



Your Ref: C10005502/JM  
Our Ref : CS/AGI20002468/P

26<sup>th</sup> February 2020

**M/s Auto & General Insurance (Singapore) Pte. Ltd.**

190 Clemenceau #03-01  
Singapore Shopping Centre  
Singapore 239924  
(Motor Claims Department)

**TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE INSURED VEHICLE SMA 1984U ON 06<sup>th</sup> FEBRUARY 2020**

1. We refer to your letter dated 12<sup>th</sup> February 2020 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle SMA 1984U (herein referred to as "**Insured Vehicle**") are set out below.

**Inspection of the Insured Vehicle**

3. The Insured Vehicle was physically inspected on 13<sup>th</sup> February 2020 at the premises of WAH HONG MOTORS & CREDIT PTE LTD (herein referred to as "**Wah Hong**") located at ENTERPRISE HUB 38 TOH GUAN ROAD EAST#01-57 S(608581).
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded:-

Vehicle Registration No.	: SMA 1984U
Make / Model	: MITSUBUSHI LANCER EX GT 2.0L CVT ABS D/AB 2WD HID
Chassis No	: JMYSTCY4AAU000656
Year of Registration	: JAN 2010
Mileage	: N.A (wiring affected)

5. The Insured Vehicle was noted to have sustained fire damage that was confined to its front portion. The interior compartment and rear portion was observed to be unaffected by the fire.

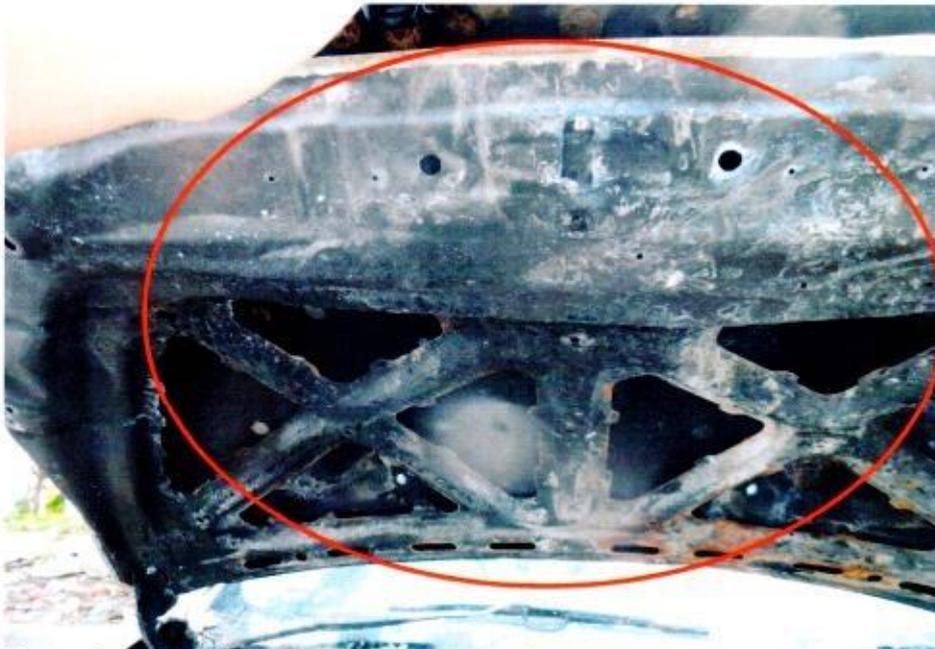
6. The fire had resulted in the body parts at the front portion of the Insured Vehicle was observed to be burnt. This had included its front right headlamps; bonnet and whole of the engine compartment were also observed to sustain heat damage. This includes the timing cover, alternator, ABS pump, brake reservoir and its wiring harness. See photos 1 – 14 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 front right portion. Its front right headlamps, bonnet and whole of the engine compartment were also observed to sustain heat damage. This includes the timing cover, alternator, battery, Ecu, fuses box ABS pump and its wiring harness, are amongst the body parts that were found to have been affected as a result of the fire.



**Photo 2** shows the close up view of the front bonnet portion of the Insured Vehicle at the time of our inspection. The fire damage to the Insured Vehicle was confined to its front portion. As observed whitish burn marks (circled) on the surface are a result of exposure to prolonged heat intensity as a result of the fire.



**Photo 3** shows the close up view of the front bonnet portion of the Insured Vehicle at the time of our inspection. The fire damage to the Insured Vehicle was confined to its front portion. As observed whitish burn marks (circled) on the surface are a result of exposure to prolonged heat intensity as a result of the fire.



**Photo 4** shows the general view of the engine compartment of the Insured Vehicle at the time of our inspection. Its front headlights, timing cover, alternator, battery, Ecu, fuse box, ABS pump and its wiring harness, are amongst the body parts that were found to have been affected as a result of the fire.



**Photo 5** shows the close up view of the front engine compartment portion of the Insured Vehicle at the time of our inspection. Its timing cover, (arrowed) was damaged as a result of the fire.



**Photo 6** shows the close up view of the front engine compartment portion of the Insured Vehicle at the time of our inspection. Its ABS pump, Ecu, fuse box and battery (arrowed) were damaged as a result of the fire.



**Photo 7** shows the close up view of the front engine compartment portion of the Insured Vehicle at the time of our inspection. Its wiring harnesses (arrowed) were damaged as a result of the fire.



**Photo 8** shows the close up view of the front engine compartment portion of the Insured Vehicle at the time of our inspection. Its alternator (arrowed) was damaged as a result of the fire.



**Photo 9** shows the close up view of the front right head lamp portion of the Insured Vehicle at the time of our inspection. The whole of the head lamp including its housing and its wiring harness (circled) were damaged and melted down as a result of the fire.



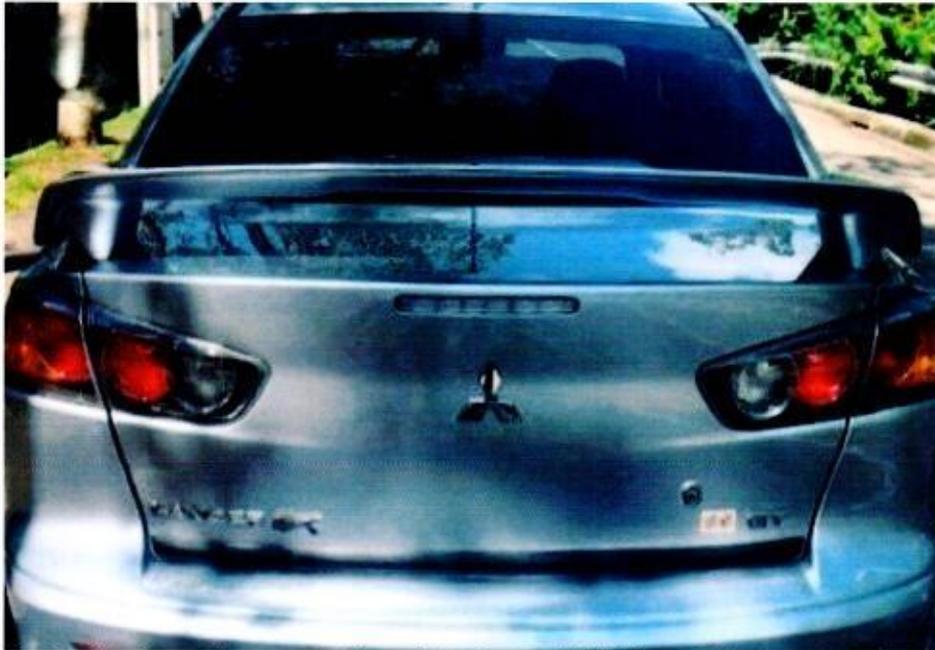
**Photo 10** shows the close up view of the front left head lamp portion of the Insured Vehicle at the time of our inspection. The whole of the head lamp including its housing and its wiring harness (circled) were damaged and melted down as a result of the fire.



**Photo 11** shows the right rear portion of the Insured Vehicle, which was observed to be unaffected by the fire.



**Photo 12** shows the left rear portion of the Insured Vehicle, which was observed to be unaffected by the fire.

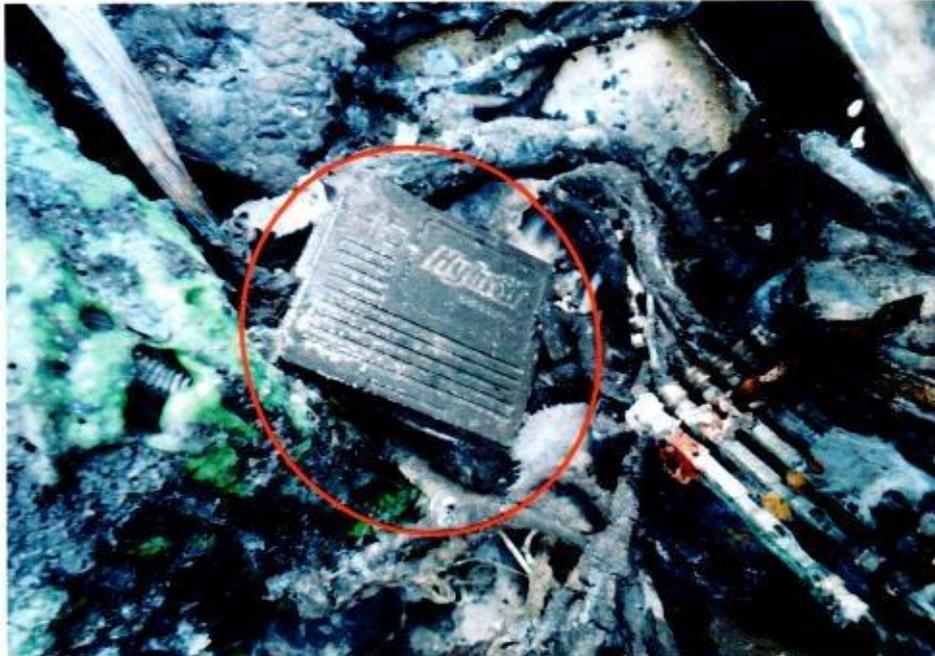


**Photo 13** shows the rear portion of the Insured Vehicle, which was observed to be unaffected by the fire.



**Photo 14** shows the interior compartment of the Insured Vehicle, which was observed to be unaffected by the fire.

7. At the time of inspection of the Insured Vehicle, we observed a set of head lamps with High Intensity Discharged (HID) bulbs and external ballast, an aftermarket audio head unit system with tweeters and an external instrument gauges fitted on the Insured Vehicle.
8. Although the Insured Vehicle has HID headlamp as a standard feature, as per the LTA registration card, the type of HID headlamps fitted on the Insured Vehicle does not appear to be the original type. Our examination of the external ballast revealed it to be of an aftermarket brand "Hybrid custom". See photo 15-21 below.



**Photo 15** shows the left aftermarket head lamp with High Intensity Discharged (HID) bulbs and external ballast (circled) of the Insured Vehicle, which was observed to be affected by the fire.



**Photo 16** shows the right aftermarket head lamp with High Intensity Discharged (HID) bulbs and external ballast (circled) of the Insured Vehicle, which was observed to be affected by the fire.



**Photo 17** shows the interior compartment of the Insured Vehicle. An aftermarket audio head unit with tweeters and external instrument gauges were fitted on the Insured Vehicle, which was observed to be unaffected by the fire.



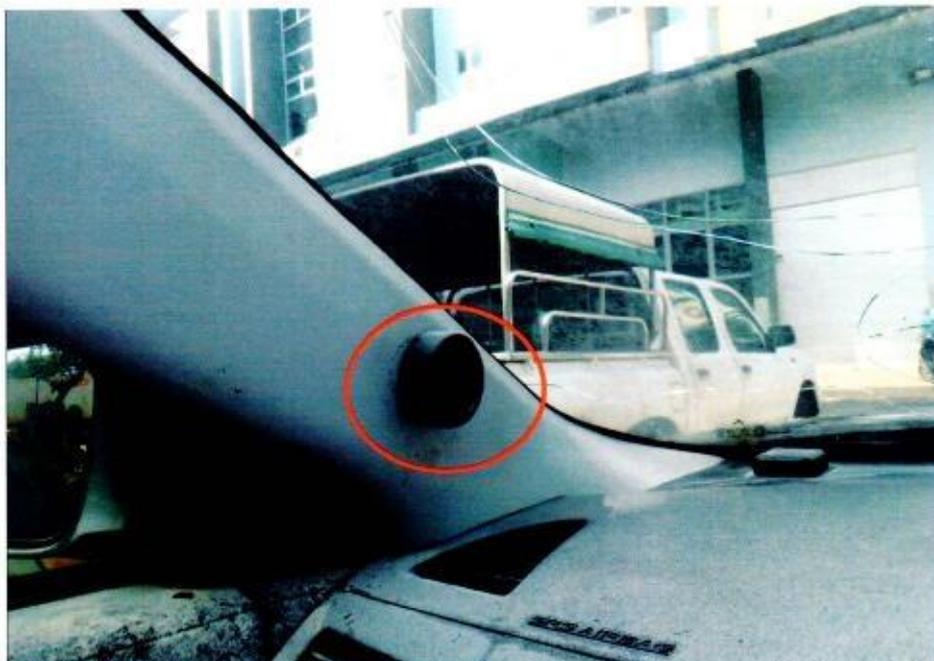
**Photo 18** shows the aftermarket audio head unit (arrowed) of the Insured Vehicle, which was observed to be unaffected by the fire.



**Photo 19** shows aftermarket external instrument gauges fitted in the Insured Vehicle, which was observed to be unaffected by the fire.



**Photo 20** shows aftermarket audio tweeters fitted in the Insured Vehicle, which was observed to be unaffected by the fire.



**Photo 21** shows aftermarket audio tweeters fitted in the Insured Vehicle, which was observed to be unaffected by the fire.

### **Investigation and Technical Analysis**

9. For this particular case, the fire appears to have been of electrical nature originated from the front portion engine compartment of the Insured Vehicle, where the aftermarket headlamp assembly with HID bulbs and external ballast are located as the nature of fire damage was confined to these particular area. This can be determined from the burn pattern of the both front headlamp assembly components which were observed to have been partly melted from the high heat intensity and the high heat intensity burn marks (whitish burn marks) found on the metal parts around the Insured Vehicle. Rust had also developed on these metal brackets.
  
10. 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 metal brackets is an indication that the front right position of the Insured Vehicle had sustained exposure to prolonged high heat intensity. See photos 22 - 23 below.

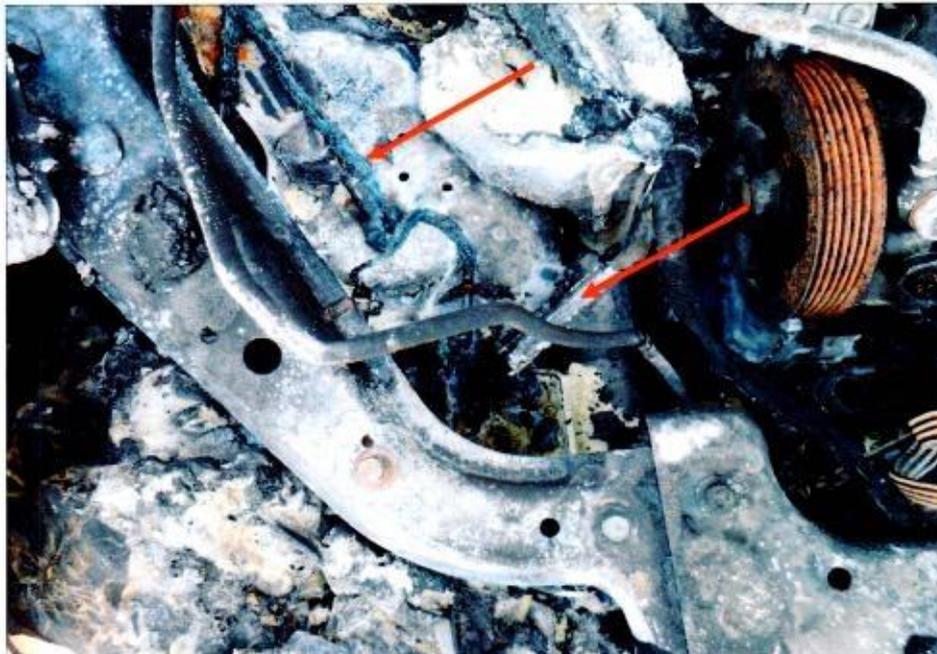


**Photo 22** shows the front right headlamp of the Insured Vehicle, at the time of our inspection. Due to heat rises, the prolonged high heat intensity confined to this area caused high heat intensity burn marks (whitish burn marks) on the surface of the metal bracket of the Insured Vehicle. (circled) and the headlamp assembly and various components was observed to be melted from the high heat intensity

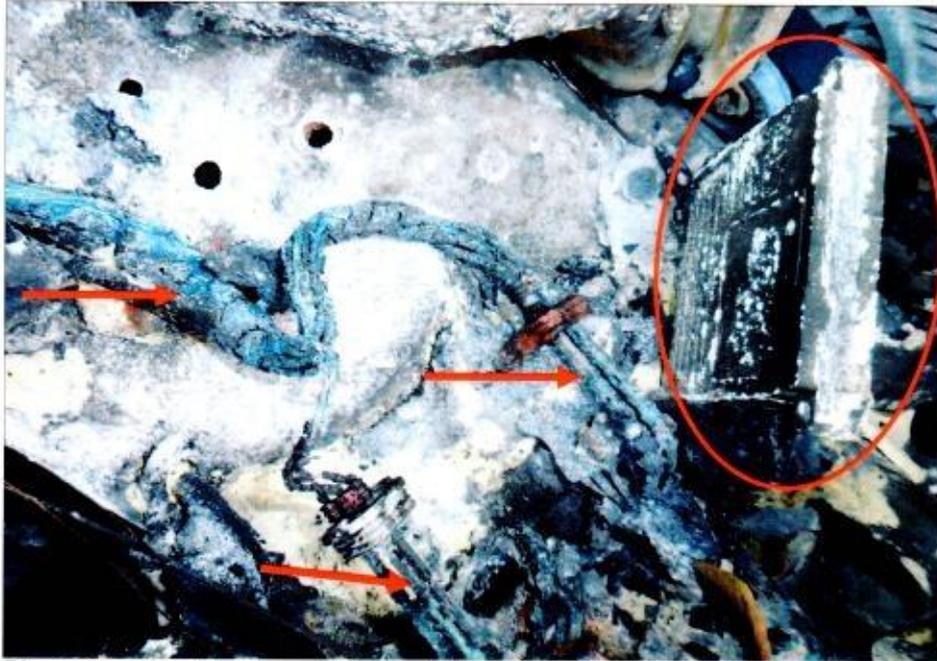


**Photo 23** shows the front left headlamp of the Insured Vehicle, at the time of our inspection. Due to heat rises, the prolonged high heat intensity confined to this area caused high heat intensity burn marks (whitish burn marks) on the surface of the metal bracket of the Insured Vehicle. (circled) and the headlamp assembly and various components was observed to be melted from the high heat intensity

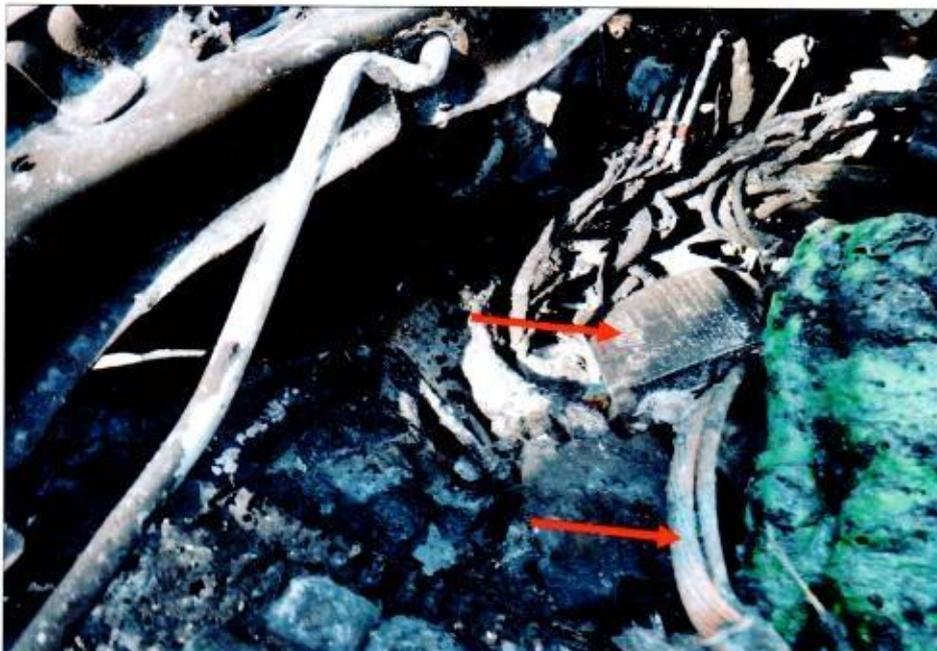
11. Upon closer examination to the both front headlamps of the Insured Vehicle which was where the fire had likely started, we had found traces of greenish residue on the wirings leading from the external ballast to the High intensity discharge blubs (HID). The external ballast wirings and HID bulbs were aftermarket and not factory fitted. 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 24 - 27 below.



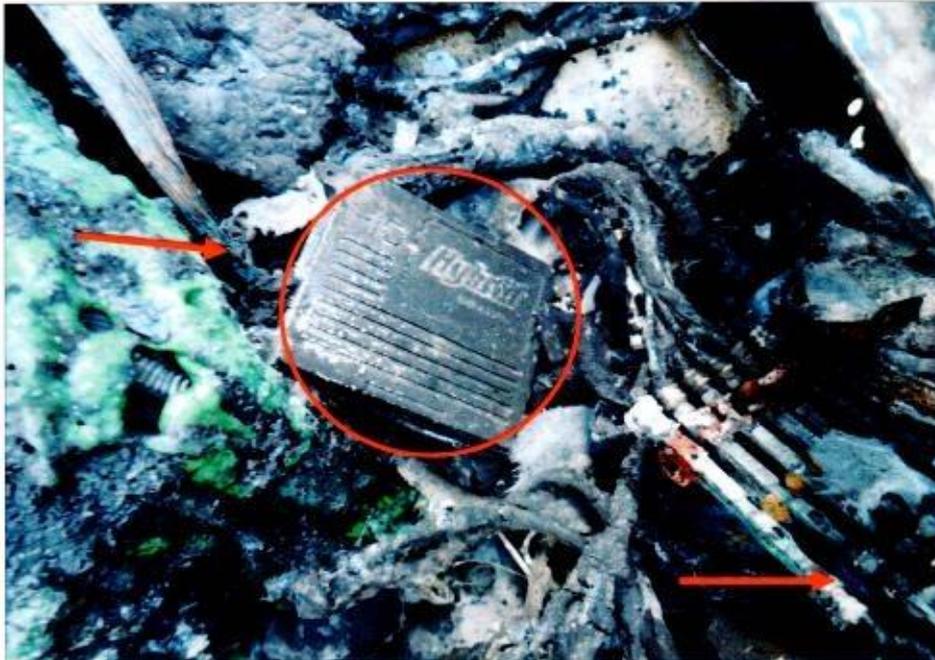
**Photo 24** shows general view of the right headlamp wirings leading from the external ballast to the High intensity discharge blubs (HID). The external ballast wirings and HID bulbs were aftermarket and not factory fitted wirings (arrowed). The presence of greenish residue indicates internal heating 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.



**Photo 25** shows the close up view of the right headlamp wirings leading from the external ballast (circled) to the High intensity discharge bulbs (HID) (arrowed). The external ballast wirings and HID bulbs were aftermarket and not factory fitted 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.



**Photo 26** shows general view of the left headlamp wirings leading from the external ballast to the High intensity discharge bulbs (HID). The external ballast wirings and HID bulbs were aftermarket and not factory fitted 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.



**Photo 27** shows the close up view of the left wirings leading from the external ballast (circled) to the High intensity discharge blubs (HID) (arrowed). The external ballast wirings and HID bulbs were aftermarket and not factory fitted 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.

12. We managed to speak to Ms Siti Khatijah on 24<sup>th</sup> February 2020 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.
14. From the Singapore Accident Statement, which was made by Ms Siti Khatijah (herein referred to as "**Ms Khatijah**"), we note that the fire to the Insured Vehicle had started at a time when it was stationary parked in a parking lot. Ms Khatijah first spotted white smoke emitting from the front bonnet of the Insured Vehicle.
15. According to Ms Khatijah, at about 1715hrs on 6<sup>th</sup> February 2020, she was travelling towards home from her workplace 47 Segar road to her home Yew Mei Green Condominium in the Insured Vehicle which was a 10 minute drive. Ms Khatijah informed us that upon entering the Condominium, she heard metal knocking sound from the external surroundings of the Insured Vehicle, she continued driving the Insured Vehicle to the parking lot, turned off the ignition and alighted the Insured Vehicle and proceed to investigate the sound she heard previously.

16. Shortly after she started investigation, Ms Khatijah noticed smoke emitting from the front bonnet area of the insured vehicle and shortly flames was spotted burst out from the bonnet.
17. Ms Khatijah mentioned that bystanders at the scene called for SCDF assistance and came to render assistance with fire extinguishers however the flame was too strong to be put out. Subsequently the SCDF and Police arrived shortly and the fire was extinguished fairly quickly, then after Ms Khatijah had her statement taken by the SCDF officers.
18. Ms Khatijah subsequently made towing arrangements on the same day with her Insurance company (AGI). The Insured Vehicle was towed to Wah Hong Motor & Credit Pte. Ltd where Ms Khatijah made an insurance report 6<sup>th</sup> February 2020 at 1715 hours.
19. Ms Khatijah mentioned that she had not experienced any mechanical or electrical/electronic problems with the Insured Vehicle till the day of the incident. She also mentioned that there were neither warning lights displayed nor was there an abnormal rise in temperature throughout the period the Insured Vehicle prior to the fire.
20. With regards to the history of the Insured Vehicle, we were able to gather from Ms Khatijah that the Insured Vehicle was purchased pre-owned on 2 weeks prior to the fire incident she is the registered owner of the Insured Vehicle and informed us that she is the sole driver of the Insured vehicle and there was no major overhaul done to the Insured Vehicle.
21. Fire due to an overheated engine was unlikely as the Insured Vehicle was driven from Ms Khatijah workplace to home without any abnormalities and brought it to a complete stop. In the event if the Insured Vehicle's engine had overheated, the mechanical parts inside the engine would first seize causing the engine to stall. Ms Khatijah would have likely experienced engine stalling shortly rendering the Insured Vehicle undriveable.
22. 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 occurred as Ms Khatijah was driving the Insured Vehicle. The location where the Insured Vehicle caught fire was also observed to be not at a secluded location.

23. 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 leading from the aftermarket head lamp assembly and the use of High intensity bulbs (HID) with external ballast on the Insured Vehicle, which was earlier discussed in paragraph 9 above.

24. 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 between 11<sup>th</sup> September 2014 – 25<sup>th</sup> January 2018 for the engine ribbed belt, ETACS Ecu, turn light switch terminal connector and engine auto tensioner. However 1 out of 4 recalls not rectified are, recall number 1. Given that the cause of fire was due to electrical short circuit of aftermarket headlamps assembly, the manufacturer recall between 11<sup>th</sup> September 2014 – 25<sup>th</sup> January 2018 whether rectified or not, it did not cause or contributed to the fire 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 878B
Vehicle No. SMA1984U	Make/Model MITSUBISHI/ LANCER EX GT 2.0L CVT ABS D/AB 2WD HID

Engine No.:  
4B11DC4850

Chassis No.:  
JMYSTCY4AAU000656

## Recall Details

### Recall No.: R2018030505

Manufacturer Recall Date:

25 Jan 2018

Estimated Completion Year of Recall:

2019

Brief Description (As Provided by Motor Dealer):

Due to the improper design of the auto tensioner, the sliding resistance forces will increase after the degradation over time. This might cause the cracks damage on the flange area of auto tensioner if the engine is used under high-load driving repetitively. In worse case, the flange will break and the drive-belt will fall off.

Date Rectified:

- 

Hotline Information:

CUSTOMER SERVICE CENTRE at 64719111

For more details, contact CYCLE & CARRIAGE AUTOMOTIVE PTE LTD

### Recall No.: R2016050237

Manufacturer Recall Date:

18 Feb 2016

Estimated Completion Year of Recall:

2018

Brief Description (As Provided by Motor Dealer):

In the turn light switch, the terminal for the connector may become worn by the operation of the switch generating the insulating material by the oxidization of the worn dust due to insufficient rigidity of the portion where the switch lever is installed.

Date Rectified:

14 Nov 2016 

Hotline Information:

CUSTOMER ASISTANCE CENTRE at 6471 9111

For more details, contact CYCLE & CARRIAGE AUTOMOTIVE PTE LTD

### Recall No.: R2015050116

Manufacturer Recall Date:

16 Apr 2015

Estimated Completion Year of Recall:

2017

Brief Description (As Provided by Motor Dealer):

Due to inappropriate manufacturing process for the electrical parts inside the ETACS ECU which controls the function of the head lights and the window wiper etc., the voltage inside the ECU may become unstable

Date Rectified:

25 May 2016



Hotline Information:

CUSTOMER SERVICE CENTRE at 64719111

For more details, contact CYCLE & CARRIAGE AUTOMOTIVE PTE LTD

### Recall No.: R2014100043

Manufacturer Recall Date:

11 Sep 2014

Estimated Completion Year of Recall:

2017

Brief Description (As Provided by Motor Dealer):

Due to the inappropriate material of the V ribbed belt in the engine, the pulley made from resin may wear obliquely.

Date Rectified:

02 Apr 2015



Hotline Information:

CUCSTOMER ASISTANCE CENTRE at  
64719111

For more details, contact CYCLE & CARRIAGE AUTOMOTIVE PTE LTD

**Conclusion**

25. 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 short circuit from the wirings of the non-original High intensity discharge (HID) headlight.
26. 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.
27. Our investigations had also revealed that at the time of writing this report, the manufacturer recall campaign in between 11<sup>th</sup> September 2014 – 25<sup>th</sup> January 2018 which had involved the Insured Vehicle did not possess a fire risk to the Insured Vehicle.



**Sherwin Beh**  
Technical Investigator



**Ang Bryan Tani**  
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