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Your Ref: MC/MC 18210/2019  
Our Ref : CI/LAW21007981/D

28 July 2021

**Incident Involving Motor Cars SLL 5469T And SKP 9800J  
On 25 September 2018 Along China Street Turning Into  
Church Street**

**Introduction & Background Information**

1. I refer to the letter dated 07 May 2021 from M/s C Yogarajah LLC.
2. By way of introduction, I set out below a brief description of my professional qualifications and professional work experiences.
3. I am a Senior Technical Investigator and certified Accident Reconstructionist with LKK Auto Consultants Pte Ltd. I have been carrying out assessments, valuations, inspections and technical investigations of motor vehicles involved in, among other things, accidents since 2007. I have also carried out accident reconstruction basing on the laws of dynamics and physics by applying mathematical equations with technique competencies aligned with international standards, ensuring proper cause analysis. Some of my clients include the Singapore Police Force, NTUC Income Insurance Co-Operative Limited, AIG Asia Pacific Insurance Pte Ltd, AXA Insurance Singapore Pte Ltd, Cycle & Carriage Industries Pte Ltd and Performance Motors Limited amongst others. I also have experience in providing analysis and commentaries on damages and faults of motor vehicles.
4. I have given oral evidence as an expert witness in both the State Court and High Court, for both the prosecution and the defence for criminal proceedings and also for both the plaintiff and the defendant in civil proceedings. For instance, in MC Suit 17701/2010/Q, I acted as an expert witness in proceedings which involved among other things, a claim by an owner of a Mercedes sedan against the dealer for allegedly carrying out negligent works on the Mercedes sedan; in Suit 760/2011, I was asked by the dealer to provide my expert opinion on whether a brand new BMW sedan sold to a customer was defective. I have also been jointly appointed by both a car dealer and a car owner to provide my expert opinion as to whether the transmission of a brand-new car was defective.
5. My testimony as an expert witness for accident reconstruction and speed analysis cases involving criminal proceedings for the prosecution include amongst others, MAC 2350-51/2011, an accident involving four motor cars and a motorcycle resulting in the death of the motorcyclist; DAC 039421-2011, a motor car and motorcycle accident resulting in the death of the motorcyclist; MAC 3935/12, a motor lorry and pedal bicycle accident resulting in the death of the cyclist.

6. Cases where I have been engaged by an accused person include amongst others, DAC 60889-90/10, a motorcycle and motor car accident resulting in the death of the pillion rider; DAC 049130-2013 & DAC 049131-2013, self-accident involving a SMRT bus resulting in the death of one of its passengers.
7. I have also carried out numerous line of sight simulation, in close replication of an accident scenario, to determine a driver's view and sighting capability.
8. I hold a certificate in Technical Accident Investigation and Reconstruction from the Society of Automotive Engineers Australasia and a National ITE Certificate (Intermediate) in Automotive Technology (Light Vehicle) from the Institute of Technical Education. I have also attended training and passed a practical examination on correct repair methods, safe and cost-effective assessment of damaged motor vehicles (Thatcham Escribe System).
9. I am an affiliate member of the Society of Automotive Engineers Australasia; an affiliate member of the Institute of Automotive Engineer Assessors (UK); an associate member with the Society of Operations Engineers (UK).
10. This is a case whereby the driver of the motor car SLL 5469T (herein referred to as "**Plaintiff**") had commenced civil action against the driver of the motor car SKP 9800J (herein referred to as "**Defendant**") under MC Suit No. 18210/2019.
11. I was requested to provide my opinions and comments pertaining to whether the damage sustained to the Plaintiff's motor car SLL 5469T (herein referred to as "**PMC**") was caused by contact from the Defendant's motor car SKP 9800T (herein referred to as "**DMC**"), and if yes, whether the damage to PMC is consistent with the Plaintiff's account of the incident.
12. The following documents were provided to me for my review and consideration in the preparation of this report: -
  - a) Affidavit of Evidence in Chief of the Plaintiff dated 03 December 2020 (herein referred to as "**PAEIC**") and

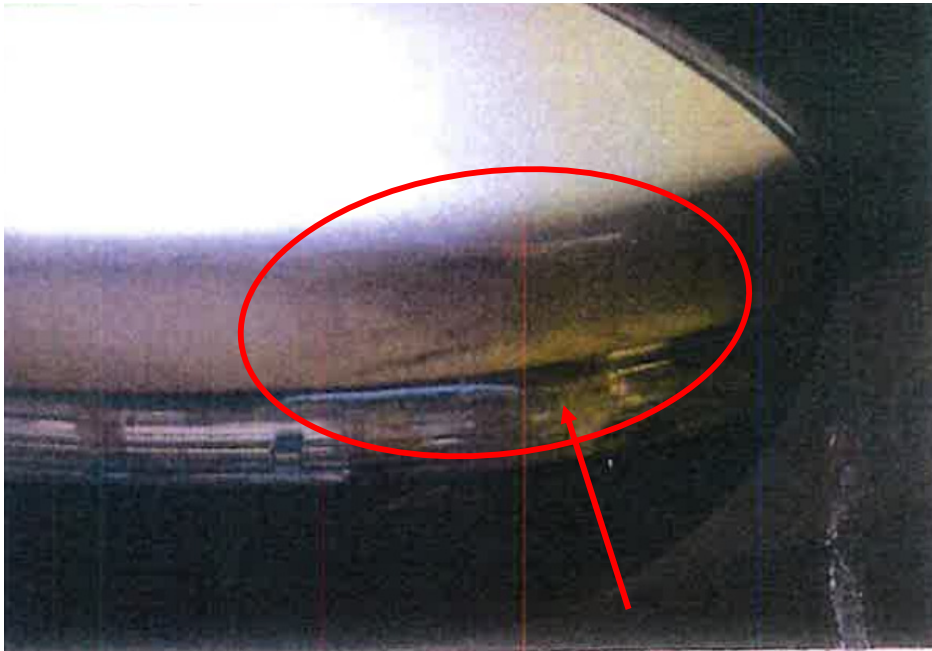
- b) Affidavit of Evidence in Chief of the Defendant dated 04 December 2020 (herein referred to as “**DAEIC**”).

### **Nature of Incident**

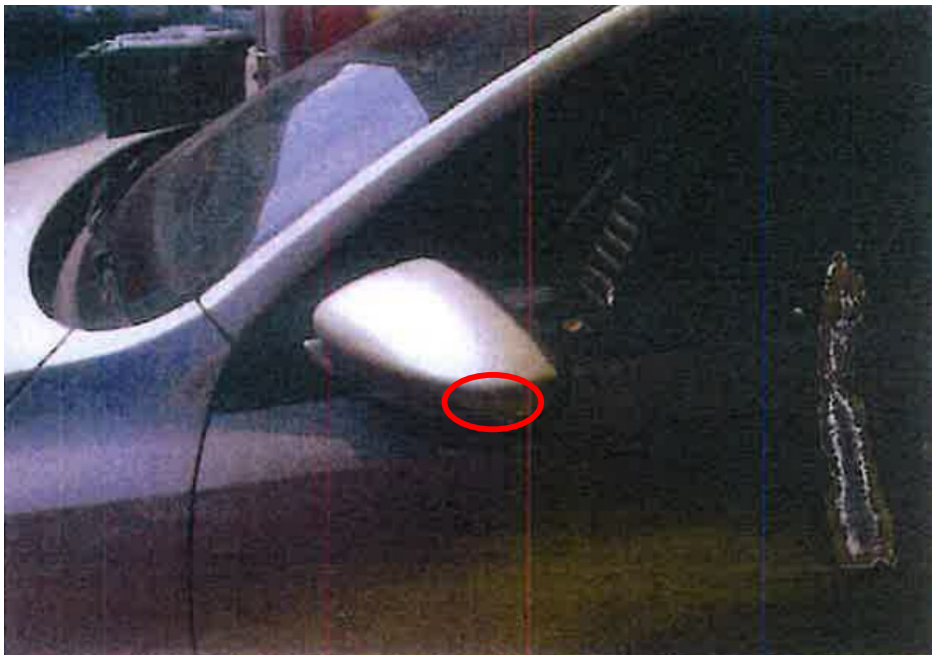
13. Both PAEIC and DAEIC had contained the circumstance of incident as described by the Plaintiff and the Defendant. The respective accounts of the incident are summarized in the following paragraphs.
14. The Plaintiff had said in paragraph 7.5 to paragraph 7.8 of PAEIC that he was driving PMC along the right lane of China Street intending to turn right onto Church Street. He was behind a row of vehicles that were also turning right onto Church Street. Upon reaching the intersection, he inched PMC forward and angled it slightly to the right in order to have a clear view of oncoming traffic from his left along Church Street.
15. In paragraph 7.9 and paragraph 7.10, the Plaintiff said that PMC was stationary waiting for traffic along Church Street to clear. As he looked left towards the oncoming traffic, he saw DMC and instantaneously heard DMC colliding into the front left portion of PMC. In paragraph 7.17, the Plaintiff further said that DMC, which was travelling along the left lane of China Street, had come from the rear left of PMC and encroached into his travelling lane. In the process, had collided into PMC, which was stationary.
16. The Defendant's account of the incident can be found in paragraph 5 and paragraph 6 of DAEIC. The Defendant said that he was driving DMC along the left lane of China Street towards Church Street. As he was turning into the right most lane of Church Street, PMC suddenly dashed forward and appeared ahead of DMC, on the right side. The Defendant instinctively swerved DMC to the left and immediately applied brakes, avoiding a collision between DMC and PMC. The Defendant stated no contact between DMC and PMC.

### **Damage to PMC**

17. The Vehicle Damage Inspection Report of PMC dated 11 March 2018 had showed damage along the side body of PMC, at its front left portion. Photographs taken at the time of inspection by M/s JP Knights Adjusters & Surveyors on 01 October 2018 had showed damage to PMC's left wing mirror, front left wheel rim, front left fender, front left headlamp and left side of the front bumper. See photo 1 – 7 below.



**Photo 1** shows a close up view of the damage to the left wing mirror of PMC. Scratch/grazed marks (circled) were observed on the outer cover at the side surface area of the left wing mirror. Its signal lamp also appears to be cracked (arrowed). Refer to photograph 2 below for a general view of PMC showing its side profile.

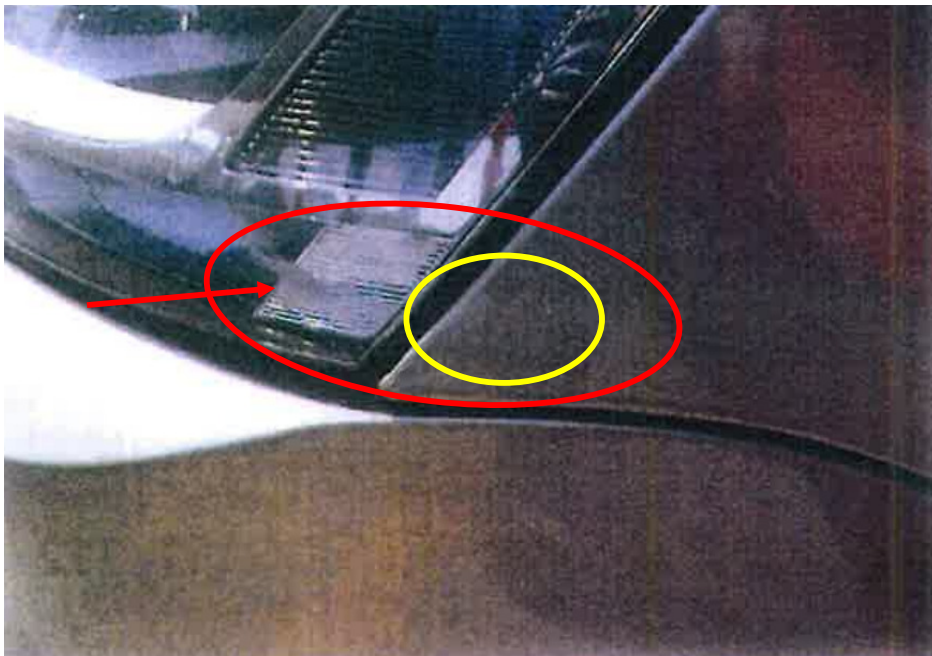


**Photo 2** shows a side profile of PMC. Following the contours of the left wing mirror, the scratch/grazed marks seen on outer cover of the left wing mirror (shown in photograph 1 above) was at the side surface area of the left wing mirror (circled).

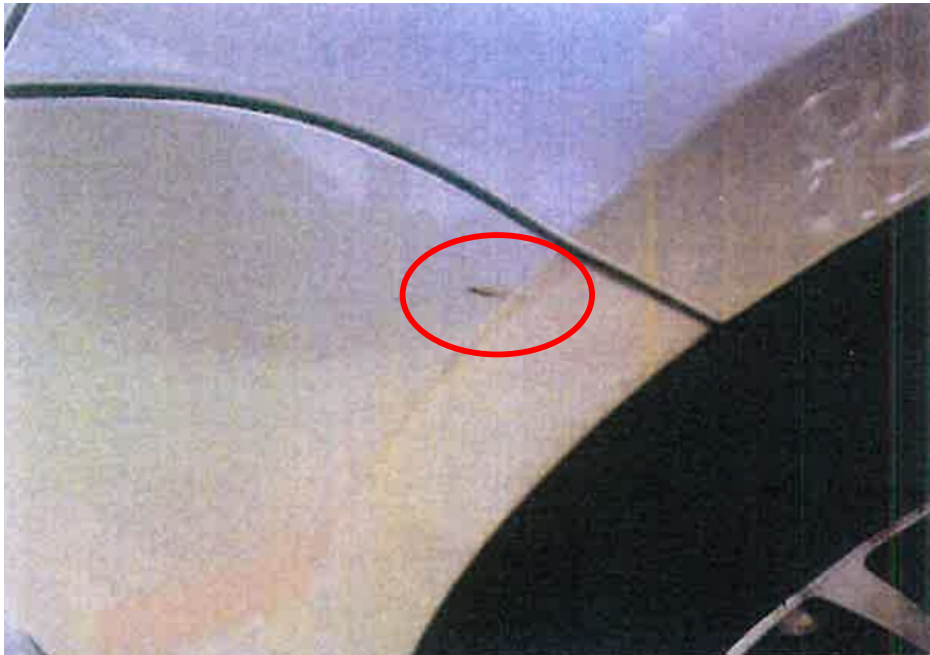




**Photo 3** shows a close up view of the damage to the front left wheel rim of PMC. What appear to be black coloured marks were seen on the outer spoke of the front left wheel rim (circled).



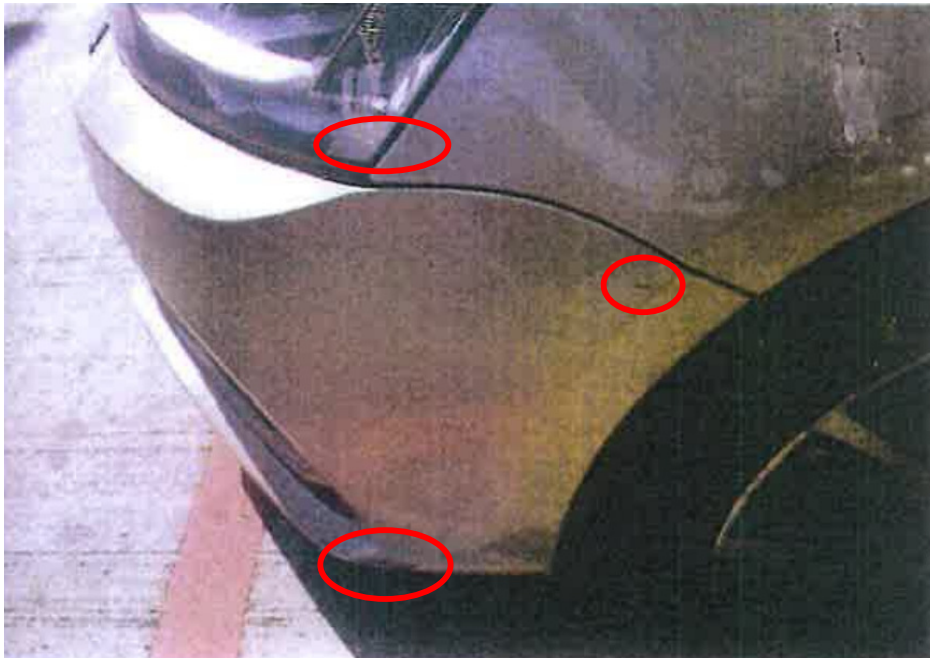
**Photo 4** shows the damage (red circle) to the front left fender and front left headlamp of PMC. Marks of grazing nature were seen to the front left fender (yellow circle) and front left headlamp (red arrow). Collectively, the grazed marks on the front left fender and front left headlamp were a result of a single motion/contact.



**Photo 5** shows a close up view of a black coloured mark (circled) seen on the left side of PMC's front bumper.



**Photo 6** shows the damage to left side lower area of PMC's front bumper. Black coloured marks that appear to be of grazing nature (circled) were seen on the left lower corner of the front bumper. Refer to photograph 7 below for a general view of PMC showing its left side front profile.



**Photo 7** shows the left side front profile of PMC. The damage to the front left fender, front left headlamp and front bumper (shown in photograph 4 to 6 above) were along the side body of PMC (circled).

## DMC

18. PAEIC and DAEIC had contained photographs showing the condition of DMC. The set of photographs in PAEIC were mainly taken at the incident location whilst the set of photographs in DAEIC were taken on 01 October 2018 or thereabouts. For completeness, I had also physically inspected DMC but will not be relying on my observations pertaining to its condition aspect given that my inspection was on 19 May 2021, which is approximately two and a half years after this particular incident. It would be more appropriate to rely on the photographs that were taken at a time closer to the incident date for a more accurate assessment of DMC's condition.
19. Basing on the photographs that were taken at the incident location and contained in PAEIC, it was observed that the front right wheel rim of DMC had sustained scratches on its outer spoke. What appears to be marks of grazing nature was also observed on the front right fender. DMC's right wing mirror was further seen to be shifted inwards. See photo 8 below.





**Photo 8** shows DMC at the incident location. Basing on the photographs contained in DAEIC, it was observed that the front right wheel rim of DMC had sustained scratches on its outer spoke (red arrow). What appears to be marks of grazing nature was also observed on the front right fender (red circle). DMC's right wing mirror was further seen to be shifted inwards (yellow arrow). Note that these damages were along the side body of DMC.

20. Comparing the set of photographs showing DMC that were taken on 01 October 2018 or thereabouts, and contained in DAEIC, I had observed scratch marks on the same area of the outer spoke of DMC's front right wheel rim. Additionally, I had also observed that the front right fender appears to be distorted. Scratch/grazed marks were also seen on the outer cover at the side surface area of DMC's right wing mirror. The grazed marks on the front right fender of DMC that were seen in the photographs contained in PAEIC (refer to red circle in photograph 8 above) were however not seen on the same area in the set of photographs contained in DAEIC. See photo 9 – 13 below.



**Photo 9** shows the front right wheel rim of DMC (photograph taken on 01 October 2018 or thereabouts). Upon my comparison with the set of photographs that were taken at the incident location, I had observed scratch marks on the same area of the outer spoke of the front right wheel rim. Refer to red arrow in photograph 8 above.





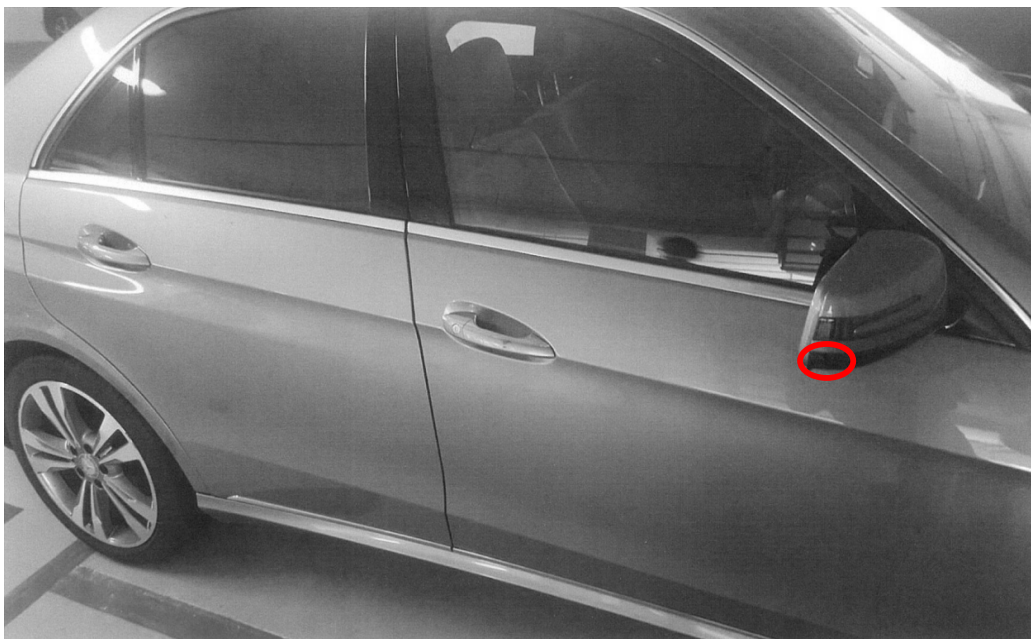
**Photo 10** shows a general view of the front right wheel rim and front right fender of DMC (photograph taken on 01 October 2018 or thereabouts). The grazed marks on the front right fender of DMC that were seen in the set of photographs taken at the incident location (refer to red circle in photograph 8 above) were not seen on the same area of the front right fender (circled). This area was determined by taking reference from the edge of DMC's front bumper as highlighted by the red arrow (refer to the set of photographs taken at the incident location that were contained in PAEIC).



**Photo 11** shows the distortion (circled) on the front right fender of DMC that I had observed from the set of photographs that were taken on 01 October 2018 or thereabouts. The distorted area was noted to be near the grazed marks that were seen on the front right fender of DMC at the incident location (refer to red circle in photograph 8 above).



**Photo 12** shows a close up view of DMC's right wing mirror (photograph taken on 01 October 2018 or thereabouts). Scratch/grazed marks (circled) were observed on the outer cover at the side surface area of the right wing mirror (refer to photograph 13 below for a general view of DMC showing its side profile). Note that the right wing mirror was seen to be shifted inwards in the photographs that were taken at the incident location. Refer to yellow arrow in photograph 8 above.



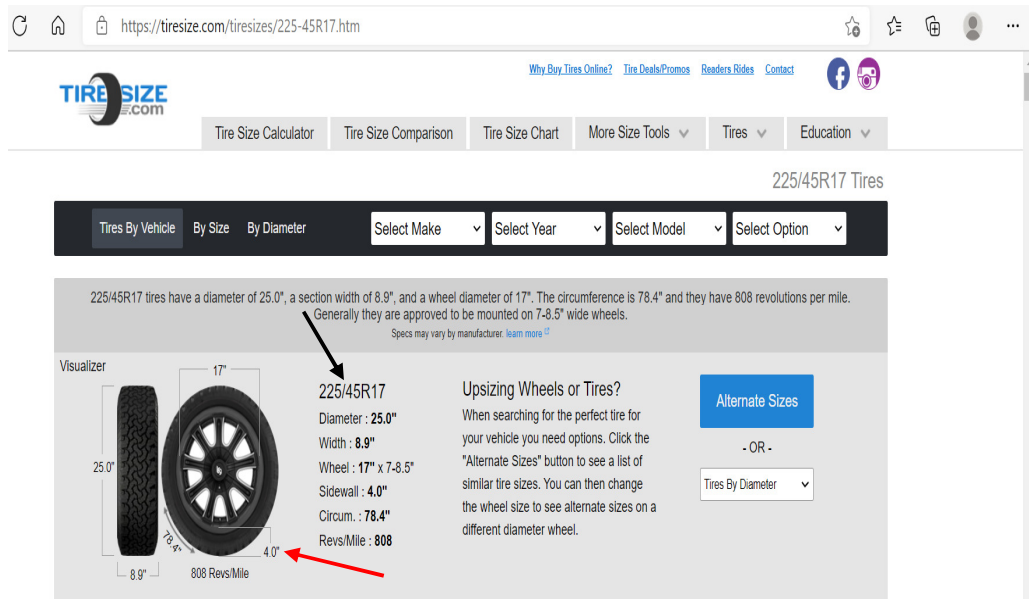
**Photo 13** shows a side profile of DMC. Following the contours of the right wing mirror, the scratch/grazed marks seen on outer cover of the right wing mirror (shown in photograph 12 above) was at the side surface area of DMC's right wing mirror (circled).



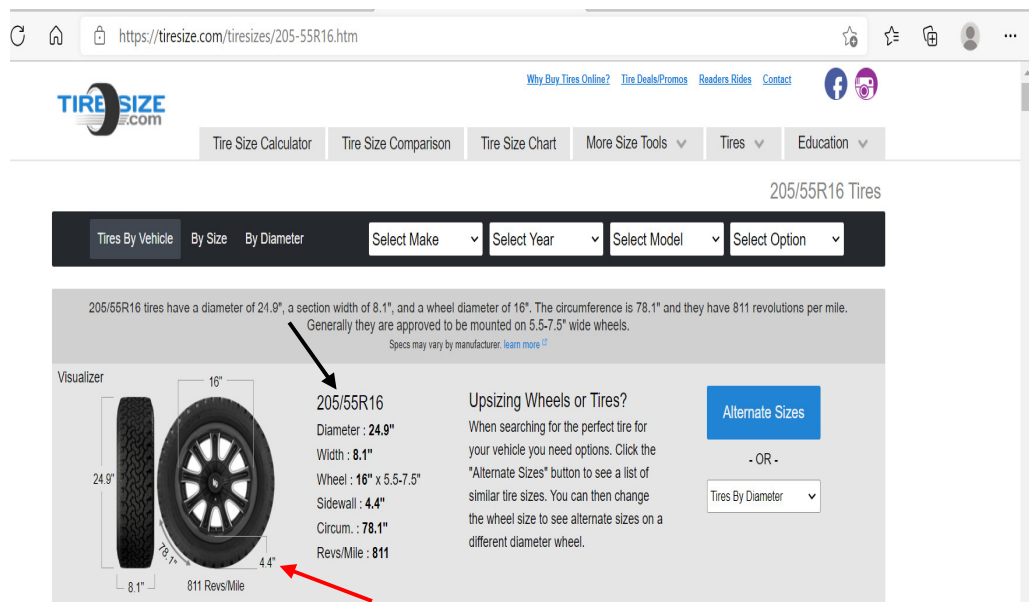
21. Whether the grazed marks that were seen on DMC's front right fender in the set of photographs taken at the incident location were damage arising from this incident will be commented upon in the next section of my report where height measurements of PMC (using a similar make and model vehicle) and DMC were obtained and analysed.

### **Height Measurement**

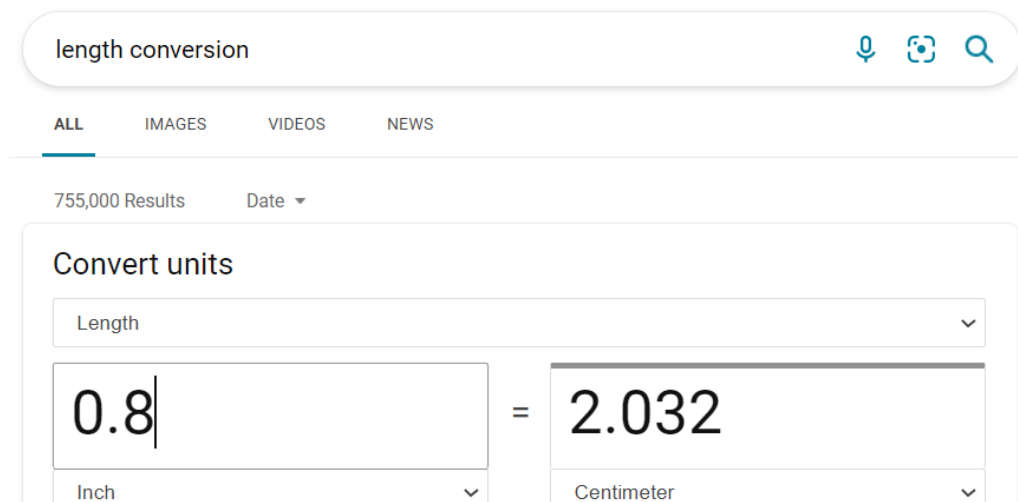
22. Following paragraph 17 to paragraph 21 above, which had mainly set out the damage aspect for this case, the paragraphs below provide an analysis into whether the damages to PMC (shown in photograph 1 to 6 above) were related to the damages to DMC (shown in photograph 8 to 12 above). This was done by measuring the height above ground level of PMC's left side front body (using a similar make and model vehicle) and the height above ground level of DMC's right side front body, thereafter, co-relating the height above ground level of the damages.
23. For completeness, PMC was not available for measurements as I was given to understand that it had been sold. A similar make and model vehicle was thus used for the height measurement. Note that PMC was fitted with 17inch rim size as indicated in The Vehicle Damage Inspection Report of PMC. The similar make and model vehicle that I had used for the height measurements was however fitted with 16inch rim size as I was not able to find a similar make and model vehicle that is fitted with 17inch rim size because 16inch is the standard manufacturer size. The measurements obtained from the similar make and model vehicle were hence adjusted to compensate for the height difference between the tyres for 17inch rim and 16inch rim. See photo 14 – 16 below for a brief explanation on the adjustment.



**Photo 14** shows measurements of a 17inch rim with 225/45 tyre size fitted (black arrow). This was the size of the tyre fitted on PMC as indicated in The Vehicle Damage Inspection Report of PMC. Note that the tyre sidewall height is 4.0inch (red arrow).



**Photo 15** shows measurements of a 16inch rim with 205/55 tyre size fitted (black arrow). This was the size of the tyre fitted on the similar make and model vehicle that was used for the height measurements. Note that the tyre sidewall height is 4.4inch (red arrow). Taking the difference of 0.4inch per sidewall for a tyre that is on a vertical axis, the height measurements obtained from the similar make and model vehicle would have to be reduce by 0.8inch in order for a comparison that is more reflective of the height above ground level of PMC's body parts.



length conversion

755,000 Results Date ▾

**Convert units**

Length ▾

0.8 | = 2.032

Inch ▾ Centimeter ▾

**Photo 16** shows length conversion from inch to centimetre. For the purpose of this report, the height measurements obtained from the similar make and model vehicle were all reduced by 2cm to compensate for the height difference between the tyres for 17inch rim and 16inch rim.

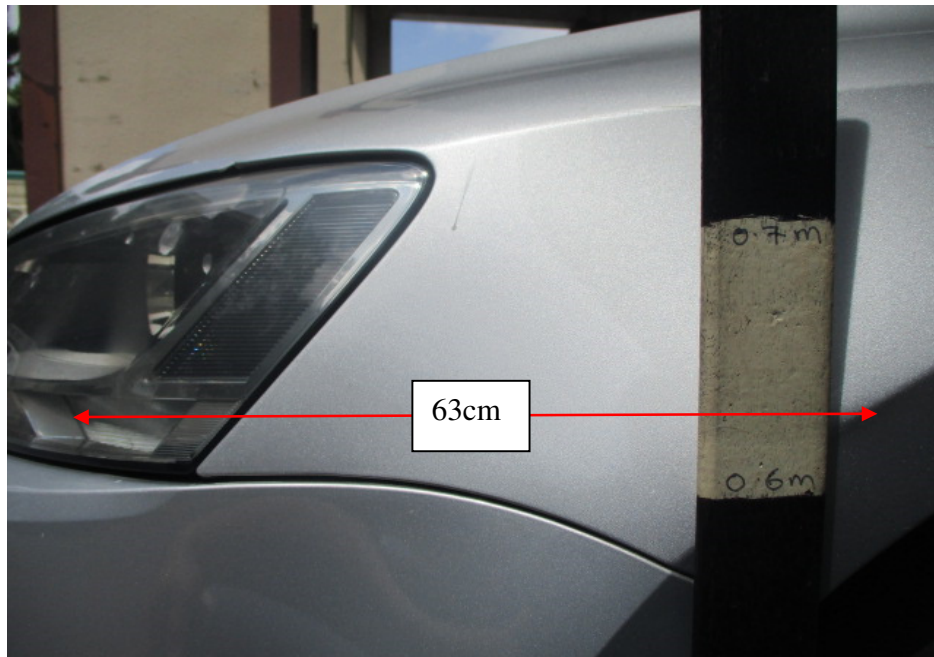
24. Moving on, the height measurements carried out had primarily focused on the damages that were seen on fixed body parts of PMC and DMC ie damage on the front left headlamp, front left fender and left wing mirror of PMC; and damage on the front right fender and right wing mirror of DMC. For clarity, the damage on the front right fender of DMC that I had focused on was the grazed marks that were seen in the set of photographs taken at the incident location but were not seen on the same area in the set of photographs taken on 01 October 2018 or thereabouts.
25. The damage to the front left wheel rim and front bumper of PMC, and damage to the front right wheel rim of DMC were not considered as their respective height above ground level at the material time of incident could not be establish given that wheels will rotate. Any measurements carried out will not represent the actual height above ground level of the damage.
26. In addition, the damage profile of the black coloured marks seen on the left side of PMC's front bumper and also on the left lower corner of PMC's front bumper (refer to photograph 5 & 6 above) appears to indicate that the marks were likely to be from tyre rubbing hence these damages were also not considered in my height measurements for similar reasons of rotation as it would not be possible to determine which area (location) of a tyre sidewall had caused these damages.
27. I now set out below the findings gathered following the height measurements that were conducted: -

- a) the height above ground level of the damage at PMC's front left headlamp and front left fender was approximately 61cm above ground level. The height above ground level of the damage at DMC's front right fender was approximately also 61cm. The height above ground level of the damaged front left headlamp and front left fender of PMC had corresponded to the height above ground level of the damage at DMC's front right fender. Height measurements indicate that there was contact between PMC and DMC at the material time, and also confirms that the grazed marks seen on the front right fender of DMC at the incident location was a damage arising from this incident. See photo 18 & 19 below.
- b) the height above ground level of the damage at PMC's left wing mirror was approximately 96cm above ground level. The height above ground level of the damage at DMC's right wing mirror was approximately 92cm. The height above ground level of the aforesaid damaged body parts of PMC and DMC is relatively similar (the difference of 4cm can be considered to be within a reasonable tolerance level that could have been attributed by factors like tyre pressure, braking action, road elevation amongst others). Again, the height measurements had indicated that there was contact between PMC and DMC at the material time. See photo 20 & 21 below.

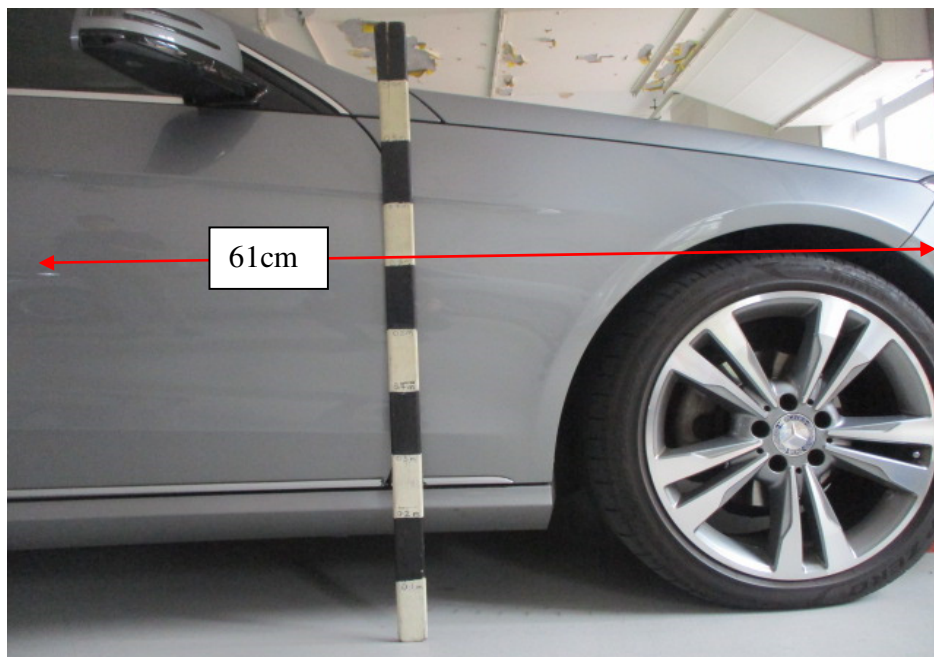


**Photo 17** shows height measurement being carried out to a similar make and model vehicle as PMC, in particular to the height above ground level of the damage at the front left headlamp, front left fender and left wing mirror of PMC.

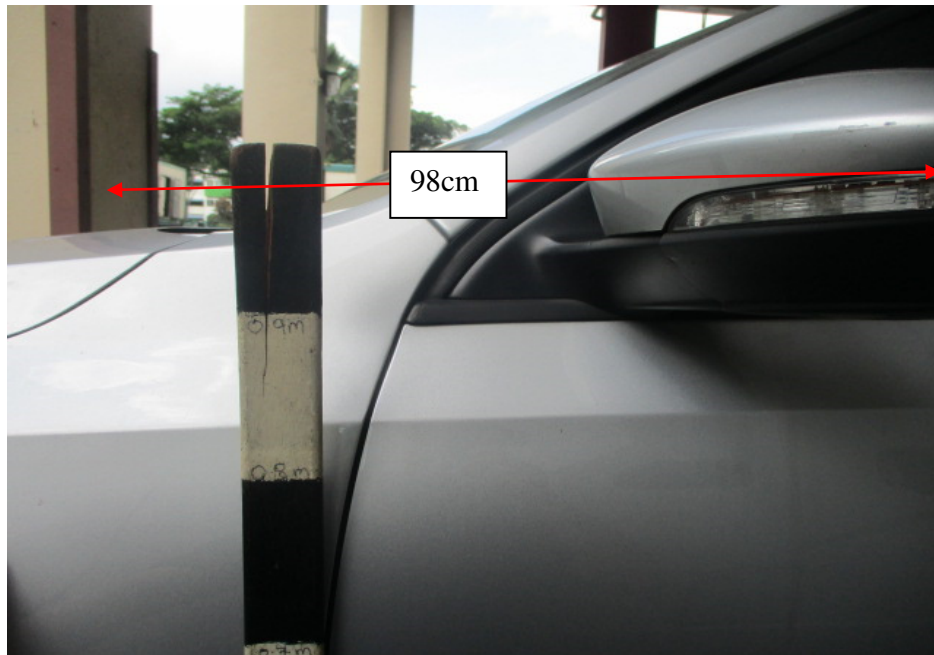




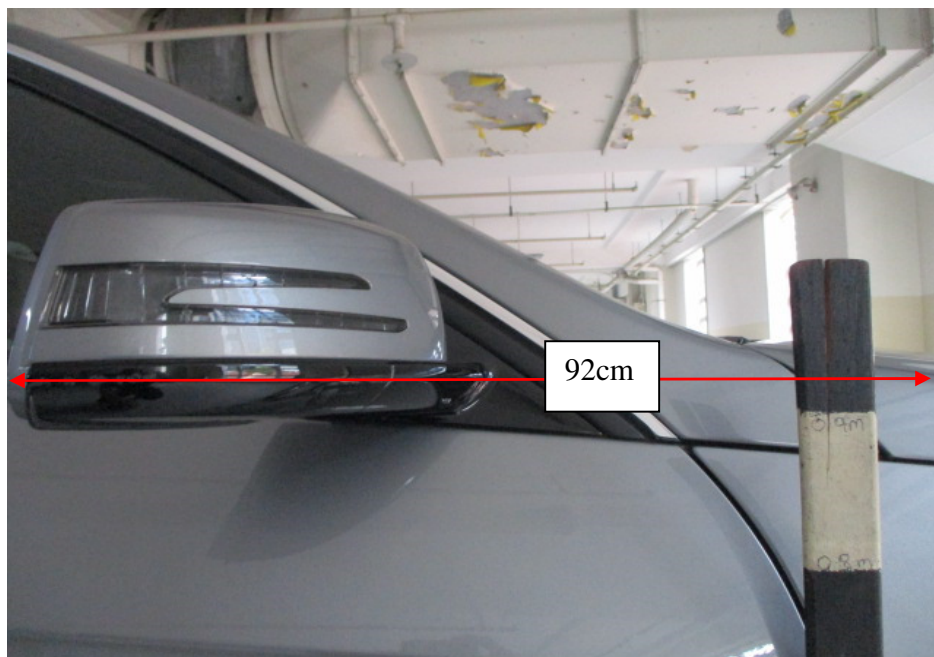
**Photo 18** shows height measurement being carried out on a similar make and model vehicle as PMC. The damage at the front left fender and front left handlamp of PMC (shown in photograph 4 above) was approximately 61cm above ground level after taking into consideration the 2cm compensation for the height difference between the tyres for 17inch rim and 16inch rim.



**Photo 19** shows height measurement being carried out on DMC, in particular to the height above ground level of the damage at the front right fender and right wing mirror of DMC. The damage at the front right fender of DMC (refer to red circle in photograph 8 above) was approximately 61cm above ground level.



**Photo 20** shows height measurement being carried out on a similar make and model vehicle as PMC. The damage at the left wing mirror of PMC (shown in photograph 1 above) was approximately 96cm above ground level after taking into consideration the 2cm compensation for the height difference between the tyres for 17inch rim and 16inch rim.

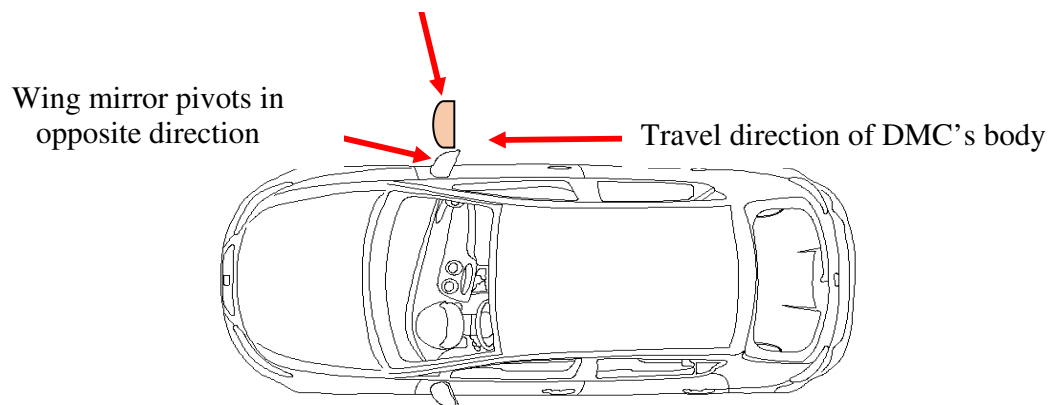


**Photo 21** shows height measurement being carried out on DMC. The damage at the right wing mirror of DMC (shown in photograph 12 above) was approximately 92cm above ground level.

### Nature of Incident

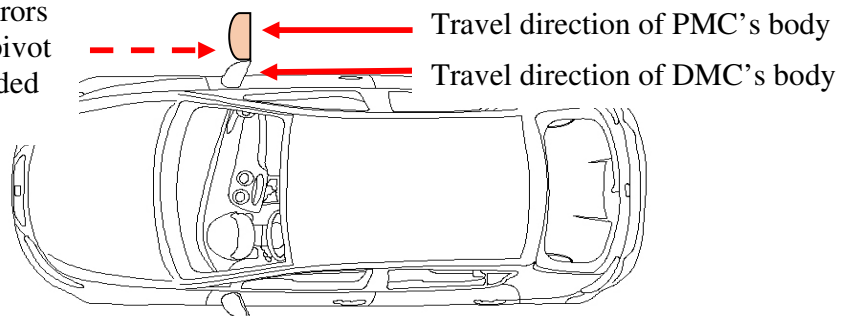
28. Given that the height measurements had produced findings indicating of contact between PMC and DMC, it would then be reasonable to also conclude that the damages seen on PMC (shown in photograph 1 to 6 above) had occurred in a manner described by the Plaintiff in PAEIC as the Defendant had stated no contact in DAEIC.
29. To further add, the damage to both PMC and DMC were along their respective side body. The Plaintiff had described that DMC had come from the rear left of PMC and encroached into his travelling lane, and in the process, had collided into PMC, which was stationary. DMC's right wing mirror was shifted inwards as seen from the photographs that were taken at the incident location. The shifting inwards of the right wing mirror supports the scenario that PMC was indeed stationary and ahead of DMC prior to the contact between both wing mirrors, ultimately corresponding to the Plaintiff's description that DMC had come from the rear left whilst it (PMC) was stationary.
30. To further explain, the cause of the right wing mirror shifting inwards was due to the forward movement of DMC's body when its right wing mirror came into contact with the left wing mirror of PMC whilst it (PMC) was stationary. Simply put, upon contact, the right wing mirror pivots inwards, which is in a direction that is opposite from DMC's travelling direction. See below for a simple illustration.

A non-moving obstruction to the travel direction of DMC  
(wing mirror of PMC whilst stationary)



31. On the other hand, the Defendant's description of PMC suddenly dashing forward and appearing ahead of DMC on the right side as it (DMC) was in forward motion (turning into the right most lane of Church Street) seems to suggest that PMC had come from the rear of DMC. If this was the case, DMC would have been ahead of PMC prior to the contact. Both PMC and DMC would also be in forward moving direction.
32. In this scenario, the same directional movement of PMC and DMC, regardless of actual respective turning angle at the time of contact, would in all likelihood result in both wing mirrors remaining in its normal unfolded position as there is no opposite direction force acting on both wing mirrors at the time of contact. This also takes into consideration that the contact between both PMC and DMC wing mirrors was at their respective side surfaces, which I had earlier commented and shown in photograph 1 and photograph 12 above. See below for a simple illustration.

No opposite direction forces acting on the wing mirrors to cause either one to pivot from its normal unfolded position



## Conclusion

33. Having considered the relevant information from the documents that were provided to me, and the observations gathered from height measurements carried out by me, I am of the opinion that there was contact between the left side front body of PMC and the right side front body of DMC at the material time.
34. I am further of the opinion that the damages seen on PMC had occurred in a manner described by the Plaintiff in PAEIC.



35. I have rendered these opinions and conclusions after careful evaluation and analysis of the documents provided, based on my education, training and experience. The factual matters stated in this report are, as far as I know, true and I have made all enquiries which I consider appropriate. The opinions stated in this report are genuinely held by me and this report contains reference to all matters I consider significant

**Ang Bryan Tani***Senior Technical Investigator**Technical Investigation & Accident Reconstructionist (SAE-A)*

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