# Fish Passage Plan (FPP) Change Request Form

**Change Form # & Title**: 21AppA001 – Outage for Doble Testing/Transformer Maintenance

**Date Submitted**: 30 December 2020

**Project**: All Lower Snake River Projects (Appendix A)

**Requester Name, Agency**: Chris Peery, USACE NWW, and Lisa Wright, Corps RCC

**Final Action: APPROVED – 11 February 2021**

**FPP Section**: Appendix A (Special Ops & Studies).

**Justification for Change**:

Adds the 2021 outage schedule for Doble testing/transformer maintenance.

**Proposed Change**: *See following pages.*

**Comments**:

28-JAN-2020 FPOM FPP Meeting:

Conder doesn’t support the Lower Monumental T1 outage starting July 22. There are still quite a few sockeye passing at that time so taking out all units during the day would likely have adverse impacts.

Bettin wondered if some of the work (e.g., replacing doghouse covers) could be put off until future outages for transmission.

Peery will coordinate with LMN on delaying the T1 outage to 1-AUG or later. An updated change form will be sent out and added to the FPOM agenda for 11-FEB. PENDING.

11-FEB-2021 FPOM:

Peery provided an update that LMN will push back the outage by a week to 29-Jul thru 13-Aug. He noted that due to the sequential nature of testing, moving one project affects the other three.

Conder said it could be better, there might still be some sockeye. But these dates are acceptable.

Lorz said it’s not perfect but better.

Ebel can live with it. He asked what the flexibility is to adjust in-season if we see a problem with sockeye. Peery said they’d probably just have to cancel and do it next year. There would be significant concerns with failures if maintenance isn’t done. Bettin added it’s never been cancelled.

Peery noted that SR sockeye come through earlier so late arrivals probably not SR. Ebel agreed.

Van Dyke concerned with the “every three years concept” when it seems to happen every year. He recognizes needed maintenance but would prefer to see it go back to every other year or every three years. Peery will work with project OPMs and Bios much earlier in the process to tighten up the schedule.

**Record of Final Action**: Approved as revised at the FPOM meeting on 11-FEB-2021.

Appendix A – Special Operations & Studies

1. INTRODUCTION

1.5. Doble Testing[[1]](#footnote-1)

Transformers at the Lower Snake River projects are required to undergo Doble testing1 every three years to ensure they are functioning correctly and identify any issues that need repair. The testing must be conducted during warm, dry conditions (July–August) and requires an outage of the transformer and associated units. Testing is performed during already scheduled outages to the extent possible and timed to avoid or minimize impacts to fish.

In years that Doble testing isn’t required, the project may still require an outage during the same timeframe to perform necessary transformer maintenance and repairs that were identified in previous Doble tests and inspections.

The transformer outage schedule for the current year is defined in **Table A-1**. For more information, refer to the project-specific sections below.

Table A-1. Doble Testing Schedule in 2021.a

|  |  |  |  |
| --- | --- | --- | --- |
| **Project** | **Dates** | **Outage**  **(Transformer & Units)** | **Notes b** |
| **IHR** | July  19–23 | Line 3 (Units 5, 6) all hours | Remaining available units (1, 2, 4) operated per FPP priority order. |
| **LMN** | July 29 –  August 13 | T1 (Units 1–4) all hours;  T2 (Units 5, 6) daily 0530–1630 | All units OOS daily 0530–1630 with Unit 5 at speed no load (5 kcfs) for station service. Units 5 & 6 RTS nightly 1630–0530 and operated per FPP priority order. |
| **LGS** | August  2–13 | T1 (Units 1–4) all hours;  T2 (Units 5, 6) 0500-1700  Aug 2-5 and Aug 9-13 | All units OOS for up to 12 hours (0500-1700) Aug 2-5 and Aug 9-13, with Unit 6 at speed no load (5 kcfs) for station service. During all other hours, Unit 6 available. |
| **LWG** | Aug 9–13;  Aug 15–17 | T1 (Units 1-4) daily 0600-1900 Aug 9-13 and Aug 16-17;  T2 (Units 5-6) all hours | All units OOS daily for up to 13 hours (0600-1900) Aug 9–13 and Aug 16–17, with Unit 5 at speed no load (5 kcfs) for station service. During all other hours, T1 (Units 1-4) available. |

**a**. The lower Columbia projects (BON, TDA, JDA, MCN) have no specific outage for Doble tests and testing is done concurrent with outages for maintenance.

**b.** OOS = Out of Service (unavailable to operate); RTS = Return to Service (available to operate).

6. Ice Harbor – Special Operations

**6.1.3. Doble Testing (see section 1.5 above for more information)**

1. Dates: Summer (annually). In 2021, the outage is scheduled for July 19–23.
2. Description: Transformer Doble testing of Line 3 and associated equipment will require Main Units 5&6 down continuously in association with this work.
3. Impacts to FPP Criteria: None. Since Ice Harbor has multiple transformer banks and transmission lines and redundant switching capability, remaining available units (1, 2, 4) will be available and operated pursuant to FPP priority order. River flows are typically lower this time of year, so it is unlikely that additional spill will be needed above the voluntary spill for juvenile fish that will already be occurring.

7. Lower Monumental – Special Operations

**7.1.3. Doble Testing (see section 1.5 above for more information)**

1. Dates: Summer (annually). In 2021, the outage is scheduled for July 29–August 13.
2. Description: During the 2021 outage, the project will upgrade the T1 iso-phase bus, which will consist of replacing doghouse covers, replacing gaskets with upgraded materials, cleaning, and inspections. The outage will require T1 and T2 (all units) out of service daily for up to 11 hours (0530-1630) and all project outflow will be spilled except 5 kcfs through Unit 5 for station service power. T2 (Units 5, 6) will return to service nightly by 1630 and be available until 0530 the next morning.
3. Impacts to FPP Criteria: All units will be out of service daily for up to 11 hours (0530-1630) and all project outflow will be spilled except 5 kcfs through Unit 5 for station service.

8. Little Goose – Special Operations

**8.1.1. Doble Testing (see section 1.5 above for more information)**

1. Dates: Summer (annually). In 2021, the outage is scheduled for August 2–13.
2. Description: During the outage in 2021, the project will continue to upgrade the T1 iso-phase bus which will consist of replacing the doghouse covers, replacing the gaskets with upgraded materials, cleaning, and inspections. The outage will require all units out of service for up to 12 hours (0500-1700) on the first and last day, August 2 and 13, to hang and remove clearances on T1, and during work days, August 3-5 and August 9-12. During these hours, all project outflow will be spilled except 5 kcfs through Unit 6 for station service power. T1 (Units 1-4) will remain out of service for the duration of the outage. T2 (Unit 6) will be returned to service nightly and all hours over the weekend Aug 6–8 (Fri-Sun).
3. Impacts to FPP Criteria: All units will be out of service for up to 12 hours (0500-1700) each day August 2-5 and 9-13, and all project outflow will be spilled except 5 kcfs through Unit 6 for station service.

9. Lower Granite – Special Operations

**9.1.4. Doble Testing (see section 1.5 above for more information)**

1. Dates: Summer (annually). In 2021, the outage is scheduled for August 9–13 and 15–17.
2. Description: The outage in 2021 is required to perform Doble testing and routine maintenance on T2 (Units 5 & 6). During this time, T2 transformer instrumentation will be upgraded, the iso-phase bus will be rehabbed, and transformer oil will be added to the T2B phase. The upgraded instrumentation will monitor transformer conditions and provide indication to the control room to prevent transformer failures and unplanned outages of all main generating units connected to the transformer. The iso-phase bus rehab will install bushing inspection covers and replace inspection hatch gaskets through the bus housing. This work will reduce the risk of water intrusion that has caused transformer/unit outages lasting up to a week.

Some of the work needs to be done from the top of the transformer on T2, which will require the powerhouse line (all units) out of service from August 9 at 0600 through August 13 at 1900, and from August 16 at 0600 through August 17 at 1900. T2 (Units 5 and 6) will remain OOS continuously through the entire outage period. T1 (Units 1-4) will RTS nightly and over the whole weekend August 14-15. Unit 5 will be operated for station service power (5 kcfs) while the PH line is OOS during the day August 9-13 and August 16-17.

1. Impacts to FPP Criteria: All units will be out of service for up to 13 hours/day (0600-1900) daily from August 9 through August 13, and August 16-17. During these hours, all project outflow will be spilled except approximately 5 kcfs through Unit 5 for station service.

1. “Doble test” is a common term referring to a power factor test of transformers to measure performance of electrical insulation. Doble is the name of a manufacturer of the test equipment. [↑](#footnote-ref-1)