

Your Ref : 541558
Our Ref : CS/MSG17024132/N

28 December 2017

M/s MSIG Insurance (Singapore) Pte Ltd

16 Raffles Quay #24-01
Hong Leong Building
Singapore 048581
(Motor Claims Department)

**AUTOMOBILE TECHNICAL INVESTIGATION REPORT OF ACCIDENT
INVOLVING SGH 575H AND XD 7869J ON 18 DECEMBER 2017**

1. We refer to your letter dated 27 December 2017 and the instructions therein to comment on the damage consistency of the motor car SGH 575H involved in the captioned accident, in particular to establish whether there was possibly contact between the rear of the motor car SGH 575H and the front of motor lorry XD 7869J; and if there was contact, whether the damage on the rear of the motor car SGH 575H is consistent to the accident.
2. The following documents were provided to us for our review and consideration in the preparation of this report:-
 - a) Singapore Police Report & Accident Statement of the driver of the motor car SGH 575H (herein referred to as "**Nissan**"), where amongst other information, the circumstances of accident was described;
 - b) Singapore Accident Statement of the driver of the motor lorry XD 7869J (herein referred to as "**Lorry**"), where amongst other information, the circumstances of accident was described together with 6 coloured photographs of the Lorry at the time of reporting;
 - c) 1 coloured photograph of the rear portion of the Motor Lorry post-accident at the accident scene taken by the driver of the Nissan;
 - d) 16 coloured photographs of the damage to the Nissan taken during the Pre- Repair Survey by LKK Auto Consultants Pte. Ltd.;
 - e) 70 coloured photographs taken during the physical inspection of the Lorry.

3. In preparation of this report, we had conducted a physical inspection and thereafter height measurements of the rear and right rear portion of the Nissan (using a similar make and model). We had also conducted a physical inspection and thereafter height measurements of the front and right front portion of the Lorry; both collectively referred herein as **“Involved Motor Vehicles”**. An analysis of all the available documents and information gathered was subsequently carried out.
4. We now set out below our detailed findings and analysis.

Nature of Accident

5. From the Singapore Accident Statement of the driver of the Nissan, Mr Koh Eng Beng (herein referred to as **“Mr Koh”**), on 18 December 2017 at 1145 hours was on the left lane of a 2 lane road when he noticed road works up ahead. He signalled his intention to switch lanes and changed lanes when it was clear to do so. While he was moving, he felt a hit from the rear and when he looked at the rear view mirror he saw the Lorry had collided into the Nissan. The lorry continued to push the Nissan forward for another 20 metres. Mr Koh accelerated and immediately stopped by the side of the road, waiting for the driver of the Lorry to stop as well. However, the driver of the Lorry continued to go straight. Mr Koh took a photograph of the Lorry before it drove off. Mr Koh then proceeded to a nearby open space carpark to inspect the damages to the Nissan. There was a dent on the rear bumper of the Nissan. Mr Koh does not have an in-vehicle camera installed on the Nissan.
6. The Singapore Accident Statement of the driver of the Lorry, Mr Chia Chee Khiang (herein referred to as **“Mr Chia”**), had stated that on the accident date and time, he was driving along Bedok North Avenue 3 but he was not involved in any accident.

Damage to the Nissan

7. From the Pre- Repair Survey of the Nissan conducted by LKK Auto Consultants Pte. Ltd., we note that the Nissan had sustained significant damages onto its rear bumper. The main body part(s) listed as damaged in the report were the rear bumper, rear end panel and right tail light. This was depicted in the photographs that were attached in the aforesaid report.
8. Examination of these photographs had showed paint graze marks on the lower centre portion of the rear bumper of the Nissan. There was a slight dent and 2 horizontal black marks on the right side of the boot lid. The right tail light had cracked and was pushed inwards. The rear bumper had buckled and was misaligned at the right rear portion. The extent of the damages observed clearly indicates that the impact onto the Nissan was more to the right side of its rear portion and relatively significant. See photos 1 – 5 below.



Photo 1 shows the general view of the rear portion of the Nissan at the time of the Pre- Repair Survey conducted by LKK Auto Consultants Pte. Ltd. which was taken 2 days after the accident. There were paint graze marks on the lower centre portion of the rear bumper of the Nissan (yellow arrows). There was a slight dent and 2 horizontal black marks on the right side of the boot lid (red circle). The right tail light had cracked and was pushed inwards (yellow circle). The rear bumper had buckled and was misaligned at the right rear portion (red arrows).



Photo 2 shows a closer view of the paint graze marks found on the lower centre portion of the rear bumper of the Nissan (yellow arrows).



Photo 3 shows a closer view of the slight dent (red circle) and 1st horizontal black mark (red arrow) on the right side of the boot lid



Photo 4 shows a close up view of the right tail light which was cracked and pushed inwards (yellow circle).



Photo 5 shows a closer view of the rear bumper which had buckled and was misaligned at the right rear portion (red arrows).

Physical Inspection of the Lorry

9. The Lorry was physically inspected at the premises of a construction site located at Punggol Way, opposite the Samudera LRT Station.
10. The mileage recorded was 104,629km.
11. At the time of our inspection, we found several faint scratch marks on the left and right side of the front bumper as well as faint graze marks and chip marks on the lower left portion of the front bumper of the Lorry. We also observed scratch marks on the left headlight guard and paint chip marks on the left front portion of the Lorry. However, it was also noted that the front bumper was not misaligned at its corner edges. See photos 6 - 13 below.



Photo 6 shows the general view of the front portion of the Lorry at the time of inspection. We found several faint scratch marks on the left and right portion side of the front bumper as well as faint graze marks and chip marks on the lower left portion of the front bumper of the Lorry. We also observed scratch marks on the left headlight guard (arrowed) and paint chip marks on the left front portion of the Lorry. However, it was also noted that the front bumper was not misaligned at its corner edges (red arrows).

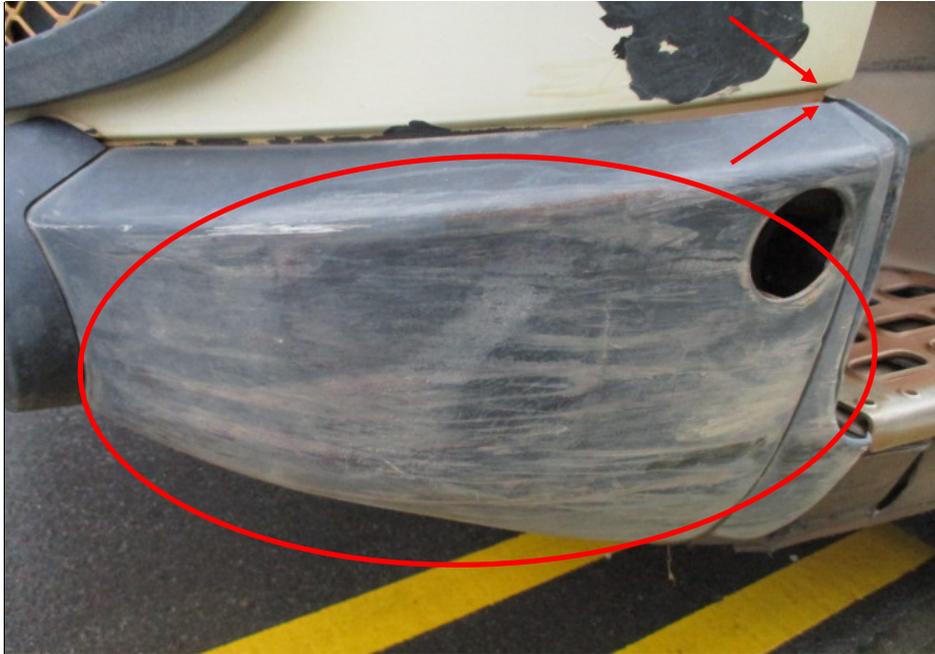


Photo 7 shows a close up view of the faint scratch marks (circled) on the left side of the front bumper of the Lorry. However the front bumper was not misaligned at its left corner edge (red arrows).



Photo 8 shows a close up view of the faint scratch marks (circled) on the right side of the front bumper of the Lorry. However the front bumper was not misaligned at its right corner edge (red arrows).



Photo 9 shows a closer view of the front bumper of the Lorry.



Photo 10 shows a closer view of the faint graze marks and chip marks on the lower left portion (circled) of the front bumper of the Lorry.



Photo 11 shows a close up view of the faint graze marks and chip marks on the lower left portion (circled) of the front bumper of the Lorry.

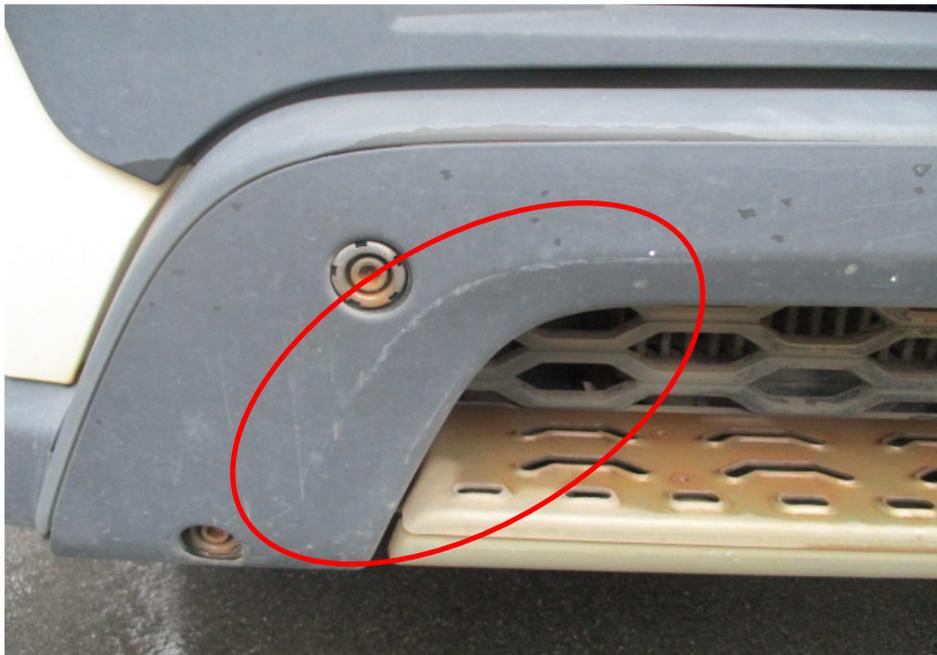


Photo 12 shows a close up view of the faint graze marks (circled) on the lower right portion of the front bumper of the Lorry.



Photo 13 shows a closer view of the scratch marks on the left headlight guard (arrowed) as well as paint chip marks on the left front portion of the Lorry (circled).

Accident Scene Photograph

12. We were able to obtain a post- accident photograph of the Involved Motor Vehicles from Mr Koh. However it only shows the rear portion of the Lorry. No other observations could be made from the photograph. See photo 14 below.



Photo 14 shows the rear portion of the Lorry at the accident scene. No other observations could be made from the photograph.

Technical Analysis

13. For this case, it was classified as a hit and run based on Mr Koh's police report. Looking at the accident sketch plan of Mr Koh's Singapore Accident Statement, Mr Koh switched lanes as there were road works going on up ahead. According to Mr Koh, the accident occurred after he had successfully switched lanes. That was when he felt an impact from the rear and was pushed 20 metres forward. Following these circumstances, the Nissan would have sustained more serious damages to its centre rear portion. However based on our examination of the survey photographs, most of the damages to the rear bumper of the Nissan were on its right rear portion which is evident by the misalignment and buckling of the right corner edge of the rear bumper. Therefore it is unlikely that it was a direct head to rear collision.
14. Since it is unlikely that the point of contact was directly from head to rear, based on the damage profiles of the Involved Motor Vehicles, it is more plausible that the point of impact was from the rear right side of the Nissan after Mr Koh had switched lanes.

Height Measurement

15. Notwithstanding the analysis of the circumstances of the case as well as the damages sustained to the Involved Motor Vehicles showing possible contact, we had conducted a height configuration test to determine whether the damages observed on the rear portion of the Nissan corresponds to the damages observed on the front portion of the Lorry.
16. In order to determine this, we had measured the height above ground level of the rear and right rear portions of the Nissan (using a similar make and model). We had thereafter compared this measured height against the front portion of the Lorry. See photos 15 & 16 below.



Photo 15 shows the height measurement being conducted on the rear portion of the Nissan (using a similar make and model). The height above ground level of the lower centre portion of the rear bumper, at the area where the paint graze marks were found was measured to be approximately 52cm. The height above ground level of the bottom portion of the right tail light, at the area where the right tail light was pushed inwards was measured to be approximately 70cm. The height above ground level of the centre portion of the rear number plate, at the area where the 1st horizontal black mark was found was measured to be approximately 80cm. The height above ground level of the bottom part of the boot lid chrome trim, at the area where the 2nd horizontal black mark was found was measured to be approximately 90cm. The damages on the rear portion of the Nissan were between the ranges of 52cm to 90cm above ground level.

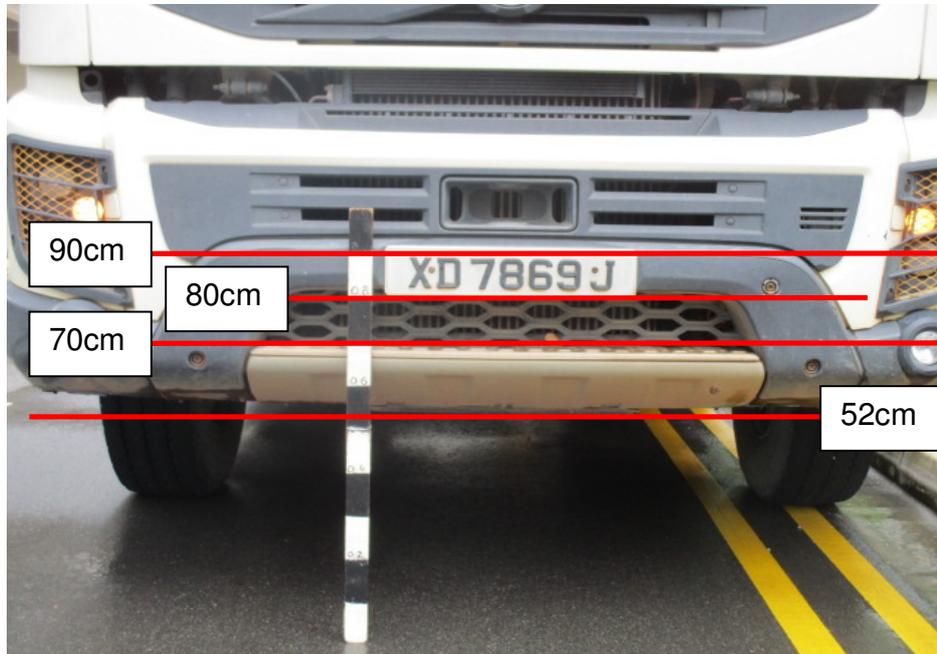


Photo 16 shows the height measurement being conducted on the front portion of the Lorry. The height at 52cm above ground does not correspond with any body part of the Lorry. The body part at 70cm above ground was the lower left portion of the front bumper, which was where the 1st chip mark was found. The body part at 80cm above ground was the centre left portion of the front bumper, which was where the 2nd chip mark was found. The body part at 90cm above ground was the upper left portion of the front bumper.

17. We now set out below the findings that we had gathered following the height measurements that was conducted:-

- a) The height above ground level of the lower centre portion of the rear bumper of the Nissan, at the area where the paint graze marks were found was measured to be approximately 52cm;
- b) the height above ground level of the bottom portion of the right tail light of the Nissan, at the area where the right tail light was pushed inwards was measured to be approximately 70cm;
- c) the height above ground level of the centre portion of the rear number plate of the Nissan, at the area where the 1st horizontal black mark was found was measured to be approximately 80cm;

- d) the height above ground level of the bottom part of the boot lid chrome trim of the Nissan, at the area where the 2nd horizontal black mark was found was measured to be approximately 90cm;
- e) the damages on the rear portion of the Nissan were between the ranges of 52cm to 90cm above ground level;
- f) the height at 52cm above ground does not correspond with any body part of the Lorry;
- g) the body part at 70cm above ground was the lower left portion of the front bumper of the Lorry, which was where the 1st chip mark was found;
- h) the body part at 80cm above ground was the centre left portion of the front bumper of the Lorry, which was where the 2nd chip mark was found;
- i) the body part at 90cm above ground was the upper left portion of the front bumper of the Lorry;
- j) the height measurements appear to support the findings of possible contact between the rear portion of the Nissan and the front portion of the Lorry.

Conclusion

18. Having investigated and technically analyzing the material evidence available at the time of writing this report, we are of the opinion that there was contact between the rear portion of the Nissan and the front portion of the Lorry at the material time.
19. The contact had occurred when the Nissan had switched lanes, resulting in direct impact between the rear right portion of the Nissan and the front left portion of the Lorry, which resulted in permanent damages to both vehicles.
20. Both damages are corresponding to their respective heights and are consistent to their nature of contact. Furthermore the pattern of the chip marks observed on the left portion of the front bumper of the Lorry corresponds to the pattern of the horizontal black marks observed on the right side of the boot lid of the Nissan.

21. Although there was significant damage observed on the Nissan, it is still possible for the Lorry to sustain minimal visible damage. The lack of visible serious damage to the front portion of the Lorry is due to the impact force acting onto the Lorry being not significant enough to have stretch past the yield point of the material strength of the Lorry's front portion. In the same context, the Nissan was exposed to impact forces that were significant enough to have caused significant visible damages to its rear right portion.
22. The magnitude of the impact forces acting onto the Nissan was greater than the magnitude that was acting onto the Lorry. In other words, because the Lorry was in motion, it had generated forces as compared to if it was in a stationary position (zero forces). Upon collision, the forces were dissipated mostly to the rear right portion of the Nissan, which had largely absorbed the magnitude of the forces, resulting in visible significant physical damages to its rear right portion. However as the motion of the Lorry was relatively slow (slowing down due to merging traffic), the magnitude of the reaction forces dissipating back to the Lorry was not significant enough to cause serious damage to the front portion of the Lorry.

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