

MEMORANDUM FOR THE RECORD-14 LWG 16 MFR Powerhouse forced outage –
24September2014

SUBJECT: MFR Lower Granite powerhouse forced outage – 24September2014

Description of the problem: Lower Granite powerhouse tripped offline from 0453 to 1715 hours on September 24, 2014 due to a DC ground. The ground was the main unit transformers relay and protection circuit. Following investigation the problem was found to be on TIC winding temperature alarm circuit. The ground was creating a false high temperature trip on the protection circuit, causing the entire powerhouse to trip off line. This prevented the operation of all units resulting in forced outages of Units 1-4 and 6 (Unit 5 is currently OOS for Annual and blade/liner contact issues). The adult fish ladder AWS fish pumps were out of service while Lower Granite was operating under emergency service power during the outage. Spill to pass inflow of 11.5 K was started at 0548 hours per BPA's request with a spill pattern of gates 4-8 open at 1, 1, 1, 2, and 2 stops, respectively.

Actions taken: The adult fish ladder was inspected by PSMFC biologist at 1030 hours. It was noted that passage had slowed in the adult ladder, and at the adult trap. At 1345 hours the powerhouse operator changed the spill pattern to that listed in the Lower Granite Spill Patterns for Fish Passage with No RSW (FPP Table LGW-9) to improve fish ladder attraction conditions without passing adult fish over the RSW. This redistributed flow across spillbays 2-8 with the hope of further reducing the velocity within the tailrace eddy. The ground was repaired and the plant was returned to normal FPP operation. Fish pumps were returned to operation when the plant was restored to service.

Impact on fish passage: Spill operation with no powerhouse discharge and no fish ladder AWS pumps operating created unfavorable adult fish ladder attraction flows. The lower ladder channel/tailwater differential was out of criteria (criteria 1-2 feet) at all entrances with depths of SSE 0.2 feet, NPE 0.0 feet, and NSE 0.1 feet. SSE's were within depth criteria, NPE's were within sill criteria, and NSE's were out of criteria with depth reading on 4.7, and 4.5 feet.

Adult Chinook counts dropped to 132 compared to 1642 on September 23 and a ten year average of 712 fish. Adult Steelhead counts dropped to 728 compared to 3438 on September 23 and a ten year average of 3597 fish. Adult Coho counts were 14 compared to 235 on September 23 and a ten year average of 55 fish. Due to low adult fish ladder passage the number of fish at the adult fish trap also declined.

Length of time for repairs: From 0453-1715 hours on September 24.

Future changes to minimize impact: During this emergency outage the priority was to get the plant back online and the fish ladder AWS pumps back in operation as to the FPP. Adjusting the

spill pattern to maximize fish ladder entrance attraction will also be prioritized should another emergency outage occur in the future.

Sincerely,
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