



**Wednesday, March 26, 2014
12:30 pm – 3:30 pm**

**Conference Phone: 1-866-778-0364
Participant Code: 3774881**

**@ BPA Headquarters
Rm. 199B**

**Hydro-Optimization
Team Meeting**

CO-CHAIRS: Larry Haas (Corps); George Brown (BPA); Bent Mouritsen (USBR)

Agenda

12:30pm – 3:30 pm

- Introductions & review agenda George Brown
- Review actions & adopt last minutes

- Briefing on co-chair meeting George Brown, Larry Haas, Bent Mouritsen

- Status of Subagreement Amendment Jason Schaefer

- GBO Status – Plan for FY14 and beyond Dan Patla, Jon Yen

- 3D CAM Operation Surveys – Plan for FY14 Dan Ramirez, Dan Patla

- Stand Alone T2 Software – Status update Larry Haas, Bent Mouritsen

- Grand Coulee – GDACS/T2-Optimization Larry Haas

- Brainstorming new initiatives – potential topics: All
 - Optimizing outage time. Critical availability.
 - Optimization feedback. Surveys/audits/real-time optimization status.
 - Optimization inventory.
 - Transformer losses – How much at each plant? Any way to reduce no-load loss.

- Charter Review and Approval George Brown

Wrap Up

George Brown, Tiffany Newton

- Review actions items today
- Set next meeting date
- Add new topics for next meeting

***** NEXT MEETING TBD*****

Hydro Optimization Team Consensus Decision Levels

1. I can say an unqualified “yes” to the proposed decision. I am satisfied that the decision is an expression of the wisdom of the group.
2. I find the proposed decision perfectly acceptable.
3. I can live with the proposed decision, although I am not especially enthusiastic about it.
4. I do not fully agree with the proposed decision and need to register my view about it. However, I do not choose to block the decision. I am willing to trust the wisdom of the group.
5. I do not agree with the decision and feel the need to stand in the way of acceptance.
6. I feel we have no clear sense of unity in the Team. We need to do more work before consensus can be reached.

DRAFT SUMMARY

HOT MEETING BPA HEADQUARTERS MARCH 26, 2014 BPA

Attendee List

Bent Mouritsen – USBR
Robert vander Borg – Corps
George Brown – BPA, co-chair
Larry Haas – Corps, co-chair
Dan Patla – Corps
Rick Reiner – Corps
Jason Schaefer – Corps
John Yen – Corps
Tiffany Newton – BPA

INTRODUCTION SUMMARY

George Brown (BPA) led introductions and reviewed the agenda.

The draft summary was reviewed from last meeting and not approved yet due to follow up needed.

The actions list was revised at the meeting.

RENEWABLE ENERGY CREDITS

George Brown led a discussion on renewable energy credits.

Highlights:

- Data registered in REGIS
- Renewable Energy Credits (RECs) created and transferred to other parties
- Worked with ODOE. Discussed comparison of data during historical conditions vs. new equipment in place
- Pre-rehabilitation and post rehabilitation data analysis
- Reviewed slide of analysis for Bonneville Powerhouse 2, Grand Coulee left and right power houses, and Cougar. Chief Joseph application will be sent to the State or Oregon next.
- Turbine replacements –optimizing weighted efficiency successfully
- QREC – what does renewable energy do for us? Ability to fulfill RPS portfolio renewable credits for customers. Only a portion of renewable energy credits go to public customers.
- Currently only State of Oregon allows federal hydro credits to be counted.

Questions about model used for assisting with efficiency problems. An audit will help identify problems with the system.

DEBRIEF FROM CO-CHAIR MEETING

George Brown (BPA) mentioned the co- chairs discussed changing the meeting format and possible topics discussed at future committee meetings.

The focus of the Hydro Optimization Team (HOT) is a technical innovation, developing new ideas, Hopper alignment of assets.

Shift implementation from HOT to other project teams

George discussed the future of the HOT Team, strategy and focus of program, goals and objectives to be identified. For now, the co-chairs agreed the charter captures the committee's purpose.

Optimizing plant generation – scope is broad not just only about efficiency gains.

The HOT Team approved having a HOT meeting twice annually.

STATUS OF SUBAGREEMENT AMENDMENT

Jason Schaefer (Corps) reported on the status of the subagreement amendment for power plant efficiency improvements.

Highlights:

- Returning FY14 funding if not used
- Request for funding for FY15-16
- Summary tables of complete items closed out

GBO STATUS

The HOT Team discussed the plan for FY14 and beyond.

Dan Patla (Corps) presented slides of the Gate Blade Optimizer (GBO), peak efficiency for Kaplan turbines – head, flow, blade angle, wicket gate angle. The goal is to automate the index testing. Discussed blade perturbation and background testing.

The new digital governors are producing better data.

Discussed reprogramming and redeployment of equipment and Winter Kennedy flushing system at The Dalles.

Purpose of GBO

Discussed unit specific cam curves

Questions about index testing from relative flows and pursuing absolute flow?

GBO's continue operating at McNary and John Day.

The focus is to get one turbine unit up and running at The Dalles and deploy the rest by mid-summer 2014. Challenges: solving system issues.

The HOT Team discussed possible options:

- Log on to the CPU
- Log on to CF card
- Log data through HMI software through own standard logging

Questions about storage issues for the data and measuring points of concern and data points.

LOWER GRANITE FLOW METERS

The HOT Team discussed before and after pictures of Lower Granite Flow Meter.

Questions about rewinding, common location, location of data and inventory.

3D CAMS and SURVEYS

The HOT Team discussed 3D cams surveys conducted in Walla Walla, using GDACS data. John Day still needs to install digital governors. Bonneville is almost complete with 8 out 10 finished.

GDACS in the Willamette Valley - T2 will be functional and turned on – better optimization. T2 is embedded in GDACS software. Plan is to use GDACS and T2 eventually - not NRTO.

The 3d Cam Operations Surveys will be completed April and September each year.

STAND ALONE T2 SOFTWARE

Bent Mouritsen (BOR) – reported T2 software was implemented at Black Canyon last August 2013. Saw Creek at Minidoka had an efficiency increase of 5.4% increase.

Questions calculation of numbers and features being added at Black Canyon. Working to clean up and fix software issues and security patches. The goal is to install at Elephant Butte and Grand Canyon Control Center by end of 2014.

GRAND COULEE GDACS and T2 OPTIMIZATION T2

T2 software is running at Chief Joseph and The Dalles. Grand Coulee is using the old software program. T2 will be turned back on when the switchyard project is completed. Lots of limitations and restrictions.

Questions about T2 interface in GDACS and the reason T2 is not turned on at several plants. Who made the decision to not turn on T2?

The team discussed inviting Dave Brown to the next HOT Team meeting to brief on GDACS and T2 at the plants.

BRAINSTORMING – NEW INITIATIVES

Potential future topics for meetings:

- Optimizing outages and time critical availability
- Optimizing feedback and surveys – real-time optimization status?
- Optimization of inventory
- Transformer issues – how much at each plant? Anyway to reduce no load loss?
- Need to understand T3? Modeling at BPA and efficiency gains.
- Deterministic model? Included uncertainty and risks
- GDACS curves- flow tables and complexity?
- Survey of industry software equipment being used for optimization
- Transformer losses – turn off monitor? Grading system – draft white paper to be developed?

The HOT Team agreed to generate new ideas for future projects and funding through appropriate channels.

The HOT Team will develop operating guidelines and efficiency tools for the plants and operators.

NEXT MEETING

The next HOT meeting is scheduled for October 15, 2014 at BPA.

Decision: The co-chairs reviewed the charter with the committee and approved the current HOT charter.