

Your Ref: 4631152650SG
Our Ref : CI/AIG22011964/N

28 November 2022

M/s AIG Asia Pacific Insurance Pte. Ltd.

78 Shenton Way #09-16
AIG Building
Singapore 079120
(Motor Claims Department)

TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE INSURED VEHICLE SJF 838A ON 17 NOVEMBER 2022

1. We refer to your letter dated 22 November 2022 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle SJF 838A (herein referred to as "**Insured Vehicle**") are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 23 November 2022 at the premises of Cycle & Carriage Mercedes-Benz Authorised Service Centre (herein referred to as "**C&C**") located at 188 Pandan Loop, Singapore 128378.
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded:-

Vehicle Registration No.	: SJF 838A
Make / Model	: MERCEDES BENZ E200 / SEDAN (R17)
Chassis No	: WDD2120342B147617
Year of Registration	: July 2015
Mileage	: N.A. (battery melted)

5. The exterior front body of the Insured Vehicle sustained visible fire damage. This included its windscreen, front bonnet, headlights, front bumper, side panels, front wheel rims and front tyres.
6. The fire had resulted in extensive damage to the engine compartment of the Insured Vehicle. Most of the components inside the engine compartment were found to be severely burnt and/or melted as a result of the fire. The interior compartment was observed to have been severely affected by the fire. See photos 1 – 6 below.



Photo 1 shows the rear view of the Insured Vehicle. The rear portion of the Insured Vehicle was observed to be relatively unaffected by the fire.



Photo 2 shows the general view of the frontal portion of the Insured Vehicle at the time of our inspection. The exterior body of the Insured Vehicle had sustained visible fire damage. This included its front windscreen, front bonnet, front bumper, front bumper reinforcement panel, headlights, side panels, front wheel rims and front tyres.



Photo 3 shows the general view of the left portion of the Insured Vehicle at the time of our inspection. The exterior body of the Insured Vehicle had sustained visible fire damage. This included its front windscreen, front bonnet, left headlight, front bumper, left front panel, left front wheel rim and left front tyre.



Photo 4 shows a closer view of the front windscreen of the Insured Vehicle at the time of our inspection. The front windscreen had sustained extensive fire damage.



Photo 5 shows a general view of the engine compartment of the Insured Vehicle at the time of our inspection. Most of the components inside the engine compartment were found to be severely burnt and/or melted as a result of the fire.



Photo 6 shows the interior compartment of the Insured Vehicle, which was observed to be severely affected 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 due to the nature of the fire damage which was more extensive at the left portion. Furthermore, the hole found in the front bonnet of the Insured Vehicle indicate that the front left portion of the Insured Vehicle was exposed to prolonged high heat intensity. Following the characteristic of heat (hot air rises), the origin of fire can then be determined to be from the engine compartment of the Insured Vehicle as the engine compartment is covered by the front bonnet and front fenders. Flames from the confined spaces of the engine compartment would travel outwards and upwards, exposing the front bonnet and front fenders of the Insured Vehicle to high heat intensity hence leaving a hole in the front bonnet as seen.
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 left rear portion of the engine compartment is an indication that the left rear portion of the engine compartment had sustained exposure to prolonged high heat intensity. See photos 7 & 8 below.

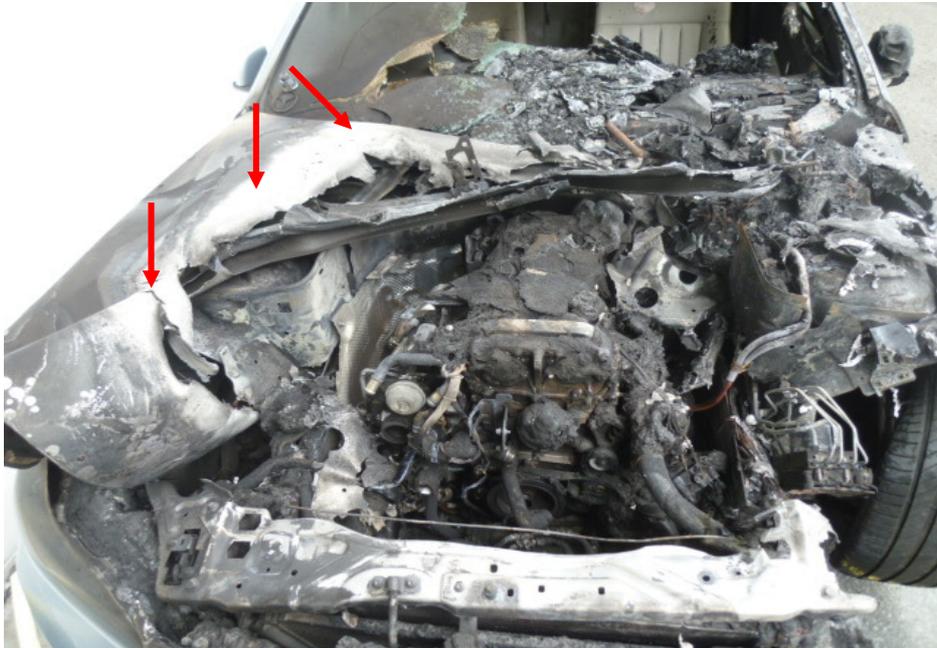


Photo 7 shows the hole found in the front bonnet of the Insured Vehicle which indicates that the front portion of the Insured Vehicle was exposed to prolonged high heat intensity. The whitish burn marks (arrowed) are a result of exposure to prolonged heat intensity.



Photo 8 shows a closer view of the rust that had developed on the left rear portion of the engine compartment (circled). The development of rust is an indication that this area was subjected 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 left rear portion of the engine compartment, which was where the fire to the Insured Vehicle had likely started, we had found traces of greenish residue on several stretches of burnt wirings leading from the Engine Control Module (ECM). 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 - 12 below.



Photo 9 shows the burnt 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. We noticed greenish residue on several stretches of burnt wirings leading from the Engine Control Module (ECM) (circled). 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 burnt 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. We noticed greenish residue on several stretches of burnt wirings leading from the Engine Control Module (ECM) (circled).

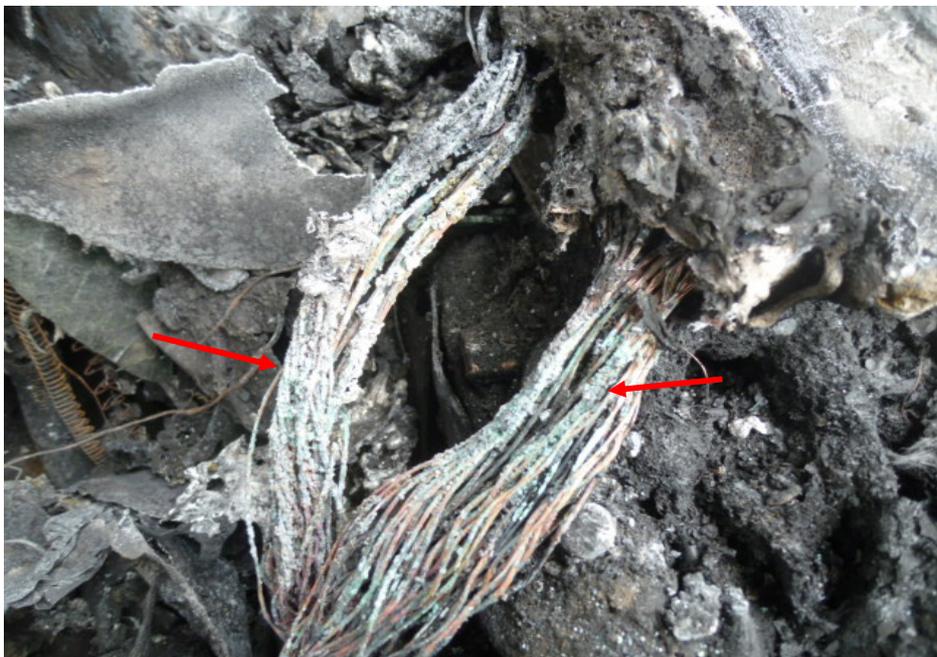


Photo 11 shows a close up view of the greenish residue found on several stretches of burnt wirings (red arrows). The presence of such greenish residue suggests occurrence of an electrical short circuit.

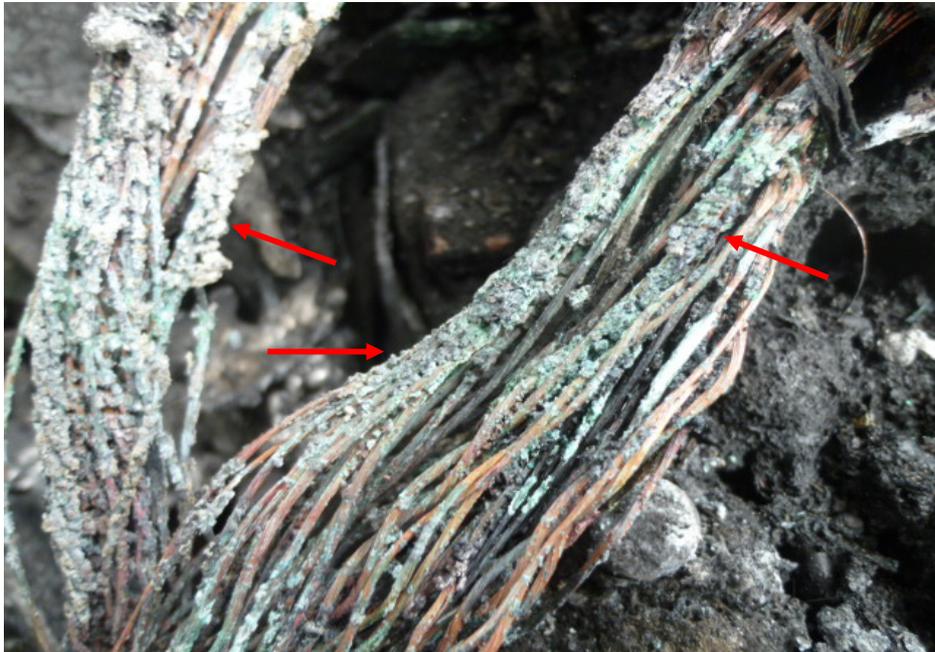


Photo 12 shows a close up view of the greenish residue found on several stretches of burnt wirings (red arrows). The presence of such greenish residue suggests occurrence of an electrical short circuit.

11. From the Singapore Police Report No. A/20221118/7009 and Accident Statement, which was made by Mr Yeong Cheng Toh (herein referred to as “**Mr Yeong**”), we note that the fire to the Insured Vehicle had started at a time while he was driving. He was alerted of the fire when he noticed white smoke emitting from the engine compartment.
12. We managed to speak to Mr Yeong 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 Yeong, at about 0800 hours on 17 November 2022, he had dropped off his son at the law firm of Allen & Gledhill before heading to his clinic located at Tanglin Shopping Centre. He was driving along Raffles Quay, intending to make a right turn into Cross Street. As he approached the right turn pocket of the traffic junction adjacent to Lau Pa Sat food centre, Mr Yeong mentioned that the Insured Vehicle suddenly stalled. He was unable to start up the engine. While making towing arrangements, he noticed white smoke emitting from the left portion of the front bonnet.

14. Mr Yeong was alerted by a pedestrian to exit the Insured Vehicle. Within a few minutes later, the engine compartment burst into flames. Mr Yeong called 995. A few good Samaritans with fire extinguishers attempted to put out the fire before the arrival of the SCDF. The police arrived first followed by firefighters within 10 minutes. The police redirected traffic. The fire was extinguished in a couple of minutes. Mr Yeong managed to take photographs and videos of the incident.
15. Mr Yeong assisted the SCDF in their preliminary investigations. The tow truck arrived shortly after. The Insured Vehicle was first towed to Kan Fook Sing Motor Workshop (herein referred to as “**KFS**”) as the tow truck driver is the husband of one of Mr Yeong’s patients who also informed Mr Yeong that KFS is one of AIG’s authorized workshops. Mr Yeong lodged a police report the following day, on 18 November 2022 at the Central Division HQ at 0912 hours. He made the insurance report at KFS later that same day at 1019 hours. He was informed by KFS that the Insured Vehicle needed to be towed to C&C to proceed with the insurance claim. The Insured was towed to C&C later that day.
16. With regards to the history of the Insured Vehicle, we were able to gather from Mr Yeong that the Insured Vehicle was purchased new by his wife, Ms Tracy Lim Li Wen in 2015 at C&C. The Insured Vehicle is owned by Mr Yeong’s wife and Mr Yeong is the main driver. To the best of his recollection, there has not been any major mechanical problem and/or electrical problem with the Insured Vehicle.
17. Pertaining to the maintenance aspect, Mr Yeong sends the Insured Vehicle for periodic servicing at Hong San Hong Wei Pte. Ltd. (herein referred to as “**Hong San**”) located at 1002 Bukit Merah Lane 3, Singapore 159719.
18. During the course of our investigations, we were also able to obtain from one of the mechanics at Hong San, a document relating to the last periodic servicing of the Insured Vehicle. The servicing package done on 28 April 2022, had included changing of engine oil and oil filter. Refer to invoice 1 below.

红山鸿伟私人有限公司 **85**
HONG SAN HONG WEI PTE LTD ←
 Block 1002, Bukit Merah Lane 3, #01 - 85, Singapore 159719. H/P : 9109 1660
 Tel & Fax : 6270 8936 Email: hshw85@yahoo.com
 (Co. Reg.No. 199503987Z) INVOICE NO. **53827**

M/S 9325 3033 Reg.No. 57E 838A ←
 Make: Mercedes
 Date: 28/4/2022 ←

QTY	DESCRIPTION	AMOUNT
	Normal Servicing - Engine oil - Engine oil filter	\$ 176.00
Remark Brake pad : F 50% R 40%		
SINGAPORE DOLLARS		
E&OE		
GOODS RECEIVED		TOTAL: \$ 176.00
_____ Authorised Signature		_____ Chop & Sign

Invoice 1 shows the last servicing done on the Insured Vehicle at Hong San on 28 April 2022 (red arrows). The servicing package had included changing of engine oil and oil filter (circled).

19. Mr Yeong mentioned that after the servicing was done, he had not experienced any mechanical or electrical 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 of the Insured Vehicle when he was driving the Insured Vehicle on the day of the incident.

20. Mr Yeong mentioned that since the purchase of the Insured Vehicle, neither his wife nor he had done any modification(s) and/or additionally fitted any electrical or electronic component(s) to the Insured Vehicle.

Incident Scene Photographs

21. We were able to obtain from Mr Yeong, photos of the Insured Vehicle which he had taken during the fire and after the fire was put out. In general, the information that could be gathered from these photographs had corresponded to the events that were related to us by Mr Yeong. 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 where the Insured Vehicle was positioned. See photos 13 - 15 below.



Photo 13 shows the Insured Vehicle on fire before the arrival of the SCDF. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Mr Yeong, which is the fire had started from the left rear portion of the engine compartment (arrowed).



Photo 14 shows 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 Yeong, which is the police and SCDF were present at the incident location (arrowed).



Photo 15 shows the Insured Vehicle at the incident scene being prepped to be towed to KFS.

22. Based on the vehicle service record invoice provided, we are of the opinion that it is unlikely that the fire could have been caused by poor maintenance of the Insured Vehicle.
23. 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 Yeong had mentioned to us there were no indications of abnormally high temperatures on the Insured Vehicle when he was driving on that day.

24. 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 where the Insured Vehicle was positioned. The location of where the Insured Vehicle was positioned was also observed to be not at a secluded location.
25. 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 wirings that were found in the engine compartment of the Insured Vehicle, which was earlier discussed in paragraph 10 above.
26. Our checks with both local and international bodies and associations had 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 Motorcycle that may possibly be related to this incident. See search result from LTA below.



Vehicle Recall Details

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

<i>Owner ID Type</i> Singapore NRIC	<i>Owner ID</i> 436J
<i>Vehicle No.</i> SJF838A	<i>Make/Model</i> MERCEDES BENZ/ E200 SEDAN (R17)
<i>Engine No.:</i> 27492030376198	<i>Chassis No.:</i> WDD2120342B147617
<i>Recall Details:</i> No Recall Detail records	

Conclusion

27. Having investigated and technically analysed the damages 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. The wirings were original factory wirings leading from 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 motorcycle as the Insured Vehicle that may possibly be related to this incident.

**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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