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13 November 2017

M/s MSIG Insurance (Singapore) Pte Ltd

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Singapore 048581
(Motor Claims Department)

**AUTOMOBILE TECHNICAL INVESTIGATION REPORT OF INCIDENT
INVOLVING SJV 8022A AND SHB 1209D ON 06 JULY 2017**

1. I refer to your letter dated 23 October 2017 and the instructions therein to comment on whether there was possibly contact between the front portion of your insured vehicle SJV 8022A (herein referred to as **"Insured Vehicle"**) and the rear portion of a third party motor taxi SHB 1209D (herein referred to as **"Motor Taxi"**); and if there was contact, whether the damage on the rear portion of the Motor Taxi is consistent to the incident.
2. The following documents were provided to me for my review and consideration in the preparation of this report:-
 - a) Police report E/20170706/2151 of the driver of the Insured Vehicle, where amongst other information, the circumstances of incident was described;
 - b) Singapore Accident Statement of the driver of the Motor Taxi, where amongst other information, the circumstances of incident was described;
 - c) 22 coloured photographs showing the damaged Motor Taxi taken on 07 July 2017 by LKK Auto Consultants Pte Ltd during the pre-repair inspection;
 - d) 13 coloured photographs taken at the incident scene; and
 - e) A 17 minute and 21 second video clip taken from the recording device mounted on the front windscreen of the Motor Taxi.
3. In preparation of this report, I had conducted a physical inspection of the Insured Vehicle and a physical re-inspection of the Motor Taxi. Height measurements of the frontal portion of the Insured Vehicle and the rear portion of the Motor Taxi were also carried out.

4. The information gathered during the course of my investigations and information gathered from all the available documents, were then technically analyzed. My findings and analysis are set out below.

Nature of Incident

5. From the Singapore Accident Statement of the driver of the Motor Taxi, he was driving the Motor Taxi along the extreme right lane of CTE towards Ang Mo Kio and had come to a stop due to vehicular traffic. The Insured Vehicle, which was travelling behind then came and hit the rear portion of the Motor Taxi.
6. The driver of the Insured Vehicle, on the other hand, had stated in his police report that the Insured Vehicle was travelling along CTE towards northbound direction. The Motor Taxi, which was travelling in front of the Insured Vehicle, suddenly e-brake. The driver of the Insured Vehicle had followed suit and managed to stop in time without collision with the Motor Taxi however another motor car (SKZ 993S) that was travelling behind the Insured Vehicle had collided into the rear of the Insured Vehicle. The driver of the Motor Taxi subsequently alighted and claimed that the front of the Insured Vehicle had collided into the rear of the Motor Taxi.

Damage to the Motor Taxi

7. The Motor Taxi was physically inspected by LKK Auto Consultants Pte Ltd on 07 July 2017, which was less than 24 hours after the reported time of incident. The inspection was at the premises of SMRT Automotive Services Pte Ltd, 60 Woodlands Industrial Park E4 Singapore 757705. The mileage of the Motor Taxi was recorded to be 650,195km.
8. The photographs taken at the time of this inspection had depicted what appears to be an inverted L shape imprint mark towards the left of the Motor Taxi's rear bumper. The left reverse sensor was also observed to have been slightly pushed inwards. The left corner edges of the rear bumper was observed to be slightly misaligned as compared to the right corner edges.
9. In general, the physical damage observed on the Motor Taxi suggests that it had sustained an impact directly onto its rear portion. The inverted L shape imprint mark on its rear bumper was a result of a load/force from a similarly shaped object (inverted L) pressing onto the rear bumper, inwards. This load/force was relatively light, and was towards the left side of the rear bumper given that the left corner edges of the rear bumper was misaligned as compared to the right corner edges. See photo 1 – 6 below.



Photo 1 shows a general view of the rear portion of the Motor Taxi at the time of inspection on 07 July 2017. The Motor Taxi was observed to be generally in good condition. What appears to be an inverted L shape imprint mark was however observed towards the left of the Motor Taxi's rear bumper (circled).



Photo 2 shows a closer view of the area where the inverted L shape imprint mark was found (arrowed). This was towards the left of the Motor Taxi's rear bumper. The imprint mark was a result of a load/force from a similarly shaped object (inverted L) pressing onto the rear bumper, inwards.



Photo 3 shows a close up view of the inverted L shape imprint mark which was caused by a load/force from a similarly shaped object (inverted L) pressing onto the rear bumper, inwards.



Photo 4 shows a close up view of the left reverse sensor of the Motor Taxi. The reverse sensor was observed to have been slightly pushed inwards, at the left side of the reverse sensor (arrowed).



Photo 5 shows the slight misalignment (arrowed) at the left corner edges of the rear bumper, adjacent to the rear left fender of the Motor taxi. Such misalignment indicates that the Motor Taxi had sustained an impact directly onto its rear portion. This impact was however relatively light given that the misalignment was observed to be slight.



Photo 6 shows the right corner edges of the rear bumper, adjacent to the rear right fender of the Motor Taxi. There was no obvious misalignment at the right corner edges of the rear bumper (arrowed) as compared to the left corner edges. This would indicate that the impact onto the rear portion of the Motor Taxi was relatively light and was more towards the left of the rear bumper given that there was slight misalignment to the left corner edges.

Physical Inspection of the Insured Vehicle

10. The Insured Vehicle was physically inspected on 24 October 2017 at the carpark of 9 Bishan Street 15, Singapore 573909. The inspection carried out had primarily focused on the frontal portion of the Insured Vehicle given that the incident was reported to be of a head to rear nature where the Insured Vehicle was behind the Motor Taxi at the material time. The mileage of the Insured Vehicle at the time of my inspection was recorded to be 69,739km
11. My visual examination of the frontal portion of the Insured Vehicle revealed several relatively minor damage at its front bumper and front grille. Its front bumper was observed to be distorted at the area slightly towards the right of the front number plate. Its front grille was observed to be cracked. These observations were highlighted to the driver of the Insured Vehicle, who was present during my inspection. However according to the driver of the Insured Vehicle, he was not aware that the damages had existed. See photo 7 – 12 below



Photo 7 shows a general view of the front left portion of the Insured Vehicle at the time of my inspection. The mileage of the Insured Vehicle at the time of my inspection was recorded to be 69,739km.



Photo 8 shows a general view of the front right portion of the Insured Vehicle at the time of my inspection. The inspection carried out had primarily focused on the frontal portion of the Insured Vehicle, as the incident was reported to be of a head to rear nature where the Insured Vehicle was behind the Motor Taxi at the material time. Its front bumper was observed to be distorted at the area slightly towards the right of the front number plate. Its front grille was observed to be cracked (circled).



Photo 9 shows a close up view of the distortion (circled) to the front bumper of the Insured Vehicle, at the area slightly towards the right of the front number plate.



Photo 10 shows a close up view of the distortion (circled) to the front bumper of the Insured Vehicle, at the area slightly towards the right of the front number plate.



Photo 11 shows a close up view of the crack (circled) to the front grille of the Insured Vehicle, at the area directly above the front number plate.



Photo 12 shows a general view of the crack (circled) to the front grille of the Insured Vehicle, at the top centre area of the front grille.

Incident Scene Photographs

12. My review of the 13 incident scene photographs that were made available to me had showed the Insured Vehicle behind the Motor Taxi. The centre of the Insured Vehicle appears to be slightly aligned towards the left of the Motor Taxi. It was also noted that there was a gap between the front of the Insured Vehicle and the rear of the Motor Taxi.
13. Upon enlarging one of the photographs, which had showed the rear bumper of the Motor Taxi, I had observed what appears to be the same inverted L shape imprint mark on the rear bumper of the Motor Taxi, similar to what was observed from the photographs of the Motor Taxi that were taken at the time of inspection by LKK Auto Consultants Pte Ltd.
14. The distortion to the front bumper and crack to the front grille that I had noted on the frontal portion of the Insured Vehicle at the time of my inspection was similarly observed on its frontal portion at the incident scene. See photo 13 - 15 below.



Photo 13 shows the Insured Vehicle behind the Motor Taxi. The centre of the Insured Vehicle was observed to be slightly aligned towards the left of the Motor Taxi. There was also a gap between the front portion of the Insured Vehicle and the rear portion of the Motor Taxi.



Photo 14 shows an enlarged view of the Motor Taxi's rear bumper, using photograph 13 above. I had observed what appears to be the same inverted L shape imprint mark on the rear bumper of the Motor Taxi, similar to what was observed from the photographs of the Motor Taxi that were taken at the time of inspection by LKK Auto Consultants Pte Ltd (refer to photograph 2 above for comparison).



Photo 15 shows an enlarged view of the frontal portion of the Insured Vehicle (from photographs taken at the incident scene). The distortion to the front bumper and crack to the front grille that I had noted on the frontal portion of the Insured Vehicle at the time of my inspection was similarly observed on its frontal portion at the incident scene (circled).

Video Clip

15. The video clip that was provided to me in preparation of this report was taken from a recording device that was mounted on the front windscreen of the Motor Taxi. The recording was provided to me in a single clip. The length (duration) indicated in the video clip was 17 minute 21 seconds.
16. From the video recording, the Motor Taxi could be seen travelling along the extreme right lane of CTE. The Motor Taxi then came to a complete stop as the vehicle that was travelling in front had stopped. Thereafter there was shaking of the image captured by the recording device and simultaneously the Motor Taxi appears to have moved forward slightly. These events could be seen during the 7 minute 25 second to 26 second mark of the video recording. See screen shot below at the point in time when the Motor Taxi had come to a complete stop due to the front vehicle stopping. This was just before the shaky image. One would have to view the recording to see the shaking of the image captured. The slight movement forward of the Motor Taxi can be seen by taking reference from fixed feature(s) that can be found along the roadway, in particular the markings on the concrete centre divider wall and/or the position of overhanging shrubs on the top of the concrete centre divider wall.



Screenshot shows the 7 minute 25 second mark of the video clip that was recorded from a recording device mounted on the front windscreen of the Motor Taxi. The Motor Taxi was seen coming to a complete stop as the vehicle that was travelling in front had also stopped. Thereafter there was shaking of the image captured by the recording device. The capturing of shaky image by the recording device, while the Motor Taxi was stationary, indicates that there was a jerk like movement of the Motor Taxi, causing the recording device to shake and ultimately capturing the shaky image.

17. The capturing of a shaky image whilst stationary is a sign that there was jerk movement to the Motor Taxi causing the recording device to shake and therefore capturing the shaky image. For this particular case, the jerk movement experienced by the Motor Taxi could possibly arise from a force/load acting on the Motor Taxi (in the context of this case, represent a contact from the Insured Vehicle), and/or the releasing of the brake pedal and instantly stepping on the brake pedal again by the Motor Taxi driver.

Driver of Motor Car SKZ 993S

18. I manage to speak to the driver of motor car SKZ 993S, Mr Ang Sien Yang (herein referred to as "**Mr Ang**"), whose motor car had collided into the rear of the Insured Vehicle. The purpose of speaking to Mr Ang was to primarily gather further information regarding the incident, in particular whether there was possibly contact between the front of the Insured Vehicle and the rear of the Motor Taxi.

19. During my telephone conversation with Mr Ang on 07 November 2017, he had informed me that he could not be sure that there was no contact between the Insured Vehicle and the Motor Taxi at the time when his motor car had collided into the Insured Vehicle. This was due to his motor car being behind the Insured Vehicle and hence he was not able to clearly see the events in front of the Insured Vehicle. However his observation that the Motor Taxi was approximately 1metre in front of the Insured Vehicle as compared to the front portion of his motor car being still in contact with the rear portion of the Insured Vehicle, and also his observation (together with the driver of the Insured Vehicle) that there was no damage to the rear portion of the Motor Taxi and front portion of the Insured Vehicle, had both suggested to him that there was no contact between the front portion of the Insured Vehicle and the rear portion of the Motor Taxi.
20. Mr Ang also informed me that he was unsure whether the Motor Taxi was driven forward at any point in time as the first time that he had seen the Motor Taxi was after he had alighted from his motor car and whilst having a conversation with the driver of the Insured Vehicle regarding the settlement of the accident. Mr Ang had also informed me that there was a passenger seated on the rear of the Motor Taxi however both he and the driver of the Insured Vehicle were prevented by the driver of the Motor Taxi from speaking to the passenger.

Technical Analysis

21. Under normal circumstances, a shaky image captured by a recording device whilst the Motor Taxi is stationary can suggest that a contact between the Insured Vehicle and the Motor Taxi had occurred. However for this case, since the driver of the Motor Taxi was seated inside the Motor Taxi, this shaky image can also be due to the driver releasing and stepping on the brake pedal again.
22. To establish whether the capturing of the shaky image by the recording device was due to contact from the Insured Vehicle or whether due to the Motor Taxi driver releasing and stepping on the brake pedal again, I had firstly compared the height above ground level of the front number plate of the Insured Vehicle and thereafter compared this measured height with the height above ground level of the rear bumper of the Motor Taxi, at the area where the inverted L shape was observed.

23. My focus of the front number plate was due to the shape of the inverted L imprint mark on the Motor Taxi's rear bumper, corresponding to the shape of the front number plate frame, at the corner edge where the top horizontal end of the front number plate frame joins the vertical end of the front number plate frame.

24. I now set out below the findings gathered following the height measurements that was conducted:-

- a) the height of the top horizontal end of the Insured Vehicle's front number plate frame was measured to be approximately 50cm above ground level;
- b) comparing this measured height with the rear portion of the Motor Taxi, I note that the height above ground level of the top horizontal end of the Insured Vehicle's front number plate frame (50cm) was at the rear bumper of the Motor Taxi, at a similar height above ground level to where the inverted L shape imprint mark was found (refer to photograph 2 & 3 above);
- c) the measurements carried out appear to then indicate that the inverted L shape imprint mark found on the rear bumper of the Motor Taxi was caused by contact from the front number plate frame of the Insured Vehicle. See photo 16 & 17 below.

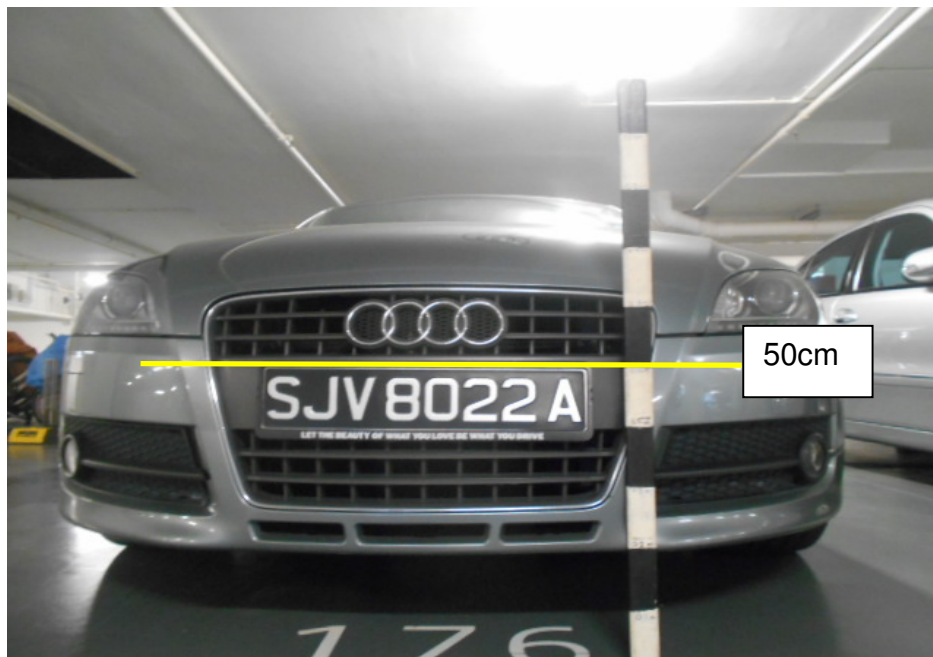


Photo 16 shows the height measurement that was conducted on the front portion of the Insured Vehicle. The top horizontal end of the Insured Vehicle's front number plate frame was measured to be approximately 50cm above ground level.



Photo 17 shows the height measurement that was conducted on the rear portion of the Motor Taxi. The height of the top horizontal end of the Insured Vehicle's front number plate frame was at similar height above ground level on the Motor Taxi where the inverted L shape imprint mark on its rear bumper was found (refer to photograph 2 and 3 above).

25. Earlier in paragraph 12, I had commented that the incident scene photographs had showed the centre of the Insured Vehicle was aligned slightly towards the left of the Motor Taxi. At this position as seen in the incident scene photographs, the front number plate frame of the Insured Vehicle would have come into contact with the rear bumper of the Motor Taxi, at the area slightly towards the left of the rear bumper. This contact area on the Motor Taxi had corresponded to the area where the damage to the Motor Taxi was found ie towards the left side of the Motor Taxi's rear bumper (refer to photograph 1 above).
26. From this relative position, the shape of the inverted L was caused by the right top corner edge of the Insured Vehicle's front number plate frame. The front grille of the Insured Vehicle, at the area directly above the right top side of the front number plate frame was also found to be cracked at the time of my inspection (refer to photograph 11 above), indicating that this area of the Insured Vehicle was exposed to a force/load.
27. Following the discussions in paragraph 23 to paragraph 26 above, the jerk movement experienced by the Motor Taxi that caused the recording device to record a shaky image, was a result of a force/load acting on the Motor Taxi rather than the releasing of the brake pedal and instantly stepping on the brake pedal again by the driver of the Motor Taxi.
28. Since the jerk movement of the Motor Taxi was due to a force/load acting on the Motor Taxi, the simultaneous slight forward movement of the Motor Taxi (seen from the video recording) can then be attributed to this same force/load acting on the Motor Taxi and not a result of the releasing of the brake pedal and instantly stepping on the brake pedal again by the driver of the Motor Taxi. Consequently, a gap was formed between the front portion of the Insured Vehicle and the rear portion of the Motor Taxi as seen from the scene photographs.

Conclusion

29. Having investigated and technically analyzing the material evidence available at the time of writing this report, I am of the opinion that there was contact between the front of the Insured Vehicle and the rear of the Motor Taxi at the material time of incident. The impact force from the contact was relatively minor, resulting in the Motor Taxi sustaining slight damage that was mainly on its rear bumper.

30. In forming my opinion, I had considered the following factors:-

- a) the relative position of the Insured Vehicle and the Motor Taxi as seen from the incident scene photographs had corresponded to the area of damage to the Motor Taxi;
- b) the damage pattern (inverted L shape imprint mark) on the rear bumper of the Motor Taxi had corresponded to the shape at the right top corner edge of the Insured Vehicle's front number plate frame;
- c) the height above ground level of the right top corner edge of the front number plate frame corresponds to the height above ground level of where the inverted L shape imprint mark was found on the rear bumper of the Motor Taxi;
- d) the front grille of the Insured Vehicle, at the area directly above the right top side of the front number plate frame was found to be cracked, indicating that the area around the right top corner edge of the Insured Vehicle's front number plate was exposed to a force/load;
- e) the shaky image captured by the recording device that was mounted on the front windscreen of the Motor Taxi, as seen at the 7 minute 26 second mark of the video recording. Analysis of the physical damage had indicated that the jerk movement experienced by the Motor Taxi that caused the recording device to record a shaky image, was a result of a force/load acting on the Motor Taxi (in the context of this case, represent a contact from the Insured Vehicle), rather than the releasing of the brake pedal and instantly stepping on the brake pedal again by the driver of the Motor Taxi.

31. The gap between the front portion of the Insured Vehicle and the rear portion of the Motor Taxi, as seen from the scene photographs, was due to this same force/load acting on the Motor Taxi.

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