

RECOMMENDATION 7 (CMM-XII)

REVISED MINIMUM QUALITY CONTROL STANDARDS

THE COMMISSION FOR MARINE METEOROLOGY,

NOTING:

- (1) The *Manual on Marine Meteorological Services* (WMO-No. 558), paragraph 5.6.3.1 and Appendix I.15 — Minimum quality control standards,
- (2) The final report of the seventh session of the CMM Subgroup on Marine Climatology (Geneva, April 1996), paragraphs 4.1.1 and 4.1.2 and Annex VIII,

RECOGNIZING that the experience gained by the Global Collecting Centres in the operation of the Marine Climatological Summaries Scheme had enabled them to evaluate and clarify the application of the existing minimum quality control standards,

CONSIDERING that the correct and uniform application by contributing Members of agreed minimum quality control standards is essential to ensuring that high quality marine climatological data are available under the MCSS to support the whole range of applications,

RECOMMENDS:

- (1) That the revised minimum quality control standards given in the annex to this recommendation should be adopted to replace those presently given in Appendix I.15 of the *Manual on Marine Meteorological Services* (WMO-No. 558);
- (2) That these minimum quality control standards should be strictly and universally applied by all Members contributing data under the MCSS.

ANNEX TO RECOMMENDATION 7 (CMM-XII)

MINIMUM QUALITY CONTROL STANDARDS

NOTE: See specification for quality control indicators Q_1 to Q_{20} at the end of this annex. Δ = space (ASCII 32)

<i>Element</i>	<i>Error</i>	<i>Action</i>
1	$i_T \neq 0-5$	Correct manually
2	AAAA valid year	Correct manually otherwise reject
3	MM \neq 01-12	Correct manually otherwise reject
4	YY \neq valid day of month	Correct manually otherwise reject
5	G \neq 00-23	Correct manually otherwise reject
6	Q \neq 1, 3, 5, 7 Q = Δ	Correct manually and $Q_{20} = 5$, otherwise $Q_{20} = 4$ $Q_{20} = 2$
7	$L_a L_a L_a \neq 000-900$ $L_a L_a L_a = \Delta\Delta\Delta$	Correct manually and $Q_{20} = 5$, otherwise $Q_{20} = 4$ $Q_{20} = 2$
8	$L_o L_o L_o L_o \neq 0000-1800$ $L_o L_o L_o L_o = \Delta\Delta\Delta\Delta$	Correct manually and $Q_{20} = 5$, otherwise $Q_{20} = 4$ $Q_{20} = 2$
But	$L_a L_a L_a = L_o L_o L_o L_o = \Delta\Delta\Delta(\Delta)$	Correct manually otherwise reject

<i>Element</i>	<i>Error</i>	<i>Action</i>
Time sequence checks		
	Change in latitude > 0.7°/hr	Correct manually otherwise Q ₂₀ = 3
	Change in longitude > 0.7°/hr when latitude 00-39.9	Correct manually otherwise Q ₂₀ = 3
	Change in longitude > 1.0°/hr when latitude 40-49.9	Correct manually otherwise Q ₂₀ = 3
	Change in longitude > 1.4°/hr when latitude 50-59.9	Correct manually otherwise Q ₂₀ = 3
	Change in longitude > 2.0°/hr when latitude 60-69.9	Correct manually otherwise Q ₂₀ = 3
	Change in longitude > 2.7°/hr when latitude 70-79.9	Correct manually otherwise Q ₂₀ = 3
9		No checking
10	h ≠ 0-9, Δ h = Δ	Correct manually and Q ₁ = 5, otherwise Q ₁ = 4 Q ₁ = 9
11	VV ≠ 90-99, ΔΔ VV = ΔΔ	Correct manually and Q ₂ = 5, otherwise Q ₂ = 4 Q ₂ = 9
12	N ≠ 0-9, Δ, / N < Nh	Correct manually and Q ₃ = 5, otherwise Q ₃ = 4 Correct manually and Q ₃ = 5, otherwise Q ₃ = 2
13	dd ≠ 00-36, 99, ΔΔ dd = ΔΔ, // dd versus ff dd = 00, ff ≠ 00	Correct manually and Q ₄ = 5, otherwise Q ₄ = 4 Q ₄ = 9
	dd ≠ 00, ff = 00	Correct manually and Q ₄ or Q ₅ = 5 otherwise Q ₄ = Q ₅ = 2
14	i _w ≠ 0, 1, 3, 4	Correct manually, otherwise Q ₅ = 4
15	ff > 80 knots ff = ΔΔ, //	Correct manually and Q ₅ = 5, otherwise Q ₅ = 3 Q ₅ = 9
16	S _n ≠ 0, 1	Correct manually, otherwise Q ₆ = 4
17	TTT = ΔΔΔ, /// If -25 > TTT > 40 then when latitude < 45.0 TTT < -25 TTT > 40 when latitude ≥ 45.0 TTT < -25 TTT > 40	Q ₆ = 9
		Q ₆ = 4
		Q ₆ = 3
		Q ₆ = 3
		Q ₆ = 4
TTT versus humidity parameters		
	TTT < WB (wet bulb)	Correct manually and Q ₆ = 5, otherwise Q ₆ = Q ₁₉ = 2
	TTT < DP (dew point)	Correct manually and Q ₆ = Q ₇ = 5, otherwise Q ₆ = Q ₇ = 2
18	s _n ≠ 0, 1, 2, 5, 6, 7, 9	Correct manually, otherwise Q ₇ = 4
19	DP > WB DP > TTT WB = DP = ΔΔΔ	Correct manually and Q ₇ = 5, otherwise Q ₇ = Q ₁₉ = 2 Correct manually and Q ₇ = 5, otherwise Q ₇ = Q ₆ = 2 Q ₇ = 9
20	930 > PPPP > 1 050 hPa 870 > PPPP > 1 070 hPa PPPP = ΔΔΔΔ	Correct manually and Q ₈ = 1, 3 and, if corrected, Q ₈ = 5 Correct manually and Q ₈ = 5, otherwise Q ₈ = 4 Q ₈ = 9
21	ww = 22-24, 26, 36-39, 48, 49, 56, 57, 66-79, 83-88, 93, 94 and latitude < 20°	Correct manually and Q ₉ = 5, otherwise Q ₉ = 4
22, 23	W ₁ = W ₂ = 7 and latitude < 20° W ₁ < W ₂ W ₁ = W ₂ = Δ, /	Correct manually and Q ₉ = 5, otherwise Q ₉ = 4 Correct manually and Q ₉ = 5, otherwise Q ₉ = 4 Q ₉ = 9
24-27	N = 0, Δ, 9 and N _h C _L C _M C _H ≠ Δ	Correct manually and Q ₃ = 5, otherwise Q ₃ = 4

Element	Error	Action
28	$s_n \neq 0, 1$	Correct manually otherwise $Q_{10} = 4$
29	$T_w T_w T_w = \Delta\Delta\Delta, ///$ if $-2.0 > T_w T_w T_w > 37.0$ then when latitude < 45.0 $T_w T_w T_w < -2.0$ $T_w T_w T_w > 37.0$ when latitude ≥ 45.0 $T_w T_w T_w < -2.0$ $T_w T_w T_w > 37.0$	$Q_{10} = 9$ Control manually and $Q_{10} = 5$, otherwise $Q_{10} = 4$ Control manually and $Q_{10} = 5$, otherwise $Q_{10} = 3$ Control manually and $Q_{10} = 5$, otherwise $Q_{10} = 3$ Control manually and $Q_{10} = 5$, otherwise $Q_{10} = 4$
30	Indicator $\neq 0-7, \Delta$	Correct manually, make it Δ if not correctable
31	Indicator $\neq 0-9, \Delta$	Correct manually, make it Δ if not correctable
32	$20 < P_w P_w < 30$ $P_w P_w > 30$ and $\neq 99$ $P_w P_w = \Delta\Delta, //$	$Q_{11} = 3$ $Q_{11} = 4$ $Q_{11} = 9$
33	$35 < H_w H_w < 50$ $H_w H_w \geq 50$ $H_w H_w = \Delta\Delta, //$	$Q_{12} = 3$ $Q_{12} = 4$ $Q_{12} = 9$
34	$d_{w1} d_{w1} \neq 00-36, 99, \Delta\Delta$ swell ₁ = swell ₂ = Δ	Correct manually and $Q_{13} = 5$, otherwise $Q_{13} = 4$ $Q_{13} = 9$
35	$25 < P_{w1} P_{w1} < 30$ $P_{w1} P_{w1} > 30$ and $\neq 99$	$Q_{13} = 3$ $Q_{13} = 4$
36	$35 < H_{w1} H_{w1} < 50$ $H_{w1} H_{w1} \geq 50$	$Q_{13} = 3$ $Q_{13} = 4$
37	$I_s \neq 1-5, \Delta$	Correct manually, otherwise Δ
38	$E_s E_s \neq 00-99, \Delta\Delta$	Correct manually, otherwise $\Delta\Delta$
39	$R_s \neq 0-4, \Delta$	Correct manually, otherwise Δ
40	Source $\neq 0-6$	Correct manually
41	Platform $\neq 0-9$	Correct manually
42	No call sign	Insert manually
43	No country code	Insert manually
44		No quality control
45	$Q \neq 0-6, 9$	Correct manually
46	$i_x \neq 1-7$	Correct manually
47	$i_R = 0-2$ and $RRR = 000, ///$, $\Delta\Delta\Delta$ $i_R = 3$ and $RRR \neq 000, ///$, $\Delta\Delta\Delta$ $i_R = 4$ and $RRR \neq ///$, $\Delta\Delta\Delta$	Correct manually, otherwise $Q_{14} = 4$ Correct manually, otherwise $Q_{14} = 2$ Correct manually, otherwise $Q_{14} = 2$
48	$RRR \neq 001-999$ and $i_R = 1, 2$	Correct manually and $Q_{14} = 5$, otherwise $Q_{14} = 2$
49	$t_R \neq 0-9$	Correct manually and $Q_{14} = 5$, otherwise $Q_{14} = 4$
50	$s_n \neq 0, 1, 2, 5, 6, 7, 9$	Correct manually, otherwise $Q_{19} = 4$
51	$WB < DP$ $WB = ///$, $\Delta\Delta\Delta$ $WB > TTT$	Correct manually and $Q_{19} = 5$, otherwise $Q_{19} = Q_7 = 2$ $Q_{19} = 9$ Correct manually and $Q_{19} = 5$, otherwise $Q_{19} = Q_6 = 2$
52	$a \neq 0-8, \Delta$ $a = 4$ and $ppp \neq 000$ $a = \Delta$	Correct manually and $Q_{15} = 5$, otherwise $Q_{15} = 4$ Correct manually and $Q_{15} = 5$, otherwise $Q_{15} = Q_{16} = 2$ $Q_{15} = 9$
53	$ppp > 150$ $ppp > 250$ $ppp = \Delta\Delta\Delta$	Correct manually and $Q_{16} = 1, 3$ and if corrected $Q_{16} = 5$ Correct manually and $Q_{16} = 5$ otherwise $Q_{16} = 4$ $Q_{16} = 9$
54	$D_s \neq 0-9, \Delta$ $D_s = \Delta, /$	Correct manually and $Q_{17} = 5$, otherwise $Q_{17} = 4$ $Q_{17} = 9$
55	$V_s \neq 0-9, \Delta$ $V_s = \Delta, /$	Correct manually and $Q_{18} = 5$, otherwise $Q_{18} = 4$ $Q_{18} = 9$
56	$d_{w2} d_{w2} \neq 00-36, 99$	Correct manually and $Q_{13} = 5$, otherwise $Q_{13} = 4$
57	$25 < P_{w2} P_{w2} < 30$ $P_{w2} P_{w2} > 30$ and $\neq 99$	$Q_{13} = 3$ $Q_{13} = 4$
58	$35 < H_{w2} H_{w2} < 50$ $H_{w2} H_{w2} \geq 50$	$Q_{13} = 3$ $Q_{13} = 4$

<i>Element</i>	<i>Error</i>	<i>Action</i>
59	$c_i \neq 0-9, \Delta$	Correct manually, otherwise Δ
60	$s_i \neq 0-9, \Delta$	Correct manually, otherwise Δ
61	$b_i \neq 0-9, \Delta$	Correct manually, otherwise Δ
62	$D_i \neq 0-9, \Delta$	Correct manually, otherwise Δ
63	$z_i \neq 0-9, \Delta$	Correct manually, otherwise Δ

Specifications for quality control indicators Q_1 to Q_{20}

- 0 No quality control (QC) has been performed on this element
- 1 QC has been performed; element appears to be correct
- 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
- 6-8 Reserve
- 9 The value of the element is missing