

Your Ref: DMPC2300244H/ST  
Our Ref : CS4/ICS23003621/P

4<sup>th</sup> May 2023

**M/s ECICS LTD.**  
10 EUNOS ROAD 8 #09-04A  
SINGAPORE POST CENTRE  
Singapore 408600

**TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE  
INSURED VEHICLE SMT 4585T ON 4<sup>th</sup> April 2023**

1. We refer to your letter dated 6<sup>th</sup> April 2023 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle SMT 4585T (herein referred to as “**Insured Vehicle**”) are set out below.

**Inspection of the Insured Vehicle**

3. The Insured Vehicle was physically inspected on 12<sup>th</sup> April 2023 at the premises of Charn’s Custom craft Pte Ltd located at 1010 Bukit Merah Lane 3, #01-105, Singapore 159724
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded:-

|                          |   |
|--------------------------|---|
| Vehicle Registration No. | : SMT 4585T   |
| Make / Model             | : HYUNDAI DM SANTA FE 2.4L GDI ABS D/AB<br>SR 4WD 5DR |
| Chassis No               | : KMHSU81BSEU331844                                   |
| Year of Registration     | : 30 MAY 2014   |
| Mileage                  | : N.A (wiring affected)                               |

5. The Insured Vehicle was observed to have sustained severe fire damage all around. Its engine compartment and interior compartment had completely been burnt. Rust had accumulated around the whole Insured Vehicle of the Insured Vehicle as a result of exposure to environmental condition for a period of time. See photos 1 – 7 below.



**Photo 1** shows the general view of the front portion of the Insured Vehicle at the time of our inspection. The Insured Vehicle was observed to have sustained extensive fire damage all around. Its engine compartment and interior compartment was completely burnt. Rust had accumulated all over the front engine portion of the Insured Vehicle as a result of exposure to environmental condition for a period of time.



**Photo 2** shows the general view of the rear portion of the Insured Vehicle which was observed to be completely burnt as well at the time of our inspection as a result of the fire.



**Photo 3** shows the general view of the right body of the Insured Vehicle at the time of our inspection. The Insured Vehicle was observed to have sustained extensive fire damage all around. Rust had accumulated all over the front and interior compartment of the Insured Vehicle as a result of exposure to environmental condition for a period of time.



**Photo 4** shows the general view of the left body of the Insured Vehicle at the time of our inspection. The Insured Vehicle was observed to have sustained extensive fire damage all around. Rust had accumulated all over the front and centre portion of the Insured Vehicle as a result of exposure to environmental condition for a period of time.



**Photo 5** shows the general view of the interior compartment of the Insured Vehicle at the time of our inspection. Its interior compartment completely burnt as a result of the fire.



**Photo 6** shows the general view of the interior compartment of the Insured Vehicle at the time of our inspection. Its interior compartment completely burnt as a result of the fire.



**Photo 7** shows the engine compartment of the Insured Vehicle at the time of our inspection. The entire engine compartment of the Insured Vehicle was observed to be severely burnt. Most of the parts inside the engine compartment were found to be burnt and/or melted as a result of the fire.

6. At the time of inspection, we did not find any unusual skeletal remains which could have suggested that there was possible modification(s) on the Insured Vehicle.

### **Investigation and Technical Analysis**

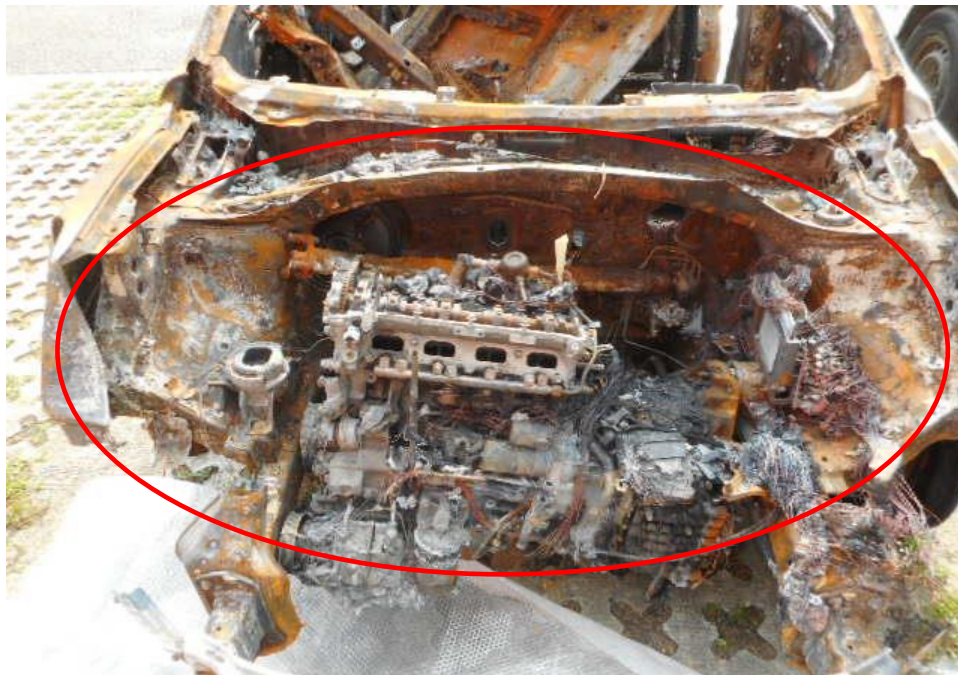
7. Based on the circumstance for this particular case, the fire appears to have originated from the front of the Insured Vehicle, somewhere around the front portion. This can be determined basing on the area where the extent of fire damage was most severe, the circumstance of the fires' origin at the material time of incident and also the high heat intensity burn marks (whitish burn marks) that were found on the surface of its front bonnet portion and its front engine compartment.
8. These whitish burn marks are a result of exposure to prolong heat intensity. Rust would normally start to develop around these areas soon after a fire as the prolonged exposure to high heat intensity usually causes the bare steel/metal material of the body parts to be exposed to natural environmental condition. The rust that had developed on the front bonnet and engine compartment portion, in the immediate vicinity of where these whitish burn marks were found, would also support our findings of where the fire had affected the Insured Vehicle. See photo 8- 14 below.



**Photo 8** shows the exterior of the front bonnet of the Insured Vehicle at the time of our inspection. The high heat intensity burn marks (whitish burn marks) (circled) and rust that had development found on the exterior surface of the bonnet indicates that the fire had originated from the front portion of the Insured Vehicle.

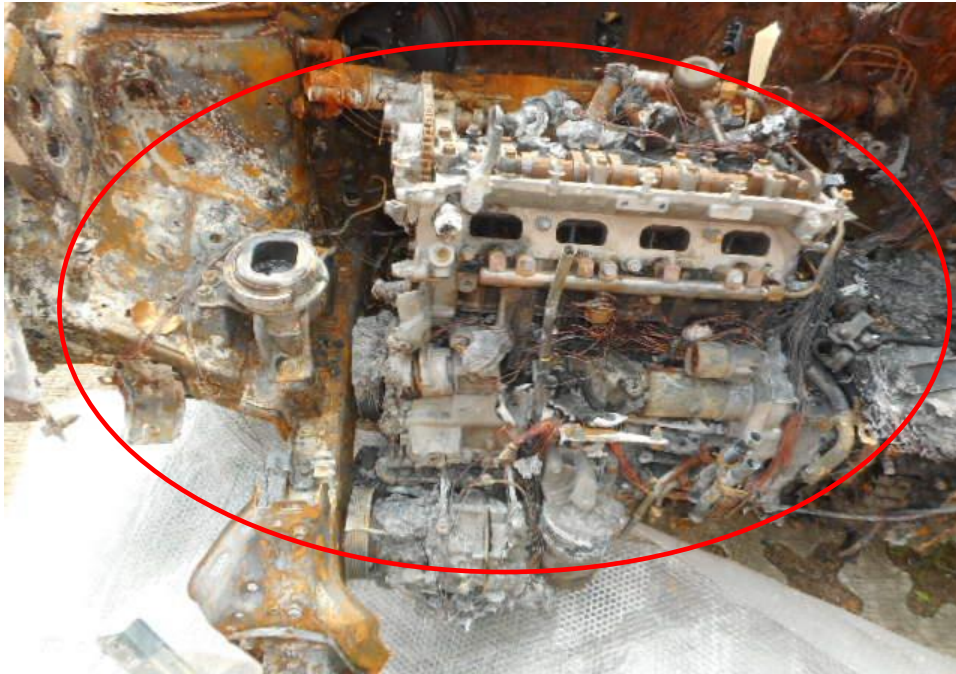


**Photo 9** shows the underside of the front bonnet cover of the Insured Vehicle at the time of our inspection. The High heat intensity burn marks (whitish burn marks) and rust that had development found on the interior surface of the bonnet indicates that the fire had originated from the front portion of the Insured Vehicle.

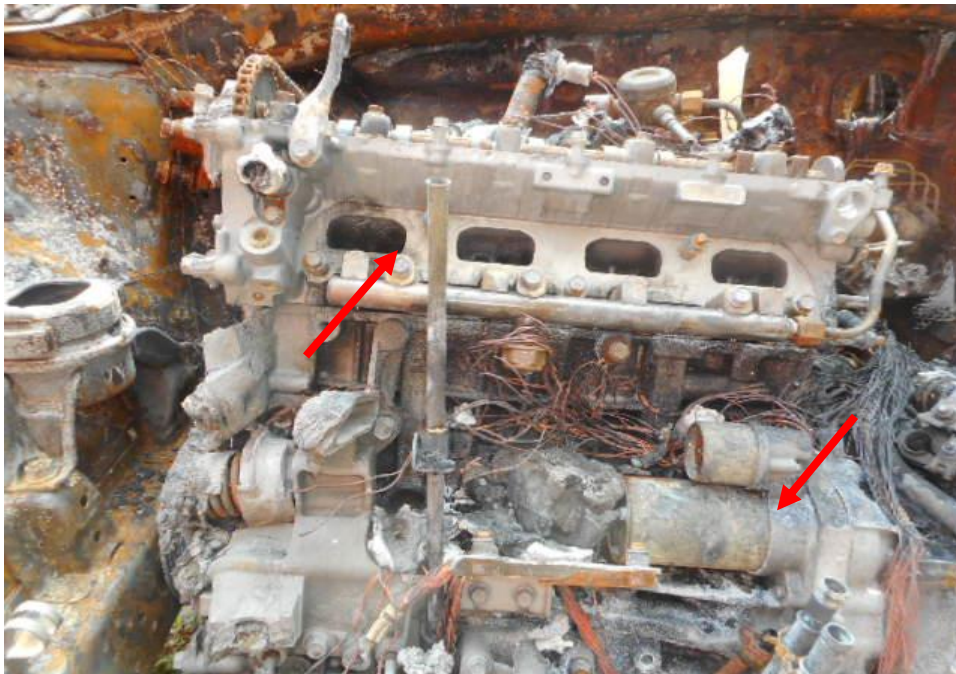


**Photo 10** shows general view of the engine compartment portion of the Insured Vehicle at the time of our inspection. The high heat intensity burn marks (whitish burn marks) and rust (circled) that had development found on the exterior surface indicates that the fire had originated from this area of the Insured Vehicle.

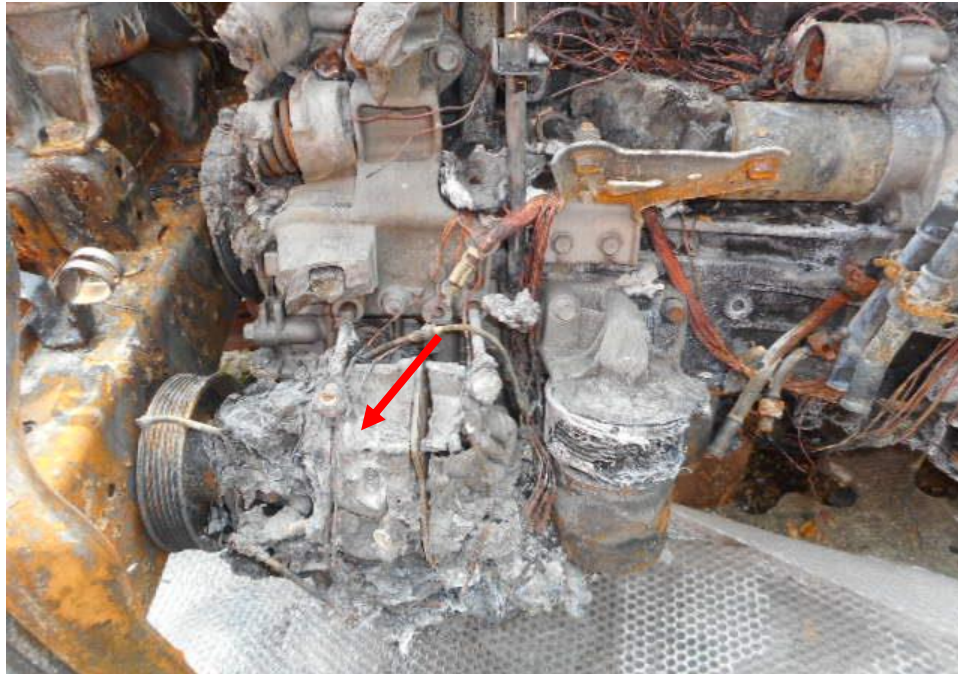
9. Upon closer examination of the engine compartment portion of the Insured Vehicle which was where the fire had likely started, although the whole engine compartment had been burnt by the fire, we notice that the engine components had sustained more severe damages. See photos 11 - 14 below.



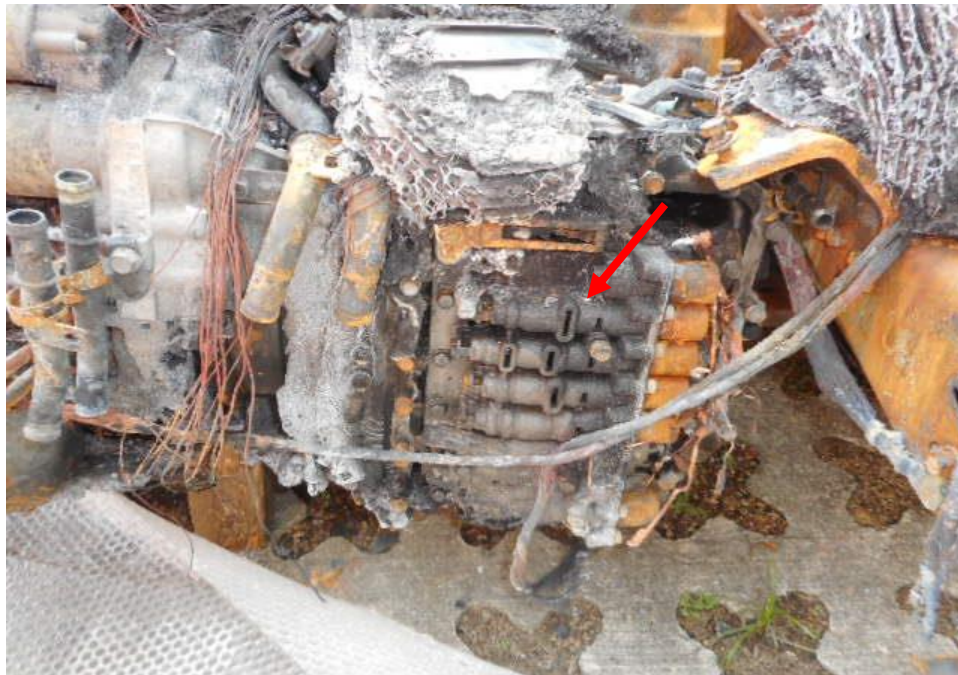
**Photo 11** shows close up view of the engine compartment portion of the Insured Vehicle at the time of our inspection. The engine components had sustain high heat intensity burn marks (whitish burn marks) and rust (circled) that had development found on the exterior surface indicates that the fire had originated from this area of the Insured Vehicle.



**Photo 12** shows the engine components. The engine starter motor, engine block (arrowed) were found to have been burnt to its bare state as a result of the fire.




**Photo 13** shows the engine components. The engine air-conditioner (arrowed) were found to have been burnt to its bare state as a result of the fire.



**Photo 14** shows the engine components. The transmission unit (arrowed) were found to have been burnt to its bare state as a result of the fire.

10. From the Singapore Accident Statement, which was made by Mr Amiruddin Bin Ramli (herein referred to as **“Mr Amiruddin”**); we note that the fire to the Insured Vehicle had started at a time when he was driving and started to hear knocking noise from the engine.
11. We managed to speak to Mr Amiruddin on 25<sup>th</sup> April 2023 where we were able to gather further information pertaining to the incident as well as information pertaining to the history of the Insured Vehicle.
12. According to Mr Amiruddin, on 5<sup>th</sup> April 2023 at 1630hrs. Mr Amiruddin and his wife was on a road trip to Malacca (Malaysia) from Singapore. Mr Amiruddin mentioned that while he was driving the Insured Vehicle on the Malaysia expressway towards Malacca and suddenly he heard loud knocking sound emitting from the engine compartment into the driver's cabin and subsequently he noticed that the Insured Vehicle's engine was losing power and slowly down. Mr Amiruddin then pulled the Insured Vehicle to a stop at the shoulder lane and by then the engine had stalled.
13. Subsequently, Mr Amiruddin got down the Insured Vehicle to inspect the issue at the engine compartment and before he could open the front bonnet of the engine compartment, all of a sudden he heard a small explosion and notice smoke and flames started to emit out from the front bonnet of the engine compartment. He quickly asked his wife to remove the belongings and evacuate from the Insured Vehicle. He and wife ran to a safe spot and he that flames and smoke was building up and spreading fast from the front of the Insured Vehicle to the whole Insured Vehicle.
14. Mr Amiruddin mentioned that the members of public had called for fire brigade assistances and by the time they arrived the Insured Vehicle was totally engulfed in flames. The fire was put out shortly and he got his statement taken by the fire brigade and by the Police that arrived shortly.
15. Mr Amiruddin informed that the Insured Vehicle was towed to the Malaysia Police station where he did the Police report and then subsequently contacted his insurance company and made towing arrangements and the Insured Vehicle was towed to Charn's Custom craft Pte Ltd where Mr Amiruddin made an insurance report on 5 April 2023 at 1701 hours.

16. Mr Amiruddin mentioned that he had not experienced any mechanical or electrical/electronic problems with the Insured Vehicle till the day of the incident. He also mentioned that there were neither warning lights displayed nor was there an abnormal rise in temperature throughout the period the Insured Vehicle and when driven, prior to the fire.
17. With regards to the history of the Insured Vehicle, we were able to gather from Mr Amiruddin that the Insured Vehicle was purchased pre-owned and he is the registered owner of the Insured Vehicle. Mr Amiruddin informed us that he is the sole driver of the Insured vehicle since the day he bought the Insured Vehicle 10 month ago and he had just did a periodic servicing 1 month ago prior to the fire incident.
18. Pertaining to the maintenance aspect, Mr Amiruddin sends the Insured Vehicle for periodical servicing and LTA vehicle inspection. He had provided us with the latest servicing record and informed that there was no major overhaul done or modifications done to the Insured Vehicle. See servicing invoice below.



**KOMOCO MOTORS PTE. LTD.**

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Page No 1  
Date 03/03/2023

**To :** AMIRUDDIN BIN RAMLI  
02 133 168 WOODLANDS STREET 11  
SINGAPORE 730168  
Tel : 98206804  
Email : AMIR1275@YAHOO.COM.SG

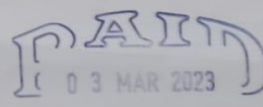
**Attn:**

**Tax Invoice**

Invoice No : CGI-ASS-2023004259  
Invoice Date : 03/03/2023  
Repair Date : 03/03/2023  
Our Ref : WSR-ALX-2023005218  
Mileage : 39506  
Term : 0 Days  
Mode :  
Service Advisor : SOMANATHAN THANGAVELLOO  
Your Ref : SMT4585T

| Item   | Description  | Quantity | UOM  | Discount (%) | Unit Price SGD | GST | Amount SGD    |
|--|--|----------|------|--------------|----------------|-----|---------------|
| 1  | MAINTENANCE SERVICE PACKAGE B WITH SHELL ULTRA OIL 5W-30 | 1        |      | 0.00         | 218.00         | STD | 218.00        |
| 2  | ADDITIONAL 1.0 LITRE OF SHELL HELIX ULTRA 5W-30          | 1        |      | 0.00         | 28.00          | STD | 28.00         |
| 3  | ROTATE & BALANCE BOTH FRONT TYRES                        | 1        |      | 0.00         | 30.00          | STD | 30.00         |
| 4  | CAR WASHING  | 1        |      | 0.00         | 12.00          | STD | 12.00         |
| 5  | FILTER ASSY-ENGINE OIL                                   | 0        | UNIT | 20.00        | 0.00           | STD | 0.00          |
| 6  | GASKET-OIL PLUG  | 0        | UNIT | 20.00        | 0.00           | STD | 0.00          |
| <b>Total</b>                                   |  |          |      |              |                |     | 288.00        |
| Goods and Service Tax                          |  |          |      |              |                |     | 23.04         |
| 8% GST (Tax on SGD 23.04@1.0000000 = SGD23.04) |  |          |      |              |                |     |               |
| Rounding Adjustment                            |  |          |      |              |                |     | (0.04)        |
| <b>Total Amount with GST</b>                   |  |          |      |              |                |     | <b>311.00</b> |

Amount : SGD THREE HUNDRED ELEVEN ONLY



E. & O. E.

Komoco Motors Pte Ltd

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**Incident Scene Photographs**

19. During the course of our investigations, we were able to obtain coloured photographs showing the Insured Vehicle at the incident after the fire was extinguished by fire brigade personnel. These were provided to us by Mr Amiruddin.
20. Our examination of these photographs revealed that the fire had started from the front of the Insured Vehicle. The photographs had also showed the Insured Vehicle on fire and similar extent of damage and burn pattern to the Insured Vehicle as per what we had observed during our physical inspection of the Insured Vehicle. Apart from the aforesaid; there was no further notable information that could be gathered from these photographs. See photos 15 - 19 below which were provided to us by Mr Amiruddin.

51 UBI AVE 1, #01-25 PAYA UBI INDUSTRIAL PARK, SINGAPORE 408933 TEL : (065) 62563561 FAX : (065) 67414108



**Photo 15** shows the Insured Vehicle on scene when smoke and flames had started to break out on the Insured Vehicle. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Mr Amiruddin, location when the fire broke out.



**Photo 16** shows the Insured Vehicle on scene when smoke and flames had started to spread from the front of the Insured Vehicle. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Mr Amiruddin, location when the fire broke out.



**Photo 17** shows the Insured Vehicle on scene when smoke and flames had spread to the whole Insured Vehicle. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Mr Amiruddin, location when the fire broke out.



**Photo 18** shows the fire brigade officers on scene putting the fire out. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Mr Amiruddin, location when the fire broke out.



**Photo 19** shows the fire brigade officers on scene inspecting the Insured Vehicle after putting the fire out. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Mr Amiruddin, location when the fire broke out.

21. Given the circumstances of the incident as reported, the possibility of the cause of fire to the Insured Vehicle being due to electrical in nature would seem unlikely as Mr Amiruddin had mentioned to us that the electrical system of the Insured Vehicle was still working until he pulled to the road shoulder and still managed to turn off its electrical systems.
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 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 engine overheating would then seem more likely given that electrical in nature and external factors would both seem unlikely. The fire being due to engine overheating is also supported by the he interview statement with Mr Amiruddin and he was stating that he had heard loud knocking sounds emitting from the engine then subsequently the engine was losing power and then the engine stalled before the fire started which was earlier discussed in paragraph 12 and 13 above.

24. From our understanding, the loud knocking sound produced from the engine is due to the engine piston and the cylinder valves hitting against each other and that is causing metal to metal contact resulting to the engine losing power and intense heat build-up resulting. From the intense heat build-up from the metal to metal contact in the cylinder of the engine and also petrol was spraying in as well and that had cause an uncontrolled combustion plus the engine is resulted to an abrupt stop at the shoulder lane, the engine is unable to dissipate heat from the engine compartment resulting in a fire build-up which had spread to the whole Insured Vehicle.
25. Our checks with both local and international bodies and associations had also revealed that at the time of writing this report, there is a manufacturer recall of similar make and model vehicle to the Insured Vehicle, however it is not related and will not contribute to fire being originated from the engine compartment of the Insured Vehicle. See search result from LTA below.

## Vehicle Recall Details

\* ONLY INFORMATION ON VEHICLE RECALLS SUBMITTED FROM 9 APRIL 2007 IS AVAILABLE

|  |  |
|--|--|
| Owner ID Type<br><b>Singapore NRIC</b> | Owner ID<br><b>291D</b>  |
| Vehicle No.<br><b>SMT4585T</b> ←       | Make/Model<br><b>HYUNDAI/ DM SANTA FE 2.4L GDI ABS D/AB SR 4WD 5DR</b> ← |
| Engine No.:<br><b>G4KJEU352479</b>     | Chassis No.:<br><b>KMHSU81BSEU331844</b> ←                               |

## Recall Details

**Recall No.: R2017070416**

|  |   |
|--|---|
| Manufacturer Recall Date:<br><b>10 Jul 2017</b>  | Estimated Completion Year of Recall:<br><b>2023</b> |
| Brief Description (As Provided by Motor Dealer):<br><b>Hood upper latching cable may corrode.</b> ←  | Date Rectified:<br><b>-</b> ←                       |
| Hotline Information:<br><b>CALVIN KAN CHEE KIN at 64735588</b><br><b>ISMAIL BIN TAIB at 64735588</b> |   |
| For more details, contact KOMOCO MOTORS PTE LTD  |   |

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Recall shows the recall details of the Insured Vehicle, this recall package consist of Bonnet latching cable. However, this component replaced or not does not contribute to the cause of the fire. (arrowed).

26. Our checks to the above mentioned components in the LTA recall, regarding to the bonnet latching cable, replaced or not does not contribute to the fire on the Insured Vehicle. As our investigation shows that the fire had started from the engine itself and not the LTA mentioned recall components.

### **Conclusion**

27. 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 mechanical damage to have caused the engine to overheat resulting in the fire. For this particular case, the fire had originated from the engine itself and spread to the whole Insured Vehicle.

28. 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 as the Insured Vehicle had just gone through its periodic servicing one month prior to the fire incident.

29. There was no modification(s) or additional electronic and/or electrical component(s) fitted on the Insured Vehicle at the time of our inspection of the Insured Vehicle.

30. Our investigations had also revealed that at the time of writing this report, there was a manufacturer recall to similar make and model vehicle as the Insured Vehicle. However, the mentioned component on the LTA recall rectified or not is not able to cause the fire.



**Sherwin Beh**

*Technical Investigator*



**Ang Bryan Tani**

*AMSOE, AMIRTE, AFF SAE, M.MATAI, AFF.Inst.AEA*

*Senior Technical Investigator*

*Technical Investigation & Reconstructionist (SAE-A)*

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