



Carondelet Division
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Corrective Action 1695
Carondelet Division
Corrective Action Type NCR
Date 4-30-06 Revised 5-13-06
CA Originator C. Ruud
Applies to: Coils and plates

Description of Defect / Non-Conformance

Parts failed magnetic permeability during inspection at Major Tool.

Root Cause

Surface of part holds small amount of foreign material that is slightly magnetic. CAF Sevren gauge insert marked 1.02 was actually reading 1.03. Other potential causes are contamination from contact with iron containing materials such as forks on a fork truck, chains, fixturing, fluids, and other tools. Environmental contamination could also be a factor.

Investigation: Plates that failed at MT were returned and evaluated on 4-27-06 using CAF Sevren gauge. Areas were marked by MT as high on 5 of the 6 parts returned.

Points (approx. 1/8" dia.) within the areas marked that pulled at 1.02.

20% of the areas marked passed with CAF gauge. However, all but 1 pulled at the 1.01 insert.

On one plate the 8-10 points that exceeded the 1.02 were stamped indicating the points. The part was sandblasted and retested. All areas passed the 1.02 and all but 1 point passed the 1.01.

This testing led CAF to believe our gauge may be off. The gauge was sent to the manufacturer for evaluation.

They reported the 1.02 insert was reading 1.03 and the 1.01 insert was reading 1.02.

Another potential cause for the high magnetic permeability is that contamination in the garnet used to sandblast becomes imbedded in the part. This is not likely due to the above test where sandblasting was used to remediate the high spots. The dust collector separates the fine particulate from the blast media. This would include contaminants. To determine the amount of magnetic material in the garnet a magnet was cleaned then placed in the garnet in the sandblast machine. A small amount of material was attracted to the magnet.

Molding sand has a small amount of iron oxide added to reduce sand expansion defects. Past testing showed that adhering sand frequently caused magnetic permeability failures.

The magnet test was repeated in molding sand and found similar results.

Tests were also conducted to determine the impact of testing the casting while LPI developer was on the part.

Several areas were tested and found that failures remained failures after developer applied and retested.

Corrective Action

Gauge was returned to the manufacturer for evaluation and correction.

Parts at Major Tool will be inspected by MetalTek personnel and reworked as needed.

This work is planned for the week of May 15, 2006.

Actual Completion Date

TBD

Signed: C. Ruud

CC: B. Craig, J. Edwards, J. Markham, J. Galaske