

MEMORANDUM FOR THE RECORD

SUBJECT: 19JDA06 MFR South fish turbines 1 & 3 out of service

On 28 February, JDA operations started fish turbine pumps 2 & 3 for the start of adult passage season. While starting fish turbine pump 3, the operator heard an abnormal noise and had to shut the turbine down. JDA maintenance was notified of the problem. It was later discovered that the clutch was bad and after discussing the problem with manufacturer, running the turbine would cause severe damage to the gear box and the clutch would have to be replaced before being returned to service. As a result, fish turbine pump 1 was started to supply auxiliary water to the South fish ladder.

At 1330 on 9 April, a contractor working on a breaker on the SQO2 panel had a ground out which caused a breaker trip. The trip resulted in power lost to the FCQ2 panel which provides power to the South fish turbines oil and water pumps. As a preventative measure, the turbines automatically shut themselves down without any water cooling or oil lubrication. At 1500, JDA operations began starting fish turbines 1 & 2. During the startup of turbine pump 1, the operator heard a clanking noise and shut the turbine down for JDA maintenance to investigate.

During the initial shutdown, for reasons unbeknownst to JDA maintenance, anti-ratchet gear was damaged beyond repair. The anti-ratchet gear prevents the turbine from spinning the gearbox backwards and protects the gears from damage. It being damaged made the turbine inoperable.

As a result on 10 April, the project began operation preparations following the FPP guidelines for one turbine operation. Floating orifices were pulled in main unit bays 1 & 2. North powerhouse entrance weir one was closed and weir two was set at 8' below tail water level. The south entrance weir was raised to 5 feet to maintain 1 foot of entrance differential. Additionally, JD fisheries requested main unit 1 operated at 100 megawatts to provide better entrance differential. The upper ladder diffuser setting was changed to the Shad setting, providing more water down the overflow section and to the south entrance weir.

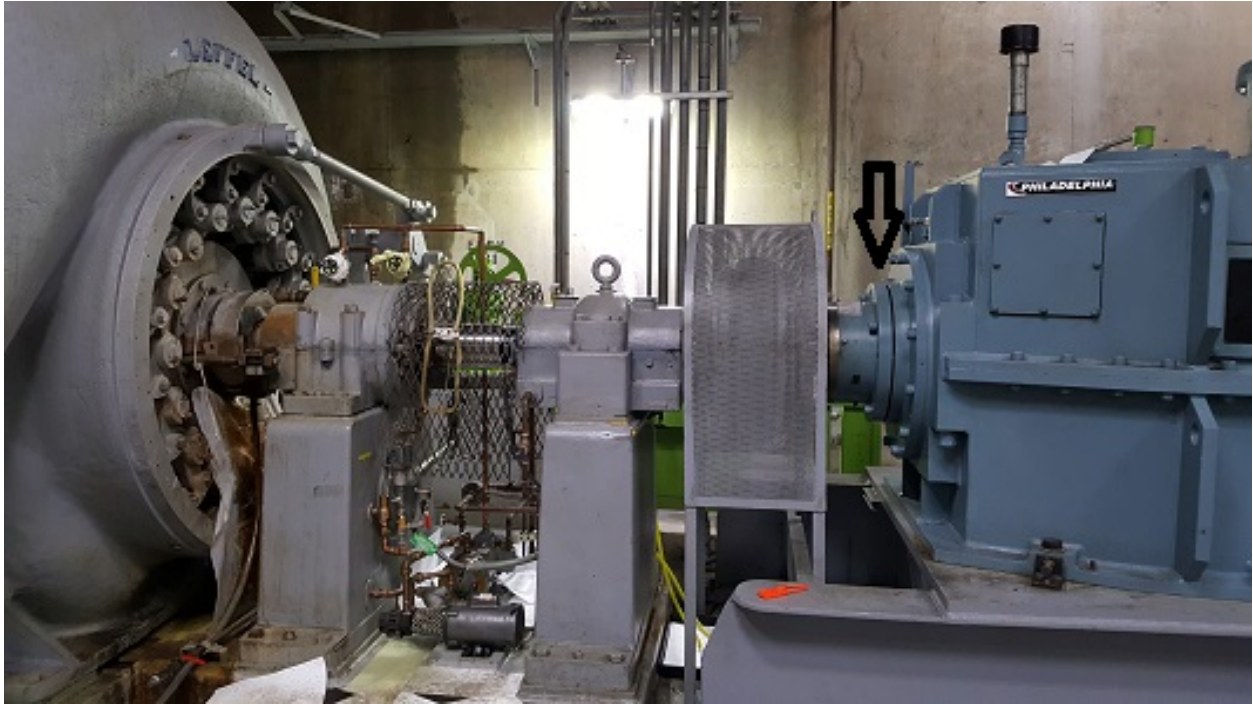
The clutch for fish turbine pump 3 should arrive on project 26 April. A spare anti-ratchet gear from the old gearbox from the rehab of fish turbine pump 3 is being pulled off and checked as a suitable replacement for turbine 1.

Updates will come as more information is gathered on repairs and changes to operation.

- A. Species –
- B. Origin – unknown
- C. Length – unknown
- D. Marks and tags – none
- E. Marks and Injuries found on carcass – none
- F. Cause and Time of Death – unknown
- G. Future and Preventative Measures –



Anti-Ratchet gear of fish turbine 1.



Clutch assembly of fish turbine 3.

Sincerely,
Eric Grosvenor
Project Fisheries