

Your Ref: S9M01JHS
Our Ref :CS/ASM19006306/D

14 April 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 SFT 26A ON 06 APRIL 2019**

1. I refer to your request dated 08 April 2019.
2. My analysis, comments and opinions with respect to the cause of fire to the insured vehicle SFT 26A (herein referred to as "**Insured Vehicle**") are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 09 April 2019 at the premises of M/s Progressive Car Care Pte Ltd, Block 3022A Ubi Road 1 #01-45/46, Singapore 408716.
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded: -

Vehicle Registration No.	: SFT 26A
Make / Model	: BMW 535i 3.0L AT
Chassis No	: WBAFR72080C264732
Year of Registration	: 2010 (May)
Mileage	: N.A (wiring affected)

5. The Insured Vehicle was noted to have sustained fire damage that was confined to its frontal right body. Its engine compartment was also observed to have been affected. The left side and the rear body of the Insured Vehicle, together with its interior compartment, were unaffected by the incident.
6. The front bumper, front bonnet, front right fender, front right headlamp and front windscreen were amongst the exterior body parts that were damaged as a result of the fire. The air intake manifold, engine top cover, air filter housing, various hoses and pipes amongst others inside the engine compartment were observed to have been burnt and/or melted. See photo 1 – 4 below.



Photo 1 shows a general view of the front right body of the Insured Vehicle at the time of my inspection. The fire damage to the Insured Vehicle was confined to its frontal right body. Its front bumper, front bonnet, front right headlamp and front right fender were amongst the exterior 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 body of the Insured Vehicle at the time of my inspection. The left side and rear body of the Insured Vehicle was observed to be relatively unaffected by the incident.



Photo 3 shows the engine compartment of the Insured Vehicle at the time of my inspection. The fire damage was observed to have been more severe at the right side of the engine compartment (circled). The parts that were found to have been burnt and/or melted include the air intake manifold, engine top cover, air filter housing, various hoses and pipes amongst others.



Photo 4 shows the interior compartment of the Insured Vehicle, which was not affected by the fire incident.

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 Eric Ang Wei Ming (herein referred to as "**Mr Ang**"), I note that the fire to the Insured Vehicle had started at a time when it was parked. About 20mins after parking the Insured Vehicle at the premises of 12 Upper Serangoon Crescent, Mr Ang received a phone call informing him that the Insured Vehicle had caught fire. When he returned to where the Insured Vehicle was parked, the fire was already extinguished with SCDF and police officers at scene.
9. I manage to speak to Mr Ang on 11 April 2019 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 Ang, on 06 April 2019 at about 1210hrs, he had parked the Insured Vehicle inside one of the parking lots at the sheltered carpark of his residence at 12 Upper Serangoon Crescent. He had earlier driven the Insured Vehicle from Bedok Mall back to his home, and as per his recollection, there was no abnormality to the Insured Vehicle during this drive. He had secured the Insured Vehicle, and everything was intact when he left to head up to his unit at #16-35.
11. At about 1230hrs, a security guard at his residence called him to inform that the Insured Vehicle had caught fire. Upon returning to where the Insured Vehicle was parked, Mr Ang observed that SCDF and police officers were at scene, and that the fire was already extinguished. He also noticed that the front right body of the Insured Vehicle was burnt with its front bonnet forced opened. From what he can remember, there was no other vehicle(s) and property that were damaged as a result of the fire.
12. After relating the earlier events to the SCDF and police officers that were at scene, Mr Ang was advised to tow the Insured Vehicle away. Arrangement was subsequently made to tow the Insured Vehicle to M/s Progressive Car Care Pte Ltd. A Singapore Accident Statement regarding the incident was also made on 08 April 2019 at M/s Progressive Car Care Pte Ltd.

13. With regard to the history of the Insured Vehicle, I was able to gather from Mr Ang that the Insured Vehicle was purchased second hand from a used car dealer about 4 years ago. Mr Ang is the registered owner and the main driver of the Insured Vehicle. However, he does not drive the Insured Vehicle very often as he is mostly overseas for work. 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 Ang informed me that the last servicing carried out to the Insured Vehicle was around October/November last year. A normal routine servicing like changing of the engine oil and engine oil filter was done during the last servicing. Mr Ang had disposed the documents relating to the servicing of the Insured Vehicle and hence was not able to provide me any documents relating to the servicing aspect. He also informed me that there was no modification(s) and/or additional electronic or electrical component(s) fitted on the Insured Vehicle.
15. Mr Ang had taken some video recordings during his time at the incident scene and these were forwarded to me for review.

Investigation and Technical Analysis

16. The video recordings provided to me were all taken after the fire was extinguished. It had showed the Insured Vehicle reversed parked inside a parking lot. The location where the Insured Vehicle was parked did not appear to be a secluded area. Upon closer examination of the video recordings, there appears to be no unusual foreign material(s) and/or object(s) found on the ground in the immediate area of where the Insured Vehicle was parked. The ground was however covered with powder residue from fire extinguishers.
17. Upon further examination of the video recordings, I note that the damage of burnt nature to the Insured Vehicle immediately after the fire was put out had corresponded to the damage as seen by me during my inspection of the Insured Vehicle ie the frontal right body of the Insured Vehicle was exteriorly affected. In general, the observations gathered from my review of the video recordings that were taken by Mr Ang at the incident scene had corresponded to the description of events that he had related to me during our conversation on 11 April 2019. See photo 5 - 7 below, which are screenshots taken from the video recordings that I had reviewed.



Photo 5 shows a screenshot taken from the video recording that was provided by Mr Ang. The damage of burnt nature to the Insured Vehicle immediately after the fire was put out had corresponded to the damage as seen by me during my inspection of the Insured Vehicle ie the frontal right body (circled) of the Insured Vehicle was exteriorly affected. Also, apart for the powder residue left behind by fire extinguishers, there appears to be no unusual foreign material(s) and/or object(s) found on the ground in the immediate area of where the Insured Vehicle was parked.



Photo 6 shows a screenshot taken from the video recording that was provided by Mr Ang, with SCDF officers examining the engine compartment of the Insured Vehicle.



Photo 7 shows a screenshot taken from the video recording that was provided by Mr Ang, with the Insured Vehicle being towed area from the incident scene. In general, the observations gathered from my review of the video recordings that were taken by Mr Ang at the incident scene had corresponded to the description of events that he had related to me during our conversation on 11 April 2019.

18. For this case, the origin of fire to the Insured Vehicle can be established basing on the burn pattern of the Insured Vehicle that was seen from the video recordings and at the time of my inspection. The paint around the rear centre area of the Insured Vehicle's front bonnet was found to be blackened. What is referred to as high heat intensity burned marks (whitish burn marks) were observed to have been formed at the rear right area of the front bonnet, within the blackened paint area. 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.
19. Correspondingly, the front bonnet insulator at the underside of the front bonnet at the rear centre area was found to have been melted whereas other areas of the front bonnet insulator were still intact. Following the characteristic of heat rising upwards, the burn pattern of the front bonnet, in particular the high heat intensity burned marks, would than indicate that the origin of fire was around the rear right area of the Insured Vehicle's engine compartment. This also follows the observation that the extent of fire damage was more severe at the right side of the engine compartment. See photo 8 - 10 below.



Photo 8 shows the whitish burn marks (arrowed) that were found on the rear right area of the Insured Vehicle's front bonnet, within an area (circled) of the front bonnet that was found with paint blackened. 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 right area of the engine compartment.

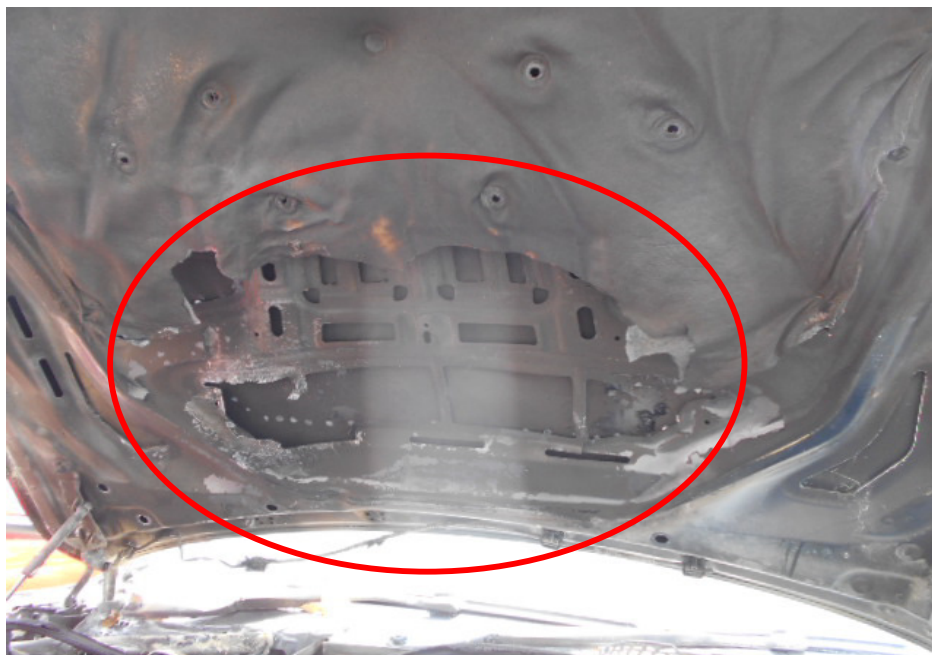


Photo 9 shows the underside of the Insured Vehicle's front bonnet. The front bonnet insulator at the rear centre area was melted whereas other areas was observed to be intact. The melted area of the front bonnet insulator was directly below the area where the paint at the top side of the front bonnet was blackened.



Photo 10 shows the engine compartment of the Insured Vehicle. Following the burn pattern, in particular the location where the high heat intensity burned marks were found on the front bonnet, and the characteristic of heat rising upwards, the fire to the Insured Vehicle had originated around the rear right side (circled) of the engine compartment. Correspondingly, the extent of fire damage was more severe at the right side of the engine compartment.

20. For a vehicular fire, causation(s) typically 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.
21. 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 video recordings 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.
22. 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.
23. In fact, my examination of the rear right area of the engine compartment, during my inspection of the Insured Vehicle, revealed greenish residue on several stretches of original factory fitted wirings. 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 was due to electrical in nature. See photo 11 & 12 below.



Photo 11 shows the stretch of wirings at the rear right area of the Insured Vehicle's engine compartment, which was where the fire had originated. Greenish residue was found along a stretch of original factory fitted wirings. The presence of such greenish residue suggests occurrence of an electrical short circuit.



Photo 12 shows a closer view of the greenish residue (arrowed) that were found on the original factory fitted wirings at the rear right area of the Insured Vehicle's engine compartment. The presence of greenish residue suggests occurrence of an electrical short circuit. This physical evidence would then appear to suggest that the cause of fire to the Insured Vehicle was due to electrical in nature.

24. My checks with both local and international bodies and associations had revealed that at the time of writing this report, there was a manufacturer recall in 2014 which involved the Insured Vehicle. According to the brief details of the recall, the bolt for the housing of the engine valve cover may become loose. From the records, rectification to address this issue was carried out to the Insured Vehicle in 2015. Given that the issue does not pose a fire risk, the manufacturer recall involving the Insured Vehicle was unlikely to have contributed or caused this fire incident. Furthermore, the purpose for the recall was rectified in 2015. 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:	7540A
Vehicle Details	
Vehicle Registration number:	SFT26A
Make:	B.M.W.
Vehicle Model:	535I 3.0L AT D/AB 2WD 4DR GAS/D SR HUD
Engine No.:	08727395N55B30A
Chassis No.:	WBAFR72080C264732
Recall Details	
1	Recall No.: R2014060020
	Manufacturer Recall Date: 26 May 2014
	Estimated Completion Year of Recall: 2015
	Brief Description (As Provided by Motor Dealer): The bolted connection on the housing of the VANOS adjustment units may become loose.
	Date Rectified: 29 Jan 2015
	For more details, contact BMW ASIA PTE LTD
	Hotline Information: PERFORMANCE MOTORS LTD at 18002255269

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Screenshot shows the LTA search result regarding the manufacturer recall involving the Insured Vehicle in 2014. From the information gathered, rectification to address the purpose of the recall was carried out to the Insured Vehicle in 2015.

Conclusion

25. 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 rear right area of the engine compartment. The wirings were original factory fitted wirings.

26. 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.
27. There was 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.
28. My investigations also revealed that there was a manufacturer recall that involved the Insured Vehicle in 2014. As the cause of the recall does not pose a fire risk, I am hence of the opinion that the recall is not related to this fire incident. Furthermore, rectification to address the purpose for the recall was carried out to the Insured Vehicle in 2015.

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