LKK Auto Consultants Pte Ltd
Company Registration No. 199607198R
51 UBI AVE 1, #01-25 PAYA UBI INDUSTRIAL PARK, SINGAPORE 408933 TEL : (065) 62563561 FAX : (065) 67414108

Your Ref : G0079677 27 June 2022
Our Ref : CI/SGL22005968/N

**Singapore Life Ltd.**
4 Shenton Way #01-01
SGX Centre 2
Singapore 068807
(Claims Division)

**TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE INSURED VEHICLE SJX 5861D ON 20 JUNE 2022**

1. We refer to your letter dated 22 June 2022 and the instructions therein.

2. Our analysis, comments and opinions with respect to the cause of fire to the Motor Vehicle SJX 5861D (herein referred to as **"Insured Vehicle"**) are set out below.

## Inspection of the Motor Vehicle

3. The Insured Vehicle was physically inspected on 23 June 2022 at the premises of Automotive Repair Centre (herein referred to as **"ARC"**) located at 38 Woodlands Industrial Park E1, #05-18, Singapore 757700.

4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded:-

| | |
|---|---|
| Vehicle Registration No. | : SJX 5861D |
| Make / Model | : AUDI A4 2.0 TFSI QU S-TRONIC |
| Chassis No | : WAUZZZ8KXAA177400 |
| Year of Registration | : June 2010 |
| Mileage | : 160,012 km |

5. The exterior front body of the Insured Vehicle sustained visible fire damage. This included its front bumper, front bonnet, left front headlamp and left front fog lamp.

6. The engine compartment and interior compartment of the Insured Vehicle was observed to have been relatively unaffected by the fire. See photos 1 – 6 below.


**Photo 1** shows the general view of the rear portion of the Insured Vehicle at the time of our inspection. The rear portion of the Insured Vehicle was observed to be unaffected by the fire.


**Photo 2** shows the general view of the frontal portion of the Insured Vehicle at the time of our inspection. The exterior body of the Insured Vehicle had sustained visible fire damage. This included its front bumper, front bonnet, left front headlamp and left front fog lamp.

**Photo 3** shows a closer view of the left front body of the Insured Vehicle at the time of our inspection. The exterior body of the Insured Vehicle had sustained visible fire damage. This included its front bumper, front bonnet, left front headlamp and left front fog lamp.

**Photo 4** shows a closer view of the left front body of the Insured Vehicle at the time of our inspection. The exterior body of the Insured Vehicle had sustained visible fire damage. This included its front bumper, front bonnet, left front headlamp and left front fog lamp (circled).

**Photo 5** shows the interior compartment of the Insured Vehicle at the time of our inspection. The interior compartment of the Insured Vehicle was relatively unaffected by the fire.

**Photo 6** shows the general view of the engine compartment of the Insured Vehicle at the time of our inspection. The fire damage was confined to its interior compartment. The engine compartment of the Insured Vehicle was observed to be relatively unaffected by the fire.

7. At the time of physical inspection of the Insured Vehicle, we had found several modifications on the Insured Vehicle. These included a non- standard open- pod air filter, an aftermarket engine strut bar, an aftermarket on-board diagnostic (OBD) gauge, an aftermarket in-car DVD player and aftermarket 19- inch alloy rims. All these fitted components were not the standard type for the Insured Vehicle. See photos 7 - 11 below.

**Photo 7** shows a close up view of the non- standard open- pod air filter fitted onto the Insured Vehicle upon our inspection (circled).


**Photo 8** shows the aftermarket engine strut bar fitted on the Insured Vehicle (arrowed).


**Photo 9** shows the aftermarket on-board diagnostic (OBD) gauge additionally fitted onto the Insured Vehicle upon our inspection. The brand of the OBD gauge was 'LUFI' (circled).

**Photo 10** shows the aftermarket in-car DVD player that was fitted at the centre portion of the front dashboard of the Insured Vehicle.


**Photo 11** shows the non-standard rim found to be fitted on the Insured Vehicle at the time of our inspection. The 19- inch alloy rims fitted on the Insured Vehicle were not the standard type for the Insured Vehicle.

## Investigation and Technical Analysis

8. For this particular case, the fire appears to have originated from the left front portion of the Insured Vehicle, somewhere around the left front fog lamp. The heat intensity caused several plastic components which included the left front headlamp, left front fog lamp and left front fog lamp cover to melt. See photos 12 - 16 below.

**Photo 12** shows the burn pattern and the nature of fire damage on the left front portion of the Insured Vehicle. The heat intensity caused several plastic components which included the left front headlamp, left front fog lamp and left front fog lamp cover to melt (circled).

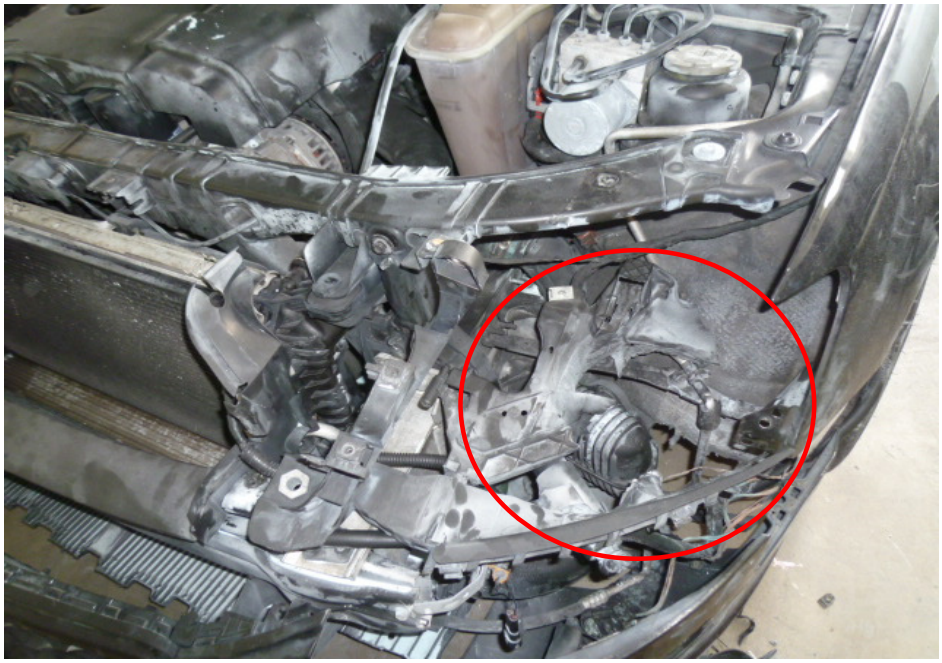


**Photo 13** shows a closer view of the burn pattern and the nature of fire damage on the left front portion of the Insured Vehicle. The heat intensity caused several plastic components which included the left front headlamp, left front fog lamp and left front fog lamp cover to melt (circled).

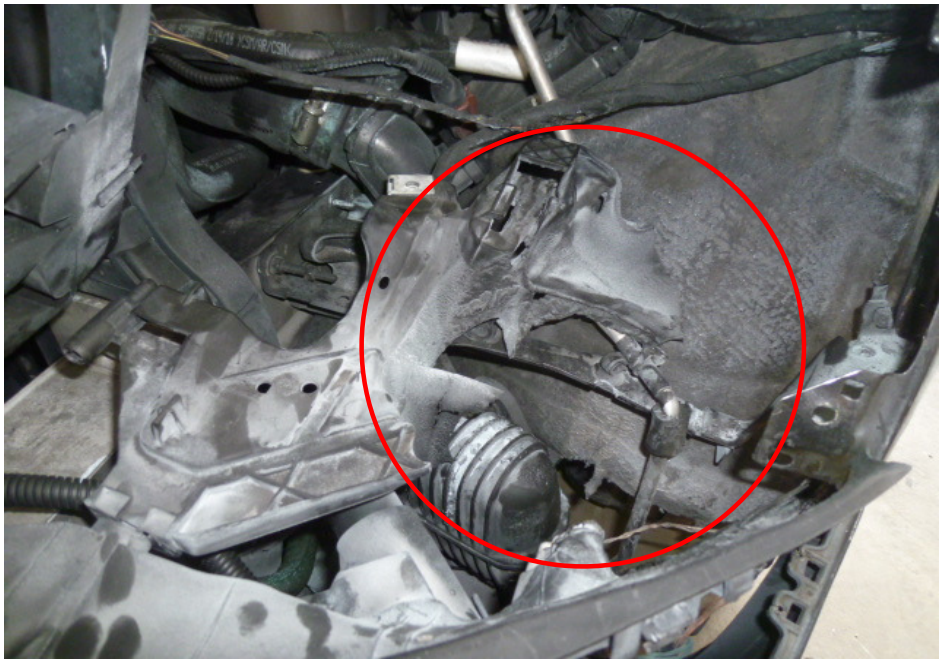


**Photo 14** shows a close up view of the several plastic components around the left front portion of the Insured Vehicle which had partially melted due to the heat intensity caused by the fire (circled).

**Photo 15** shows a closer view of the left front headlamp of the Insured Vehicle which had partially melted due to the heat intensity caused by the fire (circled).

**Photo 16** shows a closer view of the left front fog lamp cover of the Insured Vehicle which had partially melted due to the heat intensity caused by the fire (circled).

9. Upon closer examination of the left front fog lamp which was where the fire to the Insured Vehicle had likely started, we had found several stretches of wirings with greenish residue. These wirings were original factory fitted wirings leading from the left front fog lamp bulb socket of the Insured Vehicle. The presence of greenish residue indicates internal heating of copper wires, a sign of an electrical short circuit occurring. The greenish residue is normally left behind from oxidation as a result of chemical reaction involving the copper wires. This physical evidence would appear to suggest that the cause of fire to the Insured Vehicle could have possibly been due to electrical in nature. See photos 17 – 21 below.

**Photo 17** shows the wirings around the left front fog lamp which is near to the vicinity where the fire to the Insured Vehicle had likely started. We observed greenish residue on the wirings leading from the left front fog lamp bulb socket of the Insured Vehicle (circled). The presence of greenish residue indicates internal heating of copper wires, a sign of an electrical short circuit occurring. The greenish residue is normally left behind from oxidation as a result of chemical reaction involving the copper wires.

**Photo 18** shows a closer view the greenish residue on the wirings leading from the left front fog lamp bulb socket of the Insured Vehicle (arrowed). The presence of such greenish residue suggests occurrence of an electrical short circuit.

**Photo 19** shows a closer view the greenish residue on the wirings leading from the left front fog lamp bulb socket of the Insured Vehicle (arrowed). The presence of such greenish residue suggests occurrence of an electrical short circuit.

**Photo 20** shows a close up view of the greenish residue on the wirings leading from the left front fog lamp bulb socket of the Insured Vehicle (arrowed). The presence of such greenish residue suggests occurrence of an electrical short circuit.

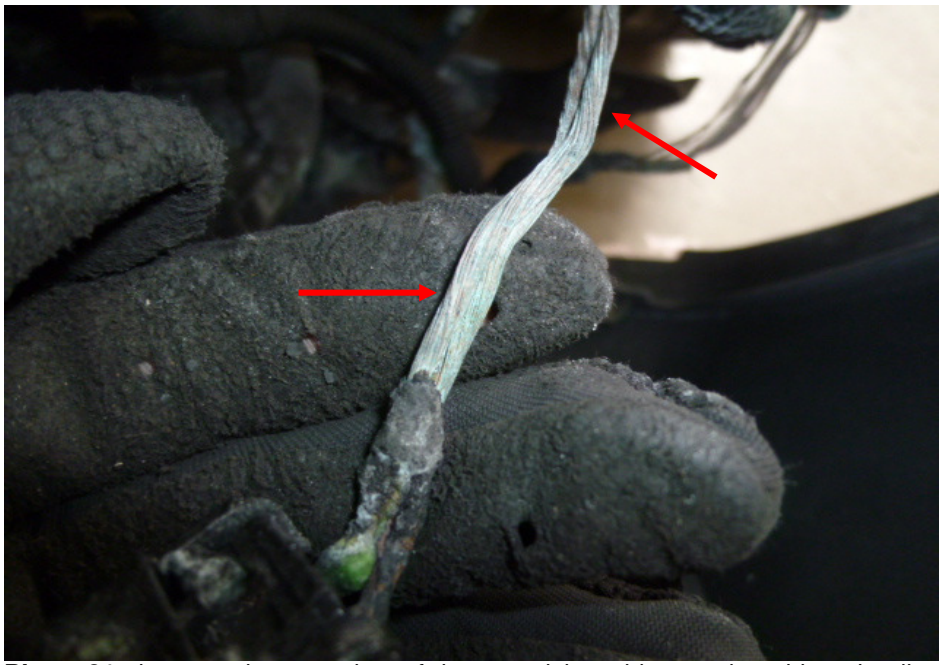


**Photo 21** shows a close up view of the greenish residue on the wirings leading from the left front fog lamp bulb socket of the Insured Vehicle (arrowed). The presence of such greenish residue suggests occurrence of an electrical short circuit.

10. From the Singapore Accident Statement, which was made by Mr Mohamed Saifuddin bin Mohamed Ali (herein referred to as **"Mr Saifuddin"**), we note that the fire to the Insured Vehicle had started at a time when he was filling up petrol. Mr Saifuddin was first alerted of the fire when his wife saw black smoke emitting from the left portion of the front bonnet of the Insured Vehicle.

11. We managed to speak to Mr Saifuddin where we were able to gather further information pertaining to the incident as well as information pertaining to the history of the Insured Vehicle.

12. According to Mr Saifuddin, at about 2230 hours on 20 June 2022 he had left The Cathay cineplex together with his wife and was headed home located at Choa Chu Kang Crescent. He travelled via Bukit Timah Road. Along the way, he stopped at the Esso petrol station along Bukit Timah Road to refuel the Insured Vehicle. He switched off the engine and proceeded to retrieve the petrol pump. As he began refuelling, his wife exclaimed that there was black smoke emitting from the left portion of the front bonnet of the Insured Vehicle.

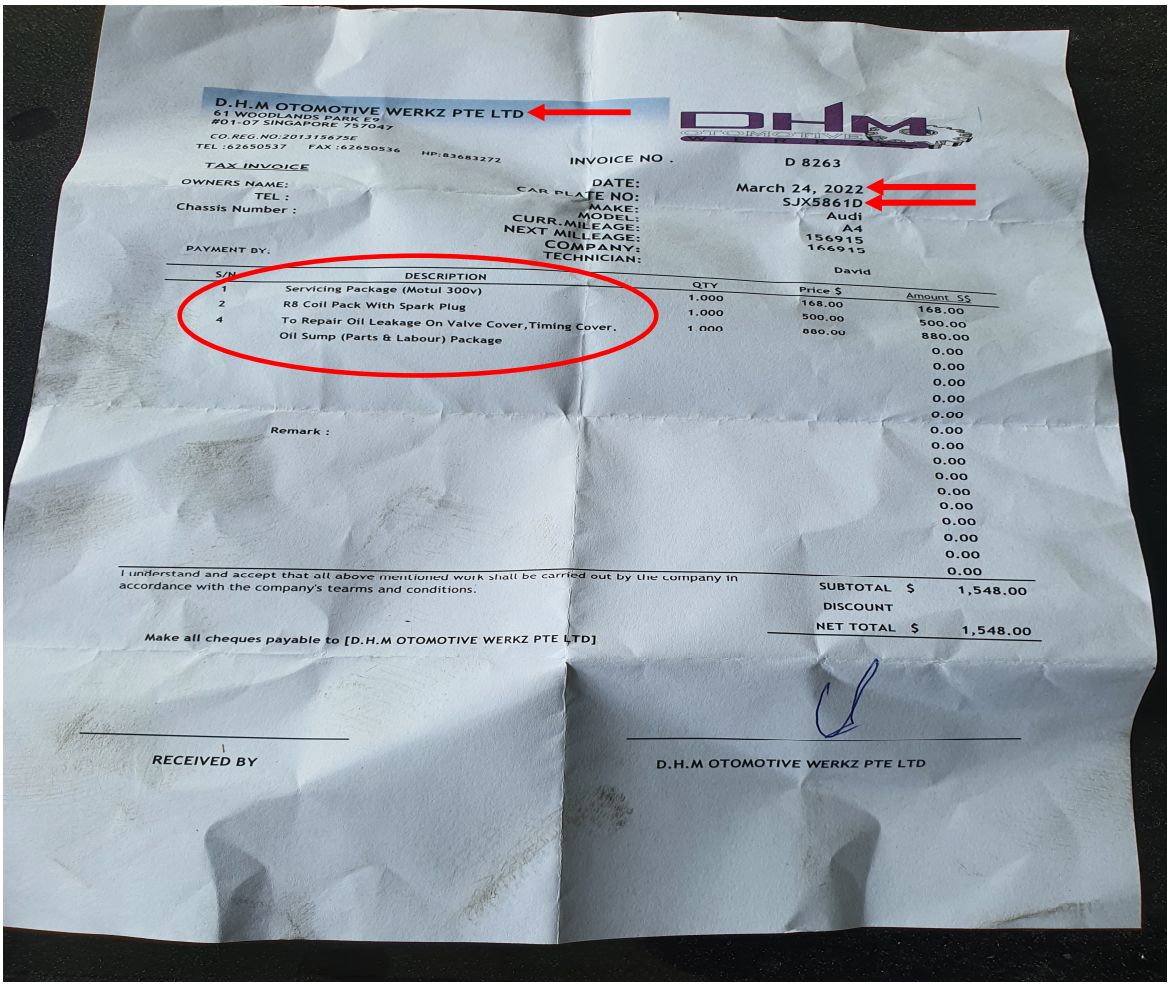
13. Mr Saifuddin immediately stopped refuelling to take a look. By then he noticed flames emitting from the left front fender liner of the Insured Vehicle. He proceeded to retrieve the nearest fire extinguisher and managed put out the fire in a minute.

14. Mr Saifuddin called his own workshop to make towing arrangements. While waiting for the tow truck he took a photograph of the Insured Vehicle post-incident. He also asked the staff of the petrol station if there was any CCTV video footage of the incident. They explained to him that they could only release the video footage to the authorities. The tow truck arrived about half an hour later and the Insured Vehicle was first towed to DHM Otomotive Werkz Pte. Ltd. (herein referred to as **"DHM"**). The Insured Vehicle was later towed to ARC. Mr Saifuddin made an insurance report there the following day, on 21 June 2022 at 1535 hours.

15. With regards to the history of the Insured Vehicle, we were able to gather from Mr Saifuddin that the Insured Vehicle was purchased secondhand with 9 years of COE left in December 2021. He is the owner and only driver of the Insured Vehicle.

16. We asked Mr Saifuddin regarding the non- standard open- pod air filter, aftermarket engine strut bar, aftermarket on-board diagnostic (OBD) gauge, aftermarket in-car DVD player and aftermarket 19- inch alloy rims that were fitted onto the Insured Vehicle. He informed us all the aftermarket components were already fitted onto the Insured Vehicle when he purchased it.

17. Pertaining to the maintenance aspect, Mr Saifuddin mentioned that he sends the Insured Vehicle for periodic servicing. He services the Insured Vehicle at DHM. The last servicing was done on 24 March 2022. The servicing package had included changing of engine oil, oil filter and spark plug. The oil leakage on the valve cover, timing cover and oil sump was also repaired Refer to invoice 1 below.



D.H.M OTOMOTIVE WERKZ PTE LTD
61 WOODLANDS PARK E9
#01-07 SINGAPORE 757047
CO.REG.NO:201315875E
TEL :62650537 FAX :62650536 HP:83683272

TAX INVOICE

OWNERS NAME:
TEL :
Chassis Number :

INVOICE NO . D 8263
DATE: March 24, 2022
CAR PLATE NO: SJX5861D
MAKE: Audi
MODEL: A4
CURR.MILEAGE: 156915
NEXT MILLEAGE: 166915
COMPANY:
TECHNICIAN: David

PAYMENT BY:

| S/N | DESCRIPTION | QTY | Price $ | Amount S$ |
|---|---|---|---|---|
| 1 | Servicing Package (Motul 300v) | 1.000 | 168.00 | 168.00 |
| 2 | R8 Coil Pack With Spark Plug | 1.000 | 500.00 | 500.00 |
| 4 | To Repair Oil Leakage On Valve Cover,Timing Cover, Oil Sump (Parts & Labour) Package | 1.000 | 880.00 | 880.00 |

Remark :

I understand and accept that all above mentioned work shall be carried out by the company in accordance with the company's tearms and conditions.

SUBTOTAL $ 1,548.00
DISCOUNT
NET TOTAL $ 1,548.00

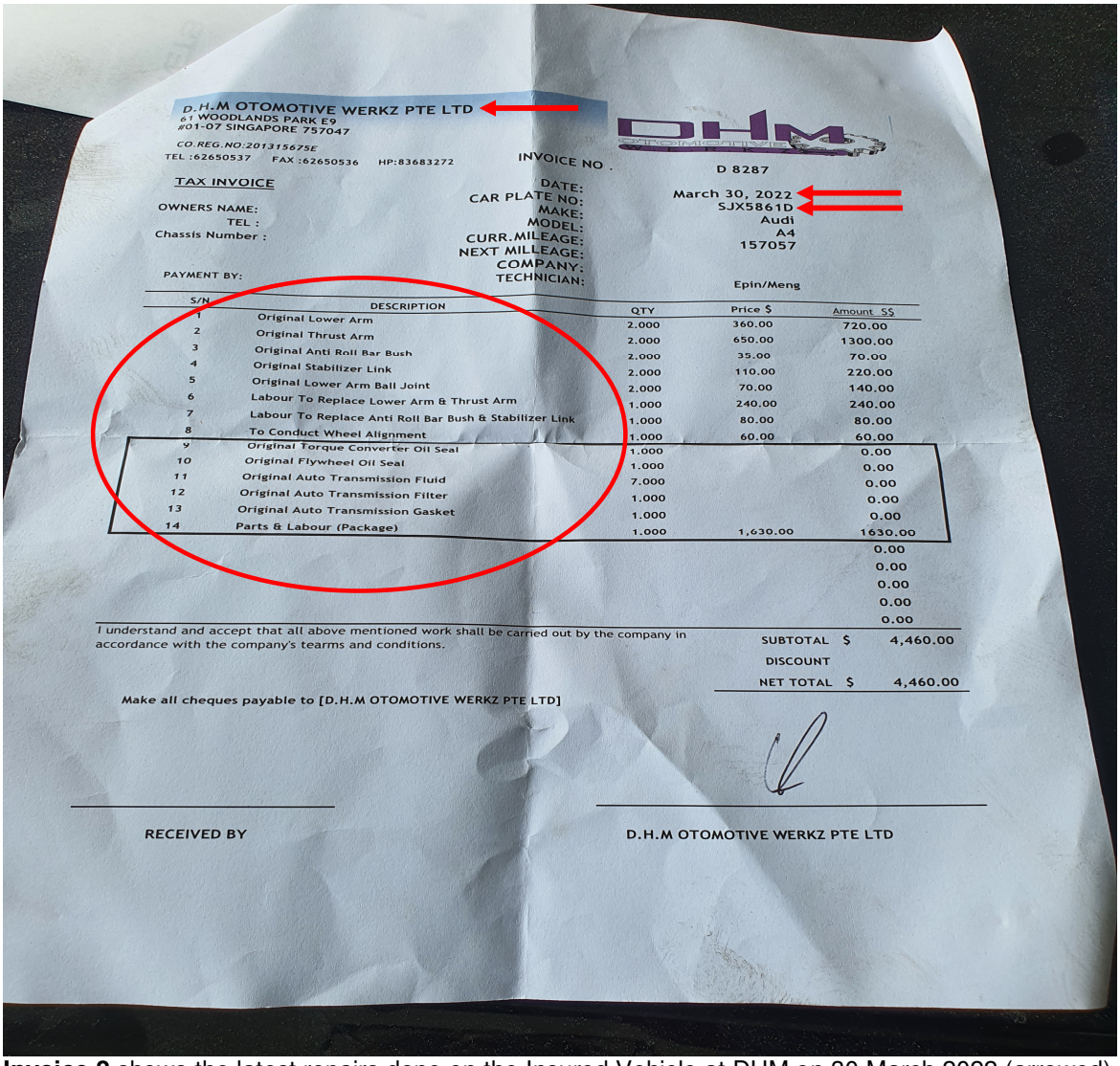
Make all cheques payable to [D.H.M OTOMOTIVE WERKZ PTE LTD]

RECEIVED BY

D.H.M OTOMOTIVE WERKZ PTE LTD

**Invoice 1** shows the last servicing done on the Insured Vehicle at DHM on 24 March 2022 (arrowed). The servicing package included changing of engine oil, oil filter and spark plug. The oil leakage on the valve cove, timing cover and oil sump was also repaired (circled).

18. After the latest servicing was done, Mr Saifuddin experienced issues with the steering of the Insured Vehicle. The insured Vehicle was sent to DHM on 30 March 2022. The repair package had included changing of the lower arm, anti roll bar bush, stabilizer link, lower arm ball joint, torque converter oil seal, flywheel oil seal, automatic transmission fluid (ATF), ATF filter and auto transmission gasket. Refer to invoice 2 below.



D.H.M OTOMOTIVE WERKZ PTE LTD
61 WOODLANDS PARK E9
#01-07 SINGAPORE 757047
CO.REG.NO:201315675E
TEL :62650537 FAX :62650536 HP:83683272

TAX INVOICE

OWNERS NAME:
TEL :
Chassis Number :

PAYMENT BY:

INVOICE NO . D 8287
DATE: March 30, 2022
CAR PLATE NO: SJX5861D
MAKE: Audi
MODEL: A4
CURR.MILEAGE: 157057
NEXT MILLEAGE:
COMPANY:
TECHNICIAN: Epin/Meng

| S/N | DESCRIPTION | QTY | Price $ | Amount S$ |
|---|---|---|---|---|
| 1 | Original Lower Arm | 2.000 | 360.00 | 720.00 |
| 2 | Original Thrust Arm | 2.000 | 650.00 | 1300.00 |
| 3 | Original Anti Roll Bar Bush | 2.000 | 35.00 | 70.00 |
| 4 | Original Stabilizer Link | 2.000 | 110.00 | 220.00 |
| 5 | Original Lower Arm Ball Joint | 2.000 | 70.00 | 140.00 |
| 6 | Labour To Replace Lower Arm & Thrust Arm | 1.000 | 240.00 | 240.00 |
| 7 | Labour To Replace Anti Roll Bar Bush & Stabilizer Link | 1.000 | 80.00 | 80.00 |
| 8 | To Conduct Wheel Alignment | 1.000 | 60.00 | 60.00 |
| 9 | Original Torque Converter Oil Seal | 1.000 | | 0.00 |
| 10 | Original Flywheel Oil Seal | 1.000 | | 0.00 |
| 11 | Original Auto Transmission Fluid | 7.000 | | 0.00 |
| 12 | Original Auto Transmission Filter | 1.000 | | 0.00 |
| 13 | Original Auto Transmission Gasket | 1.000 | | 0.00 |
| 14 | Parts & Labour (Package) | 1.000 | 1,630.00 | 1630.00 |
| | | | | 0.00 |
| | | | | 0.00 |
| | | | | 0.00 |
| | | | | 0.00 |
| | | | | 0.00 |

I understand and accept that all above mentioned work shall be carried out by the company in accordance with the company's tearms and conditions.

SUBTOTAL $ 4,460.00
DISCOUNT
NET TOTAL $ 4,460.00

Make all cheques payable to [D.H.M OTOMOTIVE WERKZ PTE LTD]

RECEIVED BY

D.H.M OTOMOTIVE WERKZ PTE LTD

**Invoice 2** shows the latest repairs done on the Insured Vehicle at DHM on 30 March 2022 (arrowed). The repair package had included changing of the lower arm, anti roll bar bush, stabilizer link, lower arm ball joint, torque converter oil seal, flywheel oil seal, automatic transmission fluid (ATF), ATF filter and auto transmission gasket (circled).

19. Mr Saifuddin mentioned that after the servicing and repairs were done, he had not experienced any mechanical or electrical problems with the Insured Vehicle till the day of the incident. There was also no abnormal rise in temperature of the Insured Vehicle when he was driving the Insured Vehicle.

## Incident Scene Photograph

20. We were able to obtain a photograph which was taken by Mr Saifuddin at the incident location. The photograph was taken after the fire to the Insured Vehicle was extinguished.

21. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Mr Saifuddin. Our close examination of this photograph also showed no unusual foreign material(s) and/or object(s) found on the ground in the immediate area of the petrol station where the Insured Vehicle was positioned. See photo 22 below.

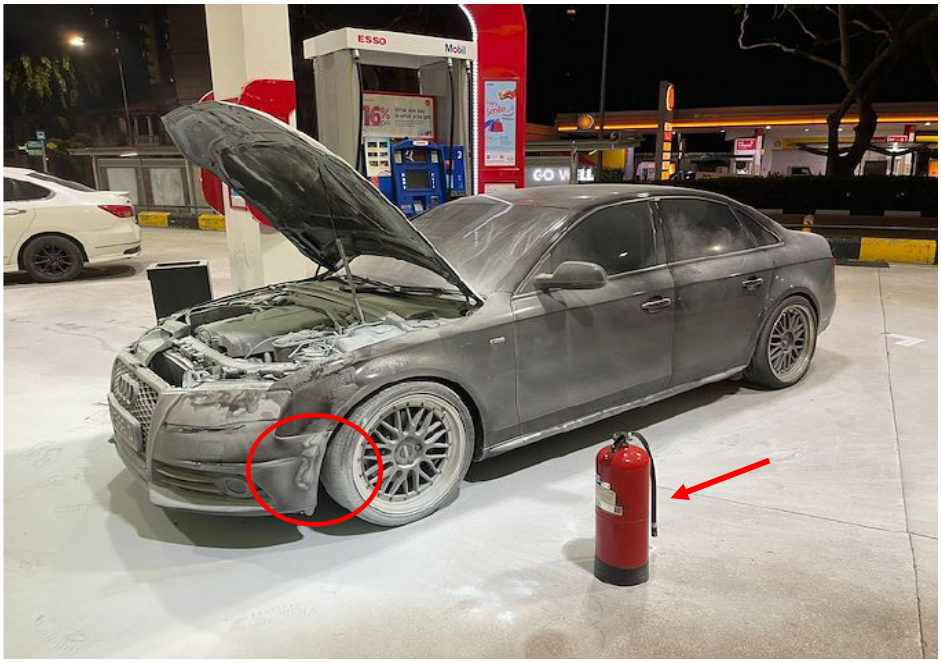



**Photo 22** shows the Insured Vehicle at the incident location after the fire was extinguished. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Mr Saifuddin, which is the burn pattern observed is an indication that the fire had started from the left front portion of the Insured Vehicle (circled) and that Mr Saifuddin had put out the fire himself with a fire extinguisher retrieved from the petrol station (arrowed).

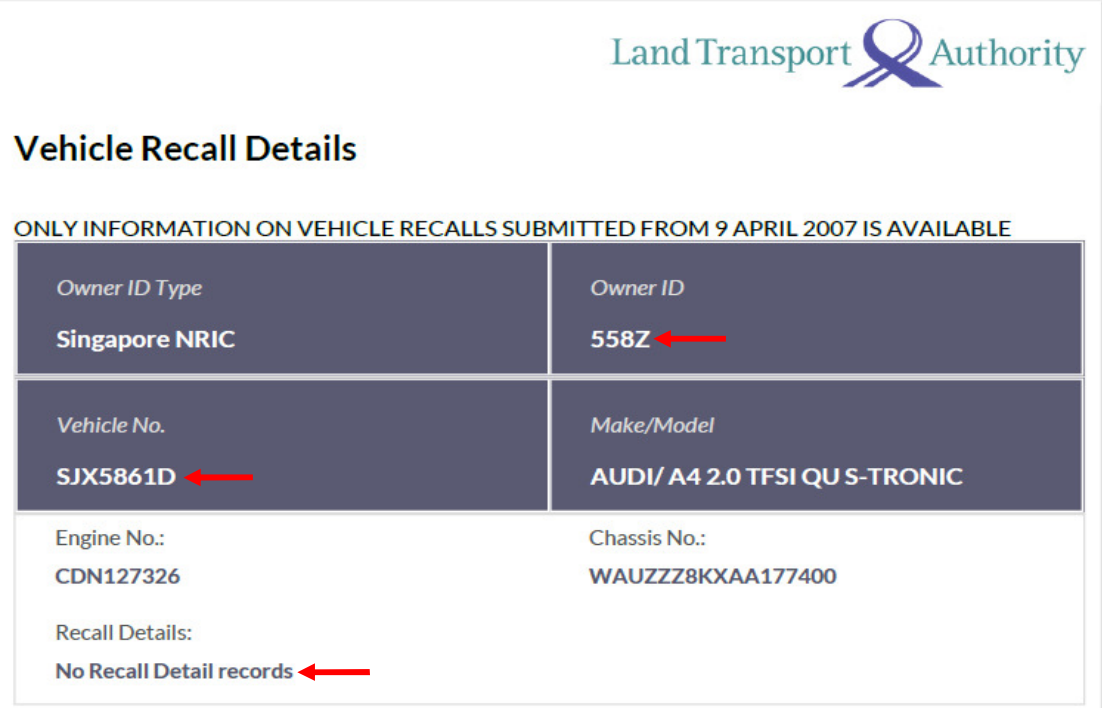
22. Based on the vehicle service record invoices provided, we are of the opinion that it is unlikely that the fire could have been caused by poor maintenance of the Insured Vehicle.

23. Given the circumstances of incident as reported, the possibility of the cause of fire to the Insured Vehicle being due to engine overheating would seem unlikely as Mr Saifuddin had mentioned to us there were no indications of abnormally high temperatures on the Insured Vehicle. Moreover, an overheated engine would have caused the Insured Vehicle to stall. However in this case, Mr Saifuddin was the one who noticed black smoke emitting from the left front portion of the front bonnet of the Insured Vehicle while he was refuelling. Therefore, we are of the opinion that the fire was not caused by an overheated engine.

24. The possibility of the fire being due to external factors (foreign material(s) stuck on hot surfaces, arson and sabotage amongst others) would also seem unlikely given that our examination of the available incident scene photograph did not reveal any unusual material(s)/object(s) found on the ground near where the Insured Vehicle was positioned. The location of where the Insured Vehicle was positioned was also observed to be not at a secluded location.

25. The possibility of the fire being due to electrical in nature would then seem more likely given that engine overheating and external factors would both seem unlikely. The fire being due to electrical in nature is also supported by the burnt wirings found in the left front portion of the Insured Vehicle, which was earlier discussed in paragraph 9 above.

26. Our checks with both local and international bodies and associations revealed that at the time of writing this report, there is no manufacturer recall of similar make and model vehicle as the Insured Vehicle that may possibly be related to this incident. See search result from LTA below.



Land Transport Authority

**Vehicle Recall Details**

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

| | |
|---|---|
| *Owner ID Type*<br>**Singapore NRIC** | *Owner ID*<br>**558Z** |
| *Vehicle No.*<br>**SJX5861D** | *Make/Model*<br>**AUDI/ A4 2.0 TFSI QU S-TRONIC** |
| Engine No.:<br>**CDN127326** | Chassis No.:<br>**WAUZZZ8KXAA177400** |
| Recall Details:<br>**No Recall Detail records** | |

## Conclusion

27. Having investigated and technically analysed the damages of burnt nature to the Insured Vehicle, we are of the view that the cause of fire to the Insured Vehicle was of electrical in nature. For this particular case, the fire had originated along the wirings inside the engine compartment, leading from the left front fog lamp bulb socket of the Insured Vehicle. The wirings were original factory wirings of the Insured Vehicle.

28. We did not find any evidence which had suggested that the cause of fire to the Insured Vehicle was due to poor maintenance and/or recurring electrical problem.

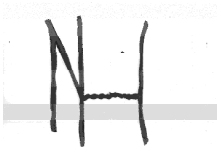
29. We found the Insured Vehicle to be fitted with additional electrical/electronic components which included an aftermarket on-board diagnostic (OBD) gauge and an aftermarket in-car DVD player. The abovementioned electrical/electronic components do not require prior approval from LTA.

30. We are further of the view that the additionally fitted electrical/electronic components found on the Insured Vehicle could not have possibly caused overloading to the electrical system of the Insured Vehicle considering that the installation was carried out a few years prior to the fire incident.

31. We found the Insured Vehicle to be fitted with a non- standard open- pod air filter, an aftermarket engine strut bar and aftermarket 19- inch alloy rims. The air filter, engine strut bar and tyre rims fitted do not require prior approval from LTA.

32. Although the non- standard open- pod air filter, aftermarket engine strut bar and aftermarket alloy rims fitted on the Insured Vehicle were not the standard type for the Insured Vehicle, we are of the view that these parts did not cause and/or contribute to the fire incident.

33. At the time of writing this report, there was also no manufacturer recall of similar make and model vehicle as the Insured Vehicle that could possibly be related to this particular incident.



**Muhd Nazril**
*Senior Technical Investigator*

**Ang Bryan Tani**
*AMSOE, AMIRTE, AFF SAE, M.MATAI, AFF.Inst.AEA*
*Senior Technical Investigator*
*Technical Investigation & Reconstructionist (SAE-A)*

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