



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AERONAUTICAL SYSTEMS CENTER (AFMC)
WRIGHT-PATTERSON AIR FORCE BASE OHIO

13 JUN 2011

MEMORANDUM FOR AMC/SGXL

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ASC/WNU

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FROM: ASC/WLM
2590 Loop Road West
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SUBJECT: Airworthiness Approval of the Percussionaire Corporation Bronchotron-Infant PulmoNOx Inc. Aeronox (B/A) Cart

References: (a) ASC/WNUP email, "B/A Cart Final Report and Recommendation Letter for SPOS," dated 10 May 2011.
(b) ASC/WNUP Technical Report No. FY10.006, "Technical Report of the Bronchotron-Infant Aeronox Cart," dated 01 December 2010.
(c) ASC/WNU memo, "Safe-To-Fly (STF) Recommendation for the Percussionaire Corporation Bronchotron-Infant PulmoNOx Inc. Aeronox (BA) Cart", dated 12 April 2011.
(d) ASC/ENAD email, "RE: Requesting review of B/A car EMI results," dated 01 June 2011.

1. Based on the email requesting Airworthiness approval of the B/A Cart (reference a), we have reviewed associated qualification documentation (reference b through d).
2. The B/A Cart is suitable for use on the C-17 with the following limitations:
 - a. The Aeronox shall be operated in:
 - (1) High Operational Temperature: 40°C (104°F) max
 - (2) Low Operational Temperature: 5°C (41°F) min

b. Percussionaire, the manufacturer of the Bronchotron-I, states the maximum temperature for the Phasitron venturi is 137.8°C (280°F).

c. The B/A Cart shall be used in accordance with manufacturer's specifications.

d. No part of the ventilator shall be submersed in water.

e. Due to the similarity of the Nitric Oxide and intravenous lines to the infant, Percussionaire recommends caution to prevent line miss-match during set-up and use.

f. The Aeronox shall not be used at altitudes or cabin pressures above 10,000 feet.

g. In the event of a rapid decompression, it is more than likely that the Aeronox unit will be damaged beyond repair. The ATL finds the Aeronox will likely remain intact and not pose a hazard in such an event.

h. The ventilator does observe gas laws involving pressure and volume, resulting in an overall decrease in Mean Airway Pressure and Frequency during the decompression event. In this case, a medical professional will need to adjust the ventilator to maintain high frequency ventilation to the infant.

i. PulmoNOx Medical Incorporated, the manufacturer of the Aeronox system, states that the Aeronox's plastic cover shall be closed during operation.

j. If using the Aeronox's internal rechargeable battery for operation, keep in mind that degradation of the battery over time will occur. It is advised to follow the Users' Guide and replace the battery after one year. During the battery evaluation, a 14-month old battery had a life of 3 hours and 31 minutes.

k. The B/A Cart was not tested for NVG compatibility. Crewmembers using Aviator's Night Vision Imaging System (ANVIS) in the rear of the aircraft will experience "blooming" from the light being emitted from the B/A Cart.

l. During the rapid decompression testing the incubator foam mat experienced considerable expansion. It is strongly recommended to increase the number and diameter of the air escape holes on the foam mat. Additional escape holes will prevent patient injury during rapid decompression events.

m. The incubator's light shall be moved an additional 2 inches inboard of its current location to eliminate cargo strap interference.

n. The incubator's plastic housing shall not be used for any additional storage or loading. The incubator section shall only house the infant and Phasitron venture, and is not designed for miscellaneous storage.

o. Wooden shoring of 10" x 10" by ½" shall be used under the wheels of the B/A Cart.

- p. Even though it was not evaluated, dunnage is strongly recommended to be used under the B/A Cart to prevent patient movement during tie-down, and possible wheel damage during flight. Concept demonstration is shown in Figure 1.

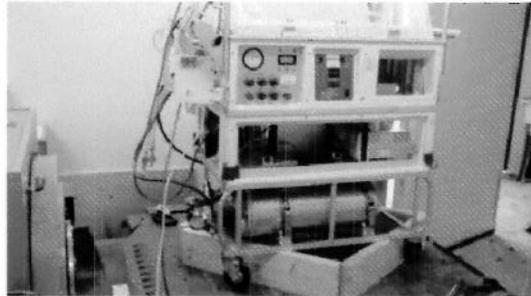


Figure 1 - Wooden dunnage - typical (concept purposes only)

- q. The B/A Cart shall be secured with five cargo straps using seven aircraft “D” rings, and four litter straps as seen in Figures 2 and 3.

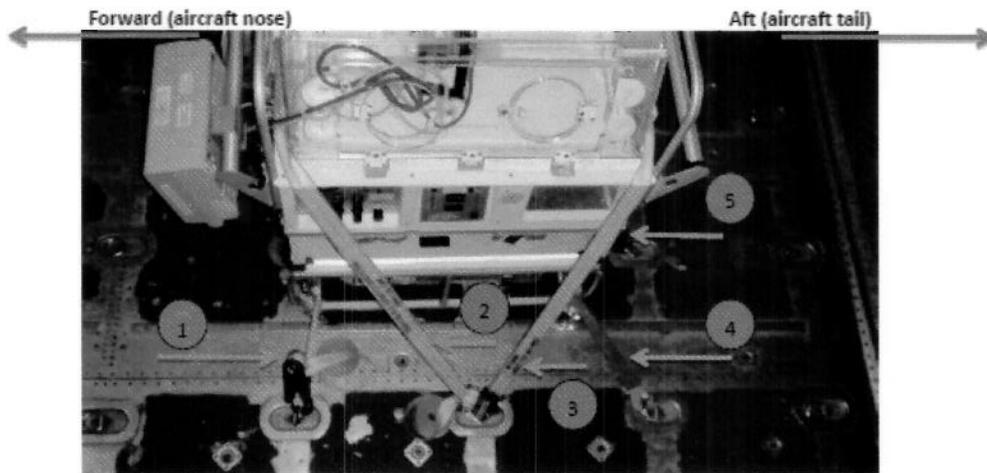


Figure 2 - Tie-Down configuration for the B/A cart using five (5) cargo straps

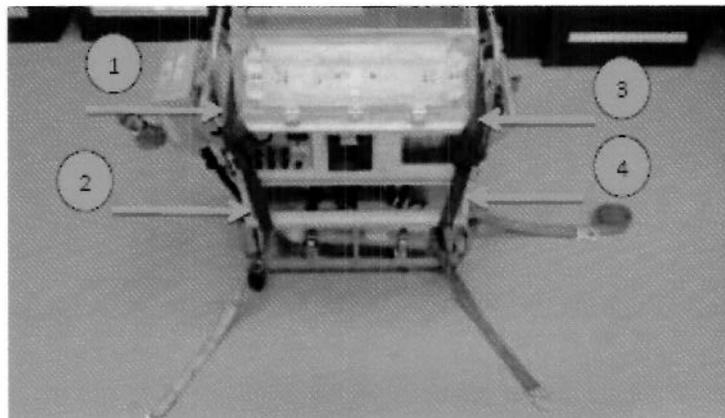


Figure 3 - Location of four (4) litter straps for additional cart security

r. Prior to use, the Aeronox is removed from its secure storage location with the B/A Cart and secured on the B/A Cart's handle. While in this position, the Aeronox is naturally secure in all axes except in the vertical (up) position. One litter strap shall be used to secure the Aeronox to the B/A Cart when in use, in flight, as seen in Figure 4.



Figure 4 - Tie down strap to prevent Aeronox damage during turbulence or other negative G conditions

3. Final Airworthiness for the Percussionaire Corporation Bronchotron-Infant PulmoNOx Inc. Aeronox (B/A) Cart is granted.

4. Any changes to the Percussionaire Corporation Bronchotron-Infant PulmoNOx Inc. Aeronox (B/A) Cart configuration that could impact Airworthiness shall be communicated to ASC/WLME for evaluation before the changes can be approved for Airworthiness on the C-17 aircraft.

