

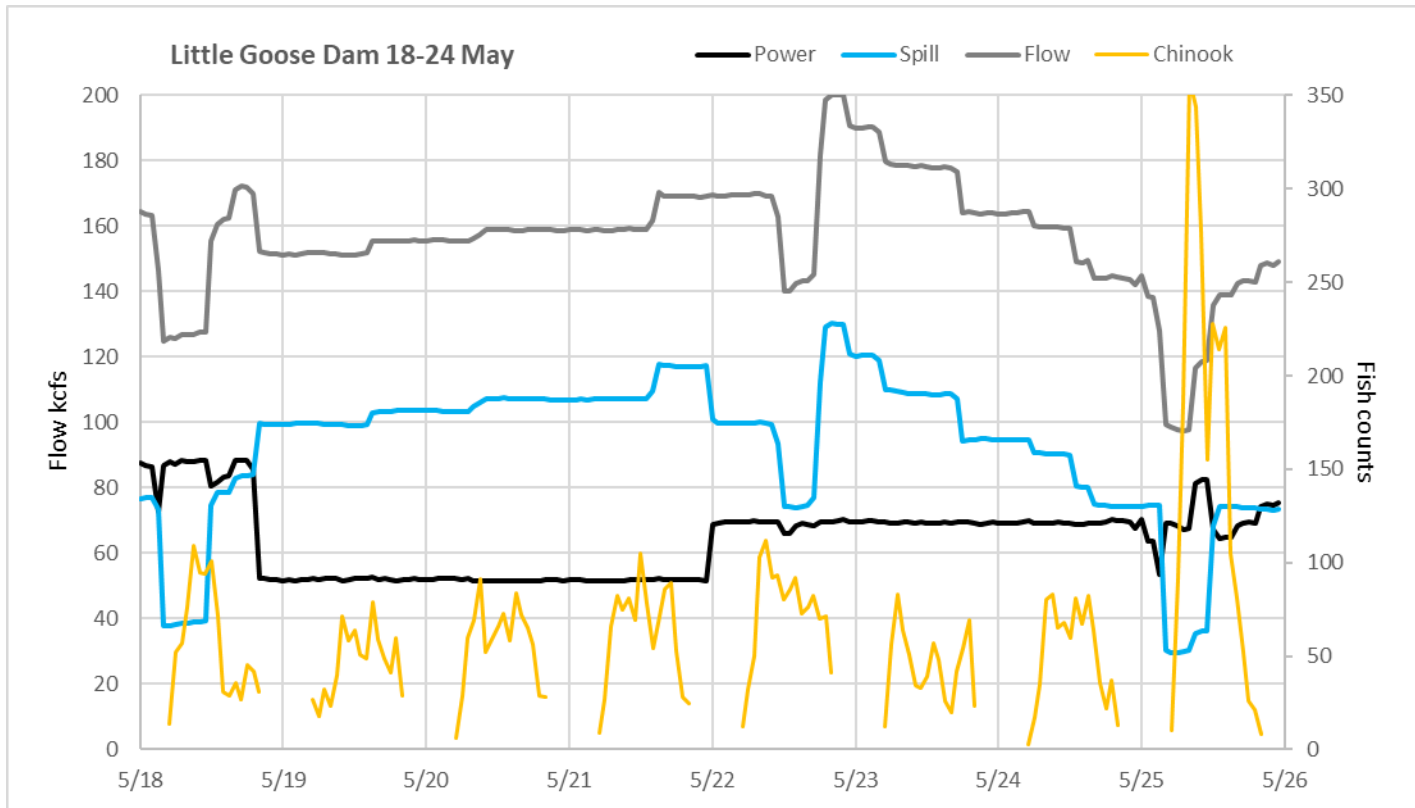
MEMORANDUM FOR THE RECORD: 23 LGS 08: TIC Derated for Elevated Dissolved Gas Levels**SUBJECT: T1C Dissolved Gas Analyzer Threshold**Background

During the 1600 hour of May 18 data from the new T1C Dissolved Gas Analyzers monitoring transformer insulating oils depicted an increase of explosive gas concentration. The analyzers sample every 4 hours to monitor ethylene and acetylene components and identified ppm levels that reached a threshold requiring action per IEEE standards. The data further revealed the increase of ethylene and acetylene production coincided with increased rates of power generation.

To mitigate the increase of T1C gas concentrations, the sample rate of the Dissolved Gas Analyzers were changed to sample hourly, and on May 18 at 1953 hours generation occurring in units 1,2,3,4, and 6 were dropped from collectively near 480 to 240 MW's. The MW reduction entailed shutdown of units 3 and 4, maintained generation from units 1 and 2, but kept generation from unit 6 online as it is tied into T2 infrastructure, leading to a deviation in unit priority. The incident occurred simultaneously with high flows (approximately 109 kcfs at the time of MW reduction) that exceeded Powerhouse capacity and necessitated the spilling of additional flows to balance the 50% decrease in unit power generation thereby contributing to the deviation from performance spill standards. Unit 3 returned to service 0000 hours May 22 and unit 4 returned to service 0000 hours May 25, with subsequent ability to provide performance level spill See Figure below). We will continue to monitor gas levels to determine safe operating conditions for T1C transformer.

- A. Species – Adult Chinook salmon *Oncorhynchus tshawytscha*, Adult Steelhead *O. mykiss*. Juvenile Chinook salmon *Oncorhynchus tshawytscha*, Steelhead *O. mykiss*, Sockeye salmon *O. nerka* and Coho salmon *O. kisutch*.
- B. Origin – Hatchery and Wild
- C. Length – N/A
- D. Marks and tags – N/A
- E. Marks and Injuries found on carcass – N/A
- F. Cause and Time of Death – N/A
- G. Future and Preventative Measures – Dissolved Gas Analyzer sample rates changed temporarily to hourly basis, data analysis and gradually bring back unit generation levels

to establish an adjusted static gas accumulation transformer baseline, and engineering consultation concerning potential repairs.



Hourly average river flow, spill, and unit flows (kcfs) and hourly adult Chinook salmon counts at Little Goose Dam during 18-24 May. Note, adult fish counts occur from 0500 to 2100 hrs daily.

Sincerely,
Deborah Snyder
Project Fisheries Biologist
Little Goose Lock and Dam
(509) 404-3263