



Auto
Consultants
Pte Ltd

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

Your Ref : 76171
Our Ref : CI/DAI18006786/Z

17th April 2018

M/s Direct Asia Insurance (Singapore) Pte Ltd
88 South Bridge Road
Singapore 058716
(Motor Claims Department)

**TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE
INSURED VEHICLE SFV 6655J ON 06th April 2018**

1. We refer to your letter dated 11th April 2018 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle SFV 6655J (herein referred to as "**Insured Vehicle**") are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 11th April 2018 at the premises of Ah Lim Motor, No.10 Ang Mo Kio Industrial Park 2A, #01-09 AMK Autopoint Singapore 568047.

4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded:-

Vehicle Registration No.	: SFV 6655J
Make / Model	: Hyundai NF Sonata 2.4
Chassis No	: KMHEU41CR5A051490
Year of Registration	: 19 th May 2005
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 observed to be partially burnt and/or melted.
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, front windscreen, front dashboard and roof upholstery 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 interior compartment of the Insured Vehicle, which was observed to be partially burnt and/or melted. The front dashboard, front windscreen and roof upholstery were amongst the parts that were found to have been burnt and/or melted 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 were leading towards the Engine Control Module (ECM) 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.

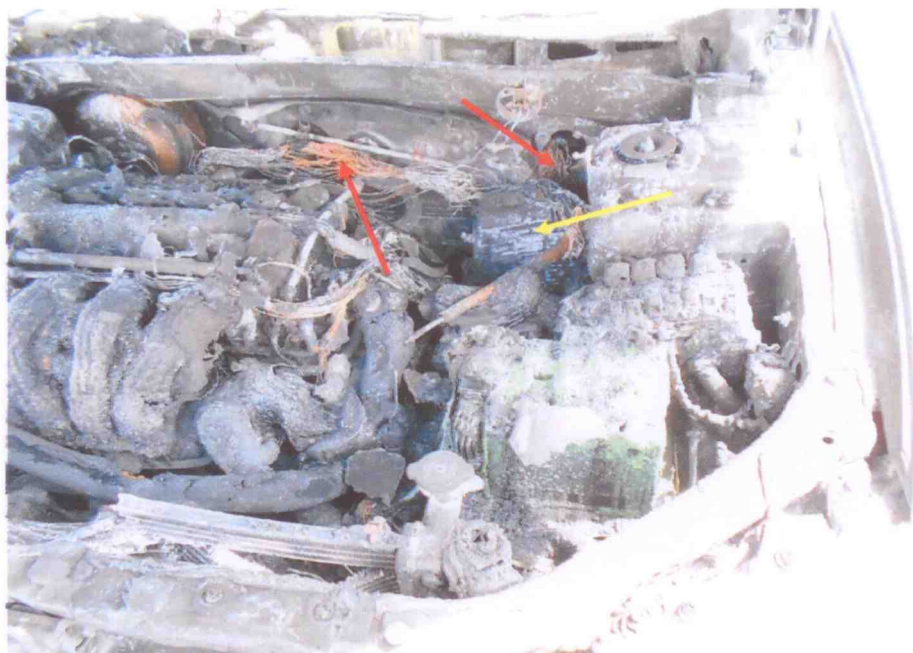


Photo 7 shows the wirings around the left rear of the engine compartment, which was in the immediate vicinity where the fire to the Insured Vehicle had likely started. The wirings (red arrow) were found to have been burnt internally to its bare copper state, suggesting occurrence of an electrical short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



Photo 8 shows a closer view of the wirings (red arrow) which were found to have been burnt internally to its bare copper state, suggesting occurrence of an electrical short circuit. These wirings were observed to be leading to the Engine Control Module (yellow arrow) of the Insured Vehicle.

11. From the Singapore Accident Statement, which was made by Ms Ng Lay Eng, (herein referred to as "**Ms Ng**") who was the last person driving the Insured Vehicle, We note that the fire to the Insured Vehicle had started when it was parked at about 4.30pm. It was approximately around 10 minutes at about 4.40pm after it was parked, when Ms Ng was alerted of the fire by one of her neighbour that there were smoke emitted from the engine of her car. She rushed down to the scene soon after and found SCDF fire-fighters & SPF officers had arrived & took control of the situation.
12. We had arranged for a face to face interview with Ms Ng near to the fire incident's location which is at Block 851 Yishun Street 81, Singapore 760851 on 13th 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. Ms Ng is working currently as a Primary School Teacher, teaching Chinese language. At a nearby neighbourhood school called "Jie Min Primary School". She has been working since 2008 till at present (10 years). She is the registered owner of the Insured Vehicle & also the main driver. Although sometimes the Insured Vehicle will be driven by her husband occasionally when he is in town. Ms Ng drives the Insured Vehicle mainly to work & sending her son to Singapore Polytechnic.
14. According to Ms Ng, on 06th April 2018 at about 2pm, she had driven the Insured Vehicle leaving Jie Min Primary School to Tanglin Shopping Mall to run some errands. At about 3pm, she had left for ICA to collect her passport. At about 4pm she proceeds back home & reached around 4.30pm. She had parked the Insured Vehicle inside a parking lot no.109 at an open car park beside her residence. She had reversed parked inside the parking lot, secured the Insured Vehicle with everything intact and went up to her home at Block 851 unit #11-64.
15. While at home she was alerted of the fire on the same day at about 4.40pm, by one of her neighbour. Upon returning to where the Insured Vehicle was parked, she noticed smoke was coming out from the left & right gaps at the front bonnet, and at the bottom of the Insured Vehicle. SCDF fire-fighters & SPF officers were already at scene took control of the situation & extinguishing the fire. By then all nearby vehicle was moved by the respective vehicle owners to a safe locations. 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 the authorized workshop at Ah Lim Motor Workshop @ 10 AMK Autopoint, Ang Mo Kio Industrial Park 2 #01-09 after clearance was obtained from both SCDF officers and Police officers, who had also attended to the scene.
17. We were able to gather from Ms Ng that the Insured Vehicle was purchased pre-owned from her brother in law in 2013. According to Ms Ng, she did not experience any mechanical and/or electrical problem with the Insured Vehicle prior to the fire incident when she 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.
18. Regarding the maintenance aspect, Ms Ng informed me that the last servicing carried out on the Insured Vehicle was on 23rd January 2018 at her regular workshop "Yew Seng Auto Service & Trading" at Block 226 Pasir Ris Street 21. She was able to provide me with a document relating to this servicing. Our review of this document revealed that the engine oil, oil filter, air filter, ignition coil and spark plugs were replaced during this servicing. The most recent wear & tear repair servicing was also done on 01st February 2018. See document photo below relating to this servicing which was provided to me by Ms Ng. See photo 9 & 10.

順盛汽車服務與貿易
YEW SENG AUTO SERVICE & TRADING
 814 226 Pagar Road Street 21 #10-72
 Singapore 510226 H40 9822 2468
 Email: chuaveyeng@hotmail.com

CASH SALE

Sold to:

4V 6655j

No.:

Date:

23/04/18

項目 Item	商品名稱 Descriptions	數量 Quantity	單位 Unit Price	金額 Amount
	Oil			30.00
	Oil			21.00
	Oil Filter			10.00
	Air Filter			30.00
	Ignition Coil			440.00
	Spark plugs			40.00
	labour			20.00

Bestform

A B C D E

Sub-total

Tax

Total : 668.00

668.00

Issued by: 15

Photo 9 shows a preventive maintenance record provided by Ms Ng.



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Shell autoserv
Car service centre

TAX INVOICE
GST REG NO.: 200010037K

MR. TAN BOON CHONG
92318536

Tax Invoice No: 00000001
Invoice Date: 01/02/2018
GST Payer:
Terms:
Page: 2

Regn. No: SPM48993 Make: HYUNDAI Model: HY SONATA

	Qty	U Price \$	Amount \$	\$
1. TIE ROD END (ORT)	2 PC	75.00	150.00	
BACK END (ORT)	2 PC	75.00	150.00	
3. LABOUR FOR SHOCKS/SUSPENSION TO DISMANTLE & RENEW ABOVE PARTS	1	60.00	60.00	
4. 4 WHEEL ALIGNMENT	1	60.00	60.00	

Grand Total 55 420.00
Less Discount 55 0.00
NETT TOTAL BEFORE GST 55 420.00
ADD GST @ 7% 35 29.40
NETT TOTAL AFTER GST 55 449.40
PAYMENT TYPE :

THANK YOU!

Customer's Signature

WARRANTY VALID ONLY FOR FAULTS REFERRED BACK TO OUR WORKSHOP ON 1ST PAGE

Authorized Franchisee of Shell autoserv (Singapore)
Auto/Service Sales Centre Pte Ltd Company Registration No: 2009-00274
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Photo 10 shows the latest wear & tear servicing record provided by Ms Ng.

19. Ms Ng also informed me that there was no modification(s) and/or additional electronic or electrical component(s) fitted on the Insured Vehicle. To the best of her knowledge, no other motor vehicle or property was affected by the fire incident.

20. We visited the incident location on 13th April 2018. The incident had occurred at an open space car park, right beside HDB Block 851 Yishun Street 81. The carpark serves both the residences and visitors. When driving through the carpark compound, parking lot number 109 was observed to be on the left side of the car park. Further observations on the ground, we found burnt marks/ burnt residual on the laid 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 851 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 109, 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 109, 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 laid bricks at the parking lot. This reveals that there's evidence that fire incident happen at the said spot.

21. 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.
22. In general, the information that could be gathered from these photographs had corresponded to the events that were related to me by Ms Ng. 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 - 16 below.



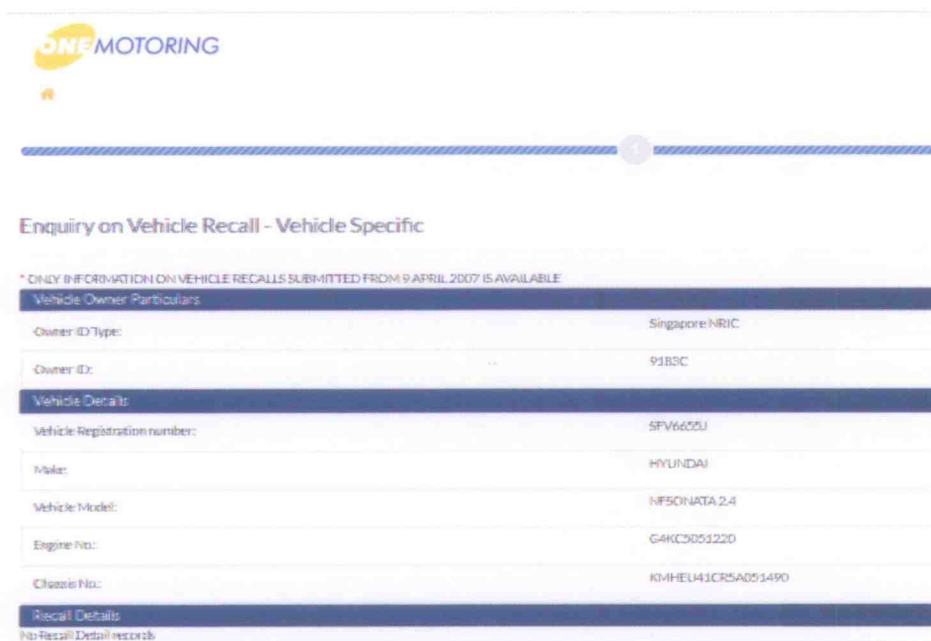
Photo 15 shows the Insured Vehicle at the incident scene. SCDF fire fighters were seen trying to extinguish the fire from the Insured Vehicle.



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

23. 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.
24. 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.
25. 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.

26. 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.
27. 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.



ONE MOTORING

Enquiry on Vehicle Recall - Vehicle Specific

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

Vehicle Owner Particulars	
Owner ID Type:	Singapore NRIC
Owner ID:	9183C

Vehicle Details	
Vehicle Registration number:	SFV665J
Make:	HYUNDAI
Vehicle Model:	INFOSOLATA 2.4
Engine No.:	G4KCS05322D
Chassis No.:	KTMHEU41CR5A051490

Recall Details	
No Recall Detail records	

Photo 17 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

28. 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 wiring leading to the Engine Control Module (ECM) of the Insured Vehicle.
29. 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.
30. 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.
31. 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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