Howell, Rosa (NHTSA)

From: david.cook@daimler.com
Sent: Friday, August 04, 2017 1:42 AM
To: Seymour, Nate (NHTSA)
Subject: RE: Detroit Axle Questions
Attachments: Poppet.wmv

Nate,

Below is some follow-up information on your questions;

How does the steering gear know it is within 5 degrees of the steering stop?
There is a pressure relief valve in the steering gear(referred to as a poppet relief valve). The poppet valve is set in the truck manufacturing plant. The very first time the steering system is turned to the steering stops the position of this valve is set to a position that will then relieve pressure 5 degrees before the stop. The stop bolts on the steering knuckle should not be adjusted in the field without resetting the poppet valves.

Does the selection of the steer gear pump take into account the wheel cut?
No, The setting of the poppet is all that is needed.

Best Regards

David Cook

Senior Team Leader, Defect Investigations
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503-745-5466

From: Seymour, Nate (NHTSA) [mailto:Nate.Seymour@dot.gov]
Sent: Monday, July 24, 2017 11:20 AM
To: Cook, David (164)
Cc: Collins, Bill (NHTSA)
Subject: RE: Detroit Axle Questions

Thanks David.

How does the steering gear know it is within 5 degrees of the steering stop? I expect there is a mechanical link in the steering pump, but if the steer stop can be adjusted on the steering knuckle, how do we know that the two systems are in sync? Does the selection of the steer gear pump take into account the wheel cut?

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From: david.cook@daimler.com [mailto:david.cook@daimler.com]
Sent: Monday, July 24, 2017 12:42 PM
To: Seymour, Nate (NHTSA) <Nate.Seymour@dot.gov>
Subject: RE: Detroit Axle Questions

Nate,

I have some partial responses to your questions.

1. The pressure is reduced on the steering gear prior to reaching the axle stops. There is not a pressure spike. When the axle contacts the stops the pressure would be around 1200 psi due to the relief.
2. The maximum pressure delivered to the gear nominally is 185 bar. The pump potentially could deliver up to 192 bar with tolerance. Typically the maximum pressure would occur right before making initial contact with the poppet(pressure relief). This would be around 5 degrees short of contacting the axle stop.

Best Regards

David Cook

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From: Seymour, Nate (NHTSA) [mailto:Nate.Seymour@dot.gov]
Sent: Wednesday, July 19, 2017 1:26 PM
To: Cook, David (164)
Subject: RE: Detroit Axle Questions

Thanks for the update

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From: david.cook@daimler.com [mailto:david.cook@daimler.com]
Sent: Wednesday, July 19, 2017 2:49 PM
To: Seymour, Nate (NHTSA) <Nate.Seymour@dot.gov>
Subject: Detroit Axle Questions

Nate,

Due to travel and vacations, we have not been able to get the right people together to answer to your questions yet. I should be able to respond early in the week on 7/31.

Best Regards

David Cook

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