



**Team Results for
Clean Snowmobile Challenge 2019
Team 13**



Modal Raw Data : Engine / Environmental

ModeNum		1	2	3	4	5
Total Points	points	1	100	1	1	1
PtsInMode	points	1	150	1	1	1
Speed	rpm	0.00	6290.44	0.00	0.00	0.00
Torque	Nm	0.00	23.72	0.00	0.00	0.00
Power	kW	0.00	15.63	0.00	0.00	0.00
BSFC	g/kw-hr	**	597.78	**	**	**
Fuel	g/hr	#####	9341.84	#####	#####	#####
T_int	degC	0.00	16.18	0.00	0.00	0.00
RelHumid	%	0.00	17.55	0.00	0.00	0.00
Baro	in Hg	0.00	28.96	0.00	0.00	0.00
Baro	mmHg	0.00	735.71	0.00	0.00	0.00
Pvap_kPa	kPa	0.00	0.28	0.00	0.00	0.00
Pvap_inHg	inHg	0.00	0.08	0.00	0.00	0.00
AbsHumidity	grains/lb	**	12.55	**	**	**
SatPres	kPa	0.00	97.80	0.00	0.00	0.00
Hum Factor		1.00	1.00	1.00	1.00	1.00
F_fac		**	0.99	**	**	**
K_fac		**	1.01	**	**	**
Humidity	g/kg	**	1.79	**	**	**
H2		**	4.45	**	**	**
WetDry Factor		1.00	0.88	1.00	1.00	1.00



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Modal Emissions Concentrations

ModeNum		1	2	3	4	5
THC	ppmC1	0.00	12542.40	0.00	0.00	0.00
CO	%	0.00	8.58	0.00	0.00	0.00
N2O	ppm	0.00	19.21	0.00	0.00	0.00
CH4	ppm	0.00	1368.50	0.00	0.00	0.00
CO2	%	0.00	6.74	0.00	0.00	0.00
O2	%	0.00	0.00	0.00	0.00	0.00
CNOx	ppm	0.00	4.02	0.00	0.00	0.00
AHC	ppm	0.00	123.88	0.00	0.00	0.00
C2H2	ppm	0.00	55.33	0.00	0.00	0.00
C2H4	ppm	0.00	314.00	0.00	0.00	0.00
C3H6	ppm	0.00	94.41	0.00	0.00	0.00
C4H6	ppm	0.00	12.82	0.00	0.00	0.00
ETOH	ppm	0.00	0.54	0.00	0.00	0.00
H2O	%	0.00	12.34	0.00	0.00	0.00
HCHO	ppm	0.00	3.77	0.00	0.00	0.00
HCN	ppm	0.00	7.04	0.00	0.00	0.00
HNCO	ppm	0.00	2.24	0.00	0.00	0.00
MECHO	ppm	0.00	0.32	0.00	0.00	0.00
NC5	ppm	0.00	9.31	0.00	0.00	0.00
NH3	ppm	0.00	54.96	0.00	0.00	0.00
NO	ppm	0.00	4.22	0.00	0.00	0.00
NO2	ppm	0.00	0.09	0.00	0.00	0.00
Soot	mg/m3	0.00	7.53	0.00	0.00	0.00
AFR	:1	**	8.62	**	**	**



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Measurement Accuracy (SAE paper 961804)

ModeNum	H2_XLS %	ModalHC_Dry %	ModalFTIR_H2O %	N2 %	Ar %	AFR :1	Tr_Eff -
1	**	0.000	0.000	0.000	0.000	**	**
2	5.073	1.431	12.336	69.750	0.806	9.828	1.000
3	**	0.000	0.000	0.000	0.000	**	**
4	**	0.000	0.000	0.000	0.000	**	**
5	**	0.000	0.000	0.000	0.000	**	**

ModeNum	ModalWHC %	ModalC1 %	ModalC8 %	ModalSUM_HC %	ModalT_Emiss %	ModalError %
1	**	**	**	**	**	**
2	706.981	1.431	0.179	1.610	94.714	5.286
3	**	**	**	**	**	**
4	**	**	**	**	**	**
5	**	**	**	**	**	**

Carbon Balance Verification

		1	2	3	4	5
Power	kW	0.000	15.628	0.000	0.000	0.000
BSFC	g/kw-hr	**	597.78	**	**	**
Fuel_MassFlow	g/hr	9999999	9342	9999999	9999999	9999999
HC_m	g/hr	**	706.98	**	**	**
CO_m	g/hr	**	9691.9	**	**	**
CO2_m	g/hr	**	11963	**	**	**
TW_Power	kW	4.2194				
TW_BSFC	g/kw-hr	**				
Fuel_MassFlow	g/hr	9999999	9342	9999999	9999999	9999999
FuelCalc	g/hr	**	9457.2	**	**	**
FuelCalcDev	%	**	-1.2353	**	**	**

\$HCR_ENG	1.949
\$OCR_ENG	0
MassFracCFuel H/C ratio	0.85943

Power Run

Team 13

TeamNumber	13
TeamName	Montana State
Model	Polaris
Engine	Polaris

Displacement cc	600.00
RatedSpeed	7063
RatedTorque	33.6

