CENWW-OD-WM **06/16/16**

MEMORANDUM FOR THE RECORD - 16 MCN 12 MFR McNary Side Brush

SUBJECT: Failure of the side screen brush in the McNary Juvenile Channel, entering emergency bypass operations and subyearling Chinook smolt mortalities noted in the juvenile collection channel when returning to primary bypass mode.

The side dewatering screen cleaning brush tripped an alarm on June 4 at 0125 hours. The brush was found stalled while traveling upstream. Efforts to restart the brush failed. At about 1000 hours, the biologist reset the brush overload relays. The brush returned to the park position and automatic mode. No other problems occurred. At the time, it appears debris had caused an overload on the brush drive motor.

On the night of June 11, the side brush tripped an alarm, but it is unknown if the side brush tripped an overload breaker. However, the written record does show that the brush did trip an alarm. On June 12, at 2137 hours, the side brush again tripped an alarm. The roving operator was able to reset the device by 2300 hours. Later, in the morning, on June 13, the side brush tripped an alarm a third time. This time, the brush was not reset. Mechanics examined the brush and determined that it stalled at the same location each time. Electricians found that the drive motor was tripping an overload limit switch. The only way to properly repair the side brush was to dewater the control section of the channel. At 1030 hours, the juvenile facility was switched from secondary bypass to primary bypass so fish could be evacuated from the facility. Accumulated fish in the sample tanks were examined by approximately 1200 hours. Most of the day's sample was missed. The side brush was then operated manually. Following repeated attempts to run the brush, twice at about 0900 hours and once at 1600 hours, fisheries technicians were instructed to monitor the channel hourly. The side brush was set to run every 8 hours overnight. Just before midnight, the side brush again tripped an alarm. The roving operator was able to reset the device.

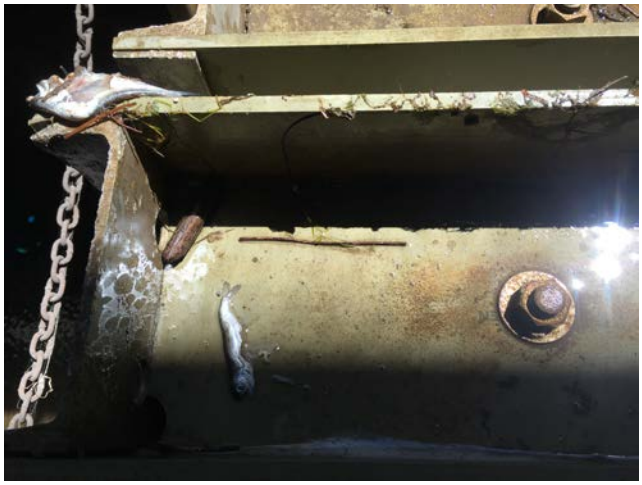
At 0730 hours, June 14, the side brush was run manually twice. From 0800 to 1015 hours, the orifices were closed and the system was switched to emergency bypass. The mechanics found that the brush bar drive gear was not making full contact on the drive rail gear teeth. The rail had a spot where the brush had been stalling out. The mechanics added shims to the drive rail, which resolved the problem. However, the biologist noted the side screen was covered in aquatic vegetation and requested that the brush be examined more thoroughly.

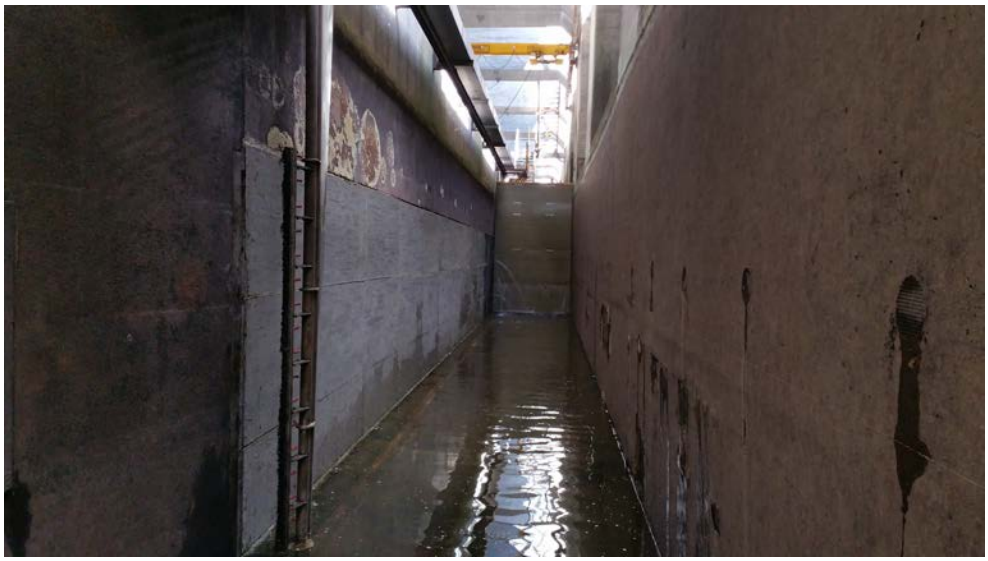
The next day, June 15, powerhouse mechanics determined that the brush was only contacting about 50 percent of the screen. They made adjustments to the brush strips until 100 percent screen contact was assured. The fisheries mechanics then cleaned the screen with wire brushes.

At 1045 hours, the orifices were closed and preparations were made to switch the system to primary bypass. When the emergency bulkheads were removed, 26 subyearling Chinook mortalities were noted. The fish appeared to have wedged themselves between the channel structure and the fiberglass bulkheads. By 1324 hours, the channel system was back in automatic mode. After checking all facility systems, the facility was switched to secondary bypass at 1415 hours. A partial sample was collected for the day.

A. Species – All subyearling Fall Chinook.
B. Origin – unknown, assumed both clipped and nonclipped fish present.
C. Length – average fork length for clipped and nonclipped subyearling Fall Chinook was 107.8 mm and 92.3 mm, respectively. Data taken from June 16 sample at the McNary fish facility.
D. Marks and tags – none noted, fish could not be retrieved safely.
E. Marks and Injuries found on carcass – fish bodies were crushed and/or bent. All mortalities looked fresh.
F. Cause and Time of Death – impingement in and around the emergency bypass bulkheads. Occurred while the system was in emergency bypass.
G. Future and Preventative Measures – For the brush: continue to perform inspections and maintenance as proficiently as possible until the brush is replaced during the winter outage of 2017-2018. For the fish: The emergency bulkheads already are difficult to install. Adding gaskets to them might be feasible but would require discussion with engineers and the general maintenance staff. The best prevention is to avoid emergency bypass.
H. Photos:


Failed Brush and Uncleaned Screen


Emergency Bypass Bulkhead Fish Mortalities



Cleaned Side Dewatering Screen

Sincerely,

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