DAILY SYNOPTIC UPPER-AIR REPORTS

The sources of data, methods of accumulation, and index numbers used for the daily synoptic upper-air reports are quite similar to those used for the surface data and have been explained under "Daily Synoptic Surface Reports". However, the time of observations is different. For upper air reports, the observation at or nearest to 0300Z is shown in all cases. The time of the observation, to the nearest hour, is shown for each station.

Method of Presentation:

The upper air data are presented in four groups as follows:

1. Upper air wind data for all days for stations reporting in the new code.
2. Upper air wind data for all days for stations reporting in the old code.
3. Raob data for all days for stations reporting in the new code.
4. Raob data for all days for stations reporting in other than new code.

As in the surface data, it is expected that all stations will be reporting in the new code in the near future. At such time, data of each type will be combined. The data in each group are presented numerically by block numbers (where applicable) and numerically by stations within each block. Upper air wind data are also shown for raobs where the raob balloon was tracked by rawin or rabal methods.

Upper Air Wind Observations

Each group of the upper air wind data contains all pibals, rabals, and rawins received for that category. The data are shown in two tabulations, the first containing values of wind direction and speed for levels through 20,000 feet, and the second the same type of information for levels above 20,000 feet.

Symbol headings used for upper air winds reported in the new code, referred to as Type I above, are as follows:

dd Direction to 36 points.

ff Speed in knots.

Where an upper air wind observation is not taken and the reason for the missed observation is known, the reason is indicated under surface winds in the following code.

01 - No balloons	06 - Instrument trouble
02 - Low clouds	07 - Smoke
03 - Thick dust	08 - Rain
04 - Fog	09 - Unfavorable sea
05 - No gas	10 - Snow

11 - High or gusty surface wind

Reports from ships are similar to those from land stations except that position is given instead of station name.

Reports from Russia are shown in the following manner:

IIIGG 8ddvv 9ddvv 0ddvv ..... $M_xH_xH_xH_xC$

III Station number.

GG Time (Moscow).

dd Wind direction to 36 points.

vv Wind speed in m.p.s.

Height levels are indicated as follows:

8 Surface.

9 200 meters.

0 = 500 meters.

1 = 1000 meters.

2 = 2000 meters.

etc.

0 = 10,000 meters.

M_x Reason for ceasing upper wind observation as follows:

0 Entered cloud	5 - Lost behind cloud
1-Lost in fog	6 - Lost in background
2-Lost in mist	7 - Lost in distance
3-Lost accidentally	8 - Lost, balloon burst
4-Lost in precipitation	9 - Lost, other causes

$H_xH_xH_x$ Height at which observation was discontinued in tens of meters.

C Predominant cloud.

Explanation of other codes used by individual stations can be found in H.O. 206, 1946.

Raob Data

Raob data are shown in three different tabulations. The first shows the station index number, the station name, and values of height, temperature, and dew point (and wind direction and speed where rawin or rabal methods were utilized), for the 1,000 mb., 850 mb., 700 mb., and 500 mb. surfaces. The second tabulation shows data for the same elements for the 300 mb., 200 mb., and 100 mb. surfaces. The third tabulation shows values of pressure, temperature, and dew point for significant levels. In all cases, the first significant level contains the surface data. Although station names are not indicated in the latter two tabulations, the index numbers are identical to those used in the first tabulation, which shows the station name for each number. Thus, any station may be easily identified from each tabulation.

Where a raob is not taken and the reason for the missed observation is known, the reason is indicated under 1000 mb. in the "101" additional data indicator code as adopted by the IMO.

Symbol headings used for raobs reported in the new code, referred to as Type III above, are as follows:

hhh = height in tens of geo. feet above mean sea level. The tens of thousands figure is not shown. 250 ft. is indicated as 025, 4720 ft. as 472, and 18,290 ft. as 829.

TT = temperature to whole degrees, the 10ths value being dropped.

T_dT_d = temperature of the dew point to whole degrees, the 10ths value being dropped.

Tx = approximate tenths value of air and dew point temperatures. The tenths values of T and T_d can be determined from the following table.

Symbol T_{xo} and T_x = Tenths Value

TT \ T_dT_d	0	123	456	789
0	0			
1 2 3		1	2	3
4 5 6		4	5	6
7 8 9		7	8	9

dd = wind direction to 36 points, even though code indicates whole degrees.

ff = wind speed in knots. When value is over 100 knots, 50 is added to direction and the 100 figure dropped from the speed. Wind direction 22, speed 108 is shown as 72 - 08.

Hour = time of release of raob to nearest hour, GCT.

Code Type = An indicator to specify the units of height, temperature and wind direction used in the report. Explanation of the code is as follows:

Symbol x_1 = Indicator specifying units of height, temperature, and wind direction.

Code Figure x_1	Specifications
0	= Feet, °C, wind direction to whole degrees.
1	= Feet, °C, wind direction to tens of degrees.
2	= Feet, °F, wind direction to whole degrees.
3	= Feet, °F, wind direction to tens of degrees.
4	= Meters, °C, wind direction to whole degrees.
5	= Meters, °C, wind direction to tens of degrees.
6	= Feet, °C, winds not reported.
7	= Feet, °F, winds not reported.
8	= Meters, °C, winds not reported.
9	= Not allocated.

PPP = pressure at significant level, in whole millibars. When value is over 999 mbs., the 1000's value is dropped. 1023.4 mb. is shown as 023.

Ship raobs are shown in the same manner with the ship's location in place of station name.

Exceptions --

Station 01001, Jan Mayen, reports in Prat Code

(for code see H.O. 206, 1946)

Block 03 - British Isles - no significant levels sent. Occasionally ship reports are received in Corac Code. These are identified as such.

Explanation of the Russian raob code is as follows:

IIIGG $H_1H_1H_1T_1T_1$ $H_2H_2H_2T_2T_2$ ..... 98765 H_aH_aPPP

$T_aT_aT_aUU$ QQQEE H_bH_bPPP $T_bT_bT_bUU$ QQQEE .....

$A_{df}A_{df}$ = Form of additional data follows (1945 Radiosonde code.)

dd = Wind direction in tens of degrees.

EE = Equivalent potential temperature in °C.

GG = Greenwich hour - Local mean solar time in Russian.

HH = (PRAT and PRAWT) Height in tens of feet or while meters dependent on KK.

H_aH_a, H_bH_b = Height in nectometers.

H_dH_d = Height in hundreds of geodynamic meters.

$H_1H_1H_1$, $H_2H_2H_2$ = (Russian code) Height at pressure levels as follows:

1 - 1000 mb.	6 - 400
2 - 900	7 - 300
3 - 700	8 - 200 etc.
4 - 500	

$h_1h_1h_1$, $h_2h_2h_2$ = Height in tens of feet or whole meters.

III = Station index number.

KK = Indicator of form of report in PRAT code.

m_rm_r = Mixing ratios in grams of water vapor per kilogram of dry air.

nn = Gives significant levels given consecutively.

hh = Gives height of level in 100's of feet or tens of meters according to regional agreement.

$n_0n_9n_8n_7n_6$ $n_5n_4n_3n_2n_1$ = Thousands figure in heights above M.S.L. of the 1000 mb, 900 mb, etc.

PP = Pressure in tens of millibars.

PPP = Pressure in whole millibars.

$P_oP_oP_o$ = Station level pressure.

P_1P_1, P_2P_2 = Pressure in tens of millibars of 1st, 2nd, etc. levels.

$P_1P_2P_3P_4P_5$ = Units figure of pressures for following levels which report in tens of millibars.

QQQ = (Russian code) Mixing ratio in grams and tenths. Temperature of air in whole degrees.

TT = Temperature of air in whole degrees.

T_oT_o = Temperature of air at surface.

T_1T_1, T_2T_2 = Temperature at certain levels.

TTT = Temperature in degrees and tenths.

U = Relative humidity (International code).

UU = Relative humidity in percent.

U_oU_o = Relative humidity in percent at surface.

U_1U_1, U_2U_2 = Moisture values indicated by x_3.

vv = Wind speed.

X = Used to make a five digit group.

$x_1x_2x_3$ = Indicator figures to show units used x_1 for heights, x_2 for wind, x_3 for moisture values.

0 = Indicator figure for wind group.

00000 = Indicates that temperatures and humidities are for fixed pressures, 1,000, 900, 800 mbs. etc.

00, 85, 70, 50 etc = (1945 Radiosonde) Indicator figures for 1,000, 850, 700 mb. levels.

Explanation of other codes used by individual stations can be found in H.O. 206, 1946.