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Docket Management System  
Docket No. FAA-2002-13438  
U.S. Department of Transportation Dockets  
Room Plaza 401  
400 Seventh Street SW.  
Washington, DC 20590-0001

Subject: Comments to Notice of Proposed Rulemaking (NPRM) titled "Trim Systems and Protective Breathing Equipment," Docket FAA-2002-13438 - 5

Reference: Federal Register publication of October 2, 2002 (67 FR 61836)

Dear Sirs:

Enclosed are comments from B/E Aerospace, related to the subject NPRM. B/E regrets that they are submitted after the formal deadline of December 2, and respectfully requests that they be considered to the fullest extent possible.

Please feel free to contact the undersigned with any comments or questions. My contact information is as follows:

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As you will note, the attached comments pertain to Protective Breathing Equipment. B/E does not have any input to offer on the issue of Trim Systems.

Sincerely,  
B/E Aerospace, Inc.

  
James C. Cannon, Ph.D.  
Chief Engineer - Lenexa Business Unit

Enclosure

**B/E Aerospace, Inc Comments to NPRM Docket FAA-2002-13438,  
"Trim Systems and Protective Breathing Equipment"**

B/E Aerospace has no inputs relating to the Trim Systems issues. B/E Aerospace has the following comments relating to Protective Breathing Equipment.

B/E agrees with the overall objective of enhancing consistency between the airworthiness standards of the United States and the Joint Airworthiness Requirements of Europe. However, B/E believes that some details of the language used in the current version of proposed 25.1439(b)(5) could be interpreted in a way that would rule out the use of portable PBE designs that are fully compliant to the requirements of TSO C116 and that have performed effectively in the field since the requirements for installation of this equipment were implemented.

**Suggested change to proposed 25.1439(b)(5)**

In the following excerpt, the strikethrough indicates language that B/E suggests should be deleted and the underscore indicates text that B/E suggests should be added.

"...If a continuous flow open circuit protective breathing system is used ~~(including a closed circuit rebreather type system)~~ a flow rate of 60 liters per minute at 8,000 feet (45 liters per minute at sea level) and a supply of 600 liters of free oxygen at 70° F and 760 mm. Hg. pressure is considered to be of 15-minute duration at the prescribed altitude and minute volume. Continuous flow open circuit systems must not increase the ambient oxygen content of the local atmosphere above that of demand systems. If a closed circuit protective breathing system is used, compliance to the performance requirements stated in TSO C116 for 15 minutes is considered to satisfy the required 15-minute duration at the prescribed altitude and minute volume. BTPD refers to..."

**Rationale for suggested change to proposed 25.1439(b)(5)**

Historically, a larger supply of oxygen was considered necessary when an open circuit continuous flow oxygen mask was used, relative to a demand oxygen mask, because the continuous flow mask has no means to adjust for a momentary inhalation rate that exceeded the continuous flow rate. Accordingly the continuous flow rate was set higher, so that the flow would be sufficient in the event of such a momentary excursion.

By contrast, in a closed circuit rebreather system, in principle, the rate at which oxygen must be supplied is not equal to the breathing rate. If the closed circuit device has sufficient reservoir capacity to accommodate the demand for added breathing volume during a momentary excursion, the actual oxygen flow rate required is only the quantity necessary to replace the oxygen that was consumed by metabolic activity or lost through leakage.

In the case of a TSO C116 compliant PBE, the user's breathing rate may correspond to 30 liters per minute for 15 minutes or 450 liters BTPD, but the actual oxygen flow required might be only one to two liters per minute NTPD. In a closed circuit rebreather, a 600 liter oxygen supply for 15 minutes duration would be equal to a metabolic demand of 40 liters per minute, which is well outside the range of human metabolic capacity, and thus quite excessive. To the best of B/E's knowledge, none of the currently certified TSO C116 compliant portable closed circuit PBE units would be capable of delivering 600 liters of oxygen, but all would readily accommodate a breathing rate of 30 liters per minute BTPD at 8,000 ft pressure altitude.

Because proposed 25.1439(a) mentions both fixed and portable PBE, B/E believes that the presently proposed language could be interpreted as requiring a closed circuit portable PBE to have an oxygen supply much larger than actually is necessary. B/E believes that our suggested change to the proposed language clarifies this issue.