



Your Ref: S8300950
Our Ref : CS/ASM18003398/N

8 March 2018

M/s AXA Insurance Pte Ltd

8 Shenton Way #24-01
AXA Tower
Singapore 068811
(Motor Claims Department)

**TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE
INSURED VEHICLE GY 830G ON 16 FEBRUARY 2018**

1. We refer to your letter dated 22 February 2018 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle GY 830G (herein referred to as "**Insured Vehicle**") are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 5 March 2018 at the premises of ComfortDelGro Engineering Pte. Ltd. (herein referred to as "**Comfort**") located at 205 Braddell Road, Singapore 579701.
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded:-

Vehicle Registration No.	: GY 830G
Make / Model	: KIA FRONTIER SC
Chassis No	: KNCSE011257049147
Year of Registration	: December 2004
Mileage	: N.A (battery melted)

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



Photo 2 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 Insured Vehicle as a result of exposure to environmental condition for a period of time.



Photo 3 shows the general view of the rear 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 Insured Vehicle as a result of exposure to environmental condition for a period of time.



Photo 4 shows the general view of the interior compartment of the Insured Vehicle at the time of our inspection. Its interior compartment was completely burnt as a result of the fire.



Photo 5 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. For this particular case, the fire appears to have originated within the engine compartment of the Insured Vehicle. This can be determined from the burn pattern and the high heat intensity burn marks (whitish burn marks) found as well as the rust that had developed on the underside of the passenger side engine access panel of the Insured Vehicle.
8. The whitish burn marks are a result of exposure to prolonged 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. The rust that had developed on the underside of the passenger side engine access panel of the Insured Vehicle is an indication that the engine compartment had sustained exposure to prolonged high heat intensity. See photo 6 below.



Photo 6 shows the whitish burn marks that were found on the underside of the passenger side engine access panel of the Insured Vehicle (circled). Such whitish burn marks are a result of exposure to prolonged heat intensity. Rust would also begin to develop on these areas soon after the fire. The development of rust is an indication that the area was exposed to prolonged exposure to high heat intensity, which had caused the steel/metal material of the passenger side engine access panel to be exposed to natural environmental condition. Hence the rust that had developed around the underside of the passenger side engine access panel of the Insured Vehicle (arrowed) is an indication that the fire to the Insured Vehicle had originated from the engine compartment.

9. Upon closer examination of the engine compartment, which was where the fire to the Insured Vehicle had likely started, we had found several stretches of wiring with green residue. These wirings were original factory fitted wirings that were around the centre portion of the engine compartment. We also found greenish residue on several stretches of wirings leading from the battery of the Insured Vehicle. The presence of greenish residue indicates internal heating of copper wires, a sign of an electrical short circuit occurring. The greenish residue is normally left behind from oxidation as a result of chemical reaction involving the copper wires. These physical evidences would appear to suggest that the cause of fire to the Insured Vehicle could have possibly been due to electrical in nature. See photos 7 - 11 below.



Photo 7 shows the wirings around the centre portion of the engine compartment which is near to the vicinity where the fire to the Insured Vehicle had likely started. We observed greenish residue on the wirings at the centre portion of the engine compartment (arrowed).



Photo 8 shows a closer view of the greenish residue found on the wirings at the centre portion of the engine compartment (arrowed). This seems to suggest the occurrence of an electrical short circuit.

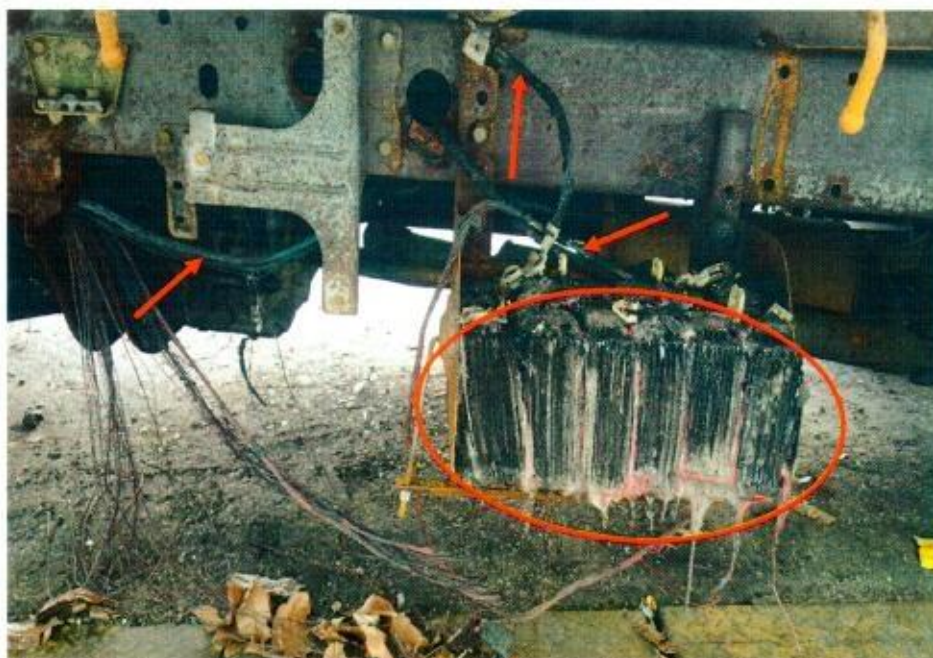


Photo 9 shows the wirings leading from the battery (circled) of the Insured Vehicle. We observed greenish residue on these wirings (arrowed).



Photo 10 shows a close up view of the greenish residue found on the wirings leading from the battery of the Insured Vehicle (arrowed). This seems to suggest the occurrence of an electrical short circuit.

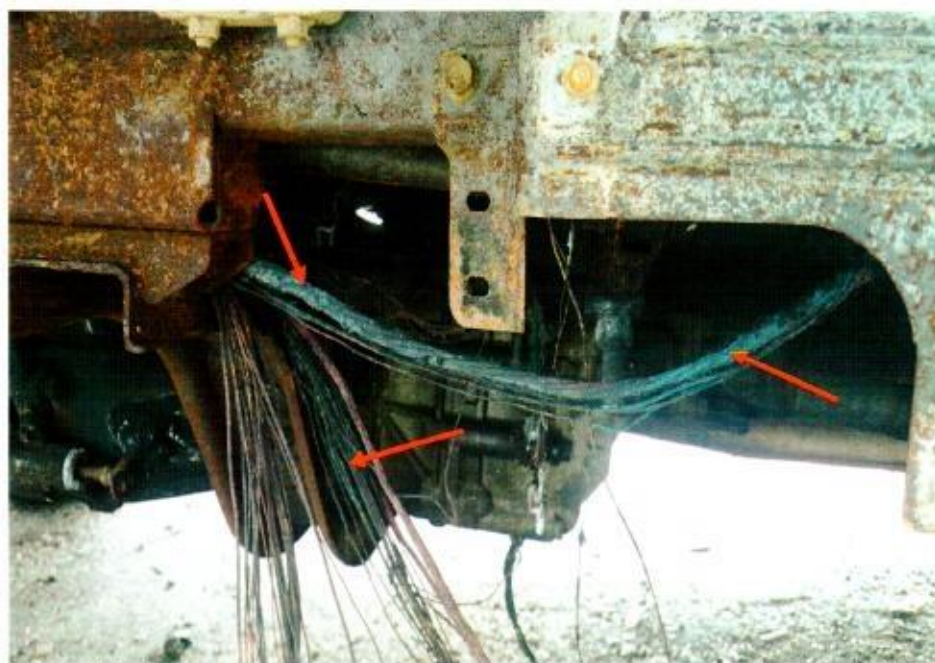




Photo 11 shows a close up view of the greenish residue found on the wirings leading from the battery of the Insured Vehicle (arrowed). This seems to suggest the occurrence of an electrical short circuit.

10. From the Singapore Accident Statement and the Police Report No. F/20180219/2129 which were made by Ms Sharifah Radiah binte Syed Abdul Rahman (herein referred to as "**Ms Sharifah**"), we note that the fire to the Insured Vehicle had started at a time when it was parked. Ms Sharifah was first alerted of the fire when she received a call from her employee.
11. We managed to speak to Ms Sharifah on 7 March 2018 where we were able to gather further information pertaining to the incident as well as the history of the Insured Vehicle. Ms Sharifah is the office administrator of S.A.R. Cleaning Services (herein referred to as "**SAR**") which is owned by her father, Mr Syed Abdul Rahman. Ms Sharifah mentioned that her employees were still in the office which is situated on the 4th floor when the incident happened. The Insured Vehicle was parked in an open carpark situated at the back of the office. An employee looked out the back window of the office and suddenly saw the Insured Vehicle on fire. That was when her employee immediately called Ms Sharifah at 2320 hours and subsequently the SCDF.
12. Ms Sharifah was at her home residence located at Block 613A Punggol Drive at the material time of incident. She immediately proceeded to the incident location. By the time she arrived at midnight, the fire was put out by the SCDF. Police were present at the incident location as well. Her statement was taken by the police. She also assisted the SCDF in their preliminary investigations. Ms Sharifah had called her insurance agent as she was making her way to the incident location. The tow truck arrived the following day on 17 February 2018 at 1000 hours. The Insured Vehicle was towed to Comfort. Ms Sharifah lodged a police report at the Punggol Neighbourhood Police Centre at 1508 hours and later proceeded to Comfort to make an insurance report at 1611 hours.
13. According to Ms Sharifah, the Insured Vehicle was parked at the office carpark since Wednesday, 14 February 2018 after a disposal job. The Insured Vehicle remained parked till the day of the incident. Ms Sharifah told us that her father was also overseas when the incident occurred. The Insured Vehicle was not allowed to be driven home. It was to be parked at the office at the end of the work day. Ms Sharifah and her father were the only ones who had the key to the Insured Vehicle. Therefore no employee could drive the Insured Vehicle without Ms Sharifah's or her father's knowledge.
14. We asked Ms Sharifah if there were any items placed in the interior compartment or at the rear carriage deck of the Insured Vehicle when it was parked. She informed us that there were no additional items placed in the interior compartment.



15. She did however mention that there was old furniture placed at the rear carriage deck from the last disposal job that needed to be disposed of. There were no electrical, electronic or flammable items placed at the rear carriage deck of the Insured Vehicle when the fire occurred.
16. Ms Sharifah added that the Insured Vehicle was only driven if there were any assignments that required transporting and/or disposing of bulky items.
17. With regard to the history of the Insured Vehicle, we were able to gather from Ms Sharifah that the Insured Vehicle was purchased new in 2004. The COE of the Insured Vehicle was also recently extended for another 5 years by her father. To the best of her recollection, there has not been any major mechanical problem and/or electrical problem with the Insured Vehicle hence the decision to renew the COE of the Insured Vehicle.
18. Pertaining to the maintenance aspect, Ms Sharifah sends the Insured Vehicle for periodic servicing. The Insured Vehicle was serviced at Shell Autoserv Car Service Centre (Novena) located at 324 Thomson Road.
19. The last servicing before the incident was done on 7 June 2017. We were able to obtain from Ms Sharifah a tax invoice of the most recent servicing done to the Insured Vehicle. The servicing package included the changing of engine oil and oil filter. See Invoice 1 below.


Shell autoserv
car service centre



TAX INVOICE
GST REG NO: 200010021R

MR. JIMON

Acc: MR. JIMON

Tax Invoice No: NV005436

Invoice Date: 07/06/2017

ODO Reading: 251753

Terms: Page: 1

Regn. No: GY8300

Make: KIA

Model: FRONTIER SC

Qty	U-Price \$	Amount \$	\$
1	49.00	49.00	
1	10.00	10.00	
1	25.00	25.00	
1	30.00	30.00	

1 SHELL RIMULA R4 X (XSLIT)

2 RIMULA R4X ENGINE OIL (1LIT)

3 OIL FILTER

4 LABOUR FOR LUB /ATF/FLUID

Grand Total

Less Discount

NETT TOTAL BEFORE GST

Add GST @ 7%

NETT TOTAL AFTER GST

PAYMENT TYPE : CASH

123.45

THANK YOU!

S\$ 115.37

S\$ 0.00

S\$ 115.37

S\$ 8.08

S\$ 123.45

Customer's Signature

Authorized Franchisee of Shell Autoserv (Singapore)

300N Service Auto Centre Pte Ltd (Company Registration No: 200010021R)

Business address: 51 Ubi Ave 1, #01-25 Paya Ubi Industrial Park, Singapore 408933

Shell Autoserv Novena

103 Mountbatten Road

Singapore 100007

Tel: 6752 8811 / 6752 8812 Fax: 6752 8813

Email: novena@shellautoserv.sg

Shell Autoserv Serangoon

100 Serangoon Road

Singapore 556941

Tel: 6542 4456 Fax: 6542 4457

Shell Autoserv Mandai

100 Uppr Changi Road

Singapore 727120

Tel: 6542 4456 Fax: 6542 4457

Shell Autoserv Tampines

511 Tampines Road

Singapore 507571

Tel: 6752 8811 Fax: 6752 8812

Shell Autoserv Singapore

511 Serangoon Road

Singapore 556941

Tel: 6542 4456 Fax: 6542 4457

We stand behind our work. That's why we give you a printed service warranty or 3 months, up to 50,000 km, whichever comes first.

Invoice 1 shows the latest servicing package done on the Insured Vehicle on 7 June 2017 at Shell Autoserv Car Service Centre (Novena) (red arrows). It included the changing of engine oil and oil filter (circled).

20. Ms Sharifah also managed to provide us a test certificate issued by STA Inspection Centre to prove that the Insured Vehicle had passed the yearly vehicle inspection on 19 December 2017. See Inspection Certificate 1 below.

TEST CERTIFICATE

NO. STAA0181923

Land Transport Authority

THE ROAD TRAFFIC ACT
(CHAPTER 276)

This is to certify that motor vehicle with registration No. **GY830G** was examined under section 90 of the Road Traffic Act and that at the date of the examination the prescribed statutory requirements were complied with in relation to the vehicle.

Date of issue: **19/12/2017**

Reference No: **LA171219052**

STA Inspection Pte Ltd



KEEP THIS CERTIFICATE SAFELY

CHECK carefully that the particulars specified above are correct. A test certificate showing any alteration should not be issued or accepted as this may delay the renewal of a vehicle licence.

For the purpose of renewing road tax, this Certificate must be presented within **3 months** from the date of issue.

WARNING:

A test certificate should not be accepted as evidence of the satisfactory mechanical condition of a vehicle offered for sale.



STA Inspection Pte Ltd
Sta-Ming Centre
400, Selegie Road
Singapore 378077
Tel: 8559621100
Fax: 8559621041
Email: sta@sta.com.sg
P.O. Box 12, 187554 S2
P.O. Box 12, 187554 S2

John Boon Lay Centre
200, Selegie Road
Singapore 378077
Tel: 8559621110
Fax: 8559621041

STAA0181923

Inspection Certificate 1 shows the test certificate issued to Ms Sharifah by STA Inspection Centre (circled) to prove that the Insured Vehicle had passed the yearly vehicle inspection on 19 December 2017 (arrowed).

21. To the best of her recollection, there has not been any major mechanical problem and/or electrical problem with the Insured Vehicle. Ms Sharifah also informed us that ever since her father purchased the Insured Vehicle, neither she nor her father have done any modification(s) and/or additionally fitted any electrical or electronic component(s) to the Insured Vehicle.

Site Inspection

22. With the information gathered, we visited the incident location on 8 March 2018 taking the reports made by Ms Sharifah and the information that we had gathered from her as references.
23. Firstly, we note that the incident had occurred at the open carpark at the back of the SAR office located at 541 Balestier Road.
24. There is a CCTV camera affixed on the wall at the front left side of the office building, facing the carpark exit. However there is no camera affixed at the rear of the office building. We did notice that there was a CCTV camera facing the open carpark where the incident occurred which is affixed on the wall of the hotel located next to the office building. However we were unable to view or obtain the footage for security reasons.
25. At the time of visit, we observed burn marks and/or burnt residual remains on the ground where the Insured Vehicle was parked. We also found burn marks on the kerb, fence and trunk of a tree nearest to where the Insured Vehicle was parked when the fire occurred. Although the lower portion of the outer walls of the office building above where the Insured Vehicle was parked had been repainted, the upper portion of the outer walls were still covered in soot. Apart from the burn marks on the kerb, fence and tree trunk as well as soot on the outer walls, we did not observe any other damaged or newly replaced property at the time of our visit to the incident location. See photos 12-20 below.



Photo 12 shows the front of the SAR office located at 541 Balestier Road. There is a CCTV camera affixed on the wall at the front left side of the office building, facing the carpark exit (circled). However there is no camera affixed at the rear of the office building.



Photo 13 shows a closer view of the CCTV camera affixed on the wall at the front left side of the office building, facing the carpark exit (circled).



Photo 14 shows the open carpark at the back of the SAR office located at 541 Balestier Road. We did notice that there was a CCTV camera facing the open carpark where the incident occurred which is affixed on the wall of the hotel located next to the office building (circled).



Photo 15 shows a closer view of the CCTV camera facing the open carpark where the incident occurred which is affixed on the wall of the hotel located next to the office building (circled). However we were unable to view or obtain the footage for security reasons.



Photo 16 shows a closer view of the burnt marks and/or burnt residual remains on the ground where the Insured Vehicle was parked at the time of incident. We also found burn marks on the kerb, fence and trunk of a tree nearest to where the Insured Vehicle was parked when the fire occurred (circled).



Photo 17 shows a close up view of the burn marks on the kerb nearest to where the Insured Vehicle was parked when the fire occurred (circled).



Photo 18 shows a close up view of the burn marks on the fence and trunk of a tree nearest to where the Insured Vehicle was parked when the fire occurred (circled).



Photo 19 shows although the lower portion of the outer walls of the office building above where the Insured Vehicle was parked had been repainted (arrowed), the upper portion of the outer walls were still covered in soot (circled).



Photo 20 shows a close up view of the upper portion of the outer walls of the office building that were still covered in soot as a result of the fire.

Incident Scene Photographs

26. We were able to obtain photographs from Ms Sharifah which were taken by her employees and herself at the incident location. The photographs were taken during the fire and after the fire to the Insured Vehicle were extinguished.
27. In general, the information that could be gathered from these photographs had corresponded to the events that were related to us by Ms Sharifah. 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 where the Insured Vehicle was parked. See photos 21 – 23 below.



Photo 21 shows the Insured Vehicle engulfed in flames before the arrival of the SCDF.



Photo 22 shows the SCDF conducting preliminary investigations after the fire to the Insured Vehicle was extinguished.



Photo 23 shows the rear portion of the Insured Vehicle after the fire was extinguished. In general, the information gathered from this photograph had corresponded to Ms Sharifah's statement, which is there was old furniture placed at the rear carriage deck of the Insured Vehicle when the fire started (circled).

28. 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 when the Insured Vehicle was parked and the engine was switched off for a period of time (about 48 hours).
29. The possibility of the fire being due to external factors (foreign material(s) stuck on hot surfaces, arson and sabotage amongst others) may be possible given that there was furniture (sofa and chairs) placed at the rear carriage deck of the Insured Vehicle and office windows directly above the location where the Insured Vehicle was parked. Moreover the location where the Insured Vehicle was parked was also not a location where there is large volume of human or vehicular movement. However during the course of our investigations, we were unable to gather concrete evidence to suggest this was the actual cause of fire.
30. The possibility of the fire being due to electrical in nature is also possible. The fire being due to electrical in nature is also supported by the condition of the wirings that were found in the engine compartment of the Insured Vehicle, which was earlier discussed in paragraph 9 above.
31. 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.
32. 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 search result from LTA below.

Enquiry on Vehicle Recall - Vehicle Specific

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

Vehicle Owner Particulars

Owner ID Type: Business

Owner ID: 1700C

Vehicle Details

Vehicle Registration number: GYB3002

Make: KIA

Vehicle Model: FRONTIER SC

Engine No: J2399976

Chassis No: KNC66011257049147

Recall Details

No Recall Detail records

OK

Local Expansion

A

Conclusion

33. 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 likely due to either:-

- External factors where the flames from the origin source had spread to the Insured Vehicle. However the origin of the fire could not be determined as we were unable to view the video footage of the hotel's CCTV camera which was facing the open carpark where the incident occurred. Our examination of the scene photographs provided to us by Ms Sharifah also did not reveal any unusual material(s)/object(s) found on the ground near where the Insured Vehicle had caught fire;
- electrical in nature where the fire had originated along the wirings inside the engine compartment, somewhere around the centre portion of the engine. The wirings were original factory wirings leading from the battery of the Insured Vehicle.

34. 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.
35. 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.
36. 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.
37. SCDF was activated to attend to the fire incident and a fire report pertaining to their findings will likely be forth coming. We have applied for this fire report and will forward a copy of the report once it is made available to us.

**Muhd Nazril**

Technical Investigator

**Ang Bryan Tani**

AMSOE, AMRTE, AFF SAE, M.MATAI, AFF.Inst.AEA

Senior Technical Investigator

Technical Investigation & Reconstructionist (SAE-A)

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