GOVERNMENT NOTICE NO. 60 published on 24/02/2017

THE CIVIL AVIATION ACT
(CAP. 80)

# THE CIVIL AVIATION (UNITS OF MEASUREMENT FOR AIR AND GROUND OPERATIONS) REGULATIONS, 2017

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**SCHEDULES**

THE CIVIL AVIATION ACT
(CAP. 80)

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**REGULATIONS**

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*(Made under section 4)*

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THE CIVIL AVIATION (UNITS OF MEASUREMENT FOR AIR AND GROUND OPERATIONS) REGULATIONS, 2017

PART I
PRELIMINARY

Citation

1. These Regulations may be cited as the Civil Aviation (Units of Measurement for Air and Ground Operations), Regulations 2017.

Interpretations

2. In these Regulations unless the context otherwise requires-

"Ampere (A)" means that constant electric current which, if maintained in two straight parallel conductors of infinite length, of negligible circular cross-section, and placed 1 metre apart in a vacuum, would produce between these conductors a force equal to 2 × 10–7 newton per metre of length;

"Becquerel (Bq)" means the activity of a radionuclide having one spontaneous nuclear transition per second;

"Candela (cd)" means the luminous intensity, in the perpendicular direction, of a surface of 1/600 000 square metre of black body at the temperature of freezing platinum under a pressure of 101 325 newtons per square metre;

"Celsius temperature (t°C)" means the Celsius temperature

is equal to the difference t°C = T-T0 between two thermodynamic temperatures T and T0 where T0 equals 273.15 Kelvin;

"Coulomb (C)"" means the quantity of electricity transported in 1 second by a current of 1 ampere;

"Degree Celsius (°C)" means the special name for the unit Kelvin for use in stating values of Celsius temperature;

"Farad (F)" means the capacitance of a capacitor between the plates of which there appears a difference of potential of 1 volt when it is charged by a quantity of electricity equal to 1 coulomb;

"foot (ft)" means the length equal to 0.3048 metre exactly;

"Gray (Gy)" means the energy imparted by ionizing radiation to a mass of matter corresponding to 1 joule per kilogram;

"Henry (H)" means the inductance of a closed circuit in which an electromotive force of 1 volt is produced when the electric current in the circuit varies uniformly at a rate of 1 ampere per second;

"Hertz (Hz)" means the frequency of a periodic phenomenon of which the period is 1 second;

"human performance" means human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations;

"Joule (J)" means the work done when the point of application of a force of 1 Newton is displaced a distance of 1 metre in the direction of the force;

"Kelvin (K)" means a unit of thermodynamic temperature which is the fraction 1/273.16 of the thermodynamic temperature of the triple point of water;

"kilogram (kg)" means the unit of mass equal to the mass of the international prototype of the kilogram;

"knot (kt)" means the speed equal to 1 nautical mile per hour;

"International System of Units (SI)" means a complete,

coherent system which includes three classes of units base units, supplementary units; and derived units;

"Litre (L)" means a unit of volume restricted to the measurement of liquids and gases which is equal to 1 cubic decimeter;

"lumen (lm)" means the luminous flux emitted in a solid angle of 1 steradian by a point source having a uniform intensity of 1 candela;

"lux (lx)" means the illuminance produced by a luminous flux of 1 lumen uniformly distributed over a surface of 1 square metre;

"metre (m)" means the distance travelled by light in a vacuum during 1/299 792 458 of a second;

"mole (mol)" means the amount of substance of a system which contains as many elementary entities as there are atoms in 0.012 kilogram of carbon-12;

"Nautical Mile (NM)" means the length equal to 1,852 metres exactly;

"Newton (N)" means the force which when applied to a body having a mass of 1 kilogram gives it an acceleration of 1 metre per second squared;

"Ohm (Ω)" means the electric resistance between two points of a conductor when a constant difference of potential of 1 volt, applied between these two points, produces in this conductor a current of 1 ampere, this conductor not being the source of any electromotive force;

"pascal (pa)" means the pressure or stress of 1 newton per square metre;

"radian (rad)" means the plane angle between two radii of a circle which cut off on the circumference an arc equal in length to the radius;

"second (s)" means the duration of 9 192 631 770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the caesium-133 atom;

"siemens (s)" means the electric conductance of a conductor in which a current of 1 ampere is produced by an electric potential difference of 1 volt;

"sievert (sv)" means the unit of radiation dose equivalent corresponding to 1 joule per kilogram;

"steradian (sr)" means the solid angle which, having its vertex in the centre of a sphere, cuts off an area of the surface of the sphere equal to that of a square with sides of length equal to the radius of the sphere;

"tesla (t)" means the magnetic flux density given by a magnetic flux of 1 weber per square metre;

"tonne (t)" means the mass equal to 1 000 kilograms;

"volt (v)" means the unit of electric potential difference and electromotive force which is the difference of electric potential between two points of a conductor carrying a constant current of 1 ampere, when the power dissipated between these points is equal to 1 watt;

"watt (w)" means the power which gives rise to the production of energy at the rate of 1 joule per second; and

"weber (wb)" means the magnetic flux which, linking a circuit of one turn, produces in it an electromotive force of 1 volt as it is reduced to zero at a uniform rate in 1 second.

Application

3. These Regulations shall apply to all aspects of international civil aviation air and ground operations.

## PART II
## STANDARD APPLICATION OF UNITS OF MEASUREMENT

SI units

4.-(1) The International System of Units developed and maintained by the General Conference of Weights and Measures (CGPM) shall, subject to

regulations 5 and 6 be used as the standard system of units of measurement for all aspects of civil aviation air and ground operations.

(2) The prefixes and symbols listed in First Schedule shall be used to form names and symbols of the decimal multiples and submultiples of SI units, where

Note 1. - As used herein the term SI unit is meant to include base units and derived units as well as their multiples and sub-multiples;

Non-SI units

5.-(1) The non-SI units listed in the Second Schedule to these Regulations shall be used either in lieu of, or in addition to, SI units as primary units of measurement in the manner specified in the Fourth Schedule to these Regulations.

(2) The non-SI units listed in the Third Schedule to these Regulations shall be permitted for temporary use as alternative units of measurement but only for those specific quantities listed in the Fourth Schedule to these Regulations.

Application of specific units

6.-(1) The application of units of measurement for certain quantities used in civil aviation air and ground operations shall be in accordance with the Fourth Schedule to these Regulations.

(2) Means and provisions for design, procedures and training shall be established for 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.

Design, procedures and training

7. The means and provisions for design, procedures and training shall be established for 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.

## PART III
## TERMINATION OF USE OF NON - SI ALTERNATIVE UNITS

Use of alternative non-SI units

8. The use in civil aviation operations of the alternative non-SI units (Knot, Nautical Mile and foot) shall be terminated on the dates to be established by ICAO.

## PART IV
## EXEMPTIONS

Requirements for application for exemption

9.-(1) A person may apply to the Authority for an exemption from any of the provisions of these Regulations.

(2) Unless in case of emergency, a person requiring exemption from any provision of these Regulations shall make an application to the Authority at least sixty days prior to the proposed effective date, giving the following information-

(a) name and contact address including electronic mail and fax if any;
(b) telephone number;
(c) a citation of the specific requirement from which the applicant seeks exemption;
(d) justification for the exemption;
(e) a description of the type of operations to be conducted under the proposed exemption;
(f) the proposed duration of the exemption;
(g) an explanation of how the exemption would be in the public interest;
(h) a detailed description of the alternative means by which the applicant will ensure a level of safety equivalent to that established by the regulation in question;

(i) safety risk assessment carried out in respect of the exemption applied for;

(j) if the applicant handles international operations and seeks to operate under the proposed exemption, an indication whether the exemption would contravene any provision of the Standards and Recommended Practices of the International Civil Aviation Organization (ICAO); and

(k) any other information that the Authority may require.

(3) Where the applicant seeks emergency processing of an application for exemption, the application shall contain supporting facts and reasons for not filing the application within the time specified in sub regulation (2) and satisfactory reason for deeming the application an emergency.

(4) The Authority may in writing, refuse an application made under sub regulation (3), where in the opinion of the Authority, the reasons given for emergency processing are not satisfactory.

(5) The application for exemption shall be accompanied by fee prescribed by the Authority.

Review and publication.

10.-(1) The Authority shall review the application for exemption made under regulation 59 for accuracy and compliance and if the application is satisfactory, the Authority shall publish a detailed summary of the application for comments, within a prescribed time, in either-

(a) aeronautical information circular; or

(b) a daily newspaper with national circulation.

(2) Where application requirements have not been fully complied with, the Authority shall request the

applicant, in writing, to comply prior to publication or making a decision under sub regulation (3).

(3) Where the request is for emergency relief, the Authority shall publish the decision as soon as possible after processing the application.

Evaluation of the request

11.-(1) Where the application requirements have been satisfied, the Authority shall conduct an evaluation of the request to include-

(a) determination of whether an exemption would be in the public interest;

(b) a determination, after a technical evaluation of whether the applicant's proposal would provide a level of safety equivalent to that established by the regulation, although where the Authority decides that a technical evaluation of the request would impose a significant burden on the Authority's technical resources, the Authority may deny the exemption on that basis;

(c) a determination of whether a grant of the exemption would contravene these Regulations; and

(d) a recommendation based on the preceding elements, of whether the request should be granted or denied, and of any conditions or limitations that should be part of the exemption.

(2) The Authority shall notify the applicant in writing of, the decision to grant or deny the request and publish a detailed summary of its evaluation and decision.

(3) The summary referred to in sub-regulation (2) shall specify the duration of the exemption and any conditions or limitations of the exemption.

(4) Where the exemption affects a significant population of the aviation community of the United Republic of Tanzania the Authority shall publish the summary in aeronautical information circular.

## PART V
## GENERAL PROVISIONS

Drug and alcohol testing and reporting

12.-(1) A person who performs any function prescribed by these Regulations directly or by contract under the provisions of these Regulations may be tested for drug or alcohol usage.

(2) A person who-

(a) refuses to be tested for the percentage of the presence of alcohol in the blood; or

(b) refuses to be tested for the percentage of the presence of narcotic drugs, marijuana, or depressant or stimulant drugs or substances in the body, when so requested by a law enforcement officer or the Authority, or refuses to furnish or to authorise the release of the test results requested by the Authority,

shall-

(i) be denied a licence, certificate, rating, qualification, or authorisation issued under these Regulations for a period of up to one year from the date of that refusal; or

(ii) have their licence, certificate, rating, qualification, or authorisation issued under these Regulations suspended or revoked.

(3) A person who is convicted for the violation of any local or national statute relating to the growing, processing, manufacture, sale, disposition, possession, transportation, or importation of narcotic drugs, marijuana, or depressant or stimulant drugs or substances, shall-

(a) be denied any license, certificate, rating, qualification, or authorisation issued under these Regulations for a period of up to one year after the date of conviction; or

(b) have their licence, certificate, rating, qualification, or authorisation issued under these Regulations suspended or revoked.

Change of Name

13.-(1) A holder of a certificate issued under these Regulations may apply to the Authority for-

(a) a replacement of the certificate if lost or destroyed;

(b) a change of name on the certificate; or

(c) an endorsement on the certificate

(2) For the purposes of sub regulation (1), the holder of a certificate shall submit to the Authority-

(a) the original certificate or a copy thereof in case of loss; and

(b) a court order, or other legal document verifying the name change.

(3) The Authority shall return to the holder of a certificate, with the appropriate changes applied for, if any, the documents in sub regulation (2) and, where necessary, retain copies thereof.

Change of address

14.-(1) A holder of a certificate issued under these Regulations shall notify the Authority of the change in the physical and mailing address within fourteen days of such change.

(2) A person who does not notify the Authority of the change in the physical and mailing address within the time frame specified in sub-regulation (1) shall not exercise the privileges of the certificate.

Replacement of documents

15. A person may apply to the Authority, in the prescribed form for a replacement of the documents issued under these Regulations where the documents are lost or destroyed.

Use and retention of documents and records

16.-(1) A person shall not-

(a) use any certificate or exemption issued or required by or under these Regulations which has been forged, altered, cancelled, or suspended, or to which he is not entitled; or

(b) forge or alter any certificate or exemption issued or required by or under these Regulations; or

(c) lend any certificate or exemption issued or required by or under these Regulations to any other person; or

(d) make any false representation for the purpose of procuring for himself or any other person the grant, issue, renewal or variation of any such certificate or exemption.

(e) mutilate, alter, render illegible or destroy any records, or any entry made therein, required by or under these Regulations to be maintained, or knowingly make, or procure or assist in the making of, any false entry in any such record, or wilfully omit to make a material entry in such record.

(2) All records required to be maintained by or under these Regulations shall be recorded in a permanent and indelible material.

(3) A person shall not issue any certificate or exemption under these Regulations unless-

(a) he is authorised to do so by the Authority; and

(b) all statements in the certificate are correct, and that the applicant is qualified to hold that certificate.

Reports of violation Cap.80

17.-(1) Any person who knows of a violation of the Act, or any Regulations, rules, or orders issued there under, shall report it to the Authority.

(2) The Authority may determine the nature and type of investigation or enforcement action that need to be taken following the report in subregulation (1).

Failure to comply with direction

18. Any person who fails to comply with any direction given to him by the Authority or by an authorised person commits an offence.

Aeronautical fees

19.-(1) The Authority shall, in writing, notify, the fees to be charged in connection with the issue, renewal or variation of any certificate, test, inspection or investigation required by, or for the purpose of these Regulations any orders, notices or proclamations made there under.

(2) An applicant for anything under these Regulations shall, before the application is accepted, be required to pay the fee so chargeable for the respective application.

(3) Where a payment has been made in terms of sub regulation (2) and the applicant decides to withdraw the application the Authority shall not refund the payment made.

## PART VI
## OFFENCES AND PENALTIES

Penalties

20.-(1) A person who contravenes any provision of these Regulations, orders, notices or proclamations made there commits an offence and shall, be liable upon conviction, to a fine not exceeding one million shillings or to imprisonment for a term not more than six months or both, and in the case of a continuing contravention, each day of the contravention shall constitute a separate offence.

(2) Where it is proved that an act or omission of any person, which would otherwise have been a contravention by that person of a provision of these Regulations, orders, notices or proclamations made there under was due to any cause not avoidable by the exercise

of reasonable care by that person, the act or omission shall be deemed not to be a contravention by that person of that provision.

(3) Where any person is aggrieved by any order made under these Regulations the person may, within twenty one days of such order being made, appeal against the order to a court of law with competent jurisdiction.

General penalty

21. A person who contravenes any provision of these Regulations for which no penalty has been provided, commits an offence and-

(a) shall, on conviction be liable to a fine of the sum equivalent in Tanzanian shillings of five hundred United States dollars; and

(b) may, on conviction have his certificate, approval, authorisation, exemption or such other document revoked or suspended.

## FIRST SCHEDULE

*(Made under regulation 4(2))*

**SI unit prefixes**

| 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 | $= 10^{-18}$ | atto | a |

## SECOND SCHEDULE

*(Made under regulation 5(1))*

**Non-SI units for use with the SI**

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

**THIRD SCHEDULE**

*(Made under regulation 5(2))*

**Non-SI alternative units permitted for temporary use with the SI**

a) altitude, elevation, height, vertical speed.

| **Specification quantities in Schedule 4 related** | **Unit** | **Symbol** | **Definition(in terms of SI units)** |
|---|---|---|---|
| distance (long) | nautical mile | NM | 1 NM = 1 852 m |
| distance (vertical)[a)] | foot | Ft | 1 ft = 0.304 8 m |
| speed | knot | kt | 1 kt = 0.514 444 m/s |

## FOURTH SCHEDULE

*(Made under regulation 5(1) and 6)*

**Standard application of specific units of measurement**

| ef. 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) [c)] | 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 | ° | |
| 1.12. | runway length | m | |
| 1.13. | runway visual range | m | |
| 1.14. | tank capacities (aircraft)[b)] | L | |
| 1.15. | time | s<br>min<br>h<br>d<br>week<br>month<br>year | |
| 1.16. | Visibility[C)] | km | |
| 1.17. | volume | $m^3$ | |

*GN. No. 60 (contd.)*

| | | |
|---|---|---|
| 1.18. | wind direction (wind directions other than for a landing and take-off shall be expressed in degrees true; for landing and take- off wind directions shall be expressed in | ° |

**2. Mass-related**

| Ref. No | Quantity | Primary unit (symbol) | Non-SI alternative unit |
|---|---|---|---|
| 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<br>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. | moment 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 | Pa | |

**4. Mechanics**

| | | | |
|---|---|---|---|
| 4.1. | airspeed[d)] | km/h | kt |
| 4.2. | angular acceleration | $rad/s^2$ | |
| 4.3. | angular velocity | rad/s | |
| 4.4. | energy or work | J | |
| 4.5. | equivalent shaft power | kW | |
| 4.6. | frequency | Hz | |
| 4.7. | ground speed | km/h | kt |
| 4.8. | impact | $J/m^2$ | |
| 4.9. | kinetic energy absorbed by brakes | MJ | |
| 4.10. | linear acceleration | $m/s^2$ | |
| 4.11. | power | kW | |
| 4.12. | rate of trim | °/s | |
| 4.13. | shaft power | kW | |
| 4.14. | velocity | m/s | |
| 4.15. | vertical speed | m/s | ft/min |
| 4.16. | wind speed[e)] | m/s | kt |

**5. Flow**

| Ref. No | Quantity | Primary unit (symbol) | Non-SI alternative |
|---|---|---|---|
| 5.1. | engine airflow | kg/s | |
| 5.2. | engine waterflow | kg/h | |
| 5.3. | fuel consumption (specific) | | |
| | piston engines | kg/(kW.· h) | |
| | turbo-shaft engines | kg/(kW . h) | |
| | jet engines | kg/(kN . h) | |
| 5.4. | fuel flow | kg/h | |
| 5.5. | fuel tank filling rate (gravimetric) | kg/min | |
| 5.6. | gas flow | kg/s | |
| 5.7. | liquid flow (gravimetric) | g/s | |
| 5.8. | liquid flow (volumetric) | L/s | |
| 5.9. | mass flow | kg/s | |
| 5.10. | oil consumption | | |
| | gas turbine | kg/h | |
| | piston engines (specific) | g/(kW . h) | |
| 5.11. | oil flow | g/s | |
| 5.12. | pump capacity | L/min | |
| 5.13. | ventilation airflow | $m^3/min$ | |
| 5.14. | viscosity (dynamic) | Pa . s | |
| 5.15. | viscosity (kinematic) | $m^2/s$ | |

**6. Thermodynamics**

| | | | |
|---|---|---|---|
| 6.1 | coefficient of heat transfer | $W/(m^2 . K)$ | |
| 6.2. | heat flow per unit area | $J/m^2$ | |
| 6.3. | heat flow rate | W | |
| 6.4. | humidity (absolute) | g/kg | |
| 6.5. | coefficient of linear expansion | $°C^{-1}$ | |
| 6.6. | quantity of heat | J | |
| 6.7. | temperature | °C | |

**7. Electricity and magnetism**

| | | | |
|---|---|---|---|
| 7.1. | capacitance | F | |
| 7.2. | conductance | S | |
| 7.3. | conductivity | S/m | |

| | | |
|---|---|---|
| 7.4. | current density | $A/m^2$ |
| 7.5. | electric current | A |
| 7.6. | electric field strength | $C/m^2$ |
| 7.7. | electric potential | V |
| 7.8. | electromotive force | V |
| 7.9. | magnetic field strength | A/m |
| 7.10. | magnetic flux | Wb |
| 7.11. | magnetic flux density | T |
| 7.12. | power | W |
| 7.13. | quantity of electricity | C |
| 7.14. | resistance | Ω |

**8. Light and related electromagnetic radiations**

| Ref. No | Quantity | Primary unit | Non-SI |
|---|---|---|---|
| 8.1. | illuminance | lx | |
| 8.2. | luminance | $cd/m^2$ | |
| 8.3. | luminous exitance | $lm/m^2$ | |
| 8.4. | luminous flux | lm | |
| 8.5. | luminous intensity | cd | |
| 8.6. | quantity of light | lm .s | |
| 8.7. | radiant energy | J | |
| 8.8. | wavelength | m | |

**9. Acoustics**

| | | |
|---|---|---|
| 9.1. | frequency | Hz |
| 9.2. | mass density | $kg/m^3$ |
| 9.3. | noise level | dB[e)] |
| 9.4. | period, periodic time | s |
| 9.5. | sound intensity | $W/m^2$ |
| 9.6. | sound power | W |
| 9.7. | sound pressure | Pa |
| 9.8. | sound level | dB[f)] |
| 9.9. | static pressure (instantaneous) | Pa |
| 9.10. | velocity of sound | m/s |
| 9.11. | volume velocity (instantaneous) | $m^3/s$ |
| 9.12. | wavelength | m |

*GN. No. 60 (contd.)*

**10. Nuclear physics and ionizing radiation**

| | | |
|---|---|---|
| 10.1. | absorbed dose | Gy |
| 10.2. | absorbed dose rate | Gy/s |
| 10.3. | activity of radio nuclides | Bq |
| 10.4. | dose equivalent | Sv |
| 10.5. | radiation exposure | C/kg |
| 10.6. | exposure rate | C/kg . s |

a. As used in navigation, generally in excess of 4 000 m.
b. Such as aircraft fuel, hydraulic fluids, water, oil and high pressure oxygen vessels.
c. Visibility of less than 5 km may be given in m.
d. Airspeed is sometimes reported in flight operations in terms of the ratio MACH number.
e. A conversion of 1 kt = 0.5 m/s is used in ICAO Annexes for the representation of wind speed.
f. The decibel (dB) is a ratio which may be used as a unit for expressing sound pressure level and sound power level. When used, the reference level must be specified.

Dar es Salaam,
20th February, 2017

MAKAME M. MBARAWA,
*Minister for Works, Transport and Communication*