

Your Ref: S8MOOPU9
Our Ref :CS/ASM18013652/D

01 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 SGU 8854G ON 24 JULY 2018**

1. I refer to your request dated 25 July 2018.
2. My analysis, comments and opinions with respect to the cause of fire to the insured vehicle SGU 8854G (herein referred to as "**Insured Vehicle**") are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 26 July 2018 at the premises of Ah Lim Motor Company Pte Ltd, 10 Ang Mo Kio Industrial Park 2A #01-09 AMK Autopoint, Singapore 568047.

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

Vehicle Registration No.	: SGU 8854G
Make / Model	: Nissan Sunny 1.6EXA
Chassis No	: JN1CFAN16Z0107712
Year of Registration	: 2007 (May)
Mileage	: N.A (battery melted)

5. The Insured Vehicle was noted to have sustained severe fire damage that was confined to its frontal portion. The entire engine compartment of the Insured Vehicle was observed to be burnt while the interior compartment was observed to be partially burnt and/or melted at the front area.
6. The front bumper, front bonnet, front fenders, front support panel, front grille, front headlamps, front windscreen, front dashboard and roof upholstery amongst others were observed to have been burnt as a result of the fire. The air intake manifold, battery, hoses and pipes inside the engine compartment were all burnt and/or melted. See photo 1 – 4 below.



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



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



Photo 3 shows the engine compartment of the Insured Vehicle at the time of my 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 4 shows the interior compartment of the Insured Vehicle, which was observed to be partially burnt and/or melted at the front area. The front dashboard and roof upholstery were amongst the parts that were found to have been burnt and/or melted as a result of the fire.

7. At the time of my inspection of the Insured Vehicle, I did not find any additionally fitted electronic and/or electrical component(s) on the Insured Vehicle. There was also no modification(s) fitted on the Insured Vehicle.

Circumstance of Incident

8. From the Singapore Accident Statement, which was made by one How Wee Kong (herein referred to as "**Mr How**"), I note that the fire to the Insured Vehicle had started at a time when it was parked. About 30mins after parking the Insured Vehicle at the premise of 14 Ang Mo Kio Industrial Park 2, he received a phone call informing him that the Insured Vehicle had caught fire. SCDF and police officers were already at scene when he returned to where the Insured Vehicle was parked.
9. I manage to speak to Mr How on 27 July 2018 and through telephone conversation, I was able to gather further information pertaining to the incident as well as information pertaining to the history of the Insured Vehicle.
10. According to Mr How, on 24 July 2018 at about 1100hrs, he had parked the Insured Vehicle into one of the parking lots inside the premise of 14 Ang Mo Kio Industrial Park 2. Mr How was heading to the self-storage facility within the premise. He had driven the Insured Vehicle from his home at Woodlands Street 81, and as per his recollection, there was no abnormality to the Insured Vehicle during this drive.
11. After reverse parking the Insured Vehicle into one of the parking lots, Mr How had gone inside the self-storage facility to collect some goods, which he had stored in the facility. He had secured the Insured Vehicle and everything was intact when he left. Approximately 30mins later, Mr How received a phone call from the management office of the premise, informing him that the Insured Vehicle had caught fire. Upon returning to where the Insured Vehicle was parked, Mr How noticed that the fire was extinguished by SCDF officers who were already at scene. The frontal portion of the Insured Vehicle was badly burnt because of the fire.
12. After relating the earlier events to the SCDF and police officers that were at scene, Mr How was advised to tow the Insured Vehicle away. Arrangement was subsequently made to tow the Insured Vehicle to Ah Lim Motor Company at Ang Mo Kio Autopoint. A Singapore Accident Statement regarding the incident was also made on the same day at Ah Lim Motor Company.

13. With regard to the history of the Insured Vehicle, I was able to gather from Mr How that the Insured Vehicle was purchased second hand from a used car dealer about 7 years ago. The Insured Vehicle is registered under the name of a company which he owns. Mr How is the main driver of the Insured Vehicle and to the best of his recollection, there has not been any major mechanical and/or electrical problem with the Insured Vehicle apart from the usual wear and tear that a vehicle would experience.
14. Regarding the maintenance aspect, Mr How informed me that the last servicing carried out to the Insured Vehicle was about 2 months ago, at a workshop in Johor Bahru. Maintenance and servicing of the Insured Vehicle are usually done in Johor Bahru and he does not keep any receipts for work done. A normal routine servicing like changing of the engine oil and engine oil filter was done during the last servicing. Mr How also informed me that there was no modification(s) and/or additional electronic or electrical component(s) fitted on the Insured Vehicle.
15. Mr How had taken some photographs of the Insured Vehicle after the fire was extinguished and these were forwarded to me for review.

Investigation and Technical Analysis

16. The photographs provided to me were all taken after the fire was extinguished. It had showed the Insured Vehicle parked inside a parking lot number 20 with its frontal portion burnt. The location where the Insured Vehicle was parked did not appear to be a secluded area. Upon closer examination of the photographs provided, it was observed that there was no unusual foreign material(s) and/or object(s) found on the ground in the immediate area of where the Insured Vehicle was parked.
17. The photographs had also showed the damage of burnt nature to the Insured Vehicle immediately after the fire was put out, and had corresponded to the damages as seen by me during my inspection of the Insured Vehicle. In general, the observations gathered from my review of the photographs that were taken by Mr How at the incident scene had corresponded to his description of the events that he had related to me during our conversation on 27 July 2018. See photo 5 & 6 below.



Photo 5 shows the Insured Vehicle at the incident location after the fire was extinguished. It was observed that the Insured Vehicle was parked inside a parking lot number 20 at the material time of incident. My close examination of the photographs provided had showed no unusual foreign material(s) and/or object(s) on the ground in the immediate area of where the Insured Vehicle was parked. The damage of burnt nature to the Insured Vehicle immediately after the fire was put out had also corresponded to the damages as seen by me during my inspection of the Insured Vehicle.



Photo 6 shows the Insured Vehicle at the incident location after the fire was extinguished. It was observed that the Insured Vehicle was parked inside a parking lot number 20 at the material time of incident. My close examination of the photographs provided had showed no unusual foreign material(s) and/or object(s) on the ground in the immediate area of where the Insured Vehicle was parked. In general, the observations gathered from my review of the photographs that were taken by Mr How at the incident scene had corresponded to his description of the events that he had related to me during our conversation on 27 July 2018.

18. For a vehicular fire, the common cause(s) include engine overheating, fluid leak, external factor and electrical nature. For this case, the possibility of the cause of fire to the Insured Vehicle being due to engine overheating and fluid leak would seem unlikely as the fire had started after the engine was switched off. Temperature within the engine compartment would have cooled down after the engine was switched off.
19. The possibility of the fire being due to external factor (foreign material(s) stuck on hot surfaces, arson and sabotage amongst others) would also seem unlikely given that my 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 where the Insured Vehicle was parked at the material time was also not at a secluded location.

20. The possibility of the fire being due to electrical in nature would then seem more likely given that engine overheating and external factor would both seem unlikely. 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.
21. The physical condition of the wirings as seen during my inspection of the Insured Vehicle also supports the cause of fire being due to electrical in nature. The following paragraphs discusses the physical evidence relating to this.
22. Firstly, high heat intensity burned marks (whitish burn marks) were found at the rear left area of the front bonnet. These whitish burn marks are a result of exposure to prolong 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.
23. Correspondingly, the underside of the front bonnet at the rear left area was found with similar high heat intensity burn marks (whitish burn marks). Rust had also started to develop at this area. Following the characteristic of heat rising upwards, the burn pattern of the front bonnet would than indicate that the origin of fire was at the rear left area of the Insured Vehicle's engine compartment. See photo 7 - 9 below.
24. My examination of the rear left area of the engine compartment, during my inspection of the Insured Vehicle, revealed wirings that were completely burned to its bare copper state. These wirings were original factory fitted wirings leading to the Engine Control Module (ECM) of the Insured Vehicle. The reddish colour of the copper wires suggest that the wirings were exposed to high heat. Such condition normally indicates internal heating of copper wires which is a sign of an electrical short circuit occurring. Hence the physical condition of the wirings at the area where the fire had originated indicates that the cause of fire to the Insured Vehicle was due to electrical in nature. See photo 10 - 12 below.



Photo 7 shows the whitish burn marks (circled) that were found on the rear left area of the Insured Vehicle's front bonnet. Such whitish burn marks are a result of exposure to prolong heat intensity. Following the characteristic of heat rising upwards, the fire to the Insured Vehicle can then be determined to have originated around the rear left area of the engine compartment.



Photo 8 shows the whitish burn marks on the underside of the front bonnet, directly under the area where similar whitish burn marks were found. These whitish burn marks are a result of exposure to prolong heat intensity. Rust (circled) would normally start to develop around these areas soon after a fire as prolonged exposure to high heat intensity causes steel/metal material body parts to be exposed to natural environmental condition.



Photo 9 shows a general view of where the fire to the Insured Vehicle had originated, which was around the rear left area of the engine compartment (circled). This was established basing on the burn pattern (whitish burn marks and rust) that was found on the Insured Vehicle's front bonnet.

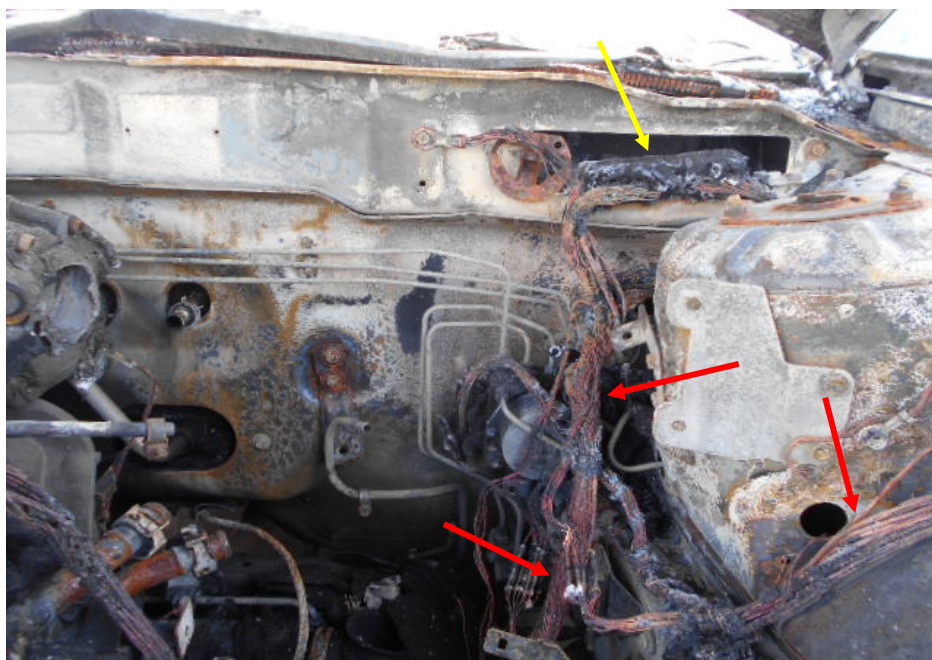


Photo 10 shows the wirings around the rear left area of the engine compartment, which was where the fire to the Insured Vehicle had likely started. The wirings (red arrow) leading to the Engine Control Module (ECM) (yellow arrow) were found to be burnt to its bare copper state. Such condition normally indicates internal heating of copper wires, which is a sign of an electrical short circuit occurring. These burnt wirings were original factory fitted wirings.

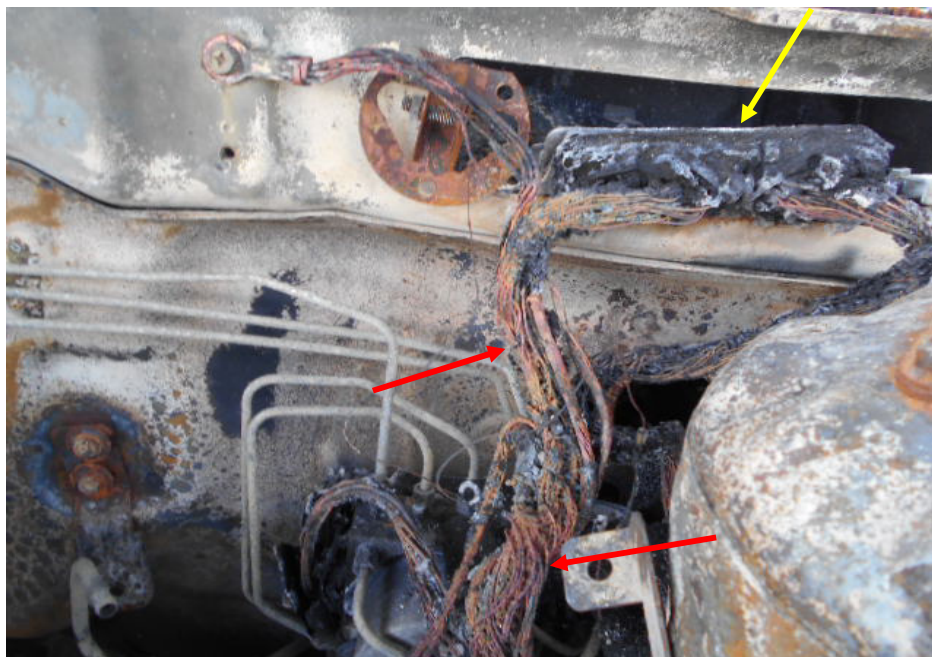


Photo 11 shows a closer view of the burnt wirings leading to the Engine Control Module (ECM) (yellow arrow). The reddish colour (red arrow) of the copper wires suggest that the wirings were exposed to high heat. Such condition normally indicates internal heating of copper wires, which is a sign of an electrical short circuit occurring.

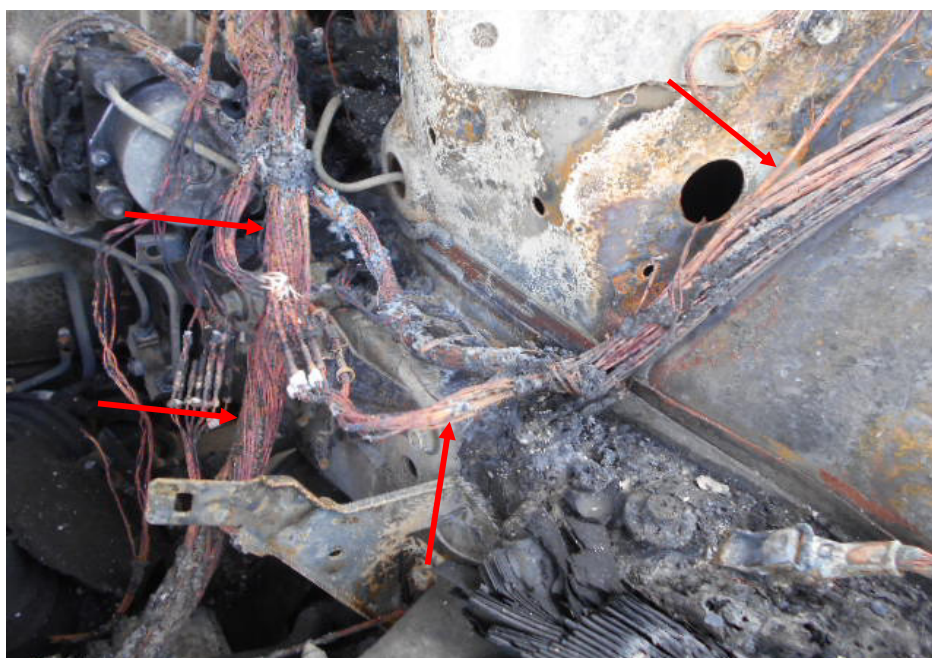


Photo 12 shows another stretch of wirings, at the rear left area of the Insured Vehicle's engine compartment, burnt to its bare copper state. The reddish colour (arrowed) of the copper wires suggest that the wirings were exposed to high heat. Such condition normally indicates internal heating of copper wires, which is a sign of an electrical short circuit occurring.

25. My checks with both local and international bodies and associations had revealed that at the time of writing this report, there is an on-going manufacturer recall pertaining to the Anti-Lock Braking System (ABS), which involved the Insured Vehicle. According to the brief details of the recall, the ABS may possibly be damaged by excessive water penetration. As at the time of writing this report, the Insured Vehicle has not been sent for rectification of this ABS issue. Given that the issue does not pose a fire risk, the manufacturer recall involving the Insured Vehicle is unlikely to have contributed or cause this fire incident. 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:	Business
Owner ID:	0135X
Vehicle Details	
Vehicle Registration number:	SGU8854G
Make:	NISSAN
Vehicle Model:	SUNNY 1.6EXA
Engine No.:	QG16422717
Chassis No.:	JN1CFAN16Z0107712
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: -

Screenshot shows the LTA search result regarding the manufacturer recall involving the Insured Vehicle. From the information gathered, there is an on-going manufacturer recall pertaining to the Anti-Lock Braking System (ABS), which involved the Insured Vehicle. According to the brief details of the recall, the ABS may possibly be damaged by excessive water penetration. As of the time of writing this report, the Insured Vehicle has not been sent for rectification of this ABS issue. However, given that this issue does not pose a fire risk, the manufacturer recall involving the Insured Vehicle is unlikely to have contributed or cause this fire incident.

26. I did however clarify with Mr How, who informed me that to the best of his recollection, he had received a letter sometime in 2016 requesting him to send the Insured Vehicle for rectification however when he called the contact number provided, he was informed that the waiting time was long and arrangement will be made for him to send the Insured Vehicle for rectification. Mr How did not make any follow up thereafter.

Conclusion

27. Having investigated and technically analysed the damages of burnt nature to the Insured Vehicle, I am 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 wiring inside the engine compartment, somewhere around the rear left area of the engine compartment. The wiring was an original factory wiring leading to the Engine Control Module (ECM) of the Insured Vehicle.
28. I 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 my inspection of the Insured Vehicle.
30. My investigations also revealed that at the time of writing this report, there is an on-going manufacturer recall that involved the Insured Vehicle. However, as the cause of the recall does not possess a fire risk, I am hence of the opinion that the recall is not related to this fire incident.

Ang Bryan Tani

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