



CMD 26-M32.1

Date: 2026-08-19

**Presentation from
New Brunswick Power Corporation**

**Présentation de la
Société d'énergie du
Nouveau-Brunswick**

In the matter of the

À l'égard de la

New Brunswick Power Corporation

**Société d'énergie du
Nouveau-Brunswick**

Update on the root cause of generator
fault at the Point Lepreau Nuclear
Generating Station

Mise à jour sur la cause profonde de la
défaillance d'un générateur à la centrale
nucléaire de Point Lepreau

Commission Meeting

Réunion de la Commission

September 2, 2026

Le 2 septembre 2026

Point Lepreau Nuclear Generating Station

Main Generator Fault Root Cause Update

CMD 26-M32.1

September 2, 2026



Background

- Main Generator Maintenance Work (during Station life-extension 2008-2012)
 - The generator which is located on the conventional side of the Station, was upgraded to a hose design consisting of individual teflon hoses carrying the cooling water to each stator bar.
 - The new design used a single pass hose distribution method where water entered from the exciter end and exited from the turbine end.
 - The stator was also rewound with an improved design using new copper bars with a solid epoxy mica insulation throughout the entire length of the bar.

Background

- On June 29, 2024, during planned power factor testing on the main generator, completed on a four-year frequency, a fault was identified on Phase B of the main generator. Phases A and C of the main generator showed acceptable results.
 - All 144 stator bars (72 on the top and 72 on the bottom) were inspected to determine the extent of condition.
 - Concerns were identified on all stator bar ends, including spares.
 - Extent-of-condition checks identified that six stator bars required repair/replacement.
 - Six stator bars were replaced or repaired during the existing 2024 planned maintenance outage.
 - Sealant was applied to all stator bar ends as a preventive measure.
- During the 2025 planned maintenance outage, a full generator stator rewind was performed, and all 144 stator bars were replaced.



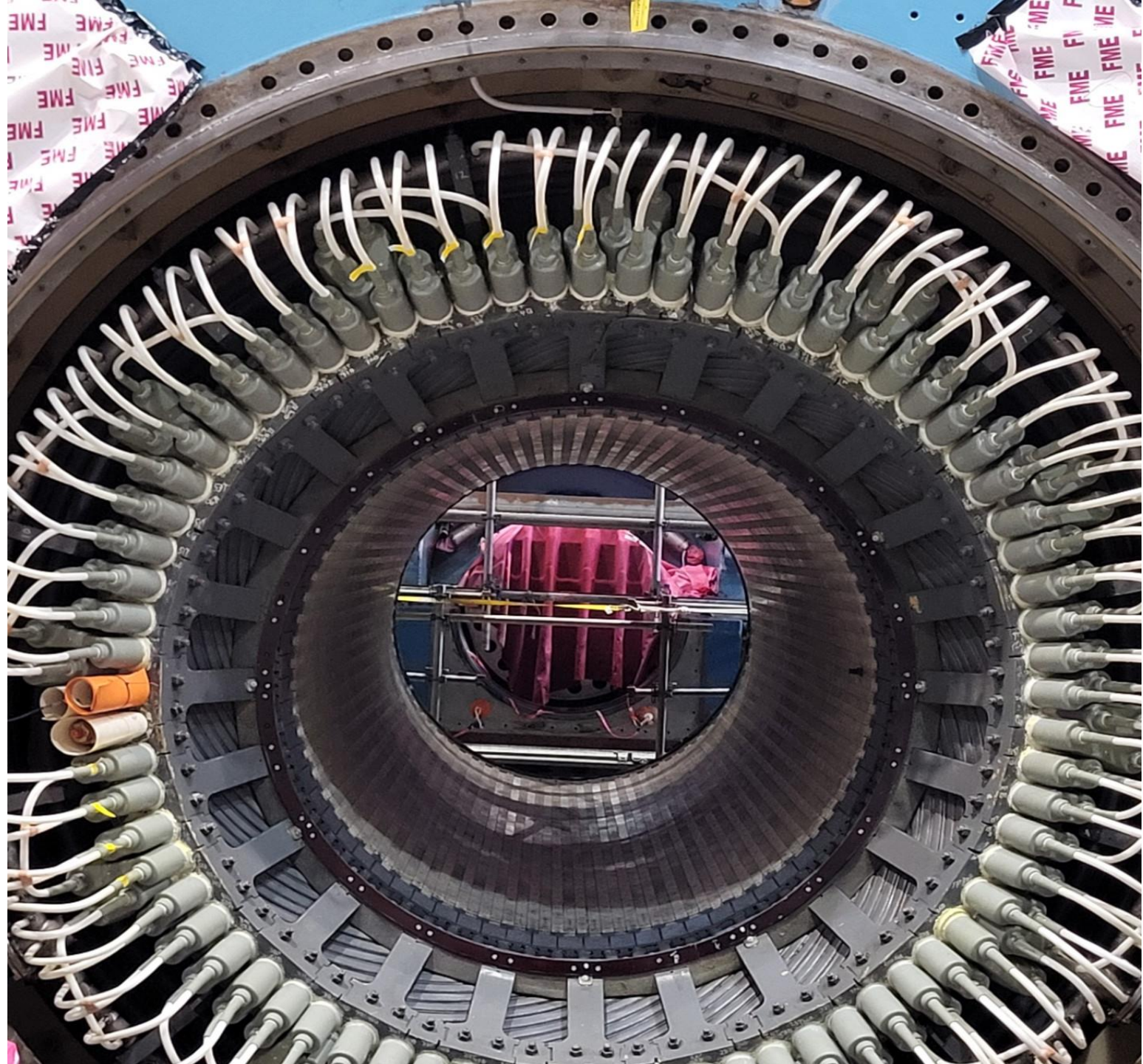
Main Generator





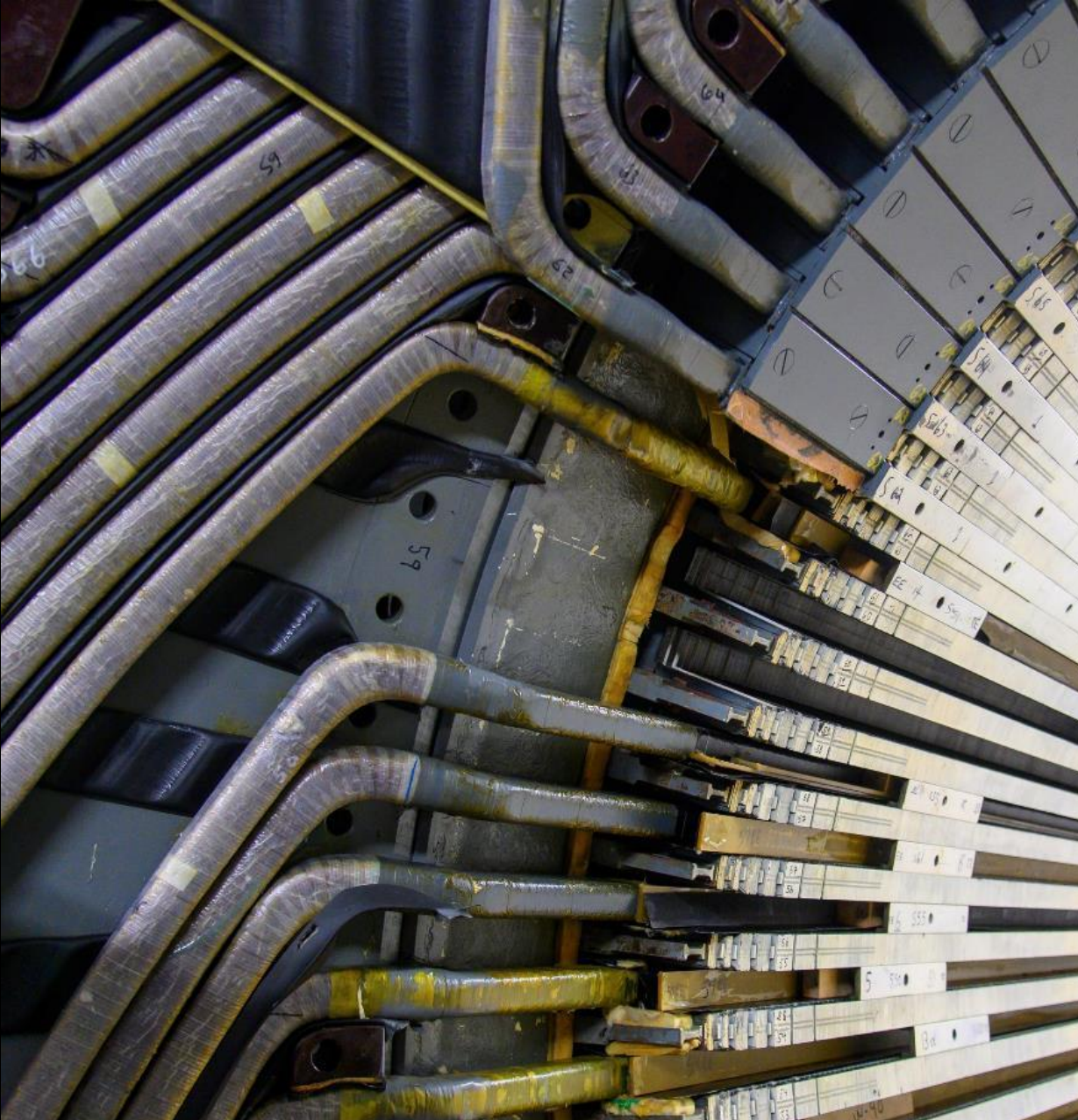
Removal of the Generator Rotor

Inside the Stator





Inside the Stator



Inside the Stator

Troubleshooting / Investigation

- In June 2024, a complex troubleshooting team was formed to investigate the unsuccessful power factor testing on phase B as part of the Station process.
- A Failure Modes and Effects (FMEA) was developed for each potential degradation mechanism.
- A support/refute matrix was completed that included the failure category, failure mode, degradation mechanism (potential causes), actions, findings, and if the potential cause was refuted or unrefuted.
- Failure modes reviewed included electrical, mechanical, process, and operations.
- The assessment comprehensively considered 34 degradation mechanisms, including stator age and wear, stator cooling-bar plugging, foreign material, shorted insulators, water ingress into winding insulation, and chemistry conductivity.
- Several actions to support or refute possible causes were carried out during troubleshooting activities, including visual and borescope inspections, electrical testing, pressure testing and vacuum decay testing, chemical analysis, and dissection of stator bars at an offsite facility.

Causes

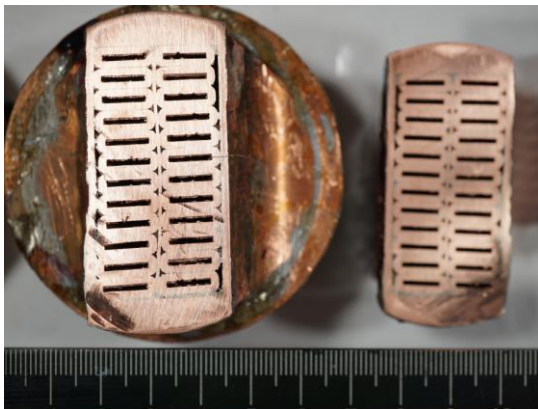
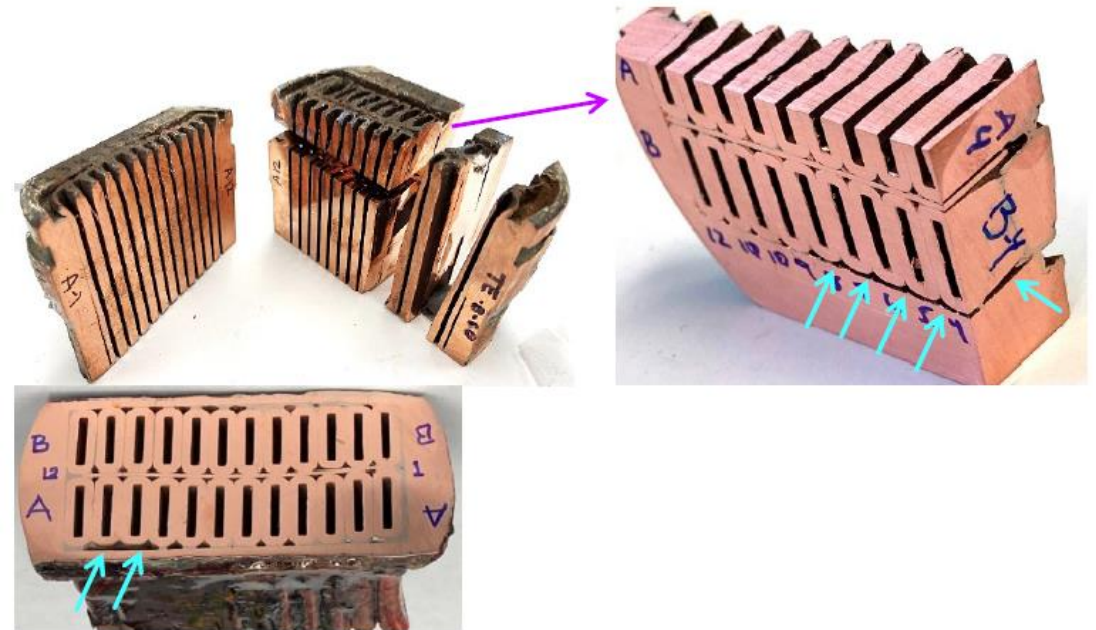
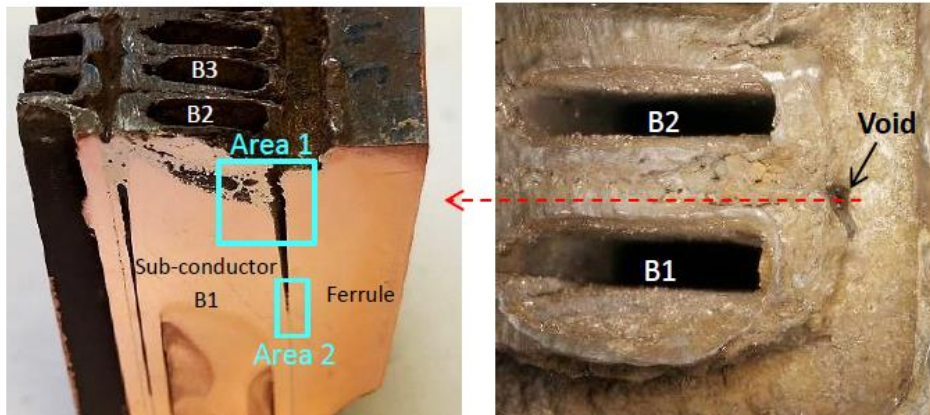
- Internal investigation identified that the stator windings exhibited manufacturing-related braze and solder voids, as well as surface conditions that provided a pathway for localized corrosion of the stator bars (braze and solder). The non-uniform surface condition of the braze at the bar ends established localized crevices, allowing crevice corrosion to initiate and propagate through the braze.
- The failed bar (B60) exhibited crevices and surface voids, which are known to increase susceptibility to crevice corrosion. Corrosion of the braze “cake,” together with the significant voids within the braze, provided flow paths for leakage. Once established, these flow paths allowed stator cooling water to pass through the braze and wet the winding insulation.

Extent of Condition

- Phase B of the main generator did not pass the power factor electrical testing.
- Phases A and C showed acceptable results; however, there were six bars that did not pass the pressure tests onsite.
- The overall electrical testing did not provide acceptable results due to water ingress into the winding insulation.
- Of the six stator bars which did not pass the pressure tests:
 - Three underwent forensics by the OEM and were replaced with spare stator bars.
 - One was replaced with a spare stator bar.
 - Two were repaired.

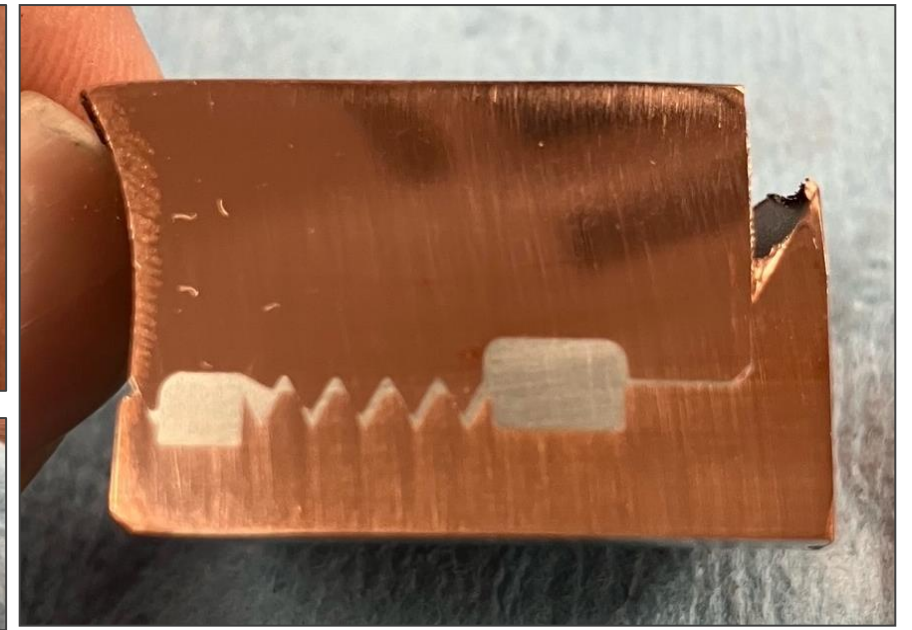
B60 – Leak Path Through Braze

- B60 - leak path through braze (void in cake between B1 and B2 strands) and visible braze voids.



Actions Taken From the Investigation

- Stringent quality control of the manufacturing process was ensured by the OEM and oversight was provided by NB Power for all 144 stator bars during the manufacturing process.
- Braze and solder cross-section samples from 2025 manufacturing.



Sharing Lessons Learned

- As part of the initial discovery of the degraded stator bars in 2024, NB Power engaged with our industry peers to both obtain industry OPEX and expertise.
- NB Power continued to share the learnings with our peers at Bruce Power and OPG and utilized Conexus, INPO and WANO to share the OPEX with our international peers.
- NB Power is committed to the safe and reliable operation of the Point Lepreau Nuclear Generating Station and sharing all learnings in an open and transparent manner with our industry peers, regulator and our communities.

Point Lepreau Nuclear Generating Station

Main Generator Fault Root Cause Update

CMD 26-M32.1

September 2, 2026

