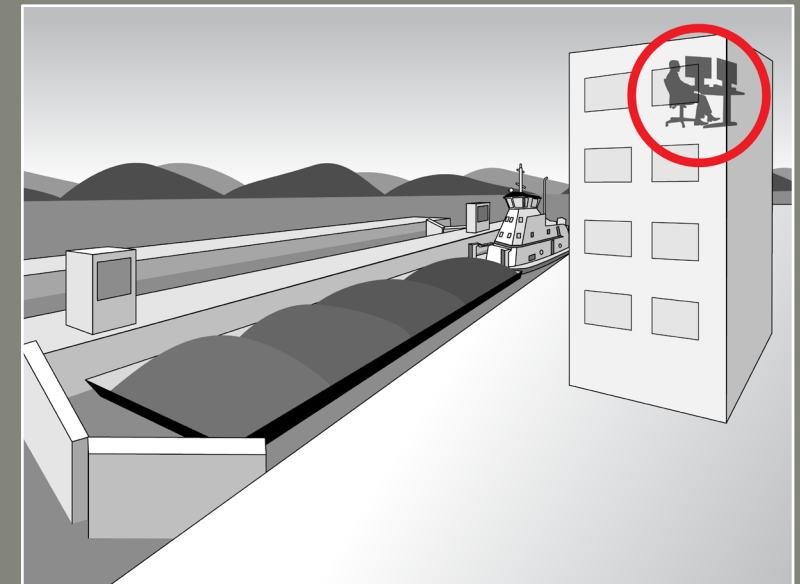
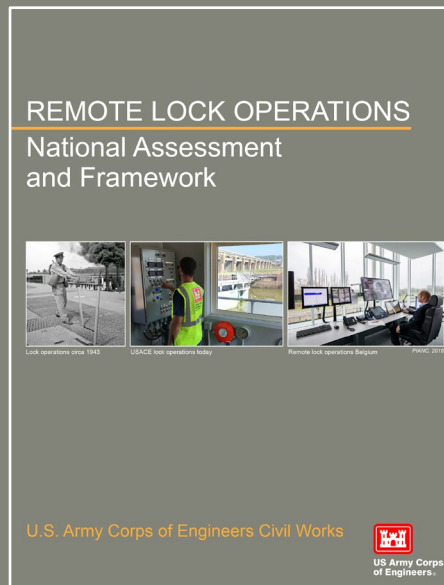


REMOTE LOCK OPERATIONS NATIONAL ASSESSMENT AND FRAMEWORK

U.S. Army Corps of Engineers Civil Works



Inland Waterways Users Board meeting #96 – April 20, 2022

Michael Tarpey
Lead Civil Engineer
USACE Inland Navigation Design Center (INDC)



US Army Corps
of Engineers®



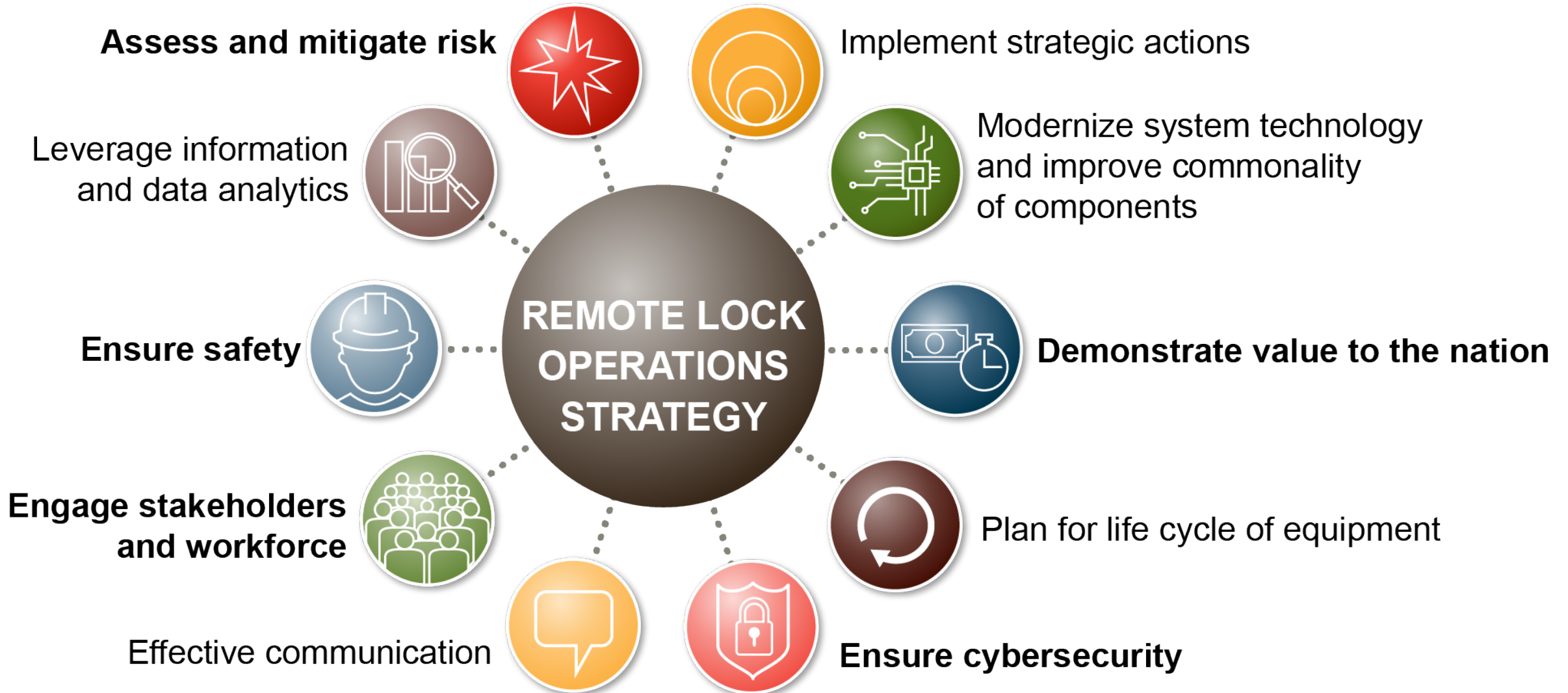
OBJECTIVE

- Assess implementation of remote lock operations
 - Improve resiliency
 - Maintain continuity of operations
- Outcome:
 - National framework
 - Implementation plan



Colorado River Locks, Texas (SWD)

FACTORS OF REMOTE LOCK OPERATIONS



TIMELINE AND DELIVERABLES

2021

J A S O N D

2022

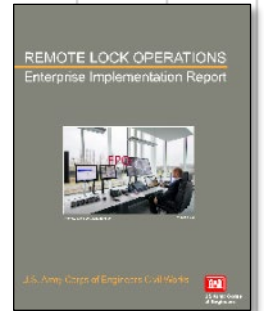
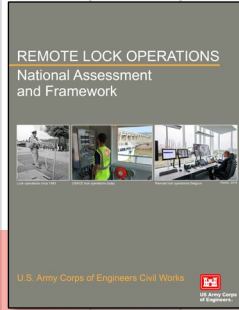
J F M A M J J A S O N D

2023

J F M A M J J A



**FRAMEWORK
REPORT**



**IMPLEMENTATION
PLAN**



COMMUNICATION

BUSINESS CASE: BOTTOM LINE UP FRONT



Yesterday



Today



Tomorrow

Benefits

- Increase resiliency
- Continuity of operations
- Centralized command and control
- Common components
- Workplace safety
- Reduce operating costs

Challenges

- Cybersecurity
- Internet connectivity
- Organizational implementation
- Stakeholder acceptance
- Cost (initial and recurring)
- Portfolio diversity
- Dam gate operations
- Recreational lockages
- Physical security

Opportunities

- Modernize USACE locks
- Align with AIS initiatives
- Increase lock availability

FRAMEWORK ASSESSMENT

KEY TAKEAWAYS

- Improves resiliency and continuity of operations
- Proven technology exists
 - USACE implementing in other mission areas
- Internal and external communication essential
- Designed and operated to ensure safety of commercial and recreational traffic
- “Hardened” to ensure cyber and physical security

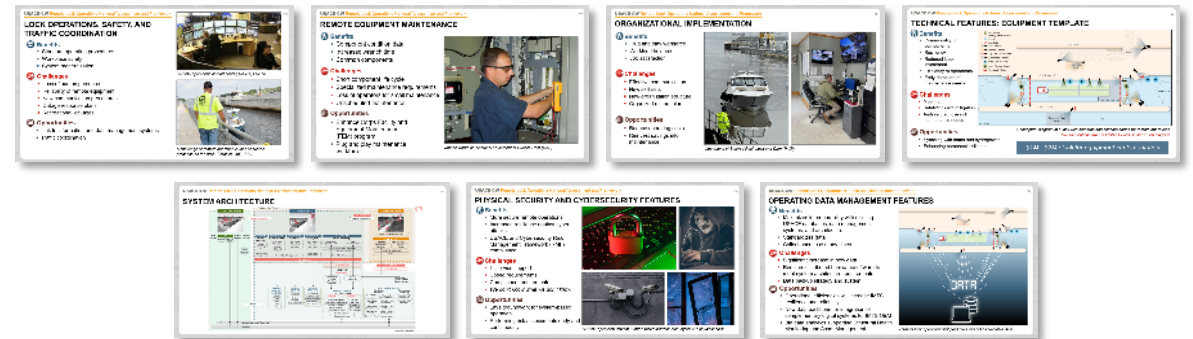
NATIONAL FRAMEWORK FOCUS:

Operational requirements

- Lock operations, safety, and traffic coordination
- Lock maintenance
- Implementation considerations

Technical requirements

- Standard technical features and system architecture
- Cybersecurity and telecommunication
- Physical security
- Operating data management



STRATEGIC COMMUNICATION APPROACH

Communications are being conducted in a deliberate fashion with key participants.



USACE

HQUSACE, MSCs, and Districts



FEDERAL PARTNERS

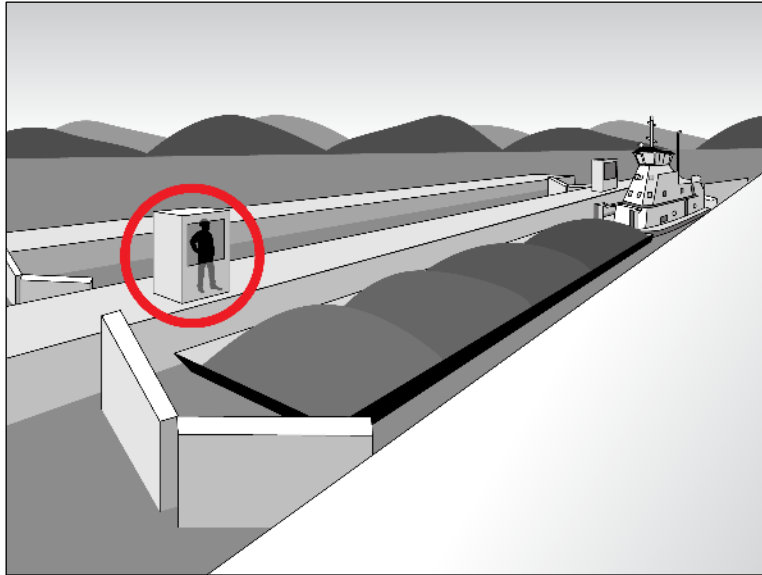
Executive Branch, Legislative Branch, and other Federal agencies



STAKEHOLDERS

National, regional, and local partners

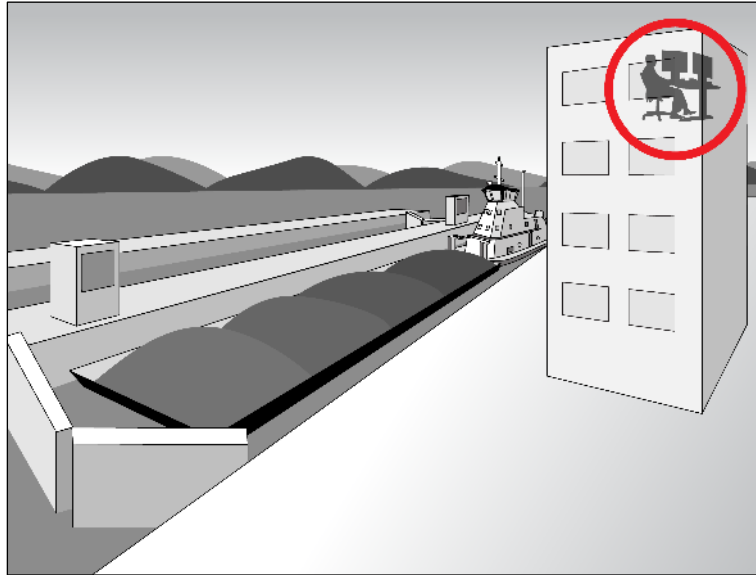
OPERATIONAL SCENARIOS



Local Operation

Navigation lock operated from lock wall.

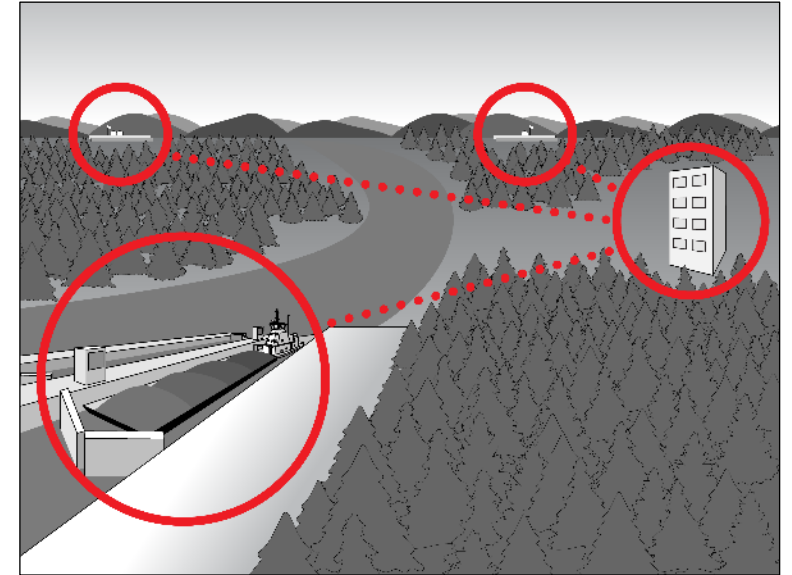
Majority of current portfolio



Closed Campus

- Navigation lock operated from local control center.
- Maintain on-site lock controls as emergency/maintenance operations.

Currently operating at select sites



Command Center

- Multiple navigation locks operated from one or more control center(s) located on or off-site.
- Maintain on-site lock controls as emergency/maintenance operations.

Future operations?

OPERATIONAL SCENARIOS (CONTINUED)



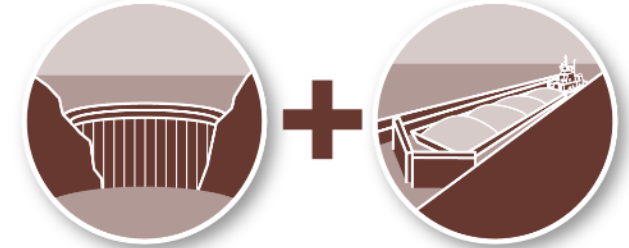
LOCAL OPERATION
Continue current operations.



CLOSED CAMPUS
Remote on-site operations at individual locks



COMMAND CENTER



MULTI-BUSINESS LINE
Remote operation of multiple missions.



TETHERED
Incorporate tethering technology.



DISTRICT
Multiple locks in the same District.



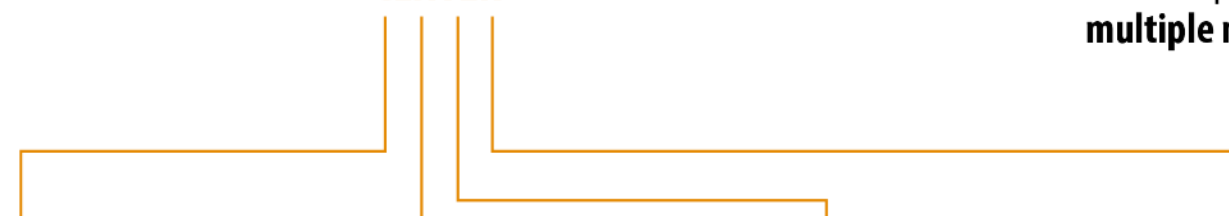
REGIONAL
Multiple locks in the same MSC.



MAJOR WATERWAYS
Multiple locks on major waterways.



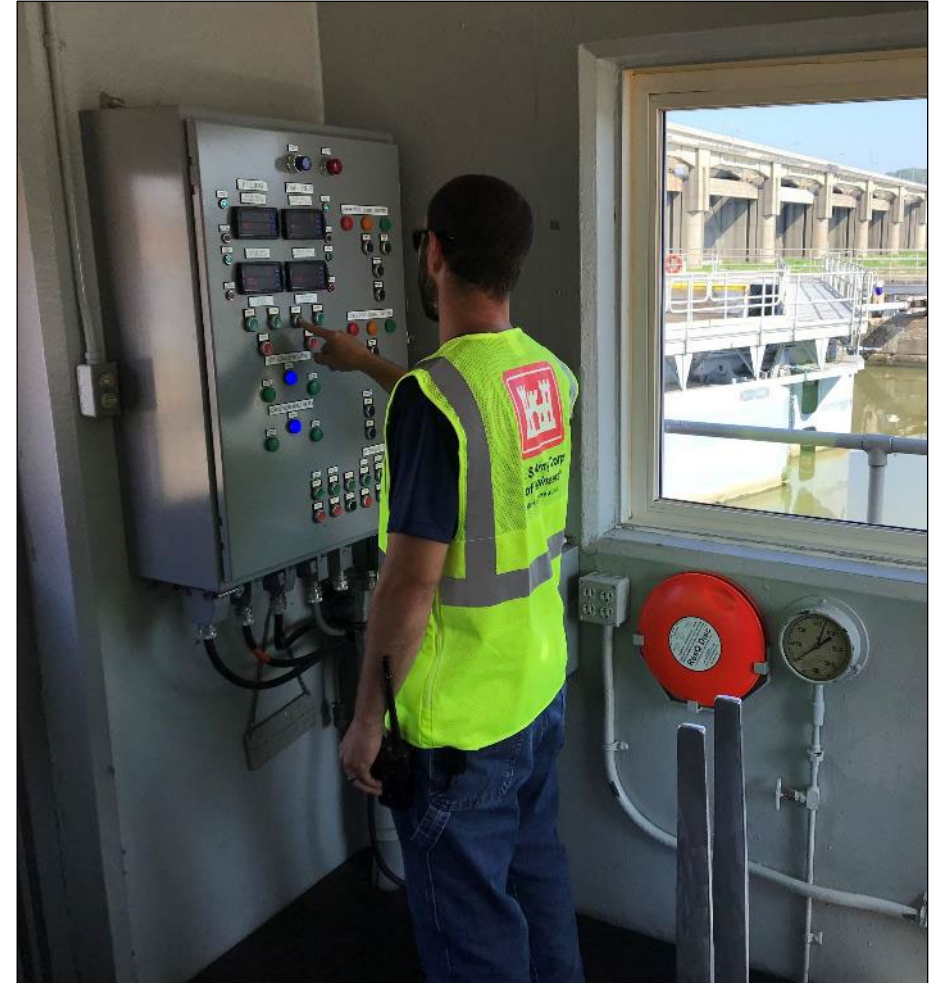
NATIONAL
Multiple locks in one command center.



PERSONNEL MANAGEMENT KEY TENETS

Command commitment: FOCUS ON PEOPLE

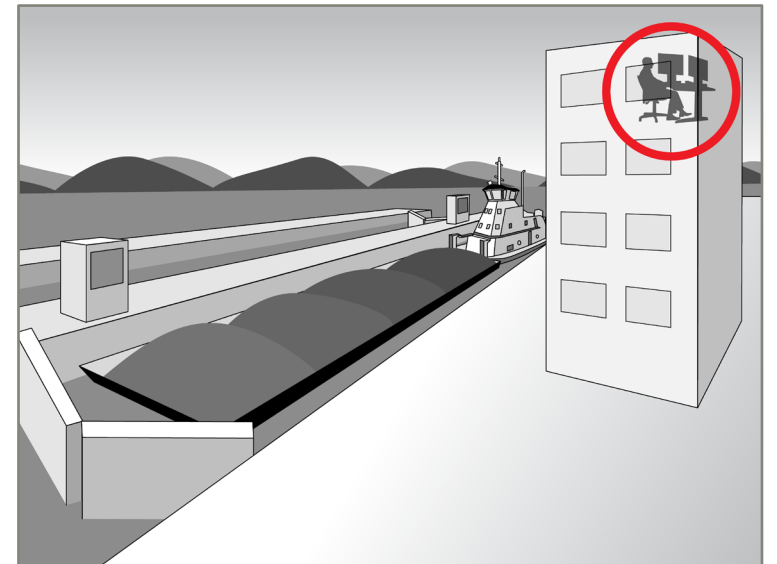
- No reduction in force (RIF)
- Cooperation & involvement of all employees
- Future staffing study would inform the planning and execution of any workforce transition strategy
 - Achieve efficiencies **without** involuntary separations or involuntary geographic moves
 - Follow previous successful workforce shaping efforts and tools
 - Voluntary workforce shaping tools are effective but need time to work; the longer the time, the better the results
- Close collaboration with unions



Lock operations today

KEY TAKEAWAYS

- Transparent communication internally and externally is essential.
- Assessment is ongoing. No decision has been made. Strong business case is needed to justify investment.
- Maintaining reliable and safe lockages for commercial and recreational traffic is critical.
- Physical & cyber security is critical.



DISCUSSION