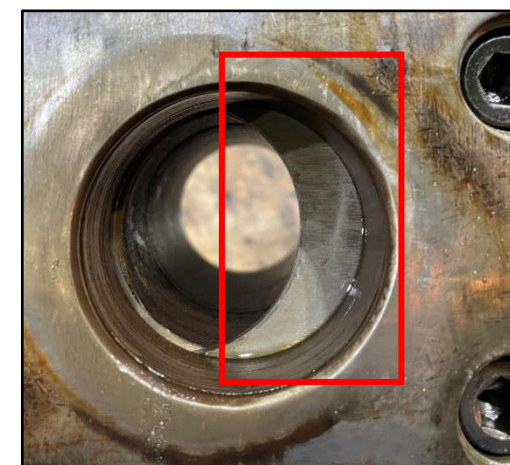
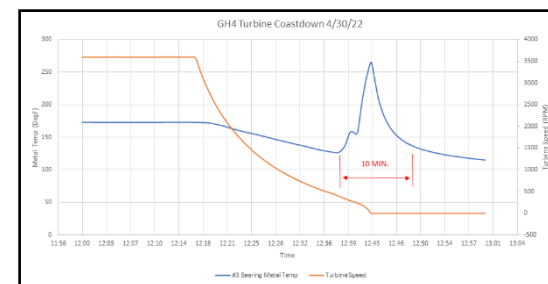
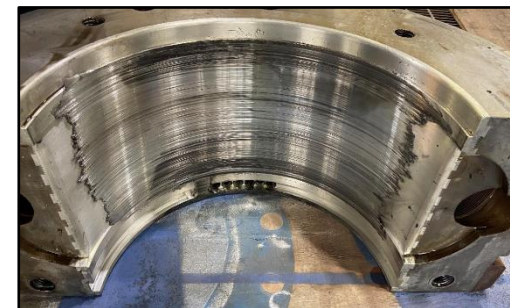


GH4 Bearing Issue

- Following return from planned outage on 4/29, operations detected tube leak morning of 4/30 and started forced outage to repair leak in superheat roof tube.
- Analysis of shutdown revealed temperature spike on #3 Turbine Bearing indicating bearing wiped during unit shutdown.
- Inspection of the bearing validated indication. Bearing sent to Cincinnati Babbitt for repair and MD&A brought on site to machine journal.
- Findings include an incorrectly installed shim (likely during 2020 Turbine Major) restricting lube oil flow to the bearing. This is the likely root cause.
- Other minor bearing work conducted and lube oil flushed.
- Unit returned to service on 5/18/2022 at 08:15.
- As of 7/1/2022 this accounts for 72.2 % of the plant EFOR.
- Bearing shop space was notably limited with most response times quoted in weeks – not days. Additionally, requests for proposals to assist with lube oil flush failed to identify qualified assistance in necessary time frame.



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Cane Run 7 – Steam Turbine Generator Fault

- During the 2022 Spring outage a Medium generator inspection was performed on the 3 generators at CR7. The steam turbine generator was placed in service on May 2nd once CT2 was ready for service. CT1 became available on May 22nd which allowed the Steam turbine generator to be available for full load operation. A fault occurred after operating at full load for approximately 20 hours.
- The Fault began with the center phase to ground and progressed to all 3 phases to ground.
- The fault was located at the generator terminals on the outgoing side of the generator current transformers.
- The fault caused significant damage to the bus bars and flexible links above the main leads of the generator. The Iso-phase adapter plate which transitions the generator bus bar to the iso-phase bus duct was damage so significantly that it would not pass electrical testing and had to be replaced.

Cane Run 7 – Steam Turbine Generator Fault

Repairs

- The main leads had to be cleaned and tested.
- Iso-phase adapter plate had to be replaced.
- About half of the bus bars could be cleaned, but the other half had to be reverse engineered and replaced.
- All the flexible links had to be replaced.
- All bolts, nuts, washers, and connection hardware had to be replaced.
- The generator rotor was pulled and sent out to have the retaining rings removed for further inspection and cleaning.
- Cleaned the stator and end-windings.
- 3 of 24 current transformers had to be replaced.
- Partial Discharge Monitoring capacitive couplers had to be replaced and new sensor cable had to be pulled.
- All components had to be tested and re-commissioned.

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