

A N N E X IV

Annex to Resolution 20 (EC-XIII)

APPENDIX F TO TECHNICAL REGULATIONS (VOLUME I)

(See paragraphs 8.2.1.4 and 8.3.1.5)

PART A

LAY-OUT FOR AN INTERNATIONAL MARITIME
METEOROLOGICAL PUNCH-CARD

<i>Column</i>	<i>Element</i>	<i>Punching procedures</i>
1	Temperature indicator	1 — Celsius
2 - 3	Year GMT	Last two digits
4 - 5	Month GMT	01-12 January to December
6 - 7	Day GMT	01-31
8	Octant of the globe, Q	WMO Code 3300
9 - 11	Latitude, LaLaLa	Tenths of degrees, WMO specifications
12 - 14	Longitude, LoLoLo	Tenths of degrees, WMO specifications
15 - 16	Time of observation, GG	Nearest whole hour GMT, WMO specifications
17	Cloud amount, N	Oktas, WMO Code 2700
18 - 19	True wind direction, dd	Tens of degrees, WMO Code 0877 ; if the data for wind direction and speed have been measured an x overpunch is given in col. 18
20 - 21	Wind speed, ff	Tens and units of knots, hundreds omitted ; values in excess of 99 knots to be indicated by an x overpunch in col. 20
22 - 23	Visibility, VV	WMO Code 4377
24 - 25	Present weather, ww	WMO Code 4677
26	Past weather, W	WMO Code 4500
27 - 31	Air pressure	Tenths of millibars
32 - 34	Air temperature	Tenths of degrees Celsius ; negative temperatures to be indicated by an x overpunch in col. 32
35 - 37	Wet bulb temperature	Tenths of degrees Celsius ; negative temperatures to be indicated by an x overpunch in col. 35 ; Ice on wet bulb to be indicated by an x overpunch in col. 37
38	Amount of lowest clouds, Nh	As reported for CL or, if no CL cloud is present, for CM ; in oktas, WMO Code 2700

Column	Element	Punching procedures
39	Genus of CL clouds	WMO Code 0513
40	Height of clouds, h	WMO Code 1600
41	Genus of CM clouds	WMO Code 0515
42	Genus of CH clouds	WMO Code 0509
43 - 45	Sea temperature	Tenths of degrees Celsius; negative temperatures to be indicated by an x overpunch in col. 43
46 - 48	Air-sea temperature difference *	Difference air minus sea surface temperature in tenths of degrees Celsius; negative differences to be indicated by an x overpunch in col. 46
49 - 50	Direction of wind waves, dwdw	Tens of degrees, WMO Code 0885
51 - 52	Period of wind waves, P _w	WMO Code 3155 (use col. 51 when one figure is punched for P _w)
53 - 54	Height of wind waves	Half-meter values, based on WMO Code 1555
		<i>Examples :</i>
		Less than ¼ m to be punched 00
		3 ½ m to be punched 07
		7 m to be punched 14
		11 ½ m to be punched 23
		The Notes (1), (2) and (4) of Code 1555 apply, in no case 50 should be added to dwdw in col. 49-50
55 - 56	Direction of swell waves, dwdw	Tens of degrees, WMO Code 0885
57 - 58	Period of swell waves, P _w	WMO Code 3155 (use col. 57 when one figure is punched for P _w)
59 - 60	Height of swell waves	Half-meter values, based on WMO Code 1555
		<i>Examples :</i>
		Less than ¼ m to be punched 00
		3 ½ m to be punched 07
		7 m to be punched 14
		11 ½ m to be punched 23
		The Notes (1), (2) and (4) of Code 1555 apply, in no case 50 should be added to dwdw in col. 49-50
61 - 62	Country which has recruited ship	Number to be assigned by WMO
63	Card indicator	0 — Punched according to WMO codes, effective in year indicated in col. 2-3; if another figure has been punched in this column, this indicates that the card has been punched according to the supplementary punching procedures (Part B)

* Should be included only if available in tenths of degrees.

<i>Column</i>	<i>Element</i>	<i>Punching procedures</i>
64 - 73		Not to be punched
74 - 76	Dew-point temperature *	Tenths of degrees Celsius; negative temperatures to be indicated by an x overpunch in col. 74
77	Wind force **	Beaufort wind scale 0-9 values 10-12 to be punched 0-2 with an x overpunch in col. 77
78 - 80		Not to be punched

* Should be included only if available in tenths of degrees.

** Optional, should be included only if the wind force has been estimated according to the Beaufort scale.

NOTES :

- (1) Members using the punch-card system for their current maritime observations will reproduce the international maritime punch-cards mechanically from their own punch-cards, punching zero in col. 63 and leaving blank the spare col. 64-73, 78-80, which may be used by the Responsible Members for computing purposes.
- (2) When preparing for exchange of data with deviating codes or from former years a Member may use the col. 1, 64-73, 78-80 for indicating deviating codes and for providing additional data. In this case, col. 63 is punched 1, 2, 3, 4 or 5 (see Part B) and all columns will be punched according to Part A modified by Part B as far as requested by the Responsible Member.
- (3) When temperature and pressure are reported in whole units, the column of the tenths of these units is to be punched 0.
- (4) The x's appearing in some of the above-mentioned WMO codes must not be punched.
- (5) If an element is missing the columns concerned are left blank.

Overpunches

x/	x or 11 overpunch in column specified
x/ in column 18	Measured data for wind direction and speed
x/ in column 20	Wind speed, 100 knots or more
x/ in column 32	Negative values of air temperature
x/ in column 35	Negative values of wet-bulb temperature
x/ in column 37	ice on wet bulb
x/ in column 43	Negative values of sea surface temperature
x/ in column 46	Air temperature lower than sea temperature
x/ in column 74	Negative value of dew point
x/ in column 77	Beaufort wind scale, 10 or more

PART B

**SUPPLEMENTARY PUNCHING PROCEDURES FOR USE OF AN
INTERNATIONAL MARITIME METEOROLOGICAL PUNCH-CARD FOR
EXCHANGE OF CARDS WITH DEVIATING CODES OR ADDITIONAL DATA**

<i>Column</i>	<i>Element</i>	<i>Supplementary punching procedures</i>
1	Temperature Indicator	<ol style="list-style-type: none"> 1 Tenths of degrees Celsius 2 Tenths of degrees Fahrenheit 3 Whole degrees Celsius (col. 34, 37, 45, 48, 76 punched 0) 4 Whole degrees Fahrenheit (col. 34, 37, 45, 48, 76 punched 0) 5 Halves of degrees Celsius 6 Halves of degrees Fahrenheit 7 Tenths of degrees Fahrenheit, but whole degrees for dew point (col. 76 punched 0)
2 - 3	Year GMT	Last two digits; dates from the nineteenth century to be indicated by an x overpunch in column 2
63	Card indicator	<ol style="list-style-type: none"> 1 Data with deviating codes or additional groups as indicated in col. 64-68; col. 78-80 left blank 2 Data with deviating codes or additional groups as indicated in col. 64-68; ship or log number punched in col. 78-80 3 Data with deviating codes or additional groups as indicated in col. 64-68; col. 74-80 left blank for special purposes (Indian Ocean Survey) 4 Data with deviating codes or additional groups as indicated in col. 64-67, indicator in col. 68 must be 4. Col. 52, 54, 58 and 60 must not be used for punching wave data. Col. 78-80 left blank 5 Data with deviating codes as indicated in col. 1, otherwise punched according to WMO codes, effective in year indicated in col. 2-3, col. 64-73, 78-80 left blank

Column	Element	Supplementary punching procedures																					
64	Indicator for location	0 QL _a LaLaLoLoLo in col. 8-14 1 10° Marsden square in col. 8-10 1° unit of latitude in col. 11 1° unit of longitude in col. 12 1/10° unit of latitude in col. 13 1/10° unit of longitude in col. 14 2 Ocean station vessel, * QL _a LaLaLoLoLo in col. 8-14; an ocean station vessel occupying an ocean weather station to be indicated by an x overpunch in col. 64 3 Ocean station vessel, * location in Marsden squares in col. 8-14; an ocean station vessel occupying an ocean weather station to be indicated by an x overpunch in col. 64 4 Anchored, QL _a LaLaLoLoLo in col. 8-14 5 Anchored, location in Marsden squares in col. 8-14																					
65	Indicator for wind data in col. 18-21 included	<table border="0"> <thead> <tr> <th></th> <th><i>dd</i></th> <th><i>ff</i></th> </tr> </thead> <tbody> <tr> <td>0</td> <td>36 pts</td> <td>knots</td> </tr> <tr> <td>1</td> <td>32 pts</td> <td>knots</td> </tr> <tr> <td>2</td> <td>36 pts</td> <td>Beaufort</td> </tr> <tr> <td>3</td> <td>32 pts</td> <td>Beaufort</td> </tr> <tr> <td>4</td> <td>36 pts</td> <td>metres per second</td> </tr> <tr> <td>5</td> <td>32 pts</td> <td>metres per second</td> </tr> </tbody> </table>		<i>dd</i>	<i>ff</i>	0	36 pts	knots	1	32 pts	knots	2	36 pts	Beaufort	3	32 pts	Beaufort	4	36 pts	metres per second	5	32 pts	metres per second
	<i>dd</i>	<i>ff</i>																					
0	36 pts	knots																					
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2	36 pts	Beaufort																					
3	32 pts	Beaufort																					
4	36 pts	metres per second																					
5	32 pts	metres per second																					
66	Indicator for VV	0 WMO Code 4377 1 VV = 00-89, WMO Code 1949																					
67	Indicator for waves	0 Punched according to the punching procedures for waves given in Part A 1 WMO Code 75 (1954) WMO Code 75 (November 1957), code renumbered 3700 effective 1960, in col. 53; wave direction according to 00-36 scale in col. 49-50 2 Sea Code (Douglas or Copenhagen 1929 scales) in col. 53; sea direction according to 00-32 scale in col. 49-50 Swell Code (Douglas or Copenhagen 1929, Berlin 1939 scales) in col. 59; swell direction according to 00-32 scale in col. 55-56 3 Sea Code (Paris 1919 scale) in col. 53; sea direction according to 00-32 scale in col. 49-50 Swell Code (Douglas or Copenhagen 1929, Berlin 1939 scales) in col. 59; swell direction according to 00-32 scale in col. 55-56																					

* By *ocean station vessel* is meant a ship meteorologically equipped to occupy an ocean weather station.

Column	Element	Supplementary punching procedures
68	Indicator for use of additional groups	<p>0 No additional data</p> <p>1 Ship's course and speed, pressure tendency and precipitation data in col. 60-77</p> <p>Col. 69, D_s — Ship's course (true) made good during the three hours preceding the time of observation, WMO Code 0700</p> <p>Col. 70, v_s — Ship's average speed made good during the three hours preceding the time of observation, WMO Code 4451</p> <p>Col. 71, a — Characteristic of pressure tendency during the three hours preceding the time of observation, WMO Code 0200</p> <p>Col. 72-73, pp — Amount of pressure tendency during the three hours preceding the time of observation, expressed in tenths of millibars; tens of millibars are indicated by overpunches, an x overpunch in col. 72 is given for values 10.0-19.9 mb, an x overpunch in col. 73 for values 20.0-29.9 mb</p> <p>Col. 74-75, RR — Amount of precipitation, WMO Code 3577</p> <p>Col. 76-77, trtr — Duration of precipitation, WMO Code 4080</p> <p>2 Ice data in col. 69-73</p> <p>Col. 69, c_2 — Description of kind of ice, WMO Code 0663</p> <p>Col. 70, K — Effect of the ice on navigation, WMO Code 2100</p> <p>Col. 71, D_i — Bearing of ice edge, WMO Code 0739</p> <p>Col. 72, r — Distance to ice edge from reporting ship, WMO Code 3600</p> <p>Col. 73, e — Orientation of ice edge, WMO Code 1000</p> <p>3 Unassigned</p> <p>4 Beaufort weather notation according to Note (1) in col. 52, 54, 58, 60, 69-71; indicator in col. 63 must be 4</p> <p>5 Beaufort Weather Notation according to Note (2) in col. 69-72</p> <p>6 Ship's course and speed, and pressure tendency in col. 69-73</p> <p>Col. 69, D_s — Ship's course (true) made good during the three hours preceding the time of observation, WMO Code 0700</p>

Column	Element	Supplementary punching procedures												
68	Indicator for use of additional groups (continued)	<p>Col. 70, v_s — Ship's average speed made good during the three hours preceding the time of observation, WMO Code 4451</p> <p>Col. 71, a — Characteristic of pressure tendency during the three hours preceding the time of observation, WMO Code 0200</p> <p>Col. 72-73, pp — Amount of pressure tendency during the three hours preceding the time of observation, expressed in tenths of millibars; tens of millibars are indicated by overpunches, an x overpunch in col. 72 is given for values 10.0-19.9 mb, an x overpunch in col. 73 for values 20.0-29.9 mb</p>												
7	Precipitation data in col. 69-72	<p>Col. 69-70, RR — Amount of precipitation, WMO Code 3577</p> <p>Col. 71-72, trtr — Duration of precipitation, WMO Code 4080</p>												
8	Cloud data in col. 69-72	<p>Col. 69, N_s — Amount of individual cloud layer or mass, of genus C, WMO Code 2700</p> <p>Col. 70, C — Genus of cloud, WMO Code 0500 (x not to be punched)</p> <p>Col. 71-72, h_{sh_s} — Height of base of cloud layer or mass whose genus is indicated by C, WMO Code 1577</p>												
9	Special phenomena in col. 69-72 according to regional codes, viz.:	<table border="0"> <tr> <td>in Region I</td> <td>WMO Code 163</td> </tr> <tr> <td>in Region II</td> <td>WMO Code 263</td> </tr> <tr> <td>in Region III</td> <td>WMO Code 383</td> </tr> <tr> <td>in Regions IV and V</td> <td>WMO Code 483</td> </tr> <tr> <td>in Region VI</td> <td>WMO Code 653</td> </tr> <tr> <td>in Antarctica</td> <td>WMO Code 753</td> </tr> </table>	in Region I	WMO Code 163	in Region II	WMO Code 263	in Region III	WMO Code 383	in Regions IV and V	WMO Code 483	in Region VI	WMO Code 653	in Antarctica	WMO Code 753
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NOTES:

(1) Beaufort Weather Notation (German system) according to the following code:

Column 52

- 0 Cloud amount < 2/8
- 1 2/8 < cloud amount < 6/8
- 2 Cloud amount > 6/8
- 3 Overcast and cloud amount > 6/8 combined
- 4 Overcast
- 5 No data concerning cloudiness
- 6 Unassigned
- 7 Unassigned
- 8 Unassigned
- 9 No data concerning the weather

Column 54

- 0 Fog
- 1 Thick fog
- 2 Slight mist
- 3 Mist
- 4 Abnormal visibility
- 5 Very abnormal visibility
- 6 Dust haze
- 7 Gloom
- 8 Ugly sky
- 9 Unassigned

Column 58

- 0 Drizzle
- 1 Thick drizzle
- 2 Rain
- 3 Heavy rain
- 4 Rain squalls or showers of rain
- 5 Heavy rain squalls or heavy showers of rain
- 6 Unassigned
- 7 Snow squalls or showers of snow
- 8 Heavy snow squalls or heavy showers of snow
- 9 Squalls of drizzle

Column 69

- 0 Lightning
- 1 Intense lightning
- 2 Thunder
- 3 Heavy thunder
- 4 Thunderstorm
- 5 Heavy thunderstorm
- 6 Drizzle and rain together
- 7 Heavy drizzle and rain together
- 8 Rain and hail together
- 9 Heavy rain and hail together

Column 71

- 0 Dew
- 1 Heavy dew
- 2 Sandstorm
- 3 Hoar-frost
- 4 Soft rime
- 5 Glazed frost
- 6 Ice, pack ice
- 7 Icebergs
- 8 Aurora
- 9 Mirage
- x or 11 Saint Elmo's fire
- r or 12 Sudden increase of wind

Column 60

- 0 Snow
- 1 Heavy snow
- 2 Hail
- 3 Heavy hail
- 4 Snow and hail
- 5 Heavy snow and hail together
- 6 Snow and rain together
- 7 Heavy snow and rain together
- 8 Unassigned
- 9 Unassigned

Column 70

- 0 Squalls
- 1 Heavy squalls
- 2 Ground fog
- 3 Fog in patches
- 4 Wet fog
- 5 Fog on shore
- 6 Solar halo
- 7 Solar halo complex
- 8 Lunar halo
- 9 Lunar halo complex
- x or 11 Waterspout (tornado)

(2) Beaufort Weather Notation (British system) according to the following code (used from the 1 January 1949 to the 31 March 1953):

Column 69

- 0 No visibility observation
- 1 Abnormal visibility
- 2 Unassigned
- 3 Mist or haze (visibility 1-2 km)
- 4 Fog (visibility less than 1 km)
- 5 Unassigned
- 6 Unassigned
- 7 Unassigned
- 8 Unassigned
- 9 Visibility greater than 2 km

Columns 70-72

- 000 No observation of weather
- 1 Snow
- 2 Squalls
- 3 Rain
- 4 Showers
- 5 Drizzle
- 6 Thunder
- 7 Hail
- 8 Lightning
- 999 None of above reported

Overpunches

- x/ x or 11 overpunch in column specified
- r/ r or 12 overpunch in column specified
- x/ in column 2 Observations from nineteenth century
- x/ in column 64 Ocean weather station
- x/ in column 72 pp = 10 mb + value punched
- x/ in column 73 pp = 20 mb + value punched
- x/ in column 70 Waterspout (tornado)
- x/ in column 71 Saint Elmo's fire
- r/ in column 71 Sudden increase of wind

Remarks

- (a) Supplementary punching procedures may be used only in cases where it is impossible to use the international maritime meteorological punch-card (Part A)
- (b) Data for former years which have not yet been punched should wherever possible be put on the international maritime meteorological punch-card (Part A).