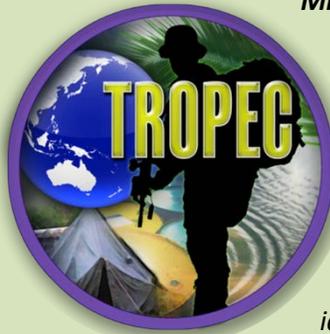


# TROPEC – BALIKATAN 2013 SUMMARY STATEMENT



**Mission:** Reduce Operational Energy Consumption in Tropical Environments while maintaining or improving warfighter capability.

**Goal:** Reduce operational energy consumption at PACOM expeditionary basing by 25% in 32 months.

**Method:** By combining Department of Energy's expertise in energy efficiency & demand reduction with PACOM and MEC's expertise in operations in tropical environments and through a process of technology identification, review and assessment, provide strategy and acquisition professionals with insight and information on material and non-material solutions.

## Balikatan, Philippines, 2013:

**Background:** Balikatan, meaning "shoulder-to-shoulder", is a bilateral Philippines-U.S. exercise aimed at improving the armed forces of each nation and strengthening their diplomatic and military relationship. The TROPEC Limited Operational Assessment (LOA) assessed the energy savings and operational performance of an inflatable shelter, environmental control unit (ECU) with a dual stage compressor, radiant barriers, duct tees, and thermostat control strategies on an expeditionary outpost in the Republic of the Philippines at Crow Valley from 1 to 18 April 2013.

### Key Findings:

- Compared to ECUs in local mode, thermostats reduced ECU energy consumption by 6.6% in shelters without radiant barriers and 2.8% in shelters with radiant barriers.
- The radiant barrier reduced ECU energy consumption by 7.0%. Combined with a thermostat, energy was reduced by 9.6%.
- Cooling two shelters with duct tees reduced ECU energy consumption by 8.8%.
- Replacing the 5-ton ECU with the modulating capacity ECU would reduce energy consumption by 29.1%.
- Both the experimental inflatable shelter and experimental ECU outperformed their baseline equivalents in terms of weight, cube and manpower requirements.

### Recommendations:

- Develop an occupancy controlled thermostat suitable for use in an expeditionary environment. Investigate high efficiency ECUs for reliability, maintainability, and grid loading characteristics.
- Assess the effectiveness of a hybrid energy source or micro grid to reduce the potential for generator surging.
- Incorporate radiant barrier insulation into the inflatable shelter.
- Investigate effects of sizing shelters and ECUs together on a system level.

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**TROPEC's Balikatan 2013 detailed analysis can be accessed via the OEPP office; it is designated for Government Use Only**

