

Your Ref: 230021  
Our Ref : CS/MSG19013717/D

26 August 2019

**M/s MSIG Insurance (Singapore) Pte Ltd**  
16 Raffles Quay #24-01  
Hong Leong Building  
Singapore 048581  
(Motor Claims Department)

**TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE  
INSURED VEHICLE SGZ 229M ON 01 AUGUST 2019**

1. I refer to your request dated 01 August 2019.
2. My analysis, comments and opinions with respect to the cause of fire to the insured vehicle SGZ 229M (herein referred to as "**Insured Vehicle**") are set out below.

**Inspection of the Insured Vehicle**

3. The Insured Vehicle was physically inspected on 01 August 2019 at the premises of M/s Borneo Motors (S) Pte Ltd, No. 2 Pandan Crescent, Singapore 128462.
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded: -

Vehicle Registration No.	: SGZ 229M
Make / Model	: Lexus ES250 Executive A/T S/R
Chassis No	: JTHBJ1GG302107741
Year of Registration	: 2018 (April)
Mileage	: N.A (battery and wirings affected)

5. The Insured Vehicle was noted to have sustained fire damage that was confined to its frontal portion. The engine compartment was observed to be burnt with the parts at the right side sustaining more severe fire damage as compared to the parts at the left side. The interior compartment was also affected at the front area.
6. Body parts at the frontal portion found burnt had included its front bonnet, front right fender, front headlamps, front windscreen, front dashboard and roof upholstery amongst others. Parts inside the engine compartment like the radiator, air intake, wirings, hoses and pipes etc were also burnt and/or melted.

7. Apart for the fire damage, the Insured Vehicle was also observed to have sustained impact damage at its frontal portion. From the impact damage pattern, the direction of impact was from the front left to front right of the Insured Vehicle whereby the body parts at the frontal portion were pushed/shifted in a left to right direction. The driver's airbag, front left passenger airbag, seat airbags and curtain airbags were also all activated.
8. At the time of my inspection of the Insured Vehicle, I did not find any additionally fitted electronic and/or electrical component(s) on the Insured Vehicle. There was also no modification(s) fitted on the Insured Vehicle. See photo 1 – 4 below.



**Photo 1** shows a general view of the front right portion of the Insured Vehicle at the time of my inspection. The fire damage to the Insured Vehicle was confined to its frontal portion. Its front bonnet, front bumper, front right fender, front right headlamp and front windscreen were amongst the body parts that were found to have been affected as a result of the fire. Apart for the fire damage, the Insured Vehicle was also observed to have sustained impact damage at its frontal portion. The impact damage pattern suggests that the direction of impact was from the front left to front right of the Insured Vehicle.





**Photo 2** shows a general view of the front left portion of the Insured Vehicle at the time of my inspection. The fire damage to the Insured Vehicle was confined to its frontal portion. Its front bonnet and front left headlamp were amongst the body parts that were found to have been affected as a result of the fire. Apart for the fire damage, the Insured Vehicle was also observed to have sustained impact damage at its frontal portion.



**Photo 3** shows the engine compartment of the Insured Vehicle at the time of my inspection. The engine compartment of the Insured Vehicle was observed to be burnt. The parts at the right side of the engine compartment had sustained more severe fire damage as compared to the parts at the left side.





**Photo 4** shows the interior compartment of the Insured Vehicle, which was observed to be partially burnt at the front area. The front dashboard and roof upholstery were amongst the parts that were found to have been burnt and/or melted as a result of the fire. The driver's airbag, front left passenger airbag and curtain airbag were also observed to have been activated.

#### **Circumstance of Incident**

9. From the Police Report G/20190801/7070, which was made by one Madam Suguna D/O Madhavan (herein referred to as "**Madam Suguna**"), it was reported that the Insured Vehicle was involved in an accident along Upper Changi Road North at about 0050hrs on 01 August 2019. Information regarding the fire to the Insured Vehicle was not mentioned in the Police Report.
10. I met Madam Suguna on 06 August 2019 for an interview to gather further information pertaining to the entire incident as well as information pertaining to the history of the Insured Vehicle.
11. According to Madam Suguna, she was driving the Insured Vehicle heading to her home at 31 Toh Drive (off Upper Changi Road North) when she was involved in an accident with a motor taxi SHB 8588M at the junction of Upper Changi Road East and Upper Changi Road North. She was earlier at Duo Building (along Beach Road) attending an event. She estimates leaving Duo Building at about 0025hrs on 01 August 2019. According to Madam Suguna, she did not consume any alcohol throughout the event.



12. Madam Suguna informed me that she took the route of ECP (Changi Airport) and exited at the Upper Changi Road East exit. The traffic light signal at the exit was showing green and she made a right turn into Upper Changi Road East towards the direction of Pasir Ris Estate. After travelling straight for a short distance, she made another right turn into the slip road heading towards Upper Changi Road North. She recalls that the traffic light signal at this slip road was also showing green and hence there was no requirement for her to stop the Insured Vehicle.
13. After making this second right turn, Madam Suguna intended to travel straight into Upper Changi Road North to reach her home. This had required her to travel straight across the roadway of Upper Changi Road East that was heading towards Singapore Expo. As far as she can recall, the traffic light signal facing her was showing green and she proceeded straight. It was when the frontal portion of the Insured Vehicle had entered into Upper Changi Road East that she felt an impact from her front left, which caused the Insured Vehicle to spin. The airbags were activated, and the Insured Vehicle came to a stop.
14. Madam Suguna slowly alighted from the Insured Vehicle and noticed a silver coloured motor taxi SHB 8588M stopped after colliding into a lamppost. She then walked over to the motor taxi and noticed some passerby already helping the driver out of the motor taxi. The taxi driver was a male Chinese and was bleeding slightly at his nose area due to a cut. There was no passenger(s) onboard the motor taxi. Madam Suguna called her husband who said that he would go down to the accident scene. Police and Ambulance were already activated by some passerby.
15. Madam Suguna related the events to the attending Police Officers and according to her, she was not subjected to any breathalyzer test. Whilst being attended to by the paramedic in the Ambulance, she spoke to the taxi driver as a translator between the Malay paramedic and the taxi driver. The taxi driver had complained of pain at his back but was already experiencing it a few days before. He was then placed on a stretcher before being conveyed to Changi General Hospital in the same Ambulance as Madam Suguna.
16. At Changi General Hospital, Madam Suguna undergone clinical examination and x-ray. No blood test was carried out on her and she was discharged a few hours later at about 0400hrs. Thereafter she went home and rested. Madam Suguna also informed me that her husband who arrived at the accident scene before she was conveyed to Changi General Hospital had taken some photographs of the accident scene and also arranged for towing of the Insured Vehicle to Borneo Motors (S) Pte Ltd through the MSIG hotline.



17. On the same day (01 August 2019) in the afternoon, Borneo Motors (S) Pte Ltd called her husband to inform that the Insured Vehicle had caught fire in their premise after it was towed in, with the cause of fire pending investigations.
18. With regard to the history of the Insured Vehicle, I was informed by Madam Suguna that she purchased the Insured Vehicle brand new in April 2018. She is the registered owner and shares the usage of the Insured Vehicle with her husband. The Insured Vehicle is used mainly to ferry their children from school and for occasional work purposes. As far as she can recall, there has not been any major mechanical and/or electrical issue(s) with the Insured Vehicle since taking possession of it. The Insured Vehicle is still under warranty with Borneo Motors (S) Pte Ltd and the last servicing carried out was on February 2019.

#### **Accident Scene Photographs**

19. The accident scene photographs that were taken by Madam Suguna's husband was duly forwarded to me for review. The photographs had showed the Insured Vehicle and a Premier motor taxi SHB 8588M at the accident scene. The Insured Vehicle was stopped along the extreme right lane of Upper Changi Road East in the direction of Singapore Expo with its front right wheel mounted the divider road kerb. Its front bonnet could also be seen partially dislodged. Leaked fluid from the Insured Vehicle was also observed on the ground at the front of the Insured Vehicle. There was no damage of fire nature seen on the Insured Vehicle at the accident scene.
20. The Premier motor taxi SHB 8588M, on the other hand, had stopped almost fully mounting the grass verge and pedestrian walkway at the slip road of Upper Changi Road North onto Upper Changi Road East. Its front portion had also collided into a lamppost at the grass verge. The collision had caused the lamppost to be slanted. Leaked fluid from the motor taxi could also be seen on the ground beneath the front portion of the Insured Vehicle. Overall, the extent of damage to the motor taxi was relatively severe with damages at its frontal portion and its right side.
21. From the photographs provided, I also note the presence of Ambulance and Traffic Police Officers. Generally, my review of the accident scene photographs had showed information that corresponded to the information that Madam Suguna had related to me during my interview with her on 06 August 2019. See photo 5 – 7 below.



**Photo 5** shows the accident scene (photograph taken by Madam Suguna's husband). The Insured Vehicle could be seen stopped on the extreme right lane of Upper Changi Road East. Traffic Police Officers were also at scene. From what I was able to gather, the travel direction of the Insured Vehicle and the Premier motor taxi SHB 8588M prior to the accident is shown by the red arrow and yellow arrow respectively. Generally, my review of the accident scene photographs had showed information that corresponded to the information that Madam Suguna had related to me during my interview with her on 06 August 2019.





**Photo 6** shows the Insured Vehicle stopped on the extreme right lane of Upper Changi Road East in the direction of Singapore Expo. The front bonnet was observed to be partially dislodged and its front right wheel mounted the divider road kerb. There was no damage of fire nature seen on the Insured Vehicle at the accident scene. The Premier motor taxi SHB 8588M (arrowed), on the other hand, had stopped almost fully mounting the grass verge and pedestrian walkway at the slip road of Upper Changi Road North onto Upper Changi Road East. Its frontal portion had also collided into a lamppost at the grass verge.





**Photo 7** shows the Premier motor taxi SHB 8588M at its stopped position. Its frontal portion had collided into a lamppost after the accident with the Insured Vehicle. Leaked fluid from the motor taxi could also be seen on the ground beneath the frontal portion of the motor taxi. Overall, the extent of damage to the Premier motor taxi SHB 8588M was relatively severe with damages at its frontal portion and its right side.



**Video Recordings**

22. During my inspection of the Insured Vehicle at M/s Borneo Motors (S) Pte Ltd on 01 August 2019, I had managed to obtain video recordings from CCTV cameras that were located near where the Insured Vehicle was parked, after it was towed into Borneo Motors (S) Pte Ltd. From the video recordings, an orange coloured tow truck was seen towing the Insured Vehicle into the premise of Borneo Motors (S) Pte Ltd at about 0448hrs or thereabouts. The Insured Vehicle was towed with its 4 wheels lifted off the ground. After removing the tow fork and setting the Insured Vehicle on the ground, the tow truck was seen driving off.
23. About an hour later (0557hrs), smoke was seen coming out from the engine compartment of the Insured Vehicle. I could also see flames at the right side of the engine compartment, through the gaps created by the damage of the Insured Vehicle's front bumper and front bonnet that was a result of the accident. A short while later, the flames spread onto the exterior body of the Insured Vehicle, first onto its front right fender and thereafter onto its front bonnet. Notably, between the time when the tow truck left the premise of M/s Borneo Motors (S) Pte Ltd till the time when smoke was first seen coming from the Insured Vehicle, there was no abnormal event ie no one walked by or walked near to the Insured Vehicle. The Insured Vehicle was basically untouched during this period. See screenshot 1 – 3 below taken from the video recordings that I had reviewed.



**Screenshot 1** shows the Insured Vehicle having arrived at the premise of M/s Borneo Motors (S) Pte Ltd. After removing the tow fork and setting the Insured Vehicle on the ground, the tow truck was seen driving off. This was about 0448hrs or thereabouts.





**Screenshot 2** shows the Insured Vehicle when flames (arrowed) were seen at the front right side of its engine compartment. This was about 0557hrs, approximately one hour after it was towed into Borneo Motors (S) Pte Ltd. From the video recordings that I had reviewed, between the time when the tow truck left the premise of M/s Borneo Motors (S) Pte Ltd till the time when smoke was first seen coming from the Insured Vehicle, there was no abnormal event ie no one walked by or walked near to the Insured Vehicle. The Insured Vehicle was basically untouched during this period.



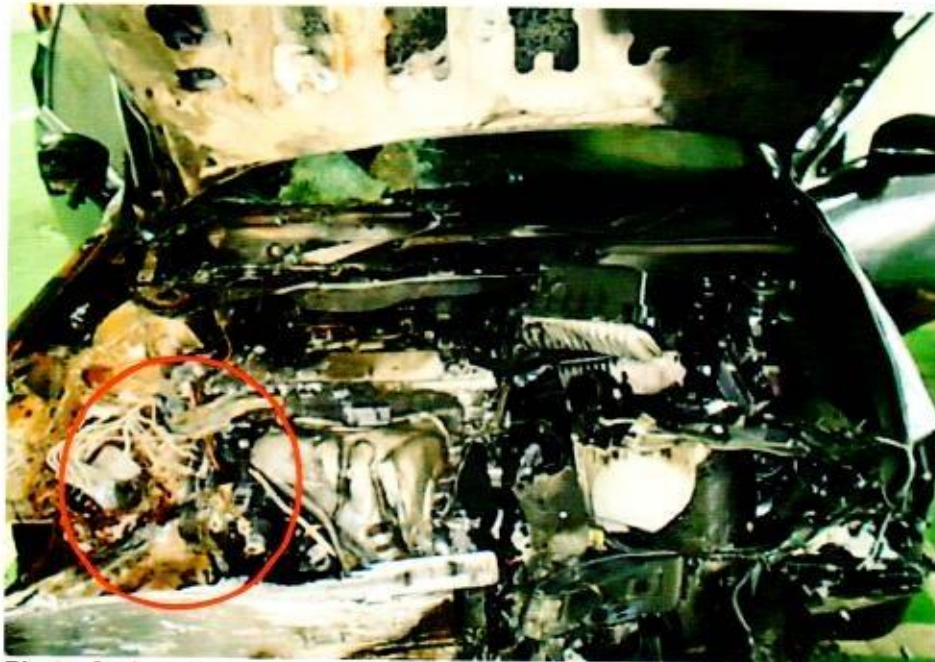
**Screenshot 3** shows flames spread onto the exterior body of the Insured Vehicle. First, onto the front right fender and thereafter onto the front bonnet.



### **Technical Analysis**

24. Based on the information gathered following my ground investigations, the fire to the Insured Vehicle had occurred when the Insured Vehicle was parked/stationary for a period of time. This was after it was involved in an accident. In this aspect, common causes of fire to a parked/stationary motor vehicle are, electrical in nature and external factor like arson.
25. External factor for this case was unlikely. As seen from the CCTV cameras, the Insured Vehicle was parked and untouched from the time it arrived at the premise of M/s Borneo Motors (S) Pte Ltd till the time smoke and flames were first seen. Since there was no abnormal external activity seen from the CCTV cameras, the cause of fire to the Insured Vehicle would then be due to electrical nature. In fact, the physical condition of the wirings as seen during my inspection of the Insured Vehicle also supports the cause of fire being due to electrical in nature. The following paragraphs discusses the physical evidence relating to this.
26. Firstly, the events seen in the video recordings indicated that the fire to the Insured Vehicle had originated within the engine compartment, at the front right area. This was established given that flames were first seen at this area of the Insured Vehicle. See screenshot 2 above.
27. My examination of the front right area of the engine compartment, during my inspection of the Insured Vehicle, revealed several stretches of wirings that were completely burned to its bare copper state. These wirings were original wire cable for the alternator and wire harness for the ABS control module of the Insured Vehicle. The bright reddish colour of the copper wires suggest 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. The condition of the wirings seen at the area where the fire had originated would hence suggest that the cause of fire to the Insured Vehicle was due to electrical in nature. See photo 8 - 11 below.



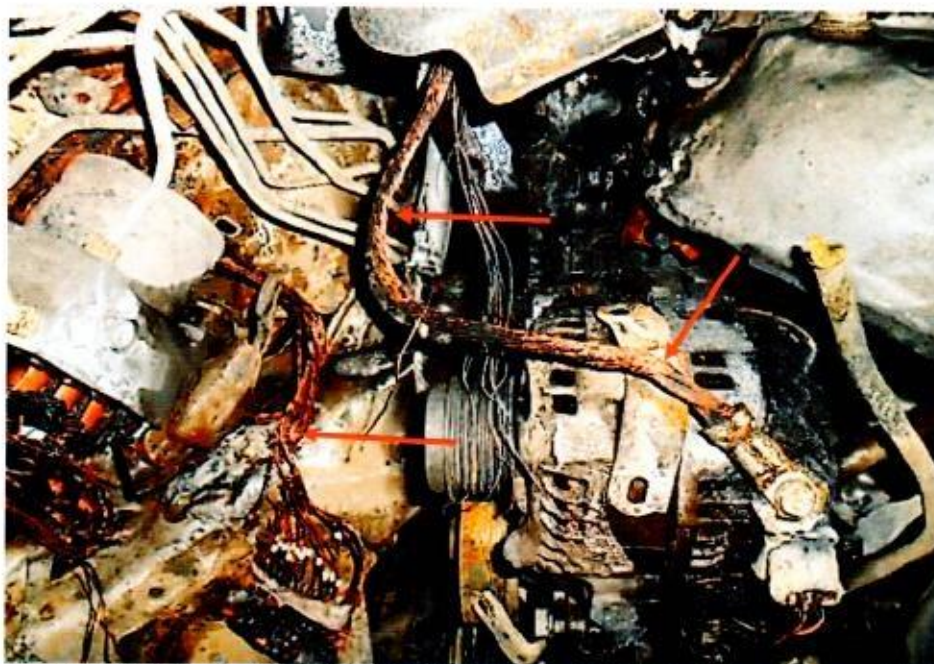


**Photo 8** shows a general view of where the fire to the Insured Vehicle had originated, which was around the front right area of the engine compartment (circled). This was established given that the video recordings that I had reviewed showed flames were first seen at this area of the Insured Vehicle.



**Photo 9** shows the wirings around the front right area of the engine compartment, which was where the fire to the Insured Vehicle had originated. Several stretches of wirings (arrowed) were observed to be completely burned to its bare copper state. The bright reddish colour of the copper wires suggest 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 10** shows a closer view of the wirings (arrowed) that were completely burned to its bare copper state. The bright reddish colour of the copper wires suggest that the wirings were exposed to high heat. These wirings were original wire cable for the alternator and wire harness for the ABS control module of the Insured Vehicle.



**Photo 11** shows the wiring harness for the ABS control module of the Insured Vehicle. The wirings were observed to be burnt to its bare copper state, indicating internal heating of copper wires, which is a sign of an electrical short circuit occurring. In general, the condition of the wirings seen at the area where the fire had originated suggest that the cause of fire to the Insured Vehicle was due to electrical in nature.



28. For this case, the Insured Vehicle was involved in an accident prior to the fire. The impact force arising from the collision had resulted in its front right chassis to be badly bent. The ABS control module of the Insured Vehicle was fitted onto a section of the front right chassis. As a consequence of the front right chassis bending, the ABS control module was also shifted towards the right. This could have caused slight instability to the current/voltage along the wiring harness of the ABS control module, ultimately leading to the fire a few hours after the accident. See photo 12 below.



Photo 12 shows the front right chassis (yellow arrow) of the Insured Vehicle badly bent. This was a result of the collision with the Premier motor taxi SHB 8588M. The ABS control module (red arrow) was also shifted towards the right as a result of the collision. This could have caused slight instability to the current/voltage along the wiring harness of the ABS control module, ultimately leading to the fire a few hours after the accident.

29. My checks with both local and international bodies and associations revealed that at the time of writing this report, there was no manufacturer recall of similar make and model vehicle as the Insured Vehicle. 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: 670E

**Vehicle Details**

Vehicle Registration number: SGZ229M ←

Make: TOYOTA

Vehicle Model: LEXUS ES250 EXECUTIVE A/T S/R

Engine No.: 2ARF555244

Chassis No.: JTHBJ1GG302107741

**Recall Details**

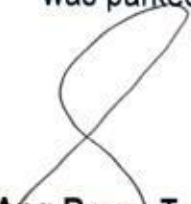
No Recall Detail records ←

**Conclusion**

30. 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 around the front right area of the engine compartment. The wirings were original factory wirings.
31. I am further of the view that the fire was related to the accident that the Insured Vehicle was involved in, a few hours before the fire. The impact from the collision had caused slight instability to the current/voltage within the wiring harness of the ABS control module of the Insured Vehicle, ultimately leading to the fire.
32. 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.
33. There were no modification(s) or additional electronic and/or electrical component(s) fitted on the Insured Vehicle at the time of my inspection of the Insured Vehicle.



34. My investigations also revealed that at the time of writing this report, there is no manufacturer recall of similar make and model vehicle as the Insured Vehicle.
35. No other property was damaged as a result of the fire apart for a slightly blackened ceiling that was directly above the location where the Insured Vehicle was parked.



**Ang Bryan Tani**

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