

Your Ref: SFL 928P
Our Ref : CI/TP21001822/D-1

13 April 2022

Moses Png Tian San
5 Leedon Heights #12-10
Singapore 267952

**SUPPLEMENTARY DAMAGE CONSISTENCY REPORT OF A PORSCHE 911
TURBO MOTOR CAR WITH REGISTRATION NUMBER SFL 928P (SND 918R)**

1. This report serves to provide my comments to the Damage Consistency And Re-inspection Report dated 30 November 2021 by M/s FormTeam Consultancy Pte Ltd (herein referred to as "**FTC Report**").
2. Where applicable, I had made references to my own report dated 29 June 2021. The Porsche 911 turbo motor car with registration number SFL 928P was referred to in FTC Report as "**PV**" (Plaintiff Vehicle). The tow truck with registration number YM 4184L that was involved in this incident was referred to as "**DV**" (Defendant Vehicle). For easy reading, I will similarly refer both as PV and DV herein.
3. For completeness, I note that the registration number of PV (SFL 928P) has been replaced with SND 918R as seen in FTC report. The soft copy of all the photographs contained in FTC Report were provided to me for review.
4. The following paragraphs sets out my comments.

Comments

5. Firstly, I concur with the finding in FTC Report, that there were parts found not replaced at the time of their inspection on 06 October 2021. My comparison of the soft copy photograph 77, 78 and 79 at page 42 of FTC Report with the soft copy photographs that I had taken of PV during my own inspection on 12 October 2020 and 20 October 2020, revealed that the left turbo, right turbo, left exhaust manifold and right exhaust manifold were all the same parts and were not replaced as at the time of their (FormTeam Consultancy Pte Ltd) inspection on 06 October 2021.
6. FTC Report also concluded that the damage to the exhaust muffler of PV is consistent to the towing incident. This concurs with my finding in paragraph 44, page 29 of my report. The exhaust muffler of PV was also found to be replaced as at the time of their (FormTeam Consultancy Pte Ltd) inspection on 06 October 2021.





























7. Whilst I would agree that the left turbo, right turbo, left exhaust manifold and right exhaust manifold of PV were not replaced, it does not mean that these parts were not consistent to the towing incident. These parts were still possibly misaligned at their flanges/joints by the towing incident, but the misalignment was not severe to render these parts beyond serviceable/working condition.
8. It was commented in FTC Report that these parts were not consistent and their basis for this appears to be primarily based on the depth of the dent on the exhaust muffler of PV. In paragraph H (14) at page 49 of FTC Report, *"From the small dent of 5mm impact on the exhaust muffler, it was impossible that the force be transmitted to other parts of PV to cause damage"*.
9. Whilst the depth of the dent may have been measured to be 5mm, the impact force exerted on the exhaust muffler was sufficient to push the entire exhaust muffler upwards from its original position to come into contact with the exhaust heat plate. There were impact marks found on the exhaust heat plate, and this was not addressed in FTC Report. Refer to photograph 15 and 16 at page 13 and 14 as well as photograph 21 at page 16 of my report. Simply put, the 5mm dent cannot be used as a representation of the amount of force that was exerted on the exhaust muffler at the material time. Furthermore, the material strength of the exhaust muffler, which is a critical factor that would affect the amount of force required to cause the 5mm dent, was not considered or mentioned in FTC report.
10. Also, in paragraph 40 to 42, at page 26 of my report, I had discussed on the manufacturer design/layout of PV's exhaust system, where such design/layout does not accommodate for any unnatural independent flexing movement, and that although the incident would seem to be a relatively minor type of incident, the manufacturer's standard design/layout of the Motor Car's exhaust system led to damage beyond the expected.
11. It is noted that FTC Report did not contain any disagreement that the exhaust system of PV does not allow for any unnatural independent flexing movement of the exhaust system. Therefore, my opinion remains that parts further inwards of PV like the left turbo, right turbo, left exhaust manifold, right exhaust manifold and others, although found not replaced, were still possibly damaged from the towing incident. In addition, photograph 34 and 35 at page 27 and 28 of my report had showed both left turbo and right turbo oil pipes had shifted upwards, leaving behind contact marks on the respective heat shields. This is supportive of my view that unnatural flexing movement did indeed occur to parts beyond the exhaust muffler.

12. FTC Report had commented *“untouched rusted bolt”* multiple times, referring to the bolts securing the exhaust components of PV. The relationship that the bolts are rusted and untouched at the same time cannot be conclusively established. It has to be recognized that the bolts of PV’s exhaust system are exposed to both cyclical high temperatures, and weather/moisture elements through the exposed rear underside of PV. The rusting of bolts is a natural ongoing process that continues with time and cyclical environmental exposure. Simply put, although the bolts may have been rusted, it does not mean that the bolts were also untouched. Any rusted bolts could have still been subjected to removal and re-fitting processes. Relying on rusted bolt alone to determine parts not replaced is not conclusive.
13. In paragraph H (15) at page 40 of FTC Report, it was commented that *“PV was almost 20 years old and had 7 ownership transfers at the time of incident and PV could have been involved in some accidents which the owner may not have been aware, and repairs might not have been properly carried out”*. I disagree with this comment if the comment is made specific to the misalignment of PV’s exhaust system as a result of the towing incident. This is because, I am given to understand that the left turbo, right turbo, left exhaust manifold and right exhaust manifold of PV were all new parts and were recently replaced by the owner before the incident.
14. For similar reasons, I would also disagree with the comments in paragraph H (5) at page 48 of FTC Report that *“the exhaust gas leakage was due to wear and tear”*. The comment that *“the exhaust gaskets could have been corroded over a prolonged period and/or exhaust gaskets not fitted”*, is also inaccurate. There is no basis for such comment to be made as the exhaust gaskets sits in between the joints at the different exhaust sections and are not in view unless the different exhaust sections are dismantled. It would therefore be inappropriate for comments to be made on the condition of the exhaust gaskets at the material time of incident without the benefit of having sight of the exhaust gaskets.
15. With regard to paragraph G (3) at page 45 and paragraph H (16) at page 49 of FTC report, it was commented that *“It is not uncommon to see vehicles with exhaust tail pipes of asymmetric heights”*. Several photographs of other vehicles were shown in photograph 80 to 83 at page 43 and 44 of FTC Report. In my opinion, I find the photographs shown and comments in paragraph G (3) and paragraph H (16) irrelevant and cannot be relied on to justify that the asymmetric height of PV’s exhaust muffler was a common thing and not caused by the impact on PV’s exhaust muffler as a result of the towing incident.

16. In paragraph 31 at page 21 of my report I had commented on the before towing and after towing photographs that were provided to me by the owner, which clearly showed the exhaust tailpipes of PV were of different height immediately after the towing. The two photographs, which were shown in photograph 29 and 30 at page 21 and page 22 in my report, were not considered and commented upon in FTC Report. Using photographs of other vehicles to simply suggest that the difference in height of PV's exhaust tail pipes was a common sight and not caused by the impact on PV's exhaust muffler as a result of the towing incident is not supported.
17. Regardless of where or at which position I had carried out the measurements of PV's exhaust tail pipes (refer to paragraph G (2) at page 45 of FTC Report), the before towing and after towing photographs had already clearly showed that PV's tail pipes were of different height immediately after the towing.
18. Moving on, the width of the rear exhaust dent was measured to be 10.5cm in FTC Report as shown in photograph 74 at page 40 of FTC report. The width of the boom arm housing of the actual tow truck was measured to be 12.3cm as shown in photograph 4 at page 5 of FTC Report and the width of the inner boom arm of the actual tow truck was measured to be 10.8cm as shown in photograph 7 at page 6 of FTC Report.
19. In paragraph G (1) at page 45 of FTC Report, it was commented that "*the dent mark was caused by the tow truck's inner boom arm. The measurements on the rear muffler dent matches with DV Tow Truck lifting Inner Boom*". However, having reviewed the measurements, I find that the measurements in FTC Report also show that it was possible that the tow truck's boom arm housing and not the inner boom arm had caused the dent to the exhaust muffler of PV.
20. The measurement of the tow truck's boom arm housing (12.3cm) in FTC Report had included the curved sides of the boom arm housing. Basing on photograph 4 at page 5 of FTC Report, the curved sides of the boom arm housing were about 1cm on each side. This would mean that the width of the boom arm housing between the parallel sides was 10.3cm, and also correspond to the 10.5cm width of PV's rear exhaust dent. Hence, the measurements in FTC Report also show that it was possible that the tow truck's boom arm housing had caused the dent to the rear exhaust of PV. The causation of the dent should therefore not be limited to the descending and unloading process of PV, as opined in paragraph G (1) at page 45 of FTC Report. Note that in paragraph 35 at page 24 of my report, I had opined that the dent was caused by DV's boom arm housing.

21. The comments at paragraph G (10) at page 47 of FTC Report in particular “*DV, while towing from Leedon Height to Carros Centre, the tow boom housing could not have damaged the rear exhaust muffler*”, would then be incorrect. Note that in paragraph 36 at page 24 of my report, I had commented that the damage to the rear exhaust could have been caused during the towing journey.
22. Notwithstanding that my measurements of the boom arm housing did not show any vehicle number, the measurements of DV’s boom arm housing shown in FTC Report had confirmed that the damage to PV’s rear exhaust could also have been caused by the DV’s boom arm housing, which would support my opinion that the damage could have arisen during the towing journey. It should therefore not be confined to the descending and unloading process of PV as opined in FTC Report.
23. Photographs 12 to 17 at page 9 to 11 of FTC Report showed “*The proper way to unload low floor clearance vehicle by using 2 wooden blocks between each fork*”. While it is one of the possible good practice methods to reduce opportunity of causing damage, I note that it has not been established in FTC Report that wooden blocks were used during the descending and unloading process of PV.
24. FTC Report had only recommended the damaged exhaust muffler for replacement. In addition to the damaged exhaust muffler, the exhaust heat plate, 2 x exhaust heat shields, 2 x oil pipes were also presented for verification. Refer to photograph 53 to 59 at pages 30 to 38 of FTC Report. In this aspect, I am of the opinion that these parts should be recommended for replacement as well. Reasons for which were set out earlier in paragraph 9 to 11 above. Paragraph H (6) at page 48 of FTC report confirmed that these parts were replaced.
25. The cost to replace the damaged exhaust muffler was recommended to be SGD 7,790.43 at page 1 of Annex A in FTC Report. I note that this cost was obtained through online search from overseas website. It was not stated on the website and/or in FTC Report whether this cost includes international shipping, applicable taxes and other incidentals to fulfill the product locally in Singapore. All these other costs, if have not, should be considered for a fair and reasonable recommendation on the cost of replacement for the damaged exhaust muffler of PV.

26. Furthermore, I note that the USD/SGD currency conversion data value of 1.41387 applied in FTC Report was dated 29 April 2020, which was about 6 weeks after the date of incident on 18 March 2020. Although not significantly different, the conversion data value closer to the date of incident should be applied. My checks on historical data revealed that the USD/SGD currency conversion data value on 18 March 2020 was 1.44449, which was higher than the data value applied in FTC Report. Refer to screenshot below.

 USD	 Lao Kip	8947.89891	USD LAK rate for 3/18/2020
 USD	 Macau Pataca	8.04543	USD MOP rate for 3/18/2020
 USD	 Malaysian Ringgit	4.39652	USD MYR rate for 3/18/2020
 USD	 Myanmar Kyat	1437.35408	USD MMK rate for 3/18/2020
 USD	 Nepalese Rupee	119.45865	USD NPR rate for 3/18/2020
 USD	 New Zealand Dollar	1.74252	USD NZD rate for 3/18/2020
 USD	 Pakistan Rupee	157.59053	USD PKR rate for 3/18/2020
 USD	 Philippine Peso	51.72265	USD PHP rate for 3/18/2020
 USD	 Seychelles Rupee	13.70425	USD SCR rate for 3/18/2020
 USD	 Singapore Dollar	1.44449	USD SGD rate for 3/18/2020
 USD	 Sri Lanka Rupee	186.78560	USD LKR rate for 3/18/2020
 USD	 Taiwan Dollar	30.49526	USD TWD rate for 3/18/2020
 USD	 Thai Baht	32.62136	USD THB rate for 3/18/2020
 USD	 Vietnamese Dong	23418.91619	USD VND rate for 3/18/2020

27. The issue on the costing to replace the damaged exhaust muffler aside, I am given to understand from the owner that the damaged exhaust muffler was no longer in production as at the time of this incident. According to the owner, after the discovery of the damage to the exhaust muffler, he had communicated with Gruppe M, the manufacturer of the damaged exhaust muffler, and he was informed that the damaged exhaust muffler was no longer in production. Refer to screenshot below, which also includes correspondence between the owner and a local supplier for the damaged exhaust muffler. Full correspondences attached with this report.

From: sales@gruppemusa.com
To: [Moses Png](#)
Subject: RE: Stock availability
Date: Wednesday, 25 March, 2020 11:35:07 AM

Japan informed me this application is discontinued unfortunately.

Thank you

Sam | Wholesale Manager

GruppeM North America
T: (310) 455-6688
F: (310) 388-0330
www.gruppemusa.com

----- Original message -----

From: Moses Png <mosespng@gmail.com>
Date: 3/24/20 2:43 PM (GMT-08:00)
To: sales@gruppemusa.com
Subject: RE: Stock availability

Thanks Sam,

Please let me know when you find out.

From: [James Lee](#)
To: [Moses Png](#)
Subject: Re: Exhaust enquiry
Date: Monday, 23 March, 2020 11:09:57 AM

Hi,

Sorry this item has been discontinued.

Best Regards,

James Lee
 Maximus Racing Pte Ltd.
 Follow us:
<http://www.Facebook.com/MaximusRacingSG>

On 22 Mar 2020, at 06:51, Moses Png <mosespng@gmail.com> wrote:

Hi MaximusRacing

How much is the stainless steel Gruppe M exhaust (muffler with cats)
 for 996 Turbo and if they are still available for order? Thanks.

Regards,
 Moses Png

28. Given that an identical exhaust muffler was no longer available for replacement, the owner had no alternative but to source for another brand of exhaust muffler. Hence the fitment of "Kline Innovation Exhaust System" on PV as shown in photograph 27 at page 17 of FTC Report. Note also in the Vehicle Damage Inspection Report of PV dated 21 May 2020 by Infiniti Appraisal Services, at page 2 s/no 1, it was indicated "Muffler Gruppe M (eol)", with eol being the abbreviation for "end of life/line". This Vehicle Damage Inspection Report of PV by Infiniti Appraisal Services was provided to FormTeam Consultancy Pte Ltd in the preparation of FTC Report.
29. A complete change of PV's exhaust muffler to another brand would have meant a change in the volumetric efficiency, exhaust flow profile and other parameters that was previously set for the damaged Gruppe M exhaust muffler. A software recalibration was hence required to re-adjust the various parameters to reinstate proper operation conditions for PV's exhaust system to function at its optimal efficiency. DME Speed Density Recalibration, which was indicated as "Not Necessary" at page 2 of Annex A in FTC Report, should therefore be a cost that is necessary.
30. Even if PV's damaged exhaust muffler was replaced with a Porsche original exhaust muffler, DME Speed Density Recalibration would still have been necessary to reinstate proper operation condition of PV's exhaust system.
31. Lastly, given the need for DME Speed Density Recalibration, the 1 day of repair to reinstate PV that was recommended at page 5 of Annex A in FTC Report would be insufficient. In my opinion, the repair would take at least 3 days, factoring in the replacement of the exhaust heat plate, 2 x exhaust heat shields and 2 x oil pipes that I had commented in paragraph 24 above.

**Ang Bryan Tani***AFF SAE-A, AMSOE AMIRTE, MATAI, Aff.Inst.AEA**Senior Technical Investigator**Technical Investigation & Accident Reconstructionist (SAE-A)*

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