

## **FY17 Columbia-Snake River Navigation Lock Extended Outage**

Progress Update to Navigation Stakeholders

Information presented during conference call with stakeholders on March 23, 2017

Thank you for your continued support and interest in the 2016-2017 Columbia-Snake River System extended navigation lock outage. For those who may be new to this topic, here's a bit of background:

The U.S. Army Corps of Engineers conducted an extended navigation lock maintenance outage, from December 12, 2016, through March 20, 2017. The closure affected all Corps navigation locks on the Columbia and Snake rivers, during which time critical, non-routine repairs and maintenance, plus routine maintenance and scheduled improvements occurred.

The project information below was originally provided during a navigation-stakeholder teleconference on March 23, 2017. For those who were unable to attend that teleconference, here are the latest status updates:

**All locks** – All locks were taken out of service on December 12, and numerous in-lock work activities were accomplished during this time. Most locks in the system have returned to service: Bonneville Dam reopened its navigation lock on Feb. 9, as scheduled; McNary reopened its lock late-Friday; John Day reopened late-Saturday; The Dalles returned its lock to service on Sunday afternoon; and Lower Monumental and Lower Granite reopened their locks Monday afternoon.

Lower Monumental and Lower Granite have ongoing in-house work on their NavLock fill/drain tainter valves, projected to run through June 15. The locks are operational at these sites, although this work may add up to 20 minutes to lockage times. Additionally, Lower Monumental has diving repairs to the upstream guidewall in-progress, which are scheduled to run through 8 p.m. on Friday, March 24. The contractor will vacate the area for vessel lockages.

Little Goose and Ice Harbor dam's navigation locks, on Washington's Snake River, could not be returned to service by March 20 because of on-site work complications. Ice Harbor is scheduled to return their lock to service at 11:59 p.m. on March 23. Little Goose is currently estimated to return their lock to service at 11:59 p.m. on April 2.

**Bonneville Lock and Dam** – Bonneville completed their navigation lock controls upgrade and reopened the navigation lock to river users on February 9, 2017, as scheduled.

**The Dalles Lock and Dam** – The Dalles completed their work and returned their lock to service at 1 p.m. on Monday, March 20. The lock had several major work projects conducted during the extended outage -- replacement of the upstream gate; for the downstream gate, replacement of the gudgeon, performing adjustments, installing cathodic protection; and upgrading the lock controls and power distribution system.

**John Day Lock and Dam** – John Day's lock returned to service at 11:59 p.m. on Saturday, March 18. Completed, routine maintenance activities include inspecting, cleaning and repairing equipment. Interim repairs to the downstream gate bearing shoe have also been completed.

**McNary Lock and Dam** – McNary's lock reopened to river traffic at 4:45 p.m. on Friday, March 17. Work on the downstream miter gate included: repairs to the gudgeons (top hinge of each gate leaf), replacement of the bottom seal assemblies, and replacement of deteriorated timber fenders on each gate leaf, and bumpers on the navigation lock walls adjacent to the downstream gate.

**Ice Harbor Lock and Dam** – Ice Harbor’s lock is scheduled to return to service at 11:59 p.m. on Thursday, March 23 (tonight). Critical components of the NavLock machinery and control systems required replacement during the extended closure. The navigation lock at Ice Harbor Dam required additional work to address an unexpected mechanical issue that developed during the downstream lock gate’s commissioning process. Corps maintenance staff and engineers investigated unusual “popping” noises that occurs while the gate hoist machinery of both towers are in operation. In the interest of lock-user safety, reopening of the lock was delayed to conduct additional investigations and engineering analysis. When the investigation started, the government and contractor began troubleshooting the cause, collecting data utilizing gauges, and performing modifications that included adjustment of various bolts and torque levels through the weekend. The investigation and data analyzed resulted in a hypothesis that we were seeing movement at metal-to-metal surfaces of the sheave hub, shrink-fit sleeve and shaft as the sheave rotated, causing a “pop” noise. In order to verify this hypothesis, a subcontractor specializing in instrumentation and diagnostics was onsite to support the investigation from March 20 through 22. This additional data and analysis was able to validate the amount of flexing -- called differential flexure -- of the sheave hub relative to the shaft. The hoist sheave popping has been identified, measured, and mitigated to the greatest extent possible. Flexing between the drum and the shaft is causing the drum to push against the shoulder of the shrink-fit sleeve installed around the shaft during construction. That interference fit creates a stick-and-slip scenario that unloads in increments of one one-thousandth of an inch, causing the “popping” sound that reverberates through the drum. The strain measured due to this movement results in minimal stress in the hub, which is not enough to cause concern of premature failure. A long-term monitoring plan will be developed from which future recommendations can be made. Vessel occupants may be able to hear the “popping” noise while locking through, although this “nuisance noise” is not a cause for safety concerns.

**Lower Monumental Lock and Dam** – Lower Monumental’s lock returned to service at 2:30 p.m. on Monday, March 20. Work conducted during the outage involved the second phase of the downstream gate replacement project, which includes replacing the machinery and control systems that operate the gate. Some work on the tainter valves will continue (likely through June 15) -- lockage times may be up to 20 minutes longer than normal until that work is completed. Additionally, divers will continue making underwater timber-bumper repairs on the floating guidewall upstream of the lock. Work progress has been affected by high river flow conditions and poor diving visibility, and is anticipated to be completed at approximately 8 p.m. on Friday, March 24. Divers will be vacated from the guidewall area during tug/tow operations.

**Little Goose Lock and Dam** – Little Goose’s lock is currently scheduled to return to service at 11:59 p.m. on April 2. As previously discussed during the past several calls, Little Goose’s gate could not be returned to service by March 20 because of delays due to weather, onsite efficiency, and unforeseen crack repair requirements on the south navigation lock gate. When the Corps became aware that the work would not be completed on time, they evaluated the remaining work under contract and determined the best course of action to reduce risk and bring the lock back to operational capability as soon as possible was to award a new contract for the completion of the remaining work. A contract was awarded March 10 to Knight Construction & Supply, Inc., of Deer Park, Washington. They are mobilized on the work site and working two 12-hour shifts, seven days a week until the gates are returned to service. Knight Construction has completed the welding repairs, to include installing the skin plates on both gates and correcting any deficient welds. They are moving the north gate back into place during the day shift today (March 23), and will then be connecting the gudgeon linkage and operating cylinder during the night shift and into tomorrow (March 24), as necessary. The south gate will follow the north gate, pending any adjustments required to the pintle heel. There is concern regarding the location of the new pintle heel installed during the previous contract -- additional measurements of the conditions are being performed through today (March 23). This may require adjustment in the pintle heel or quoin block areas to ensure the gate is properly sealing during operation. Once the gates are back in place with the gudgeon linkage and operating cylinders connected, Knight

Construction will make adjustment to the quoin and mitering blocks, and move into pre-operational testing of the gate. Again, at this time, the return-to-service date remains 11:59 p.m. on April 2.

**Lower Granite Lock and Dam – Lower Granite’s lock returned to service at 2:30 p.m. on Monday, March 20.** Maintenance crews completed the replacement of damaged timber bumpers on the downstream miter gate and installation of new upstream gate cables. Some work on the tainter valves hydraulic cylinders will continue (likely through June 15) -- lockage times may be up to 20 minutes longer than normal until that work is completed.

This extended lock outage has been a coordinated effort between the Corps’ Portland and Walla Walla districts and commercial river users.

We want to assure Stakeholders that the District has been and will continue to exercise all available actions to accelerate the remaining repairs and minimize the delay in storing safe and reliable lock service. We understand the vital importance of the Columbia and Snake rivers to the economy of the Pacific Northwest, and realize that commercial lock users need as early a decision as possible on changes to the outage schedule in order to adjust their own plans.

We hope you can join us for next week’s status-update teleconference on Thursday, March, 30, at 1 p.m. Please, reference the attached **FY17LockOutage Stakeholder Teleconference Schedule** for call-in instructions.

For those who cannot attend the teleconference meeting, a written stakeholder update will also be sent the following day via email and posted to the FY17 Extended NavLock Outage webpage <http://www.nww.usace.army.mil/Missions/Navigation/FY17LockOutage.aspx>.

We also promise to provide interim email updates regarding any schedule-specific information, as soon as we can confirm it. Please, be sure you’ve signed up for outage updates by email. Just send an email to [FY17LockOutage@usace.army.mil](mailto:FY17LockOutage@usace.army.mil) with your contact information, and we’ll add you to the distribution list

As always, you are also welcome to call or email our Public Affairs Offices at the numbers and addresses below.

Walla Walla District Public Affairs Office  
(509) 527-7020  
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# FY17LockOutage

## Stakeholder Teleconference Schedule

All dates are Thursdays at 1 p.m. (Pacific)

**Monthly** – Sept. 8, Oct. 6, Nov. 3

**Weekly** – Dec. 1, 8, 15, 22, 29

Jan. 5, 12, 19, 26

Feb. 2, 9, 16, 23

Mar. 2, 9, 16, 23, 30

### Teleconference Call-in Instructions

Dial: **877-848-7030** Toll-Free

When prompted, enter:

Access Code **4909700#**

Security Code **7020#**

+ Weekly teleconferences will continue until all locks are returned to service

Information presented during teleconference will be distributed via eMail and Web-posted the following day



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[FY17LockOutage@usace.army.mil](mailto:FY17LockOutage@usace.army.mil)



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