

Your Ref: S8M00LXD
Our Ref :CS/ASM18011493/D

10 July 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 SGD 9562G ON 25 JUNE 2018**

1. I refer to your request dated 25 June 2018.
2. My analysis, comments and opinions with respect to the cause of fire to the insured vehicle SGD 9562G (herein referred to as "**Insured Vehicle**") are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 27 June 2018 at the premises of M/s Mova Automotive Pte Ltd, Block 1008 Bukit Merah Lane 3 #01-04, Singapore 159722.
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded: -

Vehicle Registration No.	: SGD 9562G
Make / Model	: Chevrolet Optra 1.6A
Chassis No	: KL1NA196E5H110658
Year of Registration	: 2006 (March)
Mileage	: N.A (wiring affected)

5. The Insured Vehicle was noted to have sustained fire damage that was confined to its frontal body. Its engine compartment was observed to have been extensively burnt. The rear body and interior compartment were unaffected by the incident.
6. Body parts that were observed to have been burnt and/or melted as a result of the fire had included the front fenders, front bonnet, front headlamps and front radiator grille amongst others. Parts inside the engine compartment like the radiator, intake manifold, air duct, cooling fan, hoses and pipes amongst others were all burnt and/or melted as a result of the incident. See photo 1 – 4 below.



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



Photo 2 shows a general view of the front left body of the Insured Vehicle at the time of inspection. The Insured Vehicle was observed to have sustained fire damage at its frontal body. Its front left fender, front left headlamp and front bonnet were amongst the body parts that were found to have been burnt as a result of the fire.



Photo 3 shows the engine compartment of the Insured Vehicle at the time of inspection. Almost all the parts inside the engine compartment were observed to have been burnt and/or melted as a result of the fire. These parts had included its radiator, air condenser, cooling fan, intake manifold, fuse box, battery, air duct, hoses and pipes amongst others.



Photo 4 shows the interior compartment of the Insured Vehicle. The interior compartment and rear body of the Insured Vehicle were unaffected by the incident.

7. There was no modification(s) and/or electronic and/or electrical component(s) additionally fitted on the Insured Vehicle at the time of my inspection.

Circumstance of Incident

8. From the Singapore Accident Statement, which was made by one Leng Zheng Yan (herein referred to as "**Mr Leng**"), I note that the fire to the Insured Vehicle had started at the entrance leading to the carpark of Harbourside Building 2. The Singapore Accident Statement made by Mr Leng did not contain any further description of the events.
9. Given the relatively brief description of the events contained in Mr Leng's Singapore Accident Statement, I had spoken to him on 02 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 Leng, on 25 June 2018 at about 0920hrs, he was driving the Insured Vehicle heading to his office at Harbourside Building 2. He was from his home at Block 32 Eunos Crescent. Mr Leng estimates the duration of the drive from Eunos Crescent to Harbourside Building to be about 20mins to 25mins. During the journey, he did not experience any abnormality to the Insured Vehicle. The Insured Vehicle was operating normally as per usual.
11. Upon reaching the carpark entrance of Harbourside Building 2, the engine of the Insured Vehicle suddenly died off. Mr Leng attempted to start the engine but did not hear any cranking sound. He then saw smoke coming out from the gaps at the left side of the front bonnet and hence alighted from the Insured Vehicle to check. After alighting, he heard a minor explosion sound, and after which a lot of smoke was seen coming out from the gaps around the front bonnet.
12. Mr Leng quickly went to the security office nearby and alerted the security officers of the incident. He also called the Police for assistance. Several security officers took a fire hose and sprayed on the exterior of the front bonnet, at the area where smoke was coming out. According to Mr Leng, he saw flames at the front under side of the Insured Vehicle. SCDF officers soon arrived and took over the fire-fighting, managing to fully extinguish the flame.
13. After relating the earlier events to the SCDF officers and the police officers who had attended to the incident scene, Mr Leng was advised to tow the Insured Vehicle away. Arrangement was subsequently made to tow the Insured Vehicle to Mova Automotive Pte Ltd at Bukit Merah.

14. With regard to the history of the Insured Vehicle, I was able to gather from Mr Leng that he is the registered owner and main driver of the Insured Vehicle. He purchased the Insured Vehicle second hand in August last year. He had sent the Insured Vehicle for a routine servicing on 09 June this year at his regular workshop "Autosaver" at Kaki Bukit. He also replaced the aircon compressor and power window motor before Chinese New Year this year. As far as he can recall, he did not experience any major mechanical and/or electrical problem with the Insured Vehicle since taking possession of it in August last year. Mr Leng was not able to provide any documents relating to these servicing and maintenance as he does not keep such documents.
15. Mr Leng informed me that he has not done any modification and/or fitted any electrical/electronic component(s) on the Insured Vehicle. Mr Leng had taken some photographs during his time at the incident location and these photographs were forwarded to me for review.

Investigation and Technical Analysis

16. The photographs provided to me had showed the Insured Vehicle stopped at the top of an upslope ramp leading into the driveway of a sheltered carpark. Whitish smoke could be seen coming out from the engine compartment of the Insured Vehicle, through the gaps at the front bonnet and front radiator grille. Upon closer examination of the photographs provided, I had noted that there was no unusual foreign material(s), object(s) and/or fluid accumulation on the ground where the Insured Vehicle had stopped.
17. SCDF officers could also be seen examining the engine compartment of the Insured Vehicle after the fire was extinguished. The damage of fire nature to the Insured Vehicle, as seen from the photographs provided, was observed to be similar to what I had observed during my inspection of the Insured Vehicle.
18. In general, the observations gathered from my review of the photographs that was taken by Mr Leng at the incident scene had corresponded to the description of events that he had related to me during our conversation on 02 July 2018. See photo 5 – 7 below.



Photo 5 shows the Insured Vehicle at the incident location with whitish smoke emitting out from the gaps surrounding its front bonnet and front radiator grille. There was no unusual foreign material(s) or object(s) and/or fluid accumulation on the ground where the Insured Vehicle had stopped. In general, the observations gathered from my review of the photographs that were taken by Mr Leng at the incident scene had corresponded to the description of events that he had related to me during our conversation on 02 July 2018.



Photo 6 shows SCDF officers examining the engine compartment of the Insured Vehicle after the fire was extinguished.



Photo 7 shows the Insured Vehicle after the fire was extinguished. The damage of fire nature to the Insured Vehicle, as seen from the photographs provided, was observed to be similar to what I had observed during my inspection of the Insured Vehicle. In general, the observations gathered from my review of the photographs that were taken by Mr Leng at the incident scene had corresponded to the description of events that he had related to me during our conversation on 02 July 2018.

19. For this case, intense burn marks were found on a single area on the Insured Vehicle. This was at the centre left of the front bonnet. The burn marks were seen on the front bonnet of the Insured Vehicle immediately after the fire was extinguished. Such marks are normally formed on steel/metal material body parts that had been exposed to prolong high heat intensity, and can usually be used to determine the origin of the fire. Given the characteristic of heat (hot air rises), the origin of fire can then be determined to be at the centre left area of the engine compartment, below the area where the intense burn marks were found on the Insured Vehicle's front bonnet.
20. My examination of the centre left area of the engine compartment, during my inspection of the Insured Vehicle, revealed wirings that were completely burned to its bare copper state. The bright 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 8 - 12 below.



Photo 8 shows the intense burn marks (circled) that were found on the centre left of the front bonnet. Such marks are normally formed on steel/metal material body parts that had been exposed to prolong high heat intensity, and can usually determine the origin of the fire.



Photo 9 shows the Insured Vehicle at the incident scene after the fire was extinguished. Intense burn marks (circled) were seen on the front bonnet of the Insured Vehicle immediately after the fire was extinguished. Such marks are normally formed on steel/metal material body parts that had been exposed to prolong high heat intensity, and can usually determine the origin of the fire. For this case, the fire had originated at the centre left area of the Insured Vehicle's engine compartment.

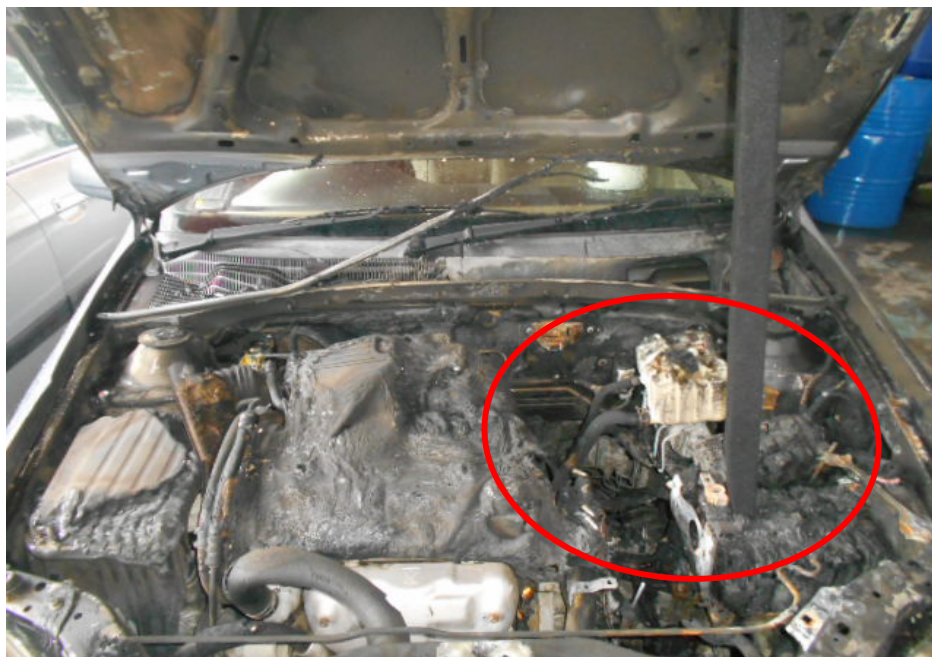


Photo 10 shows the engine compartment of the Insured Vehicle at the time of my inspection. Following the location where intense burn marks were found, the origin of fire was determined to be at the centre left area (circled) of the Insured Vehicle's engine compartment.



Photo 11 shows the wirings at the centre left area of the Insured Vehicle's engine compartment. Upon closer examination of the area where the fire had originated, I had found wirings (arrowed) that were completely burned to its bare copper state. The bright 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.



Photo 12 shows another stretch of wiring around the centre left area of the Insured Vehicle's engine compartment. The wirings (arrowed) were found to be completely burned to its bare copper state. Such condition normally indicates internal heating of copper wires, which is a sign of an electrical short circuit occurring. This then indicates that the cause of fire to the Insured Vehicle was of electrical nature.

21. My checks with both local and international bodies and associations revealed that at the time of writing this report, there was no manufacturer recall of similar make and model vehicle as the Insured Vehicle. See search result below obtained from LTA.

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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:	9507H
Vehicle Details	
Vehicle Registration number:	SGD9562G ←
Make:	CHEVROLET
Vehicle Model:	OPTRA 1.6A
Engine No.:	F16D3501626K
Chassis No.:	KL1NA196E5H110658
Recall Details	
No Recall Detail records ←	

Screenshot shows the LTA search result regarding manufacturer recall involving the Insured Vehicle. Results gathered from my search revealed that the Insured Vehicle was not involved in any manufacturer recall campaign.

Conclusion

22. 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 wirings inside the engine compartment, at the centre left area of the engine compartment. The wirings were original factory wirings.
23. 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.
24. There was no modification (s) and/or additional electronic and/or electrical component(s) fitted on the Insured Vehicle at the time of my inspection of the Insured Vehicle.
25. My investigations also revealed that at the time of writing this report, there is no manufacturer recall of similar make and model vehicle as the Insured Vehicle.

Ang Bryan Tani

AMSOE, AMIRTE, AFF SAE, M.MATAI, AFF.Inst.AEA

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Technical Investigation & Reconstructionist (SAE-A)

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