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: C0456701
Our Ref : CS/AXA17020335/N

3 November 2017

M/s AXA Insurance Pte Ltd
8 Shenton Way #24-01
AXA Tower
Singapore 068811
(Motor Claims Department)

TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE MOTOR VEHICLE XD 3957P ON 29 JULY 2017

1. We refer to your letter dated 24 October 2017 and the instructions therein.

2. Our analysis, comments and opinions with respect to the cause of fire to the Motor Vehicle XD 3957P (herein referred to as "**Insured Vehicle**") are set out below.

Inspection of the Motor Vehicle

3. The Insured Vehicle was physically inspected on 2 November 2017 at the premises of ST Kinetics (herein referred to as **"ST"**) located at 31 Corporation Road, Singapore 649825.

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

Vehicle Registration No.	: XD 3957P
Make / Model	: MAN TGS18.400 4X2 BLS
Chassis No	: WMA06SZZX9M538399
Year of Registration	: 2010 (March)
Mileage	: N.A (wiring affected)

5. The Insured Vehicle was noted to have sustained fire damage that was confined to its interior portion. The fire damage was observed to be most severe at its interior compartment. The front exterior portion was unaffected by the fire except for the front windscreen. The engine compartment was unaffected by the fire. See photos 1 – 6 below.

Photo 1 shows the front view of the Insured Vehicle at the time of our inspection. The fire damage to the Insured Vehicle was confined to its interior compartment. Most parts of the front portion were unaffected by the fire except for the front windscreen.

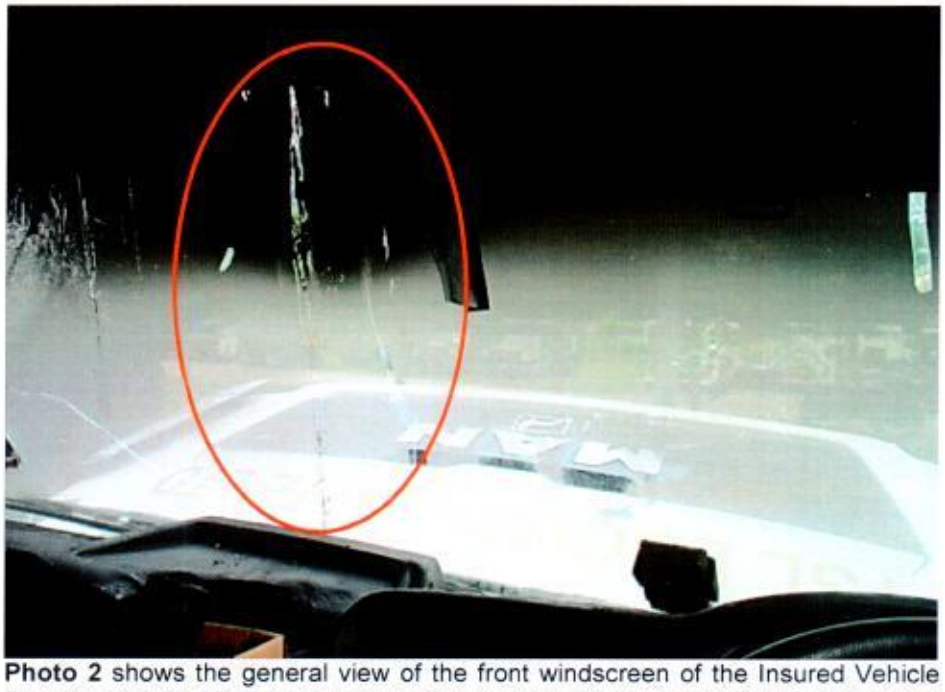


Photo 2 shows the general view of the front windscreen of the Insured Vehicle (as viewed from the interior compartment). The centre portion of the windscreen seemed to have sustained visible fire damage (circled).

Photo 3 shows the right side view of the Insured Vehicle at the time of our inspection. The fire damage to the Insured Vehicle was confined to its interior compartment. The right side was observed to have been unaffected by the fire except for the driver door window (circled).

Photo 4 shows a closer view of the driver door window of the Insured Vehicle at the time of our inspection (as viewed from the interior compartment). The window was covered in soot (circled).

Photo 5 shows the rear view of the Insured Vehicle at the time of our inspection. The fire damage to the Insured Vehicle was confined to its interior compartment. The rear portion was observed to have been unaffected by the fire.

Photo 6 shows the interior compartment of the Insured Vehicle at the time of inspection. Most of the components in the centre of the dashboard (circled) were found to be burnt and/or melted as a result of the fire.

6. At the time of inspection of the Insured Vehicle, we did not find any additionally fitted electronic and/or electrical component(s) on the Insured Vehicle. There also appears to be no modification(s) fitted on the Insured Vehicle.

Investigation and Technical Analysis

7. For this particular case, the fire appears to have started from the centre of the dashboard. This can be determined basing on the area where the extent of fire damage was most severe which was the centre portion of the instrument panel. Various components of the instrument panel were observed to have been burnt and/or partly melted from prolonged exposure to high heat intensity which included the upper and central parts of the instrument panel assembly, air outlet assembly, beaker holder assembly and carrier assembly, amongst others. See photos 7 - 9 below.

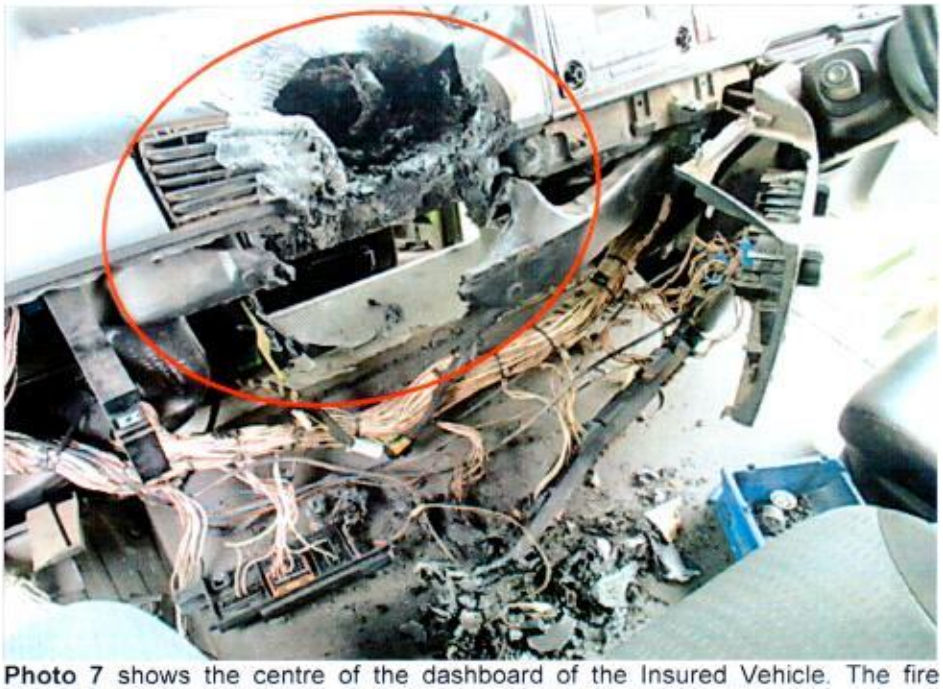


Photo 7 shows the centre of the dashboard of the Insured Vehicle. The fire seemed to have originated from the centre portion of the instrument panel basing on the area where the extent of fire damage was most severe. Various components of the instrument panel were observed to have been burnt and/or partly melted from prolonged exposure to high heat intensity which included the upper and central parts of the instrument panel assembly, air outlet assembly, beaker holder assembly and carrier assembly, amongst others (circled).

Photo 8 shows a closer view of the centre portion of the instrument panel. Various components of the instrument panel were observed to have been burnt and/or partly melted from prolonged exposure to high heat intensity which included the upper and central parts of the instrument panel assembly, air outlet assembly, beaker holder assembly and carrier assembly, amongst others (circled).

Photo 9 shows a close up view of the centre portion of the instrument panel. Most of the components of the instrument panel were observed to have been burnt and/or partly melted from prolonged exposure to high heat intensity.

8. Upon closer examination of the various components contained within the centre portion of the instrument panel, which was where the fire to the Insured Vehicle had likely started, we had found greenish residue on some of the wirings leading to a connector. The wirings were original factory fitted wirings. We also found traces of greenish residue on the front portion of the air- conditioning blower connector as well as on the air- conditioning blower motor resistor. 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. These physical evidences would then appear to suggest that the cause of fire to the Insured Vehicle could have possibly been due to electrical in nature. See photos 10 - 16 below.

Photo 10 shows some original factory fitted wirings leading to a connector with greenish residue (circled). The presence of such greenish residue suggests occurrence of an electrical short circuit.

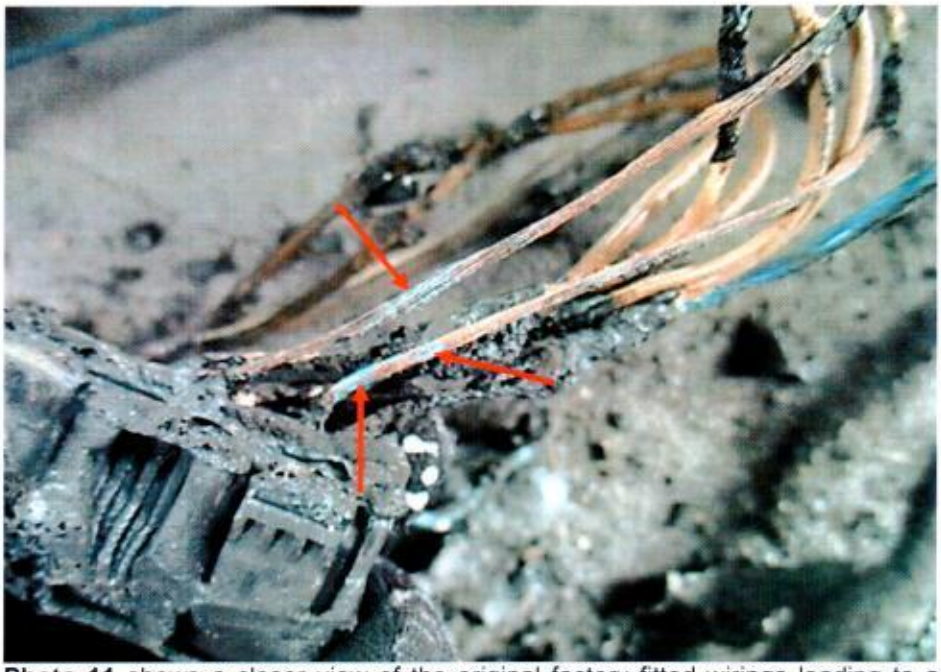


Photo 11 shows a closer view of the original factory fitted wirings leading to a connector with greenish residue (red arrows). The presence of such greenish residue suggests occurrence of an electrical short circuit.

Photo 12 shows traces of greenish residue found on the front portion of the air-conditioning blower connector (red arrows). The presence of such greenish residue suggests occurrence of an electrical short circuit.

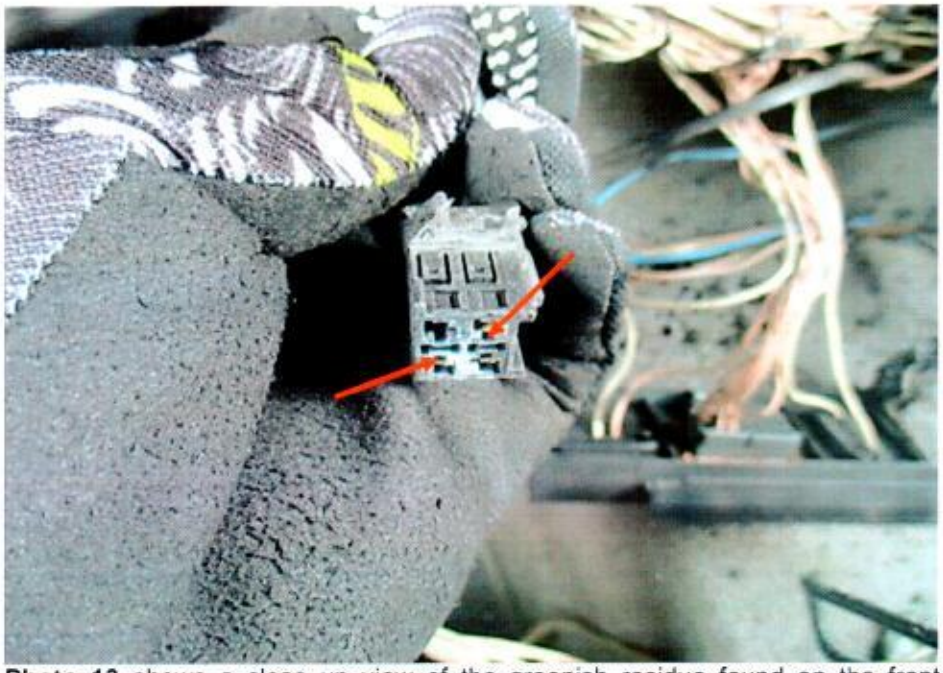


Photo 13 shows a close up view of the greenish residue found on the front portion of the air- conditioning blower connector (red arrows). The presence of such greenish residue suggests occurrence of an electrical short circuit.

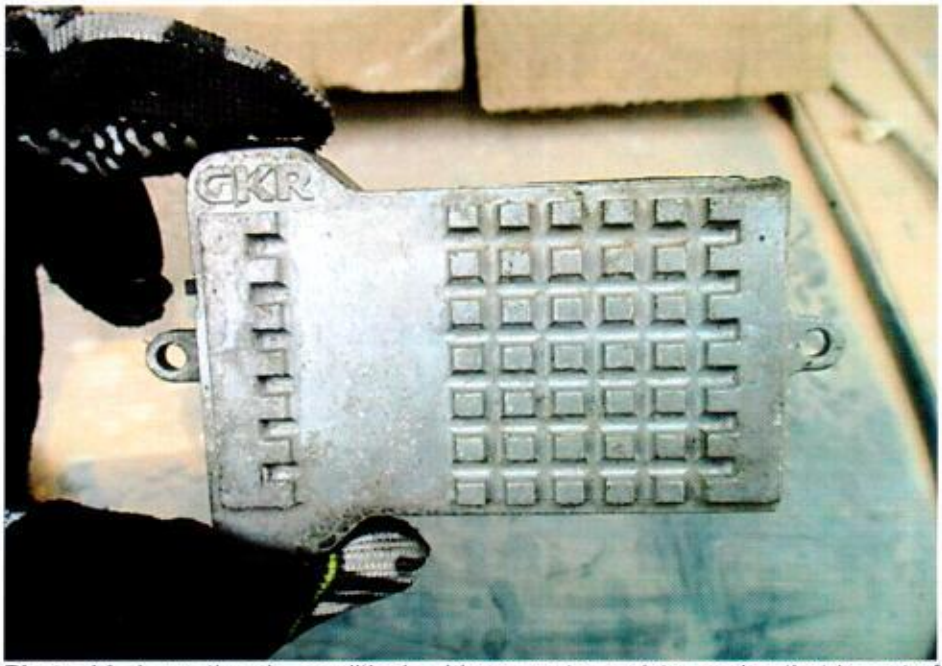


Photo 14 shows the air- conditioning blower motor resistor casing that is part of the instrument panel.

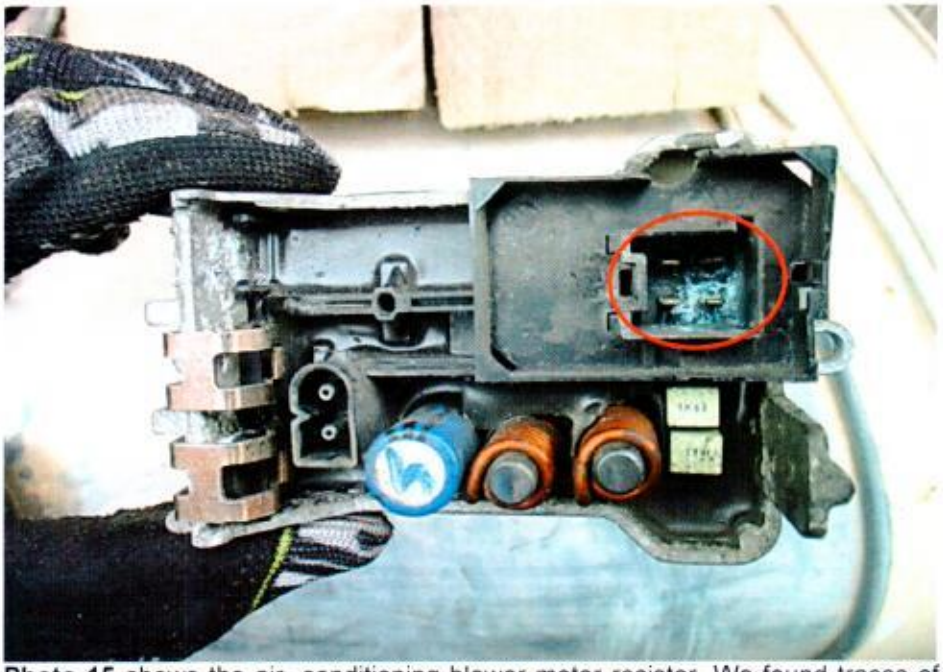


Photo 15 shows the air- conditioning blower motor resistor. We found traces of greenish residue on the air- conditioning blower connector contact point (circled). The presence of such greenish residue suggests occurrence of an electrical short circuit.

Photo 16 shows a close up view of the greenish residue found on the air-conditioning blower connector contact point (circled). The presence of such greenish residue suggests occurrence of an electrical short circuit.

9. From the Singapore Accident Statement which was made by Mr Chai Wenhao (herein referred to as **"Mr Chai"**), we note that the fire to the Insured Vehicle had started at a time when it was parked at an open space. Mr Chai was first alerted of the fire when he returned to the Insured Vehicle.

10. We managed to speak to Mr Chai with the aid of his Human Resource Manager Ms Fiona as an interpreter as Mr Chai could only speak Mandarin. We were able to gather information pertaining to the incident. We further spoke to Ms Fiona to gather information pertaining to the history of the Insured Vehicle.

11. According to Mr Chai, at about 1300hrs on 29 July 2017, he had parked the Insured Vehicle at the open space of the Pandan Industrial Estate along Pandan Loop which is across the road from his company TSL Logistics Pte. Ltd (herein referred to as **"TSL"**) located at 194 Pandan Loop, #05-15, Pantech Business Hub, Singapore 128383.

12. He went up to the office after parking the Insured Vehicle. When he returned 20 minutes, he realized that the Insured Vehicle was on fire. The Insured Vehicle was covered in thick smoke. He opened the driver door to release the smoke which was coming from the interior compartment. He then took a bottle of mineral water from inside the cabin and poured it on the centre portion of the instrument panel. Mr Chai managed to put out the fire in 10 minutes.

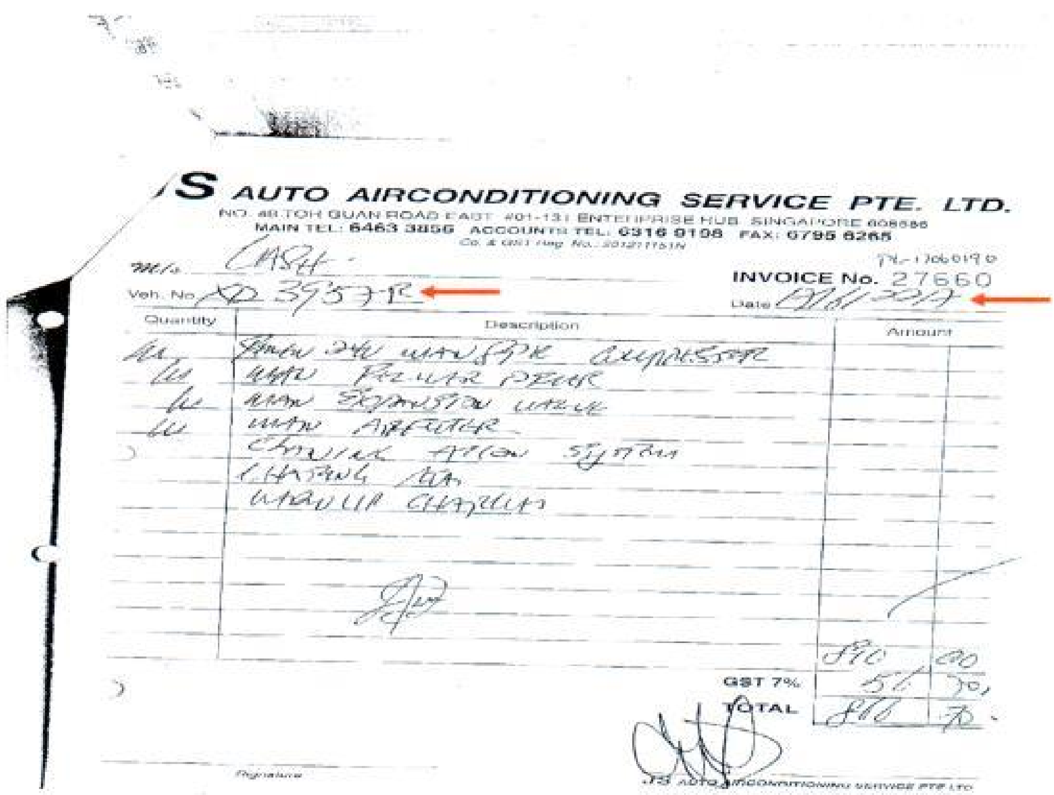
13. After extinguishing the fire, Mr Chai called his operations manager, Mr Richard Loo who made towing arrangements. The Insured Vehicle was towed to ST. Mr Chai made an insurance report at Ethoz Bukit Batok on 31 July 2017 at 1618 hours.

14. Mr Chai is the main driver of the Insured Vehicle. To the best of his recollection, there has not been any major mechanical problem and/or electrical problem with the Insured Vehicle whenever he was driving it.

15. With regards to the history of the Insured Vehicle, we were able to gather from Ms Fiona that the Insured Vehicle was bought second hand on 11 January 2017 from OK2 Pte. Ltd. located at 68 Kaki Bukit Avenue 6, ARK@KB, #02-20, Singapore 417896.

16. We asked Ms Fiona why the insurance claim was submitted 3 months after the incident occurred. She informed us that initially TSL intended to pay for the repairs of the Insured Vehicle as they were not aware that the insurance policy for the Insured Vehicle included a 'fire and theft' clause. However after finding out from ST that the repairs would be costly, Ms Fiona checked the records, went through the insurance policy again and realized that it did provide for instances of fire and theft. Hence she submitted a claim in October 2017.

17. During the course of our investigations, we were able to obtain from Ms Fiona the latest servicing and repair records of the Insured Vehicle. The air-conditioning was serviced on 17 June 2017 at JS Auto Airconditioning Service Pte. Ltd. (herein referred to as **"JS"**) located at 48 Toh Guan Road East, Enterprise Hub, #01-131, Singapore 608586. Additionally, the battery was replaced on 24 June 2017 at Soon Tat Battery Service (herein referred to as **"Soon Tat"**) which is located at the same premises as JS. See invoices 1 & 2 below.



JS AUTO AIRCONDITIONING SERVICE PTE. LTD.

NO. 48 TOH GUAN ROAD EAST #01-131 ENTERPRISE HUB SINGAPORE 608586

MAIN TEL: 6463 3856 ACCOUNTS TEL: 6316 0198 FAX: 6795 6265

Co. & GST Reg. No.: [illegible]

M/s. CASH

Veh. No. XD 3957R

INVOICE No. 27660

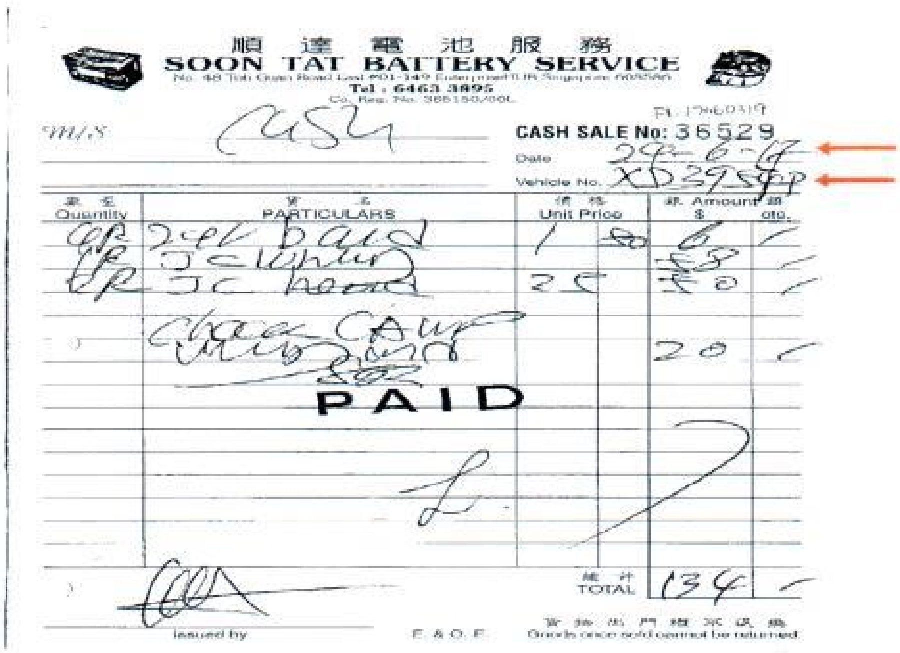
Date 17/06/2017

Quantity	Description	Amount
	[illegible]	
		810.00
	GST 7%	56.70
	TOTAL	866.70

Signature

JS AUTO AIRCONDITIONING SERVICE PTE LTD

Invoice 1 shows the air conditioning servicing package done on the Insured Vehicle on 17 June 2017 at JS (red arrows).



順 達 電 池 服 務

SOON TAT BATTERY SERVICE

Tel : 6463 3895

M/S Cash

CASH SALE No: 36529

Date 24-6-17

Vehicle No. XD2959P

數量 Quantity	貨名 PARTICULARS	價格 Unit Price	銀 Amount 額 $	cts.

PAID

總計 TOTAL 134 -

Issued by

E. & O. E.

貨物出門概不退換 Goods once sold cannot be returned.

Invoice 2 shows the battery of the Insured Vehicle replaced at Soon Tat on 24 June 2017 (red arrows).

18. Ms Fiona mentioned that since the air conditioning servicing and battery replacement was done, the drivers had not experienced any other mechanical problems with the Insured Vehicle till the day of the incident. She mentioned that there were neither warning lights displayed nor was there an abnormal rise in temperature throughout the period the Insured Vehicle was driven till the day of the incident.

Incident Scene Photographs

19. Although we were not able to obtain any video footage of the incident, we were however able to obtain photographs which were taken by Mr Chai at the incident location. The photographs were taken after the fire to the Insured Vehicle was extinguished.

20. In general, the information that could be gathered from these photographs had corresponded to the events that were related to us by Mr Chai. Our close examination of these photographs also showed no unusual foreign material(s) and/or object(s) found on the ground in the immediate area of the open space where the Insured Vehicle was parked. See photos 17 & 18 below.

Photo 17 shows the Insured Vehicle after the fire was extinguished by Mr Chai. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Mr Chai, which is the fire started from the interior compartment.

Photo 18 shows the interior compartment of the Insured Vehicle after the fire was extinguished. In general, the extensive damages sustained to the centre portion of the instrument panel had corresponded to the events that were related to us by Mr Chai, which is the fire started from the interior compartment.

Site Inspection

21. With the information gathered, we visited the incident location on 15 November 2017 taking the report made by Mr Chai and the information that we had gathered from him and Ms Fiona as references.

22. Firstly, we note that the incident had occurred at an open space inside the Pandan Industrial Estate located along Pandan Loop which is across from TSL.

23. The Insured Vehicle was parked in an open space between blocks N and Q.

24. We did not find any CCTV camera(s) in the surrounding vicinity where the Insured Vehicle was parked. We did not find any burnt residual remains on the ground where the Insured was positioned as it was a minor fire. Furthermore the incident occurred approximately 3 months before the insurance claim was made.

25. We also noticed that parking lots had been constructed in the open space where the Insured Vehicle was parked on the day of the incident. No further information could be gathered during our site visit other than the observation that the location where the Insured Vehicle was parked was not a secluded location. See photos 19 – 23 below.

Photo 19 shows the entrance to the open carpark inside the Pandan Industrial Estate (circled) located along Pandan Loop which is across from TSL.

Photo 20 shows the position where the Insured Vehicle was parked on the day of the incident (arrowed). We noticed that parking lots had been constructed in the open space where the Insured Vehicle was parked on the day of the incident (circled).

Photo 21 shows the open carpark inside the Pandan Industrial Estate. The Insured Vehicle was parked (arrowed) in between blocks N (circled) and Q on the day of the incident.

Photo 22 shows the open carpark inside the Pandan Industrial Estate. The Insured Vehicle was parked (arrowed) in between blocks N and Q (circled) on the day of the incident.

Photo 23 shows a closer view of the position where the Insured Vehicle was parked on the day of the incident. We did not find any burnt residual remains on the ground where the Insured was positioned as it was a minor fire. Moreover, the incident occurred approximately 3 months before the insurance claim was made. Moreover, parking lots had been constructed in the open space where the Insured Vehicle was parked on the day of the incident.

26. 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.

27. 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 the fire had broken out while the Insured Vehicle was parked at the open space.

28. 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 as the fire was confined to within its interior compartment with no visible exterior damage. The location where the Insured Vehicle caught fire was also observed to be not at a secluded location.

29. 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 nature is also supported by the condition of the wirings that were found inside the centre portion of the instrument panel of the Insured Vehicle, which was earlier discussed in paragraph 8 above.

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

Enquiry on Vehicle Recall - Details

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

Vehicle Owner Particulars

Owner ID Type:	Company
Owner ID:	9403M

Vehicle Details

Vehicle Registration number:	XD3957P
Make:	MAN
Vehicle Model:	TGS18.400 4X2 BLS
Engine No.:	50521103702113
Chassis No.:	WMA06SZZX9MS38399

Recall Details

No Recall Detail records

OK

Land Transport Authority

Conclusion

31. 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 from the wirings within the centre portion of the instrument panel of the Insured Vehicle. The wirings were original factory wirings of the Insured Vehicle.

32. 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.

33. There were no modification(s) or additional electronic and/or electrical component(s) fitted on the Insured Vehicle at the time of our inspection of the Insured Vehicle.

34. Our investigations had also revealed that at the time of writing this report, there is no manufacturer recall of electrical nature to similar make and model vehicle as the Insured Vehicle that may possibly be related to this incident.

35. SCDF officers did not attend to the incident scene hence there will not be any SCDF fire report that may be forthcoming.

Muhd Nazril
Technical Investigator

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