

FCA US LLC Chronology  
RT JC RM ORC Corrosion  
Submitted on January 26, 2016

- On July 7, 2015, the FCA US LLC (“FCA US”) Vehicle Safety and Regulatory Compliance (“VSRC”) organization opened an investigation as a result of suspected inadvertent airbag deployments on two 2009 MY Dodge Journeys (“JC”) vehicles reported through the Customer Assistance Inquiry Record “CAIR” system.
- On June 26, 2015, the FCA US VRSC received the associated Occupant Restraint Controllers (“ORC”) from the two JC vehicles CAIR reports. The parts were sent to the ORC supplier, Continental Automotive Systems, Inc. (“Continental”), for failure analysis.
- From June 30, 2015 to July 10, 2015, FCA US identified an additional 13 CAIRs potentially related to inadvertent airbag deployment. FCA US determined the ORC used on 2008 and 2009 MY Dodge Carvan and Chrysler Town and Country (“ RT”) vehicles and 2009 MY Volkswagen Routan (“RM”) vehicles shared a similar design to the 2009 MY JC ORC. The CAIR review found two potentially related reports of inadvertent airbag deployment on 2009 MY vehicles. The 2008 MY RT data could not be analyzed relative to this issue due to a prior recall campaign (L01) which required an ORC replacement for potential inadvertent airbag deployment. The vehicles involved in L01 had ORC modules replaced with the same ORC utilized in the permanent corrective action for this issue.
- On August 10, 2015, Continental communicated to FCA US that the root cause of failure in both ORCs previously provided by FCA US for failure analysis was Titanium Nitride corrosion of the power supply integrated circuit resulting from manufacturing process deficiencies. Continental indicated that humidity can enter the component through areas left open during the manufacturing process and react with water soluble ions, leading to corrosion. In some cases, the failure can induce electrical overstress of the airbag squib activation circuits (“ASIC”) resulting in an inadvertent airbag deployment.
- On August 18, 2015, FCA US and Continental reviewed corrective action report #2008110079 dated July 17, 2008, related to the ORC power supply integrated circuit used on 2008-2009 MY RT, 2009 MY JC and 2009 MY RM vehicles. The supplier confirmed the root cause of the failure documented in the report is the same as the failures observed in the two ORCs associated with the inadvertent airbag deployments. The original corrective action report did not list airbag inadvertent deployment or no airbag deployment as a potential failure effect.
- Two interim corrective actions were identified in the report. The first was an added double rinse and dry to remove electrolytes from the wafer to ensure cleanliness. The second was over exposed vias to increase the size within tolerance limits. This allows more oxide material into vias to block humidity from entering.
- It was established that on July 27, 2008, Continental began to ship parts to FCA US with both interim corrective actions. The change was not documented in the FCA US system and part numbers were not changed.
- The final corrective action modified the design of the ORC to allow for High Density Plasma deposition of silicon dioxide to fill vias ensuring a sealed Titanium Nitride layer. On August 3, 2009, start of production for the 2010 MY, the final corrective action was fully implemented in the plants.
- On August 18, 2015, FCA US confirmed two previously documented inadvertent airbag deployments resulting from corrosion of the ORC power supply integrated circuit. The dates of occurrence were August 8, 2010 and April 26, 2012. No failure trend was evident during this period.
- From August 18, 2015 to December 4, 2015, FCA US analyzed CAIR data and identified 19 suspect inadvertent airbag deployments reported in 2009 MY JC vehicles built prior to implementation of the interim corrective actions. Five of the 19 suspect ORCs were inspected and the failure mode

was confirmed as power supply integrated circuit corrosion. One suspect case was reported for a vehicle built after implementation of the interim corrective actions.

- Review of 2009 MY JC CAIRs for ORC replacement identified 24 reports for vehicles built before implementation of the interim corrective actions and four reports for vehicles built after.
- The CAIR data from 2008 MY RT vehicles were discarded due to FCA US recall campaign L01 in which inadvertent airbag deployment was identified as a potential failure effect. The remedy specified in recall campaign L01 is ORC replacement, and the replacement ORC used for recall campaign L01, was manufactured subsequent to the final corrective action identified above.
- One suspect inadvertent airbag deployment was reported on a 2009 MY RT vehicle built before implementation of the interim corrective actions. One suspect case was reported for a vehicle built after implementation of the interim corrective actions.
- Review of 2009 MY RT CAIRs for ORC replacement identified one report for a vehicle built before implementation of the interim corrective actions and five reports for vehicles built after.
- On December 10, 2015, the ORC supplier provided failure rate data from the power supply integrated circuit manufacturer distinguishing the populations of the power supply integrated circuits before and after interim corrective actions were implemented. The failure rate based on returned parts is approximately six times greater for parts manufactured before the interim corrective actions were implemented.
- FCA US determined the suspect vehicle population based on manufacturing records provided by Continental indicating implementation of the interim corrective actions beginning July 27, 2008. An absolute end of the suspect ORC builds cannot be determined because the change was not documented by FCA US and the ORC tracking data provided by Continental is incomplete. FCA US conservatively estimates August 31, 2008 to be the end of the suspect ORC builds.
- The 2008 MY RT population which completed campaign L01 has been eliminated. The replacement parts for L01 contain the final corrective action for this issue.
- The suspect period for JC vehicles was established as December 31, 2007, start of production for the 2009 MY JC vehicles to August 31, 2008, when the interim corrective actions went into production at Toluca Assembly Plant.
- The suspect period for RT vehicles was established as June 18, 2007, start of production for the 2008 MY RT vehicles to August 31, 2008, when the interim corrective actions went into production at Windsor Assembly Plant and St. Louis II Assembly Plant.
- The suspect period for RM vehicles was established as August 11, 2008, start of production for the 2009 MY RM vehicles to August 31, 2008, when the interim corrective actions went into production at Windsor Assembly Plant.
- As of January 8, 2016, FCA US identified 21 CAIRs, three VOQs and one field report potentially related to the issue of inadvertent airbag deployment in these vehicles.
- As of January 8, 2016, FCA US identified 34 CAIRs, zero VOQs and zero field reports potentially related to the issue for ORC replacement, without an inadvertent airbag deployment.
- As of January 8, 2016, total warranty for potentially related airbag inadvertent deployment is one at 0.003 c/1000
- As of January 8, 2016, total warranty for potentially related ORC replacement is 99 at 0.30 c/1000
- As of January 8, 2016, FCA US is unaware of any accidents potentially related to this issue.
- As of January 8, 2016, FCA US is aware of seven injuries potentially related to this issue.
- On January 19, 2016, FCA US determined, through the Vehicle Regulations Committee, to conduct a voluntary safety recall of the affected vehicles.
- On January 22, 2016 Continental filed a Defect Information Report, pursuant to Part 573, regarding the subject Airbag Control Unit / ORC components.