Individual Project Meeting Record

Project Title	**Design and manufacture of an aerodynamic undertray for Formula Student**			
Supervisor	**Dr. Rob Watson**	Student	**Dennise Zefanya Tohpati**	
Date and time	**MEETING 9 – 23rd November 2020**	Location	**MS TEAM [ONLINE]**	

Review of actions from previous meeting
- Finished 2D open-flow (phase 2) analyses which based on changes in some undertray's variables: smoothed inlet and outlet angle, 30 degrees slant angle, diffuser length, and additional gurney flaps with various length
- The quantitative results have been documented and plotted to see the behaviour of undertray's variable on open flow condition.

Discussion, decisions, assignments
- It was found in 2D analyses, the effect of diffuser length was substantial to negative lift and drag. As the diffuser length increases (or ratio of rear diffuser height and length decreases), the negative lift will increase with drag. This was suspected due to lower expansion rate of the flow in the diffuser which cause the flow to separate a little longer compared to the sharp angle, hence increase in negative lift and drag.
- Other extra variables in phase 2 such as gurney flaps length was found to be insignificant to negative lift and drag contribution of the car.
- The optimised values have been agreed to be used in the 3D undertray design with some suspicion on the 2D flow assumption which then will be verified using the 3D open flow bluff body analyses.

Agreed actions and completion dates
- Some analyses in 3D open flow of bluff body with skirt using optimised variables from 2D analyses will be required to validate the flow behaviour in respect of its negative lift and drag.
- Plot the X-wall shear on 2D open-flow analyses to see the separation of the flow on the undertray.
- Start the flexible 3D design of the undertray with number of prototypes, and the variable will be based on the 2D open-flow results.

Date and time of next meeting	Friday 4th December 2020	Location of next meeting	**MS TEAM [ONLINE]**
Supervisor signature		Student signature	**Dennise Tohpati**