DEPARTMENT OF THE AIR FORCE
354TH FIGHTER WING (PACAF)
EIELSON AIR FORCE BASE, AK

MAR 16 2022

MEMORANDUM FOR ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
410 Willoughby Avenue Suite 303
Juneau AK 99801

FROM: 354 FW/CC
354 Broadway Street Suite 19A
Eielson AFB AK 99702

SUBJECT: Owner-Requested Limit Application for Blair Lakes Range Support Facility

1. Pursuant to Title 18 of the Alaska Administrative Code, Chapter 50, Section 225 (18 AAC 50.225), Eielson Air Force Base (AFB) is submitting the attached application for an owner-requested limit (ORL) for the Blair Lakes Range Support Facility (Blair Lakes).

2. The facility was granted an ORL on March 25, 2005 (0859ORL01). The ORL was amended into a minor source permit to include a portable rock crusher that was planned for installation at Blair Lakes in 2009 (#AQ0859MSS01, Revision 1). The proposed rock crusher was never installed and there are no future plans for installing a rock crusher. As a result, the facility is requesting that Minor Permit #AQ0859MSS01, Revision 1 be rescinded and coverage authorized under the ORL. In addition, Eielson AFB requests that the visible emissions monitoring requirement (Condition 6) not be a condition of the ORL. Visible emissions monitoring of the Blair Lakes operating emission units has not recorded a result greater than 20 percent opacity.

3. To maintain potential emissions below 100 tons per year (TPY) of each regulated pollutant, a limit of 24,000 combined annual hours for emission units 1-3 is requested. The attachment provides the required information for the ORL.

4. Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete. If you have any questions regarding this information, please contact Heidi Young, Air Program Manager, at 907-377-1815 or email at heidi.young.6@us.af.mil.

BERKLAND.DAVID.J.1146964946
Digitally signed by BERKLAND.DAVID.J.1146964946
Date: 2022.03.14 18:43:41 -08'00'

DAVID J. BERKLAND, Colonel, USAF
Commander

Owner-Requested Limits
Request for Approval under 18 AAC 50.225 to Avoid All Permitting Obligations under AS 46.14.130

United States Air Force
Blair Lakes Range Support Facility

Submitted To:

Alaska Department of Environmental Conservation

Division of Air Quality, Air Permits Program

Introduction and Background

The United States Air Force (USAF) commenced construction of the Blair Lakes Support Facility prior to October 1, 2004; the facility's four engines and two boilers were originally authorized for operation under an Owner Requested Limit (ORL) on March 25, 2005 (0859ORL01). The rock crusher-related equipment (EU IDs 16-30) was added to the inventory in 2009. A Minor Source Specific (MSS) permit was issued, and subsequently revised, under the authority of 18 AAC 50.502 for air quality protection - 18 AAC 50.502(c)(1) for a new stationary source with emissions greater than 40 tpy of NOx and SO2 and 18 AAC 50.502(b)(3) for a rock crusher rated greater than 5 tons per hour. Even though the rock crusher equipment was added to the inventory through a minor permit, the equipment was never installed.

The USAF requests to remove EU IDs 16 – 30 from the permit inventory, due to the unrealized assumption that the rock crusher would be operating at Blair Lakes Range and contributing to the facility's emissions of air pollutants. Once these units are removed and only EU IDs 1-6 remain in the emission inventory, a minor permit is not required since installation of these units preceded the Department's minor permitting program under the authority of 18 AAC 50.502. This returns Blair Lakes to its original condition as it was described in ORL 0859ORL01: four diesel-fired internal combustion engines and two diesel-fired comfort heat boilers. These are original sources that have had no changes in operation. An ORL will be taken on the hours of operation for EU IDs 1-3 to maintain emissions of each criteria pollutant below 100 tpy and avoid Title V permitting for the facility (EU IDs 1-6). The calculations assume a maximum horsepower of 380 for EU IDs 1-3. This is the maximum horsepower for standby operation, even though these emission units operate as prime engines. In accordance with 18 AAC 50.225, all information required to rescind all terms and conditions of Minor Permit AQ0859MSS01, Revision 1 and return to Owner-Requested Limits are included herein.

1. The completed stationary source identification form is provided as Attachment 1. The form indicates that this is a change to the initial application, since the Blair Lakes Support Facility will be returning to an ORL as explained in the introduction.

2. A list of all emission units at the stationary source is provided. These emission units are also listed in the calculations of the stationary sources actual emissions and potential to emit air pollutants. There are four engines and two comfort heat boilers. The engines include three non-emergency engines for site electrical production and one emergency fire pump. The non-emergency engines (EU IDs 1-3) have been replaced since 2004 with remanufactured Cummins engines that have the same specifications, emissions, and manufacture date of the original engines.

Emission Unit Inventory for the Blair Lakes Range Support Facility

Unit No.	Type	Description	Rating/Size	Estimated Installation (Year)
1	Generator #1	Cummins LTA 10-G1 Diesel Engine (diesel fuel)	380 hp - standby 345 hp - prime	2004
2	Generator #2	Cummins LTA 10-G1 Diesel Engine (diesel fuel)	380 hp - standby 345 hp - prime	2004
3	Generator #3	Cummins LTA 10-G1 Diesel Engine (diesel fuel)	380 hp - standby 345 hp - prime	2004
4	Backup Fire Water Pump	John Deere Diesel Engine (diesel fuel)	105hp	2004
5	Comfort Heat Boiler #1	Burnham v1123 Boiler (diesel fuel)	5.6 mmBtu/hr	2004
6	Comfort Heat Boiler #2	Burnham v1123 Boiler (diesel fuel)	5.6 mmBtu/hr	2004

3. Calculations of the stationary source's actual emissions based on calendar year 2020 operations and potential to emit air pollutants are provided at Attachment 2. Vendor information was used for the emissions calculated for EU IDs 1-3 and is included with Attachment 3.

4. Through this ORL, a limit of 24,000 total annual hours of operation is requested for Blair Lakes EU IDs 1-3 to avoid all permitting requirements. Attachment 3 shows the potential pollutant emissions using the standby horsepower and the proposed hours limit for EU IDs 1-3.The calculations assume the limit as 8,000 hours for each of EU IDs 1-3. Although these engines operate in prime mode, the standby horsepower was used for the calculations resulting in the most conservative pollutant emissions. The standby horsepower (380 hp) is the maximum horsepower at which these units could potentially operate. References and assumptions used in the calculations as well as vendor information for EU IDs 1-3 are included with Attachment 3.

5. Each of these units has a non-resettable hour meter. Monthly hours for each unit will be read from the hour meter and entered into a spreadsheet or database to track monthly hours of operation. The combined total will be calculated to determine compliance with the ORL.

6. The limit of 24,000 combined annual hours for EU IDs 1-3 will be taken to avoid the NOx Title V permit threshold of 100 tons per year (tpy). The calculation of potential emissions uses380 horsepower for EU IDs 1-3. This horsepower is for operations of EU IDs 1-3 as standby

engines to produce a more conservative result of emissions. Since these engines are used for electrical production for the facility, they operate in prime mode but have a maximum potential of 380 horsepower.

. NA - Repealed 10/6/2013

. The cover letter includes the commitment from the owner/operator of the stationary source that the facility will be able to comply with the hours limit requested for EU IDs 1-3 as described in #4 and #5 of the materials provided for this owner-requested limit.

. The certification statement signed by the responsible official is included in Attachment 1 and the cover letter that accompanies the request.

Attachment 1

OWNER REQUESTED LIMIT IDENTIFICATION FORM

Alaska Department of Environmental Conservation **Owner Requested Limit Application**	**ADEC USE ONLY** Receiving Date: ADEC Control #: ORL :

STATIONARY SOURCE IDENTIFICATION FORM

Section 1 Stationary Source Information

Stationary Source Name: Blair Lakes Range Support Facility			
Project Name (if different):	Stationary Source Contact: Heidi Young		
Source Physical Address: Fort Wainwright Military Reservation	City: Eielson AFB	State: AK	Zip: 99702
	Telephone: 907-377-1815		
	E-Mail Address: heidi.young.6@us.af.mil		
UTM Coordinates or Latitude/Longitude:	Northing:	Easting:	Zone:
	Latitude: 63 deg 38 min N	Longitude: 147 deg 20 min W	

Section 2 Legal Owner

Name: United States Air Force, Eielson Air Force Base		
Mailing Address: 354 FW/CC 354 Broadway Avenue Unit 19A		
City: Eielson AFB	State: AK	Zip: 99702
Telephone #: 907-377-6101		
E-Mail Address: david.berkland@us.af.mil		

Section 3 Operator *(if different from owner)*

Name:		
Mailing Address:		
City:	State:	Zip:
Telephone #:		
E-Mail Address:		

Section 4 Designated Agent *(for service of process)*

Name: Heidi Young		
Mailing Address: 2310 Central Avenue, Suite 100		
City Eielson AFB	State: AK	Zip: 99702
Physical Address: 2310 Central Avenue, Suite 100		
City: Eielson AFB	State: AK	Zip: 99702
Telephone #: 907-377-1815		
E-Mail Address: heidi.young.6@us.af.mil		

Section 5 Billing Contact Person *(if different from owner)*

Name: Heather Fletcher		
Mailing Address: 2310 Central Avenue		
City: Eielson AFB	State: AK	Zip: 99702
Telephone #: 907-377- 7071		
E-Mail Address: heather.fletcher.5@us.af.mil		

Section 6 Application Contact

Name: Heidi Young			
Mailing Address: 2310 Central Avenue, Suite 100 Eielson AFB AK 99702	City: Eielson AFB	State: AK	Zip: 99702
	Telephone: 907-377-1815		
	E-Mail Address: heidi.young.6@us.af.mil		

Section 7 Certification

This certification applies to the Air Quality Control Owner Requested Limit Application for the Blair Lakes Range Support Facility (Stationary Source Name)

submitted to the department on: 16 Mar 2022.

Type of Application

☒ Initial Application Previously covered under ORL 859ORL01 and Minor Permit #AQ0559MSS01, Rev 1
☐ Change to Initial Application

The application is **NOT** complete unless the certification of truth, accuracy, and completeness on this form bears the **signature of a responsible official** of the firm making the application. (18 AAC 50.205)

CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS

"Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete."

Signature: BERKLAND.DAVID.J.1146964946 Digitally signed by BERKLAND.DAVID.J.1146964946 Date: 2022.03.14 18:53:24 -08'00'	Date: 14 Mar 2022
Printed Name: DAVID J. BERKLAND	Title: Commander, 354th Fighter Wing

Section 13 Attachments

☒ Attachments Included. List attachments:

Attachment 1 - Stationary Source Identification Form - this form
Attachment 2 - Potential Emissions without Limits and Actual Emissions
Attachment 3 - Potential Emissions with ORL

Attachment 2

Permit No.	**AQ0859MSS01**
Source	**Blair Lakes Range Support Facility**
Owner/Operator	**USAF, Eielson Air Force Base**

Potential to Emit (tpy)	Rating	Rating	Operating Hours	CO		NOx		VOC		PM-10 / PM-2.5		SO_2	
				Emission Factor	PTE (tpy)	Emission Factor	PTE (tpy)	Emission Factor	PTE (tpy)	Emission Factor	PTE (tpy)	Emission Factor	PTE (tpy)
EU 1 (Cummins Diesel Engine Generator	*380 bhp*	*283.4 kW*	*8,000*	*2.56E-03 lb/bhp-hr*	***3.9***	*0.019 lb/bhp-hr*	***28.1***	*9.50E-04 lb/bhp-hr*	***1.4***	*1.10E-03 lb/bhp-hr*	***1.7***	***0.5***	***5.5***
EU 2 (Cummins Diesel Engine Generator	*380 bhp*	*283.4 kW*	*8,000*	*2.56E-03 lb/bhp-hr*	***3.9***	*0.019 lb/bhp-hr*	***28.1***	*9.50E-04 lb/bhp-hr*	***1.4***	*1.10E-03 lb/bhp-hr*	***1.7***		***5.5***
EU 3 (Cummins Diesel Engine Generator	*380 bhp*	*283.4 kW*	*8,000*	*2.56E-03 lb/bhp-hr*	***3.9***	*0.019 lb/bhp-hr*	***28.1***	*9.50E-04 lb/bhp-hr*	***1.4***	*1.10E-03 lb/bhp-hr*	***1.7***		***5.5***
EU 4 (Fire Water Pump)	*105 bhp*	*78.3 kW*	*500*	*6.68E-03 lb/hp-hr*	***0.2***	*0.031 lb/hp-hr*	***0.8***	*2.50E-03 lb/hp-hr*	***0.1***	*2.20E-03 lb/hp-hr*	***0.1***		***0.1***
EU 5 (Burnham Boiler #1)	*5.6 MMBtu/hr*		*8,760*	*5 lbs/1000 gal*	***0.9***	*20 lbs/1000 gal*	***3.6***	*0.252 lbs/1000 gal*	***0.05***	*2 lbs/1000 gal*	***0.4***		***12.6***
EU 6 (Burnham Boiler #2)	*5.6 MMBtu/hr*		*8,760*	*5 lbs/1000 gal*	***0.9***	*20 lbs/1000 gal*	***3.6***	*0.252 lbs/1000 gal*	***0.05***	*2 lbs/1000 gal*	***0.4***		***12.6***

Actual/Reported Emissions (tpy) 2020 Operatons	Rating	Rating	Operating Hours	CO		NOx		VOC		PM-10 / PM-2.5		SO_2	
				Emission Factor	PTE (tpy)	Emission Factor	PTE (tpy)	Emission Factor	PTE (tpy)	Emission Factor	PTE (tpy)	Emission Factor	PTE (tpy)
EU 1 (Cummins Diesel Engine Generator	*345 bhp*	*257.3 kW*	*3,265*	*2.56E-03 lb/bhp-hr*	***1.4***	*0.019 lb/bhp-hr*	***10.7***	*9.50E-04 lb/bhp-hr*	***0.5***	*1.10E-03 lb/bhp-hr*	***0.6***	***0.0015***	***0.01***
EU 2 (Cummins Diesel Engine Generator	*345 bhp*	*257.3 kW*	*2,766*	*2.56E-03 lb/bhp-hr*	***1.2***	*0.019 lb/bhp-hr*	***9.1***	*9.50E-04 lb/bhp-hr*	***0.5***	*1.10E-03 lb/bhp-hr*	***0.5***		***0.01***
EU 3 (Cummins Diesel Engine Generator	*345 bhp*	*257.3 kW*	*2,782*	*2.56E-03 lb/bhp-hr*	***1.2***	*0.019 lb/bhp-hr*	***9.1***	*9.50E-04 lb/bhp-hr*	***0.5***	*1.10E-03 lb/bhp-hr*	***0.5***		***0.01***
EU 4 (Fire Water Pump)	*105 bhp*	*78.3 kW*	*7*	*6.68E-03 lb/hp-hr*	***0.0***	*0.031 lb/hp-hr*	***0.0***	*2.50E-03 lb/hp-hr*	***0.0***	*2.20E-03 lb/hp-hr*	***0.0***		***0.00***
EU 5 (Burnham Boiler #1)	*5.6 MMBtu/hr*		*1,945*	*5 lbs/1000 gal*	***0.2***	*20 lbs/1000 gal*	***0.8***	*0.252 lbs/1000 gal*	***0.01***	*2 lbs/1000 gal*	***0.1***		***0.01***
EU 6 (Burnham Boiler #2)	*5.6 MMBtu/hr*		*1,079*	*5 lbs/1000 gal*	***0.1***	*20 lbs/1000 gal*	***0.4***	*0.252 lbs/1000 gal*	***0.01***	*2 lbs/1000 gal*	***0.0***		***0.00***

Potential Emissions (tpy)			**13.6**			**92.4**			**4.5**			**5.8**		**41.8**
Actual/Reported Emissions (tpy)			**4.1**			**29.7**			**1.5**			**1.8**		**0.0**

Notes:

1. Heat Content of Diesel Fuel (AP-42, Appendix A):	137,000	Btu/gal
2. Density of Diesel Fuel (AP-42, Appendix A):	7.05	lb/gal
3. Max Sulfur Content of Diesel Fuel:	0.5	wt. pct. S - PTE
4. Boiler hour meter readings were obtained during Method 9 observations	0.0015	wt. pct. S - actual emissions

Blair Lakes Range Support Facilty Equipment Inventory

Emission Unit			Fuel	Potential Operation/ Consumption	Maximum Capacity	
ID	Description	Type				
1	Blair Lakes Generator #1	Reciprocating Generator Engine	Diesel	8,000 hours/yr	380	hp
2	Blair Lakes Generator #2	Reciprocating Generator Engine	Diesel	8,000 hours/yr	380	hp
3	Blair Lakes Generator #3	Reciprocating Generator Engine	Diesel	8,000 hours/yr	380	hp
4	Blair Lakes Fire Water Pump	Reciprocating Fire Pump Engine	Diesel	500 hours/yr	105	hp
5	Blair Lakes Comfort Boiler #1	JP-8 Fired Comfort Heat Boiler	Diesel	8,760 hours/yr	5.6	MMBtu/hr
6	Blair Lakes Comfort Boiler #2	JP-8 Fired Comfort Heat Boiler	Diesel	8,760 hours/yr	5.6	MMBtu/hr

Notes and Assumptions:

1. Heat Content of Diesel Fuel: 137 MBtu/gal
2. Density of Diesel Fuel: 7.05 lb/gal
3. Maximum Sulfur content: 0.5 wt. pct. S

4. The United States Air Force (USAF) is requesting to remove all emission units associated with rock crushing operations from the inventory for the Blair Lakes Range. Therefore, the emission units identified as EU IDs 16 - 30 in Minor Permit AQ0859MSS01, Revision 1 do not appear in the revised inventory.

5. Under MSS01, Rev. 1, Generators #1 - #3 (EU IDs 1 - 3) are subject to a combined operating limit of 18,375 hours per 12 consecutive months, or equivalently 6,125 hrs each per year. The USAF is requesting to change the operational limit for EU IDs 1 - 3 to 24,000 combined hours per year. Emissions are calculated using 8000 hours/year for each of these units.

Potential Emissions and Permit Applicabiltiy For Blair Lakes Support Facility

Emission Unit		Potential Emissions (tpy)				
ID	Description	NO_X	CO	$PM_{10}/PM_{2.5}$	VOC	SO_2
1	Blair Lakes Generator #1	28.1	3.9	1.7	1.4	5.48
2	Blair Lakes Generator #2	28.1	3.9	1.7	1.4	5.48
3	Blair Lakes Generator #3	28.1	3.9	1.7	1.4	5.48
4	Blair Lakes Fire Water Pump	0.8	0.2	0.1	0.1	0.09
5	Blair Lakes Comfort Boiler #1	3.6	0.9	0.4	0.1	12.62
6	Blair Lakes Comfort Boiler #2	3.6	0.9	0.4	0.1	12.62
	Existing Potential Emissions under Permit AQ0859MSS01, Rev. 1 (tpy)	**92.0**	**15.5**	**6.1**	**5.0**	**46.0**
	Future Potential Emissions (tpy) - removing rock crusher equipment and changing limits on generators	**92.4**	**13.6**	**5.8**	**4.5**	**41.8**
	Change in Future Potential Emissions (tpy)	**0.4**	**-1.9**	**-0.3**	**-0.5**	**-4.2**
	Minor Permit under 18 AAC 50.502(c)(3)(A) Applicability Threshold	10	N/A	10	N/A	10
	Minor Permit Required for Change in Emissions?	No	No	No	No	No
	Title V Permit Threshold	100	100	100	100	100
	Title V Permit Required?	No	No	No	No	No

Notes

1. By eliminating the potential emissions of the rock crushing equipment (EU IDs 16 - 30, removed from updated inventory), potential emissions are decreased for all pollutants except NOx in spite of the increasing operational hours with the new ORL for EU IDs 1 - 3

2. The potential emission calculations for SO_2 assume a fuel sulfur content of 0.5 weight percent (wt %). This is a conservative assumption, since Ultra Low Sulfur Diesel (ULSD) ihas been combusted in the engines and boilers at the Blair Lakes Range.

Blair Lakes Range Support Facillity Portable Rock Crusher Potential NO_X Emissions Calculations

ID	Description	NO_X Emission Factor		Maximum Capacity	Maximum Operation		Potential NO_X Emission
			Reference				
1	Blair Lakes Generator #1	0.019 lb/bhp-hr	Vendor Information	380 hp (prime)	8,000	hours/yr	28.1 tpy
2	Blair Lakes Generator #2	0.019 lb/bhp-hr	Vendor Information	380 hp (prime)	8,000	hours/yr	28.1 tpy
3	Blair Lakes Generator #3	0.019 lb/bhp-hr	Vendor Information	380 hp (prime)	8,000	hours/yr	28.1 tpy
4	Blair Lakes Fire Water Pump	0.031 lb/bhp-hr	AP-42 Table 3.3-1	105 hp	500	hours/yr	0.8 tpy
5	Blair Lakes Comfort Boiler #1	20 lb/Mgal	AP-42 Table 1.3-1	5.6 MMBtu/hr	8,760	hours/yr	3.6 tpy
6	Blair Lakes Comfort Boiler #2	20 lb/Mgal	AP-42 Table 1.3-1	5.6 MMBtu/hr	8,760	hours/yr	3.6 tpy
					Future Potential NO_X Emissions		92.4 tpy

Blair Lakes Range Support Facillity Potential CO Emissions Calculations

Emission Unit		CO Emission Factor		Maximum	Maximum Operation		Potential CO
ID	Description		Reference	Capacity			Emission
1	Blair Lakes Generator #1	2.56E-03 lb/bhp-hr	Vendor Information	380 hp	8,000	hours/yr	3.9 tpy
2	Blair Lakes Generator #2	2.56E-03 lb/bhp-hr	Vendor Information	380 hp	8,000	hours/yr	3.9 tpy
3	Blair Lakes Generator #3	2.56E-03 lb/bhp-hr	Vendor Information	380 hp	8,000	hours/yr	3.9 tpy
4	Blair Lakes Fire Water Pump	6.68E-03 lb/bhp-hr	AP-42 Table 3.3-1	105 hp	500	hours/yr	0.2 tpy
5	Blair Lakes Comfort Boiler #1	5 lb/Mgal	Ap-42 Table 1.3-1	5.6 MMBtu/hr	8,760	hours/yr	0.9 tpy
6	Blair Lakes Comfort Boiler #2	5 lb/Mgal	Ap-42 Table 1.3-2	5.6 MMBtu/hr	8,760	hours/yr	0.9 tpy
					Future Potential CO Emissions		13.6 tpy

Blair Lakes Range Support Facillity Potential PM_{10} Emissions Calculations

Emission Unit		PM_{10} Emission Factor		Maximum	Maximum Operation	Potential PM_{10}
ID	Description		Reference	Capacity		Emissions
1	Blair Lakes Generator #1	1.10E-03 lb/bhp-hr	Vendor Information	380 hp	8,000 hours/yr	1.7 tpy
2	Blair Lakes Generator #2	1.10E-03 lb/bhp-hr	Vendor Information	380 hp	8,000 hours/yr	1.7 tpy
3	Blair Lakes Generator #3	1.10E-03 lb/bhp-hr	Vendor Information	380 hp	8,000 hours/yr	1.7 tpy
4	Blair Lakes Fire Water Pump	2.20E-03 lb/bhp-hr	AP-42 Table 3.3-1	105 hp	500 hours/yr	0.1 tpy
5	Blair Lakes Comfort Boiler #1	2 lb/Mgal	AP-42 Table 1.3-1	5.6 MMBtu/hr	8,760 hours/yr	0.4 tpy
6	Blair Lakes Comfort Boiler #2	2 lb/Mgal	AP-42 Table 1.3-1	5.6 MMBtu/hr	8,760 hours/yr	0.4 tpy
					Future Potential PM_{10} Emissions	5.8 tpy

Blair Lakes Range Support Facility Potential VOC Emissions Calculations

Emission Unit		VOC Emission Factor		Maximum	Maximum Operation		Potential VOC
ID	Description		Reference	Capacity			Emission
1	Blair Lakes Generator #1	9.5E-04 lb/bhp-hr	Vendor Information	380 hp	8,000	hours/yr	1.4 tpy
2	Blair Lakes Generator #2	9.5E-04 lb/bhp-hr	Vendor Information	380 hp	8,000	hours/yr	1.4 tpy
3	Blair Lakes Generator #3	9.5E-04 lb/bhp-hr	Vendor Information	380 hp	8,000	hours/yr	1.4 tpy
4	Blair Lakes Fire Water Pump	2.5E-03 lb/bhp-hr	AP-42 Table 3.3-1	105 hp	500	hours/yr	0.1 tpy
5	Blair Lakes Comfort Boiler #1	0.34 lb/Mgal	AP-42 Table 1.3-3	5.6 MMBtu/hr	8,760	hours/yr	0.1 tpy
6	Blair Lakes Comfort Boiler #2	0.34 lb/Mgal	AP-42 Table 1.3-3	5.6 MMBtu/hr	8,760	hours/yr	0.1 tpy
					Future Potential VOC Emissions		4.5 tpy

Blair Lakes Range Support Facillity Potential SO_2 Emissions Calculations

Emission Unit		Maximum Fuel	SO_2 Emission Factor		Maximum	Maximum Operation	Maximum Potential	Potential SO_2
ID	Description	Sulfur Content		Reference	Capacity		Fuel Consumption	Emission
1	Blair Lakes Generator #1	0.5000 wt. pct.	70.5 lb/Mgal	Mass Balance	19.4 gph	8,000 hours/yr	155.3 Mgal/yr	5.48 tpy
2	Blair Lakes Generator #2	0.5000 wt. pct.	70.5 lb/Mgal	Mass Balance	19.4 gph	8,000 hours/yr	155.3 Mgal/yr	5.48 tpy
3	Blair Lakes Generator #3	0.5000 wt. pct.	70.5 lb/Mgal	Mass Balance	19.4 gph	8,000 hours/yr	155.3 Mgal/yr	5.48 tpy
4	Blair Lakes Fire Water Pump	0.5000 wt. pct.	70.5 lb/Mgal	Mass Balance	5.4 gph	500 hours/yr	2.7 Mgal	0.09 tpy
5	Blair Lakes Comfort Boiler #1	0.5000 wt. pct.	70.5 lb/Mgal	Mass Balance	40.9 gph	8,760 hours/yr	358.1 Mgal	12.62 tpy
6	Blair Lakes Comfort Boiler #2	0.5000 wt. pct.	70.5 lb/Mgal	Mass Balance	40.9 gph	8,760 hours/yr	358.1 Mgal	12.62 tpy
							Future Potential SO_2 Emissions	41.8 tpy

Notes

1. A brake-specific fuel consumption (BSFC) of 7,000 Btu/hp-hr was used in the calculation of the gallon per hour fuel rates.

2. The potential emission calculations for pollutant SO2 assume a fuel sulfur content of 0.5 weight percent (wt %). This is a conservative assumption, since only Ultra Low Sulfur Diesel (ULSD) is combusted in the engines and boilers at the Blair Lakes Range.

Power Generation

Exhaust Emission Data Sheet

230DFAB

60 Hz Diesel Generator Set

ENGINE

Model: Cummins LTA10-G1
Type: 4 Cycle, In-line 6 Cylinder Diesel
Aspiration: Turbocharged and Aftercooled
Compression Ratio: 16:1
Emission Control Device: Turbocharger and Aftercooler

Bore: 4.92 in. (125 mm)
Stroke 5.35 in. (136 mm)
Displacement: 610 cu. in. (10.0 liters)

PERFORMANCE DATA	STANDBY	PRIME
BHP @ 1800 RPM (60 Hz)	380	345
Fuel Consumption (gal/Hr)	17.1	15.6
Exhaust Gas Flow (CFM)	1825	1645
Exhaust Gas Temperature (°F)	965	940

EXHAUST EMISSION DATA

(All Values are Grams per HP-Hour)

COMPONENT	STANDBY	PRIME
HC (Total Unburned Hydrocarbons)	0.48	0.43
NOx (Oxides of Nitrogen as NO2)	9.30	8.40
CO (Carbon Monoxide)	1.00	1.16
PM (Particulate Matter)	0.50	0.50
SO_2 (Sulfur Dioxide)	0.56	0.57

TEST CONDITIONS

Data was recorded during steady-state rated engine speed (± 25 RPM) with full load (± 2%).
Pressures, temperatures, and emission rates were stablized.

Fuel Specification:	ASTM D975 No. 2-D diesel fuel with 0.03-0.05% sulfur content (by weight), and 40-48 cetane number.
Fuel Temperature:	99 ± 9 ° F (at fuel pump inlet)
Intake Air Temperature:	77 ± 9 ° F
Barometric Pressure:	29.6 ± 1 in. Hg
Humidity:	NOx measurement corrected to 75 grains H2O/lb dry air
Reference Standard:	ISO 8178

The NOx, HC, CO and PM emission data tabulated here were taken from a single engine under the test conditions shown above. Data for the other components are estimated. These data are subject to instrumentation and engine-to-engine variability. Field emissions test data are not guaranteed to these levels. Actual field test results may vary due to test site conditions, installation,fuel specification, test procedures and instrumentation. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

A4 & 2