

Your Ref: CSG24VFPCA00047/HLF
Our Ref : CS4/FCI21004180/P

18th November 2024

M/s ALLIED WORLD ASSURANCE COMPANY LTD
60 ANSON ROAD #08-01
MAPLETREE ANSON
Singapore 079914

TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE INSURED VEHICLE YN 605K ON 31st OCTOBER 2024

1. We refer to your letter dated 12th November 2024 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle YN 605K (herein referred to as “**Insured Vehicle**”) are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 14th November 2024 at the premises of Klenco (Singapore) Pte Ltd located at 18 Gul Crescent, Singapore 629527
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded:-

Vehicle Registration No.	: YN 605K
Make / Model	: DULEVO, 5000 VELOCE EU4 A
Chassis No	: ZA9S5020E4DC38063
Year of Registration	: 18 NOV 2009
Mileage	: N.A (wiring affected)

5. The Insured Vehicle was observed to have sustained minor fire damage confined only to its engine compartment in the middle right side, the electrical wirings around the middle right engine area was damaged as a result of the fire. The other parts of the Insured Vehicle was not affected by the fire See photos 1 – 7 below.



Photo 1 shows the front portion of the Insured Vehicle, which was observed to be unaffected by the fire.



Photo 2 shows the rear portion of the Insured Vehicle, which was observed to be unaffected by the fire.



Photo 3 shows the right body of the Insured Vehicle, which was observed to be unaffected by the fire.



Photo 4 shows the left body of the Insured Vehicle, which was observed to be unaffected by the fire.



Photo 5 shows the general view of the interior compartment of the Insured Vehicle at the time of our inspection was observed to be unaffected by the fire.



Photo 6 shows the engine compartment in the middle right portion of the Insured Vehicle at the time of our inspection. The engine compartment of the Insured Vehicle was observed to sustained heat and smoke damages. The electrical wirings was damaged as a result of the fire.



Photo 7 shows the engine compartment of the Insured Vehicle at the time of our inspection. The Insured Vehicle was observed to have sustained fire damage to its electrical wirings and components (red circle) and the right engine door panel (yellow circle) was damaged as a result of the fire.

6. At the time of inspection, we did not find any unusual remains which could have suggested that there was possible modification(s) on the Insured Vehicle.

Investigation and Technical Analysis

7. Based on the circumstances for this particular case, the fire appears to have originated from the engine area of the Insured Vehicle, somewhere around the middle right portion. This can be determined basing on the area where the extent of fire damage was most severe, the circumstances of the fires' origin at the material time of incident and also the high heat intensity burn marks (whitish burn marks) that were found on the exterior surface close to the engine middle right portion.
8. These whitish burn marks are a result of exposure to prolong heat intensity. Rust would normally start to develop around these areas soon after a fire as the prolonged exposure to high heat intensity usually causes the bare steel/metal material of the body parts to be exposed to natural environmental condition. The rust that had developed on the front bonnet and centre portion, in the immediate vicinity of where these whitish burn marks were found, would also support our findings of where the fire had affected the Insured Vehicle. See photo 8 and 9 below.



Photo 8 shows the close up view of the engine right portion of the Insured Vehicle at the time of our inspection. The burn pattern of the various components which were observed to be partly melted and burn from the high heat intensity and exposure of bare copper wirings (circled) indicates that the fire had originated from the wirings of the engine right portion of the Insured Vehicle.

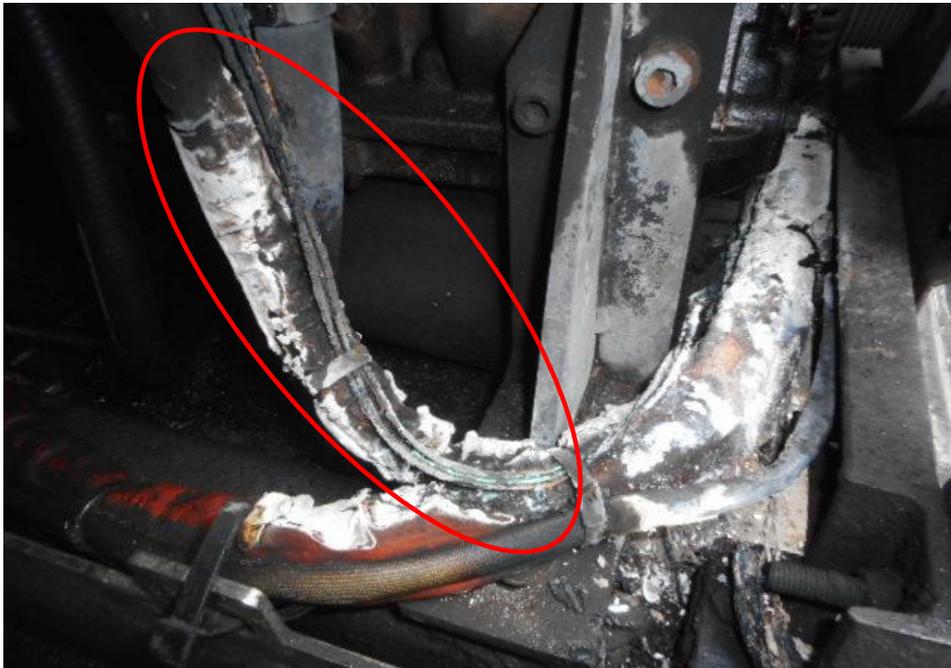


Photo 9 shows the close up view of the engine of the Insured Vehicle at the time of our inspection. The burn pattern of the various components which were observed to be partly melted and burn from the high heat intensity and exposure of bare copper wirings (circled) indicates that the fire had originated from the wirings of the engine portion of the Insured Vehicle.

9. Upon closer examination of the engine compartment portion Insured Vehicle, which was where the fire had likely started, we had found traces of greenish residue on the main wiring's harnesses leading from the alternator to the electrical components of the Insured Vehicle. The wirings were original wirings fitted from the manufacturer. 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 the 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 10 to 12 below.

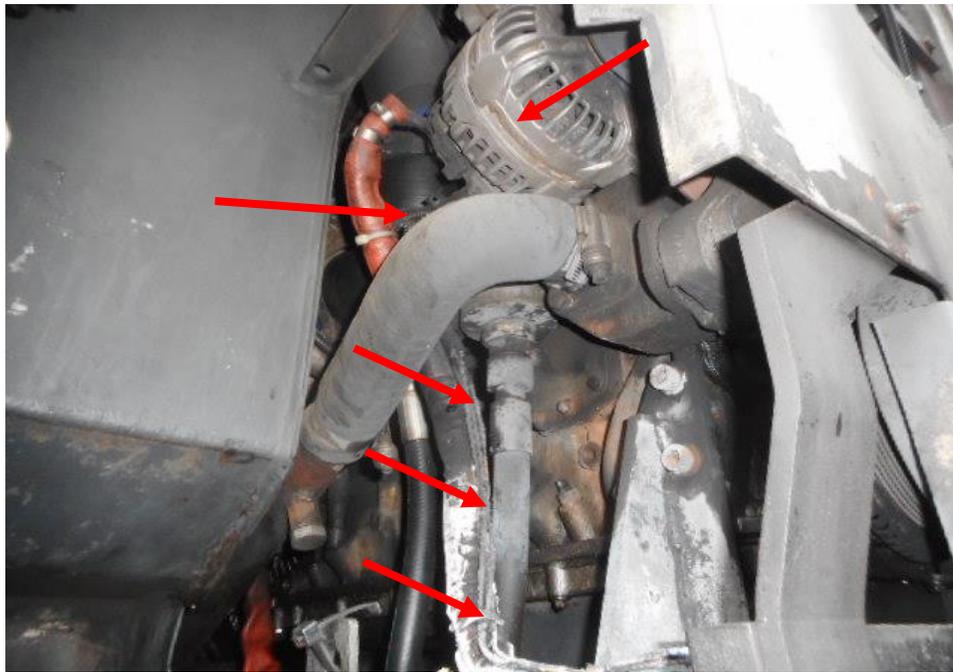


Photo 10 shows the general view of the engine compartment of the Insured Vehicle at the time of our inspection. The fire damage to the Insured Vehicle has affected its engine compartment. Its wirings from the alternator (arrowed) to its electrical components and various original wiring harnesses was amongst the parts in the compartment that were found to have been affected as a result of the fire.

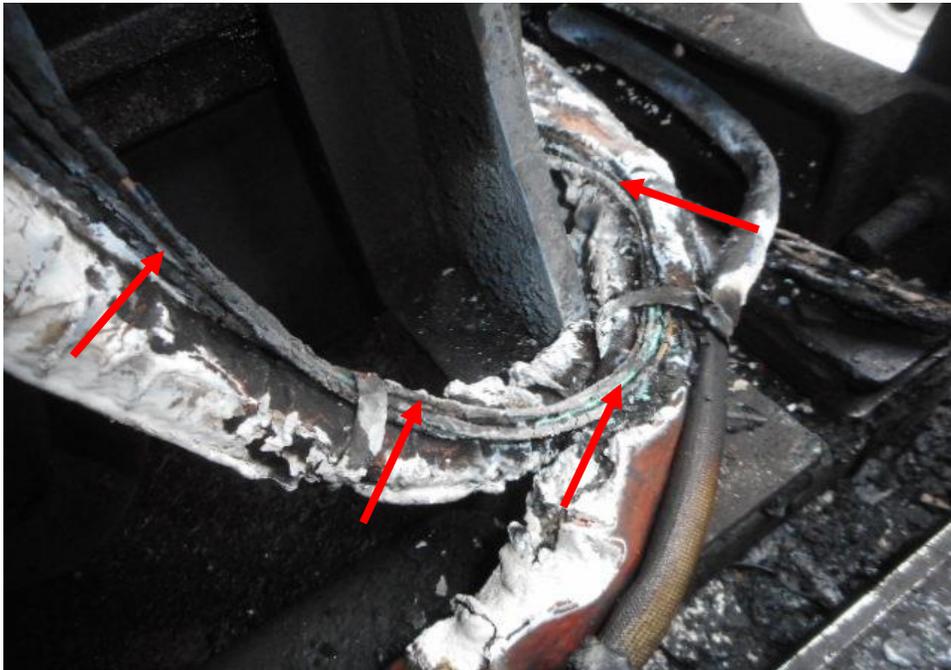


Photo 11 shows a close up view of the original wiring harness from the alternator (arrowed) was observed with greenish residue on the surface. The presence of greenish residue indicates internal heating of copper wires, a sign of an electrical short circuit occurring. The greenish residue is normally left behind from oxidation as a result of chemical reaction involving the copper wires.



Photo 12 shows close up view of the original wiring harness from the alternator (arrowed) to the electrical components was observed with greenish residue on the surface. 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.

10. From the Singapore Accident Statement, which was made by Mr Wong Tuck Kwong (herein referred to as “**Mr Wong**”); we note that the fire to the Insured Vehicle started at a time when the Insured Vehicle was travelling on the road. Mr Wong was first alerted of the fire when he smelt smoke in the cabin and saw smoke around the Insured Vehicle during driving.
11. We managed to speak to Mr Wong on 18th November 2024 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 Wong, on 31st October 2024. Mr Wong informed us that he works as a road sweeper operator and was operating the Insured Vehicle along Tampines Industrial area towards Sengkang at about 0805 hours. Mr Wong was in the midst of driving the Insured Vehicle when he mentioned that there was smoke smell in the cabin of the Insured Vehicle, and he also saw smoke around the Insured Vehicle. He immediately pulled the Insured Vehicle to the side of the road, close to lamppost no 151 and called for Police and SCDF assistances. Mr Wong mentioned that while he was will waiting for assistances, he opened the right middle engine compartment door and notice that was a little flames at the wirings and he subsequently took his water bottle with water inside and proceed to extinguish the flame, however he did not managed to extinguished the flame and shortly after SCDF officers arrived and had the fire extinguished and had Mr Wong’s statement was taken down afterwards.
13. Mr Wong subsequently contacted his company, and they made towing arrangements. The tow truck arrived and had the Insured Vehicle towed to their company depot and then to the authorised workshop, Klenco (S) Pte Ltd. Mr Wong made an insurance report on 4th November 2024 at 1003 hours.
14. Mr Wong mentioned that he had not experienced any mechanical or electrical/electronic problems with the Insured Vehicle till the day of the incident. He also mentioned that there were neither warning lights displayed nor was there an abnormal rise in temperature throughout the period the Insured Vehicle prior to the fire.
15. With regards to the history of the Insured Vehicle, we were able to gather from Mr Wong’s company that the Insured Vehicle was purchased pre-owned 1 month ago and Mr Wong is the registered driver of the Insured Vehicle. Mr Wong informed us that he is the only driver of the Insured Vehicle and the Insured Vehicle did not had any servicing conducted or any repair works conducted on it prior to the fire incident.

Incident Scene Photographs

16. During our investigations, we were able to obtain coloured photographs showing the Insured Vehicle at the incident after the fire was extinguished and SCDF personnel was on the scene. These were provided to us by Mr Wong.
17. Our examination of these photographs revealed that the fire had started from the front of the Insured Vehicle. The photographs had also showed the Insured Vehicle on fire and similar extent of damage and burn pattern to the Insured Vehicle as per what we had observed during our physical inspection of the Insured Vehicle. Apart from the aforesaid, there was no further notable information that could be gathered from these photographs. See photos 13 and 14 below which were provided to us by Mr Wong.



Photo 13 shows the Insured Vehicle middle right portion 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 Wong, location when the fire broke out.



Photo 14 shows the SCDF officer on scene after the fire was put out on the Insured Vehicle. In general, the information that could be gathered from this photograph had corresponded to the events that were related to us by Mr Wong, location when the fire broke out.

18. 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 Wong had mentioned to us that he was able to drive the Insured Vehicle to the side of the road and turned off the engine.
19. 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 location where the Insured Vehicle caught fire was also observed to be not at a secluded location.
20. 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 several stretches of original wirings from the alternator to its electrical components which was burnt internally to its bare copper state on the Insured Vehicle which was a sign of short circuit that which was earlier discussed in paragraph 9 above.

21. Our checks with both local and international bodies and associations had also revealed that at the time of writing this report, there is a manufacturer recall of similar make and model vehicle to the Insured Vehicle that may possibly be related to fire being originated from the engine compartment of the Insured Vehicle. See search result from LTA below.

Vehicle Recall Details

* ONLY INFORMATION ON VEHICLE RECALLS SUBMITTED FROM 9 APRIL 2007 IS AVAILABLE

Owner ID Type Company	Owner ID 700E
Vehicle No. YN605K ←	Make/Model DULEVO/ 5000 VELOCE EU4 A
Engine No.: 658795	Chassis No.: ZA9S5020E4DC38063 ←
Recall Details: No Recall Detail records ←	

Conclusion

22. 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 nature. For this particular case, the fire had originated from the wiring harnesses of the alternator leading to its electrical components in the engine compartment of the Insured Vehicle.
23. 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.

24. There was 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.
25. Our investigations had also revealed that at the time of writing this report, there was no manufacturer recall to similar make and model vehicle as the Insured Vehicle that may possibly be related to this incident.

**Sherwin Beh***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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