POCAHONTAS COUNTY PUBLIC SERVICE DISTRICT

REGIONAL SEWER PROJECT

WEST VIRGINIA DEPT. OF AIR QUALITY GENERAL PERMIT G65-C APPLICATION

Location 01 – Linwood Pump Station
2nd Submission: 03-03-2017

TABLE OF CONTENTS

The following checked items are included in this application package:

☒ APPLICATION FOR GENERAL PERMIT REGISTRATION

☒ 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: EQUIPMENT DATA SHEETS AND REGISTRATION SECTION APPLICABILITY FORM
☐ ATTACHMENT H: AIR POLLUTION CONTROL DEVICE SHEETS
☒ ATTACHMENT I: EMISSIONS CALCULATIONS
☐ ATTACHMENT J: CLASS I LEGAL ADVERTISEMENT
☐ ATTACHMENT K: ELECTRONIC SUBMITTAL
☒ ATTACHMENT L: GENERAL PERMIT REGISTRATION APPLICATION FEE
☐ ATTACHMENT M: SITING CRITERIA WAIVER
☐ ATTACHMENT N: MATERIAL SAFETY DATA SHEETS (MSDS)
☒ ATTACHMENT O: EMISSIONS SUMMARY SHEETS
☐ OTHER SUPPORTING DOCUMENTATION NOT DESCRIBED ABOVE (Equipment Drawings, Aggregation Discussion, etc.)

WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
601 57th Street, SE
Charleston, WV 25304
Phone: (304) 926-0475 • *www.dep.wv.gov/daq*

APPLICATION FOR GENERAL PERMIT REGISTRATION

CONSTRUCT, MODIFY, RELOCATE OR ADMINISTRATIVELY UPDATE
A STATIONARY SOURCE OF AIR POLLUTANTS

☒ CONSTRUCTION ☐ MODIFICATION ☐ RELOCATION ☐ CLASS I ADMINISTRATIVE UPDATE
☐ CLASS II ADMINISTRATIVE UPDATE

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

☐ **G10-D –** Coal Preparation and Handling
☐ **G20-B –** Hot Mix Asphalt
☐ **G30-D –** Natural Gas Compressor Stations
☐ **G33-A –** Spark Ignition Internal Combustion Engines
☐ **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**
☐ **G70-A –** Class II Oil and Natural Gas Production Facility

SECTION I. GENERAL INFORMATION

1. Name of applicant (as registered with the WV Secretary of State's Office):
Pocahontas County Public Service District

2. Federal Employer ID No. (FEIN):
55-0604862

3. Applicant's mailing address:
HC 63 Box 122
Frank, WV 24920

4. Applicant's physical address: **N/A**

5. If applicant is a subsidiary corporation, please provide the name of parent corporation: **N/A**

6. **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 Registration Certificate as **Attachment A**.
- IF **NO,** provide a copy of the **Certificate of Authority / Authority of LLC / 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.):
Emergency Generator(s)

8a. Standard Industrial Classification (SIC) code: **4952**
AND
8b. North American Industry System (NAICS) code: **221320**

9. DAQ Plant ID No. (for existing facilities only):
___ ___ ___ - ___ ___ ___ ___ ___ **N/A**

10. List all current 45CSR13 and other General Permit numbers associated with this process (for existing facilities only):
N/A

A: PRIMARY OPERATING SITE INFORMATION

11A. Facility name of primary operating site:	12A. Address of primary operating site:
Linwood Pump Station	Mailing: **N/A** Physical: **U.S. Route 219 approximately 0.2 mile north of WV Route 66 intersection, Linwood, WV**

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: **Current Owner is Pocahontas County Public Service District**

– 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. Include a **MAP** as **Attachment F**.

New sewage pumping station to be located along U.S. Route 219 approximately 0.2 mile north of its intersection with WV Route 66.

15A. Nearest city or town:	16A. County:	17A. UTM Coordinates:
Slatyfork, West Virginia	**Pocahontas**	Northing (KM): **4253.21357** Easting (KM): **583.53530** Zone: **17S**

18A. Briefly describe the proposed new operation or change (s) to the facility:	19A. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):
New sewage pumping station to convey sewage from new collection system to new wastewater treatment plant.	Latitude: **38.42328** Longitude: **- 80.04303**

B: 1ST ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits)

11B. Name of 1st alternate operating site:	12B. Address of 1st alternate operating site:
	Mailing: Physical:

13B. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? 9 **YES** 9 **NO**

– IF **YES**, please explain:

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

14B. – 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. Include a **MAP** as **Attachment F**.

_____

_____

_____

15B. Nearest city or town:	16B. County:	17B. UTM Coordinates: Northing (KM): _____ Easting (KM): _____ Zone: _____
18B. Briefly describe the proposed new operation or change (s) to the facility:		19B. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits): Latitude: _____ Longitude: _____

C: 2ND ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits):

11C. Name of 2nd alternate operating site: _____ _____	12C. Address of 2nd alternate operating site: Mailing:_____ Physical:_____ _____

13C**.** Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? 9 **YES** 9 **NO**

– IF **YES**, please explain: _____

_____

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

14C. – 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. Include a **MAP** as **Attachment F**.

_____

_____

_____

15C. Nearest city or town:	16C. County:	17C. UTM Coordinates: Northing (KM): _____ Easting (KM): _____ Zone: _____
18C. Briefly describe the proposed new operation or change (s) to the facility:		19C. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits): Latitude: _____ Longitude: _____

20. Provide the date of anticipated installation or change: **03 / 01 / 2017** ☐ If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: : _____/_____/_____	21. Date of anticipated Start-up if registration is granted: **03 / 17 / 2017**

22. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application if other than 8760 hours/year. (Note: anything other than 24/7/52 may result in a restriction to the facility's operation).

Hours per day **24** Days per week **7** Weeks per year **52** Percentage of operation **100**

SECTION III. ATTACHMENTS AND SUPPORTING DOCUMENTS

23. Include a check payable to WVDEP – Division of Air Quality with the appropriate **application fee** (per 45CSR22 and 45CSR13).

24. Include a **Table of Contents** as the first page of your application package.

All of the required forms and additional information can be found under the Permitting Section (General Permits) of DAQ's website, or requested by phone.

25. Please check all attachments included with this permit application. Please refer to 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
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- ☐ OTHER SUPPORTING DOCUMENTATION NOT DESCRIBED ABOVE (Equipment Drawings, Aggregation Discussion, etc.)

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 of this application. Please DO NOT fax permit applications. For questions regarding applications or West Virginia Air Pollution Rules and Regulations, please refer to the website shown on the front page of the application or call the phone number also provided on the front page of the 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

☐ *I hereby certify that* (please print or type) _____

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 Director 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 _____ 2/28/17
(please use blue ink) Responsible Official Date

Name & Title Mark Smith, Board Chairman
(please print or type)

Signature _____
(please use blue ink) Authorized Representative (if applicable) Date

Applicant's Name _____

Phone & Fax _____
Phone Fax

Email wvctrack@yahoo.com

ATTACHMENT A

CURRENT BUSINESS CERTIFICATE

030283alj040403.wpd

PUBLIC SERVICE COMMISSION
OF WEST VIRGINIA
CHARLESTON

03-P

ORIGINAL

Entered: April 4, 2003

CASE NO. 03-0283-PSD-PC

POCAHONTAS COUNTY COMMISSION
Petition for consent and approval to enlarge Pocahontas County Public Service District.

FINAL
4-24-03

RECOMMENDED DECISION

On February 24, 2003, the Pocahontas County Commission (County Commission) filed a letter/petition, pursuant to the provisions of West Virginia Code §16-13A-2, seeking Commission approval to enlarge the boundaries of the Pocahontas County Public Service District (District) to provide for the creation of a county-wide sewer service public service district. Attached to the petition were certified copies of: (1) a January 21, 2003 County Commission resolution proposing the enlargement of the District's sewer authority; (2) minutes of a hearing held by the County Commission on February 11, 2003, regarding the proposed expansion; and (3) an affidavit of publication of notice in The Pocahontas Times, Inc., of the proposed enlargement of the District and the hearing thereon to be held on February 11, 2003.

On March 13, 2003, Staff Attorney Cassius H. Toon filed an Initial and Final Joint Staff Memorandum. An Initial and Final Internal Memorandum, dated March 4, 2003, from Scott McNeely, Utilities Analyst I, Water and Wastewater Division. Commission Staff pointed out that the creation of a county-wide sewer public service district for Pocahontas County was authorized in Case No. 96-1252-PSWD-PC. Specifically, by Commission Order entered therein on February 4, 1998, the Public Service Commission ordered "that the Pocahontas County Commission's petition for approval of a county-wide public sewer district, excluding the corporate limits of the Towns of Marlington [sic] and Hillsboro and certain tracts of land held by Intrawest, commonly known as Snowshoe and Silver Creek Resorts is granted." Accordingly, Commission Staff recommended that this case be dismissed.

By Order dated March 27, 2003, the Commission referred this matter to the Division of Administrative Law Judges for further disposition and ordered that an Administrative Law Judge's decision be rendered on or before April 25, 2003.

FINDINGS OF FACT

1. On February 24, 2003, the Pocahontas County Commission filed a letter/petition seeking Commission approval to enlarge the boundaries of the Pocahontas County Public Service District to provide for creation of a county-wide sewer service public service district. (See February 24, 2003 filing).

2. Commission Staff reported that the Pocahontas County Public Service District was already authorized to provide county-wide sewer service and recommended that this matter be dismissed. (See, Initial and Final Joint Staff Memorandum and attachment filed March 13, 2003; Case No. 96-1252-PSWD-PC).

CONCLUSION OF LAW

Upon consideration of all of the above, the undersigned Administrative Law Judge is of the opinion that, since the creation of a county-wide sewer public service district for Pocahontas County was accomplished in Case No. 96-1252-PSWD-PC, the letter/petition filed herein on February 24, 2003, by the Pocahontas County Commission, seeking to duplicate the creation of a county-wide sewer public service district, should be dismissed as moot.

ORDER

IT IS, THEREFORE, ORDERED that the letter/petition filed herein on February 24, 2003, by the Pocahontas County Commission seeking Commission approval to enlarge the boundaries of the Pocahontas County Public Service District to provide for the creation of a county-wide sewer service public service district be, and hereby is, dismissed and removed from the Commission's docket of open cases.

The Executive Secretary is hereby ordered to serve a copy of this order upon the Commission by hand delivery, and upon all parties of record by United States Certified Mail, return receipt requested.

Leave is hereby granted to the parties to file written exceptions supported by a brief with the Executive Secretary of the Commission within fifteen (15) days of the date this order is mailed. If exceptions are filed, the parties filing exceptions shall certify to the Executive Secretary that all parties of record have been served said exceptions.

If no exceptions are so filed this order shall become the order of the Commission, without further action or order, five (5) days following the expiration of the aforesaid fifteen (15) day time period, unless it is ordered stayed or postponed by the Commission.

Any party may request waiver of the right to file exceptions to an Administrative Law Judge's order by filing an appropriate petition in writing with the Secretary. No such waiver will be effective until approved by order of the Commission, nor shall any such waiver operate to

make any Administrative Law Judge's Order or Decision the order of the Commission sooner than five (5) days after approval of such waiver by the Commission.

Melissa K. Marland
Chief Administrative Law Judge

MKM/JPC:mal
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PUBLIC SERVICE COMMISSION
OF WEST VIRGINIA
CHARLESTON

04-666

Entered: October 19, 2004

CASE NO. 04-0273-PSD-PC

POCAHONTAS COUNTY COMMISSION
Petition for consent and approval of the enlargement of the sewer authority of the Pocahontas County Public Service District.

FINAL
11-8-04

RECOMMENDED DECISION

On February 24, 2004, the Pocahontas County Commission (County Commission) filed an Order dated February 17, 2004, to enlarge the boundaries of the Pocahontas County Public Service District (District), pursuant to West Virginia Code §16-13A-2.

By Order dated March 23, 2004, this matter was referred to the Division of Administrative Law Judges for a decision to be rendered on or before September 21, 2004.

On April 28, 2004, Staff Attorney Cassius H. Toon filed a Final Joint Staff Memorandum, to which was attached the Final Internal Memorandum, prepared by Mr. Scott McNeely, Utilities Analyst II, Water and Wastewater Division. The County Commission seeks to expand the boundaries of the District to provide sewer services to certain tracts of land held by Intrawest, commonly known as Snowshoe and Silver Creek Resorts. Currently, the District has county-wide sewer authority, excluding the corporate limits of the Towns of Durbin, Marlinton, Hillsboro and the proposed Intrawest land. The proposed adjustment of the boundaries would allow expansion of the District's system to provide sewer service to a number of customers within the Snowshoe and Silver Creek Resorts and surrounding areas. The District will be filing a certificate application for a sewer plant project to serve Snowshoe, Silver Creek and the surrounding areas. Staff recommended that the Order of the County Commission be approved, after the statutorily required Public Service Commission hearing is held.

By Order dated May 5, 2004, this matter was set for hearing to be held in the Marlinton City Building, Council Chambers, 209 2nd Avenue, Marlinton, West Virginia, on May 28, 2004. Said Order required the Pocahontas County Commission to give notice of the hearing to be held on May 28, 2004, by publishing a Notice of Hearing once, in a newspaper duly qualified by the Secretary of State, published and of general circulation in Pocahontas County.

On May 25, 2004, Thomas R. Michael, Esquire, counsel for the Pocahontas County Public Service District, filed a motion for

cancellation of the hearing set for May 28, 2004, and requesting a 90-day extension of the Administrative Law Judge's decision due date, citing that the Notice of Hearing had not been published as required by the Order of May 5, 2004.

By Order dated May 26, 2004, the Administrative Law Judge's decision due date of September 21, 2004, was extended until December 20, 2004.

By Order dated August 24, 2004, this matter was set for hearing to be held in the Pocahontas County, on September 14, 2004. Said Order also required the Pocahontas County Commission to give notice of the hearing to be held on September 14, 2004, by publishing a Notice of Hearing, once in a newspaper, duly qualified by the Secretary of State, published and of general circulation in Pocahontas County.

The hearing was held as scheduled. The Pocahontas County Commission was represented by its counsel, Thomas Michael, Esquire. Commission Staff was represented by Staff Attorney Cassius H. Toon. At the hearing, a proper affidavit of publication was submitted by the Pocahontas County Commission reflecting that publication of the Notice of Hearing had been made in accordance with the Commission's requirements in The Pocahontas Times, Inc., on September 2, 2004. (Tr., p. 6).

No one appeared at the hearing in protest to the petition. (See, Tr., p. 6).

Commission Staff moved into evidence, as Staff Exhibit No. 1, its Final Joint Staff Memorandum dated April 28, 2004. The County Commission stipulated to Staff's recommendation for approval of the petition to enlarge the boundaries of the Pocahontas County Public Service District. (See, Staff Exhibit No. 1; Tr., p. 7).

No further evidence was presented in the case and the matter was submitted as an unprotested application.

FINDINGS OF FACT

1. The Pocahontas County Commission filed with the Commission an Order dated February 17, 2004, to enlarge the boundaries of the Pocahontas County Public Service District, pursuant to West Virginia Code §16-13A-2. (See, petition filed February 24, 2004).

2. Commission Staff recommended that the petition be approved after the conduct of the statutorily required hearing was held. The proposed adjustment of the boundaries would allow expansion of the District's system to provide sewer service to a number of customers within the Snowshoe and Silver Creek Resorts and surrounding areas, and that the District will be filing a certificate application for a sewer plant project to serve Snowshoe, Silver Creek and the surrounding areas. (See, Staff Exhibit No. 1).

3. A hearing was scheduled to be held in this matter, in accordance with West Virginia Code §16-13A-2, on September 14, 2004, in Pocahontas County. (See, Order dated August 24, 2004).

4. The Pocahontas County Commission gave proper notice of the hearing to be held on September 14, 2004, as required by the Order of August 24, 2004. (See, affidavit of publication; case file).

5. No one appeared at the hearing in protest to the Pocahontas petition. (See, Tr., p. 7).

CONCLUSION OF LAW

Since the Pocahontas County Commission gave proper notice of the hearing to be held in this case on September 14, 2004, and no one appeared in protest to the petition, the February 17, 2004 Order of the Pocahontas County Commission to enlarge the boundaries of the Pocahontas County Public Service District can be approved in accordance with West Virginia Code §16-13A-2.

ORDER

IT IS, THEREFORE, ORDERED that the Pocahontas County Commission's Order of February 17, 2004, to enlarge the boundaries of the Pocahontas County Public Service District be, and the same hereby is, approved.

The Executive Secretary is hereby ordered to serve a copy of this order upon the Commission by hand delivery, and upon all parties of record by United States Certified Mail, return receipt requested.

Leave is hereby granted to the parties to file written exceptions supported by a brief with the Executive Secretary of the Commission within fifteen (15) days of the date this order is mailed. If exceptions are filed, the parties filing exceptions shall certify to the Executive Secretary that all parties of record have been served said exceptions.

If no exceptions are so filed this order shall become the order of the Commission, without further action or order, five (5) days following the expiration of the aforesaid fifteen (15) day time period, unless it is ordered stayed or postponed by the Commission.

Any party may request waiver of the right to file exceptions to an Administrative Law Judge's Order by filing an appropriate petition in writing with the Secretary. No such waiver will be effective until approved by order of the Commission, nor shall any such waiver operate to make any Administrative Law Judge's Order or Decision the order of the Commission sooner than five (5) days after approval of such waiver by the Commission.

Robert W. Glass
Administrative Law Judge

RWG:pst
040273ac.wpd

ORIGINAL

ENTERED
O.R. 97U Page

PUBLIC SERVICE COMMISSION
OF WEST VIRGINIA
CHARLESTON

FINAL
12-9-97

Entered: November 19, 1997

CASE NO. 96-1252-PSWD-PC

POCAHONTAS COUNTY COMMISSION
Petition for consent and approval to, inter alia, expand the boundaries of the Upper Greenbrier Public Service District.

RECOMMENDED DECISION

On October 1, 1996, April 24, 1997, and May 6, 1997, the Pocahontas County Commission issued orders taking various actions regarding the Upper Greenbrier Public Service District, the Little Levels Public Service District and the Cheat Mountain Public Service District.

By Order dated November 18, 1996, this matter was referred to the Division of Administrative Law Judges for a decision to be rendered on or before May 5, 1997. By Order dated April 11, 1997, the decision due date was extended until August 4, 1997. By subsequent Order dated July 21, 1997, the decision due date was further extended until December 3, 1997.

On September 9, 1997, Staff Attorney Ronald E. Robertson, Jr., Esquire, filed the Final Joint Staff Memorandum, to which was attached the Further Final Internal Memorandum of Mr. James W. Boggess, Utilities Analyst II, Water and Wastewater Division. Messrs. Robertson and Boggess explained that, in its petition in this case, the Pocahontas County Commission seeks consent and approval for (1) the expansion of the Upper Greenbrier Public Service District into a county-wide public sewer and water district, to be known as the Pocahontas County Public Service District, and to include all of Pocahontas County, excluding the corporate limits of the Towns of Marlinton and Hillsboro and certain tracts of land held by Intrawest, commonly known as Snowshoe and Silver Creek Resorts; (2) the Pocahontas County Commission's nunc pro tunc creation of the Upper Greenbrier Public Service District and the expansion of its boundaries to include the Town of Durbin; and (3) the dissolution of the Little Levels and Cheat Mountain Public Service Districts.

After setting forth a lengthy chronology of events occurring in this case, Staff set forth its recommendations in this case to be as follows:

1) Approval of a county-wide district for water service, excluding the corporate limits of the Towns of Marlinton and Hillsboro and certain tracts of land held by Intrawest, commonly known as Snowshoe and Silver Creek Resorts;

2) Approval of a sewer district, limited to the East Cass area;

3) Approval to change the name of Upper Greenbrier Public Service District to Pocahontas County Public Service District, subject to bondholder approval;

4) Approval for the dissolution of the Little Levels and Cheat Mountain Public Service Districts;

5) Approval of the nunc pro tunc creation of the Upper Greenbrier Public Service District and the nunc pro tunc expansion of the District to include the Town of Durbin; and

6) A public hearing be held as required by West Virginia Code §16-13A-2 in Pocahontas County.

By Order dated September 11, 1997, this matter was set for a hearing to be held in the Council Room, Marlinton, West Virginia, on September 29, 1997. In a letter received September 12, 1997, the Pocahontas Commission requested that the hearing scheduled for the Council Room be changed to the Pocahontas County Commission Room, Pocahontas County Courthouse.

By Order dated September 16, 1997, the hearing in this matter was scheduled to be held in the Pocahontas County Commission Room, Pocahontas County Courthouse, 900 10th Avenue, Marlinton, West Virginia, on September 29, 1997. Said Order also required that the Pocahontas County Commission give notice of the hearing to be held on September 29, 1997, by publishing a copy of a Notice of Hearing, once in a newspaper, duly qualified by the Secretary of State, published and of general circulation in Pocahontas County.

The hearing was held as scheduled on September 29, 1997, in Marlinton. The Pocahontas County Commission appeared by Walter Weiford, Esquire. Staff was represented by Staff Attorney Ronald E. Robertson, Jr. One Intervenor, Mr. John Leyzorek, appeared at the hearing. Prior to the receipt of evidence, the County Commission provided the affidavit of publication giving notice of the hearing. The affidavit was marked as Petitioner's Exhibit No. 1.

EVIDENCE

Mr. Dana Moyers, President of the Pocahontas County Commission (County Commission), explained that the Pocahontas County Commission decided that it was important for the County Commission to have the ability to be able to expand the infrastructure of Pocahontas County to address the inadequacy of water and sewer service in certain areas of Pocahontas County. In August 1996, the Pocahontas County Commission first proposed to expand the Upper Greenbrier Public Service District (Upper Greenbrier). Publication was made and notice given of the hearing to be held for this purpose on August 20, 1996. At the hearing held on August 20, 1996, public comment was received concerning the expansion. After receiving the public's comments, the County Commission decided to proceed, but, in September 1996, the Pocahontas County Commission voted to hold additional hearings. Since Pocahontas County is a rural county, it wanted to make sure that everyone was given an opportunity to express themselves concerning this proposal. At a meeting held in September 1996, further comments were received both pro and con to the

proposal. On October 1, 1996, the Pocahontas County Commission adopted a proposal for the expansion of the Upper Greenbrier Public Service District into a county-wide water and sewer public service district and filed its petition with the Public Service Commission, in accordance with the provisions of West Virginia Code §16-13A-2. (See, Tr., pp. 5-10).

Mr. Moyers explained that the Little Levels and Cheat Mountain Public Service Districts had been created, but were never activated nor held any property. Therefore, it was decided that, since these "paper" public service districts do not have board members, they should be dissolved. In April 1996, after correspondence between bond counsel for the Upper Greenbrier Public Service District and the Public Service Commission, the Pocahontas County Commission took action to expand the boundaries of the Upper Greenbrier Public Service District to include the Town of Durbin. Also, in May of 1996, the Pocahontas County Commission further ordered that the name be changed to the Pocahontas County Public Service District. The board members of the Upper Greenbrier Public Service District are Mr. William Kisner, Ms. June Elliott and Mr. William Rexroad. The Upper Greenbrier Public Service District provides both water and sewer service to its customers. (See, Tr., pp. 10-19).

With the testimony of Mr. Moyers, the Petitioner had no further evidence to present and Commission Staff presented its evidence in this case.

Mr. James Boggess, Utilities Analyst, Water and Wastewater Division, prepared the Further Internal Memorandum which was marked as Staff Exhibit No. 1. In its petition, Mr. Boggess indicated that the Pocahontas County Commission proposes creating both county-wide water and sewer public service districts. After reviewing the proposal of the Pocahontas County Commission, Staff recommended that a county-wide public service district be approved for water service to include the entire county, excluding those areas that are currently being served by existing water utilities, including the Town of Marlinton, which actually provides service outside of its corporate limits to a hospital. The hospital has its own sewer package plant. In making Staff's recommendation concerning sewer service, Mr. Boggess explained that Staff was reluctant to incorporate an area within the boundaries of the sewer district that could possibly create a liability for the public service district in the future if the West Virginia Department of Environmental Protection (DEP) or the United States Environmental Protection Agency (USEPA) would order improvements or corrections and the county-wide sewer district would have to make the changes. (Tr., pp. 19-24).

The Staff's recommendation for the sewer district was to limit it to the East Cass area. Mr. Boggess testified that he was informed that there is a preliminary application for a sewer project for this area. Mr. Boggess had been told by the President of the Pocahontas County Commission that, due to recent flooding, the Federal Emergency Management Agency (FEMA) is proposing some action to either raise the homes in the East Cass area or move the entire community to higher ground which would directly impact the sewer service. At a meeting that Staff had with the Pocahontas County Commission, the County Commission was advised of the procedure to expand districts under West Virginia Code §16-13A-2, and for the dissolution of

"paper" public service districts. Mr. Boggess did not wish to change the Staff's recommendation about limiting sewer service to the East Cass area of Pocahontas County. (See, Tr., pp. 24-26).

Mr. Boggess indicated that most county-wide public service districts are named for the county. The reason for Staff's recommendation to change the name is that it removes any confusion, as in this case, where the Upper Greenbrier Public Service District actually includes all of Pocahontas County. The Little Levels and Cheat Mountain Public Service Districts had been created by the Pocahontas County Commission, but never activated. These districts never held any property and never had a project or board members. Since these were pure "paper" public service districts, they should be dissolved since there would be no impact on customers. (Tr., pp. 26-27).

Concerning Staff recommendations five and six, Mr. Boggess explained that, since the Pocahontas County Commission could not find the orders creating the Upper Greenbrier Public Service District and its subsequent expansion to include the Town of Durbin, the Pocahontas County Commission created documents nunc pro tunc to reflect these actions. An affidavit indicated that the original documents had been seen by Mr. Walt Helmick, an earlier President of the Pocahontas County Commission, who signed the affidavit. Mr. Boggess indicated that there are facilities in place in the current Upper Greenbrier Public Service District for providing water service, but he did not know if the present or any proposed facilities are adequate to serve the entire county. He was aware of a proposed upgrade of the plant facility to provide expanded service. The East Cass area doesn't have any sewer service now. (Tr., pp. 27-34).

The only indebtedness that the Upper Greenbrier Public Service District has consists of two notes with the Bank of Marlinton, totaling $12,000. He wasn't aware of any bonds that might be outstanding. Mr. Boggess indicated that the Upper Greenbrier Public Service District does not have any prefilings presently at the Commission. He was not aware of the number of water customers served by the Upper Greenbrier Public Service District. Staff Attorney Ronald Robertson stated that the Upper Greenbrier Public Service District has incurred long-term indebtedness with the Rural Economic Community Development Service (RECD) to fund line replacement and other improvements. This indebtedness was approved in P.S.C. Case No. 94-0775-PWD-CN. (See, Tr., pp. 34-37).

Mr. Dana Moyers further testified that the County Commission has no objection to the change in the public service district's name. However, the Pocahontas County Commission has some reservations about Staff's recommendation regarding limiting sewer service to the East Cass area, as the Pocahontas County Commission wants to have the ability to provide sewer service throughout the county where it is necessary and it can meet the engineering, financial and statutory requirements. Mr. Moyers explained that the East Cass area consists of approximately 40 residents and approximately half of these are in the flood plain, which recently experienced a flood. This area has been affected by the two floods that have hit the region. Mr. Moyers explained that FEMA has informed the Pocahontas County Commission about a mitigation program and the Pocahontas County Commission is completing the application for an East Cass mitigation

program. Under such a program, one of the available options is relocation, where the individual residents would be bought out and would be relocated, either in mass to keep the community together or the individual could move to any number of areas that are flood proof. In addition, the residents of East Cass could raise the foundations of their homes and stay where they are or do nothing. Since the application deadline isn't until November 30, 1997, the Pocahontas County Commission doesn't know what will be the ultimate fate for this community. (Tr., pp. 38-41).

The County Commission has offered to assist the East Cass residents by providing property, either giving property that it owns or trying to find a suitable parcel of land so that the community could stay together. However, Mr. Moyers did not feel that the County Commission could find thirty pieces of property. Even if it could, it would be difficult through the existing funding sources to put in thirty septic systems or thirty wells. The Upper Greenbrier Public Service District does provide sewer service to the community of Frank and the Town of Durbin and it is the Pocahontas County Commission's desire to be able to provide sewer service to the East Cass area, in addition to these other serviced areas. Therefore, Mr. Moyers testified that the Pocahontas County Commission opposes the Staff recommendation to limit its ability to provide sewer service to the East Cass area, as it does not want to limit itself because there may be other areas of the county that perhaps could be in the same position as East Cass, considering flooding situations and the growing tourism-based economy. The Pocahontas County Commission does not know what the demands are going to be in that area or the area of the ski resort and resort community, as well as other communities. He pointed out that there is a community in Buckeye, where there is a need for water and sewer service. Mr. Moyers believes that other communities will also step forward, at which time the County Commission will have to look at the numbers to see if there are enough people to pay for such a system. (See, Tr., pp. 41-45).

Mr. John Leyzorek made a sworn statement as an Intervenor in this action. Mr. Leyzorek represented that, at the hearings held on this matter, the public comment has been overwhelming opposed to the idea, although there were some who testified in favor. He did not believe that it is a good idea to create a public entity with powers such as eminent domain without a pressing immediate need, although he admitted that, in some areas, there may be a need. He did not believe that it was good to cover the entire county, which is lightly populated, with a "bureaucratic umbrella" and this seemed to him to be potentially dangerous and certainly unnecessary. Mr. Leyzorek pointed out that West Virginia Code §16-13A-2(g) provides that no expansion of a public service district may occur if existing or proposed facilities are not adequate to serve the proposed area. He believed that the implication of the law is that, if an area for a public service district is proposed, there needs to be facilities which can service the entire area and he did not see that there were such facilities or, to his knowledge, any plans to build any facilities to serve the entire county area. Intervenor's Exhibit No. 1 was received and introduced into evidence. (Tr., pp. 45-52).

With the testimony of Mr. Leyzorek, no further evidence was presented and the case was submitted for a decision.

A procedural schedule was established for the submission of briefs and reply briefs by the parties. No briefs were submitted by the parties in this case. (See, Tr., pp. 37-55; case file generally).

DISCUSSION

In its petition submitted for Public Service Commission approval, in accordance with West Virginia Code §16-13A-2, the Pocahontas County Commission requested that its following actions be approved:

1. The expansion of the Upper Greenbrier Public Service District into a county-wide public sewer and water district to include all of Pocahontas County, excluding the corporate limits of the Towns of Marlinton and Hillsboro, and certain tracts of land held by Intrawest, commonly known as Snowshoe and Silver Creek Resorts;

2. The nunc pro tunc creation of the Upper Greenbrier Public Service District and its subsequent expansion to include the Town of Durbin;

3. The dissolution of the Little Levels and Cheat Mountain Public Service Districts; and

4. The change of the name of the Upper Greenbrier Public Service District to the Pocahontas County Public Service District.

After a review of this petition, Commission Staff recommended (1) approval of a county-wide district for water service, excluding the corporate limits of the Towns of Marlinton and Hillsboro and the Snowshoe and Silver Creek Resorts; (2) that the sewer district be limited to the East Cass area of Pocahontas County; (3) approval of the change in the name of the Upper Greenbrier Public Service District to the Pocahontas County Public Service District; (4) the dissolution of the Little Creek and Cheat Mountain Public Service Districts; and (5) approval of the nunc pro tunc creation of the Upper Greenbrier Public Service District and its subsequent expansion to include the Town of Durbin.

Mr. Dana Moyers, President of the Pocahontas County Commission, expressed the County Commission's objection to the sewer district being limited to the East Cass area. He explained that this area has about 40 residents and has been recently flooded. Because of the flooding, the Pocahontas County Commission is applying to FEMA for a mitigation program for the East Cass area, which could result in this community being moved to a new location out of the flood plain. The Pocahontas County Commission took the action to create county-wide water and sewer districts in order to give it the flexibility to meet the needs of Pocahontas County, which has a dynamic tourism-based economy. This action would enable the Pocahontas County Commission to expand the infrastructure to provide water and sewer service to those areas in which the service is now inadequate.

Upon consideration of all of the above, the Administrative Law Judge is of the opinion that, although the County Commission objects to being limited to only providing sewer service to the East Cass area, the Staff

recommendation has the best interests of the County Commission in mind, since Staff is reluctant to recommend creation of a large sewer district that gives more exposure for possible action by the DEP or USEPA that could expose the Pocahontas County Commission to potential liability to correct problems that might develop in the future. Although the future of the East Cass area may be in doubt, since this area does not have sewer service, it is reasonable to agree with Staff as to this limitation. If, in the future, other areas of need develop for sewer service, the County Commission can seek authority to serve these areas and keep the potential liability to only the areas of actual need. The creation of the county-wide water district does not pose the same liability problems as sewer and it will be approved. Therefore, different treatment of the two requests is appropriate.

In this present case, since there is not a metes and bounds description of the sewer district proposed by Staff, the expansion of the sewer district must be disapproved until the Pocahontas County Commission has an appropriate description of the sewer district proposed for the East Cass area and approved by separate Pocahontas County Commission order.

The Administrative Law Judge is of the opinion that, since the Little Levels and Cheat Mountain Public Service Districts were never activated and do not have customers, it is reasonable to approve the dissolution of these two public service districts.

Since a former president of the Pocahontas County Commission, Mr. Walt Helmick, signed an affidavit that he had seen the missing documents creating the Upper Greenbrier Public Service District and its subsequent inclusion of the Town of Durbin, the Pocahontas County Commission's nunc pro tunc creation of these documents should be approved to provide a record of these actions.

The Staff recommendation for approval of the name change of the Upper Greenbrier Public Service District to become the Pocahontas County Public Service District is reasonable to eliminate confusion, since the Upper Greenbrier Public Service District water utility will include all of Pocahontas County. Also, now is the time to change the name when the county-wide public service district is created and new invoices will need to be printed by the District to bill its customers.

FINDINGS OF FACT

1. On October 1, 1996, April 24, 1997, and May 6, 1997, the Pocahontas County Commission issued orders taking various actions regarding the Upper Greenbrier Public Service District, the Little Levels Public Service District and the Cheat Mountain Public Service District. (See, petition).

2. On September 9, 1997, Staff Attorney Ronald E. Robertson filed the Final Joint Staff Memorandum, to which was attached the Further Final Internal Memorandum of Mr. James W. Boggess, Utilities Analyst II, Water and Wastewater Division, in which Staff recommended: 1) approval of a county-wide public service district for water to exclude the corporate limits of Marlinton, Hillsboro and the Snowshoe area; 2) approval of a sewer public service district limited to the East Cass area; 3) that the name of the Upper Greenbrier Public Service District be changed to Pocahontas County

Public Service District; 4) that the Little Levels and Cheat Mountain Public Service Districts be dissolved; 5) and that approval be granted to the nunc pro tunc creation of the Upper Greenbrier Public Service District and its subsequent expansion to include the Town of Durbin. (See, Final Joint Staff Memorandum filed September 9, 1997).

3. Mr. Dana Moyers, President of the Pocahontas County Commission, testified that the Pocahontas County Commission decided that it needed to expand the boundaries of the Upper Greenbrier Public Service District to give it the ability to expand the Pocahontas County infrastructure in order to address the inadequacies in the water and sewer service being provided in certain areas. (See, Tr., pp. 5-11).

4. The East Cass area consists of 40 residents and one-half of these live in a flood plain. The East Cass area has no sewer service at this time. (See, Tr., pp. 34, 40).

5. The Pocahontas County Commission has applied to FEMA for a mitigation program for the East Cass area, which, if approved, would provide two options of either flood proofing the houses in the area or complete relocation of the community, to a new location out of the flood plain in Pocahontas County. (See, Tr., p. 40).

6. Mr. James Boggess testified that Staff was reluctant to recommend a county-wide sewer authority and incorporate a large area within the sewer boundaries which could possibly create a liability for the public service district in the future if the DEP or USEPA should order improvements, since a county-wide sewer district would be the legal entity to make the changes. (See, Tr., pp. 24, 36).

CONCLUSIONS OF LAW

The Administrative Law Judge is of the opinion and finds that:

1. Since the Little Levels and Cheat Mountain Public Service Districts were never activated by the Pocahontas County Commission and have no board members or customers, it is reasonable to dissolve these public service districts.

2. Due to the potential future liability of the Pocahontas County Commission arising from action by the DEP or USEPA, it is reasonable to deny the Pocahontas County's request to create a county-wide sewer district and to adopt the Staff recommendation that the expansion of the sewer district be limited to the East Cass area. However, since there is no metes and bounds or other legal description of the sewer district proposed by Staff, the current order of the Pocahontas County Commission creating the county-wide sewer district should be disapproved and the Pocahontas County Commission should have a metes and bounds or other legal description of the Staff's proposed sewer district prepared and approved by separate County Commission order.

3. Since the original documents creating the Upper Greenbrier Public Service District and expanding it to include the town of Durbin were observed by Mr. Walt Helmick, the nunc pro tunc action of the Pocahontas

County Commission creating the Upper Greenbrier Public Service District and its subsequent inclusion of the Town of Durbin should be approved.

4. Since the Pocahontas County Commission has determined that there are areas of need for water service throughout Pocahontas County, it is reasonable to approve a county-wide water district to give the Pocahontas County Commission the ability to meet these needs.

ORDER

IT IS, THEREFORE, ORDERED that the October 1, 1996, April 24, 1997, and May 6, 1997 orders of the Pocahontas County Commission, be, and the same hereby are, approved, insofar as they provide for: 1) the expansion of the Upper Greenbrier Public Service District to include a county-wide public water district, excluding the corporate limits of the Town of Marlinton and Hillsboro and certain tracts of land held by Intrawest, commonly known as Snowshoe and Silver Creek Resorts; the change in the name of the Upper Greenbrier Public Service District to the Pocahontas County Public Service District; the nunc pro tunc creation of the Upper Greenbrier Public Service District and its subsequent expansion to include the Town of Durbin; and the dissolution of the Little Levels and Cheat Mountain Public Service Districts.

IT IS FURTHER ORDERED that the October 1, 1996, and May 6, 1997 orders of the Pocahontas County Commission, creating a county-wide public sewer district, be, and the same hereby are, disapproved.

The Executive Secretary is hereby ordered to serve a copy of this order upon the Commission by hand delivery, and upon all parties of record by United States Certified Mail, return receipt requested.

Leave is hereby granted to the parties to file written exceptions supported by a brief with the Executive Secretary of the Commission within fifteen (15) days of the date this order is mailed. If exceptions are filed, the parties filing exceptions shall certify to the Executive Secretary that all parties of record have been served said exceptions.

If no exceptions are so filed this order shall become the order of the Commission, without further action or order, five (5) days following the expiration of the aforesaid fifteen (15) day time period, unless it is ordered stayed or postponed by the Commission.

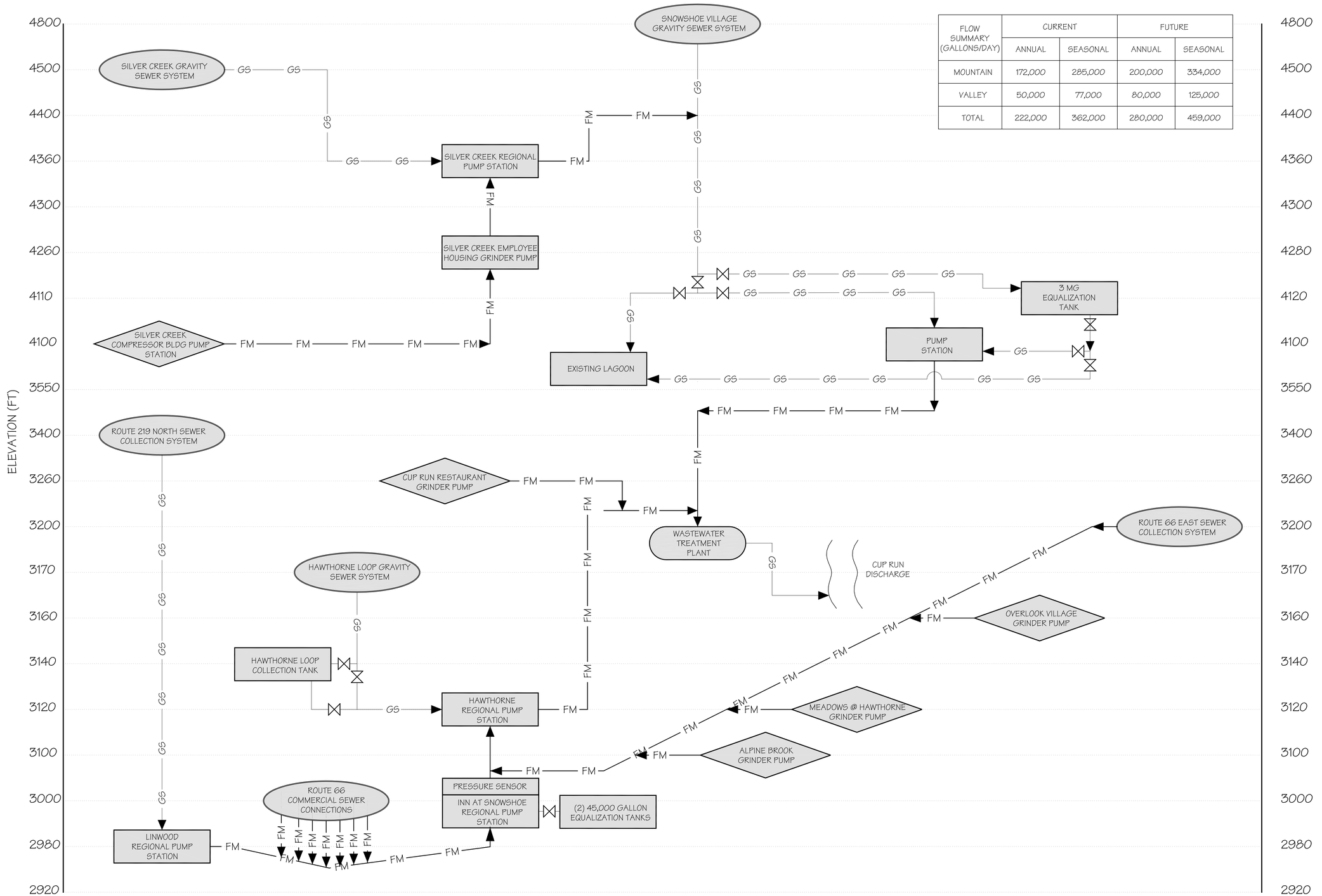
Any party may request waiver of the right to file exceptions to an Administrative Law Judge's Order by filing an appropriate petition in writing with the Secretary. No such waiver will be effective until approved by order of the Commission, nor shall any such waiver operate to make any Administrative Law Judge's Order or Decision the order of the Commission sooner than five (5) days after approval of such waiver by the Commission.

Robert W. Glass
Administrative Law Judge

RWG:pst

ATTACHMENT D

PROCESS FLOW DIAGRAM



FLOW SUMMARY (GALLONS/DAY)	CURRENT		FUTURE	
	ANNUAL	SEASONAL	ANNUAL	SEASONAL
MOUNTAIN	172,000	285,000	200,000	334,000
VALLEY	50,000	77,000	80,000	125,000
TOTAL	222,000	362,000	280,000	459,000

POCAHONTAS CO. REGIONAL SEWER SYSTEM SCHEMATIC

CHANGE ORDER

PROJECT
Regional Sewer Project
WV SRF NO. C-544415
Contract #2
Pump Stations

OWNER
Pocahontas County
Public Service District
HC 63, Box 122
Frank, WV 24920
(304) 456-3127

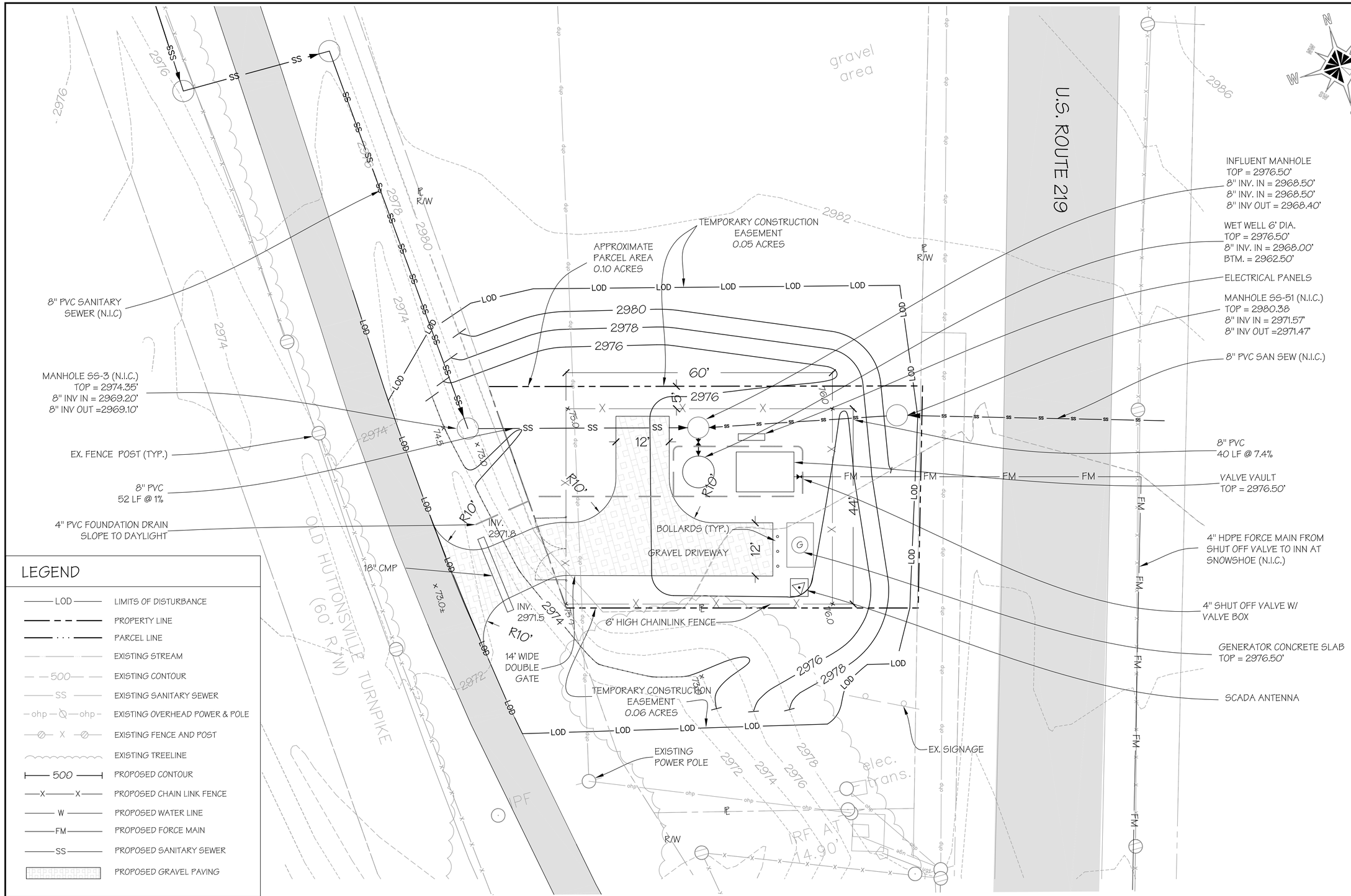
ENGINEER
Waste Water Management, Inc.
2820 Dorr Avenue, Suite 200
Fairfax, VA 22031
(703) 846-0098

DAVID J. RISH
REGISTERED
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
12/31/15

Scale:	N.T.S
Project:	1224
Original:	12/20/2013
Revised:	05/10/2016
Sheet:	PS-00-GN-01

ATTACHMENT E

PLOT PLAN



LEGEND

- LOD — LIMITS OF DISTURBANCE
- PROPERTY LINE
- PARCEL LINE
- EXISTING STREAM
- 500 — EXISTING CONTOUR
- SS — EXISTING SANITARY SEWER
- ohp — EXISTING OVERHEAD POWER & POLE
- X — EXISTING FENCE AND POST
- EXISTING TREELINE
- 500 — PROPOSED CONTOUR
- X — PROPOSED CHAIN LINK FENCE
- W — PROPOSED WATER LINE
- FM — PROPOSED FORCE MAIN
- SS — PROPOSED SANITARY SEWER
- PROPOSED GRAVEL PAVING

SITE PLAN

SCALE: 1" = 10'-0"

10 5 0 10 20 30

SCALE IN FEET

* CONTOUR INTERVAL 2 FT

LINWOOD PUMP STATION SITE LAYOUT

BIDDING DOCUMENT - NOT FOR CONSTRUCTION

Regional Sewer Project
WV SRF NO. C-544415
Contract #2
Pump Stations
PROJECT

Pocahontas County
Public Service District
HC 63, Box 122
Frank, WV 24920
(304) 456-3127
OWNER

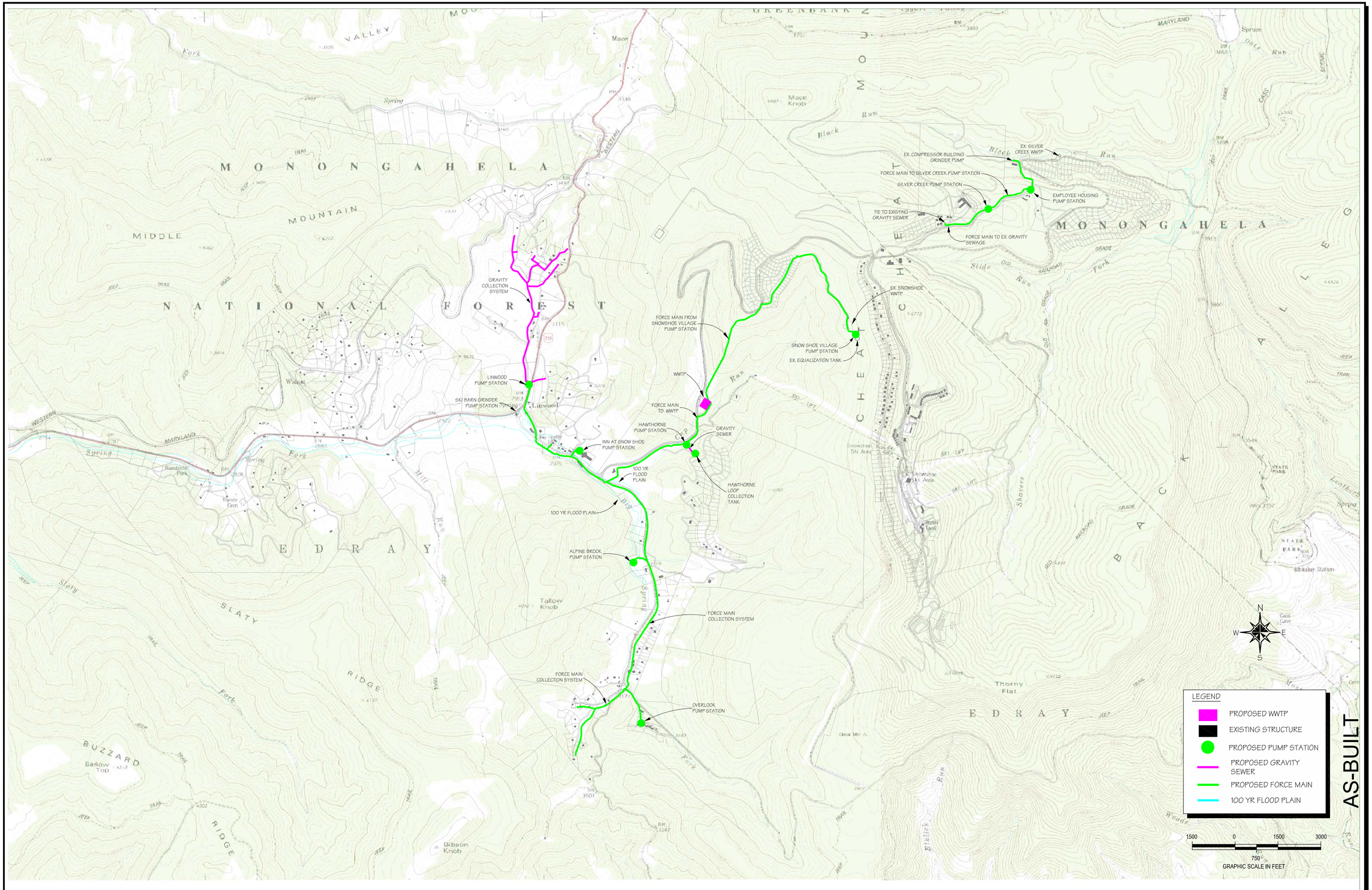
Waste Water Management, Inc.
2820 Dorr Avenue, Suite 200
Fairfax, VA 22031
(703) 846-0098
ENGINEER

DAVID J. RIGBY
REGISTERED
#7051
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER

Scale:	AS SHOWN
Project:	1224
Original:	12/20/2013
Revised:	02/28/2014
Sheet:	PS-01-C-01

ATTACHMENT F

AREA MAP



AS-BUILT

REGIONAL SEWER PROJECT OVERALL MAP

Regional Sewer Project
WV SRF NO. C-544415
Regional Sewer Project Overall Map
PROJECT

Pocahontas County
Public Service District
HC 63, Box 122
Frank, WV 24920
(304) 456-3127
OWNER

Waste Water Management, Inc.
2820 Dorr Avenue, Suite 200
Fairfax, VA 22031
(703) 846-0098
ENGINEER

DAVID J. RIGBY
REGISTERED
#7051
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER

Scale:	AS SHOWN
Project:	1224
Original:	12/20/2013
Revised:	02/17/2017
Sheet:	G-0

ATTACHMENT G

EQUIPMENT DATA SHEETS
AND
REGISTRATION SECTION
APPLICABILITY FORM

G65-C REGISTRATION APPLICATION FORMS

Location 01 – Linwood Pump Station

General Permit G65-C Registration
Section Applicability Form

General Permit G65-C was developed to allow qualified registrants to seek registration for emergency generator(s).

General Permit G65-C allows the registrant to choose which sections of the permit that they wish to seek registration under. Therefore, please mark which sections that you are applying for registration under. Please keep in mind, that if this registration is approved, the issued registration will state which sections will apply to your affected facility.

Section 5	Reciprocating Internal Combustion Engines (R.I.C.E.)*	☐
Section 6	Tanks	☐
Section 7	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40CFR60 Subpart IIII)	☒
Section 8	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (40CFR60 Subpart JJJJ)	☐

*** Affected facilities that are subject to Section 5 may also be subject to Sections 7 or 8. Therefore, if the applicant is seeking registration under both sections, please select both.**

EMERGENCY GENERATOR ENGINE DATA SHEET
LOCATION 01 – 50 KW SIZE

Source Identification Number[1]		EG-01	
Engine Manufacturer and Model		Cummins 4BTAA3.3-G7	
Manufacturer's Rated bhp/rpm		99	
Source Status[2]		NS	
Date Installed/Modified/Removed[3]		3/01/2017	
Engine Manufactured/Reconstruction Date[4]			
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart IIII? (Yes or No)[5]		Yes	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJ? (Yes or No)[6]		No	
Engine, Fuel and Combustion Data	Engine Type[7]	LB4S	
	APCD Type[8]	Engine Design Modification	
	Fuel Type[9]	2FO	
	H_2S (gr/100 scf)	N/A	
	Operating bhp/rpm	82.5	
	BSFC (Btu/bhp-hr)		
	Fuel throughput (ft^3/hr)	N/A	
	Fuel throughput ($MMft^3$/yr)	N/A	
	Operation (hrs/yr)	500	
Reference[10]	Potential Emissions[11]	lbs/hr	tons/yr
MD	NO_X	0.582	0.146
MD	CO	0.136	0.034
MD	VOC	0.018	0.005
N/A	SO_2	0.018	0.005
MD	PM_{10}	0.053	0.013
MD	Formaldehyde	0.136	0.034

1. Enter the appropriate Source Identification Number for each emergency generator. Generator engines should be designated EG-1.

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 spark 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*.

Specification sheet

Diesel generator set

50 kW - 60 kW
EPA emissions stationary standby

Description

Cummins Power Generation generator sets are fully integrated power generation systems providing optimum performance, reliability and versatility for stationary standby applications.

Features

Cummins heavy-duty engine - Rugged 4-cycle, liquid-cooled, industrial diesel engine delivers reliable power, low emissions and fast response to load changes.

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads and fault clearing short-circuit capability.

Control system - The PowerCommand® 1.1 electronic control is standard equipment and provides total generator set system integration including automatic remote starting/stopping, precise frequency and voltage regulation, alarm and status message display, output metering, auto-shutdown at fault detection and NFPA 110 Level 1 compliance.

Cooling system - Standard cooling package provide reliable running at up to 50 °C (122 °F) ambient temperature.

Enclosures - The aesthetically appealing enclosure incorporates special designs that deliver one of the quietest generators of its kind. Aluminum material plus durable powder coat paint provides the best anti-corrosion performance. The generator set enclosure has been evaluated to withstand 180 MPH wind loads in accordance with ASCE7-10. The intelligent design has removable panels and service doors to provide easy access for service and maintenance.

Fuel tanks - Two dual wall sub-base fuel tank series are offered as optional features, providing economical and flexible solutions to meet extensive code requirements on diesel fuel tanks.

NFPA - The generator set accepts full rated load in a single step in accordance with NFPA 110 for Level 1 systems.

Warranty and service - Backed by a comprehensive warranty and worldwide distributor and dealer network.

	Standby rating 60 Hz		Prime Rating 60 Hz		Data sheets 60 Hz
Model	kW	kVA	kW	kVA	
C50 D6	50.0	62.5	45.0	56.25	NAD-5863
C60 D6	60.0	75.0	54.0	67.50	NAD-5864

Generator set specifications

Governor regulation class	TBC
Voltage regulation, no load to full load	± 1.0%
Random voltage variation	± 1.0%
Frequency regulation	Isochronous
Random frequency variation	TBD
Radio frequency emissions compliance	FCC code Title 47 Part 15 Class B

Engine specifications

Design	Turbocharged and charge air cooled
Bore	95.0 mm (3.74 in)
Stroke	115.0 mm (4.53 in)
Displacement	3.26 litres (199 in^3)
Cylinder block	Cast iron, in-line, 4 cylinder
Battery capacity	550 amps at ambient temperature of 0 °F to 32 °F (-18 °C to 0 °C)
Battery charging alternator	50 amps
Starting voltage	12 volt, negative ground
Fuel system	Direct injection, number 2 diesel fuel, fuel filter, electric fuel shut off
Fuel filter	Single element, 10 micron filtration, spin-on fuel filter with water separator
Air cleaner type	Dry replaceable element
Lube oil filter type(s)	Spin-on, full flow
Standard cooling system	50 ºC (122 °F) ambient cooling system
Rated speed	1800 rpm

Alternator specifications

Design	Brushless, 4 pole, drip proof, revolving field
Stator	2/3 pitch
Rotor	Direct coupled, flexible disc
Insulation system	Class H per NEMA MG1-1.65
Standard temperature rise	120 ºC (248 °F) standby
Exciter type	Torque match (shunt) with PMG as option
Alternator cooling	Direct drive centrifugal blower
AC waveform total harmonic distortion	< 5% no load to full linear load, < 3% for any single harmonic
Telephone influence factor (TIF)	< 50 per NEMA MG1-22.43
Telephone harmonic factor (THF)	3%

Available voltages

Single phase	3 phase			
• 120/240	• 120/208	• 120/240 delta	• 277/480	• 347/600

Note: Consult factory for other voltages.

Generator set options

Fuel system
- ☐ Basic fuel tanks
- ☐ Regional fuel tanks

Engine
- ☐ Engine air cleaner – normal or heavy duty
- ☐ Shut down – low oil pressure
- ☐ Extension – oil drain
- ☐ 120 V 1000 W coolant heater

Alternator
- ☐ One size up alternator
- ☐ PMG
- ☐ Alternator heater, 120 V

Control
- ☐ AC output analog meters (bargraph)
- ☐ Stop switch – emergency
- ☐ Auxiliary output relays (2)
- ☐ Auxiliary configurable signal inputs (8) and relay outputs (8)

Electrical
- ☐ Single circuit breaker
- ☐ Dual circuit breakers

Enclosure
- ☐ Aluminum enclosure Sound Level 1 or Level 2, with muffler installed, sandstone or green color
- ☐ Open set

Cooling system
- ☐ Shutdown – low coolant level
- ☐ Warning – low coolant level
- ☐ Extension – coolant drain
- ☐ Coolant heater – 120 V, 1 Ph

Exhaust system
- ☐ Exhaust connector – NPT

Generator set application
- ☐ Battery rack
- ☐ Battery rack, heavy duty

Warranty
- ☐ Base warranty – 2 year, 400 hour, standby
- ☐ Standby, 3 year, 900 hour, parts
- ☐ Standby, 5 year, 1500 hour, parts
- ☐ Standby, 3 year, 900 hour, parts and labor
- ☐ Standby, 5 year, 1500 hour, parts and labor
- ☐ Standby, 3 year, 900 hour, parts, labor and travel
- ☐ Standby, 5 year, 1500 hour, parts, labor and travel

Note: Some options may not be available on all models - consult factory for availability.

Generator set accessories

- ☐ Coolant heater
- ☐ Extreme cold weather components
- ☐ HMI211RS in-home display, including pre-configured 12” harness
- ☐ HMI211 remote display, including pre-configured 12”harness
- ☐ HMI220 remote display
- ☐ Auxiliary output relays (2)
- ☐ Auxiliary configurable signal inputs (8) and relay outputs (8)
- ☐ Annunciator – RS485
- ☐ Remote monitoring device – PowerCommand 500
- ☐ Battery charger – stand-alone, 12 V
- ☐ Circuit breakers
- ☐ Enclosure Sound Level 1 to Sound Level 2 upgrade kit
- ☐ Enclosure paint touch up kit
- ☐ Mufflers – industrial, residential or critical
- ☐ Alternator PMG
- ☐ Alternator heater
- ☐ Maintenance and service kit
- ☐ Engine lift kit

☐ Various fuel tanks and accessories

Control system PowerCommand 1.1

PowerCommand control is an integrated generator set control system providing voltage regulation, engine protection, operator interface and isochronous governing (optional). Major features include:

- Battery monitoring and testing features and smart starting control system.
- Standard PCCNet interface to devices such as remote annunciator for NFPA 110 applications.
- Control boards potted for environmental protection.
- Control suitable for operation in ambient temperatures from -40 °C to +70 °C (-40 °F to +158 °F) and altitudes to 5000 meters (13,000 feet).
- Prototype tested; UL, CSA, and CE compliant.
- InPower™ PC-based service tool available for detailed diagnostics.

Operator/display panel

- Manual off switch
- Alpha-numeric display with pushbutton access for viewing engine and alternator data and providing setup, controls and adjustments (English or international symbols)
- LED lamps indicating generator set running, not in auto, common warning, common shutdown, manual run mode and remote start
- Suitable for operation in ambient temperatures from -40 °C to +70 °C
- Bargraph display (optional)

AC protection

- Over current warning and shutdown
- Over and under voltage shutdown
- Over and under frequency shutdown
- Over excitation (loss of sensing) fault
- Field overload

Engine protection

- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- High, low and weak battery voltage warning
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Redundant start disconnect
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown

Alternator data

- Line-to-line and Line-to-neutral AC volts
- 3-phase AC current
- Frequency
- Total kVa

Engine data

- DC voltage
- Lube oil pressure
- Coolant temperature
- Engine speed

Other data

- Generator set model data
- Start attempts, starts, running hours
- Fault history
- RS485 Modbus® interface
- Data logging and fault simulation (requires InPower service tool)

Digital governing (optional)

- Integrated digital electronic isochronous governor
- Temperature dynamic governing

Digital voltage regulation

- Integrated digital electronic voltage regulator
- 2-phase line-to-line sensing
- Configurable torque matching

Control functions

- Time delay start and cooldown
- Cycle cranking
- PCCNet interface
- (2) Configurable inputs
- (2) Configurable outputs
- Remote emergency stop
- Automatic transfer switch (ATS) control
- Generator set exercise, field adjustable

Options

☐ Auxiliary output relays (2)
☐ Remote annunciator with (3) configurable inputs and (4) configurable outputs
☐ PMG alternator excitation
☐ PowerCommand 500/550 for remote monitoring and alarm notification (accessory)
☐ Auxiliary, configurable signal inputs (8) and configurable relay outputs (8)
☐ Digital governing
☐ AC output analog meters (bargraph)
- Color-coded graphical display of:
  - 3-phase AC voltage
  - 3-phase current
  - Frequency
  - kVa

☐ Remote operator panel

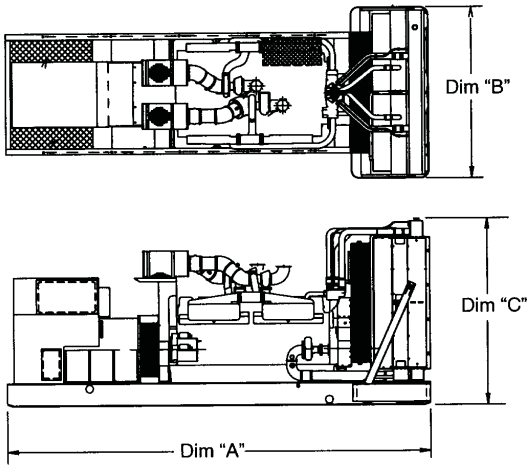
Ratings definitions

Emergency standby power (ESP):
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-time running power (LTP):
Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

Prime power (PRP):
Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base load (continuous) power (COP):
Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.



This outline drawing is for reference only. See respective model data sheet for specific model outline drawing number.

Do not use for installation design

Model	Dim "A" mm (in.)	Dim "B" mm (in.)	Dim "C" mm (in.)	Set Weight* dry kg (lbs)	Set Weight* wet kg (lbs)
			Open Set		
C50 D6	2224 (87.5)	864 (34)	1121 (44.13)	648 (1434)	669 (1480)
C60 D6	2224 (87.5)	864 (34)	1121 (44.13)	701 (1550)	721 (1596)
			Sound Attenuated Enclosure Level 1		
C50 D6	2384 (93.8)	864 (34)	1156 (45.5)	695 (1538)	716 (1584)
C60 D6	2384 (93.8)	864 (34)	1156 (45.5)	748 (1654)	768 (1700)
			Sound Attenuated Enclosure Level 2		
C50 D6	2629 (103.5)	864 (34)	1156 (45.5)	714 (1580)	735 (1626)
C60 D6	2629 (103.5)	864 (34)	1156 (45.5)	767 (1696)	787 (1742)

* Weights represent a set with standard features. See outline drawings for weights of other co

See below drawings for overall shipping weight and dimensions

Codes and standards

Codes or standards compliance may not be available with all model configurations – consult factory for availability.

	The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Cummins Power Generation products bearing the PTS symbol meet the prototype test requirements of NFPA 110 for Level 1 systems.		This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.
			The generator set is available Listed to UL 2200, Stationary Engine Generator Assemblies.
International Building Code	The generator set is certified for seismic application in accordance with International Building Code (IBC) 2012.		All low voltage models are CSA certified to product class 4215-01.
		U.S. EPA	Engine certified to U.S. EPA SI Stationary Emission Regulation 40 CFR, Part 60.

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

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NAS-5873b-EN (10/15)

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Generator set data sheet

Model: C50 D6
Frequency: 60 Hz
Fuel type: Diesel
KW rating: 50 standby
45 prime
Emissions level: EPA Emission Stationary Standby

Exhaust emission data sheet:	**EDS-1186**
Exhaust emission compliance sheet:	**EPA-1255**
Sound performance data sheet:	**MSP-1184**
Cooling performance data sheet:	**MCP-266**
Prototype test summary data sheet:	**TBD**

Fuel consumption

	Standby				Prime			
	kW (kVA)				kW (kVA)			
Ratings	50 (62.5)				45 (56.25)			
Load	**1/4**	**1/2**	**3/4**	**Full**	**1/4**	**1/2**	**3/4**	**Full**
US gph	1.49	2.38	3.30	4.25	1.35	2.16	3.00	3.86
L/hr	5.64	9.01	12.49	16.09	5.11	8.18	11.36	14.61

Engine

	Standby rating	Prime rating
Engine manufacturer	Cummins Inc.	
Engine model	4BTAA3.3-G7	
Configuration	Cast iron, in-line, 4 cylinder	
Aspiration	Turbocharged and charge air cooled	
Gross engine power output, kWm (bhp)	73.8 (99)	67.1 (90)
BMEP at set rated load, kPa (psi)	1285.87 (186.5)	1167.9 (169.4)
Bore, mm (in)	95 (3.74)	
Stroke, mm (in)	115 (4.53)	
Rated speed, rpm	1800	
Piston speed, m/s (ft/min)	6.9 (1359)	
Compression ratio	17.3:1	
Lube oil capacity, L (qt)	7.9 (8.35)	
Overspeed limit, rpm	2250	

Fuel flow

Maximum fuel flow, L/hr (US gph)	56.39 (14.9)
Maximum fuel inlet restriction with clean filter, mm Hg (in Hg)	58.42 (2.3)
Maximum return restriction, mm Hg (in Hg)	375.92 (14.8)

Air

	Standby rating	Prime rating
Combustion air, m3/min (scfm)	5.26 (186)	5.09 (180)
Maximum air cleaner restriction with clean filter, kPa (in H2O)	1.25 (5)	
Alternator cooling air, m3/min (cfm)	16.84 (595)	

Exhaust

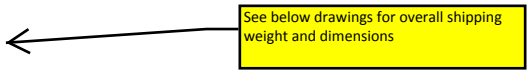
Exhaust flow at set rated load, m^3/min (cfm)	12.85 (454)	12 (424)
Exhaust temperature, °C (°F)	444 (831)	419.4 (787)
Maximum back pressure, kPa (in H_2O)	TBD	TBD
Actual exhaust back pressure with CPG fitted muffler, kPa (in H_2O)	7.8 (31.3)	7.23 (29)

Standard set-mounted radiator cooling

Ambient design, ° C (° F)	50 (122)	
Fan load, kW_m (HP)	2.83 (3.8)	
Coolant capacity (with radiator), L (US Gal)	14.76 (3.9)	
Cooling system air flow, m^3/min (scfm)	93.16 (3290)	
Total heat rejection, MJ/min (Btu/min)	2.56 (2431.7)	2.347 (2225)
Maximum cooling air flow static restriction, kPa (in H_2O)	0.12 (0.5)	

Weights[2]

Unit dry weight kgs (lbs)	698 (1538)
Unit wet weight kgs (lbs)	719 (1584)



Notes:
[1] For non-standard remote installations contact your local Cummins Power Generation representative.
[2] Weights represent a set with standard features. See outline drawing for weights of other configurations.

Derating factors

Standby	Engine power available up to 1600m (5,512ft) and ambient temperatures up to 50C (122F). Above these conditions, derate at 6% per 300m (985ft) and 10% per 10C (18F).
Prime	Engine power available up to 3050m (10,000ft) and ambient temperatures up to 40C (104F). Above these conditions, derate at 6% per 300m (985ft) and 11% per 10C (18F).

Ratings definitions

Emergency standby power (ESP):	**Limited-time running power (LTP):**	**Prime power (PRP):**	**Base load (continuous) power (COP):**
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.	Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) is in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.

Alternator data

Standard Alternators		Single phase table	Three phase table			
Maximum temperature rise above 40 °C ambient		120 °C	120 °C	120 °C	120 °C	120 °C
Feature code		B949-2	B946-2	B986-2	B943-2	B952-2
Alternator data sheet number		ADS-582	ADS-581	ADS-581	ADS-581	ADS-581
Voltage ranges		120/240	120/208	120/240	277/480	347/600
Voltage feature code		R104-2	R098-2	R106-2	R002-2	R114-2
Surge kW		57.54	58.33	58.33	58.33	58.33
Motor starting kVA (at 90% sustained voltage)	Shunt	95	119	119	119	119
	PMG	150	181	181	181	181
Full load current amps at standby rating		208	173.68	150.5	75.26	60.2

Optional alternators for improved motor starting capability		Single phase table	Three phase table			
Maximum temperature rise above 40 °C ambient		105 °C	120 °C	120 °C	120 °C	120 °C
Feature code		BB961-2	B958-2	B987-2	B955-2	B964-2
Alternator data sheet number		ADS-583	ADS-582	ADS-582	ADS-582	ADS-582
Voltage ranges		120/240	120/208	120/240	277/480	347/600
Voltage feature code		R104-2	R098-2	R106-2	R002-2	R114-2
Surge kW		59.19	59.39	59.39	59.39	59.39
Motor starting kVA (at 90% sustained voltage)	Shunt	170	212	95	212	212
	PMG	180	225	150	225	225
Full load current amps at standby rating		208	173.68	150.5	75.26	60.2

Notes:
[1] Single phase power can be taken from a three phase generator set at up to 2/3 set rated 3-phase kW at 1.0 power factor. Also see Note 3 below.
[2] The broad range alternators can supply single phase output up to 2/3 set rated 3-phase kW at 1.0 power factor.
[3] The extended stack (full single phase output) and 4 lead alternators can supply single phase output up to full set rated 3-phase kW at 1.0 power factor.

Formulas for calculating full load currents:

Three phase output

$$\frac{kW \times 1000}{Voltage \times 1.73 \times 0.8}$$

Single phase output

$$\frac{kW \times SinglePhaseFactor \times 1000}{Voltage}$$

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

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NAD-5864b-EN (2/16)

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PowerCommand®
1.1 control system

> Specification sheet

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Power Generation

Control system description

The PowerCommand® control system is a microprocessor-based generator set monitoring, metering and control system designed to meet the demands of today's engine driven generator sets. The integration of all control functions into a single control system provides enhanced reliability and performance compared to conventional generator set control systems. These control systems have been designed and tested to meet the harsh environment in which gensets are typically applied.

Features

Easy to view: HMI 211RS for residential use. 128x64 pixel graphic LED backlight LCD.

Easy to use: Tactile buttons for generator set start/stop. Residential standby display for convenient use.

Modbus interface: Eliminates need for MODLON.

Progressive protective functions: Advanced Overcurrent Protection – Generator set monitoring & protection.

Digital voltage regulation: Single phase full wave SCR type regulator compatible with either shunt or PMSG systems.

Digital engine speed governing: Provides isochronous frequency regulation.

12 and 24 VDC battery operation.

Automatic mains failure: Smooth & automatic transfer and re-transfer of load from utility to generator set & vice-versa.

Exerciser clock: Runs generator set exerciser routines for dependability of operation.

Warranty and service: Backed by a comprehensive warranty and worldwide distributor service network.

Certification: Suitable for us on generator sets that are designed, manufactured, tested and certified to relevant UL, NFPA, ISO, IEC Mil Std., CE and CSA standards.

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Power Generation

PowerCommand digital generator set control PCC 1302

Description

The PowerCommand generator set control is suitable for use on a wide range of generator sets in non-paralleling applications. The PowerCommand control is compatible with shunt or PMG excitation style. It is suitable for use with reconnectable or non-reconnectable generators, and it can be configured for any frequency, voltage and power connection from 120-600 VAC line-to-line.

Power for this control system is derived from the generator set starting batteries. The control functions over a voltage range from 8 VDC to 30 VDC.

Features

- 12 and 24 VDC battery operation.
- Digital voltage regulation.
- Digital engine speed governing (where applicable) - Provides isochronous frequency regulation.
- Full authority engine communications (where applicable) - Provides communication and control with the Engine Control Module (ECM).
- Common harnessing - with higher feature Cummins Power Generation controls allows for easy field upgrades.
- Generator set monitoring - Monitors status of all critical engine and alternator functions.
- Digital genset metering (AC and DC).
- Genset battery monitoring system - to sense and warn against a weak battery condition.
- Engine starting - Includes relay drivers for starter, fuel shut off (FSO), glow plug/spark ignition power and switch B+ applications.
- Generator set protection - Protects engine and alternator.
- Advanced serviceability - using InPower™, a PC-based software service tool.
- Environmental protection - The control system is designed for reliable operation in harsh environments. The main control board is a fully encapsulated module that is protected from the elements.
- Exerciser function – Routine exercising of generator set.
- Supports dual fuel control.
- Automatic Mains Failure function built in generator set controller.Modbus interface - for interconnecting to customer equipment.
- Configurable inputs and outputs - Four discrete inputs and two dry contact relay outputs.
- Warranty and service - Backed by a comprehensive warranty and worldwide distributor service network.
- Certifications - Suitable for use on generator sets that are designed, manufactured, tested and certified to relevant UL, NFPA, ISO, IEC, Mil Std., CE and CSA standards.

Base control functions

HMI capability

Operator adjustments - The HMI includes provisions for many set up and adjustment functions.

Generator set hardware data - Access to the control and software part number, generator set rating in KVA and generator set model number is provided from the HMI or InPower.

Data logs - Includes engine run time, controller on time, number of start attempts.

Fault history - Provides a record of the most recent fault conditions with control hours time stamp. Up to 10 events are stored in the control non-volatile memory.

Alternator data

- Voltage (single or three phase line-to-line and line-to-neutral)
- Current (single or three phase)
- KVA (three phase and total)
- Frequency

Engine data

- Starting battery voltage
- Engine speed
- Engine temperature
- Engine oil pressure
- Partial Full Authority Engine (FAE) data (where applicable)

Service adjustments - The HMI includes provisions for adjustment and calibration of generator set control functions. Adjustments are protected by a password. Functions include:

- Engine speed governor adjustments
- Voltage regulation adjustments
- Cycle cranking
- Configurable fault set up
- Configurable output set up
- Meter calibration
- Units of measurement

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Engine control

SAE-J1939 CAN interface to full authority ECMs (where applicable) - Provides data swapping between genset and engine controller for control, metering and diagnostics.

12 VDC/24 VDC battery operations - PowerCommand will operate either on 12 VDC or 24 VDC batteries.

Isochronous governing (where applicable) - Capable of controlling engine speed within +/-0.25% for any steady state load from no load to full load. Frequency drift will not exceed +/-0.5% for a 33 °C (60 °F) change in ambient temperature over an 8 hour period.

Temperature dependent governing dynamics (with electronic governing) - Modifies the engine governing control parameters as a function of engine temperature. This allows the engine to be more responsive when warm and more stable when operating at lower temperature levels.

Remote start mode - Accepts a ground signal from remote devices to automatically start the generator set and immediately accelerate to rated speed and voltage. The remote start signal will also wake up the control from sleep mode. The control can incorporate a time delay start and stop.

Remote and local emergency stop - The control accepts a ground signal from a local (genset mounted) or remote (facility mounted) emergency stop switch to cause the generator set to immediately shut down. The generator set is prevented from running or cranking with the switch engaged. If in sleep mode, activation of either emergency stop switch will wake up the control.

Sleep mode - The control includes a configurable low current draw state to minimize starting battery current draw when the genset is not operating. The control can also be configured to go into a low current state while in auto for prime applications or applications without a battery charger.

Engine starting - The control system supports automatic engine starting. Primary and backup start disconnects are achieved by one of three methods: magnetic pickup, battery charging alternator feedback or main alternator output frequency. The control also supports configurable glow plug control when applicable.

Cycle cranking - Configurable for the number of starting cycles (1 to 7) and duration of crank and rest periods. Control includes starter protection algorithms to prevent the operator from specifying a starting sequence that might be damaging.

Time delay start and stop (cooldown) - Configurable for time delay of 0-300 seconds prior to starting after receiving a remote start signal and for time delay of 0-600 seconds prior to shut down after signal to stop in normal operation modes. Default for both time delay periods is 0 seconds.

Alternator control

The control includes an integrated line-to-line sensing voltage regulation system that is compatible with shunt or PMG excitation systems. The voltage regulation system is full wave rectified and has an SCR output for good motor starting capability. Major system features include:

Digital output voltage regulation - Capable of regulating output voltage to within +/-1.0% for any loads between no load and full load. Voltage drift will not exceed +/-1.5% for a 40 ºC (104 ºF) change in temperature in an eight hour period. On engine starting or sudden load acceptance, voltage is controlled to a maximum of 5% overshoot over nominal level.

The automatic voltage regulator feature can be disabled to allow the use of an external voltage regulator.

Torque-matched V/Hz overload control - The voltage roll-off set point and rate of decay (i.e. the slope of the V/Hz curve) is adjustable in the control.

Protective functions

On operation of a protective function the control will indicate a fault by illuminating the appropriate status LED on the HMI, as well as display the fault code and fault description on the LCD. The nature of the fault and time of occurrence are logged in the control. The service manual and InPower service tool provide service keys and procedures based on the service codes provided. Protective functions include:

Battle short mode

When enabled and the *battle short* switch is active, the control will allow some shutdown faults to be bypassed. If a bypassed shutdown fault occurs, the fault code and description will still be annunciated, but the genset will not shutdown. This will be followed by a *fail to shutdown fault*. Emergency stop shutdowns and others that are critical for proper operation are not bypassed. Please refer to the Control Application Guide or Manual for list of these faults.

Configurable alarm and status inputs

The control accepts up to four alarm or status inputs (configurable contact closed to ground or open) to indicate a configurable (customer-specified) condition. The control is programmable for warning, shutdown or status indication and for labeling the input.

Emergency stop

Annunciated whenever either emergency stop signal is received from external switch.

General engine protection

Low and high battery voltage warning - Indicates status of battery charging system (failure) by continuously monitoring battery voltage.

Weak battery warning - The control system will test the battery each time the generator set is signaled to start and indicate a warning if the battery indicates impending failure.

Fail to start (overcrank) shutdown - The control system will indicate a fault if the generator set fails to start by the completion of the engine crack sequence.

Fail to crank shutdown - Control has signaled starter to crank engine but engine does not rotate.

Cranking lockout - The control will not allow the starter to attempt to engage or to crank the engine when the engine is rotating.

Hydro mechanical fuel system engine protection

Overspeed shutdown - Default setting is 115% of nominal.

Low lube oil pressure warning/shutdown - Level is preset (configurable with InPower) to match the capabilities of the engine used. Control includes time delays to prevent nuisance alarms.

High lube oil temperature warning/shutdown - Level is preset (configurable with InPower) to match the capabilities of the engine used. Control includes time delays to prevent nuisance alarms.

High engine temperature warning/shutdown - Level is preset (configurable with InPower) to match the capabilities of the engine used. Control includes time delays to prevent nuisance alarms.

Low coolant temperature warning – Indicates that engine temperature may not be high enough for a 10 second start or proper load acceptance.

Sensor failure indication - Logic is provided on the base control to detect analog sensor or interconnecting wiring failures.

Full authority electronic engine protection

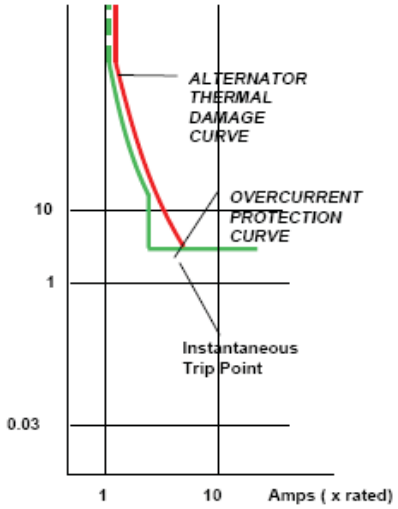
Engine fault detection is handled inside the engine ECM. Fault information is communicated via the SAE-J1939 data link for annunciation in the HMI.

Alternator protection

High AC voltage shutdown (59) - Output voltage on any phase exceeds preset values. Time to trip is inversely proportional to amount above threshold. Values adjustable from 105-130% of nominal voltage, with time delay adjustable from 0.1-10 seconds. Default value is 110% for 10 seconds.

Low AC voltage shutdown (27) - Voltage on any phase has dropped below a preset value. Adjustable over a range of 50-95% of reference voltage, time delay 2-20 seconds. Default value is 85% for 10 seconds.

Overcurrent warning/shutdown - Implementation of the thermal damage curve with instantaneous trip level calculated based on current transformer ratio and application power rating.



Under frequency shutdown (81 u) - Generator set output frequency cannot be maintained. Settings are adjustable from 2-10 Hz below nominal governor set point, for a 5-20 second time delay. Default: 6 Hz, 10 seconds.

Over frequency shutdown/warning (81o) - Generator set is operating at a potentially damaging frequency level. Settings are adjustable from 2-10 Hz above nominal governor set point for a 1-20 second time delay. Default: 6 Hz, 10 seconds, enabled.

Loss of sensing voltage shutdown - Shutdown of generator set will occur on loss of voltage sensing inputs to the control.

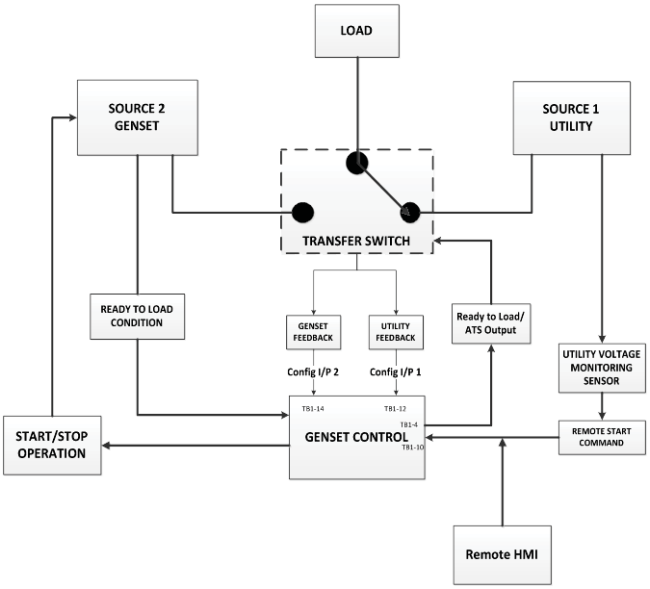
Field overload shutdown - Uses field voltage to shutdown generator set when a field overload condition occurs.

Advanced functions

Automatic mains failure*

The built in AMF feature provides the automatic transfer and re-transfer of the load from utility to generator set and vice-versa.

- Automatically starts-stops the generator set in the event of utility failure.
- Annunciates faults.



***** A utility voltage monitoring sensor (as shown in the AMF diagram above) must be connected in order to use the AMF feature on the 1302 control. Use Schneider Electric Relay RSB1A120U7, Socket RSZE1S35M.

Exerciser clock

The exerciser clock runs the generator set exerciser routines for dependability of operation.

Field control interface

Input signals to the base control include:

- Remote start
- Local and emergency stop
- Configurable inputs: Control includes (4) input signals from customer discrete devices that are configurable for warning, shutdown or status indication, as well as message displayed

Output signals from the PowerCommand control include:

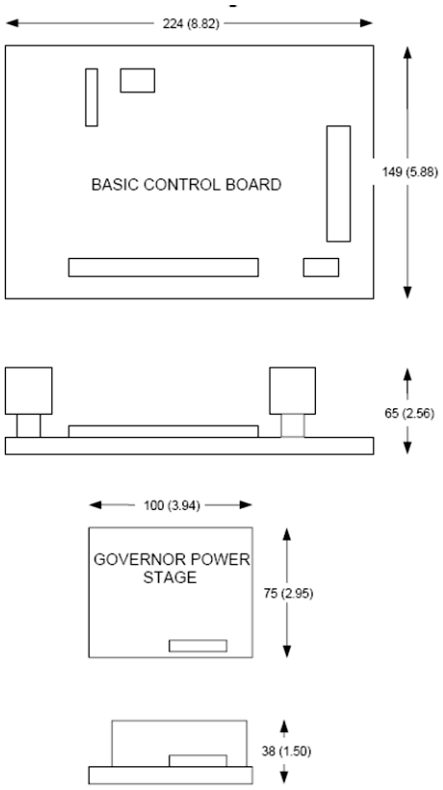
- Configurable relay outputs: Control includes (2) relay output contacts rated at 2 A. These outputs can be configured to activate on any control warning or shutdown fault as well as ready to load, not in auto, common alarm, common warning and common shutdown.
- Ready to load (generator set running) signal: Operates when the generator set has reached 90% of rated speed and voltage and latches until generator set is switched to off or idle mode.

Communications connections include:

- PC tool interface: This RS-485 communication port allows the control to communicate with a personal computer running InPower or PowerCommand for Windows® software.
- Modbus RS-485 port: Allows the control to communicate with external devices such as PLCs using Modbus protocol.

  Note - An RS-232 or USB to RS-485 converter is required for communication between PC and control.
- Networking: This RS-485 communication port allows connection from the control to the other Cummins Power Generation products.

Mechanical drawings



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PowerCommand human machine interface HMI211

Description

This control system includes an intuitive operator interface panel that allows for complete genset control as well as system metering, fault annunciation, configuration and diagnostics. The interface includes five generator set status LED lamps with both internationally accepted symbols and English text to comply with customer needs. The interface also includes an LED backlit LCD display with tactile feel soft-switches for easy operation and screen navigation. It is configurable for units of measurement and has adjustable screen contrast and brightness.

The *run/off/auto* switch function is integrated into the interface panel.

All data on the control can be viewed by scrolling through screens with the navigation keys. The control displays the current active fault and a time-ordered history of the five previous faults.

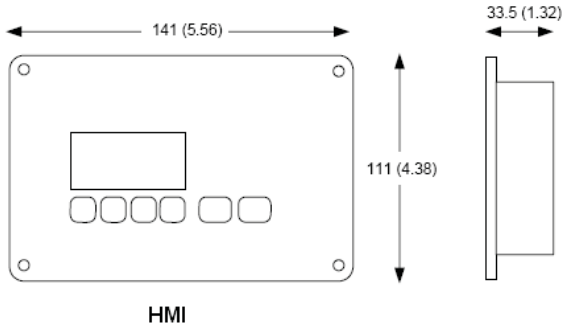
Features

- LED indicating lamps:
  - remote start
  - not in auto
  - shutdown
  - warning
  - auto
  - run
- 128 x 64 pixels graphic LED backlight LCD.
- Four tactile feel membrane switches for LCD defined operation. The functions of these switches are defined dynamically on the LCD.
- Two tactile feel membrane switches dedicated for *off* and *back*.
- Allows for complete genset control setup.
- Certifications: Suitable for use on generator sets that are designed, manufactured, tested and certified to relevant UL, NFPA, ISO, IEC, Mil Std., CE and CSA standards.
- HMI 211RS provides convenience for residential use.

Communications connections

- PC tool interface - This RS-485 communication port allows the HMI to communicate with a personal computer running InPower.
- This RS-485 communication port allows the HMI to communicate with the main control board.

Mechanical drawing



Dimensions: mm (inches)

Software

InPower (beyond 6.0 version) is a PC-based software service tool that is designed to directly communicate to PowerCommand generator sets and transfer switches, to facilitate service and monitoring of these products.

Environment

The control is designed for proper operation without recalibration in ambient temperatures from -40 °C (-40 °F) to +70° C (158 °F), and for storage from -55 °C (-67 °F) to +80 °C (176 °F). Control will operate with humidity up to 95%, non-condensing.

The HMI is designed for proper operation in ambient temperatures from -40 °C***** (-40 °F) to +70 °C (158 °F), and for storage from -40 °C***** (-40 °F) to +80 °C (176 °F).

The control board is fully encapsulated to provide superior resistance to dust and moisture. Display panel has a single membrane surface, which is impervious to effects of dust, moisture, oil and exhaust fumes. This panel uses a sealed membrane to provide long reliable service life in harsh environments.

The control system is specifically designed and tested for resistance to RFI/EMI and to resist effects of vibration to provide a long reliable life when mounted on a generator set. The control includes transient voltage surge suppression to provide compliance to referenced standards.

***** Heater accessory (pn: A040H853) is available for enhanced operation below -20 °C

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Certifications

PowerCommand meets or exceeds the requirements of the following codes and standards:

- NFPA 110 for level 1 and 2 systems.
- ISO 8528-4: 1993 compliance, controls and switchgear.
- CE marking: The control system is suitable for use on generator sets to be CE-marked.
- EN 50081-1,2 residential/light industrial emissions or industrial emissions.
- EN 50082-1,2 residential/light industrial or industrial susceptibility.
- ISO 7637-2, level 2; DC supply surge voltage test.
- Mil Std 202C, Method 101 and ASTM B117: Salt fog test.
- PowerCommand control systems and generator sets are designed and manufactured in ISO 9001 certified facilities.
- UL 508 recognized or Listed and suitable for use on UL 2200 Listed generator sets.
- CSA C282-M1999 compliance.
- CSA 22.2 No. 14 M91 industrial controls.

Warranty

All components and subsystems are covered by an express limited one year warranty. Other optional and extended factory warranties and local distributor maintenance agreements are available.

Accessories

1301-1302 Upgrade Kit (HM)	0541-1431
PowerCommand 500 (LAN)	A040X126
Remote HMI 211	0541-1394
Remote HMI 211RS	A046K103
I/O Expansion (Aux 101)	0541-1291
HMI Heater Accessory Kit	A040H853

Parts ordering information

1302 Control Board	0327-1617-02
1302 control Board – Arrow	A043W505
Aux 104 (Governor Control)	0327-1507
HMI 211 Without Heater	0300-6014
HMI 211 with Heater	A026G237

Additional resources

Resource	Where to Find
1302 Service Manual	QSOL
Accessories Catalog	cumminspower.com
Additional Controls Information	PowerSuite Library

PCCNet COMPATIBLE

See your distributor for more information

Cummins Power Generation

Americas
1400 73rd Avenue N.E.
Minneapolis, MN 55432 USA
Phone: 763 574 5000
Fax: 763 574 5298

Europe, CIS, Middle East and Africa
Manston Park Columbus Ave.
Manston Ramsgate
Kent CT 12 5BF United Kingdom
Phone 44 1843 255000
Fax 44 1843 255902

Asia Pacific
10 Toh Guan Road #07-01
TT International Tradepark
Singapore 608838
Phone 65 6417 2388
Fax 65 6417 2399

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

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Power Generation

ALTERNATOR DATA SHEET

Frame Size CA125-P14

CHARACTERISTICS **No of Bearings 1**

WEIGHTS:

Stator Assembly:	387	lb	175.5	kg
Rotor Assembly:	240.8	lb	109.2	kg
Complete Assembly:	628	lb	285	kg

MAXIMUM SPEED: 2250 rpm

INSULATION SYSTEM: Class H Throughout

	60 Hz Voltage (winding no)				
			240 (06)		
EXCITATION CURRENT: Full load			1.31		
EXCITATION CURRENT: No load			0.45		
1 ∅ RATINGS (0.8 power factor) (Based on specific temperature rise at 40°C ambient temperature)			240 (06)		
120°C Rise Peak Standby Ratings kW			60		
kVA			60		
105°C Rise Peak Standby Ratings kW			55		
kVA			55		
REACTANCES (per unit ±30%) (Based on full load at 105°C Rise Rating)			240 (06)		
Synchronous			1.78		
Transient			0.19		
Subtransient			0.13		
Negative Sequence			0.24		
Zero Sequence			0.16		
MOTOR STARTING			240 (06)		
Maximum kVA (90% Sustained Voltage) (At 20°C nominal generator & ambient temperature) (PMG)			180		
(Shunt)			170		
TIME CONSTANTS (Sec)			240 (06)		
Transient			0.038		
Subtransient			0.007		
Open Circuit			0.64		
DC			0.010		
WINDINGS (@20°C)			240 (06)		
Stator Resistance (Ohms per phase)			0.028		
Rotor Resistance (Ohms)			0.800		
Number of Leads			4		

Power Generation

Prototype Test Supported Emergency/Standby Generator Sets Certification

Onan Corporation certifies that industrial Cummins® /Onan® brand generator sets bearing the Prototype Test Supported (PTS) seal have been subjected to a design and development process that includes extensive prototype testing and evaluation. A PTS production model is engineered and manufactured according to documentation developed through comprehensive research, design and design verification.

Design verification is based on tests of pre-production prototype models manufactured specifically for prototype test purposes and not sold as new equipment. To be certified as a PTS model, the generator set must satisfy these prerequisites:

DESIGN: The PTS certified generator set must be designed specifically for emergency/standby applications that require high reliability and rapid response.

PROTOTYPE TESTING: Design suitability of the PTS certified generator set must be proven by tests on pre-production prototype models. The prototype test program is intended to:

1. Confirm the engine and generator have reserve capacity beyond rating to minimize the potential of damage or shutdown during steady state or transient loading conditions, including momentary overloads.
2. Demonstrate generator set, controls and accessories capability to perform reliably and compatibly in service during disturbances common in actual load circuits.
3. Verify the integrity of the generator and excitation system insulation systems and electrical components to withstand heating under rated load and transient overcurrent conditions.
4. Evaluate generator set mechanical and electrical strength to perform without damage during abnormal operating conditions, such as short circuits or out-of -phase paralleling. While operating at rated load, the generator set must be subjected to several 3-phase short circuits of 20 second duration. After the tests, the generator set is inspected to verify that no electrical or mechanical damage was incurred by any components.
5. Determine by endurance testing that no resonance conditions exist in the generator set or accessories that will cause premature failure of components on production units.
6. Investigate and identify failure modes to minimize the risk of any single component failure or human error that could lead to lack of essential electrical supply.
7. Provide a margin of safety, by actual trials, between the generator set component design and protection systems so that the components are not damaged before the protective devices activate a shutdown.

DOCUMENTATION AND SOFTWARE: The PTS certified generator set must be documented in a single drawing package with all components identified with Onan part numbers. A PTS test certificate must be crated for each PTS generator set certifying the PTS testing performed.

QUALITY ASSURANCE: Engineering drawings, specifications and test requirements for a PTS certified generator set must be classified by components and assembly quality characteristics. A component and process inspection and test plan must be developed and maintained to measure product conformance to documentation requirements.

PRODUCTION MODEL TESTING: PTS certified generator sets must be subjected to complete production tests that demonstrate conformance to specifications at all rated conditions, including start-up, full load pick-up and a performance run at full rated load and power factor.

PROTOTYPE TEST SUPPORT (PTS)
60 HZ TEST SUMMARY

GENERATOR SET MODELS		REPRESENTATIVE PROTOTYPE	
		Model:	C60 D6
C50 D6	C60 D6	Engine:	4BTAA3.3-G7
		Alternator:	CA125-L14

The following summarizes prototype testing conducted on the designated representative prototype of the specified models. This testing is conducted to verify the complete generator set electrical and mechanical design integrity. Prototype testing is conducted only on generator sets not sold as new equipment.

Maximum Surge Power: 62.52 kW

The generator set was evaluated to determine the stated maximum surge power.

Maximum Motor Starting: 111 kVA

The generator set was tested to simulate motor starting by applying the specified kVA load at low lagging power factor (0.4 or lower). With this load applied, the generator set recovered to a minimum of 90% rated voltage.

Alternator Temperature Rise:

The highest rated temperature rise (120°C) test results are reported as follows to verify that worst case temperature rises do not exceed allowable NEMA MG1 limits for class H insulation. Tests were conducted per IEEE 115, rise by resistance and embedded detector, with the rated voltages. Only the highest temperatures are reported.

Location:	Maximum Rise (°C)
Alternator Stator:	83
Alternator Rotor:	66
Exciter Stator:	NA
Exciter Rotor:	NA

Torsional Analysis and Testing:

The generator set was tested to verify that the design is not subjected to harmful torsional stresses.
A spectrum analysis of the transducer output was conducted over the speed range of 1650 to 1950 RPM.

Cooling System: 50 °C Ambient
0.5 in. H_2O restriction

The cooling system was tested to determine ambient temperature and static restriction capabilities. The test was performed at full rated load in elevated ambient temperature under static restriction conditions.

Durability:

The C60 D6 generator set was subjected to a minimum 1000 hour endurance test operating at variable load up to the standby rating based upon MIL-STD-705 to verify structural soundness and durability of the design.

Steady State Performance:

The generator set was tested to verify if the steady state operating performance was within the specified maximum limits.

Voltage Regulation:	± 1%
Random Voltage Variation:	± 1%
Frequency Regulation:	± 0.5%
Random Frequency Variation:	± 0.5%

Transient Performance:

The generator set was tested to verify single step loading capability as required by NFPA 110 and verify acceptable voltage and frequency response on load addition or rejection.
The following results were recorded at 1.0 power factor :

Full Load Acceptance:		
Voltage Dip:	19.5	%
Recovery Time:	3.2	sec
Frequency Dip:	5.8	%
Recovery Time:	1.8	sec
Full Load Rejection:		
Voltage Rise:	25.7	%
Recovery Time:	2.4	sec
Frequency Rise:	8.6	%
Recovery Time:	1.4	sec

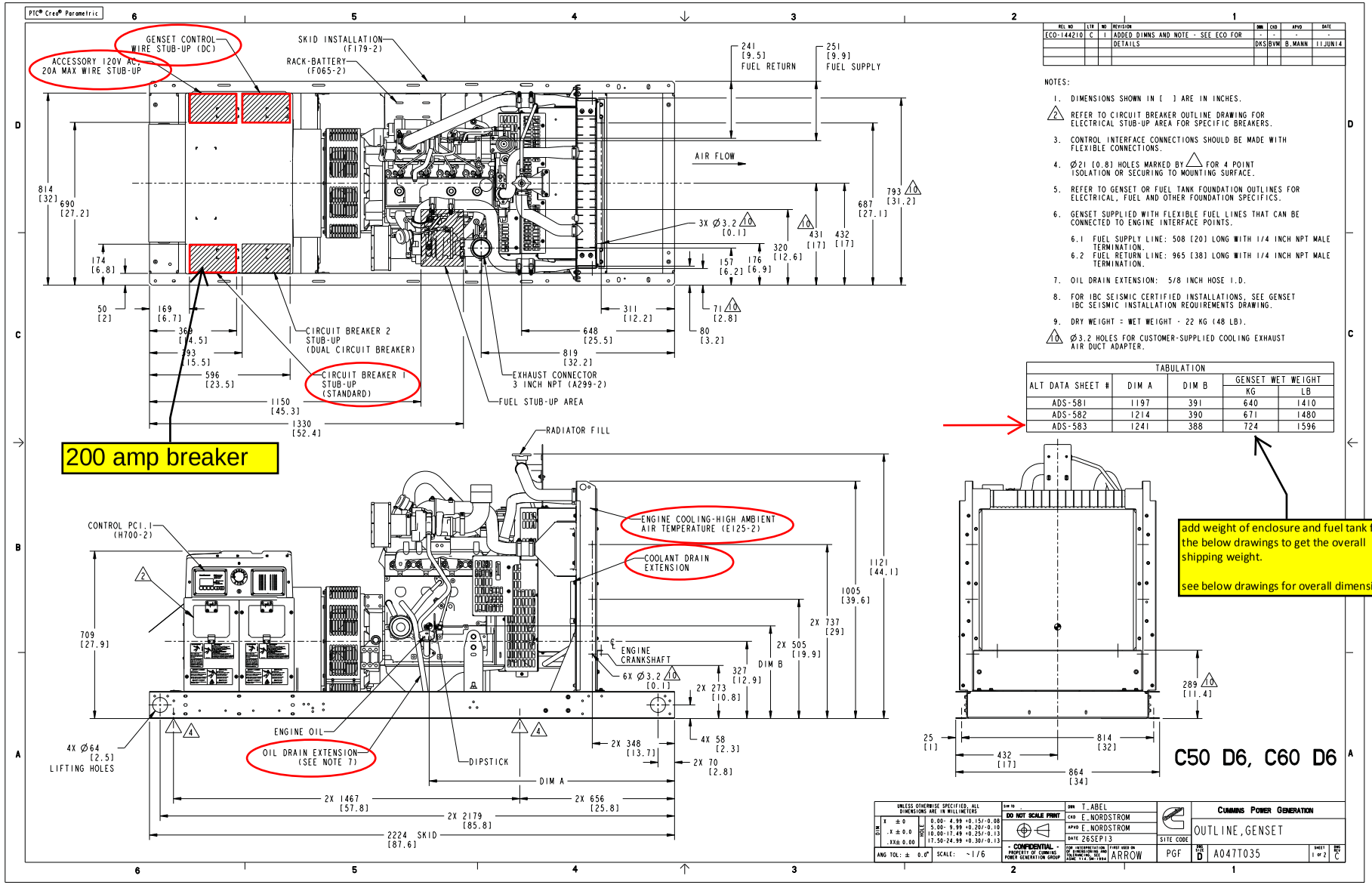
Harmonic Analysis:

(per MIL-STD-705B, Method 601.4)

	Line to Line		Line to Neutral	
Harmonic	No Load	Full Load	No Load	Full Load
3	0.2	2.2	0.2	2.1
5	1.1	1.1	0.9	0.9
7	0.9	0.6	0.8	0.6
9	0	0.9	0	0.8
11	0.4	0.4	0.3	0.4
13	0.3	0.1	0.2	0
15	0	0.2	0	0.1

Electrical and Mechanical Strength:

The generator set was tested to several single phase and three phase faults to verify that the generator can safely withstand the forces associated with short circuit conditions. The generator set was capable of producing full rated output at the conclusion of the testing.



REL NO	LTR	NO	REVISION	DRN	CKD	APVD	DATE
ECO-144210	C	1	ADDED DIMNS AND NOTE - SEE ECO FOR DETAILS	DKS	BVM	B.MANN	11JUN14

NOTES:

1. DIMENSIONS SHOWN IN [ ] ARE IN INCHES.
2. REFER TO CIRCUIT BREAKER OUTLINE DRAWING FOR ELECTRICAL STUB-UP AREA FOR SPECIFIC BREAKERS.
3. CONTROL INTERFACE CONNECTIONS SHOULD BE MADE WITH FLEXIBLE CONNECTIONS.
4. Ø21 [0.8] HOLES MARKED BY △ FOR 4 POINT ISOLATION OR SECURING TO MOUNTING SURFACE.
5. REFER TO GENSET OR FUEL TANK FOUNDATION OUTLINES FOR ELECTRICAL, FUEL AND OTHER FOUNDATION SPECIFICS.
6. GENSET SUPPLIED WITH FLEXIBLE FUEL LINES THAT CAN BE CONNECTED TO ENGINE INTERFACE POINTS.
   - 6.1 FUEL SUPPLY LINE: 508 [20] LONG WITH 1/4 INCH NPT MALE TERMINATION.
   - 6.2 FUEL RETURN LINE: 965 [38] LONG WITH 1/4 INCH NPT MALE TERMINATION.
7. OIL DRAIN EXTENSION: 5/8 INCH HOSE I.D.
8. FOR IBC SEISMIC CERTIFIED INSTALLATIONS, SEE GENSET IBC SEISMIC INSTALLATION REQUIREMENTS DRAWING.
9. DRY WEIGHT = WET WEIGHT - 22 KG (48 LB).

10. Ø3.2 HOLES FOR CUSTOMER-SUPPLIED COOLING EXHAUST AIR DUCT ADAPTER.

TABULATION

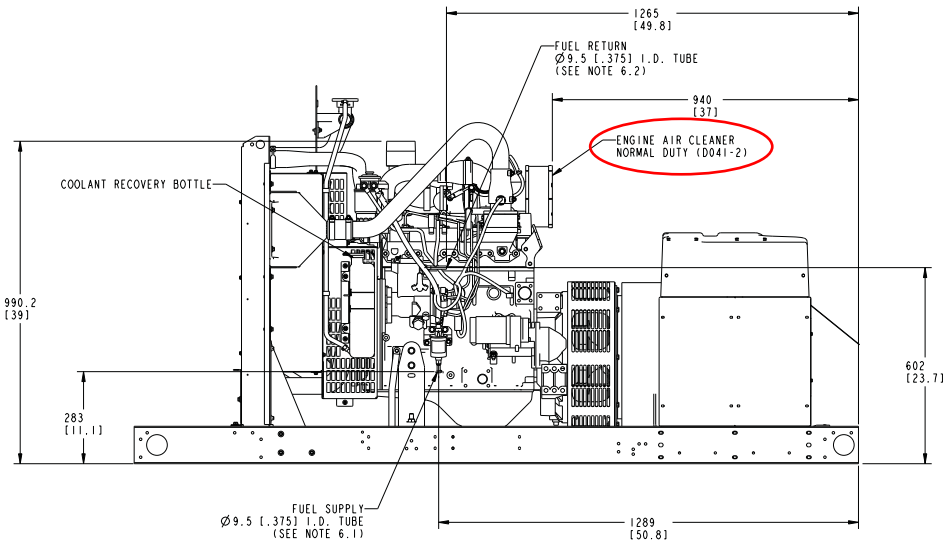
ALT DATA SHEET #	DIM A	DIM B	GENSET WET WEIGHT KG	GENSET WET WEIGHT LB
ADS-581	1197	391	640	1410
ADS-582	1214	390	671	1480
ADS-583	1241	388	724	1596

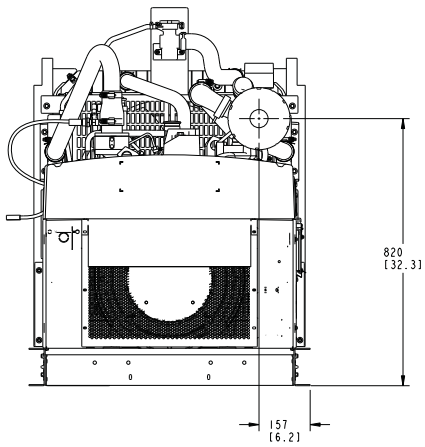
add weight of enclosure and fuel tank from the below drawings to get the overall shipping weight.

see below drawings for overall dimensions

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS
DIM: X ±0, .X ±0.0, .XX± 0.00
HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13
ANG TOL: ± 0.0° SCALE: ~1/6
DO NOT SCALE PRINT
- CONFIDENTIAL - PROPERTY OF CUMMINS POWER GENERATION GROUP
DRN T_ABEL
CKD E_NORDSTROM
APVD E_NORDSTROM
DATE 26SEP13
FIRST USED ON ARROW
SITE CODE PGF
CUMMINS POWER GENERATION
OUTLINE,GENSET
SIZE D A047T035 SHEET 1 of 2 REV C

Drawing Name: A047T036 Revision: C
Part Name: A047T035 Revision: C
Sheet 1 of 3





REL NO	LTR	NO	REVISION	DRN	CKD	APVD	DATE
ECO-144210	C	-	---	DKS	BVM	B.MANN	11JUN14

C50 D6, C60 D6

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS

DIM		RULE
X	± 0	0.00- 4.99 +0.15/-0.08
.X	± 0.0	5.00- 9.99 +0.20/-0.10
.XX	± 0.00	10.00-17.49 +0.25/-0.13
		17.50-24.99 +0.30/-0.13

ANG TOL: ± 0.0° SCALE: ~1/6

DO NOT SCALE PRINT

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FOR INTERPRETATION OF DIMENSIONS AND TOLERANCING, REF ASME Y14.5M-1994

FIRST USED ON ARROW

DRN	T_ABEL
CKD	E_NORDSTROM
APVD	E_NORDSTROM
DATE	26SEP13

SITE CODE PGF

CUMMINS POWER GENERATION

OUTLINE,GENSET

SIZE D | A047T035 | SHEET 2 of 2 | REV C

Drawing Name: A047T036 Revision: C
Part Name: A047T035 Revision: C
Sheet 2 of 3

Data sheet

Circuit breakers

Description

This data sheet provides circuit breaker manufacturer part numbers and specifications. Please refer to their website for more technical information.

Applicable models

Engine	Models					
Kubota	C10D6	C15D6	C20D6			
QSJ2.4	C20N6	C25N6	C30N6	C30N6H	C36N6	C36N6H
	C40N6	C40N6H	C50N6H	C60N6H		
B3.3	C25D6	C30D6	C35D6	C40D6	C50D6	C60D6
QSJ5.9G	C45N6	C50N6	C60N6	C70N6	C80N6	C100N6
QSB5	DSFAC	DSFAD	DSFAE	C50D6C	C60D6C	C80D6C
	C100D6C	C125D6C				
QSB7	DSGAA	DSGAB	DSGAC	DSGAD	DSGAE	
QSL9	DSHAD	DQDAA	DQDAB	DQDAC		
QSM11	DQHAB					
QSX15	DFEJ	DFEK				

Instructions

1. Locate the circuit breaker feature code or part number and use the charts below to find the corresponding manufacturer circuit breaker catalog number.

2. Use the first letter of the circuit breaker catalog number to determine the "frame" of the breaker. If the first letter is an “N”, use the second letter. Then follow the corresponding website link from the table below to find the breaker catalog number description.

Please refer to the catalog numbering systems page, which is given in the chart, to understand the nomenclature of the catalog number.

Frame	Catalog name*	Catalog number description page(s)
P	0612CT0101	16-17
H, J, and L	0611CT1001	8-9
Q	0734CT0201	4

*The following link may also be used to search specifically by the breaker part number or for the catalog name listed above. http://products.schneider-electric.us/technical-library/

3. Search the catalog by using the first 3 letters of the breaker catalog number and the first 5 numbers to find information such as trip curves, accessories, and dimensional details regarding the circuit breaker.

*If the catalog number starts with “N”, skip the N and begin your search with the second letter.

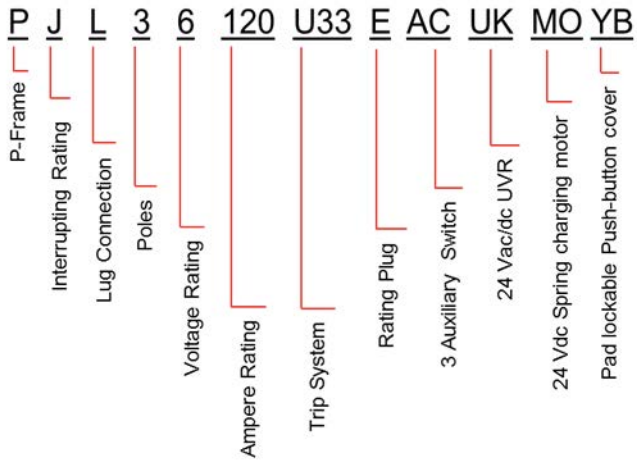
*If the first 3 letters are “PJP,” the search will not work. You will need to start with just “PJ” and use the description pages to obtain the information you are looking for on the “PJP.”

Example

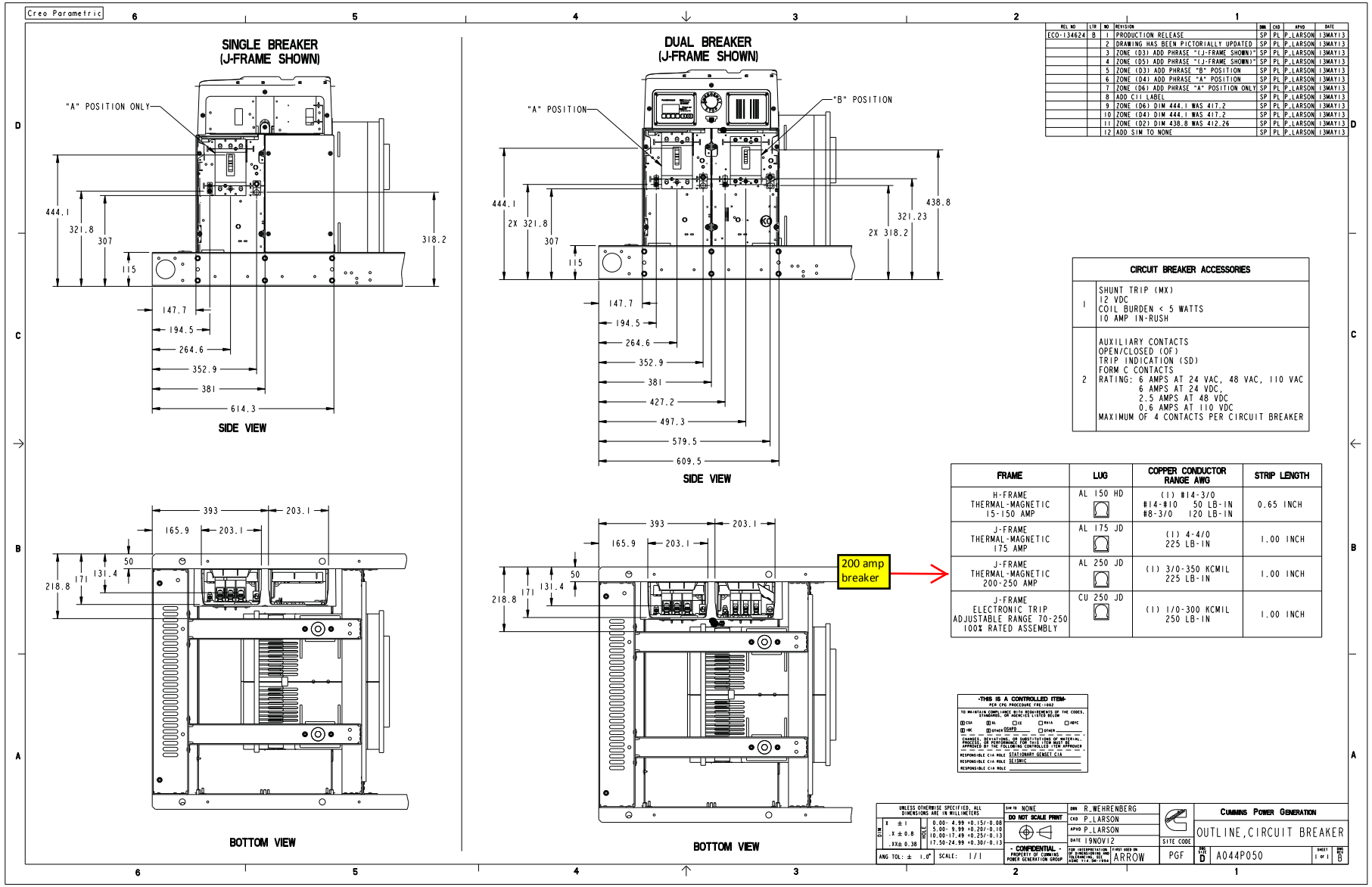
After finding your circuit breaker catalog number to be "PJL36120U33EACUKMOYB," navigate to the P-frame catalog by using the link provided.

Look at pages 16-17 of the pdf catalog to find the nomenclature of the breaker.

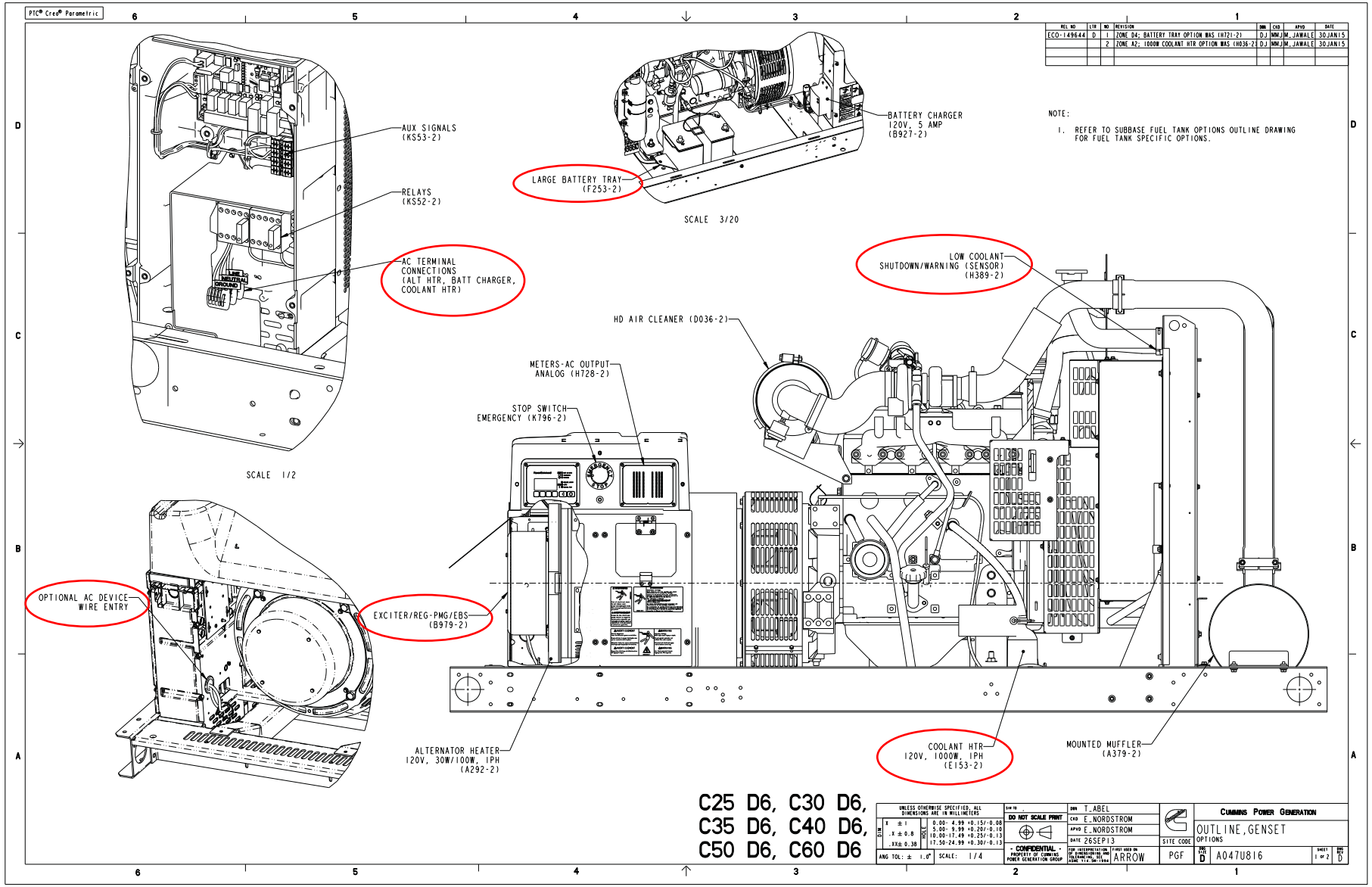
Search the P-frame spec sheet using the search "PJL36120.”



Feature Code	Breaker Description	Cummins Part #	Manufacturer	Breaker Catalog Number	Trip Unit	Plug Type
KV10-2	CB,Loc A,50A,2P,600VAC,80%,UL	A043E181	Schneider Electric	HDL26050	Thermal Magnetic	N/A
KV11-2	CB,Loc A,60A,2P,600VAC,80%,UL	A043E179	Schneider Electric	HDL26060	Thermal Magnetic	N/A
KV12-2	CB,Loc A,70A,2P,600VAC,80%,UL	A043E169	Schneider Electric	HDL26070	Thermal Magnetic	N/A
KV13-2	CB,Loc A,80A,2P,600VAC,80%,UL	A043D328	Schneider Electric	HDL26080	Thermal Magnetic	N/A
KV14-2	CB,Loc A,90A,2P,600VAC,80%,UL	A043D326	Schneider Electric	HDL26090	Thermal Magnetic	N/A
KV15-2	CB,Loc A,100A,2P,600VAC,80%,UL	A043D324	Schneider Electric	HDL26100	Thermal Magnetic	N/A
KV16-2	CB,Loc A,125A,2P,600VAC,80%,UL	A043D274	Schneider Electric	HDL26125	Thermal Magnetic	N/A
KV17-2	CB,Loc A,150A,2P,600VAC,80%,UL	A043C676	Schneider Electric	HDL26150	Thermal Magnetic	N/A
KV18-2	CB,Loc A,175A,2P,600VAC,80%,UL	A043E202	Schneider Electric	JDL26175	Thermal Magnetic	N/A
KV19-2	CB,Loc A,200A,2P,600VAC,80%,UL	A043E199	Schneider Electric	JDL26200	Thermal Magnetic	N/A
KV20-2	CB,Loc A,225A,2P,600VAC,80%,UL	A043E195	Schneider Electric	JDL26225	Thermal Magnetic	N/A
KV21-2	CB,Loc A,250A,2P,600VAC,80%,UL	A043E193	Schneider Electric	JDL26250	Thermal Magnetic	N/A
KV30-2	CB,Loc A,15A,3P,600VAC,80%,UL	A043L506	Schneider Electric	HDL36015	Thermal Magnetic	N/A
KV31-2	CB,Loc A,20A,3P,600VAC,80%,UL	A043L480	Schneider Electric	HDL36020	Thermal Magnetic	N/A
KV32-2	CB,Loc A,25A,3P,600VAC,80%,UL	A043L508	Schneider Electric	HDL36025	Thermal Magnetic	N/A
KV33-2	CB,Loc A,30A,3P,600VAC,80%,UL	A043L475	Schneider Electric	HDL36030	Thermal Magnetic	N/A
KV34-2	CB,Loc A,40A,3P,600VAC,80%,UL	A043L464	Schneider Electric	HDL36040	Thermal Magnetic	N/A



Drawing Name: A044P051 Revision: B
Part Name: A044P050 Revision: B
Sheet 1 of 2



Drawing Name: A047U817 Revision: D
Part Name: A047U816 Revision: D
Sheet 1 of 3

Sound Pressure Level @ 7 meters, dB(A)

See Notes 1-6 listed below

Configuration		Position (Note 1)								8 Position Average
		1	2	3	4	5	6	7	8	
Standard –Unhoused	Infinite Exhaust	79.1	81.6	80.0	82.3	79.3	81.7	81.6	80.7	80.9
F217-2 Sound Attenuated Level 2	Mounted	69.1	69.0	66.9	70.1	68.9	69.1	68.1	68.4	68.8
F231-2 Sound Attenuated Level 1	Mounted	74.8	71.5	67.7	68.8	68.4	70.0	69.5	72.4	71.0

Sound Power Level, dB(A)

See Notes 2-4, 7, 8 listed below

Configuration		Octave Band Center Frequency (Hz)								Overall Sound Power Level
		31.5	63	125	250	500	1000	2000	4000	8000	
Standard –Unhoused	Infinite Exhaust	48.5	68.9	77.9	95.6	98.8	101.4	102.3	97.3	91.4	106.9
F217-2 Sound Attenuated Level 2	Mounted	53.1	79.3	79.0	90.3	91.3	89.6	89.2	87.3	83.3	97.1
F231-2 Sound Attenuated Level 1	Mounted	52.0	80.8	77.8	91.3	92.1	90.6	90.5	88.1	83.4	98.0

.

Exhaust Sound Power Level, dB(A)

See Notes 2 , 9 listed below

Open Exhaust (No Muffler) @ Rated Load	Octave Band Center Frequency (Hz)									Overall Sound Power Level
	31.5	63	125	250	500	1000	2000	4000	8000	
	47.3	84.8	90.8	100.0	107.6	110.9	109.9	110.5	108.6	116.9

Note:

1. Position 1 faces the Generator front per ISO **8528-10**. The positions proceed around the generator set in a counter-clockwise direction in 45° increments. All positions are at 7m (23 ft) from the surface of the generator set and 1.2m (48") from floor level.
2. Sound levels are subject to instrumentation, measurement, installation and manufacturing variability.
3. Data based on full rated load.
4. Sound data for generator set with infinite exhaust do not include exhaust noise.
5. Sound Pressure Levels are measured per ANSI S1.13 and ANSI S12.18, as applicable.
6. Reference sound pressure is 20 µPa.
7. Sound Power Levels per ISO 3744 and ISO 8528-10, as applicable.
8. Reference power = 1 pw (10^{-12} W)
9. Exhaust Sound Power Levels are per ISO 6798, as applicable.

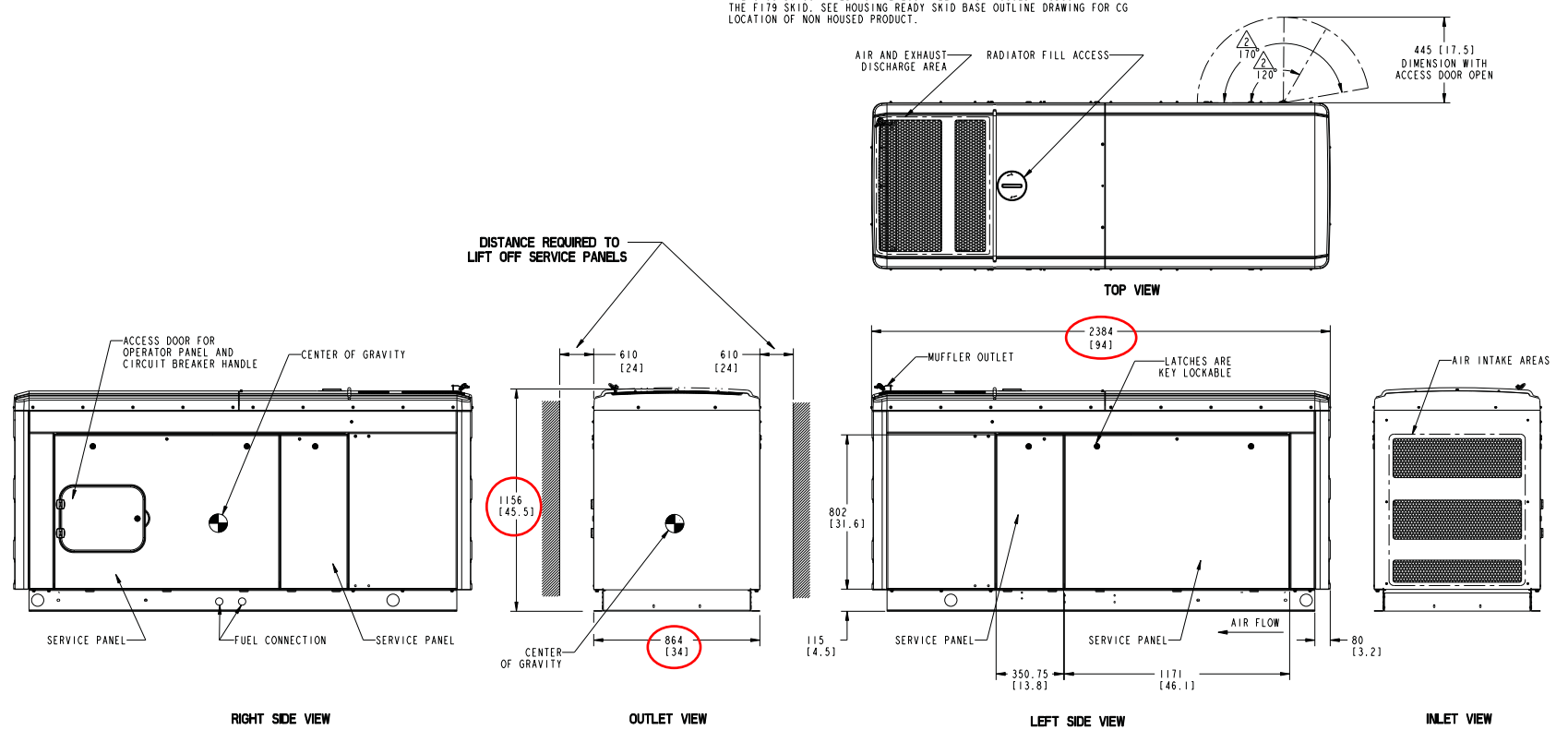
add this weight to the open unit weight (drawing above) and fuel tank weight (drawing below) to get the overall shipping weight

Use this page and next page for overall shipping dimensions

NOTES:

1. DIM [ ] IN INCHES
2. 120° AND 170° ARE DETENTED OPEN ANGLE FOR HINGE.
3. WHEN THE HOUSING INSTALLED ON AN OPEN GENERATOR SET, THE TOTAL WEIGHT WILL INCREASE BY 98 KG (216 LBS). THIS INCLUDES THE MUFFLER.
4. THE CENTER OF GRAVITY(CG) OF THE GENERATOR SET WHEN EQUIPPED WITH THIS HOUSING SHIFTS APPROXIMATELY 8MM (0.31 INCH) TOWARDS THE AIR DISCHARGE END OF THE HOUSING AND 38MM (1.5 INCH) HIGHER FROM THE GROUND. COMPARED TO THE EQUIVALENT NON-HOUSED PRODUCT WITH THE F179 SKID. SEE HOUSING READY SKID BASE OUTLINE DRAWING FOR CG LOCATION OF NON HOUSED PRODUCT.

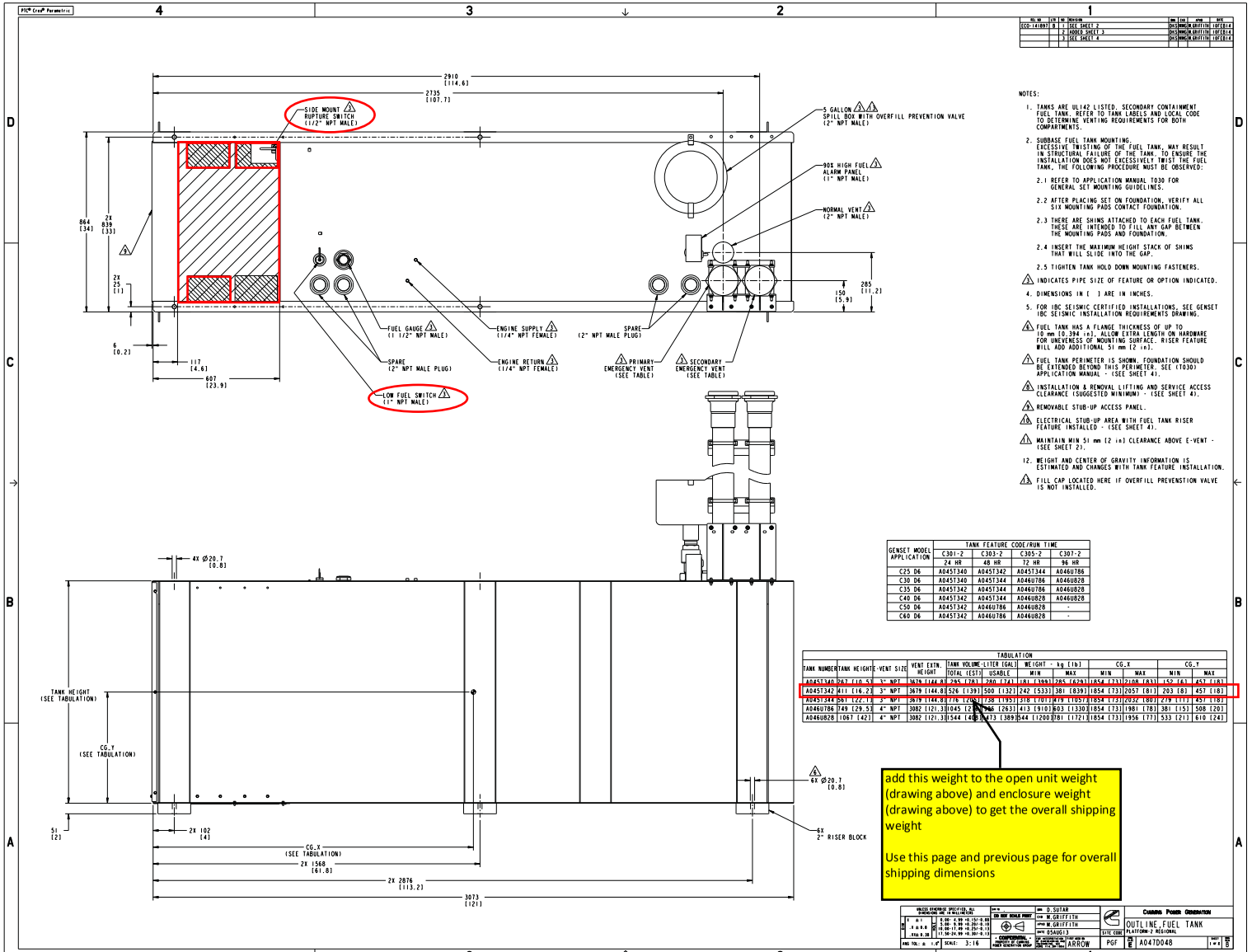
REL NO	LTR	NO	REVISION	DRN	CKD	APVD	DATE
ECO-146872	D	1	ZONE B3 ADD PHRASE "MUFFLER OUTLET"	AM	RN	R_NERADI	29SEP14
		2	ZONE A2 ADD "AIR FLOW" SYMBOL	AM	RN	R_NERADI	29SEP14
		3	SECURITY CLASSIFICATION WAS "PROPRIETARY" IN MATRIX	AM	RN	R_NERADI	29SEP14



F231-2 ENCLOSURE CONFIGURATION

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS
DIM: X ±1, .X ±0.8, .XX± 0.38
HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13
ANG TOL: ± 0.5°
SCALE: 1/10
DIM ID: NONE
DO NOT SCALE PRINT
- CONFIDENTIAL - PROPERTY OF CUMMINS POWER GENERATION GROUP
DRN S_GAMBHIRE
CKD T_RADKE
APVD J_MATTHEWS
DATE 17JAN13
FIRST USED ON ARROW
SITE CODE PGF
CUMMINS POWER GENERATION
OUTLINE,ENCLOSURE
SIZE D
A043J729
SHEET 1 of 2
REV D

Drawing Name: A043J730 Revision: D
Part Name: A043J729 Revision: D
Sheet 1 of 3



NOTES:

1. TANKS ARE UL142 LISTED. SECONDARY CONTAINMENT FUEL TANK. REFER TO TANK LABELS AND LOCAL CODE TO DETERMINE VENTING REQUIREMENTS FOR BOTH COMPARTMENTS.
2. SUBBASE FUEL TANK MOUNTING. EXCESSIVE TWISTING OF THE FUEL TANK, MAY RESULT IN STRUCTURAL FAILURE OF THE TANK. TO ENSURE THE INSTALLATION DOES NOT EXCESSIVELY TWIST THE FUEL TANK, THE FOLLOWING PROCEDURE MUST BE OBSERVED:
   - 2.1 REFER TO APPLICATION MANUAL T030 FOR GENERAL SET MOUNTING GUIDELINES.
   - 2.2 AFTER PLACING SET ON FOUNDATION, VERIFY ALL SIX MOUNTING PADS CONTACT FOUNDATION.
   - 2.3 THERE ARE SHIMS ATTACHED TO EACH FUEL TANK. THESE ARE INTENDED TO FILL ANY GAP BETWEEN THE MOUNTING PADS AND FOUNDATION.
   - 2.4 INSERT THE MAXIMUM HEIGHT STACK OF SHIMS THAT WILL SLIDE INTO THE GAP.
   - 2.5 TIGHTEN TANK HOLD DOWN MOUNTING FASTENERS.
3. INDICATES PIPE SIZE OF FEATURE OR OPTION INDICATED.
4. DIMENSIONS IN [ ] ARE IN INCHES.
5. FOR IBC SEISMIC CERTIFIED INSTALLATIONS, SEE GENSET IBC SEISMIC INSTALLATION REQUIREMENTS DRAWING.
6. FUEL TANK HAS A FLANGE THICKNESS OF UP TO 10 mm [0.394 in]. ALLOW EXTRA LENGTH ON HARDWARE FOR UNEVENESS OF MOUNTING SURFACE. RISER FEATURE WILL ADD ADDITIONAL 51 mm [2 in].
7. FUEL TANK PERIMETER IS SHOWN. FOUNDATION SHOULD BE EXTENDED BEYOND THIS PERIMETER. SEE (T030) APPLICATION MANUAL - (SEE SHEET 4).
8. INSTALLATION & REMOVAL LIFTING AND SERVICE ACCESS CLEARANCE (SUGGESTED MINIMUM) - (SEE SHEET 4).
9. REMOVABLE STUB-UP ACCESS PANEL.
10. ELECTRICAL STUB-UP AREA WITH FUEL TANK RISER FEATURE INSTALLED - (SEE SHEET 4).
11. MAINTAIN MIN 51 mm [2 in] CLEARANCE ABOVE E-VENT - (SEE SHEET 2).
12. WEIGHT AND CENTER OF GRAVITY INFORMATION IS ESTIMATED AND CHANGES WITH TANK FEATURE INSTALLATION.
13. FILL CAP LOCATED HERE IF OVERFILL PREVENSTION VALVE IS NOT INSTALLED.

GENSET MODEL APPLICATION	TANK FEATURE CODE/RUN TIME			
	C301-2	C303-2	C305-2	C307-2
	24 HR	48 HR	72 HR	96 HR
C25 D6	A045T340	A045T342	A045T344	A046U786
C30 D6	A045T340	A045T344	A046U786	A046U828
C35 D6	A045T342	A045T344	A046U786	A046U828
C40 D6	A045T342	A045T344	A046U828	A046U828
C50 D6	A045T342	A046U786	A046U828	-
C60 D6	A045T342	A046U786	A046U828	-

TABULATION

TANK NUMBER	TANK HEIGHT	VENT SIZE	VENT EXTN. HEIGHT	TANK VOLUME-LITER (GAL)		WEIGHT - kg [lb]		CG.X		CG.Y	
				TOTAL (EST)	USABLE	MIN	MAX	MIN	MAX	MIN	MAX
A045T340	267 [10.5]	3" NPT	3676 [144.8]	295 [78]	280 [74]	181 [398]	285 [629]	1854 [73]	2108 [83]	152 [6]	457 [18]
A045T342	411 [16.2]	3" NPT	3679 [144.8]	526 [139]	500 [132]	242 [533]	381 [839]	1854 [73]	2057 [81]	203 [8]	457 [18]
A045T344	581 [22.9]	3" NPT	3679 [144.8]	778 [206]	738 [195]	318 [701]	419 [1057]	1854 [73]	2032 [80]	279 [11]	457 [18]
A046U786	749 [29.5]	4" NPT	3082 [121.3]	1045 [276]	996 [263]	413 [910]	603 [1330]	1854 [73]	1981 [78]	381 [15]	508 [20]
A046U828	1067 [42]	4" NPT	3082 [121.3]	1544 [408]	1473 [389]	544 [1200]	781 [1721]	1854 [73]	1956 [77]	533 [21]	610 [24]

add this weight to the open unit weight (drawing above) and enclosure weight (drawing above) to get the overall shipping weight

Use this page and previous page for overall shipping dimensions

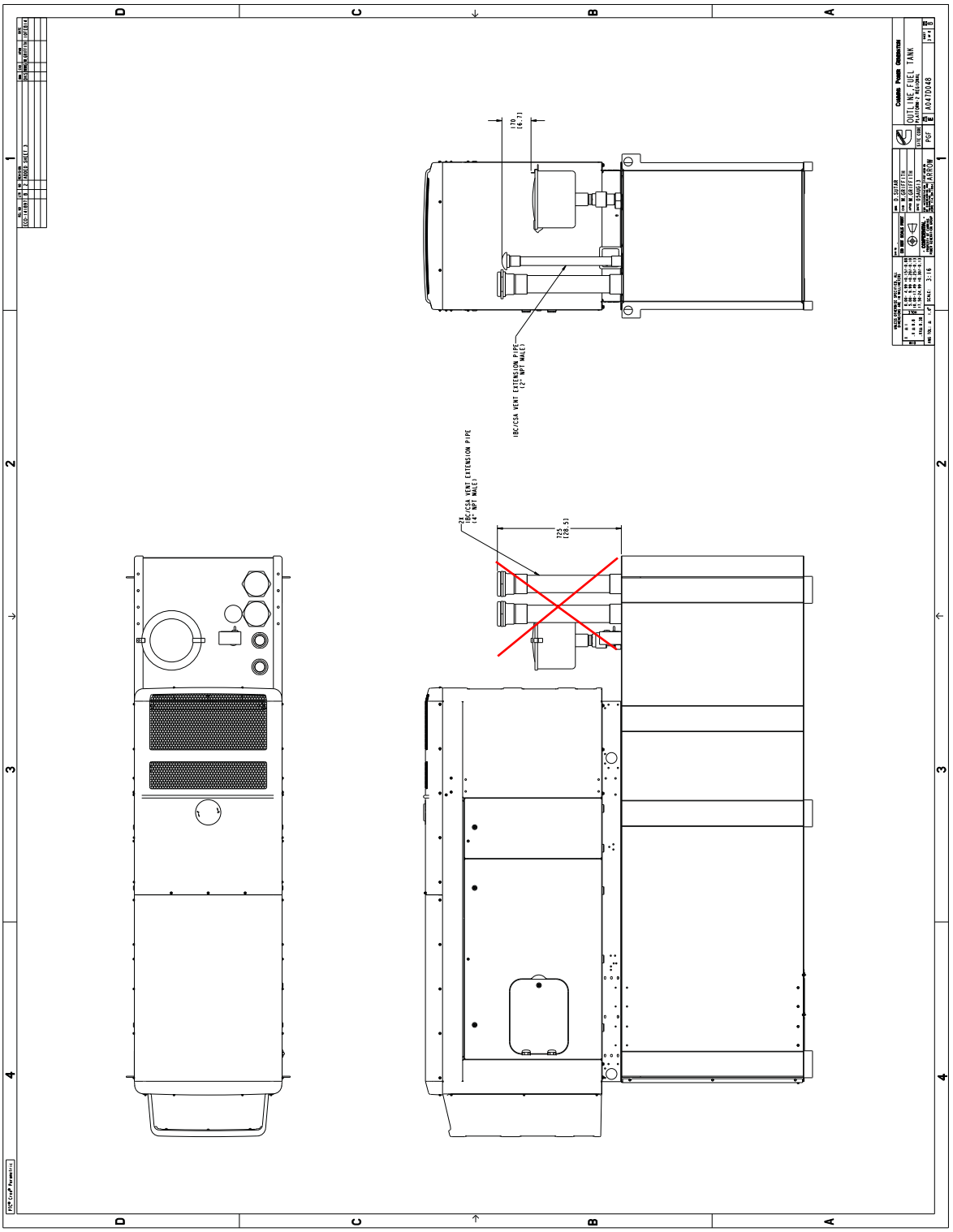
CUMMINS POWER GENERATION

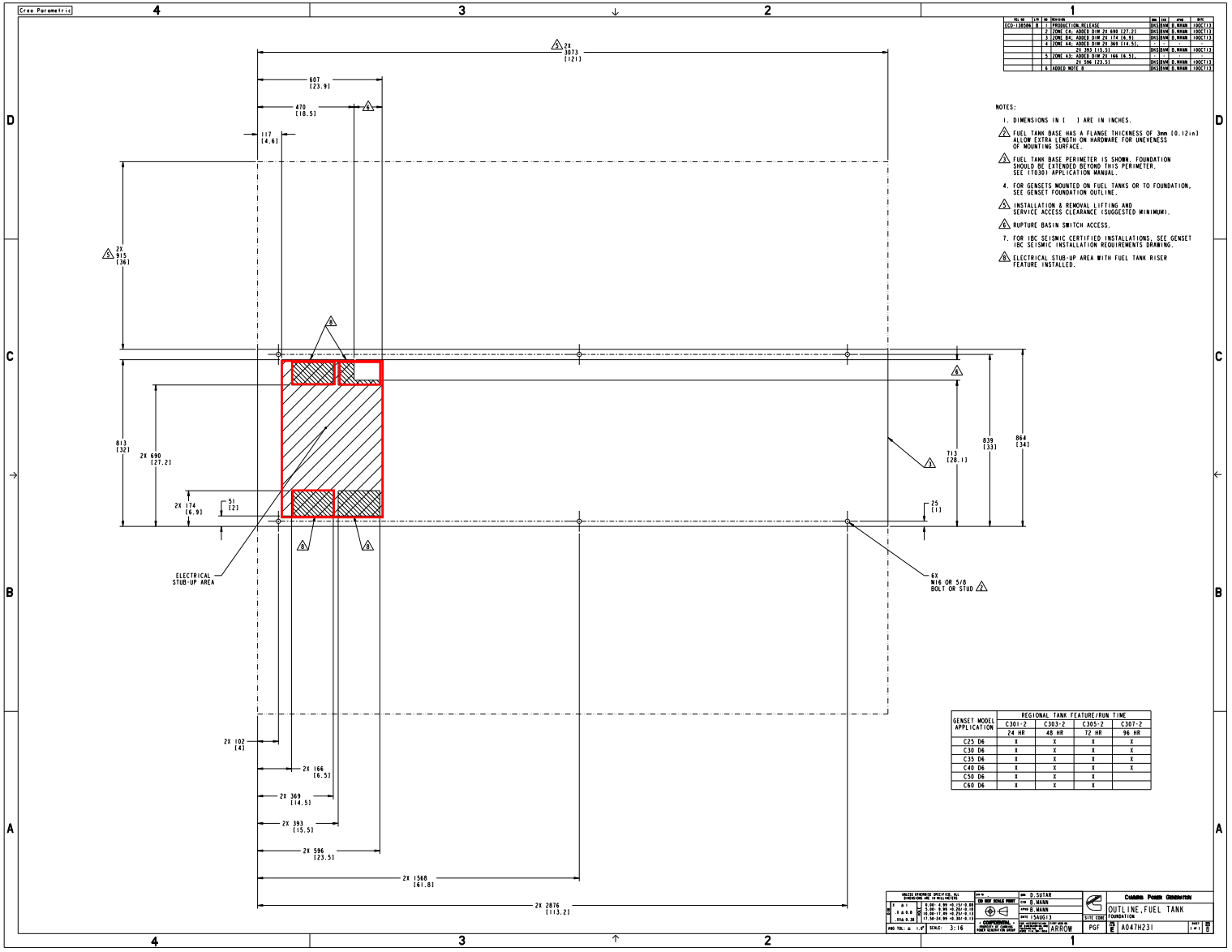
OUTLINE, FUEL TANK

PLATFORM 2 REGIONAL

PGF | A047D048

Drawing Name: A047D049 Revision: B
Part Name: A047D048 Revision: B
Sheet 1 of 5


170
(6.7)
IBC/CSA VENT EXTENSION PIPE
(2" NPT MALE)
2X
IBC/CSA VENT EXTENSION PIPE
(4" NPT MALE)
725
(28.5)
OUTLINE, FUEL TANK
A047D048



Drawing Name: A047H232 Revision: B
Part Name: A047H231 Revision: B
Sheet 1 of 2

OTPC transfer switch open and closed transition

Description

OTPC transfer switches are designed for operation and switching of electrical loads between primary power and standby generator sets. They are suitable for use in emergency, legally required and optional standby applications. The switch monitors both power sources, signals generator set startup, automatically transfers power, and returns the load to the primary power source when the utility returns and stabilizes.

OTPC transfer switches are available with closed transition transfer. By briefly connecting the two sources (for 100 msec or less), the transfer from the alternate source back to the normal source occurs without interruption in the power supply to loads.

UL	All switches are UL 1008 Listed with UL Type Rated cabinets and UL Listed CU-AL terminals.
CSA	All switches are certified to CSA 282 Emergency Electrical Power Supply for Buildings, up to 600 VAC.
NEC	Suitable for use in emergency, legally required and standby applications per NEC 700, 701 and 702.
NFPA	All switches comply with NFPA 70, 99 and 110 (Level 1).
NEMA	All switches comply with NEMA ICS 10.
IEEE	All switches comply with IEEE 446 Recommended Practice for Emergency and Standby Power Systems.
ISO 9001	This transfer switch is designed and manufactured in facilities certified to ISO9001.

Features

PowerCommand® control - A fully featured microprocessor-based control with digital display. Controls allow operator to enter settings and make adjustments to software-enabled features easily and accurately. Accommodates up to eight event schedules.

Programmed transition – Open transition timing can be adjusted to completely disconnect the load from both sources for a programmed time period, as recommended by NEMA MG-1 for transfer of inductive loads.

Advanced transfer switch mechanism – Unique bi-directional linear actuator provides smooth, continuous transfer switch action during automatic operation.

Robust control system design - Optically isolated logic inputs and isolation transformers for AC power inputs provide high-voltage surge protection.

Main contacts - Heavy-duty silver alloy contacts with multi-leaf arc chutes are rated for motor loads or total system load transfer. They require no routine contact maintenance. Continuous load current not to exceed 100% of switch rating and Tungsten loads not to exceed 30% of switch rating.

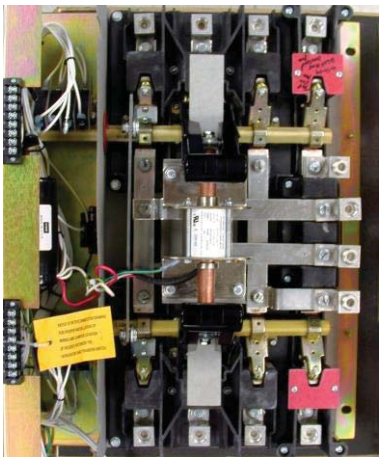
Communications capability - The transfer switch is capable of communicating with other transfer switches, SCADA and remote monitoring systems, or Cummins Power Generation generators utilizing LonWorks® protocol.

Easy service/access - Single-plug harness connection and compatible terminal markings simplify servicing. Access space is ample. Door-mounted controls are field-programmable; not tool is required.

Complete product line - Cummins Power Generation offers a wide range of equipment, accessories and services to suit virtually any backup power application.

Warranty and service - Products are backed by a comprehensive warranty and a worldwide network of distributors with factory-trained service technicians.

Transfer switch mechanism



- Transfer switch mechanism is electrically operated and mechanically held in the Source 1 and Source 2 positions. The transfer switch incorporates electrical and mechanical interlocks to prevent inadvertent interconnection of the sources.
- Independent break-before-make action is used for both 3-pole and 4-pole/ switched neutral switches. This design allows use of sync check operation when required, or control of the operating speed of the transfer switch for proper transfer of motor and rectifier-based loads (programmed transition feature).
- True 4-pole switching allows for proper ground (earth) fault sensing and consistent, reliable operation for the life of the transfer switch. The neutral poles of the transfer switch have the same ratings as the phase poles and are operated by a common crossbar mechanism, eliminating the possibility of incorrect neutral operation at any point in the operating cycle, or due to failure of a neutral operator.
- High pressure silver alloy contacts resist burning and pitting. Separate arcing surfaces further protect the main contacts. Contact wear is reduced by multiple leaf arc chutes that cool and quench the arcs. Barriers separate the phases to prevent interphase flashover. A transparent protective cover allows visual inspection while inhibiting inadvertent contact with energized components.
- Switch mechanism, including contact assemblies, is third party certified to verify suitability for applications requiring high endurance switching capability for the life of the transfer switch. Withstand and closing ratings are validated using the same set of contacts, further demonstrating the robust nature of the design.

Specifications

Voltage rating	600 VAC, 50 or 60 Hz.
Arc interruption	Multiple leaf arc chutes provide dependable arc interruption.
Neutral bar	A full current-rated neutral bar with lugs is standard on enclosed 3-pole transfer switches.
Auxiliary contacts	Two isolated contacts (one for each source) indicating switch position are provided for customer use. Contacts are normally open, and close to indicate connection to the source. Wired to terminal block for easy access. Rated at 10 amps continuous and 250 VAC maximum. UL recognized, and CSA-certified.
Operating temperature	-40 ˚F (-40 ˚C) to 140 ˚F (60 ˚C)
Storage temperature	-40 ˚F (-40 ˚C) to 140 ˚F (60 ˚C)
Humidity	Up to 95% relative, non-condensing
Altitude	Up to 10,000 ft (3,000 m) without derating
Surge withstand ratings	Voltage surge performance and testing in compliance with the requirements of IEEE C62.41 (Category B3) and IEEE C62.45.
Total transfer time (source-to-source)	Will not exceed 6 cycles at 60 Hz with normal voltage applied to the actuator and without programmed transition enabled.
Manual operation handles	Transfer switches rated through 1000 amps are equipped with permanently attached operating handles and quick-break, quick-make contact mechanisms suitable for manual operation. Transfer switches over 1000 amps are equipped with manual operators. All switches must be de-energized before manual operation is attempted.

Transition modes

Open transition/programmed: Controls the time required for the device to switch from source to source, so that the load-generated voltages decay to a safe level before connecting to an energized source. Recommended by NEMA MG-1 to prevent nuisance-tripping breakers and load damage. Adjustable 0-60 seconds, default 0 seconds. Programmed transition is standard on 150-1200 amp switches, and optional on 1600-4000 amps.

Open transition/in-phase: Initiates open transition transfer when in-phase monitor senses both sources are in phase. Operates in a break-before-make sequence. Includes ability to enable programmed transition as a back-up. If sources are not in phase within 120 seconds, switches from 40-1200 amps will transfer using programmed transition (not available on open transition switches over 1200 amps).

Closed transition: Used in applications where loads are sensitive to the momentary power interruption that occurs when performing open transition between sources. Closed transition is accomplished by briefly (<100 msec) paralleling two good sources to eliminate the momentary break in the power supply.
Closed transition is only available as an option on OTPC models from 1000-4000 amps.

Genset-to-genset: Either genset can be designated as the lead genset. If the lead genset goes down or is taken offline, the transfer switch starts the second genset and transfers the load. The control can be programmed to alternate between the two gensets at a set interval up to 336 hours (2 weeks).

PowerCommand control

PowerCommand controls are microprocessor based and developed specifically for automatic transfer switch operation. The control includes all of the features and options required for most applications.

- LED lamps indicate source availability, source connected, exercise mode and test mode.
- Flash memory stores the control settings.
- Contents of the memory are not lost even if power to the controller is lost.
- On-board battery maintains the real-time clock setting and the engine start time delay.
- Choice of two control packages allows selection of the most suitable control for the application.

Control functions

Level 1 control (C023)

Open transition (in-phase)
Open transition (programmed)
Utility-to-genset applications
Software adjustable time delays:
Engine start: 0 to 120 sec
Transfer normal to emergency: 0 to 120 sec
Re-transfer emergency to normal: 0 to 30 min
Engine stop: 0 to 30 min
Programmed transition: 0 to 60 sec
Undervoltage sensing: 3-phase normal, 1-phase emergency
Accuracy: =/- 2%
Pickup: 85% to 100% of nominal voltage
Dropout: 75% to 98% of pickup setting
Dropout time delay: 0-4 sec
Overvoltage sensing: 3-phase normal, 1-phase emergency
Accuracy: =/- 2%
Pickup: 95% to 99% of dropout setting
Dropout: 105% to 135% of nominal voltage
Dropout time delay: 0 to 120 sec
Over/under frequency sensing:
Accuracy: ±0.05 Hz
Pickup: ±5% to ±20% of nominal frequency
Dropout: 1-5% beyond pickup
Dropout time delay: 0.1 to 15.0 sec
Programmable genset exerciser: One event/schedule with or w/o load
Basic indicator panel:
Source available/connected LED indicators
Test/exercise/override buttons
Digital display – optional (M018)
Analog bar graph meter display – optional (D009)
Date/time-stamped event recording: 50 events
Load sequencing: Optional with network communications module M031. Provides control for eight steps of load with an adjustable time delay for each step on transfer, re-transfer or both.

Level 2 control (C024)

Open transition (in-phase)
Open transition (programmed)
Closed transition (includes fail-to-disconnect timer to prevent extended paralleling with the utility)
Utility-to-genset applications
Utility-to-utility applications
Genset-to-genset applications
Software adjustable time delays:
Engine start: 0 to 120 sec
Transfer normal to emergency: 0 to 120 sec
Re-transfer emergency to normal: 0 to 30 min
Engine stop: 0 to 30 min
Programmed transition: 0 to 60 sec
Undervoltage sensing: 3-phase normal, 3-phase emergency
Accuracy: +/- 2%
Pickup: 85% to 100% of nominal voltage
Dropout: 75% to 98% of pickup setting
Dropout time delay: 0-4 sec
Overvoltage sensing: 3-phase normal, 3-phase emergency
Accuracy: ±2%
Pickup: 95% to 99% of dropout setting
Dropout: 105% to 135% of nominal voltage
Dropout time delay: 0 to 120 sec
Over/under frequency sensing:
Accuracy: =/- 0.05 Hz
Pickup: ±5% to ±20% of nominal frequency
Dropout: 1-5% beyond pickup
Dropout time delay: 0.1 to 15.0 sec
Voltage imbalance sensing:
Dropout: 2% to 10%
Pickup: 90% of dropout
Time delay: 2.0 to 20.0 sec
Phase rotation sensing:
Time delay: 100 msec
Loss of single phase detection:
Time delay: 100 msec
Programmable genset exerciser: Eight events/schedules with or w/o load
Basic indicator panel:
Source available/connected LED indicators
Test/exercise/override buttons
Digital display – standard
Analog bar graph meter display – optional (D009)
Date/time-stamped event recording: 50 events
Load sequencing: Optional with network communications module M031. Provides control for eight steps of load with an adjustable time delay for each step on transfer, re-transfer, or both.
Genset-to-genset: Same functions as above, for lead and secondary generators.
Utility-to-utility: Same functions as above, for preferred and alternate source.

Time-delay functions

Engine start: Prevents nuisance genset starts due to momentary power system variation or loss. Not included in utility-to-utility systems.

Transfer normal to emergency: Allows genset to stabilize before application of load. Prevents power interruption if normal source variation or loss is momentary. Allows staggered transfer of loads in multiple transfer switch systems. For genset-to-genset applications, delays transfer of load from lead to secondary generator.

Re-transfer emergency to normal: Allows the utility to stabilize before re-transfer of load. Prevents needless power interruption if return of normal source is momentary. Allows staggered transfer of loads in multiple transfer switch systems. For genset-to-genset applications, delays re-transfer of load from secondary back to lead generator.

Engine stop: Maintains availability of the genset for immediate reconnection if the normal source fails shortly after retransfer. Allows gradual genset cool down by running unloaded. Not included in utility-to-utility systems.

Elevator pre-transfer signal: Requires optional relay signal module (M023). Signals elevator system that transfer is pending and delays transfer for pre-set interval of 0-60 seconds to prevent a power interruption during elevator operation.

User interfaces

Basic interface panel

LED indicators provide at-a-glance source and transfer switch status for quick summary of system conditions. Test and override buttons allow delays to be bypassed for rapid system checkout.

Digital display (M018)

The digital display provides a convenient method for monitoring load power conditions, adjusting transfer switch parameters, monitoring PowerCommand network status or reviewing transfer switch events. Password protection limits access to adjustments to authorized personnel. The digital display is optional with the PowerCommand Level 1 control and comes standard with the Level 2 control.

User interface options

Front panel security key (M017)

Locks front panel to prohibit access to digital control settings. Prevents unauthorized activation of transfer or test functions.

Bar graph meter display (D009)

An LED bar graph display provides an easy-to-read indicator of the level of power being supplied to the load. Information displayed includes: 3-phase voltage and current, frequency, power factor, and kilowatts. Green, amber, and red LEDs provide at-a-glance indication of system acceptability. Available as an option with the Level 2 PowerCommand microprocessor control.

Control Options

Relay signal module (M023)

Provides relay output contacts for sending information to the building monitoring and control system. Relay outputs include: Source 1 connected/available, Source 2 connected/available, not in auto, test/exercise active, failed to disconnect, failed to synchronize, failed to transfer/re-transfer, and elevator control pre-transfer signal.

Loadshed (M007)

Removes the load from the emergency power source by driving the transfer switch to the neutral position when signaled remotely. Transfers load back to the emergency source when the signal contacts open. Immediately re-transfers back to the primary source when available. Available for utility-to-genset applications only.

PowerCommand network interface (M031)

Provides connection to the PowerCommand network. LonWorks compatible for integration with building monitoring and control system.

Load power and load current monitoring (M022)

Measures load phase and neutral current, power factor, real power (kW) and apparent power (kVA). Warns of excessive neutral current resulting from unbalanced or nonlinear loads. Minimum current level detection is 3%.

UL withstand and closing ratings

OTPC transfer switches must be protected by circuit breakers or fuses. Referenced drawings include detailed listings of specific breakers or fuse types that must be used with the respective transfer switches. Consult with your distributor/dealer to obtain the necessary drawings. Withstand and closing ratings (WCR) are stated in symmetrical RMS amperes.

	MCCB protection			Special circuit breaker protection		
Transfer switch ampere	**WCR @ volts max with specific manufacturers MCCBs**	**Max MCCB rating**	**Drawing reference**	**With specific current limiting breakers (CLB)**	**Max CLB rating**	**Drawing reference**
40, 70, 125 3-pole	14,000 at 480 14,000 at 600	225 A	A050J441	200,000 at 480 100,000 at 600	225 A	A048J566
40, 70, 125 4-pole	30,000 at 480 30,000 at 600	400 A	A048E949	200,000 at 480 100,000 at 600	400 A	A051D533
150, 225, 260	30,000 at 480 30,000 at 600	400 A	A048E949	200,000 at 480 100,000 at 600	400 A	A051D533
300, 400, 600	65,000 at 480 65,000 at 600	1200 A	A048E951	200,000 at 480 100,000 at 600	1200 A	A048J564
800, 1000 open	65,000 at 480 50,000 at 600	1400 A	A048E953	150,000 at 480 100,000 at 600	1400 A	A048J562
1000, 1200 closed	85,000 at 480 65,000 at 600*	1600 A	A052L319			
1200 open, delayed	85,000 at 480 65,000 at 600	1600 A	A048E947	200,000 at 480 200,000 at 600	1600 A	A048P186
1600, 2000, 3000, 4000	These amperages don't have specific circuit breaker ratings. See 3 cycle ratings table.					

Fuse protection

Transfer switch ampere	**WCR @ volts max. with current limiting fuses**	**Max fuse, size and type**	**Drawing reference**
40, 70, 125 3- and 4-pole	200,000 at 480 200,000 at 600	200 A Class, J, RK1, RK5, T	A050J441
150, 225, 260	200,000 at 480 200,000 at 600	600 A Class, J, RK1, RK5 1200 A Class L or T	A048E949
300, 400, 600	200,000 at 480 200,000 at 600	600 A Class, RK1 or RK5 1200 A Class L or T	A048E951
800, 1000 open	200,000 at 480 200,000 at 600	600 A Class, J, RK1 or RK5 1200 A Class T 2000 A Class L	A048E953
1000, 1200 closed	200,000 at 480**	3000 A Class L	A052L319
1200 open	200,000 at 480 200,000 at 600	600A Class J, RK1 or RK5 1200 A Class T 2000 A Class L	A048E947
1600, 2000	200,000 at 480**	2500 A Class L	A052L322
3000	200,000 at 480**	4000 A Class L	A052L322
4000	200,000 at 480** 200,000 at 600*	6000 A Class L	A052L324

*CSA only
**UL only

3-cycle ratings

Transfer switch ampere	WCR @ volts max 3-cycle rating	Max MCCB rating	Drawing reference
1000, 1200 closed	50,000 at 480 42,000 at 600*	1600 A	A052L319
1200 open	50,000 at 480 42,000 at 600	1600 A	A048E947
1600, 2000	100,000 at 480 65,000 at 600*	4000 A	A052L322
3000	100,000 at 480 65,000 at 600*	4000 A	A052L322
4000	100,000 at 480 85,000 at 600*	5000 A	A052L324

*CSA only

Transfer switch lug capacities

All lugs are 90ºC rated and accept copper or aluminum wire unless indicated otherwise.

Amp rating	Cables per phase	Size
40, 70, 125 3-pole	1	#12 AWG-2/0
40 4-pole	1	#14 AWG-2/0
70, 125 4-pole	1	#6 AWG - 300 MCM
150, 225	1	#6 AWG - 300 MCM
260	1	#6 AWG - 400 MCM
300, 400	2	Two hole lug, one accepts 3/0 – 600 MCM and the other accepts #4 AWG – 250 MCM
600	2	250 - 500 MCM
800 1000 open, delayed	4	250 - 500 MCM
1000 closed 1200 closed	4	#2 AWG to 600 MCM
1200 open, delayed	4	#2 AWG to 600 MCM, standard (feature N045) 1/0 AWG to 750 MCM, optional (feature N066) Compression Lug Adapter, optional (feature N032)**
1600, 2000	8	#2 AWG to 600 MCM (lugs optional)
3000	8	#2 AWG to 600 MCM (lugs optional)
4000	12	1/0 AWG to 750 MCM (lugs optional)

**Recommended Compression Lugs (½" stud, 1-3/4" centers) Lug mounting hardware included.

750 MCM	600 MCM	500 MCM	Manufacturer
CRA-750L2	CRA-600L2	CRA-500L2	ILSCO
2ACL-750	2ACL-600	2ACL-500	
2IACL-750	2IACL-600	2IACL-500	
54223	54289	54286	THOMAS & BETTS
60278	60275	60273	
60278N	60278N	60278N	
LCN75	LCN600	LCN500	
ATL502	ATL6002	ATL5002	
YA39-2LN	YA36-2LN	YA34-2LN	BURNDY
YA39-2N	YA36-2N	YA34-2N	
YA44L-2NTC-LD	-	YA38L-2NTC-FX	
YAG44L-2NTC-LD	-	YAG38L-2NTC-LD	
YA44-2N-FXB	-	YA38-2N-FXB	
YA39A5 and YA39AM2	YA36A3	YA34A3	

Enclosures

Dimensions - transfer switch in UL type 1 enclosure

Amp rating	Height		Width		Depth				Weight		Outline drawing
					Door closed		Door open				
	in	mm	in	mm	in	mm	in	mm	lb	kg	
40, 70, 125 3-pole	27.0	686	20.5	521	12.0	305	31.5	800	82	37	0310-0544
40, 70, 125 4-pole	35.5	902	26.0	660	16.0	406	41.0	1042	165	75	0500-4896
150, 225	35.5	902	26.0	660	16.0	406	41.0	1042	165	75	0310-0414
260	43.5	1105	28.5	724	16.0	406	43.0	1093	170	77	0310-0540
300, 400, 600	54.0	1372	25.5	648	18.0	457	42.0	1067	225	102	0310-1307
800, 1000 open	68.0	1727	30.0	762	20.6	524	48.5	1232	360	163	0310-0417
1000, 1200 closed	76.3	1937	36.0	915	22.7	577	54.0	1372	450	204	0310-0482
1200 open	90.0	2290	39.0	991	27.5	699	64.7	1644	730	331	A030L605
1600, 2000*	90.0	2290	36.0.	915	48.0	1219	84.0	2134	1100	499	0310-0483
3000*	90.0	2290	36.0	915	48.0	1219	84.0	2134	1250	567	0310-0484
4000*	90.0	2290	46.5	1180	60.0	1520	106	2700	1850	839	0500-4485

Dimensions - transfer switch in UL type 3R, 4 or 12 enclosure

Amp rating	Height		Width		Depth				Weight		Cabinet type	Outline drawing
					Door closed		Door open					
	in	mm	in	mm	in	mm	in	mm	lb	kg		
40, 70, 125 3-pole	34.0	864	26.5	673	12.5	318	36.5	927	125	57	3R, 12	0310-0453
											4	0310-0445
40, 70, 125 4-pole	42.5	1080	30.5	775	16.0	406	44.0	1118	190	86	3R, 12	0500-4896
											4	0500-4896
150, 225	42.5	1080	30.5	775	16.0	406	44.0	1118	215	97	3R, 12	0310-0454
											4	0310-0446
260	46.0	1168	32.0	813	16.0	406	46.0	1168	255	102	3R, 12	0310-0455
											4	0310-0447
300, 400, 600	59.0	1499	27.5	699	18.5	419	41.5	1054	290	132	3R, 12	0310-1315
											4	0310-1316
800, 1000 open	73.5	1867	32.5	826	20.8	529	49.5	1257	410	186	3R, 12	0310-0457
											4	0310-0449
1000, 1200 closed	76.3	1937	36.0	915	22.7	577	54.0	1372	450	204	3R, 12, 4	0310-0482
1200 open	90.0	2290	39.0	991	27.5	699	64.7	1644	730	331	3R, 12	A030L605
											4	A041N372
1600, 2000*	90.0	2290	38.0	826	50.9	1293	80.0	2032	1100	499	3R, 12, 4	0310-0744
3000*	90.0	2290	38.0	965	51.0	1295	84.5	2146	1250	567	3R	0310-0745
4000*	90.0	2290	49.0	1244	60.0	1524	105	2654	1850	839	3R	0500-4486

Dimensions - transfer switch in UL type 4X stainless steel enclosure

Amp rating	Height		Width		Depth				Weight		Cabinet type	Outline drawing
					Door closed		Door open					
	in	mm	in	mm	in	mm	in	mm	lb	kg		
40, 70, 125 3-pole	46.0	1168	32.0	813	16.0	406	46.0	1168	255	102	4X	0500-4184
40, 70, 125 4-pole	46.0	1168	32.0	813	16.0	406	46.0	1168	255	102	4X	0500-4896
150, 225	46.0	1168	32.0	813	16.0	406	46.0	1168	255	102	4X	0500-4184
260	46.0	1168	32.0	813	16.0	406	46.0	1168	255	102	4X	0500-4184
300, 400, 600	73.5	1867	32.5	826	19.5	495	49.5	1257	410	186	4X	0500-4185
800, 1000 open	73.5	1867	32.5	826	19.5	495	49.5	1257	410	186	4X	0500-4185
1000, 1200 closed	70.0	1778	40.0	1016	19.8	502	59.0	1499	450	204	4X	0310-0482
1200 open	90.0	2290	39.0	991	27.5	699	64.7	1644	730	331	4X	A041N372
1600, 2000	90.0	2290	35.5	826	50.9	1293	80.0	2032	1100	499	4X	0310-0744

* Rear and side access is required for installation. Dimensions shown are for 4-pole. For information on 3-pole switches, call factory.

Submittal detail

Amperage ratings
- ☐ 40
- ☐ 70
- ☐ 125
- ☐ 150
- ☐ 225
- ☐ 260
- ☐ 300
- ☐ 400
- ☐ 600
- ☐ 800
- ☐ 1000
- ☐ 1200
- ☐ 1600
- ☐ 2000
- ☐ 3000
- ☐ 4000

Voltage ratings
- ☐ R020 120*
- ☐ R038 190
- ☐ R021 208
- ☐ R022 220
- ☐ R023 240
- ☐ R024 380
- ☐ R025 416
- ☐ R035 440
- ☐ R026 480
- ☐ R027 600

* Single phase connection (not available on 1200-4000 amps)

Pole configuration
- ☐ A028 Poles - 3 (solid neutral)
- ☐ A029 Poles - 4 (switched neutral)

Frequency
- ☐ A044 60 Hertz
- ☐ A045 50 Hertz

Transfer mode
- ☐ A077 Open transition/in-phase
- ☐ A078 Open transition/programmed
- ☐ A079 Closed transition (available 1000-4000 amps, for closed transition below 1000 amps, see CHPC spec sheet S-1437)

Application
- ☐ A035 Utility to genset
- ☐ A036 Utility to utility
- ☐ A037 Genset to genset

System options
- ☐ A041 Single Phase, 2-wire or 3-wire (not available 1200-4000 amps)
- ☐ A042 Three Phase, 3-wire or 4-wire

Enclosure
- B001 Type 1: Indoor use, provides some protection against dirt (similar to IEC type IP30)
- ☐ B002 Type 3R:Intended for outdoor use, provides some protection from dirt, rain and snow (similar to IEC type IP34)
- ☐ B003 Type 4: Indoor or outdoor use, provides some protection from wind-blown dust and water spray (similar to IEC type IP65)
- ☐ B004 Open Construction: No enclosure - includes automatic transfer switch and controls (call factory for dimensions)
- ☐ B010 Type 12: Indoor use, some protection from dust (similar to IEC type IP61)
- ☐ B025 Type 4X: Stainless steel, indoor or outdoor use, provides some protection from corrosion (similar to IEC Type IP65)

Standards
- ☐ A046 UL 1008/CSA certification
- ☐ A064 NFPA 20 compliant (not available on 1200-4000 amp switches)
- ☐ A080 Seismic certification

Controls
- ☐ C023 PowerCommand control - Level 1
- ☐ C024 PowerCommand control - Level 2

Control options
- ☐ M017 Security key - front panel
- ☐ M018 Digital display
- ☐ M022 Load monitoring (min current level 3%)
- ☐ M023 Relay signal module. Includes pre-transfer module for elevator control
- ☐ M031 LonWorks network communications module (FTT-10)

Meter
- ☐ D009 Analog bar graph meter

Battery chargers
- ☐ K001 2 amps, 12/24 volts
- ☐ KB59 15 amps, 12 volts
- ☐ KB60 12 amps, 24 volts

Protective relays (closed transition)
- ☐ M045 Paralleling timer and lock-out relays, ANSI/IEEE 62PL and 86
- ☐ M046 Paralleling timer, lock-out and reverse power relays, single phase, ANSI/IEEE 62PL, 86 and 32R
- ☐ M047 Paralleling timer, lock-out and reverse power relays, three phase, ANSI/IEEE 62PL, 86 and 32R

Auxiliary relays - Relays are UL listed and factory installed. All relays provide two normally closed isolated and two normally open contacts rated 10 amps at 600 VAC. Relay terminals accept from one 18 gauge to two 12 gauge wires per terminal.
- ☐ L101 24 VDC coil - installed, not wired (for customer use).
- ☐ L102 24 VDC coil - emergency position - relay energized when switch is in Source 2 (emergency) position.
- ☐ L103 24 VDC coil - normal position - relay energized when switch is in Source 1 (normal) position
- ☐ L201 12 VDC coil - installed, not wired
- ☐ L202 12 VDC coil - emergency position - relay energized when switch is in Source 2 (emergency) position
- ☐ L203 12 VDC coil - normal position - relay energized when switch is in Source 1 (normal) position

Miscellaneous options
- ☐ M003 Terminal block - 30 points (not wired)
- ☐ N020 Terminal block – re-transfer inhibit
- ☐ M007 Load shed - from emergency - drives switch to neutral position when remote signal contact closes
- ☐ N009 Power connect - bus stabs (150-1200 amp open construction only)
- ☐ N013 Extension harness (open construction only)

Lug kits (select one)
- ☐ N008 Mechanical Lugs, 600 MCM (1000A closed, 1200A closed,1600A-3000A only)
- ☐ N032 Compression Lug Adapters (1200A open/delayed only)
- ☐ N045 Mechanical Lugs, 600 MCM (1200A open/delayed only)
- ☐ N056 Mechanical Lugs, 750 MCM (4000A only)
- ☐ N066 Mechanical Lugs, 750 MCM (1200A open/delayed only)

Warranty
- ☐ G010 Years 0-2: Parts, labor and travel
  Years 3-5: Parts only
  Years 6-10: Main contacts only
- ☐ G013 Years 0-5: Comprehensive
  Years 6-10: Main contacts only

Shipping
- ☐ A051 Packing - export box

Accessories

AC-167 Accessories specifications sheet

Power Generation

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Manston Park Columbus Ave.
Manston Ramsgate
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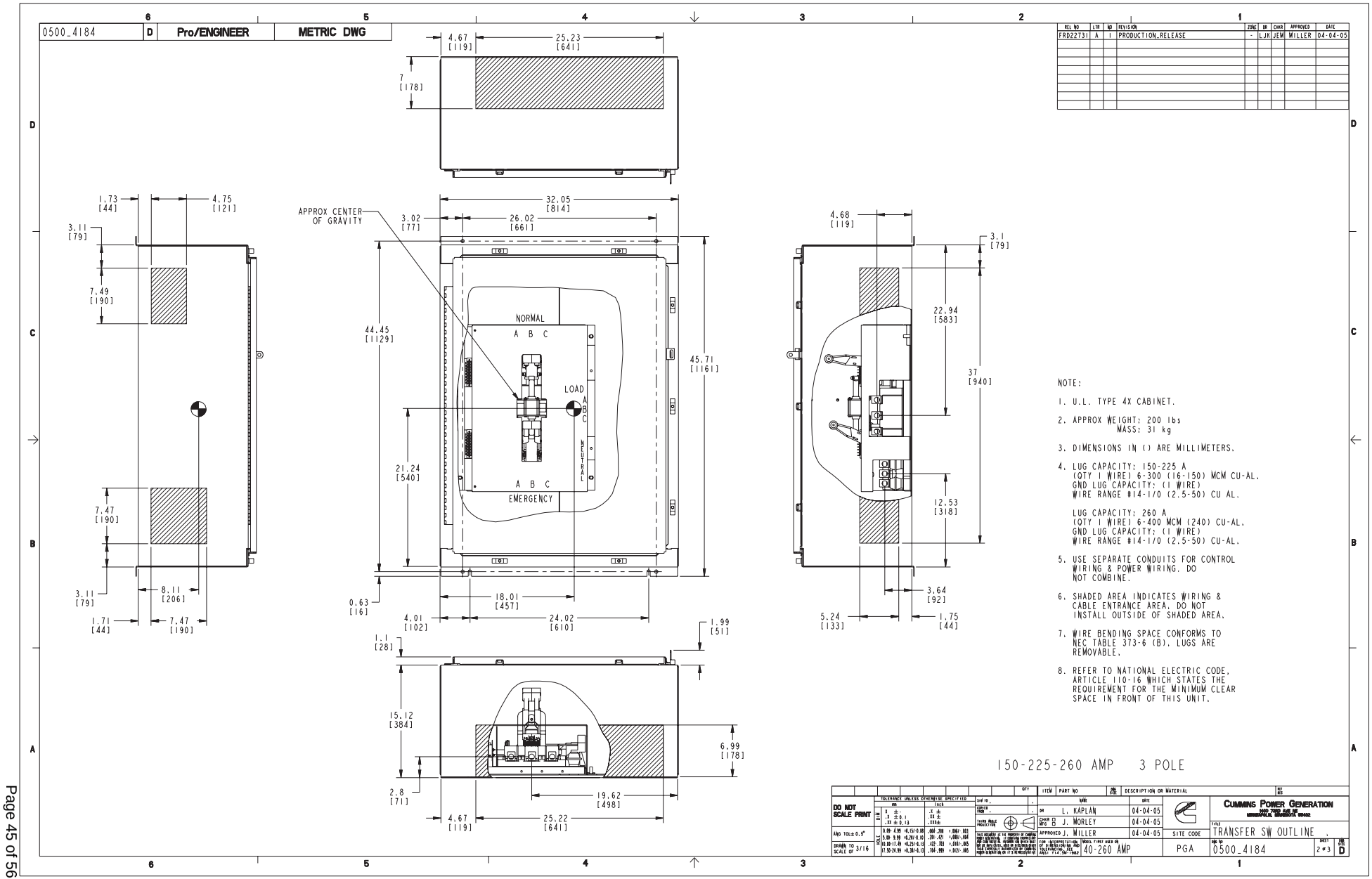

225 amp OTPC
3 pole, Nema 4X

PowerCommand® Annunciator Discrete Input or PCCNet

> Specification sheet

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Power Generation

Description

The Universal Annunciator Module provides visual and audible indication of up to 20 separate alarm or status conditions, based on discrete (relay) inputs or network inputs. Each LED can be controlled by either a discrete wire input or by a signal on the PCCNet network sent from an external device, such as a PCC1301 or PCC2100 (version 2.4 or later) control.

In addition to the LEDs, the annunciator can control four custom relays based on signals received over the PCCNet. When one of the annunciator's discrete inputs is activated, the annunciator will broadcast that information over the network. By taking advantage of the network, discrete inputs and custom relays, the annunciator can be used as expanded I/O for a genset controller.

Easily installed in a location to give immediate notification of an alarm or warning status. Designed to give operating/monitoring personnel quick-glance status information. The module directly senses battery voltage to provide green/yellow/red alarm and status information for that parameter.

Genset controller complies with NFPA level two requirements when used with the display but without the annunciator panel. When used with the annunciator it meets NFPA level one requirements (emergency and standby power systems). The annunciator module can also be used for monitoring of transfer switch or other equipment status.

Features

- Visual and audible warnings of up to 20 separate alarm or status conditions.
- LEDs can be controlled either via PCCNet or discrete input.
- Status of discrete inputs is broadcast on network.
- Four custom relays can be controlled over the PCCNet network.
- Configurable LED color (red, yellow or green) and selectable horn operation allows maximum flexibility.
- Standard NFPA 110 label, field configurable for other alarm status and conditions.
- Each audible alarm is annunciated, regardless of the number of existing alarm conditions displayed.
- Sealed membrane panel design provides environmental protection for internal components and is easy to clean.
- Configurable for negative (ground) input or positive input.
- Integral DC voltage sensing.
- Flush or surface mount provisions.
- UL Listed and labeled; CSA certified; CE marked.

S-1472e (8/09)

Specifications

Signal requirements

Positive - Input impedance is 1.82 kOhms to ground; maximum input voltage = 31 VDC.

Negative - Input impedance is 1.82 kOhms to Bat+: inputs are at Bat+ level when open.

Sink/source current threshold for detection - 150 uA minimum, 3 mA maximum.

Typical conductor size: 16 ga for 304.8 m (1000 ft)

Max conductor size for terminal: 12 ga

Relay outputs

0.2 A at 125 VAC and 1 A at 30 VDC

Network connections

Use Belden 9729 two pair, stranded, shielded 24 AWG twisted pair cable for all PCCNet connections. Total network length can not exceed 1219 m (4000 ft). Up to 20 nodes can be connected to the network.

Note: Any communications wire connected to the generator set should be stranded cable.

Power

Maximum consumption: 15 watts

Battery voltage

Functional range - Audible and visual conditions operational from 6.5 to 31 VDC.

Low voltage setting - 12.0 VDC for 12 Volt nominal systems; 24.0 for 24 Volt nominal systems.

High voltage setting - 16.0 Volt for 12 Volt nominal systems; 32.0 Volt for 24 Volt nominal systems.

Alarm horn

Sound level: 90 dB at 30 cm

Physical

Weight (with enclosure): 1.4 kg (3.0 lbs)

Temperature

-20 °C to +70 °C (-4 °F to +158 °F)

Humidity

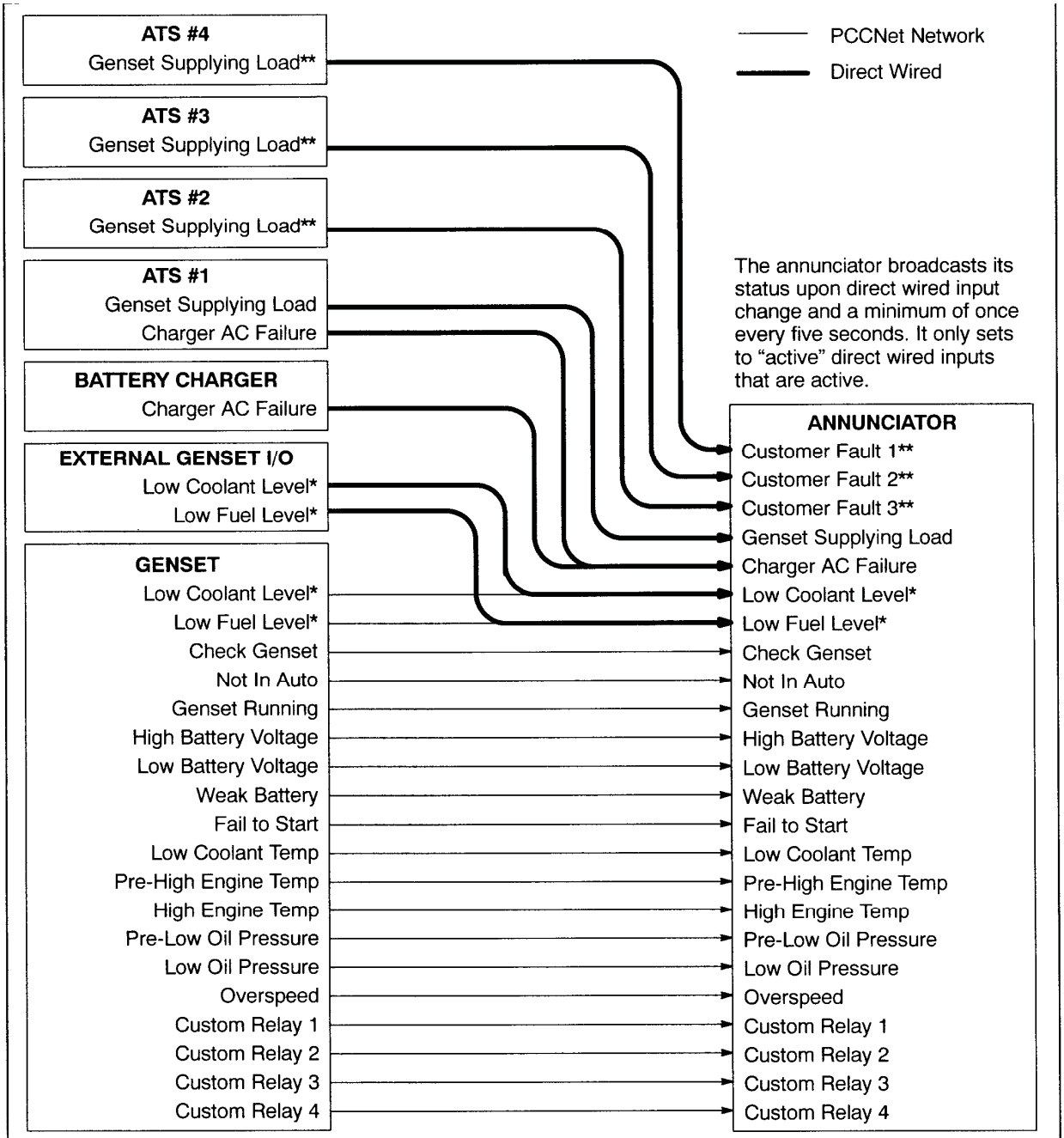
10% to 95% RH (non-condensing)

Default lamp configurations

Can be configured for current NFPA 110 standard or as a replacement for Legacy (pre-2001) NFPA 110 annunciator (300-4510 or 300 4511)

		NFPA 110		
Lamp	Description	Color	Horn	Flash
DS1	Customer fault 1	Green	No	No
DS2	Customer fault 2	Amber	No	No
DS3	Customer fault 3	Red	No	No
DS4	Genset supplying load	Amber	No	No
DS5	Charger AC failure	Amber	Yes	No
DS6	Low coolant level	Amber	Yes	No
DS7	Low fuel level	Red	Yes	No
DS8	Check generator set	Amber	No	No
DS9	Not in auto	Red	Yes	Yes
DS10	Generator set running	Amber	No	No
DS11	High battery voltage	Amber	Yes	No
DS12	Low battery voltage	Red	Yes	No
DS13	Weak battery	Red	Yes	No
DS14	Fail to start	Red	Yes	No
DS15	Low coolant temp	Red	Yes	No
DS16	Pre-high engine temp	Amber	Yes	No
DS17	High engine temp	Red	Yes	No
DS18	Pre-low oil pressure	Red	Yes	No
DS19	Low oil pressure	Red	Yes	No
DS20	Overspeed	Red	Yes	No

Typical installation



* Low Coolant Level and Low Fuel Level statuses can be either direct wired from External Genset I/O or be part of the PCCNet network status coming from the genset. If direct wired, then the annunciator sets the appropriate bit for the genset to reference.

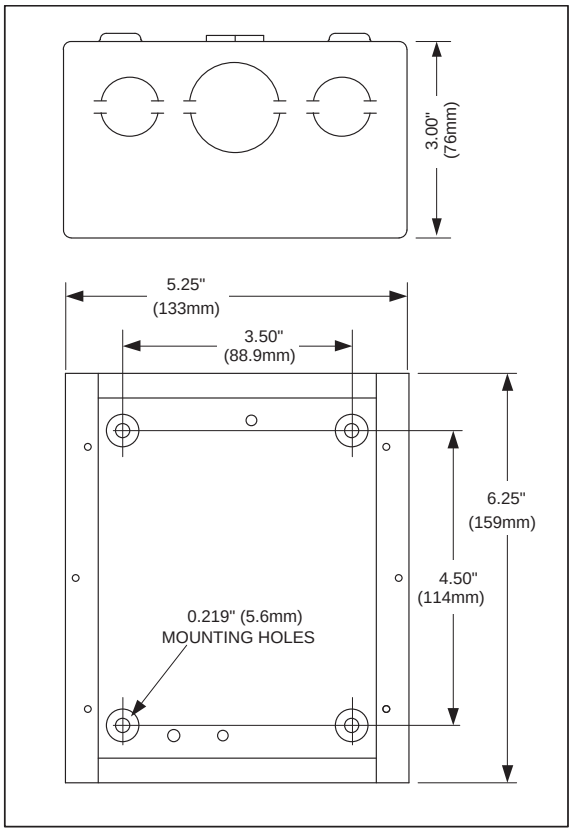
** These can be Genset Supplying Load 2 thru 4 or Customer Faults.

When enabled, High Battery Voltage, Low Battery Voltage, and Normal Battery Voltage takes precedence over the hardwired input.

Normal Battery voltage can replace Weak Battery.

1

Dimensions



Dimensions: in (mm)

Ordering information

Part number	Description
0300-5929-01	Panel mount
0300-5929-02	Panel with enclosure

PCCNet COMPATIBLE

See your distributor for more information.

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S-1472e (8/09)

Cummins Power Generation

Specification sheet

Battery Charger

A048G602 *10A 50/60 Hz*

A051H785 *20A 50/60 Hz*

Description

Cummins Power Generation fully automatic battery chargers are constant voltage/constant current chargers incorporating a 4-stage charging algorithm. Designed for use in applications where battery life and reliability are important; these chargers, complete with built-in equalize charge capability, are ideal for stationary or portable starting battery charging service.

To achieve optimum battery life, a 4-stage charging cycle is implemented. The four charging stages are constant current, high-rate taper charge, finishing charge, and maintaining charge. During the constant current cycle the charger operates at maximum possible output in the fast charge mode. During the high-rate taper charge cycle the charger stays at fast charge voltage level until battery current acceptance falls to a portion of the chargers rated output. During the finishing charge cycle the charger operates at the float voltage and completes the battery charge. During the maintaining charge cycle the charger supplies only a few milliamps required by the battery to stay at peak capability.

An optional temperature sensor (**A043D534**) may be used to adjust charging voltage based on temperature of the battery. Use of a battery temperature sensor helps to increase battery life by preventing over or under charging. The battery temperature sensor also protects the battery from overheating. Temperature compensation sensor is required for all applications when battery charger and battery are located in different temperature or battery heater is being used.

Battery chargers are field-configurable for charging either 12 or 24 VDC battery systems at 50/60 Hz operation. Simple jumper selectors enable selection of output voltage and battery type.

Features

Protection – Surge protected to IEEE and EN standards. All models include single pole cartridge type fuses mounted on the printed circuit board to protect against input or output overcurrent.

Easy installation – Clearly marked terminal blocks and panel knockouts provide convenient connections of input and output leads.

User display – Output voltage and current, fault information and status are indicated on the front panel. Includes precision ammeter and voltmeter.

Monitoring – Status LED indicators are provided to show the condition of the charger. LED's on the right side of the monitor indicate operational functions for Temperature Compensation active (Green), AC on (Green), Float (Green) or Boost (Amber) mode, as well as Battery Fault (Red). LED's on the left side of the monitor illuminate (in Red) when Charger fail, High or Low VDC or AC fail occur.

Adjustable float voltage – Float voltage can be set, using easy to understand jumpers, for optimum battery performance and life.

Construction – NEMA-1 (IP20) corrosion resistant aluminum enclosure designed for wall mounting.

Faults – The charger senses and annunciates the following fault conditions: AC power loss, battery overvoltage, battery under voltage, battery fault conditions and charger failure. Includes an individual 30 volt/2 amp isolated contact for each alarm.

Vibration resistant design – complies with UL991 class B vibration resistance requirements.

Listed – C-UL listed to UL 1236 CSA standard 22.2 No 107.2-M89. Suited for flooded and AGM lead acid and NiCd batteries in generator set installations.

Warranty – 5 year CPG warranty.

Status and Fault LED

Field selectable jumper

Specifications

Performance and physical characteristics

Output:	Nominal voltage	12VDC* or 24VDC
	Float voltage – 12VDC batteries	12.87, 13.08, 13.31, 13.50*, 13.62, 14.30
	Float voltage – 24VDC batteries	25.74, 26.16, 26.62, 27.00*, 27.24, 28.60
	Equalize-voltage	6.5% above float voltage sensing
	Output voltage regulation	±0.5% (1/2%) line and load regulation
	Maximum output current	10 or 20 amps nominal
	Equalize charging	Battery interactive auto-boost
Input:	Voltage AC	120, 208, 240 ±10%
	Frequency	60/50 Hz ±5%
Approximate net weight:		10A: 25 lbs. (11.36 Kg) 20A: 50 lbs. (22.68 Kg)
Approximate dimensions: height x width x depth-in		10A: 12.50" x 7.66" x 6.50"(318x195x165 mm) 20A: 13.06" x 13.95" x 6.83"(332x354x173 mm)
Ambient temperature operation: At full rated output		- 4˚F to 104 ˚F (-20 ˚C to 45 ˚C)

Note:

- Battery charger comes with default settings of 12VDC and 13.50/27.00VDC float voltage and can be changed to the battery manufacture recommendations. Replacement printed circuit board and fuses are identified in the Owner's Manual (10A: A050S537 and 20A: A051X126) which resides in Quick Serve On-Line. Service parts can be purchased through the Memphis Distribution Center. The PC board replacement instruction sheet (10A: A052N073, 20A: A053W929) and service manual (A050D829) is also available.
- Installation and application must comply with "section 4.5.3 batteries and battery charger" of application guide T-030 (Liquid Cooled Generator Set Application Manual A040S369).

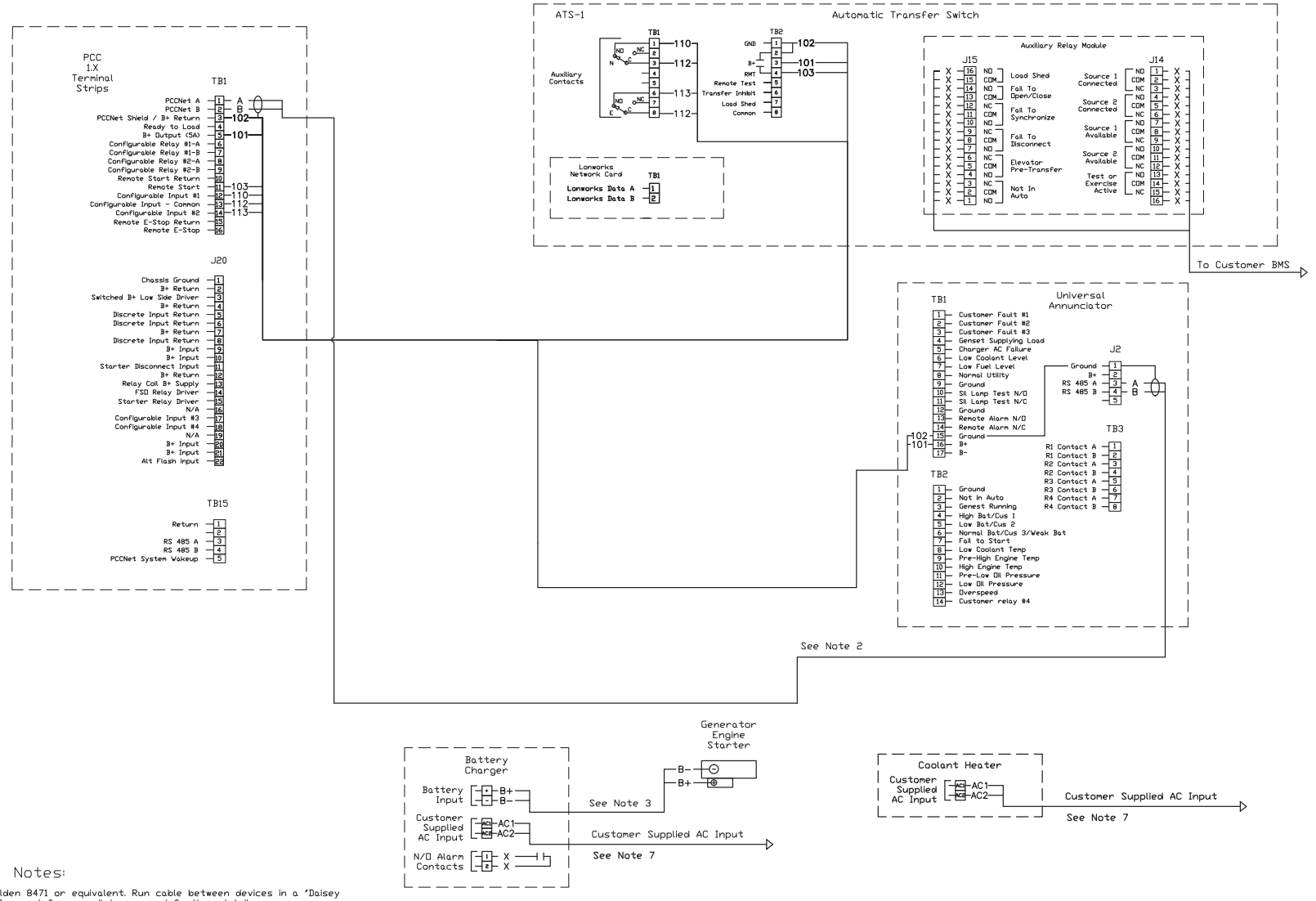
Caution:

- Higher input voltages (i.e. 480VAC or 600VAC) can be applied if a transformer with a 120VAC-240VAC output is installed. Higher input voltages (i.e. 480VAC or 600VAC) can be applied if a transformer with a 120VAC-240VAC output is installed. For voltages higher than 240 VAC, step-down transformer must be used. Review the respective Owner/Installation manual A050S537 for 10Amp and A051X126 20A chargers for supplier recommended step-down transformer requirements.
- 10Amp battery charger is recommended for genset applications with 1 or 2 factory provided batteries. 20Amp battery charger is recommended for Cummins Genset applications with 3 or 4 factory provided batteries. Please consider the auxiliary DC loads connected to the genset batteries and size this charger as per the T-030 application guide to prevent misapplication issues.
- Back feed to a utility system can cause electrocution and/or property damage. Do not connect generator sets to any building electrical system except through an approved device or after building main switch is open.
- For professional use only. Must be installed by a qualified service technician. Improper installation presents hazards of electrical shock and improper operation, resulting in severe personal injury and/or property damage.
- Use this charger for charging LEAD-ACID or LIQUID ELECTROLYTE NICKEL-CADMIUM batteries only. Do not use this battery charger for charging dry cells, alkaline, lithium, nickel-metal hydride, or sealed nickel-cadmium batteries that are commonly used with home appliances. These batteries may burst and cause injuries to persons and damage to property.
- Do not parallel these battery chargers with any other charging system.

Americas
1400 73rd Avenue N.E.
Minneapolis, MN 55432 USA
Phone: 763 574 5000
Fax: 763 574 5298

Europe, CIS, Middle East and Africa
Manston Park Columbus Ave.
Manston Ramsgate
Kent CT 12 5BF United Kingdom
Phone 44 1843 255000
Fax 44 1843 255902

Asia Pacific
10 Toh Guan Road #07-01
TT International Tradepark
Singapore 608838
Phone 65 6417 2388
Fax 65 6417 2399



Notes:

1. FTT-10 network cable use Belden 8471 or equivalent. Run cable between devices in a "Daisey Chain" configuration. See FTT-10 manual for max distances and further detail.
2. PCC NET network cable use Belden 9729 or equivalent. See Cummins documentation for max distances and further detail.
3. See wire size chart in battery charger installation manual or NEC guide.
4. Pull 20% extra wires on all runs for spares.
5. See instruction sheet C673b for Modlon II Gateway Kit pinout and further detail.
6. See AUX 101 / 102 Operator Manual for pinout and further detail.
7. See BOM for voltage.

Power Generation

Cummins Crosspoint LLC.
2301 Nelson Miller Pkwy
Louisville, KY 40223

Project:	
Title:	
AUTHOR: D. Fields	Date:

Revision: M

Sheet: 1 of 1

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Power Generation

Limited Standby 5 Year or 1,500 Hour Parts + Labor + Travel Extended Warranty – L189

Commercial Generating Set

When purchased, this limited extended warranty applies to all Cummins Power Generation® branded commercial generating sets and associated accessories (hereinafter referred to as "Product").

This warranty covers any failures of the Product, under normal use and service, which result from a defect in material or factory workmanship.

Warranty Period:

The warranty start date is the date of initial start up, first rental, demonstration or 18 months after factory ship date, whichever is sooner. The coverage duration is 5 years from warranty start date or 1,500 hours, whichever occurs first.

Emergency Standby Power (ESP) is defined as the maximum power available during a variable electrical power sequence, under the stated operating conditions, for which a generating set is capable of delivering in the event of a utility power outage. The permissible average power output over 24 hours of operation shall not exceed 70% of the ESP.

Cummins Power Generation® Responsibilities:

In the event of a failure of the Product during the extended warranty period due to defects in material or workmanship, Cummins Power Generation® will only be responsible for the following costs:

- All parts and labor required to repair the Product.
- Reasonable travel expenses to and from the Product site location.
- Maintenance items that are contaminated or damaged by a warrantable failure.

Owner Responsibilities:

The owner will be responsible for the following:

- Notifying Cummins Power Generation® distributor or dealer within 30 days of the discovery of failure.
- Installing, operating, commissioning and maintaining the Product in accordance with Cummins Power Generation®'s published policies and guidelines.
- Providing evidence for date of commissioning.
- Providing sufficient access to and reasonable ability to remove the Product from the installation in the event of a warrantable failure.

In addition, the owner will be responsible for:

- Incremental costs and expenses associated with Product removal and reinstallation resulting from non-standard installations.
- Costs associated with rental of generating sets used to replace the Product being repaired.
- Costs associated with labor overtime and premium shipping requested by the owner.
- All downtime expenses, fines, all applicable taxes, and other losses resulting from a warrantable failure.

Limitations:

This limited extended warranty does not cover Product failures resulting from:

- Inappropriate use relative to designated power rating.
- Inappropriate use relative to application guidelines.
- Failures due to normal wear, corrosion, varnished fuel system parts, lack of reasonable and necessary maintenance, unauthorized modifications and/or repair, and use of add-on or modified parts.
- Improper and/or unauthorized installation.
- Owner's or operator's negligence, accidents or misuse.
- Noncompliance with any Cummins Power Generation® published guideline or policy.
- Use of improper or contaminated fuels, coolants or lubricants.
- Improper storage before and after commissioning.

Limitations Continued:

- Owner's delay in making Product available after notification of potential Product problem.
- Replacement parts and accessories not authorized by Cummins Power Generation®.
- Use of Battle Short Mode
- Owner or operator abuse or neglect such as: operation without adequate coolant or lubricants; overfueling; overspeeding; lack of maintenance to lubricating, cooling or air intake systems; late servicing and maintenance; improper storage, starting, warm-up, run-in or shutdown practices, or for progressive damage resulting from a defective shutdown or warning device.
- Damage to parts, fixtures, housings, attachments and accessory items that are not part of the generating set.

This limited extended warranty does not cover costs resulting from:

- Difficulty in gaining access to the Product.
- Damage to customer property.
- Repair of cosmetic damage to enclosures.

Items not covered by this limited extended warranty:

- Batteries
- Enclosures
- Coolant heaters
- Exhaust systems and aftertreatment components
- Maintenance items

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CUMMINS POWER GENERATION® RIGHT TO FAILED COMPONENTS:

Failed components claimed under warranty remain the property of Cummins Power Generation®. Cummins Power Generation® has the right to reclaim any failed component that has been replaced under warranty.

THE WARRANTIES SET FORTH HEREIN ARE THE SOLE WARRANTIES MADE BY CUMMINS POWER GENERATION ® IN REGARD TO THE PRODUCT. CUMMINS POWER GENERATION® MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, OR OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT IS CUMMINS POWER GENERATION® LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

This limited extended warranty shall be enforced to the maximum extent permitted by applicable law. This limited extended warranty gives the owner specific rights that may vary from state to state or from jurisdiction to jurisdiction.

Product Model Number:_____

Product Serial Number:_____

Date in Service:_____

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Power Generation

Limited Warranty

Transfer Switch and Paralleling Systems

This limited warranty applies to all Cummins Power Generation® branded Transfer Switches, Paralleling Systems and associated accessories (hereinafter referred to as "Product").

This warranty covers any failures of the Product, under normal use and service, which result from a defect in material or factory workmanship.

Warranty Period:

The warranty start date is the date of commissioning†, demonstration or 18 months after factory ship date, whichever is sooner.

† Date of commissioning not to exceed date of Generator Set initial start-up.

Transfer Switch Coverage Duration:

The warranty coverage duration for Transfer Switches is defined in the table below for the different product families:

Product Family	Duration
GTEC, LT, LC, RST, OTEC	▪ 1 Year: Parts, Labor & Travel
RSS, Other Power Transfer Devices††	▪ 2 Years: Parts, Labor & Travel
OT, OTPC, BTPC, OHPC, CHPC, PLT	▪ Years 0-2: Parts, Labor &Travel ▪ Years 3-5: Parts Only ▪ Years 6-10: Main Contacts Only

†† Devices manufactured by Cummins Power Generation that allow power transfer between two power sources.

Paralleling Systems Coverage Duration:

The warranty coverage duration for Paralleling Systems is for a period of 2 Years from the warranty start date.

Cummins Power Generation® Responsibilities:

In the event of a failure of the Product during the warranty period due to defects in material or workmanship, Cummins Power Generation® will only be responsible for the following costs:

- Parts and labor required to repair the Product as defined by coverage duration.
- Reasonable travel expenses to and from the Product site location as defined by coverage duration.

Owner Responsibilities:

The owner will be responsible for the following:

- Notifying Cummins Power Generation® distributor or dealer within 30 days of the discovery of failure.
- Installing, operating, commissioning and maintaining the Product in accordance with Cummins Power Generation®'s published policies and guidelines.
- Providing evidence for date of commissioning.
- Providing sufficient access to and reasonable ability to remove the Product from the installation in the event of a warrantable failure.

In addition, the owner will be responsible for:

- Incremental costs and expenses associated with Product removal and reinstallation resulting from non-standard installations.
- Costs associated with rental of power generating equipment used to replace the Product being repaired.
- Costs associated with labor overtime and premium shipping requested by the owner.
- All downtime expenses, fines, all applicable taxes, and other losses resulting from a warrantable failure.

Limitations:

This limited warranty does not cover Product failures resulting from:

- Inappropriate use relative to designated power rating.
- Inappropriate use relative to application guidelines.
- Non-conformance to applicable industry standards for installation
- Normal wear and tear.
- Improper and/or unauthorized installation.
- Negligence, accidents or misuse.
- Lack of maintenance or unauthorized repair.
- Noncompliance with any Cummins Power Generation® published guideline or policy.
- Improper storage before and after commissioning.
- Owner's delay in making Product available after notification of potential Product problem.
- Replacement parts and accessories not authorized by Cummins Power Generation®.
- Owner or operator abuse or neglect such as: late servicing and maintenance and improper storage.
- Damage to parts, fixtures, housings, attachments and accessory items that are not part of the transfer switch or paralleling system.

This limited warranty does not cover costs resulting from:

- Difficulty in gaining access to the Product.
- Damage to customer property.

Please contact your local Cummins Power Generation® Distributor for clarification concerning these limitations.

CUMMINS POWER GENERATION® RIGHT TO FAILED COMPONENTS:

Failed components claimed under warranty remain the property of Cummins Power Generation®. Cummins Power Generation® has the right to reclaim any failed component that has been replaced under warranty.

Extended Warranty:

Cummins Power Generation® offers several levels of Extended Warranty Coverage. Please contact your local Cummins Power Generation ® Distributor for details.

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THE WARRANTIES SET FORTH HEREIN ARE THE SOLE WARRANTIES MADE BY CUMMINS POWER GENERATION ® IN REGARD TO THE PRODUCT. CUMMINS POWER GENERATION® MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, OR OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT IS CUMMINS POWER GENERATION® LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

This limited warranty shall be enforced to the maximum extent permitted by applicable law. This limited warranty gives the owner specific rights that may vary from state to state or from jurisdiction to jurisdiction.

Product Model Number:_____

Product Serial Number:_____

Date in Service:_____

ATTACHMENT I

EMISSIONS CALCULATIONS

Pocahontas County Public Service District
Regional Sewer Project
Air Permit Applications - Standby Generator Emissions Calculations
Prepared by: Waste Water Management, Inc.
February 28, 2017

Location No	Location	Source ID No	Engine Mfr / Model	Generator Set Model	BHP @ 100% Load	Operation	NOx			CO			VOC			PM10			Formaldehyde		
						(hrs / yr)	(g / HP-hr)	(lbs / hr)	(tons / yr)	(g / HP-hr)	(lbs / hr)	(tons / yr)	(g / HP-hr)	(lbs / hr)	(tons / yr)	(g / HP-hr)	(lbs / hr)	(tons / yr)	(g / HP-hr)	(lbs / hr)	(tons / yr)
01	Linwood Pump Station	EG-01	Cummins 4BTAA3.3-G7	C50 D6	82.5	500	3.200	0.582	0.146	0.750	0.136	0.034	0.100	0.018	0.005	0.290	0.053	0.013	0.750	0.136	0.034
02	Inn at Snowshoe Pump Station	EG-02	Cummins QSB5-G3 NR3	80DSFAE	130	500	2.840	0.814	0.203	0.370	0.106	0.027	0.020	0.006	0.001	0.040	0.011	0.003	0.370	0.106	0.027
03	Alpine Brook Pump Station	EG-03	Kubota V2203-M	20DSKBA	34	500	2.200	0.165	0.041	0.400	0.030	0.007	0.040	0.003	0.001	0.360	0.027	0.007	0.400	0.030	0.007
04	Overlook Village Pump Station	EG-04	Kubota V2203-M	20DSKBA	34	500	2.200	0.165	0.041	0.400	0.030	0.007	0.040	0.003	0.001	0.360	0.027	0.007	0.400	0.030	0.007
05	Meadows at Hawthorne Pump Station	EG-05	Kubota D1703-M	10DSKAA	17	500	4.500	0.169	0.042	0.500	0.019	0.005	0.190	0.007	0.002	0.110	0.004	0.001	0.500	0.019	0.005
06	Hawthorne Pump Station	EG-06	Cummins QSB7-G5 NR3	100DSGAA	162	500	1.940	0.693	0.173	0.830	0.296	0.074	0.120	0.043	0.011	0.100	0.036	0.009	0.830	0.296	0.074
07	Silver Creek Pump Station	EG-07	Cummins 4BT3.3-G5 NR3	35DGHCB	58.6	500	2.810	0.363	0.091	0.540	0.070	0.017	0.050	0.006	0.002	0.090	0.012	0.003	0.540	0.070	0.017
08	Employee Housing Pump Station	EG-08	Cummins 4BT3.3-G5 NR3	35DGHCB	58.6	500	2.810	0.363	0.091	0.540	0.070	0.017	0.050	0.006	0.002	0.090	0.012	0.003	0.540	0.070	0.017
09	Wastewater Treatment Plant	EG-09	Cummins QST30-G5 NR2	750DQFAA	1,102	500	3.970	9.645	2.411	0.460	1.118	0.279	0.090	0.219	0.055	0.120	0.292	0.073	0.460	1.118	0.279
10	Snowshoe Village Pump Station	EG-10	Cummins 4BT3.3-G5 NR3	35DGHCB	58.6	500	2.810	0.363	0.091	0.540	0.070	0.017	0.050	0.006	0.002	0.090	0.012	0.003	0.540	0.070	0.017

Notes:

1. Data shown in green is manufacturer data.
2. Data shown in red is taken from the application.
3. Data shown in blue is calculated from manufacturer data and the application.
    a. Emissions in lbs / hr = (BHP @ 100% load) x (grams of constituent / HP-hr) x (0.022 lbs / gram)
    b. Emissions in tons / yr = (Emissions in lbs / hr) x (Operation hrs / yr) / (2,000 lbs / ton)

ATTACHMENT L

GENERAL PERMIT REGISTRATION APPLICATION FEE

ATTACHMENT O

EMISSIONS SUMMARY SHEETS

Exhaust Emission Data Sheet
C50 D6
60 Hz Diesel Generator Set
EPA Emission

Engine Information:

Model:	Cummins 4BTAA3.3-G7	Bore:	3.74 in. (95 mm)
Type:	4 Cycle, In Line, 4 Cylinder Diesel	Stroke:	4.53 in. (115 mm)
Aspiration:	Turbocharged and Charge air cooled	Displacement:	199 cu. In. (3.3 liters)
Compression Ratio:	17.3:1		
Emission Control Device:			

	1/4	1/2	3/4	Full	
PERFORMANCE DATA	**Standby**	**Standby**	**Standby**	**Standby**	
BHP @ 1800 RPM (60 Hz)	20.6	41.3	61.9	82.5	
Fuel Consumption (gal/Hr)	1.9	2.8	3.8	4.3	
Exhaust Gas Flow (CFM)	219.8	335.3	435.4	531.5	
Exhaust Gas Temperature (°F)	734.3	827.3	864	913.7	
EXHAUST EMISSION DATA					
HC (Total Unburned Hydrocarbons)	0.6	0.2	0.1	0.1	
NOx (Oxides of Nitrogen as NO2)	3.3	2.5	2.7	3.2	
CO (carbon Monoxide)	2	1.2	0.7	0.3	
PM (Particular Matter)	0.4	0.2	0.1	0.1	
SO2 (Sulfur Dioxide)	0.2	0.2	0.1	0.1	
Smoke (Bosch)	0.7	0.6	0.5	0.5	

All values are Grams per HP-Hour

TEST CONDITIONS

Data is representative of steady-state engine speed (± 25 RPM) at designated genset loads. Pressures, temperatures, and emission rates were stabilized.

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

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

2016 EPA Tier3 Exhaust Emission Compliance Statement
C50 D6
Stationary Emergency
60 Hz Diesel Generator Set

Compliance Information:

The engine used in this generator set complies with U.S. EPA New Source Performance Standards for Stationary Emergency engine under the provisions of 40 CFR Part 60 Subpart IIII when tested per ISO 8178 D2.

Engine Manufacturer:	Cummins Inc
EPA Certificate Number:	GCEXL03.3CAA-020
Effective Date:	11/04/2015
Date Issued:	11/04/2015
EPA Engine Family (Cummins Emissions Family):	GCEXL03.3CAA (C782)

Engine Information:

Model:	4BTAA3.3-G7	Bore:	3.74 in. (95 mm)
Engine Nameplate HP:	99	Stroke:	4.53 in. (115 mm)
Type:	4 Cycle, In Line, 4 Cylinder Diesel	Displacement:	199 cu. In. (3.3 liters)
Aspiration:	Turbocharged and Charge Air Cooled	Compression Ratio:	17.3:1
Emission Control Device:		Exhaust Stack Diameter:	3 in.(76 mm)

Diesel Fuel Emission Limits

D2 Cycle Exhaust Emissions

	Grams per BHP-hr			Grams per kWm-hr		
	NOx + NMHC	CO	PM	NOx + NMHC	CO	PM
Cert Test Results - Diesel Fuel (300-4000 ppm Sulfur)	3.20	0.75	0.29	4.30	1.00	0.39
EPA Emissions Limit	3.50	3.70	0.30	4.70	5.00	0.40
Cert Test Results - CARB Diesel Fuel (<15 ppm Sulfur)	2.90	0.75	0.25	3.90	1.00	0.34
CARB Emissions Limit	3.50	3.70	0.15	4.70	5.00	0.20

Cert Test Results - The CARB emission values are based on CARB approved calculations for converting EPA (500 ppm) fuel to CARB (15 ppm) fuel.

Test Methods: EPA/CARB emissions recorded per 40CFR89 (ref. ISO8178-1) and weighted at load points prescribed in Subpart E, Appendix A for Constant Speed Engines (ref. ISO8178-4, D2)

Diesel Fuel Specifications: Cetane Number: 40-48. Reference: ASTM D975 No. 2-D.

Reference Conditions: Air Inlet Temperature: 25°C (77°F), Fuel Inlet Temperature: 40°C (104°F). Barometric Pressure: 100 kPa (29.53 in Hg), Humidity: 10.7 g/kg (75 grains H2O/lb) of dry air; required for NOx correction, Restrictions: Intake Restriction set to a maximum allowable limit for clean filter; Exhaust Back Pressure set to a maximum allowable limit.

Tests conducted using alternate test methods, instrumentation, fuel or reference conditions can yield different results.
Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

EMERGENCY GENERATOR EMISSION SUMMARY SHEET FOR CRITERIA POLLUTANTS

Emergency Generator Location: As Shown Below | **Registration Number** (Agency Use) G65-C

	Potential Emissions (lbs/hr)					Potential Emissions (tons/yr)				
Source ID No.	**NO_X**	**CO**	**VOC**	**SO_2**	**PM_{10}**	**NO_X**	**CO**	**VOC**	**SO_2**	**PM_{10}**
Emergency Generator Location: Linwood Pump Station										
EG-01	**0.582**	**0.136**	**0.018**	**0.018**	**0.053**	**0.146**	**0.034**	**0.005**	**0.005**	**0.013**
Totals						**0.146**	**0.034**	**0.005**	**0.005**	**0.013**