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16th August 2010

Attention: XXXXXXXXX

Service Report

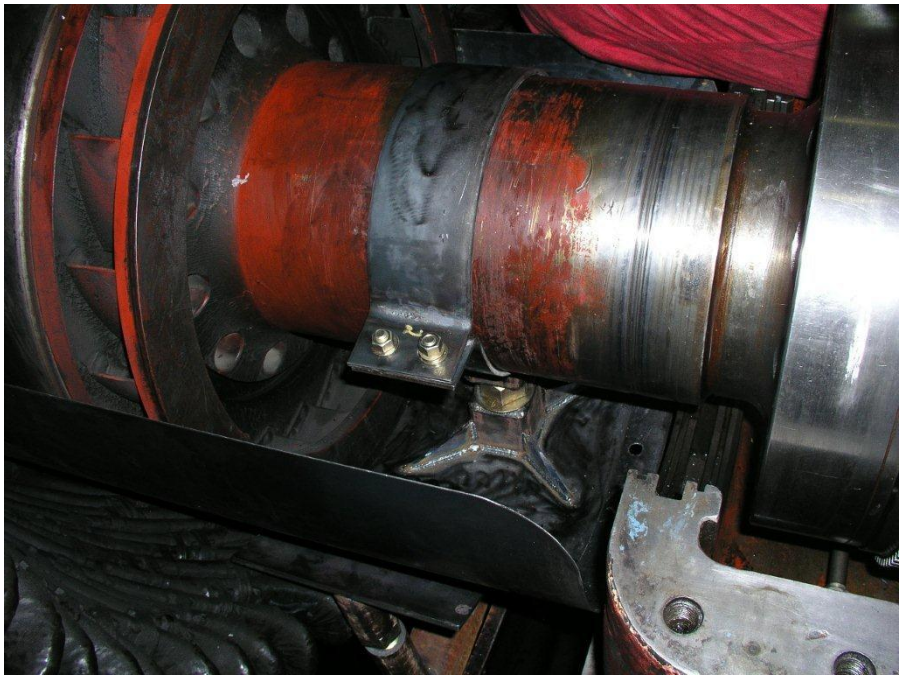
12.5 Mw GE Generator, Serial # 6881289,

Type ATB Manufactured 1953,
13.8Kv 523A, 3600 Rpm,
Air Cooled,
DC Field 250V / 154Amp

Work Scope
I am going into more step by step detail than usual because of problems that we encountered, to help with future overhauls on this and similar machines.

Exciter electrically (all electrical disconnects/re-connect carried out by Techmation electrician) and mechanically disconnected then moved off to one side, slip ring brush gear removed, inboard/outboard top and bottom brackets removed, rotor outboard shaft blocked, outboard babbit bearing and labyrinth seals removed, oil pump assembly removed.
Note: normally at this point the bearing pedestal is removed; however this was not physically possible, we suspect that the slip rings are not original and are slightly oversize, this prevented the pedestal from being slid underneath the rings. To overcome this problem we used a come-along to secure the pedestal to the overhead crane and moved it along with the main rotor to the point where we could lower it into the oil pump well and slide it out to one side. The same procedure in reverse was carried out during re-assembly.
Barring gear removed, upper coupling casting removed, coupling pins removed.

A rotor skid plate and shoe had to be fabricated when the stator bore was accessible for measuring, the rotor/ stator air gap on this machine was unusually small, this created other problems that had to be overcome i.e. normally a sturdy skid plate is installed and then the rotor is lifted enabling a support shoe to be slid past the outboard end ring and under the rotor iron core, thus preventing any contact between the inboard end ring and iron core as the rotor was extracted. With the outboard pedestal still in position the plate had to be slid onto the top of the rotor and slid around to the bottom, the thickest skid plate that we could use was only 0.125” thick. With the limited access the support shoe could not be slid into the rotor / stator air gap. Therefore an adjustable shaft clamp / shoe had to be manufactured and installed onto the inboard shaft between the cooling fan and the coupling.



The skid plate had to be longer than normal to accommodate this. The position of the shaft clamp / shoe was approximately 18” past the iron core, the skid plate was not strong enough to support the rotor and another adjustable brace had to be fabricated to support the inboard end of the skid plate.

Paraffin wax was used as a lubricant on the skid plate and shoe, and the rotor was removed.

General observations, a significant amount oil was found in the bottom of the stator frame and the inboard stator windings had a coating of oil. The stator winding blocking and bracing appeared to be in good condition, cooling vents were dirty but cleaned up well with dry ice cleaning, the wedges are the original wood wedges from 1953 and many were found to be loose (see separate report).

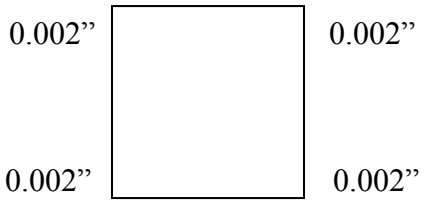
The reason for the oil contamination was because of a modified bottom labyrinth this was repaired with a two part “metal set” epoxy,

Re-Assembly

Outboard babbit bearing tolerances

Inboard / Outboard Labyrinth Seal Clearance = 0.003” – 0.009”

Horn Measurements*



** Horn Measurements - this is the gap between the journal and babbit – measured with a feeler gauge inserted approximately 30% of the way down the side of the bottom half bearing shell.*

Top bearing clearance 0.0105”.

Coupling alignment:

Generator to Turbine
The pedestal is doweled and shimming was not necessary

	Vertical	Horizontal
Gap (axial)	0.0042”	0.0043”
Offset (peripheral)	0.0006”	0.0002”

All measurements are well within spec’ for the coupling type and speed.

Exciter to Generator
0.005” shims were added under the outboard end of the bedplate, jacking bolts should be installed to help with the horizontal alignment.

	Vertical	Horizontal
Gap (axial)	0.0024”	0.0037”
Offset (peripheral)	0.0019”	0.0014”

All measurements are well within spec’ for the coupling type and speed.

Slip Ring Brush Spring Tension – All even at 4lbs

Test run was not witnessed due to delay with boiler repairs; However, Dan Ivey called and left a message late on Monday night (16th Aug) to confirm that the generator was running smoothly.

I trust the above information is to your satisfaction. If you have any questions or require further information, please contact the undersigned.

Report compiled by:

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