

## 2019 UNITED STATES GRAND PRIX

31 October - 3 November 2019

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<b>From</b>	The FIA Formula One Technical Delegate	<b>Document</b>	66
<b>To</b>	The Stewards	<b>Date</b>	03 November 2019
		<b>Time</b>	17:19

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### Technical Delegate's Report

#### Before the race:

The following parts have been replaced today after 12:05 and before the start of the race:

#### Red Bull Racing Honda:

Car 33: Rear wing assembly

A fuel sample was taken from car numbers 11, 07 and 26 and analysed during the race.

An engine oil sample was taken from car numbers 07 and 88.

On the grid it was checked that all cars had fitted their tyres when the "3-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 27, 99, 10 and 88.

On the grid the minimum tyre starting pressure of the LHS and RHS front and rear tyre was checked on all cars.

#### 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
16	Ferrari	Charles Leclerc
33	RBR Honda	Max Verstappen
23	RBR Honda	Alexander Albon
03	Renault	Daniel Ricciardo
27	Renault	Nico Hülkenberg
08	Haas Ferrari	Romain Grosjean
55	McLaren Renault	Carlos Sainz
04	McLaren Renault	Lando Norris
11	Racing Point Mercedes	Sergio Perez
07	Alfa Romeo Ferrari	Kimi Räikkönen
26	Toro Rosso Honda	Daniil Kvyat
63	Williams Mercedes	George Russell

The steering wheel of all classified cars has been checked.

Car numbers 27 and 11 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 2019 Formula One Technical Regulations prescribed front wing section was checked on car numbers 27 and 11.

The minimum distance between the adjacent rear wing sections at any longitudinal vertical plane was checked on car numbers 27 and 11.

It was confirmed for car numbers 27 and 11 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 27 and 11.

The front and rear brake air duct dimensions were checked on car numbers 27 and 11.

It was confirmed for car number 16 that the minimum weight of 743 kg was respected at all times during the race.

The engine high rev limit bands were checked on all cars.

The plenum temperature was checked on all cars.

The IVT code and calibration checksums were checked on all cars.

The IVT temperatures were checked on all cars.

The ES state of charge on-track limits were checked on all cars.

The lap energy release and recovery limits were checked on all cars.

The MGU-K power limits were checked on all cars.

The maximum MGU-K speed was checked on all cars.

The maximum MGU-K torque was checked on all cars.

The maximum MGU-H speed was checked on all cars.

The TAG320 locked status was checked on all cars.

The session type has been confirmed for all cars.

Chassis FIA checksum was checked on all cars taking part in the race.

The torque coordinator demands were checked on all cars.

The torque control was checked on all cars.

The rear brakes pressure control was checked on all cars.

The brake temperature warnings were checked on all cars.

The race start data of all cars have been checked.

Single clutch paddle use for the race start has been checked on all cars.

The MGU-K use at the race start was checked on all cars.

It was checked on all cars that the ES was not charged while the car was stationary in the pits.

It was checked that no car exceeded 80 km/h when leaving the formation grid prior to the start of the race.

It was verified on all cars that the MD5 checksum of the PCU8 (dash board display) used on the car matched the configuration lodged with the FIA prior to the qualifying session.

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.

Fuel flow meter calibration checksums were checked on all cars.

The instantaneous fuel mass flow of all cars was checked.

The fuel temperature of all cars was checked.

The total fuel mass consumed by all cars during the race was checked.

A fuel sample was taken from car number 77.

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 04.

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 2019 FIA Formula One Technical Regulations.

**Jo Bauer**

**The FIA Formula One Technical Delegate**