INDIVIDUAL BEVERAGE CHILLER (IBC) | DoD CFD

PURPOSE:

The IBC is a small device that will provide soldiers with cool, refreshing beverages on-demand, anywhere on the battlefield. It interfaces with the water bladder and will cool beverages just as ice would. Currently, Soldiers in the field have a difficult time getting a cold drink, yet they need to drink more than a gallon of water a day to stay hydrated in hot environments. When their hydration bladders get hot, the water becomes unpalatable, leading to reduced consumption and increased risk of dehydration and serious injury. The current solutions of distributing ice or refrigerated bottled water are expensive and logistically challenging.

CHARACTERISTICS:

The IBC works by utilizing the cooling effect of evaporating water. A small portion of the beverage is evaporated on the way to the user's mouth. Two technologies have been developed that achieve this effect. The first, a "powered version," evaporates water through a porous membrane and uses a small 2W fan. The other, a "non-powered version," uses a series of wicks and a special antimicrobial fabric and is non-powered. Both are compact devices that can cool 3 liters (.8 gal) of water by 20°F or more, depending on the surrounding environment.

CAPABILITIES & BENEFITS:

- **Reduced logistical burden...**The IBC dramatically reduces the demand for ice and refrigerated bottled water in the field.
- **Reusable...**This solid-state device will be either non-powered or rechargeable so it can chill beverages indefinitely.
- **Chill on the move capability...**Designed to be compatible with the hydration bladder, the IBC dispenses chilled beverage through the bladder drink tube.

COMMENTS:

This item is currently at a technology readiness level (TRL) of 5, with working prototypes tested in laboratory conditions. A field test will be scheduled for summer 2010, with the goal of reaching a TRL of 6.

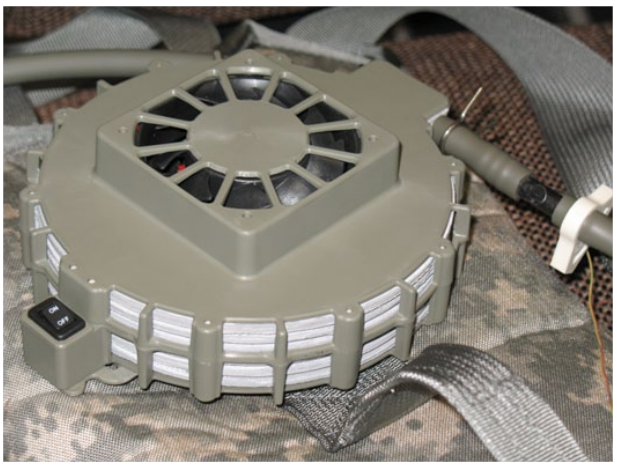
TECHNOLOGY SPECIFICATIONS:

Powered Version:

- Uses a series of semi-permeable membranes that hold in liquid water while allowing water vapor to pass through and evaporate.
- Able to reduce 116°F (47°C) water to 80°F (27°C) in hot, dry conditions.
- **Weight:** 217 grams (7.65 oz) with batteries.

UNCLASSIFIED

- **Dimensions:** 5.4 × 1.4 inches (13.7 × 3.6 cm) thick (including fan and "ears").
- **Interface:** Either replaces the cap on the hydration bag or clips to the MOLLE straps.
- 1.1W fan requires 2 camera batteries.
- Enough power to last during daylight hours with battery management (when not on at all times).
- Power switch integrated into the bite valve for user control.



Non-Powered Version:

- Evaporates water off of a fabric wrapped around small plastic chambers.
- Drinking water is fed to the fabric via a system of wicks.
- Silver threads in the fabric and wick combat bacteria growth.
- Able to reduce 116°F (47°C) water to 89°F (32°C) in hot, dry conditions.
- **Weight:** 440 grams (15.5 oz) including straps.
- **Dimensions:** 9 × 4.5 × 3 inches (23 × 11.4 × 7.6 cm)
- **Interface:** Straps onto the top of the hydration bag above the water fill hole.
- Must be open to the air; wind currents amplify the cooling effect.
- No battery or external power necessary at any time.

POINT OF CONTACT:

DoD Combat Feeding
Phone: COMM (508) 233-4670
E-Mail: nati-amsrd-nsc-ad-b@conus.army.mil