COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM
April 10, 2020
DRAFT Facilitator's Summary
Facilitator: Emily Stranz; Notes: Colby Mills, DS Consulting

The following Facilitator's Summary is intended to capture basic discussion, decisions, and actions, as well as point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members. Official minutes can be found on the TMT website: http://www.nwdwc.usace.army.mil/tmt/agendas/2020/.

John Day Dam Operations
Tony Norris, BPA, notified the TMT that as of this morning John Day Dam's generation was above minimum generation outside of the flex hours due to the project carrying decremental, or "DEC," reserves. He noted that this demonstrates the measures required to maintain a reliable transmission system; DEC reserves are required in order to be able to hold reserves if necessary to decrease generation for system balancing.

This scenario will persist during lower flows and higher spill conditions. Tony clarified that when the project operates under low flow conditions and is meeting minimum generation while spilling the balance of flow, the spill volume may be below FOP spill objectives because BPA needs to be able to carry reserves to decrease generation. BPA will be generating above the minimum generation at 1 or several projects (potentially on all three of the Lower Columbia projects) in order to do so. The location of reserves depends on a number of factors impacting reliability, and John Day is a particularly useful project as it has large units, a large pool, and responds fast. BPA felt that this is consistent with the FOP and Spill Agreement as it was negotiated.

Clarifying questions and answers from TMT members formed a discussion to help build understanding around the DEC reserves. Discussion points included:

- Consider alternative ways to meet DEC reserve requirements, while having less impact to fish and spill operations.
- Use TMT to explore alternatives for how the reserves could be distributed.
- There are many variables/considerations that feed into decisions around where reserves can and can't be carried, creating a challenge to commit to alternatives outside of BPA's operations.
- Some projects have significant restraints and limited flexibility where reserves can be carried, especially in the spring.

After highlighting concerns from Salmon Managers, Jay Hesse, Nez Perce, elevated the issue to the flex spill working group.

- **ACTION**: In an effort to discuss further options for minimizing impacts to fish, Jay will contact Ben Zelinsky at BPA to convene the working group; Jay will report progress back to the TMT.
- **ACTION**: Salmon Managers requested time at a future TMT Process meeting to learn more about DEC reserves and identify potential alternatives (without making decisions, as stated in process guidelines).

The next TMT meeting is a conference call on April 15th at 9:00 AM.
A process meeting will follow for TMT Members.

This summary is respectfully submitted by the DS Consulting Facilitation Team. Suggested edits are welcome and can be sent to Colby at colby@dsconsult.co.

Columbia River Regional Forum
Technical Management Team DRAFT OFFICIAL MINUTES
April 10, 2020
Minutes: Melissa Haskin, BPA (contractor, FLUX Resources)

Today's unscheduled TMT meeting was chaired by Doug Baus, Corps, and facilitated by Emily Stranz, DS Consulting. See the end of these minutes for a list of attendees. Today's meeting was called by BPA to discuss reserves.

1. John Day Dam Operations

Tony Norris, BPA, reported that John Day's generation was above its minimum generation this morning outside of the flex hours. Currently, the spill objectives are relatively high and flows are low. To keep a reliable transmission system, BPA is required to carry DEC reserves to enable a decrease in generation to balance they system (just as it needs the ability to increase generation to balance the system). BPA is carrying a portion of the DEC reserves at John Day, which is why John Day was above minimum generation in non-flex hours. This may persist as streamflow conditions are not expected to change per the RFC extended forecast for John Day. In a situation where flows are insufficient to achieve the spill cap for 125% TDG, resulting in projects at minimum generation and "spill the rest", BPA will need to carry reserves to maintain the ability to decrease generation. These reserves may be carried at one or spread over the 4 Lower Columbia projects, depending on system conditions.

Erick Van Dyke, OR, wondered why this situation is occurring now. This is a unique situation where spill targets have been higher than they have been in the past. Tony noted that last year, this was not an issue because river flow was higher, at 350 kcfs. This year, flows are 140 kcfs – a significantly different hydrological condition. Rob Hawkins, BPA, noted that BPA must carry almost 850 MW of DEC reserves, whether they are being deployed or not. BPA needs to be able to generate above minimum turbine capacity so that it can decrease as far as the minimum turbine requirement to respond to reserve deployments. Holding a project above minimum generation during non-flex spill hours is not a new action, and is a requirement. What is new is that very high spill objectives combined have all 8 projects pinned to minimum generation.

Minimum generation values noted in the FOP do not include what is needed for reserves. Currently, the minimum generation at John Day is 50-60 kcfs. Charles Morrill, WA, asked if reserves are measured by pool elevation. Reserves are measured in megawatts (MW).

Many factors come into play when deciding where and how to carry reserves. BPA clarified why and how it was operating the way it is. Including,

- Certain operations might require more DEC reserves at one project versus another;
- When deciding where and how to carry reserves, turbine unit starts and stops play a key factor;
- Since there are many factors that impact where reserves can and cannot be carried to maintain reliability, it would be hard for BPA to commit to certain patterns of carrying reserves;
- Reserves need to be deployed quickly. Not all projects are equipped to respond quickly.

Typically, BPA carries a majority of reserves at Grand Coulee and Chief Joseph. These two projects are flexible and have the fewest constraints. However, sometimes they are also limited, and in that scenario, reserves must be carried at other projects. Looking at particular projects:

- Bonneville has a 12.5-foot tailwater constraint for chum, as coordinated at TMT. Thus, BPA would not carry significant DEC reserves, if any, at that project.
- John Day is a very effective project for carrying reserves because its units have a wide megawatt range within 1% so they can respond more quickly to transmission needs with fewer unit starts and stops.
- Dworshak Dam is coordinated on a long-term basis because it does not have the ramping flexibility or the equipment needed to allow for rapid reserve deployments.
- At the Snake River projects, this time of year with flows low, high spill objectives, and MOP forebay restrictions, it is not possible to carry a lot of DEC reserves.
- The Willamette projects are never used to carry reserves because they are far less flexible in their forebays, ramp rates, and megawatt ranges. They lack the horsepower the system needs.
- Hungry Horse and Libby are highly restrictive and do not have the same agency connection that other projects have that allow for flexible control to deploy reserves in a speedy manner. Reserve requirements need to be highly responsive (within seconds) and these projects do not respond that way.

TMT representatives asked Tony Norris and Rob Hawkins:

1. **Can the flow above minimum generation at The Dalles be considered as DEC reserves? – Jay Hesse, Nez Perce.** Rob replied that a portion of it is. He provided an example: if flows were 200 kcfs through the project and it was operating above minimum generation, then the entire amount of generation between minimum generation and current generation as DEC reserves – the ramp rates would be prohibitive, it might cause a bounce in the forebay, and/or it might be disruptive to downstream operations. This is one of the reasons BPA tries to spread the DEC reserves around – to minimize the impact of operations upstream and downstream.
2. **Tom Iverson, Yakama Nation Fisheries expressed that what he was hearing is that reserves are being carried at both John Day and The Dalles in order to spread them out.** Rob replied that Iverson was correct, adding certain operations might require more DEC reserves at one project versus another.
3. **Why are projects other than John Day operating above minimum generation? – Jonathan Ebel, ID.** Scott Bettin, BPA, clarified that Little Goose operating above min gen is a separate issue being discussed at FPOM. BPA says it is operating to the Fish Passage Plan and FOP, thus Little Goose is not interpreted as being operated above minimum generation currently.
4. **Why are certain projects utilized to carry DEC reserves and others are not**, asked Hesse. He added that Dworshak Dam is operating above minimum generation. Rob replied that Dworshak is not controlled the same way as the mainstem "Big 10" projects (Grand Coulee through Bonneville). The Big 10 are operated in a far more flexible manner for real time to meet transmission system needs whereas Dworshak is coordinated on more of a long-term basis. Dworshak does not have the ramping flexibility necessary to allow for rapid

reserve deployments. Likewise, the Snake projects do not have that flexibility this time of year either, due to forebay restrictions, spill objectives, and how the projects can operate within 1%.

5. **Van Dyke asked what projects actually have the capacity to manage reserves, outside the 8 projects mentioned in the flexible spill agreement** (Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, John Day, The Dalles, and Bonneville). Norris responded that the other two would be Grand Coulee and Chief Joseph, where a large portion of the reserves are typically held. Van Dyke clarified that he was wondering which are used. Rob shared that the Big 10 are used in real time, saying that different flow regimes result in different capabilities at the projects. Grand Coulee and Chief Joseph are usually the most flexible projects with the fewest constraints, though, at times, those projects can get more constrained (At Grand Coulee, TDG can be an issue, for example). In that situation, reserves sometimes have to be carried elsewhere. When that happens, the Lower Columbia projects end up carrying a majority of the reserves. This can happen especially during high flow periods. He shared that the Willamette projects are never used to carry reserves because they are far less flexible on their forebays, ramp rates and megawatt ranges. They do not have the horsepower that the system needs. Meanwhile, Hungry Horse and Libby are highly restrictive and do not have the same agency connection that the other projects have that allow for flexible control and deploy reserves in a reasonable amount of time.
6. **Hesse asked what BPA's process is for deciding where and how to carry reserves and why BPA picked John Day**. Rob responded that John Day has the largest pool and therefore the most water flexibility. The turbines are also some of the largest units on the Lower Columbia and have a wide 1% MW operating range.
7. **Ebel and Hesse asked if there are other ways to carry reserves across the system.** Rob replied that one of the primary concerns when deciding how to carry reserves is unit starts and stops. Bonneville and McNary require a number of starts and stops to maintain reliability. Spreading out reserves to carry them at multiple projects might require bringing extra units online in order to have meaningful results. BPA tries to carry the bulk of INC and DEC reserves at Grand Coulee and Chief for this reason and to minimize impacts on fish. Bettin added that fish are factored into decisions. Norris added that there are many variables that impact where reserves are carried. Those can change with conditions and that is why it would be difficult to commit to a particular pattern for carrying reserves. If the conditions persist with low flows and high spill objectives with projects at minimum generation and spill the rest, a portion of INC and DEC reserves may need to be carried on the lower river projects and BPA does not have a lot of flexibility about where it can carry those based on what is happening in the system.
8. **Trevor Conder, NOAA, asked if there is more flexibility within the FOP to allow for BPA to use performance spill during nighttime hours at projects like John Day**. This may be an option but the best place for it to be considered is at the Spill Agreement Working Group.
9. **Hesse asked if The Dalles is above minimum generation**. The project is but not for reserve purposes. BPA is meeting required spill and also carrying DEC reserves at that project. If the project carried more DEC reserves, BPA would have to increase generation and that would decrease spill.

Ebel, Hesse, and Van Dyke voiced concerns about the way reserves were being carried. Ebel stated that there has been an inadequate consideration of alternative ways to hold reserves in a

way that will have fewer impacts to fish. Hesse said he objected to how BPA is carrying reserves because it is inconsistent with the outcomes – and counter to the outcomes – in the flexible spill agreement. He believes that there are ways to avoid or lessen impacts on fish. Van Dyke agreed, saying that current operations do not support the flexible spill agreement. Hesse already indicated to the Spill Agreement Working Group that there may need to be a call. He will follow up and elevate today's discussion to the Spill Agreement Working Group. Hesse will contact Ben Zelinsky at BPA to convene the working group and report back to TMT when a decision has been made.

Several TMT members and representatives including Hesse and Morrill requested additional discussion on DEC reserves. Morrill has additional questions about how DEC reserves work. Hesse would like to explore what options are available for carrying reserves. A TMT process meeting would be appropriate for discussion on how DEC reserves work. BPA will bring additional representatives to next week's process meeting to answer questions. Hesse's question may best be answered in another group, said Dave Swank, USFWS, but Norris, Morrill, and Swank agreed it may help to brainstorm at next week's process meeting and then the group can decide the appropriate forum for Hesse's question.

2. Next TMT

The next TMT meeting is a conference call on April 15 at 9 a.m.

Today's Attendees:

Agency	TMT Representative
Army Corps of Engineers	Doug Baus (Chair), Lisa Wright, Julie Ammann
Bonneville Power Administration	Tony Norris, Scott Bettin, Eve James
Bureau of Reclamation	N/A
NOAA Fisheries	N/A
US Fish & Wildlife Service	Dave Swank
Washington	Charles Morrill
Oregon	Erick Van Dyke
Idaho	Jonathan Ebel
Montana	N/A
Nez Perce Tribe	Jay Hesse
Umatilla Tribe/CRITFC	Tom Lorz
Colville Tribe	N/A
Warm Springs Tribe	N/A
Kootenai Tribe	N/A
Spokane Tribe	N/A

Other Attendees (non-TMT members):

Army Corps of Engineers – Dan Turner
Bonneville Power Administration – Rob Hawkins, Shane Mosier, Paul Koski, Melissa Haskin (CONTR, FLUX Resources; note taker)
DS Consulting – Emily Stranz (Facilitator), Colby Mills
Fish Passage Center – Dave Benner

NOAA Fisheries – Trevor Conder
Public Power Council – Shane Scott
Washington – Michael Garrity
Yakama Nation Fisheries – Tom Iverson