

Your Ref: SKD 3004T  
Our Ref : CI/TP20013785/D

14 December 2020

### **Premium Automobiles**

55 Ubi Road 1  
Singapore 408699

### **TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING AN AUDI A5 SPORTBACK 2.0 TFSI MOTOR CAR WITH REGISTRATION NUMBER SKD 3004T**

1. I refer to your request dated 03 December 2020.
2. My analysis, comments, and opinions with respect to the cause of fire to the Audi A5 2.0 Sportback TFSI motor car with registration number SKD 3004T (herein referred to as "**Motor Car**") are set out below.

#### **Inspection of the Motor Car**

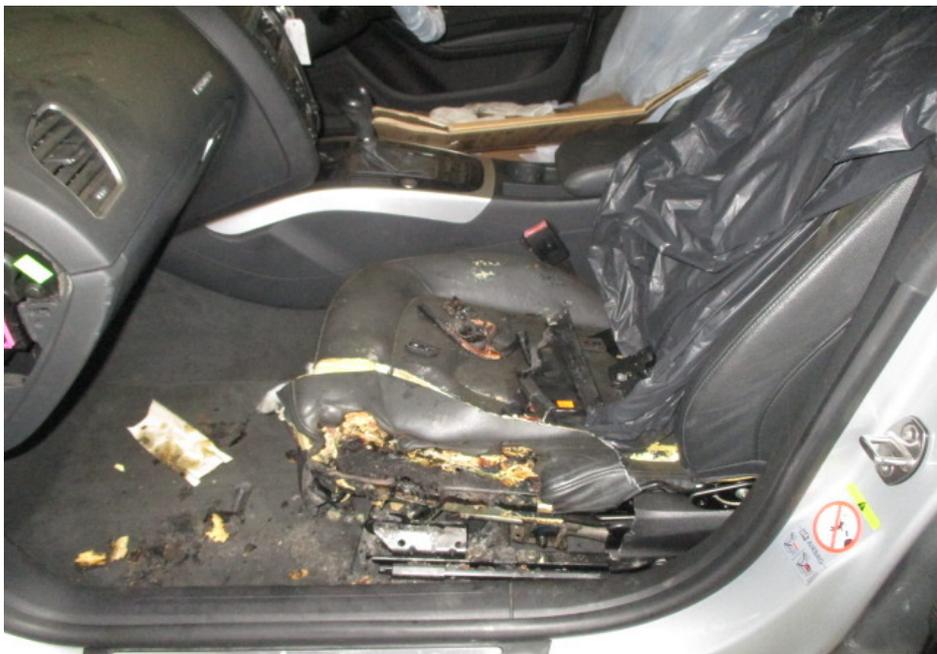
3. The Motor Car was physically inspected by me on 07 December 2020 at the premises of M/s Premium Automobiles, No. 55 Ubi Road 1, Singapore 408699.
4. The Motor Car was observed to have sustained fire damage that was confined to within the interior compartment, at the front left passenger seat area. The exterior body and engine compartment of the Motor Car were relatively unaffected by the incident. See photo 1 – 4 below.



**Photo 1** shows a general view of the front body of the Motor Car at the time of my inspection. The exterior body of the Motor Car was relatively unaffected by the incident.



**Photo 2** shows a general view of the interior compartment of the Motor Car, at the front left area. The Motor Car was observed to have sustained fire damage that was confined to within the interior compartment, at the front left passenger seat area. The front left passenger seat, front left door trim and front left "A" pillar trim were amongst the parts that were observed to have been affected.



**Photo 3** shows the front left passenger seat of the Motor Car at the time of my inspection. The damage of fire nature was observed to have been confined to within the interior compartment, at the front left passenger seat area.



**Photo 4** shows the front left passenger seat of the Motor Car. The damage of fire nature was observed to have been confined to within the interior compartment, at the front left passenger seat area.

### **Investigation and Technical Analysis**

5. For this case, given that there was no damage of fire nature to other areas of the Motor Car, the origin of fire can then be simply established to be from within the interior compartment of the Motor Car, at its front left passenger seat area.
6. Fire occurring from within the interior compartment of a motor vehicle is more often than not due to external factor like arson, a lighted cigarette butt falling onto the carpet or onto the seat(s) of a motor vehicle etc; or it can also be due to an electrical short to the wirings within the interior compartment of the motor vehicle.
7. At the time of my inspection of the Motor Car, I did not find any unusual burnt remnants on the carpet surrounding the front left passenger seat to suggest that the fire to the Motor Car was possibly due to external factor. I did, however, found a stretch of burnt wirings leading to a burnt wire connector, which would indicate to me that the cause of fire to the Motor Car was due to electrical nature (an electrical short of the wirings). See photo 5 – 8 below.
8. For completeness, I was informed that the stretch of burnt wirings was cut prior to my inspection for the purpose of manufacturer's own investigations into the cause of fire.



**Photo 5** shows the stretch of burnt wirings (arrowed) that I had found on the front left passenger seat of the Motor Car. The condition of this stretch of burnt wirings and burnt wire connector suggests to me that the cause of fire to the Motor Car was due to electrical in nature (an electrical short of the wirings).



**Photo 6** shows a closer view of the stretch of burnt wirings (arrowed) that I had found on the front left passenger seat of the Motor Car. The burnt wirings led to a wire connector (circled) that was also observed to be burnt. I was informed that this stretch of wirings was cut prior to my inspection for the purpose of manufacturer's own investigation into the cause of fire.



**Photo 7** shows a closer view of the burnt wirings and burnt wire connector. The wirings were found to be burnt to its bare copper state. Such condition normally indicates internal heating of copper wires where the copper wires were exposed to high heat from a sudden surge in electric current flow. The condition of the wirings suggests that the cause of fire to the Motor Car was due to electrical in nature (an electrical short of the wirings).



**Photo 8** shows another close view of the burnt wirings and burnt wire connector. The wirings were found to be burnt to its bare copper state. Such condition normally indicates internal heating of copper wires where the copper wires were exposed to high heat from a sudden surge in electric current flow. The condition of the wirings suggests that the cause of fire to the Motor Car was due to electrical in nature (an electrical short of the wirings).

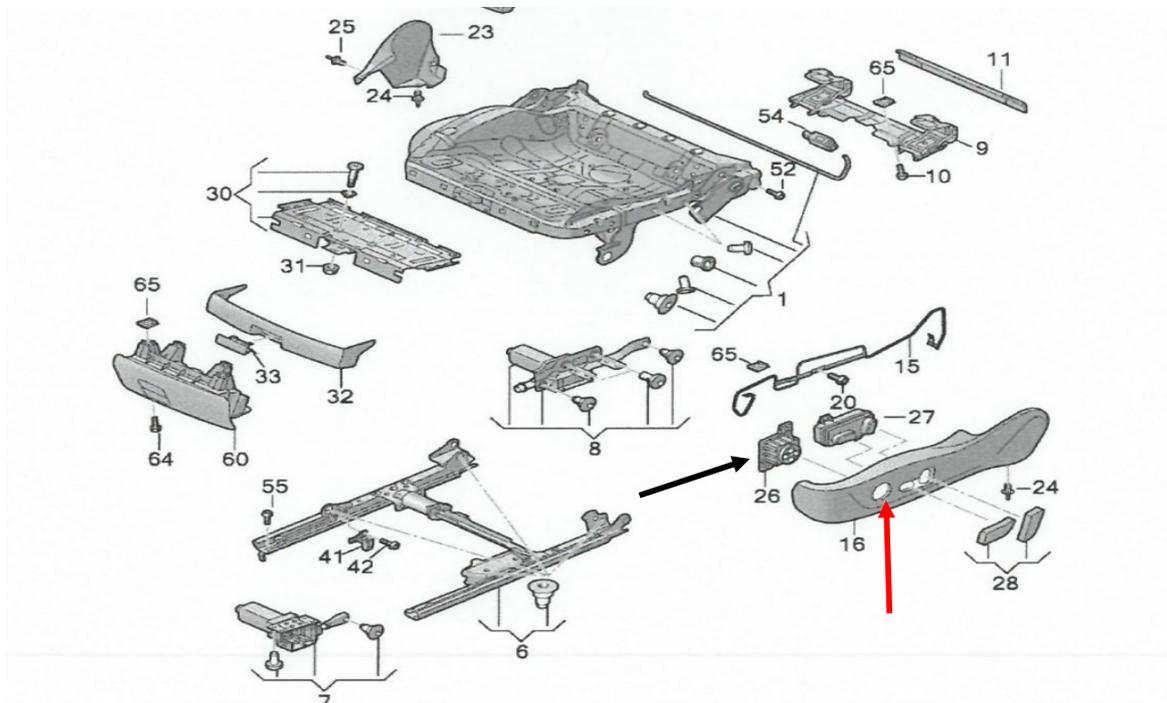
9. Upon my further checks, I had found that the stretch of burnt wirings and burnt wire connector was for the Motor Car's front left passenger seat lumbar controller. The controller, together with the stretch of burnt wirings and burnt wire connector, are located at the left side of the front left passenger seat. See photo 9 - 11 below.



**Photo 9** shows where the stretch of burnt wirings is located. The 2 red arrows show the cut point of the stretch of burnt wirings. By placing the cut off point together, the stretch of burnt wirings (yellow arrow) was established to be located at the left side of the Motor Car's front left passenger seat. The circled area shows where the controllers for the seat and backrest of the front left passenger seat are located. The wire connectors and wirings for these 2 controllers were without any signs of an electrical short (refer to photo 10 below). Hence the stretch of burnt wirings and burnt wire connector was determined to be for the Motor Car's front left passenger seat lumbar controller (refer to photo 11 below).



**Photo 10** shows the wire connectors and wirings for the controllers for the seat and backrest of the front left passenger seat. The wire connectors (circled) and wirings (arrowed) for these 2 controllers were without any signs of an electrical short.



**Photo 11** shows the parts catalogue for the front left passenger seat of the Motor Car. The location of the Motor Car's front left passenger seat lumbar controller is indicated by the red arrow. The stretch of burnt wirings and burnt wire connector was for the Motor Car's front left passenger seat lumbar controller, indicated by the black arrow.

10. Having determined the source of fire to be due to an electrical short of the wirings and wire connector at the Motor Car's front left passenger seat lumbar controller, the following paragraphs discuss whether the cause of the electrical short was due to a product defect and/or due to an external cause.
11. Firstly, my checks with both local and international bodies and associations had revealed that at the time of writing this report, there is no manufacturer recall campaign which involved the Motor Car. Also, according to Premium Automobiles, the local distributor for Audi make motor vehicles, there is no known reported similar incident(s) of fire originating from the lumbar controller. Hence the cause of the electrical short being due to a product defect can reasonably be ruled out. See search result from LTA below.

## Vehicle Recall Details

\* ONLY INFORMATION ON VEHICLE RECALLS SUBMITTED FROM 9 APRIL 2007 IS AVAILABLE

Owner ID Type <b>Singapore NRIC</b>
Owner ID <b>810D</b>
Vehicle No. <b>SKD3004T</b> ←
Make/Model <b>AUDI/ A5 SPORTBACK 2.0 TFSI QU</b>
Engine No.: <b>CDN234048</b>
Chassis No.: <b>WAUZZZ8T0BA111108</b>
Recall Details: <b>No Recall Detail records</b> ←

**Screenshot** shows the LTA search result regarding manufacturer recall. From the result, the Motor Car was not involved in any manufacturer recall campaign.

12. During my inspection of the Motor Car, a water test was carried out to check on the possibility of water seeping into the interior compartment of the Motor Car when raining and/or car washing. This was done by spraying water onto the Motor Car and it was observed that water had seeped into the interior compartment from around the top centre of the Motor Car's front windscreen.
13. Upon further testing, where water was poured directly at the top centre of the Motor Car's front windscreen, I had observed water dripping from the left "A" pillar trim directly onto the location where the Motor Car's front left passenger seat lumbar controller was located. A video recording of this water test is annexed together with this report. See photo 12 – 15 below extracted from the video recording.



**Photo 12** shows water (arrowed) dripping from the left "A" pillar trim of the Motor Car during the water test (screenshot extracted from the water test video recording).



**Photo 13** shows water (arrowed) dripping from the left "A" pillar trim of the Motor Car during the water test. The water was observed to have dripped from the left "A" pillar trim directly onto the location (circled) where the Motor Car's front left passenger seat lumbar controller was located (screenshot extracted from the water test video recording).



**Photo 14** shows a closer view of the water (arrowed) dripping from the left "A" pillar trim of the Motor Car during the water test (screenshot extracted from the water test video recording).



**Photo 15** shows a closer view of the water (arrowed) dripping onto the left side of the Motor Car's front left passenger seat, which was where the Motor Car's front left passenger seat lumbar controller was located (refer to photo 11 above). Screenshot extracted from the water test video recording.

14. Water seeping into the interior compartment from the front windscreen of a motor vehicle is usually due to inadequate sealing capability at the front windscreen of the Motor Car. The front windscreen is fixed onto the body of a motor vehicle via rubber moulding and sealant along the sides of the front windscreen. Besides holding the front windscreen in place, the rubber moulding and sealant also provides a sealing effect preventing water and minimising external noise and wind from entering the interior compartment of a motor vehicle. Over time, the rubber moulding and/or sealant can lose its sealing capability progressively due to deterioration of rubber compound and allow water, noise and/or wind to enter the interior compartment of a vehicle.
15. Basing on paragraphs 11 to 14 above, in particular the observations gathered from the water test, the cause of the electrical short of the wirings and wire connector at the Motor Car's front left passenger seat lumbar controller can reasonably be established to be due to external cause and not due to product defect.

## **Conclusion**

16. Having investigated and technically analysed the damages of burnt nature to the Motor Car, I am of the view that the cause of fire to the Motor Car was of electrical in nature (electrical short of the wirings). For this case, the fire had originated along the wirings and wire connector at the Motor Car's front left passenger seat lumbar controller.
17. The electrical short was due to external cause where a water test carried out to the Motor Car revealed water seeping into the interior compartment, and thereafter dripping directly onto the location where the Motor Car's front left passenger seat lumbar controller was located. The cause of the electrical short was not due to product defect.
18. The ability for water to seep into the interior compartment of the Motor Car was a result of inadequate sealing capability at the front windscreen of the Motor Car where the condition of the front windscreen rubber moulding and/or sealant had deteriorated over a period of time allowing water to seep into the interior compartment progressively.
19. There was no modification(s) or additional electronic and/or electrical component(s) fitted on the Motor Car at the time of my inspection of Motor Car.



### **Ang Bryan Tani**

*AMSOE, AMIRTE, AFF SAE, M.MATAI, AFF.Inst.AEA*

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*Technical Investigation & Accident Reconstructionist (SAE-A)*

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