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Our Ref : CI/AIG19002163/D

01 February 2019

AIG Asia Pacific Insurance Pte Ltd

78 Shenton Way #08-16
AIG Building
Singapore 079120
(Motor Claims Department)

**TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE
INSURED VEHICLE SFU 8778E ON 11 JANUARY 2019**

1. I refer to your request dated 15 January 2019.
2. My analysis, comments and opinions with respect to the cause of fire to the insured vehicle SFU 8778E (herein referred to as "**Insured Vehicle**") are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 17 January 2019 at the premises of M/s Kan Fook Sing Motor Workshop, 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.	: SFU 8778E
Make / Model	: Toyota Wish 1.8 Auto
Chassis No	: JTDER12W103001255
Year of Registration	: 2008 (December)
Mileage	: N.A (wiring affected)

5. The fire damage to the Insured Vehicle was observed to be confined to the front area of its interior compartment. Parts like the front dashboard, upholstery, plastic trims, seats and carpet were amongst the parts that were partially melted/burnt. Apart from the front windscreen, the exterior of the Insured Vehicle was unaffected by the fire. The engine compartment was also observed to be intact and without any fire damage.
6. The Insured Vehicle was also found to have been additionally fitted with an audio amplifier, 2 small audio speakers, a media screen and a high ampere fuse. See photo 1 – 8 below.



Photo 1 shows a general view of the front left body of the Insured Vehicle at the time of my inspection. The exterior body of the Insured Vehicle was observed to be in good general condition with no damage of burn nature found apart from a cracked front windscreen.



Photo 2 shows a general view of the rear right body of the Insured Vehicle at the time of inspection. The rear body of the Insured Vehicle was observed to be unaffected by the fire.



Photo 3 shows the engine compartment of the Insured Vehicle at the time of my inspection. There was no damage of burn nature observed within the engine compartment. A high ampere fuse (arrowed) was observed to be additionally fitted inside the engine compartment.



Photo 4 shows a general view of the interior compartment of the Insured Vehicle. The fire damage to the Insured Vehicle was confined to mainly the front area of its interior compartment. The front dashboard, seats, upholstery, carpets and various plastic trims amongst others were observed to have been partially melted/burnt.



Photo 5 shows a general view of the interior compartment of the Insured Vehicle. The fire damage to the Insured Vehicle was confined to mainly the front area of its interior compartment. The front dashboard, seats, upholstery, carpets and various plastic trims amongst others were observed to have been partially melted/burnt.



Photo 6 shows the audio amplifier that was found to be additionally fitted under the front left passenger seat of the Insured Vehicle. The audio amplifier and the connecting wire cables were found to be without any burnt marks.



Photo 7 shows the audio speaker (arrowed) that was found to be additionally fitted near the right side "A" pillar trim of the Insured Vehicle. The same audio speaker fitted near the left side "A" pillar trim was observed to be partially melted/burnt as a result of the fire.



Photo 8 shows the media screen that was additionally fitted on the roof of the Insured Vehicle. The media screen was observed to be partially melted/burnt as a result of the fire.

Circumstance of Incident

7. From the police report G/20190111/2183, which was made by one Mohamad Naser Bin Yusop (herein referred to as "**Mr Naser**"), I note that the fire to the Insured Vehicle had started at a time when he was driving the Insured Vehicle. Mr Naser first noticed burning smell emitting from the Insured Vehicle. He then parked the Insured Vehicle and switched off the engine, at which time, he saw smoke emitting from the stereo of the Insured Vehicle. Fire soon broke out and with the help of some members of public, Mr Naser was able to extinguish the fire using a nearby fire hose.
8. I spoke to Mr Naser on 24 January 2019 and through telephone conversation, I was able to gather further information pertaining to the incident as well as information pertaining to the history of the Insured Vehicle.
9. According to Mr Naser, on 11 January 2019 he had collected the Insured Vehicle at the multi-storey carpark of his residential home. He had intended to drive the Insured Vehicle to his mother-in-law's home at Sengkang area to collect dinner. Soon after the engine was started, both he and his son, who was seated at the front left passenger seat, smelt some slight burning smell, which they thought was coming from the outside as there was some upgrading works that were on-going at the multi-storey carpark. During the journey to Sengkang, he did not experience any abnormality to the Insured Vehicle. The Insured Vehicle was operating normally as per usual.
10. Upon arriving at Sengkang, his son went to collect the dinner while Mr Naser waited inside the Insured Vehicle with the engine running. After a few minutes, his son returned, and they then headed back home to Tampines. Nearing their home, Mr Naser again smelt burning smell and this time, he decided to check the source of the burning smell when he stopped the Insured Vehicle briefly for his son to buy some groceries at a supermarket along the way home. Upon alighting from the Insured Vehicle after switching off the engine, Mr Naser had checked the engine compartment and underside of the Insured vehicle but did not find anything unusual. His son soon returned, and they continued their journey home.
11. Upon driving passing the carpark gantry at the multi-storey carpark of his residential estate, the burning smell became stronger. Mr Naser continued driving the Insured Vehicle and parked inside one of the parking lots before switching off the engine. Feeling uneasy, he decided to check on the source of the burning smell again.

12. Opening the front bonnet, he again did not find anything unusual. His son then suggested to check on the stereo (head unit) of the Insured Vehicle as he (his son) felt the burning smell was coming from around the stereo. Mr Naser then turned the ignition key to the main electrical position, which is the position that allows electrical current from the battery to power the various electrical accessories like the lights and stereo, without starting the engine. According to Mr Naser, smoke started emitting from the corners of the stereo. A small flame was also coming out from the gaps at the corners of the stereo. He then instructed his son to go find his neighbours for help. Mr Naser then ran to the nearby fire hose at the multi-storey carpark and manage to pull the hose to the Insured Vehicle before spraying water on the Insured Vehicle as the fire got bigger. With the help of some member of public, the fire was extinguished before the arrival of SCDF and Police officers.
13. With regard to the history of the Insured Vehicle, I was able to gather from Mr Naser that the Insured Vehicle was purchased brand new about 10 years ago. It is registered under his name and he is the main driver of the Insured Vehicle. The COE of the Insured Vehicle was also recently renewed in December 2018 for another 10 years. As far as he can recall, apart for the usual wear and tear issues he did not experience any major mechanical and/or electrical problem with the Insured Vehicle. Servicing and maintenance of the Insured Vehicle would usually be done at Johor Bahru and he would buy the parts/items that needed to be replaced before driving to Johor Bahru for servicing and maintenance.
14. According to Mr Naser, the last servicing was in December 2018 before he renewed the COE of the Insured Vehicle. During this servicing, the engine oil, transmission oil and spark plugs were replaced. Mr Naser pays cash for the servicing and does not keep any receipts. Pertaining to the various additionally fitted audio components, Mr Naser informed me that that stereo came fitted with the Insured Vehicle when he purchased it 10 years ago. The audio amplifier, audio speakers, media screen and large ampere fuse (to prevent overloading) were installed about 1 year after taking possession of the Insured Vehicle. There was no issue with the audio system of the Insured Vehicle since he installed these components. Mr Naser was not able to provide me with any documents relating to the installation as the installation took place about 9 years ago.
15. Mr Naser informed me that he had taken some photographs and videos during his time at the incident location and these were duly forwarded to me for review.

Investigation and Technical Analysis

16. The photographs provided to me had showed the Insured Vehicle after the fire was extinguished. Photographs taken were basically close up photographs showing the interior compartment of the Insured Vehicle. In general, the fire damage seen inside the interior compartment of the Insured Vehicle was observed to be similar to what I had observed during my inspection of the Insured Vehicle. See photo 9 below.



Photo 9 shows the interior compartment of the Insured Vehicle (photograph taken by Mr Naser at the incident scene). In general, the fire damage seen inside the interior compartment of the Insured Vehicle immediately after the fire was extinguished was observed to be similar to what I had observed during my inspection of the Insured Vehicle.

17. My review of the video recordings provided by Mr Naser had produced notable information with regard to the origin of fire. From the video recordings, smoke was indeed seen emitting from the interior compartment of the Insured Vehicle, at the area where the stereo was fitted. Fire could also be seen engulfing the interior compartment of the Insured Vehicle before it was extinguished by members of public using a fire hose. See photo 10 and 11 below which were extracted from the video recordings that I had reviewed.



Photo 10 shows smoke in the interior compartment of the Insured Vehicle before the fire. From the video recordings, the smoke appear to be emitting from the area where the stereo (arrowed) is fitted.

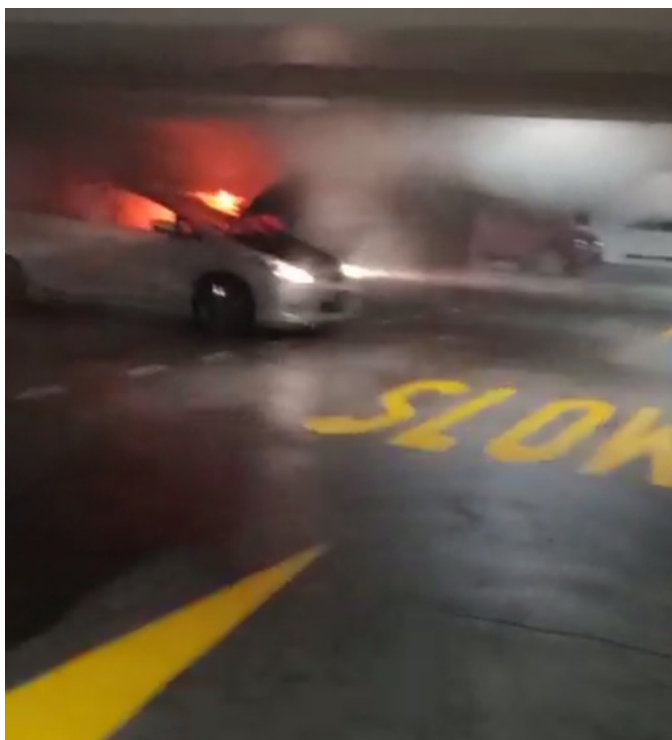


Photo 11 shows fire engulfing the interior compartment of the Insured Vehicle before it was extinguished by members of the public using a fire hose.

18. For this case, the fire to the Insured Vehicle can be established to have originated from the interior compartment, at the area behind the centre of the front dashboard. This was established from information gathered upon reviewing the photographs and videos provided by Mr Naser, as well as, from the physical damage to the Insured Vehicle, where the fire damage to the Insured Vehicle was observed to be confined to the front area of its interior compartment.
19. My examination of the centre area of the front dashboard, which was where the fire to the Insured Vehicle had originated, revealed burnt wirings that were with greenish colour residue. 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 indicate that the cause of fire to the Insured Vehicle was due to electrical in nature. See photo 12 - 14 below.



Photo 12 shows the interior compartment of the Insured Vehicle. Basing on the information gathered during the course of my investigations, and the physical damage to the Insured Vehicle, the fire had originated at the area (circled) behind the centre of the front dashboard. This was also behind and slightly below the location where the stereo (arrowed) is located.



Photo 13 shows the burnt wirings that were with greenish colour residue (arrowed). This was at the area behind the centre of the front dashboard, behind and slightly below the location of the stereo. 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 indicate that the cause of fire to the Insured Vehicle was due to electrical nature.



Photo 14 shows a closer view of the burnt wiring that were with greenish colour residue (arrowed). The presence of greenish residue indicates internal heating of copper wires, a sign of an electrical short circuit occurring.

20. My checks with both local and international bodies and associations revealed that there was a manufacturer recall involving the Insured Vehicle in year 2012. The recall was for mechanical issue to the steering shaft of the Insured Vehicle. From the records, rectifications to address this recall was carried out to the Insured Vehicle in year 2014. See search result below obtained from LTA.

Enquiry on Vehicle Recall - Vehicle Specific

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

Vehicle Owner Particulars	
Owner ID Type:	Singapore NRIC
Owner ID:	0052Z
Vehicle Details	
Vehicle Registration number:	SFU8778E ←
Make:	TOYOTA
Vehicle Model:	WISH 1.8 AUTO
Engine No.:	1ZZ3189747
Chassis No.:	JTDER12W103001255
Recall Details	
1	Recall No.: R2012120063
	Manufacturer Recall Date: 14 Nov 2012
	Estimated Completion Year of Recall: 2015
	Brief Description (As Provided by Motor Dealer):
	The steering shaft system of the subject vehicles consists of a steering intermediate shaft assembly, steering sliding yoke sub assembly, and steering intermediate extension shaft assembly. Due to insufficient hardness of the extension shaft for the vehicle with electric power steering system, the splines which connect the extension shaft to the steering gear box may deform if the steering wheel is frequently and forcefully turned to the full-lock position while driving at a slow speed. ←
	Date Rectified: 14 Mar 2014 ←

Screenshot shows the LTA search result regarding the manufacturer recall that involved the Insured Vehicle. The recall was for mechanical issue to the steering shaft of the Insured Vehicle. From the records, rectifications to address this recall was carried out to the Insured Vehicle in year 2014.

Conclusion

21. Having investigated and technically analysed the damages of burnt nature to the Insured Vehicle, I am 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 behind the centre area of the front dashboard, inside the interior compartment of the Insured Vehicle.
22. I 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.
23. The Insured Vehicle was found additionally fitted with several audio components. This include an audio amplifier, 2 small audio speakers, a media screen and a high ampere fuse. According to Mr Naser, these were fitted about 9 years ago (with no supporting documents provided). These additionally fitted audio components could have caused overloading to the electrical system of the Insured Vehicle, leading to the electrical short circuit. However, given that the audio components were fitted about 9 years ago, I am of the opinion that the overloading, if any, would have been very minimal.
24. My investigations also revealed that the Insured Vehicle was involved in a manufacturer recall in year 2012. The purpose of the recall was for mechanical issue to the steering shaft of the Insured Vehicle. Rectification works to address this recall were carried out to the insured Vehicle in year 2014. Given the electrical nature of this fire incident, the mechanical issue of the steering shaft did not cause and/or contributed to this fire incident.

Ang Bryan Tani

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