

COLUMBIA RIVER REGIONAL FORUM

TECHNICAL MANAGEMENT TEAM

May 20, 2009 Meeting

FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Robin Gumpert

Notes: Erin Halton

The following notes are a summary of issues that are intended to 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.

Review of Minutes/Agenda

The 4/22, 4/29, 5/6 and 5/13 facilitator notes and official meeting minutes had all been posted to the TMT webpage. Dave Wills, USFWS made the following edit to the 5/6 official minutes:

- Under operations review/reservoirs, clarify language to say "lower ¼ of the 1% operating efficiency range."

With the no other changes mentioned during the meeting, the 4/22, 4/29 and 5/6 Facilitator Notes and Official Meeting Minutes were finalized. TMT will finalize the 5/13 notes at the 5/27 meeting.

Hanford Reach Update

Russell Langshaw, Grant County PUD, referred TMT to a graph posted as a link to the agenda; the daily flow levels have been in the range of 65-167 kcfs, with an average of 126 kcfs. The daily deltas ranged from 9-106, with an average of 32. Langshaw said one exceedance had occurred on April 24, when all mainstem projects were spilling. He also said that operations during May 2-4 raised some communications concerns; since then the PUD has worked closely with BPA to ensure the best possible communication process is in place.

Action/Next Steps: Langshaw noted the construction scheduled for the weekend ahead; he will continue to share updates with TMT as the season progresses and this item will be on the agenda for either the 6/3 or 6/10 TMT meeting.

SOR - FWS #1

Jason Flory, USFWS, referred TMT to SOR FWS #1, posted as a link to the TMT agenda. Flory said that the May final forecast indicated a relatively low sturgeon volume, and as such, the Service has made a request for the sturgeon pulse start date to be pushed back as late as possible. Flory reviewed the proposal's hydrograph shape for the pulse:

- ramp up to full powerhouse for 7 days,
- then 20 kcfs for 7 days;
- then 17 kcfs for 5 days;
- then 15 kcfs for 5 days;
- then return to VARQ flows.

Brian Marotz, MT, added that the proposal for 2009 is similar to those used in 2008, which provided favorable temperature conditions via a gradual warming trend. Marotz recommended a gradual ramp down after the tiered sturgeon flow, with increasingly gradual stage changes as flows approached the stable summer minimum. Greg Hoffman, COE, referred TMT to graphs posted to the agenda that showed thermograph and flow data from 2008, noting that 2009 data has been following as similar pattern to last year. Flory clarified that the SOR was a joint effort by the technical workgroup and the policy team.

Joel Fenolio, COE Seattle District, provided scenarios that used the current Libby volume inflow forecast (5209 KAF) to show potential hydrograph shaping and pool elevations for varying start dates and inflow volumes. Fenolio said that last year's pulse began on June 7th and he estimated that this year's pulse could begin between June 10 – 15th and would pose no threat to flood control operations. TMT members discussed the requested operation, the 2008 operation and the benefits of an operation that would ramp down gradually.

Action/Next Steps: The COE planned to implement the SOR as written and will coordinate closely with the Service and sturgeon technical/policy groups. Scott Bettin, BPA, agreed to forward technical group meeting notes along to Jim Adams at the COE. TMT will discuss the start date for the sturgeon pulse at the 6/3 meeting.

Chief Joseph Spill Test

Amy Reese, Seattle District COE, provided a brief summery of the 4/28-5/1 spill test at Chief Joseph. She thanked everyone who helped coordinate the test and reviewed the following preliminary results:

- Gas abatement was substantial: TDG levels at all fixed gauges were below 120%
- The 120% TDG spill cap is equivalent to 100 kcfs (this has been incorporated into the Spill Priority List)
- A consistent, uniform spill pattern is better than a bulk pattern (hydrologically more stable and yields better gas abatement.)

Action/Next Steps: Reese described the following next steps:

- Clean pipes near the fixed monitoring station to improve monitor equilibration and ability to make real-time adjustments as needed.
- Mike Schneider, COE, will help provide with spill cap estimates for higher levels of spill.
- Construction is planned for joint seal repair, with above water work planned for June-August and in-water work scheduled starting mid July. Spill should still be possible in the bays not being worked on; the COE hopes to minimize spill and impacts to the construction. The COE does not anticipate the construction will impact operations at other projects.
- An update on this item will be on the agenda for a June TMT meeting.

Transmission Emergency Action Plan

Tony Norris, BPA, referred TMT to a draft Transmission Emergency Action Plan posted as a link to the TMT agenda. He noted that this document serves as “Attachment 2” to the TMT Emergency Protocols and asked TMT members to provide comments to him within the next week or two. Norris clarified that if a transmission emergency were to occur in the very near future, the draft would stand as it is currently posted. Norris also reminded TMT members that they may provide comments on the Generation Action Plan as well.

Action/Next Steps: This item will be on the agenda for the 5/27 TMT meeting; Mike Viles, BPA, plans to attend the meeting.

Operations Review

Reservoirs: John Roache reported on BOR projects: Grand Coulee was at elevation 1259.7' and expecting a maximum flood control elevation of 1270' for the end of May. Hungry Horse was at elevation 3522.32', with outflows of 6.2 kcfs and inflows in the range of 18-19 kcfs. Roache clarified the method of calculation for VARQ flows, noting that calculating the initial VARQ outflow begins with the monthly final forecast and that adjustments are made to fine tune the final VARQ outflow. One of the major adjustments takes into account how far above or below flood control the project is on April 30. As the project gets closer to refill, current forecasts and engineering judgment is used to guide discharges.. Jim Adams reported on COE projects: Libby was at elevation 2406.9', with outflows of 13.4 kcfs and inflows picking up to 21.3 kcfs. Albeni Falls was at elevation 2058.2'. Dworshak was at elevation 1551.3' with minimum outflows of 1.7 kcfs. Seven day average inflows were 102.1 kcfs at Lower Granite (Adams noted inflows were at 141 kcfs on 5/19), 248 kcfs at McNary and 260.8 kcfs at Bonneville. Adams added that the impacts of involuntary spill (elevated TDG) were yet to be seen.

Fish: Paul Wagner, NOAA, reported that juveniles were in the 88,000 per day range at Lower Granite after a peak earlier in the season of 160,000 per day. Steelhead numbers were in the 68,000 per day range at Lower Granite. Cindy LeFleur, WA, said that adult passage counts at Bonneville were approaching 93,000 for the season. She noted that June 15 is the cut off date for counting Spring Chinook; total count is tracking to be in the range of 130-150,000 which is significantly lower than the 300,000 prediction. Jacks are on track to reach a new record high, with a total expected to be in the range of 80-90,000.

Power System: Tony Norris, BPA, reported that over 2100 megawatts of wind capacity have been installed.

Water Quality: Paul Wagner reported on Salmon Manager recommendations for a revised Spill Priority List; Jim Adams, COE planned to post the suggested as a link to the agenda following the meeting.

Next TMT Meeting: May 27 Face-to-Face

Agenda items may include:

- Notes Review

- Transmission Emergency Action Plan / Comments
- Upper Snake Augmentation Update
- Spill Priority List
- Summer Operations / Draft Summer Fish Operations Plan
- Operations Review

**Columbia River Regional Forum
Technical Management Team Meeting
May 20, 2009**

1. Introduction

Today's TMT meeting was chaired by Jim Adams (COE) and facilitated by Robin Gumpert (DS Consulting), with representatives of BPA, BOR, Montana, COE, NOAA, Oregon, USFWS, CRITFC, Washington, the Nez Perce Tribe and others participating. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at the meeting. Anyone with questions or comments about these notes should provide them to the TMT chair or bring them to the next meeting.

2. Review Meeting Minutes for April 22, 29 and May 6, 2009

There were no comments on the April 22 and 29 minutes so they are presumed final. The May 13 minutes will be finalized at the next TMT meeting on May 27. In response to a question from Dave Wills (USFWS), the May 6 official minutes will be revised, under Bonneville Spring Creek Hatchery, to specify that the operation was at the lower quarter of 1% efficiency operating range.

3. Hanford Reach Update

Russell Langshaw (Grant PUD) gave an update on protection flows in Hanford Reach from April 2 to May 17. Flow band constraints ranged from 20-60 kcfs, while mean daily flows ranged from 65-157 kcfs with an average of 126 kcfs. Minimums ranged from 61-141 kcfs, with a mean of 109 kcfs. Maximums ranged from 75-238 kcfs, with a mean of 141 kcfs. Daily deltas were from 9-136 kcfs, with a mean of 32 kcfs.

An exceedance on April 24 occurred mainly as a result of higher inflows than anticipated. All the mid-Columbia reservoirs filled, and the resulting spill sent flows above the Hanford reach protection band for about 4 hours.

An operation on May 2-4 caused some concern, and as a result Grant PUD has been working closely with BPA on coordinating and communicating better to avoid future exceedances. Langshaw will revisit TMT on June 3.

4. Sturgeon Operations at Libby – SOR-FWS#1

The SOR, submitted to the COE on May 15, specifies a sturgeon volume of 0.8 maf is set based on the May final inflow forecast. This is a tier 2 water year, according to the 2006 USFWS BiOp for Libby. Every year, a policy technical team and a technical work group come up with flow management recommendations for sturgeon, which are used to develop the SOR.

This year's operation is planned around encouraging results from last year, which was very similar to 2009 in terms of weather patterns – a cool, late spring and slow warming of river water. The goal of this year's sturgeon operation is to mimic last year's conditions with the limited volume available in 2009. Therefore the SOR has no firm start date; the intent is to start flows as late as possible. Timing will be based primarily on reservoir temperatures and sturgeon spawning behavior. The operation will ramp up from VARQ flows to full powerhouse capacity for 7 days; then to 20 kcfs flows for 5 days; 17 kcfs for 5 days; 15 kcfs for 5 days; and finally back to VARQ flows.

The effort to stage the operation with lower elevation runoff wasn't attempted this year because the goal is to repeat last year's results when temperatures remained cool longer. Temperature is more important than flow, Montana and NOAA agreed.

Greg Hoffman (COE Libby Dam) presented several graphs depicting the requested operation. Despite difficulties in 2008 with selective withdrawal gates at Libby, the sturgeon operation lasted 14 days at full powerhouse. This year, the selective withdrawal gates have been repaired, and one goal of the SOR is to delay peak flows in June. In general, reservoir flows are significantly behind schedule in 2009, as they were in 2008. This will probably be a good year to replicate last year in terms of temperature management and river flow.

Joel Fenolio (COE Seattle) presented graphs of scenarios with different inflow volumes and start dates for the sturgeon pulse. Even the low scenario shows a maximum elevation at Libby Dam of 2,453 feet. In 2009 the maximum elevation will probably happen later in the year than usual.

Brian Marotz (Montana) requested gradual changes in the ramp down to base flows. The COE will implement the SOR as written, in coordination with USFWS. TMT will revisit this issue at its next meeting May 27.

5. Chief Joseph Spill Test

Amy Reese (COE Seattle) summarized the results of spill testing and the post-construction operation at Chief Joseph Dam.

Spill Testing: This took place from April 28-May 1, 2009, scheduled at that time to make use of large volumes that forecasts showed would need to be spilled anyway from Chief Joseph in April for flood control. The spill tests found that newly installed deflectors yield substantial TDG abatement: All tests showed that TDG levels at Chief Joseph remained below 120% with deflectors in place.

The COE will do more long term evaluation of these data to determine the best spill pattern for Chief Joseph. Meanwhile, temporary spill caps are in effect,

based on information from data loggers, probes, and 6 fixed monitoring stations: 20 kcfs for 110% TDG saturation; 40 kcfs for 115% TDG saturation; and 100 kcfs for 120% TDG saturation.

During the tests it was discovered that, compared to data loggers and probes, fixed monitoring stations gave unreliable readings of TDG saturation levels, thus are a poor basis for setting future spill caps. There are 6 of these stations in TDG pipes that are probably clogged with algae. The probes will be moved to locations outside the pipes so they can gather more reliable TDG data.

The TDG abatement achieved by deflectors at Chief Joseph is impressive. The spill cap for 110% TDG in the tailrace was 5 kcfs before deflectors were installed; now it's 20 kcfs. For 115% TDG, the cap was 27 kcfs, now its 40 kcfs. For 120% TDG, the cap was 30 kcfs, now it's 100 kcfs. There was a consistent finding that bulk spill patterns create higher TDG levels than uniform spill.

Summer Construction: Joint seal repair work is underway in response to uplift pressures at Chief Joseph Dam, Reese reported. Two construction projects are in progress. The first involves underwater work sealing the joints in the dam tailwater, scheduled to start the second or third week in July and last through September. The number of cofferdams needed for that work will influence the number of bays available for spill during the work period.

The second project involves repairing joint seals above the tailwater elevation level, lasting from June 10 through September. The COE hopes to minimize spill during the work period. USFWS and NOAA agreed that up to 10 kcfs spill would be considered acceptable. No impacts to other systems or operations are expected. The COE will provide updates on this work as needed.

6. *Transmissions Emergency Action Plan (TEAP)*

The TEAP, attached to today's agenda, is related to the generation emergency action plan BPA approved at TMT last year. The generation emergency action plan describes the steps BPA will take to avoid interrupting fish protection measures, Tony Norris said. The TEAP further describes the role of BPA's Transmission Services in that process. Mike Viles from BPA's transmission business line will give a presentation on the plan at TMT's next meeting May 27. Norris asked TMT to review the TEAP in preparation for Viles' presentation next week.

The plan should cover more than line outages, Jim Litchfield (Montana) said. Transmission can be impacted by a variety of events.

7. Operations Review

a. Reservoirs. Grand Coulee is at elevation 1,259.7 feet and slowly filling, with inflows starting to pick up. The May 31 maximum flood control elevation is 1,270 feet.

Hungry Horse is at elevation 3,522.32 feet, with 6.2 kcfs discharges and inflows of 18-19 kcfs. The reservoir is filling at the rate of 1-1.5 foot per day. Both Libby and Hungry Horse are operating this year under a combined transmission limit of 840 megawatts, which means that Hungry Horse can release no more than about 7 kcfs before they have to spill when Libby is operating at full load, John Roache said. BOR is working with the COE on coordinating flows at Libby under this limitation.

Libby is at elevation 2,406.9 feet, with VARQ flows of 13.4 kcfs starting May 19 at 6 pm. VARQ flows will continue until either the sturgeon pulse starts or updated VARQ information is available. There was mention of the impact full powerhouse flows from Libby will have when the sturgeon pulse begins. Wagner asked what triggered Libby outflows to increase from 6 to 13.4 kcfs. Refill began April 28; at that point inflows were below the VARQ limit, Fenolio said. The project passed inflows over the past 2 weeks until they rose to the VARQ level. The STP forecast shows inflows rising to 17-18 kcfs soon and up to 30 kcfs by May 29, Adams reported.

Albeni Falls is at elevation 2,058.2 feet and slowly filling. The reservoir is anticipated to fill by the end of June.

Dworshak is at elevation 1,551.3 feet, back to minimum flows of 1.7 kcfs after spilling last weekend in response to 160 kcfs inflows.

Seven-day average inflows are 141 kcfs at Lower Granite, 248 kcfs at McNary, and 260.8 kcfs at Bonneville. The Bonneville tailwater has been spilling 111.6 kcfs, with TDG readings just under 120%, mitigated by wind in the forebay. The freshet has clearly arrived. Inflows at Lower Granite were 83 kcfs on May 13, 92 kcfs on May 14, and 97.9 kcfs on May 18.

b. Fish. Juveniles: The combined yearling passage index count was 88,000 fish at Lower Granite on May 19, Paul Wagner reported. The peak migration count was 160,000 within the past week. The 2009 migration is about 60% completed at the lower Columbia River projects. The most recent passage counts were 50,000 at Little Goose; 250,000 at McNary; 30,000 at John Day; and 63,000 at Bonneville, the highest count Bonneville has seen in recent years.

Steelhead passage index counts are 68,000 and peaked at 168,000 fish about a week ago in response to the freshet. Steelhead passage counts at individual projects are 38,000 at McNary and 25,000 at Bonneville.

About 2,000 sockeye per day are passing Lower Granite, which is within the expected timeframe for sockeye passage in late May.

Adults: Approximately 93,000 spring Chinook passed Bonneville, with some 20 days left in the counting period that ends June 15, Cindy LeFleur (Washington) reported. The US v. Oregon technical advisory committee predicted a river mouth run size of 147,000 this year to be revised as new counts come in.

Jack Chinook passage is off the charts in 2009, with a recent count of 80,000-90,000 jacks compared to a previous record of 24,000 jacks in 2000. As a result of this year's bump, the 10 year average for Chinook jacks will rise from 146,000 to 180,000. Researchers are studying this phenomenon and expect to see a strong return of adult Chinook in 2010 as a result.

c. Power System. Installed wind capacity in the region is now 2,105 megawatts, Norris reported.

d. Water Quality. High inflows at Lower Granite have been causing involuntary spill downstream at Bonneville and some of the Snake River projects, Adams reported. On May 19, spill at Lower Granite was 40.7 kcfs, causing spill at Little Goose to exceed its 30 kcfs gas cap. Total dissolved gas levels on the Snake River are 114.4% in the Lower Monumental forebay and 115.8% in the Ice Harbor forebay. The impacts of involuntary spill are still traveling downriver, taking 2-4 days to reach successive projects.

Discussion turned to the spill priority list, part of the spring Water Management Plan. After discussion at yesterday's FPAC meeting the Salmon Managers would like to revise the spill priority list, Wagner said. Their recommendation is to move Bonneville to the top of the list for spills of 125 kcfs or more because that is where most fish in the lower river are passing now. However, Bonneville needs a 120 kcfs daytime cap to protect ascending adults from fallback, and a 150 kcfs nighttime cap. The Salmon Managers' priorities for passing involuntary spill in descending order are:

Ice Harbor – Has up to 30% daytime spill and to the gas cap at night with no transportation, making it a good candidate for high spill.

McNary – Is generally limited by powerhouse capacity, but can spill up to 150 kcfs with only 120% TDG in the tailrace.

Lower Monumental – Transport here is typically not very effective; passage via spill is better. Testing of uniform vs. bulk spill is in progress. Generally it's possible to spill about 10 kcfs more at Lower Monumental with a

uniform than a bulk spill pattern. If the project is using a bulk pattern and more spill is needed, switch to a uniform pattern and increase spill by 10 kcfs.

Little Goose – Can spill up to 125% at night, with a daytime spill cap of 30% for adult passage. Nevertheless, the Salmon Managers reached consensus on spilling a higher percentage at Goose when the powerhouse is fully loaded and all 6 units are running. Spill can increase under such conditions without causing adult passage problems.

Lower Granite and Chief Joseph are next, followed by John Day with its ongoing 30% vs. 40% spill test. The Dalles and Dworshak are last on the list.

This proposal goes against the guidelines COE fish biologists typically use, Laura Hamilton (COE) noted. The usual order is to spill first at Lower Granite, then Lower Monumental, Little Goose and Ice Harbor, moving down the river rather than cherry-picking projects. The Salmon Managers' recommendation is based on current migration and transport benefits at specific locations, Wagner explained. TDG impacts of the proposal could actually lower the amount of spill available, Norris said. One suggestion for the proposal is to split projects into two lists, those that are above and below 125 kcfs, which has worked in the past, Adams and Scott Bettin (BPA) agreed.

Wagner will provide the COE and BPA with the criteria the Salmon Managers used in developing their spill recommendations. TMT will revisit the spill priority list at its next meeting.

9. Next Meeting

The next regular TMT meeting will be on May 27 at the COE Portland office. The transmission emergency action plan, lower Snake River flow augmentation, spill priority list, summer operations, and possibly the FOP will be on the agenda. This summary prepared by consultant and writer Pat Vivian.

Name	Affiliation
Tony Norris	BPA
John Roache	BOR
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Paul Wagner	NOAA
Rick Kruger	Oregon
Dave Wills	USFWS
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Russ Kiefer	Idaho
Richelle Beck	DRA
Greg Hoffman	COE Libby Dam
Russ George	WMC
Tom Le	Puget Sound Energy
Dave Statler	Nez Perce Tribe
John Hart	EWEB
Mike Butchko	Powerex
Glen Trager	Shell Energy
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