

Your Ref: SNM23D204795/C01/LEEPG
Our Ref : CS4/CTI23007097/N

17 July 2023

M/s China Taiping Insurance (Singapore) Pte. Ltd.

3 Anson Road #16-00
Springleaf Tower
Singapore 079909
(Motor Claims Department)

**TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE
INSURED VEHICLE SDK 8922G ON 9 JULY 2023**

1. We refer to your letter dated 13 July 2023 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle SDK 8922G (herein referred to as “**Insured Vehicle**”) are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 14 July 2023 at the premises of Cheng Hoe Motor Pte. Ltd. (herein referred to as “**Cheng Hoe**”) located at 38 Woodlands Industrial Park E1, Singapore 757700.
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded:-

Vehicle Registration No.	: SDK 8922G
Make / Model	: TOYOTA PREVIA 8 SEATER
Chassis No	: JTEGD52MX07029721
Year of Registration	: June 2006
Mileage	: N.A. (battery melted)

5. The exterior front body of the Insured Vehicle sustained visible fire damage. This included its front windscreen, front bonnet, headlights, front bumper and side panels.
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, headlights and side panels.



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 and left front panel.



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 portion of the engine compartment. This can be determined from the whitish burn marks on the left portion of the front bonnet of the Insured Vehicle and also the rust that had developed on the underside of the front bonnet, at the left bottom portion.
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 underside of the front bonnet, around the left bottom portion, is an indication that the left portion of the engine compartment had sustained exposure to prolonged high heat intensity. See photos 7 & 8 below.



Photo 7 shows the burn pattern and whitish burn marks that were found on the left portion of the front bonnet of the Insured Vehicle (circled). Such whitish burn marks are a result of exposure to prolonged heat intensity, which may indicate where the fire had started. Rust would also begin to develop on these areas soon after the fire.



Photo 8 shows the rust that had developed on the underside of the front bonnet, around the left bottom portion (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 portion of the engine compartment.

10. Upon closer examination of the left 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 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.



Photo 10 shows a closer view of the burnt wirings leading from the Engine Control Module (ECM). We noticed greenish residue on several stretches of the burnt wirings (circled). The greenish residue is normally left behind from oxidation as a result of chemical reaction involving the copper wires.



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

11. From the Singapore Police Report No. E/20230710/7025 and Accident Statement, which was made by Ms Shermaine Chua Si Min (herein referred to as “**Ms Chua**”), we note that the fire to the Insured Vehicle had started at a time while it was stationary. She was alerted of the fire when she noticed white smoke emitting from the engine compartment.
12. We managed to speak to Ms Chua 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 Ms Chua, at about 0200 hours on 9 July 2023, she had parked the Insured Vehicle at the loading bay of Block 118A Alkaff Crescent to drop off her friend. The engine was still running and both of them were in the Insured Vehicle. Out of a sudden, Ms Chua saw white smoke emitting from the left side of the front bonnet of the Insured Vehicle. She immediately switched off the engine and both of them exited the Insured Vehicle. Her friend saw sparks coming from the left front underside of the Insured Vehicle.
14. Ms Chua called 995. While waiting for the SCDF to arrive, she managed to retrieve a water hose from the nearby block and sprayed water at the direction of the Insured Vehicle. However by then the Insured Vehicle was on fire. A few minutes later the SCDF arrived followed by the police shortly after. The fire was put out in less than 20 minutes. Ms Chua managed to take photographs and videos of the incident.
15. Ms Chua assisted the SCDF in their preliminary investigations. Her statement was also taken by the police. Her friend made towing arrangements. The tow truck arrived within half an hour. The Insured Vehicle was first towed to Ang Kah Hoe Automobile Workshop (herein referred to as “**AKH**”) as it was their regular workshop. The Insured Vehicle was later towed to Cheng Hoe as Cheng Hoe is one of China Taiping’s authorized workshops. Ms Chua lodged a police report the following day, on 10 July 2023 at the Tanglin Division HQ at 1352 hours. She made the insurance report at Cheng Hoe later that same day at 1819 hours.
16. With regards to the history of the Insured Vehicle, we were able to gather from Ms Chua’s father, (herein referred to as “**Mr Chua**”) that the Insured Vehicle was purchased new by him in 2006. The Insured Vehicle is owned by Mr Chua and he 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 Chua sends the Insured Vehicle for periodic servicing at AKH located at 10 Penjuru Rd, Singapore 609124.
18. During the course of our investigations, we were also able to obtain from Mr Chua, a document relating to the last periodic servicing of the Insured Vehicle. The servicing package done on 11 January 2023, had included changing of engine oil, oil filter, air filter and spark plugs. Refer to invoice 1 below.

[illegible]

Invoice 1 shows the last servicing done on the Insured Vehicle at AKH on 11 January 2023 (red arrows). The servicing package had included changing of engine oil, oil filter, air filter and spark plugs (circled).

19. Mr Chua 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 and Ms Chua were driving the Insured Vehicle on the day of the incident.
20. Mr Chua mentioned that since the purchase of the Insured Vehicle, he had not 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 Ms Chua, photos of the Insured Vehicle which she 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 Ms Chua. 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 parked. 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 Ms Chua, which is the fire had started from the left rear portion of the engine compartment (arrowed).

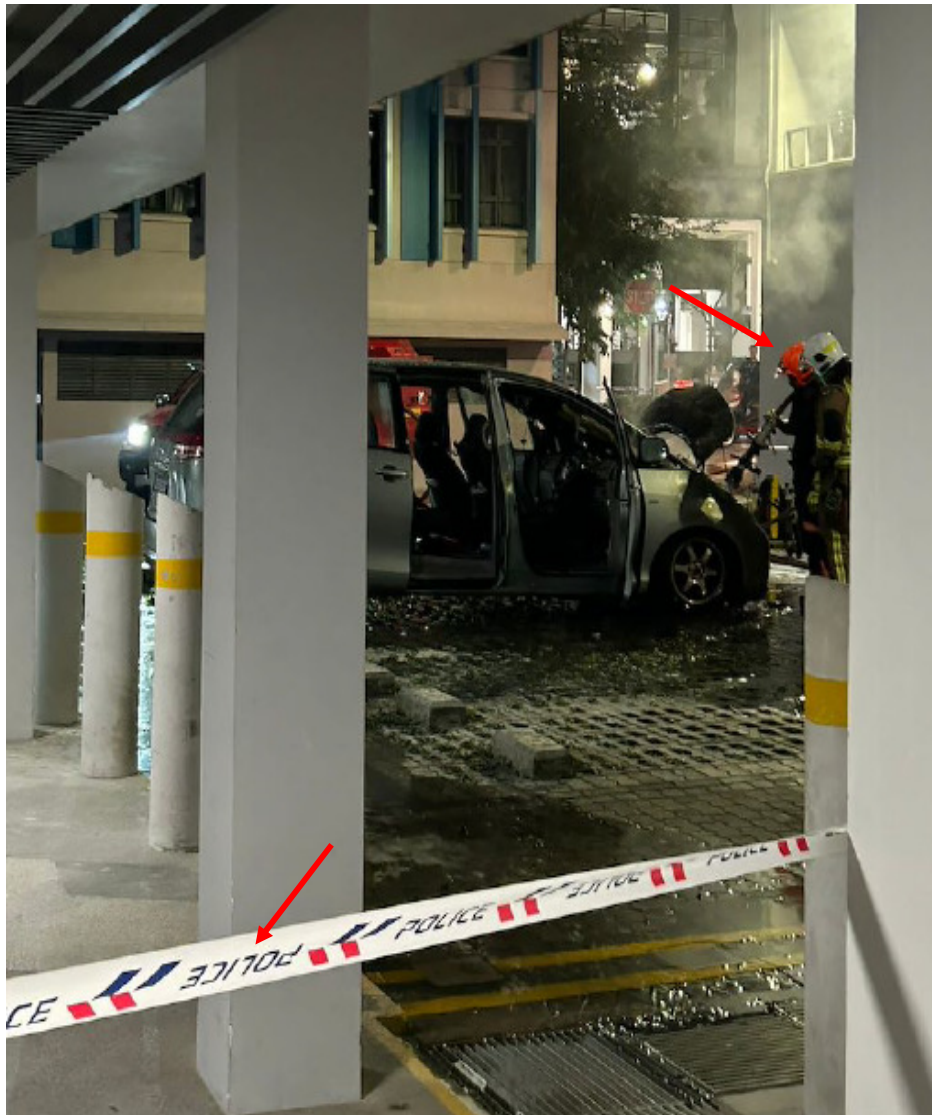


Photo 14 shows the Insured Vehicle at the incident scene after the fire was extinguished. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Ms Chua, which is the police and SCDF were present at the incident location (arrowed).

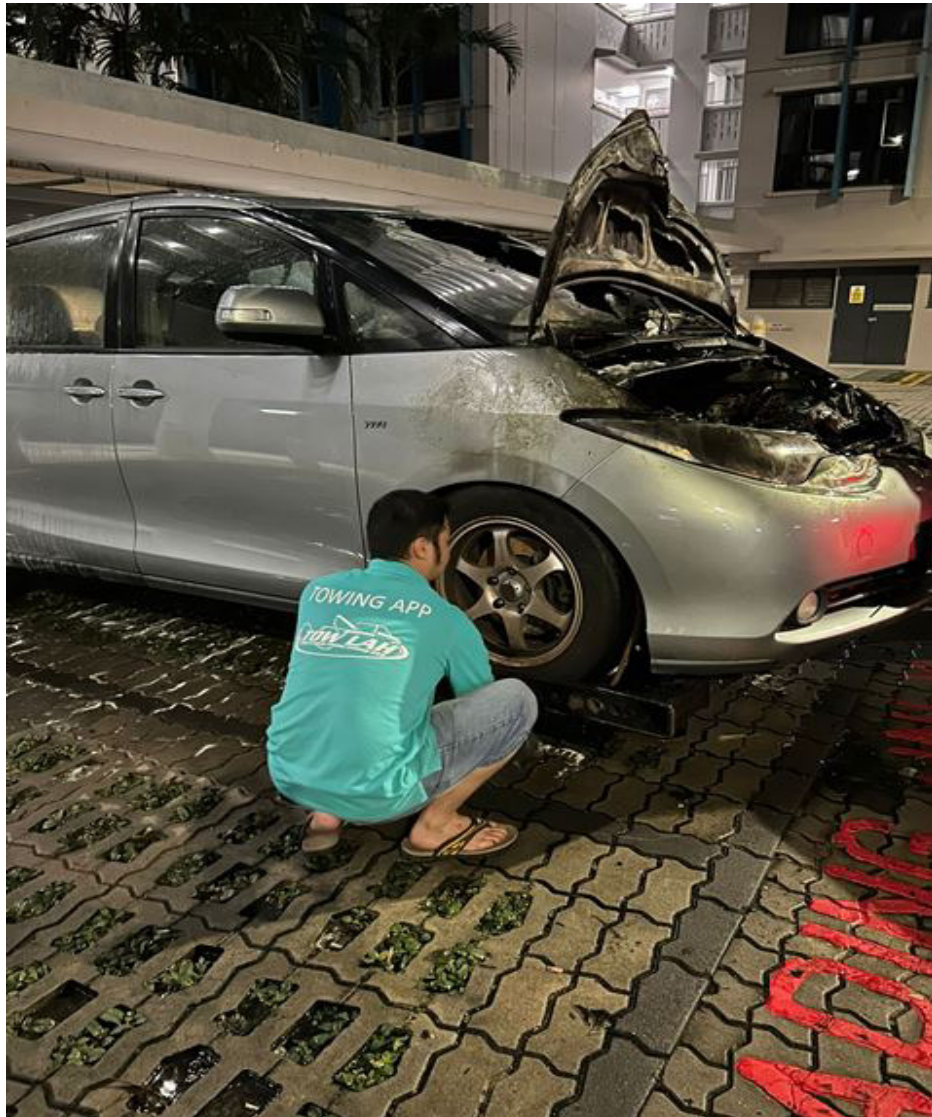



Photo 15 shows the Insured Vehicle at the incident scene being prepped to be towed to AKH.

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 Ms Chua had mentioned to us there were no indications of abnormally high temperatures on the Insured Vehicle when she 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 parked. The location of where the Insured Vehicle was parked 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

Owner ID Type Singapore NRIC	Owner ID 342G
Vehicle No. SDK8922G	Make/Model TOYOTA/ PREVIA 8 SEATER
Engine No.: 2AZ2231698	Chassis No.: JTEGD52MX07029721
Recall Details: 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 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 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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