

N49RF ERROR SUMMARY  
20200223N1

Flight ID: 20200223N1

| Sensor or System<br>-----            | Number or Name<br>----- |
|--------------------------------------|-------------------------|
| Static Pressure Probe                | PSM.2                   |
| Dynamic Pressure Probe               | PQM.2                   |
| Total Temperature Probe              | TTM.4                   |
| Dewpoint Temp. Probe                 | TDM.1                   |
| Vertical Accelerometer               | AccZI.2                 |
| Altimeter                            | AltGPS.2                |
| INE Selection                        | 2                       |
| Differential Attack Pressure Probe   | PDALPHA.2               |
| Differential Sideslip Pressure Probe | PDBETA.2                |
| Dynamic Attack Pressure Probe        | PQALPHA.2               |
| Dynamic Sideslip Pressure Probe      | PQBETA.2                |

|                  |                            |
|------------------|----------------------------|
| Flight Directory | acdata/2020/MET/20200223N1 |
|------------------|----------------------------|

| Local Met Data        | Takeoff KPDX (1830Z) | Landing KPDX (0220Z) |
|-----------------------|----------------------|----------------------|
| Dynamic Corrections   |                      | Yes                  |
| AttackAngleIntercept  |                      | 3.97801              |
| AttackAngleSlope      |                      | 3.86172              |
| SlipAngleIntercept    |                      | 1.258                |
| SlipAngleSlope        |                      | 6.69941              |
| AttackAngleIntercept2 |                      | 5.04641              |
| AttackAngleSlope2     |                      | 5.41847              |
| SlipAngleIntercept2   |                      | 0.905                |
| SlipAngleSlope2       |                      | 6.78464              |

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Notes:

There were no edits made in the measured parameters used to calculate meteorological and navigational parameters.

Takeoff/Landing data: Data during landing and takeoff are potentially suspect. It is recommended that ground data not be used for scientific analysis.

AltRA.1 contains sporadic drop outs in transit that could be unrepresentative.

LatI.1 slightly lower than LatI.2 and LatI.3, and LonI.1 also slightly lower than LonI.2 and LonI.3.

PDBeta.2 running slightly higher than PDBeta.1.

PQBeta.2 running slightly higher than PQBeta.1.

TDM.1 and TDM.2 appear unrepresentative. Consider all flight level humidity to be suspect.

WS.d and WD.d unrepresentative and inaccurate.

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Takeoff/Landing Data: Data during landing and takeoff are potentially suspect... It

is recommended that ground data not be used for scientific analysis.

| Expendable Type | # deployed | # good | # transmitted |
|-----------------|------------|--------|---------------|
| -----           | -----      | -----  | -----         |
| Dropsondes      | 32         | 30     | 30            |
| Test sondes     | 0          | 0      | 0             |
| AXBTS           | 0          | 0      | 0             |
| AXCPs           | 0          | 0      | 0             |
| AXCTDs          | 0          | 0      | 0             |
| UAS             | 0          | 0      | 0             |

Flight Director: Hathaway / Henning  
Phone #: 863-500-3911

ACAT-4 Version = 7.3

# U.S. Department of Commerce / NOAA / OMAO / Aircraft Operations Center - N49RF Manifest - HD Flight

| FLIGHT INFORMATION                |            |             |       | CREW MANIFEST |                |                                                        | MISSION INFORMATION     |                  |                    |     |      |  |
|-----------------------------------|------------|-------------|-------|---------------|----------------|--------------------------------------------------------|-------------------------|------------------|--------------------|-----|------|--|
| FLT ID:                           | 20200223N1 | FLT #:      |       | AC:           | Jason Mansour  | Scientists:                                            | Pressure                |                  | Dropsondes         |     |      |  |
| From:                             | K PDX      | ETD:        | 1830z | CP(s):        | Lindsey Norma  | Brian Kawzenuk<br>Zheng Minghua                        | A/C Takeoff             |                  | Good               | Bad | Sent |  |
| To:                               | K PDX      | ETA:        | 0200z |               | Matthew Nardi  |                                                        | ASOS Takeoff            |                  | 30                 | 2   | 30   |  |
| Block Time                        |            | Flight Time |       | Nav(s):       |                |                                                        | ASOS Land               |                  | BTs                |     |      |  |
| In:                               | 0220z      | Land:       | 0220z | FE(s):        |                |                                                        | A/C Land                |                  | Good               | Bad | Sent |  |
| Out:                              | 1820z      | T/O:        | 1830z | FD(s):        | Nikki Hamanay  | Visitors:                                              | ASOS Land               |                  |                    |     |      |  |
| Total:                            | 8.0        | Total:      | 7.8   |               | Rich Henning   |                                                        |                         |                  |                    |     |      |  |
| Sponsoring Org:                   |            | EMC         |       | SEB:          | Leonard Miller |                                                        |                         | Storm Number ID: |                    |     |      |  |
| Program:                          |            | PAR         |       |               | Nick Underwood |                                                        | (ie: AL072012)          |                  |                    |     |      |  |
| Purpose:                          |            | AR2020 # 8  |       | SSA:          |                |                                                        | TCPOD/WSPOD Mission     |                  | NOAA 11WSE TRACK99 |     |      |  |
|                                   |            |             |       | AVAPS:        | Steven Paul    |                                                        | (ie: NOAA2 2418A SANDY) |                  |                    |     |      |  |
| AS REQUIRED BY ORM                |            |             |       | Y             | N              | REMARKS                                                | Fix Number              | Obs Number       | Fix Time           | SLP |      |  |
| VOLCANIC ASH                      |            |             |       |               | ✓              |                                                        |                         |                  |                    |     |      |  |
| SCIENCE MISSION WITHIN BDRY LAYER |            |             |       |               | ✓              |                                                        |                         |                  |                    |     |      |  |
| LACK OF PRECIPITATION             |            |             |       |               | ✓              |                                                        |                         |                  |                    |     |      |  |
| RELATIVE HUMIDITY ≥ 80%           |            |             |       |               | ✓              |                                                        |                         |                  |                    |     |      |  |
| LARGE AIR-SEA TEMP GRADIENT       |            |             |       |               | ✓              |                                                        |                         |                  |                    |     |      |  |
| HIGH SURFACE WINDS                |            |             |       |               | ✓              |                                                        |                         |                  |                    |     |      |  |
| LONG FETCH / DURATION OF SFC WND  |            |             |       |               | ✓              |                                                        |                         |                  |                    |     |      |  |
| SEA SALT ACCRETION FORECAST       |            |             |       |               | ✓              |                                                        |                         |                  |                    |     |      |  |
| SEA SALT ACCRETION OBSERVED       |            |             |       |               | ✓              |                                                        |                         |                  |                    |     |      |  |
| Gmax:                             |            |             |       | Gmin:         |                | *Highlighted items must be completed before departure. |                         |                  |                    |     |      |  |
| Remarks:                          |            |             |       |               |                |                                                        |                         |                  |                    |     |      |  |
|                                   |            |             |       |               |                |                                                        |                         |                  |                    |     |      |  |
|                                   |            |             |       |               |                |                                                        |                         |                  |                    |     |      |  |

## G-IV QC Checklist

|                     |                  |
|---------------------|------------------|
| Flight ID:          | 20200220N1       |
| Flight Director(s): | Hathaway/Henning |

| Pressure Comparison |        |        |
|---------------------|--------|--------|
|                     | T/O    | Land   |
| Aircraft            | 1019.2 | 1028.6 |
| Tower               | 1019.2 | 1028.0 |

|             |      |
|-------------|------|
| UWZ.d mean: | 0.16 |
|-------------|------|

|                                             | Raw 1Hz Mean File Parameters                  |                                                  |                                                 |                                                 | C File Parameters                              |                                            |
|---------------------------------------------|-----------------------------------------------|--------------------------------------------------|-------------------------------------------------|-------------------------------------------------|------------------------------------------------|--------------------------------------------|
| <input type="checkbox"/> Accelerometer      | <input checked="" type="checkbox"/> AccAXI.1  | <input checked="" type="checkbox"/> AccAYI.1     | <input checked="" type="checkbox"/> AccAZI.1    | <input checked="" type="checkbox"/> AccZI.1     | <input checked="" type="checkbox"/> AccZref    |                                            |
|                                             | <input checked="" type="checkbox"/> AccAXI.2  | <input checked="" type="checkbox"/> AccAYI.2     | <input checked="" type="checkbox"/> AccAZI.2    | <input checked="" type="checkbox"/> AccZI.2     |                                                |                                            |
|                                             | <input checked="" type="checkbox"/> AccAXI.3  | <input checked="" type="checkbox"/> AccAYI.3     | <input checked="" type="checkbox"/> AccAZI.3    | <input checked="" type="checkbox"/> AccZI.3     |                                                |                                            |
| <input type="checkbox"/> Altitude           | <input checked="" type="checkbox"/> AltGPS.1  | <input checked="" type="checkbox"/> AltI.1       | <input checked="" type="checkbox"/> AltPaADDU.1 | <input checked="" type="checkbox"/> AltBCADDU.1 | <input checked="" type="checkbox"/> ALTref     |                                            |
|                                             | <input checked="" type="checkbox"/> AltGPS.2  | <input checked="" type="checkbox"/> AltI.2       | <input checked="" type="checkbox"/> AltPaADDU.2 | <input checked="" type="checkbox"/> AltBCADDU.2 | <input checked="" type="checkbox"/> ALTPA.d    |                                            |
|                                             | <input checked="" type="checkbox"/> AltGPS.3  | <input checked="" type="checkbox"/> AltI.3       | <input checked="" type="checkbox"/> AltRA.1     |                                                 | <input checked="" type="checkbox"/> ALTGA.d    |                                            |
| <input type="checkbox"/> Ground Speed       | <input checked="" type="checkbox"/> GsXI.1    | <input checked="" type="checkbox"/> GsYI.1       | <input checked="" type="checkbox"/> GsZI.1      | <input checked="" type="checkbox"/> GsGPS.1     | <input checked="" type="checkbox"/> GSXref     |                                            |
|                                             | <input checked="" type="checkbox"/> GsXI.2    | <input checked="" type="checkbox"/> GsYI.2       | <input checked="" type="checkbox"/> GsZI.2      | <input checked="" type="checkbox"/> GsGPS.2     | <input checked="" type="checkbox"/> GSYref     |                                            |
|                                             | <input checked="" type="checkbox"/> GsXI.3    | <input checked="" type="checkbox"/> GsYI.3       | <input checked="" type="checkbox"/> GsZI.3      | <input type="checkbox"/> GsGPS.3                | <input checked="" type="checkbox"/> GSZref     |                                            |
|                                             | <input checked="" type="checkbox"/> GsXGPS.1  | <input checked="" type="checkbox"/> GsYGPS.1     | <input checked="" type="checkbox"/> GsZGPS.1    |                                                 |                                                |                                            |
|                                             | <input checked="" type="checkbox"/> GsXGPS.2  | <input checked="" type="checkbox"/> GsYGPS.2     | <input checked="" type="checkbox"/> GsZGPS.2    |                                                 |                                                |                                            |
|                                             | <input type="checkbox"/> GsXGPS.3             | <input type="checkbox"/> GsYGPS.3                | <input type="checkbox"/> GsZGPS.3               |                                                 |                                                |                                            |
| <input type="checkbox"/> Lat / Lon          | <input checked="" type="checkbox"/> LatGPS.1  | <input checked="" type="checkbox"/> LatI.1       | <input checked="" type="checkbox"/> LonGPS.1    | <input checked="" type="checkbox"/> LonI.1      | <input checked="" type="checkbox"/> LATref     |                                            |
|                                             | <input checked="" type="checkbox"/> LatGPS.2  | <input checked="" type="checkbox"/> LatI.2       | <input checked="" type="checkbox"/> LonGPS.2    | <input checked="" type="checkbox"/> LonI.2      | <input checked="" type="checkbox"/> LONref     |                                            |
|                                             | <input checked="" type="checkbox"/> LatGPS.3  | <input checked="" type="checkbox"/> LatI.3       | <input checked="" type="checkbox"/> LonGPS.3    | <input checked="" type="checkbox"/> LonI.3      |                                                |                                            |
| <input type="checkbox"/> Pressure           | <input checked="" type="checkbox"/> PDALPHA.1 | <input checked="" type="checkbox"/> PQALPHA.1    | <input checked="" type="checkbox"/> PQM.1       | <input checked="" type="checkbox"/> PSM.1       | <input checked="" type="checkbox"/> PDALPHAref | <input checked="" type="checkbox"/> PQMref |
|                                             | <input checked="" type="checkbox"/> PDALPHA.2 | <input checked="" type="checkbox"/> PQALPHA.2    | <input checked="" type="checkbox"/> PQM.2       | <input checked="" type="checkbox"/> PSM.2       | <input checked="" type="checkbox"/> PDBETAref  | <input checked="" type="checkbox"/> PQ.c   |
|                                             | <input checked="" type="checkbox"/> PDBETA.1  | <input checked="" type="checkbox"/> PQBETA.1     |                                                 |                                                 | <input checked="" type="checkbox"/> PQALPHAref | <input checked="" type="checkbox"/> PSMref |
|                                             | <input checked="" type="checkbox"/> PDBETA.2  | <input checked="" type="checkbox"/> PQBETA.2     |                                                 |                                                 | <input checked="" type="checkbox"/> PQBETAref  | <input checked="" type="checkbox"/> PS.c   |
| <input type="checkbox"/> Air Speed          | <input checked="" type="checkbox"/> CasADDU.1 | <input checked="" type="checkbox"/> CasADDU.2    | <input checked="" type="checkbox"/> TasADDU.1   | <input checked="" type="checkbox"/> TasADDU.2   | <input checked="" type="checkbox"/> IAS.d      | <input checked="" type="checkbox"/> TAS.d  |
| <input type="checkbox"/> Pitch / Roll       | <input checked="" type="checkbox"/> PitchI.1  | <input checked="" type="checkbox"/> PitchRateI.1 | <input checked="" type="checkbox"/> RollI.1     | <input checked="" type="checkbox"/> RollRateI.1 | <input checked="" type="checkbox"/> PITCHref   |                                            |
|                                             | <input checked="" type="checkbox"/> PitchI.2  | <input checked="" type="checkbox"/> PitchRateI.2 | <input checked="" type="checkbox"/> RollI.2     | <input checked="" type="checkbox"/> RollRateI.2 | <input checked="" type="checkbox"/> ROLLref    |                                            |
|                                             | <input checked="" type="checkbox"/> PitchI.3  | <input checked="" type="checkbox"/> PitchRateI.3 | <input checked="" type="checkbox"/> RollI.3     | <input checked="" type="checkbox"/> RollRateI.3 |                                                |                                            |
| <input type="checkbox"/> Temp / Dewpt       | <input checked="" type="checkbox"/> TTM.1     | <input checked="" type="checkbox"/> TTM.4        | <input checked="" type="checkbox"/> TDM.1       |                                                 | <input checked="" type="checkbox"/> TD.c       | <input checked="" type="checkbox"/> TTMref |
|                                             | <input type="checkbox"/> TTM.2                |                                                  | <input checked="" type="checkbox"/> TDM.2       |                                                 | <input checked="" type="checkbox"/> TDMref     | <input checked="" type="checkbox"/> TA.d   |
|                                             | <input checked="" type="checkbox"/> TTM.3     |                                                  |                                                 |                                                 |                                                |                                            |
| <input type="checkbox"/> Misc. (Must check) |                                               |                                                  |                                                 |                                                 | <input checked="" type="checkbox"/> UWZ.d      | <input checked="" type="checkbox"/> WS.d   |
|                                             |                                               |                                                  |                                                 |                                                 | <input checked="" type="checkbox"/> DPJ_WSZ    | <input checked="" type="checkbox"/> WD.d   |
|                                             |                                               |                                                  |                                                 |                                                 | <input checked="" type="checkbox"/> HUM        |                                            |

| FLID_Mission_Documents.pdf:         |                                                  |
|-------------------------------------|--------------------------------------------------|
| <input checked="" type="checkbox"/> | Error Summary                                    |
| <input checked="" type="checkbox"/> | Crew Manifest                                    |
| <input checked="" type="checkbox"/> | QC Checklist                                     |
| <input checked="" type="checkbox"/> | Dropwindsonde Log(s) - AVAPS and FD if completed |
| <input checked="" type="checkbox"/> | Flight Track                                     |
| <input checked="" type="checkbox"/> | Miscellaneous FD Notes                           |

| QC Key        |                                     |
|---------------|-------------------------------------|
| Not checked   | <input type="checkbox"/>            |
| Valid         | <input checked="" type="checkbox"/> |
| Errors (note) | <input checked="" type="checkbox"/> |

### NOTES:

AltRA.1 contains sporadic drop outs in transit that could be unrepresentative.  
 LatI.1 slightly lower than LatI.2 and LatI.3, and LonI.1 also slightly lower than LonI.2 and LatI.3.  
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 PQBETA.2 running slightly higher than PQBETA.1  
 TDM.1 and TDM.2 appear unrepresentative. Consider all flight level humidity to be suspect.  
 WS.d and WD.d unrepresentative and inaccurate.  
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## AOC GPS Dropwindsonde Log (updated Mar 2019)

Flight ID: 20200223N1

ASPEN Operator/Flight Director(s):

HENNING/HATHAWAY

Mission ID:

11WSE

Storm Name/Track:

TRACK 99

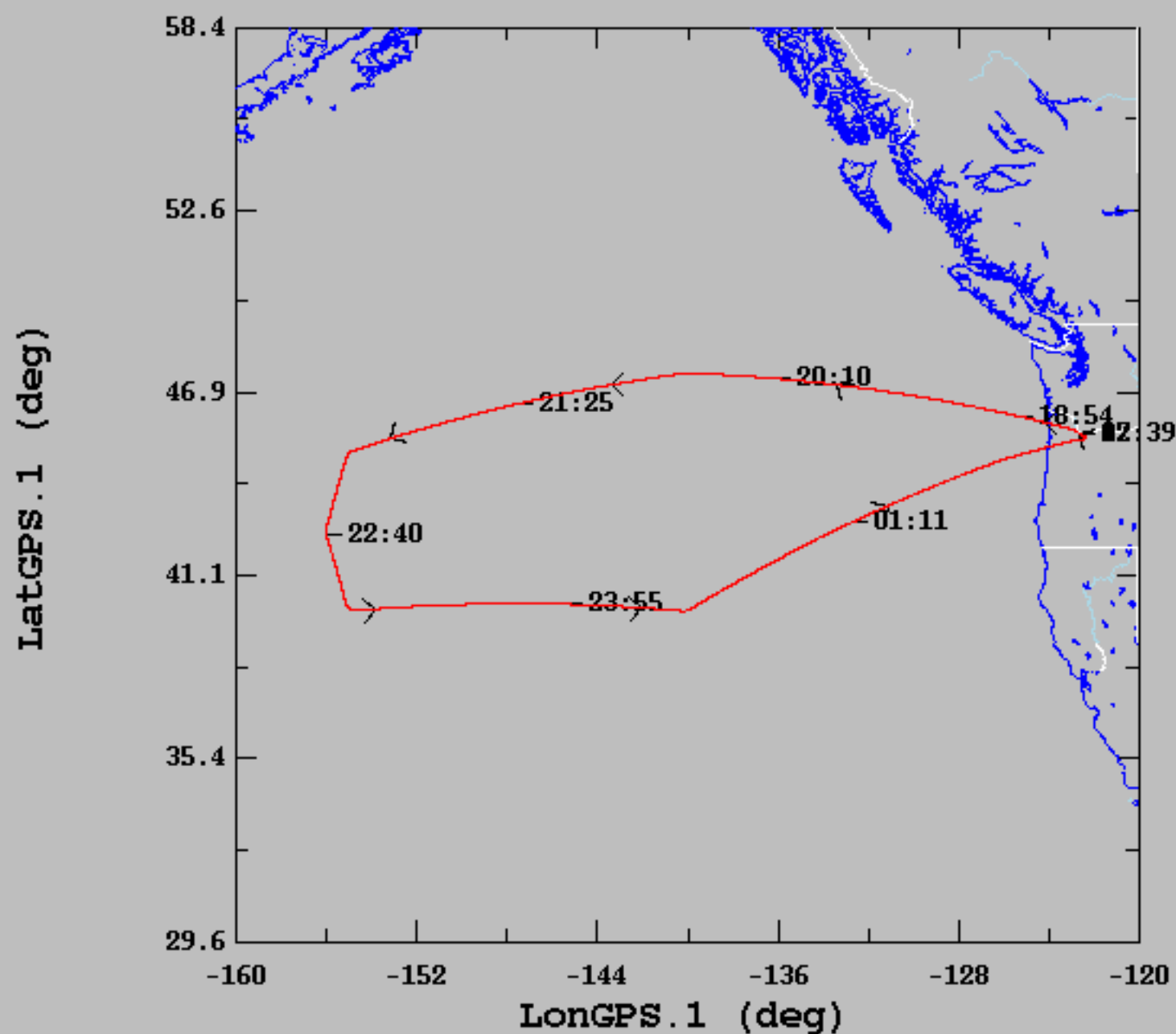
PG \_\_\_\_ of \_\_\_\_

| Sonde # | Ob #          | Launch Time HHMMSS (Z) | Sonde ID (min last 5) | Ch # used | Lat (°N)             | Lon (°E) | Prominent Wx Cond. | SFC Prs (mb) | 250mb                                | 500mb | SFC Wind | KWBC # | Sonde Issues? |
|---------|---------------|------------------------|-----------------------|-----------|----------------------|----------|--------------------|--------------|--------------------------------------|-------|----------|--------|---------------|
|         |               |                        |                       |           |                      |          |                    |              | Comments / Issues / QC / ASPEN Edits |       |          |        |               |
| 1       | 1             | 2035                   | 0056                  | 1         | 47.5                 | 140      | UCST               | 1029.1       | 10321                                | 5592  | 210/10   | 2104   |               |
| 2       | 2             | 2043                   | 0087                  | 2         | 47.4                 | 141.3    | ↓                  | 1027.4       | 10324                                | 5588  | 145/6    | 2110   |               |
| 3       | 3             | 2052                   | 0776                  | 3         | 47.2                 | 142.6    | ↓                  | 1025.9       | 10330                                | 5589  | 150/20   | 2113   |               |
| 4       | 4             | 2100                   | 0791                  | 4         | 47.1                 | 143.9    |                    | 1023.0       | 10331                                | 5585  | 130/29   | 2121   |               |
| 5       | 5             | 2109                   | 1075                  | 1         | 46.9                 | 145.2    |                    | 1021.3       | 10347                                | 5597  | 115/24   | 2138   |               |
| 6       | 6             | 2117                   | 0008                  | 2         | 46.7                 | 146.4    |                    | 1016.9       | 10341                                | 5583  | 125/38   | 2150   |               |
| 7       | 7             | 2126                   | 0088                  | 3         | 46.5                 | 147.7    |                    | 1013.4       | 10338                                | 5578  | 115/39   | 2148   |               |
| 8       | 8             | 2134                   | 0014                  | 4         | 46.3                 | 148.9    |                    | 1009.2       | 10321                                | 5560  | 110/38   | 2217   |               |
| 9       | 9             | 2143                   | 0739                  | 1         | 46                   | 150.2    |                    | 1006.2       | 10307                                | 5544  | 115/25   | 2222   |               |
| 10      | 10            | 2151                   | 0735                  | 2         | 45.8                 | 151.4    |                    | 1003.6       | 10283                                | 5520  | 135/20   | 2226   |               |
| 11      | 11            | 2200                   | 0734                  | 3         | 45.5                 | 152.6    | ✓                  | 1002.3       | 10260                                | 5495  | 200/9    | 2236   |               |
| 12      | <del>12</del> | 2207                   | —                     | 4         | — NO LAUNCH DETECT — |          |                    |              |                                      |       |          |        |               |
| 13      | <del>13</del> | 2209                   | —                     | 1         | — FAST FALL —        |          |                    |              |                                      |       |          |        |               |
| 14      | 12            | 2211                   | 0611                  | 2         | 45.2                 | 154.3    | UCST               | 1002.3       | 10223                                | 5458  | 220/12   | 2238   |               |
| 15      | 13            | 2216                   | 0607                  | 4         | 45.0                 | 155      |                    | 1000.4       | 10189                                | 5424  | 250/8    | 2248   |               |
| 16      | 14            | 2227                   | 0723                  | 3         | 43.7                 | 155.5    |                    | 1000.1       | 10187                                | 5412  | 275/6    | 2250   |               |
| 17      | 15            | 2240                   | 0725                  | 1         | 42.4                 | 156      |                    | 1000.3       | 10183                                | 5410  | 300/6    | 2325   | ✓             |
| 18      | 16            | 2251                   | 0732                  | 2         | 41.2                 | 155.5    |                    | 1000.8       | 10227                                | 5440  | 155/6    | 2328   | ✓             |
| 19      | 17            | 2302                   | 0610                  | 3         | 40.1                 | 154.9    |                    | 999.0        | 10264                                | 5465  | 240/2    | 2334   | ✓             |
| 20      | 18            | 2308                   | 0730                  | 4         | 40                   | 153.8    |                    | 999.1        | 10312                                | 5502  | 155/15   | 2340   | ✓             |
| 21      | 19            | 2314                   | 0013                  | 1         | 40.1                 | 152.7    |                    | 1000.9       | 10358                                | 5543  | 150/14   | 2342   | ✓             |
| 22      | 20            | 2321                   | 0018                  | 2         | 40.2                 | 151.5    |                    | 1002.2       | 10387                                | 5541  | 175/27   | 2348   | ✓             |
| 23      | 21            | 2328                   | 0460                  | 3         | 40.2                 | 150.4    |                    | 1005.1       | 10416                                | 5600  | 180/28   | 2352   | ✓             |
| 24      | 22            | 2334                   | 0762                  | 4         | 40.2                 | 149.2    |                    | 1009.2       | 10443                                | 5638  | 180/31   | 2355   | ✓             |
| 25      | 23            | 2340                   | 0905                  | 1         | 40.2                 | 148      | ↓                  | 1012.4       | 10467                                | 5660  | 175/27   | 0011   | ✓             |
| 26      | 24            | 2347                   | 0014                  | 2         | 40.2                 | 146.9    |                    | 1015.0       | 10484                                | 5682  | 175/22   | 0014   | ✓             |
| 27      | 25            | 2353                   | 0149                  | 3         | 40.2                 | 145.7    | BKN                | 1017.7       | 10501                                | 5703  | 175/24   | 0025   | intent        |
| 28      | 26            | 2359                   | 1072                  | 4         | 40.2                 | 144.6    |                    | 1020.0       | 10516                                | 5720  | 185/14   | 0030   | CORRs         |
| 29      | 27            | 0006                   | 1083                  | 1         | 40.2                 | 143.4    |                    | 1022.4       | 10529                                | 5734  | 180/20   | 0057   | ✓             |
| 30      | 28            | 0012                   | 0743                  | 2         | 40.1                 | 142.3    | ✓                  | 1023.6       | 10529                                | 5738  | 185/21   | 0101   | ✓             |
| 31      | 29            | 0019                   | 0788                  | 3         | 40.1                 | 141.1    |                    | 1026.2       | 10545                                | 5755  | 170/19   | 0107   | ✓             |
| 32      | 30            | 0025                   | 0009                  | 4         | 40                   | 140      |                    | 1027.9       | 10547                                | 5760  | 210/16   | 0109   | LAS           |
| 33      |               |                        |                       |           |                      |          |                    |              |                                      |       |          |        |               |

LLD  
LLDCORR -  
CORR -

LAST

2020-02-23, 17:39:36-26:26:29



|                         | mean    | sigma | min     | max     |
|-------------------------|---------|-------|---------|---------|
| LatGPS.1 (deg), 1 s/sec | 44.38   | 2.59  | 40.01   | 47.50   |
| LonGPS.1 (deg), 1 s/sec | -137.97 | 11.27 | -155.98 | -122.35 |