

CESWL-CO-0

DEPARTMENT OF THE ARMY
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Civil Regulatory Functions
McCLELLAN-KERR ARKANSAS RIVER NAVIGATION SYSTEM
STANDING OPERATING PROCEDURE NO. 12
MITER GATE OPERATIONS

1. Purpose. The purpose of this memorandum is to establish procedures to be followed by lock personnel to insure that the miter gates are properly mitered before changing the water level in the lock chamber.
2. Applicability. The provisions herein are applicable to all locks on the McClellan-Kerr Arkansas River Navigation System in the Little Rock District.
3. References.
 - a. Multiple memorandum, CESWD-SO/CO-0, 6 June 1988, subject: Board of Investigation for Locking Procedures.
 - b. Letter, SWDSO, 15 September 1986, subject: Board of Investigation Recommendations for Locking Procedure, and enclosures and endorsements thereto.
 - c. Operation and Maintenance Manual, Norrell Lock and Dam.
 - d. Operation and Maintenance Manual, Lock and Dam No. 2.
 - e. Operation and Maintenance Manual, Locks and Dams Nos. 3, 4, 5, and David D. Terry Lock and Dam.
 - f. Operation and Maintenance Manual, Murray and Toad Suck Ferry Locks and Dams and Locks and Dams Nos. 9 and 13.
 - g. Operation and Maintenance Manual, Dardanelle Lock and Dam.
 - h. Operation and Maintenance Manual, Ozark Lock and Dam.
4. Policy. It is the policy in the Southwestern Division to visually inspect the miter gates for proper miter before changing

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the water level of a lock chamber and to utilize the miter gate interlock system. Furthermore, a 2-foot minimum differential head on the miter gates will be maintained between lockages at any time the interlock system is inactive (reference 3.a.).

5. General Procedure for Operating Lock Controls and Machinery.

This SOP is an addition to the procedures for lock operation contained in the Operation and Maintenance Manuals, references 3.c. through 3.h.

6. Procedure for Visual Inspection. The lock operators will inspect the miter gates as follows:

a. The upstream miter gate will be inspected for proper miter immediately before going to the downstream control shelter to lower the water level of the lock chamber.

b. The downstream miter gate will be inspected for proper miter immediately before going to the upstream control shelter to raise the water level of the lock chamber.

c. During the visual inspection, the lock operator will stop at the miter contact blocks and look at the top of the miter contact blocks and as far down the miter as can be seen to the water surface.

(1) If the gate is properly mitered, proceed immediately with the lockage.

(2) If the gate is not properly mitered, the lock operator will open and close the miter gate to obtain a proper miter.

(3) If a proper miter cannot be obtained, the operator should notify the lockmaster or the lockmaster superintendent of the problem.

7. Procedure for Interlock System Utilization. The miter gate interlock system will be activated and fully operational as a normal condition. All incidents of INTERLOCK SYSTEM OVERRIDE will be reported to the lockmaster superintendent and entered in the operator's daily log (ENG Form 2198).

a. At the beginning of each shift, the OPERATOR IN CHARGE will insure that the interlock system is activated and not in OVERRIDE.

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b. To flush the lock chamber (flush burning vessels, drift, ice, etc.) requires an operation with INTERLOCK SYSTEM IN OVERRIDE and the following procedures:

(1) Insure that the downstream miter gates are fully recessed and the downstream miter gate operating levers are in CENTER position before opening the upstream tainter valves.

(2) Immediately following any lock chamber flushing operation insure that the interlock system is reactivated and not in OVERRIDE.

c. If other conditions exist that require an INTERLOCK SYSTEM OVERRIDE, the following procedures should be followed:

(1) Determine the source of the problem (interlock system malfunction, miter switch opens persistently due to wind or wave action, etc.) to insure that an INTERLOCK SYSTEM OVERRIDE is warranted. Notify the lockmaster or lockmaster superintendent if there is any doubt of the cause of the problem.

(2) Prepare interlock system controls for override.

(3) Visually check again for proper miter immediately before changing the water level in the lock chamber.

(4) By manipulating one tainter valve, slowly change the water level in the lock chamber approximately 0.3 foot then close the tainter valve in such a manner that it is closed by the time the water surface has been changed a total of 0.5 foot. Perform a visual inspection of the miter.

(a) If the 0.5-foot change in water surface elevation brings the gate into a proper miter, proceed with the lockage.

(b) If a proper miter does not exist, start over by changing the lock chamber water surface to the original condition then open and close the miter gate to obtain a proper miter.

(5) Immediately after any lock operation with INTERLOCK SYSTEM IN OVERRIDE, take the following action:

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(a) If the OVERRIDE was caused by a temporary condition or if the problem has been resolved, reactivate the interlock system (turn the OVERRIDE off).

(b) If the condition that caused the use of OVERRIDE persists, initiate the use of the 2-foot minimum differential head on the miter gates between lockages.

8. Procedure for Maintaining a 2-Foot Minimum Differential Head on the Miter Gates Between Lockages. Any time that the interlock system is not activated, a 2-foot minimum differential head on the miter gates will be maintained between lockages.

a. Since conditions vary, each project should determine the valve opening, opening and closing rates, and the amount of differential head that creates the least evident stress or vibration of the equipment.

(1) Nominal values for the low head projects are an opening of 2 feet on one tainter valve opened in slow or intermediate slow delivery and a differential head of from 4 feet to a lock chamber half full.

(2) Nominal values for the high head projects are an opening of 2 feet on one tainter valve opened in intermediate fast or fast delivery and a differential head of from 6 feet to a lock chamber half full.

b. Upon the completion of a lockage downstream:

(1) Verify that the emptying valves are closed.

(2) Verify a proper miter at the downstream gate by a visual inspection. Then proceed immediately to the upstream shelter.

(3) By manipulating one filling tainter valve, slowly raise the water level in the lock chamber approximately 0.3 foot then close the tainter valve in such a manner that it is closed by the time the water surface has been raised a total of 0.5 foot. Perform a visual inspection of the downstream miter.

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(a) If the 0.5-foot rise in water surface elevation results in a proper miter, open one filling tainter valve 2 feet, nominal, to raise the water surface in the lock chamber, then close the tainter valve when the desired differential head is reached.

(b) If a proper miter does not exist, start over by lowering the lock chamber water surface to the original condition, then open and close the downstream miter gate to obtain a proper miter.

c. Upon the completion of a lockage upstream:

(1) Verify that the filling valves are closed.

(2) Verify a proper miter at the upstream gate by a visual inspection. Then proceed immediately to the downstream shelter.

(3) By manipulating one emptying tainter valve, slowly lower the water level in the lock chamber approximately 0.3 foot then close the tainter valve in such a manner that it is closed by the time the water surface has been lowered a total of 0.5 foot. Perform a visual inspection of the upstream miter.

(a) If the 0.5-foot drop in water surface elevation results in a proper miter, open one emptying tainter valve 2 feet, nominal, to lower the water surface in the lock chamber, then close the tainter valve when the desired differential head is reached.

(b) If a proper miter does not exist, start over by raising the lock chamber water surface to the original condition, then open and close the upstream miter gate to obtain a proper miter.

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9. Advertisement of Requirements. No advertisement to industry required.

FOR THE DISTRICT ENGINEER:



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