LKK Auto Consultants Pte Ltd
Company Registration No. 199607198R
51 UBI AVE 1, #01-25 PAYA UBI INDUSTRIAL PARK, SINGAPORE 408933 TEL : (065) 62563561 FAX : (065) 67414108

Your Ref: S9M01X83
Our Ref : CS/ASM19014457/P

11th September 2019

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 YN 5078Z ON 8th AUGUST 2019

1. We refer to your letter dated 16th August 2019 and the instructions therein.

2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle YN 5078Z (herein referred to as **"Insured Vehicle"**) are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 13th July 2018 at the premises of Automobile Integrated Management Pte. Ltd (herein referred to as **"AIM"**) located at 23 Kaki Bukit Avenue 4 #04-01, Singapore 415933.

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

Vehicle Registration No.	: YN 5078Z
Make / Model	: MISTSUBISHI CANTER
Chassis No	: FEB21EA00275
Year of Registration	: 17 APRIL 2014
Mileage	: 178,916KM

5. The Insured Vehicle was noted to have sustained fire damage that was confined to its rear cargo compartment. The fire damage was observed to be most severe at its rear cargo compartment. The front cabin portion of the Insured Vehicle was relatively unaffected by the fire except for the rear cargo compartment. The rear cargo compartment of the Insured Vehicle was affected as a result of the fire.

6. The fire had resulted in the contents and body parts of the rear cargo cabin of the Insured Vehicle to be burnt. The contents of the cargo compartment had included a personal mobility device (PMD), hand trolleys, several printer toner cartridges and other items were also damaged. The ceiling, a sliding door, walls and the rear lift gate as well as other parts of the Insured Vehicle had sustained heat and smoke damage See photos 1 – 8 below.

Photo 1 shows the front view of the Insured Vehicle at the time of our inspection. The fire damage to the Insured Vehicle was confined to its rear cargo compartment. The front cabin portion of the Insured Vehicle was relatively unaffected by the fire except for the rear cargo portion.

Photo 2 shows the recorded mileage of the Insured Vehicle at the time of inspection 178,916km.

Photo 3 shows the right side view of the Insured Vehicle at the time of our inspection. The front cabin portion of the Insured Vehicle was relatively unaffected by the fire except for the rear cargo compartment. The fire damage to the Insured Vehicle was confined to its rear cargo compartment (circled).

Photo 4 shows the left rear view of the Insured Vehicle at the time of our inspection. The front cabin of the Insured Vehicle was relatively unaffected by the fire except for the rear cargo compartment. The fire damage to the Insured Vehicle was confined to its rear cargo compartment. The fire damage was observed to be most severe at its rear cargo compartment (circled).

Photo 5 shows the interior contents in the rear cargo compartment of the Insured Vehicle at the time of our inspection. The fire damage to the Insured Vehicle was confined to its rear cargo compartment.

Photo 6 shows the interior contents in rear cargo compartment of the Insured Vehicle at the time of our inspection. The contents included a Personal Mobility Device (PMD) (circled) and a hand push trolley (yellow arrowed) which was observed to have sustained heat and smoke damage, a result of the fire incident.

Photo 7 shows the interior contents in rear cargo compartment of the Insured Vehicle at the time of our inspection. The contents included a several printer toner cartridges (circled) and other items around the area were also damaged (yellow arrowed), as a result of the fire.

Photo 8 shows the exterior body of the rear cargo compartment of the Insured Vehicle at the time of our inspection. The contents included a sliding door, the ceiling, walls (circled) and the rear lift gate (yellow arrowed), as a result of the fire.

7. At the time of inspection of the Insured Vehicle, we that observed that there was additional electronic audiophile equipment, which included a subwoofer, an audio amplifier and a set of stereo bookshelf speaker fitted in the front cabin compartment of the Insured Vehicle. See photo 9 – 10

Photo 9 shows a subwoofer (arrowed) mounted at the foot well area in the front cabin compartment of the Insured Vehicle at the time of our inspection.

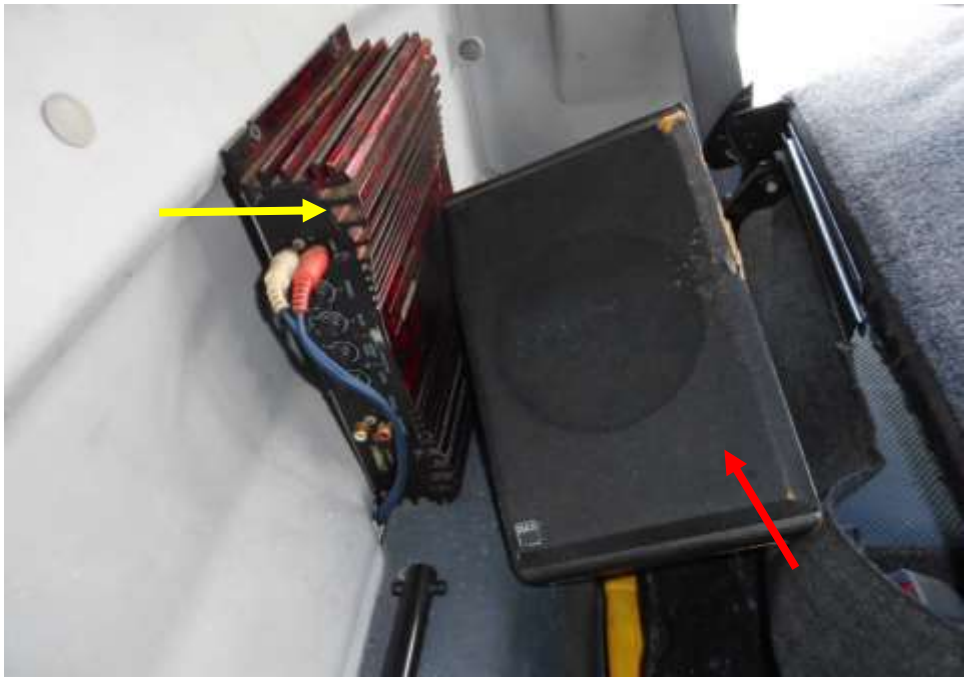

Photo 10 shows the audio amplifier (yellow arrow) and the stereo bookshelf speaker (red arrow) mounted behind the passenger seat of the front cabin compartment of the Insured Vehicle at the time of our inspection.

Investigation and Technical Analysis

8. For this particular case, the fire appears to have originated from the inside of the rear cargo compartment of the Insured Vehicle. However observed the focus fire damage point is more at the rear right portion of the Insured Vehicle, where the switch and wirings leading up to the interior ceiling lightings are located as the nature of fire damage was confined to these particular areas. This can be determined from the burn pattern of the switch wirings, remains of combustible items and burned body panel of the Insured Vehicle. The items and the body panels at the rear right and ceiling were observed to have been burned to ashes, body panels melted from the high heat intensity and the high heat intensity burn marks (whitish burn marks) was found on the metal surface of the rear tailgate and the melted down metal body panels on the Insured Vehicle. Rust had also developed on these metal frames.

9. 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 whitish burn marks on the rear tail gate surface and the rust that had developed on the metal frames of the rear cargo compartment is an indication that the rear portion of the Insured Vehicle had sustained exposure to prolonged high heat intensity. See photos 11 - 12 below.

Photo 11 shows the exterior view of the rear tailgate as well as the exposed rear cargo compartment of the Insured Vehicle which is situated at the rear of the Insured Vehicle at the time of our inspection. The rear right portion of the tailgate belonging to the Insured Vehicle was observed to be significantly burned by the fire (circled).

Photo 12 shows the rear interior portions of the Insured Vehicle, where the rear tail gate and rear cargo compartment frame are located. Whitish burn marks and rust on the metal frame of the cargo compartment (yellow arrow) was observed as a result of exposure to prolonged heat intensity. The nature of fire damage was confined to these particular areas (circled).

10. Upon closer examination of the rear cargo compartment portion of the Insured Vehicle which was where the fire had likely started, we had found traces of greenish residue on the wirings leading from the switch panel to the ceiling light. 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.

11. Due to the intensity of the fire, the ceiling light of the Insured Vehicle was burned into ashes. However, we were able to trace the likely cause of where the fire had started. This physical evidence would then appear to suggest that the cause of fire to the Insured Vehicle could have possibly been due to electrical in nature. See photos 13 - 18 below.

Photo 13 shows the rear right portion of the Insured Vehicle, where the fire had likely started. We observed the switch panel of the ceiling light mounted on the metal frame of the rear cargo compartment. The switch panel (yellow arrow) was burnt with expose wiring and traces of greenish residue on these wirings (circled). The wirings lay out from the switch panel through the metal frame and body panels to the ceiling lights of the Insured vehicle. The presence of such 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. This physical evidence would then appear to suggest that the cause of fire to the Insured Vehicle could have possibly been due to electrical in nature.

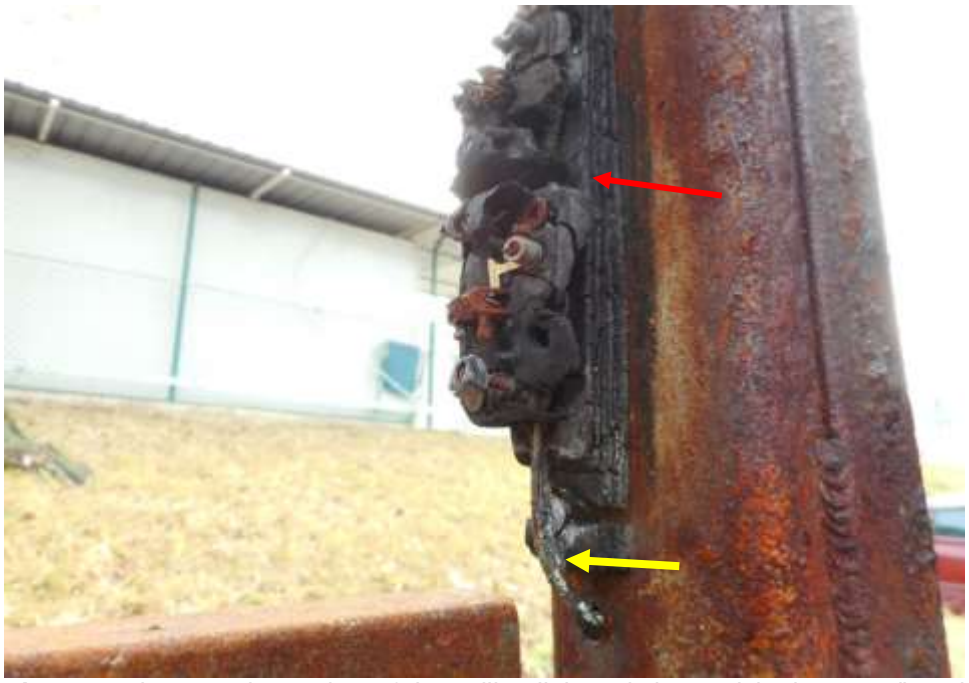

Photo 14 shows a closer view of the ceiling light switch panel (red arrowed) and the wirings to the ceiling light of the rear cargo compartment of the Insured Vehicle. We observed traces of greenish residue on these wirings (arrowed). The presence of such greenish residue indicates internal heating of 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. This physical evidence would then appear to suggest that the cause of fire to the Insured Vehicle could have possibly been due to electrical in nature.

Photo 15 shows a closer view of the wirings from the switch panel running through the right side body panel. Greenish residue found on the wirings leading to the ceiling lights of the Insured Vehicle (arrowed). This seems to suggest the occurrence of an electrical short circuit.

Photo 16 shows a view of the wirings from the right side panel body panel laid through a hole on the centre metal frame up to the ceiling light. We observed that the wirings from the exterior of the centre metal frame laid back into the inside of the metal frame. Greenish residue found on the wirings leading to the ceiling lights of the Insured Vehicle (circled). This seems to suggest the occurrence of an electrical short circuit.

Photo 17 shows a closer view of the wirings from the right side panel body panel laid through a hole on the centre metal frame up to the ceiling light. Greenish residue found on the wirings leading to the ceiling lights of the Insured Vehicle (circled). This seems to suggest the occurrence of an electrical short circuit.

Photo 18 shows a view of the ceiling and body panels of the rear cargo compartment of the Insured vehicle. The fire observed to have likely started from the wiring of the ceiling light to the switch panel, due to the intensity of the fire that have melted the whole of the ceiling (red circle) and rear right body panel (yellow circle).

12. We managed to speak to Mr Chew on 17th September 2019 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. From the Singapore Accident Statement which was made by Mr Chew Beng Ann (herein referred to as **"Mr Chew"**), we note that the fire to the Insured Vehicle had started at a time when it was parking stationary. Mr Chew was not in the Insured Vehicle when the fire started. He was first alerted of the fire by his friends.

14. According to Mr Chew, the Insured Vehicle caught fire at about 2300hrs on 08th August 2019; he was attending an event at an open space near block 374 Bukit Batok Street 31. He mentioned at the Insured Vehicle had been left parked stationary for about 1hr 30min and left the vicinity. He was first alerted by his friends, that the Insured Vehicle was emitting smoke; was he proceed to the scene and upon arriving he observed that the Insured Vehicle was emitting smoke from the gaps of the rear cargo compartment. He rushed to open the sliding door of the compartment to inspect the source and upon opening the sliding door fire and smoke was coming out from the interior of the cargo compartment.

15. Upon witnessing the fire, Mr Chew and bystanders contacted the SCDF. They took pails of water and bottles of fire extinguisher in attempt to control the fire, but to no avail as due to the intensity of the fire and the combustible materials feeding the fire, they had no choice but to wait for SCDF assistance. SCDF arrived shortly on scene and the fire was extinguished fairly quickly. Mr Chew had his statement taken by the SCDF officers.

16. Mr Chew subsequently contacted his company of the incident and they made towing arrangements to have the Insured Vehicle towed to Automobile Integrated Management Pte. Ltd and made an insurance report on 15th August 2019 at 1637 hours

17. The Insured Vehicle belongs to PN-I Services Pte Ltd which core business is in printers and printer supplies where Mr Chew is a working as a delivery driver. Mr Chew uses the Insured Vehicle for delivery purposes. He is the only driver of the Insured Vehicle and the Insured Vehicle was purchased brand new and used for 5 years prior to the fire incident.

18. Mr Chew 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 prior to the fire.

19. With regard to the history of the Insured Vehicle, we were able to gather from Ms Sharon, the lady boss of the company. To the best of her recollection, there has not been any major mechanical problem and/or electrical problem with the Insured Vehicle.

20. Pertaining to the maintenance aspect, Mr Chew sends the Insured Vehicle for periodic servicing. The last servicing was on 04th April 2019 and LTA inspection on 11th April 2019 prior to the incident.

21. To the best of his recollection, he mentioned that he had fitted additional electronic audiophile equipment, which included a subwoofer, an audio amplifier and a set of stereo bookshelf speaker fitted in the front cabin compartment of the Insured Vehicle.

22. Given the circumstances of the incident as reported, the possibility of the cause of fire to the Insured Vehicle being due to engine overheating would seem unlikely as Mr Chew had mentioned to us there were no indications of abnormally high temperatures when he was driving the Insured Vehicle on the day of the incident. Moreover, the Insured Vehicle engine was able to be started at the material time of inspection.

23. 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 fire occurred as Mr Chew informed that he first observed smoke emitting out from the gaps of the enclosed rear cargo compartment of the Insured Vehicle. The location where the Insured Vehicle caught fire was also observed to be not at a secluded location.

24. The possibility of the fire being due to electrical in nature would then seem more likely given that engine overheating and external factors would both seem unlikely. The fire being due to electrical nature is also supported by the condition of the wirings that were found leading from the switch panel to the ceiling light of the Insured Vehicle, which was earlier discussed in paragraph 8 above and stated in the SCDF's fire report.

25. 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 Inspection Certification below.

CHIN NAM HUP KEE MOTOR WORKS PTE LTD

160 SIN MING DRIVE #07-18/19 SIN MING AUTOCITY
SINGAPORE 575722
Tel: 6453 6112 Fax: 6562 2981
ROC No: 201400858E GST REG. NO.: 201400858E

TAX INVOICE

Bill To:

PN-I SERVICES PTE LTD
21 BUKIT BATOK CRESCENT #24-73, WCEGA TOWER
SINGAPORE 658065

Phone : 6578 3777

Invoice No : 00025145
Date : 04-04-19
Make/Model : MITSUBISHI FUSOFEB21
Vehicle No. : YN5078Z
Mileage : 169013KM
Terms : Net EOM after EOM
Due Date : 31-05-19

Product	Description	Unit	Amount
TOW1	TOW CHARGES	1 UNIT	S$90.00
L3	CALTEX DELO 400 FULLY SYNTHETIC ENGINE OIL	6 L	S$48.00
OFMS1R	OIL FILTER EURO5	1 PC	S$20.00
AFMS2R	AIR FILTER ELEMENT EURO 5	1 PC	S$60.00
DFMS4R	DIESEL FILTER FUSO FEB21	1 PKG	S$28.00
G4	GENERAL SERVICE AND MULTI POINT CHECK	1 UNIT	S$30.00
ALMS2RB	ALTERNATOR (REBUILT) FEB21 EURO 5 SUPPLY AND REPLACE ABOVE PARTS	1 PKG	S$350.00
FBMS6	MITSUBISHI FAN BELT FUSO FEB21	1 PKG	S$75.00
BTV2	VOLTA 120-7L BATTERY	2 PC	S$270.00
LA13B	GREASE UNDERCARRIAGE	1 PKG	S$15.00
/	BOTH FRONT TYRE OUTER WEAR. KIV	1	

Remarks: LEONG

Service Staff : KELVIN POH

Note
Interest for late payment will be charged at 1% per month on overdue invoices

I certify that I have received all products in good condition and confirm that all services have been satisfactorily completed. I understand that goods sold are not returnable and hereby absolve Chin Nam Hup Kee Motor Works Pte Ltd of any liability arising from use thereafter.

Total	S$976.00
7% GST	S$68.32
Total Inc GST	S$1,044.32

O/C YN5078Z

Customer's Signature/ Company Stamp

Chin Nam Hup Kee Motor Works Pte Ltd.

Invoice 1 shows the last periodical servicing done on the Insured Vehicle at Chin Nam Hup Kee Motor Works Pte Ltd. On 04th April 2019 (red arrows) prior to the fire, which had included the, standard engine oil change and replacements of wear and tear parts. None was related to and could have caused the fire.

REV. 11

TEST CERTIFICATE

No. BB01401260BB2

Land Transport Authority

THE ROAD TRAFFIC ACT (CHAPTER 276)

This is to certify that the motor vehicle with registration no: YM5078Z 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.

VICOM INSPECTION CENTRE (PTE LTD)

11/Apr/2019
Date of issue

Authorised signatory

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.

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

VICOM INSPECTION CENTRE PTE LTD

VICOM (Sin Ming)
305 Sin Ming Drive
Singapore 575718
Tel: 6458 4555

VICOM (Changi)
20 Changi North Crescent
Singapore 499613
Tel: 6545 4808

VICOM (Bt Batok)
511 Bt Batok Street 23
Singapore 659545
Tel: 6567 7111

VICOM (Yishun)
501 Yishun Industrial Park A
Singapore 768732
Tel: 6755 9028

VICOM (Kaki Bukit)
23 Kaki Bukit Ave 4
Singapore 417943
Tel: 6749 5422

LTA Certification shows the latest annual LTA inspection done on the Insured Vehicle at Vicom Inspection centre On 11th April 2019 (red arrows) prior to the fire,

Enquiry on Vehicle Recall - Vehicle Specific

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

Vehicle Owner Particulars		
Owner ID Type:	Company	
Owner ID:	828W	
Vehicle Details		
Vehicle Registration number:	YN5078Z	
Make:	MITSUBISHI	
Vehicle Model:	CANTER FE821ER4SDEB	
Engine No.:	4P10A99900	
Chassis No.:	FE821EA00275	
Recall Details		
1	Recall No.:	R2016050246
	Manufacturer Recall Date:	27 Apr 2016
	Estimated Completion Year of Recall:	2017
	Brief Description (As Provided by Motor Dealer):	MATERIALS OF FUEL RETURN HOSE WERE NOT SUITABLE AGAINST CHEMICALS FROM PAINT, SHAMPOO OR GREASE, WHICH ARE USED DURING REAR BODY BUILDING OR WASHING.
	Date Rectified:	18 Jan 2017
	For more details, contact GOLDBELL ENGINEERING PTE LTD	
	Hotline Information:	CALL CENTRE at 68640698
2	Recall No.:	R2018080566
	Manufacturer Recall Date:	30 Jul 2018
	Estimated Completion Year of Recall:	2020
	Brief Description (As Provided by Motor Dealer):	The airbag ECU wiring harness, which has been secured between cabin front metal bracket and front top edge of ECU bracket may in isolated cases be squashed or sheared off due to this routing.
	Date Rectified:	09 Jan 2019
	For more details, contact GOLDBELL ENGINEERING PTE LTD	
	Hotline Information:	EUGENE SEE CHAO-SHAN at 68640680

Recall 1 & 2 shows the recall details of the Insured Vehicle, this recall package consist of the replacements of components for the replacement of the fuel return hose and the Airbag wiring harness, both of which were rectified on 18th January 2017 and 09th January 2019 on the Insured Vehicle. This components however has is no relation to the cause of the fire. (arrowed).

SINGAPORE CIVIL DEFENCE FORCE

FIRE REPORT

1. GENERAL INFORMATION	
INCIDENT NO. : /20190808/0929	LOCATION OF FIRE:
FIRE REPORTED ON : 08 August 2019	Open space near Block 374 Bukit Batok Street 31 Singapore 650374
TIME OF CALL : 23:19:24 hrs	
STATION COVERAGE : Bukit Batok Fire Station	

2. INCIDENT INFORMATION

FIRE INVOLVED: A ceiling light at the cargo compartment of a Mitsubishi Fuso Canter lorry (YN5078Z).

METHOD OF EXTINGUISHMENT: By SCDF crew using a hose reel jet and a 38mm hose line jet from fire appliance.

PROBABLE CAUSE OF FIRE: Accidental (Electrical origin at the ceiling light)

DAMAGE SUSTAINED: As a result of the fire, the ceiling light was damaged. The contents of the cargo compartment comprising a personal mobility device (PMD), two hand push trolleys, several printer toner cartridges and other items were also damaged. The ceiling, a sliding door, walls and liftgate, as well as other parts of the lorry, sustained heat and smoke damage. The tentage adjacent to the lorry sustained heat damage.

3. FATALITY/INJURY INFORMATION

NAME	PIN/FIN	ADDRESS	DEAD/INJURIES SUSTAINED
NIL	NIL	NIL	NIL

REPORT CERTIFIED TRUE AND CORRECT BY:

CINDY HAN
for COMMISSIONER
SINGAPORE CIVIL DEFENCE FORCE

This is a computer generated Fire Report. No signature is required.

SCDF Report shows the incident details of the Insured Vehicle, their findings to the result of the fire was stated as of electrical nature, electrical origin at the ceiling light due to short circuit. (arrowed) Our findings also revealed signs of short circuit from the wirings of the ceiling lights to its switch panel at the rear cargo compartment of the Insured Vehicle.

Conclusion

26. 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 ceiling light wirings leading from the switch of the Insured Vehicle due short circuit.

27. 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.

28. There were additional electronic audiophile equipment, which included a subwoofer, an audio amplifier and a set of stereo bookshelf speaker fitted in the front cabin compartment of the Insured Vehicle. However they are inspected and not related to the cause of fire.

29. 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.

Sherwin Beh
Technical Investigator

Ang Bryan Tani
AMSOE, AMIRTE, AFF SAE, M.MATAI, AFF.Inst.AEA
Senior Technical Investigator
Technical Investigation & Reconstructionist (SAE-A)