

Our Ref : CS4/ASM20007497/N

22 July 2020

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 SJA 3323A ON 19 JULY 2020**

1. We refer to your letter dated 20 July 2020 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the Motor Vehicle SJA 3323A (herein referred to as “**Insured Vehicle**”) are set out below.

Inspection of the Motor Vehicle

3. The Insured Vehicle was physically inspected on 21 July 2020 at the premises of Ah Lim Motor Co. (herein referred to as “**Ah Lim**”) located at 10 Ang Mo Kio Industrial Park 2A, Ang Mo Kio Autopoint, #01-09, Singapore 568047.

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

Vehicle Registration No.	: SJA 3323A
Make / Model	: B.M.W. /535I 3.0L AT D/AB 2WD 4DR GAS/D SR HUD
Chassis No	: WBAFR72040C579771
Year of Registration	: July 2010
Mileage	: N.A (wiring affected)

5. The exterior front body and engine compartment of the Insured Vehicle sustained visible fire damage. This included its front windscreen, front bonnet, headlights, front bumper and side panels.
6. The fire had resulted in serious damage to the engine compartment of the Insured Vehicle. Most of the components inside the engine compartment were found to be severely burnt and/or melted as a result of the fire. See photos 1 – 6 below.



Photo 1 shows the general view of the rear portion of the Insured Vehicle at the time of our inspection. The rear portion of the Insured Vehicle was observed to be unaffected by the fire.



Photo 2 shows the general view of the front portion of the Insured Vehicle at the time of our inspection. The exterior body of the Insured Vehicle had sustained visible fire damage. This included its front windscreen, front bonnet, headlights, front bumper and side panels.



Photo 3 shows the general view of the left frontal portion of the Insured Vehicle at the time of our inspection. The exterior body of the Insured Vehicle had sustained visible fire damage. This included its front windscreen, front bonnet, left headlight, front bumper and left side panel.



Photo 4 shows a closer view of the front windscreen of the Insured Vehicle at the time of our inspection. The front windscreen had sustained minimal fire damage (circled).



Photo 5 shows the interior compartment of the Insured Vehicle at the time of our inspection. The interior compartment of the Insured Vehicle was relatively unaffected by the fire.



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

7. At the time of physical inspection of the Insured Vehicle, we had found several modifications on the Insured Vehicle. These included an engine strut bar (which had sustained minor fire damage) and aftermarket 20- inch alloy rims. All these fitted components were not the standard type for the Insured Vehicle. See photos 7 & 8 below.



Photo 7 shows the engine strut bar (arrowed) fitted on the Insured Vehicle. However it had sustained minor fire damage.



Photo 8 shows the non-standard rim found to be fitted on the Insured Vehicle at the time of our inspection. The 20- inch alloy rims fitted on the Insured Vehicle were not the standard type for 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 centre portion of the engine compartment. This can be determined from the discolouration found on the top centre portion of the underside of the bonnet due to prolonged exposure to high heat intensity. A closer examination revealed faint whitish burn marks on the top centre portion on the underside of the bonnet due to prolonged exposure to high heat intensity. We also observed paint bubbles on the front centre portion of the front bonnet. In general the location of the fires' origin was determined given that the damage of fire nature was confined to these particular areas on the Insured Vehicle. See photos 9 - 11 below.

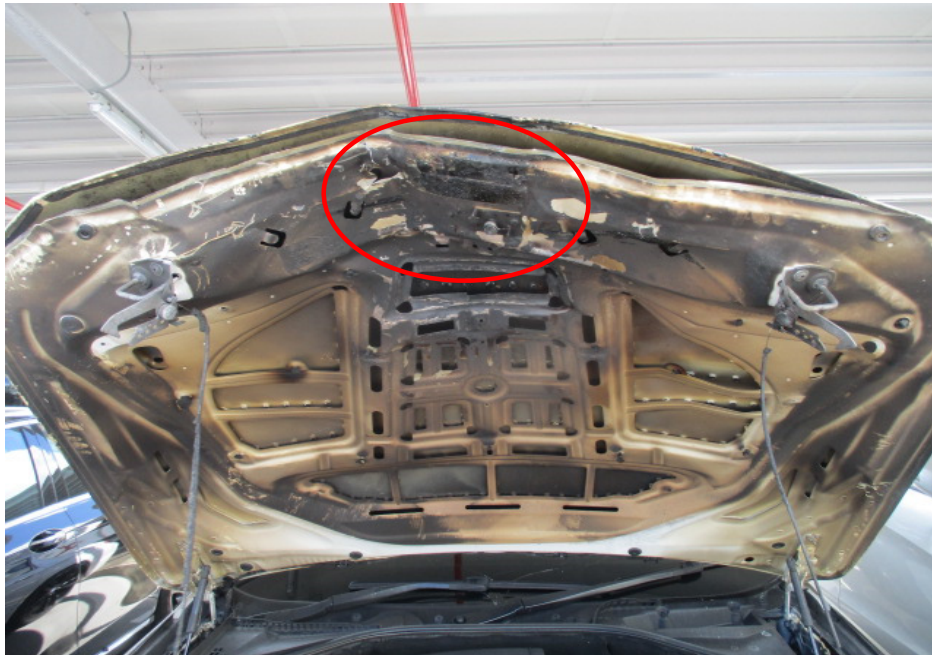


Photo 9 shows the burn pattern on the underside of the bonnet of the Insured Vehicle due to prolonged exposure to high heat intensity caused by the fire (circled).



Photo 10 shows upon closer examination, we noticed whitish burn marks on the top centre portion on the underside of the bonnet of the Insured Vehicle due to prolonged exposure to high heat intensity caused by the fire (circled).



Photo 11 shows the burn marks and paint bubbles on the front centre portion of the front bonnet of the Insured Vehicle (circled).

9. Upon closer examination of the front centre portion of the engine compartment which was where the fire to the Insured Vehicle had likely started, we had found traces of greenish residue on several stretches of burnt wirings. 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. 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 12 - 15 below.

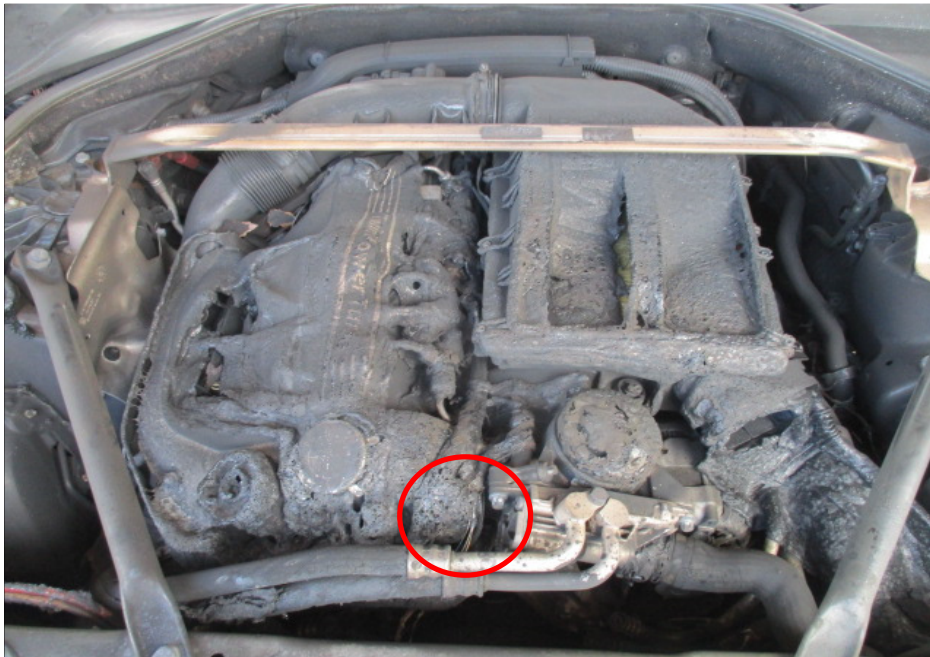


Photo 12 shows the burnt wirings around the front centre portion of the engine compartment (circled), which is in the immediate vicinity where the fire to the Insured Vehicle had likely started.

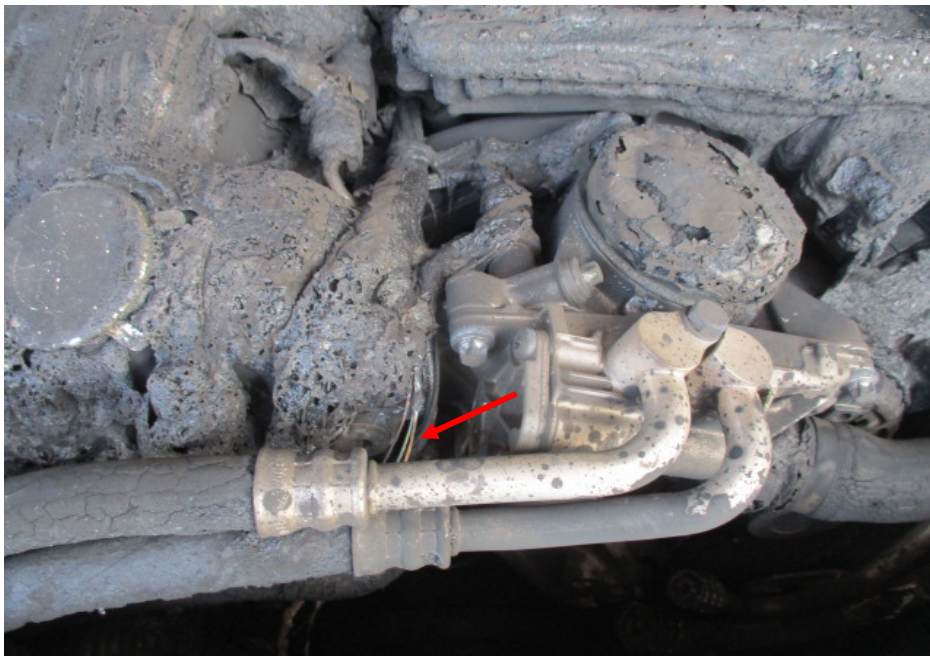


Photo 13 shows a closer view of the burnt wirings around the front centre portion of the engine compartment, which is in the immediate vicinity where the fire to the Insured Vehicle had likely started. We noticed greenish residue on several stretches of burnt wirings (arrowed). The presence of greenish 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.

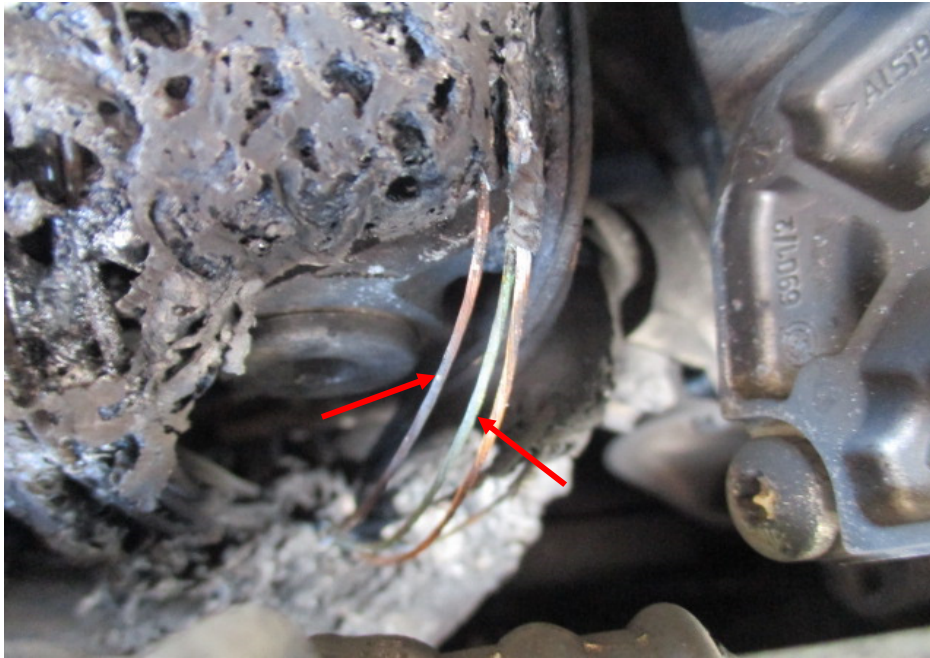


Photo 14 shows a close up view of the greenish residue found on several stretches of burnt wirings (red arrows). The presence of such greenish residue suggests occurrence of an electrical short circuit.

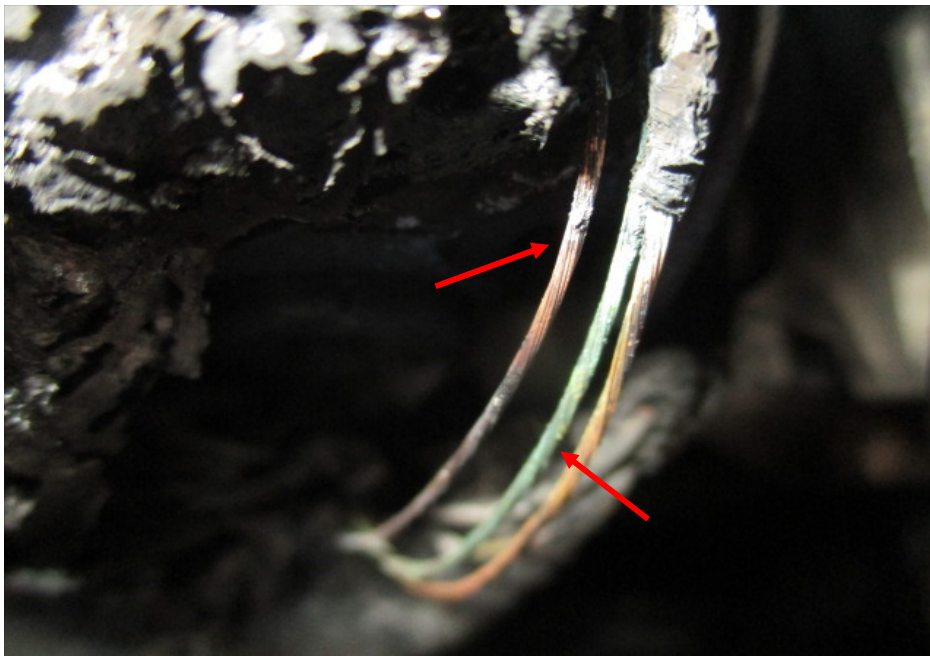


Photo 15 shows a close up view of the greenish residue found on several stretches of burnt wirings (red arrows). The presence of such greenish residue suggests occurrence of an electrical short circuit.

10. From the Singapore Accident Statement, which was made by Mr Mohammed Razali bin Arifin (herein referred to as "**Mr Razali**"), we note that the fire to the Insured Vehicle had started at a time when he was driving. Mr Razali was first alerted of the fire when he saw smoke emitting from underneath the Insured Vehicle.
11. We managed to speak to Mr Razali on 22 July 2020 where we were able to gather further information pertaining to the incident as well as information pertaining to the history of the Insured Vehicle.
12. According to Mr Razali, at about 1900hrs on 19 July 2020, he together with his younger brother had left the Boon Lay Power Nasi Lemak stall located at Boon Lay Place and was headed to drop his brother off at the Selarang Halfway House before heading to his home located at Anchorvale. He entered the car wash located within the Shell petrol station at Jalan Bahar. After washing the Insured Vehicle, Mr Razali intended to make a U- turn at the traffic junction as he intended to take the PIE. It was then that he saw smoke from the driver window.
13. Other motorists from the other side of the traffic junction exclaimed to Mr Razali that the Insured Vehicle was on fire. He immediately switched off the engine and exited the Insured Vehicle. He told his brother to call for the SCDF while he redirected traffic from a safe distance.
14. SCDF arrived within 5 minutes. Police arrived shortly after. Firefighters pried open the front bonnet. The fire was extinguished in less than 5 minutes. Mr Razali managed to take photographs of the incident.
15. Mr Razali then called United Motor, the dealer which he bought there Insured Vehicle from. Towing arrangements were made. The tow truck arrived in 45 minutes while Mr Razali assisted the SCDF in their preliminary investigations. Mr Razali mentioned that the Insured Vehicle was first towed to United Motor. It was then towed to Ah Lim the following day.
16. The following day, on 20 July 2020 Mr Razali went to Ah Lim to make an insurance report at 1445 hours.
17. With regards to the history of the Insured Vehicle, we were able to gather from Mr Razali that the Insured Vehicle was purchased second hand from United Motor 2 weeks ago. United Motor renewed the COE for another 10 years. Mr Razali is the owner and only driver of the Insured Vehicle.

18. We asked Mr Razali regarding the engine strut bar and aftermarket 20- inch alloy rims. He mentioned that he had requested United Motor to replace the rims with aftermarket 20- inch alloy rims when he bought the Insured Vehicle. He installed the engine strut bar post- purchase.
19. Pertaining to the maintenance aspect, Mr Razali mentioned that the Insured Vehicle had been serviced before he purchased it from United Motor, Unfortunately, he did not keep the invoice.
20. Mr Razali mentioned that after the servicing was done pre- purchase, 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.
21. Mr Razali mentioned that since the purchase of the Insured Vehicle, he has not done any modification(s) and/or additionally fitted any electrical or electronic component(s) to the Insured Vehicle.

Incident Scene Photographs

22. We were able to obtain photographs which were taken by Mr Razali at the incident location. The photographs were taken during and after the fire to the Insured Vehicle was extinguished.
23. In general, the information that could be gathered from these photographs had corresponded to the events that were related to us by Mr Razali. 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 road where the Insured Vehicle was positioned. See photos 16 - 18 below.



Photo 16 shows firefighters attempting to put out the fire.



Photo 17 shows the SCDF conducting preliminary investigations post- incident. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Mr Razali, which is the police were present at the incident location together with the SCDF (arrowed).

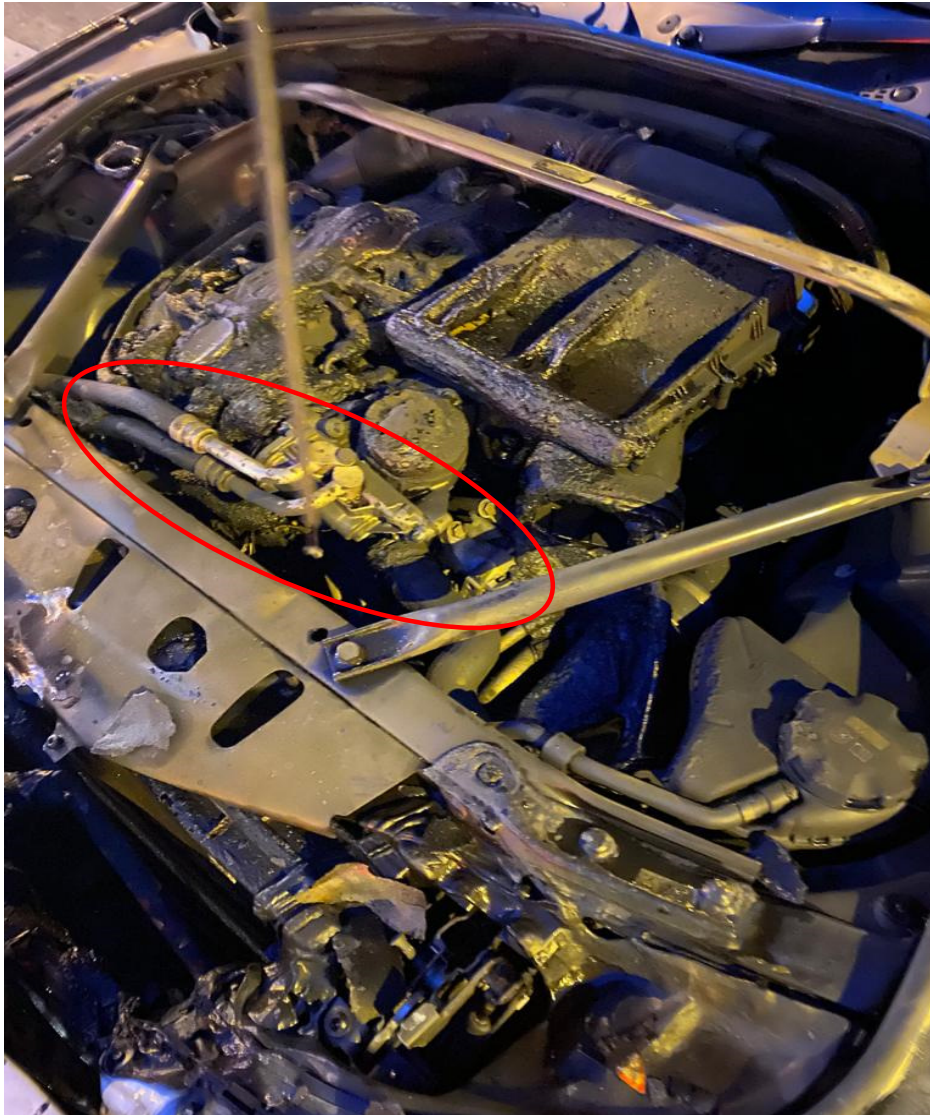


Photo 18 shows the engine compartment of the Insured Vehicle after the fire was extinguished. In general, the extensive damages sustained (circled) had corresponded to the events that were related to us by Mr Razali, which is the fire started from the engine compartment.

24. 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 Razali 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 Razali was the one who noticed smoke emitting from underneath while he was driving and stopped the Insured Vehicle. Therefore, we are of the opinion that the fire was not caused by an overheated engine.

25. 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 given that our 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 positioned. The location of where the Insured Vehicle was positioned was also observed to be not at a secluded location.
26. 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 in nature is also supported by the burnt wirings found in the engine compartment of the Insured Vehicle, which was earlier discussed in paragraph 9 above.
27. Our checks with both local and international bodies and associations 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. However there was a previous recall campaign involving the Insured Vehicle on 26 May 2014. The purpose of the recall was for the bolted connection on the housing of the VANOS adjustment units. However the issue was rectified on 9 February 2015.

Vehicle Recall Details	
* ONLY INFORMATION ON VEHICLE RECALLS SUBMITTED FROM 9 APRIL 2007 IS AVAILABLE	
Owner ID Type Singapore NRIC	Owner ID 098H
Vehicle No. SJA3323A 	Make/Model B.M.W./ 535i 3.0L AT D/AB 2WD 4DR GAS/D SR HUD
Engine No.: 06587486N55B30A	Chassis No.: WBAFR72040C579771
Recall Details	

Recall No.: R2014060020

Manufacturer Recall Date: 26 May 2014	Estimated Completion Year of Recall: 2015
Brief Description (As Provided by Motor Dealer): The bolted connection on the housing of the VANOS adjustment units may become loose.	Date Rectified: 09 Feb 2015
Hotline Information: PERFORMANCE MOTORS LTD at 18002255269	
For more details, contact BMW ASIA PTE LTD	

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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 wirings inside the engine compartment, somewhere around the front centre portion of the engine compartment. The wirings were original factory wirings 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. We found the Insured Vehicle to be fitted with a non- standard engine strut bar and aftermarket 20- inch alloy rims. The engine strut bar and tyre rims fitted do not require prior approval from LTA.
31. Although the engine strut bar and aftermarket alloy rims fitted on the Insured Vehicle were not the standard type for the Insured Vehicle, we are of the view that these parts did not cause and/or contribute to the fire incident.

32. Our investigations had also revealed that at the time of writing this report, the manufacturer recall campaign in 2014 which had involved the Insured Vehicle did not possess a fire risk to the Insured Vehicle.
33. 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***Senior 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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