

Your Ref: 4192902740SG
Our Ref : CS4/AIG22001055/N

21 February 2022

M/s AIG Asia Pacific Insurance Pte. Ltd.

78 Shenton Way Level 10
Singapore 079120
(Motor Claims Department)

**TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE
INSURED VEHICLE GBF 9147X ON 27 JANUARY 2022**

1. We refer to your letter dated 4 February 2022 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle GBF 9147X (herein referred to as "**Insured Vehicle**") are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 4 February 2022 at the premises of Kan Fook Sing Motor Workshop (herein referred to as "**KFS**") located at 61 Defu Lane 12, Singapore 539147.
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded:-

Vehicle Registration No.	: GBF 9147X
Make / Model	: TOYOTA PROACE 1.6 MANUAL
Chassis No	: YARVBBHVBGZ056872
Year of Registration	: April 2017
Mileage	: N.A (wiring affected)

5. The Insured Vehicle was noted to have sustained fire damage that was confined to its interior compartment and undercarriage. The seats of the Insured Vehicle were observed to be partially burnt and/or melted while the exterior of the Insured Vehicle was observed to have been relatively unaffected by the fire.
6. The fire had resulted in several components in the undercarriage to be slightly burnt and/or damaged. This had included its diesel particulate filter (DPF), DPF heat shield and engine oil pan cover, amongst others. See photos 1 – 6 below.



Photo 1 shows the general view of the frontal portion of the Insured Vehicle at the time of our inspection. The fire damage was confined to its interior compartment and undercarriage. The exterior portion of the Insured Vehicle was observed to be relatively unaffected by the fire.



Photo 2 shows the general view of the engine compartment of the Insured Vehicle at the time of our inspection. The fire damage was confined to its interior compartment and undercarriage. The engine compartment of the Insured Vehicle was observed to be relatively unaffected by the fire.



Photo 3 shows the general view of the rear portion of the Insured Vehicle at the time of our inspection. The fire damage was confined to its interior compartment and undercarriage. The exterior portion of the Insured Vehicle was observed to be relatively unaffected by the fire.



Photo 4 shows the interior compartment of the Insured Vehicle, which was observed to be relatively unaffected by the fire with the exception of the seats.



Photo 5 shows the rear cabin of the Insured Vehicle, which was observed to be relatively unaffected by the fire, with the exception of the seats.



Photo 6 shows the seats of the Insured Vehicle which were observed to be partially burnt and/or melted as a result of the fire (circled).

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. Basing on the circumstances of the fires' origin at the material time of incident as well as examining the area where the extent of fire damage was most severe, we can determine that the fire had likely started from the undercarriage of the Insured Vehicle. This can be observed from the burnt seats and insulating material near the seats of the Insured Vehicle. See photo 7 below.

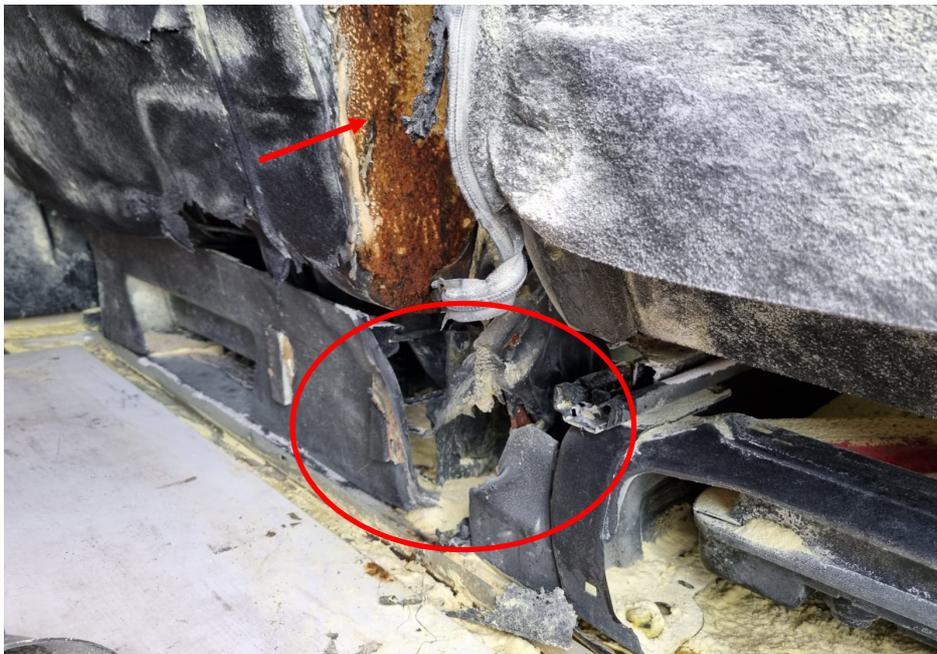


Photo 7 shows a close up view of the burnt seats (arrowed) and insulating material near the seats (circled) which appears to indicate that the fire may have originated from the undercarriage of the Insured Vehicle.

9. For this particular case, the DPF warning light was displayed on the dashboard of the Insured Vehicle before the incident occurred. To determine the cause of fire, the Insured Vehicle was hoisted for us to have a thorough look of the undercarriage. The fire appears to have originated from the engine oil pan cover of the Insured Vehicle. This can be determined from fire extinguisher residue found on the engine oil pan cover, partially burnt and/or melted parts of the engine oil pan cover, DPF and DPF heat shield as well as burnt wirings. Upon closer examination of the engine oil pan cover, which was where the fire to the Insured Vehicle had likely started, we had found faint traces of greenish residue on several stretches of burnt 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 could have possibly been due to electrical in nature. See photos 8 - 12 below.

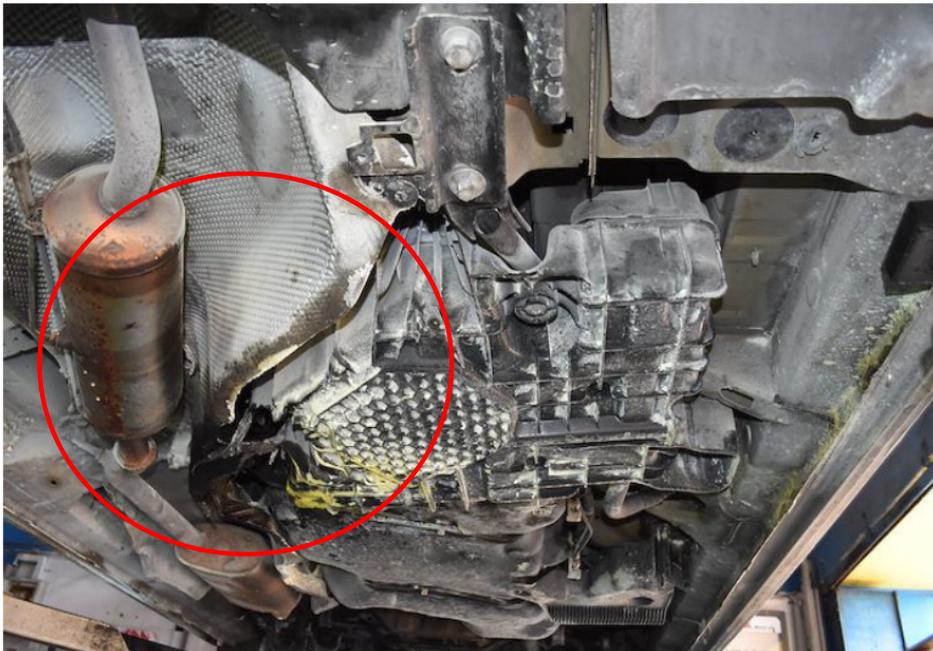


Photo 8 shows the Insured Vehicle hoisted for us to have a thorough look of the undercarriage. For this particular case, the fire appears to have originated from the engine oil pan cover of the Insured Vehicle. This can be determined from fire extinguisher residue found on the engine oil pan cover, partially burnt and/or melted parts of the engine oil pan cover, DPF and DPF heat shield as well as burnt wirings (circled).



Photo 9 shows a closer view of the partially burnt and/or melted parts of the DPF (circled) and DPF heat shield (arrowed).



Photo 10 shows a closer view of the partially burnt and/or melted parts of the engine oil pan cover (arrowed) as well as burnt wirings (circled).



Photo 11 shows upon closer examination of the engine oil pan cover, 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 (arrowed).



Photo 12 shows a close up view of faint traces of greenish residue on several stretches of burnt wirings (arrowed). 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.

10. From the Police Report No. G/20220128/7028 and Singapore Accident Statement, which was made by Mr Low Sze Yong (herein referred to as “**Mr Low**”) who is an employee of Ah Huat Trading Pte. Ltd., we note that the fire to the Insured Vehicle had started at a time when he was driving to Kaki Bukit. Mr Low was first alerted of the fire when he saw a spark coming from the undercarriage of the Insured Vehicle.
11. We managed to speak to Mr Albert who is the father of Mr Low and the owner of Ah Huat Trading Pte. Ltd. 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 Albert, at about 1315hrs on 27 January 2022, Mr Low was driving the Insured Vehicle to Hing Ta Service Centre (herein referred to as “**Hing Ta**”) which was located at 2 Kaki Bukit Ave 2, #01-26, Kaki Bukit Autohub, Singapore 417921 as he had noticed the ‘Diesel Particulate Filter (DPF)’ warning light flashing on the dashboard of the Insured Vehicle for the last 2 to 3 days. Mr Low managed to arrive at Hing Ta. The engine of the Insured Vehicle was still running when Mr Low noticed a spark from the undercarriage of the Insured Vehicle. Flames soon emitted from the undercarriage of the Insured Vehicle. Mr Low immediately switched off the engine and grabbed a fire extinguisher. Assisted by people from the neighbouring workshops who poured water on the undercarriage of the Insured Vehicle, Mr Low managed to extinguish the fire in about 5 minutes. Mr Low then called Mr Albert and explained to him what happened. Neither Mr Low nor Mr Albert took any photographs of the incident.
13. SCDF arrived awhile later and ensured the fire was completely extinguished. The staff at Hing Ta assisted Mr Low with the towing arrangements. The Insured Vehicle was towed to KFS that same day. Mr Low lodged a police report at the Bedok Division HQ the following day, on 28 January 2022 at 1231 hrs. He then made an insurance report at KFS later that same day at 1334 hrs.
14. With regard to the history of the Insured Vehicle, we were able to gather from Mr Liew that the Insured Vehicle was purchased new in 2017. To the best of his recollection, there has not been any major mechanical problem and/or electrical problem with the Insured Vehicle.
15. Pertaining to the maintenance aspect, Mr Albert sends the Insured Vehicle for periodic servicing at Hing Ta.

17. Mr Albert mentioned that after the servicing was done, Mr Low had not experienced any mechanical or electrical problems with the Insured Vehicle till the day of the incident. He also mentioned that there was no abnormal rise in temperature of the Insured Vehicle when he was driving the Insured Vehicle on the day of the incident.
18. 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.
19. 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 Low had mentioned there were no indications of abnormally high temperatures on the Insured Vehicle when he was driving on that day.
20. 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 was confined to within its interior compartment, with no visible exterior damage.
21. 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 greenish residue that was found on the wirings from the undercarriage of the Insured Vehicle, which was earlier discussed in paragraph 9 above.
22. The fire being due to electrical in nature was most likely a result of the surrounding heat accumulated from increased exhaust temperature caused by a clogged DPF.
23. 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 Vehicle 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

Owner ID Type	Owner ID
Company	301E ←
Vehicle No.	Make/Model
GBF9147X ←	TOYOTA/ PROACE 1.6 MANUAL
Engine No.:	Chassis No.:
BH020006431	YARVBBHVBGZ056872
Recall Details:	
No Recall Detail records ←	

Conclusion

24. 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 in nature. For this particular case, the fire had originated from the wirings leading from the oil pan cover of the Insured Vehicle. The wirings were original factory fitted wirings of the Insured Vehicle. The fire was most likely a result of the surrounding heat accumulated from increased exhaust temperature caused by a clogged DPF.
25. 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.
26. 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.

27. 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 vehicle 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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