

Your Ref: SNM22D202713/C01
Our Ref : CS4/CTI22003776/N

9 May 2022

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 GBC 3173A ON 20 APRIL 2022**

1. We refer to your letter dated 25 April 2022 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle GBC 3173A (herein referred to as "**Insured Vehicle**") are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 25 April 2022 at the premises of Hup Soon Lee Motor Service (herein referred to as "**HSL**") located at 1018 Yishun Industrial Park A, #01-352, Singapore 768760.

4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded:-

Vehicle Registration No.	: GBC 3173A
Make / Model	: Nissan NV200 1.5L MT ABS AIRBAG 2WD 6DR
Chassis No	: VSKYBAM20U0026614
Year of Registration	: November 2011
Mileage	: N.A (wiring affected)

5. The fire had resulted in the body parts at the front portion of the Insured Vehicle to be burnt. This had included its front bonnet and front windscreen, amongst others. The interior compartment was observed to be relatively unaffected by the fire.
6. The fire had resulted in the components in the engine compartment of the Insured Vehicle to be burnt. Affected parts had included the battery and engine block, amongst others. 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 fire damage to the Insured Vehicle was confined to its frontal portion. Its front bonnet and front windscreen were amongst the body parts that were found to have been affected as a result of the fire.



Photo 2 shows the general view of the right body of the Insured Vehicle at the time of our inspection. The fire damage to the Insured Vehicle was confined to its frontal portion. The right body was found to have been 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 to the Insured Vehicle was confined to its frontal portion. The rear portion was found to have been relatively unaffected by the fire.



Photo 4 shows the general view of the front windscreen of the Insured Vehicle at the time of our inspection. The fire damage to the front windscreen of Insured Vehicle was minimal.



Photo 5 shows the interior compartment of the Insured Vehicle, which was observed to be relatively unaffected by the fire.



Photo 6 shows a general view of the engine compartment of the Insured Vehicle which was covered in fire extinguisher residue at the time of our inspection. Most of its engine components were found to have been affected as a result of 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 centre rear portion of the engine compartment. This can be determined from the burn pattern and the high heat intensity burn marks (whitish burn marks) found on the centre rear of the bonnet of the Insured Vehicle and also the rust that had developed on the underside of the front bonnet, at the rear centre 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 right side area, is an indication that the right side area 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 (circled) that were found on the rear centre portion of the front bonnet of the Insured Vehicle. 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 rear centre 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 centre rear portion of the engine compartment.

10. Upon closer examination of the engine compartment, in particular to the wire harness closest to the firewall, we had found faint traces of greenish residue on several burnt stretches of original factory fitted wirings around the centre rear portion of the engine compartment. The presence of such 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. We also observed that the negative terminal of the battery had partially melted. These physical evidences 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 - 13 below.



Photo 9 shows the burnt stretches of original factory fitted wirings near the firewall, which is in the immediate vicinity where the fire to the Insured Vehicle had likely started. Faint traces of greenish residue were found on some of the wirings (circled). The presence of such greenish residue suggests occurrence of an electrical short circuit.



Photo 10 shows a closer view of the burnt stretches of original factory fitted wirings near the firewall, which is in the immediate vicinity where the fire to the Insured Vehicle had likely started (circled).



Photo 11 shows a close up view of the burnt stretches of original factory fitted wirings near the firewall, which is in the immediate vicinity where the fire to the Insured Vehicle had likely started. Faint traces of greenish residue were found on some of the wirings (circled).



Photo 12 shows a closer view of the wirings around the centre rear portion of the engine compartment which is near to the vicinity where the fire to the Insured Vehicle had likely started. We observed greenish residue on the wirings (arrowed) at the centre rear portion of the engine compartment.



Photo 13 shows a close up view of the wirings around the centre rear portion of the engine compartment which is near to the vicinity where the fire to the Insured Vehicle had likely started. We observed greenish residue on the wirings (arrowed) at the centre rear portion of the engine compartment.

11. From the Singapore Accident Statement which was made by Mr Rajakamatchi Seran (herein referred to as **"Mr Raja"**), who is the driver for Kontourz Private Limited (herein referred to as **"Kontourz"**), we note that the fire to the Insured Vehicle had started at a time when it was in HSL for repairs. The mechanic for HSL was first alerted of the fire when he saw smoke emitting from the front bonnet of the Insured Vehicle shortly after he parked the Insured Vehicle inside the workshop.
12. We managed to speak to Mr Yee Tai Fook (herein referred to as **"Mr Yee"**) on 28 April 2022 who is a warehouse manager for a conglomerate of companies which Kontourz is a part of, 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 Yee, on 24 March 2022, Mr Raja informed Mr Yee that there was a loss of power in the Insured Vehicle. Mr Raja was instructed to drive to HSL. A diagnostic check of the Insured Vehicle indicated that the fuel pump switch and turbo charger boost system needed to be replaced. These parts were changed on 25 March 2022.

14. On the morning of 28 March 2022 Mr Raja informed Mr Yee that the Insured Vehicle had broken down along the CTE. Prior to that, Mr Raja mentioned that there was a red engine warning light flashing on the dashboard of the Insured Vehicle. Mr Yee arranged for the Insured Vehicle to be towed to HSL at around 1010 hours. A second diagnostic check of the Insured Vehicle was performed. The mechanic at HSL informed MR Yew that it was probably due to the industrial diesel which was used to fuel the Insured Vehicle. He asked Mr Yee to fill up the Insured Vehicle with regular diesel at any petrol station. Mr Yee stated that after filling up the Insured Vehicle with regular diesel, there were no more issues with the Insured Vehicle.
15. On 30 March 2022, Mr Raja sent Mr Yee a video of the Insured Vehicle's engine at idle. He mentioned that the idling was not normal. Mr Yee instructed Mr Raja to drive the Insured Vehicle to HSL. Mr Raja arrived at HSL at 1147 hours.
16. On 4 April 2022, Mr Yee texted HSL via whatsapp for an update on the status of the Insured Vehicle. The mechanic informed Mr Yee that it was a fuel injector issue and recommended that Mr Yee change all 4 fuel injectors. Mr Yee asked the mechanic if it was a fuel injector issue or fuel pump issue but he did not get a reply.
17. On 7 April 2022 Mr Yee texted HSL again for an update. The mechanic sent Mr Yee the error codes for the fuel injectors during the diagnostic check of the Insured Vehicle. Mr Yee told the mechanic to proceed with the repairs. Mr Yee asked the mechanic if the fuel pump needed to be replaced as well. He was informed by the mechanic to replace the fuel injectors first.
18. On 18 April 2022 Mr Yee texted HSL again for an update. He did not get a reply. He repeated this the following day on 19 April 2022. The mechanic replied to Mr Yee requesting for more time as the fuel injectors needed to be meticulously removed to prevent damage to the top cam cover of the Insured Vehicle
19. On 20 April 2022 at 1100 hours Mr Yee texted HSL for an update. The mechanic called Mr Yee later that day at 1435 hours. He explained that he had replaced all 4 fuel injectors and performed a test drive of the Insured Vehicle around the vicinity of the workshop. He returned to HSL and parked the Insured Vehicle inside the workshop and switched off the engine. Shortly after the engine compartment of the Insured Vehicle was on fire and the mechanic put out the fire with a fire extinguisher which was lying in the workshop. He managed to put out the fire in a few minutes.

20. The mechanic did not mention to Mr Yee how long after he had parked the Insured Vehicle did the fire occur. He sent Mr Yee a picture of the burnt engine compartment via private message. Mr Yee asked the mechanic to send the picture and update the status of the Insured Vehicle in the main chat group via whatsapp but he did not do so.
21. On 21 April 2022 Mr Yee texted HSL and the mechanic informed Mr Yee that he needed to await further instructions from his employer with regards to the claims procedure. Mr Yee did not want to wait any longer as he did not wish to be penalised for late reporting. He called Mr Jay who is his insurance broker.
22. An insurance report was made at Cheng Hoe Motor by Mr Raja on 25 April 2022. Mr Yee further explained to us that he only joined the company on 21 March 2022. Hence he was not aware of any other issues with the Insured Vehicle prior to that date.
23. We managed to speak to the mechanic of HSL during our physical inspection of the Insured Vehicle on 25 April 2022 where we were able to gather further information pertaining to the incident. He mentioned that after he had parked the Insured Vehicle in the workshop, he switched off the engine. Shortly after, he saw smoke emitting from the front bonnet. He then saw flames from the right portion of the bonnet. He did not release the front bonnet.
24. Instead, he grabbed the fire extinguisher closest to him in the workshop and slipped in the hose from the underside of the front bonnet and attempted to put out the fire. He only stopped when he noticed there were no more flames emitting from the front bonnet. Minutes later, he released the front bonnet and took a picture of the engine compartment post- incident and sent it to Mr Yee.
25. With regard to the history of the Insured Vehicle, Mr Yee mentioned that the Insured Vehicle was bought new in 2011. The COE was renewed for another 10 years in 2021 and Mr Raja is the main driver.
26. Pertaining to the maintenance aspect, Mr Yee mentioned that the Insured Vehicle will be sent for servicing every 10,000km at HSL. The last servicing was done on 14 January 2022. The servicing package included changing of engine oil and oil filter. The engine mounting, timing belt, and wiper blades were also replaced. The last repairs were done on 25 March 2022. The fuel pump switch and turbo boost system were replaced.

27. During the course of our investigations, we were able to obtain from Mr Yee the latest servicing and repair records of the Insured Vehicle. Refer to Invoices 1 and 2 below.

[illegible]

Invoice 1 shows the last servicing package done on the Insured Vehicle on 14 January 2022 at HSL (red arrows) which included changing of engine oil and oil filter. The engine mounting, timing belt, and wiper blades were also replaced (circled).

[illegible]

Invoice 2 shows the latest repairs done on the Insured Vehicle on 25 March 2022 at HSL (red arrows). The fuel pump switch and turbo boost system were replaced (circled).

Incident Scene Photographs

28. We were able to obtain from Mr Yee several photographs of the Insured Vehicle and screenshots of the conversation between Mr Yee and the mechanic of HSL pre- incident and post- incident. In general, the information that could be gathered from these photographs and screenshots had corresponded to the events that were related to us by Mr Yee. See photos 14 - 22 below.



Photo 14 shows the red engine warning light which had been flashing on the dashboard of the Insured Vehicle when Mr Raja was driving along the CTE before it broke down on 28 March 2022.



Photo 15 shows the Insured Vehicle which was waiting to be towed along the CTE on 28 March 2022. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Mr Yee, which is the Insured Vehicle had broken down along the CTE on 28 March 2022.

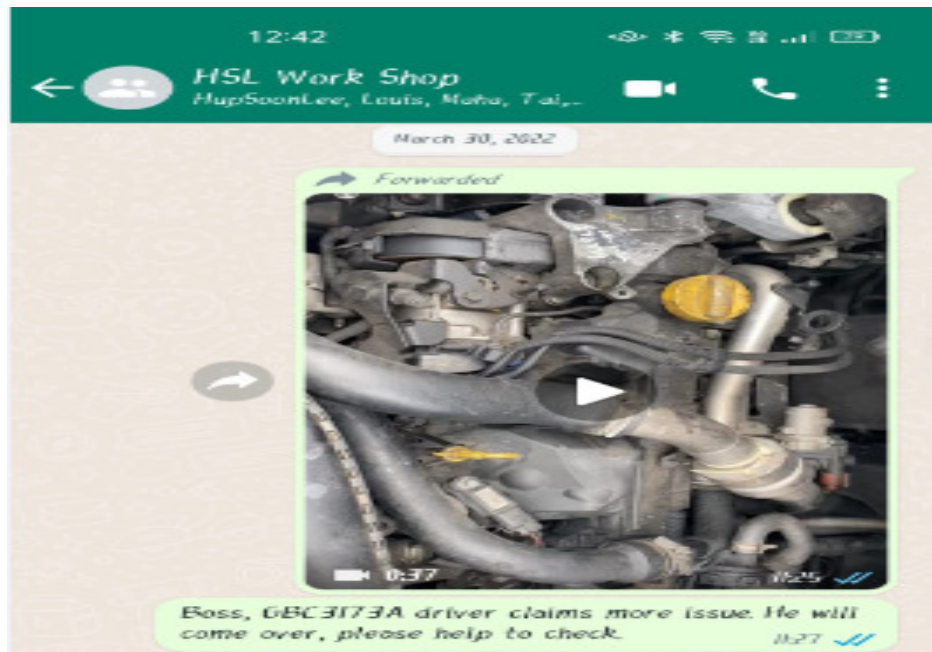


Photo 16 shows the whatsapp message which was sent to HSL by Mr Yee on 30 March 2022 pertaining to the idling issue of the Insured Vehicle's engine (arrowed).

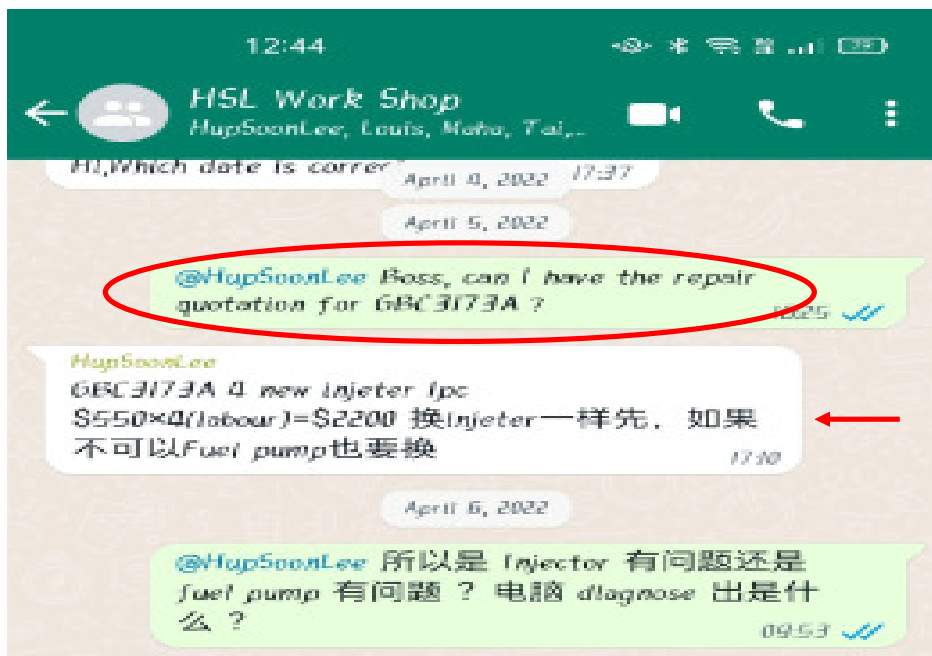


Photo 17 shows the whatsapp message which was sent to HSL by Mr Yee on 4 April 2022 pertaining to repair quotation for the Insured Vehicle (circled). The mechanic of HSL replied stating that the fuel injectors needed to be replaced (arrowed).

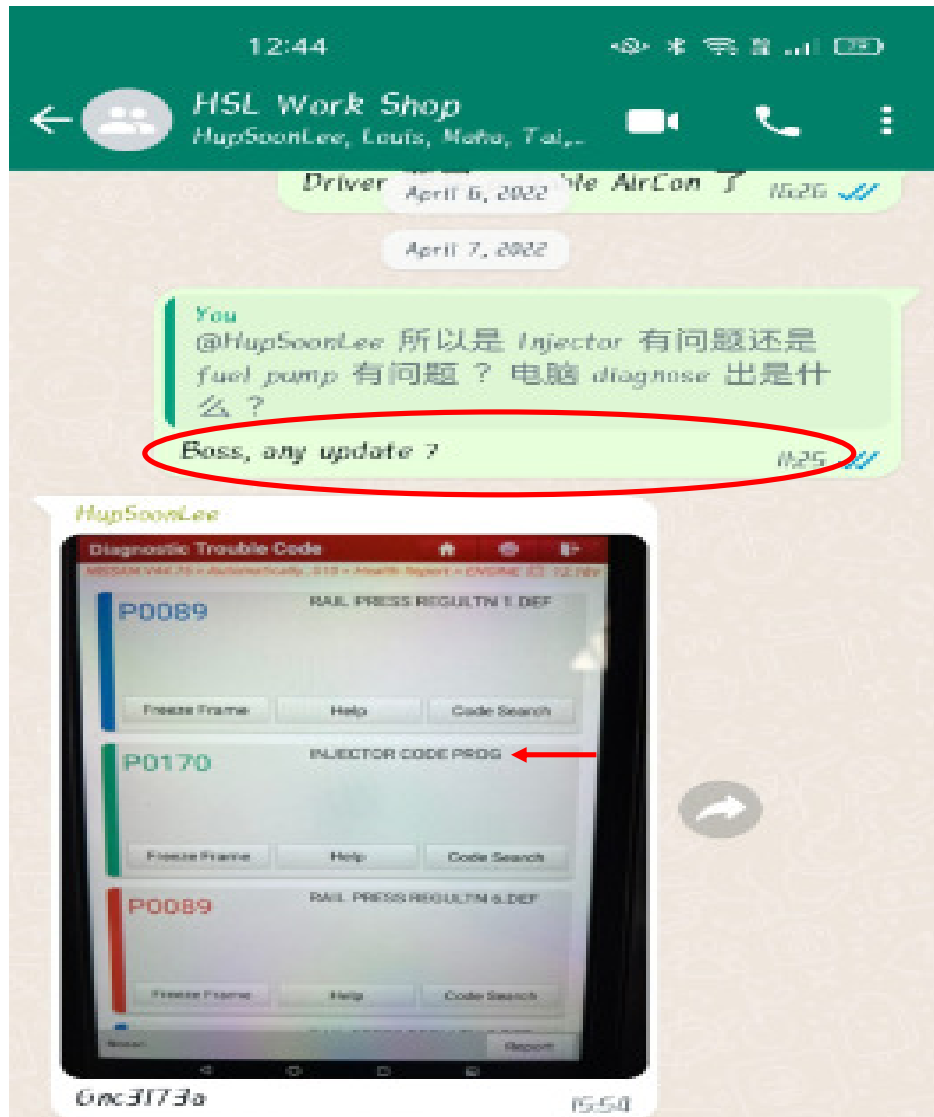


Photo 18 shows the whatsapp message which was sent to HSL by Mr Yee on 7 April 2022 pertaining to the diagnostic check for the Insured Vehicle (circled). The mechanic of HSL replied showing the error codes on the fuel injectors (arrowed).

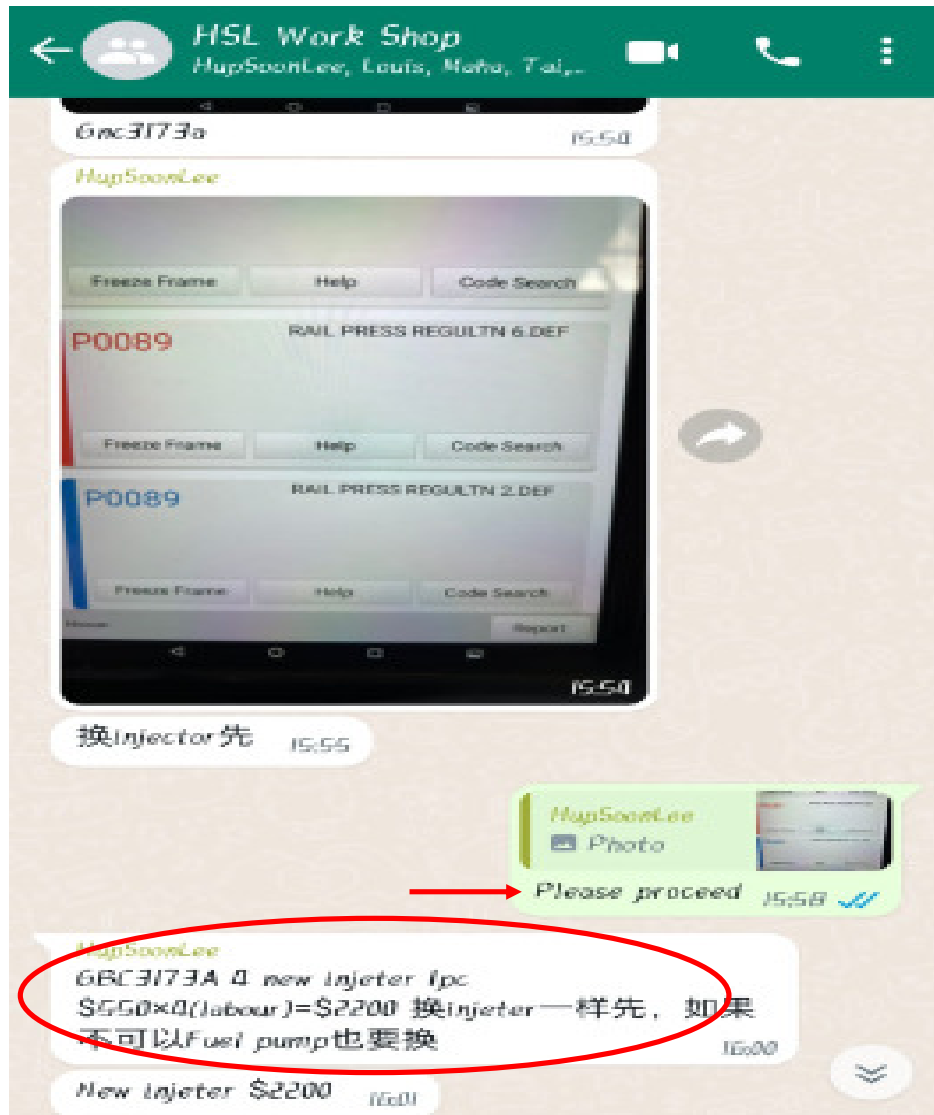


Photo 19 shows the whatsapp message which was sent to HSL by Mr Yee on 7 April 2022 asking the mechanic to proceed with the repairs to replace the fuel injectors on the Insured Vehicle (arrowed). The mechanic of HSL replied with the price breakdown on the fuel injectors (circled).

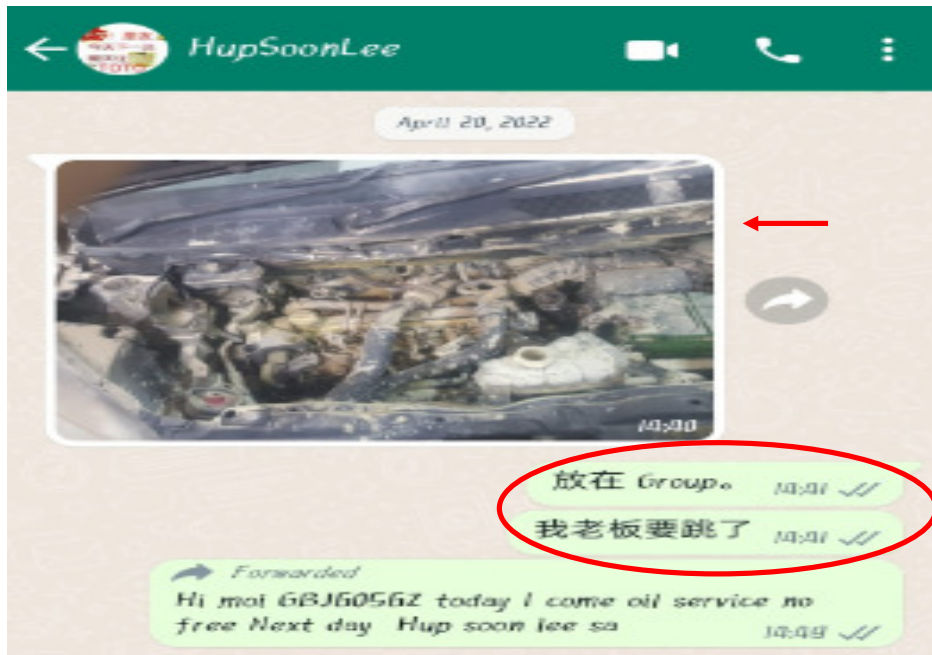


Photo 20 shows the private whatsapp message which was sent to Mr Yee by the mechanic of HSL on 20 April 2022 post- incident (arrowed). Mr Yee replied in Mandarin asking the mechanic of HSL to forward this message to the main chat whatsapp group (circled).




Photo 21 shows the Insured Vehicle at HSL post- incident.



Photo 22 shows the engine compartment of the Insured Vehicle at HSL post-incident. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Mr Yee, which is the fire to the Insured Vehicle had started from the engine compartment (arrowed).

29. 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 the mechanic of HSL had mentioned to us there were no indications of abnormally high temperatures on the Insured Vehicle when he was performing the test drive of the Insured Vehicle around the vicinity of the workshop after replacing the fuel injectors. Moreover, an overheated engine would have caused the Insured Vehicle to stall. However in this case, the mechanic was the one who noticed smoke emitting from the engine compartment after he had parked and switched off the engine of the Insured Vehicle.
30. 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 an unusual material(s)/object(s) found on the ground near where the Insured Vehicle had caught fire. Furthermore, the location of where the Insured Vehicle was positioned was also observed to be not at a secluded location.

31. 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 faint traces of greenish residue that were found on several burnt stretches of original factory fitted wirings around the centre rear portion of the engine compartment of the Insured Vehicle, which was earlier discussed in paragraph 10 above.
32. 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 Company	Owner ID 021E ←
Vehicle No. GBC3173A ←	Make/Model NISSAN/ NV200 1.5L MT ABS AIRBAG 2WD 6DR
Engine No.: K9KF276D124523	Chassis No.: VSKYBAM20U0026614
Recall Details: No Recall Detail records ←	

Conclusion

33. 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 along the wirings around the engine compartment. The wirings were original factory wirings around the centre rear portion of the engine compartment of the Insured Vehicle.
34. 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.
35. 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 pose a fire risk.



Muhd Nazril
Technical Investigator



Ang Bryan Tani
AMSOE, AMIRTE, AFF SAE, M.MATAI, AFF.Inst.AEA
Senior Technical Investigator
Technical Investigation & Reconstructionist (SAE-A)

DISCLAIMER OF LIABILITY TO THIRD PARTIES:- This Report is made solely for the use and benefit of the Client named on the front page of this Report. No liability or responsibility whatsoever, in contract or tort, is accepted to any third party who may rely on the Report wholly or in part. Any third party acting or relying on this Report, in whole or in part, does so at his or her own risk.