

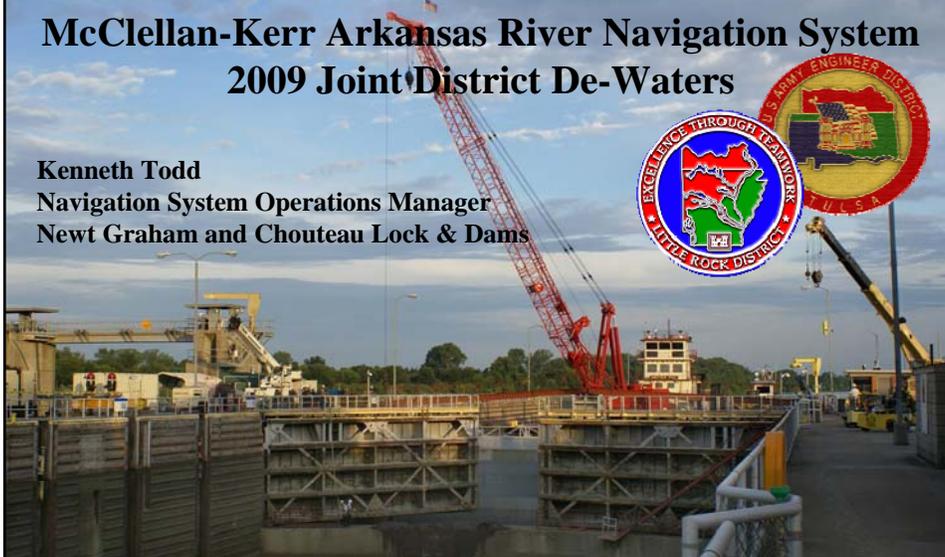


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## McClellan-Kerr Arkansas River Navigation System 2009 Joint District De-Waters

**Kenneth Todd**  
Navigation System Operations Manager  
Newt Graham and Chouteau Lock & Dams



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## Navigation Project Personnel

- Navigation Project Office Staff
  - 1 Navigation Project Manager - OPM
  - 1 Admin Assistant and 1 Student Aide
  - 3 CE Techs and 1 COOP
    - Hydrographic Survey Team
    - District GIS Specialist
- Major Maintenance Unit
  - 1 Fleet Maintenance Manager - BLM
  - 1 Floating Plant and 8 Crew members
  - 7 Major Maintenance Crew members
- 5 Lock and Dams
  - 2 Navigation Operations Managers
  - 5 Lock & Dam Equipment Mechanics
    - Maintenance Hub
  - 25 Lock & Dam Operators



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## Safe and reliable Navigation

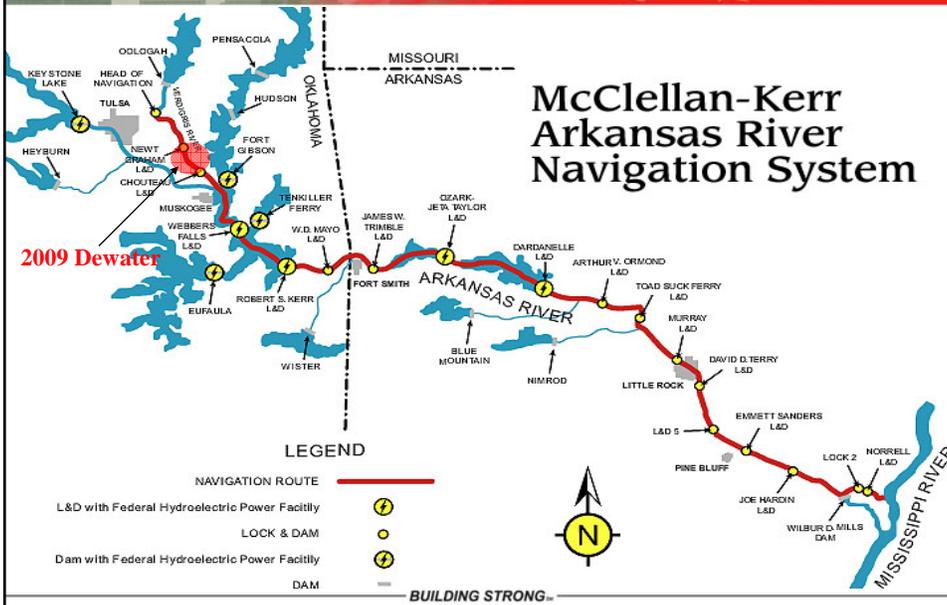
- Maintain 9' depth for @ 150 miles of navigation channel
  - 150' channel width on the Verdigris River
  - 250' channel width on the Arkansas River
- Maintain serviceability of existing infrastructure
  - 18 Locks along the 445 mile navigation system
    - All Locks are 110' X 600' single chamber
    - Lifts of SWT Locks range from 20' to 48'
    - Average age of Locks on system is 40 years
  - Spillway pool regulation
    - 3 to 18 Tainter Gates per Spillway in SWT
    - 4 Corps powerhouses along navigation system
- FEM - all Preventative Maintenance activities
  - Lock De-Waters on 12 year system-wide schedule



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## McClellan-Kerr Arkansas River Navigation System





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## Chouteau Lock and Dam 17



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## Chouteau Lock Chamber



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## Newt Graham Lock and Dam 18



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### Planned De-Water Activities (14 day)

- Repair upstream Miter Gates – Lock 18 only
- Tension Diagonals & Plumb Miter Gates
- Replace damaged/ missing armor plate
- Remove/ replace Timber Fenders
- Inspect & repack Pintle Balls
- Sandblast Miter/ Quion Blocks & apply Belzona
- Replace Miter Gate & Mooring Bitt Anodes
- Replace/ repair Air & Grease Lines
- Inspect & Repair J-Bulb Seals
- Clean & Spot Paint corroded areas on Miter Gates
- Inspect Tainter Valves and replace Anodes

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### Miter Gate Damage



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### Typical day during periods of high flows



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## Impeding Navigation



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## Armor Damage



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## Miter Block & Quoin Damage



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## Additional damage and problems

- Mud & Debris removal from US/ DS Sills
- Damage to both DS Miter Gates
- More extensive damage US Miter Gates
- 3 worn out/ damaged J-Bulb Seals
- Requested/ approved additional 4 days



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## Mud and Debris Removal



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## Damaged Bottom J-Bulb Seal



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## SWT/ SWL Team approach (shared resources)

- Major Maintenance Activities
  - Training Events
    - SWT/ SWL De-Waters
    - SWL Sector Bearing replacement
    - SWL Motor Control Centers
  - Emergency Response
    - SWT shoaling
- Shared Equipment and Assets
  - Stop Logs, center posts, pumps & etc.
  - Knowledge and experiences
  - SWL Dive Team
- System approach to Critical Maintenance prioritization
  - Maintain a top 10 list of critical maintenance items
  - Based on engineering and economic risk



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## Current Top 10 Maintenance Needs

1. Dredging
2. Design/Construct Dredge Disposal Pits
3. Lock De-Watering – 2 annually
4. Major Rehab Report/Repair – Hardin Dam
5. ARK/White Cutoff Structures
6. Procure Stop Logs for System Use
7. Repair Newt Graham Guide Wall
8. Replace Electrical Control Panels & Wiring – Locks 4, 5, 6, 8 & 13
9. Replace 3 Motor Control Centers, and 33 Spillway Motor control centers – Chouteau, Webbers, RS Kerr
10. Tainter Gate Re-hab at R.S. Kerr



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## Local News Network Coverage



<http://www.newsok.com/Global/category.asp?C=21535&clipId=4073671&fy/rn=&partnerclipId=MainVideoCatNo&AutoStart=true&ActivePanel=InfoMain&LaunchPageAdTag=homepage&ClFormat=tv>

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## Newt Graham Open House



Dignitaries, media, port and Corps representatives observe work in progress

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## Newt Graham Visitors

- Prep Week – Command Sergeant Major Buxbaum
- 1st Day – ODOT Media Crew
- 2nd Day – Local News Media Crew
- 4th Day – Congressional dignitaries
  - Sen. Jim Inhofe
  - Rep. John Sullivan
  - Representatives from Sen. Tom Coburn's office
  - Representatives from Rep. Dan Boren's office
- 9th Day – Lt. General Van Antwerp
- District/ Division office employees



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## DS Miter Gate Repairs



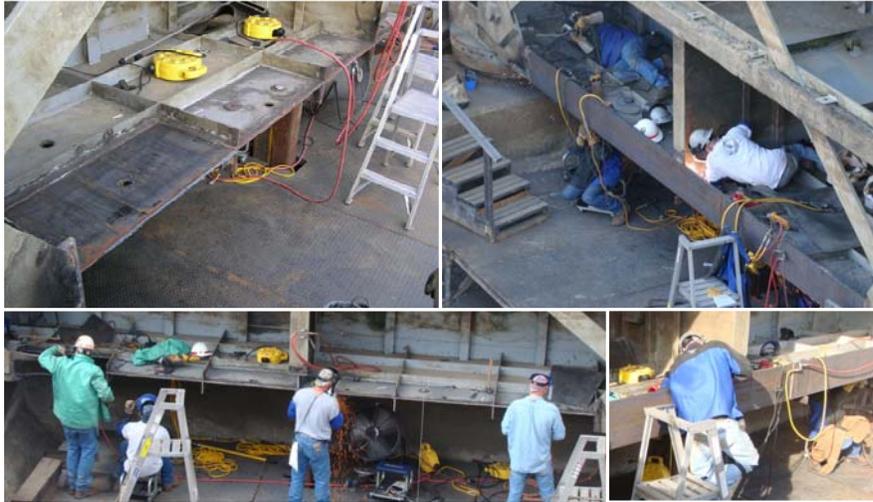
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## US Miter Gate Repairs



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## Miter Gate Repairs by Heat Treating



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## Replace J-Bulb Seals



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## Tension Diagonals and Plumb Miter Gates



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## Air & Grease Line Replacement/ Repair



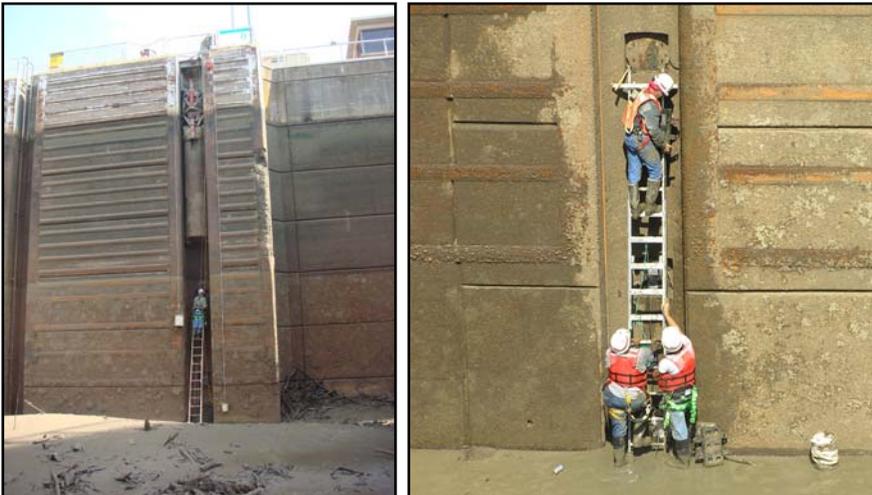
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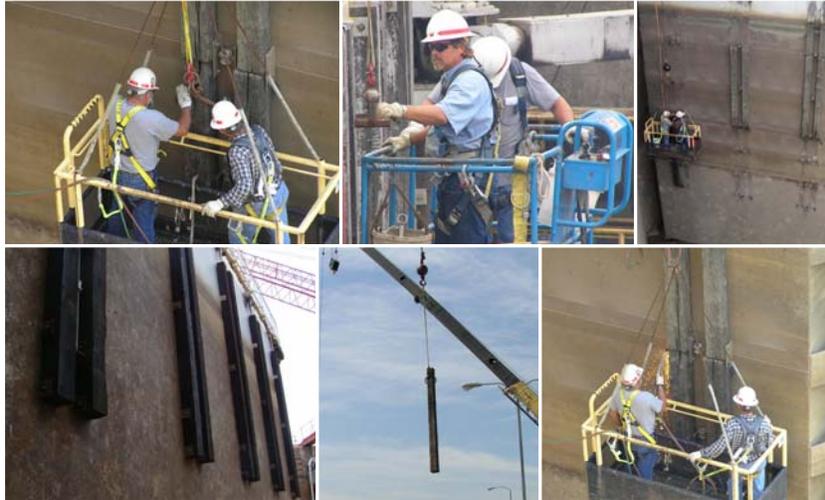
## Mooring Bitt Anode Replacement



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## Timber Fender Replacement



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## Sandblasting and Belzona application

- Sandblast Miter Gate Repairs
- Sandblast Miter and Quoin Blocks
- Apply Belzona



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## Tainter Valves

- Inspect condition of Valves
- Replace Anodes
- Repair Grease Lines



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## 18<sup>th</sup> Day Pulling Closures

**\*De-water Schedule:**

- FY10 - Locks 4&5
- FY11 - Locks 8&9
- FY12 - Locks 10&12
- FY13 - Locks 2&3
- FY14 - Locks 6&7

\*Subject to change



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## Lessons Learned

- Safety Issues
  - Proactive participation in planning from Safety offices
  - Provide fall protection training further in advance
  - Daily records of critical lifts performed
  - All rigging cables or slings must be rated and tagged
  - Insure Crane Operators are in compliance with Safety Manual
  - Improve Lockout/ Tagout procedures
    - Future De-Waters will need physical locks on controls
  - Emergency Response Plan
    - To include personal evacuation plan from chamber bottom
- Minimum of 14 days to perform full De-Water
- Hydrographic survey of Miter sills and approaches
- Shortage of Crane Operators
- Continue use Aerial lifts – one for each end
- Develop work packets for each dewater task
- Continue daily briefings and practice of information sharing

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## Questions?



**One River – One Team**

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