

## 2021 ABU DHABI GRAND PRIX

9 - 12 December 2021

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<b>From</b>	The FIA Formula One Technical Delegate	<b>Document</b>	56
<b>To</b>	The Stewards	<b>Date</b>	12 December 2021
		<b>Time</b>	20:25

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### Technical Delegate's Report

#### Before the race:

A fuel sample was taken from car numbers 55, 47 and 63 and analysed during the race.

An engine oil sample was taken from car numbers 47 and 63.

On the grid it was checked that all cars had fitted their tyres when the "5-Minutes" signal was given.

On the grid it was checked that the top ten cars had fitted the tyres which they had used when doing their fastest lap in Q2.

On the grid the temperature of the LHS and RHS front and rear tyre was checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

On the grid the minimum tyre starting pressure of the LHS and RHS front and rear tyre was checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

#### After the race:

The following cars were weighed:

<b>Number</b>	<b>Car</b>	<b>Driver</b>
44	Mercedes	Lewis Hamilton
77	Mercedes	Valtteri Bottas
33	Red Bull Racing Honda	Max Verstappen
11	Red Bull Racing Honda	Sergio Perez
04	McLaren Mercedes	Lando Norris
05	Aston Martin Mercedes	Sebastian Vettel

14	Alpine Renault	Fernando Alonso
31	Alpine Renault	Esteban Ocon
16	Ferrari	Charles Leclerc
55	Ferrari	Carlos Sainz
22	AlphaTauri Honda	Yuki Tsunoda
10	AlphaTauri Honda	Pierre Gasly
47	Haas Ferrari	Mick Schumacher

The steering wheel of car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06 has been checked.

Car numbers 14 and 10 were checked for the following:

- 1) Bodywork around the front wheels
- 2) Front wing height and overhang
- 3) Rear wing height and overhang
- 4) Front and rear wing width
- 5) Rear wing configuration
- 6) Rear bodywork area
- 7) Rear winglet height
- 8) Skidblock thickness
- 9) Stepped bottom
- 10) Diffuser height
- 11) Diffuser area
- 12) Overall height
- 13) Overall width

The profile of the in Article 3.3.1 of the 2021 Formula One Technical Regulations prescribed front wing section was checked on car numbers 14 and 10.

The minimum distance between the adjacent rear wing sections at any longitudinal vertical plane was checked on car numbers 14 and 10.

It was confirmed for car numbers 14 and 10 that any vertical cross section of bodywork normal to the car centre line and situated in the volumes defined in Article 3.5.7 form one tangent continuous curve on its external surface with a radius no less than 75mm.

The concave radius of sections of the two rear wing elements which are in contact with the external air stream was checked on car numbers 14 and 10.

The front and rear brake air duct dimensions were checked on car numbers 14 and 10.

The uppermost rear wing element adjustable positions were checked on car 14 and 10.

The engine high rev limit bands were checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

The oil consumption was checked on car numbers 44, 77, 33, 04, 14, 31, 16, 55, 22 and 10.

The plenum temperature was checked on 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

The IVT temperatures were checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

The ES state of charge on-track limits were checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

The lap energy release and recovery limits were checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

The MGU-K power limits were checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

The maximum MGU-K speed was checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

The maximum MGU-K torque was checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

The maximum MGU-H speed was checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

The session type has been confirmed for car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

Chassis FIA checksum was checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

The rear brakes pressure control was checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

The brake temperature warnings were checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

The race start data of car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06 have been checked.

Single clutch paddle use for the race start has been checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

The MGU-K use at the race start was checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

It was checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06 that the ES was not charged while the car was stationary in the pits.

It was checked that car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06 did not exceed 80 km/h when leaving the formation grid prior to the start of the race.

It was verified on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06 that the PCU dash display configuration was not changed during Parc Fermé.

The tyre starting pressures of all cars during the race were checked.

The tyres used by all drivers during the race today have been checked.

It was checked that car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06 did not exceed 15000 rpm during the race.

The fuel pressure of car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06 during the race was checked.

The logged pressure within the engine cooling system during the race was checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

Fuel flow meter calibration checksums were checked on car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06.

The instantaneous fuel mass flow of car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06 was checked.

The fuel temperature of car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06 was checked.

The total fuel mass consumed by car numbers 44, 77, 33, 11, 03, 04, 18, 05, 14, 31, 16, 55, 22, 10, 07, 99, 47, 63 and 06 during the race was checked.

A fuel sample was taken from car number 16.

The fuel samples have been checked for density and analysed by gas chromatography.

The results of all the fuel analyses show that the fuels were the same as ones, which had been approved for use by the relevant competitors prior to the Event.

Further the density change of the fuel samples taken today was within the permitted limits.

An engine oil sample was taken from car number 16.

The engine oil samples have been analysed by FTIR spectroscopy and viscometry.

The results of the FTIR analyses show that the sampled oils were consistent with reference engine oil samples which had been approved for use by the relevant competitors prior to the Event.

All car weights and the items checked were found to be in conformity with the 2021 FIA Formula One

Technical Regulations.

**Jo Bauer**

**The FIA Formula One Technical Delegate**