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: S8M00PJ3
Our Ref : CS/ASM18013515/N

6 August 2018

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 INSURED VEHICLE SGV 187X ON 22 JULY 2018

1. We refer to your letter dated 24 July 2018 and the instructions therein.

2. Our analysis, comments and opinions with respect to the cause of fire to the Motor Vehicle SGV 187X (herein referred to as **"Insured Vehicle"**) are set out below.

Inspection of the Motor Vehicle

3. The Insured Vehicle was physically inspected on 3 August 2018 at the premises of Sng Ah Tee Motor & Panel Service Pte. Ltd. (herein referred to as **"SAT"**) located at Block 3, Pioneer Road North, #01-18, Singapore 628457.

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

Vehicle Registration No.	: SGV 187X
Make / Model	: MITSUBISHI LANCER 1.6 M
Chassis No	: JMYSNCS3A7U008780
Year of Registration	: June 2007
Mileage	: N.A (battery melted)

5. The exterior front body and interior compartment of the Insured Vehicle sustained visible fire damage. This included its windscreen, front bonnet, headlights, front bumper, side panels, front rims, front tyres and dashboard.

6. The fire had resulted in extensive damage to the engine compartment of the Insured Vehicle. Most of the components inside the engine compartment were found to be severely burnt and/or melted as a result of the fire. See photos 1 – 6 below.

Photo 1 shows the general view of the front 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 windscreen, front bonnet, headlights, front bumper, front bumper reinforcement panel, side panels, front rims and front tyres.

Photo 2 shows the general view of the right 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 windscreen, front bonnet, headlights, front bumper, front bumper reinforcement panel, right side panel, right front rim and right front tyre.

Photo 3 shows the general view of the left 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 windscreen, front bonnet, headlights, front bumper, front bumper reinforcement panel, left side panel, left front rim and left front tyre.

Photo 4 shows a closer view of the windscreen of the Insured Vehicle at the time of our inspection. The windscreen had sustained extensive fire damage.

Photo 5 shows the interior compartment of the Insured Vehicle at the time of our inspection. The interior compartment of the Insured Vehicle was observed to be severely affected by the fire.

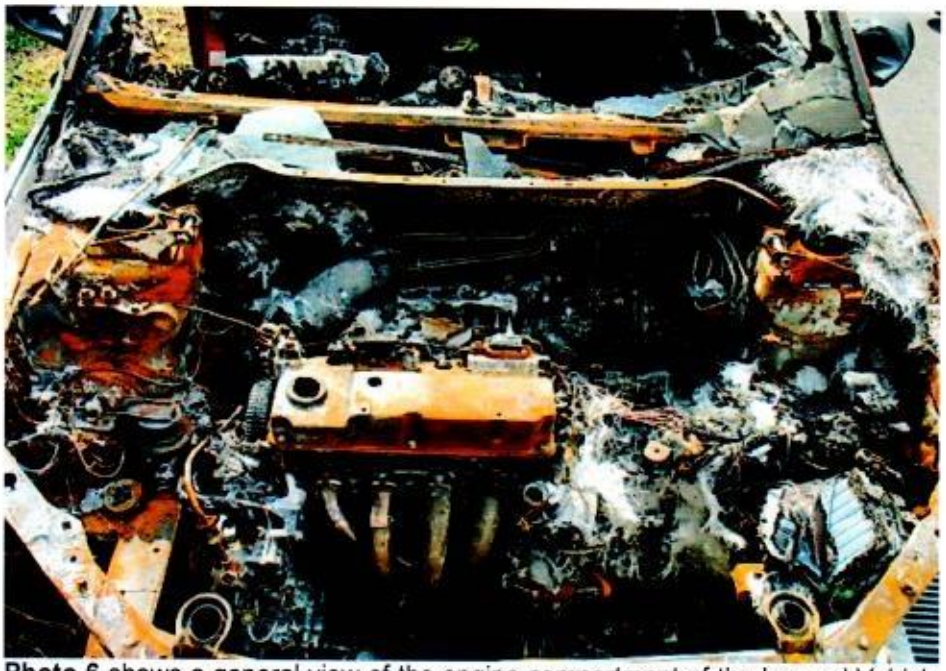


Photo 6 shows a general view of the engine compartment of the Insured Vehicle at the time of our inspection. Most of the components inside the engine compartment were found to be severely burnt and/or melted as a result of the fire.

7. At the time of physical inspection of the Insured Vehicle, we had found several modifications and additionally fitted electronic and/or electrical component(s) on the Insured Vehicle. These included aftermarket front seats, a fuel management system module (which had sustained serious fire damage), 2 aftermarket amplifiers, 2 aftermarket twitters (both of which had sustained extensive fire damage), an in-car DVD player (which had sustained extensive fire damage), a non- standard full exhaust system and aftermarket 15- inch alloy rims. All these fitted components were not the standard type for the Insured Vehicle. See photos 7 - 18 below.

Photo 7 shows the aftermarket front seats that were fitted onto the Insured Vehicle upon our inspection (arrowed).

Photo 8 shows the fuel management system module that was fixed underneath the left portion of the front dashboard of the Insured Vehicle which had sustained serious fire damage. The brand of the module was 'GREDDY' (arrowed).

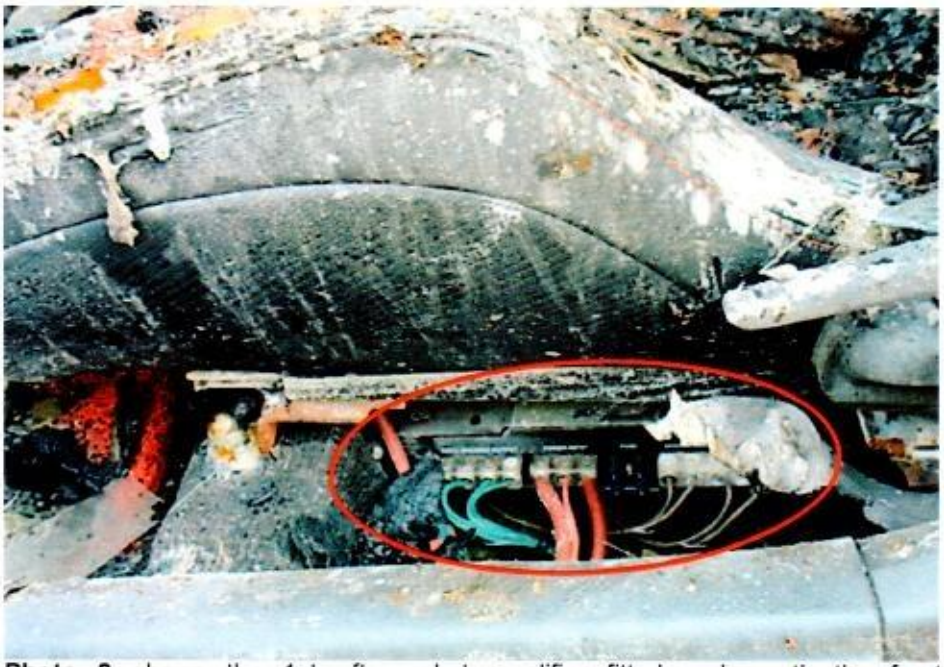


Photo 9 shows the 1st aftermarket amplifier fitted underneath the front passenger seat of the Insured Vehicle upon our inspection (circled).

Photo 10 shows the 2nd aftermarket amplifier fitted underneath the driver seat of the Insured Vehicle upon our inspection (circled).

Photo 11 shows the 1st aftermarket twitter fitted onto the right corner of the dashboard of the Insured Vehicle upon our inspection which had sustained extensive fire damage (circled).

Photo 12 shows the 2nd aftermarket twitter fitted onto the left corner of the dashboard of the Insured Vehicle upon our inspection (circled) which had sustained serious fire damage.

Photo 13 shows the in-car DVD player that was fitted at the centre portion of the front dashboard of the Insured Vehicle which had sustained extensive fire damage (circled).

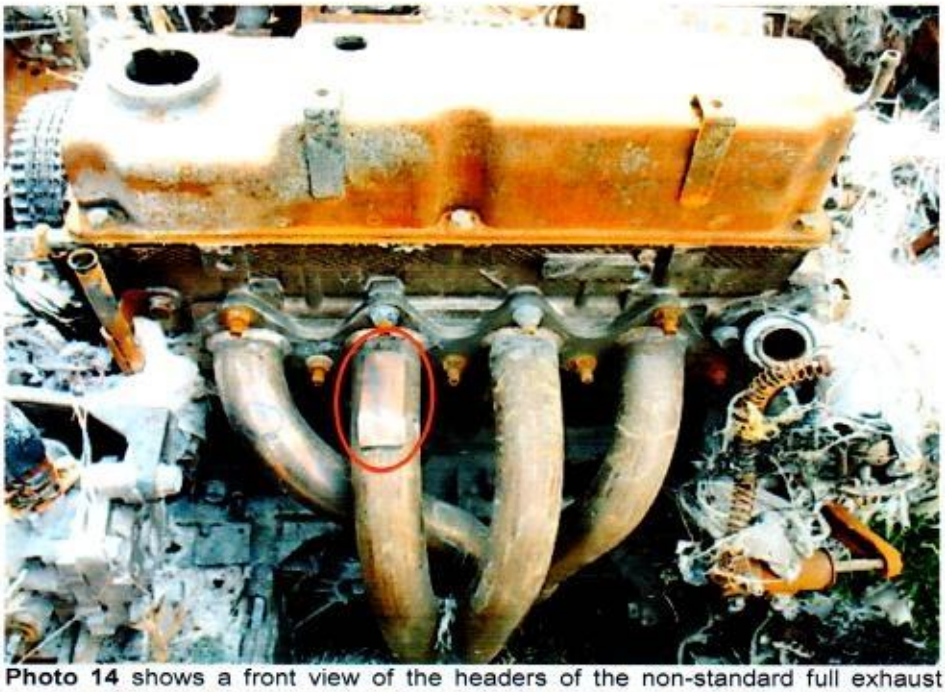


Photo 14 shows a front view of the headers of the non-standard full exhaust system that was found to be fitted on the Insured Vehicle at the time of our inspection. The brand of the exhaust system was 'DRIFT RACING' (circled).

Photo 15 shows a close up view of 1 of the headers of the non-standard full exhaust system that was found to be fitted on the Insured Vehicle at the time of our inspection. The brand of the exhaust system was 'DRIFT RACING' (circled).

Photo 16 shows a front view of the non-standard rear exhaust muffler that was found to be fitted on the Insured Vehicle at the time of our inspection.

Photo 17 shows a close up left side view of the non-standard rear exhaust muffler that was found to be fitted on the Insured Vehicle at the time of our inspection. The brand of the rear exhaust muffler was 'DRIFT RACING' (circled).

Photo 18 shows the non-standard rim found to be fitted on the Insured Vehicle at the time of our inspection. The 15- 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 within the engine compartment of the Insured Vehicle, somewhere around the rear portion of the engine compartment. This can be determined from the greenish residue that was found on several stretches of burnt original factory fitted wirings mainly around the rear portion of the engine compartment. 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 appear to suggest that the cause of fire to the Insured Vehicle could have possibly been due to electrical in nature. See photos 19 – 22 below.

Photo 19 shows the burnt wirings around the rear portion of the engine compartment which is near to the vicinity where the fire to the Insured Vehicle had likely started (circled).

Photo 20 shows a closer view the greenish residue on several stretches of burnt wirings at the rear portion of the engine compartment (red arrows). 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 21 shows a close up view of the greenish residue on the wirings at the rear portion of the engine compartment. The presence of such greenish residue suggests occurrence of an electrical short circuit.

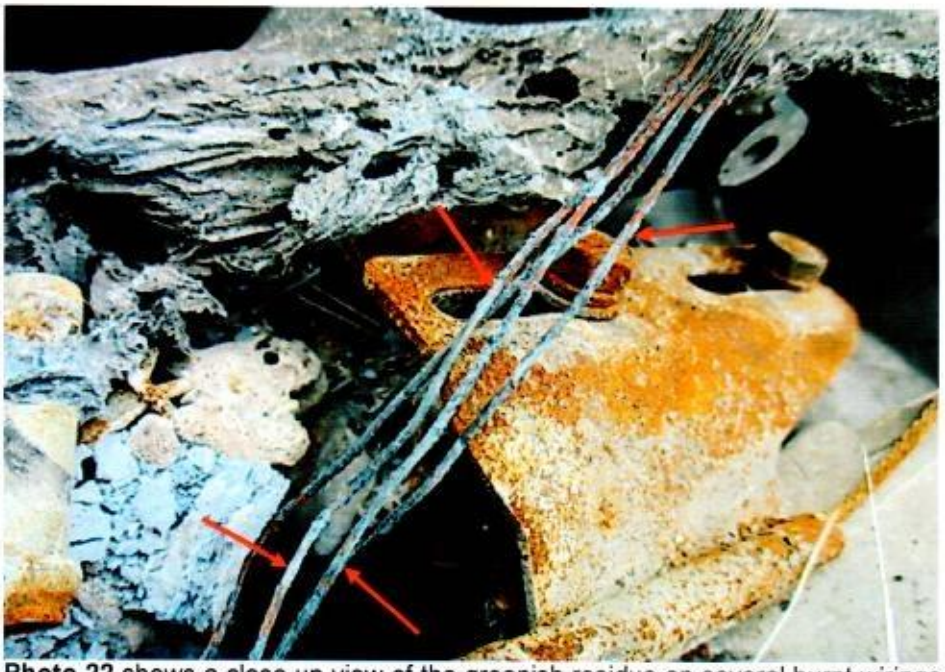


Photo 22 shows a close up view of the greenish residue on several burnt wirings at the rear portion of the engine compartment (arrowed). The presence of such greenish residue suggests occurrence of an electrical short circuit.

9. From the Singapore Police Report No. J/20180723/2041 and Accident Statement, which was made by Mr Nur Muhammad bin Mohamed Amran (herein referred to as **"Mr Nur"**), we note that the fire to the Insured Vehicle had started at a time when he was driving. Mr Nur was first alerted of a rattling sound followed by white smoke emitting from the front bonnet of the Insured Vehicle.

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

11. According to Mr Nur, at about 0130hrs on 22 July 2018, he alongside a friend was driving from East Coast along the ECP towards Jurong where his home is located. He travelled via ECP/MCE/AYE and as he passed the Keppel Raod exit, Mr Nur heard a rattling sound and saw white smoke coming from the rear portion of the front bonnet. He then felt a loss of power in the Insured Vehicle. He pulled the Insured Vehicle to the road shoulder immediately and switched off the engine. He opened the front bonnet and saw flames emitting from the rearportion of the engine compartment. He quickly went to the boot of the Insured Vehicle to look for water which he could use to put out the fire while his friend called for the SCDF. Firefighters arrived but by then the entire front portion of the Insured vehicle was ablaze.

12. The fire was put out shortly after and Mr Nur assisted SCDF personnel in their preliminary investigations. He was authorized by the SCDF to tow the Insured Vehicle after half an hour. Mr Nur called the AXA hotline and made towing arrangements. The tow truck arrived within 45 minutes and the Insured Vehicle was towed to SAT as that was the nearest authorized workshop to Mr Nur's home.

13. Mr Nur made an insurance report at SAT the next day, 23 July 2018 at 0942hrs followed by a police report at the Jurong West Neighbourhood Police Centre at 1104 hours.

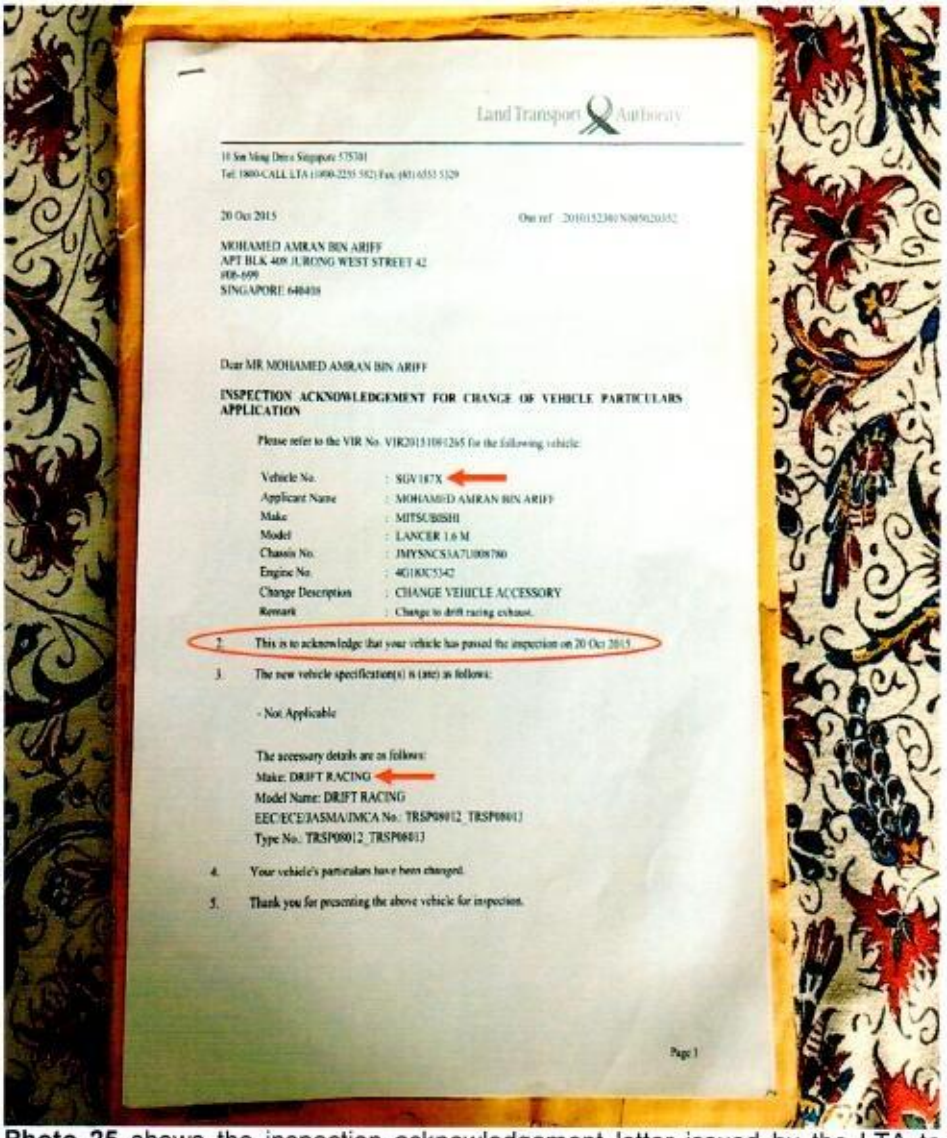
14. With regards to the history of the Insured Vehicle, we were able to gather from Mr Nur that the Insured Vehicle belongs to his father, Mr Mohamed Amran bin Ariff and Mr Nur is the main driver. The Insured Vehicle was purchased new in 2007. The COE of the Insured Vehicle was also recently extended for another 5 years. To the best of his recollection, there has not been any major mechanical problem and/or electrical problem with the Insured Vehicle hence the decision to renew the COE of the Insured Vehicle.

15. We asked Mr Nur regarding the fuel management system module, aftermarket front seats, 2 aftermarket amplifiers, 2 aftermarket twitters, in-car DVD player, non- standard exhaust system and aftermarket 15- inch alloy rims that were fitted onto the Insured Vehicle. He informed us that the fuel management system module was fitted so as to achieve better fuel consumption on the Insured Vehicle. Mr Nur mentioned that he replaced the original front seats with aftermarket front seats. The amplifiers and twitters were removed from his previous vehicle and installed onto the Insured Vehicle after his father purchased it. He also replaced the original CD player of the Insured Vehicle with a DVD player as well as the original rims with aftermarket 15- inch alloy rims.

16. As for the aftermarket full exhaust system, Mr Nur mentioned that he purchased the aftermarket full exhaust system, had it fitted onto the Insured Vehicle on 14 October 2015 and inspected on 20 October 2015. We were able to obtain the exhaust authentication certificate as well as the inspection acknowledgement letter issued by the LTA to prove that the aftermarket full exhaust system had passed the mandatory inspection on 20 October 2015. See photos 23 - 25.

Photo 23 shows the front copy of the DRIFT RACING full exhaust system authentication certificate with its serial number (arrowed).

Photo 24 shows the rear copy of the DRIFT RACING full exhaust system authentication certificate. The full exhaust system was fitted onto the Insured Vehicle on 14 October 2015 and had passed the mandatory inspection at Vicom Inspection Centre on 20 October 2015 (arrowed).



Land Transport Authority

10 Sin Ming Drive Singapore 575701
Tel: 1800-CALL LTA (1800-2255 582) Fax: (65) 6353 5329

20 Oct 2015 Our ref: 201015230/N00502035Z

MOHAMED AMRAN BIN ARIFF
APT BLK 409 JURONG WEST STREET 42
#08-699
SINGAPORE 640409

Dear MR MOHAMED AMRAN BIN ARIFF

INSPECTION ACKNOWLEDGEMENT FOR CHANGE OF VEHICLE PARTICULARS APPLICATION

Please refer to the VIR No. VIR20131001265 for the following vehicle:

Vehicle No.	: SGV187X
Applicant Name	: MOHAMED AMRAN BIN ARIFF
Make	: MITSUBISHI
Model	: LANCER 1.6 M
Chassis No.	: JMYSNCS3A7U008780
Engine No.	: 4G18KC5342
Change Description	: CHANGE VEHICLE ACCESSORY
Remark	: Change to drift racing exhaust.

2. This is to acknowledge that your vehicle has passed the inspection on 20 Oct 2015.

3. The new vehicle specification(s) is (are) as follows:

- Not Applicable

The accessory details are as follows:
Make: DRIFT RACING
Model Name: DRIFT RACING
EEC/ECE/JASMA/IMCA No.: TRSP08012_TRSP08013
Type No.: TRSP08012_TRSP08013

4. Your vehicle's particulars have been changed.

5. Thank you for presenting the above vehicle for inspection.

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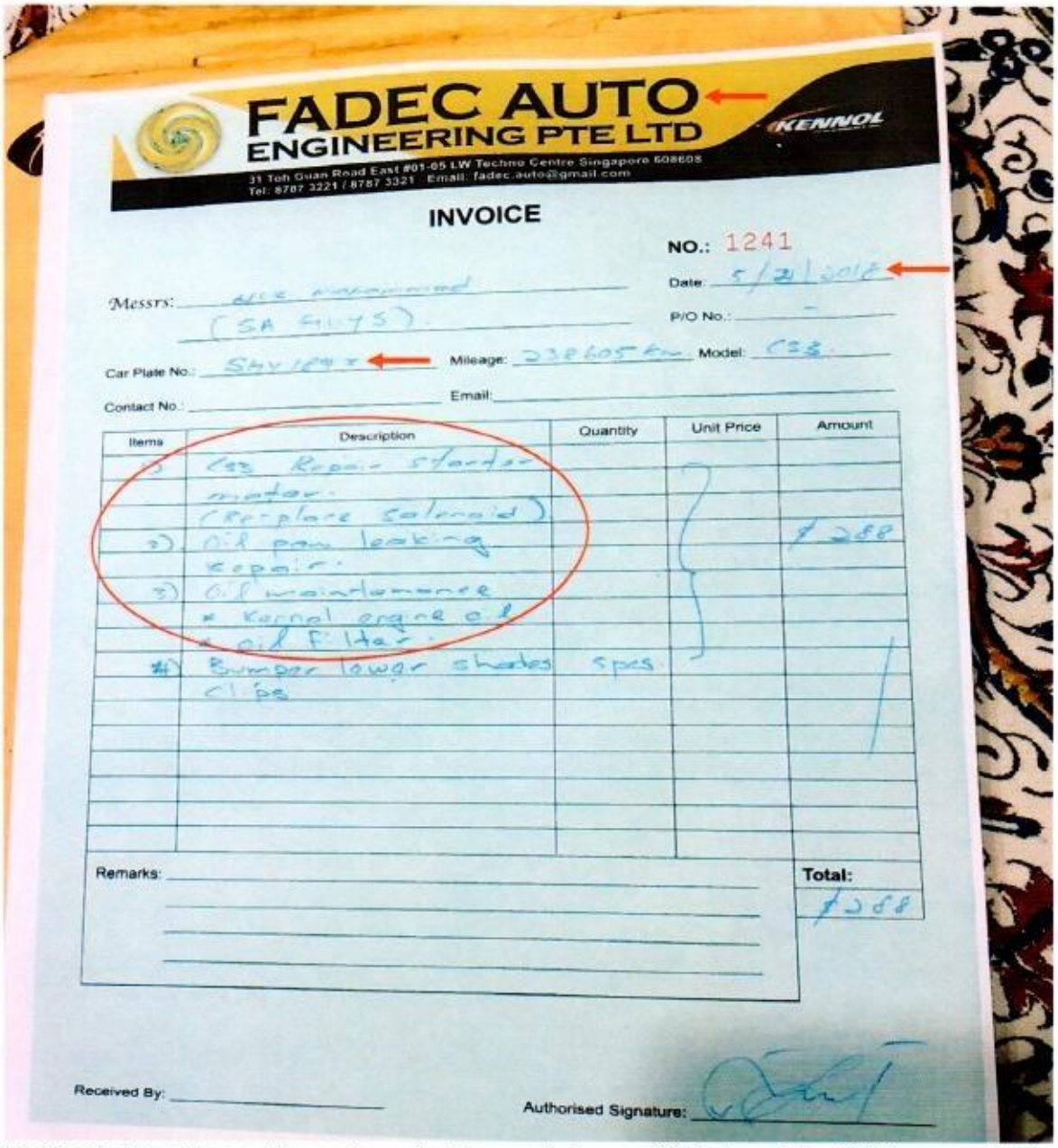
Photo 25 shows the inspection acknowledgement letter issued by the LTA to prove that the DRIFT RACING full exhaust system fitted onto the Insured Vehicle (arrowed) had passed the mandatory inspection on 20 October 2015 (circled).

17. Pertaining to the maintenance aspect, Mr Nur mentioned that he sends the Insured Vehicle for periodic servicing. He services the Insured Vehicle at Fadec Auto engineering Pte. Ltd. located at 31 Toh Guan Road East, #01-05, LW Techno Centre, Singapore 608608. He had the Insured Vehicle serviced 3 months prior to the incident on 5 April 2018.

18. During the course of our investigations, we were able to obtain from Mr Nur, a tax invoice of the most recent servicing and repairs done to the Insured Vehicle. The servicing package had included the changing of engine oil and oil filter. The solenoid of the Insured Vehicle's starter motor was replaced and the oil pan was repaired. See Invoice 1 below.



FADEC AUTO ENGINEERING PTE LTD
31 Toh Guan Road East #01-05 LW Techno Centre Singapore 608605
Tel: 6787 3221 / 8787 3321 Email: fadec.auto@gmail.com
KENNOL

INVOICE

NO.: 1241

Messrs: Alie Mahmood (SA 4475)
Date: 5/2/2018
P/O No.:
Car Plate No.: SHV 1897 Z
Mileage: 238605 km
Model: CS3
Contact No.:
Email:

Items	Description	Quantity	Unit Price	Amount
1)	Car Repair starter motor. (Re-place solenoid)			
2)	Oil pan leaking Repair.			$288
3)	Oil maintenance * Kernal engine oil * Oil Filter.			
#)	Bumper lower shades clips	5pcs		

Remarks:
Total: $288

Received By:
Authorised Signature:

Invoice 1 shows the servicing and repairs done on the Insured Vehicle on 5 April 2018 arrowed). The servicing package had included the changing of engine oil and oil filter. The solenoid of the Insured Vehicle's starter motor was replaced and the oil pan was repaired (circled).

19. Mr Nur mentioned that since the latest servicing and repairs were done he had not experienced any other mechanical or electrical problems with the Insured Vehicle. He also mentioned that there were neither warning lights displayed nor was there an abnormal rise in temperature of the Insured Vehicle while he was driving before the incident occurred.

Incident Scene Photographs

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

21. In general, the information that could be gathered from these photographs had corresponded to the events that were related to us by Mr Nur. 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 road shoulder of the AYE where the Insured Vehicle was positioned. See photos 26 - 28 below.

Photo 26 shows the front portion of the Insured vehicle after the fire had been extinguished. In general, the fire bike parked in the background had corresponded to the events that were related to us by Mr Nur, which is the SCDF had arrived at the incident location and assisted Mr Nur in putting out the fire (arrowed).

Photo 27 shows SCDF personnel conducting preliminary investigations as to how the fire to the Insured vehicle had started.

Photo 28 shows the right side view of the Insured Vehicle after the fire was extinguished. In general, the extensive damages sustained to the front portion had corresponded to the events that were related to us by Mr Nur, which is the fire started from the front bonnet (circled).

22. Based on the vehicle service record invoice 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 Nur had mentioned to us that 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 Nur was the one who noticed white smoke emitting from the rear portion of the front bonnet while he was driving and stopped the Insured Vehicle. 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 photographs 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 engine compartment of the Insured Vehicle, which was earlier discussed in paragraph 8 above.

26. Our checks with both local and international bodies and associations had revealed that at the time of writing this report, there was a manufacturer recall on 12 June 2014 for the lighting switch platform. However it was rectified on 30 October 2014. See search result from LTA below.

Enquiry on Vehicle Recall - Vehicle Specific

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

Vehicle Owner Particulars

Owner ID Type:	Singapore NRIC
Owner ID:	0720B

Vehicle Details

Vehicle Registration number:	SGV187X
Make:	MITSUBISHI
Vehicle Model:	LANCER 1.6 M
Engine No.:	4G18JC5342
Chassis No.:	JMYSNC53A7U008780

Recall Details

1

Recall No.:	R2014060021
Manufacturer Recall Date:	12 Jun 2014
Estimated Completion Year of Recall:	2016
Brief Description (As Provided by Motor Dealer):	Due to inappropriate structure of the base for the lighting switch platform, there may be the part where crack occurs in the soldering between the base and the platform caused by the repeated heating cycle of expansion and contraction.
Date Rectified:	30 Oct 2014

For more details, contact CYCLE & CARRIAGE AUTOMOTIVE PTE LTD

Hotline Information:	CUSTOMER ASISSTANT CENTRE at 6471 9111

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Land Transport Auth

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, somewhere around the rear portion of the engine compartment. The wirings were original factory fitted 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 aftermarket front seats, a fuel management system module, 2 aftermarket amplifiers, 2 aftermarket twitters, an in-car DVD player, a non- standard full exhaust system and non-standard tyre rims (15 inch alloy rims). The abovementioned electrical/electronic components and rims do not require prior approval from LTA however the non-standard full exhaust system would require prior approval from LTA. Mr Nur has provided documents to prove that the non-standard full exhaust system has been approved by the LTA.

30. We are further of the opinion that the additionally fitted electrical/electronic components found on the Insured Vehicle could have possibly caused overloading to the electrical system of the Insured Vehicle. However considering that the installation was carried out shortly after the Insured Vehicle was purchased which was approximately more than 10 years prior to the fire incident, the overloading was likely to be minimal.

31. Although the aftermarket front seats, alloy rims and full exhaust system 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.

32. Our investigations had also revealed that at the time of writing this report, the manufacturer recall campaign in 2014 which had involved the Insured Vehicle that could be related to the fire incident was rectified before the incident occurred.

33. SCDF was activated to attend to the fire incident and a fire report pertaining to their findings will likely be forth coming. We have applied for this fire report and will forward a copy of the report once it is made available to us.

Muhd Nazril
Technical Investigator

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