REPUBLIC of SAN MARINO
CIVIL AVIATION AUTHORITY

POLICY LETTER 01/2022 Issue 01

PROTECTIVE BREATHING EQUIPMENT MEL POLICY

1. Introduction

Protective Breathing Equipment (PBE) is a portable self-contained personal smoke hood designed to safeguard crew members from the effects of smoke, carbon dioxide, harmful gases etc. whilst managing in-flight fire, smoke or fume emergencies.

The oxygen produced when the PBE is activated may be generated by either oxygen gas cylinders (OG) or chemical oxygen generators (COG). This policy letter refers to both oxygen generator types which when carried as baggage/cargo are subject to the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Doc 9284).

Such PBE equipment and spares may well be safe when in their approved stowage/certified location but when carried as baggage/cargo or in a non-approved location on any aircraft they could present a considerable hazard unless all the requirements applicable to their carriage as items of dangerous goods (DG) are complied with.

The CAA has noted that some Master Minimum Equipment List (MMEL) provided by the major States of Design do not clearly alert the flight crew that a PBE which is removed from its approved stowage/certified location (whether it is unserviceable or not) becomes cargo and will then be subject to the ICAO Doc 9284, which would require the operator to hold a carriage of dangerous goods approvals from the CAA. When applying ICAO Dox 9284 for COG it is prohibited to carry as cargo on a passenger aircraft and for OG there are specific requirements that must be followed.

The objective of this Policy Letter is to make operators aware of the issues, to provide a standard procedure and to ensure operators take action to amend their MEL accordingly.

2. Applicability

This policy letter applies to all operators of aeroplanes and helicopters that carry PBE and have a MEL either approved by the CAA or an application submitted for approval, regardless of whether they are Commercial Air Transport (CAT) or General Aviation (GA) operators.

3. Chemical Oxygen Generator (COG)

A chemical oxygen generator is a device containing chemicals which upon activation

releases oxygen as a product of chemical reaction. Chemical oxygen generators are used for the generation of oxygen for respiratory support in aircraft.

Oxidizing salts such as chlorates and perchlorates of lithium, sodium and potassium, which are used in chemical oxygen generators, evolve oxygen when heated. These salts are mixed with a fuel powder to produce oxygen by continuous reaction. Once the reaction begins, normally after activation by a crew member, oxygen is released and a portion of the oxygen reacts with the fuel to continue to produce more heat and therefore more oxygen.

The heat produced has caused numerous incidents and major fatal accidents involving smoke and fire in the past and that is the reason flight crew need to take precautions. It should be noted that PBE must be easily assessable and either located near cabin crew seats or adjacent to hand fire-extinguishers.

COG PBEs classified as UN 3356 CL 5.1, special containers are required, shipped by cargo aircraft only. For safety reasons, the carriage of PBE units as baggage/cargo is forbidden on passenger aircraft and is limited to small numbers on dedicated cargo aircraft.

4. Compressed Oxygen Generator (OG)

A compressed oxygen generator is a device containing small compressed oxygen bottles as a source for the users breathable oxygen.

Compressed Oxygen PBEs, classified as UN 3072, CL9, on restriction, passenger/cargo aircrafts permitted, shipping them is much cheaper.

5. Regulatory References

The PBE regulatory requirement for CAT operators of aeroplanes is stated in CAR OPS 1.780. It also states minimum number and location of PBE. There is no regulation regarding the carriage of PBE for CAT operators of helicopters.

CAR OPS 1.1145/OPS 3.1160 require an operator to comply with the ICAO Technical Instructions for the Safe Transport of Dangerous Goods (Technical Instructions).

There is no regulation regarding the carriage of PBE for GA aircraft although most corporate jet aeroplanes are equipped with PBE.

CAR OPS 2A.102/OPS 2H.103 require an operator to comply with the Technical Instructions.

6. MMEL Issues

A review of MMELs provided by the FAA, Transport Canada, EASA and ANAC determined that no common international standard currently exists when dealing with PBE. The CAA has decided to adopt the same policy as EASA CS-MMEL and an example is presented below as policy under section 9.

It should be noted that all MMELs only address those PBE in excess of those required.

7. Safety Issues

PBE may be inoperative due to either being unserviceable, having passed its expiration date or having been used. PBE, which has damage to the package or seal, is considered inoperable. When inoperative the PBE must be considered as potentially hazardous, even if it has been used.

Some MMELs remark "that the inoperative PBE unit should be removed from the passenger cabin and its location is placarded INOPERATIVE, or it is removed from the installed location, secured out of sight..."

This statement is incorrect as it could mislead the flight crew in placing an inoperative PBE in a non-approved stowage area, such as a cargo compartment or area inaccessible in flight.

Excess PBE, either inoperative or serviceable, including replacement units, may only be carried if in approved stowage/certified location. Otherwise, the PBE unit must be removed from the aircraft.

Note: Under special provision for COG A111 it states that if the PBE has passed its expiration date, are unserviceable or have been used are forbidden for transport. This special provision for OG does not have this same restriction.

8. Dangerous Goods Issues

Some MMELs have a note stating that inoperative PBE units may be subject to DG requirements or may be a breach of DG regulations. If a PBE unit, either inoperative or serviceable, is not carried in approved stowage/certified location then the Technical Instructions apply.

Most San Marino aircraft operators do not have approval to carry DG so any departure from the existing or proposed MEL procedures would be in contravention of the Technical Instruction requirements and non-compliant with the applicable CAR OPS regulations.

For those operators that do have a DG approval from the CAA, the Technical Instructions Special Provision A144 applies in all respects for serviceable PBE including limitations, packing, marking and notification.

Note that inoperative PBE removed from the aircraft may also be subject to DG requirements.

COGs are subject to UN No. 3356 and special provisions A1, A111, A116 and A114 may apply and require special packaging 565 to be complied with.

OGs are subject to Un No. 3072 (life-saving appliances, not self-inflating) and special provisions A48, A87 and A182 may apply and special packing instruction 955 to be

complied with.

9. Other Considerations

Those operators, that elected to have the required number of PBE as mandatory for dispatch may not have included the PBE in their MEL or may have stated “must be installed and operative” without further remarks. This does not assist the flight crew in determining the safety or DG issues and will no longer be permitted.

For helicopters, if one or more cargo or baggage compartments are to be accessible in flight, the PBE must be available for an appropriate crew member without leaving their seat.

10. Policy

All aircraft that carry PBE shall contain an item reference to PBE under the appropriate ATA Chapter in their MEL.

The following (O and (M) procedures and note shall be used under the Remarks or Exceptions section in an operator’s MEL instead of the existing MEL entry for all aircraft regardless of the State of Design.

ATA Chapter:				
(1) System & Sequence Numbers ITEM	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
Protective BreathingEquipment (PBE)	D	[1]X	[2]X	(M) (O) Any in excess of those required may be inoperative or missing provided: (a) [3]Required distribution is maintained, (b) Inoperative PBE and its installed location are placarded inoperative, (c) Inoperative PBE unit is secured in an [4]alternative approved stowage/certified location or removed from the aircraft, and (d) Procedures are established and used to alert crew members of inoperative or missing equipment. Note: Inoperative PBE units may be subject to dangerous goods requirements. **Procedures:** **(M)** To provide instructions to placard the inoperative PBE unit and its installed location, to secure the PBE unit in an alternative approved stowage/certified location or remove from the aircraft. **(O)** To provide procedures to alert crew members.

11. Operator Action

For applicants for MEL approval, this policy must be included in their MEL submission.

For all approved MEL holders, this policy must be included in their MEL prior to 01 September 2022 and all flight crew advised of this policy letter either by email or a Flight Crew Instruction/Temporary revision before 01 July 2022.

[1] The number installed must meet the needs of not only the flight deck as required by OPS 1.780 for CAT and OPS 1.790 must be considered particularly for corporate aircraft baggage/cargo compartments which are accessible to the crew and categorised as Class A and/or B.

[2] Number required for dispatch must meet the regulatory minimum requirements which may be 2, one on the flight deck and one adjacent to the Class A or B baggage/cargo compartment.

[3] For example, if 3 PBEs are fitted (flight deck, galley and baggage/cargo area) and 1 becomes u/s then it may be necessary to replace the 'required' PBE with a serviceable one and place the u/s PBE in an approved stowage/certified location that is not 'required' (i.e. the galley). This way the required distribution is maintained.

[4] If the aircraft has an alternative approved stowage/certified location then the operator should tailor their MEL to identify where these are located. If they do not have alternative approved stowage/certified location then they should just state 'removed from the aircraft'.

It would be appreciated if the responsible manager of your organisation could acknowledge receipt of this policy letter and indicate when the required notification to flight crew and MEL amendment action is contemplated.

If you have any questions regarding this policy letter, please direct them to info@smar.aero. Thank you for your cooperation and implementation of this policy.

Yours sincerely,

CONTI/
MARCO/202
0130407A17

Eng. Marco Conti
Director General

07 June 2022