FY12/13 PRIP, Floating Plant Biodiesel, and Maintenance Management updates

Presenter Name

Duty Location
Date of Presentation

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US Army Corps of Engineers
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FY11-13 PRIP

	FY11			FY12			FY13		
	Floating Plant	All Projects	FP %	Floating Plant	All Projects	FP %	Floating Plant	All Projects	FP %
Continuing Items	68119	69119	99%	44594	94468	47%	*39138*	*62798*	*62%*
New Starts	24690	82119	30%	30	4245	1%	*7384*	*12852*	*57%*
Total	**92809**	**107758**	**86%**	**44624**	**99274**	**45%**	***46522***	***79650***	***58%***

PRIP Developments

- FY13 PRIP reflects MG Walsh's call for "curbing our appetites in this era of austerity"
- National prioritization of PRIP submissions will become increasingly important
  - Already an issue with floating crane submissions
  - Affordability and Utilization are key factors
  - MVD's Optimum Fleet PDT and PRIP Prioritization PDT are good examples
- Minimum Fleet Capital Investment report
  - Directed by Mike Ensch
  - Approved by Rich Lockwood 19 Jan 2012; distributed to Oversight Group for review/comment
  - Lifecycle financial planning, including PRIP, is critical to successful management of vessels
  - Effort is planned to be extended to major floating plant, using similar methodology

USACE Floating Plant Biodiesel Initiative

- **Why biodiesel?**
  - Potential lower cost
  - Potential reduced maintenance
  - Reduced GHG emissions
- **FY11**
  - Successfully tested operational feasibility on 4 vessels @ 4 locations
  - Nominal performance and emissions testing to establish trending
- **FY12**
  - Instrumentation, installation, testing provided through MDC
    1. Planned conversions to biodiesel (all blends)
    2. Formal emissions testing in cooperation with CARB/EPA
    3. 2G fuel operational feasibility/formal emissions testing

USACE Floating Plant Biodiesel Initiative

	FY08 Baseline	FY11	FY12
B5-B20	0	314778	*617378*
B100	0	64091	*83677*
Diesel	8415252	7025980*	*6703794**

*Reduction in diesel use also due to planned repowerings & replacements

- FY11 report will be updated with FY12 findings, lessons learned
- Anticipate submission to Chief, Operations Division of recommendations for FP petroleum fuel reduction:
  - Development of power curves/optimum RPM for economical operation
  - Alternative fuels (biodiesel, LNG, etc.)
  - Improved hull coatings
  - Improved hull forms
  - Repowering

USACE Floating Plant Biodiesel Initiative

- **Minnesota:** B20 or greater in state vehicles
- **Wisconsin:** State agencies must reduce diesel fuel consumption 25% by 2015
- **Illinois:** B5 in all state or public vehicles
- **Indiana:** B2 in all state or public vehicles
- **Ohio:** New state vehicles must be capable of using an alternate fuel (biodiesel defined as B20 or greater)
- **Tennessee:** State agencies should strive to use alternative fuels whenever possible, including biodiesel
- **Kentucky:** State mandated to develop alternative fuel strategy
- **West Virginia:** 75% of a state agency's fleet must be AFVs; biodiesel is one choice
- **Pennsylvania:** None
- **New York:** New state vehicles must be AFVs; use of either 450gal B100, 2250gal B20, or 9000gal B5 can be used to equate to one AFV purchase

"Run-to-failure maintenance"
Corrective Maintenance

Breakdown maintenance

- High risk of secondary failure
- High production downtime
- Has Overtime Costs
- Potential Safety Hazards

+ Machines are not 'over maintained'
+ No condition monitoring related costs

"Fix it before it breaks"
Preventive Maintenance

Schedule maintenance
Historical maintenance
Calendar based maintenance

- Machines are repaired when there are no faults
- Repair often causes more harm than good
- There are still 'unscheduled' breakdowns

+ Maintenance is performed in controlled manner
+ Fewer catastrophic failures
+ Greater control over stored parts and costs
+ Unexpected machinery failure should be reduced

"If it Isn't broke, don't fix it"
Predictive Maintenance

Condition based maintenance

- High investment costs
- Additional skills required

+ Unexpected breakdown is reduced
+ Parts are ordered when needed
+ Maintenance is performed when convenient
+ Equipment life is extended

"Fix it at the right time"
Proactive Maintenance

Prognostic maintenance
Reliability Centered maintenance

- High investment costs
- Additional skills required
- Additional time invested upfront
- Requires a change in philosophy from management and down

+ Equipment life is extended
+ Reduced downtime
+ Reduced overall maintenance costs
+ Improved equipment reliability
+ Fewer failures, thus fewer secondary failures

Ref: DoD Guidebook "Condition Based Maintenance Plus", May 2008

FY11 USACE Maintenance Management Assessment Results

1. **USACE does a very good job of accomplishing *Maintenance* (especially reactively) despite varying missions, levels of funding, and organizational structures**

2. **USACE does not do a very good job of *Maintenance Management***

3. **National FEM Utilization planning should have proceeded/accompanied deployment**

4. **Importance of USACE management involvement at all levels in deployment/implementation was not communicated clearly – (FEM's importance as a management tool was not understood)**

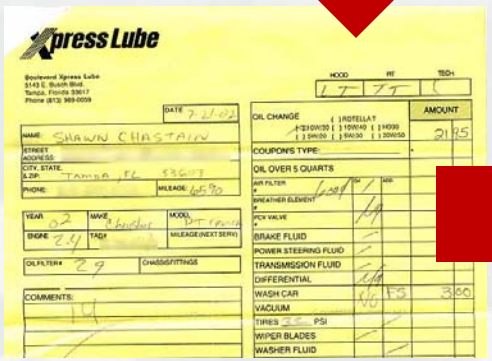
5. **Importance of good corporate Maintenance Management practices is not clearly understood/emphasized**

Not FEM

What is Maintenance Management?

Maintenance is the actual work performed to maintain assets

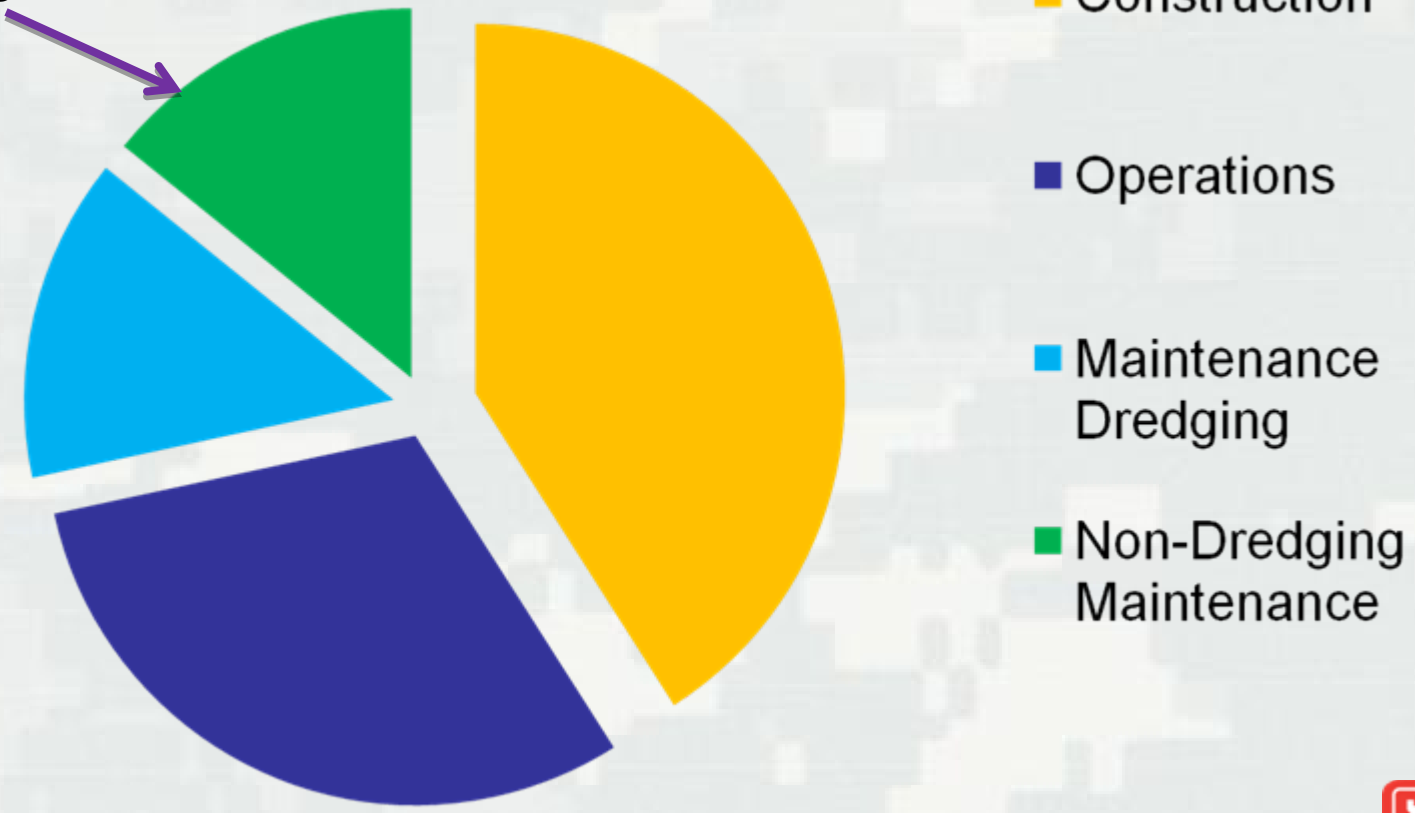
Maintenance Management is the collection and use of specific, uniform, and relevant Maintenance Data



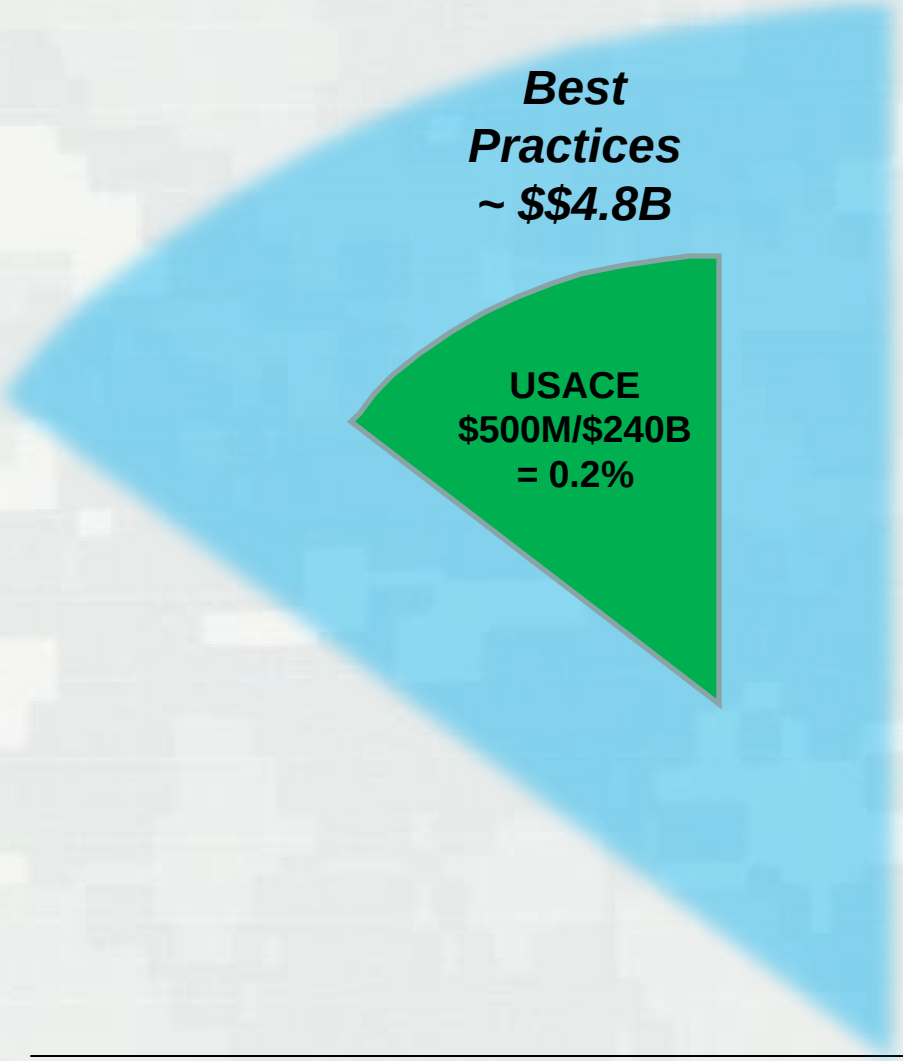
What is not measured cannot be improved

Why Maintenance Management?

Roughly $500M (14%) of total USACE budget goes to Non-Dredging Maintenance



Why Maintenance Management?



USACE Maintenance Budget Compared to Industry Best Practices

Society of Maintenance Reliability Professionals Best Practice:

Ideal Maintenance Budget = 2-4% of Replacement Asset Value

For $240B RAV, 2% = $4.8B

Why Maintenance Management?

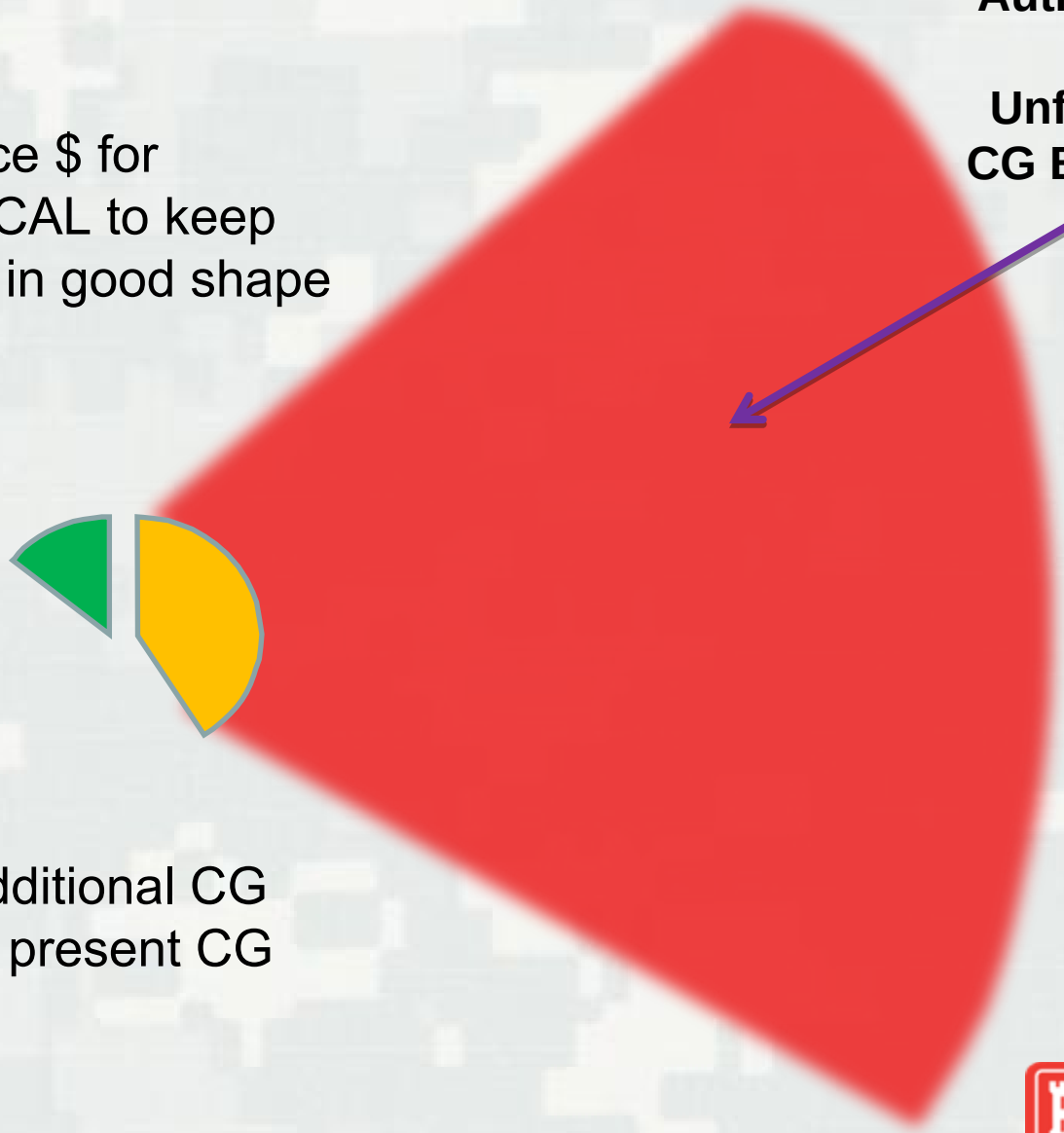
USACE
$500M/$240B
= 0.2%

Roughly a 500:1 ratio

This is equivalent to buying a $25,000 car

And budgeting $50/year for maintenance

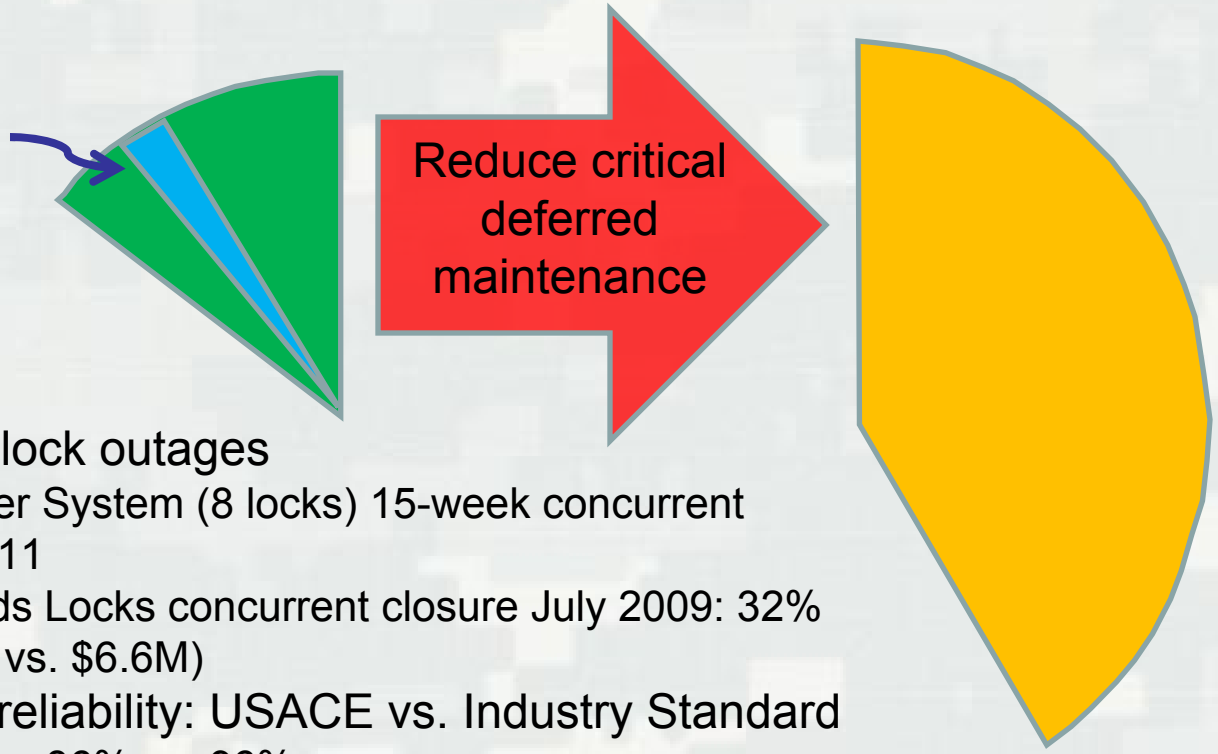
Prioritizing maintenance $ for effectiveness is CRITICAL to keep mission-critical assets in good shape



Difficult to afford additional CG Major Rehabs with present CG backlog

Maintenance funding spent effectively = sustainment or increase in VTN

Reallocate limited funds more effectively



- Synchronizing multiple lock outages
  - Columbia-Snake River System (8 locks) 15-week concurrent closure winter 2010-2011
  - Emsworth & Dashields Locks concurrent closure July 2009: 32% savings overall ($4.8M vs. $6.6M)
- Improving hydropower reliability: USACE vs. Industry Standard
  - Peak Availability: 86% vs. 96%
  - Availability: 84% vs. 94%
  - Forced Outages: 4% vs. 2%
- Better monitoring of critical component condition
  - Limit switches, etc.

Good Maintenance Management can:

- Maximize the effectiveness of each Maintenance dollar towards mission-critical assets
- Show changes in Condition/Performance/Risk Reduction from expending Maintenance funds
- Identify the assets Maintenance funding was spent on

USACE Maintenance Management Compared to Industry Best Practices

Best Practice	USACE	Industry
All Maintenance Tracked by Work Order (WO) & tracked from start to finish		
All PM's planned and estimated for labor, materials, and duration		
All work tracked by WO & tracked from start to finish		
All facility operations tracked by WO		
Failure codes and failure reporting properly used		
All Critical assets/components properly classified		
All WO's properly classified		

RIGHT MAINTENANCE AT THE RIGHT TIME

How to do Maintenance Management?

1. Develop USACE Maintenance Management Strategy
   - ► How to maximize positive impact on critical national assets to meet mission requirements with limited maintenance funds
2. Draft USACE Maintenance Management Implementation Plan (MMIP) to put MM Strategy to work
   - ► Align with existing guidance (ER 1130-2-500, ER 750-1-1, etc.)
   - ► Link maintenance to results
     - Specific, uniform, relevant data requirements
     - Data and linkage requirements detailed (OCA, ORA, APPMS, CEFMS, etc.)
     - Required reports specified to measure both maintenance and maintenance processes
   - ► Update guidance to align with new practices (EP 1130-2-500, Chapter 5)