LRD’s Lock Gate Replacement Program

Briefing to Inland Waterways User Board, 20 Oct 2010

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Key Points

- Founded on life-cycle Asset Management and Risk-based Principles
- Formal assessment process w/Engineering analysis (OCA)
- Achieves Acceptable Level of Risk
- Proactive maintenance control measures to extend gate life
- Proposed strategy
Current Lock Infrastructure Conditions

- Key system nodes have surpassed design life
  - Average age is ~ 50yrs, some are (90 yrs old)
- Lock Gates are most immediate critical infrastructure component
- Degrading to failed condition rapidly
Ohio River System
Scheduled Work by Component

- Lock Gates
- F/E Valves
- Gate/Valve Op.
- Elect/Hydraulic Systems
- Other Lock Structures
- Dam Structures
- Dam Gates
- Dam Machinery
- Lock systems have greatest need
- Dams
Lock Failures

Historic Lock Outages

- Fixed-as-failed
- Scheduled

Failed Lock Gates Projection

Time (Hrs)

Historic       >>>>>        Future

Markland Gate Failure 2009

Greenup Failure 2010

BUILDING STRONG®
Progressive Lock Gate Deterioration

Lock Gates (All Chambers) - 2030

- A: 0%
- B: 29%
- C: 7%
- D: 0%
- F: 64%
### Predicted Failures

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**Legend:**
- **A**: Maintained in 'GOOD' condition through spare gate replacement program.
- **D**: Decommissioned and replaced by Olmsted L/D
Proposed: Lock Gate Replacement Program
Proposed Program Strategy

- Exigent gates replaced within the affordable and expected LRD program levels
- Most critical Projects
  - Markland, McAlpine, Greenup, Meldahl, and Willow Island
- Continue aggressive inspection and affect interim repairs
- Fully realize LRD Heavy Lift Crave “Henry M. Shreve” to minimize impact to Navigation
- Investigate replacement options and methods
Proposed Program Strategy

- Replacement strategy and methods
  - Do Nothing - gates continue to deteriorate. Over $43B losses in 20 yrs
  - Replacements per Technical Recommendations - average annual cost is $31.6 million. Completed in 2023
  - 20 yr replacement program - up to $25 million/yr
  - Replacements in Construction (Major Rehab) – shifts from O&M to Construction. Cost shared 50-50 w/Inland Waterways Trust Fund

- Move toward optimal and affordable plan
Proposed Program Strategy

- Look at various replacement options
  - Do Nothing - gates continue to deteriorate. Over $43B losses in 20 yrs
  - Replacements per Technical Recommendations - average annual cost is $31.6 million. Completed in 2023
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- Move toward optimal and affordable plan

Contact:
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