

DRAFT SUMMARY

HOT MEETING BPA HEADQUARTERS APRIL 19, 2017 BPA

ATTENDEE LIST

George Brown – BPA, co-chair
Andrew Long – USACE, co-chair
Bent Mouritsen – USBR, co-chair
Shawn Martin – USACE, HDC
Dan Ramirez – USACE, HDC
John Yen – USACE, HDC
Luke Chase – BPA
Tiffany Newton – BPA
Erin Foraker – USBR (phone)
Rick Reiner – USACE, NWP TDA
Kim Johnson – BPA
Ken Yokohama – BPA

INTRODUCTION SUMMARY

George Brown led introductions and reviewed the agenda.

ACTIONS

The actions list was reviewed and revised during the meeting.

Program Funding - George Brown (BPA) reported meeting with Wayne Todd (BPA) and Chris Allen (BPA) to further discuss program funding and cost savings.

The HOT Team discussed the frequency of HOT TEAM meetings will be prioritized around future projects and program funding.

ENREL Report – Erin Foraker (BOR) will follow up on assessment needs.

Transformer No Load/Load Losses – Discussion around unit efficiency vs. transformer and generator efficiencies?

- operating curves vs. flat efficiency
- Optimize total data in T2
- Wait on numbers before exploring other options and continue to review historical data.

ACCS for T2

Shawn Martin (Corps) discussed needing funding and a work schedule for ACCS for T2. The project estimate is for three months of work.

Q – Opportunity to combine with a future capital project along with GDACS replacement.

Q – Continue to improve standalone T2 and add GDACS. Need to get down to one version from using two versions.

Q – Stand alone T2 having separate software.

Q – Why is T2 not being used? Where is T2 being used? The list needs to be updated.

GLEN CANYON UPDATE

Erin Foraker provided a 3D presentation on the AutoCAD work.

- Slides of 3D model of inside and outside of dam, generated by underwater and unmanned aerial scanner. Laser scanning techniques used with accuracy to 1 ft.
- AutoCAD/AutoDesk software being integrated with the scanning technology to create 3D dot models.
- Saves time on as built conditions
- Helicopters captured some of the data up and down stream to build the 3D model.

VIDEO of POINT CLOUD

Erin Foraker showed a video of the main floor. Used sonar of the sedimentation.

Tons of data collected and used to build 3D models

Discussed 2D vs. 3D models – The industry is moving toward 3D models and benefits are:

- Model is of facility level
- As built drawings

- Resolution within 1 inch of accuracy
- Improved construction activities
- Continuous learning how to use the new model
- Potential to connect data to Maximo databases
- Data can be broken down different ways with software.
- Photo renderings from data collected
- People can take a 3D tour of the facility without going to the site
- Reclamation is interested in the 3D model project
- Focus now is mechanical and electrical wiring

Q – Sonar was used for under water imaging.

- Surveys were conducted last July and August 2016.
- Received 3D rendering drawings from Auto Desk.
- A write up s being developed about the project and will be published in Research Magazine.
- The project will be presented at Hydro Vision in Denver, Colorado.

GBO STATUS

- Looked at movement at system and blades.
- Gross head PLC had an error and now fixed
- PPEI Subagreement –Intent is to close out the agreement once funding runs out. Currently there are minimal funds remaining in the sub-agreement.
- HDC continues to ass and improve GBO performance.

3D CAM OPS SURVEY

No progress being made. Surveys were not completed.

Q - Operating within 1% efficiency to meet BiOp requirements.

STANDALONE T2 SOFTWARE

Bent Mouritsen (BOR) and Shawn Martin (COE) reported.

- No changes from last meeting.
- Waiting for software changes
- Toby Steves will be working on the base code project
- Concern about funding project – could be the last year.
- Opportunity to add inventory on optimization measures and include benefits of - Stand Alone data.

GDACS AND T2 OPTIMIZATION

Bent Mouritsen (BOR) reported he will coordinate with Toby Steves (BOR) about compiling stand alone benefits data to inventory and to be used by facilities.

POTENTIAL IMPROVEMENTS

Shawn Martin reported on efficiency projects that Toby Steve's is working on at Reclamation.

- UC Solution not adhering to MVAR table limits
- Sub-optimal UC solution with rough zones
- Low MW limit causes UC to fail
- Incorrect UC solution when unit pumping

DIGITAL GOVERNORS TO GDACS

John Yen (Corps) reported on strengths and weaknesses of existing T2.

- Data movement outside
- Working to facilitate
- K grade plant engineer needs to pull data

Q – Data not in AGC due to blade angle not tracking individual unit head.

BPA has access to the data. The Corps database will take years to develop. Suggestion to develop a report and share data on Francis and Kaplan's.

John Yen (Corps) mentioned he will talk to Dave Kirsch or Fran Halpin at BPA about data collection at AGC plants.

What type of data will be transmitted? Head, gate, or blade angle?

Q – Resolution time and specifying timeframe and angle.

Q – Audit and using one min. averages of data. Use the GBO log which contains information for auditing purposes.

NEW IDEAS/FUTURE HOPPER LIST

The HOT Team discussed potential ways to save money for future efficiency projects. Inventory is at a good starting point to track HOT projects.

Q – Discussed methods and initiatives at projects for T2 tracking.

Q – Alignment of the operational excellence effort with efficiency improvements.

RECLAMATION

Erin Foraker (BOR) reported working on collecting research need statements.

The safety office is discussing using robots in the future for UAV work projects and inspections of the penstock. Robots in the future will likely be used to code penstocks. In addition, working on safety standards.

Q – Potential projects for efficiency projects – power diagnostic projects.

Q – What is the definition of efficiency? Small amount of optimization projects. Hydro project are approved because benefits are justified through research and development programs.

Erin Foraker (BOR) volunteered to share a draft R&D proposal package with the HOT Team and review the various conditions.

The team discussed past, current, and possible projects.

- Condition monitoring and software tools. Reclamation doesn't own the code.
- Noise project is being used across Reclamation

Erin Foraker (BOR) will compile a list of successful R&D projects – past, current, and potentially new projects and forward to the HOT Team.

CORPS

HVAC UNIT COOLING PROJECT - John Yen (Corps) reported on a few projects:

- Energy efficient model development for HVAC unit cooling
- Relays – reviewing for energy savings

Q – How to define optimization? Additional generation?

The HOT Team discussed inviting Toby Steves to host a webinar meeting to discuss Stand Alone T2.

Bent Mouritsen will follow up with Toby Steves to set up the webinar.

Next Meeting is October 2017. More to come about future projects. Need to discuss frequency of meetings.



Hydro-Optimization Team Meeting

April 19, 2016
12:00 pm – 4:00 pm
(PST)

@ BPA Headquarters
Rm. 678

Webex Meeting

Meeting number: (b) (2)

Meeting password: (b) (2)

Meeting link: (b) (2)

Host key: (b) (2)

Audio connection: (b) (2) Call-in toll number (US/Canada)

Access code: (b) (2)

Co-chairs: Andrew Long (USACE-HDC); George Brown (BPA); Bent Mouritsen (USBR)

Agenda

12:00 pm – 4:00 pm

- Introductions (5 min) All
- Review actions (15 min) George Brown
- Glen Canyon update Erin Foraker
- The Dalles index tests, GBO validation (10 min) Andrew Long/George Brown
 - Funding status update.
- Energy Efficiency update (10 min) Andrew Long
 - Status of scope development for a pilot project
- Status of Ongoing Projects:
 - GBO Status – FY17 Progress (10 min) Dan Patla
 - Brief status update of work that is underway
 - Lessons learned to share with HOT?
 - 3D CAM Ops Surveys – Share results of latest surveys (10 min) Dan Patla
 - Stand Alone T2 Software (10 min) Bent Mouritsen
 - Lessons learned to share with HOT?
 - Feedback from project operators?
 - Estimates of the plant efficiency improvements resulting from T2.

- GDACS/T2-Optimization (20 min) John Yen
 - Follow up to prior meetings discussion of T2 adoption and use.
 - Strengths and weaknesses of existing T2 tools
 - Potential improvements
 - Tracking plant operations vs. T2 recommendations

- Break (10 min)

- Digital governor inputs into GDACS (15 min) John Yen
 - Detail the additional information that will be flowing into GDACS.
 - Methods to move the data out of GDACS for analysis?

- Discussion of new ideas/initiatives – potential topics: (up to 1.5 hrs) All
 - Review new ideas/initiatives discussed during last meeting. Review last meeting notes.
 - Transformer no-load losses
 - Relays
 - Automatic or real time optimization status tools. Are the optimization sub-systems functioning correctly (i.e. governors, 3-D cams, Kaplan blade position, head sensors, etc).
 - Discuss any other new ideas/initiatives

- Wrap Up (10 min) George Brown, Andrew Long, Bent Mouritsen
 - 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.