

Chronology of Defect / Noncompliance Determination

In late March 2022, GILLIG was notified of a failed lower control arm (LCA) at a transit agency customer location, customer A. GILLIG communicated this information to its supplier, SAF Holland (the “supplier”).

In late April 2022, after a replacement LCA became available, GILLIG sent the failed LCA to the supplier for analysis, but in late June 2022, GILLIG was informed by the supplier that the LCA was lost while in transit to a third party laboratory and no analysis on the field part could be performed.

In late June 2022, GILLIG, and subsequently the supplier, were notified of a second failed LCA arm, the second failure at the same transit agency customer A. The following week, GILLIG quality, engineering, and customer care along with the supplier visited the customer location to inspect the vehicle and learn more about the duty cycle and operations at this customer location.

After this second customer visit, it was decided in early July that a more in-depth analysis of the LCA loading experienced during vehicle operation on route was required to understand if the loading was unique to the vehicle duty cycle at this customer location. A test plan was formulated, instrumentation acquired and the supplier’s team, with GILLIG observing, executed the data collection at customer A location at the end of July.

In early August 2022, after conducting further research, GILLIG found a report of an apparent LCA failure and investigation that occurred in April 2018, customer B. At the time the incident was initially reviewed in 2018, the supplier’s analysis indicated this event to be an anomaly.

Also, in August, the supplier provided preliminary inspection results for LCA #2 from Customer A. The supplier confirmed that although the bar pin bushing appeared to be worn, there had been no metal-to-metal contact between the bar pin and the LCA bore, thus eliminating the possibility of a resulting high-stress concentration in this area.

Postprocessing and analysis of the data collected at customer A location from July 2022 had been in process and in late August, the supplier shared a preliminary assessment and high-level summary with GILLIG that the data indicated the strain profiles were not outside the normal range of other applications where the LCA was used. Based on this feedback, it was decided that a suspension level rig test was needed to accurately capture strain response in the fracture site and validate the supplier’s preliminary assessment.

In late August, GILLIG’s aftermarket parts division was contacted by customer C that communicated that it had two, previously unreported, failures of this control arm. This new information was communicated to the supplier. The LCA’s were discarded by customer C before GILLIG could have them returned for analysis.

In September, the supplier shared with GILLIG the metallurgical results for failed LCA #2 from Customer A and the supplier began looking into potential casting foundry process issues with the control arm manufacturer.

In October, GILLIG’s aftermarket parts division received a request for parts to replace a failed LCA from Customer D. The LCA was returned to the supplier for analysis to evaluate whether the request was related to the ongoing issue being investigated. A second LCA replacement part was ordered by this customer in December 2022.

In December, the supplier completed the assembly of the suspension level test-rig initiated in August. With the test rig operational, the supplier was now able to accurately capture the strain response in the fracture site and use this data to better understand the strain profile over specific duty cycles.

In January 2023, the supplier began component level testing on the current design level LCA to enable correlating failure cycles to FEA for fatigue analysis and life predictions. Component level testing was selected over full rig testing to accelerate the data collection.

In February 2023, information was first provided from the supplier to GILLIG that an exceedance of the suspension design limits in a CNG bus application with a high center of gravity contributed to high levels of cumulative strain damage in the LCA.

GILLIG made the decision to conduct a safety recall on February 16, 2023. GILLIG is not aware of any crashes or injuries potentially related to this condition.

End-of-document