OFFICIAL COORDINATION REQUEST FOR
NON-ROUTINE OPERATIONS AND MAINTENANCE

COORDINATION TITLE - 17 MCN 06 MOC Fish Pump #2 Testing
COORDINATION DATE - May 11, 2017, Updated May 31, 2017
PROJECT – CENWW-ODM McNary Dam
RESPONSE DATE – 19 May 2017

Description of the problem: The Oregon ladder axillary water supply system at McNary Dam contains three electric pumps but has been without fish pump 2 since January 4, 2011. The ladder will maintain criteria with two fish pumps operating but the system has been without a backup in the event fish pumps 1 or 3 failed.

The contractor has almost completed rehabilitation of fish pump 2 and will turn the pump over to project personnel on May 15. On May 31, the fish pump 2 intake stop logs will be removed, which takes about 5 hours. Discharge stop logs were removed 6 July. During stop log removal, blade angles of pumps 1 and 3 will have to be reduced. The ladder would be out of criteria during this time.

Water testing of fish pump 2 will begin 10 Juky after resistance temperature detectors (RTDs), which have been ordered, are installed. The various tests should take two weeks to complete. While testing pump 2, the blade angles of pumps 1 and 3 will be adjusted as needed to keep the ladder in criteria. An operator will be dedicated to the fish pump house and the fisheries staff will monitor the ladder from the control room at the fisheries systems computer. Vibration testing of pump 2 will occur on 10 or 11 July ~~June~~ after test equipment is installed. All testing should be completed by14 July ~~June~~, but can be extended an additional week if needed. The contractor is scheduled to leave the project on June 15.

A complication to this process is that the fish pump stop logs can only be moved this one time. The picking eyes on the two full sets of logs have been condemned. Fish pump stop logs cannot be reinstalled until new picking eyes have been mounted. If a fish pump fails after stop logs have been removed, the blade angle on the operating pump(s) have to be reduced so the blades on the failed pump can be adjusted and the brakes set so the blades will not be spun by backflow from the other pump(s). This will also reduce backflow through the inoperable pump. The operators are confident the ladder will remain in criteria with two fish pumps operational and no stop logs installed.

When fish pump 2 returns to service, we would like to remove fish pump 3 from service to begin rehabilitation.

Type of outage required

Impact on facility operation: Discharge log removal will occur on ~~May~~ 6 July. Blade angles of pumps 1 and 3 will have to be reduce to insure stop log removal from

pump 2. This could take up to 5 hours. The ladder will be out of criteria during this time.

Fish pump 2 water testing from ~~June~~ July 10-14 could result in slight drifts out of criteria while the blade angles of pumps 1 and 3 are being adjusted. Adjustments will be made as smoothly and quickly as possible.

Impact on unit priority: None.

Impact on forebay/tailwater operation: None.

Impact on spill: None.

Dates of impacts/repairs: May 31 to ~~June~~ July 14. ~~Most active days will be May , May 23 to June 7.~~

Length of time for repairs: Stop log removal will take 10 hours or less over two work days~~, May~~. (Five hours or less each of two days.) Testing will occur 10 hours per day 10-14 July~~une~~. If running well, fish pump 2 will be allowed to remain operational during test hours.

Analysis of potential impacts to fish

1. See Table 1 below for the Oregon ladder 10-year average adult fish passage by species during the time of stop log removal and fish pump testing. The spring Chinook run will be concluding. The summer Chinook and sockeye runs will beginning. The two tables help to split out the two Chinook races. Table 1 has McNary's Oregon ladder 10-year average fish passage data for May 22 to June 8 for the years 2007 to 2016 as we compiled from the DART website. (http://www.cbr.washington.edu/dart)

Table 1. Oregon Ladder Ten Year Average of Fish/Day Spring Chinook (2007-2016)

mm/dd	Spring Chinook (Fish/Day)	Spring Jack Chinook (Fish/Day)	Steelhead (Fish/Day)	Wild Steelhead (Fish/Day)	Sockeye (Fish/Day)
31-May	795	269	9	1	2
1-Jun	716	238	8	1	2
2-Jun	670	206	9	2	2
3-Jun	645	197	8	1	8
4-Jun	766	187	10	1	10
5-Jun	956	220	12	3	17
6-Jun	852	217	12	2	25
7-Jun	871	263	12	1	32
8-Jun	882	210	15	1	58

2. The current spring Chinook and summer steelhead runs are well below the 10-year average. As of May 10, 2017, 1,844 adult and 69 jack spring Chinook have been counted passing McNary. The ten year average passage to date is 44,750 adult and 2,125 jack spring Chinook salmon. To date, 2,533 steelhead total, which includes 758 non-clipped steelhead, have been counted. The ten year average is 6,342 total and 2,103 non-clipped steelhead. We compiled the date from the DART website. (http://www.cbr.washington.edu/dart) This data includes both ladders.
3. The fish counts used for Table 2 below were the 10 year average from May 15 to June 15 divided by the total run ten year average. The table records the percentage of total run of each species effected by the Oregon ladder fish pump 2 stop log removal and testing during this time frame. Again, we compiled the data from the DART website. (http://www.cbr.washington.edu/dart) However, from May 16 to 22, no wet testing of the fish pump will occur and testing should be completed by June 7. Therefore, the percentage of fish effect will be less than stated in the table. Nevertheless, this time frame allows for variances in the testing schedule and any issues that may arise.

Table 2. Percent of Total Run Impacted by Fish Pump 2 Testing.

Spring Chinook	Spring Chinook Jacks	Summer Chinook	Summer Chinook Jacks	Combined Steelhead	Sockeye
30.0	58.9	8.9	11.9	0.2	1.7

4. During intake log removal, fish passage could be affected as the intake is near the south powerhouse entrance and along the Oregon shoreline. Notice and vibrations from log removal could potentially affect passage 5 or less hours. During discharge log the removal, there will be reduced attraction flow, which could delay fish passage that day for five hours or less. Both sets of logs will be removed in the afternoon to try to reduce any disturbance of fish passage.

   During fish pump 2 wet testing, fish pumps 1 and 3 will be in use and available to supplement flow. However, during blade angle changes, attraction flow could briefly decrease or increase, which could result in the ladder being out of criteria momentarily. The result could cause brief delays in passage, particularly when the blade angles are reduced. All adjustments will be made as quickly and as smoothly as possible to reduce the attraction flow disruptions.

   With current fish passage lower than average, delays are a recognized concern.

Summary statement - expected impacts on:

Downstream migrants: None.

Upstream migrants: Minimal.

Lamprey: None.

Comments from agencies

From: Gary Fredricks - NOAA Federal
Sent: Wednesday, May 17, 2017 3:10 PM
To: Peery, Christopher:

Chris, I'm a little confused by the dates on this since the MOC says the work will start on the 15th but then the MOC response date is the 19th. I don't recall discussing this at FPOM on the 11th. In any case, assuming the stop log work will be done in the afternoon as the MOC says, I don't see any concerns for passage and it will be good to have pump 2 running (assuming the testing goes ok). I just hope it doesn't take six years to get pump 3 back.

I'm on annual leave now through the rest of the month so I won't be paying too much attention to emails.

Thanks, Gary

From: Tom Lorz [mailto:lort@critfc.org]
Sent: Wednesday, May 17, 2017 5:10 PM
To: Peery, Christopher A CIV (US)

thanks for the update, saw this and like gary was wondering has this work been done or is it scheduled to be done. If it is done the way outlined in the MOC I am fine with it. sooner rather than later date wise not in during the day, the times outlined in the MOC during daytime look good.

> From: Peery, Christopher A CIV (US)
> Sent: Thursday, May 18, 2017 9:46 AM
> To: 'Gary Fredricks - NOAA Federal':
>
> The schedule for this testing has been difficult to pin down, which delayed the release of the MOC. The latest schedule I heard was that the intake stoplogs will not be removed until Monday, 22 May, with the rest of the schedule to occur as described.
>
> If that does not occur, we will submit an updated MOC.
>
> From: Johnson, Bobby R CIV CENWW CENWD (US)
> Sent: Thursday, May 18, 2017 2:39 PM
> To: Peery, Christopher A CIV (US):
>
> Chris stated the process accurately. The plan is now for the intake logs to be removed Monday, the 22nd.
>
> I was in a meeting about concept designs for new fish pumps so I apologize for getting back slowly.

Thanks,

Bobby

From: Johnson, Bobby R CIV CENWW CENWD (US)
Sent: Wednesday, May 24, 2017 12:10 PM
To: Peery, Christopher A CIV (US)

Chris,

We have delays. The access plate between the upper and low chamber had to be replaced. A total rebuild. The some of the RTD's were not functional. Thus, the intake and discharge logs will be removed on May 31 and water testing will be delayed about a week.

Thanks,

Bobby

From: Peery, Christopher A CIV (US)
Sent: Thursday, May 31, 2017 11:16 AM

There have been delays in the testing for AWS #2 at McNary Dam. The intake stop logs are being pulled today and (latest word), they will begin removing discharge stop logs today. Please find attached an updated MOC.

Thank you,
Chris

From: Peery, Christopher A CIV (US)
Sent: Thursday, June 01, 2017 7:16 AM

Please note, incorrect subject line was used in previous email. This regards testing of AWS pump 2 at McNary Dam.

Thanks,
Chris

From: Gary Fredricks - NOAA Federal
Sent: Thursday, June 01, 2017 8:15 AM
To: Peery, Christopher A CIV (US)

I almost sent you an email on that one.... But since you caught it, Ill hit you with a different gripe. The attached pdf document doesn't allow review of the before and after edits. I think it would if this were a Word document but not in Adobe since Adobe basically freezes the document based on what's on the screen. I know I can spend the time to compare old and new copies but it would sure be nice not to go digging for the old copy. Am I missing something in my Adobe viewer? All the griping aside, I have no issues with the new MOC. Thanks Chris. Gary

From: Peery, Christopher A CIV (US)
Sent: Thursday, June 01, 2017 8:31 AM
To: 'Gary Fredricks - NOAA Federal'

I have been removing the old text and showing just the new text in track changes but I can retain both in the future to make it easier to see the changes.

Chris

From: Morrill, Charles (DFW)
Sent: Wednesday, May 31, 2017 11:24 AM
To: Peery, Christopher A CIV (US

Hi Chris,

thanks for the MOC update on testing McN AWS pumps and the MFH for IH ...

And ... any progress on APHIS providing Hazing protocol/guidelines for McN yet ...

thanks

Charlie

From FPOM meeting, 8 June 2017 Notes:

1.1. **17MCN06 MOC Fish Pump #2 Testing –** The fish pump was spinning this morning. The testing is on hold. The oil leak was actually a water leak. This fish pump has parts scavenged from the other fish pumps. The testing schedule is constantly changing. The project will update FPOM next week. Fredricks wants the MFR/MOC in Word format using Track changes to see easily see the changes made. The PDF will indicate the final version.

Final coordination results

MOC Approved

After Action update

From: Johnson, Bobby R CIV CENWW CENWD (US)
Sent: Wednesday, June 14, 2017 2:39 PM
To: Peery, Christopher A CIV (US) <Christopher.A.Peery@usace.army.mil>; Setter, Ann L CIV USARMY CENWW (US) <Ann.L.Setter@usace.army.mil>
Cc: Griffith, Denise S CIV (US) <Denise.S.Griffith@usace.army.mil>
Subject: Fish Pump 2

Still working on governor pump issues.

Hope to pull discharge logs Monday, the 19th.

From: Johnson, Bobby R CIV CENWW CENWD (US)

Sent: Thursday, June 8, 2017 11:24 AM
To: Peery, Christopher A CIV (US)
Cc: Setter, Ann L CIV USARMY CENWW (US); Griffith, Denise S CIV (US)
Subject: fish pump 2 up date

Chris,

A list might be the easiest way to tell some of the issues.

Bobby

Faulty test sensors, which need to be replaced, have delayed fish pump 2 testing for one week. The intake and discharge stoplogs will be removal on May 31 with testing beginning then.

On May 27, the Oregon ladder south entrance pool differential was drifting in and out of criteria. The operators increased fish pumps 1 and 3 blade angles, which resolved the issue. Fish pumps 1 and 3 were out of service from 1505 to 1545 hours on May 31 for the removal of one discharge log from fish pump 2. During the outage, a wiring issue was resolved at fish pump 1. Early in the day, all intake stoplogs were removed from fish pump 2. Electrical staff check all systems this week. For initial testing, only one of eight discharge logs will be removed.

A head cover water leak has delayed fish pump 2 testing into next week. After the fish pump outage, on June 1, the biologist noted SEFW1 and SFEW2 were at 7.5 feet, which is out of criterion. The operators increased fish pumps 1 and 3 blade angles, which resolved the issue.

June 5 proceed with testing. 4160V breaker would not close.

June 6th 1300 to 1319, pump 3 down to test breaker in pump 2, no result.

June 7th continue to try to run fish pump 2. SFEW1 and 2 at 7.0 and n7.1 feet. High tailwater contributes.
About 1645 to 1715, tried 4160 breaker from another fish pump to help track problem.

June 8th at 0734 4160 breaker finally closed and pump spun. Testing appears delayed further. GM was told not to remove the other seven discharge logs.

-----Original Message-----
From: Johnson, Bobby R CIV CENWW CENWD (US)
Sent: Thursday, June 08, 2017 3:52 PM
To: Setter, Ann L CIV USARMY CENWW (US) <Ann.L.Setter@usace.army.mil>; Peery, Christopher A CIV (US) <Christopher.A.Peery@usace.army.mil>
Cc: Griffith, Denise S CIV (US) <Denise.S.Griffith@usace.army.mil>
Subject: RE: fish pump 2 up date

They are running another test right now. Found the last electrical bug. On Monday, the discharge logs will be pulled and the full testing will begin.

From Weekly Report #16, covering June 9-15;

Comments: The Oregon ladder measured out of criteria points on June 9 and 14 were possibly due to one of eight discharge logs having been removed from fish pump 2, high tailwater elevations creating unfavorable hydraulic gradients and slack forming in the cables of entrance weirs NFEW2 and NFEW3.

Comments: Fish pump 2 testing has been delayed due to mechanical and electrical issues. Missing packing, oil system filters and relays were replaced. The blade governor is the main issue, which still requires resolution. The seven remaining discharge logs have not yet been scheduled for removal.

From Weekly Report #17, covering June 16-22;

Comments: On June 16, at 1557 hours, fish pumps 1 and 3 blade angles were reduce to zero degrees for six minutes to allow for adjustments on entrance weir NFEW3. Fish pump 2 vibration testing has been delayed due continued work on the blade governor. The oil head packing was replaced on June 21. The seven remaining discharge logs are tentatively scheduled for removal on June 29.

From: Johnson, Bobby R CIV CENWW CENWD (US)
Sent: Tuesday, June 27, 2017 3:11 PM
To: Peery, Christopher A CIV (US) <Christopher.A.Peery@usace.army.mil>
Cc: Griffith, Denise S CIV (US) <Denise.S.Griffith@usace.army.mil>
Subject: fish pump 2

Chris,

Ashton told me today the pump has passed all it no load testing but he did not give me a date for the load vibration testing or discharge log removal.

Thanks,

Bobby

From: Johnson, Bobby R CIV CENWW CENWD (US)
Sent: Thursday, June 29, 2017 4:11 PM
To: Peery, Christopher A CIV (US) <Christopher.A.Peery@usace.army.mil>
Cc: Setter, Ann L CIV USARMY CENWW (US) <Ann.L.Setter@usace.army.mil>; Griffith, Denise S CIV (US) <Denise.S.Griffith@usace.army.mil>
Subject: fish pump 2, FOGs TSWs

Chris,

The discharge logs for fish pump 2 are scheduled for removal on July 6, Coleman told the supervisors he wants it ready, finish the small mechanical and electrical wrap up.

From: Johnson, Bobby R CIV CENWW CENWD (US)
Sent: Thursday, July 06, 2017 3:03 PM
To: Peery, Christopher A CIV (US) <Christopher.A.Peery@usace.army.mil>
Cc: Griffith, Denise S CIV (US) <Denise.S.Griffith@usace.army.mil>
Subject: RE: fish pump2 status (UNCLASSIFIED)

Forgot one thing: We removed alive: two juvenile walleye, a couple of crayfish and one adult lamprey from the discharge logs. I also, had one subyearling Chinook mortality.

From: Johnson, Bobby R CIV CENWW CENWD (US)
Sent: Thursday, July 06, 2017 6:03 PM
To: Peery, Christopher A CIV (US) <Christopher.A.Peery@usace.army.mil>
Cc: Setter, Ann L CIV USARMY CENWW (US) <Ann.L.Setter@usace.army.mil>;

Griffith, Denise S CIV (US) <Denise.S.Griffith@usace.army.mil>
Subject: fish pump 2

Chris,

I got a late text from Bill. So, at 28 degree, the pump over heated and wobbled. They reduced the angle to 24 degrees which helped but Bill called a stop to all testing until Monday. Need to know why we have a wobble.

Even with the discharge logs out, they did insure the ladder was back in criteria when I asked at 1750.

Denise will do an inspection tomorrow.

So, I guess piecing all the e-mails together you have a picture to pass along.

Hopefully, by late Monday, we can tell you why we have a wobble and where we will go from there.

Thanks,

Bobby

From: Johnson, Bobby R CIV CENWW CENWD (US)
Sent: Thursday, July 13, 2017 12:42 PM
To: Setter, Ann L CIV USARMY CENWW (US) <Ann.L.Setter@usace.army.mil>; Peery, Christopher A CIV (US) <Christopher.A.Peery@usace.army.mil>; Hockersmith, Eric E CIV USARMY CENWW (US) <Eric.E.Hockersmith@usace.army.mil>
Cc: Griffith, Denise S CIV (US) <Denise.S.Griffith@usace.army.mil>
Subject: fish pump 2 is back!!

Chris,

After the test yesterday afternoon they left pump 2 on line. We have all three pumps going since then and the ladder should be in criteria with no problems.

Denise will do an inspection tomorrow.

Thanks,

Bobby

From: Johnson, Bobby R CIV CENWW CENWD (US)
Sent: Thursday, July 13, 2017 3:33 PM
To: Setter, Ann L CIV USARMY CENWW (US) <Ann.L.Setter@usace.army.mil>; Peery, Christopher A CIV (US) <Christopher.A.Peery@usace.army.mil>; Hockersmith, Eric E CIV USARMY CENWW (US) <Eric.E.Hockersmith@usace.army.mil>
Subject: fish pump 2

The baled angle is at 10 degrees. I am assuming we are in a break in phase. I'll try to get an update but will not get back until Sunday.

From: Johnson, Bobby R CIV CENWW CENWD (US)
Sent: Sunday, July 16, 2017 2:34 PM
To: Peery, Christopher A CIV (US) <Christopher.A.Peery@usace.army.mil>; Hockersmith, Eric E CIV USARMY CENWW (US) <Eric.E.Hockersmith@usace.army.mil>; Setter, Ann L CIV USARMY CENWW (US) <Ann.L.Setter@usace.army.mil>
Subject: Fish pump 2

Chris,

It actually came on line the 12th at 1520 and has been running with 9 degrees blade angle since. Had one oil alarm on the 14th but no problem.

Both ladder inspections on the 14th and 16th were in criteria!

Amazing what just a little extra water can do. Just think if we ever get this ladder rehabbed.

Thanks,

Bobby

From Weekly Report #20

Comments: On July 8, fish pump 2 blade governor oil filtration system was found obstructed. The pump was not operating at the time. On July 10, fish pump 2 was vibration tested. The pump commissioning was completed. The governor operated correctly and was switched to automatic mode. On July 11, an oil leak was found in the governor system, which was repaired. On July 12, the pump was tested and returned to service at 1520 hours. At higher blade angles, and over excitation occurred. Until this issue can be resolved, the pump is restricted to a blade angle of 10 degrees. Even with this operational restriction, ladder flow conditions have improved.

Please email or call with questions or concerns.

Bobby Johnson
Project Fishery Biologist, McNary Dam
Phone: (541)-922-2212
Email: bobby.johnson@usace.army.mil

Or

Denise Griffith
Assistant Project Fishery Biologist, McNary Dam
Phone: (541) 922-2263
Email: denise.s.griffith@usace.army.mil