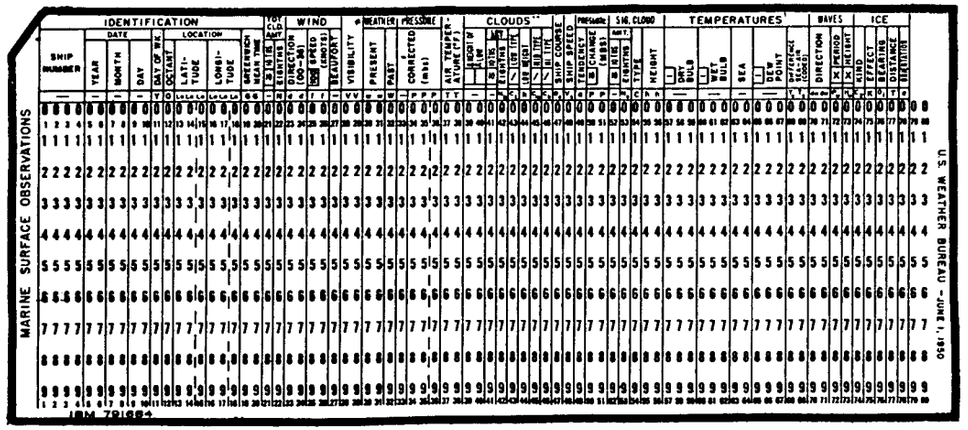
116 U.S. MERCHANT MARINE, OCEAN STATION VESSELS (OSV's), NAVY SHIPS AND SOME OBSERVATIONS AVAILABLE FROM OTHER SOURCES.



AREA COVERAGE

1. World-wide Merchant and Navy Ships. 2. Ocean Station Vessels (OSV's).

A 10° square status on index cards is maintained at the National Weather Records Center (NWRC), Asheville, North Carolina.

PERIOD OF RECORD

1949-~~6~~/63 all ships except: } See deck 128 for period 7/63 - shipping season '63 -
1945-~~6~~/63 for OSV observations. } " " " " " "
March 1960-1961 for Great Lakes ships.

OBSERVATION TIME

00, 06, 12, 18 GMT six hourly synoptic observations for all Merchant and some Navy Ships.
00, 03, 06, 09, 12, 15, 18, and 21 GMT for three hourly synoptic observations for OSV's.
All hours available for Great Lakes ships.

CODE

Below are indicated the codes used. See Supplementary Notes on page 11 for deviations.
FM 21 & FM 21A Surface reports for ships in full code. SHIP $YQL_aL_aL_a$ $L_oL_oL_oGG$ Nddff VVwwW PPPTT $N_hC_LhC_MC_H$ D_sv_sapp $(8N_sC_hh_sh_s)$ $(0T_sT_sT_dT_d)$ $(1d_wd_wP_HH_w)$ Values in parentheses are optional.

FM 22 & 22A Surface reports for ships in abbreviated form.
SHIP $YQL_aL_aL_a$ $L_oL_oL_oGG$ Nddff VVwwW PPPTT $N_hC_LhC_MC_H$
Specifications of the symbolic letters are defined in the Card Content of this manual.

SOURCE

Data are punched at the NWRC from the following Weather Bureau (WB) Forms:

1210, 1210 A, 1210 A&B, WB-11 A&B formerly 1210 A&B, 1210 E, 1210 F, 615-5 formerly 1210 F, 615-4 for Great Lakes ships.

MISSING DATA

1. If an element(s) were missing within an observation the card columns for that element(s) were left blank, unless otherwise noted in the card content of this manual.

2. Identification cards were punched only for missing observation of OSV observations for the period that the station was in operation and not covered by an OSV ship.

COLUMNS AND ELEMENTS PUNCHED

Columns 1-79 were punched and column 80 may be punched for control purposes. Ice data columns 74-78 are very seldom punched.*

The elements punched are:

*, # Total Cloud Amount in tenths
Total Cloud Amount in eighths
Wind Direction
Wind Speed
*, # Wind Beaufort Force
Visibility
Present Weather
Past Weather
Sea Level Pressure in Millibars
Air Temperature
*, # Height of Low Clouds in hundreds of feet
*, # Total amount of low clouds in tenths
Total amount of low clouds in eights
Type of low cloud
Height of lower cloud in code
Type of middle cloud
Type of high cloud
Ship's course and speed
Pressure Tendency and amount of change during the past 3 hours
Significant Cloud Amount in tenths
Significant Cloud Amount in eighths
Significant Cloud Type
Significant Cloud Height
Dry Bulb Temperature
Wet Bulb Temperature
Sea Temperature
Dew Point Temperature
Air-Sea Temperature Difference
Wave Direction
Wave Period
Wave Height
Ice Kind
Ice effect on navigation
Ice Bearing
Ice Distance
Ice Orientation

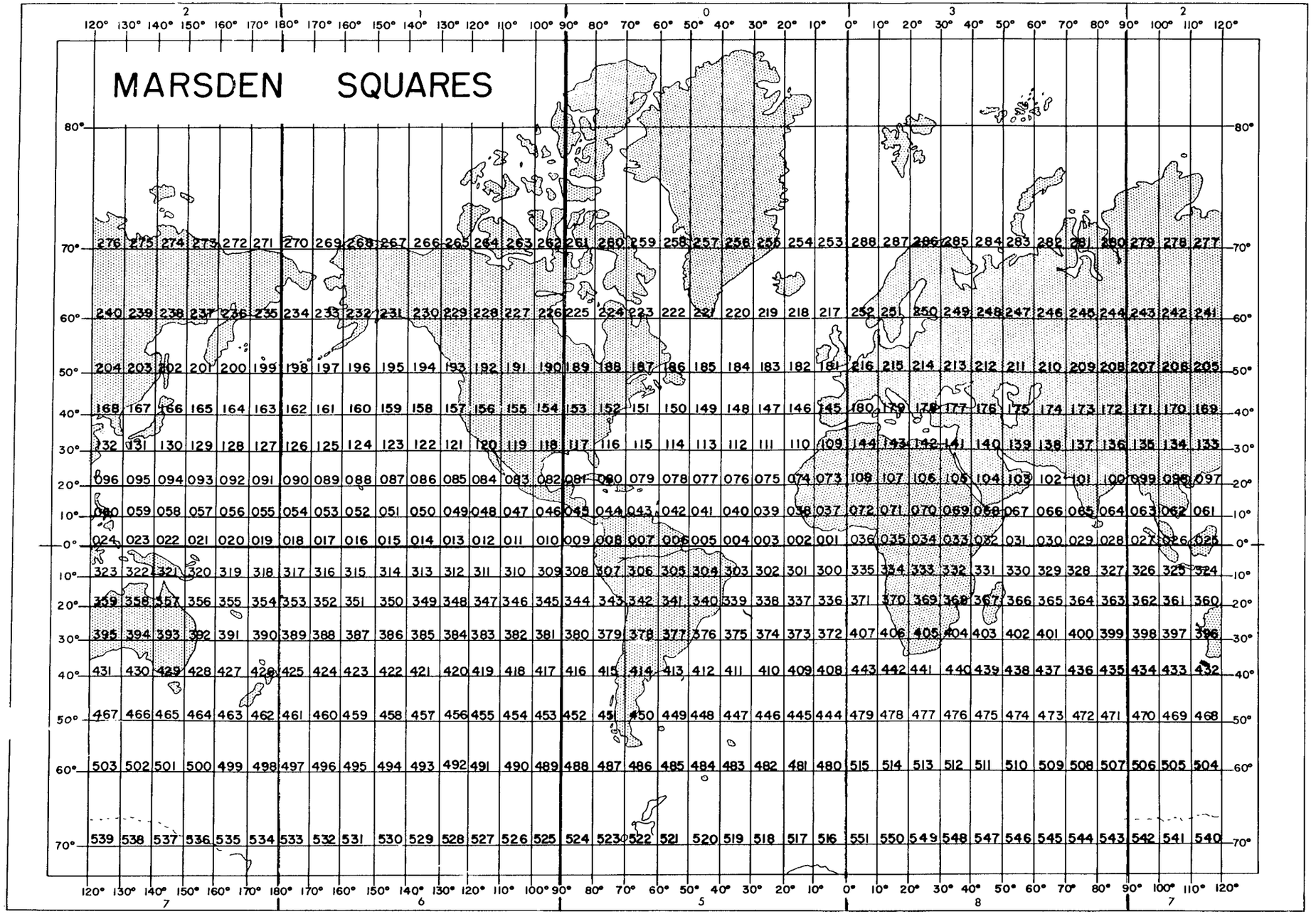
* Indicates see Supplementary Notes, page 11, paragraph A-1.
\# Indicates see Supplementary Notes, page 11, paragraph A-2.

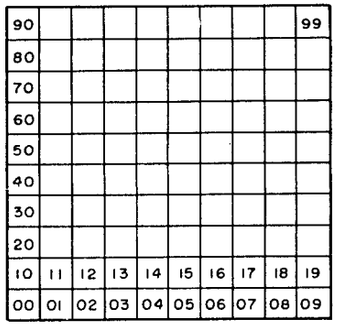
ADDITIONAL REMARKS

The data for all U.S. ships are ~~scheduled to change~~ changed to Deck 128 beginning July 63. ~~Jan 62.~~

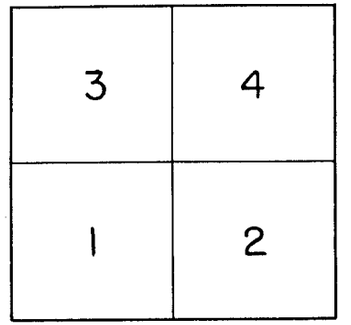
CORRECTIONS

Any errors detected in this manual should be called to the attention of Director, National Weather Records Center, or Chief, Data Processing Division, Climatic Center, USAF. Please give specific instances of error, and correct information if available.





1°



5°

SQUARES ARE ALWAYS ORIENTED SO THAT THE LOWEST NUMBER IS NEAREST THE INTERSECTION OF THE GREENWICH MERIDIAN AND THE EQUATOR.

Revision Date: ~~15 Jan 62~~ Sept. 64

CARD CONTENT

Column	Item or Element	Symbolic Letter	Card Code	Card Code Definition	Remarks
21-80	Missing Data		Blank(B)	Missing Data indicated by leaving the field of the missing element(s) blank unless otherwise indicated below.	
1-4	Ships Identification				
1-4	Ship number		0001-9999	Barometer number for merchant and Great Lakes ships (See Column 79)	
1-4	Navy Ship number		B001-B999	Navy Ship number	A number list is maintained at the NWRC of barometers, OSV ships, OSV stations, and navy ships.
1-2	OSV Ship number		01-99		
3-4	OSV station number		01-99		
1	Teletype data indicator		X	Indicates data are from teletype source.	See Supplementary Note D-1.
5-6	Year		49-61	1941-1961	Last two digits of year
7-8	Month		01-12	Jan-Dec, respectively	
9-10	Day	YY	01-31	1st-31st day of month	Date identification is in Greenwich Mean Time (GMT)
11	Day of week	Y	1-7	Sunday-Saturday, respectively	
12	Octant	Q	0-3,5-8	See Code 1, page 5	Octant of the Globe
13-15	Latitude	$L_aL_aL_a$	000-900	0.0°-90.0° In one tenth degrees	North when 0-3, South when 5-8 in column 12.
16-18	Longitude	$L_oL_oL_o$	000-900 901-999 000-~~900~~	0.0°-90.0° (E or W) 90.1°- 99.9°(E or W) 100.0°-180.0° (E or W)	In one tenth degrees. Direction East or West and the (hundreds position digit omitted) is indicated in column 12.
19-20	Hour (GMT)	GG	00-23	0000-2300 GMT	00= Midnight of day beginning. See page 1, Observation Time
21	Total Cloud Amount	N	0-9, X Blank	Clear - 0.9, X=10/10 Sky obscured or unknown.	In tenths. See Supplementary Note A-1.
22	Total Cloud Amount	N	0-9	See Code 2, page 5	In eighths. OSV's for 45-48 have been converted to this code.
23-24	Wind Direction	dd	00-36	See Code 3, page 5	OSV and Navy ships use only the code indicated by points of the compass in Code 3A,16 points of 36 points.
25-26	Wind Speed	ff	00-99 X/	Calm-99 knots X overpunch in column 25 indicates ≥ 100 knots	See Supplementary Note A-1. Values in excess of 100 knots were punched in the normal manner.
27	Wind Beaufort	F	0-9 X/0 X/1 X/2	0-9 Beaufort Force Beaufort Force 10 Beaufort Force 11 Beaufort Force 12 or greater	See Code 24, page 9. See Supplementary Notes A-1 and B-1.

CARD CONTENT

Column	Item or Element	Symbolic Letter	Card Code	Card Code Definition	Remarks
28-29	Visibility in Nautical Miles	VV	00-99	See Code 4.	For period Jan 55-Dec 61
			00-99	See Code 25	For period 1949-1954
				(For conversion Table of the 1949 & 1955, 00-89 Code to the 90-99 Decade see Code 25A)	OSV's for period 45-48 were converted to the 90-99 code of the 49 period. See Supplementary Note B-1, page 11 and Code 31, page 10.
30-31	Present Weather	ww	00-99	See Code 5, pages 6 and 7	For period 49-61.
				See Code 26, page 10	For period OSV's 45-48. See Supplementary Note B-1
32	Past Weather	W	0-9	See Code 6, Page 7	OSV's for 1945-1948 not punched
33-36	Pressure (MSL)	PPPP	8000-9999	800.0-999.9 millibars	
			0000-0999	1000.0 - 1099.9 mbs.	Thousands position digit omitted. See Supplementary Note A-2 page 11.
37-38	Air Temperature	TT	00-99	0°-99° F (Whole °F)	Values ≥ 100° F punched by dropping the hundreds digit. See columns 57-59.
			X/	X overpunch in columns 37 = minus values	Note: A few values may be in °C.
39-46	Cloud data				See Supplementary Notes A & B.
39-40	Height of Lower Clouds above Mean Sea Level (MSL)	hh	XX	No low clouds below 8000 feet	Punched in hundreds of feet. See Supplementary Note A-1.
			00	= ≦ 100 feet	
			01-80	= 100-8000 feet	
			Blank	= sky obscured or unknown	
41	Amount of lower clouds (tenths)	N_h	0-9	0-9/10 lower clouds	See Supplementary Note A-1.
			X	= 10/10 lower clouds	
			Blank	= missing or sky obscured	
42	Amount of lower clouds (eighths)	N_h	0-9	See Code 2, page 5.	See Supplementary Notes B-1 & B-2.
43	Type of low clouds	C_L	0-9, X	See Code 7, page 7.	For period 49-61.
				See Code 27, page 10.	For period OSV's 45-48.
44	Height of lower clouds	h	0-9,	See Code 8, page 7.	See Supplementary Note B-2.
45	Type of Middle Cloud	C_m	0-9, X	See Code 9, page 7.	See Supplementary Notes B-1 and B-2, page 11.
46	Type of High Cloud	C_h	0-9, X	See Code 10, page 7.	

CARD CONTENT

Column	Item or Element	Symbolic Letter	Card Code	Card Code Definition	Remarks
47	Ship's Course	D_s	0-9	See Code 11, page 8.	
48	Ship's Speed	V_s	0-9	See Code 12, page 8.	Ships average speed made good during the 3 hours preceeding the time of observations.
49	Pressure Tendency	a	0-9	See Code 13, page 8	For period Jan 55-Dec 61
				See Code 28, page 10	For period Jan 49-Dec 54 and OSV's 45-48.
50-51	Pressure Change	pp	00-99 X/	0.0-9.9 millibars X overpunch in column 50 = value punched in cols. 50-51 + 10.0 mbs.	Note: OSV's period 45-48 punched in 1/5 mb. units, i.e., 02=0.4 mbs.
52-56	Significant Clouds			See Supplementary Notes A & B-3, page 11.	
52	Cloud Amount	N_s	0-9, X	Clear-9/10, X=10/10	In tenths
53	Cloud Amount	N_s	0-9	See Code 2.	In eighths
54	Sig. Cloud Type	C	0-9, X	See Code 14, page 8	For period Jan 55-Dec 61
				See Code 29, page 10	For period 45-54
55-56	Sig. Cloud Height	$h_s h_s$	00-99	See Code 15	For period Jan 55-Dec 61
				See Code 30	For period 45-54
				Note: The 00-50 & 90-99 codes are the same for Code 15 and 30, except as indicated in A.1(f).	
57-69	Temperature			Rounded to whole degrees F, i.e. 24.5° F punched 025 24.4° F punched 024 (Note: A few values may be in °C)	
57-59	Dry Bulb	TT	000-099 100-199	0°-99° F 100°-199° F	X or X overpunch in column 57 = minus values
60-62	Wet Bulb	TT_{wet}			X or X overpunch in column 60 = minus
63-64	Sea Temp.	TT_{sea}			
65-67	Dew Point	$T_d T_d$			X or X overpunch in column 65 = minus
68-69	Air-Sea Temp. Diff.	$T_s T_s$	00-49 50-99	0°-49° F 0°-49° F, resp.	When sea is lower than air temp. When sea is higher than air temp.
70-73	Waves	(Wave Data for OSV's 1945-1948 were not punched)			See Supplementary Note B-4.
70-71	Direction	$d_w d_w$	00-36 50-86 49,99	See Code 16, page 8 See Code 18, page 8	50 is added to $d_w d_w$ to indicate second scale in Code 18.
72	Period	P_w	2-9 0,1,X	See Code 17, page 8	
73	Height of Waves	H_w	0-9	See Code 18, page 8 See Supplementary Note A.2	OSV's and Navy ships report waves as calm when height is less than 0.5 feet. The $d_w d_w$ P_w H_w are reported and punched as 00X0 resp.

CARD CONTENT

Column	Item or Element	Symbolic Letter	Card Code	Card Code Definition	Remarks
74-78	Ice				Very rarely punched.
74	Kind of Ice	c_2	0-9	See Code 19.	
75	Effect of Ice on Navigation	K	0-9	See Code 20.	
76	Bearing of Ice Limits	D_i	0-9	See Code 21.	
77	Distance to Ice Limits	r	0-9	See Code 22.	When the exact bounding distance corresponds to 2 code figures the lower code is punched.
78	Orientation of ice limits	e	0-9	See Code 23	
79	Barometer Comparison Station or Data Source		1	= New York	Indicates station issuing ships barometer number
			2	= New Orleans	
			3	= San Francisco	
			4	= OSV Ship	Of any country
			5	= U.S. Navy Ships	The X of the ship number is left blank in Column 1.
			6	= Military Sea Transport Ships (MSTS)	
			9	= Great Lakes Ships See Supplementary Note A-2, page 11.	X/9 = Canadian Great Lake ships (these have no wave data)
80	Blank or Random punches used for operation purposes.				

CODE TABLES

CODE TABLES

When coding a meteorological report, symbolic letters are replaced by figures, which specify the value or the state of the corresponding element. In some cases, the specification of the symbolic letter (or group of letters) is sufficient to permit a direct transcription into figures (e.g., GG or FFF). In other cases, these figures are obtained by means of a special code table (or code, in short) for each element.

The codes elaborated to this end, as far as they are in world-wide use, are called international meteorological code tables. These same codes are used inversely for decoding observations and thus making available the information contained in them.

Besides the specifications given by the code tables in world-wide use, other sets of code tables are established by the WMO for regional use. Further arbitrary codes have been made necessary by the use of data in card decks which were never encoded into WMO forms.

Only codes pertinent to this card deck are included in the present manual. They appear in the order in which the elements were introduced in the description of the card content. They are numbered consecutively, and if applicable, the corresponding WMO code numbers are shown.

Code 1 (Col. 12)
(1949 WMO Code 70)
(1960 WMO Code 3300)

Q - Octant Of The Globe

Code Figure	Greenwich Longitude	Hemisphere
0	0° - 90°W	North
1	90° - 180°W	
2	180° - 90°E	
3	90° - 0°E	
5	0° - 90°W	South
6	90° - 180°W	
7	180° - 90°E	
8	90° - 0°E	

Code 2 (Cols. 21, 41, 53)
(1949 WMO Code 60)
(1960 WMO Code 2700)

N - The fraction of the celestial dome covered by cloud

N_h - The fraction of the celestial dome covered by the cloud(s) reported for C_L or, if no C_L-cloud present, for C_M

Code figure		
0	0	0
1	1 okta or less, but not zero	1/10 or less, but not zero
2	2 oktas	2/10 - 3/10
3	3 oktas	4/10
4	4 oktas	5/10
5	5 oktas	6/10
6	6 oktas	7/10 - 8/10
7	7 oktas or more, but not 8 oktas	9/10 or more, but not 10/10
8	8 oktas	10/10
9	Sky obscured, or cloud amount cannot be estimated	

Code 3 (cols. 23-24)
(1949 WMO Code 23)
(1960 WMO Code 0877)

dd - True direction, in tens of degrees, from which wind is blowing (or will blow)

Code figure		Code figure	
00	Calm	19	185° - 194°
01	5° - 14°	20	195° - 204°
02	15° - 24°	21	205° - 214°
03	25° - 34°	22	215° - 224°
04	35° - 44°	23	225° - 234°
05	45° - 54°	24	235° - 244°
06	55° - 64°	25	245° - 254°
07	65° - 74°	26	255° - 264°
08	75° - 84°	27	265° - 274°
09	85° - 94°	28	275° - 284°
10	95° - 104°	29	285° - 294°
11	105° - 114°	30	295° - 304°
12	115° - 124°	31	305° - 314°
13	125° - 134°	32	315° - 324°
14	135° - 144°	33	325° - 334°
15	145° - 154°	34	335° - 344°
16	155° - 164°	35	345° - 354°
17	165° - 174°	36	355° - 4°
18	175° - 184°	99	Variable

Code 3A

dd - Wind Direction

Code Figure	Arrow	Direction	Degrees (16 points)	Degrees (8 points)
00	C	Calm	-	-
36	↓↓	N (North)	349-011	338-022
02	↓↙	NNE	012-033	
05	↙↙	NE	034-056	023-067
07	←↙	ENE	057-078	
09	←←	E (East)	079-101	068-112
11	←↖	ESE	102-123	
14	↖↖	SE	124-146	113-157
16	↑↖	SSE	147-168	
18	↑↑	S (South)	169-191	158-202
20	↑↗	SSW	192-213	
23	↗↗	SW	214-236	203-247
25	→↗	WSW	237-258	
27	→→	W (West)	259-281	248-292
29	→↘	WNW	282-303	
32	↘↘	NW	304-326	293-337
34	↓↘	NNW	327-348	

Code 4
(1955 WMO Code 84) (Cols 28-29, 1955-6/63)
(1960 WMO Code 4377)

VV - Horizontal visibility at surface

Code figure	Km	Yards (Approx.)	Statute Miles (Approx.)	Nautical Miles (Approx.)
00	<0.1	<110	<1/16	< 1/16
01	0.1	110	1/16	1/16
02	0.2	220	1/8	1/8
03	0.3	330	3/16	3/16
04	0.4	440	1/4	
05	0.5	550	5/16	1/4
06	0.6	660	3/8	5/16
07	0.7	770	7/16	3/8
08	0.8	880	1/2	
09	0.9	990	9/16	1/2
10	1	1,100	5/8	
11	1.1	1,210	11/16	
12	1.2	1,320	3/4	5/8
13	1.3	1,430	13/16	
14	1.4	1,540	7/8	3/4
15	1.5	1,650	15/16	
16	1.6	1,760	1	7/8
17	1.7	1,870	1 1/16	
18	1.8	1,980	1 1/8	1
19	1.9	2,090	1 3/16	
20	2	2,200	1 1/4	
21	2.1	2,310	1 5/16	1 1/8
22	2.2	2,420	1 3/8	
23	2.3	2,530	1 7/16	1 1/4
24	2.4	2,640	1 1/2	
25	2.5	2,750	1 9/16	1 3/8
26	2.6	2,860	1 5/8	
27	2.7	2,970	1 11/16	
28	2.8	3,080	1 3/4	1 1/2
29	2.9	3,190	1 13/16	
30	3	3,300	1 7/8	1 5/8
31	3.1	3,410	1 15/16	
32	3.2	3,520	2	1 3/4
33	3.3	3,630	2 1/16	
34	3.4	3,740	2 1/8	
35	3.5	3,850	2 3/16	1 7/8
36	3.6	3,960	2 1/4	
37	3.7	4,070	2 5/16	2
38	3.8	4,180	2 3/8	
39	3.9	4,290	2 7/16	
40	4	4,400	2 1/2	
41	4.1	4,510	2 9/16	
42	4.2	4,620	2 5/8	2 1/4
43	4.3	4,730	2 11/16	
44	4.4	4,840	2 3/4	
45	4.5	4,950	2 13/16	

Code 4, continued

Code figure	Km	Yards (Approx.)	Statute Miles (Approx.)	Nautical Miles (Approx.)
46	4.6	5,060	2 7/8	2 1/2
47	4.7	5,170	2 15/16	
48	4.8	5,280	3	
49	4.9	5,390	3 1/16	
50	5	5,500	3 1/8	
51				
52				
53		NOT USED		
54				
55				
56	6	6,600	3 3/4	3
57	7	7,700	4 3/8	
58	8	8,800	5	4
59	9	9,900	5 5/8	5
60	10	11,000	6 1/4	
61	11	12,100	6 7/8	6
62	12	13,200	7 1/2	
63	13	14,300	8 1/8	7
64	14	15,400	8 3/4	
65	15	16,500	9 3/8	8
66	16	17,600	10	
67	17	18,700	10 5/8	9
68	18	19,800	11 1/4	
69	19	20,900	11 7/8	10
70	20	22,000	12 1/2	11
71	21	23,100	13 1/8	
72	22	24,200	13 3/4	12
73	23	25,300	14 3/8	
74	24	26,400	15	13
75	25	27,500	15 5/8	
76	26	28,600	16 1/4	14
77	27	29,700	16 7/8	
78	28	30,800	17 1/2	15
79	29	31,900	18 1/8	
80	30	33,000	18 3/4	
81	35		21 7/8	20
82	40		25	
83	45		28 1/8	25
84	50		31 1/4	
85	55		34 3/8	30
86	60		37 1/2	
87	65		40 5/8	35
88	70		43 3/4	
89	> 70		>43 3/4	> 35
90	< 0.05	<55	<1/32	< 50 yards
91	0.05	55	1/32	50 yards
92	0.2	220	1/8	200 yards
93	0.5	550	5/16	1/4
94	1	1,100	5/8	1/2
95	2	2,200	1 1/4	1
96	4	4,400	2 1/2	2
97	10	11,000	6 1/4	5
98	20	22,000	12 1/2	10
99	≥ 50	≥ 55,000	≥ 31 1/4	≥ 25

Notes:

(1) The code is direct reading in units of 100 m (approx. 110 yards or 1/16 statute mile) from 0 to 50.

(2) The code figures 51 to 55 are not used.

(3) For code figures 56 to 80, 50 is subtracted and the remaining figure is direct reading in units of km (approx. 1,100 yards or 5/8 statute mile).

(4) For code figures 81 to 89, the code reads in increments of 5 km (3 1/8 statute miles) from the values given for code figure 80.

(5) The code table is to be considered as a coding device in which certain code figures are assigned values. These are discrete values (not ranges). Any observation or forecast of values to be coded in the code table is to be made without regard to the code table. The coding is then accomplished according to the following rule: If the observed or forecast visibility is between two of the reportable distances as given in the table, the code figure for the lower reportable distance is reported.

Code 5 (cols. 30-31)

(1949 WMO Code 92)
(1960 WMO Code 4677)

ww - Present weather

ww 00 - 49 No precipitation at the station at the time of observation

ww 00 - 19 No precipitation, fog, ice fog (except 11 and 12), duststorm, sandstorm, drifting or blowing snow at the station (land station or ship) at the time of observation or, except for 09 and 17, during the preceding hour.

Code figure

ww

No Meteors except photometeors:

(00 Cloud development not observed or not observable
(01 Clouds generally dissolving or becoming less developed
(02 State of sky on the whole unchanged
(03 Clouds generally forming or developing

) characteristic change of the state of sky during the past hour

Haze, dust, sand or smoke:

(04 Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes
(05 Haze
(06 Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation
(07 Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen
(08 Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no duststorm or sandstorm
(09 Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour

10 Mist

11 (Patches of) shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 metres on land or 10 metres at sea
12 (More or less) (continuous)

13 Lightning visible, no thunder heard

14 Precipitation within sight, not reaching the ground or the surface of the sea

15 Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e. estimated to be more than 5 km) from the station

16 Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station

17 Thunderstorm, but no precipitation at the time of observation

18 Squalls
19 Funnel cloud(s) (tornado cloud or waterspout)

) at or within sight of the station during the preceding hour or at the time of observation

Code 5, continued

ww 20 - 29 Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation

Code figure

ww

20 Drizzle (not freezing) or snow grains
21 Rain (not freezing)
22 Snow
23 Rain and snow or ice pellets, type (a)
24 Freezing drizzle or freezing rain

) not falling as shower(s)

25 Shower(s) of rain
26 Shower(s) of snow, or of rain and snow
27 Shower(s) of hail (ice pellets, type (b), snow pellets), or of rain and hail (ice pellets, type (b), snow pellets)
28 Fog or ice fog
29 Thunderstorm (with or without precipitation)

ww 30 - 39 Duststorm, sandstorm, drifting or blowing snow

ww

30, 31, 32 Slight or moderate duststorm or sandstorm:
- has decreased during the preceding hour
- no appreciable change during the preceding hour
- has begun or has increased during the preceding hour

33, 34, 35 Severe duststorm or sandstorm:
- has decreased during the preceding hour
- no appreciable change during the preceding hour
- has begun or has increased during the preceding hour

36 Slight or moderate drifting snow
37 Heavy drifting snow

) generally low (below eye level)

38 Slight or moderate blowing snow
39 Heavy blowing snow

) generally high (above eye level)

ww 40 - 49 Fog or ice fog at the time of observation

ww

40 Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer

Code 5, continued

Code figure

41 Fog or ice fog in patches

42 Fog or ice fog, sky visible
43 Fog or ice fog, sky invisible

) has become thinner during the preceding hour

44 Fog or ice fog, sky visible
45 Fog or ice fog, sky invisible

) no appreciable change during the preceding hour

46 Fog or ice fog, sky visible
47 Fog or ice fog, sky invisible

) has begun or has become thicker during the preceding hour

48 Fog, depositing rime, sky visible
49 Fog, depositing rime, sky invisible

ww 50 - 99 Precipitation at the station at the time of observation

ww 50 - 59 Drizzle

ww

50 Drizzle, not freezing, intermittent
51 Drizzle, not freezing, continuous

) slight at time of observation

52 Drizzle, not freezing, intermittent
53 Drizzle, not freezing, continuous

) moderate at time of observation

54 Drizzle, not freezing, intermittent
55 Drizzle, not freezing, continuous

) heavy (dense) at time of observation

56 Drizzle, freezing, slight
57 Drizzle, freezing, moderate or heavy (dense)
58 Drizzle and rain, slight
59 Drizzle and rain, moderate or heavy

ww 60 - 69 Rain

ww

60 Rain, not freezing, intermittent
61 Rain, not freezing, continuous

) slight at time of observation

62 Rain, not freezing, intermittent
63 Rain, not freezing, continuous

) moderate at time of observation

64 Rain, not freezing, intermittent
65 Rain, not freezing, continuous

) heavy at time of observation

66 Rain, freezing, slight
67 Rain, freezing, moderate or heavy
68 Rain or drizzle and snow, slight
69 Rain or drizzle and snow, moderate or heavy

Code 5, continued

ww 70 - 79 Solid precipitation not in showers

ww

70 Intermittent fall of snow flakes
71 Continuous fall of snow flakes

) slight at time of observation

72 Intermittent fall of snow flakes
73 Continuous fall of snow flakes

) moderate at time of observation

74 Intermittent fall of snow flakes
75 Continuous fall of snow flakes

) heavy at time of observation

76 Ice prisms (with or without fog)
77 Snow grains (with or without fog)
78 Isolated starlike snow crystals (with or without fog)
79 Ice pellets, type (a)

ww 80 - 99 Showery precipitation, or precipitation with current or recent thunderstorm

ww

80 Rain shower(s), slight
81 Rain shower(s), moderate or heavy
82 Rain shower(s), violent
83 Shower(s) of rain and snow mixed, slight
84 Shower(s) of rain and snow mixed, moderate or heavy
85 Snow shower(s), slight
86 Snow shower(s), moderate or heavy

87, 88 Shower(s) of snow pellets or ice pellets, type (b), with or without rain or rain and snow mixed
- 87 - slight
- 88 - moderate or heavy

89, 90 Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder
- 89 - slight
- 90 - moderate or heavy

91 Slight rain at time of observation
92 Moderate or heavy rain at time of observation
93 Slight snow, or rain and snow mixed or hail (ice pellets, type (b), snow pellets), at time of observation
94 Moderate or heavy snow, or rain and snow mixed or hail (ice pellets, type (b), snow pellets) at time of observation

) thunderstorm during the preceding hour but not at time of observation

95 Thunderstorm, slight or moderate, without hail (ice pellets, type (b), snow pellets); but with rain and/or snow at time of observation
96 Thunderstorm, slight or moderate, with hail (ice pellets, type (b), snow pellets) at time of observation

) thunderstorm at time of observation

Code 5, continued

Code figure

97 Thunderstorm, heavy, without hail (ice pellets,type(b), snow pellets), but with rain and/or snow at time of observation

98 Thunderstorm combined with duststorm or sandstorm at time of observation

99 Thunderstorm, heavy, with hail (ice pellets, type(b), snow pellets) at time of observation

Code 6 (Col.32)
(1949 WMO Code 90)
(1960 WMO Code 4500)

W - Past weather

Code figure

0 Cloud covering 1/2 or less of the sky throughout the appropriate period

1 Cloud covering more than 1/2 of the sky during part of the appropriate period and covering 1/2 or less during part of the period

2 Cloud covering more than 1/2 of the sky throughout the appropriate period

3 Sandstorm, duststorm or blowing snow

4 Fog or ice fog or thick haze

5 Drizzle

6 Rain

7 Snow, or rain and snow mixed

8 Shower(s)

9 Thunderstorm(s) with or without precipitation

Notes:

(1) In the case of a sandstorm, with a temperature below 0°C, the word SANDSTORM is added at the end of the report, but is omitted in punching.

(2) In the case of a shower or a thunderstorm, accompanied by hail, the words PAST HAIL are added at the end of the report, but are omitted in punching.

(3) In the case of a snow shower or a shower of rain and snow mixed, with a temperature above 0°C, the word SNOW or SLEET is added at the end of the report, but is omitted in punching.

Code 7 (Col.43)
(1949 WMO Code 11)
(1960 WMO Code 0513)

C_L - Clouds of the genera Stratocumulus, Stratus, Cumulus and Cumulonimbus

Code figure	Non technical specifications
0	No Stratocumulus, Stratus, Cumulus or Cumulonimbus
1	Cumulus with little vertical extent and seemingly flattened, or ragged Cumulus other than of bad weather, or both
2	Cumulus of moderate or strong vertical extent, generally with protuberances in the form of domes or towers, either accompanied or not by other Cumulus or by Stratocumulus, all having their bases at the same level
3	Cumulonimbus the summits of which, at least partially, lack sharp outlines, but are neither clearly fibrous (cirriform) nor in the form of an anvil; Cumulus, Stratocumulus or Stratus may also be present
4	Stratocumulus formed by the spreading out of Cumulus; Cumulus may also be present
5	Stratocumulus not resulting from the spreading out of Cumulus
6	Stratus in a more or less continuous sheet or layer, or in ragged shreds, or both, but no Stratus fractus of bad weather
7	Stratus fractus of bad weather (generally existing during precipitation and a short time before and after), or Cumulus fractus of bad weather, or both (pannus), usually below Altostratus or Nimbostratus
8	Cumulus and Stratocumulus other than that formed from the spreading out of Cumulus; the base of the Cumulus is at a different level from that of the Stratocumulus
9	Cumulonimbus, the upper part of which is clearly fibrous (cirriform), often in the form of an anvil; either accompanied or not by Cumulonimbus without anvil or fibrous upper part, by Cumulus, Stratocumulus, Stratus or pannus
X	Stratocumulus, Stratus, Cumulus and Cumulonimbus invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena

Code 8 (Col.44)
(1949 WMO Code 43)
(1960 WMO Code 1600)

h = Height above Ground of the Base of the Cloud

Code Figure	Height in Feet	Height in Meters
0	0- 149	0- 49
1	150- 299	50- 99
2	300- 599	100- 199
3	600 999	200- 299
4	1,000-1,999	300- 599
5	2,000-3,499	600- 999
6	3,500-4,999	1,000-1,499
7	5,000-6,499	1,500-1,999
8	6,500-7,999	2,000-2,499
9	8,000 or higher, or no clouds	2,500 or higher, or no clouds

Note: The heights (in feet) given in this code table approximately correspond to those given in 1949 and 1955 WMO Code 43 and 1960 WMO Code 1600 and those given in the ninth decade (i.e., code figures 90-99) of 1949 and 1955 WMO Code 40 or 1960 WMO Code 1577.

Code 9 (Col.45)
(1949 WMO Code 12)
(1960 WMO Code 0515)

C_M - Clouds of the genera Altocumulus, Altostratus and Nimbostratus

Code figure	
0	No Altocumulus, Altostratus or Nimbostratus
1	Altostratus, the greater part of which is semi-transparent; through this part the sun or moon may be weakly visible, as through ground glass
2	Altostratus, the greater part of which is sufficiently dense to hide the sun or moon, or Nimbostratus
3	Altocumulus, the greater part of which is semi-transparent; the various elements of the cloud change only slowly and are all at a single level
4	Patches (often in the form of almonds or fishes) of Altocumulus, the greater part of which is semi-transparent; the clouds occur at one or more levels and the elements are continually changing in appearance
5	Semi-transparent Altocumulus in bands, or Altocumulus in one or more fairly continuous layers (semi-transparent or opaque), progressively invading the sky; these Altocumulus clouds generally thicken as a whole
6	Altocumulus resulting from the spreading out of Cumulus (or Cumulonimbus)
7	Altocumulus in two or more layers, usually opaque in places, and not progressively invading the sky; or opaque layer of Altocumulus, not progressively invading the sky; or Altocumulus together with Altostratus or Nimbostratus
8	Altocumulus with sproutings in the form of small towers or battlements, or Altocumulus having the appearance of cumuliform tufts
9	Altocumulus of a chaotic sky, generally at several levels
X	Altocumulus, Altostratus and Nimbostratus invisible owing to darkness, fog, blowing dust or sand or other similar phenomena, or more often because of the presence of a continuous layer of lower clouds

Code 10 (Col.46)
(1949 WMO Code 13)
(1960 WMO Code 0509)

C_H - Clouds of the genera Cirrus, Cirrocumulus and Cirrostratus

Code figure	Non technical specifications
0	No Cirrus, Cirrocumulus or Cirrostratus
1	Cirrus in the form of filaments, strands or hooks, not progressively invading the sky
2	Dense Cirrus, in patches or entangled sheaves, which usually do not increase and sometimes seem to be the remains of the upper part of a Cumulonimbus; or Cirrus with sproutings in the form of small turrets or battlements, or Cirrus having the appearance of cumuliform tufts
3	Dense Cirrus, often in the form of an anvil, being the remains of the upper parts of Cumulonimbus
4	Cirrus in the form of hooks or of filaments, or both, progressively invading the sky; they generally become denser as a whole
5	Cirrus (often in bands converging towards one point or two opposite points of the horizon) and Cirrostratus, or Cirrostratus alone; in either case, they are progressively invading the sky, and generally growing denser as a whole, but the continuous veil does not reach 45 degrees above the horizon
6	Cirrus (often in bands converging towards one point or two opposite points of the horizon) and Cirrostratus, or Cirrostratus alone; in either case, they are progressively invading the sky, and generally growing denser as a whole; the continuous veil extends more than 45 degrees above the horizon, without the sky being totally covered
7	Veil of Cirrostratus covering the celestial dome
8	Cirrostratus not progressively invading the sky and not completely covering the celestial dome
9	Cirrocumulus alone, or Cirrocumulus accompanied by Cirrus or Cirrostratus, or both, but Cirrocumulus is predominant
X	Cirrus, Cirrocumulus and Cirrostratus invisible owing to darkness, fog, blowing dust or sand or other similar phenomena, or more often because of the presence of a continuous layer of lower clouds

Code 11 (Col. 47)
(1949 WMO Code 20)
(1960 WMO Code 0700)

D_s Ships Course (true)

Direction toward which ship is moving

Code Figure	Direction	Code Figure	Direction
0	Ship hove to	5	SW
1	NE	6	W
2	E	7	NW
3	SE	8	N
4	S	9	All directions or unknown

Code 12 (Col. 48)
(1949 WMO Code 88)
(1960 WMO Code 4451)

V_s Ship's speed (In Nautical Miles per hour)

Code Figure	Speed	Code Figure	Speed
0	0	5	13-15
1	1-3	6	16-18
2	4-6	7	19-21
3	7-9	8	22-24
4	10-12	9	over 24

Code 13 (Col. 49)
(1955 WMO Code 02)
(1960 WMO Code 0200)

a - Characteristic of pressure tendency during the three hours preceding the time of observation

Code figure		
0	Increasing, then decreasing; atmospheric pressure the same or higher than 3 hours ago	
1	Increasing, then steady; or increasing, then increasing more slowly;	atmospheric pressure now higher than 3 hours ago
2	Increasing (steadily or unsteadily);	
3	Decreasing or steady, then increasing; or increasing, then increasing more rapidly;	
4	Steady; atmospheric pressure the same as 3 hours ago	
5	Decreasing, then increasing; atmospheric pressure the same or lower than 3 hours ago	
6	Decreasing, then steady; or decreasing then decreasing more slowly;	atmospheric pressure now lower than 3 hours ago
7	Decreasing (steadily or unsteadily);	
8	Steady or increasing, then decreasing; or decreasing, then decreasing more rapidly;	

Code 14 (Col. 54)
(1955 WMO Code 10)
1960 WMO Code 0500

C - Genus of cloud

Code figure		
0	Cirrus	Ci
1	Cirrocumulus	Cc
2	Cirrostratus	Cs
3	Altocumulus	Ac
4	Altostratus	As
5	Nimbostratus	Ns
6	Stratocumulus	Sc
7	Stratus	St
8	Cumulus	Cu
9	Cumulonimbus	Cb
X	Cloud not visible owing to darkness, fog, dust-storm, sandstorm, or other analogous phenomena	

Code 15 (Cols. 55-56 1955-6/63)
1955 WMO Code 40
1960 WMO Code 1577

$HH - H_iH_i - hh - h_Bh_B - h_fh_f - h_ih_i - h_sh_s - h_th_t - h_xh_x$

Code figure	Metres	Feet (approx.)	Code figure	Metres	Feet (approx.)
00	<30	< 100			
01	30	100	34	1,020	3,400
02	60	200	35	1,050	3,500
03	90	300	36	1,080	3,600
04	120	400	37	1,110	3,700
05	150	500	38	1,140	3,800
06	180	600	39	1,170	3,900
07	210	700	40	1,200	4,000
08	240	800	41	1,230	4,100
09	270	900	42	1,260	4,200
10	300	1,000	43	1,290	4,300
11	330	1,100	44	1,320	4,400
12	360	1,200	45	1,350	4,500
13	390	1,300	46	1,380	4,600
14	420	1,400	47	1,410	4,700
15	450	1,500	48	1,440	4,800
16	480	1,600	49	1,470	4,900
17	510	1,700	50	1,500	5,000
18	540	1,800	51	Not used	
19	570	1,900	52		
20	600	2,000	53		
21	630	2,100	54		
22	660	2,200	55		
23	690	2,300	56	1,800	6,000
24	720	2,400	57	2,100	7,000
25	750	2,500	58	2,400	8,000
26	780	2,600	59	2,700	9,000
27	810	2,700	60	3,000	10,000
28	840	2,800	61	3,300	11,000
29	870	2,900	62	3,600	12,000
30	900	3,000	63	3,900	13,000
31	930	3,100	64	4,200	14,000
32	960	3,200	65	4,500	15,000
33	990	3,300	66	4,800	16,000

Code 15, continued

Code figure	Metres	Feet (approx.)	Code figure	Metres	Feet (approx.)
67	5,100	17,000	84	15,000	50,000
68	5,400	18,000	85	16,500	55,000
69	5,700	19,000	86	18,000	60,000
70	6,000	20,000	87	19,500	65,000
71	6,300	21,000	88	21,000	70,000
72	6,600	22,000	89	> 21,000	> 70,000
73	6,900	23,000	90	Less than 50 m	
74	7,200	24,000	91	50 to 100 m	
75	7,500	25,000	92	100 to 200 m	
76	7,800	26,000	93	200 to 300 m	
77	8,100	27,000	94	300 to 600 m	
78	8,400	28,000	95	600 to 1,000 m	
79	8,700	29,000	96	1,000 to 1,500 m	
80	9,000	30,000	97	1,500 to 2,000 m	
81	10,500	35,000	98	2,000 to 2,500 m	
82	12,000	40,000	99	2,500 m or more, or no clouds	
83	13,500	45,000			

Code 16 (Cols. 70-71)
(1949 WMO Code 23B)
(1960 WMO Code 0885)

d_wd_w - Direction from which waves come, in tens of degrees

Code Figure		Code Figure	
00	Calm (no waves)	19	185° - 194°
01	5° - 14°	20	195° - 204°
02	15° - 24°	21	205° - 214°
03	25° - 34°	22	215° - 224°
04	35° - 44°	23	225° - 234°
05	45° - 54°	24	235° - 244°
06	55° - 64°	25	245° - 254°
07	65° - 74°	26	255° - 264°
08	75° - 84°	27	265° - 274°
09	85° - 94°	28	275° - 284°
10	95° - 104°	29	285° - 294°
11	105° - 114°	30	295° - 304°
12	115° - 124°	31	305° - 314°
13	125° - 134°	32	315° - 324°
14	135° - 144°	33	325° - 334°
15	145° - 154°	34	335° - 344°
16	155° - 164°	35	345° - 354°
17	165° - 174°	36	355° - 4°
18	175° - 184°	49	Waves confused, direction indeterminate (waves equal to or less than 4 3/4 metres)
		99	Waves confused, direction indeterminate (waves greater than 4 3/4 metres)

Code 17 (Col. 72)
(1949 WMO Code 69)
(1960 WMO Code 3155)

P_w - Period of the Waves

Code Figure	
2	5 seconds or less
3	5 - 7 "
4	7 - 9 "
5	9 - 11 "
6	11 - 13 "
7	13 - 15 "
8	15 - 17 "
9	17 - 19 "
0	19 - 21 "
1	Over 21 "
x	Calm or period not determined

NOTES: The period is measured to the nearest second. If the exact number of seconds for the period of the waves corresponds to two code figures, the lower code figure should be reported.

Code 18 (Col. 73)
(1949 WMO Code 42)
(1960 WMO Code 1555)

H_w - Mean Maximum Height of the Waves

Code Figure *) / **)		If 50 is added to d_wd_w	
0	Less than 1/4 m (1 ft)	0	5 m (16 ft)
1	1/2 m (1 1/2 ft)	1	5 1/2 m (17 1/2 ft)
2	1 m (3 ft)	2	6 m (19 ft)
3	1 1/2 m (5 ft)	3	6 1/2 m (21 ft)
4	2 m (6 1/2 ft)	4	7 m (22 1/2 ft)
5	2 1/2 m (8 ft)	5	7 1/2 m (24 ft)
6	3 m (9 1/2 ft)	6	8 m (25 1/2 ft)
7	3 1/2 m (11 ft)	7	8 1/2 m (27 ft)
8	4 m (13 ft)	8	9 m (29 ft)
9	4 1/2 m (14 ft)	9	9 1/2 m (30 1/2 ft)
x	Height not determined		

*) Each code figure provides for reporting a range of heights. For example: 1 = 1/4 m (1 ft) to 3/4 m (2 1/2 ft); 5 = 2 1/4 m (7 ft) to 2 3/4 m (9 ft); 9 = 4 1/4 m (13 1/2 ft) to 4 3/4 m (15 ft), etc.

**) If a wave height comes exactly midway between the heights corresponding to two code figures, the lower code figure should be reported.

Code 19 (Col. 74)

WMO 1949 & 1955 CODE 19

WMO 1960 CODE 0663

c_2 - Description of Kind of Ice

Code Figure	Kind of Ice
0	No ice.
1	New ice.
2	Fast ice.
3	Drift ice.
4	Packed (compact) slush or strips of hummocked ice
5	Open lead near shore.
6	Heavy fast ice.
7	Heavy drift ice.
8	Hummocked ice.
9	Ice jamming.

Notes:
(1) Code figure 0 is used to report ice blink which requires that a direction be reported also.
(2) The term "jamming" means that the ice is being squeezed or crowded together into a compact mass.

Code 20 (Col. 75)

WMO 1949 & 1955 CODE 53

WMO 1960 CODE 2100

K - Effect of the Ice on Navigation

Code Figure	Navigation Conditions
0	Navigation unobstructed.
1	Navigation unobstructed for steamers difficult for sailing ships.
2	Navigation difficult for low-powered steamers, closed to sailing ships.
3	Navigation possible only for powerful steamers.
4	Navigation possible only for steamers constructed to withstand ice pressure.
5	Navigation possible with the assistance of icebreakers.
6	Channel open in solid ice.
7	Navigation temporarily closed.
8	Navigation closed.
9	Navigation conditions unknown (e.g., owing to bad weather).

Code 21 (Col. 76)

WMO 1949 &1955 CODE 20 A

1960 WMO Code 0739

D_1 - Bearing of Ice Edge

Code Figure	Bearing
0	No ice edge can be stated.
1	Ice edge toward NE.
2	Ice edge toward E.
3	Ice edge toward SE.
4	Ice edge toward S.
5	Ice edge toward SW.
6	Ice edge toward W.
7	Ice edge toward NW.
8	Ice edge toward N.
9	Ice edge in several directions.

Note: If more than one ice edge can be stated, the nearest or most important should be reported.

Code 22 (Col. 77)

WMO 1949 & 1955 CODE 73

1960 WMO Code 3600

r - Distance to Ice Edge From Reporting Ship

Code Figure	Distance
0	Up to 1 mile.
1	1- 2 miles.
2	2- 4 miles.
3	4- 6 miles.
4	6- 8 miles.
5	8-12 miles.
6	12-16 miles.
7	16-20 miles.
8	More than 20 miles.
9	Unspecified, or no observation.

Note: The exact bounding distance is to be assigned to the lower code figure in each case; e.g., a distance of 8 miles is coded as 4.

Code 23

WMO 1949 & 1955 CODE 27

1960 WMO Code 1000

e - Orientation of Ice Edge

Code Figure	Orientation
0	Orientation of ice edge impossible to estimate - ship outside the ice.
1	Ice edge lying in a direction NE to SW with ice situated to the NW.
2	Ice edge lying in a direction E to W with ice situated to the N.
3	Ice edge lying in a direction SE to NW with ice situated to the NE.
4	Ice edge lying in a direction S to N with ice situated to the E.
5	Ice edge lying in a direction SW to NE with ice situated to the SE.
6	Ice edge lying in a direction W to E with ice situated to the S.
7	Ice edge lying in a direction NW to SE with ice situated to the SW.
8	Ice edge lying in a direction N to S with ice situated to the W.
9	Orientation of ice edge impossible to estimate - ship inside the ice.

Code 24 (Col. 27)

WMO 1949 &1955 CODE 30

WMO 1960 CODE 1100

F - Force of Surface Wind

BEAUFORT SCALE OF WIND

Beaufort Number	Descriptive Term	Velocity equivalent at a standard height of 10 meters above open flat ground: Mean Velocity in Knots	Meters/Sec.	km/h	m.p.h.
0	Calm	<1	0-0.2	<1	<1
1	Light Air	1-3	0.3-1.5	1-5	1-3
2	Light Breeze	4-6	1.6-3.3	6-11	4-7
3	Gentle Breeze	7-10	3.4-5.4	12-19	8-12
4	Moderate Breeze	11-16	5.5-7.9	20-28	13-18
5	Fresh Breeze	17-21	8.0-10.7	29-38	19-24
6	Strong Breeze	22-27	10.8-13.8	39-49	25-31
7	Near Gale	28-33	13.9-17.1	50-61	32-38
8	Gale	34-40	17.2-20.7	62-74	39-46
9	Strong Gale	41-47	20.8-24.4	75-88	47-54
10	Storm	48-55	24.5-28.4	89-102	55-63
11	Violent Storm	56-63	28.5-32.6	103-117	64-72
12	Hurricane	64-	32.7-	118-	73-

Code 25 (Cols. 28-29)

(1949 WMO Code 84) (1949-1954)

Visibility

Code	Metric system	Statute miles	Nautical Miles (Approx.)
00	Less than 200 m.	Less than 1/8 mi.	< 1/8
01	200 m.	1/8 and 3/16 mi.	1/8 - 3/16
02	400 m.	1/4 mi.	1/4
03	600 m.	3/8 mi.	3/8
04	800 m.	1/2 mi.	1/2
05	1000 m.	5/8 mi.	5/8
06	1200 m.	3/4 mi.	3/4
07	1400 m.		
08	1600 m.	1 mi.	
09	1800 m.		1
10	2000 m.	1 1/4 mi.	
11	2200 m.		1 1/4
12	2400 m.	1 1/2 mi.	
13	2600 m.		1 1/2
14	2800 m.	1 3/4 mi.	
15	3000 m.		
16	3200 m.	2 mi.	1 3/4
17	3400 m.		
18	3600 m.	2 1/4 mi.	2
19	3800 m.		
20	4000 m.	2 1/2 mi.	2 1/4
21-23	4200 to 4600 m.		(23) 2 1/2
24	4800 m.	3 mi.	
25-31	5000 to 6200 m.		(27) 3
32	6400 m.	4 mi.	
33-39	6600 to 7800 m.		(37) 4
40	8000 m.	5 mi.	
41-47	8200 to 9400 m.		(46) 5
48	9600 m.	6 mi.	
49	9800 m.		
50-55	10000 to 11000 m.		(55) 6
56	11200 m.	7 mi.	
57-63	11400 to 12600 m.		
64	12800 m.	8 mi.	7
65-71	13000 to 14200 m.		
72	14400 m.	9 mi.	
73-79	14600 to 15800 m.		(74) 8
80	16000 m.	10, 11, and 12 mi.	9 - 10 Incl.

Code 25, continued

Visibility (cont.)

Code	Metric system	Statute miles	Nautical Miles (Approx.)
81	20 km.	13,14,15, and 20mi.	11- 20 Incl.
82	40 km.	25,30 and 35 mi.	25- 30 "
83	60 km.	40 and 45 mi.	35- 40 "
84	80 km.	50,55, and 60 mi.	45- 50 "
85	100 km.	65 to 90 mi. incl.	55- 80 "
86	150 km.	95 to 120 mi. incl.	85-105 "
87	200 km.	125 to 185 mi. incl.	110-160 "
88	300 km.	190 to 310 mi. incl.	165-265 "
89	500 km. or more	315 mi. or more	270 or more
90	Less than 50 m.	< 1/32	< 50 yards
91	50 but not 200 m.	1/32	50 yards
92	200 but not 500 m.	1/8	200 yards
93	500 but not 1000 m.	5/16	1/4
94	1 but not 2 km.	5/8	1/2
95	2 but not 4 km.	1 1/4	1
96	4 but not 10 km.	2 1/2	2
97	10 but not 20 km.	6 1/4	5
98	20 but not 50 km.	12 1/2	10
99	50 km. or more	≥ 31 1/4	≥ 25

If the distance of visibility is between two of the distances given in the table, the code figure for the lower distance will be reported, e. g. if the distance is 7/16 mile code figure 03 is used in the 0-89 code or 93 in the 90-99 code.

Code 25A

Conversion Table of Visibility for Nautical Miles from the 00-89 code to 90-99 decade

1949 00-89 Code	1949 & 1955 Decade 90-99	1955 & 1960 00-89 Code	Code 90-99 Nautical Mile Values
X0-X2	90	00	< 50 yards or meters
X3-X9, 00	91	01	50 yards or meters
01	92	02-04	200 yards or meters
02-03	93	05-08	1/4 or 500 meters
04-08	94	09-17	1/2
09-17	95	18-36	1.0
18-45	96	37-58	2.0
46-80	97	59-68	5.0
81	98	69-82	10.0
82-89	99	83-89	≥25.0

When distances are between two of the distances assigned to the above codes the code figure for the smaller distance are reported and punched.

Code 26 (OSV. Cols 30-31) COPENHAGEN 1929 Code 1946-1948

ww - Present Weather

00-19. Abbreviated Description of Sky and Special Phenomena

00 Cloudless.
01 Partly cloudy.
02 Cloudy
03 Overcast.
04 Low fog, whether on ground or over sea.
05 Haze (visibility 1,000m., 1,100 yards or more).
06 Dust devils seen.
07 Distant lightning.
08 Light fog (visibility between 1,000 m. and 2,000 m., 1,100 yards and 2,200 yards)
09 Fog at a distance, but not at station (or ship).
10 Precipitation within sight.
11 Thunder, without precipitation at station (or ship).
12 Duststorm within sight, but not at station (or ship).
13 Ugly, threatening sky.
14 Squally weather.
15 Heavy squalls } in last 3 hours.
16 Waterspouts seen }
17 Visibility reduced by smoke (industrial, grass or forest fires), or volcanic ashes.
18 Duststorm (visibility greater than 1,000 m., 1,100 yards).
19 Signs of tropical storm (hurricane).

20-29. Precipitation in last hour but not at time of observation

20 Precipitation (rain, drizzle, hail, snow or sleet).
21 Drizzle } other than showers
22 Rain }
23 Snow }
24 Rain and snow, mixed }
25 Rain shower(s). } In last hour but not at time of observation.
26 Snow shower(s).
27 Hail, or rain and hail shower(s)
28 Slight thunderstorm.
29 Heavy thunderstorm.

30-39 Duststorms and storms of drifting snow (visibility less than 1,000 meters, 1,100 yards)

30 Dust or sand storm
31 Dust or sand storm has decreased.
32 Dust or sand storm, no appreciable change.
33 Dust or sand storm has increased.
34 Line of duststorms.
35 Storm of drifting snow.
36 Slight storm of drifting snow } generally low
37 Heavy storm of drifting snow }
38 Slight storm of drifting snow } generally high.
39 Heavy storm of drifting snow }

40-49 Fog (visibility less than 1,000 meters, 1,100 yards)

40 Fog.
41 Moderate fog in last hour } but not at time of obser-
42 Thick fog in last hour } vation.
43 Fog, sky discernible } has become thinner during last
44 Fog, sky not discernible } hour.
45 Fog, sky discernible } no appreciable change during
46 Fog, sky not discernible } last hour.
47 Fog, sky discernible } has begun or become thicker
48 Fog, sky not discernible } during last hour.
49 Fog in patches.

50-59 Drizzle (precipitation consisting of numerous minute drops)

50 Drizzle.
51 Intermittent } slight drizzle.
52 Continuous }
53 Intermittent } moderate drizzle.
54 Continuous }
55 Intermittent } thick drizzle
56 Continuous }
57 Drizzle and fog
58 Slight or moderate } drizzle and rain
59 Thick }

Code 26, continued

60-69. Rain

60 Rain.
61 Intermittent } slight rain.
62 Continuous }
63 Intermittent } moderate rain.
64 Continuous }
65 Intermittent } heavy rain.
66 Continuous }
67 Rain and fog.
68 Slight or moderate } rain and snow, mixed
69 Heavy }

70-79. Snow

70 Snow (or snow and rain, mixed).
71 Intermittent } slight snow in flakes.
72 Continuous }
73 Intermittent } moderate snow in flakes.
74 Continuous }
75 Intermittent } heavy snow in flakes.
76 Continuous }
77 Snow and fog.
78 Grains of snow (frozen drizzle).
79 Ice crystals; or frozen raindrops (sleet - U.S. definition).

80-89. Shower(s)

80 Shower(s).
81 Shower(s) of slight or moderate } rain.
82 Shower(s) of heavy }
83 Shower(s) of slight or moderate } snow.
84 Shower(s) of heavy }
85 Shower(s) of slight or moderate } rain and snow.
86 Shower(s) of heavy }
87 Shower(s) of snow pellets
88 Shower(s) of slight or moderate } hail, or rain and hail.
89 Shower(s) of heavy }

90-99. Thunderstorm

90 Thunderstorm
91 Rain at time } thunderstorm during last hour,
92 Snow, or snow and rain mixed, at time } but not at time of observation
93 Thunderstorm, slight, without hail, but with rain (or snow)
94 Thunderstorm, slight, with hail
95 Thunderstorm, moderate, without hail, but with rain (or snow)
96 Thunderstorm, moderate, with hail
97 Thunderstorm, heavy, without hail, but with rain (or snow)
98 Thunderstorm combined with duststorm
99 Thunderstorm, heavy, with hail } at time of observation

Note - In coding present weather (ww) the observer used the highest applicable number.

Code 27 (OSV. Col. 43) 1929 COPENGEN CODE 1946-1948

C_L - Form of low cloud

Code Figure	Form of Cloud
0	No lower clouds.
1	Cumulus of fine weather.
2	Cumulus heavy and swelling, without anvil top.
3	Cumulonimbus.
4	Stratocumulus formed by the flattening of cumulus clouds.
5	Layer of stratus or stratocumulus.
6	Low broken up clouds of bad weather.
7	Cumulus of fine weather and stratocumulus.
8	Heavy or swelling cumulus, or cumulonimbus, and stratocumulus
9	Heavy or swelling cumulus (or cumulonimbus) and low ragged clouds of bad weather.

Code 28 (Col. 49 OSV 46-48) (1949 WMO Code 02)

$h_s h_s$

a - Characteristic of barometric tendency during the period of three hours preceding the time of observation

Code figure		
0	Rising, then falling	Barometer now higher than, or the same as 3 hours ago
1	Rising, then steady; or rising then rising more slowly	
2	Unsteady	
3	Steady or rising	
4	Falling or steady, then rising; or rising then rising more quickly	
5	Falling, then rising	Barometer now lower than 3 hours ago
6	Falling, then steady; or falling then falling more slowly	
7	Unsteady	
8	Falling	
9	Steady or rising then falling; or falling then falling more quickly	

Code 29 (Col. 54 1945-54) 1949 WMO Code 10

C - Genus (type) of significant cloud

Code figure		
1	Cirrus	Ci
2	Cirrostratus	Cs
3	Cirrocumulus	Cc
4	Altocumulus	Ac
5	Altostratus	As
6	Stratocumulus	Sc
7	Nimbostratus	Ns
8	Cumulus or Fracto-cumulus	Cu or Fc
9	Cumulonimbus	Cb
0	Stratus or Fracto-stratus	St or Fs
X	Cloud non visible owing to darkness, fog, sandstorm, or other analogous phenomena	

Code 30 (Cols. 55-56 1945-54) 1949 WMO Code 40

Code figure	Metres	Feet (approx.)	Code figure	Metres	Feet (approx.)	Code figure	Metres	Feet (approx.)
50	1,500	5,000	67	2,010	6,700	84	4,000	13,000
51	1,530	5,100	68	2,040	6,800	85	5,000	16,000
52	1,560	5,200	69	2,070	6,900	86	6,000	20,000
53	1,590	5,300	70	2,100	7,000	87	7,000	23,000
54	1,620	5,400	71	2,130	7,100	88	8,000	26,000
55	1,650	5,500	72	2,160	7,200	89	9,000 or higher	30,000 or higher
56	1,680	5,600	73	2,190	7,300			
57	1,710	5,700	74	2,220	7,400	90	less than 50 m	
58	1,740	5,800	75	2,250	7,500	91	50 to	100 m
59	1,770	5,900	76	2,280	7,600	92	100 to	200 m
60	1,800	6,000	77	2,310	7,700	93	200 to	300 m
61	1,830	6,100	78	2,340	7,800	94	300 to	600 m
62	1,860	6,200	79	2,370	7,900	95	600 to	1,000 m
63	1,890	6,300	80	2,400	8,000	96	1,000 to	1,500 m
64	1,920	6,400	81	2,700	9,000	97	1,500 to	2,000 m
65	1,950	6,500	82	--	--	98	2,000 to	2,500 m
66	1,980	6,600	83	3,000	10,000	99	2,500 m or more, or no clouds	

Notes: In the decade 90-99, a height exactly equal to one of the heights in the table will be reported by the higher code figure, e.g., a height of 600 m will be reported by code figure 95.

Code 31 (Cols. 28-29 1929 COPENHAGEN CODE OSV 1945-48 with 9 prefix)

V - Visibility

Code figure	
0	Under 50 metres (under 50 yards)
1	50- 200 metres (50-200 yards)
2	200- 500 metres (200- 500 yards)
3	500- 1,000 metres (500-1,000 yards)
4	1,000- 2,000 metres (1,000 yards - 1 nautical mile)
5	2,000- 4,000 metres (1 - 2 nautical miles)
6	4,000-10,000 metres (2- 5 nautical miles)
7	10,000-20,000 metres (5-10 nautical miles)
8	20,000-50,000 metres (10-30 nautical miles)
9	50,000 metres or over (30 nautical miles or over)

SUPPLEMENTARY NOTES

A. Missing elements.

1. Beginning 1 Jan 51 when Forms 1210F went into effect, the following elements were omitted:

   (a) Total cloud amounts in tenths column 21.
   (b) Wind Beaufort Force column 27.
   (c) Heights of low clouds in hundreds of feet columns 39-40.
   (d) Amount of low clouds in tenths column 41.
   (e) Amount of significant clouds in tenths column 52.
   (f) The amount, type, and heights of significant clouds.

   Columns 52-56 (except OSV and Navy ships were punched when data were available; these cards have a 4 or 5 in column 79).

2. Beginning Mar 60 Great Lakes ships observations were punched for all hours reported on WB Forms 615-4. Columns 21, 27, 39-69, 74-78, 80 were not punched. Columns 70-73 were not punched when the waves were less than 3 feet. Columns 36 will always be "0". Pressure is reported in whole millibars. These cards have a "9" punch in column 79.

B. Code Changes

1. The Ocean Vessel Stations were included for the entire period of this deck; however, the period 1945-1948 were recorded in the 1929 Copenhagen Code. Most of the elements were converted to the 1949 code except the following which remain in the 1929 Code:

   (a) Visibility of the 90-99 Code (Code 98 = 10-30 Nautical Miles, Code 99 = $\geq$ 30 Nautical Miles.
   (b) Present Weather.
   (c) Low Cloud Type (the middle and high cloud types were not converted but are the same description as the 1949 Code.)
   (d) The Pressure Tendency Amount of change.
   (e) Wave Data were not punched into these cards for 1945-1948.

2. (a) For the period 1949-1954 the (N_h) amount of lower clouds and (h) height of lower clouds, (low (C_L) or middle (C_M) when there are no low clouds present) are for the predominating lowest layer below 8200 feet. (This did not include fragments.)

   (b) For the period 1955-1961 the above data (a) was the amount (N_h) and height (h) for the lowest cloud (i.e., the smallest visible fragment) was reported and punched.

3. Code changes effective Jan 55

   (a) Visibility code.
   (b) Pressure tendency.
   (c) Type and height of significant cloud.

4. The wave data were reported as a single group from Jan 49 to approximately Jan 59. This wave group was the sea and swell combined. Beginning with the distribution of WB Form 615-5 approximately Jan 59, Merchant Ships may have reported more than one wave group. These were not identified as sea or swell or several wave groups of sea and swell combined. The punching practices since only one group could be punched are in the following priority:

   (a) The group with the highest height (H_w).
   (b) When two groups had the same height (H_w), the group with the lowest period (P_w) was punched.
   (c) When two groups had the same height (H_w) and period (P_w), the group with the wave direction ($d_w d_w$) closest to the wind direction (dd) was punched.

C. 1. The vast majority of temperatures are in degrees Fahrenheit (°F); however, there are a few in degrees Centigrade (°C).

2. Most dew point temperatures were computed with a depression (dry bulb - wet bulb) to the nearest five tenths (0.5) or whole °F.

D. 1. An X punch in column 1, with columns 2-4 and 79 blank indicates that data were punched for the Northern Hemisphere Project, from Teletype data. These are generally from Foreign OSV and other ships. These cards have generally been eliminated from this deck.