M6932 Air Traffic Control Tutorial 8: Aviation Emission Analysis

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Engine	AE3007A2 Type 3 (reduced emission)				CFM56-7B20/3 with Tech Insertion				CF34-8C5B1 with Low Emission Combust				JT8D-7 with Reduced Emissions			
Mode	**T/O**	**C/O**	**App**	**Idle**	**T/O**	**C/O**	**App**	**Idle**	**T/O**	**C/O**	**App**	**Idle**	**T/O**	**C/O**	**App**	**Idle**
EI NOx (g/kg)	18.61	15.99	7.9	4.39	15.61	13.53	7.98	3.77	13.89	12.03	10.42	4.5	17.2	14	6.3	3.15
EI CO2 (g/kg)	3155	3155	3155	3155	3155	3155	3155	3155	3155	3155	3155	3155	3155	3155	3155	3155
fuel_burn_Mode (kg/sec)	0.466	0.388	0.138	0.055	0.896	0.746	0.268	0.094	0.606	0.497	0.171	0.063	0.9892	0.8113	0.2861	0.1291
N_eng	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Time_in_Mode (sec)	42	132	240	1560	42	132	240	1560	42	132	240	1560	42	132	240	1560
CO2 (g)	61749.66	161586.48	104493.6	270699	118728.96	310679.16	202929.6	462649.2	80301.06	206980.62	129481.2	310073.4	131078.892	337873.998	216634.92	635404.3
NOx (g)	364.23492	818.94384	261.648	376.662	587.43552	1332.32616	513.2736	552.8328	353.52828	789.21612	427.6368	442.26	714.59808	1499.2824	432.5832	634.3974
Total CO2 (g)	598528.74				1094986.92				726836.28				1320992.19			
Total NOx (g)	1821.48876				2985.86808				2012.6412				3280.86108			

Company	Engine	Total CO2 (g)	Total NOx (g)
Rolls-Royce Corporation	AE3007A2 Type 3 (reduced emission)	598528.74	1821.48876
CFM International	CFM56-7B20/3 with Tech Insertion	1094986.92	2985.86808
GE Aircraft Engines	CF34-8C5B1 with Low Emission Combustor	726836.28	2012.6412
Pratt & Whitney	JT8D-7 with Reduced Emissions	1320992.19	3280.86108

The recommendation is to go with **Rolls-Royce Corporation's AE3007A2 Type 3 (reduced emission)** given that it has the **lowest CO2 and NOx emissions in Landing and Take-off Cycle (LTO)** amongst the four identified jet engines.