

# *P & A Engineering and Consultants, Inc.*

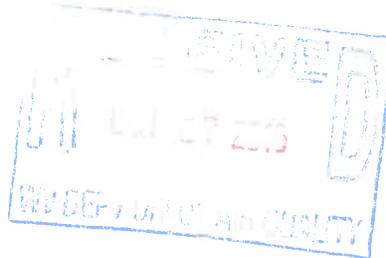
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312 Justice Avenue  
Logan, WV 25601

Phone (304) 752-8320  
Fax (304) 752-7488

October 4, 2016

Mr. William F. Durham, Director  
Division of Air Quality  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304



RE: Kanawha Eagle Mining LLC  
General Permit Modification  
ID#039-00480

Dear Mr. Durham:

On behalf of Kanawha Eagle Mining, LLC, we are submitting the enclosed General Permit Modification Application for the South Hollow Preparation Plant Facility for your review and approval. Additional application copies and the submittal fee of \$1500 are also being submitted.

The application addresses changes in the process flow, controls, and additional deep mine belts, refuse belts, equipment identifications, feeder breaker, delete truck dump bins and eight screens.

If additional information or clarification is needed, please contact me at the Logan address listed above or call 304-752-8320.

Sincerely,

Donna J. Toler  
Air Quality Project Manager

*donnatoler@suddenlink.net*

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WEST VIRGINIA  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 DIVISION OF AIR QUALITY  
 601 - 57<sup>th</sup> Street SE  
 Charleston, WV 25304  
 Phone: (304) 926-0475 • www.wvdep.org

**APPLICATION FOR GENERAL PERMIT REGISTRATION**  
 CONSTRUCT, MODIFY, RELOCATE OR ADMINISTRATIVELY UPDATE  
 A STATIONARY SOURCE OF AIR POLLUTANTS

PLEASE CHECK ALL THAT APPLY (IF KNOWN):  
 CONSTRUCTION  MODIFICATION  RELOCATION  
 ADMINISTRATIVE UPDATE  AFTER-THE-FACT

FOR AGENCY USE ONLY: PLANT I.D. # \_\_\_\_\_  
 PERMIT # \_\_\_\_\_ PERMIT WRITER: \_\_\_\_\_

CHECK WHICH TYPE OF GENERAL PERMIT REGISTRATION YOU ARE APPLYING FOR:

- G10-C – Coal Preparation and Handling
- G20-B – Hot Mix Asphalt
- G30-D – Natural Gas Compressor Stations
- G33-A – Class I Spark Ignition Internal Combustion Engine
- G35-A – Natural Gas Compressor Stations (Flare/Glycol Dehydration Unit)

- G40-C – Nonmetallic Minerals Processing
- G50-B – Concrete Batch
- G60-C - Class II Emergency Generator
- G65-C – Class I Emergency Generator

SECTION I. GENERAL INFORMATION

1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE):  
**KANAWHA EAGLE MINING, LLC**

2. FEDERAL EMPLOYER ID NO. (FEIN):  
**54-1930908**

3. APPLICANT'S MAILING ADDRESS:

**3228 SUMMIT SQUARE PLACE SUITE 180  
 LEXINGTON, KY 40509-2637**

4. IF APPLICANT IS A SUBSIDIARY CORPORATION, PLEASE PROVIDE THE NAME OF PARENT CORPORATION:

**BLACKHAWK MINING**

5. WV BUSINESS REGISTRATION. IS THE APPLICANT A RESIDENT OF THE STATE OF WEST VIRGINIA?  YES  NO

- ⇒ IF YES, PROVIDE A COPY OF THE CERTIFICATE OF INCORPORATION / ORGANIZATION / LIMITED PARTNERSHIP (ONE PAGE) INCLUDING ANY NAME CHANGE AMENDMENTS OR OTHER BUSINESS CERTIFICATE AS ATTACHMENT A.
- ⇒ IF NO, PROVIDE A COPY OF THE CERTIFICATE OF AUTHORITY / AUTHORITY OF L.L.C. / REGISTRATION (ONE PAGE) INCLUDING ANY NAME CHANGE AMENDMENTS OR OTHER BUSINESS CERTIFICATE AS ATTACHMENT A.

SECTION II. FACILITY INFORMATION

7. TYPE OF PLANT OR FACILITY (STATIONARY SOURCE) TO BE CONSTRUCTED, MODIFIED, RELOCATED OR ADMINISTRATIVELY UPDATED (E.G., COAL PREPARATION PLANT, PRIMARY CRUSHER, ETC.):

**Adding deep mine belts, adding 11 refuse belts, delete 2 truck dump bins, add breaker, delete 8 screens, change equipment identifications, controls, transfer points and add generators.**

8. STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODE FOR THE FACILITY:

**1221 AND 1222**

9A. DAQ PLANT I.D. NO. (FOR AN EXISTING FACILITY):  <b>039-00480</b>	10A. LIST ALL CURRENT 45CSR13 AND 45CSR30 (TITLE V) PERMIT NUMBERS ASSOCIATED WITH THIS PROCESS (FOR EXISTING FACILITY ONLY):  <b>G10-D017</b>
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*PRIMARY OPERATING SITE INFORMATION*

11A. NAME OF PRIMARY OPERATING SITE:  <b>South Hollow Preparation Plant</b>	12A. MAILING ADDRESS OF PRIMARY OPERATING SITE:  <b>PO Box 100, Winifrede, WV 25214</b>
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13A. DOES THE APPLICANT OWN, LEASE, HAVE AN OPTION TO BUY, OR OTHERWISE HAVE CONTROL OF THE *PROPOSED SITE*?

YES     NO

⇒ IF YES, PLEASE EXPLAIN: **OWNER/OPERATOR**

⇒ IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.

14A. ⇒ FOR MODIFICATIONS or ADMINISTRATIVE UPDATES, AT AN EXISTING FACILITY, PLEASE PROVIDE DIRECTIONS TO THE *PRESENT LOCATION* OF THE FACILITY FROM THE NEAREST STATE ROAD;

⇒ FOR CONSTRUCTION OR RELOCATION PERMITS, PLEASE PROVIDE DIRECTIONS TO *THE PROPOSED NEW SITE LOCATION* FROM THE NEAREST STATE ROAD.

**From Charleston, follow Route 61 through Chesapeake, WV – turn right onto Winifrede Hollow road, proceed straight approximately 5 miles to plant site**

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INCLUDE A MAP AS ATTACHMENT F.

15A. NEAREST CITY OR TOWN:  <b>Chesapeake</b>	16A. COUNTY:  <b>Kanawha</b>	
17A. UTM NORTHING (KM):  <b>4223.28461</b>	18A. UTM EASTING (KM):  <b>450.97763</b>	19A. UTM ZONE:  <b>17</b>

**Coordinates: 38-09-22.02 N and 81-33-34.36W sits on top plant**



**2<sup>ND</sup> ALTERNATE OPERATING SITE INFORMATION (G20-B, G40-C, G50-C only)**

11C. NAME OF PRIMARY OPERATING SITE:  _____	12C. MAILING ADDRESS OF PRIMARY OPERATING SITE:  _____	
<p>13C. DOES THE APPLICANT OWN, LEASE, HAVE AN OPTION TO BUY, OR OTHERWISE HAVE CONTROL OF THE <i>PROPOSED SITE</i>?</p> <p><input type="checkbox"/> YES    <input type="checkbox"/> NO</p> <p>⇨ IF YES, PLEASE EXPLAIN: _____</p> <p>_____</p> <p>⇨ IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.</p>		
<p>14C. ⇨ FOR MODIFICATIONS or ADMINISTRATIVE UPDATES, AT AN EXISTING FACILITY, PLEASE PROVIDE DIRECTIONS TO THE <i>PRESENT LOCATION</i> OF THE FACILITY FROM THE NEAREST STATE ROAD;</p> <p>⇨ FOR CONSTRUCTION OR RELOCATION PERMITS, PLEASE PROVIDE DIRECTIONS TO <i>THE PROPOSED NEW SITE LOCATION</i> FROM THE NEAREST STATE ROAD.</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>INCLUDE A MAP AS ATTACHMENT F.</p>		
15C. NEAREST CITY OR TOWN:	16C. COUNTY:	
17C. UTM NORTHING (KM):	18C. UTM EASTING (KM):	19C. UTM ZONE:
<p>20. PROVIDE THE DATE OF ANTICIPATED INSTALLATION OR CHANGE:    <b>Upon Permit Approval</b></p> <p>⇨ IF THIS IS AN AFTER-THE-FACT PERMIT APPLICATION, PROVIDE THE DATE UPON WHICH THE PROPOSED CHANGE DID HAPPEN: ____/____/____</p>		<p>21. DATE OF ANTICIPATED START-UP IF REGISTRATION IS GRANTED:</p> <p><b>Upon Permit Approval</b></p>
<p>22. PROVIDE MAXIMUM PROJECTED OPERATING SCHEDULE OF ACTIVITY/ ACTIVITIES OUTLINED IN THIS APPLICATION:</p> <p>HOURS PER DAY <b>24</b>    DAYS PER WEEK <b>7</b>    WEEKS PER YEAR <b>52</b>    PERCENTAGE OF OPERATION <b>100</b></p>		

**WEST VIRGINIA  
STATE TAX DEPARTMENT  
BUSINESS REGISTRATION  
CERTIFICATE**

ISSUED TO:  
**KANAWHA EAGLE MINING, LLC  
3228 SUMMIT SQUARE PL 180  
LEXINGTON, KY 40509-2637**

**BUSINESS REGISTRATION ACCOUNT NUMBER: 2319-5086**

This certificate is issued on: 08/11/2015

*This certificate is issued by  
the West Virginia State Tax Commissioner  
in accordance with Chapter 11, Article 12, of the West Virginia Code*

*The person or organization identified on this certificate is registered  
to conduct business in the State of West Virginia at the location above.*

This certificate is not transferrable and must be displayed at the location for which issued  
This certificate shall be permanent until cessation of the business for which the certificate of registration  
was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.

Change in name or change of location shall be considered a cessation of the business and a new  
certificate shall be required.

TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them.  
CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of  
this certificate displayed at every job site within West Virginia.

## DETAILED PROCESS DESCRIPTION

Raw coal from the Eagle Mine is transferred to the plant via belt BC-01(PE) @ TP-01(TC-FE) and TP-02(TC-FW). Raw coal from the Peerless Mine will transfer to stockpile OS-01(SW-WS) @ TP-03(TC-FE) and TP-04(TC-MDH); will reclaim under pile to feeder-breaker CR-01(FE) for transfer via belt BC-03(PE) to the plant feed belt BC-09(PE) @ TP-05(LO-UC) thru TP-07(TC-FE). Raw coal from the newest deep mine will transfer via a series of belt conveyors BC-04(NC) thru BC-07(NC) to the plant transfer belts BC-08(PE) and BC-09(PE) @ TP-08(TC-FE) thru TP-16(TC-FW). Stacker belt BC-05 can be used to transfer raw coal to open stockpile OS-02(SW-WS) for loadout to truck @ TP-09(TC-MDH) and TP-10(LO-MDH). This coal can be trucked to raw coal stockpile OS-03(SW-WS) @ TP-11(UL-MDH) in the event of belt system breakdown. Raw coal from BC-07 can also transfer to the raw coal stockpiles OS-03(SW-WS) and OS-04(SW-WS) via a series of belt conveyors BC-12(PE) thru BC-14(PE) @ TP-23(TC-FE) thru TP-27(TC-PE).

Raw coal entering the plant will be screened by SS-01(FW) and crushed by CR-02(FW); transferred to belts BC-10(PE) and BC-11(PE); transfer to the raw coal silos BS-01(FE), BS-02(FE) and stockpiles OS-03 and OS-04 @ TP-17(TC-FW) thru TP-22(TC-FE). From the silos and stockpiles, raw coal will reclaim under bin and under pile to belt conveyors BC-15(FE), BC-16(FE) and BC-17(PE) for transfer to plant @ TP-28(LO-UC) thru TP-34(TC-FW).

Plant stoker coal will transfer to stoker bin BS-03(FE) via belt BC-18(PE) for loadout to truck or train @ TP-35(TC-FW) thru TP-38(LO-TC).

Clean coal from the plant will transfer to the clean coal silos BS-04(FE) and BS-05(FE) via belts BC-19(PE) and BC-20(PE) @ TP-39(TC-FW) thru TP-

Attachment B

42(TC-FE) and reclaim under bin to belts BC-21(FE) and BC-22(FE) for transfer to loadout bin BS-06(FE) @ TP-43(LO-UC) thru TP-46(TC-FE). Clean coal can be transferred to rail or truck @ TP-47(LR-TC) and TP-48(LO-TC).

Screen SS-01 reject materials can transfer to refuse crusher CR-03(FW) and transfer to refuse belt BC-23(PE) inside the plant @ TP-49(TC-FW) and TP-50(TC-FW).

Plant refuse is transferred to the disposal area via a series of partially enclosed belt conveyors BC-23(PE) thru BC-39(PE) @ TP-51(TC-FW) thru TP-71(TC-MDH). In the event of belt malfunction or breakdown, refuse can also transfer from belt BC-23 to refuse bin BS-07(FE) for transfer to the disposal area by truck @ TP-52(TC-FE) thru TP-54(UL-MDH).

Refuse slurry material exits the plant via slurry line to the filter press building where it will be processed and transfer to the refuse disposal area via a series of refuse belts BC-40(PE) thru BC-42(PE) @ TP-72(TC-FE) thru TP-75(TC-MDH).

## DESCRIPTION OF FUGITIVE EMISSIONS

Potential sources of fugitive particulate emissions for this facility include emissions, which are not captured by pollution control equipment and emissions from open stockpiles and vehicular traffic on paved haulroads and work areas. The haulroads and work areas will be controlled by water truck in accordance with section E.6.c.i. of the General Permit.

The water truck is equipped with pumps sufficient to maintain haulroads and work areas. The water truck will be operated three times daily, and more as needed in dry periods.

An additive to prevent freezing will be utilized in the winter months when freezing conditions are present.

BC-42 (PE)

1F-75 (IC-MB21)

300 TPH



TO DISPOSAL AREA

No.	Date	Revision	By	Job No.:	Date Drawn:
1				EP-002-04	08/14/16
2				Drawn By: G C	Checked By: DJT
3				Computer No.:	Contour Interval:
4				16103	N/A
5				Scale:	Sheet No.:
6				NOT TO SCALE	1 of 1
7				SUBMITTAL DATE:	
8				09-2016	
9					

Prepared by:



**E NGINEERS & C ONSULTANTS**  
PO Box 470 Alum Creek, WV 25003 (304) 756-4066

**Kanawha Eagle Mining, LLC**

**South Hollow Preparation Plant  
Facility ID: 039-00480**

Air Quality General Permit

**Material Flow Diagram**

10/20

No.	Date	Revision	By	Job No.:	Date Drawn:
1				EP-002-04	08/14/16
2				Drawn By: G C	Checked By: DJT
3				Computer No.:	Contour Interval:
4				16104	N/A
5				Scale:	Sheet No.:
6				NOT TO SCALE	1 of 1
7				SUBMITTAL DATE:	
8				09-2016	
9					

Prepared by:



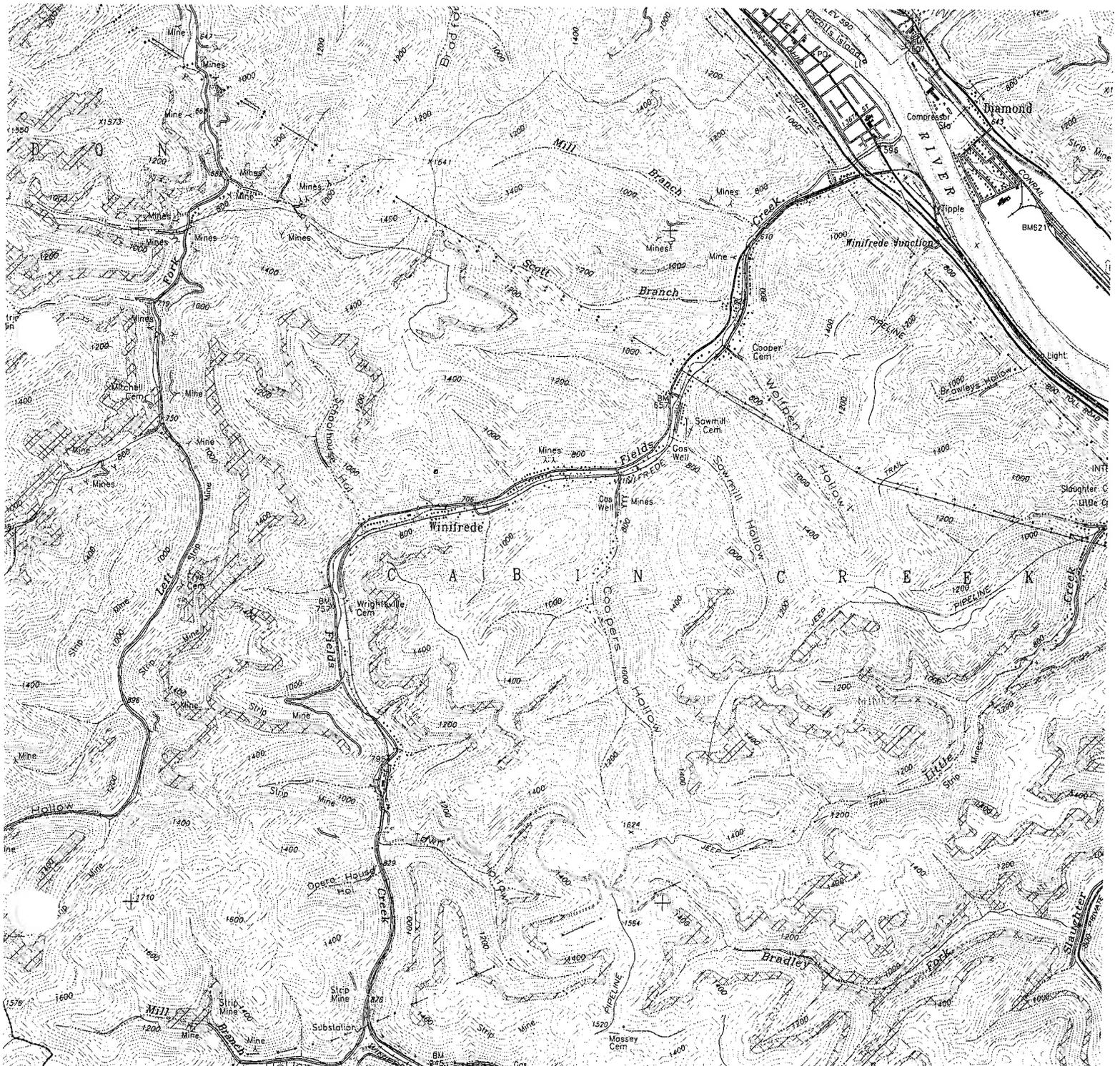
**E NGINEERS & C ONSULTANTS**  
 PO Box 470 Alum Creek, WV 25003 (304) 756-4066

**Kanawha Eagle Mining, LLC**

**South Hollow Preparation Plant**  
**Facility ID: 039-00480**

Air Quality General Permit

**Site Map**



Lon/Lat

Longitude: - 81 d 33 m 34.36 s

Latitude: + 38 d 9 m 22.02 S

DD: -81.559544 38.156117

Datum:  NAD27  NAD83

Convert

UTM

Coordinates: 450977.63 E 4223284.61 N

Datum:  NAD27  NAD83 Zone: 17

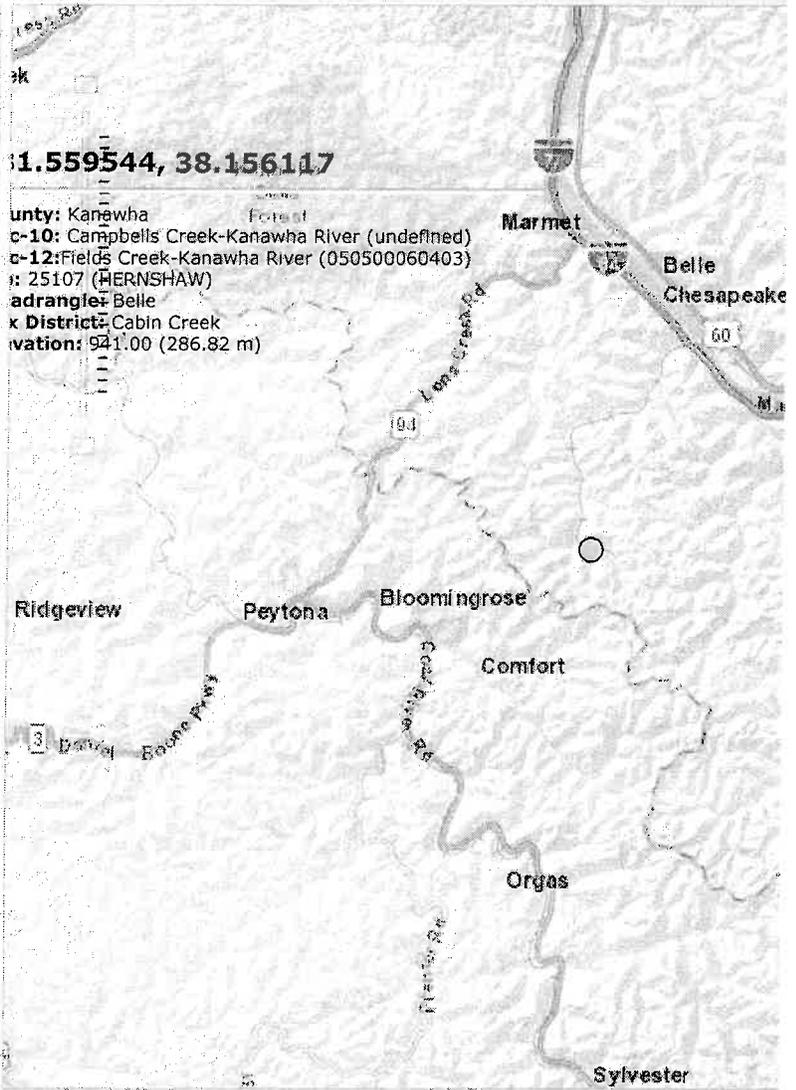
Convert

WV State Plane (feet)

Coordinates: 1376168.69 E -118470.48 N

Datum:  NAD27  NAD83 Zone: North

Convert



clear markers  street map  image  topo

## CRUSHING AND SCREENING AFFECTED SOURCE SHEET

Source Identification Number <sup>1</sup>		RC Breaker CR-01	RC In- Plant CR-02	In-Plant Refuse CR-03	
Type of Crusher or Screen <sup>2</sup>		Breaker	SR	SR	
Date of Manufacture <sup>3</sup>		2012	2005	2005	
Maximum Throughput <sup>4</sup>	tons/hour	800	800	100	
	tons/year	7,008,000	7,008,000	876,000	
Material sized from/to: <sup>5</sup>		4x0	4x0	+2	
Average Moisture Content (%) <sup>6</sup>		6	6	6	
Control Device ID Number <sup>7</sup>		FE	FW	FW	
Baghouse Stack Parameters <sup>8</sup>	height (ft)	N/A			
	diameter (ft)				
	volume (ACFM)				
	exit temp (°F)				
	UTM Coordinates				
Maximum Operating Schedule <sup>9</sup>	hours/day	24	24	24	
	days/year	365	365	365	
	hours/year	8760	8760	8760	
Percentage of Operation <sup>10</sup>	January-March	25	25	25	
	April-June	25	25	25	
	July-September	25	25	25	
	Oct-December	25	25	25	

1. Enter the appropriate Source Identification Number for each crusher and screen. For example, in the case of an operation which incorporates multiple crushers, the crushers should be designated CR-1, CR-2, CR-3 etc. beginning with the breaker or primary crusher. Multiple screens should be designated S-1, S-2, S-3 etc.
2. Describe types of crushers and screens using the following codes:

HM Hammermill	SS Stationary Screen
DR Double Roll Crusher	SD Single Deck Screen
BM Ball Mill	DD Double-Deck Screen
RB Rotary Breaker	TD Triple Deck Screen
JC Jaw Crusher	OT Other
GC Gyratory Crusher	
OT Other - Quadroll	
3. Enter the date that each crusher and screen was manufactured.
4. Enter the maximum throughput for each crusher and screen in tons per hour and tons per year.
5. Describe the nominal material size reduction (e.g. +2"/ -").
6. Enter the average percent moisture content of the material processed.
7. Enter the appropriate Control Device Identification Number for each crusher and screen. Refer to Table A - *Control Device Listing and Control Device Identification Number Instructions* in the *Reference Document* for Control Device ID prefixes and numbering.
8. Enter the appropriate stack parameters if a baghouse control device is used.
9. Enter the maximum operating schedule for each crusher and screen in hours per day, days per year and hours per year.
10. Enter the estimated percentage of operation throughout the year for each crusher and screen.

## CRUSHING AND SCREENING AFFECTED SOURCE SHEET

Source Identification Number <sup>1</sup>		In-Plant RC <b>SS-01</b>			
Type of Crusher or Screen <sup>2</sup>		<b>DD</b>			
Date of Manufacture <sup>3</sup>					
Maximum Throughput <sup>4</sup>	tons/hour	<b>800</b>			
	tons/year	<b>7,008,000</b>			
Material sized from/to <sup>5</sup>		<b>4X0</b>			
Average Moisture Content (%) <sup>6</sup>		<b>6</b>			
Control Device ID Number <sup>7</sup>		<b>FW</b>			
Baghouse Stack Parameters <sup>8</sup>	height (ft)				
	diameter (ft)				
	volume (ACFM)				
	exit temp (°F)				
	UTM Coordinates				
Maximum Operating Schedule <sup>9</sup>	hours/day	<b>24</b>			
	days/year	<b>365</b>			
	hours/year	<b>8760</b>			
Percentage of Operation <sup>10</sup>	January-March	<b>25</b>			
	April-June	<b>25</b>			
	July-September	<b>25</b>			
	Oct-December	<b>25</b>			

1. Enter the appropriate Source Identification Number for each crusher and screen. For example, in the case of an operation which incorporates multiple crushers, the crushers should be designated CR-1, CR-2, CR-3 etc. beginning with the breaker or primary crusher. Multiple screens should be designated S-1, S-2, S-3 etc.
2. Describe types of crushers and screens using the following codes:

HM	Hammermill	SS	Stationary Screen
DR	Double Roll Crusher	SD	Single Deck Screen
BM	Ball Mill	DD	Double-Deck Screen
RB	Rotary Breaker	TD	Triple Deck Screen
JC	Jaw Crusher	OT	Other
GC	Gyratory Crusher		
OT	Other		
3. Enter the date that each crusher and screen was manufactured.
4. Enter the maximum throughput for each crusher and screen in tons per hour and tons per year.
5. Describe the nominal material size reduction (e.g. +2" / -\_").
6. Enter the average percent moisture content of the material processed.
7. *Device Identification Number Instructions* in the *Reference Document* for Control Device ID prefixes and numbering. Enter the appropriate Control Device Identification Number for each crusher and screen. Refer to Table A - *Control Device Listing and Control*
8. Enter the appropriate stack parameters if a baghouse control device is used.
9. Enter the maximum operating schedule for each crusher and screen in hours per day, days per year and hours per year.
10. Enter the estimated percentage of operation throughout the year for each crusher and screen.

### CONVEYING AFFECTED SOURCE SHEET

Source Identification Number <sup>1</sup>	Date of Manufacture <sup>2</sup>	Type of Material Handled <sup>3</sup>	Size of Material Handled <sup>4</sup>	Maximum Material Transfer Rate <sup>5</sup>		Average Moisture Content (%) <sup>6</sup>	Control Device <sup>7</sup>
				tons/hour	tons/year		
BC-01	2005	RC	4x0	800	7,008,000	6	PE
BC-02	2005	RC	4x0	800	7,008,000	6	PE
BC-03	2004	RC	2x0	800	7,008,000	6	PE
BC-04	2004	RC	2x0	1200	10,512,000	6	NC
BC-05	2016	RC	2x0	1200	10,512,000	6	NC
BC-06	2016	RC	2x0	1200	10,512,000	6	NC
BC-07	2016	RC	2x0	1200	10,512,000	6	NC
BC-08	2005	RC	2x0	800	7,008,000	6	PE
BC-09	1999	RC	2x0	800	7,008,000	6	PE
BC-10	1999	RC	2x0	800	7,008,000	6	PE
BC-11	2002	RC	2x0	800	7,008,000	6	PE
BC-12	2005	RC	2x0	1200	10,512,000	6	PE
BC-13	2005	RC	2x0	1200	10,512,000	6	PE
BC-14	2005	RC	2x0	1200	5,256,000	6	PE
BC-15	2005	RC	2x0	800	5,256,000	6	FE
BC-16	2005	RC	2x0	800	5,256,000	6	FE
BC-17	2012	RC	2x0	800	7,008,000	6	PE
BC-18	2012	Stoker	2x0	300	2,628,000	7	PE
BC-19	2012	CC	2x0	800	7,008,000	7	PE
BC-20	2012	CC	2x0	800	7,008,000	7	PE
BC-21	2012	CC	2x0	4000	7,008,000	7	FE

**CONVEYING AFFECTED SOURCE SHEET**

Source Identification Number <sup>1</sup>	Date of Manufacture <sup>2</sup>	Type of Material Handled <sup>3</sup>	Size of Material Handled <sup>4</sup>	Maximum Material Transfer Rate <sup>5</sup>		Average Moisture Content (%) <sup>6</sup>	Control Device <sup>7</sup>
				tons/hour	tons/year		
BC-22	2012	CC	2x0	4000	7,008,000	7	PE
BC-23	1993	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-24	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-25	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-26	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-27	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-28	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-29	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-30	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-31	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-32	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-33	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-34	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-35	2005	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-36	2005	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-37	2005	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-38	1993	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-39	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-40	1997	Refuse	3/8x0	300	2,628,000	15	PE
BC-41	1997	Refuse	3/8x0	300	2,628,000	15	PE
BC-42	1997	Refuse	3/8x0	300	2,628,000	15	NC

## STORAGE ACTIVITY AFFECTED SOURCE SHEET

Source Identification Number <sup>1</sup>	Silo BS-01	Silo BS-02	Stoker BS-03	Silo BS-04	Silo BS-05
Type of Material Stored <sup>2</sup>	RC	RC	CC	CC	CC
Average Moisture Content (%) <sup>3</sup>	6	6	7	7	7
Maximum Yearly Storage Throughput (tons) <sup>4</sup>	7,008,000	7,008,000	2,628,000	7,008,000	7,008,000
Maximum Storage Capacity (tons) <sup>5</sup>	7,500	7,500	160	7,500	10,000
Maximum Base Area (ft <sup>2</sup> ) <sup>6</sup>					
Maximum Pile Height (ft) <sup>7</sup>					
Method of Material Load-in <sup>8</sup>	SS	SS	SS	SS	SS
Load-in Control Device Identification Number <sup>9</sup>	TC-FE	TC-FE	TC-FE	TC-FE	TC-FE
Storage Control Device Identification Number <sup>9</sup>	FE	FE	FE	FE	FE
Method of Material Load-out <sup>8</sup>	SS	SS	SS	SS	SS
Load-out Control Device Identification Number <sup>9</sup>	LO-UC	LO-UC	LO-TC	LO-UC	LO-UC

1. Enter the appropriate Source Identification Number for each storage activity using the following codes. For example, if the facility utilizes three storage bins, four open stockpiles and one storage building (full enclosure), the Source Identification Numbers should be BS-1, BS-2, and BS-3; OS-1, OS-2, OS-3, and OS-4; and SB-1, respectively.

BS Bin or Storage Silo (full enclosure)	E3 Enclosure (three sided enclosure)
OS Open Stockpile	SB Storage Building (full enclosure)
SF Stockpiles with wind fences	OT Other

2. Describe the type of material stored or stockpiled (e.g. clean coal, raw coal, refuse, etc).

3. Enter the average percent moisture content of the stored material.

4. Enter the maximum yearly storage throughput for each storage activity.

5. Enter the maximum storage capacity for each storage activity in tons (e.g. silo capacity, maximum stockpile size, etc.)

6. For stockpiles, enter the maximum stockpile base area.

7. For stockpiles, enter the maximum stockpile height.

8. Enter the method of load-in or load-out to/from stockpiles or bins using the following codes:

CS Clamshell	SS Stationary Conveyor/Stacker
FC Fixed Height Chute from Bins	ST Stacking Tube
FE Front Endloader	TC Telescoping Chute from Bins
MC Mobile Conveyor/Stacker	TD Truck Dump
UC Under-pile or Under-Bin Reclaim Conveyor	PC Pneumatic Conveyor/Stacker
RC Rake or Bucket Reclaim Conveyor	OT Other

## STORAGE ACTIVITY AFFECTED SOURCE SHEET

Source Identification Number <sup>1</sup>	BS-06	BS-07			
Type of Material Stored <sup>2</sup>	CC	Refuse			
Average Moisture Content (%) <sup>3</sup>	7	10			
Maximum Yearly Storage Throughput (tons) <sup>4</sup>	7,008,000	3,504,000			
Maximum Storage Capacity (tons) <sup>5</sup>	200	150			
Maximum Base Area (ft <sup>2</sup> ) <sup>6</sup>		Emergency Use Only			
Maximum Pile Height (ft) <sup>7</sup>					
Method of Material Load-in <sup>8</sup>	SS	SS			
Load-in Control Device Identification Number <sup>9</sup>	TC-FE	TC-FE			
Storage Control Device Identification Number <sup>9</sup>	FE	FE			
Method of Material Load-out <sup>8</sup>	TC	Chute			
Load-out Control Device Identification Number <sup>9</sup>	LR-TC LO-TC	LO-MDH			

1. Enter the appropriate Source Identification Number for each storage activity using the following codes. For example, if the facility utilizes three storage bins, four open stockpiles and one storage building (full enclosure), the Source Identification Numbers should be BS-1, BS-2, and BS-3; OS-1, OS-2, OS-3, and OS-4; and SB-1, respectively.

BS Bin or Storage Silo (full enclosure)	E3 Enclosure (three sided enclosure)
OS Open Stockpile	SB Storage Building (full enclosure)
SF Stockpiles with wind fences	OT Other

2. Describe the type of material stored or stockpiled (e.g. clean coal, raw coal, refuse, etc).  
 3. Enter the average percent moisture content of the stored material.  
 4. Enter the maximum yearly storage throughput for each storage activity.  
 5. Enter the maximum storage capacity for each storage activity in tons (e.g. silo capacity, maximum stockpile size, etc.)  
 6. For stockpiles, enter the maximum stockpile base area.  
 7. For stockpiles, enter the maximum stockpile height.  
 8. Enter the method of load-in or load-out to/from stockpiles or bins using the following codes:

CS Clamshell	SS Stationary Conveyor/Stacker
FC Fixed Height Chute from Bins	ST Stacking Tube
FE Front Endloader	TC Telescoping Chute from Bins
MC Mobile Conveyor/Stacker	TD Truck Dump
UC Under-pile or Under-Bin Reclaim Conveyor	PC Pneumatic Conveyor/Stacker
RC Rake or Bucket Reclaim Conveyor	OT Other

## STORAGE ACTIVITY AFFECTED SOURCE SHEET

Source Identification Number <sup>1</sup>	OS-01	OS-02	OS-03	OS-04	
Type of Material Stored <sup>2</sup>	RC	RC	RC	RC	
Average Moisture Content (%) <sup>3</sup>	6	6	6	6	
Maximum Yearly Storage Throughput (tons) <sup>4</sup>	7,008,000	5,256,000	5,256,000	5,256,000	
Maximum Storage Capacity (tons) <sup>5</sup>	40,000	50,000	40,000	40,000	
Maximum Base Area (ft <sup>2</sup> ) <sup>6</sup>	88,869	108,869	88,869	88,869	
Maximum Pile Height (ft) <sup>7</sup>	50'	50'	75	75	
Method of Material Load-in <sup>8</sup>	SS	SS	SS	SS	
Load-in Control Device Identification Number <sup>9</sup>	TC-MDH	TC-MDH	TC-PE/ST	TC-PE/ST	
Storage Control Device Identification Number <sup>9</sup>	SW-WS	SW-WS	SW-WS	SW-WS	
Method of Material Load-out <sup>8</sup>	UC	Loader	UC	UC	
Load-out Control Device Identification Number <sup>9</sup>	LO-UC	LO-MDH	LO-UC	LO-UC	

1. Enter the appropriate Source Identification Number for each storage activity using the following codes. For example, if the facility utilizes three storage bins, four open stockpiles and one storage building (full enclosure), the Source Identification Numbers should be BS-1, BS-2, and BS-3; OS-1, OS-2, OS-3, and OS-4; and SB-1, respectively.

BS Bin or Storage Silo (full enclosure)

OS Open Stockpile

SF Stockpiles with wind fences

E3 Enclosure (three sided enclosure)

SB Storage Building (full enclosure)

OT Other

2. Describe the type of material stored or stockpiled (e.g. clean coal, raw coal, refuse, etc).

3. Enter the average percent moisture content of the stored material.

4. Enter the maximum yearly storage throughput for each storage activity.

5. Enter the maximum storage capacity for each storage activity in tons (e.g. silo capacity, maximum stockpile size, etc.)

6. For stockpiles, enter the maximum stockpile base area.

7. For stockpiles, enter the maximum stockpile height.

8. Enter the method of load-in or load-out to/from stockpiles or bins using the following codes:

CS Clamshell

FC Fixed Height Chute from Bins

FE Front Endloader

MC Mobile Conveyor/Stacker

UC Under-pile or Under-Bin Reclaim Conveyor

RC Rake or Bucket Reclaim Conveyor

SS Stationary Conveyor/Stacker

ST Stacking Tube

TC Telescoping Chute from Bins

TD Truck Dump

PC Pneumatic Conveyor/Stacker

OT Other

## ATTACHMENT H

### BAGHOUSE AIR POLLUTION CONTROL DEVICE SHEET *Not applicable for this facility*

Complete a Baghouse Air Pollution Control Device Sheet for each baghouse control device.

1. Baghouse Control Device Identification Number:
2. Manufacturer's name and model identification:
3. Number of compartments in baghouse:
4. Number of compartments online during normal operation and conditions:
5. Gas flow rate into baghouse: \_\_\_\_\_ ACFM @ \_\_\_\_\_ °F and \_\_\_\_\_ PSIA
6. Total cloth area: \_\_\_\_\_ ft<sup>2</sup>
7. Operating air to cloth ratio: \_\_\_\_\_ ft/min
8. Filter media type: \_\_\_\_\_
9. Stabilized static pressure drop across baghouse: \_\_\_\_\_ inches H<sub>2</sub>O
10. Baghouse operation is:  
 Continuous     Automatic     Intermittent
11. Method used to clean bags:  
 Shaker                       Pulse jet                       Reverse jet                       Other
12. Emission rate of particulate matter entering and exiting baghouse at maximum design operating conditions:  
Entering baghouse: \_\_\_\_\_ lb/hr and \_\_\_\_\_ grains/ACF  
Exiting baghouse: \_\_\_\_\_ lb/hr and \_\_\_\_\_ grains/ACF
13. Guaranteed minimum baghouse collection efficiency: \_\_\_\_\_ %
14. Provide a written description of the capture system (e.g. hooding and ductwork arrangement), size of ductwork and hoods and air volume, capacity and operating horsepower of fan:
  
15. Describe the method of disposal for the collected material:



2. TRANSFER POINTS (including all conveyor transfer points, equipment transfer points etc.)

k =	Particle Size Multiplier (dimensionless)	PM	PM-10
U =	Mean Wind Speed (mph)	0.74	0.35
		7	

Transfer Point ID No.	Transfer Point Description Include ID Numbers of all conveyors, crushers, screens, stockpiles, etc. involved	Material Moisture Content %	Maximum Transfer Rate		Control Device ID Number	Control Efficiency %
			TPH	TPY		
TP01	Eagle Mine to BC-01	6	800	7,008,000	TC-FE	80
TP02	BC-01 to SS-01	6	800	7,008,000	TC-FW	90
TP03	Peerless to BC-02	6	800	7,008,000	TC-FE	80
TP04	BC-02 to OS-01	6	800	7,008,000	TC-MDH	0
TP05	OS-01 to CR-01	6	800	7,008,000	LO-UC	80
TP06	CR-01 to BC-03	6	800	7,008,000	TC-FE	80
TP07	BC-03 to BC-09	6	800	7,008,000	TC-FE	80
TP08	BC-04 to BC-05	6	1,200	10,512,000	TC-FE	80
TP09	BC-05 to OS-02	6	1,200	5,256,000	TC-MDH	80
TP10	OS-02 to Truck	6	600	5,256,000	LO-UC	80
TP11	Truck to OS-03	6	600	5,256,000	TC-FE	80
TP12	BC-05 to BC-06	6	1,200	10,512,000	TC-FE	80
TP13	BC-06 to BC-07	6	1,200	10,512,000	TC-FE	80
TP14	BC-07 to BC-08	6	1,200	7,008,000	TC-FE	80
TP15	BC-08 to BC-09	6	800	7,008,000	TC-FE	80
TP16	BC-09 to SS-01	6	800	7,008,000	TC-FW	90
TP17	SS-01 to BC-10	6	800	7,008,000	TC-FW	90
TP18	SS-01 to CR-02	6	800	7,008,000	TC-FW	90
TP19	CR-02 to BC-10	6	800	7,008,000	TC-FW	90
TP20	BC-10 to BS-01	6	800	7,008,000	TC-FE	80
TP21	BC-10 to BC-11	6	800	7,008,000	TC-FE	80
TP22	BC-11 to BS-02	6	800	7,008,000	TC-FE	80
TP23	BC-07 to BC-12	6	1,200	10,512,000	TC-FE	80
TP24	BC-12 to BC-13	6	1,200	10,512,000	TC-FE	80
TP25	BC-13 to OS-03	6	1,200	5,256,000	TC-PE	50
TP26	BC-13 to BC-14	6	1,200	5,256,000	TC-FE	80
TP27	BC-14 to OS-04	6	1,200	5,256,000	TC-PE	50
TP28	OS-04 to BC-15	6	800	5,256,000	LO-UC	80
TP29	BC-15 to BC-16	6	800	5,256,000	TC-FE	80
TP30	BC-16 to BC-17	6	800	5,256,000	TC-FE	80
TP31	OS-03 to BC-17	6	800	5,256,000	LO-UC	80
TP32	BS-02 to BC-17	6	800	7,008,000	LO-UC	80
TP33	BS-01 to BC-17	6	800	7,008,000	LO-UC	80
TP34	BC-17 to Plant	6	800	7,008,000	TC-FW	90
TP35	Plant to BC-18	7	300	2,628,000	TC-FW	90
TP36	BC-18 to BS-03	7	300	2,628,000	TC-FE	80
TP37	BS-03 to Rail	7	300	2,628,000	LR-TC	75
TP38	BS-03 to Truck	7	300	2,628,000	LO-TC	75
TP39	Plant to BC-19	7	800	7,008,000	TC-FE	80
TP40	BS-19 to BS-04	7	800	7,008,000	TC-FE	80
TP41	BC-19 to BC-20	7	800	7,008,000	TC-PE	50
TP42	BC-20 to BS-05	7	800	7,008,000	TC-FE	80
TP43	BS-05 to BC-21	7	800	7,008,000	TC-PE	50
TP44	BC-21 to BC-22	7	800	7,008,000	LO-UC	80
TP45	BS-04 to BC-22	7	800	7,008,000	LO-UC	80
TP46	BC-22 to BS-06	7	800	7,008,000	TC-FE	80
TP47	BS-06 to Rail	7	800	7,008,000	LR-TC	75
TP48	BS-06 to Truck	7	400	3,504,000	LO-TC	75
TP49	SS-01 to CR-03	6	100	876,000	TC-FW	90
TP50	CR-03 to BC-23	6	100	876,000	TC-FW	90
TP51	Plant to BC-23	10	800	7,008,000	TC-FW	90
TP52	BC-23 to BS-07	10	400	3,504,000	TC-FE	80
TP53	BS-07 to Truck	10	400	3,504,000	LO-MDH	0
TP54	Truck to Disposal Area	10	400	3,504,000	UL-MDH	0
TP55	BC-23 to BC-24	10	800	7,008,000	TC-FE	80
TP56	BC-24 to BC-25	10	800	7,008,000	TC-FE	80
TP57	BC-25 to BC-26	10	800	7,008,000	TC-FE	80
TP58	BC-26 to BC-27	10	800	7,008,000	TC-FE	80
TP59	BC-27 to BC-28	10	800	7,008,000	TC-FE	80





# EMISSIONS SUMMARY

Name of applicant: Kanawha Eagle Mining  
 Name of plant: South Hollow Plant  
OAQ Calc Sheet

## Particulate Matter or PM (for 45CSR14 Major Source Determination)

Uncontrolled PM		Controlled PM	
lb/hr	TPY	lb/hr	TPY

FUGITIVE EMISSIONS				
<i>Stockpile Emissions</i>	0.57	2.49	0.14	0.62
<i>Unpaved Haulroad Emissions</i>	541.42	2,377.93	162.43	713.38
<i>Paved Haulroad Emissions</i>	0.00	0.00	0.00	0.00
<b>Fugitive Emissions Total</b>	<b>541.99</b>	<b>2,380.42</b>	<b>162.57</b>	<b>714.00</b>

POINT SOURCE EMISSIONS				
<i>Equipment Emissions</i>	114.00	499.32	13.00	56.94
<i>Transfer Point Emissions</i>	36.28	146.48	8.81	34.86
<b>Point Source Emissions Total*</b>	<b>150.28</b>	<b>645.80</b>	<b>21.81</b>	<b>91.80</b>

\*Note: Point Source Total Controlled PM TPY emissions is used for 45CSR14 Major Source determination (see below)

<b>Facility Emissions Total</b>	<b>692.27</b>	<b>3,026.22</b>	<b>184.38</b>	<b>805.81</b>
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**\*Facility Potential to Emit (PTE) (Baseline Emissions) = 91.80**  
 (Based on Point Source Total controlled PM TPY emissions from above) ENTER ON LINE 26 OF APPLICATION

## Particulate Matter under 10 microns, or PM-10 (for 45CSR30 Major Source Determination)

Uncontrolled PM-10		Controlled PM-10	
lb/hr	TPY	lb/hr	TPY

FUGITIVE EMISSIONS				
<i>Stockpile Emissions</i>	0.27	1.17	0.07	0.29
<i>Unpaved Haulroad Emissions</i>	156.47	687.24	46.94	206.17
<i>Paved Haulroad Emissions</i>	0.00	0.00	0.00	0.00
<b>Fugitive Emissions Total</b>	<b>156.74</b>	<b>688.41</b>	<b>47.01</b>	<b>206.46</b>

POINT SOURCE EMISSIONS				
<i>Equipment Emissions</i>	53.58	234.68	6.11	26.76
<i>Transfer Point Emissions</i>	17.16	69.28	4.17	16.49
<b>Point Source Emissions Total*</b>	<b>70.74</b>	<b>303.96</b>	<b>10.28</b>	<b>43.25</b>

\*Note: Point Source Total Controlled PM-10 TPY emissions is used for 45CSR30 Major Source determination

<b>Facility Emissions Total</b>	<b>227.48</b>	<b>992.37</b>	<b>57.29</b>	<b>249.72</b>
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**EMISSION FACTORS**

source: Air Pollution Engineering Manual and References  
(lb/ton of material throughput)

PM	
Primary Crushing	0.02
Tertiary Crushing	0.06
Screening	0.1

PM-10	
Primary Crushing	0.0094
Tertiary Crushing	0.0282
Screening	0.047

## 2. Emissions From TRANSFER POINTS

Transfer Point ID No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
TP01	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP02	0.630	2.760	0.063	0.276	0.298	1.306	0.030	0.131
TP03	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP04	0.630	2.760	0.630	2.760	0.298	1.306	0.298	1.306
TP05	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP06	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP07	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP08	0.945	4.140	0.189	0.828	0.447	1.958	0.089	0.392
TP09	0.945	2.070	0.189	0.414	0.447	0.979	0.089	0.196
TP10	0.473	2.070	0.095	0.414	0.224	0.979	0.045	0.196
TP11	0.473	2.070	0.095	0.414	0.224	0.979	0.045	0.196
TP12	0.945	4.140	0.189	0.828	0.447	1.958	0.089	0.392
TP13	0.945	4.140	0.189	0.828	0.447	1.958	0.089	0.392
TP14	0.945	2.760	0.189	0.552	0.447	1.306	0.089	0.261
TP15	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP16	0.630	2.760	0.063	0.276	0.298	1.306	0.030	0.131
TP17	0.630	2.760	0.063	0.276	0.298	1.306	0.030	0.131
TP18	0.630	2.760	0.063	0.276	0.298	1.306	0.030	0.131
TP19	0.630	2.760	0.063	0.276	0.298	1.306	0.030	0.131
TP20	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP21	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP22	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP23	0.945	4.140	0.189	0.828	0.447	1.958	0.089	0.392
TP24	0.945	4.140	0.189	0.828	0.447	1.958	0.089	0.392
TP25	0.945	2.070	0.473	1.035	0.447	0.979	0.224	0.490
TP26	0.945	2.070	0.189	0.414	0.447	0.979	0.089	0.196
TP27	0.945	2.070	0.473	1.035	0.447	0.979	0.224	0.490
TP28	0.630	2.070	0.126	0.414	0.298	0.979	0.060	0.196
TP29	0.630	2.070	0.126	0.414	0.298	0.979	0.060	0.196
TP30	0.630	2.070	0.126	0.414	0.298	0.979	0.060	0.196
TP31	0.630	2.070	0.126	0.414	0.298	0.979	0.060	0.196
TP32	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP33	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP34	0.630	2.760	0.063	0.276	0.298	1.306	0.030	0.131
TP35	0.190	0.834	0.019	0.083	0.090	0.395	0.009	0.039
TP36	0.190	0.834	0.038	0.167	0.090	0.395	0.018	0.079
TP37	0.190	0.834	0.048	0.209	0.090	0.395	0.023	0.099
TP38	0.190	0.834	0.048	0.209	0.090	0.395	0.023	0.099
TP39	0.508	2.224	0.102	0.445	0.240	1.052	0.048	0.210
TP40	0.508	2.224	0.102	0.445	0.240	1.052	0.048	0.210
TP41	0.508	2.224	0.254	1.112	0.240	1.052	0.120	0.526
TP42	0.508	2.224	0.102	0.445	0.240	1.052	0.048	0.210
TP43	0.508	2.224	0.254	1.112	0.240	1.052	0.120	0.526
TP44	0.508	2.224	0.102	0.445	0.240	1.052	0.048	0.210
TP45	0.508	2.224	0.102	0.445	0.240	1.052	0.048	0.210
TP46	0.508	2.224	0.102	0.445	0.240	1.052	0.048	0.210
TP47	0.508	2.224	0.127	0.556	0.240	1.052	0.060	0.263
TP48	0.254	1.112	0.063	0.278	0.120	0.526	0.030	0.132
TP49	0.079	0.345	0.008	0.035	0.037	0.163	0.004	0.016
TP50	0.079	0.345	0.008	0.035	0.037	0.163	0.004	0.016
TP51	0.308	1.350	0.031	0.135	0.146	0.639	0.015	0.064
TP52	0.154	0.675	0.031	0.135	0.073	0.319	0.015	0.064



0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTALS	36.279	146.480	8.810	34.863	17.159	69.281	4.167	16.489

**Source:**

AP42, Fifth Edition, Revised 11/2006  
 13.2.4 Aggregate Handling and Storage Piles

**Emissions From Batch Drop**

$$E = k \cdot (0.0032) \cdot [(U/5)^{1.3}] / [(M/2)^{1.4}] = \text{pounds/ton}$$

Where:

		PM	PM-10
k =	Particle Size Multiplier (dimensionless)	0.74	0.35
U =	Mean Wind Speed (mph)		
M =	Material Moisture Content (%)		

**Assumptions:**

**k - Particle size multiplier**

For PM (< or equal to 30um) k = 0.74

For PM-10 (< or equal to 10um) k = 0.35

**Emission Factor**

For PM E=  $0.74 \cdot (0.0032) \cdot (((U/5)^{1.3}) / ((M/2)^{1.4}))$   
 =lb/ton

For PM-10 E=  $0.35 \cdot (0.0032) \cdot (((U/5)^{1.3}) / ((M/2)^{1.4}))$   
 =lb/ton

For lb/hr [lb/ton]\*[ton/hr] = [lb/hr]

For Tons/year [lb/ton]\*[ton/yr]\*[ton/2000lb] = [ton/yr]

### 3. Emissions From WIND EROSION OF STOCKPILES

Stockpile ID No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
OS01	0.568	2.490	0.142	0.622	0.267	1.170	0.067	0.293
OS02	0.696	3.050	0.174	0.763	0.327	1.434	0.082	0.358
OS03	0.341	1.494	0.085	0.373	0.160	0.702	0.040	0.176
OS04	0.568	2.490	0.142	0.622	0.267	1.170	0.067	0.293
OS05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTALS	0.568	2.490	0.142	0.622	0.267	1.170	0.067	0.293

**Source:**

*Air Pollution Engineering Manual*

Storage Pile Wind Erosion (Active Storage)

$$E = 1.7 * [s/1.5] * [(365-p)/235] * [f/15] = (\text{lb/day/acre})$$

Where:

s =	silt content of material
p =	number of days with >0.01 inch of precipitation per year
f =	percentage of time that the unobstructed wind speed exceeds 12 mph at the mean pile height

**Emission Factors**

For PM  $E = (1.7) * ((\text{Inputs!F147})/1.5) * ((365 - \text{Inputs!I139})/235) * ((\text{Inputs!I140})/15)$

For PM-10  $E = 0.47 * (1.7) * ((\text{Inputs!F147})/1.5) * ((365 - \text{Inputs!I139})/235) * ((\text{Inputs!I140})/15)$

For lb/hr  $[\text{lb/day/acre}] * [\text{day}/24\text{hr}] * [\text{base area of pile (acres)}] = \text{lb/hr}$

For Ton/yr  $[\text{lb/day/acre}] * [365\text{day/yr}] * [\text{Ton}/2000\text{lb}] * [\text{base area of pile (acres)}] = \text{Ton/yr}$

#### 4. Emissions From UNPAVED HAULROADS

Item No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
1	90.12	395.70	27.03	118.71	26.04	114.36	7.81	34.31
2	89.44	395.70	26.83	118.71	25.85	114.36	7.75	34.31
3	120.34	527.59	36.10	158.28	34.78	152.48	10.43	45.74
4	240.67	1055.18	72.20	316.55	69.56	304.95	20.87	91.49
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.86	3.76	0.26	1.13	0.25	1.09	0.07	0.33
TOTALS	541.42	2377.93	162.43	713.38	156.47	687.24	46.94	206.17

**Source:**

AP42, Fifth Edition, Revised 11/2006

13.2.2 Unpaved Roads

Emission Estimate For Unpaved Haulroads at Industrial Sites (equation 1)

$$E = k \cdot (s/12)^a \cdot (W/3)^b = \text{lb/vmt}$$

Where:

		PM	PM-10
k =	particle size multiplier	4.90	1.50
a =	empirical constant	0.7	0.9
b =	empirical constant	0.45	0.45
P =	number of days per year with precipitation >0.01 inch	157	

**Emission Factors**

For PM  $E = ((\$35) \cdot (((\text{Inputs!}\$163)/12)^{(\$36)}) \cdot (((\text{Inputs!}H171)/3)^{\$37})) \cdot ((365 - P) \cdot (1/2000))$

For PM-10  $E = ((\$J35) \cdot (((\text{Inputs!}\$163)/12)^{(\$J36)}) \cdot (((\text{Inputs!}H171)/3)^{\$J37})) \cdot ((365 - P) \cdot (1/2000))$

For lb/hr  $(\text{lb/vmt}) \cdot (\text{miles per trip}) \cdot (\text{Max trips per hour})$

For Ton/yr  $(\text{lb/vmt}) \cdot (\text{miles per trip}) \cdot (\text{Max trips per year}) \cdot (1/2000)$

### 5. Emissions From INDUSTRIAL PAVED HAULROADS

Item No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**Source:**

AP42, Fifth Edition, Revised 11/2006  
13.2.1 PAVED ROADS

**Emission Estimate For Paved Haulroads**

$$E = [k * (sL/2)^{0.65} * (W/3)^{1.5} - C] * (1 - (P/4 * N)) = \text{lb / Vehicle Mile Traveled (VMT)}$$

Where:

		PM	PM-10
k =	particle size multiplier	0.082	0.016
sL =	road surface silt loading, (g/ft <sup>2</sup> )	1	
P =	number of days per year with precipitation >0.01 inch	157	
N =	number of days in averaging period	365	
C =	factor for exhaust, brake wear and tire wear	0.0047	0.0047

**Emission Factors**

For PM                    E=            (\$34 \* ((((\$35)/2)<sup>0.65</sup>) \* (((Inputs!G190)/3)<sup>1.5</sup>) - (\$38)) \* (1 - ((Inputs!\$34

For PM-10                E=            (\$34 \* ((((\$35)/2)<sup>0.65</sup>) \* (((Inputs!G190)/3)<sup>1.5</sup>) - (\$38)) \* (1 - ((Inputs!\$

For lb/hr                (lb/vmt) \* (miles per trip) \* (Max trips per hour)

For Ton/yr                (lb/vmt) \* (miles per trip) \* (Max trips per year) \* (1/2000)

Legal Advertisement

**AIR QUALITY PERMIT NOTICE  
Notice of Application**

Notice is given that Kanawha Eagle Mining LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a General Permit Registration Modification for a coal preparation plant facility located on Fields Creek near Winifrede in Kanawha County, West Virginia. Coordinates for the facility are as follows: latitude 38.156117 longitude -81.559544.

The applicant estimates the potential to discharge the following Regulated Air Pollutants will be: particulate matter baseline emissions of 92 tons per year, point source emissions of 43 tons per year of particulate matter less than 10 microns, and the controlled facility emission total of 806 tons per year.

Startup of operation is planned to begin upon permit approval. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57<sup>th</sup> Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1227, during normal business hours.

Dated this the 12th day of October 2016

By: Kanawha Eagle Mining, LLC  
D. Edward Brown  
Vice President  
3228Summit Square Place  
Suite 180  
Lexington, KY 40509

**ATTACHMENT K**

**ELECTRONIC SUBMITTAL**

**LOCATED IN ORIGINAL COPY OF REGISTRATION  
APPLICATION**

SECTION IV. CERTIFICATION OF INFORMATION

This General Permit Registration Application shall be signed below by a Responsible Official. A Responsible Official is a President, Vice President, Secretary, Treasurer, General Partner, General Manager, a member of a Board of Directors, or Owner, depending on business structure. A business may certify an Authorized Representative who shall have authority to bind the Corporation, Partnership, Limited Liability Company, Association, Joint Venture or Sole Proprietorship. Required records of daily throughput, hours of operation and maintenance, general correspondence, Emission Inventory, Certified Emission Statement, compliance certifications and all required notifications must be signed by a Responsible Official or an Authorized Representative. If a business wishes to certify an Authorized Representative, the official agreement below shall be checked off and the appropriate names and signatures entered. Any administratively incomplete or improperly signed or unsigned Registration Application will be returned to the applicant.

FOR A CORPORATION (domestic or foreign)

I certify that I am a President, Vice President, Secretary, Treasurer or in charge of a principal business function of the corporation

FOR A PARTNERSHIP

I certify that I am a General Partner

FOR A LIMITED LIABILITY COMPANY

I certify that I am a General Partner or General Manager

FOR AN ASSOCIATION

I certify that I am the President or a member of the Board of Directors

FOR A JOINT VENTURE

I certify that I am the President, General Partner or General Manager

FOR A SOLE PROPRIETORSHIP

I certify that I am the Owner and Proprietor

*is an Authorized Representative and in that capacity shall represent the interest of the business (e.g., Corporation, Partnership, Limited Liability Company, Association Joint Venture or Sole Proprietorship) and may obligate and legally bind the business. If the business changes its Authorized Representative, a Responsible Official shall notify the Chief of the Office of Air Quality immediately, and/or,*

*I hereby certify that all information contained in this General Permit Registration Application and any supporting documents appended hereto is, to the best of my knowledge, true, accurate and complete, and that all reasonable efforts have been made to provide the most comprehensive information possible*

Signature  08/08/2016  
(please use blue ink) Responsible Official Date

Name & Title D. EDWARD BROWN, VICE PRESIDENT  
(please print or type)

Signature  08/08/2016  
(please use blue ink) Authorized Representative (if applicable) Date

Applicant's Name: **KANAWHA EAGLE MINING, LLC**

Phone **859-543-0515**

Email: [ebrown@blackhawkmining.com](mailto:ebrown@blackhawkmining.com) and [fcoulter@blackhawkmining.com](mailto:fcoulter@blackhawkmining.com) (contact)

**SECTION III. ATTACHMENTS AND SUPPORTING DOCUMENTS**

PLEASE CHECK ALL ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

Please See the appropriate reference document for an explanation of the attachments listed below.

- ATTACHMENT A : CURRENT BUSINESS CERTIFICATE
- ATTACHMENT B: PROCESS DESCRIPTION
- ATTACHMENT C: DESCRIPTION OF FUGITIVE EMISSIONS
- ATTACHMENT D: PROCESS FLOW DIAGRAM
- ATTACHMENT E: PLOT PLAN
- ATTACHMENT F: AREA MAP
- ATTACHMENT G: AFFECTED SOURCE SHEETS
- ATTACHMENT H: BAGHOUSE AIR POLLUTION CONTROL DEVICE SHEET
- ATTACHMENT I: EMISSIONS CALCULATIONS
- ATTACHMENT J: CLASS I LEGAL ADVERTISEMENT
- ATTACHMENT K: ELECTRONIC SUBMITTAL DISKETTE
- CERTIFICATION OF INFORMATION
- APPLICATION FEE

PLEASE MAIL AN ORIGINAL AND TWO COPIES OF THE COMPLETE GENERAL PERMIT REGISTRATION APPLICATION WITH THE SIGNATURE(S) TO THE DAQ PERMITTING SECTION AT THE ADDRESS SHOWN ON THE FRONT PAGE. PLEASE DO NOT FAX PERMIT APPLICATIONS. FOR QUESTIONS REGARDING APPLICATIONS OR WEST VIRGINIA AIR POLLUTION RULES AND REGULATIONS PLEASE CALL (304) 926-3727.

## ENGINE DATA SHEET

Source Identification Number <sup>1</sup>		Gen Set - 1		Gen Set - 2		Gen Set - 3	
Engine Manufacturer and Model		CAT Olympian		CAT NCGWV		CAT D150-8	
Manufacturer's Rated bhp/rpm		1800		1800		1800	
Source Status <sup>2</sup>		ES		ES		ES	
Date Installed/Modified/Removed (Month/Year) <sup>3</sup>		2013		2013		2014	
Engine Manufactured/Reconstruction Date <sup>4</sup>		2013		2013		2014	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart III? (Yes or No) <sup>5</sup>		Yes		Yes		Yes	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No) <sup>6</sup>		No		N/A		N/A	
Engine, Fuel and Combustion Data	Engine Type	4 Stroke		4 Stroke		4 Stroke	
	APCD Type <sup>8</sup>	N/A		N/A		N/A	
	Fuel Type <sup>9</sup>	No 2 Fuel Oil		No 2 Fuel Oil		No 2 Fuel Oil	
	H <sub>2</sub> S (gr/100 scf)	N/A		N/A		N/A	
	Operating bhp/rpm	N/A		N/A		N/A	
	BSFC (Btu/bhp-hr)	N/A		N/A		N/A	
	Fuel throughput (ft <sup>3</sup> /hr)	12.8 gal/hr		19.4		11.3	
	Fuel throughput (MMft <sup>3</sup> /yr)	6400		9700		5650	
	Operation (hrs/yr)	500		500		500	
Reference <sup>10</sup>	Potential Emissions <sup>11</sup>	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
	NO <sub>x</sub>	5.7350	1.434	9.7030	2.426	5.8280	1.457
	CO	1.2358	0.309	2.0908	0.523	1.2558	1.314
	VOC	0.4570	0.114	0.7731	0.193	0.4644	0.116
	SO <sub>2</sub>	0.3793	0.095	0.6417	0.160	0.3854	0.096
	PM <sub>10</sub>	0.4070	0.102	0.6886	0.172	0.4136	0.103
	Formaldehyde	0.00221	0.000553	0.00309	0.000772	0.0018	0.00045

1. Enter the appropriate Source Identification Number for each reciprocating internal combustion compressor/generator engine located at the facility. Multiple compressor engines should be designated CE-1, CE-2, CE-3 etc. Emergency Generator engines should be designated EG-1, EG-2, EG-3 etc. If more than three (3) engines exist, please use additional sheets.

2. Enter the Source Status using the following codes:

NS Construction of New Source (installation)

ES Existing Source

MS Modification of Existing Source

RS Removal of Source

3. Enter the date (or anticipated date) of the engine's installation (construction of source), modification or removal.
4. Enter the date that the engine was manufactured, modified or reconstructed.
5. Is the engine a certified stationary compression ignition internal combustion engine according to 40CFR60 Subpart IIII. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4210 as appropriate.

**Provide a manufacturer's data sheet for all engines being registered.**

6. Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart JJJJ. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4243a(2)(i) through (iii), as appropriate.

**Provide a manufacturer's data sheet for all engines being registered.**

7. Enter the Engine Type designation(s) using the following codes:

LB2S Lean Burn Two Stroke

RB4S Rich Burn Four Stroke

LB4S Lean Burn Four Stroke

8. Enter the Air Pollution Control Device (APCD) type designation(s) using the following codes:

A/F Air/Fuel Ratio

IR Ignition Retard

HEIS High Energy Ignition System

SIPC Screw-in Precombustion Chambers

PSC Prestratified Charge

LEC Low Emission Combustion

NSCR Rich Burn & Non-Selective Catalytic Reduction

SCR Lean Burn & Selective Catalytic Reduction

9. Enter the Fuel Type using the following codes:

PQ Pipeline Quality Natural Gas

RG Raw Natural Gas

2FO #2 Fuel Oil

LPG Liquid Propane Gas

10. Enter the Potential Emissions Data Reference designation using the following codes. Attach all referenced data to this *Compressor/Generator Data Sheet(s)*.

MD Manufacturer's Data

AP AP-42

GR GRI-HAPCalc™

OT Other \_\_\_\_\_ (please list)

11. Enter each engine's Potential to Emit (PTE) for the listed regulated pollutants in pounds per hour and tons per year. PTE shall be calculated at manufacturer's rated brake horsepower and may reflect reduction efficiencies of listed Air Pollution Control Devices. Emergency generator engines may use 500 hours of operation when calculating PTE. PTE data from this data sheet shall be incorporated in the *Emissions Summary Sheet*.

### ENGINE DATA SHEET

Source Identification Number <sup>1</sup>		Gen Set - 4		Gen Set - 5		Gen Set - 6	
Engine Manufacturer and Model		CAT XQ20-P2		CAT XQ20-P2		CAT XQ30-6	
Manufacturer's Rated bhp/rpm		1800		1800		1800	
Source Status <sup>2</sup>		ES		ES		ES	
Date Installed/Modified/Removed (Month/Year) <sup>3</sup>		2014		2014		2014	
Engine Manufactured/Reconstruction Date <sup>4</sup>		2014		2014		2014	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart IIII? (Yes or No) <sup>5</sup>		Yes		Yes		Yes	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No) <sup>6</sup>		No		N/A		N/A	
Engine, Fuel and Combustion Data	Engine Type	4 Stroke		4 Stroke		4 Stroke	
	APCD Type <sup>8</sup>	N/A		N/A		N/A	
	Fuel Type <sup>9</sup>	No 2 Fuel Oil		No 2 Fuel Oil		No 2 Fuel Oil	
	H <sub>2</sub> S (gr/100 scf)	N/A		N/A		N/A	
	Operating bhp/rpm	N/A		N/A		N/A	
	BSFC (Btu/bhp-hr)	N/A		N/A		N/A	
	Fuel throughput (ft <sup>3</sup> /hr)	4		4		5	
	Fuel throughput (MMft <sup>3</sup> /yr)	2000		2000		2500	
	Operation (hrs/yr)	500		500		500	
Reference <sup>10</sup>	Potential Emissions <sup>11</sup>	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
	NO <sub>x</sub>	2.3250	0.581	2.3250	0.581	1.1625	0.291
	CO	0.5010	0.125	0.5010	0.125	0.2505	.0063
	VOC	0.1853	0.046	0.1853	0.046	0.0826	0.023
	SO <sub>2</sub>	0.1538	0.038	0.1538	0.038	0.0769	0.019
	PM <sub>10</sub>	0.1650	0.041	0.1650	0.041	0.0825	0.021
	Formaldehyde	0.0064	0.000159	0.0064	0.000159	0.0008	0.000199
<p><b>The three generators (Numbers 4-5-6) listed above are small portable to power guard shacks and office trailer in event of power outage. Fuel usage was obtained from Caterpillar representative by phone – rental and serviced by Caterpillar. No emissions data available from CAT.</b></p>							

1. Enter the appropriate Source Identification Number for each reciprocating internal combustion compressor/generator engine located at the facility. Multiple compressor engines should be designated CE-1, CE-2, CE-3 etc. Emergency Generator engines should be designated EG-1, EG-2, EG-3 etc. If more than three (3) engines exist, please use additional sheets.
2. Enter the Source Status using the following codes:  
NS Construction of New Source (installation)      ES Existing Source  
MS Modification of Existing Source                      RS Removal of Source
3. Enter the date (or anticipated date) of the engine's installation (construction of source), modification or removal.
4. Enter the date that the engine was manufactured, modified or reconstructed.
5. Is the engine a certified stationary compression ignition internal combustion engine according to 40CFR60 Subpart IIII. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4210 as appropriate.

**Provide a manufacturer's data sheet for all engines being registered.**

6. Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart JJJJ. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4243a(2)(i) through (iii), as appropriate.

**Provide a manufacturer's data sheet for all engines being registered.**

7. Enter the Engine Type designation(s) using the following codes:  
LB2S Lean Burn Two Stroke                                      RB4S Rich Burn Four Stroke  
LB4S Lean Burn Four Stroke
8. Enter the Air Pollution Control Device (APCD) type designation(s) using the following codes:  
A/F Air/Fuel Ratio    IR Ignition Retard  
HEIS High Energy Ignition System                                      SIPC Screw-in Precombustion Chambers  
PSC Prestratified Charge    LEC Low Emission Combustion  
NSCR Rich Burn & Non-Selective Catalytic Reduction                                      SCR Lean Burn & Selective Catalytic Reduction
9. Enter the Fuel Type using the following codes:  
PQ Pipeline Quality Natural Gas                                      RG Raw Natural Gas  
2FO #2 Fuel Oil    LPG Liquid Propane Gas
10. Enter the Potential Emissions Data Reference designation using the following codes. Attach all referenced data to this *Compressor/Generator Data Sheet(s)*.  
MD Manufacturer's Data    AP AP-42  
GR GRI-HAPCalc™    OT Other \_\_\_\_\_ (please list)
11. Enter each engine's Potential to Emit (PTE) for the listed regulated pollutants in pounds per hour and tons per year. PTE shall be calculated at manufacturer's rated brake horsepower and may reflect reduction efficiencies of listed Air Pollution Control Devices. Emergency generator engines may use 500 hours of operation when calculating PTE. PTE data from this data sheet shall be incorporated in the *Emissions Summary Sheet*.



### EMISSION SUMMARY SHEET FOR CRITERIA POLLUTANTS

Registration Number (Agency Use) <b>G10-D</b>														
Source ID No.	Potential Emissions (lbs/hr)						Potential Emissions (tons/yr)							
	NOx	CO	VOC	SO <sub>2</sub>	PM <sub>10</sub>	NOx	CO	VOC	SO <sub>2</sub>	PM <sub>10</sub>				
Transfer Points					8.81					34.86				
Crush/Screen					13.0					56.94				
Generator 1	5.7350	1.2358	0.4570	0.3793	0.4070	1.434	0.309	0.114	0.095	0.102				
Generator 2	9.7030	2.0908	0.7731	0.6417	0.6886	2.426	0.523	0.193	0.160	0.172				
Generator 3	5.8280	1.2558	0.4644	0.3854	0.4138	1.457	0.314	0.116	0.096	0.103				
Generator 4	0.7750	0.1670	0.0618	0.0513	0.0550	0.194	0.042	0.015	0.013	0.014				
Generator 5	0.7750	0.1670	0.0618	0.0513	0.0550	0.194	0.042	0.015	0.013	0.014				
Generator 6	1.1625	0.2505	0.0926	0.0769	0.0825	0.291	0.063	0.023	0.019	0.021				
	23.9785	5.1669	1.9107	1.5859	24.0069	5.996	1.293	0.476	0.396	91.2134				

**EMISSION SUMMARY SHEET FOR HAZARDOUS/TOXIC POLLUTANTS**

		Registration Number (Agency Use) <u>G10-D</u>											
		Potential Emissions (lbs/hr)					Potential Emissions (tons/yr)						
Source ID No.		Benzene	Acetaldehyde	Toluene	Xylenes	n-Hexane	Formaldehyde	Benzene	Acetaldehyde	Toluene	Xylenes	n-Hexane	Formaldehyde
Gen Set - 1		0.00161	0.00132	0.00071	0.00049		0.00204	0.000403	0.000331	0.000177	0.000123		0.000509
Gen Set - 2		0.00244	0.00201	0.000107	0.00075		0.00309	0.00061	0.000502	0.000268	0.000186		0.000772
Gen Set - 3		0.00142	0.00117	0.00062	0.00043		0.0018	0.000356	0.000292	0.000156	0.000109		0.00045
Gen Set - 4		0.0005	0.00041	0.00022	0.00015		0.00064	0.000126	0.000103	0	0		0.000159
Gen Set - 5		0.0005	0.00041	0.00022	0.00015		0.00064	0.000126	0.000103	0	0		0.000159
Gen Set - 6		0.00063	0.00052	0.00028	0.00019		0.0008	0.000157	0.000129	0	0		0.000199
<b>Total</b>		<b>0.005651</b>	<b>0.00584</b>	<b>0.002157</b>	<b>0.00218</b>	<b>NA</b>	<b>0.00901</b>	<b>0.001778</b>	<b>0.00146</b>	<b>0.00601</b>	<b>0.000418</b>	<b>NA</b>	<b>0.002248</b>

TERIA POLLUTANTS

AP-42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-1 for Diesel Fuel

		<b>150</b>	<b>kW</b>
	Diesel Fuel Engine	<b>188</b>	<b>hp</b>
ax. Hours of Operation (8 hours/day, 5 days/week, 12.5 weeks/year)		<b>500</b>	<b>hrs/year</b>
	Heating Value for diesel	<b>128700</b>	<b>Btu/gal</b>

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

Pollutant		Emission Factor (lb/hp-hr)	Emission Factor (lb/MMBtu)	Rating	lb/hour	TPY
NOx	AP42	0.03100	4.41	D	5.8280	1.457
CO	AP42	0.00668	0.95	D	1.2558	0.314
SOx	AP42	0.00205	0.29	D	0.3854	0.096
PM/PM10	AP42	0.00220	0.31	D	0.4136	0.103
TOC	AP42	0.00247	0.35	D	0.4644	0.116

**HAZARDOUS AIR POLLUTANTS**

42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-2  
 400SR30 Table 45-30A Hazardous Air Pollutants

Diesel Fuel Engine	<b>188</b>	<b>hp</b>		
Maximum Hours of Operation (8 hour/day, 5 days/week, 12.5 weeks/year)			<b>500</b>	<b>hours/year</b>
Heating Value for diesel			<b>19000</b>	<b>Btu/lb</b>
			<b>7.1</b>	<b>lb/gal</b>
Maximum diesel usage at 1800 rpm			<b>134900</b>	<b>BTU/US gal</b>
			<b>11.3</b>	<b>gal/hour</b>

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
 per 2000 lb

<b>CAS NO.</b>		<b>Emission Factor (lb/MMBtu)</b>	<b>Rating</b>	<b>lb/hour</b>	<b>TPY</b>
71-43-2	Benzene	0.000933	E	0.00142	0.000356
108-88-3	Toluene	0.000409	E	0.00062	0.000156
	Xylenes	0.000285	E	0.00043	0.000109
	1,3-Butadiene	0.0000391	E	6E-05	1.49E-05
50-00-0	Formaldehyde	0.00118	E	0.0018	0.00045
	Acetaldehyde	0.000767	E	0.00117	0.000292
	Acrolein	0.0000925	E	0.00014	3.53E-05
91-20-3	Naphthalene	0.0000848	E	0.00013	3.23E-05
	Burning diesel fuel:		<b>Total HAPs</b>	<b>0.00578</b>	<b>0.001444</b>
				<b>lb/hour</b>	<b>TPY</b>

**KANAWHA EAGLE**

**Emergency for Eagle Mine - Cat NGGWV 313 KVA**

**ID: 039-00480**

**CAT 9**

**TERIA POLLUTANTS**

AP-42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-1 for Diesel Fuel

	<b>250</b>	<b>kW</b>
Diesel Fuel Engine	<b>313</b>	<b>hp</b>
Max. Hours of Operation (8 hours/day, 5days/week, 12.5 weeks/year)	<b>500</b>	<b>hrs/year</b>
Heating Value for diesel	<b>128700</b>	<b>Btu/gal</b>

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

<b>Pollutant</b>		<b>Emission Factor (lb/hp-hr)</b>	<b>Emission Factor (lb/MMBtu)</b>	<b>Rating</b>	<b>lb/hour</b>	<b>TPY</b>
NOx	AP42	0.03100	4.41	D	9.7030	2.426
CO	AP42	0.00668	0.95	D	2.0908	0.523
SOx	AP42	0.00205	0.29	D	0.6417	0.160
PM/PM10	AP42	0.00220	0.31	D	0.6886	0.172
TOC	AP42	0.00247	0.35	D	0.7731	0.193

**HAZARDOUS AIR POLLUTANTS**

42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-2  
 45 CSR30 Table 45-30A Hazardous Air Pollutants

	Diesel Fuel Engine	<b>313</b>	<b>hp</b>		
Max. Hours of Operation (8 hours/day, 5 days/week, 12.5 weeks/year)				<b>500</b>	<b>hours/year</b>
Maximum diesel usage at 1800 rpm				<b>19000</b>	<b>Btu/lb</b>
				<b>7.1</b>	<b>lb/gal</b>
	Heating Value for diesel			<b>134900</b>	<b>BTU/US gal</b>
	Maximum diesel usage at 1800 rpm			<b>19.4</b>	<b>gal/hour</b>

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
 per 2000 lb

<b>CAS NO.</b>		<b>Emission Factor (lb/MMBtu)</b>	<b>Rating</b>	<b>lb/hour</b>	<b>TPY</b>
71-43-2	Benzene	0.000933	E	0.00244	0.00061
108-88-3	Toluene	0.000409	E	0.00107	0.000268
	Xylenes	0.000285	E	0.00075	0.000186
	1,3-Butadiene	0.0000391	E	0.0001	2.56E-05
50-00-0	Formaldehyde	0.00118	E	0.00309	0.000772
	Acetaldehyde	0.000767	E	0.00201	0.000502
	Acrolein	0.0000925	E	0.00024	6.05E-05
91-20-3	Naphthalene	0.0000848	E	0.00022	5.55E-05
	Burning diesel fuel:		<b>Total HAPs</b>	<b>0.00992</b>	<b>0.00248</b>
				<b>lb/hour</b>	<b>TPY</b>

TERIA POLLUTANTS

AP-42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-1 for Diesel Fuel

	144	kW
Diesel Fuel Engine	185	hp
Max. Hours of Operation (8 hours/day, 5days/week, 12.5 weeks/year)	500	hrs/year
Heating Value for diesel	128700	Btu/gal

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

Pollutant		Emission Factor (lb/hp-hr)	Emission Factor (lb/MMBtu)	Rating	lb/hour	TPY
NOx	AP42	0.03100	4.41	D	5.7350	1.434
CO	AP42	0.00668	0.95	D	1.2358	0.309
SOx	AP42	0.00205	0.29	D	0.3793	0.095
PM/PM10	AP42	0.00220	0.31	D	0.4070	0.102
TOC	AP42	0.00247	0.35	D	0.4570	0.114

**HAZARDOUS AIR POLLUTANTS**

12 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-2  
 400SR30 Table 45-30A Hazardous Air Pollutants

	Diesel Fuel Engine	<b>185</b>	<b>hp</b>	
Max. Hours of Operation (8 hours/day, 5days/week, 12.5 weeks/year)				<b>500</b> hours/year
Maximum diesel usage at 1800 rpm				<b>19000</b> Btu/lb
				<b>7.1</b> lb/gal
	Heating Value for diesel	<b>134900</b>		<b>BTU/US gal</b>
	Maximum diesel usage at 1800 rpm	<b>12.8</b>		<b>gal/hour</b>

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
 per 2000 lb

		<b>Emission Factor</b>			
<b>CAS NO.</b>		<b>(lb/MMBtu)</b>	<b>Rating</b>	<b>lb/hour</b>	<b>TPY</b>
71-43-2	Benzene	0.000933	E	0.00161	0.000403
108-88-3	Toluene	0.000409	E	0.00071	0.000177
	Xylenes	0.000285	E	0.00049	0.000123
	1,3-Butadiene	0.0000391	E	6.8E-05	1.69E-05
50-00-0	Formaldehyde	0.00118	E	0.00204	0.000509
	Acetaldehyde	0.000767	E	0.00132	0.000331
	Acrolein	0.0000925	E	0.00016	3.99E-05
91-20-3	Naphthalene	0.0000848	E	0.00015	3.66E-05
	<b>Burning diesel fuel:</b>		<b>Total HAPs</b>	<b>0.00654</b>	<b>0.001636</b>
				<b>lb/hour</b>	<b>TPY</b>

**KANAWHA EAGLE**

**Backup for Winifrede Gate - Cat XQ20-P2**

**ID: 039-00480**

**CAT 2.2**

**Small Portable**

**TERIA POLLUTANTS**

AP-42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-1 for Diesel Fuel

	<b>20</b>	<b>kW</b>
Diesel Fuel Engine	<b>75</b>	<b>hp</b>
Max. Hours of Operation (8 hours/day, 5days/week, 12.5 weeks/year)	<b>500</b>	<b>hrs/year</b>
Heating Value for diesel	<b>128700</b>	<b>Btu/gal</b>

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

<b>Pollutant</b>		<b>Emission Factor (lb/hp-hr)</b>	<b>Emission Factor (lb/MMBtu)</b>	<b>Rating</b>	<b>lb/hour</b>	<b>TPY</b>
NOx	AP42	0.03100	4.41	D	2.3250	0.581
CO	AP42	0.00668	0.95	D	0.5010	0.125
SOx	AP42	0.00205	0.29	D	0.1538	0.038
PM/PM10	AP42	0.00220	0.31	D	0.1650	0.041
TOC	AP42	0.00247	0.35	D	0.1853	0.046

**HAZARDOUS AIR POLLUTANTS**

42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-2  
 40 CSR30 Table 45-30A Hazardous Air Pollutants

	Diesel Fuel Engine	<b>75</b>	<b>hp</b>	
Max. Hours of Operation (8 hours/day, 5 days/week, 12.5 weeks/year)		<b>500</b>		<b>hours/year</b>
Maximum diesel usage at 1800 rpm		<b>19000</b>		<b>Btu/lb</b>
		<b>7.1</b>		<b>lb/gal</b>
	Heating Value for diesel	<b>134900</b>		<b>BTU/US gal</b>
	Maximum diesel usage at 1800 rpm	<b>4</b>		<b>gal/hour</b>

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
 per 2000 lb

<b>CAS NO.</b>		<b>Emission Factor (lb/MMBtu)</b>	<b>Rating</b>	<b>lb/hour</b>	<b>TPY</b>
71-43-2	Benzene	0.000933	E	0.0005	0.000126
108-88-3	Toluene	0.000409	E	0.00022	5.52E-05
	Xylenes	0.000285	E	0.00015	3.84E-05
	1,3-Butadiene	0.0000391	E	2.1E-05	5.27E-06
50-00-0	Formaldehyde	0.00118	E	0.00064	0.000159
	Acetaldehyde	0.000767	E	0.00041	0.000103
	Acrolein	0.0000925	E	5E-05	1.25E-05
91-20-3	Naphthalene	0.0000848	E	4.6E-05	1.14E-05
	<b>Burning diesel fuel:</b>		<b>Total HAPs</b>	<b>0.00205</b>	<b>0.000511</b>
				<b>lb/hour</b>	<b>TPY</b>

TERIA POLLUTANTS

AP-42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-1 for Diesel Fuel

	<b>20</b>	<b>kW</b>
Diesel Fuel Engine	<b>25</b>	<b>hp</b>
Max. Hours of Operation (8 hours/day, 5days/week, 12.5 weeks/year)	<b>500</b>	<b>hrs/year</b>
Heating Value for diesel	<b>128700</b>	<b>Btu/gal</b>

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

Pollutant		Emission Factor (lb/hp-hr)	Emission Factor (lb/MMBtu)	Rating	lb/hour	TPY
NOx	AP42	0.03100	4.41	D	0.7750	0.194
CO	AP42	0.00668	0.95	D	0.1670	0.042
SOx	AP42	0.00205	0.29	D	0.0513	0.013
PM/PM10	AP42	0.00220	0.31	D	0.0550	0.014
TOC	AP42	0.00247	0.35	D	0.0618	0.015

**HAZARDOUS AIR POLLUTANTS**

42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-2  
 40 CSR30 Table 45-30A Hazardous Air Pollutants

Diesel Fuel Engine	<b>25</b>	<b>hp</b>		
Max. Hours of Operation (8 hours/day, 5days/week, 12.5 weeks/year)			<b>500</b>	<b>hours/year</b>
Maximum diesel usage at 1800 rpm			<b>19000</b>	<b>Btu/lb</b>
			<b>7.1</b>	<b>lb/gal</b>
		Heating Value for diesel	<b>134900</b>	<b>BTU/US gal</b>
		Maximum diesel usage at 1800 rpm	<b>4</b>	<b>gal/hour</b>

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
 per 2000 lb

<b>CAS NO.</b>		<b>Emission Factor (lb/MMBtu)</b>	<b>Rating</b>	<b>lb/hour</b>	<b>TPY</b>
71-43-2	Benzene	0.000933	E	0.0005	0.000126
108-88-3	Toluene	0.000409	E	0.00022	5.52E-05
	Xylenes	0.000285	E	0.00015	3.84E-05
	1,3-Butadiene	0.0000391	E	2.1E-05	5.27E-06
50-00-0	Formaldehyde	0.00118	E	0.00064	0.000159
	Acetaldehyde	0.000767	E	0.00041	0.000103
	Acrolein	0.0000925	E	5E-05	1.25E-05
91-20-3	Naphthalene	0.0000848	E	4.6E-05	1.14E-05
	Burning diesel fuel:		<b>Total HAPs</b>	<b>0.00205</b>	<b>0.000511</b>
				<b>lb/hour</b>	<b>TPY</b>

**KANAWHA EAGLE**

Backup for Plant Office - Cat XQ30-6

ID: 039-00480

CAT 2.2

**TERIA POLLUTANTS**

AP-42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-1 for Diesel Fuel

	<b>30</b>	<b>kW</b>
Diesel Fuel Engine	<b>37.5</b>	<b>hp</b>
Max. Hours of Operation (8 hours/day, 5days/week, 12.5 weeks/year)	<b>500</b>	<b>hrs/year</b>
Heating Value for diesel	<b>128700</b>	<b>Btu/gal</b>

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

<b>Pollutant</b>		<b>Emission Factor (lb/hp-hr)</b>	<b>Emission Factor (lb/MMBtu)</b>	<b>Rating</b>	<b>lb/hour</b>	<b>TPY</b>
NOx	AP42	0.03100	4.41	D	1.1625	0.291
CO	AP42	0.00668	0.95	D	0.2505	0.063
SOx	AP42	0.00205	0.29	D	0.0769	0.019
PM/PM10	AP42	0.00220	0.31	D	0.0825	0.021
TOC	AP42	0.00247	0.35	D	0.0926	0.023

**HAZARDOUS AIR POLLUTANTS**

12 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-2  
 40 CSR30 Table 45-30A Hazardous Air Pollutants

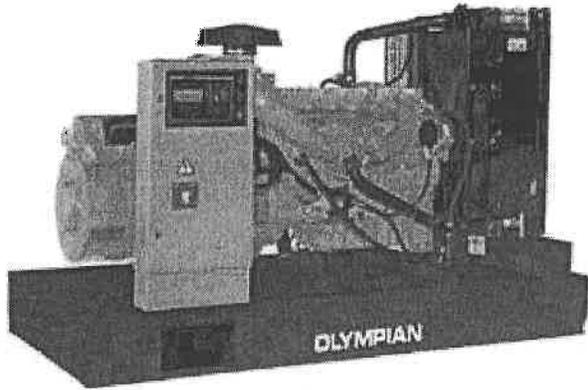
	Diesel Fuel Engine	<b>37.5</b>	<b>hp</b>	
Max. Hours of Operation (8 hours/day, 5days/week, 12.5 weeks/year)		<b>500</b>	<b>hours/year</b>	
Heating Value for diesel		<b>19000</b>	<b>Btu/lb</b>	
		<b>7.1</b>	<b>lb/gal</b>	
Maximum diesel usage at 1800 rpm		<b>134900</b>	<b>BTU/US gal</b>	
		<b>5</b>	<b>gal/hour</b>	

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
 per 2000 lb

<b>CAS NO.</b>		<b>Emission Factor (lb/MMBtu)</b>	<b>Rating</b>	<b>lb/hour</b>	<b>TPY</b>
71-43-2	Benzene	0.000933	E	0.00063	0.000157
108-88-3	Toluene	0.000409	E	0.00028	6.9E-05
	Xylenes	0.000285	E	0.00019	4.81E-05
	1,3-Butadiene	0.0000391	E	2.6E-05	6.59E-06
50-00-0	Formaldehyde	0.00118	E	0.0008	0.000199
	Acetaldehyde	0.000767	E	0.00052	0.000129
	Acrolein	0.0000925	E	6.2E-05	1.56E-05
91-20-3	Naphthalene	0.0000848	E	5.7E-05	1.43E-05
	<b>Burning diesel fuel:</b>		<b>Total HAPs</b>	<b>0.00256</b>	<b>0.000639</b>
				<b>lb/hour</b>	<b>TPY</b>

# OLYMPIAN™



## GEP200-4

Diesel Generator Set  
Exclusively from your Cat® dealer

EU Stage II Emissions Compliant

Image shown may not reflect actual package

Output Ratings		
Generating Set Model - 3 Phase	Prime*	Standby*
380-415V, 50Hz	180.0 kVA	200.0 kVA
	144.0 kW	160.0 kW
480V, 60 Hz	196.3 kVA	217.5 kVA
	157.0 kW	174.0 kW

\* Refer to ratings definitions on page 4.  
Ratings at 0.8 power factor.

Technical Data		
Engine Make & Model:	Perkins™1106C-E66TAG4	
Alternator Model:	LL5014D	
Control Panel:	PowerWizard 1.1	
Base Frame Type:	Heavy Duty Fabricated Steel	
Circuit Breaker Type:	3 Pole MCCB	
Frequency:	50 Hz	60 Hz
Engine Speed: RPM	1500	1800
Fuel Tank Capacity: litres (US gal)	418 (110.4)	
Fuel Consumption, Prime: l/hr (US gal/hr)	40.0 (10.6)	44.5 (11.8)
Fuel Consumption, Standby : l/hr (US gal/hr)	43.9 (11.6)	48.6 (12.8)

# Engine Technical Data

Physical Data	
Manufacturer:	Perkins
Model:	1106C-E66TAG4
No. of Cylinders/Alignment:	6 / In Line
Cycle:	4 Stroke
Induction:	Turbocharged Air To Air Charge Cooled
Cooling Method:	Water
Governing Type:	Electronic
Governing Class:	ISO 8528 G2
Compression Ratio:	16.2:1
Displacement: l (cu.in)	6.6 (402.8)
Bore/Stroke: mm (in)	105.0 (4.1)/127.0 (5.0)
Moment of Inertia: kg m <sup>2</sup> (lb. in <sup>2</sup> )	1.61 (5502)
Engine Electrical System:	
-Voltage/Ground:	12/Negative
-Battery Charger Amps:	10
Weight: kg (lb) - Dry:	788 (1737)
- Wet:	822 (1812)

Lubrication system	
Oil Filter Type:	Spin-On, Full Flow
Total Oil Capacity l (US gal):	16.5 (4.4)
Oil Pan l (US gal):	15.5 (4.1)
Oil Type:	API CH4 / CI4 15W-40
Cooling Method:	Water

Performance	50 Hz	60 Hz
Engine Speed: RPM	1500	1800
Gross Engine Power: kW (hp)		
-Standby:	180.5 (242.0)	204.3 (274.0)
-Prime:	163.7 (220.0)	185.3 (248.0)
BMEP: kPa (psi)		
-Standby:	2188.0 (317.4)	2064.0 (299.4)
-Prime:	1985.0 (287.9)	1872.0 (271.5)
Regenerative Power: kW	8.8	14.9

Air System	50 Hz	60 Hz
Air Filter Type:	Paper Element	
Combustion Air Flow:		
m <sup>3</sup> /min (cfm) -Standby:	11.7 (413)	13.4 (473)
-Prime:	11.3 (399)	13.3 (470)
Max. Combustion Air Intake		
Restriction: kPa (in H <sub>2</sub> O)	8.0 (32.1)	8.0 (32.1)
Radiator Cooling Air Flow:		
m <sup>3</sup> /min (cfm)	309.0 (10912)	385.0 (13596)
External Restriction to		
Cooling Air Flow: Pa (in H <sub>2</sub> O)	125 (0.5)	125 (0.5)

Fuel System				
Fuel Filter Type:	Replaceable Element			
Recommended Fuel:	Class A2 Diesel			
Fuel Consumption: l/hr (US gal/hr)				
	110% Load	100% Load	75% Load	50% Load
Prime				
50 Hz	43.9 (11.6)	40.0 (10.6)	30.7 (8.1)	20.8 (5.5)
60 Hz	48.6 (12.8)	44.5 (11.8)	35.5 (9.4)	27.3 (7.2)
Standby				
50 Hz	43.9 (11.6)	33.9 (9.0)	23.0 (6.1)	
60 Hz	48.6 (12.8)	38.3 (10.1)	29.0 (7.7)	
(based on diesel fuel with a specific gravity of 0.85 and conforming to BS2869, Class A2)				

Cooling System	50 Hz	60 Hz
Cooling System Capacity:		
l (US gal)	27.0 (7.1)	27.0 (7.1)
Water Pump Type:	Centrifugal	
Heat Rejected to Water & Lube Oil: kW (Btu/min)		
-Standby:	79.8 (4538)	89.5 (5090)
-Prime:	72.8 (4140)	82.2 (4675)
Heat Radiation to Room: Heat radiated from engine and alternator		
kW (Btu/min) -Standby:	28.8 (1638)	31.4 (1786)
-Prime:	25.4 (1444)	28.0 (1592)
Radiator Fan Load: kW (hp)	6.3 (8.5)	14.7 (19.7)
Cooling system designed to operate in ambient conditions up to 50°C (122°F). Contact your local Olympian™ dealer for power ratings at specific site conditions.		

Exhaust System	50 Hz	60 Hz
Silencer Type:	Industrial	
Silencer Model & Quantity:	SD100 (1)	
Pressure Drop Across		
Silencer System: kPa (in Hg)	2.14 (0.632)	0.54 (0.159)
Silencer Noise Reduction		
Level: dB	14	12
Max. Allowable Back		
Pressure: kPa (in. Hg)	10.0 (3.0)	15.0 (4.4)
Exhaust Gas Flow:		
m <sup>3</sup> /min (cfm) -Standby:	31.0 (1095)	34.8 (1229)
-Prime:	29.4 (1038)	33.4 (1180)
Exhaust Gas Temperature: °C (°F)		
-Standby:	499 (930)	509 (948)
-Prime:	480 (896)	485 (905)

### Alternator Performance Data

Data Item	50 Hz				60 Hz				
	415/240V	400/230V 230/115V 200/115V	380/220V 220/110V	220/127V	480/277V 240/139V	380/220V 220/110V	240/120V 208/120V	230/115V	440/254V 220/127V
Motor Starting Capability* kVA	352	331	302	389	387	257	302	282	333
Short Circuit Capacity** %	300	300	300	300	300	300	300	300	300
Reactances: Per Unit									
Xd	2.890	3.110	3.440	2.280	2.820	4.460	3.750	4.050	3.360
X'd	0.146	0.158	0.175	0.116	0.144	0.230	0.190	0.210	0.171
X''d	0.088	0.095	0.105	0.069	0.086	0.136	0.114	0.123	0.102

Reactances shown are applicable to prime ratings.

\*Based on 30% voltage dip at 0.6 power factor and SHUNT excitation system.

\*\* With optional Permanent Magnet generator.

### Alternator Technical Data

Physical Data	
Manufactured for Olympian by:	OLYMPIAN
Model:	LL5014D
No. of Bearings:	1
Insulation Class:	H
Winding Pitch - Code:	2/3 - 6
Wires:	12
Ingress Protection Rating:	IP23
Excitation System:	SHUNT
AVR Model:	R250

Operating Data	
Overspeed: RPM	2250
Voltage Regulation: (steady state)	+/- 0.5%
Wave Form NEMA = TIF:	50
Wave Form IEC = THF:	2.0%
Total Harmonic Content LL/LN:	4.0%
Radio Interference:	Supression is in line with European Standard EN61000-6
Radiant Heat: kW (Btu/min)	
-50 Hz:	15.1 (859)
-60 Hz:	15.7 (893)

## Technical Data

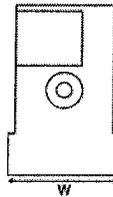
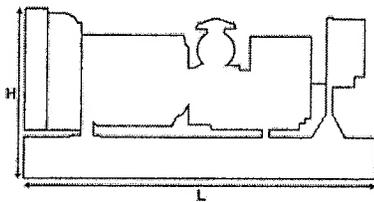
Voltage 50 Hz	Prime		Standby	
	kVA	kW	kVA	kW
415/240V	180.0	144.0	198.0	158.4
400/230V	180.0	144.0	200.0	160.0
380/220V	180.0	144.0	200.0	160.0
230/115V	180.0	144.0	200.0	160.0
220/127V	160.0	128.0	176.0	140.8
220/110V	180.0	144.0	200.0	160.0
200/115V	180.0	144.0	200.0	160.0

Voltage 60 Hz	Prime		Standby	
	kVA	kW	kVA	kW
480/277V	196.3	157.0	217.5	174.0
220/127V	196.3	157.0	217.5	174.0
380/220V	194.6	155.7	215.1	172.1
240/120V	196.0	156.8	217.0	173.6
230/115V	196.0	156.8	217.0	173.6
440/254V	195.6	156.5	216.4	173.1
220/110V	194.6	155.7	215.1	172.1
208/120V	196.3	157.0	217.5	174.0
240/139V	196.0	156.8	217.0	173.6

## Weights & Dimensions

Weights: kg (lb)	
Net (+ lube oil)	1691 (3728)
Wet (+ lube oil & coolant)	1718 (3788)
Fuel, lube oil & coolant	2072 (4568)

Dimensions: mm (in)	
Length	2500 (98.4)
Width	1320 (52.0)
Height	1626 (64.0)



**Note:** General configuration not to be used for installation. See general dimension drawings for detail.

## Definitions

### Standby Rating

These ratings are applicable for supplying continuous electrical power (at variable load) in the event of a utility power failure. No overload is permitted on these ratings. The alternator on this model is peak continuous rated (as defined in ISO 8528-3).

### Prime Rating

These ratings are applicable for supplying continuous electrical power (at variable load) in lieu of commercially purchased power. There is no limitation to the annual hours of operation and this model can supply 10% overload power for 1 hour in 12 hours.

### Standard Reference Conditions

Note: Standard reference conditions 25°C (77°F) air inlet temp, 100m (328ft) A.S.L. 30% relative humidity. Fuel consumption data at full load with diesel fuel with specific gravity of 0.85 and conforming to BS2869: 1998, Class A2.

## General Data

### Documents

A full set of operation and maintenance manuals and circuit wiring diagrams.

### Quality Standards

The equipment meets the following standards: BS5000, ISO 8528, ISO 3046, IEC 60034, NEMA MG-1.22.

### Warranty

All prime equipment carries a one year manufacturer's warranty. Standby equipment, limited to 500 running hours per year, has a two year manufacturer's warranty. For details on warranty cover please contact your local Dealer, or visit our website: [www.OlympianPower.com](http://www.OlympianPower.com).

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## DIESEL GENERATOR SET

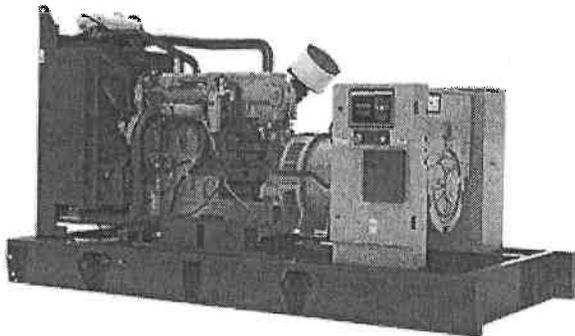


Image shown may not reflect actual package.

**STANDBY**  
**250 ekW 313 kVA**  
60 Hz 1800 rpm 480 Volts

Caterpillar is leading the power generation marketplace with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.

## FEATURES

### FUEL/EMISSIONS STRATEGY

- EPA Certified for Stationary Emergency Application (Emits Equivalent U.S. EPA Tier 3 Nonroad Standards)

### DESIGN CRITERIA

- The generator set accepts 100% rated load in one step per NFPA 110 and meets ISO 8528-5 transient response
- Cooling system designed to operate in 50°C / 122°F ambient temperatures with an air flow restriction of 0.5 in. water

### UL 2200 / CSA – Optional

- UL 2200 Listed
- CSA Certified

Certain restrictions may apply.

Consult with your Cat® Dealer.

### FULL RANGE OF ATTACHMENTS

- Wide range of bolt-on system expansion attachments, factory designed and tested
- Flexible packaging options for easy and cost effective installation

### SINGLE-SOURCE SUPPLIER

- Fully prototype tested with certified torsional vibration analysis available

### WORLDWIDE PRODUCT SUPPORT

- Cat dealers provide extensive post sale support including maintenance and repair agreements
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- The Cat S•O•S<sup>SM</sup> program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

### CAT C9 ATAAC DIESEL ENGINE

- Utilizes ACERT™ Technology
- Reliable, rugged, durable design
- Field-proven in thousands of applications worldwide
- Four-stroke-cycle diesel engine combines consistent performance and excellent fuel economy with minimum weight
- Electronic controlled governor

### CAT GENERATOR

- Matched to the performance and output characteristics of Cat engines
- UL 1446 Recognized Class H insulation
- CSA Certified

### CAT EMCP 4 CONTROL PANELS

- Simple user friendly interface and navigation
- Scalable system to meet a wide range of customer needs
- Integrated Control System and Communications Gateway
- Integrated Voltage Regulation

### SEISMIC CERTIFICATION\*

- Seismic Certification available
- Anchoring details are site specific, and are dependent on many factors such as generator set size, weight and concrete strength.  
IBC Certification requires that the anchoring system used is reviewed and approved by a Professional Engineer
- Seismic Certification per Applicable Building Codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, IBC 2012, CBC 2007, CBC 2010

\*Not available with some options – consult with your Cat Dealer.

**STANDBY 250 ekW 313 kVA**  
60 Hz 1800 rpm 480 Volts



**FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT**

System	Standard	Optional
Air Inlet	<ul style="list-style-type: none"> <li>• Disposable air filter</li> </ul>	<input type="checkbox"/> Canister type, dual element <input type="checkbox"/> Heavy duty air cleaner
Cooling	<ul style="list-style-type: none"> <li>• Package mounted radiator</li> </ul>	
Exhaust	<ul style="list-style-type: none"> <li>• Exhaust flange outlet</li> </ul>	<input type="checkbox"/> Industrial <input type="checkbox"/> Residential / Critical
Fuel	<ul style="list-style-type: none"> <li>• Primary fuel filter with integral water separator</li> <li>• Secondary fuel filters</li> <li>• Fuel priming pump</li> </ul>	
Generator	<ul style="list-style-type: none"> <li>• Matched to the performance and output characteristics of Cat engines</li> <li>• IP23 Protection</li> </ul>	<input type="checkbox"/> Permanent magnet excitation (PMG) <input type="checkbox"/> Anti-condensation space heater <input type="checkbox"/> Coastal insulation protection <input type="checkbox"/> Internal excitation (IE) / AREP
Power Termination	<ul style="list-style-type: none"> <li>• Power terminal strips</li> </ul>	<input type="checkbox"/> Circuit breakers – 100% rated assembly, UL Listed <input type="checkbox"/> SUSE (Suitable for use as service equipment)
Control Panels	<ul style="list-style-type: none"> <li>• EMCP 4.2</li> </ul>	<input type="checkbox"/> EMCP 4.3 <input type="checkbox"/> EMCP 4.4 <input type="checkbox"/> Local and remote annunciator modules <input type="checkbox"/> Remote monitoring software
Mounting	<ul style="list-style-type: none"> <li>• Rubber vibration isolators</li> </ul>	
Starting/Charging	<ul style="list-style-type: none"> <li>• 24 volt starting motor &amp; charging alternator</li> <li>• Batteries</li> </ul>	<input type="checkbox"/> Battery chargers <input type="checkbox"/> Oversize batteries <input type="checkbox"/> Jacket water heater
General	<ul style="list-style-type: none"> <li>• Paint – Caterpillar Yellow except rails and radiators gloss black</li> <li>• Narrow skid base</li> </ul>	<p>The following options are based on regional and product configuration:</p> <input type="checkbox"/> Seismic Certification per Applicable Building Codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, IBC 2012, CBC 2007, CBC 2010 <input type="checkbox"/> UL 2200 Listed package <input type="checkbox"/> CSA Certified <input type="checkbox"/> Wide skid base <input type="checkbox"/> Sound attenuated enclosure <input type="checkbox"/> Weather protective enclosure <input type="checkbox"/> Integral dual wall UL Listed 8 hr fuel tank <input type="checkbox"/> Sub-base dual wall UL Listed 24 hr fuel tank <input type="checkbox"/> Sub-base dual wall UL Listed 48 hr fuel tank

# STANDBY 250 ekW 313 kVA

60 Hz 1800 rpm 480 Volts



## SPECIFICATIONS

STANDARD CAT GENERATOR	
Frame size	LC5014H
Excitation	Self Excitation
Pitch	0.6667
Number of poles	4
Number of bearings	Single bearing
Number of leads	12
Insulation	UL 1446 Recognized Class H
IP Rating	IP23
Alignment	Pilot shaft
Overspeed capability (%)	125
Wave form deviation (%)	2
Voltage regulator	Three phase sensing
Voltage regulation	+/- 0.25% (steady state)
- Consult your Cat dealer for available voltages	
CAT DIESEL ENGINE	
C9 ATAAC, I-6, 4-Stroke Water-cooled Diesel	
Bore	112.00 mm (4.41 in)
Stroke	149.00 mm (5.87 in)
Displacement	8.80 L (537.01 in <sup>3</sup> )
Compression ratio	16.1:1
Aspiration	Air-to-air aftercooled
Fuel system	Hydraulic electronic unit injection
Governor type	Caterpillar ADEM™ control system

## CAT EMCP 4 SERIES CONTROLS

EMCP 4 controls including:

- Run / Auto / Stop Control
- Speed and Voltage Adjust
- Engine Cycle Crank
- 24-volt DC operation
- Environmental sealed front face
- Text alarm/event descriptions

Digital indication for:

- RPM
- DC volts
- Operating hours
- Oil pressure (psi, kPa or bar)
- Coolant temperature
- Volts (L-L & L-N), frequency (Hz)
- Amps (per phase & average)
- ekW, kVA, kVAR, kW-hr, %kW, PF (4.2 only)

Warning/shutdown with common LED indication of:

- Low oil pressure
- High coolant temperature
- Overspeed
- Emergency stop
- Failure to start (overcrank)
- Low coolant temperature
- Low coolant level

Programmable protective relaying functions:

- Generator phase sequence
- Over/Under voltage (27/59)
- Over/Under Frequency (81 o/u)
- Reverse Power (kW) (32) (4.2 only)
- Reverse reactive power (kVAr) (32RV)
- Overcurrent (50/51)

Communications:

- Four digital inputs (4.1)
- Six digital inputs (4.2 only)
- Four relay outputs (Form A)
- Two relay outputs (Form C)
- Two digital outputs
- Customer data link (Modbus RTU) (4.2 only)
- Accessory module data link (4.2 only)
- Serial annunciator module data link (4.2 only)
- Emergency stop pushbutton

Compatible with the following:

- Digital I/O module
- Local Annunciator
- Remote CAN annunciator
- Remote serial annunciator

**STANDBY 250 ekW 313 kVA**  
60 Hz 1800 rpm 480 Volts



**TECHNICAL DATA**

<b>Open Generator Set - - 1800 rpm/60 Hz/480 Volts</b>	<b>DM8501</b>	
<b>EPA Certified for Stationary Emergency Application (Emits Equivalent U.S. EPA Tier 3 Nonroad Standards)</b>		
<b>Generator Set Package Performance</b> Genset power rating @ 0.8 pf Genset power rating with fan	313 kVA 250 ekW	
<b>Fuel Consumption</b> 100% load with fan 75% load with fan 50% load with fan	73.3 L/hr 58.8 L/hr 43.8 L/hr	19.4 gal/hr 15.5 gal/hr 11.6 gal/hr
<b>Cooling System<sup>1</sup></b> Air flow restriction (system) Air flow (max @ rated speed for radiator arrangement) Engine coolant capacity with radiator/exp. tank Engine coolant capacity Radiator coolant capacity	0.12 kPa 600 m <sup>3</sup> /min 46.7 L 22.0 L 24.7 L	0.48 in. water 21189 cfm 12.3 gal 5.8 gal 6.5 gal
<b>Inlet Air</b> Combustion air inlet flow rate	25.2 m <sup>3</sup> /min	890 cfm
<b>Exhaust System</b> Exhaust stack gas temperature Exhaust gas flow rate Exhaust flange size (internal diameter) Exhaust system backpressure (maximum allowable)	456°C 63.6 m <sup>3</sup> /min 127.0 mm 10.0 kPa	852°F 2246 cfm 5.0 in. 40.1 in. water
<b>Heat Rejection</b> Heat rejection to coolant (total) Heat rejection to exhaust (total) Heat rejection to aftercooler Heat rejection to atmosphere from engine Heat rejection to atmosphere from generator	104 kW 277 kW 82 kW 18 kW 19.7 kW	5914 Btu/min 15753 Btu/min 4663 Btu/min 1024 Btu/min 1120 Btu/min
<b>Alternator<sup>2</sup></b> Motor starting capability @ 30% voltage dip Frame Insulation class Temperature rise	543 skV LC5014H H 150°C	270°F
<b>Lubrication System</b> Sump refill with filter	39.0 L	10.3 gal
<b>Emissions (Nominal)<sup>3</sup></b> NOx g/hp-hr CO g/hp-hr HC g/hp-hr PM g/hp-hr	2.91 g/hp-hr 0.37 g/hp-hr 0.09 g/hp-hr 0.081 g/hp-hr	

<sup>1</sup> For site specific ambient and altitude capabilities consult your Cat dealer. Air flow restriction (system) is added to existing restriction from factory.

<sup>2</sup> Generator temperature rise is based on a 40° C (104° F) ambient per NEMA MG1-32.

<sup>3</sup> Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO 8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77°F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

# STANDBY 250 ekW 313 kVA

60 Hz 1800 rpm 480 Volts



## RATING DEFINITIONS AND CONDITIONS

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### Applicable Codes and Standards:

AS1359, CSA C22.2 No100-04, UL142,UL489, UL869, UL2200, NFPA37, NFPA70, NFPA99, NFPA110, IBC, IEC60034-1, ISO3046, ISO8528, NEMA MG1-22,NEMA MG1-33, 72/23/EEC, 98/37/EC, 2004/108/EC.

**Standby** – Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

**Ratings** are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions.

**Fuel Rates** are based on fuel oil of 35° API (16°C or 60°F) gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29°C (85°F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.).

**Additional Ratings** may be available for specific customer requirements. Consult your Cat representative for details.

# STANDBY 250 ekW 313 kVA

60 Hz 1800 rpm 480 Volts



## DIMENSIONS

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Package Dimensions		
Length	2870 mm	113.0 in
Width	1622 mm	63.9 in
Height	2065 mm	81.3 in
Weight*	2106 kg	4643 lb

\*With Oil and Coolant.

**NOTE:** For reference only – do not use for installation design. Please contact your local dealer for exact weight and dimensions.

Performance No.: DM8501

Feature Code: C09DE47

Gen. Arr. Number: 449-0571

Source: U.S. Sourced

LEHE0489-00 (02/14)

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## DIESEL GENERATOR SET

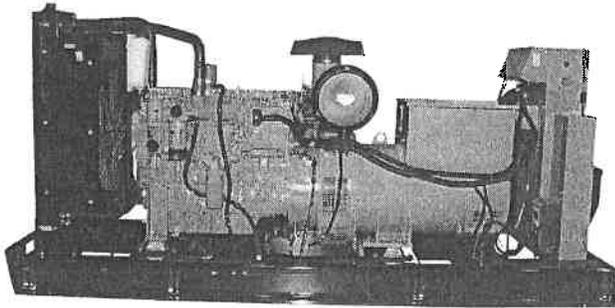


Image shown may not reflect actual package.

**STANDBY**  
**150 ekW 188 kVA**

**PRIME**  
**135 ekW 169 kVA**  
**60 Hz 1800 rpm 480 Volts**

Caterpillar is leading the power generation marketplace with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.

### FEATURES

#### FUEL/EMISSIONS STRATEGY

- EPA Certified for Stationary Emergency Application (EPA Tier 3 emissions levels)

#### FULL RANGE OF ATTACHMENTS

- Wide range of bolt-on system expansion attachments, factory designed and tested
- Flexible packaging options for easy and cost effective installation

#### SINGLE-SOURCE SUPPLIER

- Fully prototype tested with certified torsional vibration analysis available

#### WORLDWIDE PRODUCT SUPPORT

- Cat dealers provide extensive post sale support including maintenance and repair agreements
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- The Cat S•O•S<sup>SM</sup> program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

#### Cat® Model D150-8, Three Phase CAT C6.6 DIESEL ENGINE

- Reliable, rugged, durable design
- Field-proven in thousands of applications worldwide
- Four-stroke diesel engine combines consistent performance and excellent fuel economy with minimum weight
- Electronic engine control

#### GENERATOR SET

- Complete system designed and built at ISO 9001 certified facilities
- Factory tested to design specifications at full load conditions

#### CAT EMCP 4 CONTROL PANELS

- Simple user friendly interface and navigation
- Scalable system to meet a wide range of customer needs
- Integrated Control System and Communications Gateway

#### SEISMIC CERTIFICATION

- Seismic Certification available
- Anchoring details are site specific, and are dependent on many factors such as generator set size, weight, and concrete strength. IBC Certification requires that the anchoring system used is reviewed and approved by a Professional Engineer
- Seismic Certification per Applicable Building codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, IBC 2012, CBC 2007, CBC 2010
- Pre-approved by OSHPD and carries an OSP-0321-10 for use in healthcare projects in California

**STANDBY 150 kW 188 kVA**  
**PRIME 135 kW 169 kVA**  
 60 Hz 1800 rpm 480 Volts



**FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT**

System	Standard	Optional
Air Inlet	<ul style="list-style-type: none"> <li>• Dry replaceable paper element type with restriction indicator</li> </ul>	
Cooling	<ul style="list-style-type: none"> <li>• Radiator and cooling fan complete with protective guards</li> <li>• Standard ambient temperatures up to 50°C (122°F)</li> </ul>	<input type="checkbox"/> Radiator stone guard <input type="checkbox"/> Radiator transition flange
Exhaust		<input type="checkbox"/> Industrial <input type="checkbox"/> Residential <input type="checkbox"/> Critical mufflers <input type="checkbox"/> Overhead silencer mounting kit
Fuel	<ul style="list-style-type: none"> <li>• Flexible fuel lines to base with NPT connections</li> </ul>	<input type="checkbox"/> Sub-base dual wall UL listed 24 hr fuel tank <input type="checkbox"/> Sub-base dual wall UL listed 48 hr fuel tank <input type="checkbox"/> Emergency vent 12ft extension <input type="checkbox"/> 5 gallon spill containment
Generator	<ul style="list-style-type: none"> <li>• Class H insulation</li> <li>• Drip proof generator air intake (NEMA 2,IP23)</li> <li>• Electrical design in accordance with BS5000 Part 99, EN61000-6, IEC60034-1, NEMA MG-1.33</li> <li>• IP23 Protection</li> </ul>	<input type="checkbox"/> Generator upgrade 1 size <input type="checkbox"/> Permanent magnet excitation <input type="checkbox"/> Internal excitation <input type="checkbox"/> Anti-condensation space heater
Power Termination	<ul style="list-style-type: none"> <li>• Circuit breakers, UL/CSA listed, 3 pole (100% rated)</li> <li>• Power center houses EMCP controller and control terminations (CB)</li> <li>• Segregated low voltage wiring termination panel</li> <li>• NEMA 1 steel enclosure, vibration isolated</li> <li>• Electrical stub-up area directly below circuit breaker</li> </ul>	<input type="checkbox"/> Auxiliary contacts <input type="checkbox"/> Shunt trip <input type="checkbox"/> Overload shutdown via breaker
Governor	<ul style="list-style-type: none"> <li>• ADEM™A4</li> </ul>	
Control Panels	<ul style="list-style-type: none"> <li>• EMCP 4.2 digital control panel</li> <li>• Vibration isolated NEMA 1 enclosure with lockable hinged door</li> <li>• DC and AC Wiring harnesses</li> </ul>	<input type="checkbox"/> NFPA110 upgrade <input type="checkbox"/> Control panel chassis
Lube		<input type="checkbox"/> Lube oil heater
Mounting	<ul style="list-style-type: none"> <li>• Heavy-duty fabricated steel base with lifting points</li> <li>• Anti-vibration pads to ensure vibration isolation</li> <li>• Complete OSHA guarding</li> <li>• Stub-up pipe ready for connection to silencer pipework</li> </ul>	<input type="checkbox"/> IBC Seismic and OSHPD certification per Applicable Building Codes: IBC2000, IBC2003, IBC2006, IBC 2009, IBC 2012, CBC 2007, CBC 2010
Starting/Charging	<ul style="list-style-type: none"> <li>• 12 volt starting motor</li> <li>• Batteries with rack and cables</li> </ul>	<input type="checkbox"/> Battery charger – UL 10 amp <input type="checkbox"/> Battery disconnect switch <input type="checkbox"/> Battery removal (does not remove rack and cables) <input type="checkbox"/> Coolant Heater
General	<ul style="list-style-type: none"> <li>• High gloss polyurethane paint, Caterpillar Yellow except rails and radiators gloss black</li> <li>• Anticorrosive paint protection</li> <li>• All electroplated hardware</li> </ul>	<input type="checkbox"/> CSA Certified <input type="checkbox"/> Weather protective enclosure Industrial/Critical <input type="checkbox"/> Sound attenuated protective enclosure <input type="checkbox"/> Caterpillar tool set <input type="checkbox"/> Caterpillar White paint

**STANDBY 150 kW 188 kVA**  
**PRIME 135 kW 169 kVA**  
 60 Hz 1800 rpm 480 Volts



**SPECIFICATIONS**

<b>STANDARD CAT GENERATOR</b>		
Frame size	LC3014H	
Excitation	Self excitation	
Pitch	0.6667	
Number of poles	4	
Number of bearings	Single bearing	
Number of leads	12	
Insulation	Class H	
IP Rating	IP23	
Overspeed capability (%)	125	
Wave form deviation (%)	2	
Voltage regulator	Single phase sensing	
Voltage regulation	+/- 0.5% (steady state)	
<b>Additional Voltage Information:</b>		
Three Phase	Prime	Standby
08V Temp Rise	125°C / 225°F	150°C / 270°F
240V Temp Rise	125°C / 225°F	150°C / 270°F
480V Temp Rise	105°C / 189°F	130°C / 234°F
600V Temp Rise	105°C / 189°F	130°C / 234°F
- Consult your Cat dealer for other available voltages		
<b>CAT DIESEL ENGINE</b>		
C6.6 In-line 6, 4-cycle diesel		
Bore	105.0 mm (4.13 in)	
Stroke	127.0 mm (5.0 in)	
Displacement	6.6 L (402.8 in <sup>3</sup> )	
Compression ratio	16.2:1	
Aspiration	T	
Fuel system	Common rail	
Governor type	Electronic	
<b>EMISSIONS (Nominal)</b>		
NOx + HC g/kWhr	3.75	
CO g/kWhr	0.78	
PM g/kWhr	0.18	

\*The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load.

**CAT EMCP 4 SERIES CONTROLS**

EMCP 4 controls including:

- Run / Auto / Stop Control
- Speed and Voltage Adjust
- Engine Cycle Crank
- 12 volt DC operation
- Environmental sealed front face
- Text alarm/event descriptions

Digital indication for:

- RPM
- DC volts
- Operating hours
- Oil pressure (psi, kPa or bar)
- Coolant temperature
- Volts (L-L & L-N), frequency (Hz)
- Amps (per phase & average)
- kW, kVA, kVAR, kW-hr, %kW, PF

Warning/shutdown with common LED indication of:

- Low oil pressure
- High coolant temperature
- Overspeed
- Emergency stop
- Failure to start (overcrank)
- Low coolant temperature
- Low coolant level

Programmable protective relaying functions:

- Generator phase sequence
- Over/Under voltage (27/59)
- Over/Under frequency (81 o/u)
- Reverse power (kW) (32)
- Reverse reactive power (kVAR) (32RV)
- Overcurrent (50/51)

Communications:

- Six digital inputs
- Four relay outputs (Form A)
- Two relay outputs (Form C)
- Two digital outputs
- Customer data link (Modbus RTU)
- Accessory module data link
- Serial annunciator module data link
- Emergency stop pushbutton

Compatible with the following:

- Digital I/O module
- Local annunciator
- Remote CAN annunciator
- Remote serial annunciator

**STANDBY 150 ekW 188 kVA**  
**PRIME 135 ekW 169 kVA**  
 60 Hz 1800 rpm 480 Volts



**TECHNICAL DATA**

Open Generator Set – 1800 rpm/60 Hz/480 Volts	P2682A			
Tier 3	Standby		Prime	
<b>Generator Set Package Performance</b> Genset power rating @ 0.8 pf Genset power rating with fan	187.5 kVA 150.0 ekW		168.8 kVA 135.0 ekW	
<b>Fuel Consumption</b> 100% load with fan 75% load with fan 50% load with fan	42.8 L/hr 34.2 L/hr 24.9 L/hr	11.3 gal/hr 9.0 gal/hr 6.6 gal/hr	39.4 L/hr 31.4 L/hr 23.0 L/hr	10.4 gal/hr 8.3 gal/hr 6.1 gal/hr
<b>Cooling System<sup>1</sup></b> Air flow restriction (system) Engine coolant capacity with radiator/exp. tank Engine coolant capacity Radiator coolant capacity	0.12 kPa 21.0 L 9.5 L 11.5 L	0.48 in. water 5.5 gal 2.5 gal 3.0 gal	0.12 kPa 21.0 L 9.5 L 11.5 L	0.48 in. water 5.5 gal 2.5 gal 3.0 gal
<b>Inlet Air</b> Combustion air inlet flow rate	12.7 m <sup>3</sup> /min	441.4 cfm	12.4 m <sup>3</sup> /min	441.4 cfm
<b>Exhaust System</b> Exhaust stack gas temperature Exhaust gas flow rate Exhaust flange size (internal diameter) Exhaust system back pressure (maximum)	469°C 30.7 m <sup>3</sup> /min 89.0 mm 15.0 kPa	876°F 1084 cfm 3.5 in 60.2 in. water	455.2°C 29.5 m <sup>3</sup> /min 89.0 mm 15.0 kPa	851°F 1042 cfm 3.5 in 60.2 in. water
<b>Heat Rejection</b> Heat rejection to coolant (total) Heat rejection to exhaust (total) Heat rejection to aftercooler Heat rejection to atmosphere from engine Heat rejection to atmosphere from generator	80.1 kW 135.9 kW 35.0 kW 13.5 kW 11.5 kW	4555 Btu/min 7729 Btu/min 1990 Btu/min 767.7 Btu/min 654 Btu/min	74.2 kW 127.3 kW 32.5 kW 12.4 kW 10.1 kW	4220 Btu/min 7239 Btu/min 1848 Btu/min 705.2 Btu/min 574.4 Btu/min
<b>Alternator<sup>2</sup></b> Motor starting capability @ 30% voltage dip Frame Temperature rise	420 skV LC3014F 130°C		420 skV LC3014F 105°C	188°F
<b>Lubrication System</b> Total oil capacity Oil pan	16.5 L 15.5 L	4.4 gal 4.1 gal	16.5 L 15.5 L	4.4 gal 4.1 gal

<sup>1</sup>For ambient and altitude capabilities consult your Cat dealer. Airflow restriction (system) is added to existing restriction from factory.

<sup>2</sup>Generator temperature rise is based on a 40°C (104°F) ambient per NEMA MG1-32.

**STANDBY 150 ekW 188 kVA**

**PRIME 135 ekW 169 kVA**

60 Hz 1800 rpm 480 Volts



## **RATING DEFINITIONS AND CONDITIONS**

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**Applicable Codes and Standards:** AS1359, CSA C22.2 No 100-04, UL142, UL489, UL601, UL869, UL2200, NFPA 37, NFPA 70, NFPA 99, NFPA 110, IBC, IEC60034-1, ISO3046, ISO8528, NEMA MG 1-22, NEMA MG 1-33, 72/23/EEC, 98/37/EC, 2004/108/EC.

**Standby** – Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

**Prime** – Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand of 100% of prime-rated ekW with 10% of overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

**Ratings** are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions.

**Fuel rates** are based on fuel oil to specification EPA 2D 89.330-96 with a density of 0.845 – 0.850 kg/L (7.052 – 7.094 lbs/U.S. gal.) @ 15°C (59°F) and fuel inlet temperature 40°C (104°F). Additional ratings may be available for specific customer requirements, contact your Cat representative for details. For information regarding Low Sulfur fuel and Biodiesel capability, please consult your Cat dealer.

**STANDBY 150 ekW 188 kVA**  
**PRIME 135 ekW 169 kVA**  
60 Hz 1800 rpm 480 Volts



## DIMENSIONS

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Package Dimensions		
Length	3037 mm	120 in
Width	1110 mm	44 in
Height	483 mm	58 in

**NOTE:** For reference only – do not use for installation design. Please contact your local dealer for exact weight and dimensions. (General Dimension Drawing #4190061).

Performance No.: P2682A

[www.Cat-ElectricPower.com](http://www.Cat-ElectricPower.com)

Feature Code: NAC137P

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Gen. Arr. Number: 3932548

Materials and specifications are subject to change without notice.  
The International System of Units (SI) is used in this publication.

Source: U.S. Sourced

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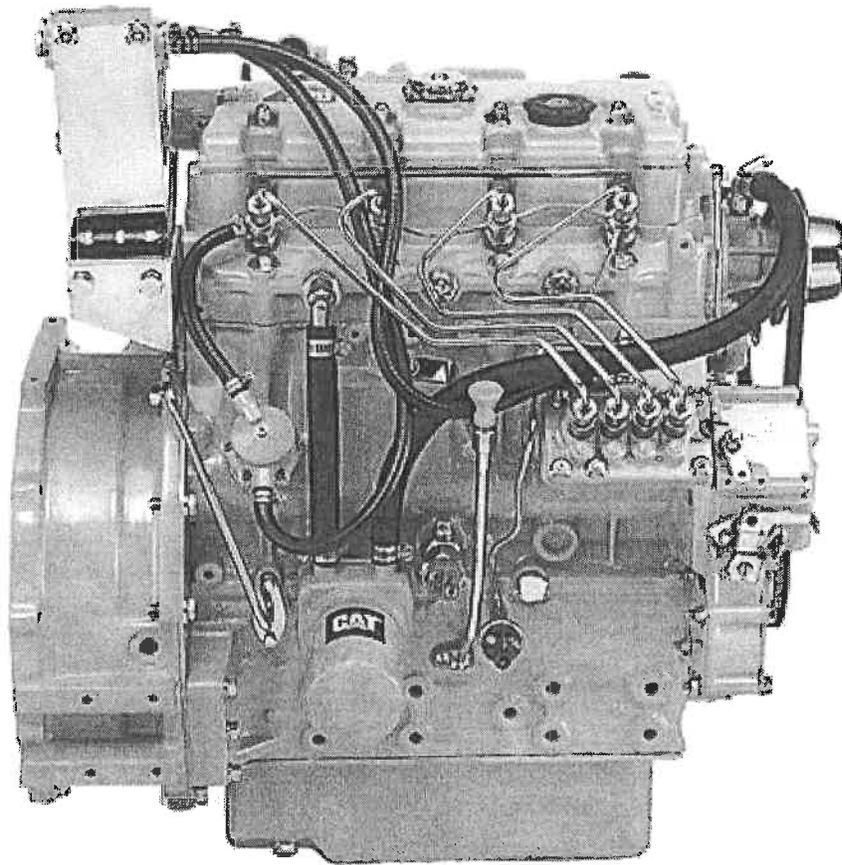
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C2.2 LRC Diesel Engines - Lesser Regulated & Non-Regulated

**SPECIFICATIONS**

**BENEFITS & FEATURES**

**EQUIPMENT**

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## OVERVIEW

Cat® C2.2 Industrial Diesel Engines deliver impressive performance throughout a wide speed range with exceptional power density. Their ultra-compact package size and extensive choice of options ensures these engines are ideal for a wide range of small, off road applications. Single-side servicing improves ease of maintenance and lowers overall owner operating costs. Industries and applications powered by C2.2 engines include: Agriculture, Aerial Lifts, Bore/Drill Rigs, Chippers/Grinders, Compactors/Rollers, Compressors, Construction, General Industrial, Irrigation Equipment, Material Handling, Mining, Mobile Earthmoving Equipment, Mobile Light Towers, Mobile Sweepers, Paving Equipment, Pumps, Trenchers, Turf and Landscaping, Underground Mining Equipment and Welders. C2.2 engines, with ratings: 31-49.3 kW (41.6-66.1 bhp) @ 2200-3000 rpm, meet EPA Tier 4 Interim equivalent, EU Stage IIIA equivalent emission standards. They are available using U.S. EPA and EU Flexibility, and for other regulated and non-regulated areas.

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XQ20

**SPECIFICATIONS**

**BENEFITS & FEATURES**

**EQUIPMENT**

## OVERVIEW

Whether or not the outage was expected, Cat® Rental Power is here to keep your operation running.

**GENERATOR**

UNITS:  **US**  **METRIC**

Rating 20 kW (25 kVA) Standby

Frequency 60 Hz

Voltage 208 - 480 V

## ENGINE

Engine

C2.2

## DIMENSIONS

Width

32.3 in

Height

61.2 in

Length

78.0 in

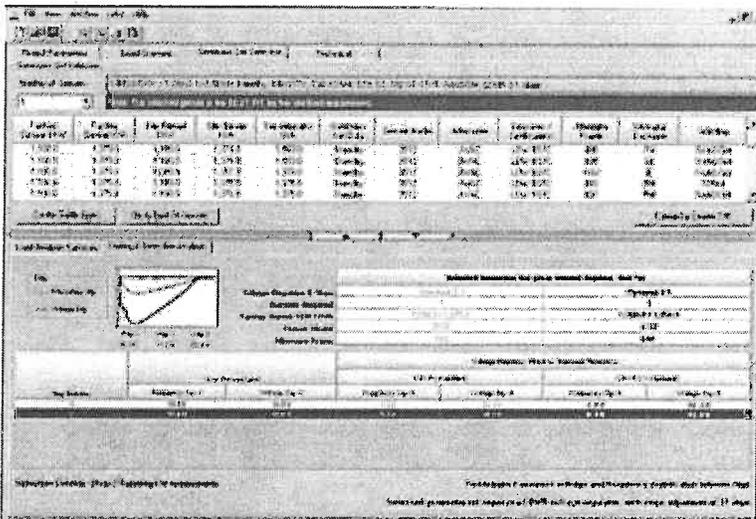
Weight

2248.0 lb

## PRECISION SIZING AT YOUR FINGERTIPS.

Caterpillar Electric Power is excited to introduce you to our latest generator set sizing software, Cat® Electric Power SpecSizer. Considering factors such as site conditions, load characteristics and required performance, SpecSizer provides accurate and timely technical data, robust load models and optimized algorithms to assist in specifying a properly sized generator set to best meet your power needs.

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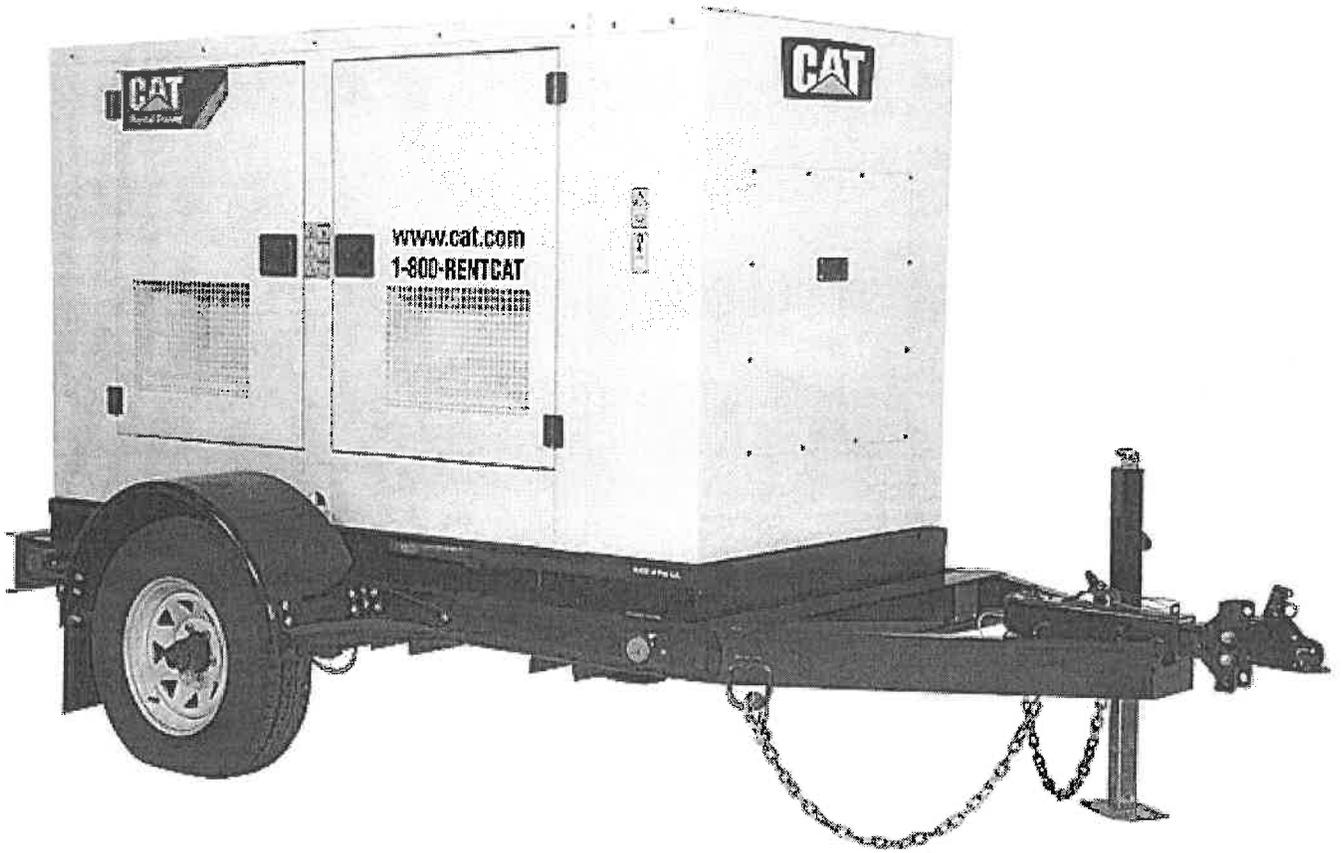
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XQ30

**SPECIFICATIONS**

**BENEFITS & FEATURES**

**EQUIPMENT**

## OVERVIEW

**GENERATOR**

UNITS:  **US**  **METRIC**

Rating 30 ekW (37 kVA) Standby

Frequency 60 Hz

Voltage 208 - 480 V

## ENGINE

Engine C2.2

## DIMENSIONS

Width 45.7 in

Height 62.1 in

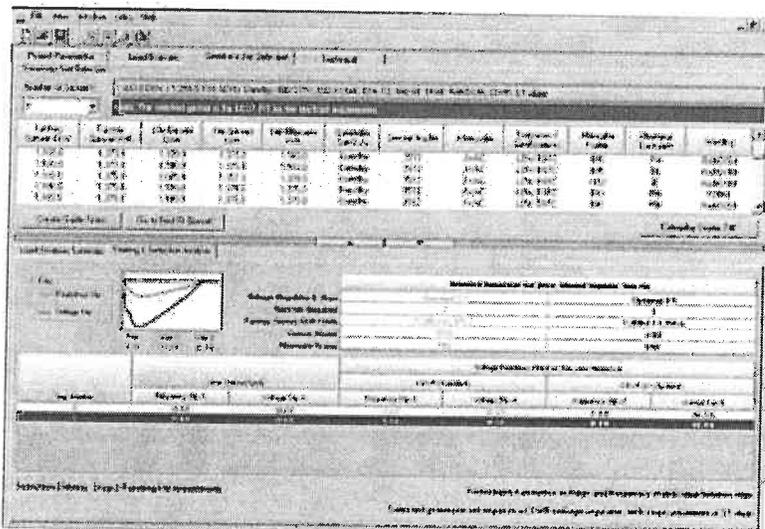
Length 91.7 in

Weight 3307.0 lb

## PRECISION SIZING AT YOUR FINGERTIPS.

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