John Hart Generating Station Replacement Project

February 2017 Community Construction Update Report #44

Prepared by: Stephen Watson, BC Hydro

(O) 250-755-4795 or (C) 250-616-9888

Twitter: @Puntledge Email: steve.watson@bchydro.com

InPowerBC

SNC·LAVALIN

BC Hydro
Power smart

Project Status

- Upstream of the dam, lower gate guides (rails that will guide the sliding of the large gates) continued to be aligned and the painting of lower sections is complete. Installation of upper gate guides also underway;
- Drilling underway for second 6 metre section of the tunnel excavation under the John Hart dam, to be complete in March;
- Power tunnel excavation reaches 1,125 metres of the 1,575 metre total, and on track for completion this summer;
- Powerhouse concrete placements and hydroelectric component installation work continues; and
- The tailrace tunnel is now roughly 75% complete.

Work inside the gate gallery on the downstream side of the powerhouse.

Project Schedule

- April: Begin process for removal of cofferdam and approach channel (see point of interest on last page);
- May: Work underway on roadway to new surge tank site (this access crosses the public trail leading to the Elk Falls suspension bridge);
- May: Begin construction work on the low-level-outlet (the water discharge works that will replace the spillway gates in providing flows down Elk Falls Canyon);
- June: Concrete work to begin at surge tank site;
- July: Complete tailrace tunnel; and
- August: Power tunnel excavation to be complete up to the intake shaft.

Existing John Hart surge towers.

Construction Pictures – John Hart Dam

Feb 22

BC Hydro
Power smart

Construction Pictures – Downstream Work Area Below John Hart Dam

Tunnelling work under the John Hart dam.

Construction Pictures – Power Tunnel

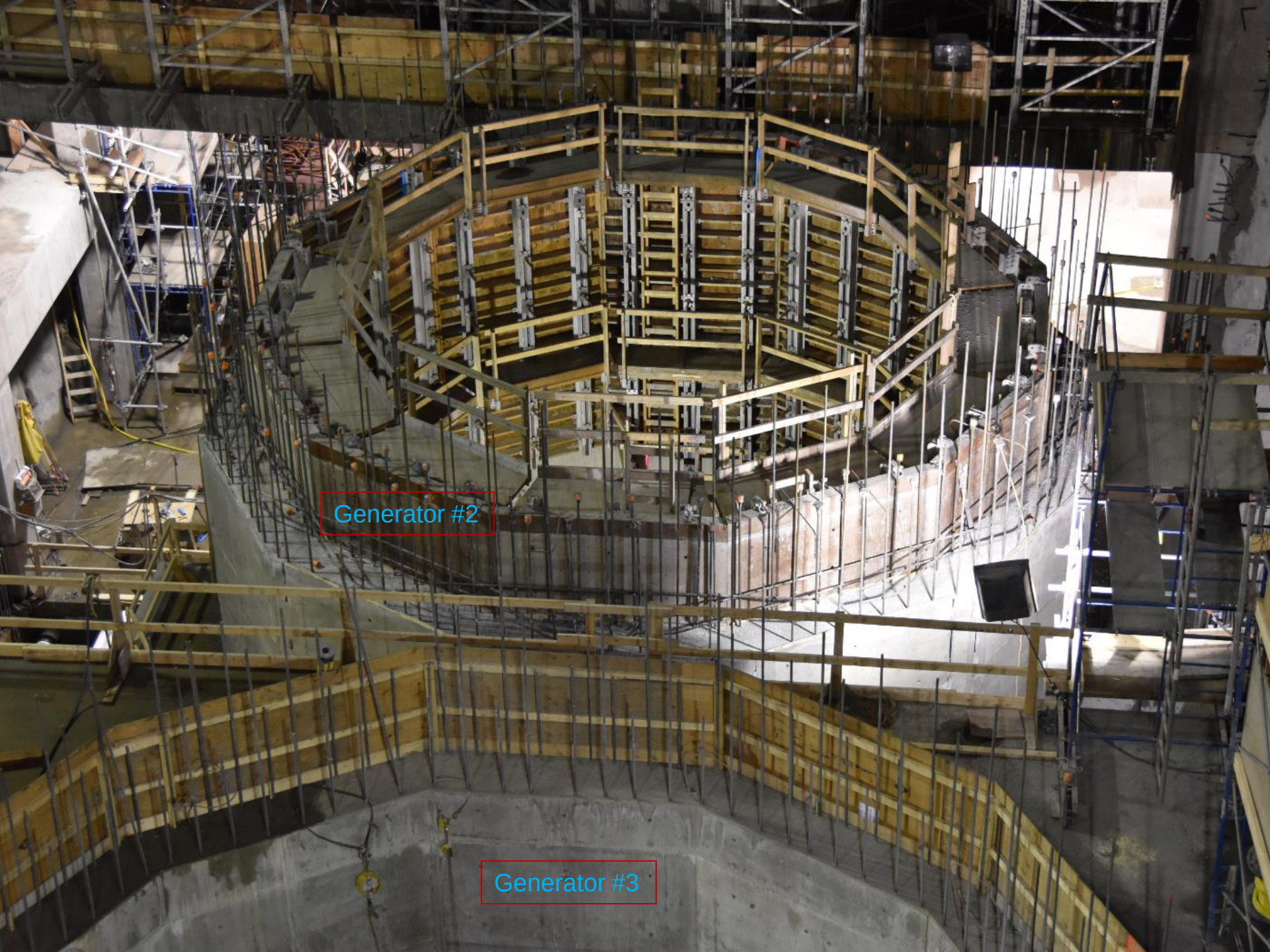
View of the power tunnel as it heads towards the John Hart dam and reservoir. As it angles to the right it follows the similar routing of the above ground penstocks near the John Hart project interpretive centre/Elk Falls parking lot.

Construction Pictures – Powerhouse

Walking down the service tunnel to the powerhouse lookout. The view from the lookout is shown on the right.

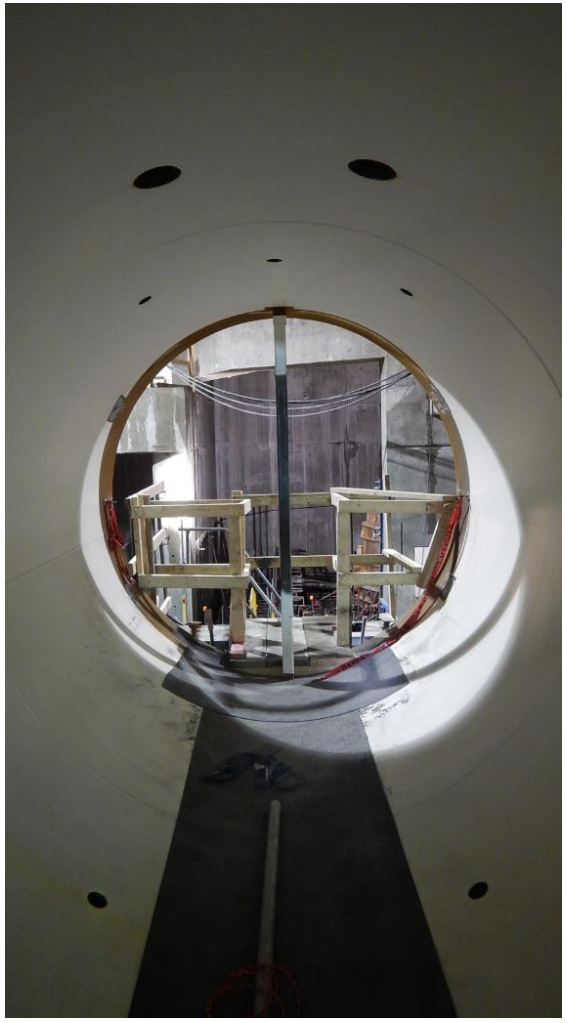
Construction Pictures – Powerhouse

Top photo shows view from inside the generator housing out towards the inlet where water from the power tunnel will enter. The bottom photo shows the formation of the scroll case inside the Turbine/Generator #3 works.

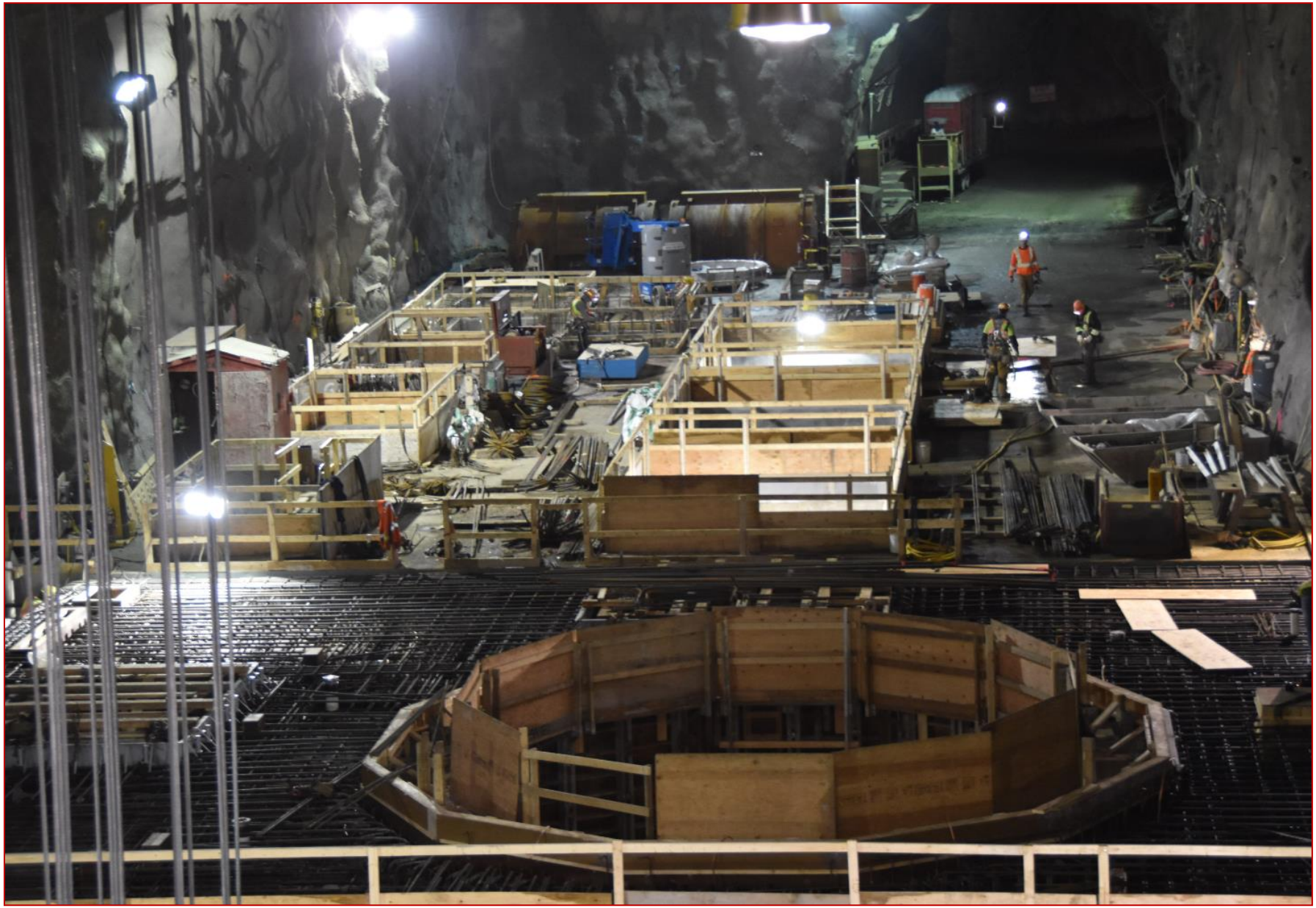

Generator #2
Generator #3

Construction Pictures – Powerhouse

Right photo shows main access tunnel entrance, water bypass facility, Generator #1, and in foreground, Generator #2. Bottom photo shows view inside a water inlet liner towards the powerhouse.



Construction Pictures – Powerhouse



Water bypass facility works and Turbine/Generator #1 works in foreground.

Construction Pictures – Powerhouse

View of the powerhouse from the main access tunnel entrance.

BC Hydro
Power smart

Construction Pictures – Gate Gallery

On the downstream side of the powerhouse, the gate gallery is where six gates will be able to be lowered down into the surge chamber for maintenance work. Gate slots are currently being excavated downward.

Construction Pictures – Surge Chamber

View from the surge chamber with the first gate slot excavation from the above gate gallery.

Construction Pictures – Tailrace Tunnel

Once water enters the surge chamber it then enters the tailrace tunnel where it will flow down and discharge into the Campbell River. This tunnel is 6.5 metres wide (bottom) and 10.7 metres high (curved top). It's a bit larger than the power tunnel.

Environment

The snow and ice of recent months poses challenges for all – but in particular for the environmental management team who must adapt to ensure all standards continue to be met both during snow, and the inevitable melt.

- Rather than use sand and salt which could run off into the wetlands, ASL-JV spread fine gravel over the roads for traction during the frosty and snowy days in Dec and Jan.
- Water treatment plant operators took special steps to ensure the continued operation of their units, including building tarp shelters and adding heaters to prevent lines from freezing. It's critical these plants continue to operate and are prepared for the increased flow of the melting snow.
- To prepare for large amounts of meltwater, the project team cleaned out the tunnel entrance sumps, removed snow from the main site to prevent flooding (which could cause dirt and debris to flow into ditches and wetlands), and cleared snow from other high-traffic areas.

Service tunnel entrance.

People Profile – Dave Johnson

About Dave

Background:

Working in the mining field for almost 22 years, Dave has travelled far and wide. His career began when in university he got a summer job in mining and loved it. In the decades since, he's worked coast to coast across Canada, all over the western U.S.A. and northern Mexico.

Home:

Dave grew up in two places – Dawson Creek and a small town just outside of Winnipeg called Oak Point. He currently calls Campbell River home where he lives with his fiancée and 12-year-old daughter.

Hobbies:

It's hard not to love fishing when you live in this area, and Dave is no exception. He also enjoys cooking, travelling and any family time he can get.

Project Responsibility:

As the Tunnel Superintendent for Frontier Kemper, FK ASL-JV, it's Dave's responsibility to achieve the development targets as safely and quickly as possible. He adds that this is his dream job, giving high praise to his amazing team.

"This project is one-of-a-kind. I am truly happy to be part of the group helping to make it a success. I hope this project is the template used for similar future projects."

BC Hydro
Power smart

Construction – Point Of Interest

Each month, BC Hydro and InPower BC will provide a construction fact, occurrence, or situation.

Removal of steel cofferdam and rock for the new water intake at John Hart dam (shown in blue circle on right)

Work started in spring 2015 on the new water intake works and power tunnel on the upstream and downstream sides of the John Hart dam. Now, the project team is preparing to move through some exciting steps this year as we move to completion. These steps include:

- March: Complete tunnel work under the dam to be able to connect the water intake entrance and the intake gates with the power tunnel on the downstream side;
- Spring: Provide dry and wet tests of the area between the cofferdam and the intake gates. This is to ensure the intake maintenance gates are water tight as we prepare to remove the cofferdam and underwater rock approach channel. Once the gate tests are complete, the 25 metre deep water intake gates zone is then filled with water;
- Summer: Remove steel cofferdam piles. Also remove the rock below the steel piles for the approach channel. This work will direct water from the reservoir into the water intake. The team will also install the steel liner, within concrete, connecting the water intake to the vertical section of the power tunnel, on the downstream side of the dam; and
- End of 2017: Intake works complete, with commissioning in 2018 along with the rest of the hydroelectric facilities, with full operation in fall 2018.