

Your Ref: 3963673214SG
Our Ref : CC3/AIG19002331/D

15 March 2019

AIG Asia Pacific Insurance Pte Ltd

78 Shenton Way #08-16
AIG Building
Singapore 079120
(Motor Claims Department)

**TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE
INSURED VEHICLE SKM 3566R ON 28 JANUARY 2019**

1. I refer to your request dated 29 January 2019.
2. My analysis, comments and opinions with respect to the cause of fire to the insured vehicle SKM 3566R (herein referred to as "**Insured Vehicle**") are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 01 January 2019 at the premises of M/s Wearnes Automotive Pte Ltd, 2 Jalan Pesawat, Singapore 619358.
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded: -

Vehicle Registration No.	: SKM 3566R
Make / Model	: Jaguar XJ 3.0L Diesel
Chassis No	: SAJAC2223BNV11649
Year of Registration	: 2011 (January)
Mileage	: N.A (wiring affected)
5. The Insured Vehicle was observed to have been extensively burnt. Its front portion and centre portion were burned to char leaving skeletal remains. Its rear portion was also severely burnt with its rear bumper the only body part that was relatively unaffected by the fire. See photo 1 – 4 below.



Photo 1 shows a general view of the rear portion of the Insured Vehicle at the time of my inspection. The Insured Vehicle was observed to have been extensively burnt. Its rear bumper was the only part that was relatively unaffected by the fire.



Photo 2 shows a general view of the front portion of the Insured Vehicle at the time of my inspection. Its front portion and centre portion were burned to char leaving skeletal remains.



Photo 3 shows a general view of the front portion of the Insured Vehicle at the time of my inspection. Its front portion and centre portion were burned to char leaving skeletal remains.



Photo 4 shows a general view of the centre portion of the Insured Vehicle at the time of my inspection. Its centre portion were burned to char leaving skeletal remains.

Circumstance of Incident

6. From the police report G/20190129/2050, which was made by one Wong Liang Min (herein referred to as "**Mr Wong**"), I note that the fire to the Insured Vehicle had started at a time when he was driving the Insured Vehicle. Mr Wong first detected white smoke coming out from the rear of the Insured Vehicle whilst the Insured Vehicle was stopped along Pending Road due to red traffic light signal. When the traffic light signal turned green, Mr Wong drove the Insured Vehicle into the open air carpark of Block 229 Pending Road and parked the Insured Vehicle between parking lot number 443 and 444. He then removed his belongings and called SCDF for assistance. Fire soon broke out and the flames spread to another vehicle SLW 9658E due to the wind direction. SCDF officers arrived and put out the fire.
7. I spoke to Mr Wong on 12 February 2019 and through telephone conversation, I was able to gather further information pertaining to the incident as well as information pertaining to the history of the Insured Vehicle.
8. Firstly, upon clarification, Mr Wong confirmed that the incident happened at around noon on 28 January 2019 instead of 2340hrs that was indicated in his Singapore Accident Statement. According to Mr Wong, after finishing a meeting at Balestier Road, he drove the Insured Vehicle heading to Pioneer Junior College. During this journey, he did not experience any abnormality to the operating behaviour of the Insured Vehicle.
9. Upon arriving at a traffic light along Pending Road, he stopped the Insured Vehicle due to red light signal. From the rear view mirror, he noticed white smoke at the back of the Insured Vehicle. He then alighted to check and discovered that the white smoke was actually coming from the underside of the Insured Vehicle. In order not to cause traffic obstruction, Mr Wong drove the Insured Vehicle into an open air carpark, which was just after the traffic light.
10. Mr Wong stopped the Insured Vehicle inside some parking lots, off the engine, alighted and opened the 4 doors, front bonnet and rear bootlid of the Insured Vehicle. He then quickly removed some belongings inside the Insured Vehicle. By which time, he noticed smoke coming out from around the centre arm rest/console inside the interior compartment of the Insured Vehicle. He then called SCDF for assistance. Flames soon appeared at the same area and subsequently turned into a fire, engulfing the entire Insured Vehicle. The fire was eventually extinguished by SCDF officers upon their arrival.

11. With regard to the history of the Insured Vehicle, Mr Wong informed me that it was purchased second hand about 6 years ago. The Insured Vehicle is registered to Advance Screen Pte Ltd, which Mr Wong is a director of. The main user of the Insured Vehicle is Mr Wong. As far as he can recall, there was no major mechanical or electrical issue(s) with the Insured Vehicle. The last servicing carried out was in November 2018. Mr Wong was however not able to provide me documents relating to the servicing of the Insured Vehicle.
12. I was also informed by Mr Wong that a few days before the fire, he received a phone call from Wearnes Automotive Pte Ltd. The phone call was to make an appointment for the Insured Vehicle to be sent to Wearnes Automotive Pte Ltd for some repair as the Insured Vehicle was part of the batch of Jaguar model vehicle that had some problem(s). The appointment was set on 30 January 2019 and the Insured Vehicle caught fire before it was sent in.
13. Mr Wong informed me that he had taken some photographs and a video during his time at the incident location and these were duly forwarded to me for review.

Investigation and Technical Analysis

14. The photographs provided to me by Mr Wong had showed the Insured Vehicle before the fire, engulfed in fire and also when after the fire was extinguished. Upon examining the photograph showing the Insured Vehicle before the fire, it was noted that smoke was emitting from the interior compartment of the Insured Vehicle, at the centre console area. This corresponds to the observations by Mr Wong where he had seen smoke from the centre console area before the fire.
15. When examining the photographs further, fire could be seen engulfing the interior compartment, at the centre body of the Insured Vehicle. After the fire was extinguished, the Insured Vehicle could be seen burned to char, in a condition that is similar to the time of my inspection.
16. From the photographs provided, I also note that there was another vehicle parked to the left of the Insured Vehicle that had also sustained damage of fire nature to its left side. The registration number plate of this vehicle was SLW 9658E. See photo 5 – 8 below



Photo 5 shows the Insured Vehicle just before the fire (photograph taken by Mr Wong at the incident scene). Smoke could be seen coming out from the interior compartment, at the centre console area.



Photo 6 shows the Insured Vehicle with fire engulfing the interior compartment, at the centre body of the Insured Vehicle (photograph taken by Mr Wong at the incident scene).



Photo 7 shows the Insured Vehicle at the incident scene after the fire was extinguished. The Insured Vehicle had burned to char as a result of the fire. Another vehicle (arrowed) parked to the left of the Insured Vehicle had also sustained damage of fire nature to its left side.



Photo 8 shows a closer view of the vehicle that had also sustained damage of fire nature to its left side as a result of the fire spreading from the Insured Vehicle. The registration number plate of this vehicle was SLW 9658E.

17. For this case, the extensive damage of fire nature to the Insured Vehicle did not allow me to make any notable observations, during my inspection, with regard to the origin and cause of fire. However, from my review of the photographs taken at the incident scene, the origin of fire can be established basing on the presence of smoke that was seen emitting from the Insured Vehicle before the fire started.
18. As seen in photograph 5 above, the smoke was coming out from the centre console area of the Insured Vehicle. The subsequent outbreak of fire was also at the centre body of the Insured Vehicle as seen in photograph 6 above. Given these observations from the photographs that were taken at the incident scene, the origin of fire can be established to be at the centre body of the Insured Vehicle.
19. My research and ground investigation revealed that this model vehicle is fitted with a Diesel Particulate Filter (DPF). As with all modern-day diesel engine motor vehicles like the Insured Vehicle, DPF, a cannister like component (part), is fitted along the exhaust system of such type of motor vehicles. Briefly, DPF is a component (part) that captures diesel particulates through a combination of filtration mechanisms, preventing the diesel particulates from being release into the atmosphere as harmful gases. An illustration of a simple filtration mechanism inside a PDF is shown below.



20. Like all filter element, the filter element inside the DPF will begin to clog as soot (carbon) and other diesel particulate starts to accumulate on the filter element inside the DPF over a period of time. Cleaning of DPF is therefore required as part of its periodic maintenance. This is usually done through a process call "regeneration", when the exhaust temperature becomes high enough (usually at 600°C) to burn off the soot and other diesel particulate that have accumulated in the DPF. Driving a vehicle over long distance at speeds higher than road speeds allowed for urban city driving is the most common method of regenerating (cleaning) the DPF.
21. Smoke and/or fire from the underside of the vehicle or flames emanating from within the exhaust tailpipe can occur for such diesel engine vehicles when the exhaust temperature within the DPF increases due to clogging (exhaust gases becomes restricted and unable to flow out smoothly) or even when "regeneration" (cleaning). Heat from a fire within the DPF may possibly radiate to the surrounding vehicle components leading to heating of the vehicle underside, melting of interior components and in worst case, a potential interior fire. The DPF of the Insured Vehicle is located at the underside centre of the Insured Vehicle, below the centre console of the Insured Vehicle. This area was the area where smoke was seen emitting from the Insured Vehicle. The evidence gathered would then appear to indicate that the fire to the Insured Vehicle was a result of heat radiating from a fire that had occurred within the DPF that was fitted at the underside centre of the Insured Vehicle.
22. I was also able to gather during the course of my investigations that there were several precautionary notices in overseas pertaining to possible fire arising from DPF fitted on similar type of vehicles as the Insured Vehicle. However, my checks with Land Transport Authority (LTA) reveal that there was no manufacturer recall campaign arising from any DPF issue. There was however a manufacturer recall campaign involving the Insured Vehicle in 2017. The recall was for software issue to the control module of the restraint system (airbags, seatbelts etc). From the records, the Insured Vehicle has yet to be sent for rectification to address the purpose of the recall. The phone call that Mr Wong received from Wearnes Automotive Pte Ltd before the fire incident was likely relating to this recall campaign. See search result below obtained from LTA.

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:	3755K														
Vehicle Details															
Vehicle Registration number:	SKM3566R														
Make:	JAGUAR														
Vehicle Model:	XJ 3.0L DIESEL LWB PL A/T ABS D/AB HID														
Engine No.:	0488171306DT														
Chassis No.:	SAJAC2223BNV11649														
Recall Details															
1	<table> <tr> <td>Recall No.:</td><td>R2017120463</td></tr> <tr> <td>Manufacturer Recall Date:</td><td>07 Aug 2017</td></tr> <tr> <td>Estimated Completion Year of Recall:</td><td>2018</td></tr> <tr> <td>Brief Description (As Provided by Motor Dealer):</td><td>A previous software update to the Restraints Control Module (RCM) may have caused the module to reset to the default calibration which is not production intent.</td></tr> <tr> <td>Date Rectified:</td><td>-</td></tr> <tr> <td colspan="2">For more details, contact JAGUAR LAND ROVER SINGAPORE PTE. LTD.</td></tr> <tr> <td>Hotline Information:</td><td>JOAN/JASSICA/SUE at 63782693/63782640/63782639</td></tr> </table>	Recall No.:	R2017120463	Manufacturer Recall Date:	07 Aug 2017	Estimated Completion Year of Recall:	2018	Brief Description (As Provided by Motor Dealer):	A previous software update to the Restraints Control Module (RCM) may have caused the module to reset to the default calibration which is not production intent.	Date Rectified:	-	For more details, contact JAGUAR LAND ROVER SINGAPORE PTE. LTD.		Hotline Information:	JOAN/JASSICA/SUE at 63782693/63782640/63782639
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For more details, contact JAGUAR LAND ROVER SINGAPORE PTE. LTD.															
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Screenshot shows the LTA search result regarding the manufacturer recall that involved the Insured Vehicle. The recall was for software issue to the control module of the restraint system (airbags, seatbelts etc). From the records, the Insured Vehicle has yet to be sent for rectification to address the purpose of the recall.

2005-2007 Jaguar S Type and XJ diesel vehicles – Diesel Particulate Filter

Make & Model : 2005-2007 Jaguar S Type and XJ Diesel

Number of Vehicles Affected: 68

Model Years From: 2005 to 2008 (MY2006 to MY2008 fitted with a diesel engine and a diesel particulate filter)

Whats wrong?: When these vehicles are driven under a unique driving pattern where the vehicle is predominantly used for short journey distances, under slow driving style and light throttle application, excessive soot and hydrocarbons may become trapped in the Diesel Particulate Filter (DPF).

The DPF on 2.7 Litre V6 diesel engine vehicles may exhibit smoke and/or fire from the underside of the vehicle, flames emanating from within the rear exhaust tailpipe or an orange glow from the underside of the vehicle. Heat from a fire within the DPF can radiate to the surrounding vehicle components and may lead to heating of the underside of the transmission tunnel and subsequent melting of the interior components and potential interior fire.

VIN Range: S Type. N50727 to N82818. XJ. H00155 to H17094.

What to do?: Contact your Jaguar dealer.

Screenshot shows the precautionary notice in Australia pertaining to possible fire arising from DPF fitted on similar type of vehicles as the Insured Vehicle.

Conclusion

23. Having investigated and technically analysed the damages of burnt nature to the Insured Vehicle, I am of the view that the cause of fire to the Insured Vehicle was due to fire that had occurred within the Diesel Particulate Filter (DPF) of the Insured Vehicle. For this particular case, heat from a fire that had occurred within the DPF had radiated to the surrounding components leading to fire within the interior compartment of the Insured Vehicle.
24. The diesel particles (soot, carbon etc) trapped by the filter element inside the DPF of the Insured Vehicle had self-ignited when the exhaust temperature within the DPF had increased as a result of clogging in the DPF.
25. My investigations also revealed that the Insured Vehicle was involved in a manufacturer recall campaign in year 2017. The purpose of the recall was for software issue to the control module of the restraint system (airbags, seatbelts etc). Such type of issue does not pose any fire risk and hence is not related to this fire incident. There was no manufacturer recall campaign for DPF related issue(s) to the Insured Vehicle. There were however several precautionary notices in overseas pertaining to possible fire arising from DPF.
26. In view of this fire incident, a similar other incident that I had also investigated, and the precautionary notices pertaining to possible vehicular fire arising from heat radiating from DPFs, it is suggested that insurers, when underwriting, should consider the possible risk of vehicular fire that such type of modern day diesel engine motor vehicles poses.

Ang Bryan Tani

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