U.S. Department of Transportation

National Highway Traffic Safety Administration

ODI RESUME

OFFICE OF DEFECTS INVESTIGATION

NHTSA

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Investigation: PE 17-002
Date Opened: 05/03/2017 **Date Closed:** 05/04/2018
Investigator: Abhijit Sengupta **Reviewer:** Scott Yon
Approver: Stephen Ridella
Subject: Extended Braking Distances

MANUFACTURER & PRODUCT INFORMATION

Manufacturer: Nissan North America, Inc.
Products: MY 2009 Nissan Murano
Population: 108,409

Problem Description: The brake pedal may lose pressure and require increased travel and pedal force by the driver, potentially resulting in extended stopping distances.

FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
Complaints:	175	367	484**
Crashes/Fires:	5	10	14**
Injury Incidents:	1	2	3
Fatality Incidents:	0	0	0
Other*:	0	103	103

***Description of Other:** Potentially related model year 2009 Nissan Murano warranty claims.

** Total eliminates duplicates received by ODI and manufacturer.

ACTION / SUMMARY INFORMATION

Action: Close this Preliminary Investigation and upgrade to Engineering Analysis (See EA18-001)

Summary:

The Office of Defects Investigation (ODI) is closing this Preliminary Evaluation and upgrading to an Engineering Analysis (EA) 18-001. During the PE, ODI requested and reviewed information provided by Nissan including consumer complaints and other field and technical data related to failures of the hydraulic control unit (HCU), an electro-mechanical brake system component that provides antilock braking and other functionality in the subject model year (MY) 2009 Murano. The subject failure of the HCU, which involves improper operation of an internal hydraulic control valve, can cause extended brake pedal travel and may result in a reduction in overall braking effectiveness. Tier-one supplier Continental manufactured the HCU for Nissan.

ODI currently recognizes 484 subject vehicle complaints that appear related to the alleged defect. Fourteen crash allegations, with three non-life threatening injuries are under evaluation also. ODI has been monitoring consumer complaints received, and in some cases has obtained suspect HCUs from complainants' vehicles. Recovered HCUs sent to NHTSA's Vehicle Research and Test Center (VRTC) in East Liberty, Ohio are under evaluation, and VRTC has conducted limited vehicle testing also.

In a July 28, 2017 submission, Nissan acknowledged that a failure of the HCU can result in increased brake pedal travel during braking. Nissan's analysis of returned parts revealed that a zinc coating used on the normally closed valve assemblies inside the HCU may react with certain brake fluid constituents. The reaction results in the formation of a gelatinous material that can harden with time and prevent the valve from closing after opening in an ABS event. When this occurs, Nissan maintains that the hydraulic brake system remains intact and that full braking is available once the pedal travels an additional distance, about 36 mm according to Nissan. Although still under investigation,

Nissan states it has not determined the condition represents an unreasonable risk to motor vehicle safety, citing low rate and vehicle age as additional factors. In March 2018, Nissan began conducting a customer satisfaction campaign on certain MY 2009 Murano to service (flush and replace the brake fluid), and then test and replace the HCU as needed. The campaign is being conducted free of charge to customers.

During the EA, ODI will request VRTC continue to evaluate the cause and consequence of HCU failures, including the affects of multi-valve failures. ODI will further study the potential scope of the alleged defect as it understands similar HCUs and brake fluid is used in other MY Muranos, and potentially in other Nissan models as well. ODI notes that improved valve coatings were introduced on Nissan HCUs at some subsequent stage.

The reports cited above can be reviewed at NHTSA.gov under the following ID numbers: 10349668, 10441563, 10492374, 10553652, 10555533, 10567250, 10622526, 10625677, 10705135, 10790348, 10642004, 10648258, 10732695, 10783262, 10785892, 10807329, 10807866, 10811609, 10811908, 10824204, 10837139, 10837342, 10845756, 10850354, 10864775, 10873697, 10884073, 10885682, 10893542, 10894785, 10907040, 10907346, 10909760, 10909850, 10911067, 10913911, 10916005, 10918518, 10925681, 10926733, 10927763, 10928683, 10935209, 10935444, 10938572, 10938849, 10939532, 10943704, 10943991, 10947315, 10948997, 10950185, 10954587, 10956268, 10958510, 10958943, 10967958, 10968136, 10968503, 10971135, 10983808, 10983820, 10983869, 10983892, 10984159, 10984164, 10984171, 10984189, 10984191, 10984197, 10984232, 10984540, 10984755, 10984822, 10985031, 10985414, 10985458, 10990578, 10993115, 10993229, 10993290, 10993323, 10993779, 10994185, 10995126, 10995646, 10995884, 11000055, 11002561, 11003607, 11003981, 11005944, 11005947, 11010036, 11010176, 11010474, 11011412, 11014081, 11014605, 11014933, 11015301, 11018640, 11018786, 11019395, 11020726, 11021176, 11022806, 11025053, 11025404, 11030682, 11032181, 11032601, 11032897, 11032911, 11041621, 11044139, 11044658, 11045210, 11046236, 11048291, 11050945, 11051037, 11051399, 11051626, 11052030, 11052222, 11052872, 11053377, 11053818, 11054094, 11054298, 11054715, 11054985, 11055250, 11055539, 11055633, 11055715, 11055823, 11056002, 11056029, 11056094, 11056233, 11056342, 11056349, 11056587, 11056648, 11056651, 11057210, 11057455, 11057720, 11058371, 11058609, 11061033, 11061637, 11062216, 11062284, 11062370, 11062726, 11062787, 11063007, 11063209, 11063954, 11064185, 11064606, 11065460, 11067398, 11071558, 11071749, 11072093, 11072367, 11072371, 11073120, 11073378, 11075349, 11075833