CENWW-ODG **June 17, 2024**

MEMORANDUM FOR THE RECORD: 24 LGS 06: Transformer-1 MOD Failure

SUBJECT: Priority unit, spill pattern, potential MOP, potential TGD deviations due to catastrophic transformer connection failure and damage

Background

Intermittent arc flash events occurred to the Motor Operated Disconnect (MOD) switch to Transformer 1, infrastructure supported by units 1- 4. Eyewitness and film footage accounts documented arc flash and spark showers beginning the 0400 hour of June 14 and manifesting again during the 0700 hour. Another 6 short bursts occurred during the 0800 hour of June 15. BPA switchyard, LGS relay data, and infra-red camera inspections took place in between events without any findings. However, visual camera inspections revealed deformities materializing on the MOD corona ball and blades. During the June 15 inspection at 1930 hours, LGS operations determined repetitive arcing continued to degrade the MOD unit with potential to cause larger events at increasing damage levels. This led to enacting emergency procedures with BPA.

Preparations to cease generation and begin spill at 60 kcfs transpired at 1950 hours on June 15, followed by bringing units 1-4 out of service. The 500 kV line was restored to Transformer 2 bringing Unit 6 online with spill levels adjusted to 45 kcfs. Unit 5 remains out of service undergoing repairs.

A. Species – Chinook salmon *Oncorhynchus tshawytscha*, Steelhead *O. mykiss*, Sockeye salmon *O. nerka*, Pacific lamprey *Entosphenus tridentatus*, and potentially Coho salmon *O. kisutch*.
B. Origin – Hatchery, 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 – Short term strategies entail assembly of a jumper configuration consisting of jumper cable, pad connectors, and collars to connect the line to the transformer side of the MOD, effectively bypassing the MOD switch and bus work. Jumper completion target is the evening of June 19, pending either manufacture or availability of jumper collars. Intermediate strategies include removal of the burnt and eroded MOD switch corona ball, blade contacts, contact plate, and arm. Demolition of the MOD switch will require 2 cranes, man basket lift, future line outage coordination, and manufacture on site.

Table 1: LGS adult passage counts June 1 – June 17, 2024, Columbia River DART (https://www.cbr.washington.edu/dart/query/adult_daily)

Date mm/dd	Chinook	Jack Chinook	Steelhead	Wild Steelhead	Sockeye	Lamprey	Bull Trout
6/1	117	104	1	1	0	0	0
6/2	254	146	0	0	0	0	0
6/3	354	89	0	0	0	0	0
6/4	241	63	1	1	0	0	1
6/5	660	174	3	3	0	0	0
6/6	1665	254	1	0	0	0	0
6/7	154	83	2	1	0	1	0
6/8	615	143	1	1	1	1	0
6/9	852	159	0	0	0	0	0
6/10	605	109	4	2	0	0	0
6/11	311	97	0	0	0	1	0
6/12	319	82	0	0	1	0	0
6/13	318	94	1	1	0	0	0
6/14	488	132	1	1	0	0	0
6/15	384	87	1	0	0	0	0
6/16	51	25	0	0	0	1	0
6/17	55	86	0	0	0	1	0

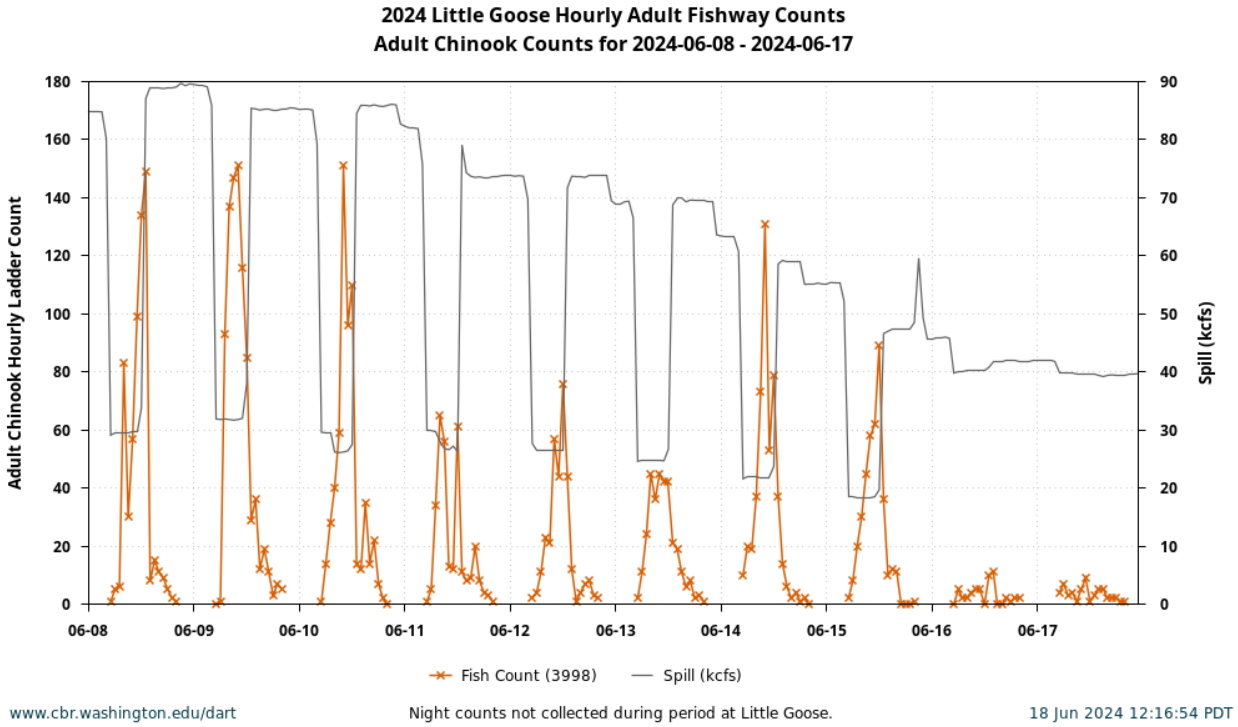
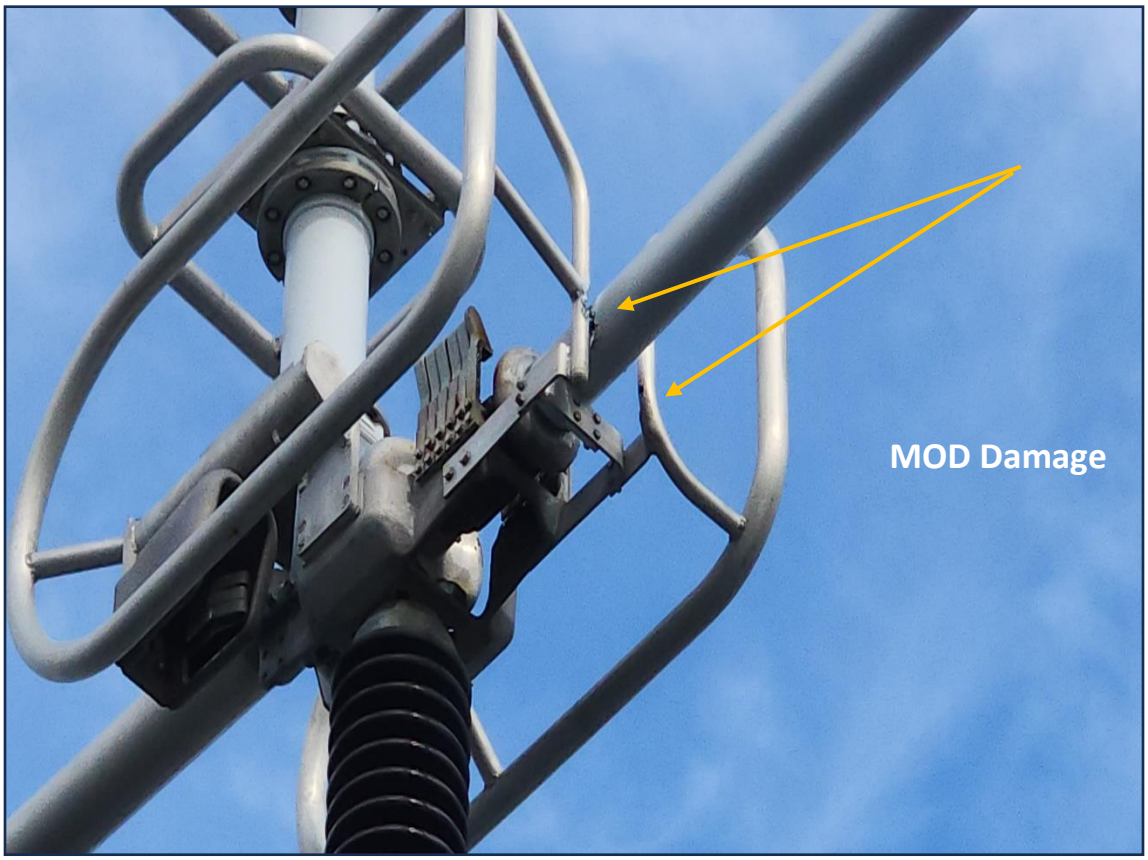


Figure 1: LGS hourly adult fishway counts May 29 – June 16, 2024


Corona Ball Damage


MOD Damage

Sincerely,
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