



Joint Committee on Tactical Shelters (JOCOTAS)

Contingency Basing Issues and Consideration

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Report Documentation Page

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Thrusts and Leadership Insights

- Shelter Systems/Contingency Basing are **on the Map**
- Energy Efficiency Is a New **Critical Requirement**
- All Services Have **Established Programs**
- Formal **Test Sites** Continue to Be Established
- Requirements Process in Sync with **User Needs**
- Push to Put **Hardware into the Hands** of User Troops
- Role of **Doctrine, Materiel and Leadership**
- Energy Austerity Needs to be **Innate**
- Joint Net Zero ACTD Test Results **Driving Field Trials**

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Shelter Systems/Contingency Basing are on the Map

Army **Approved Project**: Expeditionary Basing

POM Funding: FY12 – FY18

- Warfighter Technology / VT4
- Warfighter Advanced Technology / VT5
- Tech Enabled Concept Demonstration: FY14 Start

Systems Integration Labs and Test Programs

- Army Fort Devens, MA –PM FSS - **Briefing** LTC James Tuten
- Army Fort Leonard Wood, MO - **Maneuver Support CoE**
- MC ExFOB Phase V MCAGCC 29 Palms – **Briefing Maj Sean Sadler**
- MC Field Evaluations **Camp Leatherneck, Afghanistan**
- Air Force Holloman AFB – **AFRL Rep Rod Fisher at JOCOTAS**

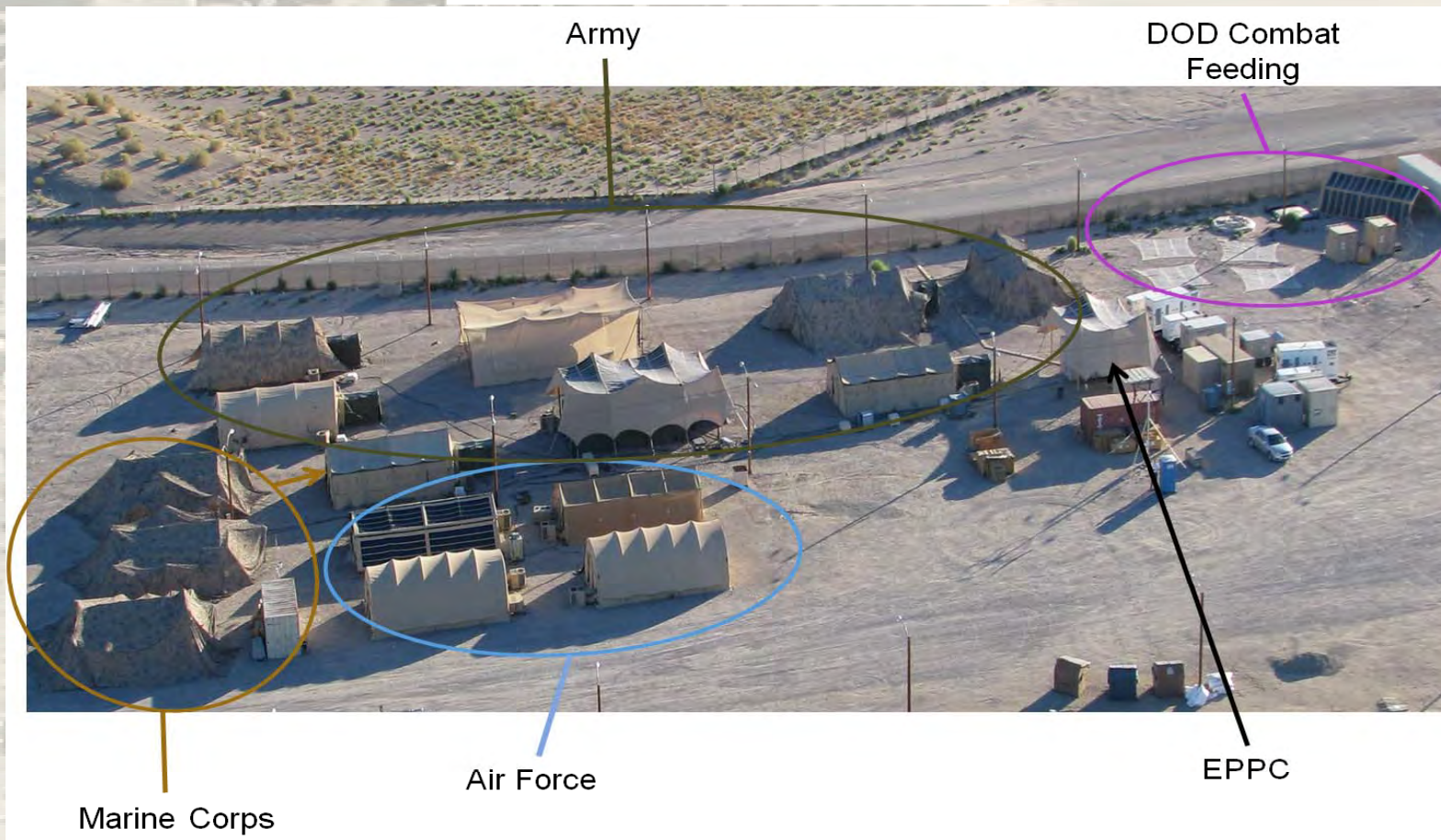
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Joint NETZERO Test Site

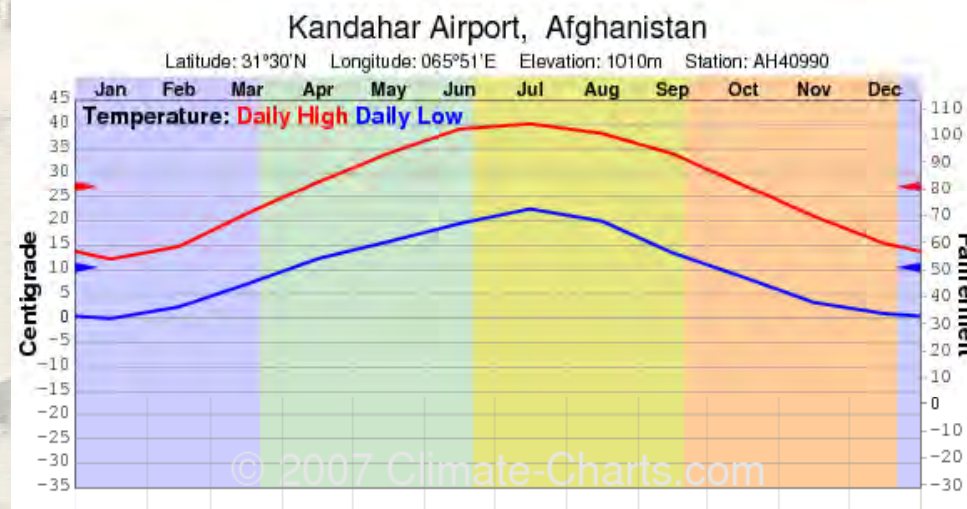
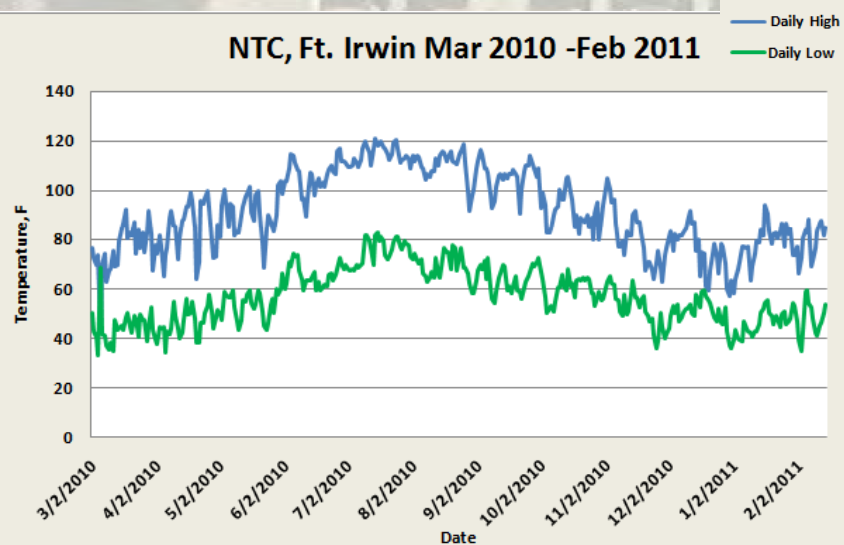


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Climate data for Baghdad													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average high °C (°F)	15.5 (59.9)	18.5 (65.3)	23.6 (74.5)	29.9 (85.8)	36.5 (97.7)	41.3 (106.3)	44.0 (111.2)	43.5 (110.3)	40.2 (104.4)	33.4 (92.1)	23.7 (74.7)	17.2 (63)	30.6 (87.1)
Average low °C (°F)	3.8 (38.8)	5.5 (41.9)	9.6 (49.3)	15.2 (59.4)	20.1 (68.2)	23.3 (73.9)	25.5 (77.9)	24.5 (76.1)	20.7 (69.3)	15.9 (60.6)	9.2 (48.6)	5.1 (41.2)	14.9 (58.8)

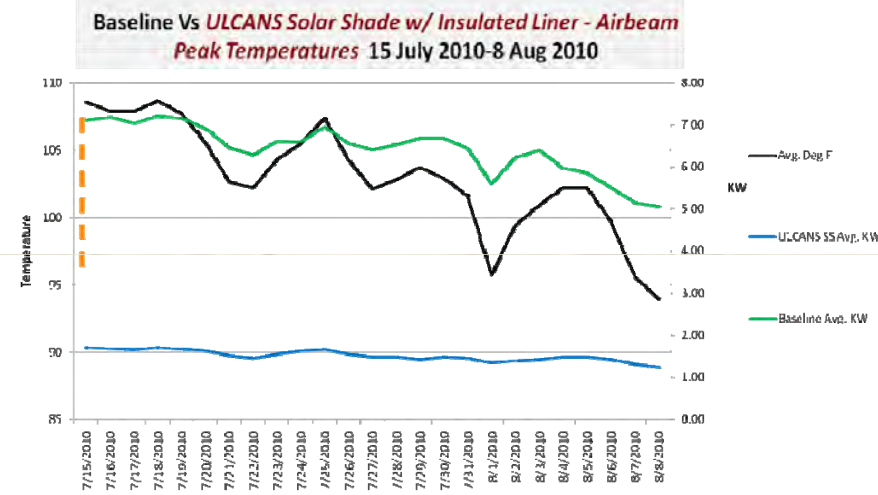
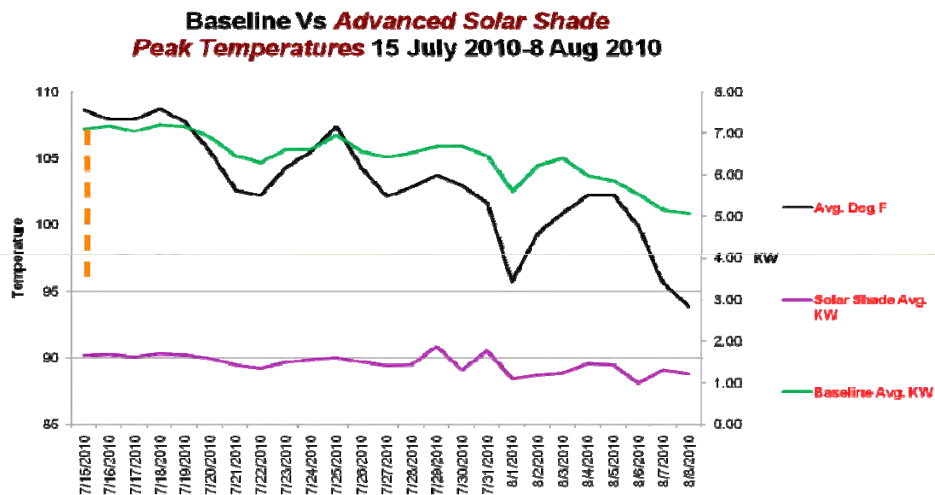
Temperatures at NTC are similar to Baghdad and about 10 degrees (F) warmer than Kandahar;

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GAO after Action Report: Every tent employed a solar shade ¹⁰

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Data from JT Net Zero

Brant's Field data with ARCENT of 5KW for CO POWER DRAW Fuel Conversion							Frank's Allocation Separating HVAC and CO				
	kW/tent	4 per gen	gals/hr	season	per season	per tent	kW tent only	% HVAC	HVAC Gal	% CO	CO gal
Max	15.00	60.00	4.66	111.84	40821.60	10205.40					
summer	14.50	58.00	4.54	72.58	6604.42	1651.10	9.5	65.52%	1081.76	34.48%	569.35
day	5.00	20.00	2.13	17.01	1548.21	387.05					387.05
winter	9.60	38.40	3.23	48.46	4409.86	1102.47	4.6	47.92%	528.26	52.08%	574.20
day	5.00	20.00	2.13	19.14	1741.74	435.44					435.44
spring	13.50	54.00	4.29	34.30	3121.66	780.42	8.5	62.96%	491.37	37.04%	289.04
day	5.00	20.00	2.13	34.03	3096.43	774.11					774.11
fall	9.00	36.00	3.09	46.32	4215.12	1053.78	4	44.44%	468.35	55.56%	585.43
day	5.00	20.00	2.13	19.14	1741.74	435.44					435.44
									2569.74		4050.05
					total	6619.80				total	6619.80
includes convenience outlets (CO)							CO deducted from total power draw				

Fig 6. Brant's Assessment of Combined Test Data

Fig 7. Frank's Breakout of Combined Test Data

[1] Convenience outlets may play a major role in power draw depending on the maturity and occupancy longevity of the base camp (how long has a unit been at the base camp and how much plug-in equipment have they bought from the Army & Air Force Exchange Service (AAFES));

[2] Confirming reports from Afghanistan HVAC units did not operate at full capacity year round. Over the spring, summer and fall cooling season (274 days) no AC is required about 35 percent of the time (during the night time hours);

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The Problem

- Fossil fuel dependence results in **exponential increase in convoy casualty risk** ^(1 & 3)
- More likely to spend money on **hardware solution** than training solution for base camps, even if either approach would have the same effect on energy consumption ⁽⁷⁾
- Renewable energy only generates **small percentage** of power requirements (<10%) ⁽²⁾
- Lack of **incentive** for individual units to conserve energy ⁽⁷⁾
- Energy-efficient technology with **inefficient operators loses** much of potential benefit ⁽⁷⁾
 - Structures and equipment do not perform to rating standard they were designed due to suboptimal human energy-related behavior
 - 2008 OSD Power Surety Task Force (PSTF) Fort Belvoir housing construction project study ⁽⁷⁾
 - Four houses built with varying degrees of energy efficiency ranging from standard construction to highly insulated house with motion sensors, better windows, rooftop solar system, etc.
 - Results: Standard first house had the most energy efficient consumption, **High-efficiency fourth house had the least energy-efficient consumption**



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Recommended Path Forward

- Communicate **energy conservation as a priority down to the lowest level** (7)
- **Equate** energy and water efficiency and **combat effectiveness** (6)
- Appeal to human instincts of competition and personal incentives (7)
- Effective fuel and **energy data collection** (6)
- Changes in training to **drive “cultural change”** in attitude towards energy usage (9)
- Suggested behavior changes
 - Remove **non mission-essential equipment** to save weight during transport (3)
 - **Turn off lights/turn down** AC when not in use (3)
 - Match power source to load requirements (4)
- Empower each team member as an “energy manager” (5)

Steps Taken

- Real time data captured in **Joint Net Zero ACTD => to ARCENT Procurement**
- Established **operational energy office** of primary responsibility
- Army directive makes **energy performance a Key Performance Parameter (KPP)**, in the same trade space as cost/schedule performance

Future Plans

- AR 5-5 Tactical Fuel & Energy Implementation Plan: **Field power and energy training program for all Soldiers** and formal management education program for Army leaders
- Air Force Facility Energy 2010: **Increase Energy Savings Performance Contracts**
- Army Operational Energy Campaign Plan 2012: **Establishes LOE for Awareness** and Discipline including near-term tasks FY12-13

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Shelters

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