

2,639.5

6,395.9

11,355.9

11,723.5

2,476.8

2,288.3

600.0

60

905

48

302.6

2,355.5

5,576.9

10,061.2

10,377.6

2,196.4

2,033.1

500.0

50

765

37

262.3

2,076.5

4,775.6

8,810.4

9,077.6

1,911.9

1,773.0

400.0

40

628

27

223.0

1,805.8

4,001.6

7,595.0

7,814.6

1,652.1

1,535.9

300.0

30

490

18

183.7

1,537.6

3,237.7

6,435.6

6,610.0

1,400.8

1,306.8

250.0

25

420

14

163.9

1,403.3

2,856.8

5,874.1

6,026.7

1,273.8

1,190.9

200.0

20

350

11

146.2

1,286.2

2,507.0

5,386.7

5,517.7

1,161.2

1,089.1

100.0

10

206

6

122.6

1,147.6

1,981.6

4,797.2

4,885.1

1,027.0

974.3

Bottom of Form

---

Heat Rejection Data Top

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#top>>

Top of Form

13 results found, displaying 1 to 13

GENSET POWER WITH FAN

PERCENT LOAD  
ENGINE POWER  
REJECTION TO JACKET WATER  
REJECTION TO ATMOSPHERE  
REJECTION TO EXH  
EXHUAUST RECOVERY TO 350F  
FROM OIL COOLER  
FROM AFTERCOOLER  
WORK ENERGY  
LOW HEAT VALUE ENERGY  
HIGH HEAT VALUE ENERGY

EKW

%  
BHP  
BTU/MIN  
BTU/MIN  
BTU/MIN  
BTU/MIN  
BTU/MIN  
BTU/MIN  
BTU/MIN

BTU/MIN

BTU/MIN

1,000.0

100

1,474

20,033

7,238

58,206

31,961

8,218

16,385

62,497

154,292

164,360

900.0

90

1,330

18,378

6,464

52,445

28,178

7,400

14,318

56,390

138,929

147,994

800.0

80

1,187

16,891  
5,941  
48,853  
25,916  
6,766  
13,293  
50,345  
127,034  
135,323

750.0

75  
1,116  
16,127  
6,236  
46,672  
24,565  
6,445  
12,521  
47,342  
121,002  
128,897

700.0

70  
1,046  
15,231  
6,920  
43,437  
22,625  
6,051  
11,086

( 44,338

113,600

121,012

600.0

60

905

13,439

6,738

37,282

19,058

5,220

8,561

38,371

97,997

( 104,392

500.0

50

765

11,741

5,267

31,535

15,862

4,369

6,404

32,440

82,034

87,386

400.0

( 40

628

10,827

4,384

25,642

12,387

3,599

4,511

26,618

67,572

71,982

300.0

30

490

9,885

3,711

19,869

8,929

2,858

2,920

20,779

53,663

57,165

250.0

25

420

9,298

3,442

17,092

7,276



2,495

2,235

17,832

46,843

49,899

200.0

20

350

8,559

3,149

14,473

5,698

2,136

1,689

14,848

40,103

42,719

100.0

10

206

6,645

2,319

9,873

2,744

1,432

1,058

8,742

26,884

28,638

Bottom of Form

---

Emissions Data Top

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#top>>

Units Filter

RATED SPEED NOT TO EXCEED DATA: 1800 RPM

GENSET POWER WITH FAN

EKW

1,000.0

750.0

500.0

250.0

100.0

ENGINE POWER

BHP

1,474

1,116

765

420

206

PERCENT LOAD

%

100

75

50

25

10

TOTAL NOX (AS NO2)

G/HR

8,726

5,093

3,335

2,252

1,328

TOTAL CO

G/HR

356

235

501

819

1,263

TOTAL HC

G/HR

37

104

99

75

153

PART MATTER

G/HR

51.8

39.2

67.6

105.5

83.2

TOTAL NOX (AS NO2)

(CORR 5% O2)

MG/NM3

2,841.8

2,105.6

2,041.6

2,429.4

2,417.2

TOTAL CO

(CORR 5% O2)

MG/NM3

116.1

93.7

305.5

894.8

2,570.4

TOTAL HC

(CORR 5% O2)

MG/NM3

10.3

37.8

52.6

69.6

283.1

PART MATTER

(  
(CORR 5% O2)

MG/NM3

14.1

13.5

35.5

106.1

135.6

TOTAL NOX (AS NO2)

(CORR 5% O2)

PPM

1,384

1,026

994

1,183

(  
1,177

TOTAL CO

(CORR 5% O2)

PPM

93

75

244

716

2,056

TOTAL HC

(CORR 5% O2)

PPM

19

(  
71

98  
130  
528

TOTAL NOX (AS NO2)

G/HP-HR

5.97  
4.59  
4.38  
5.37  
6.45

TOTAL CO

G/HP-HR

0.24  
0.21  
0.66  
1.95  
6.14

TOTAL HC

G/HP-HR

0.03  
0.09  
0.13  
0.18  
0.74

PART MATTER

G/HP-HR

0.04  
0.04  
0.09

0.25

0.40

TOTAL NOX (AS NO2)

LB/HR

19.24

11.23

7.35

4.96

2.93

TOTAL CO

LB/HR

0.79

0.52

1.10

1.81

2.78

TOTAL HC

LB/HR

0.08

0.23

0.22

0.17

0.34

PART MATTER

LB/HR

0.11

0.09

0.15

0.23

0.18

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN

EKW

1,000.0

750.0

500.0

250.0

100.0

ENGINE POWER

BHP

1,474

1,116

765

420

206

PERCENT LOAD

%

100

75

50

25



10

TOTAL NOX (AS NO2)

G/HR

7,212

4,209

2,756

1,861

1,097

TOTAL CO

G/HR

191

126

268

438

676

TOTAL HC

G/HR

19

55

52

40

81

TOTAL CO2

KG/HR

721

564

380

217

124

PART MATTER

G/HR

26.6

20.1

34.7

54.1

42.7

TOTAL NOX (AS NO2)

(CORR 5% O2)

MG/NM3

2,348.6

1,740.1

1,687.3

2,007.8

1,997.7

TOTAL CO

(CORR 5% O2)

MG/NM3

62.1

50.1

163.4

478.5

1,374.6

TOTAL HC

(CORR 5% O2)

MG/NM3

5.5

20.0

27.8

36.8

149.8

PART MATTER

(CORR 5% O2)

MG/NM3

7.2

6.9

18.2

54.4

69.5

TOTAL NOX (AS NO2)

(CORR 5% O2)

PPM

1,144

848

822

978

973

TOTAL CO

(CORR 5% O2)

PPM

50

40

131

383

1,100

TOTAL HC

(CORR 5% O2)

PPM

10

37

52

69

280

TOTAL NOX (AS NO2)

G/HP-HR

4.93

3.79

3.62

4.43

5.33

TOTAL CO

G/HP-HR

0.13

0.11

0.35

1.04

3.28

TOTAL HC

G/HP-HR

0.01

0.05

0.07

0.09

0.39

PART MATTER

G/HP-HR

0.02

0.02

0.05

0.13

0.21

TOTAL NOX (AS NO2)

LB/HR

15.90

9.28

6.08

4.10

2.42

TOTAL CO

LB/HR

0.42

0.28

0.59

0.97

1.49

TOTAL HC

LB/HR

0.04

0.12

0.12

0.09

0.18

TOTAL CO2

LB/HR

1,589

1,244

839

478

273

PART MATTER

LB/HR

0.06

0.04

0.08

0.12

0.09

OXYGEN IN EXH

%

10.1

11.5

12.2

13.5

15.7

DRY SMOKE OPACITY

%

0.7

0.7

1.4

3.0

2.2

BOSCH SMOKE NUMBER

0.18

0.16

0.58

1.31

0.99

---

Regulatory Information Top

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#top>>

EPA TIER 2

2006 - 2010

GASEOUS EMISSIONS DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 89 SUBPART D AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSIONS VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality

Agency

Regulation

Tier/Stage

Max Limits - G/BKW - HR

U.S. (INCL CALIF)

EPA

NON-ROAD

TIER 2

CO: 3.5 NOx + HC: 6.4 PM: 0.20

EPA EMERGENCY STATIONARY

2011 - ----

GASEOUS EMISSIONS DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSIONS VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality

Agency

Regulation

Tier/Stage

Max Limits - G/BKW - HR

U.S. (INCL CALIF)

EPA

STATIONARY

EMERGENCY STATIONARY

CO: 3.5 NOx + HC: 6.4 PM: 0.20

---

Altitude Derate Data Top

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unitttype=E&revisionLevels=03&selectedLevel=03#top>>

Top of Form

ALTITUDE CORRECTED POWER CAPABILITY (BHP)



17 results found, displaying 1 to 17

AMBIENT OPERATING TEMP (F)

50

60

70

80

90

100

110

120

130

NORMAL

ALTITUDE (FT)

0

1,474

1,474

1,474

1,474

1,474

1,468

1,442

1,417

1,393

1,474

1,000

1,474

1,474

1,474

1,466

1,439

1,413

1,388

1,365

1,341

1,474

2,000

1,474

1,465

1,437

1,411

1,385

1,360

1,337

1,313

1,291

1,434

3,000

1,438

1,410

1,383

1,358

1,333

1,309

1,286

1,264

1,242

1,389

4,000

1,383

1,356

1,331

1,306

1,282

1,259

1,237

1,216

1,195

1,345

5,000

1,330

1,304

1,280

1,256

1,233

1,211

1,190

( 1,169

1,149

1,302

6,000

1,278

1,254

1,230

1,207

1,185

1,164

1,144

1,124

1,105

1,260

( 7,000

1,228

1,205

1,182

1,160

1,139

1,119

1,099

1,080

1,062

1,220

8,000

1,180

1,157

( 1,135

1,114

1,094

1,074

1,056

1,037

1,020

1,180

9,000

1,133

1,111

1,090

1,070

1,050

1,032

1,014

996

979

1,141

10,000

1,087

1,066

1,046

1,027

1,008

990

973

956

940

1,103

11,000

1,043

1,023

1,004

985

967

950

933

917

902

1,066

12,000

1,001

981

963

945

928

911

895

880

865

1,029

13,000

959

941

923

906

889

873

858

843

829

994

14,000

919

901

884

868

852

837

822

808

794

959

15,000

880

863

847

831

816

802

788

774

761

926

Bottom of Form

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Cross Reference Top

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#top>>

## Engine Arrangement

Arrangement  
Number

Effective  
Serial  
Number

Engineering  
Model

Engineering  
Model  
Version

2537557

SYC00001

GS277

-

3208618

JDB00001

GS490

-

3249750

SYC00001

GS277

-

3367659

PRH00001

GS471

-



Test Specification Data

Test Spec

Setting

Effective

Serial  
Number

Engine  
Arrangement

Governor  
Type

Default  
Low Idle  
Speed

Default High  
Idle Speed

OK8987

PP6050

SYC00001

2537557

ADEM4

OK7838

GG0346

JDB00001

3208618

ADEM4

OK8987

PP6050

SYC00001

3249750

ADEM4

OK8987

PP6050

PRH00001

3367659

ADEM4

Kim Symons

Kim Symons

Account Manager

Cashman Equipment Co.

Power Solutions Division

3300 St. Rose Parkway

Henderson, NV 89052

702-326-6596 Mobile

Sales and Rentals:

Generators

Transfer Switches

UPS Systems

Switch Gear

Light Towers

Cable and Distribution

Air Compressors

Temperature Control

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From: Peter Fergen [mailto:pfergen@mojaveelectric.com]  
Sent: Monday, June 13, 2011 5:16 PM  
To: Kim Symons  
Cc: Chris Meiers  
Subject: 767810 - LV City Hall DAQEM Permit

Are you allowed to fill this out??

From: Chris Meiers  
Sent: Monday, June 13, 2011 5:09 PM  
To: Peter Fergen  
Subject: FW: DAQEM Permit

Pete,

Can you get the info requested from W/T.

Thanks,

Christopher Meiers

Project Manager

Mojave Electric

From: Payne, Daniel [mailto:Daniel.Payne@whiting-turner.com]  
Sent: Monday, June 13, 2011 4:22 PM  
To: Chris Meiers  
Cc: Crystal Teissedre; Lee, David; Lloyd, Elliott; Burch, Clinton

Subject: DAQEM Permit

Las Vegas New City Hall

Chris,

As discussed, the link below is for the DAQEM permit required for the generators. We are not able to find this information in the submittals. Please have this form filled out and returned by Thursday, 6-16-2011 to Clint Burch and myself.

[http://www.clarkcountynv.gov/Depts/daqem/Documents/Permitting/SS\\_forms/Internal\\_Combustion\\_Engine.pdf](http://www.clarkcountynv.gov/Depts/daqem/Documents/Permitting/SS_forms/Internal_Combustion_Engine.pdf)

Below is the spreadsheet that need to be submitted - please ensure the information returned from the manufacturer will fill in all cells, one for each unit. Do not worry about hours of operation.

EU#

Horsepower:

Emission Factor (lb/hp-hr)

Control Efficiency

Potential Emissions

Make:

Hours/Day:

lb/hr

lb/day

ton/yr

Model:

Hours/Year

PM10

7.00E-04

0.00%

0.00

0.00

0.00

S/N:

NOx

2.40E-02

0.00%

0.00

0.00

0.00

CO

5.50E-03

0.00%

0.00

0.00

0.00

Manufacturer Guarantees

SOx

4.05E-04

0.00%

0.00

0.00

0.00

PM10

1

VOC

7.05E-04

0.00%

0.00

0.00

0.00

NOx

1

HAP

3.05E-05

0.00%

0.00

0.00

0.00

CO

1

SOx

1

VOC

1

Engine Type:

2

Thank you,

Daniel Payne

The Whiting-Turner Contracting Company

518 S 1st Street

Las Vegas, NV 89101

702-604-4179 (c)

702-851-4190 (o)

702-851-4198 (f)



## Carmen Militello

---

**From:** Peter Fergen  
**Sent:** Friday, July 08, 2011 6:15 AM  
**To:** Kim Symons  
**Cc:** Chris Meiers  
**Subject:** FW: 767810 - LV City Hall DAQEM Permit

Kim can you resend - they waited so long that it the link is requesting a Corporate Password - thank you

-----Original Message-----

**From:** Chris Meiers  
**Sent:** Friday, July 08, 2011 6:00 AM  
**To:** Peter Fergen  
**Subject:** Fw: 767810 - LV City Hall DAQEM Permit

Pete,  
Please review below and correct.

Thanks,  
Chris Meiers

----- Original Message -----

**From:** Payne, Daniel <Daniel.Payne@whiting-turner.com>  
**To:** Chris Meiers  
**Sent:** Thu Jul 07 11:04:46 2011  
**Subject:** RE: 767810 - LV City Hall DAQEM Permit

Chris,

The web links don't work and the information pasted in the email (forwarded below) is not organized in a way that I can find anything.

Please revise.

Las Vegas New City Hall

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)  
702-851-4190 (o)  
702-851-4198 (f)

---

**From:** Chris Meiers [mailto:cmeiers@mojaveelectric.com]  
**Sent:** Tuesday, July 05, 2011 11:06 AM  
**To:** Payne, Daniel  
**Subject:** Fw: 767810 - LV City Hall DAQEM Permit

Daniel,  
Please take a look at attached. Will this work for you.

Regards,  
Chris Meiers

----- Original Message -----

From: Peter Fergen  
To: Kim Symons <Kim\_Symons@cashmanequipment.com>  
Cc: Chris Meiers  
Sent: Tue Jun 14 06:54:47 2011  
Subject: RE: 767810 - LV City Hall DAQEM Permit

Thank you

From: Kim Symons [mailto:Kim\_Symons@cashmanequipment.com]  
Sent: Tuesday, June 14, 2011 6:52 AM  
To: Peter Fergen  
Cc: Chris Meiers  
Subject: RE: 767810 - LV City Hall DAQEM Permit

I can't fill it out for you, but all the info you need should be here:

Perf No: DM9933

Change Level: 03

General

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unitttype=E&revisionLevels=03&selectedLevel=03#general>>

Heat Rejection

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unitttype=E&revisionLevels=03&selectedLevel=03#heat>>

Emissions

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unitttype=E&revisionLevels=03&selectedLevel=03#emissions>>

Regulatory

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unitttype=E&revisionLevels=03&selectedLevel=03#regulatory>>

Altitude Derate

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=>

MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#AltitudeDerate>

Cross Reference

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#xref>>

Perf Param Ref

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#perfparam>>

---

SALES MODEL:

C32

COMBUSTION:

DI

ENGINE POWER (BHP):

1,474

ENGINE SPEED (RPM):

1,800

GEN POWER WITH FAN (EKW):

1,000.0

HERTZ:

60

COMPRESSION RATIO:

15.0

FAN POWER (HP):

56.3

APPLICATION:

PACKAGED GENSET

ADDITIONAL PARASITICS (HP):

1.3

RATING LEVEL:

STANDBY

ASPIRATION:

TA

PUMP QUANTITY:

1

AFTERCOOLER TYPE:

ATAAC

FUEL TYPE:

DIESEL

AFTERCOOLER CIRCUIT TYPE:

JW+OC, ATAAC

MANIFOLD TYPE:

DRY

INLET MANIFOLD AIR TEMP (F):

120

GOVERNOR TYPE:

ADEM4

JACKET WATER TEMP (F):

210.2

ELECTRONICS TYPE:

ADEM4

TURBO CONFIGURATION:

PARALLEL

IGNITION TYPE:

CI

TURBO QUANTITY:

2

INJECTOR TYPE:

EUI

TURBOCHARGER MODEL:

GTB45518BS-52T-1.37

REF EXH STACK DIAMETER (IN):

8

CERTIFICATION YEAR:

2007

MAX OPERATING ALTITUDE (FT):

997

PISTON SPD @ RATED ENG SPD (FT/MIN):

1,913.4

---

General Performance Data Top

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#top>>

Top of Form

13 results found, displaying 1 to 13

GENSET POWER WITH FAN

PERCENT LOAD

ENGINE POWER

BRAKE MEAN EFF PRES (BMEP)

BRAKE SPEC FUEL CONSUMPTN (BSFC)

VOL FUEL CONSUMPTN (VFC)

INLET MFLD PRES

INLET MFLD TEMP

EXH MFLD TEMP

EXH MFLD PRES

ENGINE OUTLET TEMP

EKW

%

BHP

PSI

LB/BHP-HR

GAL/HR

IN-HG

DEG F

DEG F

IN-HG

DEG F

1,000.0

100

1,474

331

0.342

71.9

70.3

118.2

1,209.3

58.1

889.5

900.0

90

1,330

299

0.341

64.7

64.0

111.0

1,150.9

51.9

855.4

800.0

80

1,187

267

0.349

59.2

60.4

106.5

1,116.3

48.6

832.2

750.0

75

1,116

251

0.354

56.4

57.9

103.8

1,100.0

46.6

821.0

700.0

70

1,046

235

0.354

52.9

53.7

99.5

1,077.6

43.2

810.0

600.0

60

905

203

0.353

45.7

43.7

90.1

1,025.8

35.3

788.8

500.0

50



765  
172  
0.350  
38.2  
32.9  
80.8  
964.8  
27.0  
768.5

400.0

40  
628  
141  
0.351  
31.5  
23.9  
74.7  
895.9  
20.5  
731.2

300.0

30  
490  
110  
0.357  
25.0  
15.7  
70.4  
812.1

15.1

676.7

250.0

25

420

94

0.363

21.8

12.0

68.9

764.0

12.7

643.0

200.0

20

350

79

0.374

18.7

8.7

67.9

708.9

10.6

601.8

100.0

10

206

46

0.425

12.5

4.5

67.5

569.8

7.8

489.0

Bottom of Form

Top of Form

13 results found, displaying 1 to 13

#### GENSET POWER WITH FAN

PERCENT LOAD

ENGINE POWER

COMPRESSOR OUTLET PRES

COMPRESSOR OUTLET TEMP

WET INLET AIR VOL FLOW RATE

ENGINE OUTLET WET EXH GAS VOL FLOW RATE

WET INLET AIR MASS FLOW RATE

WET EXH GAS MASS FLOW RATE

WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)

DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)

#### EKW

%

BHP

IN-HG

DEG F

CFM

CFM

LB/HR

LB/HR

FT3/MIN

FT3/MIN

1,000.0

100

1,474

76

422.1

3,094.1

8,065.3

13,465.4

13,968.9

2,939.2

2,688.4

900.0

90

1,330

69

391.5

2,939.0

7,417.0

12,749.0

13,202.3

2,773.0

2,544.8

800.0

80

1,187

65

375.1

2,856.2

7,051.1

12,358.8

12,773.3

2,683.6

2,472.3

750.0

75

1,116

63

363.9

2,783.7

6,813.1

12,021.7

12,415.6

2,615.7

2,413.9

700.0

70

1,046

58

343.3

2,639.5

6,395.9

11,355.9

11,723.5

2,476.8

2,288.3

600.0

60

905

48

302.6

2,355.5

5,576.9

10,061.2

10,377.6

2,196.4

2,033.1

500.0

50

765

37

262.3

2,076.5

4,775.6

8,810.4

9,077.6

1,911.9

1,773.0

400.0

40

628

27

223.0

1,805.8

4,001.6

7,595.0

7,814.6

1,652.1

1,535.9

300.0

30

490

18

183.7

1,537.6

3,237.7

6,435.6

6,610.0

1,400.8

1,306.8

250.0

25

420

14

163.9

1,403.3

2,856.8

5,874.1

6,026.7

1,273.8

1,190.9

200.0

20

350

11

146.2

1,286.2

2,507.0

5,386.7

5,517.7

1,161.2

1,089.1

100.0

10

206

6

122.6

1,147.6

1,981.6

4,797.2

4,885.1

1,027.0

974.3

Bottom of Form

---

Heat Rejection Data Top

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#top>>

Top of Form



13 results found, displaying 1 to 13

GENSET POWER WITH FAN

PERCENT LOAD

ENGINE POWER

REJECTION TO JACKET WATER

REJECTION TO ATMOSPHERE

REJECTION TO EXH

EXHUAUST RECOVERY TO 350F

FROM OIL COOLER

FROM AFTERCOOLER

WORK ENERGY

LOW HEAT VALUE ENERGY

HIGH HEAT VALUE ENERGY

EKW

%

BHP

BTU/MIN

BTU/MIN

BTU/MIN

BTU/MIN

BTU/MIN

BTU/MIN

BTU/MIN

BTU/MIN

BTU/MIN

1,000.0

100

1,474

20,033

7,238

58,206

31,961

8,218

16,385

62,497

154,292

164,360

900.0

90

1,330

18,378

6,464

52,445

28,178

7,400

14,318

56,390

138,929

147,994

800.0

80

1,187

16,891

5,941

48,853

25,916

6,766

13,293

50,345

127,034

135,323

750.0

75

1,116

16,127

6,238

46,672

24,565

6,445

12,521

47,342

121,002

128,897

700.0

70

1,046

15,231

6,920

43,437

22,625

6,051

11,086

44,338

113,600

121,012

600.0

60

905

13,439

6,738

37,282

19,058

5,220

8,561

38,371

97,997

104,392

500.0

50

765

11,741

5,267

31,535

15,862

4,369

6,404

32,440

82,034

87,386

400.0

40

628

10,827

4,384

25,642

12,387

3,599

4,511

26,618

67,572

71,982

300.0

30

490

9,885

3,711

19,869

8,929

2,858

2,920

20,779

53,663

57,165

250.0

25

420

9,298

3,442

17,092

7,276

2,495

2,235

17,832

46,843

49,899

200.0

20

350

8,559

3,149

14,473

5,698

2,136

1,689

14,848

40,103

42,719

100.0

10

206

6,645

2,319

9,873

2,744

1,432

1,058

8,742

26,884

28,638

Bottom of Form

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Emissions Data Top

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#top>>

Units Filter

RATED SPEED NOT TO EXCEED DATA: 1800 RPM

GENSET POWER WITH FAN

EKW

1,000.0

750.0

500.0

250.0

100.0

ENGINE POWER

BHP

1,474

1,116

765

420

206

PERCENT LOAD

%

100

75

50

25

10

TOTAL NOX (AS NO2)

G/HR

8,726

5,093

3,335

2,252

1,328

TOTAL CO

G/HR

356

235

501

819

1,263

TOTAL HC

G/HR

37

104

99

75

153

PART MATTER

G/HR

51.8

39.2

67.6



105.5

83.2

TOTAL NOX (AS NO2)

(CORR 5% O2)

MG/NM3

2,841.8

2,105.6

2,041.6

2,429.4

2,417.2

TOTAL CO

(CORR 5% O2)

MG/NM3

116.1

93.7

305.5

894.8

2,570.4

TOTAL HC

(CORR 5% O2)

MG/NM3

10.3

37.8

52.6

69.6

283.1

PART MATTER

(CORR 5% O2)

MG/NM3

14.1

13.5

35.5

106.1

135.6

TOTAL NOX (AS NO2)

(CORR 5% O2)

PPM

1,384

1,026

994

1,183

1,177

TOTAL CO

(CORR 5% O2)

PPM

93

75

244

716

2,056

TOTAL HC

(CORR 5% O2)

PPM

19

71

98

130

528

TOTAL NOX (AS NO2)

G/HP-HR

5.97

4.59

4.38

5.37

6.45

TOTAL CO

G/HP-HR

0.24

0.21

0.66

1.95

6.14

TOTAL HC

G/HP-HR

0.03

0.09

0.13

0.18

0.74

PART MATTER

G/HP-HR

0.04

0.04

0.09

0.25

0.40

TOTAL NOX (AS NO2)

LB/HR

19.24

11.23

7.35

4.96

2.93

TOTAL CO

LB/HR

0.79

0.52

1.10

1.81

2.78

TOTAL HC

LB/HR

0.08

0.23

0.22

0.17

0.34

PART MATTER

LB/HR

0.11

0.09

0.15

0.23

0.18

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN

EKW

1,000.0

750.0

500.0

250.0

100.0

ENGINE POWER

BHP

1,474

1,116

765

420

206

PERCENT LOAD

%

100

75

50

25

10

TOTAL NOX (AS NO2)

G/HR

7,212

4,209

2,756

1,861

1,097

TOTAL CO

G/HR

191

126

268

438

676

TOTAL HC

G/HR

19

55

52

40

81

TOTAL CO2

KG/HR

721

564

380

217

124

PART MATTER

G/HR

26.6

20.1

34.7

54.1

42.7

TOTAL NOX (AS NO2)

(CORR 5% O2)

MG/NM3

2,348.6

1,740.1

1,687.3

2,007.8

1,997.7

TOTAL CO

(CORR 5% O2)

MG/NM3

62.1

50.1

163.4

478.5

1,374.6

TOTAL HC

(CORR 5% O2)

MG/NM3

5.5

20.0

27.8

36.8

149.8

PART MATTER

(CORR 5% O2)

MG/NM3

7.2

6.9

18.2

54.4

69.5

TOTAL NOX (AS NO2)

(CORR 5% O2)

PPM

1,144

848

822

978

973

TOTAL CO

(CORR 5% O2)

PPM

50

40

131

383

1,100

TOTAL HC

(CORR 5% O2)

PPM

10



37

52

69

280

TOTAL NOX (AS NO2)

G/HP-HR

4.93

3.79

3.62

4.43

5.33

TOTAL CO

G/HP-HR

0.13

0.11

0.35

1.04

3.28

TOTAL HC

G/HP-HR

0.01

0.05

0.07

0.09

0.39

PART MATTER

G/HP-HR

0.02

0.02

0.05

0.13

0.21

TOTAL NOX (AS NO2)

LB/HR

15.90

9.28

6.08

4.10

2.42

TOTAL CO

LB/HR

0.42

0.28

0.59

0.97

1.49

TOTAL HC

LB/HR

0.04

0.12

0.12

0.09

0.18

TOTAL CO2

LB/HR

1,589

1,244

839

478

273

PART MATTER

LB/HR

0.06

0.04

0.08

0.12

0.09

OXYGEN IN EXH

%

10.1

11.5

12.2

13.5

15.7

DRY SMOKE OPACITY

%

0.7

0.7

1.4

3.0

2.2

BOSCH SMOKE NUMBER

0.18

0.16

0.58

1.31

0.99

---

Regulatory Information Top

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#top>>

EPA TIER 2

2006 - 2010

GASEOUS EMISSIONS DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 89 SUBPART D AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSIONS VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality

Agency

Regulation

Tier/Stage

Max Limits - G/BKW - HR

U.S. (INCL CALIF)

EPA

NON-ROAD

TIER 2

CO: 3.5 NOx + HC: 6.4 PM: 0.20

EPA EMERGENCY STATIONARY

J56-195

2011 - ----

GASEOUS EMISSIONS DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSIONS VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality

Agency

Regulation

Tier/Stage

Max Limits - G/BKW - HR

U.S. (INCL CALIF)

EPA

STATIONARY

EMERGENCY STATIONARY

CO: 3.5 NOx + HC: 6.4 PM: 0.20

---

Altitude Derate Data Top

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#top>>

Top of Form

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

17 results found, displaying 1 to 17

AMBIENT OPERATING TEMP (F)

50

60

70

80

90

100

110

120

130

NORMAL

ALTITUDE (FT)

0

1,474

1,474

1,474

1,474

1,474

1,468

1,442

1,417

1,393

1,474

1,000

1,474

1,474

1,474

1,466

1,439

1,413

1,388

1,365

1,341

1,474

2,000

1,474

1,465

1,437

1,411

1,385

1,360

1,337

1,313

1,291

1,434

3,000

1,438

1,410

( 1,383

1,358

1,333

1,309

1,286

1,264

1,242

1,389

4,000

1,383

1,356

1,331

1,306

1,282

( 1,259

1,237

1,216

1,195

1,345

5,000

1,330

1,304

1,280

1,256

1,233

1,211

1,190

1,169

( 1,149



1,302

6,000

1,278

1,254

1,230

1,207

1,185

1,164

1,144

1,124

1,105

1,260

7,000

1,228

1,205

1,182

1,160

1,139

1,119

1,099

1,080

1,062

1,220

8,000

1,180

1,157

1,135

1,114

1,094

1,074

1,056

1,037

1,020

1,180

9,000

1,133

1,111

1,090

1,070

1,050

1,032

1,014

996

979

1,141

10,000

1,087

1,066

1,046

1,027

1,008

990

973

956

940

1,103

11,000

1,043

1,023

1,004

985

967

950

933

917

902

1,066

12,000

1,001

981

963

945

928

911

895

880

865

1,029

13,000

959

941

923

906

889

873

858

843

829

994

14,000

919

901

884

868

852

837

822

808

794

959

15,000

880

863

847

831

816

802

788

774

761

926

Bottom of Form

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Cross Reference Top

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unitttype=E&revisionLevels=03&selectedLevel=03#top>>

Engine Arrangement

Arrangement  
Number

Effective  
Serial  
Number

Engineering  
Model

Engineering  
Model  
Version

2537557

SYC00001

GS277

-

3208618

JDB00001

GS490

-

3249750

SYC00001

GS277

-

3367659

PRH00001

GS471

-

Test Specification Data

Test Spec

Setting

Effective  
Serial  
Number

Engine  
Arrangement

Governor  
Type

Default  
Low Idle  
Speed

Default High  
Idle Speed

OK8987

PP6050

SYC00001

2537557

ADEM4

OK7838

GG0346

JDB00001

3208618

ADEM4

OK8987

PP6050

SYC00001

3249750

ADEM4

OK8987

PP6050

PRH00001

3367659

ADEM4

Kim Symons

Kim Symons

Account Manager

Cashman Equipment Co.

Power Solutions Division

3300 St. Rose Parkway

Henderson, NV 89052

702-326-6596 Mobile

Sales and Rentals:

Generators

Transfer Switches

UPS Systems

Switch Gear

Light Towers

Cable and Distribution

Air Compressors

Temperature Control

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From: Peter Fergen [mailto:pfergen@mojaveelectric.com]  
Sent: Monday, June 13, 2011 5:16 PM  
To: Kim Symons  
Cc: Chris Meiers  
Subject: 767810 - LV City Hall DAQEM Permit

Are you allowed to fill this out??

From: Chris Meiers  
Sent: Monday, June 13, 2011 5:09 PM  
To: Peter Fergen  
Subject: FW: DAQEM Permit

Pete,

Can you get the info requested from W/T.

Thanks,

Christopher Meiers

Project Manager

Mojave Electric

From: Payne, Daniel [mailto:Daniel.Payne@whiting-turner.com]  
Sent: Monday, June 13, 2011 4:22 PM  
To: Chris Meiers  
Cc: Crystal Teissedre; Lee, David; Lloyd, Elliott; Burch, Clinton  
Subject: DAQEM Permit



Las Vegas New City Hall

Chris,

As discussed, the link below is for the DAQEM permit required for the generators. We are not able to find this information in the submittals. Please have this form filled out and returned by Thursday, 6-16-2011 to Clint Burch and myself.

[http://www.clarkcountynv.gov/Depts/daqem/Documents/Permitting/SS\\_forms/Internal\\_Combustion\\_Engine.pdf](http://www.clarkcountynv.gov/Depts/daqem/Documents/Permitting/SS_forms/Internal_Combustion_Engine.pdf)

Below is the spreadsheet that need to be submitted - please ensure the information returned from the manufacturer will fill in all cells, one for each unit. Do not worry about hours of operation.

EU#

Horsepower:

Emission Factor (lb/hp-hr)

Control Efficiency

Potential Emissions

Make:

Hours/Day:

lb/hr

lb/day

ton/yr

J56-208

Model:

Hours/Year

PM10

7.00E-04

0.00%

0.00

0.00

0.00

S/N:

NOx

2.40E-02

0.00%

0.00

0.00

0.00

CO

5.50E-03

0.00%

0.00

0.00

0.00

Manufacturer Guarantees

SOx

4.05E-04

0.00%

0.00

0.00

0.00

PM10

1

VOC

7.05E-04

0.00%

0.00

0.00

0.00

NOx

1

HAP

3.05E-05

0.00%

0.00

0.00

0.00

CO

1

SOx

( 1

VOC

1

Engine Type:

2

( Thank you,

Daniel Payne

The Whiting-Turner Contracting Company

518 S 1st Street

Las Vegas, NV 89101

702-604-4179 (c)

702-851-4190 (o)

702-851-4198 (f)

**Carmen Militello**

---

**From:** Chris Meiers  
**Sent:** Thursday, August 04, 2011 6:36 AM  
**To:** 'Daniel.Payne@whiting-turner.com'  
**Subject:** Fw: Additional DAQEM information  
**Attachments:** no-reply@cashmanequipment.com\_20110727\_110551.pdf

Sorry - Try This One!

----- Original Message -----

**From:** Kim Symons <[Kim\\_Symons@cashmanequipment.com](mailto:Kim_Symons@cashmanequipment.com)>  
**To:** Chris Meiers  
**Sent:** Wed Jul 27 10:03:16 2011  
**Subject:** RE: Additional DAQEM information

Based on what I could dig up from CAT:

**SULFUR DIOXIDE EMISSION LEVEL - Calculations**

From EDS 82.0, LEKQ5359, "Caterpillar Diesel Prechamber and Selected D.I. Engines"

$SO_2 \text{ g/hr} = 0.01998 \times \text{fuel rate (grams/hr)} \times (\% \text{ fuel sulfur by weight})$

#2 Diesel fuel contains a maximum of 0.5% sulfur

The generators will burn 69.4gph based on information from CAT

Diesel Fuel weighs  $7.1\text{ \#/gal} \times 3237.6\text{ g/lb} = 224,689\text{ g}$

$SO_2 \text{ g/hr} = 0.01998 \times 224689 \times .5\%$

$SO_2 \text{ g/hr} = 22.446$

This is a different number than what Broadbent & Assoc. gave me and they are the experts, not me.

Kim Symons

Kim Symons

Account Manager

Cashman Equipment Co.

J56-213

Power Solutions Division  
3300 St. Rose Parkway  
Henderson, NV 89052

702-326-6596 Mobile

Sales and Rentals:

Generators	Light Towers
Transfer Switches	Cable and Distribution
UPS Systems	Air Compressors
Switch Gear	Temperature Control

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From: Chris Meiers [<mailto:cmeiers@mojaveelectric.com>]  
Sent: Tuesday, July 26, 2011 6:49 AM  
To: Kim Symons  
Cc: Crystal Teissedre  
Subject: Fw: Additional DAQEM information

More Generator info required HELP!

-Chris Meiers

----- Original Message -----

From: Payne, Daniel <[Daniel.Payne@whiting-turner.com](mailto:Daniel.Payne@whiting-turner.com)>

To: Chris Meiers

Cc: Crystal Teissedre

Sent: Mon Jul 25 13:26:05 2011

Subject: Additional DAQEM information

Las Vegas New City Hall  
Chris,

After sitting down and reviewing the permit application with the County, the following questions need to be answered or information provided.

Provide copy of purchase order for the emergency generators

Are the generators equipped with either afterburners or turbochargers? Provide mfr cut sheets. If not, what pollution control methods are employed to reduce emissions?

Are the generators set to either a "lean burn" or a "rich burn" or neither?

Provide mfr data showing emissions of SOx at .1839 g/hp-hr Provide mfr data showing separate numbers for PM2.5 and PM 10 emissions

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)

702-851-4190 (o)

702-851-4198 (f)





## ENGINE DATA SHEET

EDS 82.0  
Date 5-95

### Caterpillar Diesel Prechamber and Selected D.I. Engines

The passage of the 1990 Clean Air Act Amendments will increase the requests for emission data from both current engines and previously purchased engines. The information in this publication is intended to assist in answering the emission related questions on previously purchased engines. Your source of data for new engines is the TMI system. In some cases data is presented for turbocharged, turbocharged jacket water aftercooled (JWAC) and turbocharged separate circuit aftercooled (SCAC) configurations. The SCAC engines all had watercooled exhaust manifolds. The emission levels obtained on a SCAC engine with non-watercooled exhaust manifolds would be similar to the emissions on an engine with watercooled manifolds except the exhaust stack temperatures could be as much as 75°C higher at the rated point for non-watercooled manifolds.

#### List of Prechamber Engines Included in This Document

D315 PC D330A 4.5 x 5.5 I4 2V NA, T  
D318 PC D333A 4.5 x 5.5 I6 2V NA, T  
3304 PCNA I4 4.75 x 6.0 2V  
3304 PCT I4 4.75 x 6.0 2V  
3306 PCNA I6 4.75 x 6.0 2V  
3306 PCT I6 4.75 x 6.0 2V  
3306 PCTA I6 4.75 x 6.0 2V  
D334 PCTA I6 4.75 x 6.0 4V  
D337 PCT 5 1/8 x 6.5 I6 2V  
3406 PCT I6 5.4 x 6.5 4V  
3406 PCTA I6 5.4 x 6.5 4V  
3408 PCTA V8 5.4 x 6.0 4V  
3412 PCTA V12 5.4 x 6.0 4V  
D343 PCT I6 5.4 x 6.5 4SV (SIMILAR TO 1693 TRUCK)  
D343 PCTA I6 5.4 x 6.5 4SV (SIMILAR TO 1693 TRUCK)  
D348 PCTA V12 5.4 x 6.5 4V  
D349 PC SCAC V16 5.4 x 6.5 4V  
D353 PCTA I6 6.25 x 8.2 2V  
D353 PC SCAC 110 F I6 6.25 x 8.0 2V  
D353 PC SCAC 85 F I6 6.25 x 8.0 2V  
D379 PCTA V8 6.25 x 8.0 2V  
D398 PC SCAC 85 F V12 6.25 x 8.0 2V  
D398 PCTA V12 6.25 x 8.0 2V  
D399 PCTA V16 6.25 x 8.0 2V  
D399 PC SCAC 85 F 6.25 x 8.0 2V

SV = SLANT VALVE  
TA = JACKET WATER AFTERCOOLED  
SCAC = SEPARATE CIRCUIT AFTERCOOLED  
4V = 4 VERTICAL VALVES  
TT = TWIN TURBOCHARGERS  
TTA = TWIN TURBO AFTERCOOLED

#### List of DI Engines

3306 DINA I6 4.75 x 6.0 2V  
3306 DIT I6 4.75 x 6.0 2V  
3408 DIT I6 5.4 x 6.5 GEN SET  
3408 DITA I6 5.4 x 6.5 GEN SET  
3406 DIT I6 5.4 x 6.5 INDUSTRIAL  
3406 DITA I6 5.4 x 6.5 INDUSTRIAL  
3408 DIT V6 5.4 x 6.0 INDUSTRIAL  
3408 DITA V8 5.4 x 6.0 INDUSTRIAL  
3408 DITA V8 5.4 x 6.0 GEN SET  
3412 DIT V12 5.4 x 6.0 GEN SET  
3412 DIT V12 5.4 x 6.0 IND AND 50 HZ GEN SET  
3412 DITT V12 5.4 x 6.0 IND AND 50 HZ GEN SET  
3412 DITTA V12 5.4 x 6.0 50 HZ GEN SET  
3412 DITTA V12 5.4 x 6.0 60 HZ GEN SET  
3412 DITTA V12 5.4 x 6.0 INDUSTRIAL

Table 1

It is difficult to supply all the information that could be requested. The emission data is presented in g/hr. In some cases the emissions may be requested in ppm. The ppm can be approximately calculated using the equations given in Table 2.

Emissions Calculations	
$SO_2 \text{ g/hr} = .01998 \times (\text{fuel rate g/hr}) \times (\% \text{ fuel sulfur by weight})$	
$NO_x \text{ concentration (ppm)} = 629 \times \frac{(NO_x \text{ mass emissions g/hr})}{(\text{Exhaust mass flow kg/hr})}$	
$CO \text{ concentration (ppm)} = 1034 \times \frac{(CO \text{ mass emissions g/hr})}{(\text{Exhaust mass flow kg/hr})}$	
$HC \text{ concentration (ppm)} = 2067 \times \frac{(HC \text{ mass emission g/hr})}{(\text{Exhaust mass flow kg/hr})}$	
$SO_2 \text{ concentration (ppm)} = 452 \times \frac{(SO_2 \text{ mass emissions g/hr})}{(\text{Exhaust mass flow kg/hr})}$	

Table 2

The  $SO_2$  produced by an engine is a function of the sulfur in the fuel. Table 2 gives an equation for calculating  $SO_2$  in the exhaust. Fuel sulfur varies greatly. An average value to be used in the above equation is .2 for many industrial fuels.

The engine tests were run with inlet air temperature and pressure to the engine of 85°F and 28.4 in.hg ABS respectively.

The Caterpillar smoke density number is given for each point. To determine smoke opacity, use the smoke chart in Table 3 and the appropriate stack diameter.

The particulate matter is based on a correlation between smoke density and particulates. Particulates consist of soot, soluble organic fractions, sulfates, and miscellaneous compounds from the oil additive package. Soluble organic fraction is approximately 60 to 80% lubricating oil that finds its way into the combustion chamber by passing the piston rings, flowing down the valve guides, or flowing past the turbocharger seals. If a field measurement is made on a very old, worn out engine, the particulates could be higher than the value listed in the table. The current Caterpillar accepted particulate measuring procedure, ISO 8178-1, was not available at the time these engines were tested. The values of particulates estimated from smoke are a good approximation of the values obtained with the ISO procedure.

The EPA approved particulate measurement procedure, Method 5, will give equivalent results if the contractor is skilled.

The gaseous emission measurements were made using SAE test procedures recommended at the time the emissions were run. These procedures have changed very little and are consistent with EPA CFR 40 part 86 subpart D. Subpart D is similar to the following procedures:

EPA	SAE
Method 25A for HC	J215
Method 10 for CO	J177a
Method 7E for $NO_x$	J177a

For further emission information, consult TMI performance parameter DM1176-01.

The exhaust stack temperatures can vary depending on how far downstream from the turbocharger the measurement was made. In most of the cases shown in the tables, the thermocouple would have been less than 6 feet from the turbocharger outlet. Exhaust temperatures at this location would have a  $\pm 5\%$  °C range from the table values.

**Carmen Militello**

---

**From:** Chris Meiers  
**Sent:** Wednesday, August 03, 2011 1:40 PM  
**To:** 'Daniel.Payne@whiting-turner.com'  
**Subject:** Fw: Additional DAQEM information

FYI

----- Original Message -----

**From:** Kim Symons <[Kim\\_Symons@cashmanequipment.com](mailto:Kim_Symons@cashmanequipment.com)>  
**To:** Chris Meiers  
**Sent:** Tue Jul 26 10:20:52 2011  
**Subject:** RE: Additional DAQEM information

I'm seeing what else I can find.

Kim Symons

Kim Symons

Account Manager

Cashman Equipment Co.

Power Solutions Division

3300 St. Rose Parkway

Henderson, NV 89052

702-326-6596 Mobile

Sales and Rentals:

Generators

Transfer Switches

UPS Systems

Switch Gear

Light Towers

Cable and Distribution

Air Compressors

Temperature Control

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From: Chris Meiers [<mailto:cmeiers@mpjaveelectric.com>]  
Sent: Tuesday, July 26, 2011 6:49 AM  
To: Kim Symons  
Cc: Crystal Teissedre  
Subject: Fw: Additional DAQEM information

More Generator info required HELPI

-Chris Meiers

----- Original Message -----

From: Payne, Daniel <[Daniel.Payne@whiting-turner.com](mailto:Daniel.Payne@whiting-turner.com)>  
To: Chris Meiers  
Cc: Crystal Teissedre  
Sent: Mon Jul 25 13:26:05 2011  
Subject: Additional DAQEM information

Las Vegas New City Hall  
Chris,

After sitting down and reviewing the permit application with the County, the following questions need to be answered or information provided.

Provide copy of purchase order for the emergency generators

Are the generators equipped with either afterburners or turbochargers? Provide mfr cut sheets. If not, what pollution control methods are employed to reduce emissions?

Are the generators set to either a "lean burn" or a "rich burn" or neither?

Provide mfr data showing emissions of SOx at .1839 g/hp-hr Provide mfr data showing separate numbers for PM2.5 and PM 10 emissions

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)  
702-851-4190 (o)  
702-851-4198 (f)

**Carmen Militello**

---

**From:** Chris Meiers  
**Sent:** Tuesday, August 02, 2011 9:04 AM  
**To:** 'Daniel.Payne@whiting-turner.com'  
**Subject:** Fw: Additional DAQEM information  
**Attachments:** no-reply@cashmanequipment.com\_20110727\_110551.pdf

FYI

----- Original Message -----

**From:** Kim Symons <[Kim\\_Symons@cashmanequipment.com](mailto:Kim_Symons@cashmanequipment.com)>  
**To:** Chris Meiers  
**Sent:** Wed Jul 27 10:03:16 2011  
**Subject:** RE: Additional DAQEM information

Based on what I could dig up from CAT:

**SULFUR DIOXIDE EMISSION LEVEL - Calculations**

From EDS 82.0, LEKQ5359, "Caterpillar Diesel Prechamber and Selected D.I. Engines"

$SO_2 \text{ g/hr} = 0.01998 \times \text{fuel rate (grams/hr)} \times (\% \text{ fuel sulfur by weight})$

#2 Diesel fuel contains a maximum of 0.5% sulfur

The generators will burn 69.4gph based on information from CAT

Diesel Fuel weighs  $7.1\text{\#/gal} \times 3237.6\text{g/lb} = 224,689\text{g}$

$SO_2 \text{ g/hr} = 0.01998 \times 224689 \times .5\%$

$SO_2 \text{ g/hr} = 22.446$

This is a different number than what Broadbent & Assoc. gave me and they are the experts, not me.

Kim Symons

Kim Symons

Account Manager

Cashman Equipment Co.

J56-221

Power Solutions Division  
3300 St. Rose Parkway  
Henderson, NV 89052

702-326-6596 Mobile

Sales and Rentals:

Generators	Light Towers
Transfer Switches	Cable and Distribution
UPS Systems	Air Compressors
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From: Chris Meiers [<mailto:cmeiers@mojaveelectric.com>]  
Sent: Tuesday, July 26, 2011 6:49 AM  
To: Kim Symons  
Cc: Crystal Teissedre  
Subject: Fw: Additional DAQEM information

More Generator info required HELP!

-Chris Meiers

----- Original Message -----

From: Payne, Daniel <[Daniel.Payne@whiting-turner.com](mailto:Daniel.Payne@whiting-turner.com)>

To: Chris Meiers

Cc: Crystal Teissedre

Sent: Mon Jul 25 13:26:05 2011

Subject: Additional DAQEM information

Las Vegas New City Hall  
Chris,

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Are the generators set to either a "lean burn" or a "rich burn" or neither?

Provide mfr data showing emissions of SOx at .1839 g/hp-hr Provide mfr data showing separate numbers for PM2.5 and PM 10 emissions

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)

702-851-4190 (o)

702-851-4198 (f)





## ENGINE DATA SHEET

EDS 82.0

Date 5-95

### Caterpillar Diesel Prechamber and Selected D.I. Engines

The passage of the 1990 Clean Air Act Amendments will increase the requests for emission data from both current engines and previously purchased engines. The information in this publication is intended to assist in answering the emission related questions on previously purchased engines. Your source of data for new engines is the TMI system. In some cases data is presented for turbocharged, turbocharged jacket water aftercooled (JWAC) and turbocharged separate circuit aftercooled (SCAC) configurations. The SCAC engines all had watercooled exhaust manifolds. The emission levels obtained on a SCAC engine with non-watercooled exhaust manifolds would be similar to the emissions on an engine with watercooled manifolds except the exhaust stack temperatures could be as much as 75°C higher at the rated point for non-watercooled manifolds.

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3304 PCT I4 4.75 x 6.0 2V  
3306 PCNA I6 4.75 x 6.0 2V  
3306 PCT I6 4.75 x 6.0 2V  
3306 PCTA I6 4.75 x 6.0 2V  
D334 PCTA I6 4.75 x 6.0 4V  
D337 PCT 5 1/8 x 6.5 I6 2V  
3406 PCT I6 5.4 x 6.5 4V  
3406 PCTA I6 5.4 x 6.5 4V  
3408 PCTA V8 5.4 x 6.0 4V  
3412 PCTA V12 5.4 x 6.0 4V  
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D343 PCTA I6 5.4 x 6.5 4SV (SIMILAR TO 1693 TRUCK)  
D348 PCTA V12 5.4 x 6.5 4V  
D349 PC SCAC V16 5.4 x 6.5 4V  
D353 PCTA I6 6.25 x 8 2V  
D353 PC SCAC 110 F I6 6.25 x 8.0 2V  
D353 PC SCAC 85 F I6 6.25 x 8.0 2V  
D379 PCTA V8 6.25 x 8.0 2V  
D398 PC SCAC 85 F V12 6.25 x 8.0 2V  
D398 PCTA V12 6.25 x 8.0 2V  
D399 PCTA V16 6.25 x 8.0 2V  
D399 PC SCAC 85 F 6.25 x 8.0 2V

SV = SLANT VALVE

TA = JACKET WATER AFTERCOOLED

SCAC = SEPARATE CIRCUIT AFTERCOOLED

4V = 4 VERTICAL VALVES

TT = TWIN TURBOCHARGERS

TTA = TWIN TURBO AFTERCOOLED

#### List of DI Engines

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3306 DIT I6 4.75 x 6.0 2V  
3406 DIT I6 5.4 x 6.5 GEN SET  
3406 DITA I6 5.4 x 6.5 GEN SET  
3406 DIT I6 5.4 x 6.5 INDUSTRIAL  
3406 DITA I6 5.4 x 6.5 INDUSTRIAL  
3408 DIT V8 5.4 x 6.0 INDUSTRIAL  
3408 DITA V8 5.4 x 6.0 INDUSTRIAL  
3408 DITA V8 5.4 x 6.0 GEN SET  
3412 DIT V12 5.4 x 6.0 GEN SET  
3412 DIT V12 5.4 x 6.0 IND AND 50 HZ GEN SET  
3412 DITT V12 5.4 x 6.0 IND AND 50 HZ GEN SET  
3412 DITTA V12 5.4 x 6.0 50 HZ GEN SET  
3412 DITTA V12 5.4 x 6.0 60 HZ GEN SET  
3412 DITTA V12 5.4 x 6.0 INDUSTRIAL

Table 1

It is difficult to supply all the information that could be requested. The emission data is presented in g/hr. In some cases the emissions may be requested in ppm. The ppm can be approximately calculated using the equations given in Table 2.

Emissions Calculations	
$SO_2 \text{ g/hr} = .01998 \times (\text{fuel rate g/hr}) \times (\% \text{ fuel sulfur by weight})$	
$NO_x \text{ concentration (ppm)} = 629 \times \frac{NO_x \text{ mass emissions g/hr}}{(\text{Exhaust mass flow kg/hr})}$	
$CO \text{ concentration (ppm)} = 1034 \times \frac{CO \text{ mass emissions g/hr}}{(\text{Exhaust mass flow kg/hr})}$	
$HC \text{ concentration (ppm)} = 2067 \times \frac{HC \text{ mass emission g/hr}}{(\text{Exhaust mass flow kg/hr})}$	
$SO_2 \text{ concentration (ppm)} = 452 \times \frac{SO_2 \text{ mass emissions g/hr}}{(\text{Exhaust mass flow kg/hr})}$	

Table 2

The  $SO_2$  produced by an engine is a function of the sulfur in the fuel. Table 2 gives an equation for calculating  $SO_2$  in the exhaust. Fuel sulfur varies greatly. An average value to be used in the above equation is .2 for many industrial fuels.

The engine tests were run with inlet air temperature and pressure to the engine of 85°F and 28.4 in.hg ABS respectively.

The Caterpillar smoke density number is given for each point. To determine smoke opacity, use the smoke chart in Table 3 and the appropriate stack diameter.

The particulate matter is based on a correlation between smoke density and particulates. Particulates consist of soot, soluble organic fractions, sulfates, and miscellaneous compounds from the oil additive package. Soluble organic fraction is approximately 60 to 80% lubricating oil that finds its way into the combustion chamber by passing the piston rings, flowing down the valve guides, or flowing past the turbocharger seals. If a field measurement is made on a very old, worn out engine, the particulates could be higher than the value listed in the table. The current Caterpillar accepted particulate measuring procedure, ISO 8178-1, was not available at the time these engines were tested. The values of particulates estimated from smoke are a good approximation of the values obtained with the ISO procedure.

The EPA approved particulate measurement procedure, Method 5, will give equivalent results if the contractor is skilled.

The gaseous emission measurements were made using SAE test procedures recommended at the time the emissions were run. These procedures have changed very little and are consistent with EPA CFR 40 part 86 subpart D. Subpart D is similar to the following procedures:

EPA	SAE
Method 25A for HC	J215
Method 10 for CO	J177a
Method 7E for $NO_x$	J177a

For further emission information, consult TMI performance parameter DM1176-01.

The exhaust stack temperatures can vary depending on how far downstream from the turbocharger the measurement was made. In most of the cases shown in the tables, the thermocouple would have been less than 6 feet from the turbocharger outlet. Exhaust temperatures at this location would have a  $\pm 5\%$  °C range from the table values.

**Carmen Militello**

---

**From:** Chris Meiers  
**Sent:** Thursday, August 04, 2011 9:11 AM  
**To:** 'Daniel.Payne@whiting-turner.com'  
**Subject:** Fw: Additional DAQEM information  
**Attachments:** no-reply@cashmanequipment.com\_20110726\_172421.pdf

Try this

----- Original Message -----

**From:** Kim Symons <Kim\_Symons@cashmanequipment.com>  
**To:** Chris Meiers  
**Sent:** Tue Jul 26 16:17:09 2011  
**Subject:** RE: Additional DAQEM information

Provide copy of purchase order for the emergency generators

Chris, you should provide this, I think.

Are the generators equipped with either afterburners or turbochargers? Provide mfr cut sheets. If not, what pollution control methods are employed to reduce emissions?

The generator has turbochargers as part of the overall engine, but are not explicitly for emission control as they would be on a turbine engine. Cut sheets on the turbo are unavailable, but are easily visible on the machine. The overall design of the engine is made to meet EPA Tier 2 levels for Stationary Emergency Applications. I've attached the generator spec sheet, emissions data sheets for both generators and the EPA certificate of conformity for reference.

Are the generators set to either a "lean burn" or a "rich burn" or neither? Lean burn.

Provide mfr data showing emissions of SOx at .1839 g/hp-hr. I will send a request to CAT for this information. Provide mfr data showing separate numbers for PM2.5 and PM 10 emissions. My understanding is there are no separate numbers for PM2.5 and PM10. The particulate matter that comes out of the machine is what it is.

Kim Symons

Kim Symons

Account Manager

Cashman Equipment Co.

Power Solutions Division

3300 St. Rose Parkway

Henderson, NV 89052

702-326-6596 Mobile

Sales and Rentals:

Generators	Light Towers
Transfer Switches	Cable and Distribution
UPS Systems	Air Compressors
Switch Gear	Temperature Control

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From: Chris Meiers [<mailto:cmeiers@mojaveelectric.com>]  
Sent: Tuesday, July 26, 2011 6:49 AM  
To: Kim Symons  
Cc: Crystal Teissedre  
Subject: Fw: Additional DAQEM information

More Generator info required HELP!

-Chris Meiers

J56-227

----- Original Message -----

From: Payne, Daniel <[Daniel.Payne@whiting-turner.com](mailto:Daniel.Payne@whiting-turner.com)>

To: Chris Meiers

Cc: Crystal Teissedre

Sent: Mon Jul 25 13:26:05 2011

Subject: Additional DAQEM information

Las Vegas New City Hall  
Chris,

After sitting down and reviewing the permit application with the County, the following questions need to be answered or information provided.

Provide copy of purchase order for the emergency generators

Are the generators equipped with either afterburners or turbochargers? Provide mfr cut sheets. If not, what pollution control methods are employed to reduce emissions?

Are the generators set to either a "lean burn" or a "rich burn" or neither?

Provide mfr data showing emissions of SOx at .1839 g/hp-hr Provide mfr data showing separate numbers for PM2.5 and PM 10 emissions

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)

702-851-4190 (o)

702-851-4198 (f)

## DIESEL GENERATOR SET

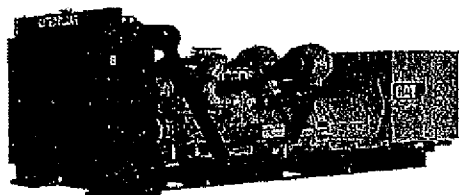


Image shown may not  
reflect actual package.

### STANDBY

**1000 e kW 1250 kVA  
60 Hz 1800 rpm 480 Volts**

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

### FEATURES

#### FUEL/EMISSIONS STRATEGY

- EPA Certified for Stationary Emergency Application (EPA Tier 2 emissions levels)

#### DESIGN CRITERIA

- The generator set accepts 100% rated load in one step per NFPA 110 and meets ISO 8528-5 transient response.

#### UL 2200

- UL 2200 listed packages available. Certain restrictions may apply. Consult with your Cat® Dealer.

#### FULL RANGE OF ATTACHMENTS

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

#### SINGLE-SOURCE SUPPLIER

- Fully prototype tested with certified torsional vibration analysis available

#### WORLDWIDE PRODUCT SUPPORT

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

#### CAT C32 ATAAC DIESEL ENGINE

- Utilizes ACERT<sup>TM</sup> Technology
- Reliable, rugged, durable design
- Four-cycle diesel engine combines consistent performance and excellent fuel economy with minimum weight
- Electronic engine control

#### CAT GENERATOR

- Designed to match the performance and output characteristics of Cat diesel engines
- Single point access to accessory connections
- UL 1446 recognized Class H insulation

#### CAT EMCP 4 SERIES CONTROL PANELS

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

#### SEISMIC CERTIFICATION

- Seismic Certification available
- Anchoring details are site specific, and are dependent on many factors such as generator set size, weight, and concrete strength. IBC Certification requires that the anchoring system used is reviewed and approved by a Professional Engineer
- Seismic Certification per Applicable Building Codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, CBC 2007
- Pre-approved by OSHP and carries an OPA#(OSP-0084-01) for use in healthcare projects in California

J56-229

MOJ00413  
JA 00004860

# STANDBY 1000 ekW 1250 kVA

60 Hz 1800 rpm 480 Volts



## FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Air Inlet	<ul style="list-style-type: none"> <li>• Single element canister type air cleaner</li> <li>• Service Indicator</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Dual element air cleaners</li> <li><input type="checkbox"/> Air Inlet adapters</li> </ul>
Cooling	<ul style="list-style-type: none"> <li>• Radiator with guard</li> <li>• Coolant drain line with valve</li> <li>• Fan and belt guards</li> <li>• Cat Extended Life Coolant</li> <li>• Coolant level sensors</li> <li>• Radiator duct flange</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Jacket water heater</li> </ul>
Exhaust	<ul style="list-style-type: none"> <li>• Dry exhaust manifold</li> <li>• Flanged faced outlets</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Stainless steel exhaust flex fittings</li> <li><input type="checkbox"/> Elbows, flanges, expanders &amp; Y adapters</li> </ul>
Fuel	<ul style="list-style-type: none"> <li>• Primary fuel filter with water separator</li> <li>• Secondary fuel filter</li> <li>• Fuel priming pump</li> <li>• Flexible fuel lines</li> <li>• Fuel cooler</li> </ul>	
SR5 Generator	<ul style="list-style-type: none"> <li>• Class H insulation</li> <li>• Cat digital voltage regulator (CDVR) with kVAR/PF control, 3-phase sensing</li> <li>• Reactive droop</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Oversize &amp; premium generators</li> <li><input type="checkbox"/> Winding temperature detectors</li> <li><input type="checkbox"/> Anti-condensation heaters</li> <li><input type="checkbox"/> Bearing temperature detectors</li> </ul>
Power Termination	<ul style="list-style-type: none"> <li>• Bus bar (NEMA or IEC mechanical lug holes)</li> <li>• Top cable entry</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Circuit breakers, UL listed, 3 pole with shunt trip, 100% rated manual or electrically operated</li> <li><input type="checkbox"/> Circuit breakers, IEC compliant, 3 or 4 pole with shunt trip, manual or electrically operated</li> <li><input type="checkbox"/> Bottom cable entry</li> <li><input type="checkbox"/> Power terminations can be located on the right, left and/or rear as an option. Multiple circuit breaker options</li> </ul>
Governor	<ul style="list-style-type: none"> <li>• ADEM™ A4</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Load Share Module</li> </ul>
Control Panels	<ul style="list-style-type: none"> <li>• EMCP 4.2</li> <li>• User interface panel (UIP) - rear mount</li> <li>• AC &amp; DC customer wiring area (right side)</li> <li>• Emergency stop push button</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> EMCP 4.3 <input type="checkbox"/> EMCP 4.4</li> <li><input type="checkbox"/> Option for right or left mount UIP</li> <li><input type="checkbox"/> Local &amp; remote annunciator module</li> <li><input type="checkbox"/> Digital I/O Module</li> <li><input type="checkbox"/> Generator temperature monitoring &amp; protection</li> <li><input type="checkbox"/> Remote monitoring software</li> </ul>
Lube	<ul style="list-style-type: none"> <li>• Lubricating oil and filter</li> <li>• Oil drain line with valves</li> <li>• Fumes disposal</li> <li>• Gear type lube oil pump</li> </ul>	
Mounting	<ul style="list-style-type: none"> <li>• Rails, engine / generator / radiator mounting</li> <li>• Rubber anti-vibration mounts (shipped loose)</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Spring-type vibration isolator</li> <li><input type="checkbox"/> IBC Isolator</li> </ul>
Starting/Charging	<ul style="list-style-type: none"> <li>• 24 volt starting motor(s)</li> <li>• Batteries with rack and cables</li> <li>• Battery disconnect</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Battery chargers (10 amp)</li> <li><input type="checkbox"/> 45 amp charging alternator</li> <li><input type="checkbox"/> Oversize batteries</li> <li><input type="checkbox"/> Ether starting aid</li> </ul>
General	<ul style="list-style-type: none"> <li>• Right-hand service</li> <li>• Paint - Caterpillar Yellow (except rails and radiators that are gloss black)</li> <li>• SAE standard rotation</li> <li>• Flywheel and Flywheel housing - SAE No. 0</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> CSA certification</li> <li><input type="checkbox"/> EU Declaration of Incorporation</li> <li><input type="checkbox"/> EEC Declaration of Conformity</li> <li><input type="checkbox"/> Seismic Certification per Applicable Building Codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, CBC 2007</li> </ul>

# STANDBY 1000 kW 1250 kVA

60 Hz 1800 rpm 480 Volts



## SPECIFICATIONS

### CAT GENERATOR

SR5 Generator	
Frame size.....	1402
Excitation.....	JE
Pitch.....	0.6667
Number of poles.....	4
Number of bearings.....	2
Number of Leads.....	006
Insulation.....	UL 1446 Recognized Class H with tropicalization and antiabrasion
IP rating.....	IP23
Alignment.....	Close Coupled
Overspeed capability - % of rated.....	125
Wave form.....	002.00
Voltage regulator.....	3 Phase sensing with selectable volts/Hz
Voltage regulation.....	Less than +/- 1/2% (steady state)
Less than +/- 1% (no load to full load)	
Telephone Influence Factor.....	Less than 50
Harmonic distortion.....	Less than 5%

### CAT DIESEL ENGINE

C32 TA, V-12, 4-stroke watercooled diesel	
Bore - mm.....	145.00 mm (5.71 in)
Stroke - mm.....	162.00 mm (6.38 in)
Displacement - L.....	32.10 L (1958.86 in <sup>3</sup> )
Compression ratio.....	15.0:1
Aspiration.....	TA
Fuel system.....	MEUI
Governor type.....	ADEM™ A4

### CAT EMCP 4 SERIES CONTROL PANELS

#### EMCP 4 controls including:

- Run / Auto / Stop Control
- Speed Adjust
- Voltage Adjust
- Engine Cycle Crank
- Emergency stop pushbutton

#### EMCP 4.2 controller features:

- 24-volt DC operation
- Environmental sealed front face
- Text alarm/event descriptions
- True RMS AC metering, 3-phase,  $\pm 1\%$  accuracy.

#### Digital indication for:

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

#### Warning/shutdown with common LED indication of shutdowns for:

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

#### Programmable protective relaying functions:

- Generator phase sequence
- Over/Under voltage (27/59)
- Over/Under Frequency (81 o/u)
- Reverse Power (kW) (32)
- Reverse Reactive Power (kVAR) (32RV)
- Overcurrent (50/51)

#### Communications

- Customer data link (Modbus RTU)
- Accessory module data link
- Serial annunciator module data link
- 6 programmable digital inputs
- 4 programmable relay outputs (Form A)
- 2 programmable relay outputs (Form C)
- 2 programmable digital outputs

#### Compatible with the following optional modules:

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



# STANDBY 1000 kW 1250 kVA

60 Hz 1800 rpm 480 Volts



## TECHNICAL DATA

Open Generator Set - 1800 rpm/60 Hz/480 Volts	DM9933	
EPA Certified for Stationary Emergency Application (EPA Tier 2 emissions levels)		
Generator Set Package Performance Genset Power rating @ 0.8 pf Genset Power rating with fan	1250 kVA 1000 kW	
Coolant to aftercooler Coolant to aftercooler temp max	49 °C	120 °F
Fuel Consumption 100% load with fan 75% load with fan 50% load with fan	272.1 L/hr 219.4 L/hr 144.7 L/hr	71.9 Gal/hr 56.4 Gal/hr 36.2 Gal/hr
Cooling System <sup>1</sup> Air flow restriction (system) Engine coolant capacity	0.12 kPa 65.0 L	0.48 in. water 14.5 gal
Inlet Air <sup>2</sup> Combustion air inlet flow rate	87.6 m <sup>3</sup> /min	3099.6 cfm
Exhaust System Exhaust stack gas temperature Exhaust gas flow rate Exhaust flange size (internal diameter) Exhaust system backpressure (maximum allowable)	476.4 °C 228.4 m <sup>3</sup> /min 203 mm 10.0 kPa	889.5 °F 8065.9 cfm 8 in 40.2 in. water
Heat Rejection Heat rejection to coolant (total) Heat rejection to exhaust (total) Heat rejection to aftercooler Heat rejection to atmosphere from engine Heat rejection to atmosphere from generator	352 kW 1024 kW 288 kW 127 kW 62.7 kW	20018 Btu/min 58235 Btu/min 18379 Btu/min 222 Btu/min 3585.7 Btu/min
Alternator <sup>3</sup> Motor starting capability @ 30% voltage dip Frame Temperature Rise	2734 kVA 1402 125 °C	225 °F
Lube System <sup>3</sup> Supply refill with filter	99.0 L	26.2 gal
Emissions (Nominal) <sup>3</sup> NOx g/hp-hr CO g/hp-hr HC g/hp-hr PM g/hp-hr	4.93 g/hp-hr .13 g/hp-hr .01 g/hp-hr .018 g/hp-hr	

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

<sup>2</sup> UL 2200 Listed packages may have oversized generators with a different temperature rise and motor starting characteristics. Generator temperature rise is based on a 40°C ambient per NEMA MG1-32.

<sup>3</sup> Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77°F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 Btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

J56-232

MOJ00416  
JA 00004863

**EMISSIONS DATA [PRH01013]****JULY 26, 2011**(PRH01013)-ENGINE (G1G05031)-GENERATOR (JSJ01011)-  
GENSETFor Help Desk Phone Numbers [Click here](#)**Engine Emissions Data**For Emissions feedback and questions contact: [engine\\_certification@cat.com](mailto:engine_certification@cat.com)

\*\*This link is case sensitive.\*\*

**Emissions Definitions**

This emission data is Caterpillar's best estimate for this rating. If actual emissions are required then an emission test needs to be run on your engine.

Serial Number (Machine)	
Serial Number (Engine)	PRH01013
Sales Model	C32
Build Date	2010-11-22
Interlock Code Progression	No Interlock Code Progression
<b>As Shipped Data</b>	
Engine Arrangement Number	3431709
Certification Arrangement	
Test Spec Number	0K8990
Certification	NON-CERTIFIED ENGINE
Labeled Model Year	
Family Code	
Flash File	3459219
Flash File Progression	3459219
CORR FL Power at RPM	1,502 HP (1,120.0 KW ) at 1800 rpms
Advertised Power	1,474hp 1,800RPM
Liters	1,959CU IN

This is not an official emission certificate. This is for emission data information only.

Caterpillar Confidential: Green  
 Content Owner: Shane Gilles  
 Web Master(s): PSG Web Based Systems Support  
 Current Date: Tuesday, July 26, 2011 9:26:57 AM  
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[Data Privacy Statement](#)

J56-233

<http://tmiwebclassic.cat.com/tmi/servlet/TMIDirector?Action=buildtab&refkind=RNTMI...> 07/26/2011MOJ00417  
JA 00004864

**EMISSIONS DATA [PRH01016]****JULY 26, 2011**For Help Desk Phone Numbers [Click here](#)**Engine Emissions Data**For Emissions feedback and questions contact: [engine\\_certification@cat.com](mailto:engine_certification@cat.com)

\*\*This link is case sensitive.\*\*

**Emissions Definitions**

This emission data is Caterpillar's best estimate for this rating. If actual emissions are required then an emission test needs to be run on your engine.

Serial Number (Machine)	
Serial Number (Engine)	PRH01016
Sales Model	C32
Build Date	2010-11-24
Interlock Code Progression	No Interlock Code Progression
<b>As Shipped Data</b>	
Engine Arrangement Number	3367659
Certification Arrangement	
Test Spec Number	0K8987
Certification	NR_EPA/CARB w/NMHC+NOx & PM
Labeled Model Year	2010
Family Code	ACPXL32.0ESW
Family Certification	EPA Tier 2
Family Certification	
Family Certification	
Flash File	3459218
Flash File Progression	3459218
CORR FL Power at RPM	1,502 HP (1,120.0 KW) at 1800 rpms
Advertised Power	1,474hp 1,800RPM
Liters	1,959CU IN

This is not an official emission certificate. This is for emission data information only.

Caterpillar Confidential: Green  
 Content Owner: Shane Gilles  
 Web Master(s): PSG Web Based Systems Support  
 Current Date: Tuesday, July 26, 2011 9:26:19 AM  
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF TRANSPORTATION AND AIR QUALITY  
WASHINGTON, DC 20460



CERTIFICATE OF CONFORMITY  
2010 MODEL YEAR

Manufacturer: CATERPILLAR, INC.  
Engine Family: ACPXL32.0ESW  
Certificate Number: CPX-NRCI-10-13  
Intended Service Class: NR 9 (>560)  
Fuel Type: DIESEL  
FELs: g/kW-hr NMHC + NOx: 5.8 NOx: N/A PM: 0.15  
Effective Date: 9/25/2009  
Date Issued: 9/25/2009

Karl J. Simon, Director  
Compliance and Innovative Strategies Division  
Office of Transportation and Air Quality

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60 and Part 89, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following stationary and nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and 89, and produced in the stated model year.

This certificate of conformity covers only those new stationary and nonroad compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and 89 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60 and 89.

This certificate of conformity is conditional upon compliance of said manufacturer with the averaging, banking and trading provisions of 40 CFR Part 89, Subpart C. Failure to comply with these provisions may render this certificate void ab initio.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 89.129-96 and 89.506-96 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to a revocation or suspension of this certificate for reasons specified in 40 CFR Part 89. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void ab initio for other reasons specified in 40 CFR Part 89.

This certificate does not cover stationary and nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

J56-235

**Carmen Militello**

---

**From:** Chris Meiers  
**Sent:** Tuesday, July 19, 2011 12:48 PM  
**To:** 'Daniel.Payne@whiting-turner.com'  
**Subject:** Fw: DAQEM Permit  
**Attachments:** no-reply@cashmanequipment.com\_20110719\_133011.pdf

Daniel,  
Can you open attached and review. Hopefully this is completed for some reason I cannot open.

Regards,  
Chris Meiers

----- Original Message -----

**From:** Kim Symons <Kim\_Symons@cashmanequipment.com>  
**To:** Chris Meiers  
**Sent:** Tue Jul 19 12:20:08 2011  
**Subject:** RE: DAQEM Permit

See attached.

Kim Symons

Kim Symons

Account Manager

Cashman Equipment Co.

Power Solutions Division

3300 St. Rose Parkway

Henderson, NV 89052

702-326-6596 Mobile

Sales and Rentals:

Generators

Light Towers

Transfer Switches

Cable and Distribution

UPS Systems

Air Compressors

Switch Gear

Temperature Control

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From: Chris Meiers [mailto:cmeiers@mojaveelectric.com]  
Sent: Monday, July 18, 2011 3:46 PM  
To: Kim Symons  
Subject: Fw: DAQEM Permit

Kim,  
Try this one

----- Original Message -----

From: Payne, Daniel <Daniel.Payne@whiting-turner.com>  
To: Payne, Daniel <Daniel.Payne@whiting-turner.com>; Chris Meiers  
Cc: Crystal Teissedre; Lee, David <David.Lee@whiting-turner.com>; Lloyd, Elliott <Elliott.Lloyd@whiting-turner.com>; Burch, Clinton <Clinton.Burch@whiting-turner.com>  
Sent: Fri Jul 08 13:31:03 2011  
Subject: RE: DAQEM Permit

Las Vegas New City Hall  
Chris,

As discussed, WT needs additional information for the DAQEM permit. Attached is the permit application and the spreadsheets that are to be submitted.

Please provide the required information and backup documentation.

Thank you,

Daniel Payne

The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)  
702-851-4190 (o)  
702-851-4198 (f)

---

From: Payne, Daniel  
Sent: Monday, June 13, 2011 4:22 PM  
To: Christopher Meiers (cmeiers@mojaveelectric.com)  
Cc: Crystal Teissedre (cteissedre@mojaveelectric.com); Lee, David; Lloyd, Elliott; Burch, Clinton  
Subject: DAQEM Permit

Las Vegas New City Hall  
Chris,

As discussed, the link below is for the DAQEM permit required for the generators. We are not able to find this information in the submittals. Please have this form filled out and returned by Thursday, 6-16-2011 to Clint Burch and myself.

[http://www.clarkcountynv.gov/Depts/daqem/Documents/Permitting/SS\\_forms/Internal\\_Combustion\\_Engine.pdf](http://www.clarkcountynv.gov/Depts/daqem/Documents/Permitting/SS_forms/Internal_Combustion_Engine.pdf)

Below is the spreadsheet that need to be submitted - please ensure the information returned from the manufacturer will fill in all cells, one for each unit. Do not worry about hours of operation.

EU#	Horsepower:	Emission Factor (lb/hp-hr)				Control Efficiency			Potential Emissions
Make:	Hours/Day:	lb/hr	lb/day	ton/yr					
Model:	Hours/Year	PM10	7.00E-04	0.00%	0.00	0.00	0.00		
S/N:		NOx	2.40E-02	0.00%	0.00	0.00	0.00		
		CO	5.50E-03	0.00%	0.00	0.00	0.00		
M	<<att5488a.gif>>	anufacturer	Guaran	<<att5488b.gif>>	tees	SOx	4.05	<<att5488c.gif>> E-04	
	0.00%	0.00	<<att548ac.gif>>	0.00	0.00				
	PM10	<<att548ad.gif>>							

<<att548be.gif>>

1	VOC	7.05E-04	0.00%	0.00	0.00	0.00	
NOx	1	HAP	3.05E-05	0.00%	0.00	0.00	0.00
CO	1						
SOx	1						
VOC	1						

Engine Type: 2

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street

J56-238

Las Vegas, NV 89101

702-604-4179 (c)

702-851-4190 (o)

702-851-4198 (f)





# DAQEM

## DEPARTMENT OF AIR QUALITY & ENVIRONMENTAL MANAGEMENT

500 S Grand Central Parkway 1st Floor • Box 555210 • Las Vegas, NV 89155-5210  
(702) 455-5942 • Fax (702) 383-9994

Lewis Wollenmeyer Director • Tina Glogos Assistant Director

For Office Use Only

### EMISSION UNIT INFORMATION WORKSHEET INTERNAL COMBUSTION ENGINE

#### I. SOURCE INFORMATION

Source Name: Generator

Source ID Number (if applicable): \_\_\_\_\_

#### II. ENGINE SPECIFICATIONS (Complete all that apply)

Engine Manufacturer's Name: Caterpillar

Engine Model Number: C32

Engine Serial Number: PRH 01018/PRH 01020

Date of Engine Manufacture: 10/24/2010

Date Unit Ordered: 8/12/2010

Date of Installation: \_\_\_\_\_

Number of Cylinders: 12 Displacement: 1958.86 in<sup>3</sup> (in<sup>3</sup>, liters)  
32.10 liters

Check ALL configurations below that apply to this engine:

☐ Two Cycle ☒ Four Cycle ☐ Dual-Fuel (not Flex Fuel)

☐ Spark Ignition ☐ Compression Ignition

☐ Lean Burn ☐ Rich Burn

Engine Power Rating: 1474 bhp (HP) @ 1,800 RPM

Type of Fuel(s) Used: Diesel

Exhaust Stack Height above grade: \_\_\_\_\_ ft

Exhaust Stack Diameter: 8 in

Exhaust Velocity: \_\_\_\_\_ ft/sec Or

Exhaust Flow Rate: \_\_\_\_\_ ft<sup>3</sup>/min 237.5 m<sup>3</sup>/min

Exhaust Temperature: 964.9 °F

J56-240

MOJ00424  
JA 00004871

III. EQUIPMENT SPECIFICATIONS (Complete all that apply)

Check ONE option below that best describes the equipment receiving power from the engine referenced above:

☒ Electrical Generator

☐ Fire Pump

☐ Air Compressor

☐ Other, Explain \_\_\_\_\_

Equipment Manufacturer's Name: Caterpillar

Equipment Model Number: EGP

Equipment Serial Number: JSS01013 / JSS01016

Electrical Generator Output Rating (if applicable): 1000 (kW)

IV. EMISSIONS DATA

For the purposes of determining whether or not a source needs a Minor Source Permit, DAQEM will calculate the Potential to Emit (PTE) using 8,760 hours of operation per year for all new engines, including emergency equipment.

Emergency Equipment (backup power supply)

DAQEM will calculate a source's permitted PTE for emergency generators and/or fire pumps using 500 hours per year, unless the applicant requests a voluntary limit that is more stringent. The source's PTE will include operation due to testing, maintenance and emergency purposes. DAQEM will limit the maximum operating hours for testing and maintenance to those limits specified in any applicable NSPS or NESHAP (e.g. 100 hours per year).

If you are requesting a limit on maximum operating hours less than those described in the paragraph above, including during emergencies, specify total operating hours below:

\_\_\_\_\_ (hours/day), AND/OR \_\_\_\_\_ (hours/year)

Continuous Duty Equipment (primary power supply)

DAQEM will calculate a source's permitted PTE for continuous duty equipment using 8,760 hours per year, unless the emission unit is physically or voluntarily limited. The permitted PTE will include all operating purposes.

If you are requesting a limit on maximum operating hours less than those described in the paragraph above, specify total operating hours below:

\_\_\_\_\_ (hours/day), AND/OR \_\_\_\_\_ (hours/year)

J56-241

MOJ00425  
JA 00004872

### Engine Emissions Data

List the emission data for this unit for Particulate Matter under 10 microns (PM<sub>10</sub>), Particulate Matter under 2.5 microns (PM<sub>2.5</sub>), Nitrogen Oxides (NO<sub>x</sub>), Sulfur Oxides (SO<sub>x</sub>), Carbon Monoxide (CO), and Volatile Organic Compounds (VOC).

POLLUTANT	EMISSIONS RATE	UNITS (Circle One)
PM <sub>2.5</sub>	.02	g/bhp-hr; g/hr; ppmv; lb/day; lb/gallon
PM <sub>10</sub>	.02	g/bhp-hr; g/hr; ppmv; lb/day; lb/gallon
NO <sub>x</sub>	4.93	g/bhp-hr; g/hr; ppmv; lb/day; lb/gallon
SO <sub>x</sub>	1839 E-4	g/bhp-hr; g/hr; ppmv; lb/day; lb/gallon
CO	.13	g/bhp-hr; g/hr; ppmv; lb/day; lb/gallon
VOC	.01	g/bhp-hr; g/hr; ppmv; lb/day; lb/gallon

Check ALL sources of emissions data referenced above and note for which pollutant(s):

☒ Manufacturer's Guarantee\*

Pollutant(s) PM, NOX, CO, VOC

☐ Source Test

Pollutant(s) \_\_\_\_\_

☐ AP-42 (if no other data available)

Pollutant(s) \_\_\_\_\_

What methods of air pollution control are used with this engine?\*

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\* Attach copy of Manufacturer's Information concerning emissions and controls.

GENSET POWER WITH FAN		EKW	1,000.0	750.0	500.0	250.0	100.0
ENGINE POWER		BHP	1,474	1,116	765	420	206
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	8,726	5,093	3,335	2,252	1,328
TOTAL CO		G/HR	356	235	501	819	1,263
TOTAL HC		G/HR	37	104	99	75	153
PART MATTER		G/HR	51.8	39.2	67.6	105.5	83.2
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,841.8	2,105.6	2,041.6	2,429.4	2,417.2
TOTAL CO	(CORR 5% O2)	MG/NM3	116.1	93.7	305.5	894.8	2,570.4
TOTAL HC	(CORR 5% O2)	MG/NM3	10.3	37.8	52.6	69.6	283.1
PART MATTER	(CORR 5% O2)	MG/NM3	14.1	13.5	35.5	106.1	135.6
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,384	1,026	994	1,183	1,177
TOTAL CO	(CORR 5% O2)	PPM	93	75	244	716	2,056
TOTAL HC	(CORR 5% O2)	PPM	19	71	98	130	528
TOTAL NOX (AS NO2)		G/HP-HR	5.97	4.59	4.38	5.37	6.45
TOTAL CO		G/HP-HR	0.24	0.21	0.66	1.95	6.14
TOTAL HC		G/HP-HR	0.03	0.09	0.13	0.18	0.74
PART MATTER		G/HP-HR	0.04	0.04	0.09	0.25	0.40
TOTAL NOX (AS NO2)		LB/HR	19.24	11.23	7.35	4.96	2.93
TOTAL CO		LB/HR	0.79	0.52	1.10	1.81	2.78
TOTAL HC		LB/HR	0.08	0.23	0.22	0.17	0.34
PART MATTER		LB/HR	0.11	0.09	0.15	0.23	0.18

#### RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN		EKW	1,000.0	750.0	500.0	250.0	100.0
ENGINE POWER		BHP	1,474	1,116	765	420	206
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	7,212	4,209	2,756	1,861	1,097
TOTAL CO		G/HR	191	126	268	438	676
TOTAL HC		G/HR	19	55	52	40	81
TOTAL CO2		KG/HR	721	564	380	217	124
PART MATTER		G/HR	26.6	20.1	34.7	54.1	42.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,348.6	1,740.1	1,687.3	2,007.8	1,997.7
TOTAL CO	(CORR 5% O2)	MG/NM3	62.1	50.1	163.4	478.5	1,374.6
TOTAL HC	(CORR 5% O2)	MG/NM3	5.5	20.0	27.8	36.8	149.8
PART MATTER	(CORR 5% O2)	MG/NM3	7.2	6.9	18.2	54.4	69.5
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,144	848	822	978	973
TOTAL CO	(CORR 5% O2)	PPM	50	40	131	383	1,100
TOTAL HC	(CORR 5% O2)	PPM	10	37	52	69	280
TOTAL NOX (AS NO2)		G/HP-HR	4.93	3.79	3.62	4.43	5.33
TOTAL CO		G/HP-HR	0.13	0.11	0.35	1.04	3.28

GENSET POWER WITH FAN	EKW	1,000.0	750.0	500.0	250.0	100.0
ENGINE POWER	BHP	1,474	1,116	765	420	206
PERCENT LOAD	%	100	75	50	25	10
* TOTAL HC <i>VOC</i>	G/HP-HR	0.01	0.05	0.07	0.09	0.39
* PART MATTER	G/HP-HR	0.02	0.02	0.05	0.13	0.21
TOTAL NOX (AS NO2)	LB/HR	15.90	9.28	6.08	4.10	2.42
TOTAL CO	LB/HR	0.42	0.28	0.59	0.97	1.49
TOTAL HC	LB/HR	0.04	0.12	0.12	0.09	0.18
TOTAL CO2	LB/HR	1,589	1,244	839	478	273
PART MATTER	LB/HR	0.06	0.04	0.08	0.12	0.09
OXYGEN IN EXH	%	10.1	11.5	12.2	13.5	15.7
DRY SMOKE OPACITY	%	0.7	0.7	1.4	3.0	2.2
BOSCH SMOKE NUMBER		0.18	0.16	0.58	1.31	0.99

### Regulatory Information [Top](#)

EPA TIER 2			2006 - 2010	
GASEOUS EMISSIONS DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 89 SUBPART D AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSIONS VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.				
Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	NON-ROAD	TIER 2	CO: 3.5 NOx + HC: 6.4 PM: 0.20

EPA EMERGENCY STATIONARY			2011 -	
GASEOUS EMISSIONS DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSIONS VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.				
Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	STATIONARY	EMERGENCY STATIONARY	CO: 3.5 NOx + HC: 6.4 PM: 0.20

### Altitude Derate Data [Top](#)

#### ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	50	60	70	80	90	100	110	120	130	NORMAL
ALTITUDE (FT)										
0	1,474	1,474	1,474	1,474	1,474	1,468	1,442	1,417	1,393	1,474
1,000	1,474	1,474	1,474	1,466	1,439	1,413	1,388	1,365	1,341	1,474
2,000	1,474	1,465	1,437	1,411	1,385	1,360	1,337	1,313	1,291	1,434

**EMISSIONS DATA**(PRH01018)-ENGINE (G1E01083)-GENERATOR (JSJ01013)-  
GENSET**JULY 19, 2011**For Help Desk Phone Numbers [Click here](#)**Engine Emissions Data**For Emissions feedback and questions contact: [engine\\_certification@cat.com](mailto:engine_certification@cat.com)

\*\*This link is case sensitive.\*\*

**Emissions Definitions**

This emission data is Caterpillar's best estimate for this rating. If actual emissions are required then an emission test needs to be run on your engine.

Serial Number (Machine)	
Serial Number (Engine)	PRH01018
Sales Model	C32
Build Date	2010-11-24
Interlock Code Progression	No Interlock Code Progression
<b>As Shipped Data</b>	
Engine Arrangement Number	3367659
Certification Arrangement	
Test Spec Number	0K8987
Certification	NR EPA/CARB w/NMHC+NOx & PM
Labeled Model Year	2010
Family Code	ACPXL32.0ESW
Family Certification	EPA Tier 2
Family Certification	
Family Certification	
Flash File	3459218
Flash File Progression	3459218
CORR FL Power at RPM	1,502 HP (1,120.0 KW) at 1800 rpms
Advertised Power	1,474hp 1,800RPM
Liters	1,959CU IN

This is not an official emission certificate. This is for emission data information only.

Caterpillar Confidential: Green  
 Content Owner: Shane Gilles  
 Web Master(s): PSG Web Based Systems Support  
 Current Date: Tuesday, July 19, 2011 12:18:16 PM  
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**EMISSIONS DATA**(PRH01020)-ENGINE (G1E01086)-GENERATOR (JSJ01016)-  
GENSET**JULY 19, 2011**For Help Desk Phone Numbers [Click here](#)**Engine Emissions Data**For Emissions feedback and questions contact: [engine\\_certification@cat.com](mailto:engine_certification@cat.com)**\*\*This link is case sensitive.\*\*****Emissions Definitions**

This emission data is Caterpillar's best estimate for this rating. If actual emissions are required then an emission test needs to be run on your engine.

Serial Number (Machine)	
Serial Number (Engine)	PRH01020
Sales Model	C32
Build Date	2010-11-24
Interlock Code Progression	No Interlock Code Progression
<b>As Shipped Data</b>	
Engine Arrangement Number	3367659
Certification Arrangement	
Test Spec Number	OK8987
Certification	NR_EPA/CARB w/NMHC+NOx & PM
Labeled Model Year	2010
Family Code	ACPXL32.0ESW
Family Certification	EPA Tier 2
Family Certification	
Family Certification	
Flash File	3459218
Flash File Progression	3459218
CORR FL Power at RPM	1,502 HP (1,120.0 KW ) at 1800 rpms
Advertised Power	1,474hp 1,800RPM
Liters	1,959CU IN

This is not an official emission certificate. This is for emission data information only.

Caterpillar Confidential: Green  
 Content Owner: Shane Gilles  
 Web Master(s): PSG Web Based Systems Support  
 Current Date: Tuesday, July 19, 2011 10:41:02 AM  
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[Data Privacy Statement](#)

**Carmen Militello**

---

**From:** Chris Meiers  
**Sent:** Monday, July 25, 2011 10:32 AM  
**To:** 'Daniel.Payne@whiting-turner.com'  
**Subject:** Fw: DAQEM Permit

FYI

----- Original Message -----

**From:** Kim Symons <Kim\_Symons@cashmanequipment.com>  
**To:** Chris Meiers  
**Sent:** Mon Jul 25 07:36:57 2011  
**Subject:** RE: DAQEM Permit

I got some help from a company called Broadbent and Assoc. who specialize in air quality permitting. They told me to use the PM number from the information I sent to you and use the number for both the PM2.5 and PM10. The Sox number used was a standard number that DAQEM supplied to B&A for use in permitting.

Based on the submittal drawings, the top of the muffler appears to be about 183".

Kim Symons

Kim Symons

Account Manager

Cashman Equipment Co.

Power Solutions Division

3300 St. Rose Parkway

Henderson, NV 89052

702-326-6596 Mobile

Sales and Rentals:

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From: Chris Meiers [mailto:cmeiers@mojaveelectric.com]  
Sent: Friday, July 22, 2011 3:15 PM  
To: Kim Symons  
Subject: Fw: DAQEM Permit

Kim,  
Can you please address the permit information when you get a chance.

Thanks,  
Chris Meiers

----- Original Message -----  
From: Payne, Daniel <Daniel.Payne@whiting-turner.com>  
To: Chris Meiers  
Sent: Tue Jul 19 16:40:02 2011  
Subject: RE: DAQEM Permit

The forms are filled out (except for exhaust stack - I'll just have to go measure it) However - there is no manufacturers documentation for the PM2.5, PM 10, and SOx emissions.

Please have them provide the documentation for this.

Las Vegas New City Hall

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)  
702-851-4190 (o)  
702-851-4198 (f)

---

From: Chris Meiers [mailto:cmeiers@mojaveelectric.com]  
Sent: Tuesday, July 19, 2011 12:48 PM  
To: Payne, Daniel  
Subject: Fw: DAQEM Permit

Daniel,  
Can you open attached and review. Hopefully this is completed for some reason I cannot open.

Regards,  
Chris Meiers

----- Original Message -----  
From: Kim Symons <Kim\_Symons@cashmanequipment.com>  
To: Chris Meiers  
Sent: Tue Jul 19 12:20:08 2011  
Subject: RE: DAQEM Permit

See attached.

Kim Symons

Kim Symons  
Account Manager

Cashman Equipment Co.  
Power Solutions Division  
3300 St. Rose Parkway  
Henderson, NV 89052

702-326-6596 Mobile

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From: Chris Meiers [mailto:cmeiers@mojaveelectric.com]  
Sent: Monday, July 18, 2011 3:46 PM  
To: Kim Symons  
Subject: Fw: DAQEM Permit

Kim,  
Try this one

----- Original Message -----

From: Payne, Daniel <Daniel.Payne@whiting-turner.com>  
To: Payne, Daniel <Daniel.Payne@whiting-turner.com>; Chris Meiers  
Cc: Crystal Teissedre; Lee, David <David.Lee@whiting-turner.com>; Lloyd, Elliott <Elliott.Lloyd@whiting-turner.com>; Burch, Clinton <Clinton.Burch@whiting-turner.com>  
Sent: Fri Jul 08 13:31:03 2011  
Subject: RE: DAQEM Permit

Las Vegas New City Hall  
Chris,

J56-250

As discussed, WT needs additional information for the DAQEM permit. Attached is the permit application and the spreadsheets that are to be submitted.

Please provide the required information and backup documentation.

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)  
702-851-4190 (o)  
702-851-4198 (f)

---

From: Payne, Daniel  
Sent: Monday, June 13, 2011 4:22 PM  
To: Christopher Meiers (cmeiers@mojaveelectric.com)  
Cc: Crystal Teissedre (cteissedre@mojaveelectric.com); Lee, David; Lloyd, Elliott; Burch, Clinton  
Subject: DAQEM Permit

Las Vegas New City Hall  
Chris,

As discussed, the link below is for the DAQEM permit required for the generators. We are not able to find this information in the submittals. Please have this form filled out and returned by Thursday, 6-16-2011 to Clint Burch and myself.

[http://www.clarkcountynv.gov/Depts/daqem/Documents/Permitting/SS\\_forms/Internal\\_Combustion\\_Engine.pdf](http://www.clarkcountynv.gov/Depts/daqem/Documents/Permitting/SS_forms/Internal_Combustion_Engine.pdf)

Below is the spreadsheet that need to be submitted - please ensure the information returned from the manufacturer will fill in all cells, one for each unit. Do not worry about hours of operation.

EU#	Horsepower:	Emission Factor (lb/hp-hr)	Control Efficiency	Potential Emissions
Make:	Hours/Day:	lb/hr lb/day ton/yr		
Model:	Hours/Year	PM10 7.00E-04 0.00% 0.00 0.00 0.00		
S/N:		NOx 2.40E-02 0.00% 0.00 0.00 0.00		
		CO 5.50E-03 0.00% 0.00 0.00 0.00		
M	<<att5488a.gif>> anufacturer	Guaran <<att5488b.gif>> tees	SOx 4.05	<<att5488c.gif>> E-04
	0.00% 0.00	<<att548ac.gif>> 0.00 0.00		
	PM10	<<att548ad.gif>>		

<<att548be.gif>>	
1	VOC 7.05E-04 0.00% 0.00 0.00 0.00
NOx 1	HAP 3.05E-05 0.00% 0.00 0.00 0.00
CO 1	
SOx 1	
VOC 1	

Engine Type: 2

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)  
702-851-4190 (o)  
702-851-4198 (f)

**Carmen Militello**

---

**From:** Chris Meiers  
**Sent:** Friday, May 20, 2011 9:31 AM  
**To:** Richard Christensen  
**Subject:** FW: LV City Hall PSG overhead conduits

Richard,  
Please look into this issue with the conduits.

Thanks,

*Christopher Meiers*  
*Project Manager*  
*Mojave Electric*

---

**From:** Rob Mayer [[mailto:Robert\\_Mayer@cashmanequipment.com](mailto:Robert_Mayer@cashmanequipment.com)]  
**Sent:** Friday, May 20, 2011 9:25 AM  
**To:** Chris Meiers  
**Cc:** Kim Symons; Mark Pfeiffer; James Wingard  
**Subject:** LV City Hall PSG overhead conduits

Chris,

We have run into a problem with the over head conduits on PSG.  
There is a lifting fixture that bolts onto the top to allow circuit breakers to be removed.  
With the conduits on top, we cannot install this CB lifting removal tool.

Also, do you any updates for our startup?

Thank you,

Rob Mayer  
Project Manager  
Cashman Power Solutions  
3300 St. Rose Parkway  
Henderson Nv. 89052  
tel 702/326-3693  
fax 702/639-5090  
[rob\\_mayer@cashmanequipment.com](mailto:rob_mayer@cashmanequipment.com)

**Carmen Militello**

---

**From:** Chris Meiers  
**Sent:** Wednesday, July 27, 2011 1:52 PM  
**To:** 'Daniel.Payne@whiting-turner.com'  
**Subject:** Fw: New City Hall - Generator Fuel  
**Attachments:** no-reply@cashmanequipment.com\_20110727\_144458.pdf

Here you go

----- Original Message -----

**From:** Kim Symons <[Kim\\_Symons@cashmanequipment.com](mailto:Kim_Symons@cashmanequipment.com)>  
**To:** Chris Meiers  
**Sent:** Wed Jul 27 13:36:00 2011  
**Subject:** RE: New City Hall - Generator Fuel

Yes, up to B20, as long as it meets all the "standards". Info from CAT attached.

Kim Symons

Kim Symons

Account Manager

Cashman Equipment Co.

Power Solutions Division

3300 St. Rose Parkway

Henderson, NV 89052

702-326-6596 Mobile

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From: Chris Meiers [<mailto:cmeyers@mojaveelectric.com>]  
Sent: Wednesday, July 27, 2011 12:57 PM  
To: Kim Symons  
Subject: New City Hall - Generator Fuel

Kim,  
Is the Generator BIO Diesel Fuel compatible?

Thanks,  
Chris Meiers



Table 8

Alternative Distillate Fuels - Arctic Applications <sup>(1) (2)</sup>	
Specification	Grade
"MIL-DTL-5624U"	JP-5
"MIL-DTL-83133F"	JP-8
"ASTM D1655-08a"	Jet A <sup>(3)</sup> , Jet A-1 <sup>(3)</sup>

(1) The fuel that is selected must meet the requirements that are specified in the "Caterpillar Specification for Distillate Diesel Fuel for Off-Highway Diesel Engines" table, table 7. Cooling of the fuel may be required to maintain 1.4 cSt or greater viscosity at the fuel injection pump. Consult the supplier for the recommended additives in order to maintain the proper fuel lubricity.

(2) The fuel specifications listed in this table allow and/or recommend the use of fuel additives that have not been tested by Caterpillar for use in Caterpillar fuel systems. The use of these specifications allowed and/or recommended fuel additives are at the risk of the user.

(3) Jet A is the standard fuel used by U.S. commercial airlines when operating within the U.S. Jet A-1 is the standard fuel used by commercial airlines worldwide. Per "ASTM D1655-08a, Table 1 (Detailed Requirements of Aviation Turbine Fuels)", Jet A and Jet A-1 have identical requirements except for freezing point. Jet A has a freeze point requirement of -40 °C (-40 °F) versus the Jet A-1 has a freeze point requirement of -47 °C (-52.6 °F), but other freezing points may be agreed on by the fuel purchaser and the fuel supplier.

These fuels are lighter than the No. 2 grades of fuel. The cetane number of the fuels in table 8 must be at least 40. If the viscosity is below 1.4 cSt at 40 °C (104 °F), use the fuel only in temperatures below 0 °C (32 °F). Do not use any fuels with a viscosity of less than 1.2 cSt at 40 °C (104 °F).

**Note:** Fuel cooling may be required in order to maintain the minimum viscosity of 1.4 cSt at the fuel injection pump.

**Note:** These fuels may not prove acceptable for all applications.

## Aftermarket Fuel Additives

There are many different types of fuel additives that are available to use. Caterpillar does not generally recommend the use of fuel additives.

In special circumstances, Caterpillar recognizes the need for fuel additives. Fuel additives need to be used with caution. The additive may not be compatible with the fuel. Some additives may precipitate. This action causes deposits in the fuel system. The deposits may cause seizure. Some additives may plug fuel filters. Some additives may be corrosive, and some additives may be harmful to the elastomers in the fuel system. Some additives may damage emission control systems. Some additives may raise fuel sulfur levels above the maximum allowed by the United States (U.S.) Environmental Protection Agency (EPA) and/or, as appropriate, other regulatory agencies. Consult your fuel supplier for those circumstances when fuel additives are required. Your fuel supplier can make recommendations for additives to use and for the proper level of treatment.

**Note:** Metallic fuel additives can cause fuel system/injector fouling and after treatment device fouling. Caterpillar discourages the use of metallic fuel additives in most applications. Metallic fuel additives should only be used in applications where their use is specifically recommended by Caterpillar.

**Note:** The U.S. EPA bans the use of metallic fuel additives in on-highway applications.

**Note:** Diesel fuel additives/conditioners may not improve markedly poor diesel fuel properties enough to make them acceptable for use.

**Note:** For best results, your fuel supplier should treat the fuel when additives are needed.

## Cat Diesel Fuel Conditioner

**Note:** Cat Diesel Fuel Conditioner, part number 256-4968, is the only fuel conditioner/additive available to the end user that is tested and approved by Caterpillar for use in Caterpillar diesel engines.

Cat Diesel Fuel Conditioner is a proprietary metal and ash free formulation that has been extensively tested for use with distillate diesel fuels for use in Caterpillar diesel engines. Cat Diesel Fuel Conditioner helps address many of the challenges that various fuels worldwide present in regards to fuel life/stability, engine startability, injector deposits, fuel system life, and long term engine performance.

**Note:** Diesel fuel additives/conditioners may not improve markedly poor diesel fuel properties enough to make them acceptable for use.

**Note:** For maximum overall benefits, ask your fuel supplier to add Cat Diesel Fuel Conditioner at the recommended treat rate before fuel delivery, or you may add Cat Diesel Fuel Conditioner at the recommended treat rate during the early weeks of fuel storage. Follow all applicable national, regional, and local laws, mandates, and regulations concerning the use of diesel fuel conditioners/additives.

Cat Diesel Fuel Conditioner is a proven high performance, multipurpose diesel fuel conditioner that is designed to improve:

- Fuel economy (through fuel system cleanup)
- Lubricity
- Oxidative stability
- Detergency/dispersancy
- Moisture dispersancy
- Corrosion protection
- Cetane (typically 2-3 cetane numbers)

Cat Diesel Fuel Conditioner has been validated through lab and field tests to improve/reduce diesel fuel consumption and emissions for typical fleets through fuel system/injector cleanup, and to help maintain new engine performance by keeping fuel systems clean. Note that while fuel system/injector cleanup takes place over time, maintaining fuel system/injector cleanliness is an ongoing process.

Data indicates that average fuel economy improvements across typical fleets may be in the 2-3+ percentage range. Note that improvements may vary based on factors such as engine model, age and condition of the engine, and application.

Cat Diesel Fuel Conditioner also reduces the formation of gums, resins, and sludge, and disperses insoluble gums. This can dramatically improve fuel storage life, reduce fuel related engine deposits and corrosion, and extend fuel filter life.

#### NOTICE

Use of Cat Diesel Fuel Conditioner does not lessen the engine owner and/or responsibility of the fuel supplier to follow all industry standard maintenance practices for fuel storage and for fuel handling. Refer to the "General Fuel Information" article in this Special Publication for additional information. Additionally, use of Cat Diesel Fuel Conditioner does NOT lessen the engine responsibility of the owner to use appropriate diesel fuel. Refer to the "Fuel Specifications" section in this Special Publication (Maintenance Section) for guidance.

Caterpillar strongly recommends that Cat Diesel Fuel Conditioner be used with biodiesel and biodiesel blends. Cat Diesel Fuel Conditioner is suitable for use with biodiesel/biodiesel blends that meet Caterpillar biodiesel recommendations and requirements. **Note that not all fuel additives are suitable for use with biodiesel/biodiesel blends.** Read and follow all applicable label usage instructions. Also, refer to this Special Publication, "Distillate Diesel Fuel" article and also refer to the "Biodiesel" article, which includes Caterpillar biodiesel recommendations and requirements.

When used as directed, Cat Diesel Fuel Conditioner has proven to be compatible with existing and U.S. EPA 2007 on-highway certified diesel engine emission control catalysts and particulate filters.

**Note:** When used as directed, Cat Diesel Fuel Conditioner will not raise fuel sulfur levels measurably in the final fuel/additive blend. In the U.S., the current formulation of Cat Diesel Fuel Conditioner must be blended in at the recommended treat-rate at the fuel supplier/distributor level for use in on-highway or other applications where use of ULSD fuel is mandated (15 ppm or less fuel sulfur). Follow all applicable national, regional, and local laws, mandates, and regulations concerning the use of diesel fuel conditioners/additives.

#### NOTICE

When used as directed Cat Diesel Fuel Conditioner will not raise fuel sulfur levels measurably in the final fuel/additive blend. But, in the U.S., aftermarket fuel additives (retail consumer level versus bulk fuel additives used at the fuel supplier/distributor level) with more than 15 ppm sulfur are NOT allowed to be used in applications where ULSD usage is mandated (15 ppm or less fuel sulfur). The current formulation of Cat Diesel Fuel Conditioner has more than 15 ppm sulfur. Follow all applicable national, regional, and local laws, mandates and regulations concerning the use of diesel fuel conditioners/additives.

103432160

## Biodiesel

SMCS Code: 1280

#### NOTICE

These recommendations are subject to change without notice. Consult your Caterpillar dealer for the most up to date recommendations.

J56-257

MOJ00441  
JA 00004888

**Note:** For guidance related to on-highway diesel engines refer to specific engine Operation and Maintenance Manuals and to the most current revision level of Special Publication, SEBU6385, "Caterpillar On-Highway Diesel Engine Fluids Recommendations".

#### Referenced Documents:

- "ASTM D6751 Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels"
- "EN 14214 Automotive fuels - Fatty acid methyl esters (FAME) for diesel engines - Requirements and test methods"
- "ASTM D7467 Standard Specification for Diesel Fuel Oil, Biodiesel Blend (B6 to B20)"
- "ASTM D975-08a Standard Specification for Diesel Fuel Oils" (includes requirements for B5 and lower biodiesel blends)
- "EN 590 Automotive fuels - Diesel - Requirements and test methods" (includes requirements for B5 and lower biodiesel blends)
- "EN 14078 Liquid petroleum products - Determination of fatty acid methyl esters (FAME) in middle distillates - Infrared spectroscopy method"
- "EN 14104 Fat and oil derivatives - Fatty Acid Methyl Esters (FAME) - Determination of Acid Value"
- "ASTM D664 Standard Test Method for Acid Number of Petroleum Products by Potentiometric Titration"
- "ASTM D6469 Standard Guide for Microbial Contamination in Fuels and Fuel Systems"

**Note:** For the purpose of these recommendations, the cautions, guidelines and recommendations applicable to biodiesel (B100) are also applicable to biodiesel blends (B2, B5, B20, etc.).

**Note:** A complete Caterpillar S-O-S Services oil analysis program is strongly recommended when using biodiesel blends B1 (1 percent) through B19 (19 percent), and a complete Caterpillar S-O-S Services oil analysis program is required when using biodiesel/biodiesel blends that are B20 or above (when requesting oil analysis, be sure to note the level of biodiesel being used (B5, B20, etc.)).

**Note:** DO NOT USE ONLY THIS SPECIAL PUBLICATION AS A BASIS FOR DETERMINING OIL DRAIN INTERVALS.

This Special Publication does not address recommended oil drain intervals, but rather provides guidance that should be used in conjunction with your specific engine/machine Operation and Maintenance Manuals in determining acceptable oil drain intervals. Consult your engine/machine Operation and Maintenance Manuals, and consult Caterpillar dealers for additional guidance, including but not limited to guidance on establishing optimized and/or acceptable oil drain intervals.

**Note:** The use of a Caterpillar S-O-S Services oil analysis program helps environmental sustainability as it is the best way to optimize oil life, and will help engines reach their expected life. Consult with your Caterpillar dealer regarding the testing required to establish a safe, optimized oil drain interval.

Biodiesel is a fuel that can be made from a variety of feedstocks. Soybean oil and rapeseed oil are the primary feedstocks. Without esterification, these oils gel in the crankcase and the fuel tank. These fuels may not be compatible with many of the elastomers that are used in engines. In original forms, these oils are not suitable for use as a fuel in compression ignition engines. Alternate base stocks for biodiesel may include animal tallow, waste cooking oils, or a variety of other feedstocks. To use any of the oils listed above as fuel, the oil must be esterified.

Biodiesel and biodiesel blends are known to cause an increase in fuel system deposits, most significant of which is deposits within the fuel injector. These deposits can cause a loss in power due to restricted or modified fuel injection or cause other functional issues associated with these deposits. Caterpillar Diesel Fuel Conditioner helps to limit these issues by improving the stability of biodiesel and biodiesel blends while also cleaning formed deposits and hindering the production of new deposits. **Therefore, the use of Caterpillar Diesel Fuel Conditioner is strongly recommended when running biodiesel and biodiesel blends, especially when using B20 or higher blend levels.** Refer to this Special Publication, "Distillate Diesel Fuel" article, "Caterpillar Diesel Fuel Conditioner" topic for additional information.

**Note:** Engines that are manufactured by Caterpillar are certified by use of the prescribed U.S. EPA and European Certification fuels. Caterpillar does not certify engines on any other fuel.

**Note:** The user of the engine has the responsibility of using the correct fuel that is recommended by the manufacturer and allowed by the U.S. EPA and other appropriate regulatory agencies.

Caterpillar is not in a position to evaluate the many variations of biodiesel and the long-term effects on performance, durability, or compliance to emissions standards for Caterpillar products. J56-258

**Note:** Visually apparent phase separation, sediment, suspended matter, or undissolved water should not be present in biodiesel and biodiesel blends.

Biodiesel and biodiesel blends should not contain any constituent, additive or other substance that makes them unacceptable for use in diesel engines.

"EN 14078" is the recommended test method for determining the volume percent biodiesel in a biodiesel blend.

#### NOTICE

Failures that result from the use of any fuel are not Caterpillar factory defects. Therefore, the cost of repair would NOT be covered by the Caterpillar warranty for materials and/or the warranty for workmanship.

### Recommendation for the Use of Biodiesel in Caterpillar Commercial and Machine Diesel Engines

For Caterpillar Series C175 Series diesel engines, consult the Caterpillar Application & Installation Group or consult your Caterpillar dealer before using biodiesel or biodiesel blends.

For Caterpillar off-highway ACERT Technology diesel engine model numbers C7, C9, C11, C13, C15, C18, C27, and C32 and also for Caterpillar 3114, 3116, 3126, 3176, 3196, 3208, 3306, C-9, C-10, C-12, 3406, C-15, C-16, C-18, 3456, 3408, 3412, Series 3500 Series, Series 3600 Series, Series C280 Series, CM20, CM25, and CM32 engines, biodiesel that meets the requirements that are listed in the "Caterpillar Specification for Biodiesel Fuel", "ASTM D6751", or "EN 14214" are acceptable blendstock. Biodiesel may be blended in amounts up to a maximum of 20 percent (B20) with an acceptable diesel fuel. This blend is acceptable provided that the biodiesel constituent meets the requirements that are outlined in Table 9 prior to blending. In addition, the final blend must meet the requirements for distillate diesel fuel that are listed in the "Caterpillar Specification for Distillate Diesel Fuel for Off-Highway Diesel Engines", Table in this Special Publication, "Distillate Diesel Fuel" article. Biodiesel that meets "ASTM D7467" (B6 to B20), or biodiesel that meets "ASTM D975-08a" or "EN 590" requirements for B5 and lower biodiesel blends are also acceptable for use in the listed engines.

C0.5-C2.2, C4.4, and C4.4 ACERT Technology diesel engines and C6.6 ACERT Technology diesel engines compatible with up to B20 biodiesel as described above have been released as follows:

- C0.5-C2.2 Tier 4 Interim/Stage IIIB, at model introduction, starting April 2007

- C4.4 (Mechanical) Tier 3/Stage IIIA, at model introduction, starting Nov 2007

- C4.4 ACERT Technology Tier 3/Stage IIIA electronic diesel engines manufactured after 1 July 2008, Serial numbers:

- Cat Machine Group - C4E05524-UP

- Cat Industrial - 44404304-UP

- C6.6 ACERT Technology electronic diesel engines built after 1 July 2008, Serial numbers:

- Cat Machine Group - CE614624-UP

- Cat Industrial - 66609016-UP

**Note:** Diesel fuels that meet the requirements of the most current versions of the "Caterpillar Specification for Distillate Diesel Fuel for Off-Highway Diesel Engines", the "Caterpillar Specification for Distillate Diesel Fuel for On-Highway Diesel Engines", the National Conference on Weights and Measures (NCWM) Premium Diesel definition, "EN 590" and/or "ASTM 975 (No.1-D, No.2-D)", are examples of fuels that are acceptable for creating biodiesel blends. These biodiesel blends must meet the Caterpillar recommendations and requirements for biodiesel blends.

**Note:** Crankcase oil fuel dilution may be much higher when biodiesel and/or biodiesel blends are used. This increased level of fuel dilution when using biodiesel and/or biodiesel blends is related to the typically lower volatility of biodiesel. In-cylinder emissions control strategies utilized in many of the industries latest engine designs may lead to a higher level of biodiesel concentration in the sump.

**The long-term effect of biodiesel concentration in crankcase oil is currently unknown, but some potential issues are:**

- A higher risk of corrosion
- A higher risk of wear
- A higher risk of piston deposits
- Either increased or decreased oil viscosity
- Shortened aftertreatment device ash service intervals (more frequent) and/or shortened aftertreatment device life
- Shortened oil life (more frequent oil drain intervals)

J56-259

The use of a complete Caterpillar S-O-S Services oil analysis program is strongly recommended when B19 and lower biodiesel blends are used, and the use of a complete Caterpillar S-O-S Services oil analysis program is required when using biodiesel/biodiesel blends that are B20 or above (when requesting oil analysis, be sure to note the level of biodiesel being used (B5, B20, etc.)).

For blends of biodiesel B20 or above, consult your Caterpillar dealer for guidance. A complete Caterpillar S-O-S Services oil analysis program is required when biodiesel or blends of biodiesel that are B20 or above are used. Biodiesel or blends of biodiesel as used in the engine must meet the requirements that are stated in the "Caterpillar Specification for Distillate Diesel Fuel for Off-Highway Diesel Engines" Table in this Special Publication, "Distillate Diesel Fuel" article.

For Caterpillar C0.5 through C2.2 and for C4.4 mechanical engines that meet Tier2/Stage2 or earlier emissions regulations, for C4.4 (machine engine serial numbers C4E05523 and lower, and industrial engine serial numbers 44404303 and lower) and C6.6 (machine engine serial numbers CE614623 and lower, and industrial engine serial numbers 66609015 and lower) ACERT Technology diesel engines, and for C3.4, 3003 through 3034, 3044, 3046, 3054, 3056, 3064, and 3066 engines, biodiesel that meets the requirements that are listed in the "Caterpillar Specification for Biodiesel Fuel", "ASTM D6751", or "EN 14214" may be blended with an acceptable diesel fuel. This blend should be a maximum ratio of 5% biodiesel to 95% of an acceptable diesel fuel. The biodiesel must meet the requirements that are listed in Table 9 prior to blending. Biodiesel that meets "ASTM D975-08a" or "EN 590" requirements for B5 and lower biodiesel blends are also acceptable for use in the listed engines. Use of more than a 5% biodiesel can cause premature failures. The repair for these failures would not be covered under the Caterpillar warranty.

Note: When biodiesel, or any blend of biodiesel is used, the user has the responsibility for obtaining the proper local exemptions, regional exemptions, and/or national exemptions, if required, for the use of biodiesel in any Caterpillar engine that is regulated by emissions standards. Biodiesel that meets the requirements that are listed in the "Caterpillar Specification for Biodiesel Fuel", "ASTM D6751", or "EN 14214" is not expected to pose major problems when blended with an acceptable distillate diesel fuel and when used as recommended at the maximum stated percentages. In addition, biodiesel that meets "ASTM D7467" (B6 to B20), or biodiesel that meets "ASTM D975-08a" or "EN 590" requirements for B5 and lower biodiesel blends are not expected to pose major problems and when used as recommended. However, the following additional recommendations must be followed.

## Recommendations

For the purpose of these recommendations, the cautions, guidelines and recommendations applicable to biodiesel (B100) are also applicable to biodiesel blends (B2, B5, B20, etc.).

Note: Fuel storage tanks should be thoroughly cleaned before converting to biodiesel/biodiesel blends. Conversion to biodiesel/biodiesel blends can loosen fuel system and fuel storage tank deposits. Bulk tank continuous filtration unit and dispensing point filters, and onboard engine filters change intervals may need to be shortened for an extended period of time in order to allow for this cleaning effect.

In North America, the use of biodiesel from "BQ-9000" accredited producers and "BQ-9000" certified marketers is required. Look for the "BQ-9000" biodiesel quality accreditation program certification logo that is available to distributors that meet the requirements of "BQ-9000". For more information on the "BQ-9000" program, go to "www.BQ-9000.org".

In other areas of the world, the use of biodiesel that is "BQ-9000" accredited and certified, or that is accredited and certified by a comparable biodiesel quality body to meet similar biodiesel quality control standards, is required.

- The oil change interval can be negatively affected by the use of biodiesel. Use Caterpillar S-O-S Services oil analysis in order to monitor the condition of the engine oil. Use Caterpillar S-O-S Services oil analysis also in order to determine the oil change interval that is optimum. A complete Caterpillar S-O-S Services oil analysis program is strongly recommended when using biodiesel blends B1 through B19, and a complete Caterpillar S-O-S Services oil analysis program is required when using biodiesel/biodiesel blends that are B20 or above (when requesting oil analysis, be sure to note the level of biodiesel being used (B5, B20, etc.)).
- Confirm with the filter manufacturer that the fuel filter/filters to be used are compatible with biodiesel. Caterpillar fuel filters are compatible with biodiesel that meets the quality requirements given in this Special Publication.
- Conversion to biodiesel can loosen fuel system deposits. Fuel filter change intervals may need to be shortened for an extended period of time in order to allow for this cleaning effect when converting used engines and/or used fuel tanks to biodiesel.
- Filter biodiesel and biodiesel blends through a fuel filter with a rating of four microns(c) absolute or less. This filtration should be located on the device that dispenses the fuel to the fuel tank for the engine, and also on the device that dispenses fuel from the bulk storage tank. Series filtration is recommended.
- In a comparison of distillate fuels to biodiesel, biodiesel typically provides less energy per gallon by 5% to 8%. Do NOT change the engine rating in order to compensate for the power loss. This will help avoid engine problems when the engine is converted back to 100 percent distillate diesel fuel.
- Compatibility of the elastomers with biodiesel is currently being monitored. The condition of seals and hoses should be monitored regularly by the end user.
- Biodiesel may pose low ambient temperature problems for both storage and operation. At low ambient temperatures, fuel may need to be stored in a heated building or a heated storage tank. The fuel system may require heated fuel lines, filters, and tanks. Filters may plug and fuel in the tank may solidify at low ambient temperatures if precautions are not taken. Consult your biodiesel supplier for assistance in the blending and attaining of the proper cloud point for the fuel.
- Biodiesel has poor oxidation stability, which can result in long term storage problems. Biodiesel should be used within six months of production. Storage life for biodiesel and biodiesel blends that are greater than B20 may be much shorter than six months. The poor oxidation stability may accelerate fuel oxidation in the fuel system. This is especially true in engines with electronic fuel systems because these engines operate at higher temperatures. In addition to this "Biodiesel" article, also refer to this Special Publication, "Distillate Diesel Fuel" article, "Aftermarket Fuel Additives" and "Cat Diesel Fuel Conditioner" topics for information concerning oxidation stability and fuel additives.
- Biodiesel can be produced using various feedstocks. The feedstock used can affect product performance. Two of the fuel characteristics affected are cold flow and oxidation stability. Consult your fuel supplier for guidance.
- Due to poor oxidation stability and other potential issues, it is strongly recommended that engines with limited operational time either not use biodiesel/biodiesel blends or, while accepting some risk, limit biodiesel to a maximum of B5. Examples of applications that should limit the use of biodiesel are the following: Standby Generator sets and certain emergency vehicles.
- Biodiesel is an excellent medium for microbial contamination and growth. Microbial contamination and growth can cause corrosion in the fuel system and premature plugging of the fuel filter. Refer to "ASTM D6469", and consult your supplier of fuel and fuel additive for assistance in selecting appropriate anti-microbial additives.
- Care must be taken in order to remove water from fuel tanks. Water accelerates microbial contamination and growth. When biodiesel is compared to distillate fuels, water is naturally more likely to exist in the biodiesel.
- Refer to this Special Publication, "General Fuel Information" article for additional recommendations.

## Seasonal Operation

It is strongly recommended that seasonally operated engines have the fuel systems, including fuel tanks, flushed with conventional diesel fuel before prolonged shutdown periods. An example of an application that should seasonally flush the fuel system is school buses (U.S.).

Perform the following items in the listed order before shutting down the engine for prolonged periods:

J56-261

1. Operate the engine until the fuel level in the tank is very low.
2. Refill the fuel tank with high quality conventional distillate diesel fuel.
3. Repeat the previous steps a minimum of two times before the engine is shut down for prolonged periods.

### Biodiesel Degradation

Biodiesel and blends of biodiesel have poor thermal stability and oxidation stability compared to petroleum distillate diesel fuels. The use of these biodiesels and blends of biodiesel can accelerate the problems that are addressed in this Special Publication. Using biodiesel blends above the maximum level approved for the engine is not recommended.

A test that can be used to help determine the degradation of biodiesel and biodiesel blends is the measurement of the Total Acid Number (TAN). This number represents the amount of acid present in the biodiesel or biodiesel blend as a result of degradation. The following test methods may be used: "EN 14104" or "ASTM D864". For neat (B100) biodiesel, this value should not exceed 0.5 mg KOH/g. For biodiesel blends such as 20% biodiesel and 80% diesel (B20), this value should not exceed 0.3 mg KOH/g. **Biodiesel and biodiesel blends that exceed these values should be considered degraded beyond acceptable limits and further testing would not be required.** Biodiesel and biodiesel blends that exceed 0.16 mg KOH/g may result in the formation of undesired degradation by-products that can cause the problems discussed in this document. Samples that exceed 0.16 mg KOH/g but do not exceed 0.3 mg KOH/g should be tested with the other methods in order to determine the thermal and oxidative stability of the fuel.

With the following considerations, commercial and machine diesel engines that are covered by this Special Publication should be able to operate satisfactorily on fuels with the stated maximum biodiesel levels:

- The biodiesel/biodiesel blends meet all of the requirements that are stated in this Special Publication.
- All appropriate guidelines and maintenance practices as stated in engine specific Operation and Maintenance Manuals and in this Special Publication are followed.
- The engines are operating in applications with low to moderate severity.
- When other factors do not preclude.

Refer to this Special Publication, and refer to your specific Cat commercial engine Operation and Maintenance Manual and/or refer to your specific Cat machine Operation and Maintenance Manual for additional guidance.

#### NOTICE

In order to meet expected fuel system component life, 4 micron(c) absolute or less secondary fuel filtration is required for all Caterpillar diesel engines that are equipped with common-rail fuel systems, and for all Caterpillar diesel engines that are equipped with unit injected fuel systems. For all other Caterpillar diesel engines (mostly older engines with pump, line and nozzle type fuel systems), the use of 4 micron(c) absolute or less secondary fuel filtration is strongly recommended. Note that all current Caterpillar diesel engines are factory equipped with Caterpillar Advanced Efficiency 4 micron(c) absolute fuel filters.

In order to obtain additional information on Caterpillar designed and produced filtration products, refer to this Special Publication, "Reference Material" article, "Filters" and "Miscellaneous" topics, and then contact your Caterpillar dealer for assistance with filtration recommendations for your Caterpillar machine.

### Fuel System Deposits

Biodiesel and biodiesel blends are known to cause an increase in fuel system deposits, most significant of which is deposits within the fuel injector. These deposits can cause a loss in power due to restricted or modified fuel injection or cause other functional issues associated with these deposits. Caterpillar Diesel Fuel Conditioner helps to limit these issues by improving the stability of biodiesel and biodiesel blends while also cleaning formed deposits and hindering the production of new deposits. **Therefore, the use of Caterpillar Diesel Fuel Conditioner is strongly recommended when running biodiesel and biodiesel blends, especially when using B20 or higher blend levels.** Refer to this Special Publication, "Distillate Diesel Fuel" article, "Caterpillar Diesel Fuel Conditioner" topic for additional information.

### Biodiesel Specification

The final blend of biodiesel as used in the engine must meet the requirements that are stated in the "Caterpillar Specification for Distillate Diesel Fuel for Off-Highway Diesel Engines" Table in this Special Publication, "Distillate Diesel Fuel" article.

#### NOTICE

The footnotes are a key part of the "Caterpillar Specification for Biodiesel Fuel" Table 9. Read ALL footnotes.

J56-262

Table 9

Caterpillar Specification for Biodiesel Fuel <sup>(1)</sup>				
Property	Test Method	Test Method	Units	Limits
	United States	International	Specific Properties of Fuel	
Density at 15°C	"ASTM D1298"	"ISO 3675"	g/cm <sup>3</sup>	0.86-0.90
Viscosity at 40°C	"ASTM D445"	"ISO 3104"	mm <sup>2</sup> /s (cSt)	1.9-6.0
Flash Point	"ASTM D93"	"ISO 3679"	°C	53 minimum
Pour Point - Summer - Winter	"ASTM D97"	"ISO 3016"	°C	6 °C (10 °F) minimum below ambient temperature
Cloud Point	"ASTM D2500"		°C	Report
Sulfur Content	"ASTM D5453"	"ISO 20846" "ISO 20884"	% weight	0.0015 maximum
Distillation - 10% Evaporation - 90% Evaporation	"ASTM D1160"		°C	To Be Determined 360
Carbon Residue, Conradson (CCR)	"ASTM D4530"	"ISO 10370"	% weight	0.05 maximum
Cetane Number	"ASTM D613"	"ISO 5165"		45 minimum
Sulfated Ash	"ASTM D874"	"ISO 3987"	% weight	0.02 maximum
Water/Sediment Content	"ASTM D2709"	"ISO 12937"	% volume	0.05 maximum
Copper Corrosion	"ASTM D130"	"ISO 2160"		No. 1
Oxidation Stability	"EN 14112"	"EN 14112"	hours	3 minimum
Esterification	"EN 14103"	"EN 14103"	% volume	97.5 minimum
Acid Value	"ASTM D664"	"EN 14104"	mg NaOH/g	0.5 maximum
Methanol Content	"EN 14110"	"EN 14110"	% weight	0.2 maximum
Monoglycerides	"ASTM D6584"	"EN 14105"	% weight	0.8 maximum
Diglycerides	"ASTM D6584"	"EN 14105"	% weight	0.2 maximum
Triglycerides	"ASTM D6584"	"EN 14105"	% weight	0.2 maximum
Free Glycerin	"ASTM D6584"	"EN 14105"	% weight	0.02 maximum
Total Glycerin	"ASTM D6584"	"EN 14105"	% weight	0.240 maximum
Phosphorus Content	"ASTM D4951"	"EN 14107"	% weight	0.001
Calcium and Magnesium combined	"EN 14538"	"EN 14538"	ppm	5 maximum
Sodium and Potassium combined	"EN 14538"	"EN 14538"	ppm	5 maximum
Cold Soak Filterability	Annex A1 in "ASTM D6751"		seconds	360 maximum <sup>(2)</sup>

(1) The final blend of biodiesel as used in the engine must meet the requirements that are stated in the "Caterpillar Specification for Distillate Diesel Fuel for Off-Highway Diesel Engines" Table in this Special Publication, "Distillate Diesel Fuel" article.

(2) B100 intended for blending into diesel fuel that is expected to give satisfactory vehicle performance at fuel temperatures at or below -12° C (10.4° F) shall comply with a cold soak filterability limit of 200 seconds maximum. Passing this "ASTM D6751" 200 seconds Cold Soak Filterability test limit does not guarantee cold performance for all biodiesel blends at all possible fuel temperatures, but biodiesel that fails this Cold Soak Filterability test requirement will produce biodiesel blends that will likely plug fuel filters when fuel temperatures are below -12° C (10.4° F).

J56-263



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**Note:** Fuels that meet the most current revision level of "ASTM D6751" or "EN 14214" may be used for blending with an acceptable distillate fuel. The conditions, recommendations, and limits that are noted in this biodiesel article apply.

## Cooling System Specifications

103467385

### General Coolant Information

SMCS Code: 1350; 1395

#### NOTICE

Every attempt is made to provide accurate, up to date information. By use of this document you agree that Caterpillar Inc. is not responsible for errors or omissions.

The information that is provided is the latest recommendations for the Caterpillar diesel engines that are covered by this Special Publication. This information supersedes all previous recommendations which have been published for the Caterpillar diesel engines that are covered by this Special Publication. Special fluids may be required for some engines and it will be necessary to continue to use these special products. Refer to the applicable Operation and Maintenance Manual.

This publication is a supplement to the Operation and Maintenance Manual. This publication does not replace the engine specific Operation and Maintenance Manual.

#### NOTICE

These recommendations are subject to change without notice. Consult your local Caterpillar dealer for the most up to date recommendations.

#### NOTICE

To avoid potential damage to your Cat machine and/or Cat engine, only purchase Cat fluids and Cat filters through your Caterpillar dealer or Caterpillar authorized outlets. For a list of authorized Caterpillar parts outlets in your area, consult your Caterpillar dealer.

If you purchase what appear to be Cat fluids and/or Cat filters through other outlets/sources, you are at a very high risk of purchasing counterfeit ("look-alike") products.

Counterfeit or "look-alike" products may visually appear the same as the original Cat product, but the product performance and internal quality will typically be very low.

Counterfeit or "look-alike" products have a very high likelihood of causing and/or allowing engine and/or machine compartment damage.

#### NOTICE

Many of the guidelines, recommendations, and requirements that are provided in this Special Publication are interrelated. Before using the provided information, it is the responsibility of the user of this Special Publication to read and understand the information provided in its entirety.

For questions concerning the information provided in this Special Publication, consult with your Caterpillar dealer.

For additional guidelines, recommendations, and requirements (including maintenance interval recommendations/requirements) refer to your product specific Operation and Maintenance Manual.

#### NOTICE

Commercial products that make generic claims of meeting Cat and/or Caterpillar requirements without listing the specific Cat recommendations and/or requirements that are met may not provide acceptable performance and may cause reduced engine and/or machine fluid compartment life. Refer to this Special Publication and refer to product specific Operation and Maintenance Manuals for Caterpillar fluids recommendations and/or requirements.

#### NOTICE

It is the responsibility of the user of this Special Publication to read, understand, and follow all safety guidelines found in this Special Publication and in engine and/or machine specific Operation and Maintenance Manuals when performing all recommended and/or required engine, engine systems, and/or machine maintenance.

For questions concerning the information provided in this Special Publication and/or in your product Operation and Maintenance Manual, consult with your Caterpillar dealer.

Follow all industry standard safety practices when operating engines and/or machines and when performing all recommended and/or required maintenance.

**Note:** For the purpose of this Special Publication, the term "coolant" is interchangeable with the terms "antifreeze", "coolant/antifreeze", and/or "antifreeze/coolant".

#### NOTICE

Never add coolant to an overheated engine. Engine damage could result. Allow the engine to cool first.

J56-265

MOJ00449  
JA 00004896

**Carmen Militello**

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**From:** Chris Meiers  
**Sent:** Monday, September 19, 2011 1:59 PM  
**To:** David Lee  
**Subject:** FW: New City Hall - Generator FW: Mojave  
**Attachments:** DOC023.PDF

David,  
Please see attached associated with the generator and Cashman.

Regards,

*Christopher Meiers*  
*Project Manager*  
*Mojave Electric*

---

**From:** Chris Meiers  
**Sent:** Sunday, September 18, 2011 4:40 PM  
**To:** Kim R. Symons  
**Subject:** New City Hall - Generator FW: Mojave

Kim,  
Please see bond and attorney letter as we discussed today. Please arrange to have someone on site as soon as possible so we can coordinate what needs to be done yet.

Thanks,

*Christopher Meiers*  
*Project Manager*  
*Mojave Electric*



SANTORO, DRIGGS, WALCH, J. & P.  
KEARNEY, HOLLEY & THOMPSON

400 SOUTH FOURTH STREET, THIRD FLOOR • LAS VEGAS, NEVADA 89101 • 702.791.0308 • FAX 702.791.1912

800 SOUTH MEADOWS PARKWAY • SUITE 800 • RENO - NEVADA - 89521 • (775) 851.8700 • FAX (775) 851.7681

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KIMBERLY J. COOPER  
SHEMILLY A. BRISCOE  
DONNA M. WITTIG  
WILLIAM N. MILLER

CHARLES L. TITUS  
(1948 - 2009)

From the desk of: Shemilly A. Briscoe  
e-mail: SBriscoe@nevadafirm.com

September 14, 2011

*Via U.S. and Certified Mail*

Jennifer R. Lloyd-Robinson  
PEZZILLO ROBINSON  
6750 Via Austi Parkway, Suite 170  
Las Vegas, Nevada 89119

RE: Cashman Equipment Company v. CAM Consulting Inc, et al;  
District Court Case #A-11-642583

Dear Jennifer:

Attached to this letter is a Western Surety bond recorded September 13, 2011 as Instrument #201109130003721 for release of mechanic's lien. The bond precludes further action against the property and requires release of the lien recorded by Cashman as Instrument No. 201106220002156.

Meanwhile, Mojave Electric received a 24 hour Notice from Whiting-Turner regarding start up of the Emergency Generators for the Las Vegas City Hall Project by October 3, 2011. As you are aware, the equipment cannot be started without Cashman's assistance. Should Cashman refuse to assist with the generators, Mojave must obtain a new subcontractor to perform this work and Mojave reserves its right to pursue Cashman for the amount incurred for performance of its work and warranty obligations under contract.

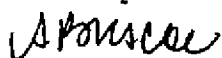
September 14, 2011

Page 2

Please advise our office whether Cashman intends to cooperate and assist with the generators within 24 hours. Otherwise, Mojave must move forward to complete the project.

Thank you,

SANTORO, DRIGGS, WALCH,  
KEARNEY, HOLLEY & THOMPSON

  
Shemilly A. Briscoe

SAB:sab  
Enclosure

C 3

Inst #: 201109130003721  
Fees: \$17.00  
N/C Fee: \$25.00  
09/13/2011 02:59:40 PM  
Receipt #: 911471  
Requestor:  
SANTORO DRIGGS ETAL  
Recorded By: OSA Pgs: 4  
DEBBIE CONWAY  
CLARK COUNTY RECORDER

APN# 139-34-31-021  
11-digit Assessor's Parcel Number may be obtained at:  
<http://redrock.co.clark.nv.us/assrealprop/owner.aspx>

Bond for Release OF  
Mechanic's Lien

Type of Document

(Example: Declaration of Homestead, Quit Claim Deed, etc.)

Recording Requested by:

Sherrilly A. Briscoe, Esq.

Return Documents To:

Name Sherrilly A. Briscoe

Address 400 S. 4th, 3rd FL

City/State/Zip LV, NV 89101

This page added to provide additional information required by NRS 111.312 Section 1-2

(An additional recording fee of \$1.00 will apply)

This cover page must be typed or printed clearly in black ink only.

OR Form 108 ~ 06/06/2007  
Coversheet.pdf

J56-269

MOJ00453  
JA 00004900

**BOND FOR RELEASE OF MECHANIC'S LIEN**

**BOND NUMBER: 58685401**

KNOW ALL MEN BY THESE PRESENTS, that we, Mojave Electric, 3755 W. Hacienda Avenue Las Vegas, NV 89118, as Principal, and Western Surety Company, a corporation created, organized, and existing under and by virtue of the laws of the State of South Dakota, as Surety, and licensed to do business in the State of Nevada, are held and firmly bound unto Cashman Equipment Company, as Obligee.

WHEREAS, Mojave Electric, as Principal, desires to give a bond for releasing the following described real property owned by QH Las Vegas, LLC from that certain notice of lien in the sum of Seven Hundred Fifty Five Thousand Eight Hundred Ninety Three and 89/100 DOLLARS (\$755,893.89\*\*) recorded, June 22, 2011, in the office of the recorder in Clark County:

See Attached Exhibit "A"

NOW, THEREFORE, the undersigned principal and surety do hereby obligate themselves to the lien claimant named in the notice of lien, Cashman Equipment Company, under the conditions prescribed by NRS 108.2413 to NRS 108.2425, inclusive, in the sum of One Million One Hundred Thirty Three Thousand Eight Hundred Forty and 84/100 DOLLARS (\$1,133,840.84\*\*) from which sum they will pay the claimant such amount as a court of competent jurisdiction may adjudge to have been secured by this lien, including the total amount awarded pursuant to NRS 108.237, but the liability of the surety may not exceed the penal sum of this surety bond.

IN TESTIMONY WHEREOF, the Principal and Surety have executed this bond at Las Vegas, Nevada, on the 8<sup>th</sup> day of the month of September, 2011.

Mojave Electric

By: \_\_\_\_\_

Troy Nelson

Western Surety Company

By: \_\_\_\_\_

Kelly M. Lamb, Attorney-In-Fact

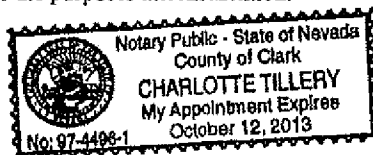
State of Nevada }

County of Clark }

On Sept. 8, 2011, before me, the undersigned, a notary public of this county and state, personally appeared Troy Nelson who acknowledged that he/she executed the foregoing instrument as Principal for the purposes therein mention.

State of Nevada }

County of Clark }

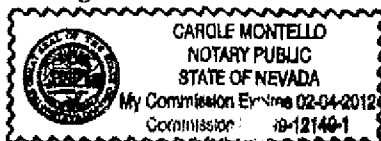


Charlotte Tillery

Notary Public

My Commission Expires: \_\_\_\_\_

On September 8, 2011, before me, the undersigned, a notary public of this county and state, personally appeared Kelly M. Lamb Attorney-In-Fact, who acknowledged that he/she executed the foregoing instrument and acknowledged to me that he/she executed the same for the purposes stated therein.



Carole Montello

Notary Public

My Commission Expires: February 4, 2012

J56-270

MOJ00454  
JA 00004901

# Western Surety Company

## POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

Know All Men By These Presents, That WESTERN SURETY COMPANY, a South Dakota corporation, is a duly organized and existing corporation having its principal office in the City of Sioux Falls, and State of South Dakota, and that it does by virtue of the signature and seal herein affixed hereby make, constitute and appoint

**Wendy R Crowell, James A Harris, Gregory J Harris, Kelly M Lamb, Individually**

of Las Vegas, NV, its true and lawful Attorney(s)-in-Fact with full power and authority hereby conferred to sign, seal and execute for and on its behalf bonds, undertakings and other obligatory instruments of similar nature

### - In Unlimited Amounts -

and to bind it thereby as fully and to the same extent as if such instruments were signed by a duly authorized officer of the corporation and all the acts of said Attorney, pursuant to the authority hereby given, are hereby ratified and confirmed.

This Power of Attorney is made and executed pursuant to and by authority of the By-Law printed on the reverse hereof, duly adopted, as indicated, by the shareholders of the corporation.

In Witness Whereof, WESTERN SURETY COMPANY has caused these presents to be signed by its Senior Vice President and its corporate seal to be hereto affixed on this 28th day of January, 2011.



WESTERN SURETY COMPANY

Paul T. Bruflat  
Paul T. Bruflat, Senior Vice President

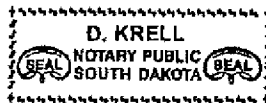
State of South Dakota }  
County of Minnehaha }

65

On this 28th day of January, 2011, before me personally came Paul T. Bruflat, to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is the Senior Vice President of WESTERN SURETY COMPANY described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed pursuant to authority given by the Board of Directors of said corporation and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said corporation.

My commission expires

November 30, 2012



D. Krell  
D. Krell, Notary Public

### CERTIFICATE

I, L. Nelson, Assistant Secretary of WESTERN SURETY COMPANY do hereby certify that the Power of Attorney hereinabove set forth is still in force, and further certify that the By-Law of the corporation printed on the reverse hereof is still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said corporation this 8<sup>th</sup> day of September, 2011.



WESTERN SURETY COMPANY

L. Nelson  
L. Nelson, Assistant Secretary



## Carmen Militello

---

**From:** Brian Bugni  
**Sent:** Monday, September 19, 2011 2:41 PM  
**To:** Shemilly Briscoe  
**Cc:** Chris Meiers  
**Subject:** FW: New City Hall - Generator FW: Mojave  
**Attachments:** DOC023.PDF

Shemilly,

FYI – This is the response from Cashman to perform the Start-up Work on the Generator at City Hall. (Troy was copied on the original email)

Thanks,  
Brian

---

**From:** Joel Larson [[mailto:Joel\\_Larson@cashmanequipment.com](mailto:Joel_Larson@cashmanequipment.com)]  
**Sent:** Monday, September 19, 2011 2:18 PM  
**To:** Brian Bugni  
**Cc:** Troy Nelson; Keith Lozeau  
**Subject:** FW: New City Hall - Generator FW: Mojave

Brian  
We just received the notice from your Legal folks.  
We will not be performing the Start-up on any equipment with unpaid invoices. If you would like to discuss further please contact me.

Thanks, Joel

Office: 702-633-4623  
Cell: 702-326-7171

---

**From:** Kim Symons  
**Sent:** Sunday, September 18, 2011 05:16 PM  
**To:** Keith Lozeau; Shane Norman  
**Subject:** FW: New City Hall - Generator FW: Mojave

I just rec'd this. It's a copy of the bond – which, Shane, you said you already rec'd. I don't know if you rec'd the letter from the lawyer that I got. Anyway, this is an FYI and I need to know what to do next, if anything at all. Thanks!

## Kim Symons

Kim Symons  
Account Manager

Cashman Equipment Co.  
Power Solutions Division  
3300 St. Rose Parkway  
Henderson, NV 89052

702-326-6596 Mobile

Sales and Rentals:

Generators

Transfer Switches

UPS Systems

Switch Gear

Light Towers

Cable and Distribution

Air Compressors

Temperature Control

CONFIDENTIALITY NOTICE: This communication including any documents, files, or previous electronic mail messages attached to it constitute an electronic communication within the scope of the Electronic Communication Privacy Act, 18 USC 2510. The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. If the reader of this message is not the intended recipient, you are hereby notified that you have received this message in error and that any review, dissemination, distribution or copying of this message, including any attachments, is strictly prohibited. If you received this in error, please contact the sender and delete the material from any computer.

---

**From:** Chris Meiers [<mailto:cmeiers@mojaveelectric.com>]

**Sent:** Sunday, September 18, 2011 4:40 PM

**To:** Kim Symons

**Subject:** New City Hall - Generator FW: Mojave

Kim,

Please see bond and attorney letter as we discussed today. Please arrange to have someone on site as soon as possible so we can coordinate what needs to be done yet.

Thanks,

*Christopher Meiers*

*Project Manager*

*Mojave Electric*



SANTORO, DRIGGS, WALCH  
KEARNEY, HOLLEY & THOMPSON

400 SOUTH FOURTH STREET, THIRD FLOOR • LAS VEGAS, NEVADA 89101 • 702.791.0308 • FAX 702.791.1912

800 SOUTH MEADOWS PARKWAY - SUITE 800 - RENO - NEVADA - 89521 - (775) 851.8700 - FAX (775) 851.7681

DENNIS R. HANEY  
KENNETH A. WOLOSON  
GREGORY J. WALCH  
NICHOLAS J. SANTORO  
MICHAEL E. KEARNEY  
J. DOUGLAS DRIGGS, JR.  
RICHARD F. HOLLEY  
RONALD J. THOMPSON  
JAMES E. WHITMIRE, III

VICTORIA L. NELSON  
JEFFREY R. ALBRECHTS  
DEAN S. BENNETT  
ANDREW J. GLENDON  
OLIVER J. PANCHERI  
BRIAN W. BOSCHEE  
BRYCE K. EARL  
ODONNA M. ATANOH

JAMES W. PUZEY  
JAMES D. BOYLE  
STACY D. HARROP  
F. THOMAS EDWARDS

JASON D. SMITH  
KIMBERLY J. COOPER  
SHEMILLY A. BRISCOE  
DONNA M. WITIG  
WILLIAM H. MILLER

CHARLES L. TITUS  
(1948 - 2008)

From the desk of: Shemilly A. Briscoe  
e-mail: [SBriscoe@nevadafirm.com](mailto:SBriscoe@nevadafirm.com)

September 14, 2011

*Via U.S. and Certified Mail*

Jennifer R. Lloyd-Robinson  
PEZZILLO ROBINSON  
6750 Via Austi Parkway, Suite 170  
Las Vegas, Nevada 89119

RE: Cashman Equipment Company v. CAM Consulting Inc, et al;  
District Court Case #A-11-642583

Dear Jennifer:

Attached to this letter is a Western Surety bond recorded September 13, 2011 as Instrument #201109130003721 for release of mechanic's lien. The bond precludes further action against the property and requires release of the lien recorded by Cashman as Instrument No. 201106220002156.

Meanwhile, Mojave Electric received a 24 hour Notice from Whiting-Turner regarding start up of the Emergency Generators for the Las Vegas City Hall Project by October 3, 2011. As you are aware, the equipment cannot be started without Cashman's assistance. Should Cashman refuse to assist with the generators, Mojave must obtain a new subcontractor to perform this work and Mojave reserves its right to pursue Cashman for the amount incurred for performance of its work and warranty obligations under contract.

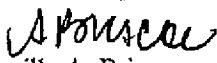
September 14, 2011

Page 2

Please advise our office whether Cashman intends to cooperate and assist with the generators within 24 hours. Otherwise, Mojave must move forward to complete the project.

Thank you,

SANTORO, DRIGGS, WALCH,  
KEARNEY, HOLLEY & THOMPSON

  
Shemilly A. Briscoe

SAB:sab  
Enclosure

C 3

Inst #: 201109130003721

Fees: \$17.00

N/C Fee: \$25.00

09/13/2011 02:59:40 PM

Receipt #: 911471

Requestor:

SANTORO DRIGGS ETAL

Recorded By: OSA Pgs: 4

DEBBIE CONWAY

CLARK COUNTY RECORDER

APN#

139-34-311-021

11-digit Assessor's Parcel Number may be obtained at:  
<http://redrock.co.clark.nv.us/assrrealprop/owner.aspx>

Bond for Release of

Mechanic's Lien

Type of Document

(Example: Declaration of Homestead, Quit Claim Deed, etc.)

Recording Requested by:

Sherrilly A. Briscoe, Esq.

Return Documents To:

Name

Sherrilly A. Briscoe

Address

400 S. 4th, 3rd FL

City/State/Zip

LV, NV 89101

This page added to provide additional information required by NRS 111.312 Section 1-2

(An additional recording fee of \$1.00 will apply)

This cover page must be typed or printed clearly in black ink only.

OR Form 108 - 06/06/2007

Coversheet.pdf

J56-276

MOJ00460  
JA 00004907

BOND FOR RELEASE OF MECHANIC'S LIEN

BOND NUMBER: 58685401

KNOW ALL MEN BY THESE PRESENTS, that we, Mojave Electric, 3755 W. Hacienda Avenue Las Vegas, NV 89118, as Principal, and Western Surety Company, a corporation created, organized, and existing under and by virtue of the laws of the State of South Dakota, as Surety, and licensed to do business in the State of Nevada, are held and firmly bound unto Cashman Equipment Company, as Obligee.

WHEREAS, Mojave Electric, as Principal, desires to give a bond for releasing the following described real property owned by QH Las Vegas, LLC from that certain notice of lien in the sum of Seven Hundred Fifty Five Thousand Eight Hundred Ninety Three and 89/100 DOLLARS (\$755,893.89\*\*) recorded, June 22, 2011, in the office of the recorder in Clark County:

See Attached Exhibit "A"

NOW, THEREFORE, the undersigned principal and surety do hereby obligate themselves to the lien claimant named in the notice of lien, Cashman Equipment Company, under the conditions prescribed by NRS 108.2413 to NRS 108.2425, inclusive, in the sum of One Million One Hundred Thirty Three Thousand Eight Hundred Forty and 84/100 DOLLARS (\$1,133,840.84\*\*) from which sum they will pay the claimant such amount as a court of competent jurisdiction may adjudge to have been secured by this lien, including the total amount awarded pursuant to NRS 108.237, but the liability of the surety may not exceed the penal sum of this surety bond.

IN TESTIMONY WHEREOF, the Principal and Surety have executed this bond at Las Vegas, Nevada, on the 8<sup>th</sup> day of the month of September, 2011.

Mojave Electric

By: \_\_\_\_\_

Trey Nelson

Western Surety Company

By: \_\_\_\_\_

Kelly M. Lamb, Attorney-In-Fact

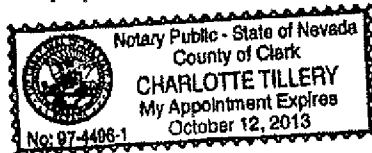
State of Nevada )

County of Clark )

On Sept. 8, 2011, before me, the undersigned, a notary public of this county and state, personally appeared Trey Nelson who acknowledged that he/she executed the foregoing instrument as Principal for the purposes therein mention.

State of Nevada )

County of Clark )

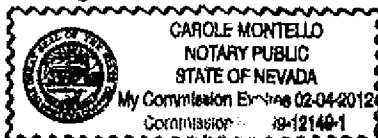


Charlotte Tillery

Notary Public

My Commission Expires: \_\_\_\_\_

On September 8, 2011, before me, the undersigned, a notary public of this county and state, personally appeared Kelly M. Lamb Attorney-In-Fact, who acknowledged that he/she executed the foregoing instrument and acknowledged to me that he/she executed the same for the purposes stated therein.



Carol Montello

Notary Public

My Commission Expires: February 4, 2011

J56-277

MOJ00461  
JA 00004908

# Western Surety Company

## POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

Know All Men By These Presents, That WESTERN SURETY COMPANY, a South Dakota corporation, is a duly organized and existing corporation having its principal office in the City of Sioux Falls, and State of South Dakota, and that it does by virtue of the signature and seal herein affixed hereby make, constitute and appoint

**Wendy R Crowell, James A Harris, Gregory J Harris, Kelly M Lamb, Individually**

of Las Vegas, NV, its true and lawful Attorney(s)-in-Fact with full power and authority hereby conferred to sign, seal and execute for and on its behalf bonds, undertakings and other obligatory instruments of similar nature

### - In Unlimited Amounts -

and to bind it thereby as fully and to the same extent as if such instruments were signed by a duly authorized officer of the corporation and all the acts of said Attorney, pursuant to the authority hereby given, are hereby ratified and confirmed.

This Power of Attorney is made and executed pursuant to and by authority of the By-Law printed on the reverse hereof, duly adopted, as indicated, by the shareholders of the corporation.

In Witness Whereof, WESTERN SURETY COMPANY has caused these presents to be signed by its Senior Vice President and its corporate seal to be hereto affixed on this 28th day of January, 2011.



WESTERN SURETY COMPANY

*Paul T. Brufat*

Paul T. Brufat, Senior Vice President

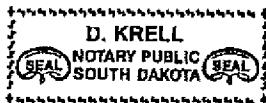
State of South Dakota  
County of Minnehaha

} ss

On this 28th day of January, 2011, before me personally came Paul T. Brufat, to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is the Senior Vice President of WESTERN SURETY COMPANY described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed pursuant to authority given by the Board of Directors of said corporation and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said corporation.

My commission expires

November 30, 2012



*D. Krell*

D. Krell, Notary Public

### CERTIFICATE

I, L. Nelson, Assistant Secretary of WESTERN SURETY COMPANY do hereby certify that the Power of Attorney hereinabove set forth is still in force, and further certify that the By-Law of the corporation printed on the reverse hereof is still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said corporation this 8th day of September, 2011.



WESTERN SURETY COMPANY

*L. Nelson*

L. Nelson, Assistant Secretary

**Carmen Militello**

---

**From:** Rob Mayer <Robert\_Mayer@cashmanequipment.com>  
**Sent:** Friday, May 20, 2011 9:25 AM  
**To:** Chris Meiers  
**Cc:** Kim Symons; Mark Pfeiffer; James Wingard  
**Subject:** LV City Hall PSG overhead conduits

Chris,

We have run into a problem with the over head conduits on PSG.  
There is a lifting fixture that bolts onto the top to allow circuit breakers to be removed.  
With the conduits on top, we cannot install this CB lifting removal tool.

Also, do you any updates for our startup?

Thank you,

Rob Mayer  
Project Manager  
Cashman Power Solutions  
3300 St. Rose Parkway  
Henderson Nv. 89052  
tel 702/326-3693  
fax 702/639-5090  
[rob\\_mayer@cashmanequipment.com](mailto:rob_mayer@cashmanequipment.com)



## Carmen Militello

**From:** Peter Fergen  
**Sent:** Tuesday, June 14, 2011 6:55 AM  
**To:** Kim Symons  
**Cc:** Chris Meiers  
**Subject:** RE: 767810 - LV City Hall DAQEM Permit

Thank you

**From:** Kim Symons [mailto:Kim\_Symons@cashmanequipment.com]  
**Sent:** Tuesday, June 14, 2011 6:52 AM  
**To:** Peter Fergen  
**Cc:** Chris Meiers  
**Subject:** RE: 767810 - LV City Hall DAQEM Permit

I can't fill it out for you, but all the info you need should be here:

Perf No: DM9933

Change Level: 03

General   Heat Rejection   Emissions   Regulatory   Altitude Derate   Cross Reference   Perf Param Ref

<b>SALES MODEL:</b>	C32	<b>COMBUSTION:</b>	D1
<b>ENGINE POWER (BHP):</b>	1,474	<b>ENGINE SPEED (RPM):</b>	1,800
<b>GEN POWER WITH FAN (EKW):</b>	1,000.0	<b>HERTZ:</b>	60
<b>COMPRESSION RATIO:</b>	15.0	<b>FAN POWER (HP):</b>	56.3
<b>APPLICATION:</b>	PACKAGED GENSET	<b>ADDITIONAL PARASITICS (HP):</b>	1.3
<b>RATING LEVEL:</b>	STANDBY	<b>ASPIRATION:</b>	TA
<b>PUMP QUANTITY:</b>	1	<b>AFTERCOOLER TYPE:</b>	ATAAC
<b>FUEL TYPE:</b>	DIESEL	<b>AFTERCOOLER CIRCUIT TYPE:</b>	JW+OC, ATAAC
<b>MANIFOLD TYPE:</b>	DRY	<b>INLET MANIFOLD AIR TEMP (F):</b>	120
<b>GOVERNOR TYPE:</b>	ADEM4	<b>JACKET WATER TEMP (F):</b>	210.2
<b>ELECTRONICS TYPE:</b>	ADEM4	<b>TURBO CONFIGURATION:</b>	PARALLEL
<b>IGNITION TYPE:</b>	CI	<b>TURBO QUANTITY:</b>	2
<b>INJECTOR TYPE:</b>	EUI	<b>TURBOCHARGER MODEL:</b>	GTB45518BS-52T-1.37
<b>REF EXH STACK DIAMETER (IN):</b>	8	<b>CERTIFICATION YEAR:</b>	2007
<b>MAX OPERATING ALTITUDE (FT):</b>	997	<b>PISTON SPD @ RATED ENG SPD (FT/MIN):</b>	1,913.4

## General Performance Data [Top](#)

Top of Form

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP
EKW	%	BHP	PSI	LB/BHP-HR	GAL/HR	IN-HG	DEG F	DEG F	IN-HG	DEG F
1,000.0	100	1,474	331	0.342	71.9	70.3	118.2	1,209.3	50.1	889.5

J56-280

900.0	90	1,330	299	0.341	64.7	64.0	111.0	1,150.9	51.9	855.4
800.0	80	1,187	267	0.349	59.2	60.4	106.5	1,116.3	48.6	832.2
750.0	75	1,116	251	0.354	56.4	57.9	103.8	1,100.0	46.6	821.0
700.0	70	1,046	235	0.354	52.9	53.7	99.5	1,077.6	43.2	810.0
600.0	60	905	203	0.353	45.7	43.7	90.1	1,025.8	35.3	788.8
500.0	50	765	172	0.350	38.2	32.9	80.8	964.8	27.0	768.5
400.0	40	628	141	0.351	31.5	23.9	74.7	895.9	20.5	731.2
300.0	30	490	110	0.357	25.0	15.7	70.4	812.1	15.1	676.7
250.0	25	420	94	0.363	21.8	12.0	68.9	764.0	12.7	643.0
200.0	20	350	79	0.374	18.7	8.7	67.9	708.9	10.6	601.8
100.0	10	206	46	0.425	12.5	4.5	67.5	569.8	7.8	489.0

Bottom of Form

Top of Form

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
EKW	%	BHP	IN-HG	DEG F	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
1,000.0	100	1,474	76	422.1	3,094.1	8,065.3	13,465.4	13,968.9	2,939.2	2,688.4
900.0	90	1,330	69	391.5	2,939.0	7,417.0	12,749.0	13,202.3	2,773.0	2,544.8
800.0	80	1,187	65	375.1	2,856.2	7,051.1	12,358.8	12,773.3	2,683.6	2,472.3
750.0	75	1,116	63	363.9	2,783.7	6,813.1	12,021.7	12,415.6	2,615.7	2,413.9
700.0	70	1,046	58	343.3	2,639.5	6,395.9	11,355.9	11,723.5	2,476.8	2,288.3
600.0	60	905	48	302.6	2,355.5	5,576.9	10,061.2	10,377.6	2,196.4	2,033.1
500.0	50	765	37	262.3	2,076.5	4,775.6	8,810.4	9,077.6	1,911.9	1,773.0
400.0	40	628	27	223.0	1,805.8	4,001.6	7,595.0	7,814.6	1,652.1	1,535.9
300.0	30	490	18	183.7	1,537.6	3,237.7	6,435.6	6,610.0	1,400.8	1,306.8
250.0	25	420	14	163.9	1,403.3	2,856.8	5,874.1	6,026.7	1,273.8	1,190.9
200.0	20	350	11	146.2	1,286.2	2,507.0	5,386.7	5,517.7	1,161.2	1,089.1
100.0	10	206	6	122.6	1,147.6	1,981.6	4,797.2	4,885.1	1,027.0	974.3

Bottom of Form

## Heat Rejection Data [Top](#)

Top of Form

WET TH V	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHAUST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIG HEAT VALUE ENERGY
	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
1,000.0	100	1,474	20,033	7,238	58,206	31,961	8,218	16,385	62,497	154,292	164,000
900.0	90	1,330	18,378	6,464	52,445	28,178	7,400	14,318	56,390	138,929	147,000
800.0	80	1,187	16,891	5,941	48,853	25,916	6,766	13,293	50,345	127,034	135,000
750.0	75	1,116	16,127	6,236	46,672	24,565	6,445	12,521	47,342	121,002	128,000
700.0	70	1,046	15,231	6,920	43,437	22,625	6,051	11,086	44,338	113,600	121,000

J56-281

3	60	905	13,439	6,738	37,282	19,058	5,220	8,561	30,371	97,997	104,
3	50	765	11,741	5,267	31,535	15,862	4,369	6,404	32,440	82,034	87,3
3	40	628	10,827	4,384	25,642	12,387	3,599	4,511	26,618	67,572	71,9
3	30	490	9,885	3,711	19,869	8,929	2,858	2,920	20,779	53,663	57,1
3	25	420	9,298	3,442	17,092	7,276	2,495	2,235	17,832	46,843	49,8
3	20	350	8,559	3,149	14,473	5,698	2,136	1,689	14,848	40,103	42,7
3	10	206	6,645	2,319	9,873	2,744	1,432	1,058	8,742	26,884	28,6

Bottom of Form

## Emissions Data Top

Units Filter

### RATED SPEED NOT TO EXCEED DATA: 1800 RPM

GENSET POWER WITH FAN		EKW	1,000.0	750.0	500.0	250.0	100.0
ENGINE POWER		BHP	1,474	1,116	765	420	206
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	8,726	5,093	3,335	2,252	1,328
TOTAL CO		G/HR	356	235	501	819	1,263
TOTAL HC		G/HR	37	104	99	75	153
PART MATTER		G/HR	51.8	39.2	67.6	105.5	83.2
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,841.8	2,105.6	2,041.6	2,429.4	2,417.2
TOTAL CO	(CORR 5% O2)	MG/NM3	116.1	93.7	305.5	894.8	2,570.4
TOTAL HC	(CORR 5% O2)	MG/NM3	10.3	37.8	52.6	69.6	283.1
PART MATTER	(CORR 5% O2)	MG/NM3	14.1	13.5	35.5	106.1	135.6
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,384	1,026	994	1,183	1,177
TOTAL CO	(CORR 5% O2)	PPM	93	75	244	716	2,056
TOTAL HC	(CORR 5% O2)	PPM	19	71	98	130	528
TOTAL NOX (AS NO2)		G/HP-HR	5.97	4.59	4.38	5.37	6.45
TOTAL CO		G/HP-HR	0.24	0.21	0.66	1.95	6.14
TOTAL HC		G/HP-HR	0.03	0.09	0.13	0.18	0.74
PART MATTER		G/HP-HR	0.04	0.04	0.09	0.25	0.40
TOTAL NOX (AS NO2)		LB/HR	19.24	11.23	7.35	4.96	2.93
TOTAL CO		LB/HR	0.79	0.52	1.10	1.81	2.78
TOTAL HC		LB/HR	0.08	0.23	0.22	0.17	0.34
PART MATTER		LB/HR	0.11	0.09	0.15	0.23	0.18

### RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN		EKW	1,000.0	750.0	500.0	250.0	100.0
ENGINE POWER		BHP	1,474	1,116	765	420	206
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	7,212	4,209	2,756	1,861	1,097
TOTAL CO		G/HR	191	126	268	438	676
TOTAL HC		G/HR	19	55	52	40	81
TOTAL CO2		KG/HR	721	564	380	217	124

GENSET POWER WITH FAN		EKW	1,000.0	750.0	500.0	250.0	100.0
ENGINE POWER		BHP	1,474	1,116	765	420	206
PERCENT LOAD		%	100	75	50	25	10
PART MATTER		G/HR	26.6	20.1	34.7	54.1	42.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,318.6	1,740.1	1,687.3	2,007.8	1,997.7
TOTAL CO	(CORR 5% O2)	MG/NM3	62.1	50.1	163.4	478.5	1,374.6
TOTAL HC	(CORR 5% O2)	MG/NM3	5.5	20.0	27.8	36.8	149.8
PART MATTER	(CORR 5% O2)	MG/NM3	7.2	6.9	18.2	54.4	69.5
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,144	848	822	978	973
TOTAL CO	(CORR 5% O2)	PPM	50	40	131	383	1,100
TOTAL HC	(CORR 5% O2)	PPM	10	37	52	69	280
TOTAL NOX (AS NO2)		G/HP-HR	4.93	3.79	3.62	4.43	5.33
TOTAL CO		G/HP-HR	0.13	0.11	0.35	1.04	3.28
TOTAL HC		G/HP-HR	0.01	0.05	0.07	0.09	0.39
PART MATTER		G/HP-HR	0.02	0.02	0.05	0.13	0.21
TOTAL NOX (AS NO2)		LB/HR	15.90	9.28	6.08	4.10	2.42
TOTAL CO		LB/HR	0.42	0.28	0.59	0.97	1.49
TOTAL HC		LB/HR	0.04	0.12	0.12	0.09	0.18
TOTAL CO2		LB/HR	1,589	1,244	839	478	273
PART MATTER		LB/HR	0.06	0.04	0.08	0.12	0.09
OXYGEN IN EXH		%	10.1	11.5	12.2	13.5	15.7
DRY SMOKE OPACITY		%	0.7	0.7	1.4	3.0	2.2
BOSCH SMOKE NUMBER			0.18	0.16	0.58	1.31	0.99

## Regulatory Information [Top](#)

EPA TIER 2			2006 - 2010	
GASEOUS EMISSIONS DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 89 SUBPART D AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSIONS VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.				
Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	NON-ROAD	TIER 2	CO: 3.5 NOx + HC: 6.4 PM: 0.20
EPA EMERGENCY STATIONARY			2011 - ----	
GASEOUS EMISSIONS DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSIONS VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.				
Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR

J56-283

<b>EPA TIER 2</b>		<b>2006 - 2010</b>			
U.S. (INCL CALIF)	EPA	STATIONARY	EMERGENCY STATIONARY	CO: 3.5 NOx + HC: 6.4 PM: 0.20	

## Altitude Derate Data [Top](#)

Top of Form

### ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	50	60	70	80	90	100	110	120	130	NORMAL
ALTITUDE (FT)										
0	1,474	1,474	1,474	1,474	1,474	1,468	1,442	1,417	1,393	1,474
1,000	1,474	1,474	1,474	1,466	1,439	1,413	1,388	1,365	1,341	1,474
2,000	1,474	1,465	1,437	1,411	1,385	1,360	1,337	1,313	1,291	1,434
3,000	1,438	1,410	1,383	1,358	1,333	1,309	1,286	1,264	1,242	1,389
4,000	1,383	1,356	1,331	1,306	1,282	1,259	1,237	1,216	1,195	1,345
5,000	1,330	1,304	1,280	1,256	1,233	1,211	1,190	1,169	1,149	1,302
6,000	1,278	1,254	1,230	1,207	1,185	1,164	1,144	1,124	1,105	1,260
7,000	1,228	1,205	1,182	1,160	1,139	1,119	1,099	1,080	1,062	1,220
8,000	1,180	1,157	1,135	1,114	1,094	1,074	1,056	1,037	1,020	1,180
9,000	1,133	1,111	1,090	1,070	1,050	1,032	1,014	996	979	1,141
10,000	1,087	1,066	1,046	1,027	1,008	990	973	956	940	1,103
11,000	1,043	1,023	1,004	985	967	950	933	917	902	1,066
12,000	1,001	981	963	945	928	911	895	880	865	1,029
13,000	959	941	923	906	889	873	858	843	829	994
14,000	919	901	884	868	852	837	822	808	794	959
15,000	880	863	847	831	816	802	788	774	761	926

Bottom of Form

## Cross Reference [Top](#)

Engine Arrangement						
Arrangement Number		Effective Serial Number		Engineering Model		Engineering Model Version
2537557		SYC00001		GS277		-
3208618		JDB00001		GS490		-
3249750		SYC00001		GS277		-
3367659		PRH00001		GS471		-
Test Specification Data						
Test Spec	Setting	Effective Serial Number	Engine Arrangement	Governor Type	Default Low Idle Speed	Default High Idle Speed
OK8987	PP6050	SYC00001	2537557	ADEM4		
OK7838	GG0346	JDB00001	3208618	ADEM4		
OK8987	PP6050	SYC00001	3249750	ADEM4		
OK8987	PP6050	PRH00001	3367659	ADEM4		

J56-284

# Kim Symons

Kim Symons  
Account Manager

Cashman Equipment Co.  
Power Solutions Division  
3300 St. Rose Parkway  
Henderson, NV 89052

702-326-6596 Mobile

Sales and Rentals:  
Generators  
Transfer Switches  
UPS Systems  
Switch Gear

Light Towers  
Cable and Distribution  
Air Compressors  
Temperature Control

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---

**From:** Peter Fergen [mailto:pfergen@mojaveelectric.com]  
**Sent:** Monday, June 13, 2011 5:16 PM  
**To:** Kim Symons  
**Cc:** Chris Meiers  
**Subject:** 767810 - LV City Hall DAQEM Permit

Are you allowed to fill this out??

---

**From:** Chris Meiers  
**Sent:** Monday, June 13, 2011 5:09 PM  
**To:** Peter Fergen  
**Subject:** FW: DAQEM Permit

Pete,

J56-285

Can you get the info requested from W/T.

Thanks,

*Christopher Meiers*  
*Project Manager*  
*Mojave Electric*

**From:** Payne, Daniel [mailto:Daniel.Payne@whiting-turner.com]  
**Sent:** Monday, June 13, 2011 4:22 PM  
**To:** Chris Meiers  
**Cc:** Crystal Teissedre; Lee, David; Lloyd, Elliott; Burch, Clinton  
**Subject:** DAQEM Permit

Las Vegas New City Hall  
Chris,

As discussed, the link below is for the DAQEM permit required for the generators. We are not able to find this information in the submittals. Please have this form filled out and returned by Thursday, 6-16-2011 to Clint Burch and myself.

[http://www.clarkcountynv.gov/Depts/daqem/Documents/Permitting/SS forms/Internal\\_Combustion\\_Engine.pdf](http://www.clarkcountynv.gov/Depts/daqem/Documents/Permitting/SS forms/Internal_Combustion_Engine.pdf)

Below is the spreadsheet that need to be submitted - please ensure the information returned from the manufacturer will fill in all cells, one for each unit. Do not worry about hours of operation.

EU#	_____	Horsepower:	_____		Emission Factor (lb/hp-hr)	Control Efficiency	Potential Emissions		
Make:	_____	Hours/Day:	_____				lb/hr	lb/day	
Model:	_____	Hours/Year	_____		PM10	7.00E-04	0.00%	0.00	0.00
S/N:	_____				NOx	2.40E-02	0.00%	0.00	0.00
Manufacturer Guarantees					CO	5.50E-03	0.00%	0.00	0.00
	g/hp-hr ▼	g/hp-hr ▼	g/hp-hr ▼	g/hp-hr ▼	SOx	4.05E-04	0.00%	0.00	0.00
PM10	g/hp-hr ▼	Diesel	_____	_____	VOC	7.05E-04	0.00%	0.00	0.00
NOx	_____			1	HAP	3.05E-05	0.00%	0.00	0.00
CO	_____			1					
SOx	_____			1					
VOC	_____			1					
Engine Type:				2					

Thank you,

Daniel Payne

J56-286

The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)  
702-851-4190 (o)  
702-851-4198 (f)

J56-287



## Carmen Militello

From: Kim Symons <Kim\_Symons@cashmanequipment.com>  
Sent: Tuesday, June 14, 2011 6:52 AM  
To: Peter Fergen  
Cc: Chris Meiers  
Subject: RE: 767810 - LV City Hall DAQEM Permit

I can't fill it out for you, but all the info you need should be here:

Perf No: DM9933

Change Level: 03

General   Heat Rejection   Emissions   Regulatory   Altitude Derate   Cross Reference   Perf Param Ref

SALES MODEL:	C32	COMBUSTION:	DI
ENGINE POWER (BHP):	1,474	ENGINE SPEED (RPM):	1,800
GEN POWER WITH FAN (EKW):	1,000.0	HERTZ:	60
COMPRESSION RATIO:	15.0	FAN POWER (HP):	56.3
APPLICATION:	PACKAGED GENSET	ADDITIONAL PARASITICS (HP):	1.3
RATING LEVEL:	STANDBY	ASPIRATION:	TA
PUMP QUANTITY:	1	AFTERCOOLER TYPE:	ATAAC
FUEL TYPE:	DIESEL	AFTERCOOLER CIRCUIT TYPE:	JW+OC, ATAAC
MANIFOLD TYPE:	DRY	INLET MANIFOLD AIR TEMP (F):	120
GOVERNOR TYPE:	ADEM4	JACKET WATER TEMP (F):	210.2
ELECTRONICS TYPE:	ADEM4	TURBO CONFIGURATION:	PARALLEL
IGNITION TYPE:	CI	TURBO QUANTITY:	2
INJECTOR TYPE:	EUI	TURBOCHARGER MODEL:	GTB45518BS-52T-1.37
REF EXH STACK DIAMETER (IN):	8	CERTIFICATION YEAR:	2007
MAX OPERATING ALTITUDE (FT):	997	PISTON SPD @ RATED ENG SPD (FT/MIN):	1,913.4

## General Performance Data [Top](#)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP
EKW	%	BHP	PSI	LB/BHP-HR	GAL/HR	IN-HG	DEG F	DEG F	IN-HG	DEG F
1,000.0	100	1,474	331	0.342	71.9	70.3	118.2	1,209.3	58.1	889.5
900.0	90	1,330	299	0.341	64.7	64.0	111.0	1,150.9	51.9	855.4
800.0	80	1,187	267	0.349	59.2	60.4	106.5	1,116.3	48.6	832.2
750.0	75	1,116	251	0.354	56.4	57.9	103.8	1,100.0	46.6	821.0
700.0	70	1,046	235	0.354	52.9	53.7	99.5	1,077.6	43.2	810.0
600.0	60	905	203	0.353	45.7	43.7	90.1	1,025.8	35.3	788.8
500.0	50	765	172	0.350	38.2	32.9	80.8	964.8	27.0	768.5
400.0	40	628	141	0.351	31.5	23.9	74.7	895.9	20.5	731.2
300.0	30	490	110	0.357	25.0	15.7	70.4	812.1	15.1	676.7
250.0	25	420	94	0.363	21.8	12.0	68.9	764.0	12.7	643.0
200.0	20	350	79	0.374	18.7	8.7	67.9	708.9	10.6	601.8
100.0	10	206	46	0.425	12.5	4.5	67.5	569.8	7.8	489.0

J56-288

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
EKW	%	BHP	IN-HG	DEG F	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
1,000.0	100	1,474	76	422.1	3,094.1	8,065.3	13,465.4	13,968.9	2,939.2	2,688.4
900.0	90	1,330	69	391.5	2,939.0	7,417.0	12,749.0	13,202.3	2,773.0	2,544.8
800.0	80	1,187	65	375.1	2,856.2	7,051.1	12,358.8	12,773.3	2,683.6	2,472.3
750.0	75	1,116	63	363.9	2,783.7	6,813.1	12,021.7	12,415.6	2,615.7	2,413.9
700.0	70	1,046	58	343.3	2,639.5	6,395.9	11,355.9	11,723.5	2,476.8	2,288.3
600.0	60	905	48	302.6	2,355.5	5,576.9	10,061.2	10,377.6	2,196.4	2,033.1
500.0	50	765	37	262.3	2,076.5	4,775.6	8,810.4	9,077.6	1,911.9	1,773.0
400.0	40	628	27	223.0	1,805.8	4,001.6	7,595.0	7,814.6	1,652.1	1,535.9
300.0	30	490	18	183.7	1,537.6	3,237.7	6,435.6	6,610.0	1,400.8	1,306.8
250.0	25	420	14	163.9	1,403.3	2,856.8	5,874.1	6,026.7	1,273.8	1,190.9
200.0	20	350	11	146.2	1,286.2	2,507.0	5,386.7	5,517.7	1,161.2	1,089.1
100.0	10	206	6	122.6	1,147.6	1,981.6	4,797.2	4,885.1	1,027.0	974.3

## Heat Rejection Data [Top](#)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHAUST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
1,000.0	100	1,474	20,033	7,238	58,206	31,961	8,218	16,385	62,497	154,292	164,477
900.0	90	1,330	18,378	6,464	52,445	28,178	7,400	14,318	56,390	138,929	147,341
800.0	80	1,187	16,891	5,941	48,053	25,916	6,766	13,293	50,345	127,034	135,297
750.0	75	1,116	16,127	6,236	46,672	24,565	6,445	12,521	47,342	121,002	128,519
700.0	70	1,046	15,231	6,920	43,437	22,625	6,051	11,086	44,338	113,600	121,141
600.0	60	905	13,439	6,738	37,282	19,058	5,220	8,561	38,371	97,997	104,368
500.0	50	765	11,741	5,267	31,535	15,862	4,369	6,404	32,440	82,034	87,333
400.0	40	628	10,827	4,384	25,642	12,387	3,599	4,511	26,618	67,572	71,933
300.0	30	490	9,885	3,711	19,869	8,929	2,858	2,920	20,779	53,663	57,141
250.0	25	420	9,298	3,442	17,092	7,276	2,495	2,235	17,832	46,843	49,808
200.0	20	350	8,559	3,149	14,473	5,698	2,136	1,689	14,848	40,103	42,719
100.0	10	206	6,645	2,319	9,873	2,744	1,432	1,058	8,742	26,884	28,619

## Emissions Data [Top](#)

Units Filter

RATED SPEED NOT TO EXCEED DATA: 1800 RPM

GENSET POWER WITH FAN	EKW	1,000.0	750.0	500.0	250.0	100.0
ENGINE POWER	BHP	1,474	1,116	765	420	206
PERCENT LOAD	%	100	75	50	25	10

J56-289

GENSET POWER WITH FAN		EKW	1,000.0	750.0	500.0	250.0	100.0
ENGINE POWER		BHP	1,474	1,116	765	420	208
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	8,726	5,093	3,335	2,252	1,328
TOTAL CO		G/HR	356	235	501	819	1,263
TOTAL HC		G/HR	37	104	99	75	153
PART MATTER		G/HR	51.8	39.2	67.6	105.5	83.2
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,841.8	2,105.6	2,041.6	2,429.4	2,417.2
TOTAL CO	(CORR 5% O2)	MG/NM3	116.1	93.7	305.5	894.8	2,570.4
TOTAL HC	(CORR 5% O2)	MG/NM3	10.3	37.8	52.6	69.6	283.1
PART MATTER	(CORR 5% O2)	MG/NM3	14.1	13.5	35.5	106.1	135.6
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,384	1,026	994	1,183	1,177
TOTAL CO	(CORR 5% O2)	PPM	93	75	244	716	2,056
TOTAL HC	(CORR 5% O2)	PPM	19	71	98	130	528
TOTAL NOX (AS NO2)		G/HP-HR	5.97	4.59	4.38	5.37	6.45
TOTAL CO		G/HP-HR	0.24	0.21	0.66	1.95	6.14
TOTAL HC		G/HP-HR	0.03	0.09	0.13	0.18	0.74
PART MATTER		G/HP-HR	0.04	0.04	0.09	0.25	0.40
TOTAL NOX (AS NO2)		LB/HR	19.24	11.23	7.35	4.96	2.93
TOTAL CO		LB/HR	0.79	0.52	1.10	1.81	2.78
TOTAL HC		LB/HR	0.08	0.23	0.22	0.17	0.34
PART MATTER		LB/HR	0.11	0.09	0.15	0.23	0.18

#### RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN		EKW	1,000.0	750.0	500.0	250.0	100.0
ENGINE POWER		BHP	1,474	1,116	765	420	206
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	7,212	4,209	2,756	1,861	1,097
TOTAL CO		G/HR	191	126	268	438	676
TOTAL HC		G/HR	19	55	52	40	81
TOTAL CO2		KG/HR	721	564	380	217	124
PART MATTER		G/HR	26.6	20.1	34.7	54.1	42.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,348.6	1,740.1	1,687.3	2,007.8	1,997.7
TOTAL CO	(CORR 5% O2)	MG/NM3	62.1	50.1	163.4	478.5	1,374.6
TOTAL HC	(CORR 5% O2)	MG/NM3	5.5	20.0	27.8	36.8	149.8
PART MATTER	(CORR 5% O2)	MG/NM3	7.2	6.9	18.2	54.4	69.5
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,144	848	822	978	973
TOTAL CO	(CORR 5% O2)	PPM	50	40	131	383	1,100
TOTAL HC	(CORR 5% O2)	PPM	10	37	52	69	280
TOTAL NOX (AS NO2)		G/HP-HR	4.93	3.79	3.62	4.43	5.33
TOTAL CO		G/HP-HR	0.13	0.11	0.35	1.04	156-290

<b>GENSET POWER WITH FAN</b>	<b>EKW</b>	<b>1,000.0</b>	<b>750.0</b>	<b>500.0</b>	<b>250.0</b>	<b>100.0</b>
<b>ENGINE POWER</b>	<b>BHP</b>	<b>1,474</b>	<b>1,116</b>	<b>765</b>	<b>420</b>	<b>206</b>
<b>PERCENT LOAD</b>	<b>%</b>	<b>100</b>	<b>75</b>	<b>50</b>	<b>25</b>	<b>10</b>
TOTAL HC	G/HP-HR	0.01	0.05	0.07	0.09	0.39
PART MATTER	G/HP-HR	0.02	0.02	0.05	0.13	0.21
TOTAL NOX (AS NO2)	LB/HR	15.90	9.28	6.08	4.10	2.42
TOTAL CO	LB/HR	0.42	0.28	0.59	0.97	1.49
TOTAL HC	LB/HR	0.04	0.12	0.12	0.09	0.18
TOTAL CO2	LB/HR	1,589	1,244	839	478	273
PART MATTER	LB/HR	0.06	0.04	0.08	0.12	0.09
OXYGEN IN EXH	%	10.1	11.5	12.2	13.5	15.7
DRY SMOKE OPACITY	%	0.7	0.7	1.4	3.0	2.2
BOSCH SMOKE NUMBER		0.18	0.16	0.58	1.31	0.99

## Regulatory Information [Top](#)

### EPA TIER 2

2006 - 2010

GASEOUS EMISSIONS DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 89 SUBPART D AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSIONS VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	NON-ROAD	TIER 2	CO: 3.5 NOx + HC: 6.4 PM: 0.20

### EPA EMERGENCY STATIONARY

2011 -

GASEOUS EMISSIONS DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSIONS VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	STATIONARY	EMERGENCY STATIONARY	CO: 3.5 NOx + HC: 6.4 PM: 0.20

## Altitude Derate Data [Top](#)

### ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	50	60	70	80	90	100	110	120	130	NORMAL
ALTITUDE (FT)										
0	1,474	1,474	1,474	1,474	1,474	1,468	1,442	1,417	1,393	1,474
1,000	1,474	1,474	1,474	1,466	1,439	1,413	1,388	1,365	1,341	1,474
2,000	1,474	1,465	1,437	1,411	1,385	1,360	1,337	1,313	1,291	1,456-291

3,000	1,438	1,410	1,383	1,358	1,333	1,309	1,286	1,264	1,242	1,389
4,000	1,383	1,356	1,331	1,306	1,282	1,259	1,237	1,216	1,195	1,345
5,000	1,330	1,304	1,280	1,256	1,233	1,211	1,190	1,169	1,149	1,302
6,000	1,278	1,254	1,230	1,207	1,185	1,164	1,144	1,124	1,105	1,260
7,000	1,228	1,205	1,182	1,160	1,139	1,119	1,099	1,080	1,062	1,220
8,000	1,180	1,157	1,135	1,114	1,094	1,074	1,056	1,037	1,020	1,180
9,000	1,133	1,111	1,090	1,070	1,050	1,032	1,014	996	979	1,141
10,000	1,087	1,066	1,046	1,027	1,008	990	973	956	940	1,103
11,000	1,043	1,023	1,004	985	967	950	933	917	902	1,066
12,000	1,001	981	963	945	928	911	895	880	865	1,029
13,000	959	941	923	906	889	873	858	843	829	994
14,000	919	901	884	868	852	837	822	808	794	959
15,000	880	863	847	831	816	802	788	774	761	926

## Cross Reference Top

Engine Arrangement						
Arrangement Number		Effective Serial Number		Engineering Model		Engineering Model Version
2537557		SYC00001		GS277		-
3208618		JDB00001		GS490		-
3249750		SYC00001		GS277		-
3367659		PRH00001		GS471		-
Test Specification Data						
Test Spec	Setting	Effective Serial Number	Engine Arrangement	Governor Type	Default Low Idle Speed	Default High Idle Speed
OK8987	PP6050	SYC00001	2537557	ADEM4		
OK7838	GG0346	JDB00001	3208618	ADEM4		
OK8987	PP6050	SYC00001	3249750	ADEM4		
OK8987	PP6050	PRH00001	3367659	ADEM4		

Kim Symons

Kim Symons  
Account Manager

Cashman Equipment Co.  
Power Solutions Division  
3300 St. Rose Parkway  
Henderson, NV 89052

702-326-6596 Mobile

J56-292

**Sales and Rentals:**

Generators  
Transfer Switches  
UPS Systems  
Switch Gear

Light Towers  
Cable and Distribution  
Air Compressors  
Temperature Control

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---

**From:** Peter Fergen [mailto:pfergen@mojaveelectric.com]  
**Sent:** Monday, June 13, 2011 5:16 PM  
**To:** Kim Symons  
**Cc:** Chris Meiers  
**Subject:** 767810 - LV City Hall DAQEM Permit

Are you allowed to fill this out??

---

**From:** Chris Meiers  
**Sent:** Monday, June 13, 2011 5:09 PM  
**To:** Peter Fergen  
**Subject:** FW: DAQEM Permit

Pete,  
Can you get the info requested from W/T.

Thanks,

*Christopher Meiers*  
*Project Manager*  
*Mojave Electric*

---

**From:** Payne, Daniel [mailto:Daniel.Payne@whiting-turner.com]  
**Sent:** Monday, June 13, 2011 4:22 PM  
**To:** Chris Meiers  
**Cc:** Crystal Teissedre; Lee, David; Lloyd, Elliott; Burch, Clinton  
**Subject:** DAQEM Permit

J56-293

Las Vegas New City Hall  
Chris,

As discussed, the link below is for the DAQEM permit required for the generators. We are not able to find this information in the submittals. Please have this form filled out and returned by Thursday, 6-16-2011 to Clint Burch and myself.

[http://www.clarkcountynv.gov/Depts/daqem/Documents/Permitting/SS\\_forms/Internal\\_Combustion\\_Engine.pdf](http://www.clarkcountynv.gov/Depts/daqem/Documents/Permitting/SS_forms/Internal_Combustion_Engine.pdf)

Below is the spreadsheet that need to be submitted - please ensure the information returned from the manufacturer will fill in all cells, one for each unit. Do not worry about hours of operation.

<b>EU#</b>					<b>Horsepower:</b>			<b>Emission Factor (lb/hp-hr)</b>	<b>Control Efficiency</b>	<b>Potential Emissions</b>	
<b>Make:</b>					<b>Hours/Day:</b>					<b>lb/hr</b>	<b>lb/day</b>
<b>Model:</b>					<b>Hours/Year:</b>						
<b>S/N:</b>											
<b>Manufacturer Guarantees</b>											
	g/hp-hr	▼	g/hp-hr	▼	g/hp-hr	▼	g/hp-hr	▼			
<b>PM10</b>	g/hp-hr	▼	Diesel	▼							
<b>NOx</b>											
<b>CO</b>											
<b>SOx</b>											
<b>VOC</b>											
<b>Engine Type:</b>											

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)  
702-851-4190 (o)  
702-851-4198 (f)

J56-294

**Carmen Militello**

---

**From:** Payne, Daniel <Daniel.Payne@whiting-turner.com>  
**Sent:** Thursday, July 07, 2011 11:05 AM  
**To:** Chris Meiers  
**Subject:** RE: 767810 - LV City Hall DAQEM Permit

Chris,

The web links don't work and the information pasted in the email (forwarded below) is not organized in a way that I can find anything.

Please revise.

Las Vegas New City Hall

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)  
702-851-4190 (o)  
702-851-4198 (f)

---

**From:** Chris Meiers [mailto:cmeiers@mojaveelectric.com]  
**Sent:** Tuesday, July 05, 2011 11:06 AM  
**To:** Payne, Daniel  
**Subject:** Fw: 767810 - LV City Hall DAQEM Permit

Daniel,  
Please take a look at attached. Will this work for you.

Regards,  
Chris Meiers

----- Original Message -----

**From:** Peter Fergen  
**To:** Kim Symons <Kim\_Symons@cashmanequipment.com>  
**Cc:** Chris Meiers  
**Sent:** Tue Jun 14 06:54:47 2011  
**Subject:** RE: 767810 - LV City Hall DAQEM Permit

Thank you

**From:** Kim Symons [mailto:Kim\_Symons@cashmanequipment.com]  
**Sent:** Tuesday, June 14, 2011 6:52 AM  
**To:** Peter Fergen



Cc: Chris Meiers  
Subject: RE: 767810 - LV City Hall DAQEM Permit

I can't fill it out for you, but all the info you need should be here:

Perf No: DM9933

Change Level: 03

General

<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#general>

Heat Rejection

<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#heat>

Emissions

<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#emissions>

Regulatory

<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#regulatory>

Altitude Derate

<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#AltitudeDerate>

Cross Reference

<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#xref>

Perf Param Ref

<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#perfparam>

---

SALES MODEL:

C32

COMBUSTION:

DI

ENGINE POWER (BHP):

1,474

ENGINE SPEED (RPM):

1,800

GEN POWER WITH FAN (EK.W):

1,000.0

HERTZ:

60

COMPRESSION RATIO:

15.0

FAN POWER (HP):

56.3

APPLICATION:

PACKAGED GENSET

ADDITIONAL PARASITICS (HP):

1.3

RATING LEVEL:

STANDBY

ASPIRATION:

TA

PUMP QUANTITY:

1

AFTERCOOLER TYPE:

ATAAC

FUEL TYPE:

DIESEL

AFTERCOOLER CIRCUIT TYPE:

JW+OC, ATAAC

MANIFOLD TYPE:

DRY

INLET MANIFOLD AIR TEMP (F):

120

GOVERNOR TYPE:

ADEM4

JACKET WATER TEMP (F):

210.2

ELECTRONICS TYPE:

ADEM4

TURBO CONFIGURATION:

PARALLEL

IGNITION TYPE:

CI

TURBO QUANTITY:

2

INJECTOR TYPE:

EUI

TURBOCHARGER MODEL:

GTB45518BS-52T-1.37

REF EXH STACK DIAMETER (IN):

8

CERTIFICATION YEAR:

2007

MAX OPERATING ALTITUDE (FT):

997

PISTON SPD @ RATED ENG SPD (FT/MIN):

1,913.4

---

General Performance Data Top

<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRelNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#top>

Top of Form

13 results found, displaying 1 to 13

GENSET POWER WITH FAN

PERCENT LOAD

ENGINE POWER

BRAKE MEAN EFF PRES (BMEP)

BRAKE SPEC FUEL CONSUMPTN (BSFC)

VOL FUEL CONSUMPTN (VFC)

INLET MFLD PRES

INLET MFLD TEMP

EXH MFLD TEMP

EXH MFLD PRES

ENGINE OUTLET TEMP

EKW

%

BHP

PSI

LB/BHP-HR

GAL/HR

IN-HG

DEG F

DEG F

IN-HG

DEG F

1,000.0

100

1,474

331

0.342

71.9

70.3

118.2

1,209.3

58.1

889.5

900.0

90

1,330

299

0.341

64.7

64.0

111.0

1,150.9

51.9

855.4

800.0

80

1,187

267

0.349

59.2

60.4

106.5

1,116.3

48.6

832.2

750.0

75

1,116

251

0.354

56.4

57.9

103.8

1,100.0

46.6

821.0

700.0

70

1,046

235

0.354

52.9

53.7

99.5

1,077.6

43.2

810.0

600.0

60

905

203

0.353

45.7

43.7

90.1

1,025.8

35.3

788.8

500.0

50

765

172

0.350

38.2

32.9

80.8

964.8

27.0

768.5

400.0

40

628

141

0.351

( 31.5

23.9

74.7

895.9

20.5

731.2

300.0

30

490

110

0.357

25.0

15.7

70.4

( 812.1

15.1

676.7

250.0

25

420

94

0.363

21.8

12.0

68.9

764.0

12.7

643.0

( 200.0



(  
20  
350  
79  
0.374  
18.7  
8.7  
67.9  
708.9  
10.6  
601.8

100.0

(  
40  
206  
46  
0.425  
12.5  
4.5  
67.5  
569.8  
7.8  
489.0

Bottom of Form

Top of Form

(  
13 results found, displaying 1 to 13

GENSET POWER WITH FAN

PERCENT LOAD

ENGINE POWER

COMPRESSOR OUTLET PRES

COMPRESSOR OUTLET TEMP

WET INLET AIR VOL FLOW RATE

ENGINE OUTLET WET EXH GAS VOL FLOW RATE

WET INLET AIR MASS FLOW RATE

WET EXH GAS MASS FLOW RATE

WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)

DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)

EKW

%

BHP

IN-HG

DEG F

CFM

CFM

LB/HR

LB/HR

FT3/MIN

FT3/MIN

1,000.0

100

1,474

76

422.1

3,094.1

8,065.3

13,465.4

( 13,968.9

2,939.2

2,688.4

900.0

90

1,330

69

391.5

2,939.0

7,417.0

12,749.0

13,202.3

2,773.0

2,544.8

( 800.0

80

1,187

65

375.1

2,856.2

7,051.1

12,358.8

12,773.3

2,683.6

2,472.3

750.0

75

1,116

( 63

363.9

2,783.7

6,813.1

12,021.7

12,415.6

2,615.7

2,413.9

700.0

70

1,046

58

343.3

2,639.5

6,395.9

11,355.9

11,723.5

2,476.8

2,288.3

600.0

60

905

48

302.6

2,355.5

5,576.9

10,061.2

10,377.6

2,196.4

2,033.1

( 500.0

50

765

37

262.3

2,076.5

4,775.6

8,810.4

9,077.6

1,911.9

1,773.0

400.0

40

628

( 27

223.0

1,805.8

4,001.6

7,595.0

7,814.6

1,652.1

1,535.9

300.0

30

490

18

183.7

1,537.6

( 3,237.7

6,435.6  
6,610.0  
1,400.8  
1,306.8

250.0

25  
420  
14  
163.9  
1,403.3  
2,856.8  
5,874.1  
6,026.7  
1,273.8  
1,190.9

200.0

20  
350  
11  
146.2  
1,286.2  
2,507.0  
5,386.7  
5,517.7  
1,161.2  
1,089.1

100.0

10  
206

6

122.6

1,147.6

1,981.6

4,797.2

4,885.1

1,027.0

974.3

Bottom of Form

Heat Rejection Data Top

<http://tmiwebclassic.cat.com/hmi/servlet/cat.cdis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXIDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#top>

Top of Form

13 results found, displaying 1 to 13

GENSET POWER WITH FAN

PERCENT LOAD

ENGINE POWER

REJECTION TO JACKET WATER

REJECTION TO ATMOSPHERE

REJECTION TO EXH

EXHUAIST RECOVERY TO 350F

FROM OIL COOLER

FROM AFTERCOOLER

WORK ENERGY

LOW HEAT VALUE ENERGY

HIGH HEAT VALUE ENERGY

EKW

%

BHP

BTU/MIN

BTU/MIN

BTU/MIN

BTU/MIN

BTU/MIN

BTU/MIN

BTU/MIN

BTU/MIN

BTU/MIN

1,000.0

100

1,474

20,033

7,238

58,206

31,961

8,218

16,385

62,497

154,292

164,360

900.0

90

1,330



18,378

6,464

52,445

28,178

7,400

14,318

56,390

138,929

147,994

800.0

80

1,187

16,891

5,941

48,853

25,916

6,766

13,293

50,345

127,034

135,323

750.0

75

1,116

16,127

6,236

46,672

24,565

6,445

12,521

( 47,342

121,002

128,897

700.0

70

1,046

15,231

6,920

43,437

22,625

6,051

11,086

44,338

113,600

( 121,012

600.0

60

905

13,439

6,738

37,282

19,058

5,220

8,561

38,371

97,997

104,392

( 500.0

50

( 765  
11,741  
5,267  
31,535  
15,862  
4,369  
6,404  
32,440  
82,034  
87,386

400.0

40  
628  
10,827  
4,384  
25,642  
12,387  
3,599  
4,511  
26,618  
67,572  
71,982

300.0

30  
490  
9,885  
3,711  
19,869  
8,929

2,858

2,920

20,779

53,663

57,165

250.0

25

420

9,298

3,442

17,092

7,276

2,495

2,235

17,832

46,843

49,899

200.0

20

350

8,559

3,149

14,473

5,698

2,136

1,689

14,848

40,103

42,719

100.0

10

206

6,645

2,319

9,873

2,744

1,432

1,058

8,742

26,884

28,638

Bottom of Form

Emissions Data Top

<<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittypc=F&revisionLevels=03&selectedLevel=03#top>>

Units Filter

RATED SPEED NOT TO EXCEED DATA: 1800 RPM

GENSET POWER WITH FAN

EKW

1,000.0

750.0

500.0

250.0

100.0

ENGINE POWER

BHP

1,474

1,116

765

420

206

PERCENT LOAD

%

100

75

50

25

10

TOTAL NOX (AS NO2)

G/HR

8,726

5,093

3,335

2,252

1,328

TOTAL CO

G/HR

356

235

501

819

1,263

TOTAL HC

G/HR

37

104

99

75

153

PART MATTER

G/HR

51.8

39.2

67.6

105.5

83.2

TOTAL NOX (AS NO2)

(CORR 5% O2)

MG/NM3

2,841.8

2,105.6

2,041.6

2,429.4

2,417.2

TOTAL CO

(CORR 5% O2)

MG/NM3

116.1

93.7

(  
305.5  
894.8  
2,570.4

TOTAL HC

(CORR 5% O2)

MG/NM3

10.3

37.8

52.6

69.6

283.1

PART MATTER

(CORR 5% O2)

MG/NM3

(  
14.1

13.5

35.5

106.1

135.6

TOTAL NOX (AS NO2)

(CORR 5% O2)

PPM

1,384

1,026

994

1,183

1,177

(  
TOTAL CO



i

93

244

2,056

—

PPM

71

130

—

## G/HP-HR

4.59

5.37

6.45

## 1

0.24

0.66

1.95

6.14

( TOTAL HC

G/HP-HR

0.03

0.09

0.13

0.18

0.74

PART MATTER

G/HP-HR

0.04

0.04

0.09

0.25

0.40

( TOTAL NOX (AS NO2)

LB/HR

19.24

11.23

7.35

4.96

2.93

TOTAL CO

LB/HR

0.79

0.52

1.10

1.81

2.78

TOTAL HC

LB/HR

0.08

0.23

0.22

0.17

0.34

PART MATTER

LB/HR

0.11

0.09

0.15

0.23

0.18

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN

EKW

1,000.0

750.0

500.0

250.0

100.0

ENGINE POWER

BHP

1,474

1,116

765

420

206

PERCENT LOAD

%

100

75

50

25

10

TOTAL NOX (AS NO2)

G/HR

7,212

4,209

2,756

1,861

1,097

TOTAL CO

G/HR

191

126

268

438

676

TOTAL HC

G/HR

19

55

52

40

81

TOTAL CO2

KG/HR

721

564

380

217

124

PART MATTER

G/HR

26.6

20.1

34.7

54.1

42.7

TOTAL NOX (AS NO2)

(CORR 5% O2)

MG/NM3

2,348.6

1,740.1

1,687.3

2,007.8

1,997.7

TOTAL CO

( (CORR 5% O2)

MG/NM3

62.1

50.1

163.4

478.5

1,374.6

TOTAL HC

(CORR 5% O2)

MG/NM3

5.5

20.0

27.8

36.8

( 149.8

PART MATTER

(CORR 5% O2)

MG/NM3

7.2

6.9

18.2

54.4

69.5

TOTAL NOX (AS NO2)

(CORR 5% O2)

PPM

1,144

848

822

978

973

TOTAL CO

(CORR 5% O2)

PPM

50

40

131

383

1,100

TOTAL HC

(CORR 5% O2)

PPM

10

37

52

69

280

TOTAL NOX (AS NO2)

G/HP-HR

4.93

3.79

3.62

4.43

5.33

TOTAL CO

G/HP-HR

0.13

0.11

0.35

1.04

3.28

TOTAL HC

G/HP-HR

0.01

0.05

0.07

0.09

0.39

PART MATTER

G/HP-HR

0.02

0.02

0.05

0.13

0.21

TOTAL NOX (AS NO2)

LB/HR

15.90

9.28

6.08

4.10

2.42

TOTAL CO

LB/HR

0.42

0.28



0.59

0.97

1.49

TOTAL HC

LB/HR

0.04

0.12

0.12

0.09

0.18

TOTAL CO2

LB/HR

1,589

1,244

839

478

273

PART MATTER

LB/HR

0.06

0.04

0.08

0.12

0.09

OXYGEN IN EXH

%

10.1

11.5

12.2

13.5

15.7

#### DRY SMOKE OPACITY

%

0.7

0.7

1.4

3.0

2.2

#### BOSCH SMOKE NUMBER

0.18

0.16

0.58

1.31

0.99

---

#### Regulatory Information Top

<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevel=03&selectedLevel=03#top>

#### EPA TIER 2

2006 - 2010

GASEOUS EMISSIONS DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 89 SUBPART D AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSIONS VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality

Agency

Regulation

Tier/Stage

Max Limits - G/BKW - HR

U.S. (INCL CALIF)

EPA

NON-ROAD

TIER 2

CO: 3.5 NOx + HC: 6.4 PM: 0.20

EPA EMERGENCY STATIONARY

2011 - ----

GASEOUS EMISSIONS DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSIONS VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality

Agency

Regulation

Tier/Stage

Max Limits - G/BKW - HR

U.S. (INCL CALIF)

EPA

STATIONARY

EMERGENCY STATIONARY

CO: 3.5 NOx + HC: 6.4 PM: 0.20

---

Altitude Derate Data Top

<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#top>

Top of Form

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

17 results found, displaying 1 to 17

AMBIENT OPERATING TEMP (F)

50

60

70

80

90

100

110

120

130

NORMAL

ALTITUDE (FT)

0

1,474

1,474

1,474

1,474

1,474

1,468

1,442

1,417

1,393

1,474

1,000

1,474

1,474

1,474

1,466

1,439

1,413

1,388

1,365

1,341

1,474

2,000

1,474

1,465

1,437

1,411

1,385

1,360

1,337

1,313

1,291

1,434

3,000

1,438

1,410

1,383

1,358

1,333

1,309

1,286

1,264

1,242

1,389

4,000

1,383

1,356

1,331

1,306

1,282

1,259

1,237

1,216

1,195

1,345

5,000

1,330

1,304

1,280

1,256

1,233

1,211

1,190

1,169

1,149

1,302

6,000

1,278

1,254

1,230

1,207

1,185

1,164

1,144

1,124

1,105

1,260

7,000

1,228

1,205

( 1,182

1,160

1,139

1,119

1,099

1,080

1,062

1,220

8,000

1,180

1,157

1,135

1,114

1,094

( 1,074

1,056

1,037

1,020

1,180

9,000

1,133

1,111

1,090

1,070

1,050

1,032

1,014

996

( 979



1,141

10,000

1,087

1,066

1,046

1,027

1,008

990

973

956

940

1,103

11,000

1,043

1,023

1,004

985

967

950

933

917

902

1,066

12,000

1,001

981

963

945

928

911

895

880

865

1,029

13,000

959

941

923

906

889

873

858

843

829

994

14,000

919

901

884

868

852

837

822

808

794

959

15,000

880

863

847

831

816

802

788

774

761

926

Bottom of Form

Cross Reference Top

<http://tmiwebclassic.cat.com/tmi/servlet/cat.edis.tmiweb.gui.TMIDirector?Action=buildtab&refkind=RNTMIRefNum&tab=MAXDataDisplay&tabkey=DM9933&perfRatingNumber=DM9933&unittype=E&revisionLevels=03&selectedLevel=03#top>

Engine Arrangement

Arrangement  
Number

Effective  
Serial  
Number

Engineering  
Model

Engineering  
Model  
Version

2537557

SYC00001

GS277

3208618

JDB00001

GS490

-

3249750

SYC00001

GS277

-

3367659

PRH00001

GS471

-

#### Test Specification Data

##### Test Spec

Setting

Effective

Serial  
Number

Engine  
Arrangement

Governor  
Type

Default  
Low Idle  
Speed

Default High  
Idle Speed

OK8987

PP6050

SYC00001

2537557

ADEM4

OK7838

GG0346

JDB00001

3208618

ADEM4

OK8987

PP6050

SYC00001

3249750

ADEM4

OK8987

PP6050

PRH00001

3367659

ADEM4

Kim Symons

Kim Symons

Account Manager

Cashman Equipment Co.

Power Solutions Division

3300 St. Rose Parkway

Henderson, NV 89052

702-326-6596 Mobile

Sales and Rentals:

Generators	Light Towers
Transfer Switches	Cable and Distribution
UPS Systems	Air Compressors
Switch Gear	Temperature Control

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From: Peter Fergen [<mailto:pfergen@mojaveelectric.com>]  
Sent: Monday, June 13, 2011 5:16 PM  
To: Kim Symons  
Cc: Chris Meiers  
Subject: 767810 - LV City Hall DAQEM Permit

Are you allowed to fill this out??

From: Chris Meiers  
Sent: Monday, June 13, 2011 5:09 PM  
To: Peter Fergen  
Subject: FW: DAQEM Permit

Pete,

Can you get the info requested from W/T.

Thanks,

Christopher Meiers

Project Manager

Mojave Electric

From: Payne, Daniel [mailto:Daniel.Payne@whiting-turner.com]  
Sent: Monday, June 13, 2011 4:22 PM  
To: Chris Meiers  
Cc: Crystal Teissedre; Lee, David; Lloyd, Elliott; Burch, Clinton  
Subject: DAQEM Permit

Las Vegas New City Hall

Chris,

As discussed, the link below is for the DAQEM permit required for the generators. We are not able to find this information in the submittals. Please have this form filled out and returned by Thursday, 6-16-2011 to Clint Burch and myself.

[http://www.clarkcountynv.gov/Depts/daqem/Documents/Permitting/SS\\_forms/Internal\\_Combustion\\_Engine.pdf](http://www.clarkcountynv.gov/Depts/daqem/Documents/Permitting/SS_forms/Internal_Combustion_Engine.pdf)

Below is the spreadsheet that need to be submitted - please ensure the information returned from the manufacturer will fill in all cells, one for each unit. Do not worry about hours of operation.

EU#

Horsepower:

Emission Factor (lb/hp-hr)

Control Efficiency

Potential Emissions

Make:

Hours/Day:

lb/hr

lb/day

ton/yr

Model:

Hours/Year

PM10

7.00E-04

0.00%

0.00

0.00

0.00

S/N:

NOx

2.40E-02

0.00%



0.00

0.00

0.00

CO

5.50E-03

0.00%

0.00

0.00

0.00

Manufacturer Guarantees

SOx

4.05E-04

0.00%

0.00

0.00

0.00

PM10

1

VOC

7.05E-04

0.00%

0.00

0.00

0.00

NOx

( 1

HAP

3.05E-05

0.00%

0.00

0.00

0.00

.CO

1

SOx

( 1

VOC

1

Engine Type:

2

Thank you,

Daniel Payne

The Whiting-Turner Contracting Company

518 S 1st Street

Las Vegas, NV 89101

702-604-4179 (c)

702-851-4190 (o)

702-851-4198 (f)

**Carmen Militello**

---

**From:** Payne, Daniel <Daniel.Payne@whiting-turner.com>  
**Sent:** Wednesday, August 03, 2011 6:21 PM  
**To:** Chris Meiers  
**Subject:** RE: Additional DAQEM information

Chris,

I think you forwarded the wrong email - this one says nothing about turbo chargers or lean burning.

Las Vegas New City Hall

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)  
702-851-4190 (w)  
702-851-4198 (f)

---

**From:** Chris Meiers [<mailto:cmeiers@mojaveelectric.com>]  
**Sent:** Wednesday, August 03, 2011 1:40 PM  
**To:** Payne, Daniel  
**Subject:** Fw: Additional DAQEM information

FYI

----- Original Message -----

**From:** Kim Symons <[Kim\\_Symons@cashmanequipment.com](mailto:Kim_Symons@cashmanequipment.com)>  
**To:** Chris Meiers  
**Sent:** Tue Jul 26 10:20:52 2011  
**Subject:** RE: Additional DAQEM information

I'm seeing what else I can find.

Kim Symons

Kim Symons

Account Manager

Cashman Equipment Co.

Power Solutions Division

3300 St. Rose Parkway

Henderson, NV 89052

702-326-6596 Mobile

Sales and Rentals:

Generators	Light Towers
Transfer Switches	Cable and Distribution
UPS Systems	Air Compressors
Switch Gear	Temperature Control

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From: Chris Meiers [<mailto:cmeiers@mojaveelectric.com>]  
Sent: Tuesday, July 26, 2011 6:49 AM  
To: Kim Symons  
Cc: Crystal Teissedre  
Subject: Fw: Additional DAQEM information

More Generator info required HELP!

J56-348

-Chris Meiers

----- Original Message -----

From: Payne, Daniel <Daniel.Payne@whiting-turner.com>

To: Chris Meiers

Cc: Crystal Teissedre

Sent: Mon Jul 25 13:26:05 2011

Subject: Additional DAQEM information

Las Vegas New City Hall

Chris,

After sitting down and reviewing the permit application with the County, the following questions need to be answered or information provided.

Provide copy of purchase order for the emergency generators

Are the generators equipped with either afterburners or turbochargers? Provide infr cut sheets. If not, what pollution control methods are employed to reduce emissions?

Are the generators set to either a "lean burn" or a "rich burn" or neither?

Provide infr data showing emissions of SOx at .1839 g/hp-hr

Provide infr data showing separate numbers for PM2.5 and PM 10 emissions

Thank you,

Daniel Payne

The Whiting-Turner Contracting Company

518 S 1st Street

Las Vegas, NV 89101

702-604-4179 (c)

702-851-4190 (o)

702-851-4198 (f)

**Carmen Militello**

---

**From:** Kim Symons <Kim\_Symons@cashmanequipment.com>  
**Sent:** Wednesday, July 27, 2011 10:03 AM  
**To:** Chris Meiers  
**Subject:** RE: Additional DAQEM information  
**Attachments:** no-reply@cashmanequipment.com\_20110727\_110551.pdf

Based on what I could dig up from CAT:

SULFUR DIOXIDE EMISSION LEVEL - Calculations  
From EDS 82.0, LEKQ5359, "Caterpillar Diesel Prechamber and Selected D.I. Engines"

$SO_2 \text{ g/hr} = 0.01998 \times \text{fuel rate (grams/hr)} \times (\% \text{ fuel sulfur by weight})$   
#2 Diesel fuel contains a maximum of 0.5% sulfur  
The generators will burn 69.4gph based on information from CAT  
Diesel Fuel weighs 7.1#/gal  $\times 3237.6\text{g/lb} = 224,689\text{g}$

$SO_2 \text{ g/hr} = 0.01998 \times 224689 \times .5\%$   
 $SO_2 \text{ g/hr} = 22.446$

This is a different number than what Broadbent & Assoc. gave me and they are the experts, not me.

**Kim Symons**

Kim Symons  
Account Manager

Cashman Equipment Co.  
Power Solutions Division  
3300 St. Rose Parkway  
Henderson, NV 89052

702-326-6596 Mobile

Sales and Rentals:	
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J56-350

notified that you have received this message in error and that any review, dissemination, distribution or copying of this message, including any attachments, is strictly prohibited. If you received this in error, please contact the sender and delete the material from any computer.

**From:** Chris Meiers [<mailto:cmeiers@mojaveelectric.com>]  
**Sent:** Tuesday, July 26, 2011 6:49 AM  
**To:** Kim Symons  
**Cc:** Crystal Teissedre  
**Subject:** Fw: Additional DAQEM information

More Generator info required HELP!

-Chris Meiers

----- Original Message -----

**From:** Payne, Daniel <[Daniel.Payne@whiting-turner.com](mailto:Daniel.Payne@whiting-turner.com)>  
**To:** Chris Meiers  
**Cc:** Crystal Teissedre  
**Sent:** Mon Jul 25 13:26:05 2011  
**Subject:** Additional DAQEM information

Las Vegas New City Hall  
Chris,

After sitting down and reviewing the permit application with the County, the following questions need to be answered or information provided.

Provide copy of purchase order for the emergency generators

Are the generators equipped with either afterburners or turbochargers? Provide mfr cut sheets. If not, what pollution control methods are employed to reduce emissions?

Are the generators set to either a "lean burn" or a "rich burn" or neither?

Provide mfr data showing emissions of SOx at .1839 g/hp-hr

Provide mfr data showing separate numbers for PM2.5 and PM 10 emissions

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)  
702-851-4190 (o)  
702-851-4198 (f)





## ENGINE DATA SHEET

EDS 82.0

Date 5-95

### Caterpillar Diesel Prechamber and Selected D.I. Engines

The passage of the 1990 Clean Air Act Amendments will increase the requests for emission data from both current engines and previously purchased engines. The information in this publication is intended to assist in answering the emission related questions on previously purchased engines. Your source of data for new engines is the TMI system. In some cases data is presented for turbocharged, turbocharged jacket water aftercooled (JWAC) and turbocharged separate circuit aftercooled (SCAC) configurations. The SCAC engines all had watercooled exhaust manifolds. The emission levels obtained on a SCAC engine with non-watercooled exhaust manifolds would be similar to the emissions on an engine with watercooled manifolds except the exhaust stack temperatures could be as much as 75°C higher at the rated point for non-watercooled manifolds.

#### List of Prechamber Engines Included in This Document

D315 PC D830A 4.5 x 5.5 I4 2V NA, T  
D318 PC D833A 4.5 x 5.5 I6 2V NA, T  
3304 PCNA I4 4.75 x 6.0 2V  
3304 PCT I4 4.75 x 6.0 2V  
3306 PCNA I6 4.75 x 6.0 2V  
3306 PCT I6 4.75 x 6.0 2V  
3306 PCTA I6 4.75 x 6.0 2V  
D334 PCTA I6 4.75 x 6.0 4V  
D337 PCT 5 1/8 x 6.5 I6 2V  
3406 PCT I6 5.4 x 6.5 4V  
3406 PCTA I6 5.4 x 6.5 4V  
3408 PCTA V8 5.4 x 6.0 4V  
3412 PCTA V12 5.4 x 6.0 4V  
D343 PCT I6 5.4 x 6.5 4SV (SIMILAR TO 1693 TRUCK)  
D343 PCTA I6 5.4 x 6.5 4SV (SIMILAR TO 1693 TRUCK)  
D348 PCTA V12 5.4 x 6.5 4V  
D349 PC SCAC V16 5.4 x 6.5 4V  
D353 PCTA I6 6.25 x 8.2 V  
D353 PC SCAC 110 F I6 6.25 x 8.0 2V  
D353 PC SCAC 05 F I6 6.25 x 8.0 2V  
D379 PCTA V8 6.25 x 8.0 2V  
D398 PC SCAC 85 F V12 6.25 x 8.0 2V  
D398 PCTA V12 6.25 x 8.0 2V  
D399 PCTA V16 6.25 x 8.0 2V  
D399 PC SCAC 85 F 6.25 x 8.0 2V

SV = SLANT VALVE

TA = JACKET WATER AFTERCOOLED

SCAC = SEPARATE CIRCUIT AFTERCOOLED

4V = 4 VERTICAL VALVES

TT = TWIN TURBOCHARGERS

TIA = TWIN TURBO AFTERCOOLED

#### List of DI Engines

3306 DINA I6 4.75 x 6.0 2V  
3306 DIT I6 4.75 x 6.0 2V  
3406 DIT I6 5.4 x 6.5 GEN SET  
3406 DITA I6 5.4 x 6.5 GEN SET  
3406 DIT I6 5.4 x 6.5 INDUSTRIAL  
3406 DITA I6 5.4 x 6.5 INDUSTRIAL  
3408 DIT V8 5.4 x 6.0 INDUSTRIAL  
3408 DITA V8 5.4 x 6.0 INDUSTRIAL  
3408 DITA V8 5.4 x 8.0 GEN SET  
3412 DIT V12 5.4 x 6.0 GEN SET  
3412 DIT V12 5.4 x 6.0 IND AND 50 HZ GEN SET  
3412 DITT V12 5.4 x 6.0 IND AND 50 HZ GEN SET  
3412 DITTA V12 5.4 x 6.0 50 HZ GEN SET  
3412 DITTA V12 5.4 x 6.0 60 HZ GEN SET  
3412 DITTA V12 5.4 x 6.0 INDUSTRIAL

Table 1

It is difficult to supply all the information that could be requested. The emission data is presented in g/hr. In some cases the emissions may be requested in ppm. The ppm can be approximately calculated using the equations given in Table 2.

Emissions Calculations	
$\text{SO}_2 \text{ g/hr} = .01998 \times (\text{fuel rate g/hr}) \times (\% \text{ fuel sulfur by weight})$	
$\text{NO}_x \text{ concentration (ppm)} = 629 \times \frac{(\text{NO}_x \text{ mass emissions g/hr})}{(\text{Exhaust mass flow kg/hr})}$	
$\text{CO concentration (ppm)} = 1034 \times \frac{(\text{CO mass emissions g/hr})}{(\text{Exhaust mass flow kg/hr})}$	
$\text{HC concentration (ppm)} = 2067 \times \frac{(\text{HC mass emission g/hr})}{(\text{Exhaust mass flow kg/hr})}$	
$\text{SO}_2 \text{ concentration (ppm)} = 452 \times \frac{(\text{SO}_2 \text{ mass emissions g/hr})}{(\text{Exhaust mass flow kg/hr})}$	

Table 2

The  $\text{SO}_2$  produced by an engine is a function of the sulfur in the fuel. Table 2 gives an equation for calculating  $\text{SO}_2$  in the exhaust. Fuel sulfur varies greatly. An average value to be used in the above equation is .2 for many industrial fuels.

The engine tests were run with inlet air temperature and pressure to the engine of 85°F and 28.4 in.hg ABS respectively.

The Caterpillar smoke density number is given for each point. To determine smoke opacity, use the smoke chart in Table 3 and the appropriate stack diameter.

The particulate matter is based on a correlation between smoke density and particulates. Particulates consist of soot, soluble organic fractions, sulfates, and miscellaneous compounds from the oil additive package. Soluble organic fraction is approximately 60 to 80% lubricating oil that finds its way into the combustion chamber by passing the piston rings, flowing down the valve guides, or flowing past the turbocharger seals. If a field measurement is made on a very old, worn out engine, the particulates could be higher than the value listed in the table. The current Caterpillar accepted particulate measuring procedure, ISO 8178-1, was not available at the time these engines were tested. The values of particulates estimated from smoke are a good approximation of the values obtained with the ISO procedure.

The EPA approved particulate measurement procedure, Method 5, will give equivalent results if the contractor is skilled.

The gaseous emission measurements were made using SAE test procedures recommended at the time the emissions were run. These procedures have changed very little and are consistent with EPA CFR 40 part 86 subpart D. Subpart D is similar to the following procedures:

EPA	SAE
Method 25A for HC	J215
Method 10 for CO	J177a
Method 7E for $\text{NO}_x$	J177a

For further emission information, consult TMI performance parameter DM1176-01.

The exhaust stack temperatures can vary depending on how far downstream from the turbocharger the measurement was made. In most of the cases shown in the tables, the thermocouple would have been less than 6 feet from the turbocharger outlet. Exhaust temperatures at this location would have a  $\pm 5\%$  °C range from the table values.

## Carmen Militello

---

**From:** Kim Symons <Kim\_Symons@cashmanequipment.com>  
**Sent:** Tuesday, July 26, 2011 4:17 PM  
**To:** Chris Meiers  
**Subject:** RE: Additional DAQEM information  
**Attachments:** no-reply@cashmanequipment.com\_20110726\_172421.pdf

Provide copy of purchase order for the emergency generators  
Chris, you should provide this, I think.

Are the generators equipped with either afterburners or turbochargers? Provide mfr cut sheets. If not, what pollution control methods are employed to reduce emissions?

The generator has turbochargers as part of the overall engine, but are not explicitly for emission control as they would be on a turbine engine. Cut sheets on the turbo are unavailable, but are easily visible on the machine. The overall design of the engine is made to meet EPA Tier 2 levels for Stationary Emergency Applications. I've attached the generator spec sheet, emissions data sheets for both generators and the EPA certificate of conformity for reference.

Are the generators set to either a "lean burn" or a "rich burn" or neither? Lean burn.

Provide mfr data showing emissions of SOx at .1839 g/hp-hr I will send a request to CAT for this information.

Provide mfr data showing separate numbers for PM2.5 and PM 10 emissions My understanding is there are no separate numbers for PM2.5 and PM10. The particulate matter that comes out of the machine is what it is.

## Kim Symons

Kim Symons  
Account Manager

Cashman Equipment Co.  
Power Solutions Division  
3300 St. Rose Parkway  
Henderson, NV 89052

702-326-6596 Mobile

Sales and Rentals:  
Generators  
Transfer Switches  
UPS Systems  
Switch Gear

Light Towers  
Cable and Distribution  
Air Compressors  
Temperature Control

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**From:** Chris Meiers [<mailto:cmeiers@mojaveelectric.com>]  
**Sent:** Tuesday, July 26, 2011 6:49 AM  
**To:** Kim Symons  
**Cc:** Crystal Teissedre  
**Subject:** Fw: Additional DAQEM information

More Generator info required HELP!

-Chris Meiers

----- Original Message -----

**From:** Payne, Daniel <[Daniel.Payne@whiting-turner.com](mailto:Daniel.Payne@whiting-turner.com)>  
**To:** Chris Meiers  
**Cc:** Crystal Teissedre  
**Sent:** Mon Jul 25 13:26:05 2011  
**Subject:** Additional DAQEM information

Las Vegas New City Hall  
Chris,

After sitting down and reviewing the permit application with the County, the following questions need to be answered or information provided.

Provide copy of purchase order for the emergency generators

Are the generators equipped with either afterburners or turbochargers? Provide mfr cut sheets. If not, what pollution control methods are employed to reduce emissions?

Are the generators set to either a "lean burn" or a "rich burn" or neither?

Provide mfr data showing emissions of SOx at .1839 g/hp-hr

Provide mfr data showing separate numbers for PM2.5 and PM 10 emissions

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)  
702-851-4190 (o)  
702-851-4198 (f)

## DIESEL GENERATOR SET

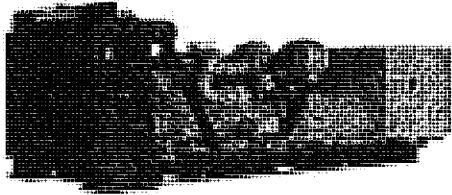


Image shown may not  
reflect actual package.

### STANDBY

**1000 ekW 1250 kVA  
60 Hz 1800 rpm 480 Volts**

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

### FEATURES

#### FUEL/EMISSIONS STRATEGY

- EPA Certified for Stationary Emergency Application (EPA Tier 2 emissions levels)

#### DESIGN CRITERIA

- The generator set accepts 100% rated load in one step per NFPA 110 and meets ISO 8528-5 transient response.

#### UL 2200

- UL 2200 listed packages available. Certain restrictions may apply. Consult with your Cat® Dealer.

#### FULL RANGE OF ATTACHMENTS

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

#### SINGLE-SOURCE SUPPLIER

- Fully prototype tested with certified torsional vibration analysis available

#### WORLDWIDE PRODUCT SUPPORT

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

#### CAT C32 ATAAC DIESEL ENGINE

- Utilizes ACERT™ Technology
- Reliable, rugged, durable design
- Four-cycle diesel engine combines consistent performance and excellent fuel economy with minimum weight
- Electronic engine control

#### CAT GENERATOR

- Designed to match the performance and output characteristics of Cat diesel engines
- Single point access to accessory connections
- UL 1446 recognized Class H insulation

#### CAT EMCP 4 SERIES CONTROL PANELS

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

#### SEISMIC CERTIFICATION

- Seismic Certification available
- Anchoring details are site specific, and are dependent on many factors such as generator set size, weight, and concrete strength. IBC Certification requires that the anchoring system used is reviewed and approved by a Professional Engineer
- Seismic Certification per Applicable Building Codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, CBC 2007
- Pre-approved by OSHP and carries an OPA#(OSP-0084-01) for use in healthcare projects in California

J56-356

MOJ00540  
JA 00004987

# STANDBY 1000 ekW 1250 kVA

60 Hz 1800 rpm 480 Volts



## FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Air Inlet	<ul style="list-style-type: none"> <li>• Single element canister type air cleaner</li> <li>• Service indicator</li> </ul>	<ul style="list-style-type: none"> <li>[ ] Dual element air cleaners</li> <li>[ ] Air inlet adapters</li> </ul>
Cooling	<ul style="list-style-type: none"> <li>• Radiator with guard</li> <li>• Coolant drain line with valve</li> <li>• Fan and belt guards</li> <li>• Cat Extended Life Coolant</li> <li>• Coolant level sensors</li> <li>• Radiator duct flange</li> </ul>	<ul style="list-style-type: none"> <li>[ ] Jacket water heater</li> </ul>
Exhaust	<ul style="list-style-type: none"> <li>• Dry exhaust manifold</li> <li>• Flanged faced outlets</li> </ul>	<ul style="list-style-type: none"> <li>[ ] Stainless steel exhaust flux fittings</li> <li>[ ] Elbows, flanges, expanders &amp; Y adapters</li> </ul>
Fuel	<ul style="list-style-type: none"> <li>• Primary fuel filter with water separator</li> <li>• Secondary fuel filter</li> <li>• Fuel priming pump</li> <li>• Flexible fuel lines</li> <li>• Fuel cooler</li> </ul>	
SR5 Generator	<ul style="list-style-type: none"> <li>• Class H Insulation</li> <li>• Cat digital voltage regulator (CDVR) with kVAR/PF control, 3-phase sensing</li> <li>• Reactive droop</li> </ul>	<ul style="list-style-type: none"> <li>[ ] Oversize &amp; premium generators</li> <li>[ ] Winding temperature detectors</li> <li>[ ] Anti-condensation heaters</li> <li>[ ] Bearing temperature detectors</li> </ul>
Power Termination	<ul style="list-style-type: none"> <li>• Bus bar (NEMA or IEC mechanical lug holes)</li> <li>• Top cable entry</li> </ul>	<ul style="list-style-type: none"> <li>[ ] Circuit breakers, UL listed, 3 pole with shunt trip, 100% rated, manual or electrically operated</li> <li>[ ] Circuit breakers, IEC compliant, 3 or 4 pole with shunt trip, manual or electrically operated</li> <li>[ ] Bottom cable entry</li> <li>[ ] Power terminations can be located on the right, left and/or rear as an option. Multiple circuit breaker options</li> </ul>
Governor	<ul style="list-style-type: none"> <li>• ADEM™ A4</li> </ul>	<ul style="list-style-type: none"> <li>[ ] Load Share Module</li> </ul>
Control Panels	<ul style="list-style-type: none"> <li>• EMCP 4.2</li> <li>• User Interface panel (UIP) - rear mount</li> <li>• AC &amp; DC customer wiring area (right side)</li> <li>• Emergency stop pushbutton</li> </ul>	<ul style="list-style-type: none"> <li>[ ] EMCP 4.3 [ ] EMCP 4.4</li> <li>[ ] Option for right or left mount UIP</li> <li>[ ] Local &amp; remote annunciator modules</li> <li>[ ] Digital I/O module</li> <li>[ ] Generator temperature monitoring &amp; protection</li> <li>[ ] Remote monitoring software</li> </ul>
Lube	<ul style="list-style-type: none"> <li>• Lubricating oil and filter</li> <li>• Oil drain line with valves</li> <li>• Fumes disposal</li> <li>• Gear type lube oil pump</li> </ul>	
Mounting	<ul style="list-style-type: none"> <li>• Rails - engine / generator / radiator mounting</li> <li>• Rubber anti-vibration mounts (shipped loose)</li> </ul>	<ul style="list-style-type: none"> <li>[ ] Spring-type vibration isolator</li> <li>[ ] IBC Isolator</li> </ul>
Starting/Charging	<ul style="list-style-type: none"> <li>• 24 volt starting motor(s)</li> <li>• Batteries with rack and cables</li> <li>• Battery disconnect</li> </ul>	<ul style="list-style-type: none"> <li>[ ] Battery chargers (10 amp)</li> <li>[ ] 45 amp charging alternator</li> <li>[ ] Oversize batteries</li> <li>[ ] Ether starting aid</li> </ul>
General	<ul style="list-style-type: none"> <li>• Right-hand service</li> <li>• Paint - Caterpillar Yellow (except rails and radiators that are gloss black)</li> <li>• SAE standard rotation</li> <li>• Flywheel and Flywheel housing - SAE No. 0</li> </ul>	<ul style="list-style-type: none"> <li>[ ] CSA certification</li> <li>[ ] EU Declaration of Incorporation</li> <li>[ ] EEC Declaration of Conformity</li> <li>[ ] Seismic Certification per Applicable Building Codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, CBC 2007</li> </ul>

# STANDBY 1000 ekW 1250 kVA

60 Hz 1800 rpm 480 Volts



## SPECIFICATIONS

### CAT GENERATOR

SR5 Generator	
Frame size	1402
Excitation	JE
Pitch	0.6667
Number of poles	4
Number of bearings	2
Number of Leads	006
Insulation	UL 1446 Recognized Class H with tropicalization and antiabrasion
IP rating	IP23
Alignment	Close Coupled
Overspeed capability - % of rated	125
Wave form	002.00
Voltage regulator	3 Phase sensing with selectable volts/Hz
Voltage regulation	Less than +/- 1/2% (steady state)
Less than +/- 1% (no load to full load)	
Telephone Influence Factor	Less than 50
Harmonic distortion	Less than 5%

### CAT DIESEL ENGINE

C32 TA, V-12, 4-stroke watercooled diesel	
Bore - mm	145.00 mm (5.71 in)
Stroke - mm	162.00 mm (6.38 in)
Displacement - L	32.10 L (1958.86 in <sup>3</sup> )
Compression ratio	15.0:1
Aspiration	TA
Fuel system	MEUI
Governor type	ADEM™ A4

### CAT EMCP 4 SERIES CONTROL PANELS

#### EMCP 4 controls including:

- Run / Auto / Stop Control
- Speed Adjust
- Voltage Adjust
- Engine Cycle Crank
- Emergency stop pushbutton

#### EMCP 4.2 controller features:

- 24-volt DC operation
- Environmental sealed front face
- Text alarm/event descriptions
- True RMS AC metering, 3-phase,  $\pm 1\%$  accuracy.

#### Digital Indication for:

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

#### Warning/shutdown with common LED Indication of shutdowns for:

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

#### Programmable protective relaying functions:

- Generator phase sequence
- Over/Under voltage (27/59)
- Over/Under Frequency (81 c/u)
- Reverse Power (kW) (32)
- Reverse Reactive Power (kVAR) (32IV)
- Overcurrent (50/51)

#### Communications

- Customer data link (Modbus RTU)
- Accessory module data link
- Serial annunciator module data link
- 6 programmable digital inputs
- 4 programmable relay outputs (Form A)
- 2 programmable relay outputs (Form C)
- 2 programmable digital outputs

#### Compatible with the following optional modules:

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

# STANDBY 1000 ekW 1250 kVA

60 Hz 1800 rpm 480 Volts



## TECHNICAL DATA

Open Generator Set - 1800 rpm/60 Hz/480 Volts		DM9933	
EPA Certified for Stationary Emergency Application (EPA Tier 2 emissions levels)			
<b>Generator Set Package Performance</b>			
Genset Power rating @ 0.8 pf		1250 kVA	
Genset Power rating with fan		1000 ekW	
Coolant to aftercooler		49 ° C	
Coolant to aftercooler temp max		120 ° F	
<b>Fuel Consumption</b>			
100% load with fan		272.1 L/hr	71.9 Gal/hr
75% load with fan		213.4 L/hr	56.4 Gal/hr
50% load with fan		144.7 L/hr	38.2 Gal/hr
<b>Cooling System<sup>1</sup></b>			
Air flow restriction (system)		0.12 kPa	0.48 in. water
Engine coolant capacity		55.0 L	14.5 gal
<b>Inlet Air</b>			
Combustion air inlet flow rate		87.6 m <sup>3</sup> /min	3093.6 cfm
<b>Exhaust System</b>			
Exhaust stack gas temperature		476.4 ° C	889.5 ° F
Exhaust gas flow rate		228.4 m <sup>3</sup> /min	8065.9 cfm
Exhaust flange size (internal diameter)		203 mm	8 in
Exhaust system backpressure (maximum allowable)		10.0 kPa	40.2 in. water
<b>Heat Rejection</b>			
Heat rejection to coolant (total)		352 kW	20018 Btu/min
Heat rejection to exhaust (total)		1024 kW	58235 Btu/min
Heat rejection to aftercooler		288 kW	16379 Btu/min
Heat rejection to atmosphere from engine		127 kW	7222 Btu/min
Heat rejection to atmosphere from generator		62.7 kW	3565.7 Btu/min
<b>Alternator<sup>2</sup></b>			
Motor starting capability @ 30% voltage dip		2734 skVA	
Frame		1402	
Temperature Rise		125 ° C	225 ° F
<b>Lube System</b>			
Sump refill with filter		90.0 L	26.2 gal
<b>Emissions (Nominal)<sup>3</sup></b>			
NOx g/hp-hr		4.93 g/hp-hr	
CO g/hp-hr		.13 g/hp-hr	
HC g/hp-hr		.01 g/hp-hr	
PM g/hp-hr		.018 g/hp-hr	

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

<sup>2</sup> UL 2200 Listed packages may have oversized generators with a different temperature rise and motor starting characteristics. Generator temperature rise is based on a 40°C ambient per NEMA MG1-32.

<sup>3</sup> Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77°F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.



**EMISSIONS DATA [PRH01013]****JULY 26, 2011**(PRH01013)-ENGINE (G1G05031)-GENERATOR (JSJ01011)-  
GENSETFor Help Desk Phone Numbers [Click here](#)**Engine Emissions Data**For Emissions feedback and questions contact: [engine\\_certification@cat.com](mailto:engine_certification@cat.com)

\*\*This link is case sensitive.\*\*

**Emissions Definitions**

This emission data is Caterpillar's best estimate for this rating. If actual emissions are required then an emission test needs to be run on your engine.

Serial Number (Machine)	
Serial Number (Engine)	PRH01013
Sales Model	C32
Build Date	2010-11-22
Interlock Code Progression	No Interlock Code Progression
<b>As Shipped Data</b>	
Engine Arrangement Number	3431709
Certification Arrangement	
Test Spec Number	0K8990
Certification	NON-CERTIFIED ENGINE
Labeled Model Year	
Family Code	
Flash File	3459219
Flash File Progression	3459219
CORR FL Power at RPM	1,502 HP (1,120.0 KW ) at 1800 rpms
Advertised Power	1,474hp 1,800RPM
Liters	1,959CU IN

This is not an official emission certificate. This is for emission data information only.

Caterpillar Confidential: Green  
 Content Owner: Shane Gillies  
 Web Master(s): PSG Web Based Systems Support  
 Current Date: Tuesday, July 26, 2011 9:26:57 AM  
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[Data Privacy Statement](#)

J56-360

<http://tmiwebclassic.cat.com/tmi/servlet/TMIDirector?Action=buildtab&refkind=RNTMI...> 07/26/2011

 MOJ00544  
 JA 00004991

**EMISSIONS DATA [PRH01016]****JULY 26, 2011**For Help Desk Phone Numbers [Click here](#)**Engine Emissions Data**For Emissions feedback and questions contact: [engine\\_certification@cat.com](mailto:engine_certification@cat.com)**\*\*This link is case sensitive.\*\*****Emissions Definitions**

This emission data is Caterpillar's best estimate for this rating. If actual emissions are required then an emission test needs to be run on your engine.

Serial Number (Machine)	
Serial Number (Engine)	PRH01016
Sales Model	C32
Build Date	2010-11-24
Interlock Code Progression	No Interlock Code Progression
<b>As Shipped Data</b>	
Engine Arrangement Number	3367659
Certification Arrangement	
Test Spec Number	0K8987
Certification	NR EPA/CARB w/NMHC+NOx & PM
Labeled Model Year	2010
Family Code	ACPXL32.0ESW
Family Certification	EPA Tier 2
Family Certification	
Family Certification	
Flash File	3459218
Flash File Progression	3459218
CORR FL Power at RPM	1,502 HP (1,120.0 KW ) at 1800 rpms
Advertised Power	1,474hp 1,800RPM
Liters	1,959CU IN

This is not an official emission certificate. This is for emission data information only.

Caterpillar Confidential: Green  
 Content Owner: Shane Gilles  
 Web Master(s): [PSG Web Based Systems Support](#)  
 Current Date: Tuesday, July 26, 2011 9:26:19 AM  
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[Data Privacy Statement](#)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF TRANSPORTATION AND AIR QUALITY  
WASHINGTON, DC 20460



CERTIFICATE OF CONFORMITY  
2010 MODEL YEAR

Manufacturer: CATERPILLAR, INC.  
Engine Family: ACPXL32.0ESW  
Certificate Number: CPX-NRCI-10-13  
Intended Service Class: NR 9 (>560)  
Fuel Type: DIESEL  
FELs: g/kW-hr NMHC +NOx: 5.8 NOx: N/A PM: 0.15  
Effective Date: 9/25/2009  
Date Issued: 9/25/2009

Karl J. Simon, Director  
Compliance and Innovative Strategies Division  
Office of Transportation and Air Quality

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60 and Part 89, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following stationary and nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and 89, and produced in the stated model year.

This certificate of conformity covers only those new stationary and nonroad compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and 89 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60 and 89.

This certificate of conformity is conditional upon compliance of said manufacturer with the averaging, banking and trading provisions of 40 CFR Part 89, Subpart C. Failure to comply with these provisions may render this certificate void ab initio.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 89.129-96 and 89.506-96 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to a revocation or suspension of this certificate for reasons specified in 40 CFR Part 89. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void ab initio for other reasons specified in 40 CFR Part 89.

This certificate does not cover stationary and nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

J56-362

MOJ00546  
JA 00004993

## Carmen Militello

---

**From:** Kim Symons <Kim\_Symons@cashmanequipment.com>  
**Sent:** Tuesday, July 26, 2011 10:21 AM  
**To:** Chris Meiers  
**Subject:** RE: Additional DAQEM information

I'm seeing what else I can find.

## Kim Symons

Kim Symons  
Account Manager

Cashman Equipment Co.  
Power Solutions Division  
3300 St. Rose Parkway  
Henderson, NV 89052

702-326-6596 Mobile

Sales and Rentals:  
Generators  
Transfer Switches  
UPS Systems  
Switch Gear

Light Towers  
Cable and Distribution  
Air Compressors  
Temperature Control

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**From:** Chris Meiers [<mailto:cmeiers@mojaveelectric.com>]  
**Sent:** Tuesday, July 26, 2011 6:49 AM  
**To:** Kim Symons  
**Cc:** Crystal Teissedre  
**Subject:** Fw: Additional DAQEM information

J56-363

More Generator info required HELP!

-Chris Meiers

----- Original Message -----

From: Payne, Daniel <Daniel.Payne@whiting-turner.com>

To: Chris Meiers

Cc: Crystal Teissedre

Sent: Mon Jul 25 13:26:05 2011

Subject: Additional DAQEM information

Las Vegas New City Hall  
Chris,

After sitting down and reviewing the permit application with the County, the following questions need to be answered or information provided.

Provide copy of purchase order for the emergency generators

Are the generators equipped with either afterburners or turbochargers? Provide mfr cut sheets. If not, what pollution control methods are employed to reduce emissions?

Are the generators set to either a "lean burn" or a "rich burn" or neither?

Provide mfr data showing emissions of SOx at .1839 g/hp-hr

Provide mfr data showing separate numbers for PM2.5 and PM 10 emissions

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)

702-851-4190 (o)

702-851-4198 (f)

## Carmen Militello

---

**From:** Payne, Daniel <Daniel.Payne@whiting-turner.com>  
**Sent:** Thursday, August 04, 2011 9:14 AM  
**To:** Chris Meiers  
**Subject:** RE: Additional DAQEM information

thank you

Las Vegas New City Hall

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)  
702-851-4190 (o)  
702-851-4198 (f)

---

**From:** Chris Meiers [<mailto:cmeiers@mojaveelectric.com>]  
**Sent:** Thursday, August 04, 2011 9:11 AM  
**To:** Payne, Daniel  
**Subject:** Fw: Additional DAQEM information

Try this

----- Original Message -----

**From:** Kim Symons <[Kim\\_Symons@cashmanequipment.com](mailto:Kim_Symons@cashmanequipment.com)>  
**To:** Chris Meiers  
**Sent:** Tue Jul 26 16:17:09 2011  
**Subject:** RE: Additional DAQEM information

Provide copy of purchase order for the emergency generators

Chris, you should provide this, I think.

Are the generators equipped with either afterburners or turbochargers? Provide mfr cut sheets. If not, what pollution control methods are employed to reduce emissions?

The generator has turbochargers as part of the overall engine, but are not explicitly for emission control as they would be on a turbine engine. Cut sheets on the turbo are unavailable, but are easily visible on the machine. The overall design of the engine is made to meet EPA Tier 2 levels for Stationary Emergency Applications. I've attached the generator spec sheet, emissions data sheets for both generators and the EPA certificate of conformity for reference.

Are the generators set to either a "lean burn" or a "rich burn" or neither? Lean burn.

Provide mfr data showing emissions of SOx at .1839 g/hp-hr I will send a request to CAT for this information.

Provide mfr data showing separate numbers for PM2.5 and PM 10 emissions My understanding is there are no separate numbers for

PM2.5 and PM10. The particulate matter that comes out of the machine is what it is.

Kim Symons

Kim Symons

Account Manager

Cashman Equipment Co.

Power Solutions Division

3300 St. Rose Parkway

Henderson, NV 89052

702-326-6596 Mobile

Sales and Rentals:

Generators

Light Towers

Transfer Switches

Cable and Distribution

UPS Systems

Air Compressors

Switch Gear

Temperature Control

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J56-366

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From: Chris Meiers [<mailto:cmeiers@mojavectric.com>]  
Sent: Tuesday, July 26, 2011 6:49 AM  
To: Kim Symons  
Cc: Crystal Teissedre  
Subject: Fw: Additional DAQEM information

More Generator info required HELP!

-Chris Meiers

----- Original Message -----

From: Payne, Daniel <[Daniel.Payne@whiting-turner.com](mailto:Daniel.Payne@whiting-turner.com)>  
To: Chris Meiers  
Cc: Crystal Teissedre  
Sent: Mon Jul 25 13:26:05 2011  
Subject: Additional DAQEM information

Las Vegas New City Hall  
Chris,

After sitting down and reviewing the permit application with the County, the following questions need to be answered or information provided.

Provide copy of purchase order for the emergency generators

Are the generators equipped with either afterburners or turbochargers? Provide mfr cut sheets. If not, what pollution control methods are employed to reduce emissions?

Are the generators set to either a "lean burn" or a "rich burn" or neither?

Provide mfr data showing emissions of SOx at .1839 g/hp-hr  
Provide mfr data showing separate numbers for PM2.5 and PM 10 emissions

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)  
702-851-4190 (o)  
702-851-4198 (f)



**Carmen Militello**

---

**From:** Payne, Daniel <Daniel.Payne@whiting-turner.com>  
**Sent:** Tuesday, July 19, 2011 4:40 PM  
**To:** Chris Meiers  
**Subject:** RE: DAQEM Permit

The forms are filled out (except for exhaust stack - I'll just have to go measure it)  
However - there is no manufacturers documentation for the PM2.5, PM 10, and SOx emissions.

Please have them provide the documentation for this.

Las Vegas New City Hall

Thank you,

Daniel Payne  
The Whiting-Turner Contracting Company  
518 S 1st Street  
Las Vegas, NV 89101

702-604-4179 (c)  
702-851-4190 (o)  
702-851-4198 (f)

---

**From:** Chris Meiers [mailto:cmeliers@mojaveelectric.com]  
**Sent:** Tuesday, July 19, 2011 12:48 PM  
**To:** Payne, Daniel  
**Subject:** Fw: DAQEM Permit

Daniel,  
Can you open attached and review. Hopefully this is completed for some reason I cannot open.

Regards,  
Chris Meiers

----- Original Message -----

**From:** Kim Symons <Kim\_Symons@cashmanequipment.com>  
**To:** Chris Meiers  
**Sent:** Tue Jul 19 12:20:08 2011  
**Subject:** RE: DAQEM Permit

See attached.

Kim Symons

Kim Symons

Account Manager

Cushman Equipment Co.

Power Solutions Division

3300 St. Rose Parkway

Henderson, NV 89052

702-326-6596 Mobile

**Sales and Rentals:**

Generators

Light Towers

Transfer Switches

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Air Compressors

Switch Gear

Temperature Control

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From: Chris Meiers [<mailto:cmeiers@mojaveelectric.com>]

Sent: Monday, July 18, 2011 3:46 PM

To: Kim Symons



**TABLE OF CONTENTS FOR JOINT APPENDIX**  
**- CHRONOLOGICAL & ALPHABETICAL -**

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**TABLE OF CONTENTS (CHRONOLOGICAL)**

<b>Tab No.</b>	<b>Description</b>	<b>Filed</b>	<b>Vol. No.</b>	<b>Page(s)</b>
1	Complaint	06/03/2011	1	JA00001- 9
2	Amended Complaint	07/25/2011	1	JA00010 - 27
3	Affidavits of Service on Angelo Carvalho and Janel Rennie aka Janel Carvalho	09/29/2011	1	JA00028 - 33
4	Second Amended Complaint	09/30/2011	1	JA00034-50
5	Errata to Second Amended Complaint	10/10/2011	1	JA00051-52

1	6	Acceptance of Service	10/10/2011	1	JA00053
2					
3	7	Answer to Second Amended Complaint, Counterclaim and Crossclaim	10/26/2011	1	JA00054-75
4					
5					
6					
7	8	Amended Answer to Second Amended Complaint, Counterclaim and Crossclaim	10/27/2011	1	JA00076-97
8					
9					
10					
11					
12	9	Errata to Amended Answer to Second Amended Complaint, Counterclaim and Crossclaim	11/10/2011	1	JA00098-99
13					
14					
15					
16					
17	10	Cashman's Response to Mojave's Counterclaim	11/21/2011	1	JA000100-03
18					
19					
20					
21	11	Complaint (Filed in A653029)	12/09/2011	1	JA000104-11
22					
23	12	Motion to Consolidate (re: Case A653029)	01/11/2012	1	JA000112-18
24					
25					
26	13	Acceptance of Service (Filed in A653029)	01/18/2012	1	JA000119-22
27					
28					

1	14	Affidavit of Service	01/19/2012	1	JA000123-25
2	15	Scheduling Order	01/31/2012	1	JA000126-28
3	16	Notice of Entry of Order Granting Motion to Consolidate (Filed in A653029)	02/02/2012	1	JA000129-34
4					
5					
6					
7					
8	17	Answer to Complaint (Filed in A653029)	02/02/2012	1	JA000135-44
9					
10					
11	18	Order Setting Civil Non-Jury Trial, Pre-Trial/Calendar Call	02/21/2012	1	JA000145-46
12					
13					
14	19	Affidavit of Service	03/01/2012	1	JA000147-49
15					
16	20	Defendants' Motion for Summary Judgment	03/09/2012	1	JA000150-203
17					
18					
19					
20	21	Cashman's Opposition to Motion for Summary Judgment	04/23/2012	1-2	JA000204-61
21					
22					
23					
24	22	Affidavit of Service	04/30/2012	2	JA000262-65
25					
26	23	Defendants' Reply to Cashman's Opposition to	05/02/2012	2	JA000266-75
27					
28					

		Motion for Summary Judgment		
24	Third Amended Complaint	05/24/2012	2	JA000276-94
25	Notice of Entry of Order Granting Cashman's Motion to Amend Complaint	05/25/2012	2	JA000295-99
26	Notice of Entry of Order Denying Defendants' Motion for Summary Judgment without Prejudice	05/25/2012	2	JA000300-04
27	Defendants' Answer to Third Amended Complaint, Counterclaim, and Cross Claim	06/28/2012	2	JA000305-31
28	Counterclaimants' Motion for Mandatory Injunction to Procure Codes on OST or in the Alternative Application for Writ of Possession	07/18/2012	2	JA000332-58

1	29	Cashman's Answer to Counterclaim	07/20/2012	2	JA000359-63
2					
3	30	Cashman's Opposition to Motion for Injunctive Relief or Writ of Possession	07/26/2012	2	JA000364-97
4					
5					
6					
7	31	Reply to Cashman's Opposition to Motion for Injunctive Relief or Writ of Possession	07/31/2012	2	JA000398-404
8					
9					
10					
11					
12	32	Order Setting Civil Non-Jury Trial, Pre-Trial/Calendar Call	08/06/2012	2	JA000405-06
13					
14					
15					
16	33	Notice of Posting Security Bond	08/09/2012	2	JA000407-13
17					
18	34	Findings of Fact and Conclusions of Law Based upon Counterclaimants Motion to Procure Codes	08/10/2012	2	JA000414-16
19					
20					
21					
22					
23	35	Notice of Entry of Findings of Fact and Conclusions of Law Based upon Counterclaimants Motion to Procure Codes	08/13/2012	2	JA000417-22
24					
25					
26					
27					
28					



1	36	Transcript of Proceedings for August 3, 2012	08/22/2012	2	JA000423-38
2					
3					
4	37	Cashman's Motion for Reconsideration of Order Granting in Part Counterclaimants' Motion for Preliminary Injunction to Procure Codes or Alternatively Motion for Clarification and Request for OST	08/29/2012	2	JA000439-66
5					
6					
7					
8					
9					
10					
11					
12					
13					
14	38	Defendants' Motion for Summary Judgment of Surety Payment and License Bond Claims	08/30/2012	2	JA000467-98
15					
16					
17					
18					
19	39	Opposition to Cashman's Motion for Reconsideration of Order Granting in Part Counterclaimants' Motion for Preliminary Injunction to Procure Codes or Alternatively Motion for Clarification and Request for OST	09/07/2012	2-3	JA000499-609
20					
21					
22					
23					
24					
25					
26					
27					
28					

1	40	Notice of Appeal	09/13/2012	3	JA00610-19
2	41	Defendants' Motion to Expunge or Reduce Mechanic's Lien	09/17/2012	3	JA000620-700
3					
4					
5					
6	42	Case Appeal Statement	09/18/2012	3	JA000701-03
7					
8	43	Cashman's Opposition to Defendants' Motion for Summary Judgment of Surety Payment and License Bond Claims	09/19/2012	3-4	JA000704-853
9					
10					
11					
12					
13					
14					
15	44	Notice of Posting Cost Bond	09/19/2012	4	JA000854-57
16					
17	45	Cashman's Motion to Stay or Suspend Order Granting in Part Counterclaimants' Motion for Preliminary Injunction to Procure Codes or Alternatively Motion for Clarification and Request for OST	09/28/2012	4	JA000858-84
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

1	46	Defendants' Opposition to Cashman's Motion to Stay or Suspend Order Granting in Part	10/01/2012	4	JA000885-89
2		Counterclaimants' Motion for Preliminary Injunction to Procure Codes or Alternatively			
3		Motion for Clarification and Request for OST			
4					
5					
6					
7					
8					
9					
10					
11					
12	47	Amended Affidavit of Service	10/17/2012	4	JA000890
13					
14	48	Cashman's Reply to its Motion to Stay or Suspend Order Granting in Part	10/22/2012	4	JA000891-904
15		Counterclaimants' Motion for Preliminary Injunction to Procure Codes or Alternatively			
16		Motion for Clarification and Request for OST			
17					
18					
19					
20					
21					
22					
23					
24					
25	49	Cashman's Opposition to Defendants' Motion to Expunge or Reduce Mechanic's Lien	10/25/2012	4-5	JA000905-1039
26					
27					
28					

1	50	Motion to Amend Complaint	10/31/2012	5	JA0001040-76
2					
3	51	Order Granting Cashman's Motion to Stay or Suspend Order Granting in Part Motion for Preliminary Injunction to Procure Codes	11/02/2012	5	JA0001077-78
4					
5					
6					
7					
8					
9	52	Notice of Entry of Order Granting Cashman's Motion to Stay or Suspend Order Granting in Part Motion for Preliminary Injunction to Procure Codes	11/02/2012	5	JA0001079-83
10					
11					
12					
13					
14					
15					
16	53	Affidavit of Brian Bugni in support of Defendants' Motion to Expunge or Reduce Mechanic's Lien	11/02/2012	5	JA0001084-85
17					
18					
19					
20					
21	54	Affidavit of Nancy Briseno-Rivero in support of Defendants' Motion to Expunge or Reduce Mechanic's Lien	11/02/2012	5	JA0001086-87
22					
23					
24					
25					
26					
27					
28					

1	55	Cashman's Reply in support of Countermotion for Summary Judgment	11/02/2012	5	JA0001088- 1101
2					
3					
4					
5	56	Reply to Cashman's Opposition to Motion to Expunge or Reduce Mechanic's Lien	11/02/2012	5	JA0001102-11
6					
7					
8					
9					
10	57	Notice of Posting Bond	11/07/2012	5	JA0001112-16
11					
12	58	Opposition to Motion to Amend Complaint	11/19/2012	5	JA0001117-26
13					
14					
15	59	Reply in Support of Motion to Amend Complaint	12/17/2012	5	JA0001127-48
16					
17					
18	60	Notice of Entry of Order Granting Motion to Amend Complaint	01/09/2013	5	JA0001149-53
19					
20					
21	61	Fourth Amended Complaint	01/10/2013	5	JA0001154-72
22					
23					
24	62	Transcript of Proceedings for November 9, 2012	01/11/2013	5	JA0001173- 1203
25					
26					
27	63	Certificate of Service for Fourth Amended	01/17/2013	5	JA0001204-05
28					

	Complaint			
64	Acceptance of Services for LWTIC Successor, LLC, FC/LW Vegas, PQ Las Vegas, LLC, and QH Las Vegas, LLC	01/22/2013	5	JA0001206-13
65	Answer to Fourth Amended Complaint, Counterclaim and Crossclaim	02/07/2013	5	JA0001214-40
66	QH Las Vegas, LLC, PQ Las Vegas, LLC, LWTIC Successor, LLC, and FC/LW Vegas Motion to Dismiss, or in the alternative, Motion for Summary Judgment	02/07/2013	5-6	JA0001241-1355
67	Cashman's Motion for Summary Judgment on the Payment Bond Claim	02/25/2013	7	JA0001356-1520
68	Cashman's Opposition to QH Las Vegas, LLC, PQ Las Vegas, LLC, LWTIC Successor, LLC,	03/06/2013	7	JA0001521-1664

	and FC/LW Vegas Motion to Dismiss, or in the alternative, Motion for Summary Judgment			
69	Defendants' Opposition to Cashman's Motion for Summary Judgment on the Payment Bond Claim	03/15/2013	7-8	JA0001665-1782
70	Cashman's Supplement to its Countermotion for Summary Judgment on its Payment Bond and Mechanic's Lien Claims	03/18/2013	8	JA0001783-1893
71	Defendants' Supplement to Motion to Expunge Lien and Opposition to Motion for Summary Judgment as to Lien and Bond Claims	04/02/2012	8-9	JA0001894-2065
72	Cashman's Reply to its Motion for Summary Judgment on the Payment Bond	04/05/2013	9	JA0002066-94

		Claim		
73	Supplement to Cashman's Supplement to its Countermotion for Summary Judgment on its Payment Bond and Mechanic's Lien Claims	04/05/2013	9	JA0002095- 2101
74	QH Las Vegas, LLC, PQ Las Vegas, LLC, LWTIC Successor, LLC, and FC/LW Vegas Reply to their Motion to Dismiss, or in the alternative, Motion for Summary Judgment	04/05/2013	9- 10	JA0002102- 2387
75	Order Rescheduling Pretrial/Calendar Call	04/17/2013	10	JA0002388-89
76	Notice of Entry of Defendants' Motion for Summary Judgment of Surety Payment and License Bond Claims and Cashman's Countermotion for Summary	05/06/2013	10	JA0002390-95



	Judgment			
77	Notice of Entry of Order Denying Cashman's Motion for Summary Judgment on Defendants' Payment Bond Claim	05/06/2013	10	JA0002396-2401
78	Notice of Entry of Order Denying Mojave's Motion to Expunge or Reduce Mechanic's Lien	05/06/2013	10	JA0002402-07
79	Notice of Entry of Order Denying QH Las Vegas, LLC, PQ Las Vegas, LLC, LWTIC Successor, LLC, and FC/LW Vegas Motion to Dismiss, or in the alternative, Motion for Summary Judgment	05/06/2013	10	JA0002408-13
80	Cashman's Motion for Award of Attorneys' Fees and Costs Pursuant to NRS 108.2275	05/31/2013	10	JA0002414-40
81	QH Las Vegas, PQ Las Vegas, LWITC Successor and	06/11/2013	10	JA0002441-61

	FC/LW Vegas' Answer to Fourth Amended Complaint			
82	Opposition to Cashman's Motion for Award of Attorneys' Fees and Costs Pursuant to NRS 108.2275	06/20/2013	10	JA0002462-74
83	Cashman's Reply in Motion for Award of Attorneys' Fees and Costs Pursuant to NRS 108.2275	07/02/2013	10	JA0002475-87
84	Order Setting Civil Non-Jury Trial, Pre-Trial/Calendar Call	09/06/2013	10	JA0002488-90
85	Cashman's Response to Mojave's Counterclaim (Filed in A653029)	09/12/2013	10	JA0002491-95
86	Order Granting Cashman's Motion for Award of Attorneys' Fees and Costs Pursuant to NRS 108.2275	09/20/2013	10	JA0002496-97

1	87	Notice of Entry of Order Granting Cashman's Motion for Award of Attorneys' Fees and Costs Pursuant to NRS 108.2275	09/24/2013	10- 11	JA0002498- 2502
2	88	Order Setting Civil Non-Jury Trial, Pre-Trial/Calendar Call	10/1/2013	11	JA0002503-05
3	89	Defendants' Trial Brief	01/16/2014	11	JA0002506-33
4	90	Plaintiff's Trial Brief	01/16/2014	11	JA0002534-59
5	91	Joint Pretrial Memorandum	01/16/2014	11	JA0002560-79
6	92	Joint Trial Exhibit Index	01/21/2014	11	JA0002580-82
7	92.J01 to 92.J65	Joint Trial Exhibits	01/21/2014	11- 27	JA0002583- 6552
8	93	Non-Jury Trial Transcripts (for January 21, 2014 through January 24, 2014)	01/31/2014	27- 29	JA0006553- 7098
9	94	Motion for Relief Pursuant to NRCP 60(b) and Motion	03/20/2014	29	JA0007099- 7112

	for Attorneys' Fees and Costs Pursuant to NRS Ch. 108			
95	Appendix to Exhibits to Motion for Relief Pursuant to NRCP 60(b) and Motion for Attorneys' Fees and Costs Pursuant to NRS Ch. 108	03/20/2014	29-30	JA0007113-7359
96	Opposition to Motion for Relief Pursuant to NRCP 60(b) and Motion for Attorneys' Fees and Costs Pursuant to NRS Ch. 108	04/15/2014	30-31	JA0007360-7693
97	Reply to Cashman's Opposition to Motion for Relief Pursuant to NRCP 60(b) and Motion for Attorneys' Fees and Costs Pursuant to NRS Ch. 108	04/23/2014	31	JA0007694-7707
98	Cashman's Reply in Support of Motion for Attorneys' Fees	05/05/2014	31	JA0007708-13
99	Findings of Fact and Conclusions of Law	05/05/2014	31	JA0007714-29

1	100	Notice of Entry of Findings of Fact and Conclusions of Law	05/06/2014	31	JA0007730-47
2					
3					
4	101	Memorandum of Costs and Disbursements	05/13/2014	31	JA0007748-50
5					
6					
7	102	Notice of Appeal	05/30/2014	32	JA0007751-72
8					
9	103	Case Appeal Statement	06/05/2014	32	JA0007773-76
10					
11	104	Decision and Order	08/04/2014	32	JA0007777-81
12					
13	105	Notice of Entry of Decision and Order	08/13/2014	32	JA0007782-88
14					
15	106	Judgment	08/18/2014	32	JA0007789-91
16					
17	107	Notice of Entry of Judgment	08/21/2014	32	JA0007792-96
18					
19	108	Order Denying Cashman's Request for Costs Pursuant to NRS 18.020	09/02/2014	32	JA0007797-98
20					
21					
22	109	Notice of Entry of Order Denying Cashman's Request for Costs Pursuant to NRS 18.020	09/02/2014	32	JA0007799-7804
23					
24					
25					
26					
27					
28					

1	110	Errata to Notice of Entry of Order Denying Cashman's Request for Costs Pursuant to NRS 18.020	09/02/2014	32	JA0007804-12
2					
3					
4					
5					
6	111	Notice of Appeal	09/02/2014	32	JA0007813-29
7					
8	112	Case Appeal Statement	09/11/2014	32	JA0007830-33
9					
10	113	Stipulation and Order for Dismissal of Defendants Fidelity and Deposit Company of Maryland and Travelers Casualty and Surety Company of America with Prejudice	05/08/2015	32	JA0007834-36
11					
12					
13					
14					
15					
16					
17					
18					
19	114	Notice of Entry of Stipulation and Order for Dismissal of Defendants Fidelity and Deposit Company of Maryland and Travelers Casualty and Surety Company of America with Prejudice	05/11/2015	32	JA0007837-42
20					
21					
22					
23					
24					
25					
26					
27					
28					

**TABLE OF CONTENTS (ALPHABETICAL)**

<b>Tab No.</b>	<b>Description</b>	<b>Filed</b>	<b>Vol. No.</b>	<b>Page(s)</b>
6	Acceptance of Service	10/10/2011	1	JA00053
13	Acceptance of Service (Filed in A653029)	01/18/2012	1	JA000119-22
64	Acceptance of Services for LWTIC Successor, LLC, FC/LW Vegas, PQ Las Vegas, LLC, and QH Las Vegas, LLC	01/22/2013	5	JA0001206-13
53	Affidavit of Brian Bugni in support of Defendants' Motion to Expunge or Reduce Mechanic's Lien	11/02/2012	5	JA0001084-85
54	Affidavit of Nancy Briseno-Rivero in support of Defendants' Motion to Expunge or Reduce Mechanic's Lien	11/02/2012	5	JA0001086-87
14	Affidavit of Service	01/19/2012	1	JA000123-25

1	19	Affidavit of Service	03/01/2012	1	JA000147-49
2					
3	22	Affidavit of Service	04/30/2012	2	JA000262-65
4					
5	3	Affidavits of Service on Angelo Carvalho and Janel Rennie aka Janel Carvalho	09/29/2011	1	JA00028 - 33
6					
7					
8					
9	47	Amended Affidavit of Service	10/17/2012	4	JA000890
10					
11	8	Amended Answer to Second Amended Complaint, Counterclaim and Crossclaim	10/27/2011	1	JA00076-97
12					
13					
14					
15					
16	2	Amended Complaint	07/25/2011	1	JA00010 - 27
17					
18					
19	17	Answer to Complaint (Filed in A653029)	02/02/2012	1	JA000135-44
20					
21	65	Answer to Fourth Amended Complaint, Counterclaim and Crossclaim	02/07/2013	5	JA0001214-40
22					
23					
24					
25					
26	7	Answer to Second Amended Complaint, Counterclaim and	10/26/2011	1	JA00054-75
27					
28					



		Crossclaim		
95	Appendix to Exhibits to Motion for Relief Pursuant to NRCP 60(b) and Motion for Attorneys' Fees and Costs Pursuant to NRS Ch. 108	03/20/2014	29-30	JA0007113-7359
42	Case Appeal Statement	09/18/2012	3	JA000701-03
103	Case Appeal Statement	06/05/2014	32	JA0007773-76
112	Case Appeal Statement	09/11/2014	32	JA0007830-33
29	Cashman's Answer to Counterclaim	07/20/2012	2	JA000359-63
80	Cashman's Motion for Award of Attorneys' Fees and Costs Pursuant to NRS 108.2275	05/31/2013	10	JA0002414-40
37	Cashman's Motion for Reconsideration of Order Granting in Part Counterclaimants' Motion for Preliminary Injunction to Procure Codes or	08/29/2012	2	JA000439-66

	Alternatively Motion for Clarification and Request for OST			
67	Cashman's Motion for Summary Judgment on the Payment Bond Claim	02/25/2013	7	JA0001356- 1520
45	Cashman's Motion to Stay or Suspend Order Granting in Part Counterclaimants' Motion for Preliminary Injunction to Procure Codes or Alternatively Motion for Clarification and Request for OST	09/28/2012	4	JA000858-84
43	Cashman's Opposition to Defendants' Motion for Summary Judgment of Surety Payment and License Bond Claims	09/19/2012	3-4	JA000704-853
49	Cashman's Opposition to Defendants'	10/25/2012	4-5	JA000905-1039

		Motion to Expunge or Reduce Mechanic's Lien		
30	Cashman's Opposition to Motion for Injunctive Relief or Writ of Possession	07/26/2012	2	JA000364-97
21	Cashman's Opposition to Motion for Summary Judgment	04/23/2012	1-2	JA000204-61
68	Cashman's Opposition to QH Las Vegas, LLC, PQ Las Vegas, LLC, LWTIC Successor, LLC, and FC/LW Vegas Motion to Dismiss, or in the alternative, Motion for Summary Judgment	03/06/2013	7	JA0001521- 1664
83	Cashman's Reply in Motion for Award of Attorneys' Fees and Costs Pursuant to NRS 108.2275	07/02/2013	10	JA0002475-87
55	Cashman's Reply in support of Countermotion for Summary	11/02/2012	5	JA0001088- 1101

	Judgment			
98	Cashman's Reply in Support of Motion for Attorneys' Fees	05/05/2014	31	JA0007708-13
72	Cashman's Reply to its Motion for Summary Judgment on the Payment Bond Claim	04/05/2013	9	JA0002066-94
48	Cashman's Reply to its Motion to Stay or Suspend Order Granting in Part Counterclaimants' Motion for Preliminary Injunction to Procure Codes or Alternatively Motion for Clarification and Request for OST	10/22/2012	4	JA000891-904
10	Cashman's Response to Mojave's Counterclaim	11/21/2011	1	JA000100-03
85	Cashman's Response to Mojave's Counterclaim (Filed in A653029)	09/12/2013	10	JA0002491-95

70	Cashman's Supplement to its Countermotion for Summary Judgment on its Payment Bond and Mechanic's Lien Claims	03/18/2013	8	JA0001783-1893
63	Certificate of Service for Fourth Amended Complaint	01/17/2013	5	JA0001204-05
1	Complaint	06/03/2011	1	JA00001- 9
11	Complaint (Filed in A653029)	12/09/2011	1	JA000104-11
28	Counterclaimants' Motion for Mandatory Injunction to Procure Codes on OST or in the Alternative Application for Writ of Possession	07/18/2012	2	JA000332-58
104	Decision and Order	08/04/2014	32	JA0007777-81
27	Defendants' Answer to Third Amended Complaint,	06/28/2012	2	JA000305-31

		Counterclaim, and Cross Claim		
20	Defendants' Motion for Summary Judgment	03/09/2012	1	JA000150-203
38	Defendants' Motion for Summary Judgment of Surety Payment and License Bond Claims	08/30/2012	2	JA000467-98
41	Defendants' Motion to Expunge or Reduce Mechanic's Lien	09/17/2012	3	JA000620-700
69	Defendants' Opposition to Cashman's Motion for Summary Judgment on the Payment Bond Claim	03/15/2013	7-8	JA0001665- 1782
46	Defendants' Opposition to Cashman's Motion to Stay or Suspend Order Granting in Part Counterclaimants' Motion for Preliminary Injunction to Procure Codes or Alternatively	10/01/2012	4	JA000885-89

	Motion for Clarification and Request for OST			
23	Defendants' Reply to Cashman's Opposition to Motion for Summary Judgment	05/02/2012	2	JA000266-75
71	Defendants' Supplement to Motion to Expunge Lien and Opposition to Motion for Summary Judgment as to Lien and Bond Claims	04/02/2012	8-9	JA0001894-2065
89	Defendants' Trial Brief	01/16/2014	11	JA0002506-33
9	Errata to Amended Answer to Second Amended Complaint, Counterclaim and Crossclaim	11/10/2011	1	JA00098-99
110	Errata to Notice of Entry of Order Denying Cashman's Request for Costs Pursuant to NRS 18.020	09/02/2014	32	JA0007804-12

1	5	Errata to Second Amended Complaint	10/10/2011	1	JA00051-52
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4	99	Findings of Fact and Conclusions of Law	05/05/2014	31	JA0007714-29
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7	34	Findings of Fact and Conclusions of Law Based upon Counterclaimants Motion to Procure Codes	08/10/2012	2	JA000414-16
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12	61	Fourth Amended Complaint	01/10/2013	5	JA0001154-72
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14	91	Joint Pretrial Memorandum	01/16/2014	11	JA0002560-79
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16	92	Joint Trial Exhibit Index	01/21/2014	11	JA0002580-82
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19	92.J01	Joint Trial Exhibits	01/21/2014	11-27	JA0002583-6552
20	to				
21	92.J65				
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23	106	Judgment	08/18/2014	32	JA0007789-91
24					
25	101	Memorandum of Costs and Disbursements	05/13/2014	31	JA0007748-50
26					
27	94	Motion for Relief Pursuant to NRCP	03/20/2014	29	JA0007099-7112
28					



		60(b) and Motion for Attorneys' Fees and Costs Pursuant to NRS Ch. 108		
50	Motion to Amend Complaint	10/31/2012	5	JA0001040-76
12	Motion to Consolidate (re: Case A653029)	01/11/2012	1	JA000112-18
93	Non-Jury Trial Transcripts (for January 21, 2014 through January 24, 2014)	01/31/2014	27- 29	JA0006553- 7098
40	Notice of Appeal	09/13/2012	3	JA00610-19
102	Notice of Appeal	05/30/2014	32	JA0007751-72
111	Notice of Appeal	09/02/2014	32	JA0007813-29
105	Notice of Entry of Decision and Order	08/13/2014	32	JA0007782-88
76	Notice of Entry of Defendants' Motion for Summary Judgment of Surety Payment and License Bond Claims and Cashman's Countermotion for	05/06/2013	10	JA0002390-95

	Summary Judgment			
100	Notice of Entry of Findings of Fact and Conclusions of Law	05/06/2014	31	JA0007730-47
35	Notice of Entry of Findings of Fact and Conclusions of Law Based upon Counterclaimants Motion to Procure Codes	08/13/2012	2	JA000417-22
107	Notice of Entry of Judgment	08/21/2014	32	JA0007792-96
77	Notice of Entry of Order Denying Cashman's Motion for Summary Judgment on Defendants' Payment Bond Claim	05/06/2013	10	JA0002396- 2401
109	Notice of Entry of Order Denying Cashman's Request for Costs Pursuant to NRS 18.020	09/02/2014	32	JA0007799- 7804
26	Notice of Entry of Order Denying Defendants'	05/25/2012	2	JA000300-04

	Motion for Summary Judgment without Prejudice			
78	Notice of Entry of Order Denying Mojave's Motion to Expunge or Reduce Mechanic's Lien	05/06/2013	10	JA0002402-07
79	Notice of Entry of Order Denying QH Las Vegas, LLC, PQ Las Vegas, LLC, LWTIC Successor, LLC, and FC/LW Vegas Motion to Dismiss, or in the alternative, Motion for Summary Judgment	05/06/2013	10	JA0002408-13
87	Notice of Entry of Order Granting Cashman's Motion for Award of Attorneys' Fees and Costs Pursuant to NRS 108.2275	09/24/2013	10-11	JA0002498-2502
25	Notice of Entry of Order Granting Cashman's Motion to Amend Complaint	05/25/2012	2	JA000295-99

1	52	Notice of Entry of Order Granting Cashman's Motion to Stay or Suspend Order Granting in Part Motion for Preliminary Injunction to Procure Codes	11/02/2012	5	JA0001079-83
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8	60	Notice of Entry of Order Granting Motion to Amend Complaint	01/09/2013	5	JA0001149-53
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11	16	Notice of Entry of Order Granting Motion to Consolidate (Filed in A653029)	02/02/2012	1	JA000129-34
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16	114	Notice of Entry of Stipulation and Order for Dismissal of Defendants Fidelity and Deposit Company of Maryland and Travelers Casualty and Surety Company of America with Prejudice	05/11/2015	32	JA0007837-42
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26	57	Notice of Posting Bond	11/07/2012	5	JA0001112-16
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1	44	Notice of Posting Cost Bond	09/19/2012	4	JA000854-57
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3	33	Notice of Posting Security Bond	08/09/2012	2	JA000407-13
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5	82	Opposition to Cashman's Motion for Award of Attorneys' Fees and Costs Pursuant to NRS 108.2275	06/20/2013	10	JA0002462-74
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10	39	Opposition to Cashman's Motion for Reconsideration of Order Granting in Part Counter- claimants' Motion for Preliminary Injunction to Procure Codes or Alternatively Motion for Clarification and Request for OST	09/07/2012	2-3	JA000499-609
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20	96	Opposition to Motion for Relief Pursuant to NRCP 60(b) and Motion for Attorneys' Fees and Costs Pursuant to NRS Ch. 108	04/15/2014	30- 31	JA0007360- 7693
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26	58	Opposition to Motion to Amend Complaint	11/19/2012	5	JA0001117-26
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108	Order Denying Cashman’s Request for Costs Pursuant to NRS 18.020	09/02/2014	32	JA0007797-98
86	Order Granting Cashman’s Motion for Award of Attorneys’ Fees and Costs Pursuant to NRS 108.2275	09/20/2013	10	JA0002496-97
51	Order Granting Cashman’s Motion to Stay or Suspend Order Granting in Part Motion for Preliminary Injunction to Procure Codes	11/02/2012	5	JA0001077-78
75	Order Rescheduling Pretrial/Calendar Call	04/17/2013	10	JA0002388-89
18	Order Setting Civil Non-Jury Trial, Pre-Trial/Calendar Call	02/21/2012	1	JA000145-46
32	Order Setting Civil Non-Jury Trial, Pre-Trial/Calendar Call	08/06/2012	2	JA000405-06

1	84	Order Setting Civil Non-Jury Trial, Pre-Trial/Calendar Call	09/06/2013	10	JA0002488-90
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4	88	Order Setting Civil Non-Jury Trial, Pre-Trial/Calendar Call	10/1/2013	11	JA0002503-05
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8	90	Plaintiff's Trial Brief	01/16/2014	11	JA0002534-59
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10	66	QH Las Vegas, LLC, PQ Las Vegas, LLC, LWTIC Successor, LLC, and FC/LW Vegas Motion to Dismiss, or in the alternative, Motion for Summary Judgment	02/07/2013	5-6	JA0001241- 1355
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18	74	QH Las Vegas, LLC, PQ Las Vegas, LLC, LWTIC Successor, LLC, and FC/LW Vegas Reply to their Motion to Dismiss, or in the alternative, Motion for Summary Judgment	04/05/2013	9- 10	JA0002102- 2387
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26	81	QH Las Vegas, PQ Las Vegas, LWITC Successor and FC/LW Vegas'	06/11/2013	10	JA0002441-61
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	Answer to Fourth Amended Complaint			
59	Reply in Support of Motion to Amend Complaint	12/17/2012	5	JA0001127-48
31	Reply to Cashman's Opposition to Motion for Injunctive Relief or Writ of Possession	07/31/2012	2	JA000398-404
97	Reply to Cashman's Opposition to Motion for Relief Pursuant to NRCP 60(b) and Motion for Attorneys' Fees and Costs Pursuant to NRS Ch. 108	04/23/2014	31	JA0007694-7707
56	Reply to Cashman's Opposition to Motion to Expunge or Reduce Mechanic's Lien	11/02/2012	5	JA0001102-11
15	Scheduling Order	01/31/2012	1	JA000126-28
4	Second Amended Complaint	09/30/2011	1	JA00034-50
113	Stipulation and Order for	05/08/2015	32	JA0007834-36



	Dismissal of Defendants Fidelity and Deposit Company of Maryland and Travelers Casualty and Surety Company of America with Prejudice			
73	Supplement to Cashman's Supplement to its Countermotion for Summary Judgment on its Payment Bond and Mechanic's Lien Claims	04/05/2013	9	JA0002095-2101
24	Third Amended Complaint	05/24/2012	2	JA000276-94
36	Transcript of Proceedings for August 3, 2012	08/22/2012	2	JA000423-38
62	Transcript of Proceedings for November 9, 2012	01/11/2013	5	JA0001173-1203