

Your Ref: S9M01GF2
Our Ref : CS/ASM19004390/N

14 March 2019

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 SGC 2494X ON 7 MARCH 2019**

1. We refer to your letter dated 11 March 2019 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle SGC 2494X (herein referred to as "**Insured Vehicle**") are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 13 March 2019 at the premises of Progressive Automotive Pte. Ltd. located at Block 3022A Ubi Road 1, #01-45/46, Singapore 048716.
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded:-

Vehicle Registration No.	: SGC 2494X
Make / Model	: Nissan Sunny 1.6EXM
Chassis No	: JN1CFAN16Z0095185
Year of Registration	: January 2006
Mileage	: N.A (wiring affected)
5. The Insured Vehicle was noted to have sustained fire damage that was confined to its front portion. The entire engine compartment of the Insured Vehicle was observed to be severely burnt while the interior compartment was observed to be relatively unaffected by the fire.
6. The fire had resulted in the body parts at the front portion of the Insured Vehicle to be burnt. This had included its front bonnet, front grille, and front headlamps, amongst others. See photos 1 – 5 below.



Photo 1 shows the general view of the front portion of the Insured Vehicle at the time of our inspection. The fire damage to the Insured Vehicle was confined to its front portion. Its front bonnet, front grille and front headlamps were amongst the body parts that were found to have been affected as a result of the fire.



Photo 2 shows the general view of the front left portion of the Insured Vehicle at the time of our inspection. The fire damage to the Insured Vehicle was confined to its front portion. Its front bonnet, left front panel and front left headlamp were amongst the body parts that were found to have been affected as a result of the fire.



Photo 3 shows the general view of the front right portion of the Insured Vehicle at the time of our inspection. The fire damage to the Insured Vehicle was confined to its front portion. Its front bonnet and front right headlamp were amongst the body parts that were found to have been affected as a result of the fire.



Photo 4 shows the engine compartment of the Insured Vehicle at the time of our inspection. The entire engine compartment of the Insured Vehicle was observed to be severely burnt. Most of the parts inside the engine compartment were found to be burnt and/or melted as a result of the fire.



Photo 5 shows the interior compartment of the Insured Vehicle, which was observed to be relatively unaffected by the fire.

7. 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

8. For this particular case, the fire appears to have originated within the engine compartment of the Insured Vehicle, somewhere around the left rear portion of the engine compartment. This can be determined from the burn pattern and paint bubbles on the left portion of the front bonnet of the Insured Vehicle as well as the rust that had developed on the underside of the front bonnet, at the left rear area.
9. The whitish burn marks are a result of exposure to prolonged heat intensity. Rust would normally start to develop around these areas soon after a fire as prolonged exposure to high heat intensity usually causes steel/metal material body parts to be exposed to natural environmental condition. The rust that had developed on the underside of the front bonnet, around the left rear area, is an indication that the left rear portion of the engine compartment had sustained exposure to prolonged high heat intensity. See photos 6 & 7 below.



Photo 6 shows the burn pattern and paint bubbles on the left portion of the front bonnet of the Insured Vehicle (circled). Such burn marks are a result of exposure to prolonged heat intensity, which may indicate where the fire had started. Rust would also begin to develop on these areas soon after the fire.



Photo 8 shows the rust that had developed on the underside of the front bonnet, around the left rear area (circled). The development of rust is an indication that the area was exposed to prolonged exposure to high heat intensity, which had caused the steel/metal material of the front bonnet to be exposed to natural environmental condition. Hence the fire to the Insured Vehicle can be determined to have originated towards the left rear portion of the engine compartment.

10. Upon closer examination of the area where the fire to the Insured Vehicle had likely started, we had found greenish residue on several stretches of original factory fitted wirings leading towards the Engine Control Module (ECM) 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 then appear to suggest that the cause of fire to the Insured Vehicle could have possibly been due to electrical in nature. See photos 9 – 11 below.

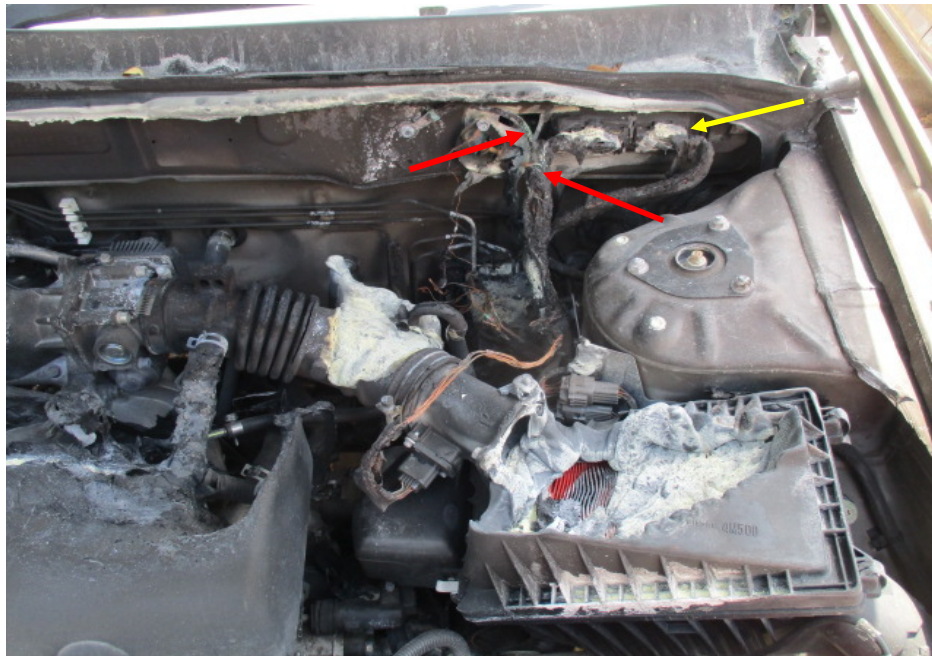


Photo 9 shows the wirings around the left rear portion of the engine compartment, which is in the immediate vicinity where the fire to the Insured Vehicle had likely started. Greenish residue was found on the wirings (red arrow) leading to the Engine Control Module (ECM) (yellow arrow). The presence 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.

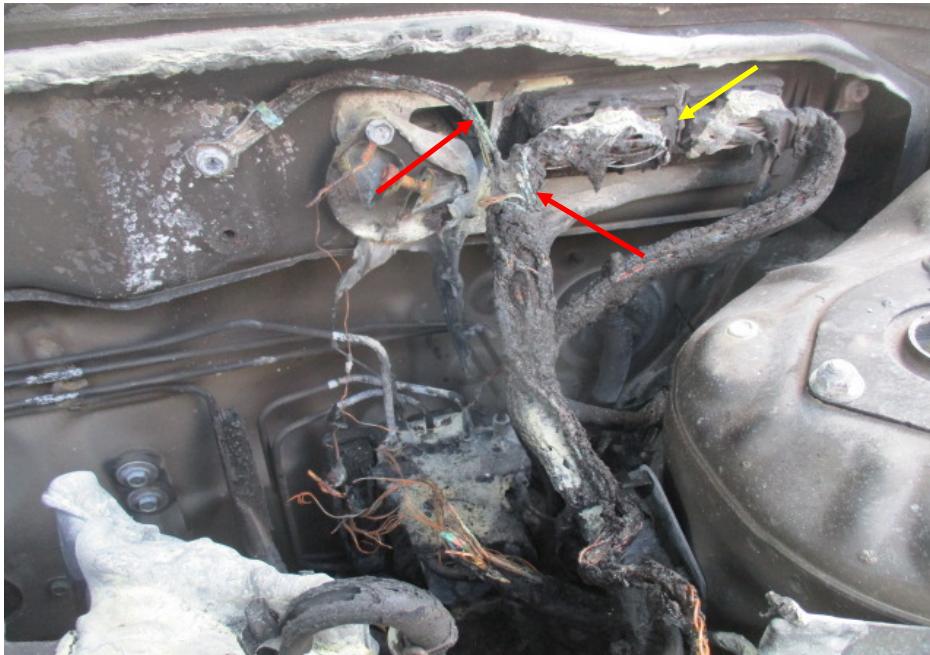


Photo 10 shows a closer view of the wirings with greenish residue (red arrows) leading to the Engine Control Module (ECM) (yellow arrow). The presence of such greenish residue suggest occurrence of an electrical short circuit.

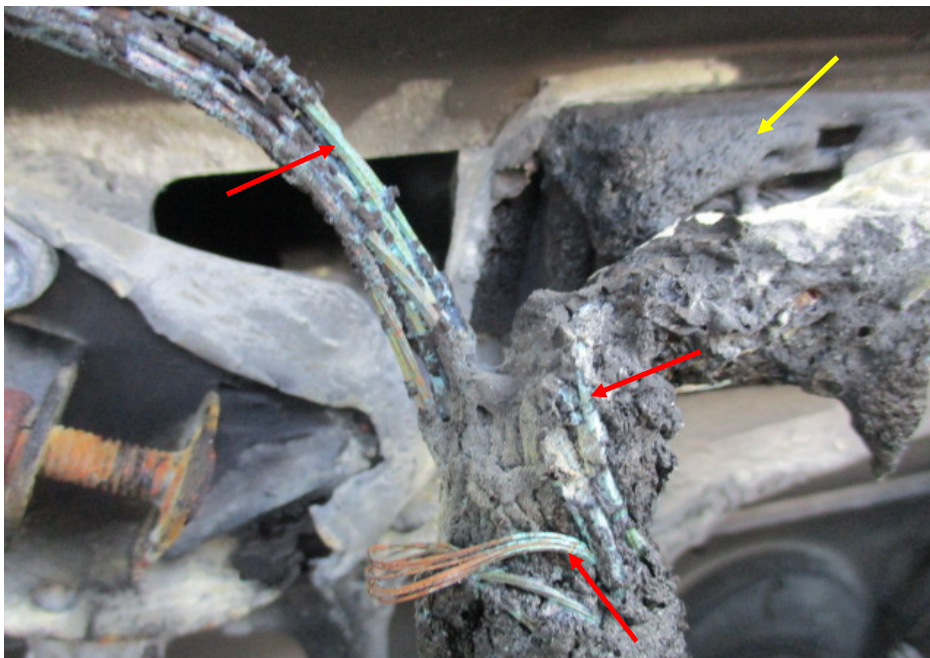


Photo 11 shows a close up view of the wirings with greenish residue (red arrows) leading to the Engine Control Module (ECM) (yellow arrow). The presence of such greenish residue suggest occurrence of an electrical short circuit.

11. From the Singapore Accident Statement, which was made by Mr Tan Mui Eng (herein referred to as “**Mr Tan**”), we note that the fire to the Insured Vehicle had started at a time when it was parked. Mr Tan’s wife was first alerted of the fire by his neighbour.
12. We managed to speak to Mr Tan on 12 March 2019 where we were able to gather further information pertaining to the incident as well as information pertaining to the history of the Insured Vehicle.
13. According to Mr Tan, at about 1500hrs on 7 March 2019, he had parked the Insured Vehicle outside his home premises located at 35 Worthing Road. At about 2030 hours Mr Tan’s neighbour came to his house and informed his wife that there was smoke emitting from the front bonnet and the Insured Vehicle had caught fire. Mr Tan’s wife quickly called the SCDF who arrived shortly after together with the police. The fire was extinguished fairly quickly. Mr Tan’s son was given a case number after his statement was taken by the police. Mr Tan was not at home when the incident occurred.
14. Mr Tan subsequently made towing arrangements the following day on 8 March 2019. The Insured Vehicle was towed to Progressive Automotive Pte. Ltd. where Mr Tan later made an insurance report at 1624 hours.
15. With regards to the history of the Insured Vehicle, we were able to gather from Mr Tan that the Insured Vehicle was purchased new. He is the registered owner of the Insured Vehicle. Mr Tan informed us that his wife drives the Insured vehicle most of the time. The COE of the Insured Vehicle was also recently renewed for another 5 years by Mr Tan. To the best of his recollection, there has not been any major mechanical problem and/or electrical problem with the Insured Vehicle hence his decision to renew the COE of the Insured Vehicle.
16. Pertaining to the maintenance aspect, Mr Tan sends the Insured Vehicle for periodical servicing. He services the Insured Vehicle at Premium Carz Auto Pte. Ltd. located at 1 Kaki Bukit Avenue 6, Autobay, #01-90, Singapore 417883. The last servicing before the incident was done on 22 November 2018. We were able to obtain a receipt of the most recent servicing and repairs done to the Insured Vehicle. The last servicing package included the changing of engine and oil filter. The left tail lamp was also replaced. The Insured Vehicle was also brought in for the mandatory yearly LTA vehicle inspection which it had passed. See Invoice 1 below.

Premium Carz
Auto Pte Ltd

1 Kaki Bukit Ave 6 #01-90 Autobay@Kaki Bukit Singapore 417883
Tel: 6636 9100 Fax: 6636 9113

One Stop Automotive Services Centre

- Insurance Claims
- Insurance Policy Renewal
- Panel Beating
- Spray Painting
- Specialise in Repairing Motor Vehicles
- Overhaul Engine
- Overhaul Auto Transmission
- Air Con Service
- Tyre & Sports Rims
- Interior & Exterior Grooming

INVOICE NO: A 1505

Invoice Date: 22/11/2018

Bill To: Windward Electrical System

Address:

Contact: Herman, 9668 8478

No.	Item Descriptions	Qty	Unit Price	Amount
1.	Engine oil 5W40			\$ 60
2.	oil filter			\$ 12
3.	Tail lamp LH			\$ 85
4.	Labour -servicing			\$ 7
5.	-check & send for inspection			\$ 45
6.	Inspection fee			\$ 65.20
7.				\$
8.				\$
9.				\$
10.				\$
11.				\$
12.				\$
13.				\$
14.				\$
15.				\$
16.				\$
17.				\$
18.				\$
19.				\$
20.				\$
21.				\$
22.				\$
Total Amount				\$ 267.20

All cheques should be crossed and made payable to:
Premium Carz Auto Pte Ltd

PAID
12 NOV 2018

for Premium Carz Auto Pte Ltd

Invoice 1 shows the latest servicing package done on the Insured Vehicle at Premium Carz Auto Pte. Ltd. on 22 November 2018 (red arrows) which had included the changing of engine and oil filter. The left tail lamp was replaced. The Insured Vehicle was also brought in for the mandatory yearly LTA vehicle inspection which it had passed (circled).

17. Mr Tan did manage to provide us a test certificate issued by Vicom Inspection Centre to prove that the Insured Vehicle had passed the mandatory yearly vehicle inspection on 22 November 2018. See photo 12 below.

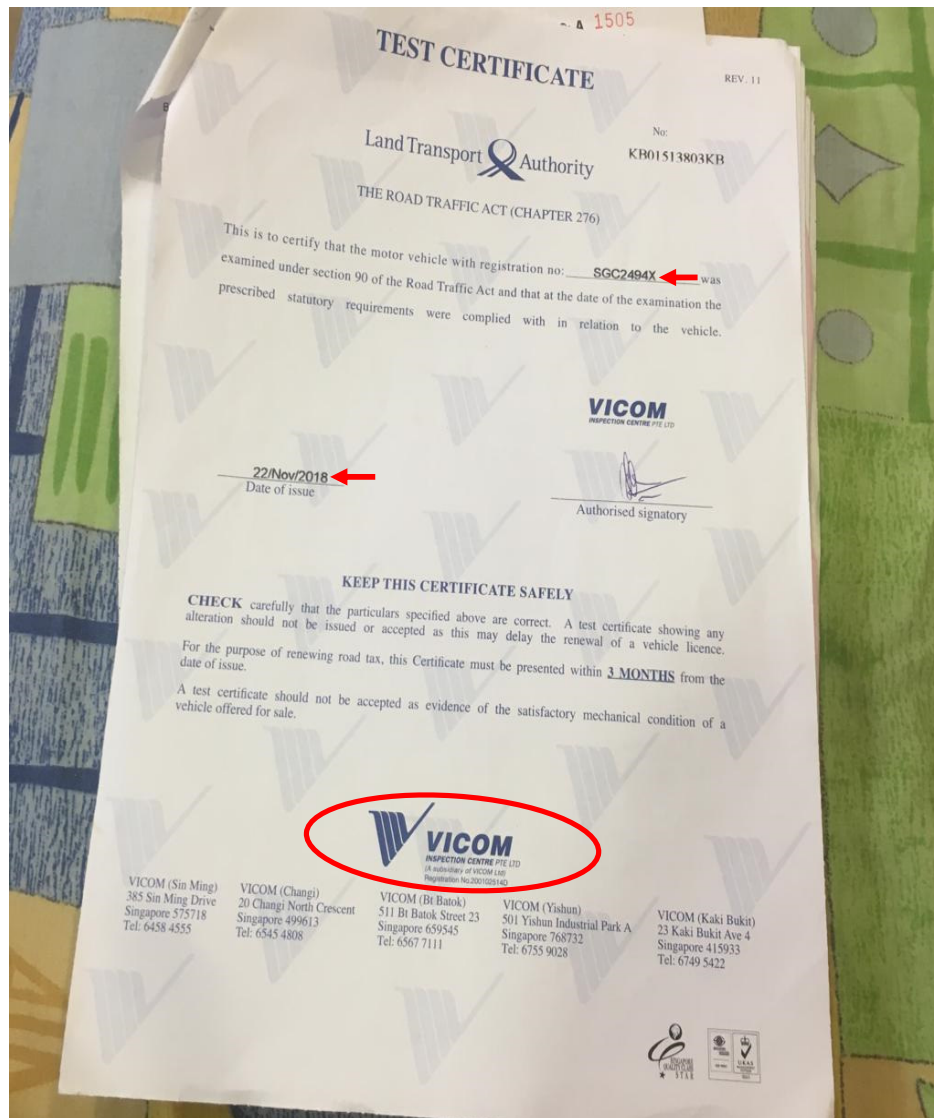


Photo 12 shows the test certificate issued to Mr Tan by Vicom Inspection Centre (circled) to prove that the Insured Vehicle had passed the mandatory yearly vehicle inspection on 22 November 2018 (red arrows).

18. Mr Tan also informed us that he has not done any modification(s) and/or additionally fitted any electrical or electronic component(s) to the Insured Vehicle.

19. Mr Tan mentioned that since the servicing was done, he had not experienced any other mechanical problems with the Insured Vehicle till the day of the incident. He mentioned that there were neither warning lights displayed nor was there an abnormal rise in temperature throughout the period he was driving the Insured Vehicle.

Incident Scene Photographs

20. Although we could not visit the site where the incident happened, we managed to obtain several photographs which were taken by Mr Tan 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 Tan. 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 side of the road where the Insured Vehicle was parked. See photos 13 - 16 below.



Photo 13 shows firefighters putting out the last remnants of the fire to the Insured Vehicle.

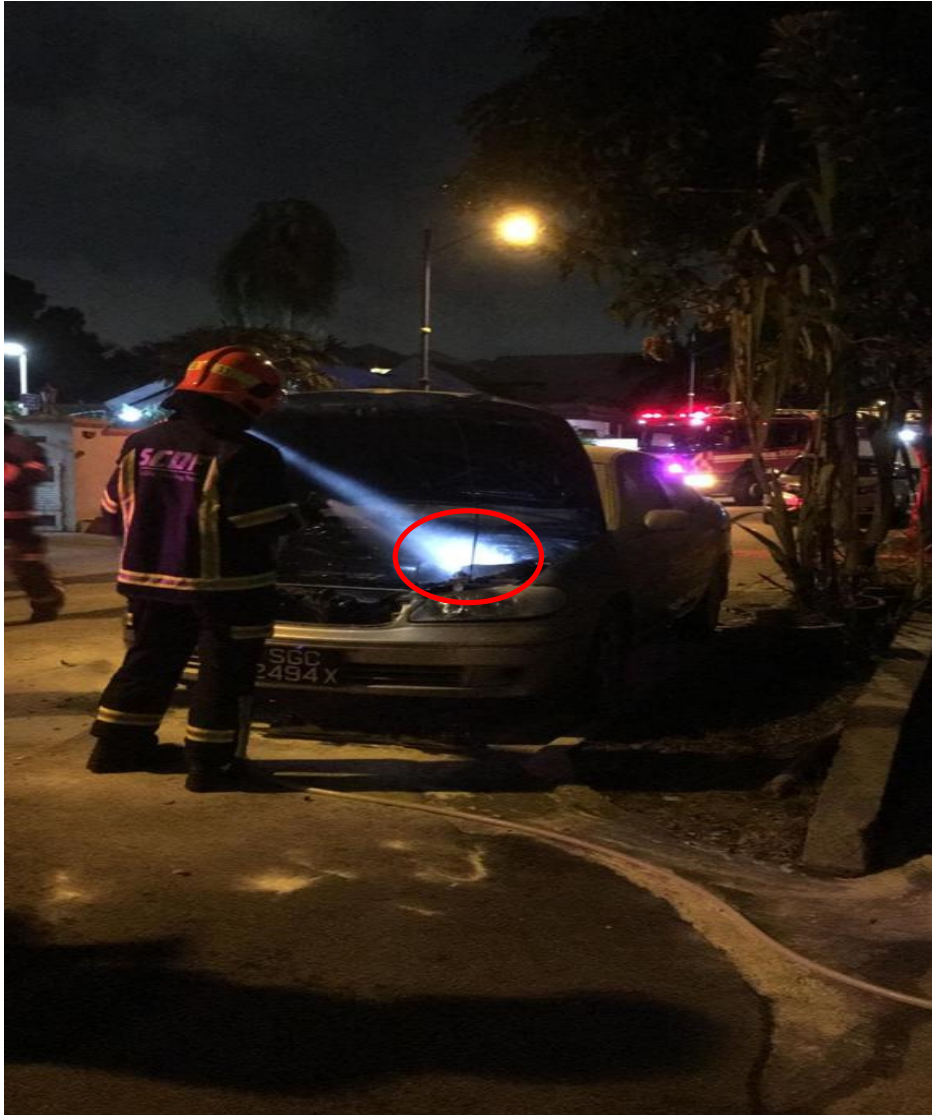


Photo 14 shows the SCDF conducting preliminary investigations after the fire was extinguished. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Mr Tan, which is the fire started from the left portion of the engine compartment (circled).



Photo 15 shows the Insured Vehicle at the incident scene the next day after the fire was extinguished.



Photo 16 shows a close up view of the engine compartment of the Insured Vehicle at the incident scene 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 Tan. The extent of fire damage observed indicates that the fire had started from the left rear portion of the engine compartment (circled).

22. 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 started after the engine was switched off for a period of time (about 6 hours).
23. 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 parked. The location of where the Insured Vehicle was parked was also observed to be not at a secluded location.
24. 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 greenish residue that was found on the wirings of the Insured Vehicle, which was earlier discussed in paragraph 10 above.
25. Although the engine of the Insured Vehicle was switched off at the material time of incident, some electrical current would still be flowing within the electrical system as several electrical and/or electronic components on the Insured Vehicle would require current to remain in operation and/or in standby mode. These components may include the alarm system, clock, radio and cabin light amongst others.
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 10 March 2016 for the ABS actuator unit which could possibly be damaged by excessive water penetration during high pressure and/or engine wash. However it was not rectified. 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:	7637E
Vehicle Details	
Vehicle Registration number:	SGC2494X
Make:	NISSAN
Vehicle Model:	SUNNY 1.6EXM
Engine No.:	QG16394272
Chassis No.:	JN1CFAN16Z0095185
Recall Details	
1 Recall No.:	R2016030213
Manufacturer Recall Date:	10 Mar 2016
Estimated Completion Year of Recall:	2017
Brief Description (As Provided by Motor Dealer):	ABS ACTUATOR UNIT COULD POSSIBLY BE DAMAGED BY EXCESSIVE WATER PENETRATION DURING HIGH PRESSURE CAR AND OR ENGINE WASH.
Date Rectified:	-
For more details, contact TAN CHONG MOTOR SALES PTE LTD	
Hotline Information:	TAN CHONG MOTOR SALES PTE LTD at 64694091/2/3

OK

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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 left rear portion of the engine compartment. The wirings were original factory wirings leading to the Engine Control Module (ECM) 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. 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.

30. 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.

31. 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*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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