

Change Request Number: 11LMN002_Unit Priority Change to Increase Spill

Date: October 28, 2010

Proposed by: Doug Baus, Corps, NWD

Location of Change: This change form is a change to a change form (Change Request Number: 10LMN001) that was not published in the 2010 FPP. It may be found online at: [http://www.nwd-](http://www.nwd-wc.usace.army.mil/tmt/documents/fpp/2011/changes/10LMN001_LMN_Turbine_Priority_Clarifications_3.pdf)

[wc.usace.army.mil/tmt/documents/fpp/2011/changes/10LMN001_LMN_Turbine_Priority_Clarifications_3.pdf](http://www.nwd-wc.usace.army.mil/tmt/documents/fpp/2011/changes/10LMN001_LMN_Turbine_Priority_Clarifications_3.pdf)

Proposed Change: Table LMN-5. Turbine Unit Operating Priority for Lower Monumental Dam.

Season	River Flow	Spill Level	Unit Priority
Mar 1 – Nov 30	Less than 70 kcfs	Bulk Spill Gas Cap	2, 3,4 , 5*, 3,4 , 6 then 1
	Over 70 kcfs	Bulk Spill Gas Cap	1**, 5*, 2, 3, 4, then 6
	Any River Flow	No Spill	2, 3, 4, 5, 6 then 1***
Dec 1 – Feb 28	Any River Flow	Any Spill Level, Including No spill	Any Order

*If U5 is OOS, run U4. **If U1 is OOS, run U2. ***If no spill is occurring, U1 may be operated at any priority level at the discretion of project personnel.

NOTE: U1 has fixed-pitch blades and can operate only at about 130 megawatts.

Turbine Unit 1 was the Fish Priority unit prior to the failure of blade linkages.

Temporary repairs included blades being welded in fixed positions. Operating turbine unit 1 improves juvenile fish passage by eliminating the eddy at the fish loading dock. Turbine unit 1 operation is also preferred as operation attracts adult fish to the North fish ladder. Since this turbine unit has fixed blades and a narrow operation window, starts and stops can cause excessive wear and tear. Turbine unit 1 should be turned on and left on for extended periods to minimize starting and stopping the unit. The operation of turbine unit 1 in first priority position should be initiated when flows are in an increasing trend, and flows are over 70kcfs. Turbine unit 1 may be turned off at the power plant operator's discretion, when the flows are between 55kcfs-70kcfs.

Reason for Change: Unit 5 exacerbates the tailrace eddy during low flows and needs to be lower in the priority as specified in the FPP and the FPP change form proposed by CRITFC. From a two dimensional view it appears having unit 5 on would counteract the tailrace eddy but in real time low flow operations the channel bathymetry creates three dimensional hydraulics that exacerbate the eddy. Initially the 2010 less than 70 kcfs priority was 2,5,3,4,6,1. Unit 2 was out of service therefore FPOM/TMT (Attachment 1) made an effort to increase spill by modifying the unit priority to 2,3,5,4,6,1 and the ensuing FPP change form by CRITFC embraced this priority for inclusion in the 2011 FPP. After the post operation review of the 2010 modified priority operation (2,3,5,4,6,1) the Corps still has concerns that unit 5 operation during low flow conditions is still problematic and needs to be lower in the priority. Two dimensional maps suggest unit 5 would counteract the tailrace unfortunately the Corps finds the operation of unit 5 during low flow conditions exacerbates the tailrace eddy and subsequently creates: 1) Navigation safety issues that require spill modifications and/or curtailments, 2) adverse conditions for adults at NSE 1 and 2, and; 3) adverse conditions for juveniles at the

outfall of the bypass flume. Therefore the Corps proposed 2,3,4,5,6,1 because it will provide the increased spill as requested but it keeps unit 5 lower in the unit priority.

Summary of 2010 Operation

On August 13, the Corps modified the turbine unit priority as specified in the 2010 FPP at LMN in an effort to achieve the 17 kcfs spill levels specified in the 2010 Summer FOP (Attachment 1). During the August 11 meeting the Corps informed TMT that LMN turbine unit 2 was out of service and consistent with the turbine unit priority list (2,5,3,4,6,1) specified in the 2010 FPP, the Corps was operating unit 5 which was the next highest unit on the priority list. Unit 5 discharges approximately 14.4 kcfs whereas unit 3 discharges approximately 11.5 kcfs at minimum generation. If unit 3 was higher on the unit priority list than unit 5, then the approximate 3 kcfs differential of discharge between these two units would represent rate of spill that would result in an additional 3 kcfs of spill rather than passing through a turbine. During the August 11 meeting, TMT recommended FPOM discuss this during the August 12 FPOM meeting and FPOM's subsequent recommendation was changing the Lower Monumental Dam unit priority to 2,3,5,4,6,1. On August 13, the Corps notified TMT and FPOM the Corps would change unit priority to 2,3,5,4,6,1, and FPOM and TMT members either supported or did not object to this operation.

Comments from others:

12 August 2010 FPOM Meeting

20. Lorz brought up the LMN unit priority with Unit 1 being a fixed blade, Unit 2 out of service, and Unit 5 has a higher loading so maintaining 17kcfs is difficult. Should Unit 3 be on instead of Unit 5? ACTION: Lorz will draft a change form for operating a single unit. If adults were the concern, Lorz suggested Unit 6 would be on instead of Unit 5. ACTION: Baus will draft a teletype stating unit priority would be 2,3,5,4,6,1. Bettin is ok with the changes. FPOM is in agreement with the changes in the unit priority.

Record of Final Action: approved 21 January 2011.

Attachment 1: Official TMT Coordination Changing LMN Unit Priority

From: Barton, Steven B NWD

Sent: Friday, August 13, 2010 10:12 AM

To: Allgood, Tiffany; Barquin, Billy; Baus, Douglas M NWD; Brandt, Scott; Denny, Lytle; Hovenkotter, Joe; Kiefer, Russ; Kruger, Rick; LeFleur, Cindy; Litchfield, Jim; Lorz, Tom; Lovtang, Jens; Marotz, Brian; Norris, Tony; Ogan, John; Pavlik-Kunkel, Deanne; Roche, John; Rose, Bob; Sears, Sheri; Spurgin, Pat; Statler, Dave; Sue Ireland; Wagner, Paul; Wills, Dave; Bettin, Scott; Boyce, Ron; Dittmer, Kyle; Domingue, Rich; Haeseker, Steve; Haller, Greg; Hassemer, Pete; MacKay, Robyn; Mellema, Mary; Steve Smith

Cc: Lear, Gayle N NWD; Peters, Rock D NWD; Feil, Dan H NWD; Kanbergs, Karlis NWD; English, Scott E NWD; Dykstra, Timothy A NWW; Donna Silverberg; Erin Halton; Robin Gumpert; Dave Benner

Subject: Official TMT Coordination: LMN Unit Priority

TMT Members and Alternates:

It was noted at the August 11 TMT meeting that Lower Monumental Powerhouse Unit 2 is out of service. Consistent with the unit priority in the 2010 Fish Passage Plan, unit 5 has been running to provide minimum generation, but discharges approximately 14.4 kcfs at minimum generation within 1% peak efficiency. The project

In an effort to provide spill levels closer to those specified in the 2010 Summer Fish Operations Plan, and as coordinated and recommended through FPOM, the Corps intends to change the unit priority at Lower Monumental to 2,3,5,4,6,1 effective today. This results in allowing unit 3 to run instead of unit 5, and a lower discharge at minimum generation within 1% peak efficiency (approximately 11.5 kcfs).

This will be mentioned during the TMT Conference Call today at 11:00 Pacific. Those TMT Members unable to participate in the call are requested to respond with any questions, objections, or comments on this operation by 16:00 Pacific, August 13, 2010.

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