

Your Ref: 582747
Our Ref : CS/MSG19001334/N

25 January 2019

M/s MSIG Insurance (Singapore) Pte. Ltd.

16 Raffles Quay #24-01
Hong Leong Building
Singapore 048581
(Motor Claims Department)

**TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE
INSURED VEHICLE SFS 2846S ON 16 JANUARY 2019**

1. We refer to your letter dated 21 January 2019 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle SFS 2846S (herein referred to as "**Insured Vehicle**") are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 22 January 2019 at the premises of S & H Motor Pte. Ltd. (herein referred to as "**S&H**") located at 160 Sin Ming Drive #07-02, 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.	: SFS 2846S
Make / Model	: AUDI A4 2.0 TFSI A
Chassis No	: WAUZZZ8KXAA092895
Year of Registration	: September 2010
Mileage	: N.A. (battery melted)

5. The exterior front body of the Insured Vehicle sustained visible fire damage. This included its windscreen, front bonnet, headlights, front bumper, side panels, front rims and front tyres.
6. The fire had resulted in extensive 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. The interior compartment was observed to have been relatively unaffected by the fire. See photos 1 – 7 below.



Photo 1 shows the rear left view of the Insured Vehicle. The rear portion of the Insured Vehicle was observed to be relatively 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, side panels, front rims and front tyres.



Photo 3 shows the general view of the right 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, front bumper, right front panel, right headlight, right front rim and right front tyre.



Photo 4 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 visible fire damage. This included its front windscreen, front bonnet, left headlight, front bumper, left front panel, left front rim and left front tyre.



Photo 5 shows a closer view of the front windscreen of the Insured Vehicle at the time of our inspection. The front windscreen had sustained serious fire damage.



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.



Photo 7 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. There also appears to be no modification(s) fitted 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 rear centre portion of the engine compartment. This can be determined from the burn pattern and the high heat intensity burn marks (whitish burn marks) that had developed on the underside of the front bonnet, at the rear centre 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 rust that had developed on the underside of the front bonnet, around the rear centre portion, is an indication that the rear centre portion of the engine compartment had sustained exposure to prolonged high heat intensity. See photo 8 below.

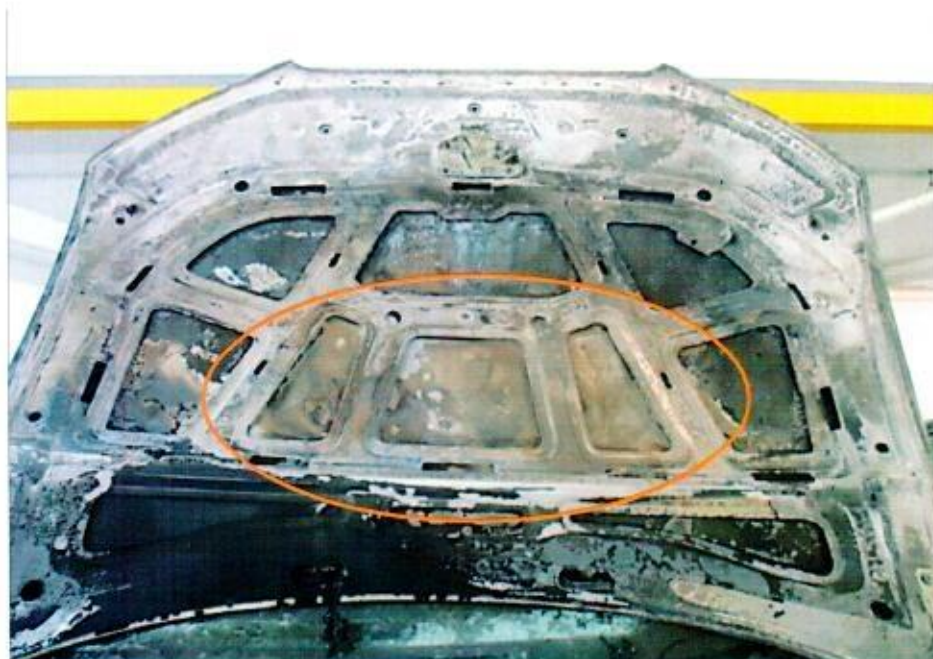


Photo 8 shows the rust that had developed on the underside of the front bonnet, around the rear centre portion (circled). The development of rust is an indication that this area was subjected to prolonged exposure to high heat intensity, which had caused the steel/metal material of the front bonnet to be exposed to natural environmental condition. Hence the fire to the Insured Vehicle can be determined to have originated towards the rear centre portion of the engine compartment.

10. Upon closer examination of the rear 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 9 - 12 below.



Photo 9 shows the burnt wirings around the rear centre portion of the engine compartment (circled), which is in the immediate vicinity where the fire to the Insured Vehicle had likely started.



Photo 10 shows a closer view of the burnt wirings around the rear 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 (circled). 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 11 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.

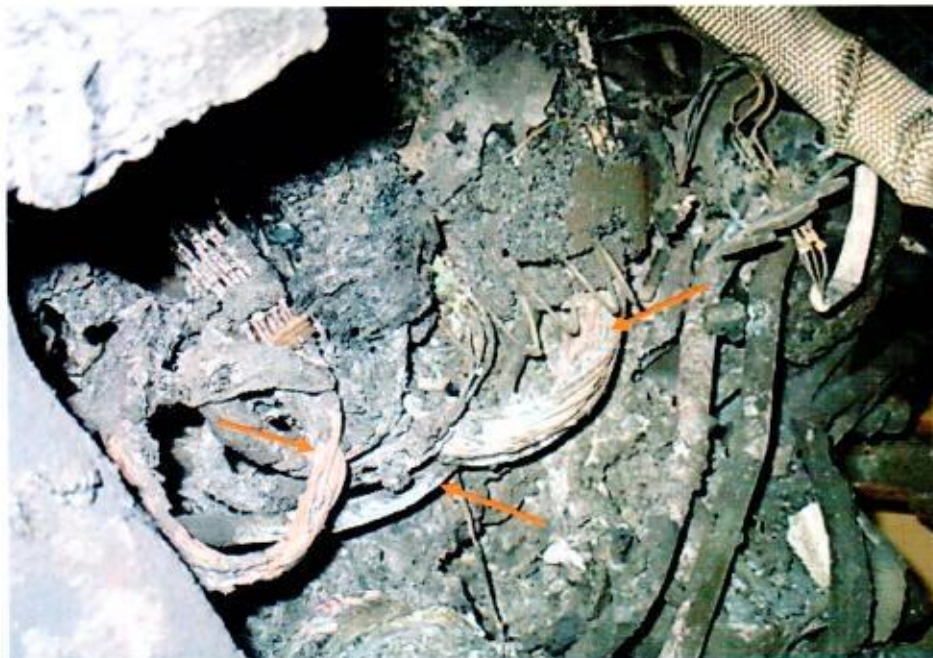
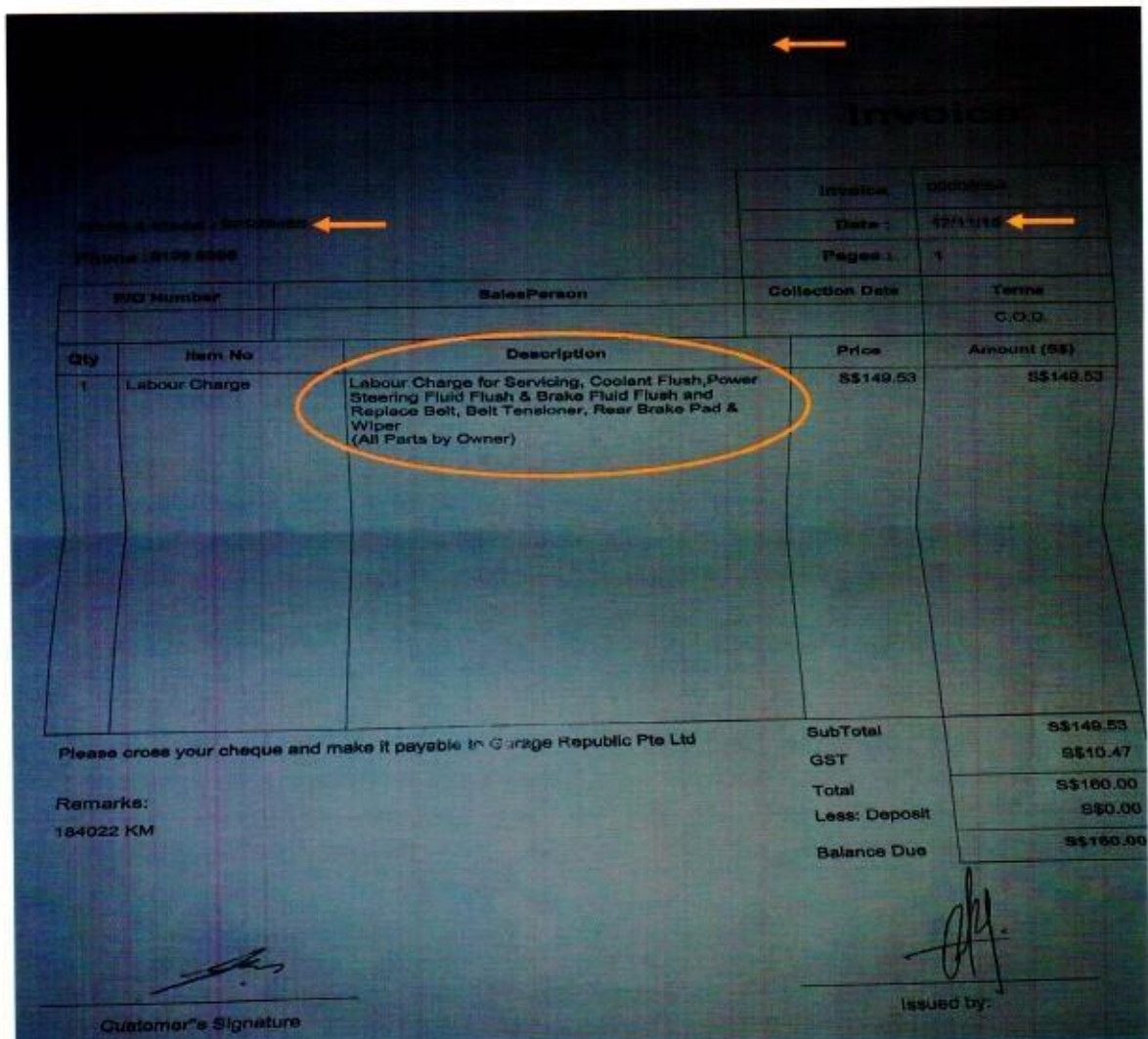


Photo 12 shows a close up view of the greenish residue found on several stretches of burnt wirings (red arrows). The presence of such greenish residue suggests occurrence of an electrical short circuit.

11. From the Police Report No. E/20190117/2053 and the Singapore Accident Statement, which was made by Mr Koh Poh Heng (herein referred to as **"Mr Koh"**), we note that the fire to the Insured Vehicle had started at a time while he was parking. He was alerted of the fire when he saw smoke emitting from the engine compartment.
12. We managed to speak to Mr Koh on 24 January 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. According to Mr Koh, at about 2100hrs on 16 January 2019, he was driving from his office located at Tradehub 21 in Jurong to his home in Yishun. Mr Koh reached the open carpark of Block 349 Yishun Avenue 11 and proceeded to park the Insured Vehicle. As he was reversing, he noticed white smoke emitting from the centre portion of the front bonnet. He immediately switched off the engine and went to check the front portion of the Insured Vehicle where he saw flames from under the front bonnet.
14. Mr Koh quickly called the SCDF whom arrived within 10 minutes together with the police. The fire was extinguished in less than 15 minutes. According to Mr Koh, there was no vehicle parked to the right side of the Insured Vehicle. However Mr Koh mentioned that there was a Volkswagen Scirocco parked to the left side of the Insured Vehicle when the incident occurred. The Volkswagen Scirocco had sustained consequential fire damage to its right front portion. The owner was notified by the police and was present while the SCDF were attempting to put out the fire.
15. Mr Koh assisted the SCDF in their preliminary investigations and his statement was also taken by the police. Mr Koh called the MSIG hotline the next morning at 1000 hours and made towing arrangements. The tow truck arrived within 40 minutes and the Insured Vehicle was towed to S&H. Mr Koh hitched a ride with a friend to S&H where he was told to lodge a police report first before making an insurance report. Mr Koh then went to the Thomson Neighbourhood Police Post and lodged a police report at 1505 hours. He then returned to S&H and made the insurance report at 1634 hours.
16. With regards to the history of the Insured Vehicle, we were able to gather from Mr Koh that the Insured Vehicle was purchased second-hand in 2018 with 2 years and 1 month of COE left. Mr Koh is the owner and only driver of the Insured Vehicle. To the best of his recollection, there has not been any major mechanical problem and/or electrical problem with the Insured Vehicle.

17. Pertaining to the maintenance aspect, Mr Koh sends the Insured Vehicle for periodic servicing.

18. During the course of our investigations, we were also able to obtain from Mr Koh, a document relating to the latest servicing of the Insured Vehicle done at Garage Republic Pte. Ltd. Located at Synergy @ Kaki Bukit, No. 25 Kaki Bukit Road 4, #08-43, Singapore 417800 on 12 November 2018. The servicing package included changing of engine oil, oil filter, belt, belt tensioner, rear brake pads and wiper. The radiator coolant, power steering fluid and brake fluid were also flushed. Refer to invoice 1 below.



Invoice

Invoice Number: 184022
Date: 12/11/18
Page: 1

QTY	Item No	Description	Price	Amount (S\$)
1	Labour Charge	Labour Charge for Servicing, Coolant Flush, Power Steering Fluid Flush & Brake Fluid Flush and Replace Belt, Belt Tensioner, Rear Brake Pad & Wiper (All Parts by Owner)	S\$149.53	S\$149.53
SubTotal				S\$149.53
GST				S\$10.47
Total				S\$160.00
Less: Deposit				S\$0.00
Balance Due				S\$160.00

Please cross your cheque and make it payable to Garage Republic Pte Ltd

Remarks:
184022 KM

Customer's Signature: _____

Issued by: _____

Invoice 1 shows the last servicing done on the Insured Vehicle on 12 November 2018 (red arrows). The servicing package included changing of engine oil, oil filter, belt, belt tensioner, rear brake pads and wiper. The radiator coolant, power steering fluid and brake fluid were also flushed (circled).

19. Mr Koh mentioned that after the servicing was done, 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.
20. Mr Koh 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.

Accident Scene Photographs

21. We were able to obtain from Mr Koh photos of the Insured Vehicle on fire well as photos which he had taken after the fire was put out. In general, the information that could be gathered from these photographs had corresponded to the events that were related to us by Mr Koh. 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 parked.
22. It was also observed that the Volkswagen Scirocco parked on the left side of the Insured Vehicle had sustained damage of heat nature at its right front side. See photos 13 – 16 below.



Photo 13 shows the Insured Vehicle on fire before the arrival of the SCDF (circled).



Photo 14 shows the SCDF having just put out the fire on the Insured Vehicle. The Volkswagen Scirroco parked on the left side of the Insured Vehicle had sustained damage of heat nature at its right front side (circled).



Photo 15 shows a closer view of the damage of heat nature sustained to the right front portion of the Volkswagen Scirocco which was parked on the left side of the Insured Vehicle when the incident occurred (circled).

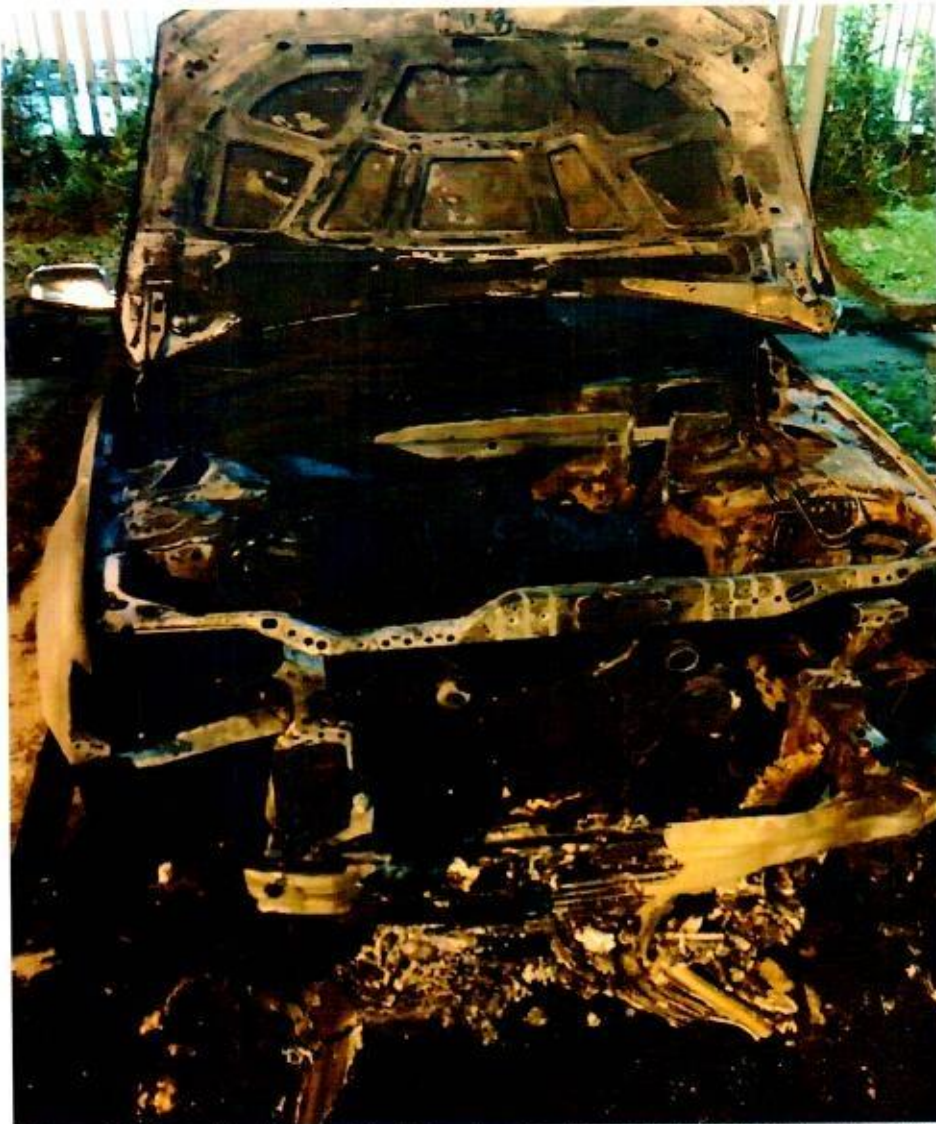


Photo 16 shows the Insured Vehicle after the fire was extinguished. The extent of damage is consistent with Mr Koh's statement in which the fire started from the engine compartment.

23. 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.
24. 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 Koh had mentioned to us there were no indications of abnormally high temperatures on the Insured Vehicle when he was driving on that day.

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 parking lot where the Insured Vehicle was parked. The location of where the Insured Vehicle was parked 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 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.
27. 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 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: Singapore NRIC

Owner ID: 28921

Vehicle Details

Vehicle Registration number: SFS2846S

Make: AUDI

Vehicle Model: AA 2.0 TFSI A

Engine No: CDN069759

Chassis No: WAUZZZ8KXA092895

Recall Details

No Recall Detail records

OK

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

Conclusion

28. Having investigated and technically analysed the damages 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 rear centre portion. 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. 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.
31. 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)

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.