

555 KW Cogeneration and Central Plant Project

Cogeneration Project

Electrical O&M Manual

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555 KW Cogeneration and Central Plant Project

Cogeneration Project

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GEN SET PERFORMANCE DATA [DM5209]

APRIL 19, 2005

Can't find what you're looking for? [Click here](#)Change Level:

Sales Model: 3512 SITA	Combustion: SI	Aspr: TA
Engine Power: 555 W/O F EKW 791 HP	Speed: 1,200 RPM	After Cooler: SCAC
Manifold Type: WC	Governor Type:	After Cooler Temp(F): 129
Turbo Quantity:	Engine App: GS	Turbo Arrangement:
Hertz: 60	Engine Rating: GS	Strategy:
Rating Type: CONTINUOUS	Certification: Rating not Certified	
Fuel: NAT GAS	Fuel Press (PSI): 25	Nox Level: CATALYST
IGN: EIS	JW Temp (F): 210	ELEK A/F CONT: YES
Cam Type: STD	Piston:	
CARB: DMPCO	C/R: 9.0:1	

General Performance Data

GEN PWR EKW	PERCENT LOAD	ENGINE POWER BHP	ENGINE BMEP PSI	FUEL RATE BTU/HR	FUEL RATE CFH	INTAKE MFLD TEMP DEG F	INTAKE MFLD P IN-HG	INTAKE AIR FLOW CFM	EXH MFLD TEMP DEG F	EXH STACK TEMP DEG F	EXH GAS FLOW CFM
555.0	100	791.2	165	7,817.064	6,837.6	139.1	52.5	1,105.4	1,187.1	892.4	3,100.6
416.3	75	593.4	124	8,248.204	5,412.0	136.4	43.3	879.3	1,121.5	836.6	2,359.0
277.5	50	395.6	83	8,990.331	3,930.9	135.5	32.5	635.7	1,042.2	789.8	1,649.2

Heat Rejection Data

GEN PWR EKW	PERCENT LOAD	REJ TO JW BTU/MN	REJ TO ATMOS BTU/MN	REJ TO EXHAUST BTU/MN	EXH RCOV TO BTU/MN	FROM AFT CLR BTU/MN	WORK ENERGY BTU/MN	LHV ENERGY BTU/MN	HHV ENERGY BTU/MN
555.0	100	42,937	3,640	20,473	15,582	2,445	33,553	103,105	114,650
416.3	75	36,510	3,014	15,241	11,260	1,649	25,165	81,608	90,707
277.5	50	28,947	2,445	10,578	7,507	512	16,777	59,258	65,912

EXHAUST Sound Data: 6.6 FEET

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
555.0	100	111	99	103	105	101	102	104	106	99

EXHAUST Sound Data: 23.0 FEET

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
555.0	100	97	88	91	92	89	91	91	91	84

EXHAUST Sound Data: 49.2 FEET

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
555.0	100	91	82	84	86	82	84	84	85	78

MECHANICAL Sound Data: 3.3 FEET

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
555.0	100	95	95	91	85	86	89	91	87	79

MECHANICAL Sound Data: 23.0 FEET

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
555.0	100	85	85	81	75	76	79	81	78	69

MECHANICAL Sound Data: 49.2 FEET

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
555.0	100	80	79	75	70	71	73	75	72	63

EMISSIONS DATA

Certification: Rating not Certified

Emissions data measurement is consistent with those described in EPA CFR 40 PART 86 SUBPART D AND ISO 8178-1 for measuring HC, CO, CO2 and NOX. These procedures are very similar to the methods described in EPA CFR 40 PART 60 APPENDIX A METHOD 25A for HYDROCARBONS, METHOD 10 for CO, METHOD 7E for NOX.

Data shown is based on steady state engine operating conditions of 25 Deg C, 96Kpa and NUMBER 2 diesel fuel with 35 Deg API and LHV of 42,780 KJ/KG.

To properly apply this data you must refer to performance parameter DM1176 for additional information...

EXHAUST STACK DIAMETER	394 IN
WET EXHAUST MASS	5,213.93 LB/HR
WET EXHAUST FLOW (983 DEG F STACK TEMP)	3,100.63 CFM
WET EXHAUST FLOW RATE (32 DEG F AND 29.98 IN HG)	1,056.00 STD CFM
DRY EXHAUST FLOW RATE (32 DEG F AND 29.98 IN HG)	967.62 STD CFM
FUEL FLOW RATE	114 CFM

RATED SPEED "Not to exceed data"

EKW	PERCENT LOAD	ENGINE POWER BHP	TOTAL NOX (AS NO2) LB/HR	TOTAL CO LB/HR	TOTAL HC LB/HR	NON- METH HC LB/HR	OXYGEN IN EXHAUST PERCENT	LAMBDA
555.0	100	791.2	18.41	18.05	3.09	0.46	0.30	.99
416.3	75	593.4	12.92	15.43	2.76	0.41	0.30	1.00
277.5	50	395.6	8.31	11.02	2.59	0.39	0.30	.99

Ambient Operating Temp. Altitude	Altitude Capability Data					
	50 F	58 F	86 F	104 F	122 F	NORMAL
0 F	791 hp	791 hp	791 hp	791 hp	791 hp	791 hp
820 F	791 hp	791 hp	791 hp	791 hp	791 hp	791 hp
1,640 F	791 hp	791 hp	791 hp	791 hp	791 hp	791 hp
2,461 F	791 hp	791 hp	791 hp	791 hp	791 hp	791 hp
3,281 F	791 hp	791 hp	791 hp	791 hp	778 hp	778 hp
4,101 F	791 hp	791 hp	791 hp	779 hp	755 hp	755 hp
4,921 F	791 hp	791 hp	780 hp	735 hp	732 hp	732 hp
5,741 F	791 hp	783 hp	756 hp	732 hp	709 hp	709 hp

Identification Reference and Notes

Engine Arrangement:		Lube Oil Press @ Rated Spd(PSI):	--
Effective Serial No:	5JD0001	Piston Speed @ Rated Eng SPD(FT/Min):	--
Primary Engine Test Spec:		Max Operating Altitude(FT):	--
Performance Parm Ref:	TM0001	PEEC Elect Control Module Ref	
Performance Data Ref:	DM5209	PEEC Personality Cont Mod Ref	
Aux Coolant Pump Perf Ref:			
Cooling System Perf Ref:		Turbocharger Model	TW6144-1.03
Certification Ref:		Fuel Injector	
Certification Year:		Timing-Static (DEG):	--
Compression Ratio:	9.0	Timing-Static Advance (DEG):	--
Combustion System:	SI	Timing-Static (MM):	--
Aftercooler Temperature (F):	129	Unit Injector Timing (MM):	--
Crankcase Blowby Rate(CFH):	--	Torque Rise (percent)	--
Fuel Rate (Rated RPM) No Load(Gal/HR):	--	Peak Torque Speed RPM	--
Lube Oil Press @ Low Idle Spd(PSI):	--	Peak Torque (LB/FT):	--

Reference
Number: DM5209 No data has been found...

Parameters
Reference: TM0001

GAS ENGINE PERFORMANCE

TOLERANCES:

AMBIENT AIR CONDITIONS AND FUEL USED WILL AFFECT THESE VALUES. EACH OF THE VALUES MAY VARY IN ACCORDANCE WITH THE FOLLOWING TOLERANCES:

POWER	+/-	3%
SPECIFIC FUEL CONSUMPTION	+/-	5%
FUEL RATE	+/-	5%
EXHAUST STACK TEMPERATURE	+/-	8%
INTAKE MANIFOLD ABSOLUTE PRESSURE - NA	+/-	5%
COMPRESSOR OUT ABSOLUTE PRESSURE - TA	+/-	5%
INTAKE MANIFOLD TEMPERATURE	+/-	3 DEG C
INLET AIR FLOW	+/-	5%
EXHAUST GAS FLOW	+/-	6%

CONDITIONS:

POWER FOR GAS ENGINES IS BASED ON FUEL HAVING A LHV OF 33.74 KJ/L (905 BTU/CU FT) AT 101 KPA (29.91 IN HG) AND 15 DEG C (59 DEG F). FUEL RATE IS BASED ON A CUBIC METER AT 100 KPA (29.61 IN HG) AND 15.6 DEG C (60.1 DEG F). AIR FLOW IS BASED ON A CUBIC FOOT AT 100 KPA (29.61 IN HG) AND 23 DEG C (77 DEG F). EXHAUST FLOW IS BASED ON A CUBIC FOOT AT 100 KPA (29.61 IN HG) AND STACK TEMPERATURE.

ENGINE PERFORMANCE IS OBTAINED IN ACCORDANCE WITH SAE J1995, ISO 3046/1, BS5514/1 AND DIN 6271/1 STANDARDS.

TRANSIENT RESPONSE DATA IS ACQUIRED FROM AN ENGINE/GENERATOR COMBINATION AT NORMAL OPERATING TEMPERATURE AND IN ACCORDANCE WITH ISO 3046/1 STANDARD AMBIENT CONDITIONS. ALSO IN ACCORDANCE WITH SAE J1995, BS5514/1 AND DIN 6271/1 STANDARD REFERENCE CONDITIONS.

ENGINES ARE EQUIPPED WITH STANDARD ACCESSORIES; LUBE OIL PUMP, JACKET WATER PUMP, SEPARATE CIRCUIT AFTERCOOLER WATER PUMP AND MAGNETO (EXCEPT EIS). POWER REQUIRED TO DRIVE AUXILIARIES MUST BE DEDUCTED FROM THE GROSS OUTPUT TO ARRIVE AT THE NET POWER AVAILABLE FOR THE EXTERNAL (FLYWHEEL OR GENERATOR) LOAD. TYPICAL AUXILIARIES INCLUDE COOLING FANS, AIR COMPRESSORS AND CHARGING ALTERNATORS. RATINGS MUST BE REDUCED TO COMPENSATE FOR ALTITUDE AND/OR AMBIENT TEMPERATURE CONDITIONS ACCORDING TO THE APPLICABLE DATA SHOWN ON THE PERFORMANCE DATA SET.

DEFINITIONS:

INDUSTRIAL CONTINUOUS - THE POWER AND SPEED CAPABILITY OF THE ENGINE WHICH CAN BE USED WITHOUT INTERRUPTION OR LOAD CYCLING.

GENERATOR SET CONTINUOUS - OUTPUT WHICH MAY BE UTILIZED CONTINUOUSLY WITHOUT LOAD CYCLING.

ALTITUDE:

ALTITUDE CAPABILITY - THE RECOMMENDED POWER VALUES FOR SUSTAINED ENGINE OPERATION AT SPECIFIC LEVELS AND AMBIENT TEMPERATURES.

COLUMN "N" DATA - THE FLYWHEEL POWER OUTPUT AT NORMAL AMBIENT TEMPERATURE.

AMBIENT TEMPERATURE - TO BE MEASURED AT THE AIR CLEANER AIR INLET DURING NORMAL ENGINE OPERATION.

NORMAL TEMPERATURE - THE NORMAL TEMPERATURE AT VARIOUS SPECIFIC ALTITUDE LEVELS FOUND ON TM2001.

HEAT REJECTION

TOLERANCES:

LHV OR HHV ENERGY	+/-	5%
WORK ENERGY	+/-	3%
REJECTION TO COOLANT	+/-	10%
REJECTION TO EXHAUST	+/-	10%
EXHAUST RECOVERY	+/-	10%
FROM OIL COOLER	+/-	20%
FROM AFTERCOOLER	+/-	5%
REJECTION TO ATMOSPHERE	+/-	50%

THE FOLLOWING FORMULAS APPLY WHEN DOING AN ENERGY BALANCE:

STANDARD TEMPERATURE SYSTEM

HHV ENERGY = REJ TO COOLANT + REJ TO ATMOS + REJ TO EXH +
FROM AFTCLR + WORK ENERGY

COGENERATION (HIGH TEMPERATURE) SYSTEM AND G3600

HHV ENERGY = REJ TO COOLANT + REJ TO ATMOS + REJ TO EXH +
FROM OIL CLR + FROM AFTCLR + WORK ENERGY

DEFINITIONS:

REJ TO COOLANT (JACKET WATER) - TOTAL AMOUNT OF HEAT PICKED UP BY THE ENGINE COOLING SYSTEM. FOR STANDARD TEMPERATURE SYSTEMS THE OIL COOLER HEAT REJECTION IS INCLUDED. FOR COGENERATION SYSTEM AND G3600 THE OIL COOLER IS SEPARATE FROM THE JACKET WATER. THEREFORE, THE OIL COOLER HEAT REJECTION IS NOT INCLUDED IN THE REJ TO COOLANT.

REJECTION TO EXHAUST - IS BASED ON COOLING EXHAUST STACK FLOW TO 25 DEG C (77 DEG F) AND IS USED IN THE ENERGY BALANCE.

EXHAUST RECOVERY - IS THE ENERGY AVAILABLE IF THE EXHAUST STACK FLOW IS COOLED TO 177 DEG C (350.6 DEG F).

CATERPILLAR

Caterpillar Confidential: Green

Content Owner: Alan Scott

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GEN SET PERFORMANCE DATA [CTM]

MARCH 03, 2005

Change Level: 02

Sales Model: 3512 SITA	Combustion: SI	Aspr: TA
Engine Power: 0 W/F EKW 555 W/O F EKW 791 HP	Speed: 1,200 RPM	After Cooler: SCAC
Manifold Type: WC	Governor Type:	After Cooler Temp(F): 129
Turbo Quantity:	Engine App: GS	Turbo Arrangement:
Hertz: 60	Engine Rating: GS	Strategy:
Rating Type: CONTINUOUS	Certification: Rating not Certified	
Fuel: NAT GAS	Fuel Press (PSI): 25	Nox Level: STD
IGN: EIS	JW Temp (F): 210	ELEK A/F CONT: NO
Cam Type: STD	Piston:	
CARB: IMPCO	C/R: 9.0:1	

General Performance Data

GEN PWR EKW	PERCENT LOAD	ENGINE POWER BHP	ENGINE BMEP PSI	FUEL RATE BTU-BHP/HR	FUEL RATE CFH	INTAKE MFLD TEMP DEG F	INTAKE MFLD P IN-HG	INTAKE AIR FLOW CFM	EXH MFLD TEMP DEG F	EXH STACK TEMP DEG F	EXH GAS FLOW CFM
555.0	100	791.2	165	7,499.010	6,557.2	140.2	53.7	1,165.4	1,152.7	869.0	3,192.4
416.3	75	593.4	124	7,887.743	5,175.4	138.2	43.3	889.9	1,120.5	838.4	2,383.7
277.5	50	395.6	83	8,502.647	3,717.9	137.3	32.2	660.4	1,035.9	786.2	1,691.6

Heat Rejection Data

GEN PWR EKW	PERCENT LOAD	REJ TO JW BTU/MN	REJ TO ATMOS BTU/MN	REJ TO EXHAUST BTU/MN	EXH RCOV TO BTU/MN	FROM AFT CLR BTU/MN	WORK ENERGY BTU/MN	LHV ENERGY BTU/MN	HHV ENERGY BTU/MN
555.0	100	39,013	3,640	20,359	15,582	2,275	33,553	98,840	109,929
416.3	75	33,326	3,014	15,071	11,374	1,479	25,165	78,025	86,783
277.5	50	26,046	2,445	10,407	7,621	398	16,777	56,074	62,329

EXHAUST Sound Data: 6.6 FEET

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
555.0	100	111	99	103	105	101	102	104	106	99

EXHAUST Sound Data: 23.0 FEET

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
555.0	100	97	88	91	92	89	91	91	91	84

EXHAUST Sound Data: 49.2 FEET

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
555.0	100	91	82	84	86	82	84	84	85	78

MECHANICAL Sound Data: 3.3 FEET

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
555.0	100	95	95	91	85	86	89	91	87	79

MECHANICAL Sound Data: 23.0 FEET

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCJ 8000HZ DB
555.0	100	85	85	81	75	76	79	81	78	69

MECHANICAL Sound Data: 49.2 FEET

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
555.0	100	80	79	75	70	71	73	75	72	63

EMISSIONS DATA

Certification: Rating not Certified

Emissions data measurement is consistent with those described in EPA CFR 40 PART 86 SUBPART D AND ISO 8178-1 for measuring HC, CO, CO₂ and NOX. These procedures are very similar to the methods described in EPA CFR 40 PART 60 APPENDIX A METHOD 25A for HYDROCARBONS, METHOD 10 for CO, METHOD 7E for NOX.

Data shown is based on steady state engine operating conditions of 25 Deg C, 96Kpa and NUMBER 2 diesel fuel with 35 Deg API and LHV of 42,780 KJ/KG.

To properly apply this data you must refer to performance parameter DM1176 for additional information...

EXHAUST STACK DIAMETER	--
WET EXHAUST MASS	5,465.25 LB/HR
WET EXHAUST FLOW (983 DEG F STACK TEMP)	3,192.45 CFM
WET EXHAUST FLOW RATE (32 DEG F AND 29.98 IN HG)	1,106.00 STD CFM
DRY EXHAUST FLOW RATE (32 DEG F AND 29.98 IN HG)	1,013.53 STD CFM
FUEL FLOW RATE	109 CFM

RATED SPEED "Not to exceed data"

EKW	PERCENT LOAD	ENGINE POWER BHP	TOTAL NOX (AS NO2) LB/HR	TOTAL CO LB/HR	TOTAL HC LB/HR	NON- METH HC LB/HR	OXYGEN IN EXHAUST PERCENT	LAMBDA
555.0	100	791.2	36.13	2.65	2.16	0.32	2.00	1.09
416.3	75	593.4	23.96	2.20	1.82	0.27	1.25	1.06
277.5	50	395.6	15.83	1.54	1.58	0.24	1.60	1.09

Ambient Operating Temp. Altitude	Altitude Capability Data					
	50 F	68 F	86 F	104 F	122 F	NORMAL
0 F	791 hp	791 hp	791 hp	791 hp	791 hp	791 hp
820 F	791 hp	791 hp	791 hp	791 hp	791 hp	791 hp
1,640 F	791 hp	791 hp	791 hp	791 hp	791 hp	791 hp
2,461 F	791 hp	791 hp	791 hp	791 hp	791 hp	791 hp
3,281 F	791 hp	791 hp	791 hp	791 hp	778 hp	778 hp
4,101 F	791 hp	791 hp	791 hp	779 hp	755 hp	755 hp
4,921 F	791 hp	791 hp	780 hp	755 hp	732 hp	732 hp
5,741 F	791 hp	783 hp	756 hp	732 hp	709 hp	709 hp

Identification Reference and Notes

Engine Arrangement:	Lube Oil Press @ Rated Spd(PSI):	--
Effective Serial No:	5JD0001 Piston Speed @ Rated Eng SPD(FT/Min):	--
Primary Engine Test Spec:	Max Operating Altitude(FT):	--
Performance Parm Ref:	TM0001 PEEC Elect Control Module Ref	
Performance Data Ref:	DM5207 PEEC Personality Cont Mod Ref	
Aux Coolant Pump Perf Ref:		
Cooling System Perf Ref:	Turbocharger Model	TW6144-L03
Certification Ref:	Fuel Injector	
Certification Year:	Timing-Static (DEG):	--
Compression Ratio:	9.0 Timing-Static Advance (DEG):	--
Combustion System:	SI Timing-Static (MM):	--
Aftercooler Temperature (F):	129 Unit Injector Timing (MM):	--
Crankcase Blowby Rate(CFH):	-- Torque Rise (percent)	--
Fuel Rate (Rated RPM) No Load(Gal/HR):	-- Peak Torque Speed RPM	--
Lube Oil Press @ Low Idle Spd(PSI):	-- Peak Torque (LB/FT):	--

Reference Number: DM5207 No data has been found...

Parameters Reference: TM0001

GAS ENGINE PERFORMANCE

TOLERANCES:

AMBIENT AIR CONDITIONS AND FUEL USED WILL AFFECT THESE VALUES. EACH OF THE VALUES MAY VARY IN ACCORDANCE WITH THE FOLLOWING TOLERANCES:

POWER	+/-	3%
SPECIFIC FUEL CONSUMPTION	+/-	5%
FUEL RATE	+/-	5%
EXHAUST STACK TEMPERATURE	+/-	8%
INTAKE MANIFOLD ABSOLUTE PRESSURE - NA	+/-	5%
COMPRESSOR OUT ABSOLUTE PRESSURE - TA	+/-	5%
INTAKE MANIFOLD TEMPERATURE	+/-	5 DEG C
INLET AIR FLOW	+/-	5%
EXHAUST GAS FLOW	+/-	6%

CONDITIONS:

POWER FOR GAS ENGINES IS BASED ON FUEL HAVING A LHV OF 33.74 KJ/L (905 BTU/CU FT) AT 101 KPA (29.91 IN HG) AND 15 DEG C (59 DEG F). FUEL RATE IS BASED ON A CUBIC METER AT 100 KPA (29.61 IN HG) AND 15.6 DEG C (60.1 DEG F). AIR FLOW IS BASED ON A CUBIC FOOT AT 100 KPA (29.61 IN HG) AND 25 DEG C (77 DEG F). EXHAUST FLOW IS BASED ON A CUBIC FOOT AT 100 KPA (29.61 IN HG) AND STACK TEMPERATURE.

ENGINE PERFORMANCE IS OBTAINED IN ACCORDANCE WITH SAE J1995, ISO 3046/1, BS5514/1 AND DIN 6271/1 STANDARDS.

TRANSIENT RESPONSE DATA IS ACQUIRED FROM AN ENGINE/GENERATOR COMBINATION AT NORMAL OPERATING TEMPERATURE AND IN ACCORDANCE WITH ISO 3046/1 STANDARD AMBIENT CONDITIONS. ALSO IN ACCORDANCE WITH SAE J1995, BS5514/1 AND DIN 6271/1 STANDARD REFERENCE CONDITIONS.

ENGINES ARE EQUIPPED WITH STANDARD ACCESSORIES; LUBE OIL PUMP, JACKET WATER PUMP, SEPARATE CIRCUIT AFTERCOOLER WATER PUMP AND MAGNETO (EXCEPT EIS). POWER REQUIRED TO DRIVE AUXILIARIES MUST BE DEDUCTED FROM THE GROSS OUTPUT TO ARRIVE AT THE NET POWER AVAILABLE FOR THE EXTERNAL (FLYWHEEL OR GENERATOR) LOAD. TYPICAL AUXILIARIES INCLUDE COOLING FANS, AIR COMPRESSORS AND CHARGING ALTERNATORS. RATINGS MUST BE REDUCED TO COMPENSATE FOR ALTITUDE AND/OR AMBIENT TEMPERATURE CONDITIONS ACCORDING TO THE APPLICABLE DATA SHOWN ON THE PERFORMANCE DATA SET.

DEFINITIONS:

INDUSTRIAL CONTINUOUS - THE POWER AND SPEED CAPABILITY OF THE ENGINE WHICH CAN BE USED WITHOUT INTERRUPTION OR LOAD CYCLING.

GENERATOR SET CONTINUOUS - OUTPUT WHICH MAY BE UTILIZED CONTINUOUSLY WITHOUT LOAD CYCLING.

ALTITUDE:

ALTITUDE CAPABILITY - THE RECOMMENDED POWER VALUES FOR SUSTAINED ENGINE OPERATION AT SPECIFIC LEVELS AND AMBIENT TEMPERATURES.

COLUMN 'N' DATA - THE FLYWHEEL POWER OUTPUT AT NORMAL AMBIENT TEMPERATURE.

AMBIENT TEMPERATURE - TO BE MEASURED AT THE AIR CLEANER AIR INLET DURING NORMAL ENGINE OPERATION.

NORMAL TEMPERATURE - THE NORMAL TEMPERATURE AT VARIOUS SPECIFIC ALTITUDE LEVELS FOUND ON TM2001.

HEAT REJECTION

TOLERANCES:

LMV OR HMV ENERGY	+/-	5%
WORK ENERGY	+/-	1%
REJECTION TO COOLANT	+/-	10%
REJECTION TO EXHAUST	+/-	10%
EXHAUST RECOVERY	+/-	10%
FROM OIL COOLER	+/-	20%
FROM AFTERCOOLER	+/-	5%
REJECTION TO ATMOSPHERE	+/-	50%

THE FOLLOWING FORMULAS APPLY WHEN DOING AN ENERGY BALANCE:

STANDARD TEMPERATURE SYSTEM

HMV ENERGY = REJ TO COOLANT + REJ TO ATMOS + REJ TO EXH +
FROM APTCLR + WORK ENERGY

COGENERATION (HIGH TEMPERATURE) SYSTEM AND G3600

HMV ENERGY = REJ TO COOLANT + REJ TO ATMOS + REJ TO EXH +
FROM OIL CLR + FROM APTCLR + WORK ENERGY

DEFINITIONS:

REJ TO COOLANT (JACKET WATER) - TOTAL AMOUNT OF HEAT PICKED UP BY THE ENGINE COOLING SYSTEM. FOR STANDARD TEMPERATURE SYSTEMS THE OIL COOLER HEAT REJECTION IS INCLUDED. FOR COGENERATION SYSTEM AND G3600 THE OIL COOLER IS SEPARATE FROM THE JACKET WATER. THEREFORE, THE OIL COOLER HEAT REJECTION IS NOT INCLUDED IN THE REJ TO COOLANT.

REJECTION TO EXHAUST - IS BASED ON COOLING EXHAUST STACK FLOW TO 25 DEG C (77 DEG F) AND IS USED IN THE ENERGY BALANCE.

EXHAUST RECOVERY - IS THE ENERGY AVAILABLE IF THE EXHAUST STACK FLOW IS COOLED TO 177 DEG C (350.6 DEG F).



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ENGINE TEST [CTM]**MARCH 03, 2005**

Sales Model: 3512

Built Date: Oct2004

Tested Date: Nov2004

Shipped Date: Nov2004

Tested: LB

Plant: Lafayette

Test Number: 01

Cell Number: 09

Test Element	Test Value	Spec Value	Label
Spec Number	0K3332	0K3332	
Arrangement Number	1992605	1992605	
CORR FL PWR	793	790	HP
Speed	1,201	1,200	RPM
CORR FL FUEL RATE	95,141.2	97,862.1	BTU/MIN
CSFC	7,198	7,421	BTU/HP-H
Jacket Water Temp	192	192	F
IN SCAC H2O	133	127	F
Compressor Out Pressure	27.70	28.28	PSIA
Inlet Manifold Pressure	25.09	26.11	PSIA
Excess Oxygen	2.2	2.0	%
Nox Level	102		PPM
FL Oil Press	60	59	PSI
High Speed	1,199	1,200	RPM
Diff Fuel Pressure High	0.25	0.22	PSI
Low Idle Speed	803	800	RPM
Low Idle Oil Pressure	57	57	PSI
Fuel Pressure	42	42	PSIA
Timing BTDC			DEG

CATERPILLAR

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TEST SPEC [CTM]**MARCH 03, 2005**

Reference Number: 0K3332

Model: G3512 SI TA SCAC

Make from Spec:

Test Spec Data				
Description	Measure	Nominal	Ceiling	Floor
Corr Full Load Power	hp	790	813	766
Full Load Speed	RPM	1200	1210	1190
High Idle Speed	RPM	1200	1220	1180
Low Idle Speed	RPM	800	830	770
Corrected Fuel Rate	BTU/MIN	97,862	101,777	93,948
CSFC	BTU/HP.H	7,421	7,718	7,124
Corr Torq Rise at TC RPM	%			
Corr Torque at TC RPM	LB/FT	3,728	4,009	3,446
Torque Check Speed	RPM	1100	1110	1090
C Fuel Rate at TC RPM	GAL/HR			
CSFC at TC RPM	LB/HP.H			
Temp Jacket Water Pump Inlet	F	192	197	186
Delta T Jacket Water (out-in)	F	41	50	32
Inlet Manifold Temp	F			
Water Temp to Scac	F	127	132	122
Scac Water Flow	GAL/MIN			
Diff Fuel Pressure	SI PSI	0.16	0.28	0.04
Diff Fuel Pressure (High)	SI PSI	0.22	0.44	
Compressor Out Press	SI PSI	28.28	29.30	27.27
Inlet Manifold PR - ABS	SI PSI	26.11	27.12	25.09
Inlet Fuel Pr - ABS	SI PSI	42	51	33
Excess Oxygen	SI %	2.0	2.2	1.8
Oil Pressure	PSI	59	68	50
Oil Pressure Low Idle	PSI	57	71	42
Oil Temp to Bearings	F			
Throttle Angle	DEG	55	65	50
Nox	PPM			