

**OFFICIAL COORDINATION REQUEST FOR  
NON-ROUTINE OPERATIONS AND MAINTENANCE**

**COORDINATION TITLE-** *(filled in by NWP or NWW OD Bio)*

**COORDINATION DATE-** August 11, 2016

**PROJECT-** McNary Dam, North Shore Fish Ladder

**RESPONSE DATE-**

**Description of the problem**

The repairs to the PUD generator will be complete and we need to conduct a week of testing to recommission the unit.

We would like to schedule wet testing of the unit during the first week of November 2016. Understand that this is an optimized schedule that assumes all tests will be successful. If we encounter failures, testing will stop until the failure can be identified and remedied. Testing would then need to start over.

The testing consists of running the unit at different flow, rpm, and load levels to test performance of new equipment. At the beginning and end of each test, turbine discharge to the fish ladder will vary; the Auxiliary Water System (AWS) will be manually adjusted to bring the ladder into criteria. Between tests, the AWS will provide full flow to the ladder.

The first days wet testing will consist of two, two-hour heat runs, with the unit wicket gates set to provide 25% and 50% of the rated speed of the unit

The second day of heat runs will run the unit at 75% and 100%-unit speed for two hours each.

The third day of heat runs will consist of an 8-hour run of the unit at 100%-unit speed.

The fourth day of the wet testing will consist of load rejection testing at 25%, 50% 75% and 100% of rated load. During these tests, the unit will be run up to the test load and the breaker opened. Each of these tests are of short duration and will require that AWS contribution be reduced during the test.

The fifth day of testing will consist of two emergency shut downs of the unit at 50% and a 100% of full load. During these tests, the unit will be run up to the test load and a simulated emergency shutdown activated. Each of these tests are of short duration and will require that AWS contribution be reduced during the test.

The sixth day of testing will put the unit online at full load for a 72-hour operational run.

Upon the successful completion of the final 72-hour test, the unit will be shut down and a system checkout completed. The unit will be then scheduled for normal operation.

Many of these test conditions are not normal operating levels and it is a new runner so it is difficult to know what percent open of the wicket gates will be needed to achieve desired test conditions. The same is true of the respective Entrance Flow Contributions. Consequently we refrained from using estimates and will just adjust as needed.

Below is the schedule in tabular form.

	Day	Test #	% of Load Capacity	Turbine RPM's	Wicket Gates % Open	Duration	Entrance Flow Contribution		Entrance Flux Time		
							AWS	Unit	Start	Stop	Total
Bearing Heat Tests	1	1		25%	as needed	2 Hrs	MAAN	unsure	10 min	10 min	20 min
		2		50%	as needed	2 Hrs	MAAN	unsure	10 min	10 min	20 min
	2	3		75%	as needed	2 Hrs	MANN	unsure	10 min	10 min	20 min
		4		100%	as needed	2 Hrs	MAAN	unsure	10 min	10 min	20 min
	3	5		100%	as needed	8 Hrs	NANN	unsure	10 min	10 min	20 min
Load Rejection	4	1		25%	as needed	6 min	manually adjusted as needed	unsure	3 min	3 min	6 min
		2		50%	as needed	8 min		unsure	5 min	5 min	10 min
		3		75%	as needed	10 min		unsure	8 min	8 min	16 min
		4		100%	as needed	12 min		unsure	10 min	10 min	20 min
Emergency Shutdown	5	1	50%	100%	as needed	8 min	MANN	unsure	5 min	5 min	10 min
		2	100%	100%	100%	12 min	0%	100%	10 min	10 min	20 min
Normal Ops	6	1	100%	100%	100%	72 hrs	0%	100%	6 - 7 min	6 - 7 min	12-14 min

MANN = Manually Adjusted As Needed

### Type of outage required

No outage, but reductions in North ladder auxiliary flow as outlined above are expected.

### Impact on facility operation

This work will result in variable auxiliary flows to the fish ladder for short periods of time at the beginning and end of each test.

### Dates of impacts/repairs

Approximately October 31 – November 5, 2016.

### Length of time for repairs

Testing is scheduled to take 6 days if everything works. If problems are encountered, repairs will delay testing.

### Expected impacts on fish passage

Even though the timing of this work is after the peak of the salmon run, there are still fish present and as the table below suggests, the Washington shore ladder is preferable to the Oregon ladder.

The impacts should be minimal and hopefully be reduced as the tests progress and operators gain familiarity with response time of adjustments.

November - All Chinook

Year	OR Shore	WA Shore	Total	% of Total using WA
2003	513	1237	1750	71%
2004	365	1294	1659	78%
2005	316	509	825	62%
2006	343	1467	1810	81%
2007	283	1255	1538	82%
2012	410	896	1306	69%
Ave	372	1110	1482	75%

**Comments from agencies**

**Final results**

Please email or call with questions or concerns.

Thank you,