

7/7/15 JA



SUBARU.

Fuji Heavy Industries U.S.A., Inc.
c/o Subaru of America
Subaru Plaza
PO Box 6000
Cherry Hill, NJ 08034-6000
856-488-8500
856-488-8669 fax

June 18, 2015

Ref. No.: GR15-028

Mr. Scott Yon
Chief, Vehicle Integrity Division
Office of Defects Investigation
National Highway Traffic Safety Administration
1200 New Jersey Avenue SE, Room W48-314
Washington, DC 20590

**Re: NVS-212jfa/PE15-012 2012MY Subaru Impreza (except WRX/STI) Occupant Control Units (OCU)
(Third Submission)**

Dear Mr. Yon,

This letter and enclosures are a partial response by Subaru of America, Inc. (Subaru, SOA) to your letter concerning the NHTSA's Preliminary Evaluation (PE15-012, April 15, 2015) investigation of allegations of improper operation of the passenger air bag system in model year 2012 Subaru Impreza (except WRX/STI) vehicles. This is our third and final submission, and includes a complete response for question no.'s 8-11.

FUSA considers portions of the enclosed to be "Confidential Business Information," and has submitted a request to Chief Counsel's office, pursuant to Part 512.

As requested in your letter, our response is provided after repeating, verbatim, the applicable request which is in bold text.

8. Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, "actions") that relate to, or may relate to, the alleged defect or the Subject Service Bulletin in the subject vehicles that have been conducted, are being conducted, are planned, or are being planned by, or for, Subaru. For each such action, provide the following information:
- Action title or identifier;
 - The actual or planned start date;
 - The actual or expected end date;
 - Brief summary of the subject and objective of the action;
 - Engineering group(s)/supplier(s) responsible for designing and for conducting the action; and,
 - A brief summary of the findings and/or conclusions resulting from the action.

For each action identified, provide copies of all documents related to the action, regardless of whether the documents are in interim, draft, or final form. Organize the documents chronologically by action.

Subaru Response:

Please see the enclosed Excel file named 'Question 8 – ACTIONS' on 'Disc 4' in the folder named 'Question No. 8.' In addition, the following supporting documents which provide more detail of the actions are also included in that folder:

- Jan 19 2012 – Denso report test data Maryland ENGLISH.pdf
- Jan 19 2012 – Denso report test data Maryland INCL JAPANESE.pdf
- Detailed test data ENGLISH.pdf
- Detailed test data JAPANESE.pdf

Data source: June 11, 2015. Fuji Heavy Industries, Quality Assurance Department.

9. Describe all modifications or changes made by, or on behalf of, Subaru in the design, material composition, manufacture, quality control, supply, or installation of the subject components, from the start of production to date, which relate to, or may relate to, the alleged defect in the subject vehicles. For each such modification or change, provide the following information:
- The date or approximate date on which the modification or change was incorporated into vehicle's production;
 - A detailed description of the modification or change;
 - The reason(s) for the modification or change;
 - The part numbers (service and engineering) of the original component;
 - The part number (service and engineering) of the modified component;
 - Whether the original unmodified component was withdrawn from production and/or sale, and if so, when;
 - When the modified component was made available as a service component; and,
 - Whether the modified component can be interchanged with earlier production components.

Also, provide the above information for any modification or change that Subaru is aware of which may be incorporated into vehicle's production within the next 120 days.

Subaru Response:

Please see the enclosed Excel file on 'Disc 4' in the folder named 'Question No. 9'. The columns are labeled to coincide with the questions listed above (i.e. 9a., 9b., 9c, etc). In addition, listed below is a detailed description of the February 16, 2012 change in production:

- b. A detailed description of the modification or change;
(February 16, 2012)

On the Electronic Control Unit (ECU) of the Occupant Detection System (ODS), Subaru had modified the threshold value of capacitance. In detail:

Modification No. 1.: (Water-poured trouble) the resistance change between main electrode and sub electrode (new threshold value) shall be newly set, and

Modification No. 2.: (Sub electrode open trouble) the new threshold value of sub electrode open is changed with the inclination of that value not to cross the inclination of output characteristics, in the ratio of detection capacitance of main electrode and sub electrode.

These modified thresholds involved margins shall be ensured by accumulation of a maximum of the factors which are human, environments, durabilities, parts and occupant behaviors. Furthermore, the trouble detection time is changed from 2s to 4s as a margin of detection time, which is changed to insensitive side.

- c. The reason(s) for the modification or change;

The reason for modification No.1 is to increase previous threshold by decreased resistance value, because an occupant of large build touched GND potential (cigarette lighter socket) etc. for 2s or more with increasing humidity within seat.

The reason for modification No.2 is to increase previous threshold and increased capacity value, because an occupant of large build touched GND potential (cigarette lighter socket) etc. for 2s or more with increasing humidity within seat.

Data source (9a., 9b., 9c., 9d., 9e., 9f., 9h., Seat Cover Material, Seat Cover Color, and Seat Heater information): June 11, 2015. Fuji Heavy Industries, Quality Assurance Department.

Data source (9g.): May 11, 2015. Subaru of America, Inc. Parts sales reporting system, Failure Code Trend Report. Sales data is reported on a monthly basis.

- 10. Provide a matrix (summary table) for all unique design levels of the subject component, which should include all part numbers (both original equipment and service part numbers), supplier identification information (name, address, part number, etc.), dates of component manufacture, dates of sale (year and month), and application by vehicle model including the periods/dates of production usage for each vehicle model identified.**

Also provide a table containing counts of service parts sales (volumes), by month and year of sale, for all unique design levels of the subject component and for all time periods.

Subaru Response:

Please see the enclosed Excel file on 'Disc 4' in the folder named 'Question No. 10.'

The 2012 Impreza ODS Occupant Control Unit (OCU) is located on the underside of the front passenger seat cushion. For service parts purposes, the OCU for the 2012 Impreza is available separately to address the issue described in TSB 17-16-12 dated May 29, 2012. The OCU is also included in the seat cushion assembly, and can be ordered based on the applicable part numbers listed in the electronic parts catalog/supersession information.

The matrix requested is listed in the 'Main' worksheet of the enclosed Excel file. Service parts sales volumes by month and year of sale, for all unique design levels of both the OCUs and seat cushion assemblies that fit the 2012 model year Impreza are included on separate worksheets within the Excel file, labeled 'OCU Sales' and 'Seat Cushion Sales.'

Data Sources:

Part number information and production data source: June 11, 2015. Fuji Heavy Industries, Quality Assurance Department.

Parts sales data source: May 11, 2015. Subaru of America, Inc. Parts sales reporting system, Failure Code Trend Report. Sales data is reported on a monthly basis.

11. Furnish Subaru's assessment of the alleged defect in the subject vehicles including:

- a. **The causal or contributory factor(s);**
- b. **The failure mechanism(s);**
- c. **The failure mode(s);**
- d. **The risk to vehicle's safety that it poses;**
- e. **What warnings, if any, that the alleged defect was occurring or that the subject component was malfunctioning; and**
- f. **The reports included with this inquiry.**

Subaru Response:

Please see the enclosed Excel file entitled '**Assessment of 26 VOQs**' on 'Disc 4' in the folder named 'Question No. 11'. In addition, please see below:

a. The causal or contributory factors:

Improper threshold value of Water-poured or sub electrode open trouble

b. The failure mechanism(s):

When an occupant in a passenger seat touches the vehicle GND such as using and charging an iPod (portable terminal connected) from cigarette lighter socket, detection capacitance of occupant detection sensor increases and exceeds the threshold value of Water-poured, causing detection of diagnosis trouble due to Water-poured (DTCs B1761 and B1650) or detection capacitance of occupant detection sensor increases and exceeds threshold value for judgment of broke wire, causing detection of diagnosis of sub electrode open trouble (DTCs B1760 and B1650), in some cases.

c. The failure mode(s):

Air Bag Warning Light will illuminate and the Passenger Air Bag indicator will show "OFF"

d. The risk to vehicle's safety that it poses:

The airbag might not operate under the conditions described in (b). However, the Air Bag Warning Light will illuminate, notifying the driver of an issue with the air bag system.

e. What warnings, if any, that the alleged defect was occurring or that the subject component was malfunctioning:

Airbag Warning Light on instrument panel illuminates

f. The reports included with this inquiry:

Since Air Bag Warning Light illuminates, some drivers properly repaired their vehicles at the retailers. However, although Service Information has already been published, approximately 50% of the vehicles in the list of VOQs have not repaired their vehicle properly. On June 18, 2015, FHI decided that Subaru will replace the OCU in all potentially affected 2012 model year Impreza vehicles. Subaru will submit a Part 573 DIR accordingly.

Data source: June 18, 2015. Fuji Heavy Industries, Quality Assurance Department.

If you need any additional information or have any questions, please do not hesitate to contact John Frooshani at (443) 430-3619.

A handwritten signature in black ink, appearing to read "Maurice Arcangeli", with a long horizontal line extending to the right.

Maurice Arcangeli
Director, Government Relations

Enclosures (two copies):

- CD - Disc 4