BOYCE HYDRO POWER LLC
A W.D. Boyce Trusts Legacy Enterprise

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27 December, 2017

Mr. John Zygaj, P.E. Regional Engineer
Chicago Regional Office
**Federal Energy Regulatory Commission**
230 S Dearborn St Ste 3130
Chicago, IL 60604

**RE: Edenville Dam P-10808**
**Concerns Regarding Winter Gate Operations For Reservoir Level Control**

Mr. Zygaj: As the Chicago Regional Office is aware, operation of the Edenville Dam's six tainter gates is not needed in winter for reservoir level control as the two turbines in the Edenville hydro station provide the flow control necessary to manage reservoir levels. Additionally, the Tobacco River Spillway, which has three gates, typically has one gate open at a fixed increment for maintenance of a required minimum flow amount during the winter. At this time however, the Commission's November 20, 2017 Order to Cease Generation at the Edenville Dam powerhouse precludes the utilization of the two turbines for reservoir level control. Consequently, the tainter spill gates must be employed for that purpose. This is an abnormal utilization of the gates and is not consistent with the historic operation of those project features.

As the Regional Engineer you are aware that the gates at the Edenville powerhouse and the Tobacco spillway that were put into operation in 1925 were not constructed with side seal heating systems, and thus are prone to significant ice coverage and subsequent immobilization during extended cold periods in the winter. This ice coverage effectively freezes the gates in position and prevents them from being operated by the electric motor chain hoist mechanism. Mechanically removing the ice by operation of power washing with heated water, and physical removal with ice picks by operators who are lowered down onto the tailrace side of the gates with a tethered hoist mechanism are the methods available for unfreezing the gates. As you can understand, neither of these methods is desirable in the dead of winter, and both are fraught with serious potential hazards for the operators.

As Boyce Hydro, operations company for the licensee, is obligated to comply with the Commission's Order, it is necessary for me to bring to your attention certain facts about operational safety that are of deep concern to Boyce Hydro's management and the senior operators who are responsible for the daily functions and performance of the work necessary to operate and maintain the facilities. A letter from Senior Operator, Greg Uhl, is enclosed with this correspondence which explains his genuine concerns at this time.

Mr. Uhl's letter details his firsthand knowledge of the operational difficulties engendered by the ice conditions attendant to the active gate operations during the winter months in Michigan. It discloses the concerns about personnel safety that applies to the removal of ice from the gates in order to operate them on a frequent basis during the winter. The letter also addresses the concerns about potential undue stress on the structural elements of the gate lifting support beams and service cat walk. If such damage occurs, it would prevent operation of the gates at all, and repair under frozen winter conditions would be a challenge, if not impossible.

Additionally, Boyce Hydro recently increased the number of its operations personnel by hiring one new employee and is training another existing employee to be an operator so that there are five operators. This is the preferred staffing level during winter drawdown and spring runoff given the amount of time that is required on a daily basis to cover the duties entailed in the operation of the generating equipment and the spillway gates. The financial pressure being exerted on the company by FERC's Cease Generation order will, in very short order, necessitate a reduction in staff to no more than three operators. This reduced staffing level places excessive demands on the number of working hours per day and per week especially for the operators when the spring runoff commences. Three shifts of work are required under these conditions in order to operate the facilities for an extended period up to three months of time without interruption. This is not a sustainable situation for the health of the Boyce operators nor is it safe for the operation of any of the four hydroelectric dams Boyce Hydro manages.

These concerns are brought to your attention in your capacity as the FERC Regional Engineer in charge of Dam Safety. You and several of your staff engineers in Chicago are familiar with the physical conditions of the gate system in Edenville, which may not be the case with FERC personnel in Washington, DC, who are involved in the decision to issue the Cease Generation Order. I think it is appropriate to bring these safety concerns to your attention, as the information will most likely be received with a higher degree of situational awareness and understanding in your office.

Boyce Hydro will be filing this letter in the Commission's public docket. I hope that the information in this letter will make it possible for you to communicate with Washington that the Cease Generation order is putting in motion the very hazards that FERC is charged with preventing, and potentially risking serious harm to Boyce Hydro's personnel.

Sincerely yours,

Lee W. Mueller, Architect
Co-Member Manager
Boyce Hydro Power, LLC.

Cc: Jerry Gomez, P.E.
R.D. Purkeypile, P.E
John Clements
Mike Swiger

Encl.

## Lee W. Mueller

**From:** Greg Uhl <greg.uhl@boycehydrollc.com>
**Sent:** Friday, December 22, 2017 11:55 AM
**To:** Lee Mueller
**Subject:** Edenville Dam spillway gates
**Attachments:** KIMG0020.JPG; KIMG0014.JPG; KIMG0018.JPG; KIMG0016.JPG; KIMG0017.JPG; KIMG0015.JPG; KIMG0019.JPG

Lee,

I have attached pictures of the spillway gates as they are today with minimal ice build up on or around the gates as you will see in the pictures. However the condition that the gates are in today in respect to operation and icing will be short lived, due to the fact that the temperatures here are expected to drop into the single digits for lows and a few days in the low to mid twenty's for highs for at least the next two weeks according to AccuWeather. The past week or so here we have had very mild temperatures for this time of year but as you can see in the pictures the spray from the spillway being open has allowed ice to accumulate on the concrete wall and security fencing on the Tobacco spillway. The ice had completely covered the fencing and the concrete wall from where it is in the photo all the way up to the gate before we had a couple of warm days to melt it off.

In preparation for the cold temperatures we are going to exercise the gates two or three times a day over the weekend and on Monday to hopefully keep the ice from accumulating so much that it hinders the operation of the gates. In the event that the ice accumulates to much we will then have to use the hot water pressure washer to melt the ice from the gates.

I have several concerns about the steps that will have to be done in the event that the gates freeze. The stress that we have to put on the gate chain could potentially break the chain, or cause the chain to come out of the keeper causing serious injury and or death if someone was struck by it. In the event that the chain were to break or come out of the keeper the bridal and chain would be lost into the lake. The stress on the chain in a effort to pop open the gate also deflects the spillway deck which is a concern for potential damage or failure of the deck. The use of the the hot water pressure washer to thaw the gates is going to cause additional slip and fall conditions from the over spray as well.

Greg Uhl
Assistant Chief Operator
Boyce Hydro LLC.

Ice formation on sidewalls will increase and eventually encrust gate side seals as temperatures drop and remain below freezing in January

Edenville Dam, Tobacco River Spillway: View of Left Side Gate Oriented Downstream (22 December, 2017)

Edenville Dam Tobacco River Spillway (22 December, 2017)
Left gate as viewed from the service catwalk, looking downstream. As freezing temperatures continue, ice builds up on the gates and side piers and eventually sealing the steel gates to the piers. Removal of ice buildup is accomplished by pressure washing the ice with a steam heated portable washer transported in the bed of a service truck. Service truck access to the spillway is on the crest of the dam which is barely 10 feet wide, and is hazardous to drive on when it is encrusted with ice.

Tainter gate spill cart hoist with electric winch and chain sprocket

Hoist chain

View of Edenville Dam Powerhouse Spillway Gates (22 December, 2017)
Center gate is open and flowing water. Left and right side gates are closed with ice formations encrusting downstream rollaway slabs. As winter temperatures drop overnight, freezing begins to encrust the gate side seals and bind them to the concrete piers.

View of Edenville Dam Powerhouse center gate oriented downstream (22 December, 2017). These steel radial arm taintor gates (approximately 22’ long x 10’ high) are manually operated with an electric motor winch connected to a steel sprocket and hoist chain which is attached to the bottom end of the gate.

Document Content(s)