



*U.S. Army Space and Missile Defense Command/
Army Forces Strategic Command*



Maintaining Infrastructure through Green Solutions in The Republic of the Marshall Islands (RMI)



"Secure the High Ground"

Report Documentation Page

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Topics to Cover

- **Corrosive island environment, isolation, age**
- **About Kwajalein**
- **Electric Vehicles/Solar Panels**
- **Power Reduction/Energy Conservation**
- **Waste Oil Solution**



Kwajalein, Marshall Islands





The Challenges ...

Balancing Mission, Infrastructure
and Quality of Life

Retaining Our Uniquely - Skilled
Workforce

A 21st Century Mission, with 1950's -
60's Facilities



Spalling Concrete
hazards



Aging/Failing
Facilities

Piers Restricted





Electric Vehicle Initiative

- To replace fossil fuel vehicles with electric vehicles
 - Provide smaller and more efficient work vehicles
 - Reduce maintenance & corrosion repairs
- To reduce energy costs and increase battery life
 - Utilize solar panel roof on electric carts
 - Reduce maintenance repairs
 - Reduce out of service down time
- Positive GREEN Initiatives





Brainstorming Matrix for Power Reduction Improvements

Eliminate trailer homes

Appoint Energy Managers

Institute Fee Structure for personal facilities

Power	Description	Ranking
High	High kW saved	10
Medium	Medium kW saved	5
Low	Low kW saved	1
Ease	Description	Ranking
Go Do It	Does not impact labor or current scope of work; "No" cost	10
Easy	Needs KRS management approval for allocation of time for effort; little cost	8
Moderate	Needs funding, multiple resources, and USAKA approval	6
Hard	Funding needed and letter of direction required (from SMDC) to implement	2
Investment	Cost	Ranking
No Cost	\$0 (within PWS)	10
Low	<\$10K	8
Moderate	>\$10K and <\$50K	6
High	>\$50K and <\$100K	3
Very High	>\$100K	1
Risk	Description	Ranking
No Risk	No Risk	10
Low	Low Consequence and Low Likelihood	8
Medium	Medium Consequence and Medium Likelihood	4
High	High Consequence and High Likelihood	1
PWS	# of Changes	Ranking
Go Do It	No Change	10
Low	Quick Change	8
Medium	Multiple Changes	4
High	Complete Revision	1
Time	Description	Ranking
Go Do It	Implementation started in <90 days	10
Fast	Implementation started in >90 days and <1 year	5
Medium	Implementation started in > 1 year	1

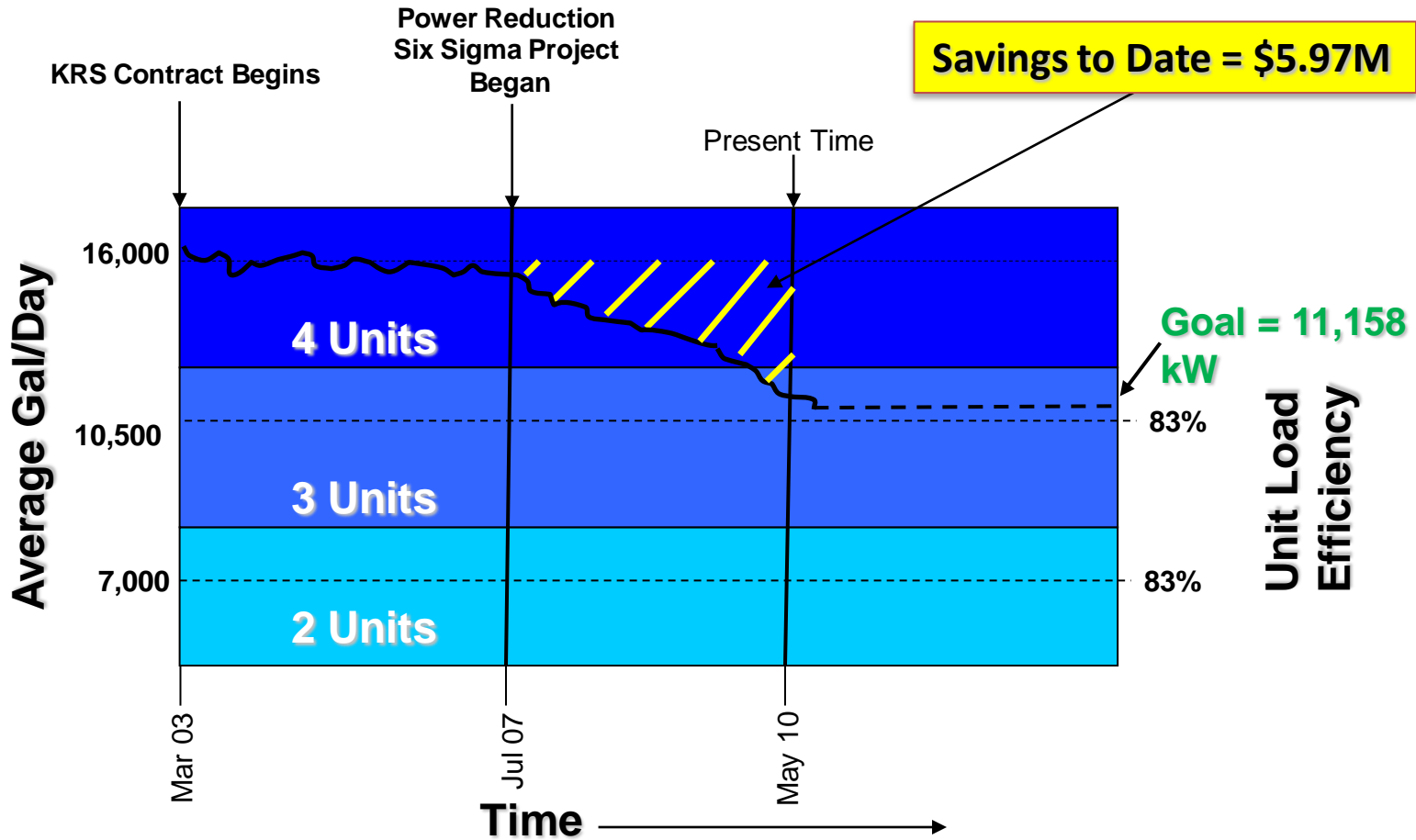
Consolidate Footprint

Set Points Raised to 74°

Minimize appliances



Kwajalein Power Plant fuel consumption (gal/day)



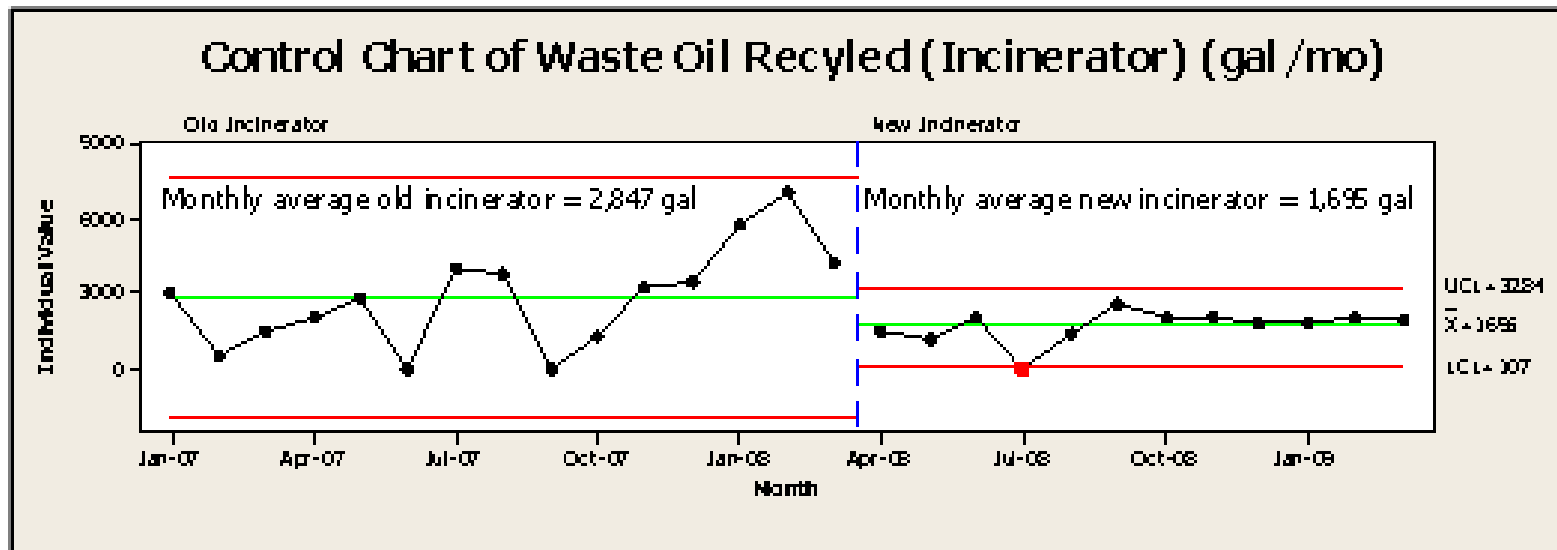
Saving Power through Six Sigma



Reduce, Reuse, Recycle of Waste Oil

How it Started:

The baseline performance for January 2007 through March 2008 showed that KRS generated a monthly average of 3,773 gallons of waste oil. In March 2008, a new, more energy-efficient incinerator replaced the older one. However, the old incinerator helped reduce waste oil backlog by burning more (2,847) gallons per month, whereas the new incinerator that burns 1,695 gallons per month creates greater backlog, leading to more waste oil overtime.





Planned Approach

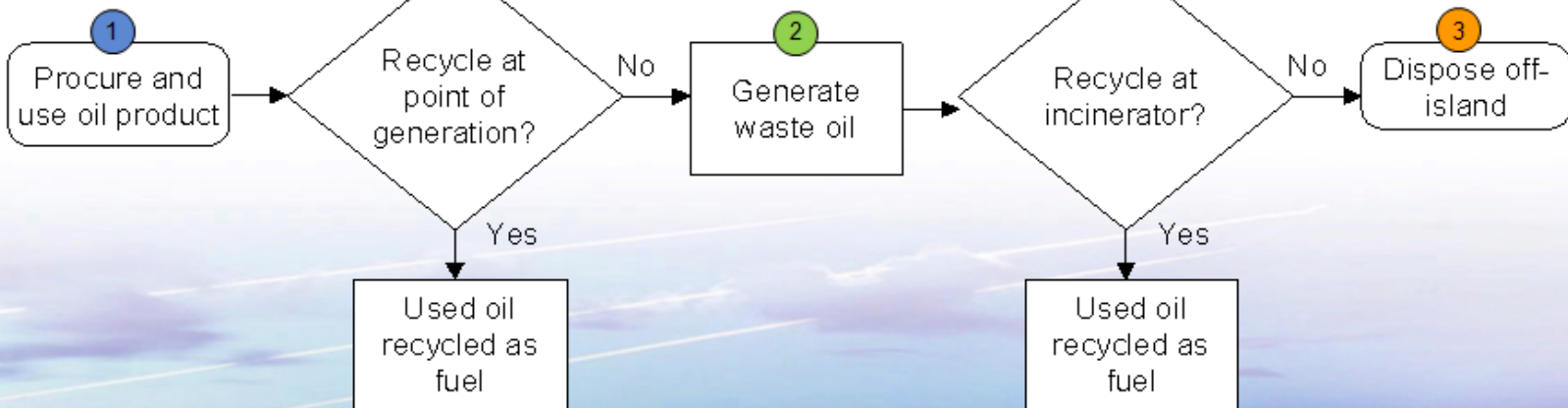
Objective

The objective of this PIP is to improve waste oil management by focusing on three key areas.

1 Reduce amount of Oil product used

2 Reduce generation of used petroleum product through reuse or recycling

3 Reduce off-island disposal for excess and backlog of used petroleum product

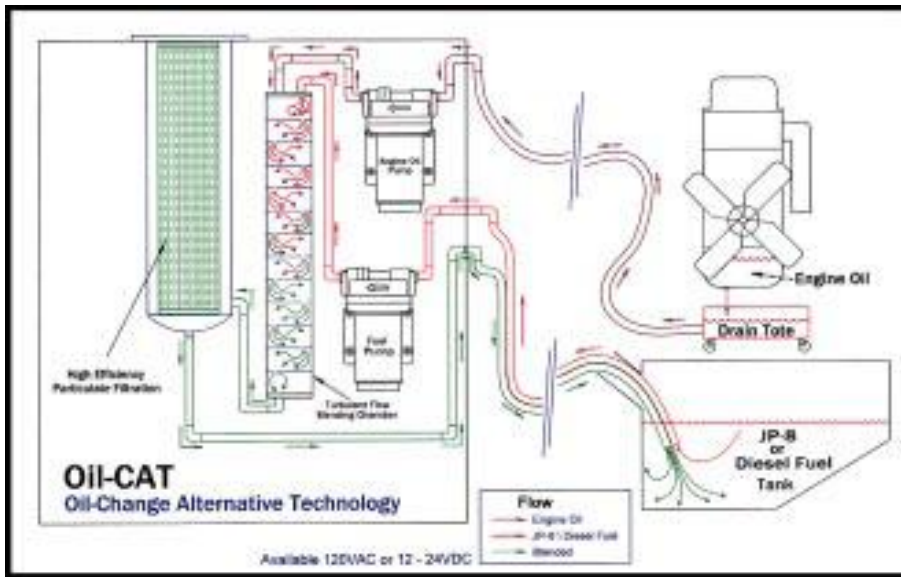




Example of an Improvement

Improvement #1: Waste Oil Filtration and Blending Units

- Purchase filtration/blending units (Payback in <1 month/unit)
- Filters oil to be reused in same equipment as fuel
- Automotive & Power Plant
- Will reduce backlog by 1,406 gal/month





Oil Cat Improvement





Projected excess waste volumes with or without improvements

Waste Oil Improvement Timeline

