

United States Government

Department of Energy
Bonneville Power Administration

memorandum

DATE: January 20, 2016

REPLY TO
ATTN OF: TPP/OPP-3

SUBJECT: PDCI Probing and Chief Joseph Brake Test Plan for the 2016 Operating Season

TO: Melvin Rodrigues – TPP/OPP3
Margaret Albright – TOT/DITT2

Richard Ellison – TOD/DITT1
Steve Felker – TOV/MEAD

1. Summary and Objectives

This is a continuation of system tests conducted in the period 1999 – 2015. The tests included operations of Chief Joseph braking resistor and injection of PDCI probing signals.

We will perform system tests:

- During early spring with high wind generation on-line
- During hydro-generation run-off in early summer
- During early fall with low hydro and predominant thermal generation

2. Test Dates

PDCI probing and Chief Joseph brake tests will be done on

- **April 13, 2016** with alternate days of April 14, 20, 21 for early spring season*
- **June 15, 2016** with alternate days of June 16, 22, 23 for hydro run-off season
- **September 14, 2016** with alternate days of September 15, 21, 22 for late summer season

Early spring date can be selected based on wind generation forecast

3. Operating Conditions Required For Tests

Operating Conditions for Chief Joseph brake insertion tests

- Power system operation is normal, the system is within System Operating Limits
- BPA Oscillation Detection Application shows no oscillations, all PMUs and all boxes are “green”-lit
- If BC-Alberta tie is in service, North-South Mode A is above 9%
- If BC-Alberta tie is out of service, North-South Mode B is above 5%
- Chief Joseph 500/230-kV transformer is in service
- Keeler 230-kV Static Var Compensator is in service
- Keeler 500/230-kV transformer is in service
- PDCI power is above 1,000 MW
- Big Eddy and Celilo 500-kV voltages are above 535-kV
- At least one Big Eddy 500/230-kV transformer is in service

4. Test Precautions and Termination Procedure

If at any time the Test Observers, security coordinators or system operators identify conditions under which the tests should not continue then the Test Director will suspend the test sequence until those conditions are no longer present and the Test Coordinator will send out a WECC Net message.

Reasons for suspending, modifying, or terminating the test sequence include but are not limited to the following:

- System emergency exists within the WECC
- Interconnections operating outside normal limits
- Undamped or unacceptable levels of system oscillations
- Facility operator deems that facility is unsafe for test, or that the test procedure is interfering with proper operation of that facility
- Test procedure is conflicting with a peak in operator workload
- A disturbance occurs resulting in system frequency below 59.90 Hz

If a disturbance occurs during a probing test, the test must be terminated immediately.

Additional Notification Procedure

If any AVR/PSS/PDCI Controller problems are observed notify the Transmission Operator immediately so that information can be communicated to the Generator Operator for their action.

5. Sequence of Test Events

Test Series A – Chief Joseph brake insertion (Morning)

- Step A1 [9:14] Apply Chief Joseph braking resistor
- Step A2 [9:20] Apply 20 minutes of PDCI probing signal
- Step A3 [9:44] Apply Chief Joseph braking resistor

Test Series B: Chief Joseph brake insertion (Afternoon)

- Step B1 [15:14] Apply Chief Joseph braking resistor
- Step B2 [15:20] Apply 20 minutes of PDCI probing signal
- Step B3 [15:44] Apply Chief Joseph braking resistor

Wide-band probing signal will be used during the test, with signal magnitude limited to +/-10 MW.

6. Test Coordinator and Responsibilities

Test coordination will be as follows:

1. Test Director will schedule the tests through the BPA outage dispatcher.
2. Test Director (BPA technical staff) will post proposed test dates on the BPA Web page.
3. The day before each test, BPA will send a message on the WECC Net notifying of the tests.
4. If there are concerns about abnormal system conditions, BPA dispatcher should be contacted as early as possible to cancel a test. The test will be resumed the next hour after the system returns to normal.
5. The probing signal will be injected by an operator of Celilo converter station. The operator will clear with the BPA dispatcher before the signal injection.

A listing of contact persons^{roles} and test observers with phone numbers and e-mail addresses will be provided 10 days in advance of the test.

A phone bridge will be available on the day of the test:

TEST APPROVALS

This test plan submitted by:

- Dmitry Kosterev – TPP
- Dan Goodrich – TOT
- Jim Burns – TOT
- Nate Gillen – TOT
- Eric Heredia – TOT
- Daniel Kuraspediani – TOT
- Hamody Hindi – TPP
- Sergey Pustovit - TPP
- Jeff Johnson – TESM

Approved:  Date: 1-22-2016
Manager – Melvin Rodrigues, Trans. Planning TPP

Approved:  Date: 2/10/2016
Manager – Margaret Albright, Technical Operations TOT

Approved:  Date: 2/5/2016
Manager – Richard Ellison, Dittmer Dispatch TOD

Approved:  Date: 2/15/16
Manager – Steve Felker, Munro Dispatch TOV