

## **APPENDIX E: AIR QUALITY**

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# EDMS 4.11 Model Inputs for Study Whitmore Study

Date: Thursday, February 26, 2004  
 Study Created: Monday, October 27, 2003  
 Study Pathname: F:\Projects\SWCA\Grand Canyon\Whitmore Study\Whitmore Study.EDM

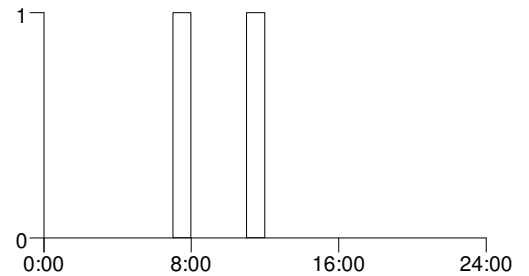
Airport: GRAND CANYON BAR TEN AIRSTRIP AZ 1Z1  
 Airport Location (lat / lon): 36-15-34.930N 113-13-52.762W  
 Field elevation: 4100 (feet MSL)  
 Average temperature: 59.0  
 Mixing Height: 3000 (feet)  
 Year being studied: 2003

This study is an analysis of Emissions only.  
 GSE are modeled based upon aircraft LTO.

## Hourly Operational Profiles

Name: DEFAULT

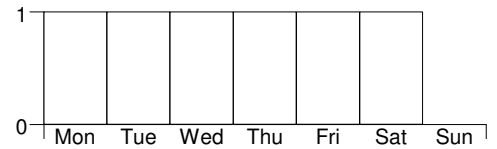
Hour	Fraction of Peak	Hour	Fraction of Peak	Hour	Fraction of Peak
1	0.0000	9	0.0000	17	0.0000
2	0.0000	10	0.0000	18	0.0000
3	0.0000	11	0.0000	19	0.0000
4	0.0000	12	1.0000	20	0.0000
5	0.0000	13	0.0000	21	0.0000
6	0.0000	14	0.0000	22	0.0000
7	0.0000	15	0.0000	23	0.0000
8	1.0000	16	0.0000	24	0.0000



## Daily Operational Profiles

Name: DEFAULT

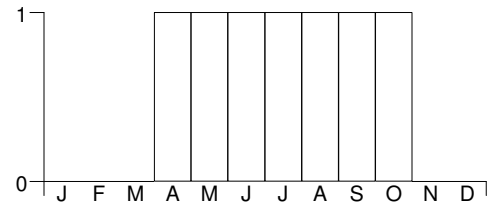
Day	Fraction of Peak	Day	Fraction of Peak
Monday	1.0000	Friday	1.0000
Tuesday	1.0000	Saturday	1.0000
Wednesday	1.0000	Sunday	0.0000
Thursday	1.0000		



## Monthly Operational Profiles

Name: DEFAULT

Month	Fraction of Peak	Month	Fraction of Peak
January	0.0000	July	1.0000
February	0.0000	August	1.0000
March	0.0000	September	1.0000
April	1.0000	October	1.0000
May	1.0000	November	0.0000
June	1.0000	December	0.0000

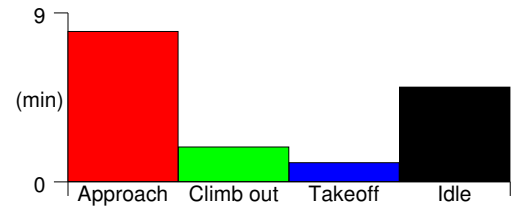


### Aircraft

Aircraft Name: Cessna 441 Conquest2  
 Engine Type: TPE331-8  
 Identification: DO228

Annual LTOs: 418  
 Annual TGO: 0  
 Hourly Operational Profile: DEFAULT  
 Daily Operational Profile: DEFAULT  
 Monthly Operational Profile: DEFAULT  
 Category: SGTP

Takeoff weight (lbs): 3000  
 Approach angle (°): 3  
 Takeoff Time (minutes): 1.03  
 Climb out Time (minutes): 1.87  
 Approach Time (minutes): 8.09  
 Total Idle Time (minutes): 5.09  
 Taxi & Queue Time (minutes): 5.00



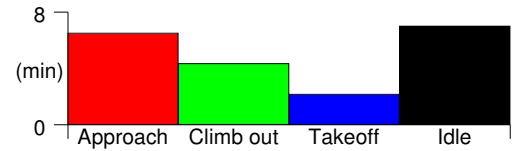
No APU assigned.

Assigned GSE/AGE:	Fuel:	Op Time (mins):	Horsepower:	Load Factor:
Fuel Truck, Small, < 3,000 gal	Diesel	10.00	175	0.2500
Ground Power Unit, 28VDC	Diesel	40.00	71	0.7500

Aircraft Name: Bell 206  
 Engine Type: 250B17B  
 Identification: Bell Ranger

Annual LTOs: 1600  
 Annual TGO: 0  
 Hourly Operational Profile: DEFAULT  
 Daily Operational Profile: DEFAULT  
 Monthly Operational Profile: DEFAULT  
 Category: SGTH

Takeoff Time (minutes): 2.17  
 Climb out Time (minutes): 4.33  
 Approach Time (minutes): 6.50  
 Total Idle Time (minutes): 7.00  
 Taxi & Queue Time (minutes): 7.00



No APU assigned.

Assigned GSE/AGE:	Fuel:	Op Time (mins):	Horsepower:	Load Factor:
Fuel Truck, Small, < 3,000 gal	Diesel	10.00	175	0.2500
Ground Power Unit, 28VDC	Diesel	40.00	71	0.7500

### User-Created GSE

\*\*My Gse

Default Operating Time per LTO (minutes): 7.00  
 Default Annual Operating Time (hours): 333  
 Default Power Rating (Horsepower): 425  
 Default Load Factor: 0.9000

Emissions data is based upon the following system GSE type operating in the specified year.

Gse Type: Air Start, 180 PPM  
 Operating Year: 2009  
 Default Fuel: Diesel

## User-Created APUs

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\*\*My APU

Default Operating Time per LTO (minutes):  
Emissions Data Source:

26.00  
APU WR27-1

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End of Report

# EDMS 4.11 Emissions Inventory Report

*Airport: GRAND CANYON BAR TEN AIRSTRIP*

*Study Name: Whitmore Study*

*Report Date: 02/26/04*

## *SUMMARY* *(Tons/Year)*

<i>NAME</i>	<i>CO</i>	<i>HC</i>	<i>NOx</i>	<i>SOx</i>	<i>PM10</i>
<i>Aircraft</i>	<i>1.275</i>	<i>.174</i>	<i>.429</i>	<i>.049</i>	<i>.000</i>
<i>GSE/AGE/APU</i>	<i>.115</i>	<i>.038</i>	<i>.547</i>	<i>.077</i>	<i>.030</i>
<i>Total</i>	<i>1.390</i>	<i>.212</i>	<i>.976</i>	<i>.126</i>	<i>.030</i>

**AIRCRAFT EMISSIONS**  
(Tons/Year)

Aircraft	Engine	Mode	CO	HC	NOx	SOx	PM10		
Cessna 441 Dodge Dodge Dodge Dodge Dodge Dodge Dodge Dodge Dodge	TPE331-8	APCH	.073	.003	.160	.017	.000		
		CLMB	.009	.000	.059	.006	.000		
		TKOF	.004	.000	.036	.003	.000		
		TAXI	.076	.006	.017	.004	.000		
		TOTAL	.162	.009	.272	.030	.000		
		APU	.000	.000	.000	.000	.000		
		GSE	.024	.008	.113	.016	.006		
		Bell 206	250B17B	APCH	.357	.039	.017	.004	.000
		Bell Ranger		CLMB	.128	.006	.084	.008	.000
		TKOF		.060	.002	.051	.004	.000	
TAXI	.568	.117		.006	.003	.000			
TOTAL	1.113	.164		.158	.019	.000			
APU	.000	.000		.000	.000	.000			
GSE	.091	.030		.434	.061	.024			

**VEHICULAR EMISSIONS**  
(Tons/Year)

NAME	CO	HC	NOx	SOx	PM10
	.000	.000	.000	.000	.000

**STATIONARY SOURCE EMISSIONS**  
(Tons/Year)

NAME	CO	HC	NOx	SOx	PM10
	.000	.000	.000	.000	.000



# EDMS 4.11 Model Inputs for Study Diamond Down Study

Date: Thursday, February 26, 2004  
 Study Created: Wednesday, February 11, 2004  
 Study Pathname: F:\Projects\SWCA\Grand Canyon\Lower Gorge Study\Lower Gorge Study.EDM

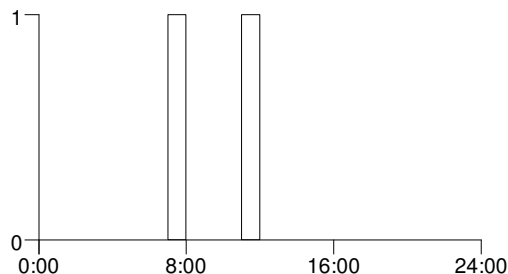
Airport: Lower Gorge Alternative E AZ 1Z1  
 Airport Location (lat / lon): 36-15-34.930N 113-13-52.762W  
 Field elevation: 4100 (feet MSL)  
 Average temperature: 59.0  
 Mixing Height: 3000 (feet)  
 Year being studied: 2003

This study is an analysis of Emissions only.  
 GSE are modeled based upon aircraft LTO.

## Hourly Operational Profiles

Name: DEFAULT

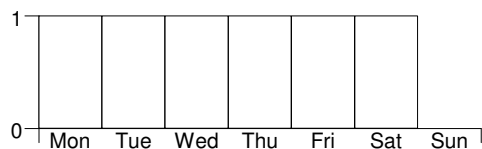
Hour	Fraction of Peak	Hour	Fraction of Peak	Hour	Fraction of Peak
1	0.0000	9	0.0000	17	0.0000
2	0.0000	10	0.0000	18	0.0000
3	0.0000	11	0.0000	19	0.0000
4	0.0000	12	1.0000	20	0.0000
5	0.0000	13	0.0000	21	0.0000
6	0.0000	14	0.0000	22	0.0000
7	0.0000	15	0.0000	23	0.0000
8	1.0000	16	0.0000	24	0.0000



## Daily Operational Profiles

Name: DEFAULT

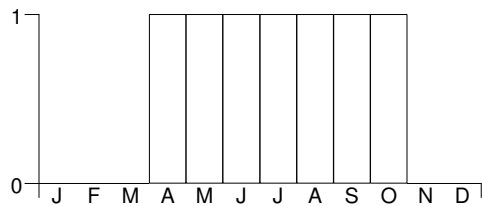
Day	Fraction of Peak	Day	Fraction of Peak
Monday	1.0000	Friday	1.0000
Tuesday	1.0000	Saturday	1.0000
Wednesday	1.0000	Sunday	0.0000
Thursday	1.0000		



## Monthly Operational Profiles

Name: DEFAULT

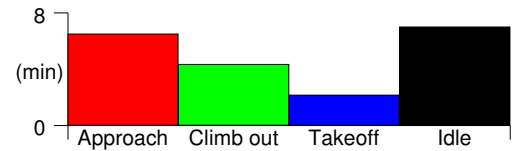
Month	Fraction of Peak	Month	Fraction of Peak
January	0.0000	July	1.0000
February	0.0000	August	1.0000
March	0.0000	September	1.0000
April	1.0000	October	1.0000
May	1.0000	November	0.0000
June	1.0000	December	0.0000



## Aircraft

Aircraft Name:	Annual LTOs:	159000
Bell 206	Annual TGO:	0
Engine Type:	Hourly Operational Profile:	DEFAULT
250B17B	Daily Operational Profile:	DEFAULT
Identification:	Monthly Operational Profile:	DEFAULT
Bell Ranger	Category:	SGTH

Takeoff Time (minutes):	2.17
Climb out Time (minutes):	4.33
Approach Time (minutes):	6.50
Total Idle Time (minutes):	7.00
Taxi & Queue Time (minutes):	7.00



No APU assigned.  
No GSE assigned.

## User-Created GSE

**My Gse	Default Operating Time per LTO (minutes):	7.00
	Default Annual Operating Time (hours):	333
	Default Power Rating (Horsepower):	425
	Default Load Factor:	0.9000

Emissions data is based upon the following system GSE type operating in the specified year.

Gse Type:	Air Start, 180 PPM
Operating Year:	2009
Default Fuel:	Diesel

## User-Created APUs

**My APU	Default Operating Time per LTO (minutes):	26.00
	Emissions Data Source:	APU WR27-1

End of Report

# EDMS 4.11 Emissions Inventory Report

*Airport: Lower Gorge Alternative E*

*Study Name: Diamond Down Study*

*Report Date: 02/26/04*

## *SUMMARY* *(Tons/Year)*

<b>NAME</b>	<b>CO</b>	<b>HC</b>	<b>NOx</b>	<b>SOx</b>	<b>PM10</b>
Aircraft	110.543	16.332	15.652	1.891	.000
GSE/AGE/APU	.000	.000	.000	.000	.000
Total	110.543	16.332	15.652	1.891	.000

**AIRCRAFT EMISSIONS**  
(Tons/Year)

Aircraft	Engine	Mode	CO	HC	NOx	SOx	PM10	
Bell 206	250B17B	APCH	35.490	3.910	1.654	.406	.000	
Bell Ranger		CLMB	12.691	.563	8.386	.760	.000	
		TKOF	5.953	.229	5.030	.412	.000	
		TAXI	56.409	11.631	.582	.314	.000	
		TOTAL		110.543	16.333	15.652	1.892	.000
		APU		.000	.000	.000	.000	.000
		GSE		.000	.000	.000	.000	.000

**VEHICULAR EMISSIONS**  
*(Tons/Year)*

NAME	CO	HC	NOx	SOx	PM10
	.000	.000	.000	.000	.000

**STATIONARY SOURCE EMISSIONS**  
(Tons/Year)

NAME	CO	HC	NOx	SOx	PM10
	.000	.000	.000	.000	.000