

## AsMA 2004 MEETING ABSTRACTS

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### THE EFFECT OF AN AIR-BREATHING BREAK DURING PREOXYGENATION ON ALTITUDE DECOMPRESSION SICKNESS RISK

A. PILMANIS<sup>1</sup> and J. WEBB<sup>2</sup>

<sup>1</sup>*Air Force Research Laboratory, Brooks City-Base, TX;* <sup>2</sup>*Wyle Life Sciences, Brooks City-Base, TX*

**Introduction:** To reduce the risk of decompression sickness (DCS) current U-2 operations require a 1-hour prebreathe (PB). An interruption (break) of the oxygen breathing with air breathing currently requires significant extension of the PB time. The purpose of this study was to define the relationship between an air break during a 1-hour PB and the subsequent DCS incidence. **Methods:** Human volunteers performed 30-min of PB, followed by a 10-min air-break, and then another 30-min of PB. They were then exposed in an altitude chamber to 4.37 psia (30,000 ft; 226 mm Hg) with an ascent rate of 5,000 ft/min. The subjects were monitored every 15 minutes for venous gas emboli (VGE) using echocardiography. The end-points were symptoms of DCS or completion of the 4-h exposure. The control data for an uninterrupted 60 min PB were taken from the AFRL DCS database. **Results:** Preliminary results show that the break-in-prebreathe profile (n=25) had 60.0% DCS and 72.0% VGE. When compared to the control data (n=105) of 73.3% DCS and 75.2% VGE, no significant differences were found. **Discussion:** These data support the concept that the renitrogenation of tissues during the short "air break" is not extensive enough to impact the DCS and VGE incidence at altitude. Alternatively, the 30 min PB after the "air break" contains enough denitrogenation to compensate for the added nitrogen in the tissues. **Conclusion:** A 10-min air break in the middle of a 60 min PB does not increase DCS risk when compared to a continuous 60 min PB.