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Montgomery Point Lock and Dam-Maintenance Dewatering Structure (MDS)

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Project Location

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During Construction

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In Operation

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In Operation

Looking North up the Mississippi

One Corps Serving The Army and the Nation

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In Operation

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What makes Montgomery Point Different?

- Has 300 ft wide Navigation Pass
- When head water is above an elevation of 115 the gates are in the lowered position and barge traffic bypasses the lock and goes over the Navigation Pass
- When head water is below a 115 the crest gates/torque tube gates are raised (maintaining a pool of 115). Navigation traffic then locks through the lock chamber

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Navigation Pass During Construction

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What are Crest Gates?

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Crest Gates

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Crest Gate

Weight 86,000lbs

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Crest Gates Require Maintenance

- All 10 crest gates require maintenance and will have to be pulled rehabbed and replaced on a 10 year maintenance schedule. The lock has been in operation since 2004.
- A Montgomery Point Maintenance Dewatering Structure (MDS) was designed to allow you to pull 5 gates at a time for the purpose of rehabbing crest gates.

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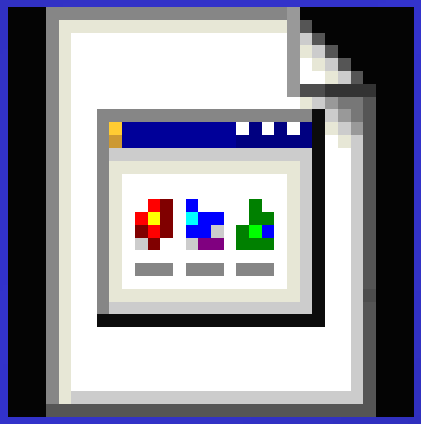
How does the MDS work?



MPLD Demo.exe

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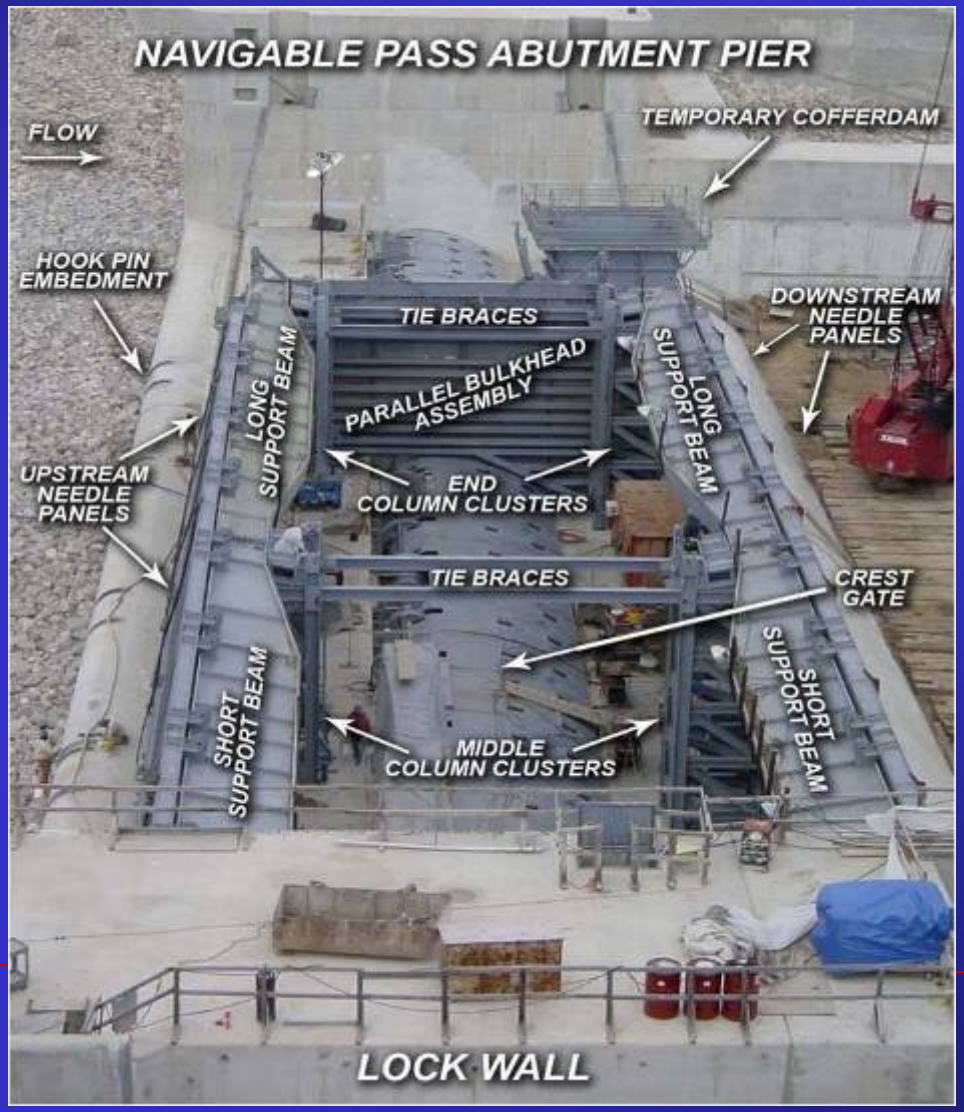
MDS Being Set in the Dry During Construction



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MDS Being Set in the Dry During Construction

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MDS Being Set in the Dry During Construction

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MDS Components Temporary Cofferdam – 78,000lbs

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MDS Components

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MDS Components

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Problems We Face/Faced

- The MDS was never set in the wet
- We did not have the proper equipment to set the structure in SWL
- HEAVY Steel Fabrication from a floating platform in the middle of a flowing river
- The MDS can only be set during specific river level conditions

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Problems
Never Set in The Wet

- The MDS was set in the dry by the contractor that built Montgomery Point
- The original contract required the contractor set the MDS in the wet under flow conditions as well
- The money ran out and this did not happen

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Problems

Did Not Have Proper Equipment to Set MDS

- Cranes we had would not make the picks needed to set the MDS
- Original Designer had Corps personnel performing simultaneous picks with two cranes
- Not safe, not possible on a floating platform
- Therefore we procured the Mike Hendricks Crane and Barge

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Mike Hendricks Crane and Barge

- 260 ft x 86 ft Barge
- Equipped with Manitowoc 18000
- De Rated Capacity of 300-350 tons
- Can make any pick required to set the MDS from one position

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Problems

Heavy Steel Fabrication in the Middle of a River

- Not something that the Corps does every day
- Large components weighing anywhere from 10 tons to 43 tons
- Sometimes have high river velocities (up to 8ft/s) on the White River which will increase the difficulty of setting the structure

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Problems

The MDS can only be set during certain river levels

- The MDS can only be set when headwater elevations on the white are between 115 and 121
- Private Independent Contractors were hired to review the setting of the MDS and give us a reasonable time required to set the structure
- These Contractors Concluded that would take a crew of 25-56 workers working 2-10 hours shifts per day **18 DAYS** in order to successfully set the MDS, pull crest gates, set gates, and pull the MDS.

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Problems

The MDS can only be set during certain river levels

- We will have several “false starts” where we could possibly mobilize, begin setting the structure, set a major portion of the structure, get a large rain/drought event, and then have to pull the structure and start again from scratch at a later date
- Hydrographs show from over 40 years of river data show that we will only have 1-2 18 day windows a year where we get the river conditions needed to set the MDS (ie. 115-121)
- Therefore the MDS will NOT be usable throughout most of the year for any EMERGENCY operations

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Other Issues at MPLD

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Other Issues at MPLD

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Other Issues at MPLD

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Other Maintenance Issues at MPLD

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Questions?