br>7208.9 | +1.2<br>-1.5 |          |     |         |     |     |     |    |       |     |         |      |      |     |                                    |
| 2116 |          | 2059.8<br>7139.7 | 2103.3<br>7138.5 | -3.5<br>+1.2 | 2101.4<br>7141.7 | -1.6<br>-2.0 |          | 114 | 22      | 112 | 315 | 258 | 19 | FL210 | 301 |         |      |      |     |                                    |
| 2200 |          | 2305.3<br>7029.5 | 2307.5<br>7028.0 | -2.2<br>+1.5 | 2306.4<br>7031.6 | -1.1<br>-2.1 |          | 339 | 22      | 341 | 324 | 182 | 23 | FL210 | 303 |         |      |      |     |                                    |
| 2237 |          | 2609.3<br>7136.7 | 2612.3<br>7135.2 | -3.0<br>+1.5 | 2612.5<br>7139.1 | -3.3<br>-2.4 |          | 348 | 62      | 342 | 297 | 068 | 31 | FL205 | 299 |         |      |      |     |                                    |
| 2317 |          | 2923.4<br>7231.0 | 2923.8<br>7229.0 | -0.4<br>+2.0 | 2925.3<br>7233.5 | -1.9<br>-2.5 |          | 000 | 0       | 000 | 306 | 161 | 8  | FL205 | 298 |         |      |      |     |                                    |
| 0002 |          | 3224.3<br>7241.1 | 3225.0<br>7238.7 | -0.7<br>+2.4 | 3220.6<br>7243.4 | -4.3<br>-2.3 |          | 194 | 32      | 191 | 294 | 258 | 17 | FL205 | 301 |         |      |      |     |                                    |
| 0050 |          | 2852.8<br>7447.8 | 2851.1<br>7445.9 | +1.7<br>+1.9 | 2856.7<br>7449.9 | -3.9<br>-2.1 |          | 207 | 12      | 206 | 302 | 231 | 8  | FL205 | 308 |         |      |      |     |                                    |
| 0131 |          | 2609.3<br>7651.3 | 2607.4<br>7650.7 | +1.9<br>+1.6 | 2615.3<br>7653.6 | -6.0<br>-2.3 |          | 263 | 12      | 262 | 314 | 015 | 8  | FL200 | 310 |         |      |      |     |                                    |

2307 7221 100N19

## PAGE OF

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

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

[illegible]

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HURRICANE SYNOPTIC SURVEILLANCE MISSION PLAN: XXXX

Prepared by the Hurricane Research Division at 07:10:50 AM on 08/25/99.  
File: 990825h.ftk

Aircraft: N42RF Altitude: FL180-250 Proposed takeoff: 25/1730Z

=====

DROP LOCATIONS

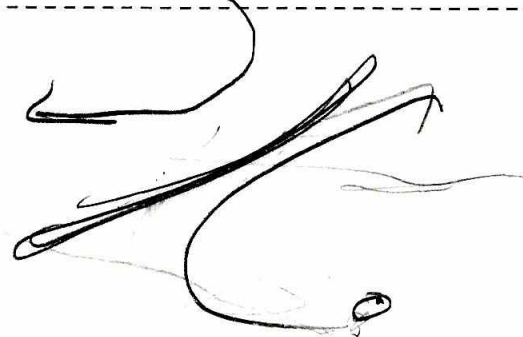
| #             | LAT<br>(d m)     | LON<br>(d m)     | RAD/AZM<br>(nm/dg) | TIME<br>(h:mm)  |
|---------------|------------------|------------------|--------------------|-----------------|
| 1             | 23 00            | 78 00            |                    | 0:53            |
| 2S            | 24 00            | 76 15            | 585/270            | 1:17            |
| 3S            | 24 00            | 73 09            | 85/090             | 1:52            |
| 4S            | 25 25            | 74 42            | 85/000             | 2:17            |
| 5S            | 24 00            | 74 42            | 0/000              | 2:34            |
| 6S            | 22 35            | 74 50            | 85/185             | 2:52            |
| 7             | 21 30            | 75 30            |                    | 3:08            |
| 8             | 21 00            | 73 00            |                    | 3:37            |
| 9             | 20 30            | 70 30            |                    | 4:07            |
| <del>10</del> | <del>23 00</del> | <del>70 30</del> |                    | <del>4:38</del> |
| <del>11</del> | <del>24 50</del> | <del>71 10</del> |                    | <del>5:02</del> |
| <del>12</del> | <del>26 40</del> | <del>71 50</del> |                    | <del>5:26</del> |
| <del>13</del> | <del>28 30</del> | <del>72 30</del> |                    | <del>5:50</del> |
| <del>14</del> | <del>30 38</del> | <del>72 30</del> |                    | <del>6:16</del> |
| <del>15</del> | <del>32 45</del> | <del>72 30</del> |                    | <del>6:43</del> |
| <del>16</del> | <del>31 05</del> | <del>74 15</del> | 30 33 73 47        | 7:11            |
| <del>17</del> | <del>29 25</del> | <del>76 00</del> | 28 25 75 03        | 7:39            |
| 18            | 28 25            | 74 25            |                    | 8:07            |

15  
15.5  
15.5

46  
51430/5  
4.30  
30

142  
7/830  
130  
10

2328Z  
23 33N  
072 29W  
998mb  
67KTS



2342  
7058

2412  
7216

E QUAD  
25/1953Z

155  
MAX 42

30nm Ocean 080

64 31+78  
30.5+78

IND. WAMI

TEAL23

2615N 7615W

