

## 2019 SINGAPORE GRAND PRIX

19 - 22 September 2019

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<b>From</b>	The FIA Formula One Technical Delegate	<b>Document</b>	29
<b>To</b>	The Stewards	<b>Date</b>	22 September 2019
		<b>Time</b>	02:08

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### Technical Delegate's Report

#### **Before the third free practice session:**

An engine oil sample was taken from car number 33.

#### **During the third free practice session:**

The tyre starting pressures of all cars during P3 were checked.

The fuel flow meter calibration checksum was checked on all cars.

The instantaneous fuel mass flow of all cars was checked.

The fuel temperature of all cars was checked.

The plenum temperature of all cars was checked.

#### **Before the qualifying practice session:**

An engine oil sample was taken from car numbers 20 and 88.

It was confirmed for all cars that the gear ratios used during the remainder of this Event belong to the gear ratios declared to the FIA technical delegate at or before the first Event of the 2019 Championship.

The thickness of the brake discs of all cars taking part in the qualifying session was checked.

#### **During the qualifying practice session:**

Car numbers 44, 77, 33, 27, 08, 99, 26 and 88 were weighed.

The weight distribution was checked on car numbers 44, 77, 33, 27, 08, 99, 26 and 88.

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

Fuel samples were taken from car numbers 11 and 63.

**After the qualifying practice session:**

Car numbers 44, 77, 05, 16, 33, 23, 03, 27, 55 and 04 were weighed.

Car numbers 44, 77, 05, 16, 33, 23, 03, 27, 55 and 04 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) Stepped bottom
- 9) Diffuser height
- 10) Diffuser width
- 11) Overall height
- 12) Overall width

The chassis identification transponders have been confirmed for car numbers 44, 77, 16, 10, 03, 55 and 04.

The profile of the prescribed front wing section in Article 3.3.1 of the 2019 Formula One Technical Regulations was checked on car numbers 44, 77, 05, 16, 33, 23, 03, 27, 55 and 04.

The minimum distance between the adjacent rear wing sections at any longitudinal vertical plane was checked on car numbers 44, 77, 05, 16, 33, 23, 03, 27, 55 and 04.

It was confirmed for car numbers 44, 77, 05, 16, 33, 23, 03, 27, 55 and 04 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 44, 77, 05, 16, 33, 23, 03, 27, 55 and 04.

The front and rear brake air duct dimensions were checked on car numbers 44, 77, 05, 16, 33, 23, 03, 27, 55 and 04.

The front axle ride height change with steer was checked on car numbers 16, 33 and 16.

The uppermost rear wing element adjustable positions were checked on car numbers 44, 16, 33, 23, 03, 55 and 04.

The pressure relief valve of the coolant header tank of the ICE of car numbers 77, 05 and 27 was checked.

The plenum temperature was checked on all cars.

The IVT code and calibration checksums 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 car numbers 44, 77, 05, 16, 33, 23, 27, 08, 20, 55, 04, 11, 18, 07, 99, 26, 10, 63 and 88.

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 qualifying sessions.

Torque sensor software version checks have been carried out on all cars.

Torque sensor calibration checks have been carried out on all cars.

The torque coordinator demands were checked on car numbers 44, 16, 33, 03, 08, 20, 55, 07, 99, 10 and 63.

The torque control was checked on car numbers 44, 16, 33, 03, 08, 20, 55, 07, 99, 10 and 63.

The rear brakes pressure control was checked on car numbers 44, 16, 33, 03, 08, 20, 55, 07, 99, 10 and 63.

Gear shift data checks have been carried out for car numbers 05, 16 and 03.

It was checked that all cars did not exceed 15000 rpm during the qualifying practice session.

The fuel pressure of all cars during the qualifying session was checked.

The logged pressure within the engine cooling system during the qualifying session was checked on all cars.

The tyres used by all drivers during the sessions 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.

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

The results of 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.

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.

The following software versions have been used by the teams during the qualifying sessions:

<b>Team</b>	<b>FIA Standard ECU system version</b>
Mercedes AMG Petronas Motorsport	SR1118
Scuderia Ferrari	SR1118
Aston Martin Red Bull Racing	SR1118
Renault F1 Team	SR1118
Haas F1 Team	SR1118
McLaren F1 Team	SR1118
SportPesa Racing Point F1 Team	SR1118
Alfa Romeo Racing	SR1118
Red Bull Toro Rosso Honda	SR1118
ROKiT Williams Racing	SR1118

Apart from the MGU-K power limits (see Document 26), all the above items were found to be in conformity with the 2019 FIA Formula One Technical Regulations.

**Jo Bauer**

**The FIA Formula One Technical Delegate**