OFFICIAL COORDINATION REQUEST FOR
NON-ROUTINE OPERATIONS AND MAINTENANCE

COORDINATION TITLE – 13 LWG 14 **-** Turbine Unit 4 & 5 Exciter Warranty Service
COORDINATION DATE- July 18, 2013
PROJECT- Lower Granite Lock and Dam
RESPONSE DATE- 25 July 2013

Description of the problem: Units 4 & 5 exciter replacements were completed in 2012. In June unit 4 experienced an exciter failure and required a forced outage. Project personnel were able to replace the PMIO card to get the unit back in operation. A warranty call was placed and the contractor has scheduled to troubleshoot and affect repairs. The failure mode is suspected to be caused by software problems and on site tests are needed to rectify this situation. Unit 5 experienced a communication failure between the exciter controller and the HMI terminal. The communication card was replaced, but the failure remained. The contractor needs to troubleshoot and repair this problem on site.

Type of outage required: It is proposed that Unit 4 will be removed from service from 0700 to 1700 hours on July 30, 2013, and Unit 5 will be removed from service from 0700 to 1700 hours on July 31, 2013.

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Impact on facility operation: When unit 4 is undergoing service, unit 2, 3, 5 and 6 will become the priority sequence. After exciter repairs are complete, Unit 4 will need to go through a start/stop sequence running at speed no load (SNL) condition for approximately 15-20 minutes. The contractor will require two or three start/stop sequences to verify the equipment operation. During the second or third sequence at SNL, the unit will synch to BPA's 500 kV line and reactive power will be varied to ascertain whether the exciter responds correctly. It is during this time the unit will be running below the 1% of peak efficiency operating range criteria for ~10-20 minutes, because practically no power will be generated while the unit is connected to the power grid at SNL. When unit 5 is undergoing service, unit 2, 3, 4 and 6 will become the priority sequence. The testing sequence for unit 5 will be the same as for unit 4. Test durations will be minimized to the extent possible and during afternoon hours. At anticipated river flows for next week, only one unit (unit 2) is expected to be run. No other impacts to facility operations are expected.

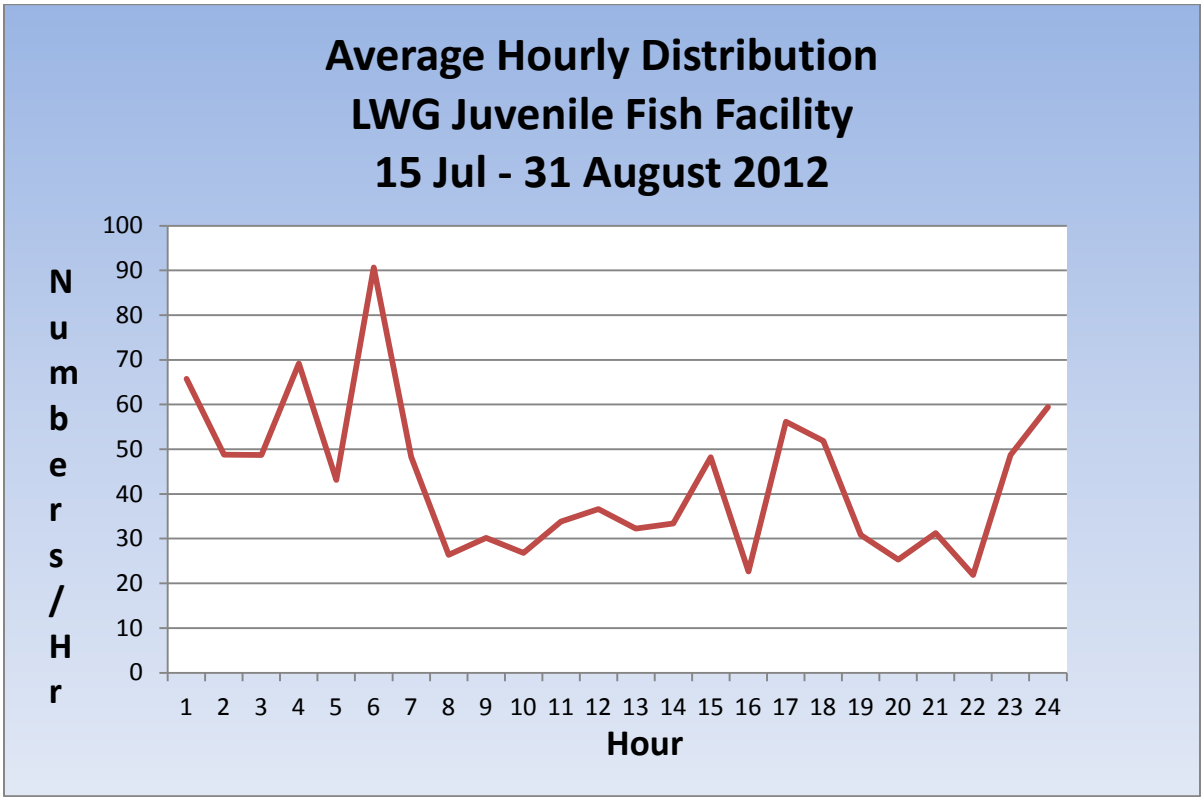
Dates of impacts/repairs: Unit 4 will be removed from service on July 30, 2013, and Unit 5 will be removed from service on July 31, 2013.

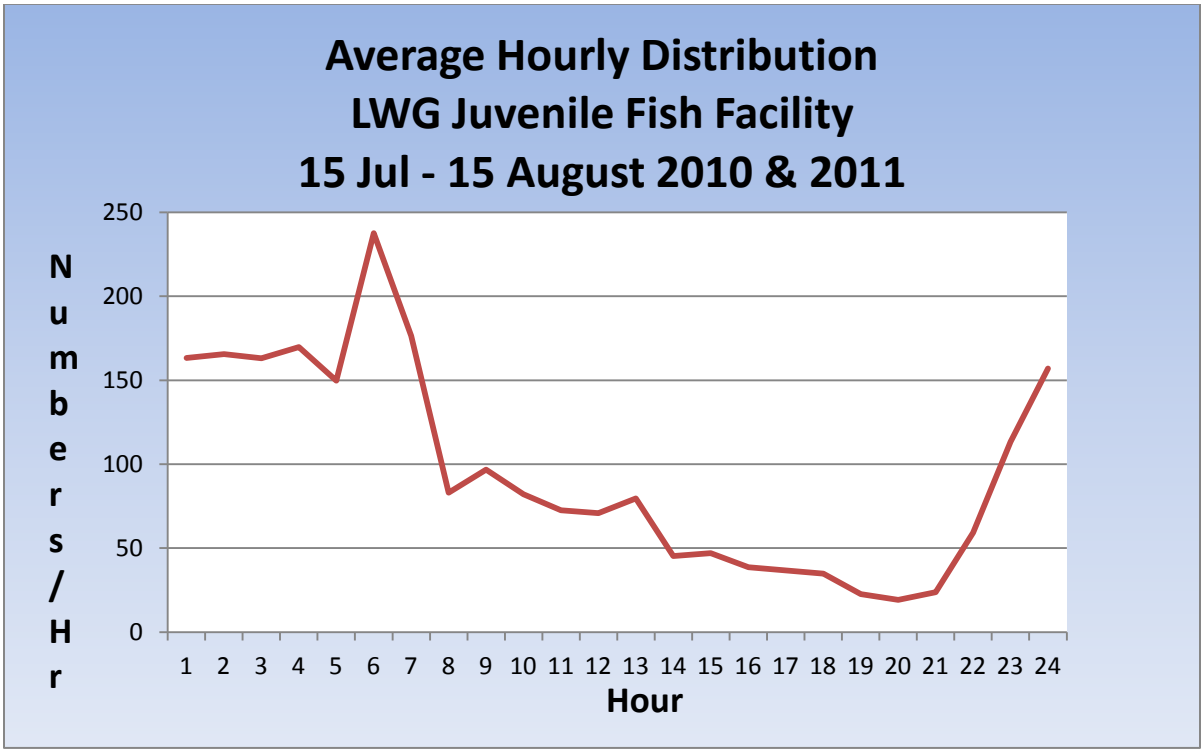
Length of time for repairs: 0700 to 1700 hours each day.

Expected impacts on fish passage: There are no expected impacts to adult fish migration into the fishway and fish ladder, because unit 2 (the priority unit) will be running. When unit 4 & 5 are run below the 1% operating range criteria, juvenile fish that enter these turbine units will be subjected to increased turbulence and increased probability of injury. However this is expected to be minimal due to the limited time (10-20 minutes for each unit) out of 1% criteria and the decline in juvenile fish migration during this period. From July 13 to July 18, 2013, the daily number of juvenile salmonids collected at Lower Granite Juvenile Fish Facility (JFF) has ranged from 972 to 2190, with a slow, general decline in numbers occurring.

The first graph below summarizes the diel distribution of juvenile fish collected at the JFF from July 15 to August 31, 2012. The second graph shows the same type of data for the period of July 15 to August 15

for the combined years of 2010 and 2011. Hourly data was recorded off of the sample counter boxes and converted to number of fish collected in the JFF per hour.





The graphs show that less juvenile fish are coming into the JFF from about 0800 to 2100 hours. Because it takes time for fish to move from the gatewells to the JFF, fish movement into the turbines or gatewells is probably occurring several hours earlier than what is shown on the graphs. Running the units below the 1% criteria in the afternoon should correspond to the time when less fish are entering the turbines. Also, most of the fish are diverted away from the turbines and into the gatewells by the ESBSs (fish screens). There will be little turbulence in the gatewells since the turbines will be running below the 1% criteria.

Comments from agencies: One comment was received:

-----Original Message-----
From: Bill Hevlin - NOAA Federal [mailto:bill.hevlin@noaa.gov]
Sent: Thursday, July 18, 2013 5:06 PM
To: Fone, Kenneth R NWW
Cc: Bailey, John C NWW; Baus, Douglas M NWD; BPA Scott Bettin; Dave Benner; Ed Meyer (ed.meyer@noaa.gov); Fredricks, Gary; Haeseker, Steve; Jason Sweet; Kiefer,Russell; Klatte, Bernard A NWP; Kruger, Rick; Langeslay, Mike J NWP; Lorz, Tom; Mackey, Tammy M NWP; Moody, Gregory P NWW; Richards, Steven P (DFW); Setter, Ann L NWW; Shutters, Marvin K NWW; Stansell, Robert J NWP; Swenson, Larry; trevor.conder@noaa.gov; Wills, Dave; Cordie, Robert P NWP; Dykstra, Timothy A NWD; Eppard, Matthew B NWP; Faulkner, Donald L NWD; Feil, Dan H NWD; Hausmann, Ben J NWP; Keller, Paul S NWP; Lear, Gayle HQ @ NWD; Medina, George J NWP; Ocker, Paul A NWD; Peters, Rock D NWD; Rerecich, Jonathan G NWP; Richards, Natalie A NWP; Schneider, Carolyn B NWP; Schwartz, Dennis E NWP; Tackley, Sean C NWP; Traylor, Andrew NWP; Van-der-leeuw, Bjorn NWP; Walker, Christopher NWP; Wright, Lisa NWD; Zorich, Nathan A NWP; Zyndol, Miroslaw A NWP; Brooks, Francis C NWW; Dugger, Carl R NWW; Eskildsen, Robert D NWW; FCRPS NWW; Fryer, Derek S NWW; Halter, Mike J NWW; Juul, Steve T NWW; Kirts, Linda R NWW; Melanson, George W NWW; Plummer, Mark F NWW; Spurgeon, William F NWW; Weston, Dwayne M NWW; Aaron Jackson; Agnes Lute (axlut@bpa.gov); Ballinger, Dean; Bob Rose; Brian McIlraith; Charles Morrill (charles.morrill@dfw.wa.gov); Chris Caudill (caudill@uidaho.edu); Chris_Peery@fws.gov; Statler, Dave; elmerc@nezperce.org; Erick VanDyke; 'Fred Mensik' (lgrsmolt@gmail.com); Fryer, Jeff; Jerry McCann; Kathryn Kostow; Kovalchuk, Greg; Martinson, Rick; Patrick Luke; Roger Dick Jr.; Rosanna Mensik; Rapp, Shawn; Shane Scott; Skidmore,John T - KEWR-4; Tucker Jones; Warf, Don; Whiteaker, John; Sears, Sheri; Mettler, Lonnie E NWW; Werner, Richard D NWW; Smetana, Bruce A NWW; Greco, Mike A NWW; Mendiola, Marty T NWW; Ivy, Nicholas J NWW
Subject: Re: FPOM: 13LWG14 - Turbine Unit 4 & 5 Exciter Warranty Service (UNCLASSIFIED)

Ken,
Thank you for the coordination request 13 LWG 14 - Turbine unit 4 & 5 exciter Warranty Service for Lower Granite. NOAA Fisheries supports the Corps' plan to remove unit 4 from service on July 30 and unit 5 from service on July 31, to complete the exciter warranty service. We agree that for the short periods when these units are brought back on line and operated outside the 1% efficiency range, turbine juvenile fish passage survival may be reduced. However, this operation will occur during the daytime reduced passage rate, as illustrated by the diel graphs attached to this coordination, and we agree with the Corps that impacts to fish passage should be minimal.

Bill Hevlin

NOAA Fisheries

On Thu, Jul 18, 2013 at 3:00 PM, Fone, Kenneth R NWW <Kenneth.R.Fone@usace.army.mil> wrote:

Classification: UNCLASSIFIED
Caveats: NONE

FPOM folks,

Please review the attached coordination request for the turbine unit 4 and 5 exciter repair and testing at Lower Granite scheduled for July 30 and 31, 2013. Please respond with any comments/concerns by July 25.

Thank you,

Ken Fone
Fishery Biologist
Operations Division
Walla Walla District
U.S. Army Corps of Engineers
509-527-7140

Classification: UNCLASSIFIED
Caveats: NONE

Final results: No objections to this MOC were received.

The exciter repairs occurred on the scheduled dates and within the specified time frames. Unit 4 was tested while running below the 1% range of peak operating efficiency at SNL for two periods of approximately 10-minutes each. This testing sequence was repeated for Unit 5.