



PUBLIC UTILITY DISTRICT NO. 1 of CHELAN COUNTY
P.O. Box 1231, Wenatchee, WA 98807-1231 • 327 N. Wenatchee Ave., Wenatchee, WA 98801
(509) 663-8121 • Toll free 1-888-663-8121 • www.chelanpud.org

April 18, 2013

VIA ELECTRONIC FILING

Honorable Kimberly D. Bose, Secretary
Nathaniel J. Davis, Sr., Deputy Secretary
FEDERAL ENERGY REGULATORY COMMISSION
888 First Street, NE
Washington, DC 20426

RE: Lake Chelan Hydroelectric Project No. 637 (Project)
Report on Minimum Flow Deviation for Chelan River

Dear Secretary Bose and Deputy Secretary Davis:

This letter is to provide you with Public Utility District No. 1 of Chelan County's (Chelan PUD) follow-up report on an instream flow deviation that occurred on March 18, 2013, on the Chelan River. This deviation was first reported by email to the Federal Energy Regulatory Commission (FERC) Portland Office (Douglas Johnson and Erich Gaedeke) and Washington Department of Ecology (Ecology) Central Regional Office (Charles McKinney and Patricia Irle) on March 20, 2013.

License Requirement

Article 405 requires Chelan PUD to implement the instream flows, ramping rates, and tailrace flows as set forth in Article 7 of the Lake Chelan Settlement Agreement and Chapter 7 of the Comprehensive Plan attached to the settlement agreement. The specific flow requirement that is the subject of this deviation report is to maintain a minimum flow of 320 cfs into the Chelan River Reach 4 from March 15-May 15 for steelhead spawning

Chelan PUD issued notifications of the flow deviation in accordance with FERC's Order Modifying and Approving Operations Compliance and Monitoring Plan, Article 405, issued November 30, 2007. When a flow deviation occurs, Chelan PUD is required to notify FERC and Ecology of the deviation within 48 hours of the time that Chelan PUD became aware of the deviation. Following the initial notification, Chelan PUD is required to file a report with the Commission within 30 days of any deviation from minimum flow requirements. The report shall, to the extent possible, identify the cause, severity, and duration of the incident, any observed or reported adverse environmental impacts resulting from the incident, a description of any

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corrective measures implemented at the time of occurrence and the measures implemented or proposed to ensure that similar incidents do not recur; and comments or correspondence, if any, received from the resource agencies and others regarding the incident.

Summary of Deviation and Environmental Effects

Minimum flows of 320 cfs for steelhead spawning were in effect in the Reach 4 Habitat Channel beginning March 15, in accordance with requirements of Article 405 of the License. These flows were being provided using a combination of 80 cfs from the Low Level Outlet (LLO) at the dam and at least 240 cfs from the pumping station located within the powerhouse tailrace. A minimum flow deviation occurred during the evening of March 18, when the low suction safety relay caused Pump 3 (at the pumping station) to shut down. A remote reset operation on Pump 3 triggered all pumps to briefly trip off, but a station reset restarted all pumps. However, Pump 3 again tripped off and stayed off-line. Operators were dispatched to the LLO to increase the flow from that source to compensate for the loss of flow from Pump 3. Operators manually opened the LLO and flows were increased from 82 cfs to 124 cfs replacing flow that would normally have been provided by Pump 3. Operators inspected the Reach 4 pump station and experienced a second station trip due to a loss of air pressure to the differential controls for monitoring intake screen cleanliness. This also appears to be the cause of the Pump 3 trip. The station was reset and flows were reestablished in Reach 4 at 384 cfs (124 LLO plus 260 pumped), causing flow fluctuations for a total time lapse of 11 minutes. The intake screen cleaning air burst/differential control system air compressor was restarted and the pump system trip limits were re-programmed.

This event resulted in brief drops in water levels in the pool at the pump station canal outlet structure at the head of the Reach 4 Habitat Channel. The water level drop was approximately 4 inches over the time period from hours 17:52 – 18:52, then a water level drop of about 9 inches occurred over a 12-minute period between hours 19:28 – 19:40. Water levels were back to the previous level by hour 19:50. Also, the flow into Reach 4 of the Chelan River was below the 320 cfs minimum for approximately two hours, based on the time lag necessary for increased flows from the LLO to arrive at Reach 4.

No adverse environmental effects resulted from the short term loss of flow and drop in water levels. Steelhead adults had not yet initiated spawning. The first steelhead redd of the year was observed on March 20 and weekly surveys did not find any additional redds until April 2. Chinook fry did not yet inhabit shallow water at the time of the incident. Chinook fry have still not appeared in the shallows as of April 16.

Detail Regarding Flow Deviation, Cause of Incident and Corrective Measures

Spawning flows of 320 cfs minimum had been in effect in the Reach 4 Habitat Channel since March 15, 2013. These flows were being provided using a combination of 80 cfs from the Low Level Outlet (LLO) and at least 240 cfs from the tailrace pumping station. A minimum flow deviation occurred during the evening of March 18, when the low suction safety relay caused

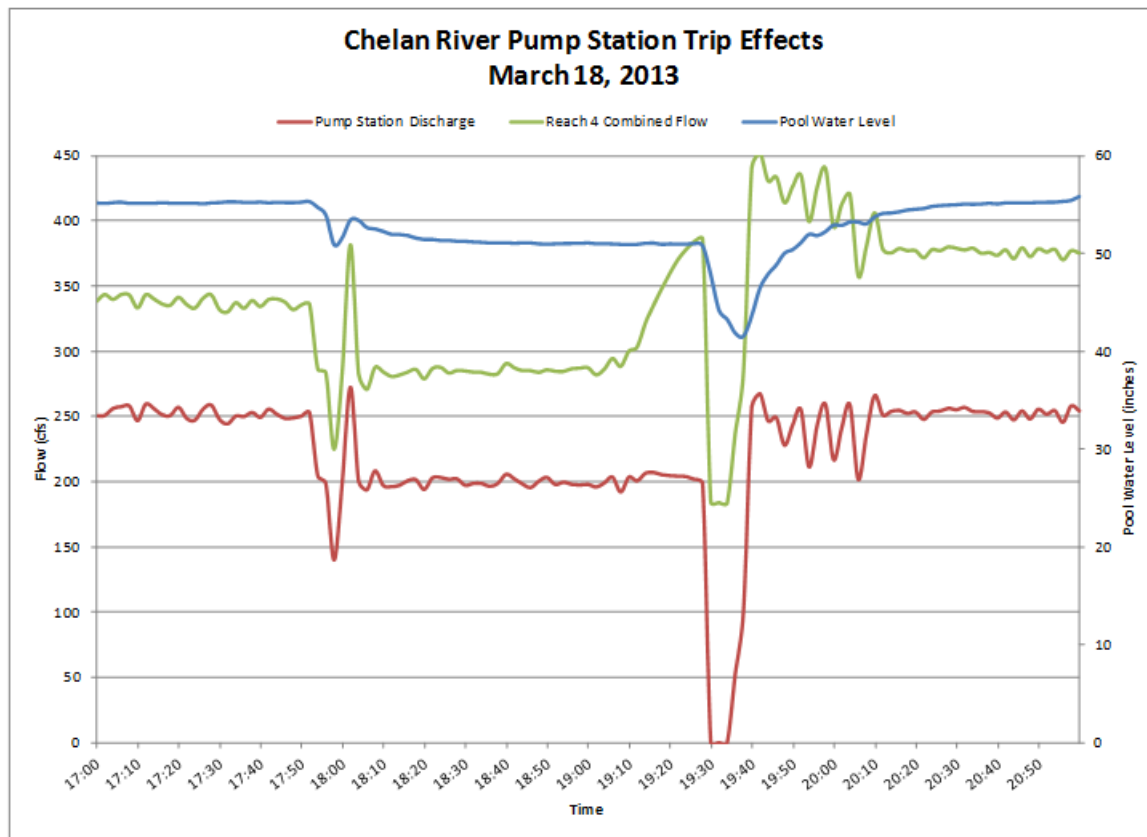
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Pump 3 to shut down. The low suction controls are designed to prevent damage to the pump or intake screens in the event that fouling reduces flow through the screens below safe operating levels. The screens were not plugged; rather the failure has been traced back to a faulty valve in the air blast screen cleaning system, causing a loss of air pressure in the system which, in turn, caused an automatic shutdown of Pump 3. Operators at the Rocky Reach control room initiated a remote resetting of Pump 3, which caused a trip of the remaining four pumps. A station reset was initiated and all five pumps were restored to service, resulting in a total time lapse of 13 minutes with no pumped flow into Reach 4. Pump 3 experienced a re-trip due to the same cause the first trip.

Rocky Reach and Lake Chelan operators were dispatched to Lake Chelan headworks to manually open the LLO and flows were increased from 82 cfs to 124 cfs replacing flow that would normally have been provided by Pump 3. Operators inspected the Reach 4 pump station and experienced a second station trip due to a loss of air pressure to the differential controls for monitoring intake screen cleanliness. This also appears to be the cause of the Pump 3 trip. The station was reset and flows were reestablished in Reach 4 at 384 cfs (124 LLO plus 260 pumped), causing flow fluctuations for a total time lapse of 11 minutes. The intake screen cleaning air burst/differential control system air compressor was restarted and the pump system trip limits were re-programmed.

This event resulted in brief drops in water levels in the pool at the pump station canal outlet structure at the head of the Reach 4 habitat channel. Also, the flow into Reach 4 of the Chelan River was below the 320 cfs minimum for approximately two hours, based on the time lag necessary for increased flows from the LLO to arrive at Reach 4. The water level drop was approximately 4 inches over the time period from hours 17:52 – 18:52, then a short water level drop of about 9 inches occurred over a 12-minute period between hours 19:28 – 19:40. Water levels were back to the previous level by hour 19:50. The flow and water level effects of the pump station trips, on two-minute intervals, are shown in the figure below.

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The LLO was left at 124 cfs for the remainder of the night and was adjusted to 86 cfs over the course of the next day (March 19, 2013) with ramp rates observed. Programming for the screen cleaning air burst/differential control system air system was in manual mode (normal for current operations) and the compressor was in the off position. A faulty valve in the air burst system allowed pressure to deplete from the control system causing an erroneous differential signal which initiated the trip. The control system air compressor was left in the auto setting and the blast valve seat was tightened to minimize leakage. The faulty valve was identified, ordered and replaced on March 21, 2013. New LLO outlet controls are purchased and on site for May 2013 installation which will allow remote operation of the LLO.

Biological and Environmental Impacts

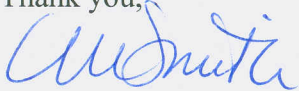
No adverse environmental effects resulted from the short term loss of flow and drop in water levels. Steelhead adults had not yet initiated spawning. The first steelhead redd of the year was observed on March 20 and weekly surveys did not find any additional redds until April 2. Chinook fry did not yet inhabit shallow water at the time of the incident, thus this incident was unlikely to have caused any stranding of Chinook fry. Water temperatures in Reach 4 were still quite cold and Chinook fry either had not yet emerged or were still hiding in the substrate to avoid predators. Water temperatures in Reach 4 were at or below 7 degrees C., while observations of Chinook fry during previous years have not observed them feeding in the shallows until water temperatures approach 10 degrees C. During a snorkel survey conducted in

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Reach 4 on March 11, 2013, only one Chinook fry was observed, which was seen in the pool area. A snorkel survey on April 10 also did not detect any Chinook fry in the Reach 4 Habitat Channel. Observations from the surface during weekly steelhead spawning surveys have noted Chinook fry when they are using shallow water feeding areas and in the log structures. Chinook fry have still not appeared in the shallows as of April 16.

Please contact me or Steven Hays at (509) 661-4181 should you have any questions regarding this incident.

Thank you,



Michelle Smith
Licensing & Compliance Manager
michelle.smith@chelanpud.org
(509)661-4180

Attachment: Email from Chelan PUD to FERC and Ecology, March 20, 2013

cc: FERC, Erick Gaedeke and Doug Johnson
Washington Department of Ecology, Pat Irle and Charlie McKinney
Chelan River Fishery Forum

Sokolowski, Rosana

From: Sokolowski, Rosana on behalf of Smith, Michelle
Sent: Wednesday, March 20, 2013 12:56 PM
To: 'Douglas Johnson'; 'Erich Gaedeke'; 'Irle, Pat (ECY)'; cmck461@ECY.WA.GOV
Cc: Truscott, Keith; Osborn, Jeff; Hays, Steve; Odell, Brian; Hudson, Kirk; Garrison, Dan; Sokolowski, Rosana; Bitterman, Deborah
Subject: Lake Chelan Project No. 637: Chelan River Minimum Flow Deviation

Follow Up Flag: Follow up
Due By: Friday, April 19, 2013 8:00 AM
Flag Status: Flagged

This email is to provide you notification regarding a pump station malfunction that resulted in momentary minimum flow and ramping rate deviations in the Chelan River near Chelan Falls. A detailed report will be filed within 30 days.

Spawning flows of 320 cfs minimum have been in effect in the Reach 4 Habitat Channel since March 15. These flows were being provided using a combination of 80 cfs from the Low Level Outlet (LLO) and at least 240 cfs from the tailrace pumping station. A minimum flow deviation occurred during the evening of March 18, when the low suction safety relay caused Pump 3 to shut down. The low suction controls are designed to prevent damage to the pump or intake screens in the event that fouling reduces flow through the screens below safe operating levels. The screens were not plugged, rather the failure has been traced back to a faulty valve in the air blast screen cleaning system, which caused a loss of air pressure in the system which, in turn, caused an automatic shutdown of Pump 3. Operators at the Rocky Reach control room initiated a remote resetting of Pump 3, which caused a trip of the remaining four pumps. A station reset was initiated and all five pumps were restored to service with Pump 3 experiencing a re-trip, resulting in a total time lapse of 13 minutes.

Rocky Reach and Lake Chelan operators were dispatched to Lake Chelan headworks to manually open the LLO and flows were increased from 82 cfs to 124 cfs replacing flow for Pump 3. Operators inspected the Reach 4 pump station and experienced a second station trip due to a loss of air pressure to the differential controls for monitoring intake screen cleanliness. This also appears to be the cause of the Pump 3 trip. The station was reset and flows were reestablished in Reach 4 at 384 cfs (124 LLO plus 260 pumped), which was a total time lapse of 11 minutes. The intake screen cleaning air burst/differential control system air compressor was restarted and the pump system trip limits were re-programmed.

This event resulted in brief drops in water levels in the pool at the pump station canal outlet structure at the head of the Reach 4 habitat channel. Also, the flow into Reach 4 of the Chelan River was below the 320 cfs minimum for approximately two hours, based on the time lag necessary for increased flows from the LLO to arrive at Reach 4. The water level drop was approximately 4 inches over the time period from hours 17:52 - 18:52, then a short water level drop of about 9 inches occurred over a 12-minute period between hours 19:28 - 19:40. Water levels were back to the previous level by hour 19:50. The flow and water level effects of the pump station trips, on two-minute intervals, are shown in the figure below.

This incident is unlikely to have caused any stranding of Chinook fry because water temperatures in Reach 4 are still quite cold and Chinook fry are still hiding in the substrate to avoid predators. Water temperatures in Reach 4 are at or below 7 degrees C., while observations of Chinook fry during previous years have not observed them feeding in the shallows until water temperatures approach 10 degrees C. During a snorkel survey conducted in Reach 4 on March 11, 2013, only one Chinook fry was observed, which was seen in the pool area. A steelhead spawning survey is scheduled for Reach 4 today, March 20, and observations

regarding presence of Chinook fry will be included in the detailed report that will be filed within 30 days.

Attached to this email are copies of a report on the cause and response to this incident by Chelan PUD personnel. If you have any questions or require additional information, please contact Steven Hays at (509)661-4181 or me.

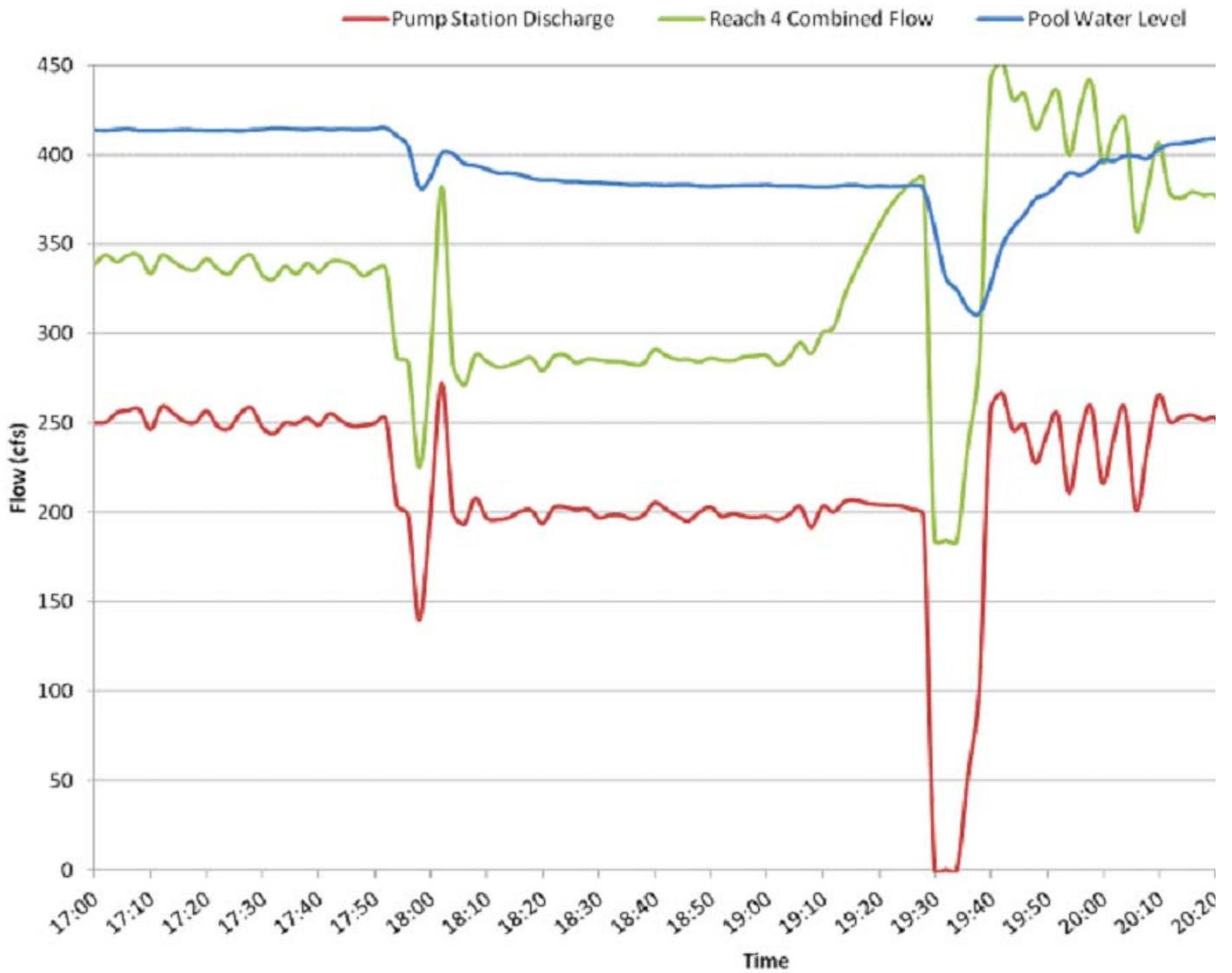
Thank you,

Michelle Smith
Licensing & Compliance Manager
(509)661-4180



3_18_13_R4_DeviaOps_Log_R4_Deviation.docx ation.pdf

Chelan River Pump Station Trip Effects March 18, 2013



3-19-2013

Minimum Flow Deviation: Chelan Reach 4

The minimum flow for the Reach 4 habitat between March 15 to May 15 and Oct. 15 to Nov. 30 is 320cfs by combination of pumping and LLO (low level outlet) flow/Spill. The Chelan Reach 4 pump station is comprised of 5-52cfs pumps providing a total of 260cfs flow into the Reach 4 habitat channel. On March 18, 2013 at approximately 17:51, pump 3 tripped on low suction. Operators at the Rocky Reach control room initiated a remote resetting of pump 3 which caused a trip of the remaining 4 pumps. A station reset was initiated and all 5 pumps were restored to service with pump 3 experiencing a re-trip, total time lapse was :13.

Rocky Reach and Chelan operators were dispatched to Chelan headworks to manually open the LLO and flows were increased from 82 to 124cfs replacing flow for pump 3. Operators inspected the Reach 4 pump station and experienced a second station trip due to a loss of air pressure to the differential controls for monitoring intake screen cleanliness, this also appears to be the cause of the pump 3 trip. The station was reset and flows were reestablished in the Reach 4 habitat at 384cfs (124 LLO-260 pumped) total time lapse :11. The intake screen cleaning air burst/differential control system air compressor was restarted and the pump system trip limits were reprogrammed.

The LLO was left at 124cfs for the remainder of the night and was adjusted to 86cfs during the course of the day (3-19-2013) with ramp rates observed. Programming for the screen cleaning air burst/differential control system air system was in manual mode (normal for current operations) and the compressor was in the off position. A faulty valve in the air burst system allowed pressure to deplete from the control system causing an erroneous differential signal which initiated the trip. The faulty valve was identified, ordered and is scheduled for replacement on 3-21-2013. The control system air compressor was left in the auto setting and the blast valve seat was tightened to minimize leakage.

Manual onsite response is required at the LLO for flow adjustments until upgraded controls are installed in May 2013, when remote operations will be available via SCADA.

The current lake elevation is below the spill gate sills precluding spill as an option for flow make up.

Deviations remained minimal throughout the course of events.

Hourly average Reach 4 flows for hours ending:

18:00- 320cfs

19:00- 290cfs

20:00- 280cfs

21:00- 380+cfs

21:00-08:00-380+cfs

With current program configuration and equipment repairs scheduled for 3-21-2013, we do not anticipate any further complications during the spring operating season.

Investigation is underway to install service/isolation valves in the air burst system to facilitate the maintenance and repair for key components during operation and in conjunction with the LLO control upgrade, will greatly enhance response capability in the future.

Brian C Odell

rpt001.vb
 Mar-19-2013
 Time: 12:21

page 1 of 1

Rocky Reach Hydro Operations Log

from: Saturday, Mar 16, 2013 to: Monday, Mar 18, 2013

SEARCH: Reach 4

TIME	CATEGORY	ENTRY
Monday, Mar 18, 2013		
20:32	INFO	LLO FLOW CURRENTLY AT 124.7 CFS AND COASTING. REACH 4 TOTAL FLOW AT .376 CFS. CAMPBELL AND WHITEHALL HEADED HOME.
19:38	INFO	REACH 4 ALL PUMPS RUNNING. FLOW VALUE 366.8 CFS
19:27	INFO	REACH 4 PUMPS 1,2,4,5 HI HI DIFF ALARMS. ALL PUMPS SHUT DOWN. CAMPBELL AND WHITEHALL TROUBLESHOOTING. REACH 4 FLOW AT 184 CFS
19:14	INFO	REACH 4 FLOW AT 0.322CFS AND INCREASING
18:17	INFO	ATTEMPTED TO OPEN CHELAN SPILL GATE FOR REACH 4 MAKE UP WATER BUT THE LAKE ELEVATION IS STILL LOWER THAN THE SPILLGATE SEAL, CHELAN SPILL GATE BACK ON SEAL, NO WATER SPILLED
18:03	INFO	CHELAN REACH 4 PUMP #3 TRIPPED ON LOW SUCTION TRIED TO CALL CAMPBELL, NO ANSWER, WHITEHALL RESPONDING, REACH 4 AT 288CFS
17:57	INFO	CHELAN PUMP REACH 4 PUMP #3 TRIPPED DUE TO LOW SUCTION, HIT ALARM RESET AND ALARM CLEARED. COMPUTER WAS NOT RESTARTING THE PUMP SO I TOGGLED THE FLOW TO 208-232 AND THEN BACK TO 260-290 TO TRY AND RESET THE FLOW REQUEST. THIS ENDED UP CAUSING THE COMPUTER TO SHUT DOWN ALL THE PUMPS, AFTER THE PUMPS HAD ALL STOPPED WE RESTARTED THEM AND ALL 5 STARTED.
17:51	INFO	CHELAN REACH 4 PUMP #3 TRIPPED ON LOW SUCTION
Saturday, Mar 16, 2013		
22:06	INFO	CHELAN: REACH 4 FLOW RATE LO ALARM AT 0.3198, CLEARED 30 SECONDS LATER AT 0.335

Record Count: 9

Operator Initials _____

Document Content(s)

041813 LC Deviation Formal.PDF.....1-11