

1. BiOp Guidance, Table 9.6-3 (on Page 9-89) Estimated spill levels and gas caps for FCRPS projects during spring (all) and summer (nontransport) projects.
 - a. Limiting Factors: gas cap, % of river flow (JDA-60% at night, TDA 40% of instantaneous flow), minimum spill at BON of 75 kcfs.
 - b. Daytime spill schedule: The definition of daytime and night time effects how long the spill levels are maintained. (BON – night is from 2130 to 0500 during July and Aug. See Fish Passage Plan, Bon-13)
2. Oregon Variance and Washington Rule Change (115% forebay, 120% tailwater)
 - a. Corps Check Spill Program (graphic) reviewed daily; calculate high 12-hour daily average. SEE TMT WEBPAGE at www.nwd-wc.usace.army.mil/tmt/
 1. Operations
 2. Spill Charts (example: see April 24)
 - b. Daily TDG Spill Decisions, numeric data of project forebay and tailwater reviewed daily and put in a Spill Log.
 1. SEE TMT WEBPAGE at www.nwd-wc.usace.army.mil/tmt/
 2. Related Links
 3. RCC-WQT
 4. 2002 Spill Log
 - c. Daily High-12 hour TDG level reported to TMT every two weeks.
 1. SEE TMT WEBPAGE at www.nwd-wc.usace.army.mil/tmt/
 2. Operations
 3. Spill Charts (example: May 24)
 4. Annual summary (handout provided)
3. Firm Generation Commitments

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|--------------------|-----------|
| LWG, LGS, LMN, IHR | 11.5 kcfs |
| MCN, JDA, TDA | 50 kcfs |
| BON | 30 kcfs |
4. Project-by-Project Guidance, 60% DGAS Report. Project TDG Performance Graphs
(example: McNary provided)
5. Travel Time Guidance
(table provided)
6. Basic Adjustment Guidance:

- a. Snake projects – 5 kcfs change results in about 2% change in TDG.
- b. Columbia projects – 10 kcfs change results in about 2% change in TDG.
- c. SYSTDG guidance for BON (with new deflectors on bays 1-3 and 16-18) Graphics based on variable spill levels based on variable inflowing TDG.

(example graph for inflow to BON at 112% provided, shown as Fig. 10)

- 7. Weekend Guidance: Total River Flow can significantly decrease on weekends, causing a resulting increase in TDG if the Friday spill level is not changed.
 - a. SSARR guidance for forecasted total river flow
- 8. Monday Guidance: Beginning-of-the-Week Total River Flows on Monday increase, causing the TDG level to decrease.
 - a. SSARR guidance for forecasted total river flow
- 9. Holiday Guidance: same as weekend guidance.
- 10. Degassing Guidance:
 - a. Winds above 10 mph enhance degassing in Columbia Gorge.
http://www.wunderground.com/US/OR/Hood_River/KDLS.html
Go to Personal Weather Station: Hood River (near bottom of the webpage)
 - b. At flows above 200 kcfs at BON, little degassing occurs between BON and Camas.
 - b. At flows below 200 kcfs at BON, significant degassing occurs between BON and Camas.
- 11. Water Temperature Guidance: Increasing air temperatures cause TDG levels to increase about 1%. Decreasing air temperatures cause TDG levels to decrease about 1%.
- 12. Spill passage test schedules cause the mass of TDG in the river to fluctuate:
For 2002 :
 - i. Lower Granite: RSW+8/ RSW+16/ TDG cap at night
 - ii. John Day: 60% night / 30% day and 30% night
 - iii. Bonneville: 75 kcfs night/ TDG cap at night
- 13. Maintenance and Repairs: maintenance or repairs of units limit the amount of spill that can occur through them. An example is Lower Granite on 6/17 to 6/21 when the project operator requested that spill level be limited to 35 KCFS from 6/17 to 6/21 during diving operations for deployment of RSW.
- 14. Physical Designs: The physical design of each spillway causes specific spill characteristics for specific flow ranges. They are identified in the annual Fish Passage Plan for Corps of Engineers Projects in tables called Spill Patterns.

- a. Spill Pattern – The spill patterns at John Day are such that to spill at low levels (80 KCFS) generate the same amount of TDG as spill at high levels (140 KCFS). Spill at about 120 KCFS generate much higher TDG levels than at 80 or 140 KCFS. This anomaly causes difficulty in regulating spill levels.
- b. Flow Deflectors – The flow deflectors at certain projects allow higher spill levels than in the past. But as a result, certain projects become bottlenecks in segments of the river. For example, if Warrendale were operated at 120% then Camas/Washougal would be in exceedence of the 115% TDG gas cap most of the time when the total river flow is above 200 Kcfs. Similar phenomena occur at Lower Granite, Little Goose and Lower Monumental river segments in the Snake.