

Your Ref: OD/1202000021292
Our Ref : CS4/FWD20011424/N

27 October 2020

M/s FWD Singapore Pte. Ltd.

6 Temasek Boulevard
#18-01
Suntec Tower 4
Singapore 038986

**TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE
INSURED VEHICLE SGZ 7677G ON 15 OCTOBER 2020**

1. We refer to your letter dated 20 October 2020 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle SGZ 7677G (herein referred to as “**Insured Vehicle**”) are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 26 October 2020 at the premises of Ah Lim Motor Co. (herein referred to as “**Ah Lim**”) located at 10 Ang Mo Kio Industrial Park 2A, Ang Mo Kio Autopoint, #01-09, Singapore 568047.
4. A static inspection was carried out to the Insured Vehicle where the following general information was first recorded:-

Vehicle Registration No.	: SGZ 7677G
Make / Model	: TOYOTA VIOS E AUTO
Chassis No	: MR053HY9305038853
Year of Registration	: November 2007
Mileage	: N.A (battery melted)
5. The Insured Vehicle was observed to have sustained severe fire damage all around. Its engine compartment and interior compartment were completely burnt. Rust had accumulated all over the Insured Vehicle as a result of exposure to environmental condition for a period of time.
6. The Insured Vehicle had also sustained a direct impact of significant force onto its front side. Its front wheels, front support panel, front bumper and front bumper reinforcement were amongst the body parts that were bent/ buckled as a result of the impact force. See photos 1 – 4 below.



Photo 1 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. Its engine compartment and interior compartment were completely burnt. Rust had accumulated all over the Insured Vehicle as a result of exposure to environmental condition for a period of time.



Photo 2 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 Insured Vehicle as a result of exposure to environmental condition for a period of time.



Photo 3 shows the interior compartment of the Insured Vehicle, which was significantly affected by the fire.



Photo 4 shows the front portion of the Insured Vehicle. Impact damage was observed at its front side (circled). Its front wheels, front support panel, front bumper and front bumper reinforcement were amongst the body parts that were bent/ buckled as a result of the impact force.

7. At the time of physical inspection of the Insured Vehicle, we had found it to be fitted with aftermarket 15- inch alloy rims. All these fitted components were not the standard type for the Insured Vehicle. See photo 5 below.



Photo 5 shows the non-standard rim found to be fitted on the Insured Vehicle at the time of our inspection. The 15- inch alloy rims fitted on the Insured Vehicle were not the standard type for the Insured Vehicle.

Investigation and Technical Analysis

8. According to the Police report T/20201019/2068 and Singapore Accident Statement made by Mr Joesaphine Shalene Khanisen (herein referred to as "**Ms Shalene**"), the fire (flames) started at a time after she had collided into the centre divider and mounted a kerb.
9. We managed to speak to Ms Shalene on 30 October 2020 where we were able to gather further information regarding the accident and also information pertaining to the history of the Insured Vehicle.
10. Ms Shalene's father is the owner whereas she is the only driver of the Insured Vehicle. According to Ms Shalene, on 15 October 2020 at about 1915hrs or thereabouts, she was driving the Insured Vehicle after work from Sembawang and was headed to her home located at Saraca Place. She was travelling around Admiralty Road East towards Yishun.

11. From what she can recall, she was driving along Admiralty Road East, when she saw smoke emitting from the left passenger compartment. She then started to lose control of the steering wheel. She tried to step on the brakes but by then it was too late. The Insured Vehicle had collided into a centre divider and mounted a kerb before coming to a complete stop.
12. The driver airbag was deployed. Ms Shalene regained composure which was when she noticed flames coming out from the engine compartment. She mentioned that the flames were getting bigger. Ms Shalene managed to break open the driver door and exited the Insured Vehicle. There was a passer-by who came to assist Ms Shalene, telling her to move as far away from the Insured Vehicle as possible for fear that it might explode. As the incident location was near to her former place of work, her ex colleagues came down to assist Ms Shalene. The SCDF and police were called.
13. The police arrived first followed by SCDF a few minutes later. The fire was extinguished shortly after. The police took Ms Shalene's statement and she also assisted the SCDF in their preliminary investigations. Ms Shalene's friend helped her call the FWD hotline and made towing arrangements. The tow truck came in half an hour. The Insured Vehicle was towed to Ah Lim. Ms Shalene refused conveyance to the hospital post- incident. However, she started to feel pain and went to Sengkang Hospital where she was warded for 1 day and subsequently given 14 days of medical leave. Ms Shalene went to make a police report at the Serangoon North Neighbourhood Police Post on 19 October 2020 at 1524 hours and an insurance report at Ah Lim the following day, on 20 October 2020 at 1519 hours.
14. Ms Shalene mentioned that she had not experienced any other mechanical problems with the Insured Vehicle till the day of the accident. She also mentioned that there were neither warning lights displayed nor was there an abnormal rise in temperature throughout the period she was driving the Insured Vehicle.
15. With regards to the history and maintenance records of the Insured Vehicle, Ms Shalene had mentioned that the Insured Vehicle was bought second-hand on 6 December 2017 by her father. The COE was renewed for 5 years.
16. We asked Ms Shalene regarding the aftermarket 15- inch alloy rims that were fitted onto the Insured Vehicle. She had replaced the original rims with aftermarket 15- inch alloy rims after purchasing the Insured Vehicle.

17. Pertaining to the maintenance aspect, Ms Shalene mentioned that she sends the Insured Vehicle for periodic servicing. She services the Insured Vehicle at Riverview Auto Services Pte. Ltd. located at 10 Ang Mo Kio Industrial Park 2A, #04-07, Singapore 568047.
18. During the course of our investigations, we were able to obtain from Ms Shalene, a tax invoice of the most recent servicing and repairs done to the Insured Vehicle. The last periodic servicing done on the Insured Vehicle was on 14 September 2020. The servicing package had included the changing of engine oil, oil filter, air filter, aircon filter and drain plug gasket. The brake light bulb was replaced. The tyres were also rotated and balanced. See Invoice 1 below.

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RIVERVIEW AUTO SERVICES PTE LTD ←

10 AMK INDUSTRIAL PARK 2A, AMK AUTOPOINT
#04-07/16 SINGAPORE 568047
Tel: 6481 2025/ 6481 5797 Fax No: 6481 8715
Email: service@riverviewauto.com.sg
Website: www.riverviewauto.com.sg
Co. Reg.: 200800062E GST Reg. No.: 200800062E

MRS KHANISEN
38 SARACA PLACE
S 807467
MRS KHANISEN
Tel 97909230

Tax Invoice (RA) : 202220
Invoice Date: 14/09/2020 ←
Vehicle Num: SGZ 7677 G ←
Make/Model: TOYOTA VIOS NCP 93
Mileage (Km): 209,480
Service Advisor: GOH
Technician: WEN
Ref./Remark:
Terms: Cash
Currency: SGD

No.	Particular	Quantity	Unit Price	Amount \$
1	* SERVICING PACKAGE FOR ASIAN CAR *			118.00
2	ENGINE OIL 5W-30 MOBIL 1 FULLY SYNTHETIC	4 LTR(S)	0.00	
3	ENGINE OIL FILTER	1 PC(S)	0.00	
4	DRAIN PLUG GASKET	1 PC(S)	0.00	
* * * ADDITIONAL PARTS : -				
5	AIR FILTER	1 PC(S)	32.00	32.00
6	CABIN FILTER	1 PC(S)	13.50	13.50
7	BRAKE LIGHT BULB RHS	1 PC(S)	3.50	3.50
* LABOUR CHARGE :-				
8	ROTATE & BALANCE TYRES			20.00
*REMARKS				
BATTERY WEAK, FRONT ABSORBER LEAK, FRONT AND REAR BRAKE PAD WORN OUT. FRONT LOWER ARM BUSH CRACK, AIR CON COOLING COIL LEAK				
E. & O.E.				Total \$ 187.00
				GST @ 7% \$ 13.09
				Amount Due \$ 200.09

Dollars: Two Hundred And Cent Nine Only

Customer's Signature/Co. Stamp for RIVERVIEW AUTO SERVICES PTE LTD ADVISOR'S SIGNATURE

Remarks Dear customers, please ensure that your invoice is stamped PAID after making payment.

Invoice 1 shows the last servicing package done on the Insured Vehicle at Riverview Auto Services Pte. Ltd. on 14 September 2020 (red arrows) which included the changing of engine oil, oil filter, air filter, aircon filter and drain plug gasket. The brake light bulb was replaced. The tyres were also rotated and balanced (circled).

19. Upon closer examination of the rear left portion of the engine compartment, we had found several stretches of wirings burnt internally to its bare copper state. The wirings were original factory fitted wirings leading towards the Engine Control Module (ECM) of the Insured Vehicle. The bright reddish colour of the copper wires suggests that the wirings were exposed to high heat. Such condition normally indicates internal heating of copper wires which is a sign of an electrical short circuit occurring. In addition, we also found greenish residue on some of the wirings. The presence of greenish residue further indicates internal heating of copper wires, another 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. 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 6 - 8 below.



Photo 6 shows the wirings around the rear left portion of the engine compartment. Several stretches of wirings leading towards the Engine Control Module (ECM) (yellow arrow) were found burnt internally to its bare copper state (red arrows). The bright reddish colour of the copper wires suggests that the wirings were exposed to high heat. Such condition normally indicates internal heating of copper wires which is a sign of an electrical short circuit occurring.



Photo 7 shows a closer view of some of the wirings with greenish residue (red arrows). The presence of such greenish residue suggest occurrence of an electrical short circuit.



Photo 8 shows a close up view of some of the wirings with greenish residue (arrowed). The presence of such greenish residue suggest occurrence of an electrical short circuit.

Accident Scene Photographs

20. We were able to obtain from Ms Shalene photos of the Insured Vehicle on fire as well as photos which they had taken during 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 Shalene. See photos 9 - 11 below.



Photo 9 shows the Insured Vehicle on fire after colliding into a centre divider and mounting a kerb, 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 Shalene, which is the fire started from the front bonnet almost immediately after the collision.

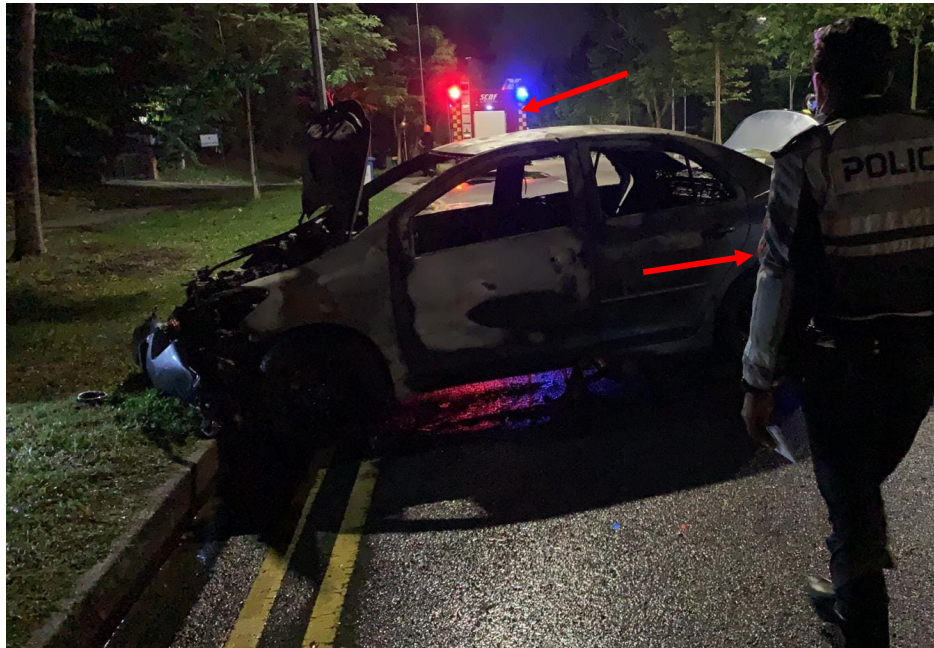



Photo 10 shows the Insured Vehicle at the incident scene after the fire was extinguished. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Ms Shalene, which was both the SCDF and police had attended to the incident (arrowed).



Photo 11 shows the Insured Vehicle being prepped to be towed to Ah Lim.

21. Our checks with both local and international bodies and associations had revealed that at the time of writing this report, there was a manufacturer recall on 10 October 2012 for the electrical sliding contact module in the driver's side Power Window Master Switch. However it was not rectified. 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 354C
Vehicle No. SGZ7677G	Make/Model TOYOTA/ VIOS E AUTO
Engine No.: 1NZK656912	Chassis No.: MR053HY9305038853

Recall Details

Recall No.: R2012100052	
Manufacturer Recall Date: 10 Oct 2012	Estimated Completion Year of Recall: 2015
Brief Description (As Provided by Motor Dealer): The sliding electrical contact module in the driver's side Power Window Master Switch (PWMS) may experience a 'notchy' or sticking feeling during operation.	Date Rectified: -
Hotline Information: Toyota Customer Service Hotline at 6631 1111	
For more details, contact BORNEO MOTORS (SINGAPORE) PTE LTD	

Conclusion

22. 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 inside the engine compartment, somewhere around the rear left portion of the engine compartment. The wirings were original factory wirings leading to the Engine Control Module (ECM) of the Insured Vehicle.

23. At the time of inspection, we did not find any unusual skeletal remains which could have suggested that there was possible modification(s) and/or additionally fitted electronic and/or electrical component(s) on the Insured Vehicle.
24. We found the Insured Vehicle to be fitted with non-standard tyre rims (15 inch alloy rims). The abovementioned rims do not require prior approval from LTA.
25. Although the aftermarket alloy rims fitted on the Insured Vehicle were not the standard type for the Insured Vehicle, we are of the view that these parts did not cause and/or contribute to the fire incident.
26. 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***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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