APPENDIX K

TEMP DROP CODE

EXTRACT FROM: WMO-No. 306 MANUAL ON CODES
FM 37-IX Ext. TEMP DROP - Upper-level pressure, temperature, humidity and wind report from a sonde released by carrier balloons or aircraft. Figure E-1 is an example TEMP DROP message.

CODE FORM:

PART ALPHA (A)

XXAA – Identifier for a temp drop code

DATE/TIME GROUP: $YYGGI_d$

- Identifier: YY – Date Group

- Identifier: GG – Time Group

- Identifier: I_d - The highest mandatory level for which wind is available

LATITUDE: $99L_aL_aL_a$

- Identifier: 99 – Indicator for data on position follows

- Identifier: $L_aL_aL_a$ – Latitude in tenths of degrees

LONGITUDE: $Q_cL_oL_oL_oL_o$

- Identifier: Q_c – The octant of the globe

- Identifier: $L_oL_oL_oL_o$ – Longitude in tenths of degrees

MARSDEN SQUARE: $MMMU_{la}U_{lo}$

- Identifier and explain: MMM – Marsden square

- Identifier and explain: $U_{la}U_{lo}$ – Units digits in the reported latitude and longitude

SEA LEVEL PRESSURE: $99P_oP_oP_o\ T_oT_oT_oD_oD_o\ d_od_of_of_of_o$

- Identifier: 99 – Indicator for data at the surface level follows

- Identifier: $P_oP_oP_o$ – Indicator for pressure of specified levels in whole millibar (thousands digit omitted)

- Identifier: $T_oT_oT_o$ – Tens and digits of air temperature (not rounded off) in degrees Celsius, at specified levels beginning with surface

- Identifier: D_oD_o – Dewpoint depression at standard isobaric surfaces beginning with surface level

K-1

When the depression is 4.9°C or less encode the units and tenths digits of the depression. Encode depressions of 5.0°C through 5.4°C as 50. Encode depressions of 5.5°C through 5.9°C as 56. Dew-point depressions of 6.0 and above are encoded in tens and units with 50 added. Dew-point depressions for relative humidity less then 20 percent are encoded as 80. When air temperature is below –40°C report D_aD_a as //.

- Identifier: d_od_o – True direction from which the wind is blowing rounded to nearest 5 degrees. Report hundreds and tens digits. The unit (0 and 5) is added to the hundreds digit of wind.

- Identifier: $f_of_of_o$ – Wind speed in knots. Hundreds digit is sum of hundreds digit of speed and unit digit of direction. Example: 295 degrees at 125 knots is encoded as 29625.

STANDARD ISOBARIC SURFACES: $P_1P_1h_1h_1h_1$ $T_1T_1T_1D_1D_1$ $d_1d_1f_1f_1f_1$

- Identifier: P_1P_1 – Pressure of standard isobaric surfaces in units of tens of millibars. (1000mbs = 00, 925mbs = 92, 850mbs = 85, 700mbs = 70, 500mbs = 50, 400mbs = 40, 300mbs = 30, 250mbs = 25)

- Identifier: $h_1h_1h_1$ – Heights of the standard pressure level in geopotential meters or decameters above the surface. Encoded in decameters at and above 500mbs omitting, if necessary, the thousands or tens of thousands digits. Add 500 to hhh for negative 1000mb or 925mb heights. Report 1000mb group as 00/// ///// ///// when pressure is less than 950mbs.

- Identifier: $T_1T_1T_1D_1D_1$ – Same temperature/dew point encoding procedures apply to all levels

- Identifier: $d_1d_1f_1f_1f_1$ – Same wind encoding procedures apply to all levels

DATA FOR TROPOPAUSE LEVELS: $88P_nP_nP_n$ $T_nT_nT_nD_nD_n$ $d_nd_nf_nf_nf_n$

- Identifier: 88 – Indicator for Tropopause level follows

- Identifier: $P_nP_nP_n$ – Pressure at the tropopause level reported in whole millibars. Report $88P_nP_nP_n$ as 88999 when tropopause is not observed

- Identifier: $T_nT_nT_nD_nD_n$ – Same temperature/dew point encoding procedures apply

- Identifier: $d_nd_nf_nf_nf_n$ - Same wind encoding procedures apply

MAXIMUM WIND DATA: $77P_nP_nP_n$ $d_nd_nf_nf_nf_n$ $4v_bv_bv_av_a$

- Identifier: 77 – Indicator that data for maximum wind level and for vertical wind shear follow when max wind does not coincide at flight. If the maximum wind level coincides with flight level encode as 66

- Identifier: $P_nP_nP_n$ – Pressure at maximum wind level in whole millibars

- Identifier: $d_nd_nf_nf_nf_n$ – Same wind encoding procedures apply

- Identifier: 4 – Data for vertical wind shear follow

- Identifier: v_bv_b – Absolute value of vector difference between max wind and wind 3000 feet BELOW the level of max wind, reported to the nearest knot. Use "//" if missing and a 4 is reported. A vector difference of 99 knots or more is reported with the code figure "99."

- Identifier: $v_a v_a$ – Absolute value of vector difference between max wind and wind 3000 feet ABOVE the level of max wind, reported to the nearest knot. Use "//" if missing and a 4 is reported. A vector difference of 99 knots or more is reported with the code figure "99."

SOUNDING SYSTEM IDENTIFIER, RADIOSONDE/SYSTEM STATUS, LAUNCH TIME: 31313 $s_r r_a r_a s_a s_a$ 8GGgg

- Identifier: s_r – Solar and infrared radiation correction (0 – no correction)

- Identifier: $r_a r_a$ – Radiosonde/sounding system used (96 – Descending radiosonde)

- Identifier: $s_a s_a$ – Tracking technique/status of system used (08 – Automatic satellite navigation)

- Identifier: 8GGgg – Launch time

- Identifier: 8 – Indicator group

- Identifier: GG – Time in hours

- Identifier: gg – Time in minutes

ADDITIONAL DATA GROUPS: 51515 101XX $0P_n P_n P_n P_n$

- Identifier: 51515 – Additional data in regional code follow.

- Identifier: 10166 – Geopotential data are doubtful between the following levels $0P_n P_n P_n P_n$. This code figure is used only when geopotential data are doubtful from one level to another.

- Identifier: 10167 – Temperature data are doubtful between the following levels $0P_n P_n P_n P_n$. This code figure shall be reported when only the temperature data are doubtful for a portion of the descent. If a 10167 group is reported a 10166 will also be reported. EXAMPLE: Temperature is doubtful from 540mbs to 510mbs. SLP is 1020mbs. The additional data groups would be: 51515 10166 00251 10167 05451.

- Identifier: 10190 – Extrapolated altitude data follows:

  a. When the sounding begins within 25mbs below a standard surface, the height of the surface is reported in the format 10190 $P_n P_n h_n h_n h_n$. The temperature group is not reported. EXAMPLE: Assume the release was made from 310mbs and the 300mb height was 966 decameters. The last reported standard level in Part A is the 400mb level. The data for the 300mb level is reported in Part A and B as 10190 30966.

  b. When the sounding does not reach surface, but terminates within 25mbs of a standard surface, the height of the standard surface is reported in Part A of the code in standard format and also at the end of Part A and Part B of the code in the format as 10190 $P_n P_n h_n h_n h_n$. EXAMPLE: Assume termination occurred as 980mbs and the extrapolated height of the 1000mb level was 115 meters. The 1000mb level would be reported in Part A of the code as 00115 ////// ////// and in Part B as 10190 0015.

- Identifier: 10191 – Extrapolated surface pressure follows. Extrapolated surface pressure is only reported when the termination occurs between 850mb and the surface. Surface pressure is reported in Part A as 99$P_o P_o P_o$ ////// and in Part B as 00$P_o P_o P_o$ //////. When surface pressure is extrapolated the 10191 group is the last additional data group reported in Part B.

AIRCRAFT AND MISSION IDENTIFICATION: 61616 AFXXX XXWSX TRACK XX OB XX

- Identifier: 61616 – Aircraft and mission identification data follows
- Identifier: AFXXX – The identifier AF for U.S. Air Force and the last three digits of the aircraft's tail number
- Identifier: XXWSX – The identifier for the number and type of mission being flown and the basin of flight origination.

    a. XX defines the number of winter storm flights flown.

    b. WS identifies the flight as a winter storm reconnaissance mission.

    c. If the flight originated in the Atlantic basin the last letter would be an 'A". The letter "C" identifies the Central Pacific area and the letter "E" identifies the Eastern Pacific.

- Identifier: Track XX – The winter storm track tasked
- Identifier: OB XX – The observation (both vertical and horizontal) number as transmitted from the aircraft.

<u>NOTE</u>

All non-tasked flights will utilize the same training flight identifiers.

NATIONALLY DEVELOPED CODES: 62626 National practice group indicator preceding a free form character string containing specific sonde or mission-related remarks. Remarks include:

- SPL XXXXNXXXXXW - Impact location of the sonde based on its last GPS position.
- XXXX – Splash time in the format hhmm
- MBL WND dddff - The mean wind in the lowest 500 meters of the sounding.
- LAST WND XXX - Height of the last reported wind. If a surface wind is reported, the Last Wind remark is omitted. XXX will never be less than 13 meters.
- AEV XXXXX - This is the software version being used for the sounding.
- DLM WND ddfff bbbttt - the average wind over the depth of the sounding. Where ddfff is the wind averaged from the first to the last available wind (these would correspond to the first and last significant levels for wind); ttt is the pressure at the top of the layer, and bbb is the pressure at the bottom of the layer (in whole mbs, with thousands digit omitted).
- WL150 ddfff zzz - Average wind over the lowest available 150 m of the wind sounding. Where ddfff is the mean wind over the 150 m layer centered at zzz m.

CODE FORM:

PART BRAVO (B)

XXBB – Identifier for a temp drop code

Date/Time Group: YYGG8
- Identifier: YY – Date Group
- Identifier: GG – Time Group
- Identifier: 8 - Indicator group for the use of satellite navigation for windfinding

LATTITUDE: $99L_aL_aL_a$
- Identifier: 99 – Indicator for data on position follows
- Identifier: $L_aL_aL_a$ – Latitude in tenths of degrees

LONGITUDE: $Q_cL_oL_oL_oL_o$
- Identifier: Q_c – The octant of the globe
- Identifier: $L_oL_oL_oL_o$ – Longitude in tenths of degrees

MARSDEN SQUARE: $MMMU_{la}U_{lo}$
- Identifier and explain: MMM – Marsden square
- Identifier and explain: $U_{la}U_{lo}$ – Units digits in the reported latitude and longitude

SEA LEVEL PRESSURE: $00P_oP_oP_o\ T_oT_oT_oD_oD_o$
- Identifier: 00 – Indicator for data at the surface level follows
- Identifier: $P_oP_oP_o$ – Indicator for pressure of specified levels in whole millibars (thousands digit omitted)
- Identifier: $T_oT_oT_o$ – Tens and digits of air temperature (not rounded off) in degrees Celsius, at specified levels beginning with surface
- Identifier: D_oD_o – Dewpoint depression at standard isobaric surfaces beginning with surface level

SIGNIFICANT ISOBARIC LEVELS: $n_1n_1P_1P_1P_1\ T_1T_1T_1D_1D_1$
- Identifier: n_1n_1 – Number of level. Only surface will be numbered as "00".
- Identifier: $P_1P_1P_1$ – Pressure at specified levels in whole millibars.
- Identifier: $T_1T_1T_1D_1D_1$ – Same temperature/dew point encoding procedures in Part Aapplies.

21212

21212 – Data for significant level winds

SEA LEVEL WIND: $n_on_oP_oP_oP_o\ d_od_of_of_of_o$
- Identifier: 00 – Indicator for wind data at surface level follows:
- Identifier: $P_oP_oP_o$ – Indicator for pressure of specified levels in whole millibars (thousands digit omitted)
- Identifier: d_od_o – True direction from which the wind is blowing rounded to nearest 5 degrees. Report hundreds and tens digits. The unit (0 and 5) is added to the hundreds digit of wind.
- Identifier: $f_of_of_o$ – Wind speed in knots. Hundreds digit is sum of hundreds digit of speed and unit digit of direction. Example: 295 degrees at 125 knots is encoded as 29625

SIGNIFICANT ISOBARIC LEVELS: $n_1n_1P_1P_1P_1 d_1d_1f_1f_1f_1$
- Identifier: n_1n_1 – Number of level. Only surface will be numbered as "00".
- Identifier: $P_1P_1P_1$ – Pressure at specified levels in whole millibars.
- Identifier: $d_1d_1f_1f_1f_1$ – Same wind encoding procedures in Part A applies.

31313, 51515, 61616, 62626 – Same procedures as Part A

FIGURE K-1. Example TEMP DROP Message.

UZPN13 KNHC 010211
XXAA 51023 99450 71352 15855 99994 08635 24030 00548 ///// /////
92592 03817 23552 85273 00916 24555 70803 06366 25055 50539 16957
24631 40702 29757 24634 88999 66301 25149 419//
31313 09608 80158
51515 10190 30900
61616 AF301 01WSC TRACK 51   OB 23
62626 SPL 4510N13483W 0212 MBL WND 23542 AEV 20108 DLM WND 23035 994314
WL150 2335 075=
XXBB 51028 99450 71352 15855 00994 08635 11850 00916 22742 07124
33729 05162 44664 07396 55640 06599 66562 12598 77557 12777 88551
12961 99538 13561 11481 18957 22449 23346 33406 28757 44356 36756
55301 46732
21212 00994 24030 11983 23037 22967 24040 33957 23548 44946 24046
55892 24558 66850 24555 77742 24045 88656 24079 99575 24588 11497
24632 22314 25136 33301 25149
31313 09608 80158
51515 10190 30900
61616 AF301 01WSC TRACK 51   OB 23
62626 SPL 4510N13483W 0212 MBL WND 23542 AEV 20108 DLM WND 23035 994314
WL150 2335 075=