Marine Energy Assessment Team

Afghanistan Assessment Outbrief

26 January 2010
The Problem

U.S. News

Pentagon: $400 a gallon for gas for troops

Published: Oct. 17, 2009 at 12:04 AM

WASHINGTON, Oct. 16 (UPI) -- The U.S. Defense Department told a congressional committee paying $400 for a gallon of gas is one reason the cost of the war in Afghanistan is so high.
The Mission

• Assess energy use by deployed Marine Forces
  – Ground truth
    • Consumption
    • Use
    • Cost

• Recommend Actions
Marine Energy Assessment Team
Itinerary

• Tampa (31 Aug – 1 Sep)
  – CENTCOM/MARCENT

• Afghanistan (3 Sep – 15 Sep)
  – Kandahar
  – Leatherneck
  – Dwyer
  – Delhi
  – Payne
  – Hasan Abad
  – Jugroom
Helmand Theater Logistics

Road distances
Chaman Gate to Kandahar ~ 110 Km
Kandahar to Leatherneck ~ 150 Km
MEB-A Fuel Use

Daily Use 88749 Gallons

Source MEB-A Bulk Fuels Officer for August 2009
Cost

Grows Approaching the Tactical Edge

$11.70

$ per gallon

$6.39

Fuel

$11.70

Water

$4.78

$2.19

Level of War

Strategic

Operational

Tactical

$1.42

Valid for August 2009

Data/Calculation Sources:

Fuel: Strategic Level-DESC, Operational Level 10th BSB, Tactical Edge – PA&E Calculation (ADP)

Water: Strategic Level- 10th BSB, Operational level 10th BSB, Tactical Edge – PA&E Calculation (ADP)
Risk Grows Approaching the Tactical Edge

Level of War
- Strategic/Pakistan
- Operational/RC South
- Tactical/MEB-A AOR

Data Sources: CIDNE and Compass ISS Threat Assessment
Period August 24 – August 30, 2009
At the Operational Level Efficiency is the Problem

On-Line Generator Capacity Greatly Exceeds the Load

- Electrical Power at Leatherneck
  - 196 generators
  - Operating at ≤ 30% load
  - 15,434 gal/day
  - 42% of camp consumption
At the Operational Level Efficiency is the Problem

Structure Energy Efficiency is Poor

- HVAC is 75% of electrical demand
- >50% is lost by inefficient structures
  - Tents
  - SWA Huts
At the Tactical Edge Power Demand is Small

10kW generator
(underutilized – 3kW max load)

JP-8 Consumption ~ 25 gal/day
At the Tactical Edge Water is the Problem

Cumulative Effort

Truck Loads

Select FOBS

H2O Trucks  Fuel Trucks

Data Source CLB-8 period June 13 – September 11 2009
At the Tactical Edge Water is the Problem

Weekly Demand for a Battalion

Combat Logistics Patrol (CLP) X 2
Recommendations

- <1 YEAR
- 1-3 YEARS
- > 3 YEARS
Near Term Recommendations

• Low Hanging Fruit
• Can be started now
• Immediate benefit
  – Reduced risk to life
  – Reduced financial cost
• Don’t require Science Experiments
Optimize Spot Power Generation

Consolidating Loads

- Methods Exist
  - Trained Marines
  - Tools such as AutoDise

- Results
  - Take 2/3 of generators off line
    - 65 instead of 196
  - 36% less fuel needed for electricity
    - 15% reduction in Leatherneck fuel demand

Gallons/Day for Electrical Power

<table>
<thead>
<tr>
<th>Gallons/Day</th>
<th>Leatherneck</th>
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<td>15431</td>
<td>9875</td>
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Improve Structure Energy Efficiency

50% Savings

- HVAC Demand: 7406
- Energy Efficient Structure HVAC Demand

• More Energy Efficient Structures
  • >50% increase in efficiency from HVAC alone

Gallons/Day for HVAC

3703
Multiple Efficiency Measures

60% Savings in Fuel Consumption

- Current Fuel Demand: 15431
- Demand with Generator Efficiency: 9875
- Demand with Generator Efficiency & Energy Efficient Structures: 6172

Gallons/Day for Electrical Power

Leatherneck
Eliminate Bottled Water

• Water is available in the AOR
• POR and COTS solutions exist
  – TWPS in use at multiple sites
  – LWPS in final testing
  – Solar powered solutions
• At the Operational Level
  • Significant Financial Savings
• At the tactical level
  • 50 trucks off the road every week
  • Water certification is the greatest hurdle
Field Self-Sufficient Patrol Base

C.O.C.

LWPS

DREAM

Billeting quarters

Composting toilets

decreased fuel storage
(air drop fuel - infrequently)
Reduce Demand

• **Its Free**
  – Reduce Load
    • People
  – Change Behavior

• **Campaign Plan**
  – Awards for Design
Mid Term Recommendations

• Reduce demand for expeditionary power

• Increase and accelerate expeditionary capability to leverage alternative power and water sources
  – Planning tools and methods
  – Confirmation methods
  – Extraction methods

• Implement solutions that have enduring function
  – Leave behind solutions
    • Infrastructure
    • Power
    • Water
Far Term Recommendations

• Self Sufficient Expeditionary Capability
  – Increased Capability
    • Enhanced performance at the tactical edge
  – Minimum (zero) footprint
    • Recycle/create what is needed
    • Reduce/eliminate waste
  – No adverse affects on environment
    • Natural/Physical/Human
Caution

- You cannot step twice into the same river

Heraclitus of Ephesus
Questions?
SURE _
You're right in liking MEAT