



Your Ref : S8M00DMN
Our Ref : CS/ASM18006764/Z

18th April 2018

M/s AXA Insurance (Singapore) Pte Ltd
8 Shenton Way #24-01, AXA Tower,
Singapore 068811
(Motor Claims Department)

**TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE
INSURED VEHICLE SFL 9297S ON 09th April 2018**

1. We refer to your letter dated 16th April 2018 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle SFL 9297S (herein referred to as "**Insured Vehicle**") are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 16th April 2018 at the premises of Progressive Automotive Pte Ltd, Blk 3022A Ubi Road 1, #01-45/46 Singapore 408716.
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded:-

Vehicle Registration No.	: SFL 9297S
Make / Model	: Hyundai FD I30 CW 1.6A
Chassis No	: KMHDC81DMAU053998
Year of Registration	: 17 th July 2009
Mileage	: N.A (battery melted)

5. The Insured Vehicle was noted to have sustained fire damage that was confined to its front portion. The entire engine compartment of the Insured Vehicle was observed to be severely burnt while the interior compartment was not affected by the fire.
6. The fire had resulted in the body parts at the front portion of the Insured Vehicle to be burnt. This had included its front bumper, front bonnet, front support panel, front grille, front headlamps, and front windscreen amongst others. See photo 1 – 4 below.



Photo 1 shows the general view of the front right portion of the Insured Vehicle at the time of our inspection. The fire damage to the Insured Vehicle was confined to its front portion. Its front bumper, front bonnet, front grille and front right headlamp were amongst the body parts that were found to have been affected as a result of the fire.



Photo 2 shows the general view of the front right portion of the Insured Vehicle at the time of our inspection. The fire damage to the Insured Vehicle was confined to its front portion. Its front bumper, front bonnet and front left headlamp were amongst the body parts that were found to have been affected as a result of the fire.



Photo 3 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.



Photo 4 shows the windshield of the Insured Vehicle, which was observed to be cracked were amongst the parts that were found to have been damaged as a result of the fire.

7. At the time of inspection of the Insured Vehicle, we did not find any additionally fitted electronic and/or electrical component(s) on the Insured Vehicle. There also appears to be no modification(s) fitted on the Insured Vehicle.

Investigation and Technical Analysis

8. For this particular case, the fire appears to have originated within the engine compartment of the Insured Vehicle, somewhere around the centre and towards the rear of the engine compartment. This can be determined from the burn pattern and the high heat intensity burn marks (whitish burn marks) found on the front bonnet of the Insured Vehicle, at both its top and under side.
9. 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 prolonged exposure to high heat intensity usually causes steel/metal material body parts to be exposed to natural environmental condition. See photo 5 & 6 below.



Photo 5 shows the burn pattern and whitish burn marks (circled) that were found on the top side of the front bonnet of the Insured Vehicle. Such whitish burn marks are a result of exposure to prolong heat intensity, which may indicate where the fire had started. Rust would also begin to develop on these areas soon after the fire.



Photo 6 shows the whitish burn marks that were found on the underside of the front bonnet, directly under the area where the same whitish burn marks were found on the top side of the front bonnet. The rust (circled) that had developed around this area was a result of prolong exposure to high heat intensity, which had caused the steel/metal material of the front bonnet to be exposed to natural environmental condition.

10. Upon closer examination of the area around the left rear of the engine compartment, which was in the immediate vicinity of where the fire to the Insured Vehicle had likely started, we had found several stretches of wiring burnt internally to its bare copper state. The wirings of the Insured Vehicle and are likely to be the original engine wire harness. Such condition normally indicate internal heating of copper wires which is a sign of an electrical short circuit occurring. This would then appear to suggest that the cause of fire to the Insured Vehicle could have possibly been due to electrical in nature. See photo 7 - 8 below.



Photo 7 shows the wirings around the left rear of the engine compartment, which was in the immediate vicinity where the fire to the Insured Vehicle had likely started. The wirings (red arrow) were found to have been burnt internally, suggesting occurrence of an electrical short circuit. The wirings also appear to be an original engine wire harness of the insured vehicle.



Photo 8 shows a closer view of the wirings (red arrow) which were found to have been burnt internally, suggesting occurrence of an electrical short circuit.

11. From the Singapore Police Report No. G/20180410/2108, which was made by Mr Lim Hwee Leng, (herein referred to as "**Mr Lim**") who was the last person driving the Insured Vehicle. Mr Lim had parked the Insured Vehicle at about 0600hrs at an open car park of Blk 75D Redhill Road and left. It was approximately around 2hrs 30 minutes at about 2030hrs Mr Lim came back to the Insured Vehicle, when he discovered that the Insured Vehicle was badly burnt. SCDF fire-fighters & SPF officers was at scene upon arrival of Mr Lim to the fire incident's location.
12. We had arranged for a face to face interview with Mr Lim in his office which is at 240 Macpherson Road, #06-01A Pine Industrial Building, Singapore 348574 on 17th April 2018 where we were able to gather further information pertaining to the incident as well as information pertaining to the history of the Insured Vehicle.
13. Mr Lim is currently running his own business in Tiles & Marbles supplies; he has been running the business for about 21 years. He is the registered owner of the Insured Vehicle & also the main driver. Although sometimes the Insured Vehicle will be driven by his son occasionally. Mr Lim drives the Insured Vehicle mainly to office & meeting clients.
14. According to Mr Lim, on 09th April 2018 he had driven the Insured Vehicle to office as usual. At about 1500hrs, he had left for Guillemard Road to meet some friends and proceeded to Yew Tee to pick up a friend to be sent to a clinic at Redhill. At about 1800hrs they arrived in Redhill Road. He had parked the Insured Vehicle inside a parking lot no.07 at an open car park beside Blk 75D Redhill Road. He had reversed parked inside the parking lot, secured the Insured Vehicle with everything intact and left.
15. Mr Lim came back to the same parking lot on the same day at about 2030hrs and discovered that the Insured Vehicle was already burnt. SCDF fire-fighters & SPF officers were already at scene upon his arrival to the Insured Vehicle where it was parked. By then the fire had already been extinguished. Fire was extinguished with a water jet & a compressed air foam backpack. No one was injured & no properties were damage from the fire incident.



16. The Insured Vehicle was eventually arranged to be towed from the incident location to Aljunied ESSO Station workshop where Mr Lim normally sent the Insured Vehicle for servicing. That was after clearance was obtained from both SCDF officers and Police officers, who had also attended to the scene.
17. The next working day, the Insured Vehicle was arranged to be towed to an authorized workshop at Progression Automotive Workshop @ 3022A Ubi Road 1, #01-45/46.
18. We were able to gather from Mr Lim that the Insured Vehicle was purchased pre-owned from a car dealer in 2017. According to Mr Lim, he did not experience any mechanical and/or electrical problem with the Insured Vehicle prior to the fire incident when he was driving it earlier in the day. To the best of her recollection, there has not been any major mechanical and/or electrical problem with the Insured Vehicle apart from the usual wear and tear that a vehicle would experience.
19. Regarding the maintenance aspect, Mr Lim informed me that the last servicing carried out on the Insured Vehicle was on 30th October 2017 at his regular workshop "Sunguan Auto Centre" at 373 Upper Aljunied Road (ESSO Station). He was able to provide me with a document relating to this servicing. Our review of this document revealed that the engine oil & oil filter were replaced during this servicing. The most recent wear & tear repair servicing was also done on 07th February 2018. See document photo below relating to this servicing which was provided to me by Mr Lim. See photo 9 & 10.



Auto
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Pte Ltd

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

Sunguan Auto Centre

Sunguan Auto Centre
373 Upper Aljunied Road
(Esso Petrol Station)
Singapore 367859

Tel. 62896923 / 62871964
Co. Reg. No. : 25628700K

Invoice To
SFL9297S
Hyundai i30 CW
Mr. Albert Lim HP: 96229083
160455km

INVOICE
Date: 30/10/2017
Invoice No: 94333

S/N	Activity	Qty	Rate	Amount
1	Mobil 1 Silver Engine Oil, Oil Filter, Package Service	1	128.00	128.00
2	2 pcs Stabilizer link rod -Left & Right To replace worn stabilizer link rod	1	140.00	140.00
3	1 pc GLOBAL MF BATTERY - 55220 (DIN55)	1	145.00	145.00
				Total: S\$413.00

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Date Vehicle Received by Customer & Signature


Authorised Signature

Photo 9 shows a preventive maintenance record provided by Mr Lim.



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

Sunguan Auto Centre

Sunguan Auto Centre
373 Upper Aljunied Road
(Esso Petrol Station)
Singapore 367859

Tel: 62888923 / 62871964
Co. Reg. No. : 25628700K

Invoice To
SFL9297S
Hyundai i30 CW
COBUILD BUILDING PTE LTD
ALBERT LIM Hp: 9622 9083
169525KM

INVOICE
Date: 07/02/2018
Invoice No: 95286

SN	Activity	Qty	Rate	Amount
1	Michelin - XM2 - 195/ 60 X 15 Tyre <i>1 pr Tyre incl (Fec)</i>	2	135.00	270.00
				Total: S\$270.00

Date Vehicle Received by Customer & Signature

Authorised Signature

Photo 10 shows the latest wear & tear servicing record provided by Mr Lim.

20. Mr Lim also informed me that there was no modification(s) and/or additional electronic or electrical component(s) fitted on the Insured Vehicle.
21. We visited the incident location on 17th April 2018. The incident had occurred at an open space car park, right beside HDB Block 75D Redhill Road. The carpark serves both the residences and visitors. When driving through the carpark compound, parking lot number 07 was observed to be on the right side of the car park. Further observations on the ground, we found burnt marks/ burnt residual on the red bricks at the parking lot. This reveals that there's evidence that fire incident happen at the said spot. See photo 11 – 14 below.



Photo 11 shows the general view of block 75D beside the open carpark where the Insured Vehicle was parked at the time of incident.



Photo 12 shows the general view of where the Insured Vehicle was parked (arrowed) at the time of incident. This was inside parking lot 07, which is on the right side upon entering the open car park.

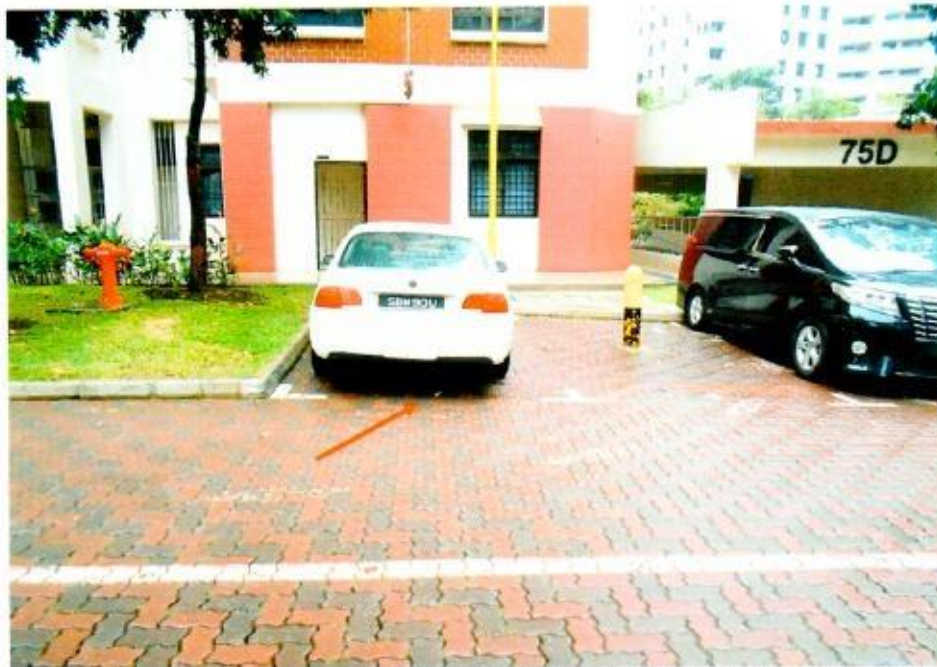


Photo 13 shows the general view of where the Insured Vehicle was parked (arrowed) at the time of incident. This was inside parking lot 07, which is on the right side upon entering the open car park.



Photo 14 shows the close-up view of where the Insured Vehicle was parked at the time of incident. Further observations on the ground, we found burnt marks/ burnt residual on the red bricks at the parking lot. This reveals that there's evidence that fire incident happen at the said spot.

22. Although there was no CCTV camera(s) around the incident location, we were however able to obtain photographs which were taken by public at the incident location from online sources. The photographs were taken at the time of the fire incident.
23. In general, the information that could be gathered from these photographs had corresponded to the events that were related to me by Mr Lim. Our close examination of these photographs also showed no unusual foreign material(s) and/or object(s) found on the ground in the immediate area of the parking lot where the Insured Vehicle was parked. See photo 15 - 18 below.



Photo 15 shows the Insured Vehicle at the incident scene. SCDF fire fighters were seen trying to extinguish the fire from the Insured Vehicle.



Photo 16 shows the Insured Vehicle at the incident scene. SCDF fire fighters were seen trying to extinguish the fire from the Insured Vehicle.

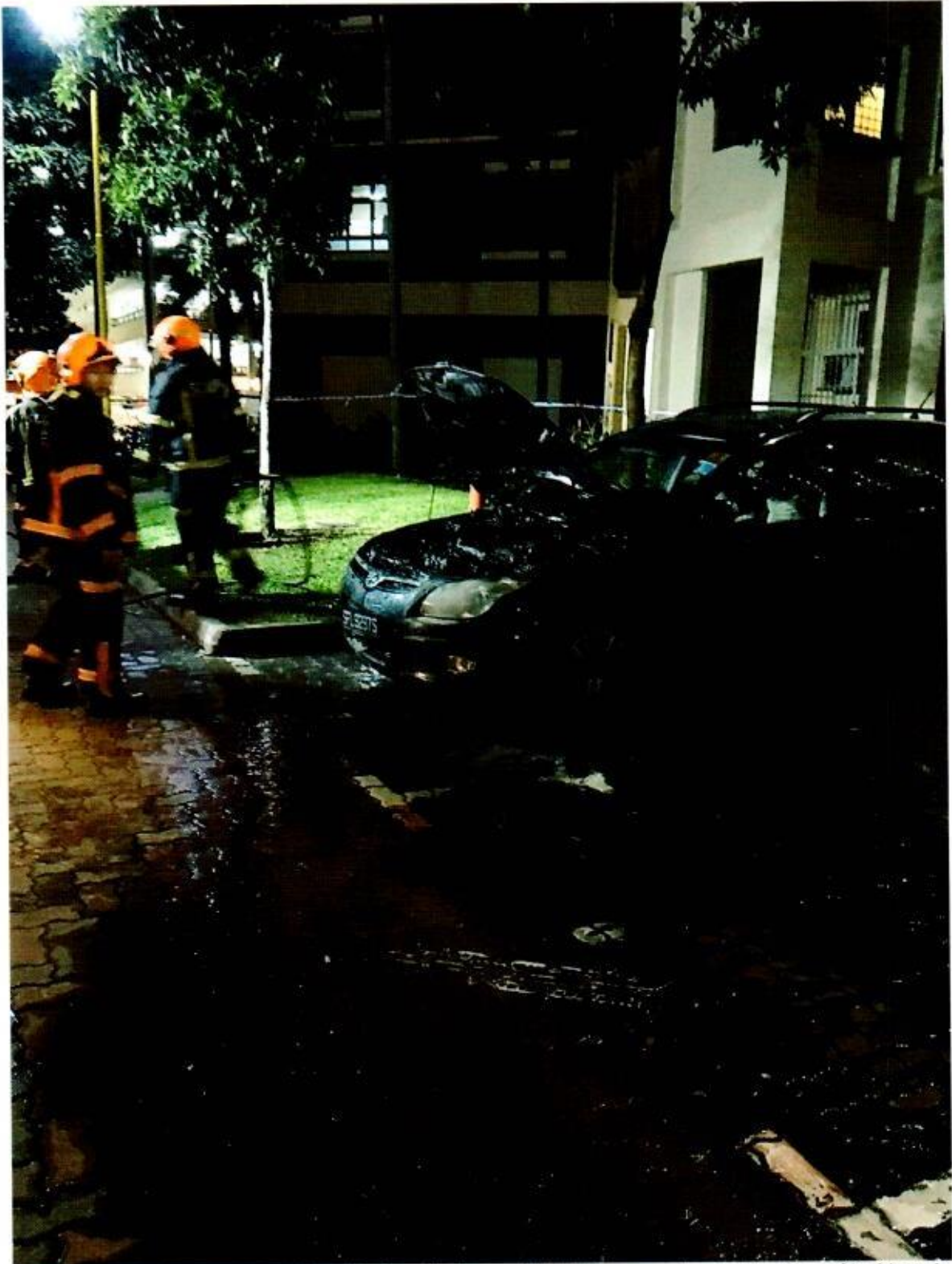


Photo 17 shows the close-up view of where the Insured Vehicle was parked at the time of incident. It was after the fire-fighter's had extinguished the fire.



Photo 18 shows the close-up view of the Insured Vehicle after SCDF fire fighters had extinguished the fire.

24. Given the circumstances of incident as reported, the possibility of the cause of fire to the Insured Vehicle being due to engine overheating would seem unlikely as the fire had started after the engine was switched off for a period of time.
25. The possibility of the fire being due to external factor (foreign material(s) stuck on hot surfaces, arson and sabotage amongst others) would also seem unlikely given that my examination of the available incident scene photographs did not reveal any unusual material(s)/object(s) found on the ground near where the Insured Vehicle was parked.
26. The possibility of the fire being due to electrical in nature would then seem more likely given that engine overheating and external factor would both seem unlikely. The fire being due to electrical nature is also supported by the condition of the wirings of the Insured Vehicle, which was earlier discussed in paragraph 10 above.
27. Although the engine of the Insured Vehicle was switched off at the material time of incident, some electrical current would still be flowing within the electrical system as several electrical and/or electronic components on the Insured Vehicle would require current to remain in operation and/or in standby mode. These components may include the alarm system, clock, radio and cabin light amongst others.
28. Our checks with both local and international bodies and associations had revealed that at the time of writing this report, there is no manufacturer recall of electrical nature to similar make and model vehicle as the Insured Vehicle that may possibly be related to this incident. See photo 19 below.



Enquiry on Vehicle Recall - Vehicle Specific

* ONLY INFORMATION ON VEHICLE RECALLS SUBMITTED PRIOR 11 APRIL 2007 IS AVAILABLE

Vehicle Owner Particulars	
Owner ID Type	Singapore F-21C
Owner ID	41170
Vehicle Details	
Vehicle Registration Number	3FL42725
Make	HYUNDAI
Vehicle Model	TD-000W LS4
Engine No.	1CAP01419500
Chassis No.	104H00010040000000
Recall Details	
No Recall Entries Found	

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Photo 19 shows there is no manufacturer recall of electrical nature to similar make and model vehicle as the Insured Vehicle that may possibly be related to this incident.

Conclusion

29. 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 electrical in nature. For this particular case, the fire had originated along the wiring inside the engine compartment, somewhere around the left rear of the engine compartment. The wiring was an original factory fitted on the Insured Vehicle.
30. 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.
31. There were 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.

32. Our investigations had also revealed that at the time of writing this report, there is no manufacturer recall of electrical nature to similar make and model vehicle as the Insured Vehicle that may possibly be related to this incident.



Rohaizal A. Rahim
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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