FCA US LLC Chronology
Insufficient Hardness on the Axle Shaft at Bearing Journal
Submitted on October 16, 2015

- On September 10, 2015, returned parts arrived at the FCA US LLC ("FCA US") Quality Engineering Center ("QEC") which showed abnormal wear in the bearing journal.
- On September 11, 2015, the QEC sent samples to the Tier-1 supplier, ZF.
- ZF confirmed, through cross section analysis, insufficient hardness in the location of the bearing journal shaft.
- On September 12, 2015, a Product Related Issue ("PRI") was issued resulting in a yard hold at Saltillo Truck Assembly Plant ("STAP") and Warren Truck Assembly Plant ("WTAP").
- On September 16, 2015, root cause was determined to be a clogged quench ring used during the heating induction process in the machine housing spindles number three and four.
- It was revealed that on May 29, the Tier-2 supplier performed preventative maintenance on the induction heat treat equipment, which could have increased debris in the system, resulting in the quench ring becoming clogged.
- The first suspect axle shaft was heat treated on May 29 at the Tier-2 supplier. These shafts would be built into axle assemblies at ZF beginning on June 5, 2015.
- On September 17, 2015, FCA US opened an internal investigation into 31 reports that showed low mileage failures within the left rear axle shafts.
- Due to partial blockage in the quench ring, inadequate quench flow occurred; this resulted in critical areas of the axle shaft not being adequately hardened.
- Investigation determined that MTG does not test for hardness in this specific area.
- On September 28, 2015, a test was conducted on returned axle shafts/axles at the Chelsea Proving Grounds. The survey confirmed that under certain circumstances, the soft journal would cause high friction at the bearing journal, resulting in temperatures exceeding 700 degrees Fahrenheit, eventually leading to the separation of the wheel from the vehicle.
- This event was preceded by an ABS warning lamp.
- While FCA US believes the maintenance on the induction heat treat equipment is a potential root cause, for partial blockage of quench ring, field data and limited survey data to date does not suggest vehicles built prior to June 17, 2015 are affected.
- The clean points are in direct correlation of when the quenching ring was replaced at MTG and the logistics variances of those parts getting to each respective plant.
- FCA US is continuing to investigate scope through survey and current inspection of axle shafts from multiple build ranges both before and after the quench ring maintenance on May 29, 2015. If necessary, further recommendations will be made. The suspect period was established as June 17, 2015 to September 17, 2015 at WTAP.
- The suspect period was established as June 17, 2015 to September 28, 2015 at STAP.
- FCA US will continue to study, survey and monitor the suspect period and specifically the timeframe of June 5, 2015 to June 17, 2015, for additional failures and to further understand scope.
- On October 9, 2015, FCA US determined, through the Vehicle Regulations Committee, to conduct a voluntary safety recall of the affected vehicles.