



Your Ref : P0526408
Our Ref : CS/ASM18012926/Z

25th July 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 MOTOR VEHICLE GW 4398Y ON 12th July 2018**

1. We refer to your letter dated 17th July 2018 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle GW 4398Y (herein referred to as "**Insured Vehicle**") are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 18th July 2018 at the premises of K. Kim Hin Auto Pte Ltd (herein referred to as "Kim Hin"), 160 Sin Ming Drive, #02-18/19/20/21, Sin Ming AutoCity Singapore 575722.
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded:-

Vehicle Registration No.	: GW 4398Y
Make / Model	: Volkswagen Caddy 1.9 TD
Chassis No	: WV1ZZZ9KZ3R517652
Year of Registration	: 2003 (July)
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 burnt while the interior compartment was observed to be relatively unaffected by the fire.
6. The fire had resulted in the body parts at the front right portion of the Insured Vehicle to be burnt. This had included its front bonnet, headlamp, front bumper & grill & left & right side fenders amongst others. See photos 1 – 4 below.



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



Photo 2 shows the semi close-up view of the front right door of the Insured Vehicle at the time of our inspection. The fire damage to the Insured Vehicle was observed to be affecting the driver side door internally.



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 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 relatively unaffected by 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.

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 front right side 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 right side of the bonnet of the Insured Vehicle and also the discolouration of the insulating material that had developed on the underside of the front bonnet, at the front right side portion.
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 discolouration of the insulating material on the underside of the front bonnet, around the front right side area, is an indication that the front right side area of the engine compartment had sustained exposure to prolonged high heat intensity. See photos 5 to 7 below.



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



Photo 7 shows the discolouration of the insulating material on the underside of the front bonnet, around the front right side area (circled). The discolouration of the insulating material is an indication that the front right side area of the engine compartment had sustained exposure to prolonged high heat intensity. Hence the fire to the Insured Vehicle can be determined to have originated towards the front right side of the engine compartment.

10. Upon closer examination of the rear left side of the engine compartment which was where the fire to the Insured Vehicle had likely started, we had found several stretches of burnt wiring around the Insured Vehicle's engine compartment. These wirings were original factory fitted wirings that were mainly around the centre to the right side of the engine compartment near the right headlamp area. Such condition normally indicates 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 photos 8 to 12 below.



Photo 8 shows the wirings around the front right side of the engine compartment which is near to the vicinity where the fire to the Insured Vehicle had likely started.



Photo 9 shows the wirings around the front right side of the engine compartment which is near to the vicinity where the fire to the Insured Vehicle had likely started.

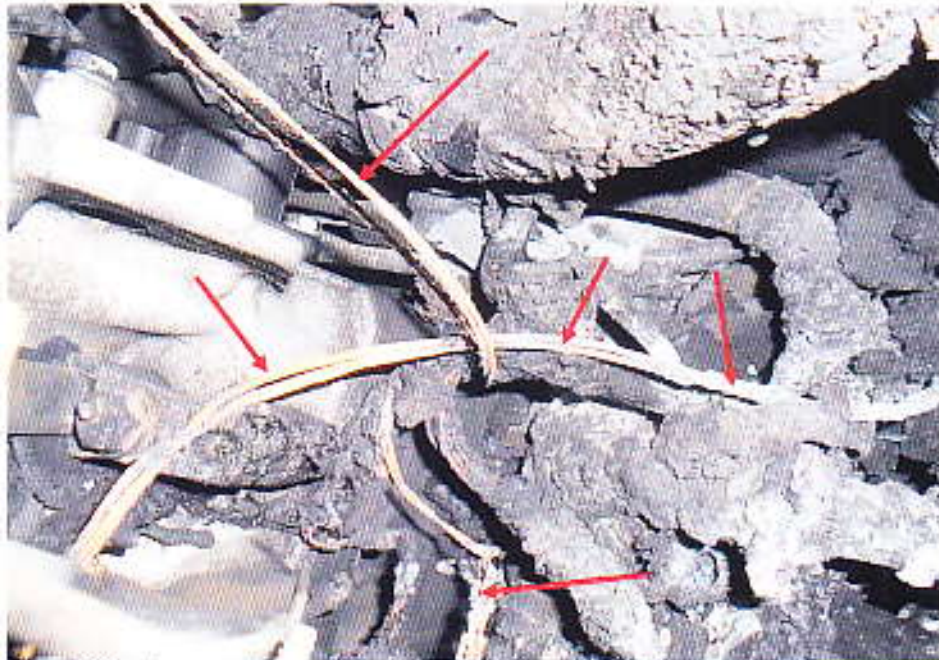


Photo 10 shows a close-up view of the wirings around the front right side of the engine compartment which is near to the vicinity where the fire to the Insured Vehicle had likely started.



Photo 11 shows a closer view of the burnt wirings (red arrows) at the rear left side of the engine compartment. Such condition normally indicates internal heating of copper wires which is a sign of an electrical short circuit occurring.



Photo 12 shows a close up view of the burnt wirings (red arrows) at the rear left side of the engine compartment. Such condition normally indicates internal heating of copper wires which is a sign of an electrical short circuit occurring

11. From the Singapore Police Report no. F/20180713/2143 which was made by Mr Tan Ee Boon (herein referred to as "Mr Tan"), we note that the fire to the Insured Vehicle had started when it was parked in a stationary position in an open space car park at Blk 175 Ang Mo Kio Avenue 4 @ lot no 172. Mr Tan was alerted of the fire when he looked down from his unit to the parked Insured Vehicle and notice that the Insured Vehicle was drawing smoke followed by fire emitted from the engine compartment.
12. We managed to speak to Mr Tan on 20th July 2018 at his working place at No. 26 Sungei kadut Drive 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. According to Mr Tan, at about 1745hrs on 12th July 2018, he had reversed parked the Insured Vehicle at an open space behind Blk 175 Ang Mo Kio Avenue 4 at parking lot no. 172. He then proceeds his way up to his house after securing the Insured Vehicle via a remote control. No abnormality was noted at time he left the Insured Vehicle. After about 15 minutes at home he looked out of the kitchen window to the Insured Vehicle where it was parked. He had noticed that the Insured Vehicle was on smoke & followed by fire at the engine area soon after. Mr Tan called SCDF for assistance.
14. About 10 minutes the SCDF arrived at the fire location. They managed to control & extinguished the fire about 10 to 15 minutes time. Mr Tan was interviewed by SCDF investigation officer. They left the incident location once everything was back to normal situation.
15. Mr Tan contacted his superior Mr Alfred Toh (Managing Director of M & F Industry Pte Ltd) to inform about the fire incident. The Insured Vehicle was arranged to be towed away from the fire incident location about 2 days later engaged by AXA insurance towing service. It was towed to AXA authorised workshop which was at K. Kim Hin Auto Pte Ltd, 160 Sin Ming Drive, #02-18/19/20/21, Sin Ming AutoCity Singapore 575722.
16. Mr Tan made a police report at Kebun Baru Neighbourhood Police Post the next day on 13th July 2018 at 1807 hours.
17. Mr Tan informed us that he neither noticed any warning lights nor abnormally high temperatures whilst driving the Insured Vehicle on the day of the incident.
18. With regards to the history of the Insured Vehicle, we spoke to Mr Tan as he is the only driver of the Insured Vehicle. We were able to gather from Mr Tan that the Insured Vehicle was purchased brand new in 2003 for his transportation purposes by the company M & F industry Pte Ltd. The COE expires in 21st March 2022. To the best of his recollection, there has not been any major mechanical problem and/or electrical problem with the Insured Vehicle. This was supported by a servicing record showed by the workshop owner Mr Eng from Sin Eng Bin Motor that took care of a fleet of vehicles from M & F Industry Pte Ltd. The repair servicing was done by Sin Eng Bin Motor which involved replacing of Clutch Assembly on 31st May 2018 apart from the latest preventive maintenance done on 25th January 2018 which includes replacing of engine oil, oil filter, air filter & fuel filter.

19. Pertaining to the maintenance aspect, Mr Eng from Sin Eng Bin Motor had submitted a servicing record as evidence on the Insured Vehicle serviced on 25th January 2018 to us. See photo 13 below.

SIN ENG BIN MOTOR Sin Eng Bin Motor, 169 Sin Eng Drive, #03-20 Singapore 175722 Tel: 64521356 (2 lines) Fax: 64557280 Reg No: 102756003			
		Invoice No :	66947
To : M & F Industrial (s) Pte Ltd Blk 1077 Eunos Ave 6 #01-154 Spore 408633 Attn: The Accounts Dept		Vehicle No:	GW 4398 Y
		Make:	VW caddy
		Date:	25/1/2018
Qty	Unit	Description	Amount (\$)
5	litre	Motor Oil	\$ 40.00
1	pc	Oil filter	\$ 14.00
1	pc	Air filter	\$ 20.00
1	pc	Fuel filter	\$ 58.00
STA inspection fee			\$ 84.53
Labour Charges:			
Servicing/ general checking/ send van for annual inspection			\$ 100.00
Total:			\$ 336.53

Driver's Signature

Sin Eng Bin Motor

Photo 13 shows a preventive maintenance servicing record provided by Mr Eng from Sin Eng Bin Motor workshop.

20. Mr Tan had informed us that ever since he drives the Insured Vehicle, he has not done any modification(s) and/or additionally fitted any electrical or electronic component(s) to the Insured Vehicle.

Fire site investigation

21. We visited the incident location on 23rd July 2018 which was located at an open space car park behind Blk 175 Ang Mo Kio Avenue 4 at parking lot no. 172 with the information that we had gathered during our conversation with Mr Tan as references.
22. When driving into the car-park vicinity, the parking lot was observed to be on the right side of the car-park which bares lots no. 172.
23. At the time of our visit, we were able to clearly see burnt marks / residual remains on the ground inside the parking lot. We found melted materials & broken glass remains on the parking lot ground which was believed to be part of material from the burnt Insured Vehicle that had occurred at the time of incident. We did not find any nearby foreign material or object that relates to the fire incident. However, from the burnt materials that we found on the parking lot ground, conclusively that a fire incident did happen at the said location.
24. The location where the Insured Vehicle was parked at the material time of incident was also noted to be not at a secluded location.
25. In general, the information that could be gathered from these photographs had corresponded to the events that were related to us by Mr Tan. 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 positioned. See photo 14 – 17 below.

51 UBI AVE 1, 001-25 PAYA UBI INDUSTRIAL PARK, SINGAPORE 408933 TEL : (065) 62563561 FAX : (065) 67414108



Photo 14 shows a general view of the fire incident location which is at blk 175 Ang Mo Kio Avenue 4, parking lot 172.



Photo 15 shows a general view of the fire incident location which is at blk 175 Ang Mo Kio Avenue 4, parking lot 172



Photo 16 shows a semi close-up view of the fire incident location which is at blk 175 Ang Mo Kio Avenue 4, parking lot 172. Burnt debris was observed on the parking lot ground at time of our visit.



Photo 17 shows a close-up view of the fire incident location which is at blk 175 Ang Mo Kio Avenue 4, parking lot 172. Burnt debris was observed on the parking lot ground at time of our visit believed to be from the burnt Insured Vehicle.

26. Based on the vehicle service record invoice provided, we are of the opinion that it is unlikely that the fire could have been caused by poor maintenance of the Insured Vehicle.
27. 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 Mr Tan had mentioned to us there were no indications of abnormally high temperatures on the Insured Vehicle.
28. 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 after Mr Tan had parked the Insured Vehicle at a designated parking lot prior to the incident. The location where the Insured Vehicle caught fire was also observed to be not at a secluded location.
29. 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 in the engine compartment of the Insured Vehicle, which was earlier discussed in paragraph 10 above.
30. 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 possible electrical or electronics failure 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:	Company
Owner ID:	3857E
Vehicle Details	
Vehicle Registration number:	GW4398Y ←
Make:	VOLKSWAGEN
Vehicle Model:	CADOY 1.9 TD
Engine No:	ALH897438
Chassis No:	WV1ZZZ9KZ3R517652
Recall Details	
No Recall Detail records ←	

OK

Conclusion

31. 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 front right area of the engine compartment.
32. 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.
33. 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.
34. Our investigations had also revealed that at the time of writing this report, there is no manufacturer recall of similar make and model vehicle as the Insured Vehicle that may possibly be related to this incident.
35. 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.



Rohaizal A. Rahim
Technical Investigator



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

DISCLAIMER OF LIABILITY TO THIRD PARTIES:- This Report is made solely for the use and benefit of the Client named on the front page of this Report. No liability or responsibility whatsoever, in contract or tort, is accepted to any third party who may rely on the Report wholly or in part. Any third party acting or relying on this Report, in whole or in part, does so at his or her own risk.