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SUBPART A – GENERAL

§ 2.1 Purpose.

This part prescribes the units of measure to be used in air and ground operations related to civil aviation in the Kingdom of Saudi Arabia.

§ 2.3 Units of Measure.

(a) Except as provided in GACAR § 2.5, the definitions and applications of units of measurement for air and ground operations as specified in this part are adapted based on the International System of Units (SI) developed and maintained by the General Conference of Weights and Measures (CGPM).

(b) The prefixes and symbols listed in Appendix A of this part are used to form names and symbols of the decimal multiples and submultiples of SI units.

Note: The Gregorian calendar is used in the GACARs.

§ 2.5 Use of Non-SI Units.

(a) The non-SI units listed in Appendix B, Table 1 of this part are used either in lieu of, or in addition to, SI units as primary units of measurement but only as specified in the Appendix B Table 2.

(b) The non-SI units listed below are permitted for temporary use as alternative units of measurement but only for those specific quantities listed in Appendix B - Table 2.

Specific quantities in Table 3-4 related to	Unit	Symbol	Definition (in terms of SI units)
distance (long)	nautical mile	NM	1 NM = 1 852 m
Elevation/Distance (vertical)	foot	ft	1 ft = 0.304 8 m
Speed (horizontal)	knot	kt	1 kt = 0.514 444 m/s
Speed (vertical)	feet per minute	ft/min	

§ 2.7 Application of specific units

(a) The application of units of measurement for certain quantities used in international civil aviation air and ground operations must be in accordance with Appendix B – Table 2.

(b) Aviation organizations must establish means and provisions for design, procedures and training for application and operations in environments involving the use of standard and non-SI alternatives of specific units of measurement, or the transition between environments using different units, with

due consideration to human performance.

(c) The application of non-SI unit, knot / nautical mile and foot in any operational environment will continue to be effective as per the provisions of this part unless and until notified by the president based on safety assessment if any further revisions are incorporated by the International Civil Aviation Organization.

Appendix A – SI Unit prefixes and Symbols

Multiplication factor		Prefix	Symbol
1 000 000 000 000 000 000	$= 10^{18}$	exa	E
1 000 000 000 000 000	$= 10^{15}$	peta	P
1 000 000 000 000	$= 10^{12}$	tera	T
1 000 000 000	$= 10^{9}$	giga	G
1 000 000	$= 10^{6}$	mega	M
1 000	$= 10^{3}$	kilo	k
100	$= 10^{2}$	hecto	h
10	$= 10^{1}$	deca	da
0.1	$= 10^{-1}$	deci	d
0.01	$= 10^{-2}$	centi	c
0.001	$= 10^{-3}$	milli	m
0.000 001	$= 10^{-6}$	micro	μ
0.000 000 001	$= 10^{-9}$	nano	n
0.000 000 000 001	$= 10^{-12}$	pico	p
0.000 000 000 000 001	$= 10^{-15}$	femto	f
0.000 000 000 000 000 001	$= 10^{-18}$	atto	a

Appendix B - Table 1 – Non-SI units for use with the SI

Specific quantities in Table 3-4 related to	Unit	Symbol	Definition (in terms of SI units)
mass	tonne	t	$1\ t = 10^3\ kg$
plane angle	degree minute second	° ' "	$1° = (\pi/180)$ rad $1' = (1/60)° = (\pi/10\ 800)$ rad $1" = (1/60)' = (\pi/648\ 000)$ rad
temperature	degree Celsius	°C	1 unit °C = 1 unit K
time	minute hour day week, month, year	min h d --	1 min = 60 s 1 h = 60 min = 3 600 s 1 d = 24 h = 86 400 s
volume	litre	L	$1\ L = 1\ dm^3 = 10^{-3}\ m^3$

Appendix B - Table 2 – Standard application of specific units of measurement

Ref. No.	Quantity	Primary unit (symbol)	Non-SI alternative unit (symbol)
1. Direction/Space/Time			
1.1	altitude	m	ft
1.2	area	m^2	
1.3	distance (long)a)	km	NM
1.4	distance (short)	m	
1.5	elevation	m	ft
1.6	endurance	h and min	
1.7	height	m	ft
1.8	latitude	° ′ ″	
1.9	length	m	
1.10	longitude	° ′ ″	
1.11	plane angle (when required, decimal subdivisions of the degree shall be used)	°	
1.12	runway length	m	
1.13	runway visual range	m	
1.14	tank capacities (aircraft)b)	L	
2. Mass Related			
2.1	air density	kg/m^3	
2.2	area density	kg/m^2	
2.3	cargo capacity	kg	
2.4	cargo density	kg/m^3	
2.5	density (mass density)	kg/m^3	
2.6	fuel capacity (gravimetric)	kg	
2.7	gas density	kg/m^3	
2.8	gross mass or payload	kg t	
2.9	hoisting provisions	kg	
2.10	linear density	kg/m	
2.11	liquid density	kg/m^3	
2.12	mass	kg	
2.13	moment of inertia	kg. m^2	
2.14	Movement of momentum	$kg.m^2/s$	
2.15	momentum	kg. m/s	

3. Force-related		
3.1	air pressure (general)	kPa
3.2	altimeter setting	hPa
3.3	atmospheric pressure	hPa
3.4	bending moment	kN · m
3.5	force	N
3.6	fuel supply pressure	kPa
3.7	hydraulic pressure	kPa
3.8	modulus of elasticity	MPa
3.9	pressure	kPa
3.10	stress	MPa
3.11	surface tension	mN/m
3.12	thrust	kN
3.13	torque	N · m
3.14	vacuum	P

Standard application of other specific units of measurement with respect to mechanical units (mechanic), flow, and thermodynamics; electricity and magnetism, light and related electromagnetic radiations, acoustics and nuclear physics and ionizing radiation are in accordance with the Annex 5, Table 3-4, Standard application of specific units of measurement.