Updated 12/22/13

TURBINE UNIT DEWATERING PLAN
Fish Removal

Overview

The purpose of this plan is to reduce the amount of fish that become entrapped, thus reducing the potential for fish mortalities, as well as manpower required to remove fish from a turbine environment. Normally, if correct turbine unit dewatering procedures are followed, few fish are found in the draft tube and/or scroll case. Sturgeon and catfish are most commonly found. Salmonids are rarely found. The following plan provides guidelines for the fish salvage operation.

Coordination

1. Project operations/maintenance staff will schedule dates for turbine unit outage and provide fisheries adequate advance notice. Prefer more than 3 days.
2. Fish removal must occur within 4 days of installing head gates and tail logs.
3. Adequate water supply will be provided until adequate personnel on site for access.

Preparation

Fisheries

- Provide dip nets, bags, cargo net (large sturgeon), flashlights and radios.
- Determine release sites will be predetermined depending on location of turbine. Handling stress time will be kept to a minimum.
- Contact operations when on site to start dewatering process.

Structural

- Provide AHA and conduct pre-work safety meeting.
- Safety clearances and confined space entry permits
- Maintain contact with fisheries to inform when ready
- Stage watered up tank in gallery with standby crane support

Operations

- Place clearances
- Provide necessary valve adjustments.

Procedures

1. Procedural requirements;
   - Operate turbine (loaded preferred or speed/no load >10mintues) to push fish from draft tube.
   - When unit is shut down, immediately install forebay and tailwater bulkheads.
   - Install one tail bulkhead on each bay before stacking the remaining bulkheads.
   - Open wicket gates to allow fish into scroll case for easier removal.
2. Fisheries personnel will be on standby as the dewatering pumps/drains are in operation.
3. Visually monitored water level.
4. Lower 2 person in scroll and 1 in draft tube (attached to safety line) to check for fish.
5. Remove fish via dip net and bag. Max 6 average fish per bag. Place fish in tank. Max 30 average fish before transporting.
6. Mobile crane will release fish to tailrace from deck.
7. Extremely large sturgeon may have to stay in draft tube with adequate water/food supply and frequent monitoring.

8. Assure functional test on wicket gates are done prior to removing tail logs to prevent fish from entering scroll case prior to start up.

Equipment check list
Hoist system – for personnel access and fish egress
Hearing protection
Fish Tank with aeration supply
Dip nets
Fish bags – Check for leaks
Safety harness
Hardhat
Waders –~2' water depth
Safety glasses – optional
Gloves
Flashlights – Head lamps preferred
Radios with head phones.
Personal Floatation Device

Personnel
Fisheries personnel (2 fish staff for scroll case and draft tube).
Structural crew (Hoist/crane operator, crew lead)
Operator