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# VOLKSWAGEN

GROUP OF AMERICA

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Office of Defects Investigation  
U.S. Department of Transportation  
National Highway Traffic Safety Administration  
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February 23, 2018 Date

Subject: [REDACTED] NEF101sly

Dear Mr. [REDACTED]

VOLKSWAGEN GROUP OF AMERICA, INC.  
3800 HAMLIN ROAD  
AUBURN HILLS, MI 48326  
PHONE +1 248 754 5000

Please find attached Volkswagen's final response to PE18-001, dated January 26, 2018, requesting information concerning incidents of seat belt rupture involving the 2018 MY Volkswagen Tiguan. Per communication from Sharon Yukevich dated February 16, 2018, per Volkswagen's request, the response is inclusive of and limited to Volkswagen and Audi models which incorporate the use of a Crash Locking Tongue (CLT).

Volkswagen also notes, per communication from Sharon Yukevich dated February 23, 2018, Volkswagen has been granted a one week extension to provide native German / Spanish language documents translated into English language.

For your convenience, each request is restated verbatim and then followed by our response.

It is further noted that certain documents deemed responsive to Requests # 2, 3, 5, 8, and 11 have been submitted to NHTSA's Office of General Counsel, under request for confidentiality. An index of these documents is included for your convenience.

Additionally, documents from the supplier ZF-TRW determined to be confidential have also been submitted to NHTSA's Office of General Counsel, under request for confidentiality.

Please contact me if you have any questions regarding this response.

Sincerely,

[REDACTED]  
Christopher T. Sandvig  
Director, Group Customer Protection  
Volkswagen Group of America, Inc.

Enclosures

Volkswagen Confidential Document List  
PE18-001\_Seat Belt 2018 MY Volkswagen Tiguan

| FolderName            | FileName                                |
|-----------------------|-----------------------------------------|
| Exhibit to Request 11 | g2170517000_geschwärzt_CONFIDENTIAL.pdf |
| Exhibit to Request 11 | g2170517000_geschwärzt_PUBLIC.pdf       |
| Exhibit to Request 11 | g2170518000_geschwärzt_CONFIDENTIAL.pdf |
| Exhibit to Request 11 | g2170518000_geschwärzt_PUBLIC.pdf       |
| Exhibit to Request 11 | g2170519000_geschwärzt_PUBLIC.pdf       |
| Exhibit to Request 11 | g2170519000_geschwärzt_CONFIDENTIAL.pdf |
| Exhibit to Request 11 | g2170520000_geschwärzt_PUBLIC.pdf       |
| Exhibit to Request 11 | g2170520000_geschwärzt_CONFIDENTIAL.pdf |
| Exhibit to Request 11 | g2170521000_geschwärzt_PUBLIC.pdf       |
| Exhibit to Request 11 | g2170521000_geschwärzt_CONFIDENTIAL.pdf |
| Exhibit to Request 11 | g2170527000_geschwärzt_PUBLIC.pdf       |
| Exhibit to Request 11 | g2170527000_geschwärzt_CONFIDENTIAL.pdf |
| Exhibit to Request 11 | g2180001000_geschwärzt_CONFIDENTIAL.pdf |
| Exhibit to Request 11 | g2180001000_geschwärzt_PUBLIC.pdf       |
| Exhibit to Request 11 | g2180002000_geschwärzt_CONFIDENTIAL.pdf |
| Exhibit to Request 11 | g2180002000_geschwärzt_PUBLIC.pdf       |
| Exhibit to Request 11 | g2180003000_geschwärzt_CONFIDENTIAL.pdf |
| Exhibit to Request 11 | g2180003000_geschwärzt_PUBLIC.pdf       |
| Exhibit to Request 11 | g2170528000_geschwärzt_PUBLIC.pdf       |
| Exhibit to Request 11 | g2170528000_geschwärzt_CONFIDENTIAL.pdf |
| Exhibit to Request 11 | g2180004000_geschwärzt_PUBLIC.pdf       |
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Volkswagen Confidential Document List  
PE18-001\_Seat Belt 2018 MY Volkswagen Tiguan

| FolderName            | FileName                                                              |
|-----------------------|-----------------------------------------------------------------------|
| Exhibit to Request 11 | pg187799000_geschwärzt_PUBLIC.pdf                                     |
| Exhibit to Request 11 | pg187799000_geschwärzt_CONFIDENTIAL.pdf                               |
| Exhibit to Request 11 | pg180006000_geschwärzt_PUBLIC.pdf                                     |
| Exhibit to Request 11 | pg180006000_geschwärzt_CONFIDENTIAL.pdf                               |
| Exhibit to Request 8  | KAP_Fzg_05_Conformity of Production CoP_V05.00_CONFIDENTIAL.pdf       |
| Exhibit to Request 8  | Sicherheitsgurt DKA_geschwärzt_CONFID.pdf                             |
| Exhibit to Request 8  | Pruefung VW Slovakia Q7, Ablauf_geschwärzt_CONFID.pdf                 |
| Exhibit to Request 8  | Road Test Process Puebla_geschwärzt_CONFID.pdf                        |
| Exhibit to Request 8  | W_3 4_CQ-M_004 Road Test Rev 21_geschwärzt_CONFID.pdf                 |
| Exhibit to Request 8  | Sicherheitsgurt DKA_geschwärzt_PUBLIC.pdf                             |
| Exhibit to Request 8  | Road Test Process Puebla_geschwärzt_PUBLIC.pdf                        |
| Exhibit to Request 8  | Pruefung VW Slovakia Q7, Ablauf_geschwärzt_PUBLIC.pdf                 |
| Exhibit to Request 8  | W_3 4_CQ-M_004 Road Test Rev 21_geschwärzt_PUBLIC.pdf                 |
| Exhibit to Request 8  | KAP_Fzg_05_Conformity of Production CoP_V05.00_PUBLIC.pdf             |
| Exhibit to Request 2  | VW 01064 Module Marking on Production Vehicles_CONFIDENTIAL.pdf       |
| Exhibit to Request 2  | VW 01064 Module Marking on Production Vehicles_PUBLIC.pdf             |
| Exhibit to Request 3  | PV 3903 Bending Stiffness_CONFIDENTIAL.pdf                            |
| Exhibit to Request 3  | TL 52454 Belt Webbing for Seat Belts_CONFIDENTIAL.pdf                 |
| Exhibit to Request 3  | PV 3903 Bending Stiffness_PUBLIC.pdf                                  |
| Exhibit to Request 3  | TL 52454 Belt Webbing for Seat Belts_PUBLIC.pdf                       |
| Exhibit to Request 5  | TL 82503 Seat Belt Buckle and Latch Plate_geschwärzt_CONFIDENTIAL.pdf |
| Exhibit to Request 5  | Q-LAH Gurtsysteme VW EN_geschwärzt_CONFIDENTIAL.pdf                   |
| Exhibit to Request 5  | TL 471 Seat_Belt_Systems_geschwärzt_CONFIDENTIAL.pdf                  |
| Exhibit to Request 5  | TL 82500 Seat Belt Retractor_geschwärzt_CONFIDENTIAL.pdf              |
| Exhibit to Request 5  | TL 82501 Seat Belt Tensioner_geschwärzt_CONFIDENTIAL.pdf              |
| Exhibit to Request 5  | TL 82501 Seat Belt Tensioner_geschwärzt_PUBLIC.pdf                    |
| Exhibit to Request 5  | Q-LAH Gurtsysteme VW EN_geschwärzt_PUBLIC.pdf                         |
| Exhibit to Request 5  | TL 82503 Seat Belt Buckle and Latch Plate_geschwärzt_PUBLIC.pdf       |
| Exhibit to Request 5  | TL 471 Seat_Belt_Systems_geschwärzt_PUBLIC.pdf                        |
| Exhibit to Request 5  | TL 82500 Seat Belt Retractor_geschwärzt_PUBLIC.pdf                    |

### Request 1

State the number of subject vehicles VW has manufactured for sale or lease in the United States. Separately, for each subject vehicle manufactured to date by VW, state the following:

- a. Vehicle Identification Number (VIN);
- b. Make;
- c. Model;
- d. Model Year;
- e. Subject component part number;
- f. Date of manufacture;
- g. Date warranty coverage commenced;
- h. The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease).

### Response 1

In response to this inquiry, Volkswagen provides the population of both the subject vehicle identified in PE18-001 and, separately, additional vehicles identified as equipped with the Crash Locking Tongue (CLT).

Population data is provided for 2018 Model Year (MY) Volkswagen Tiguan and Atlas, 2015-2018 MY Volkswagen Golf, eGolf, Golf R and GTI, 2017-2018 MY Audi Q5, 2017-2018 MY Audi Q7, 2015-2018 MY Audi Q3 and A3 vehicles manufactured for sale or lease in the United States, including, but not limited to, the District of Columbia and current U.S. territories and possessions.

| Model              | 2015           | 2016           | 2017           | 2018           | Grand Total    |
|--------------------|----------------|----------------|----------------|----------------|----------------|
| Atlas              |                |                |                | 51,187         | 51,187         |
| Audi A3            | 42,183         | 36,451         | 21,375         | 15,617         | 115,626        |
| Audi Q3            | 10,518         | 20,195         | 14,618         | 24,017         | 69,348         |
| Audi Q5            |                |                |                | 62,525         | 62,525         |
| Audi Q7            | 28,909         |                | 51,663         | 28,758         | 109,330        |
| eGolf              | 3,370          | 7,892          | 1,742          | 441            | 13,445         |
| Golf               | 29,731         | 25,691         | 38,208         | 10,860         | 104,490        |
| Golf Alltrack      |                |                | 24,283         | 4,097          | 28,380         |
| Golf GTI           | 25,063         | 15,484         | 12,561         |                | 53,108         |
| Golf R             | 1,771          | 5,277          | 4,300          |                | 11,348         |
| Golf Sportwagen    | 16,404         | 19,123         | 10,096         | 3,990          | 49,613         |
| Tiguan             |                |                |                | 57,842         | 57,842         |
| <b>Grand Total</b> | <b>157,949</b> | <b>130,113</b> | <b>178,846</b> | <b>259,334</b> | <b>726,242</b> |

Please reference the files entitled "PRODUCTION DATA.xlsx" for the subject 2018 MY Tiguan and "PRODUCTION DATA2.xlsx" for additional vehicles, for responses to subparagraphs "a" through "h," in the folder attached hereto as Exhibit to Request 1.

Source: Business Objects Vehicles Universe

Date Gathered: Through the date of the inquiry

Exhibit to Request 1

PRODUCTION DATA

Data is provided in the following files labeled as "PRODUCTION DATA.xlsx" (2018 MY Tiguan) and "PRODUCTION DATA2.xlsx" (additional models) in Microsoft Excel format in the Exhibit to Request 1 folder on the enclosed PE18-001 electronic media

## Request 2

Describe the method used to trace a particular seat belt assembly back to the VIN of the vehicle it was installed in as original equipment and how to decode the seat belt assembly serial number to determine the build date of the assembly.

## Response 2

In response to this inquiry, Volkswagen provides the following information regarding the method used to trace a particular seat belt assembly back to the VIN of a vehicle and how to decode the build date of the assembly.

The supplier is required by the Volkswagen standard to mark the part with an individual serial number. During the vehicle's production, the serial number on the seat belt assembly is scanned and stored with the vehicle identification number (VIN) in the Volkswagen central data management system.

The build date of the assembly cannot be read directly, as it is encoded within a 2-D code located on the seat belt tongue.

The build information for the seat belt assembly is stored at the supplier and must be accessible at Volkswagen's request for at least 15 years.

Please reference the files entitled, "BZD Seat Belt Assembly Method.pdf", "NHTSA Seatbelt Request 2.pdf" and "VW 01064 Module Marking on Production Vehicles.pdf" in the folder attached hereto as Exhibit to Request 2.

Note: For the Audi A3 model line, the supplier's individual serial number on the seat belt assembly is not recorded to the VIN. Identification of a particular seat belt assembly can be obtained via manual research of consignment data and production scheduling.

Source: Volkswagen AG

Date Gathered: Through the date of the inquiry

Exhibit to Request 2

TRACE METHOD

Data is provided in the following files labeled as “BZD Seat Belt Assembly Method.pdf”, “NHTSA Seatbelt Request No. 2.pdf” and “VW 01064 Module Marking on Production Vehicles.pdf” in Acrobat PDF format in the Exhibit to Request 2 folder on the enclosed PE18-001 electronic media

### Request 3

State VW's design and performance criteria for seat belt webbing. If it is seating position dependent, list the criteria for each seating position.

### Response 3

In response to this inquiry, Volkswagen provides the following information related to design and performance criteria for seat belt webbing.

Volkswagen further notes that design and performance criteria for seat belt webbing are not seating position dependent nor vehicle dependent.

Seat belt webbing is released according to internal Technical Supply Specification "TL 52454: Belt Webbing for Seat Belts".

Technical Supply Specification "TL 52454" makes reference to numerous additional documents. Volkswagen includes with this response, the referenced documents related to the design and performance criteria that is, or may be related to the alleged defect.

Additional documents that are referenced by Technical Supply Specification "TL 52454" for the seat belt assembly and restraint system are provided in responses to Requests 5 and 8.

Please reference the files entitled, "TL 52454: Belt Webbing for Seat Belts.pdf" and "PV 3903 Bending Stiffness.pdf" in the folder attached hereto as Exhibit to Request 3.

Source: Volkswagen AG

Date Gathered: Through the date of the inquiry

Exhibit to Request 3

DESIGN AND PERFORMANCE CRITERIA

Data is provided in the following files labeled as "TL 52454: Belt Webbing for Seat Belts.pdf" and "PV 3903 Bending Stiffness.pdf" in Acrobat PDF format in the Exhibit to Request 3 folder on the enclosed PE18-001 electronic media

#### Request 4

Identify all Tier 1 manufacturers VW purchases seat belt assemblies from for the purpose of installing them in new vehicle production. For each Tier 1 manufacturer identified, provide the following information in tabular form for the latest five (5) years:

- a. Supplier name;
- b. VW Part Number;
- c. Make, Model, Model Year in which seat belt assembly was utilized;
- d. Position seat belt assembly utilized in (i.e. driver, passenger, rear).

#### Response 4

In response to Request 4, Volkswagen identifies the Tier 1 manufacturer VW purchases seat belt assemblies from for the purpose of installing them in new vehicle production.

Note: The seat belt assembly using a crash locking tongue is only used in front row (driver / passenger) seating positions. Therefore, the information provided in response to inquiry PE18-001 is related to front row (driver / passenger) seat belt assemblies.

Volkswagen provides in table format, both the subject vehicle identified in PE18-001 and, the additional vehicles identified as equipped with the Crash Locking Tongue (CLT), along with supplier identification and part numbers associated with each vehicle model, model year, and seating position.

Please reference the file entitled "RESPONSE FOUR.pdf" for responses to subparagraphs "a" through "d," in the folder attached hereto as Exhibit to Request 4.

Source: Volkswagen AG

Date Gathered: Through the date of the inquiry

Exhibit to Request 4

TIER 1 MANUFACTURERS  
SUBJECT AND ADDITIONAL VEHICLE IDENTIFICATION

Data is provided in the following file labeled as "RESPONSE FOUR.pdf" in Acrobat PDF format in the Exhibit to Request 4 folder on the enclosed PE18-001 electronic media

## Request 5

For the purchased seat belt assemblies identified in Request 4, identify all testing conducted to ensure adherence to design and/or performance parameters as well as quality control for the seat belt assembly and its individual components required by VW to be conducted by the seat belt assembly supplier.

## Response 5

In response to this inquiry, Volkswagen provides a list of relevant tests and the applicable documents, for all seat belt assemblies identified in response to Request 4 that are to be tested by the seat belt assembly supplier, according to Technical Supplier Specifications (TLs) and quality assurance requirements.

|                                                                                                                                                                                                                                                                                  |                                                                                                                                                                           |                                                                                                                                                                                                |                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <b>VW TL471:<br/>Seat Belt Systems and<br/>Height Adjustment ASSY</b> <ul style="list-style-type: none"><li>▪ Fastening parts and plastic parts</li><li>▪ Locking Parts</li><li>▪ Retractors and belt tensioners</li><li>▪ Height adjustment</li><li>▪ Dynamic testing</li></ul> | <b>VW TL825 00:<br/>Seat Belt Retractor</b> <ul style="list-style-type: none"><li>▪ Requirements and Test</li></ul>                                                       | <b>VW TL825 01:<br/>Seat Belt Tensioner</b> <ul style="list-style-type: none"><li>▪ Requirements and Test</li><li>▪ Performance data/ properties</li><li>▪ Team performance test bed</li></ul> | <b>VW TL825 02:<br/>Seat Belt Vertical<br/>Adjustment</b> <ul style="list-style-type: none"><li>▪ Requirements and Test</li></ul> |
| <b>VW TL825 03:<br/>Seat Belt Buckle and<br/>Latch Plate</b> <ul style="list-style-type: none"><li>▪ Requirements and Test</li><li>▪ Geometry Functional req.</li><li>▪ Environmental req.</li></ul>                                                                             | <b>VW TL825 04:<br/>Gas Generator and<br/>Electrical Ignition<br/>Unit for Belt<br/>Tensioner</b> <ul style="list-style-type: none"><li>▪ Requirements and Test</li></ul> | <b>ZF-TRW<br/>Verification Plan<br/>and Report:<br/>Crash Locking<br/>Tongue</b> <ul style="list-style-type: none"><li>▪ Requirements and Test</li></ul>                                       | <b>Lap Pre- Tensioner</b> <ul style="list-style-type: none"><li>▪ Requirements and Tests</li></ul>                                |
| <b>Vehicle Specific Seat Belt Specification</b>                                                                                                                                                                                                                                  |                                                                                                                                                                           |                                                                                                                                                                                                |                                                                                                                                   |

Overview of Technical Supplier Specifications. Documents marked ☐ are provided, as sections of the TLs are, or may be, relevant to the alleged defect. Documents marked ☐ were determined as not relevant to the alleged defect and are not included in this response

Volkswagen identifies the following tests listed within the TL's as responsive to this inquiry:

| Specification     | Paragraph      | Subject                                                                                        | Further description                                                                                                                                       |
|-------------------|----------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| TL 471            | 6.3.2.1.2      | Locking requirements for Emergency-locking retractor (FMVSS 209 §4.3)<br>- Vehicle Sensitivity | Test locking position of the retractor for each increment in x and y direction                                                                            |
| TL 471            | 6.3.2.2        | Locking requirements for Emergency-locking retractor (FMVSS 209 §4.3)<br>- Tilt Sensitivity    | Test tilt locking position of the retractor for x and y direction                                                                                         |
| TL 471            | 6.3.2.3        | Locking requirements for Emergency-locking retractor<br>- Web Sensitivity                      | Locking and no locking dependent on belt spool acceleration                                                                                               |
| TL 471            | 6.15           | Retractor Assembly breaking strength                                                           | Breaking strength of the retractor requirement $\geq 15\text{kN}$ , 3 different locking positions                                                         |
| TL 471<br>TL82501 | 8.2<br>5.1.2.4 | Sled Test;<br>50% Dummy;<br>56kph (35mph)                                                      | Verification of adequate component strength of belt restraint system<br>- steel seat based on ECE R-16<br>- sine pulse 36g, 80ms<br>- test without airbag |
| TL 471            | 8.3            | Sled Test;<br>95% Dummy;<br>56kph (35mph)                                                      | Verification of adequate component strength of belt restraint system<br>- in vehicle body and interior<br>- vehicle pulse                                 |

The test according to TL 471 § 8.3 "Sled Test; 95% Dummy; 56kph (35mph)" is usually performed at Volkswagen, due to the vehicle components required, e.g. body in white, seats, dashboard, steering wheel, air bag, etc.

The CLT in all vehicles responsive to Request 4 utilize the design from ZF-TRW. There is no Technical Supply Specification for the CLT at this time. Therefore, Volkswagen provides the "ZF-TRW Verification Plan and Report" for the initial release of the CLT, first equipped in the 2015 MY Volkswagen Golf.

The "ZF-TRW Verification Plan and Report" represents the requirements and documentation of the tests that were conducted for the release of the CLT.

Volkswagen identifies the following tests within the “ZF-TRW Verification Plan and Report” for the CLT as responsive to this inquiry:

| Document                            | Position | Subject                  | Further description                                                                                                                       |
|-------------------------------------|----------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| ZF-TRW Verification plan and report | 1.0 -1.2 | Locking activation force | Test the locking activation force at various temperatures (-35°C, RT, 85°C)<br>requirement: no locking at 10N, locking at 50N within 10mm |
| ZF-TRW Verification plan and report | 17.0     | Locking force            | determine the locking force of the activated CLT over 50mm<br>requirement: force $\geq$ 3.2kN                                             |
| ZF-TRW Verification plan and report | 18.0     | Tongue breaking strength | straight pull out;<br>requirement: break strength $\geq$ 20kN                                                                             |

Tests according to FMVSS 209, which are required in TL 471, are also conducted independently by an external American institute like SGS or Dayton T. Brown.

Volkswagen’s Quality Assurance (QA) is releasing the seat belt assembly according to the Group Performance Specification “Quality Assurance Performance Specification for Belt Systems”. The release is based on the documentation of the supplier that all required tests have been passed and all specifications are fulfilled. The Group Performance Specification is provided with this response.

Please reference the example release documents, provided in the folder entitled, “Beon Sample” (Beon - Bemusterung online, Bemusterung = sample testing) attached hereto as Exhibit to Request 5.

Each supplier is responsible to assure that the part is within specification (Conformity of Production, CoP testing). Therefore the supplier tests/checks the seat belt assembly in accordance to Volkswagen’s specification of the part, as shown in the control plans included in this response.

Please reference the example of the control plan, in the folder entitled, “Control Plans” in the folder attached hereto as Exhibit to Request 5.

Each test in the control plan is described in individual work instructions for the worker in the factories of the suppliers. An example of a work instruction is included in this response.

Please reference the example of work instruction, in the folder entitled “Work Instructions” attached hereto as Exhibit to Request 5.

Source: Volkswagen AG

Date Gathered: Through the date of the inquiry

Exhibit to Request 5

TESTING - SUPPLIER

Information referenced in Response 5 is provided in the following folders and files in Acrobat PDF format in the Exhibit to Request 5 folder on the enclosed PE18-001 electronic media

Beon Sample folder  
Quality Standards folder  
Control Plans folder  
Work Instruction folder  
**TL 471** "Seat Belt Systems and Height Adjustment ASSY.pdf"  
**TL 82500** "Seat Belt Retractor.pdf"  
**TL 82501** "Seat Belt Tensioner.pdf"  
**TL 82503** "Seat Belt Buckle and Latch Plate.pdf"  
**ZF-TRW** "Verification Plan and Report" =  
VW\_DLT\_\_PV\_Bericht\_komplett\_15.05.14\_geschwärzt.pdf"

#### Request 6

For each test identified in Request 5, list each incident where the seat belt assembly failed to meet the test requirements. For each incident include the following in tabular form:

- a. Supplier name;
- b. Position seat belt assembly tested for (i.e. driver, passenger, rear);
- c. Test being conducted at time of failure;
- d. Failure mechanism;
- e. Root cause of failure;
- f. Counter measures implemented to reduce future occurrences;
- g. Provide a copy of the test report.

#### Response 6

Volkswagen has not identified any reports where the seat belt assembly failed to meet the test requirements in regards to performance.

#### Request 7

For each test identified in Request 5, provide test procedures/protocols approved by VW.

#### Response 7

The test procedure / protocols for each test identified in response to Request 5 are included in the Technical Supplier Specifications / documents provided in the folder attached hereto as Exhibit to Request 5.

Source: Volkswagen AG

Date Gathered: Through the date of the inquiry

### Request 8

For the purchased seat belt assemblies identified in Request 4, identify all testing conducted to ensure adherence to design and/or performance parameters as well as quality control for the seat belt assembly conducted by VW.

### Response 8

In response to this inquiry, Volkswagen provides a list of relevant tests and the applicable documents for all seat belt assemblies identified in response to Request 4, that are to be tested by Volkswagen according to internal specifications and quality assurance requirements.

#### Development Test for Releasing Vehicles/Systems

The test according to TL 471 - 8.3 "Dynamic testing with 95th percentile male in the vehicle" mentioned in Response to Request 5 is usually performed at Volkswagen, due to the vehicle components required, e.g. body in white, seats, dashboard, steering wheel, air bag, etc.

While the tests in response to Request 5 are to be conducted by the seat belt supplier and, are designed to test the seat belt assembly, the restraint systems of new Volkswagen vehicles are subject to full scale crash tests conducted by Volkswagen for release in the US Market. The specific applicable tests are identified in the following tables:

| Safety standard | Vehicle Speed | Target                                | Dummy Driver position | Dummy Passenger Position | Test procedure |
|-----------------|---------------|---------------------------------------|-----------------------|--------------------------|----------------|
| FMVSS 208       | 35 mph        | full frontal                          | 50% male              | 50% male                 | TP FMVSS 208   |
| FMVSS 208       | 35 mph        | full frontal                          | 5% female             | 5% female                | TP FMVSS 208   |
| FMVSS 208       | 25 mph        | Offset deformable barrier, 40% offset | 5% female             | 5% female                | TP FMVSS 208   |

| Consumer tests | Vehicle Speed | Target                        | Dummy Driver position | Dummy Passenger Position | Test procedure                |
|----------------|---------------|-------------------------------|-----------------------|--------------------------|-------------------------------|
| US-NCAP        | 35 mph        | Full frontal                  | 50% male              | 5% female                | NCAP Frontal Barrier          |
| IIHS           | 40 mph        | 40% Moderate Overlap          | 50% male              | n/a                      | IIHS Moderate Overlap Frontal |
| IIHS           | 40 mph        | 25% Small Overlap (Driver)    | 50% male              | n/a                      | IIHS Small Overlap Frontal    |
| IIHS           | 40 mph        | 25% Small Overlap (Passenger) | 50% male              | 50% male                 | IIHS Small Overlap Frontal    |

Please reference the results for consumer information (US-NCAP; IIHS) crash tests, in the file entitled, "PE18-001 Consumer Test Matrix.pdf" in the folder attached hereto as Exhibit to Request 8.

## CoP Crash Tests

Volkswagen vehicles of each model line are crash tested within the framework of CoP testing. This is part of the regular testing conducted by quality assurance.

| Make | Model | Safety standard | Vehicle Speed | Target                                | Dummy           |                    | Test procedure | Test date | Facility           | Result | Test identifier |
|------|-------|-----------------|---------------|---------------------------------------|-----------------|--------------------|----------------|-----------|--------------------|--------|-----------------|
|      |       |                 |               |                                       | Driver position | Passenger Position |                |           |                    |        |                 |
| VW   | Golf  | FMVSS 208       | 35mph         | rigid barrier 0°                      | 5% female       | 5% female          | FMVSS 208      | 15-Dec-15 | Volkswagen WOB     | i.O.   |                 |
| VW   | Golf  | FMVSS 208       | 25mph         | Offset deformable barrier, 40% offset | 5% female       | 5% female          | FMVSS 208      | 20-Oct-16 | Continental        | i.O.   |                 |
| VW   | Golf  | FMVSS 208       | 35mph         | rigid barrier 0°                      | 5% female       | 5% female          | FMVSS 208      | 30-May-16 | Volkswagen WOB     | i.O.   |                 |
| VW   | Golf  | FMVSS 208       | 35mph         | rigid barrier 0°                      | 50% male        | 50% male           | FMVSS 208      | 15-Nov-17 | TASS               | i.O.   |                 |
| VW   | Golf  | FMVSS 208       | 35mph         | rigid barrier 0°                      | 5% female       | 5% female          | FMVSS 208      | 14-Mar-15 | Concept            | i.O.   |                 |
| Audi | Q7    | FMVSS 208       | 35mph         | rigid barrier 0°                      | 50% male        | 50% male           | FMVSS 208      | 9-Mar-16  | AUDI AG Ingolstadt | i.O.   | 4MFG FA-35/50   |
| Audi | Q7    | FMVSS 208       | 25mph         | Offset deformable barrier, 40% offset | 5% female       | 5% female          | FMVSS 208      | 17-Mar-16 | AUDI AG Ingolstadt | i.O.   | 4MGG OS-25/5    |
| Audi | Q5    | FMVSS 208       | 35mph         | rigid barrier 0°                      | 50% male        | 50% male           | FMVSS 208      | 6-Jun-17  | AUDI AG Ingolstadt | i.O.   | FYFH FA-35/50   |
| Audi | Q5    | FMVSS 208       | 25mph         | Offset deformable barrier, 40% offset | 5% female       | 5% female          | FMVSS 208      | 31-May-17 | AUDI AG Ingolstadt | i.O.   | FYIH OS-25/5    |
| Audi | Q3    | FMVSS 208       | 35mph         | rigid barrier 0°                      | 50% male        | 50% male           | FMVSS 208      | 1-Dec-14  | AUDI AG Ingolstadt | i.O.   | 8UAF FA-35/50   |
| Audi | Q3    | FMVSS 208       | 25mph         | Offset deformable barrier, 40% offset | 5% female       | 5% female          | FMVSS 208      | 21-Jan-15 | AUDI AG Ingolstadt | i.O.   | 8UCF OS-25/5    |
| Audi | A3    | FMVSS 208       | 35mph         | rigid barrier 0°                      | 50% male        | 50% male           | FMVSS 208      | 24-Sep-14 | AUDI AG Ingolstadt | i.O.   | 8VEF FA-35/50   |
| Audi | A3    | FMVSS 208       | 25mph         | Offset deformable barrier, 40% offset | 5% female       | 5% female          | FMVSS 208      | 7-Oct-14  | AUDI AG Ingolstadt | i.O.   | 8VHF OS-25/5    |
| Audi | A3    | FMVSS 208       | 35mph         | rigid barrier 0°                      | 50% male        | 50% male           | FMVSS 208      | 21-Sep-15 | AUDI AG Ingolstadt | i.O.   | 8VAG FA-35/50   |
| Audi | A3    | FMVSS 208       | 35mph         | rigid barrier 0°                      | 50% male        | 50% male           | FMVSS 208      | 24-Aug-16 | AUDI AG Ingolstadt | i.O.   | 8VGG FA-35/50   |
| Audi | A3    | FMVSS 208       | 25mph         | Offset deformable barrier, 40% offset | 5% female       | 5% female          | FMVSS 208      | 24-Jan-17 | AUDI AG Ingolstadt | i.O.   | 8VOH OS-25/5    |
| Audi | A3    | FMVSS 208       | 35mph         | rigid barrier 0°                      | 50% male        | 50% male           | FMVSS 208      | 4-Apr-17  | AUDI AG Ingolstadt | i.O.   | 8VSH FA-35/50   |

Note: The 2018 Tiguan and Atlas are not mentioned in the table above, due to the short time in the production.

Please reference the procedure for CoP testing, in the file entitled, "KAP\_Fzg\_05\_Conformity of Production CoP\_V05.00.pdf" in the folder attached hereto as Exhibit to Request 8.

## Factory Tests

Volkswagen conducts further regular tests at each factory in order to ensure the performance parameters and the quality of the seat belt assembly as part of the regular quality management system.

Each factory conducts a final check (CP8, Check Point 8) with a pull test and a visual check of the seat belt assembly in 100% of the vehicles and a random quality check (Audit DKA, dynamic short audit, sample check per day).

Additionally, a road test is performed, where the driver is required to check the driver side front seat belt (pull test, visual check, buckling/un-buckling).

The procedures are provided in the folder entitled "Factory Checks" attached hereto as Exhibit to Request 8.

Source: Volkswagen AG

Date Gathered: Through the date of the inquiry

Exhibit to Request 8

TESTING - VOLKSWAGEN

Data is provided in the folders "Factory Checks" / "Dynamic Short Audit" and in the following files entitled, "PE18-001 Consumer Test Matrix.pdf", CoP Table\_Response 8.pdf" and "KAP\_Fzg\_05\_Conformity of Production CoP\_V05.00.pdf" in Acrobat PDF format in the Exhibit to Request 8 folder on the enclosed PE18-001 electronic media

#### Request 9

For each test identified in Request 8, list each incident where the seat belt assembly failed to meet the test requirements. For each incident include the following in tabular form:

- a. Supplier name;
- b. Position seat belt assembly tested for (i.e. driver, passenger, rear);
- c. Test being conducted at time of failure;
- d. Failure mechanism;
- e. Root cause of failure;
- f. Counter measures implemented to reduce future occurrences.

#### Response 9

Other than the 2 NCAP tests upon which PE18-001 is based, and a validation test conducted at MGA on November 01, 2017 (using an inboard wiring harness routing method) which experienced minor seat belt webbing damage, Volkswagen has not identified any reports where the seat belt assembly failed to meet the test requirements in regards to performance. Only claims in the factory that were related to the following listed items were identified:

- Wrong seat belt tongue
- Thread with welding splatter and burrs
- Internal noise between components
- Problems when placing screws
- QR code hard to read
- Incorrect seat belt assembly
- Paint present on thread
- Noise coming from retractor due to play between components

The reports for each incident are provided in the folder entitled, "KPM MEX" attached hereto as Exhibit to Request 9.

Source: Volkswagen AG

Date Gathered: Through the date of the inquiry

Exhibit to Request 9

FACTORY QUALITY TESTS

Reports are provided in a folder entitled, "KPM MEX" in the Exhibit to Request 9 folder on the enclosed PE18-001 electronic media

Request 10

For each test identified in Request 8, provide test procedures/protocols approved by VW.

Response 10

The test procedure / protocols for each test identified in Response to Request 8 are included in the Technical Supplier Specifications / documents provided in the folder attached hereto as Exhibit to Request 8.

### Request 11

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 in the subject vehicles that have been conducted, are being conducted, are planned, or are being planned by, or for VW. For each such action, provide the following information:

- Action title or identifier;
- The actual or planned start date;
- The actual or expected end date;
- A summary of the subject and objective of the action;
- Engineering group(s)/supplier(s) responsible for designing and conducting the action;
- A summary of the findings and/or conclusions resulting from the action;
- All still photograph files, high-speed video files, real-time video files, acceleration data plots, and load data plots for any analyses that have been conducted to date.

### Response 11

In response to this inquiry, Volkswagen provides the historical, current and on-going evaluation of the subject vehicle seat belt assembly, related to PE18-001.

The following evaluation activities listed below are provided in the file entitled, "Activity Table.pdf" in the folder attached hereto as Exhibit to Request 11.

| Action number | Action title                                   | Start date (actual or planned) | End date (actual or expected) | Summary of the subject and objective of the action;                                                                                                                    | Engineering group(s)/supplier(s) responsible for designing and conducting the action | A summary of the findings and/or conclusions resulting from the action                                                                                                       | All still photograph files, high-speed video files, real-time video files, acceleration data plots, and load data plots |
|---------------|------------------------------------------------|--------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| 1             | Analysis of sister parts                       | CW 2/2018                      | CW 10/2018                    | Collect and evaluate sister parts from the same production dates as the two seat belts in question, check for basic webbing requirements                               | R&D VW                                                                               | Visual inspection of all parts, two parts tested at ZF-TRW, no deviations                                                                                                    | Pictures as received, TRW report                                                                                        |
| 2             | Pretest MGA                                    | CW 44/2017                     | CW 44/2017                    | Crash test according to NCAP Standard                                                                                                                                  | R&D VW                                                                               | There was a minor belt damage observed. Test results fulfilled FMVSS 208 requirements.                                                                                       | ZF Bericht, Ums?                                                                                                        |
| 3             | Official Test at MGA                           | CW 48                          | ongoing                       | Analysis available data. Collect and evaluate the parts from the official test for indepth analysis.                                                                   | R&D VW                                                                               | It is assumed that the safety belt damage is due to the routing of the data cable/wiring harness. Parts are not available for inspection.                                    | Additional photos+                                                                                                      |
| 4             | Official Test at TRC                           | CW 50                          | ongoing                       | Analysis available data. Collect and evaluate the parts from the official test for indepth analysis.                                                                   | R&D VW                                                                               | Dislocation of the center console. It is assumed that the safety belt damage is due to the routing of the data cable/wiring harness. Parts are not available for inspection. | Additional photos+                                                                                                      |
| 5             | Comparison of webbing                          | January 8th, 2018              | January 15th, 2018            | Material comparison of webbing from:<br>1. MGA Pretest<br>2. VW Tiguan Release test<br>3. Production sample March 6th 2017<br>4. Production sample November 11th 2017  | VW quality laboratory                                                                | No significant deviations between samples provided                                                                                                                           | UMS                                                                                                                     |
| 6             | surface treatment of webbing?                  | CW 3/2018                      | CW 7/2018                     | Investigate if the samples contained low friction webbing:<br>1. VW Internal Retest<br>2. Sister part (from same production lot)<br>3. Passenger Belt from sister part | ZF-TRW                                                                               | No significant deviations between samples provided, all parts have low friction webbing                                                                                      | ZF-TRW report                                                                                                           |
| 7             | Homologation of alternative Seat belt assembly | CW 2                           | CW 12                         | Self certification of standard tongue design at ZF-TRW as backup solution                                                                                              | ZF-TRW                                                                               | Ongoing                                                                                                                                                                      |                                                                                                                         |
| 8             | Sled Tests                                     | CW 52/2017                     | CW 5/2018                     | Validate the hypothesis of test related belt damage and evaluate various influences to the system                                                                      | R&D VW                                                                               | See response to request 12                                                                                                                                                   | Photo, video, data, Dokument an NHTSA Jan.                                                                              |
| 9             | Retest VW Internal                             | January 11th, 2018             | January 12th, 2018            | VW Internal retest of the NCAP Tests with VW standard cable routing                                                                                                    | R&D VW                                                                               | Belt system worked as designed                                                                                                                                               | Photo, video, data                                                                                                      |
| 10            | Retest at MGA                                  | January 18th, 2018             | January 18th, 2018            | Retest at MGA of the NCAP Tests with VW standard cable routing                                                                                                         | R&D VW                                                                               | Belt system worked as designed                                                                                                                                               | Photo, video, data                                                                                                      |
| 11            | 5 Sled Tests with Autoliv CLT                  | CW 11                          | CW 12                         | Sled tests to compare performance of Autoliv CLT to ZF-TRW CLT                                                                                                         | R&D VW                                                                               | Ongoing                                                                                                                                                                      |                                                                                                                         |
| 12            | Crash test Standard Tongue                     |                                |                               | Crash test comparison standard tongue confirmation of sled test results with standard tongue in Vehicle                                                                | R&D VW                                                                               | Ongoing                                                                                                                                                                      |                                                                                                                         |

Volkswagen provides the following as an overview of the actions undertaken related to the seat belt assembly with regard to the alleged defect.

Additional, detailed information related to each of the Activity Numbers listed in the above table is provided in the 12 sub-folders listed in the folder entitled, "Activity Number" in the folder attached hereto as Exhibit to Request 11.

#### Crash Tests

Developmental frontal barrier tests that were conducted prior to the NCAP tests, which initiated PE18-001, and a validation test conducted at MGA on November 01, 2017, as referenced in Response 8 above, were re-assessed and confirmed there were no issues / failures pre-NCAP.

Supplemental to previously provided files to NHTSA NCAP (photographs, videos and data traces) on December 13, 2017, related to the NCAP validation test conducted at MGA Research November 01, 2017, Volkswagen is providing additional photographs that were requested of MGA after the NCAP test conducted at TRC on December 13, 2017. Please reference the sub-folder entitled, "VW TIGUAN NCAP\_Follow Up" in folder "02" under "Activity Number" included herein as Exhibit to Request 11.

Additionally, Volkswagen is providing data from 2 additional crash tests performed in January 2018. Please reference the information provided in the sub-folders "09" and "10" in the folder entitled, "Crash Tests" included herein as Exhibit to Request 11.

#### Sled Tests

Volkswagen provides a listing of all requested sled tests performed. A subset of information was provided in a submission to NHTSA (NCAP, OVSC and ODI) dated January 05, 2018. For convenience, a copy of the submitted information is included in this response. Volkswagen has not determined any further conclusions, beyond that which was communicated in January.

Volkswagen notes that all sled tests do not follow an exact test number sequence due to changes in calendar year (e.g. 2017 to 2018), changes in sled test configurations (e.g. acceleration pulses) which require test runs for calibration, and other test modes conducted in between the subject topic tests.

Sled test (G2170528, also referenced as Test 'C') was excluded from the January 05, 2018 submission, as the test specimen (buckle) in that test had been disassembled in order to prepare it for exaggerated loading (higher sled pulse, seat position and forced latch position).

As provided in the test result documentation, the exaggerated methodology proved to be inadequate, as it resulted in overloading and in an unanticipated failure mode of the buckle, and was deemed inconsequential to the investigation.

Documentation related to sled tests conducted are provided in response to PE18-001 in the folder entitled, "08Sledtests" in the "Activity Number" folder attached hereto as Exhibit to Request 11.

As previously communicated in the January 05, 2018 submission, Volkswagen began the sled test series comparable to the NHTSA NCAP full scale tests (e.g. 50% HIII, position, restraint system, pulse approx. 33.8 g etc.).

- The driver's side seat belt system used in the sled tests 1 through 8 were production parts consistent with the vehicles in the NCAP tests
- The driver's side seat belt system used in the sled tests 9 through 21 consisted of varying seat belt components and system triggering times
- Any sled test is an approximation of the full scale test. NCAP crashes show a pitch motion that is usually not replicated on the sled and restraint systems are not triggered by the vehicle control unit

The initial sled configuration needed to be altered and ramped-up in order to try to replicate the seat belt damage:

- Driver's seat pitch angle raised to increase belt loads
- Fixation of the buckle/CLT to certain positions to simulate non-alignment
- A sled pulse of about 38 g magnitude, which is well above a rigid barrier crash test
- Buckle/CLT connection bolted to be able to withstand loads by excessive unrealistic pulses
- Please refer to each line in the list for the specific configuration

Part of the in-house investigation was to alter other configuration from series production:

- Alternate webbing supplier
- Tongue plates without locking feature
- Seat belt force limiter not triggered, or triggered at varying times

Results:

- Sled test 7 (G2180001) with pitched seat, bolted buckle/CLT assembly and excessive pulse (38.4g instead of 33.8g) AND a reproduced heavy wiring harness impact resulted in a ~50% belt rupture
- Sled test 8 (G2180002) (identical configuration as 7 but W/O wiring harness) did not show any belt damage (e.g. other than normal elongation, CLT witness marks, etc.)
- Other sled tests (all with higher pulses) show the belt webbing can be pushed towards belt breakage by other parameters than the wiring harness loading but none of those test conditions represents series production of the Tiguan belt system

Based on all available sled tests, the release tests, and the recently conducted full scale crash tests (at VW and at MGA, both using series production vehicles experienced no belt rupture), Volkswagen is of the opinion that the safety belt damage experienced in both initial NCAP crashes is due to the routing of the data cable/wiring harness.

The routing of the data cable/wiring harness to the center console induced excessive loads to the safety belt system which would not occur in the field. This condition is not real world relevant.

Source: Volkswagen AG

Date Gathered: Through the date of the inquiry

Exhibit to Request 11

RESPONSE ELEVEN

Information referenced in Response 11 is provided in the listed folder / sub-folders with files provided in Acrobat PDF / JPG / AVI formats in the Exhibit to Request 11 folder on the enclosed PE18-001 electronic media

“ACTIVITY NUMBER”  
“08SLEDTESTS SUBFOLDER”  
“09 CRASHTESTS SUBFOLDER”  
“10 CRASHTESTS SUBFOLDER”

### Request 12

Furnish VW's assessment of the alleged defect in the subject vehicle, including but not limited to:

- a. The causal or contributory factor(s);
- b. The failure mechanism(s);
- c. The failure mode(s);
- d. The risk to motor vehicle safety that it poses;
- e. What warnings, if any, the operator and other occupants would have that the alleged defect was occurring;
- f. The two NCAP tests that prompted this inquiry.

### Response 12

Volkswagen asserts that seat belt assemblies which utilize the CLT and are equipped in the vehicles identified in response to Request 4, are to be differentiated not only from the 2018 MY Volkswagen Tiguan, but among the various model applications due to:

- Individual Seat Belt application (e.g. trigger times)
- Seat belt assembly suppliers
- Vehicle structure/weight
- Crash pulse
- Seat belt anchor geometry
- Seating positions
- Airbag systems

For each vehicle application, an individual and separate development and release process is conducted. Test results and assessments from the 2018 MY US Tiguan cannot be carried over to other vehicle lines.

Volkswagen conveys the following assessment regarding the alleged defect in the 2018 MY Volkswagen Tiguan. Based on all available sled tests, the release test, and the recently completed full scale crash tests (conducted at VW and MGA on series production vehicles) which resulted in no seat belt breakage, Volkswagen is of the opinion that:

- The seat belt damage experienced in the December 2017 NCAP crash tests is due to the routing of the data cable/wiring harness
- The routing of the data cable/wiring harness to the center console induced excessive loads to the seat belt system which would not occur in the field, as the condition is not real world relevant.

Based on the information and test results collected to date, subsequent to the initial events which prompted PE18-001, Volkswagen concludes that the seat belt rupture events were anomalies due to outside influence and asserts the seat belt assemblies equipped in the 2018 MY Volkswagen Tiguan do not pose an unreasonable risk to motor vehicle safety.