

Recommendation 9 (JCOMM-III)**MODIFICATIONS TO THE INTERNATIONAL MARITIME METEOROLOGICAL TAPE FORMAT AND MINIMUM QUALITY CONTROL STANDARD**

THE JOINT WMO/IOC TECHNICAL COMMISSION FOR OCEANOGRAPHY AND MARINE METEOROLOGY,

Noting:

- (1) The *Manual on Marine Meteorological Services* (WMO-No. 558), Volume I, Appendix I.13 – Layout for the International Maritime Meteorological Tape, and Appendix I.15 – Minimum Quality Control Standards,
- (2) The final report of the second session of the JCOMM Expert Team on Marine Climatology (JCOMM/MR-No. 50),

Considering:

- (1) That the International Maritime Meteorological Tape (IMMT) format is the primary format for the exchange of marine climatological data, for both the Marine Climatological Summaries Scheme (MCSS) and the VOSCLim,
- (2) The importance of the Minimum Quality Control Standard (MQCS) to the quality of the data in the MCSS archives,
- (3) The importance to the Global Collecting Centres of keeping both the IMMT and the MQCS up to date,

Recognizing the need for including information on the source of observations (electronic or paper logbook) in IMMT; as well as the need for taking account in MQCS of increased deck cargo height of modern cargo vessels,

Recommends:

- (1) That the amendments to the *Manual on Marine Meteorological Services* (WMO-No. 558) and the *Guide to Marine Meteorological Services* (WMO-No. 471), as detailed in Annexes 1 and 2 to this recommendation be approved, and included in the appropriate appendices in the Manual and Guide;
- (2) That the new version (IMMT-IV) of the IMMT format be implemented generally for all data collected as from 1 January 2011;
- (3) That the new version of the Minimum Quality Control Standard (MQCS-VI) be also implemented generally for all data collected as from 1 January 2011;

Requests the Expert Team on Marine Climatology to continue to review the implementation and value of the revised format and quality control standard, to provide technical assistance to the Members/Member States concerned as required and to propose further amendments to the format and standard as necessary;

Requests the Secretary-General of WMO to provide appropriate technical advisory assistance to Members/Member States concerned, as required, in the implementation of the revised format and standard.

Annex 1 to Recommendation 9 (JCOMM-III)

AMENDMENTS TO THE *MANUAL ON MARINE METEOROLOGICAL SERVICES* (WMO-No. 558) AND *GUIDE TO MARINE METEOROLOGICAL SERVICES* (WMO-No. 471)

LAYOUT FOR THE INTERNATIONAL MARITIME METEOROLOGICAL TAPE (IMMT) FORMAT IMMT-IV (Version 4)

Notes:

- (a) **Highlighting** marks noteworthy changes (including additional clarification Notes in [brackets]) with respect to IMMT-III.
- (b) The representation for missing data in any field is all blank(s).
- (c) Many of the "Codes" in the IMMT format match "symbolic letters" as defined in the *Manual on Codes* (WMO-No.306) for the traditional alphanumeric (FM 13-XII Ext.) SHIP code. However, the elements added for the VOSClm (as introduced for IMMT-II), for example, did not appear in WMO-No.306, thus an effort was made to select unique new Codes to avoid conflicts in meaning between symbolic letter groups in WMO-No.306 versus Codes defined only in IMMT.

Element number	Character number	Code	Element	Coding procedure
1	1	ir	Format/temperature indicator	3 – temperatures in tenths of °C 4 – temperatures in halves of °C 5 – temperatures in whole °C [Note: codes 1–2 were previously used to refer to the obsolete IMMPC format; current codes all refer to the IMMT format]
2	2–5	AAAA	Year UTC	Four digits
3	6–7	MM	Month UTC	01–12 January to December
4	8–9	YY	Day UTC	01–31
5	10–11	GG	Time of observation	Nearest whole hour UTC, WMO specifications
6	12	Qc	Quadrant of the globe	WMO code table 3333
7	13–15	L _a L _a L _a	Latitude	Tenths of degrees, WMO specifications
8	16–19	L _o L _o L _o L _o	Longitude	Tenths of degrees
9	20		Cloud height (h) and visibility (VV) measuring indicator	0 – h and VV estimated 1 – h measured, VV estimated 2 – h and VV measured 3 – h estimated, VV measured
10	21	h	Height of clouds	WMO code table 1600
11	22–23	VV	Visibility	WMO code table 4377
12	24	N	Cloud amount	Oktas, WMO code table 2700; show 9 where applicable
13	25–26	dd	True wind direction	Tens of degrees, WMO code table 0877; show 00 or 99 where applicable
14	27	i _w	Indicator for wind speed	WMO code table 1855
15	28–29	ff	Wind speed	Tens and units of knots or meters per second, hundreds omitted; values in excess of 99 knots are to be indicated in units of meters per second and i _w encoded accordingly; the method of estimation or measurement and the units used (knots or meters per second) are indicated in element 14

<i>Element number</i>	<i>Character number</i>	<i>Code</i>	<i>Element</i>	<i>Coding procedure</i>						
16	30	s _n	Sign of temperature	WMO code table 3845						
17	31–33	TTT	Air temperature	Tenths of degrees Celsius						
18	34	s _t	Sign of dew-point temperature	0 – positive or zero measured dew-point temperature 1 – negative measured dew-point temperature 2 – iced measured dew-point temperature 5 – positive or zero computed dew-point temperature 6 – negative computed dew-point temperature 7 – iced computed dew-point temperature						
19	35–37	T _d T _d T _d	Dew-point temperature	Tenths of degrees Celsius						
20	38–41	PPPP	Air pressure	Tenths of hectopascals						
21	42–43	ww	Present weather	WMO code table 4677 or 4680						
22	44	W ₁	Past weather	WMO code table 4561 or 4531						
23	45	W ₂	Past weather	WMO code table 4561 or 4531						
24	46	N _h	Amount of lowest clouds	As reported for C _L or, if no C _L cloud is present, for C _M , in oktas; WMO code table 2700						
25	47	C _L	Genus of CL clouds	WMO code table 0513						
26	48	C _M	Genus of CM clouds	WMO code table 0515						
27	49	C _H	Genus of CH clouds	WMO code table 0509						
28	50	s _n	Sign of sea-surface temperature	WMO code table 3845						
29	51–53	T _w T _w T _w	Sea surface temperature	Tenth of degrees Celsius						
30	54		Indicator for sea-surface temperature measurement	0 – Bucket thermometer 1 – Condenser inlet 2 – Trailing thermistor 3 – Hull contact sensor 4 – “Through hull” sensor 5 – Radiation thermometer 6 – Bait tanks thermometer 7 – Others						
31	55		Indicator for wave measurement	<table border="1"> <tbody> <tr> <td>Shipborne wave recorder</td> <td>0 – Wind sea and swell estimated 1 – Wind sea and swell measured 2 – Mixed wave measured, swell estimated 3 – Other combinations measured and estimated</td> </tr> <tr> <td>Buoy</td> <td>4 – Wind sea and swell measured 5 – Mixed wave measured, swell estimated 6 – Other combinations measured and estimated</td> </tr> <tr> <td>Other measurement system</td> <td>7 – Wind sea and swell measured 8 – Mixed wave measured, swell estimated 9 – Other combinations measured and estimated</td> </tr> </tbody> </table>	Shipborne wave recorder	0 – Wind sea and swell estimated 1 – Wind sea and swell measured 2 – Mixed wave measured, swell estimated 3 – Other combinations measured and estimated	Buoy	4 – Wind sea and swell measured 5 – Mixed wave measured, swell estimated 6 – Other combinations measured and estimated	Other measurement system	7 – Wind sea and swell measured 8 – Mixed wave measured, swell estimated 9 – Other combinations measured and estimated
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<i>Element number</i>	<i>Character number</i>	<i>Code</i>	<i>Element</i>	<i>Coding procedure</i>
32	56–57	P _W P _W	Period of wind waves or of measured waves	Whole seconds; show 99 where applicable in accordance with Note (3) under specification of P _W P _W in the <i>Manual on Codes</i> (WMO No. 306).
33	58–59	H _W H _W	Height of wind waves or of measured waves	Half-meter values. Examples: Calm or less than ¼m to be encoded 00; 3½m to be encoded 07; 7m to be encoded 14; 11½m to be encoded 23
34	60–61	d _{W1} d _{W1}	Direction of predominant swell waves	Tens of degrees, WMO code table 0877; encoded 00 or 99 where applicable. Blanks = no observation of waves attempted.
35	62–63	P _{W1} P _{W1}	Period of predominant swell waves	Whole seconds; encoded 99 where applicable (see under element 32)
36	64–65	H _{W1} H _{W1}	Height of predominant swell waves	Half-meter values (see under element 33)
37	66	I _s	Ice accretion on ships	WMO code table 1751
38	67–68	E _s E _s	Thickness of ice accretion	In centimetres
39	69	R _s	Rate of ice accretion	WMO code table 3551
40	70		Source of observation	0 – Unknown 1 – Logbook (paper) 2 – National Telecommunication channels 3 – National Publications 4 – Logbook (electronic) 5 – Global Telecommunication channels (GTS) 6 – International Publications [Note: Formerly (usage now discontinued): codes 1–3 also referred to “National data exchange,” and codes 4–6 also referred to “International data exchange”; distinction added between paper and electronic logbook]
41	71		Observation platform	0 – Unknown 1 – Selected ship 2 – Supplementary ship 3 – Auxiliary ship 4 – Registered VOSCLim ship 5 – Fixed sea station (e.g., rig or platform) 6 – Coastal station [Note: 7 – Reserved] [Note: 8 – Reserved] 9 – Others/data buoy [Note: Formerly (usage now discontinued): code 4 referred to “Automated station/data buoy;” and codes 7–8 referred to “Aircraft” and “Satellite,” respectively]
42	72–78		Ship's call sign	Ship's call sign stored left-justified (with right-blank fill) as follows: 7-character call sign: columns 72–78 6-character call sign: columns 72–77 5-character call sign: columns 72–76 4-character call sign: columns 72–75 3-character call sign: columns 72–74
43	79–80		Country which has recruited the ship	According to the 2-character alphabetical codes assigned by the International Organization for Standardization (ISO)

<i>Element number</i>	<i>Character number</i>	<i>Code</i>	<i>Element</i>	<i>Coding procedure</i>	
44	81		National use		
45	82		Quality control indicator	0 – No quality control (QC) 1 – Manual QC only 2 – Automated QC only /MQC (no time-sequence checks) 3 – Automated QC only (inc. time sequence checks) 4 – Manual and automated QC (superficial; no automated time-sequence checks) 5 – Manual and automated QC (superficial; including time-sequence checks) 6 – Manual and automated QC (intensive, including automated time-sequence checks) [Note: 7 and 8 – Reserved] 9 – National system of QC (information to be furnished to WMO)	
46	83	i _x	Weather data indicator	1 – Manual	
				4 – Automatic	If present and past weather data included Code tables 4677 and 4561 used
				7 – Automatic	If present and past weather data included Code tables 4680 and 4531 used
47	84	i _R	Indicator for inclusion or omission of precipitation data	WMO code table 1819	
48	85–87	RRR	Amount of precipitation which has fallen during the period preceding the time of observation, as indicated by t _R	WMO code table 3590	
49	88	t _R	Duration of period of reference for amount of precipitation, ending at the time of the report	WMO code table 4019	
50	89	s _w	Sign of wet-bulb temperature	0 – positive or zero measured wet-bulb temperature 1 – negative measured wet-bulb temperature 2 – iced measured wet-bulb temperature 5 – positive or zero computed wet-bulb temperature 6 – negative computed wet-bulb temperature 7 – iced computed wet-bulb temperature	
51	90–92	T _b T _b T _b	Wet-bulb temperature	In tenths of degree Celsius, sign given by element 50	
52	93	a	Characteristic of pressure tendency during the three hours preceding the time of observation	WMO code table 0200	
53	94–96	ppp	Amount of pressure tendency at station level during the three hours preceding the time of observation	In tenths of hectopascal	

<i>Element number</i>	<i>Character number</i>	<i>Code</i>	<i>Element</i>	<i>Coding procedure</i>
54	97	D _s	True direction of resultant displacement of the ship during the three hours preceding the time of observation	WMO code table 0700
55	98	v _s	Ship's average speed made good during the three hours preceding the time of observation	WMO code table 4451
56	99–100	d _{w2} d _{w2}	Direction of secondary swell waves	Tens of degrees, WMO code table 0877; encoded 00 or 99 where applicable. Blanks – no observation of waves attempted.
57	101–102	P _{w2} P _{w2}	Period of secondary swell waves	Whole seconds; encoded 99 where applicable (see under element 32)
58	103–104	H _{w2} H _{w2}	Height of secondary swell waves	Half-meter values (see under element 33)
59	105	c _i	Concentration or arrangement of sea ice	WMO code table 0639
60	106	S _i	Stage of development	WMO code table 3739
61	107	b _i	Ice of land origin	WMO code table 0439
62	108	D _i	True bearing of principal ice edge	WMO code table 0739
63	109	z _i	Present ice situation and trend of conditions over the preceding three hours	WMO code table 5239
64	110		FM code version	0 – previous to FM 24-V 1 – FM 24-V 2 – FM 24-VI Ext. 3 – FM 13-VII 4 – FM 13-VIII 5 – FM 13-VIII Ext. 6 – FM 13-IX 7 – FM 13-IX Ext. 8 – FM 13-X 9 – FM 13-XI A – FM 13-XII Ext. [Note: etc. for future configurations]
65	111		IMMT version	0 – IMMT version just prior to version number being included 1 – IMMT-I (in effect from Nov. 1994) 2 – IMMT-II (in effect from Jan. 2003) 3 – IMMT-III (in effect from Jan. 2006) 4 – IMMT-IV (this version) [Note: etc. for future configurations]
66	112	Q ₁	Quality control indicator for (h)	0 – no quality control (QC) has been performed on this element 1 – QC has been performed; element appears to be correct

<i>Element number</i>	<i>Character number</i>	<i>Code</i>	<i>Element</i>	<i>Coding procedure</i>
				2 – QC has been performed; element appears to be inconsistent with other elements
				3 – QC has been performed; element appears to be doubtful
				4 – QC has been performed; element appears to be erroneous
				5 – The value has been changed as a result of QC
				6 – The flag as received by the GCCs was set to "1" (correct), but the element was judged by their MQCS as either inconsistent, dubious, erroneous or missing
				7 – The flag as received by the GCCs was set to "5" (amended) but the element was judged by their MQCS as inconsistent, dubious, erroneous or missing
				[Note: 8 – Reserved]
				9 – The value of the element is missing
67	113	Q ₂	QC indicator for (VV)	- idem -
68	114	Q ₃	QC indicator for (clouds: elements 12, 24–27)	- idem -
69	115	Q ₄	QC indicator for (dd)	- idem -
70	116	Q ₅	QC indicator for (ff)	- idem -
71	117	Q ₆	QC indicator for (TTT)	- idem -
72	118	Q ₇	QC indicator for (T _d T _d T _d)	- idem -
73	119	Q ₈	QC indicator for (PPPP)	- idem -
74	120	Q ₉	QC indicator for (weather: elements 21–23)	- idem -
75	121	Q ₁₀	QC indicator for (T _w T _w T _w)	- idem -
76	122	Q ₁₁	QC indicator for (P _w P _w)	- idem -
77	123	Q ₁₂	QC indicator for (H _w H _w)	- idem -
78	124	Q ₁₃	QC indicator for (swell: elements 34–36, 56–58)	- idem -
79	125	Q ₁₄	QC indicator for (i _R RRRt _R)	- idem -
80	126	Q ₁₅	QC indicator for (a)	- idem -
81	127	Q ₁₆	QC indicator for (ppp)	- idem -
82	128	Q ₁₇	QC indicator for (D _s)	- idem -
83	129	Q ₁₈	QC indicator for (v _s)	- idem -

Element number	Character number	Code	Element	Coding procedure
84	130	Q ₁₉	QC indicator for (T _b T _b T _b)	- idem -
85	131	Q ₂₀	QC indicator for ships' position	- idem -
86	132	Q ₂₁	Version identification for Minimum quality control standards (MQCS)	1 – MQCS-I (Original version, Feb. 1989): CMM-X 2 – MQCS-II (Version 2, March 1997) CMM-XII 3 – MQCS-III (Version 3, April 2000) SGM-C-VIII 4 – MQCS-IV (Version 4, June 2001): JCOMM-I 5 – MQCS-V (Version 5, July 2004): ETMC-I 6 – MQCS-VI (this version, to be agreed) [Note: etc. for future configurations]
Additional Requirements for VOSCLim:				
87	133–135	HDG	Ship's heading; the direction to which the bow is pointing, referenced to true North	(000–360); e.g. 360 = North 000 = No Movement 090 = East
88	136–138	COG	Ship's ground course; the direction the vessel actually moves over the fixed earth and referenced to True North	(000–360); e.g. 360 = North 000 = No Movement 090 = East
89	139–140	SOG	Ship's ground speed; the speed the vessel actually moves over the fixed earth	(00–99); Round to nearest whole knot
90	141–142	SLL	Maximum height in meters of deck cargo above Summer maximum load line	(00–99); report to nearest whole meter
91	143	sl	Sign of departure of reference level	0 = positive or zero, 1 = negative
92	144–145	hh	Departure of reference level (Summer maximum load line) from actual sea level	(00–99) is the difference to the nearest whole meter between the Summer maximum load line and the sea level. Consider the difference positive when the Summer maximum load line is above the level of the sea and negative if below the water line.
93	146–148	RWD	Relative wind direction in degrees off the bow	Relative wind direction; e.g. 000 = no apparent relative wind speed (calm conditions on deck). Reported direction for relative wind = 001–360 degrees in a clockwise direction off the bow of the ship. When directly on the bow, RWD = 360.
94	149–151	RWS	Relative wind speed indicated by <i>i_w</i> (knots or $m s^{-1}$)	Reported in either whole knots or whole meters per second (e.g. 010 knots or 005 $m s^{-1}$). Units established by <i>i_w</i> (element 14) [Note: RWS is a 3-character field to store values of RWS larger than ff (if <i>i_w</i> indicates knots), e.g. ff=98 knots, RWS=101 knots; see also element 15.]
95	152	Q ₂₂	QC indicator for (HDG)	[Note: coding as for element 66]
96	153	Q ₂₃	QC indicator for (COG)	- idem -

<i>Element number</i>	<i>Character number</i>	<i>Code</i>	<i>Element</i>	<i>Coding procedure</i>
97	154	Q ₂₄	QC indicator for (SOG)	- idem -
98	155	Q ₂₅	QC indicator for (SLL)	- idem -
	156	blank		[Note: Formerly (usage now discontinued): QC indicator for (s _L); now Q ₂₇ serves as the indicator for both s _L and hh]
99	157	Q ₂₇	QC indicator for (s _L and hh)	- idem -
100	158	Q ₂₈	QC indicator for (RWD)	- idem -
101	159	Q ₂₉	QC indicator for (RWS)	- idem -
Fields new for IMMT-IV:				
102	160–163	RH	Relative humidity	Tenths of Percentage
103	164	RHi	Relative humidity indicator	0 – Relative humidity in tenths of Percentage, measured and originally reported 1 – Relative humidity in whole Percentage, measured and originally reported [Note: 2 – Reserved] 3 – Relative humidity in tenths of Percentage, computed 4 – Relative humidity in whole Percentage, computed
104	165	AWSi	AWS indicator	1 – Automated Weather Station (AWS) 2 – Automated Weather Station plus Manual Observation
105	166–172	IMOno	IMO number	Seven digits (or left justified with right-blank fill)