

Your Ref: S1M033YE
Our Ref : CS4/ASM21002653/P

5th April 2021

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 SMV 3691R ON 23rd February 2021**

1. We refer to your letter dated 26th February 2021 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle SMV 3691R (herein referred to as “**Insured Vehicle**”) are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 26th February 2021 at the premises of Rico 60 Auto Services Pte Ltd located at Kaki Bukit Avenue 4 #02-24 Premier @ Kakit Bukit Blk 8, 415875
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded:-

Vehicle Registration No.	: SMV 3691R
Make / Model	: MERCEDES BENZ A45 AMG (A)
Chassis No	: WDD1760522J161957
Year of Registration	: 24 OCTOBER 2013
Mileage	: N.A (wiring affected)

5. The Insured Vehicle was observed to have sustained severe fire damage all around. Its engine compartment and interior compartment was completely burnt. Rust had accumulated around the whole Insured Vehicle as a result of exposure to environmental condition for a period of time. 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 Insured Vehicle was observed to have sustained extensive fire damage all around. Its engine compartment and interior compartment were completely burnt. Rust had accumulated all over the front and centre portion of the Insured Vehicle as a result of exposure to environmental condition for a period of time.

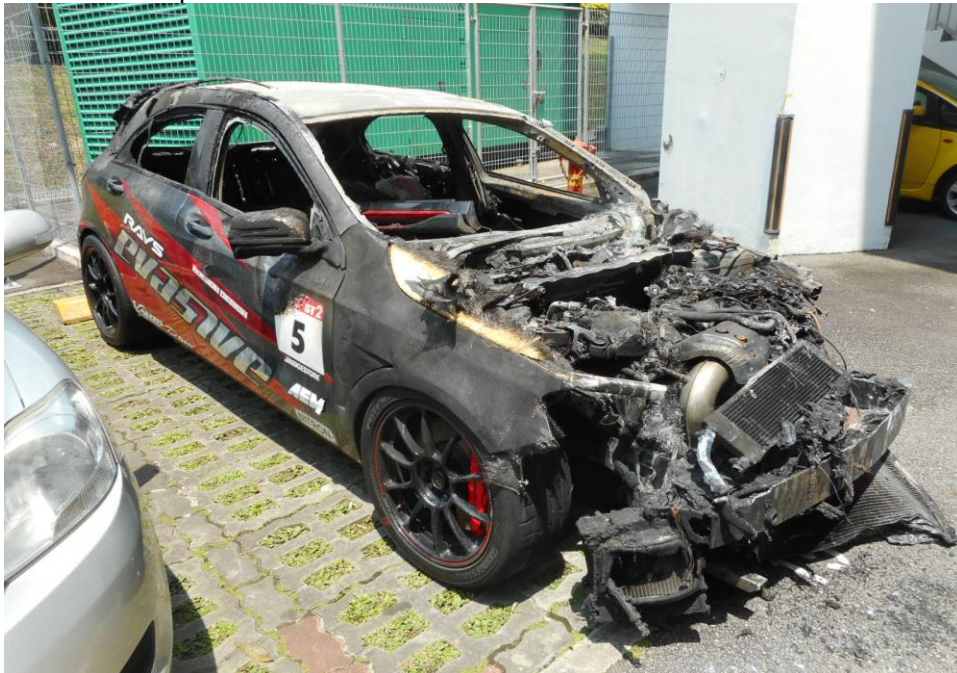


Photo 2 shows the general view of the right body of the Insured Vehicle at the time of our inspection. The Insured Vehicle was observed to have sustained extensive fire damage all around. Rust had accumulated all over the front and interior compartment of the Insured Vehicle as a result of exposure to environmental condition for a period of time.



Photo 3 shows the general view of the left body of the Insured Vehicle at the time of our inspection. The Insured Vehicle was observed to have sustained extensive fire damage all around. Rust had accumulated all over the front and centre portion of the Insured Vehicle as a result of exposure to environmental condition for a period of time.



Photo 4 shows the general view of the interior compartment of the Insured Vehicle at the time of our inspection. Its interior compartment was completely burnt as a result of the fire.



Photo 5 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 6 shows the general view of the rear portion of the Insured Vehicle which was observed to be affected heat and smoke damage at the time of our inspection as a result of the fire.

6. At the time of inspection of the Insured Vehicle, we did find additionally fitted electronic and/or electrical component(s) and aftermarket components observed are air filter, subwoofer, sport rims, carbon fibre bonnet and front fenders on the Insured Vehicle. See photo 7 – 14 below.

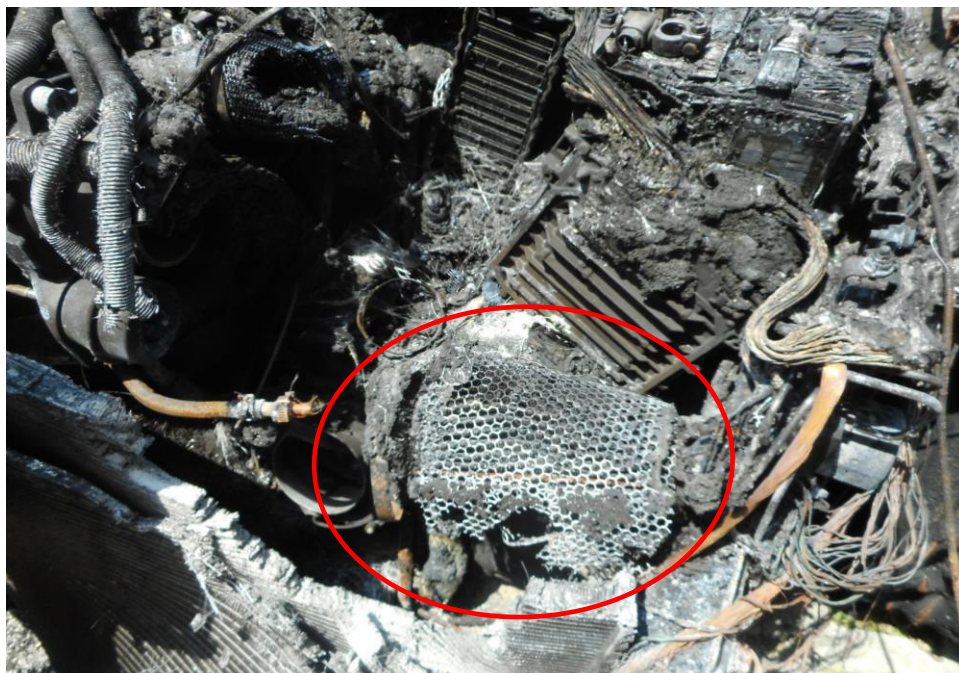


Photo 7 shows a general view an aftermarket air filter (circled) on the Insured Vehicle, which was observed to be affected by the fire.

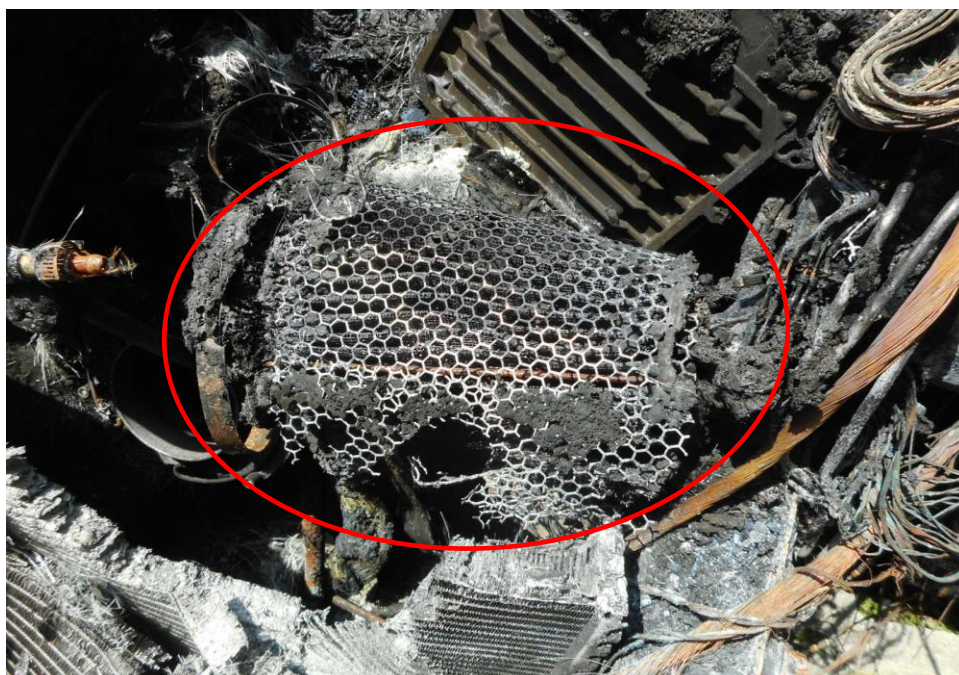


Photo 8 shows a close up view of the aftermarket air filter (circled) on the Insured Vehicle, which was observed to be affected by the fire.



Photo 9 shows an aftermarket rim (arrowed) on the Insured Vehicle, which was observed to be unaffected by the fire.



Photo 10 shows a general view of the aftermarket subwoofer (circled) on the Insured Vehicle, which was observed to be damaged by the fire.



Photo 11 shows the close up view of the aftermarket subwoofer (circled) on the Insured Vehicle, which was observed to be damaged by the fire.



Photo 12 shows the general view of the aftermarket carbon fibre bonnet and fenders (circled) on the Insured Vehicle, which was observed to be damaged by the fire.



Photo 13 shows the close up view of the aftermarket carbon fibre bonnet and fenders (circled) on the Insured Vehicle, which was observed to be damaged by the fire.



Photo 14 shows the close up view of the aftermarket carbon fibre bonnet and fenders (circled) on the Insured Vehicle, which was observed to be damaged by the fire.

Investigation and Technical Analysis

7. Based on the circumstances for this particular case, the fire appears to have originated from the front of the Insured Vehicle, somewhere around the front left and spread to the entire portion of the Insured Vehicle. This can be determined basing on the area where the extent of fire damage was most severe, the circumstances of the fires' origin at the material time of incident and also the high heat intensity burn marks (whitish burn marks) that were found at the front left portion of the Insured Vehicle.
8. 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 the prolonged exposure to high heat intensity usually causes the bare steel/metal material of the body parts to be exposed to natural environmental condition. The rust that had developed on the front left portion, in the immediate vicinity of where these whitish burn marks were found, would also support our findings of where the fire had affected the Insured Vehicle. See photo 15 and 16 below.



Photo 15 shows the general view of the exterior of the front left fender of the Insured Vehicle at the time of our inspection. The high heat intensity burn marks (whitish burn marks) and rust that had development found on the exterior surface of the bonnet indicates that the fire had originated from the front left portion of the Insured Vehicle.



Photo 16 shows the close up view of the exterior of the front left fender of the Insured Vehicle at the time of our inspection. The high heat intensity burn marks (whitish burn marks) and rust that had development found on the exterior surface of the front left fender indicates that the fire had likely originated from the front left portion of the Insured Vehicle.

9. Upon closer examination of the front left portion of the Insured Vehicle which was where the fire had likely started, we had found traces of greenish residue on the main wiring's harnesses leading from the engine control unit to the electrical components of the Insured Vehicle. The wirings were original wirings fitted from the manufacturer. 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 the 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 17 - 20 below.

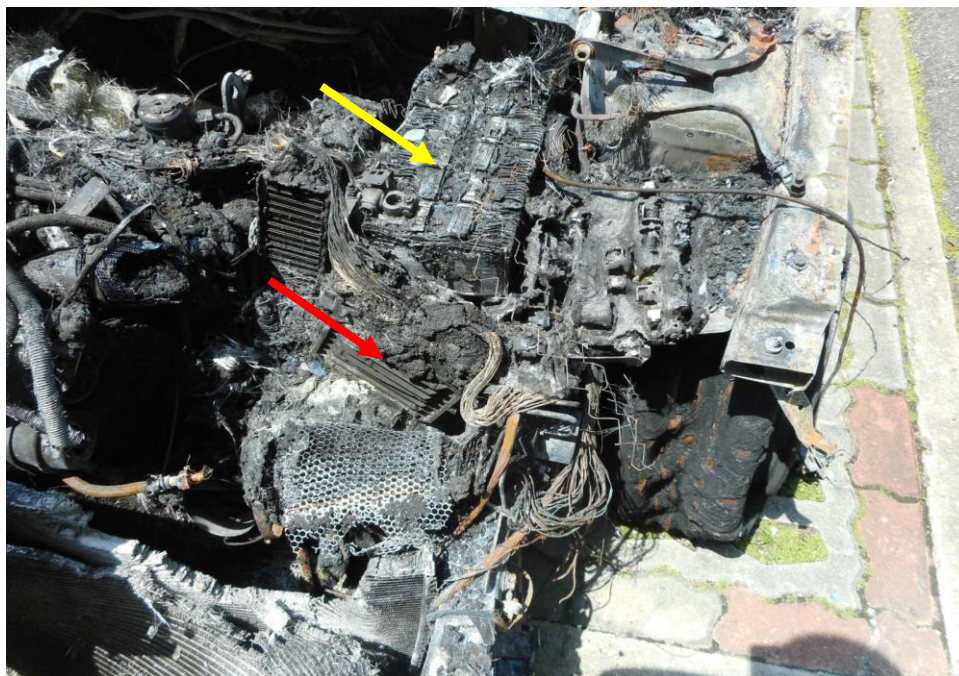


Photo 17 shows the general view of the engine compartment of the Insured Vehicle at the time of our inspection. The fire damage to the Insured Vehicle has affected its engine compartment. Its engine control unit (red arrow), battery (yellow arrow) and various original wiring harnesses was amongst the parts in the compartment that were found to have been affected as a result of the fire.

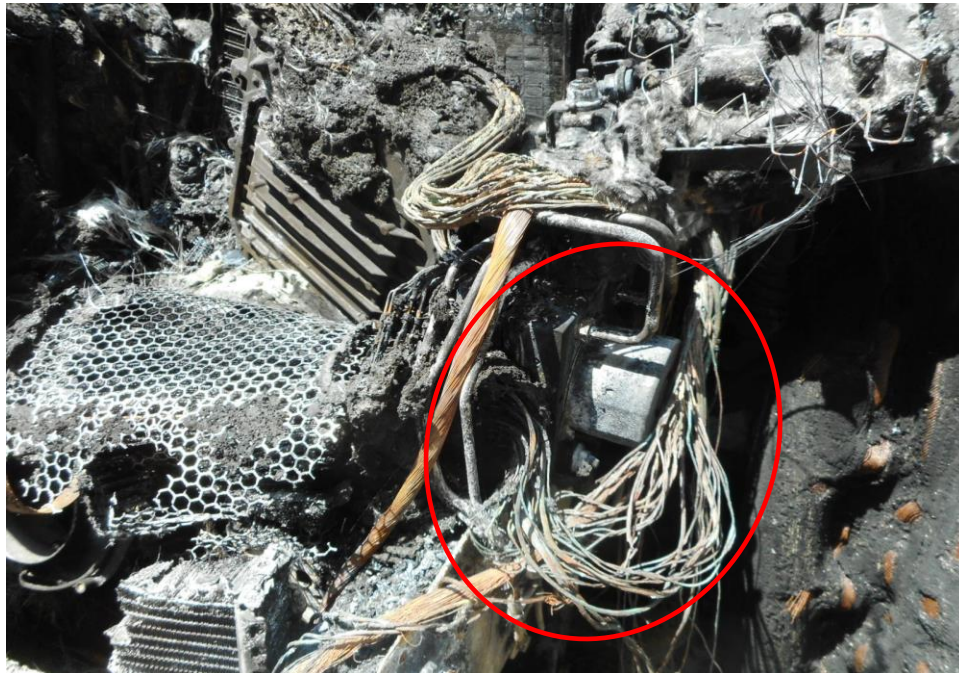


Photo 18 shows a close up view of the original wiring harness in the engine compartment. The original wiring harness from the engine control unit (circled) was observed with greenish residue on the surface. The presence of greenish residue indicates internal heating of copper wires, a sign of an electrical short circuit occurring. The greenish residue is normally left behind from oxidation as a result of chemical reaction involving the copper wires.

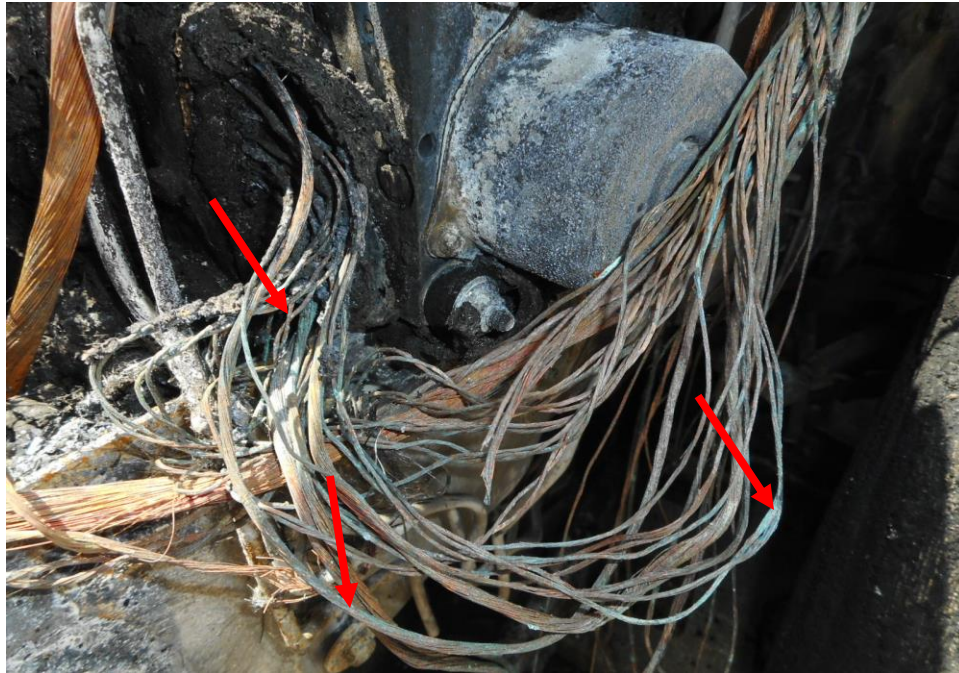


Photo 19 shows a close up view of the original wiring harness from the engine control unit in the engine compartment. The original wiring harness (arrowed) was observed with greenish residue on the surface. The presence of greenish residue indicates internal heating of copper wires, a sign of an electrical short circuit occurring. The greenish residue is normally left behind from oxidation as a result of chemical reaction involving the copper wires.

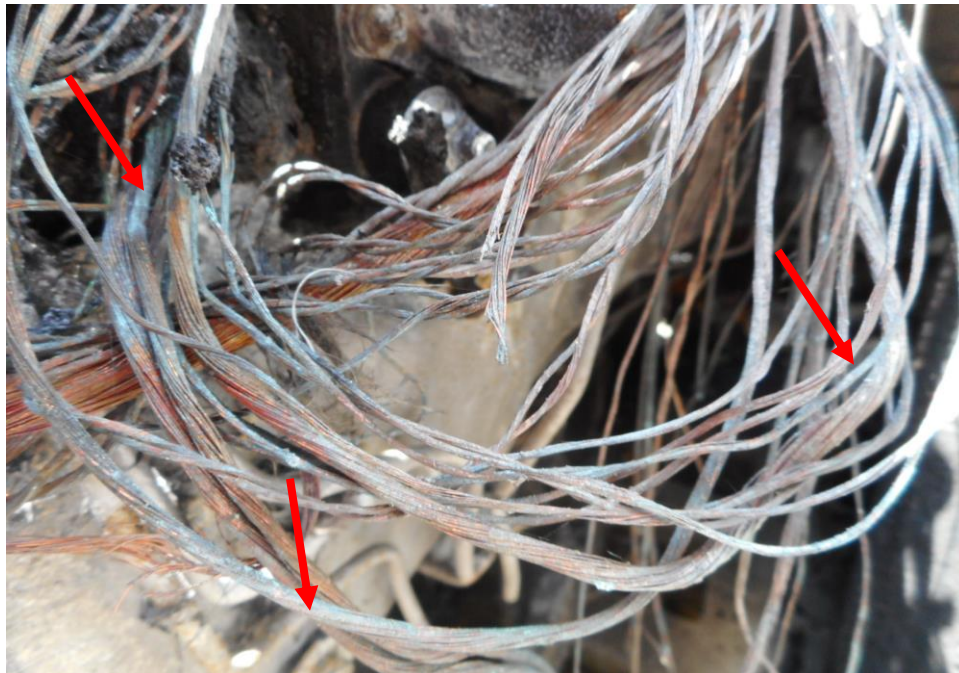


Photo 20 shows a close up view of the original wiring harness from the engine control unit in the engine compartment. The original wiring harness (arrowed) was observed with greenish residue on the surface. The presence of greenish residue indicates internal heating of copper wires, a sign of an electrical short circuit occurring. The greenish residue is normally left behind from oxidation as a result of chemical reaction involving the copper wires.

10. From the Singapore Accident Statement, which was made by Mr Darryl Lim Zong Han (herein referred to as “**Mr Lim**”); we note that the fire to the Insured Vehicle had started at a time when Mr Lim was driving. Mr Lim was first alerted of the fire when he saw smoke emitting out from the front bonnet of the Insured Vehicle.
11. We managed to speak to Mr Lim on 2nd March 2021 where we were able to gather further information pertaining to the incident as well as information pertaining to the history of the Insured Vehicle.
12. According to Mr Lim, on 23rd February 2021, Mr Lim he was travelling from his office at kaki bukit towards Chinatown. As he was driving the Insured Vehicle Bartley flyover, he felt that the air-conditioner wasn't as cold as usual, he carried on driving. However, a few moments later the warning lights on the instrument panel started appearing and immediately he applied the foot brakes to slow the Insured Vehicle down to pull it to the side but realised that the footbrake was not working, so he had to used the hand brake to slow the Insured Vehicle down and managed to bring it to a stop at the road shoulder.
13. Mr Lim turned on the ignition and alighted the Insured Vehicle to inspect the issue but suddenly he saw white smoke emitting out from the whole front bonnet and subsequently saw flames bursting out from the bonnet, Mr Lim mentioned that some passers-by had stop and passed him fire extinguishers to put out the fire however, the fire was too strong to be controlled. They than proceeded to the safe side of the road and requested for SCDF assistance
14. Mr Lim mentioned that SCDF officer arrived within 15 minutes and had the fire extinguished within 15 minutes. Mr Lim had his statement was taken by the SCDF and Police officers.
15. Mr Lim subsequently contacted a tow truck and had the Insured Vehicle towed his workshop. The tow truck had arrived on the scene and waited for SCDF clearance then proceeded to have the Insured Vehicle towed to Rico 60 Auto Services Pte Ltd. Mr Lim made an insurance report 2 days later at SME Motor Pte Ltd at 0959 hours.

16. Mr Lim mentioned that the Insured Vehicle had flashed a power steering check light a day prior to the fire, subsequently Mr Lim drove the Insured Vehicle down to his workshop and consulted them and they mentioned that water had entered the power steering module and informed him that it is not a big issue and just leave it and let the water dry up by itself, after the checks at the workshop he mentioned that the power steering was working fine and no warning light appearing till the day of the incident.
17. Mr Lim was driving the Insured Vehicle, he mentioned that that the power steering warning lights had appeared again just before the Insured Vehicle caught fire. However, he was still able to steer the Insured Vehicle to the side of the road and come to a stop. Mr Lim informed us that there was no abnormal rise in temperature throughout the period the Insured Vehicle and when driven, prior to the fire.
18. With regards to the history of the Insured Vehicle, we were able to gather from Mr Lim that the Insured Vehicle was purchased pre-owned and his uncle is the registered owner of the Insured Vehicle and the Insured Vehicle is driven by the both of them. Mr Lim informed us that the Insured Vehicle was bought 5 months ago and driven only 3 to 4 days a week.
19. Pertaining to the maintenance aspect, Mr Lim sends the Insured Vehicle for periodical servicing. He mentioned that all the latest servicing record and inspection certification was kept in the Insured Vehicle and was all burnt to the fire. He mentioned that there was no major overhaul done to the Insured Vehicle. He mentioned that when the Insured Vehicle was purchased there was no audio speakers installed in it and he had to purchase and install new speakers an additional aftermarket subwoofer at the rear boot the Insured Vehicle. He mentioned that he did not install any audio amplifiers in the Insured Vehicle.

Incident Scene Photographs

20. During the course of our investigations, we were able to obtain coloured photographs showing the Insured Vehicle at the incident scene where the fire had started burning. These were provided to us by Mr Lim.

21. Our examination of these photographs revealed that the fire had started from the front of the Insured Vehicle. The photographs had also showed the Insured Vehicle on fire and similar extent of damage and burn pattern to the Insured Vehicle as per what we had observed during our physical inspection of the Insured Vehicle. Apart from the aforesaid; there was no further notable information that could be gathered from these photographs. See photo 21 below which was provided to us by Mr Lim.



Photo 21 shows the fire started burning from the front left side of the engine compartment (circled) of the Insured Vehicle at Bartley flyover. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Mr Lim, location when the fire broke out.

22. Given the circumstances of the incident as reported, the possibility of the cause of fire to the Insured Vehicle being due to engine overheating would seem unlikely as Mr Lim had mentioned to us there were no indications of abnormally high temperatures when he was driving the Insured Vehicle on the day of the incident. Moreover, Fire due to an overheated engine was unlikely as the Insured Vehicle was still able to be operated as Mr Lim was still able to drive the Insured Vehicle and pull it to road shoulder.
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 as the fire occurred as Mr Lim was driving the Insured Vehicle. The location where the Insured Vehicle caught fire 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 condition of the original wiring harnesses wirings that were found leading from the engine control unit to the to the electrical components on the Insured Vehicle, which was earlier discussed in paragraph 9 above.

25. Our checks with both local and international bodies and associations had 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 that may possibly be related to fire being originated from the engine or interior compartment of the Insured Vehicle. See search result from LTA below.

Vehicle Recall Details

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

Owner ID Type Singapore NRIC	Owner ID 147D
Vehicle No. SMV3691R ←	Make/Model MERCEDES BENZ/ A45 AMG A ←
Engine No.: 13398080002223	
Chassis No.: WDD1760522J161957	
Recall Details: No Recall Detail records ←	

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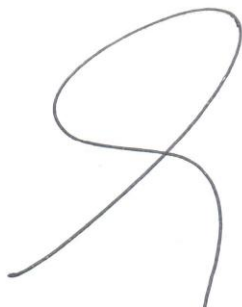
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Conclusion

26. 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 nature. The fire had originated along the original wiring harnesses leading from the engine control unit to the electrical components of the Insured Vehicle.
27. We observed other items such as the aftermarket air filter, sport rims, carbon fibre bonnet, front fenders and an aftermarket subwoofer fitted on the Insured Vehicle at the time of our inspection of the Insured Vehicle. In our opinion, these components did not cause or contribute to the fire incident as the cause of fire was observed to be of short circuit origin on the original wiring harness at the front engine compartment of the Insured Vehicle.
28. Our investigations had also revealed that at the time of writing this report, there is no manufacturer recall to similar make and model vehicle as the Insured Vehicle that may possibly be related to this incident.
29. 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 the fire report and will forward a copy of the report once it is made available to us.



Sherwin Beh
Technical Investigator



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