



Your Ref: S9M020Q0  
Our Ref : CS/ASM19016412/N

20 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 PA 2621A ON 12 SEPTEMBER 2019**

1. We refer to your letter dated 17 September 2019 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle PA 2621A (herein referred to as "**Insured Vehicle**") are set out below.

#### **Inspection of the Insured Vehicle**

3. The Insured Vehicle was physically inspected on 20 September 2019 at the premises of Aero Supply Chartered Bus & Transport Trading (herein referred to as "**Aero**") located at 3 Kwong Min Road, Singapore 628706.
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded:-

Vehicle Registration No.	: PA 2621A
Make / Model	: NISSAN JP252LSNRA
Chassis No	: JP252LSN00011
Year of Registration	: April 2001
Mileage	: N.A. (wiring affected)

5. The exterior body of the Insured Vehicle had sustained fire damage at the top portion as well as rear portion. Affected parts had included the side mirrors, roof, windows, rear panels, both windscreens and engine panel, amongst others. The engine compartment of the Insured Vehicle had sustained severe fire damage. The interior compartment of the Insured Vehicle was completely burnt. See photos 1 – 7 below.



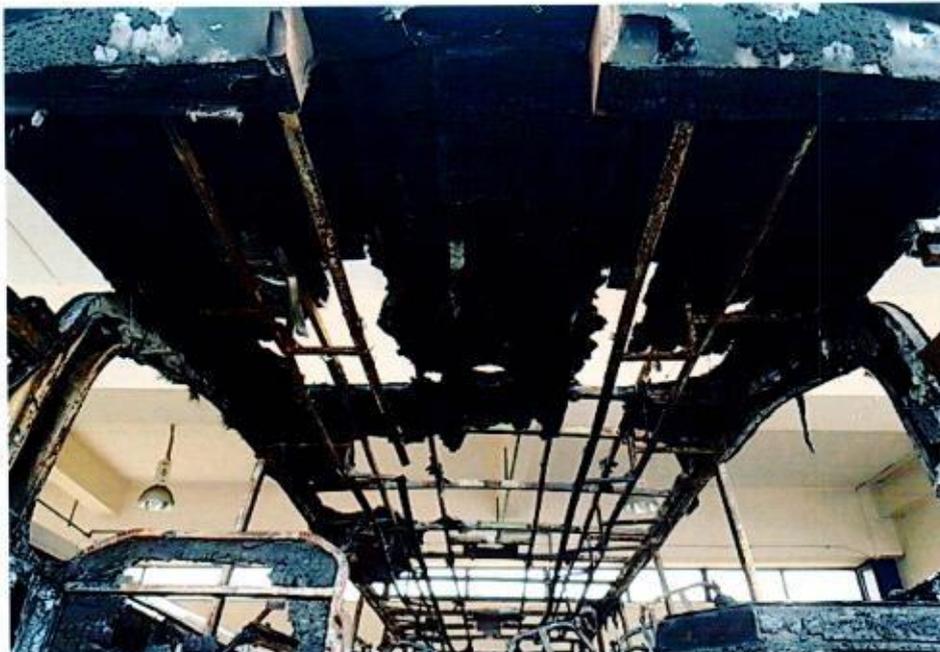
**Photo 1** shows the general view of the front portion of the Insured Vehicle at the time of our inspection. The front portion of the Insured Vehicle was significantly affected by the fire.



**Photo 2** shows the general view of the left portion of the Insured Vehicle at the time of our inspection. The exterior body of the Insured Vehicle had sustained fire damage at the top portion as well as rear portion. Affected parts had included the side mirrors, roof, windows, rear panels, both windscreens and engine panel, amongst others.



**Photo 3** shows a closer view of the left rear portion of the Insured Vehicle at the time of our inspection. The fire damage was observed to be more severe at its left rear portion.



**Photo 4** shows the general view of the top portion of the Insured Vehicle at the time of our inspection. The roof of the Insured Vehicle had sustained severe fire damage.



**Photo 5** shows the general view of the rear portion of the Insured Vehicle at the time of our inspection. The Insured Vehicle had sustained severe fire damage at the rear portion.



**Photo 6** shows a general view of the engine compartment of the Insured Vehicle at the time of our inspection. The engine compartment of the Insured Vehicle was severely affected by the fire. Most of the parts inside the engine compartment were found to be completely burnt and/or melted as a result of the fire.



Photo 7 shows the interior cabin of the Insured Vehicle at the time of inspection. The interior rear cabin was completely burnt.

6. 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.

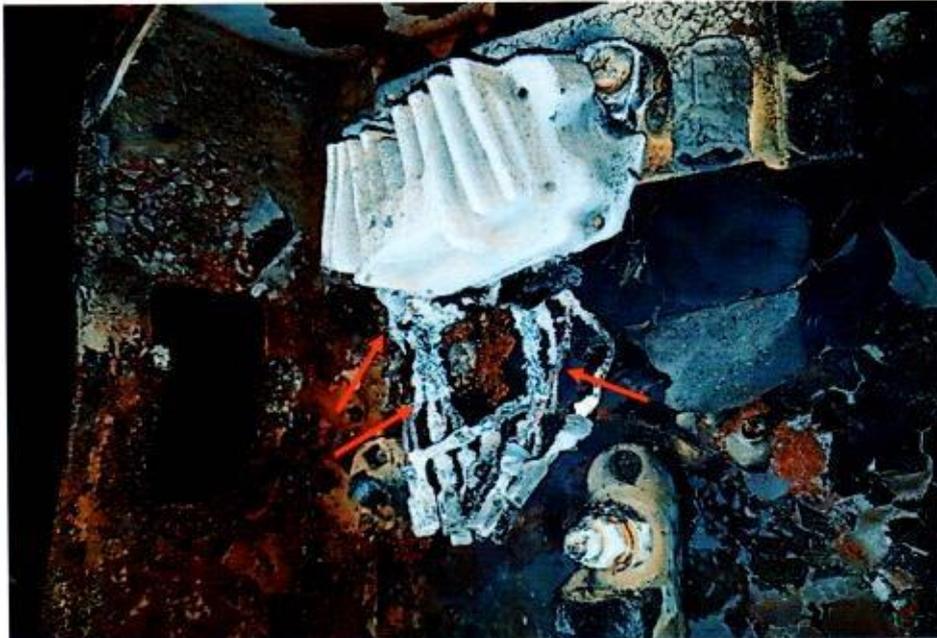
### **Investigation and Technical Analysis**

7. For this particular case, the fire appears to have originated within the engine compartment of the Insured Vehicle, somewhere around the rear right portion of the engine compartment. This can be determined from the nature of the fire damage which was more extensive at the rear right portion. Basing on the circumstances of the fires' origin at the material time of incident as well as examining the area where the extent of fire damage was most severe, we can determine that the fire had likely started from the rear right portion of the engine compartment of the Insured Vehicle.

8. Upon closer examination of the rear right portion of the engine compartment of the Insured Vehicle as well as around the immediate vicinity to where the fire had likely started, we had found greenish residue on several burnt stretches of original factory fitted wirings around the rear right portion of the engine compartment. 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. See photos 8 - 10 below.



**Photo 8** shows a closer view of the rear right portion of the burnt engine compartment of the Insured Vehicle. Upon closer examination, we had found greenish residue on several burnt stretches of original factory fitted wirings around the rear right portion of the engine compartment (circled).



**Photo 9** shows a close up view of the greenish residue found on several burnt stretches of original factory fitted wirings, around the rear right portion of the engine compartment (arrowed) 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.



**Photo 10** shows a closer view of the greenish residue that was found on several burnt stretches of original factory fitted wirings around the rear right portion of the engine compartment (arrowed) of the Insured Vehicle. This seems to suggest the occurrence of an electrical short circuit.

9. From the Singapore Police Report No. J/20190914/2032 and Accident Statement which was made by Mr Khor Gim Bee (herein referred to as “Mr Khor”), who is the driver of the Insured Vehicle, we note that the fire to the Insured Vehicle had started at a time while he was driving the Insured Vehicle. Mr Khor was first alerted of the fire when he saw smoke emitting from the rear of the Insured Vehicle.
10. We managed to speak to Mr Khor where we were able to gather further information pertaining to the incident as well as information pertaining to the history of the Insured Vehicle.
11. According to Mr Khor, on 12 September 2019 at around 2010 hours he had just dropped off passengers at Teban Gardens and was headed to the heavy vehicle carpark at Bukit Batok. He was driving along the Jurong East flyover when he saw white smoke emitting from the rear of the Insured Vehicle. He then heard a loud bang. Mr Khor immediately stopped the Insured Vehicle, switched off the engine and alighted. He then called his office to inform of the incident. His office called the SCDF and also made towing arrangements. By then the Insured Vehicle had caught fire.
12. The SCDF and police arrived in 20 minutes. Firefighters took 30 minutes to extinguish the fire. Police officers then took down Mr Khor’s statement. Mr Khor also assisted firefighters in their preliminary investigations. The tow truck arrived in less than an hour. The Insured Vehicle was towed back to Aero. Mr Khor went home as he stayed nearby.
13. Mr Khor lodged a police report at the Bukit Batok Neighbourhood Police Centre 2 days later, on 14 September 2019 at 1144 hours. He made an insurance report at Aero on 16 September 2019 at 1141 hours.
14. With regards to the history of the Insured Vehicle, we were able to gather from the staff at Aero that the Insured Vehicle was purchased new in 2011.
15. Pertaining to the maintenance aspect, the Insured Vehicle was sent for periodic servicing in – house.
16. During the course of our investigations, we were able to obtain from the staff at Aero, the servicing records of the Insured Vehicle for the last 3 months before the incident occurred. The servicing package dated on 28 June 2019 included changing of the exhaust pipe and screw. Refer to Invoice 1 below.



**YEOH BROTHERS TRANSPORT PTE LTD**  
 No.3 Kwong Min Road Singapore 628706  
 Tel: 6265 9181, 6265 5209 Fax: 6266 6890, 6261 1841  
 Email: sales@yeohbrothers.com.sg Website: www.yeohbrother.com.sg  
 Reg No. 201311586H GSTN: 201311586H

**Invoice To**  
**AERO SUPPLY CHARTERED BUS & TPT TRADING**  
 No.3 Kwong Min Road  
 Singapore 628706  
 Attn : Mr Alvin Yeoh

**Tax Invoice**  
 Invoice No. : YB VS140082  
 Date: 28/6/2019  
 Terms: Net 30

Attn:  
 Your Ref. No.:  
 Our Ref. No.:

ITEM	PARTICULARS	AMOUNT
Vehicle servicing	TO PROVIDE VEHICLE MAINTENANCE & SERVICING FOR THE MONTH OF JUNE 2019	
Vehicle servicing	VEHICLE NUM: PA 2621 A DATE OF SERVICING: 27/06/2019, REF NO: WS0377	
Vehicle servicing	CHANGE PIPE LABOUR CHARGES	45.00 26.00
Vehicle servicing	VEHICLE NUM: PC 7294 D DATE OF SERVICING: 11/06/2019, REF NO: WS0376	
Vehicle servicing	SIDE SIGNAL LIGHT LED YELLOW LABOUR CHARGES	32.00 26.00
Vehicle servicing	VEHICLE NUM: PA 2621 A DATE OF SERVICING: 05/06/2019, REF NO: WS0373	
Vehicle servicing	SCREW (TIGHTEN) LABOUR CHARGES	18.00 20.00
<b>Subtotal</b>		<b>\$165.00</b>
<b>GST 7%</b>		<b>\$11.55</b>
<b>Total</b>		<b>\$176.55</b>

Order Issued By:

Invoice 1 shows the servicing package of the Insured Vehicle done at Aero dated on 28 June 2019 (red arrows) which included changing of the exhaust pipe and screw (yellow arrows).

17. The servicing package dated on 31 July 2019 included changing of compressor oil, seal assembly and gasket kit. The gas was also topped up. Refer to Invoice 2 below.





**YEOH BROTHERS TRANSPORT PTE LTD**  
No 3 Kwong Min Road Singapore 628706  
Tel: 6265 9181, 6265 5209 Fax: 6206 0890, 6261 1841  
Email: sales@yeohbrothers.com.sg Website: www.yeohbrother.com.sg  
Reg No. 201311586H GSTN: 201311586H

**Invoice To**

AERO SUPPLY CHARTERED BUS & TPT TRADING  
No. 3 Kwong Min Road  
Singapore 628706  
Attn: Mr. Alvin Yeoh

**Tax Invoice**

Invoice No.: YB/ YS148083  
Date: 31/7/2019  
Terms: Net 30

Attn:  
Your Ref. No.:  
Our Ref. No.:

ITEM	PARTICULARS	AMOUNT
Vehicle servicing	VEHICLE NUM: PA 2621 DATE OF SERVICING : 25/07/2019, REF NO: WS0584	
Vehicle servicing	SEAL ASSY 1 SET (447045-0091) & GASKET KIT (447200-321)	150.00
Vehicle servicing	COMPRESSURE OIL 1 LITER	100.00
Vehicle servicing	TOP UP 2KG8 GAS	60.00
Vehicle servicing	LABOUR CHARGES	85.00
Vehicle servicing	VEHICLE NUM: PC 7264 DATE OF SERVICING : 31/07/2019, REF NO: WS0585	
Vehicle servicing	ENGINE OIL	105.00
Vehicle servicing	OIL FILTER	46.00
Vehicle servicing	AIR FILTER	28.00
Vehicle servicing	LABOUR CHARGES	80.00
Vehicle servicing	VEHICLE NUM: PC 7264 DATE OF SERVICING : 30/07/2019, REF NO: WS0586	
Vehicle servicing	LABOUR CHARGES TO CHECK JOINT SPEEDOMETER	25.00
<b>Subtotal</b>		<b>\$1,564.00</b>
<b>GST 7%</b>		<b>\$109.48</b>
<b>Total</b>		<b>\$1,673.48</b>

*[Signature]*  
Order Issued By  
Page 2

Cheques should be crossed and made payable to "YEOH BROTHERS TRANSPORT PTE LTD". Thank You.  
E A O E

Invoice 2 shows the servicing package of the Insured Vehicle done at Aero dated on 31 July 2019 (red arrows) which included changing of compressor oil, seal assembly and gasket kit. The gas was also topped up (yellow arrows).

18. The servicing package dated on 15 August 2019 included changing of the steering hydraulic oil. Refer to Invoice 3 below.

		Check	Comments
1) Engine Oil	引擎油	<input type="checkbox"/>	
2) Air Filter	空氣濾器	<input type="checkbox"/>	
3) Diesel Filter	柴油濾器	<input type="checkbox"/>	
4) Air Filter	空氣濾器	<input type="checkbox"/>	
5) Gear Box Oil	波箱油	<input type="checkbox"/>	
6) Steering Hydraulic Oil	方向機油	<input checked="" type="checkbox"/>	26-20
7) Battery Water	電池水	<input type="checkbox"/>	
8) Coolant Fan & Belt	散熱風扇及皮帶	<input type="checkbox"/>	
9) Adjust brake and clutch	調整煞車及离合器	<input type="checkbox"/>	
10) Internal and External Lights	內外燈	<input type="checkbox"/>	
11) Horn & Wiper	喇叭及雨刷	<input type="checkbox"/>	
12) Axle System	車軸	<input type="checkbox"/>	
13) Passenger Seats	乘客座位	<input type="checkbox"/>	
14) Tyre Pressure & Tread	輪胎壓力及胎紋	<input type="checkbox"/>	
15) Brake Checking	煞車	<input type="checkbox"/>	
16) Safety Terminal Check	安全終端檢查	<input type="checkbox"/>	
17) AirCon : Top Up Gas	冷氣補氣	<input type="checkbox"/>	

Comments:

Signature of Driver: \_\_\_\_\_  
N/P:

Signature of Mechanic: *[Signature]*  
Name:

Workshop Use Only	
Bus Date Out	
Bus Time Out	
Office Use Only	
Received Date	
Received Date	

Invoice 3 shows the servicing package of the Insured Vehicle done at Aero dated on 15 August 2019 (red arrows) which included changing of the steering hydraulic oil (yellow arrow).

19. The servicing package dated on 27 August 2019 included adjustment of the brake and clutch. Refer to Invoice 4 below.

K104      73 A      WS0590

**MAINTENANCE & SERVICE CHECKLIST**

Vehicle No. <b>R2221P</b> ←	Mileage	Driver <b>Khor Kam Bee</b> →	Date In <b>27/8/19</b>
Time In <b>9.16am</b>			

O - Dent    X - Scratch

No	Description	Checked	Comments
1	Engine Oil	<input type="checkbox"/>	
2	Oil Filter	<input type="checkbox"/>	
3	Diesel Filter	<input type="checkbox"/>	
4	Air Filter	<input type="checkbox"/>	
5	Check Fan Oil	<input type="checkbox"/>	
6	Check Hydraulic Oil	<input type="checkbox"/>	
7	Battery Water	<input type="checkbox"/>	
8	Cycle Pts & Bush	<input type="checkbox"/>	
9	Adjust brake and clutch	<input checked="" type="checkbox"/>	←
10	Internal and external lights	<input type="checkbox"/>	
11	Horn & Wiper	<input type="checkbox"/>	
12	Wash System	<input type="checkbox"/>	
13	Passenger Seats	<input type="checkbox"/>	
14	Tyre Thread & Pressure	<input type="checkbox"/>	
15	Brake Checking	<input type="checkbox"/>	
16	Battery Terminal Cleaning	<input type="checkbox"/>	
17	AirCon & Top Up Gas	<input type="checkbox"/>	

Comments:

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*[Signature]*  
Signature of driver  
Name:

\_\_\_\_\_  
Signature of Mechanic  
Name:

Workshop Use Only

Run Date Out: \_\_\_\_\_

Bus Time Out: \_\_\_\_\_

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Office Use Only

Received Date: \_\_\_\_\_

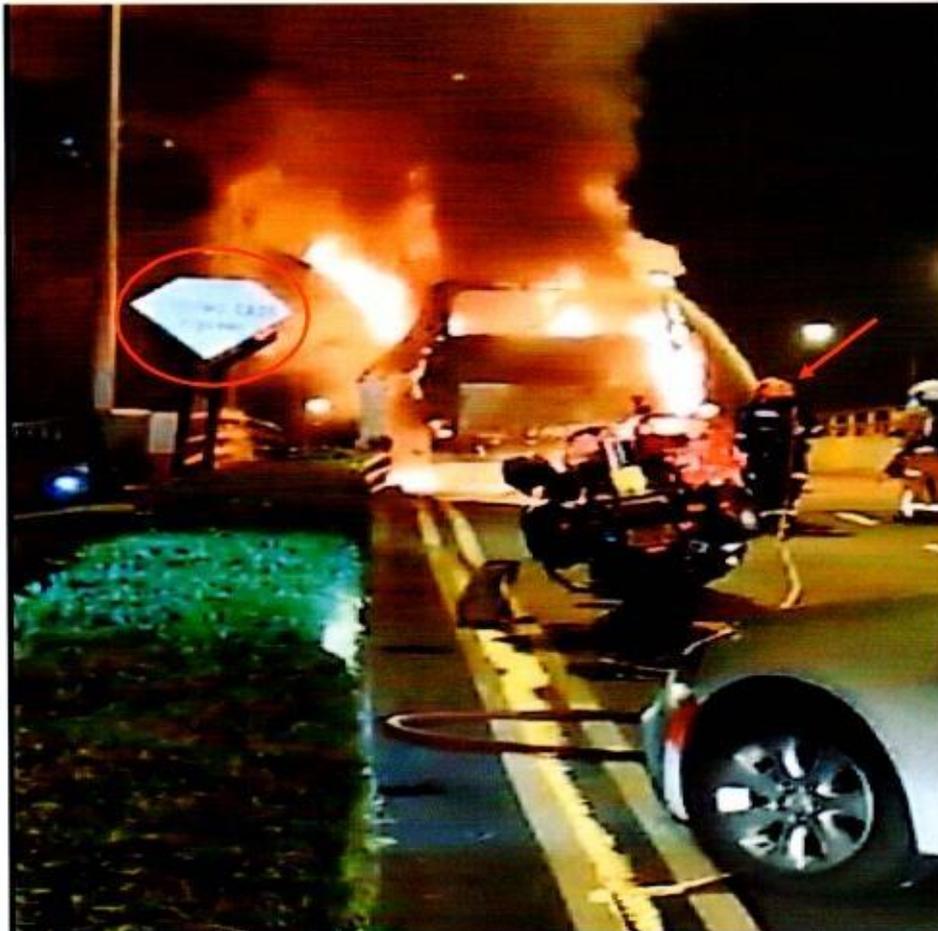
Processed Date: \_\_\_\_\_

Invoice 4 shows the servicing package of the Insured Vehicle done at Aero dated on 27 August 2019 (red arrows) which included adjustment of the brake and clutch (yellow arrow).

20. To the best of his recollection, Mr Khor mentioned he had not experienced any mechanical or electrical problems with the Insured Vehicle till the day of the incident. He mentioned that there were neither warning lights displayed nor was there an abnormal rise in temperature of the Insured Vehicle when he was driving the Insured Vehicle on the day of the incident.

### Incident Scene Photographs

21. We were able to obtain photographs taken by Mr Khor at the incident location. The photographs were taken during the fire as well as after the fire to the Insured Vehicle was extinguished.
22. In general, the information that could be gathered from these photographs had corresponded to the events that were related to us by Mr Khor. 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 positioned. See photos 11 – 13 below.



**Photo 11** shows the SCDF having arrived at the incident location and attempting to put out the fire (arrowed). In general, the information gathered from this photograph had corresponded to Mr Khor's statement, which is the fire started while Mr Khor was driving the Insured Vehicle on the 1st lane along the Jurong East Flyover (circled).



**Photo 12** shows the Insured Vehicle on fire. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Mr Khor, which is the fire had started from the rear portion of the Insured Vehicle (arrowed).



**Photo 13** shows a closer view of firefighters conducting their preliminary investigations post- incident. In general, the information that could be gathered from this photograph pertaining to the nature of fire damage had corresponded to the events that were related to us by Mr Khor, which is the fire had started from the rear portion of the Insured Vehicle (arrowed).

23. 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 Khor had mentioned to us there were no indications of abnormally high temperatures on the Insured Vehicle. Moreover, an overheated engine would have caused the Insured Vehicle to stall. However in this case, Mr Khor was alerted of the fire while he was driving the Insured Vehicle and switched off the engine of the Insured Vehicle.
24. 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 Khor was driving the Insured Vehicle. The location where the Insured Vehicle caught fire was also observed to be not at a secluded location.
25. The possibility of the fire being due to electrical in nature would then seem more likely given that engine overheating and external factors would seem unlikely. The fire being due to electrical nature is also supported by the faint traces of greenish residue that were found on several burnt stretches of original factory fitted around the rear right portion of the engine compartment of the Insured Vehicle, which was earlier discussed in paragraph 8 above.
26. 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 pose a fire risk. 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: 0228

Vehicle Details

Vehicle Registration number: RA2621A  
Make: HISSAN  
Vehicle Model: IP25LS1RA  
Engine No.: PE62103750  
Chassis No.: IP25LS1400011

Recall Details

No Recall Detail records



Please do not use your browser's Back or Forward buttons as this may result in information loss.

## 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 electrical in nature. For this particular case, the fire had originated along the original factory fitted wirings around the rear right portion of the engine compartment of the 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.
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 pose a fire risk.
30. 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, AMIRTE, AFF SAE, M.MATAI, AFF.Inst.AEA  
Senior Technical Investigator  
Technical Investigation & Reconstructionist (SAE-A)

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