



April 8, 2021 Board Meeting

**GREEN SHEET ITEM - ATTACHMENT TO GENERAL
MANAGER'S REPORT**



Power Generation

Recommended Generator Report - C80D6C

Project - San Simeon CSD Well Gen

Comments -

Project Requirements

Frequency, Hz	: 60.0	Generators Running in Parallel	: 1
Duty	: Standby	Site Altitude, ft(m)	: 361(110)
Voltage	: 277/480, Series Wye	Site Temperature, °C	: 25
Phase	: 3	Max. Altr Temp Rise, °C	: 125
Fuel	: Diesel	Project Voltage Distortion Limit, %	: 10
Emissions	: EPA, stationary emergency application		

Calculated Individual Generator Set Load Running and Peak Requirements

Running kW	: 39.0	Max. Step kW	: 78.8 In Step 1	Cumulative Step kW	: 78.8
Running kVA	: 43.2	Max. Step kVA	: 152.1 In Step 1	Cumulative Step kVA	: 152.1
Running PF	: 0.9	Peak kW	: None	Cumulative Peak kW	: None
Running NLL kVA	: 22.3	Peak kVA	: None	Cumulative Peak kVA	: None
Alternator kW	: 48.02			Pct Rated Capacity	: 48.8

Generator Set Configuration

Alternator	: UCD2G	Engine	: QSB5-G13
BCode	: B943	Fuel	: Diesel
Excitation	: PMG	Displacement, cu in. (Litre)	: 272.0(4.5)
Voltage Range	: 220/440-240/480	Cylinders	: 4
Number of Leads	: 6	Altitude Knee, ft(m)	: 4750(1448)
Reconnectable	: Yes	Altitude Slope, % per 1000ft(304.8m)	: 2
Full Single Phase Output	: No	Temperature Knee, °F(°C)	: 104(40)
Increased Motor Starting	: No	Temperature Slope, % per 18°F(10.0°C)	: 16
Extended Stack	: No	Emissions	: *
		Cooling Package	: High Ambient

*Note: Consult your Cummins Power Generation Distributor for more information.

Set Performance

Load Requirements

Running At	: 48.8% Rated Capacity		
Max. Step Voltage Dip, %	: 22	Max. Allowed Step Voltage Dip	: 35 In Step 1
Max. Step Frequency Dip, %	: 11	Max. Allowed Step Frequency Dip	: 12 In Step 1
Peak Voltage Dip, %	:	Peak Voltage Dip Limit %	: 35.0
Peak Frequency Dip, %	:	Peak Frequency Dip Limit %	: 12
Site Rated Standby kW/kVA	: 80 / 100	Running kW	: 39.0
		Running kVA	: 43.2
Site Rated Max. SkW	: 95	Effective Step kW	: 66.4
Max. SkVA	: 306	Effective Step kVA	: 152.1
Temp Rise at Full Load, °C	: 120	Percent Non-Linear Load	: 52.0
Voltage Distortion	: 3.3	Voltage Distortion Limit	: 10
Site Rated Max Step kW Limit	:	Max Step kW	:

*Note: Higher temperature rise at full rated load.

*Note: All generator set power derates are based on open generator sets.



Power Generation

Loads Summary Report

Project - San Simeon CSD Well Gen

Comments -

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Voltage	: 277/480, Series Wye	Site Temperature, °C	: 25
Phase	: 3	Max. Altr Temp Rise, °C	: 125
Fuel	: Diesel	Project Voltage Distortion Limit, %	: 10
Emissions	: EPA, stationary emergency application		

Loads Summary List

*Note: Detailed Loads and Step Report available below

Step No.	Load Name	Quantity	Running		Starting		Peak		Dip Limits, %		VTHD% Limit
			kW	kVA	kW	kVA	kW	kVA	Vdip	Fdip	
Step01	Well 1	1	18.65	20.96	58.41	129.8	None	None	35.0	12.0	0.0
Step01	CIP Pump	1	12.43	13.81	12.43	13.81	None	None	35.0	12.0	10.0
Step01	UPS Load 1	1	1.73	1.92	1.73	1.92	None	None	35.0	12.0	10.0
Step01	Light Load + Reservoir SCADA	1	5.7	6.0	5.7	6.0	None	None	35.0	12.0	10.0
Step01	Battery Charger Load 1	1	0.5	0.56	0.5	0.56	None	None	35.0	12.0	10.0
Step Summary			39.0	43.0	79.0	152.0	None	None	35.0	12.0	10.0
Project Summary			Running		Max Starting		Cumulative Step		Cumulative Peak		Project VTHD% Limit
			kW	kVA	kW	kVA	kW	kVA	kW	kVA	
			39.0	43.2	78.8	152.1	78.8	152.1	0.0	0.0	

*Note: Detailed Loads and Step Report available below



Power Generation

Loads and Steps Detail Report
 Project - San Simeon CSD Well Gen
 Comments -

Project Requirements

Frequency, Hz	: 60.0	Generators Running in Parallel	: 1
Duty	: Standby	Site Altitude, ft(m)	: 361(110)
Voltage	: 277/480, Series Wye	Site Temperature, °C	: 25
Phase	: 3	Max. Altr Temp Rise, °C	: 125
Fuel	: Diesel	Project Voltage Distortion Limit, %	: 10
Emissions	: EPA, stationary emergency application		

Calculated Individual Generator Set Load Running and Peak Requirements

Running kW	: 39.0	Max. Step kW	: 78.8 In Step 1	Cumulative Step kW	: 78.8
Running kVA	: 43.2	Max. Step kVA	: 152.1 In Step 1	Cumulative Step kVA	: 152.1
Running PF	: 0.9	Peak kW	: None	Cumulative Peak kW	: None
Running NLL kVA	: 22.3	Peak kVA	: None	Cumulative Peak kVA	: None
Alternator kW	: 48.02				

Step1

Calculated Individual Generator Set Step Load Requirements

Running kW	: 39.0	Starting kW	: 79.0	Cumulative Step kW	: 79.0
Running kVA	: 43.0	Starting kVA	: 152.0	Cumulative Step kVA	: 152.0
Running Amps	: 52.0	Starting Non-linear kVA	: 22.0		
Running Non-linear kVA	: 22.0				
Alternator kW	: 48.02				
Voltage Distortion Limit for step	: 10				

Well 1		Three Phase	Quantity	: 1 In this Step
Category	: Motor			

Running kW	: 18.65	Starting kW	: 58.41	Peak kW	: None
Running kVA	: 20.96	Starting kVA	: 129.8	Peak kVA	: None
Running PF	: 0.89	Starting PF	: 0.45	Cyclic	: No
Running Amps	: 58.25	Max. % Voltage Dip	: 35.0	Max. % Frequency Dip	: 12.0
Alternator kW	: 18.65			Voltage	: 208
Shaft Hp	: 22.0	Method	: Across the line		
Shaft kW	: 16.41	Low Inertia	: No		
Efficiency (%)	: 0.88	LRkVA Factor	: 5.9		
Design	: Standard NEMA Design B,C or D	LRkVA Code	: G		
Load Factor	: 100.0				

CIP Pump		Three Phase	Quantity	: 1 In this Step	
Category	: Motor				
Running kW	: 12.43	Starting kW	: 12.43	Peak kW	: None
Running kVA	: 13.81	Starting kVA	: 13.81	Peak kVA	: None
Running PF	: 0.9	Starting PF	: 0.9	Cyclic	: No
Running Amps	: 16.63	Max. % Voltage Dip	: 35.0	Max. % Frequency Dip	: 12.0
Running NLL kVA	: 13.81				
Starting NLL kVA	: 13.81			Voltage	: 480
Alternator kW	: 16.99				
Shaft Hp	: 15.0	Type	: Variable Frequency Drive		
Shaft kW	: 11.19	Ramp Details	: None		
Rectifier Type	: 12 pulse filtered	THDI %	: 7		
Efficiency (%)	: 0.9	THDV %	: 10		
Load Factor	: 100.0				
UPS Load 1		Single Phase	Quantity	: 1 In this Step	
Category	: UPS				
Running kW	: 1.73	Starting kW	: 1.73	Peak kW	: None
Running kVA	: 1.92	Starting kVA	: 1.92	Peak kVA	: None
Running PF	: 0.9	Starting PF	: 0.9	Cyclic	: No
Running Amps	: 16.0	Max. % Voltage Dip	: 35.0	Max. % Frequency Dip	: 12.0
Running NLL kVA	: 1.92				
Starting NLL kVA	: 1.92			Voltage	: 120
Alternator kW	: 2.93				
Output Rated kVA	: 1.5	Loading Factor %	: 100		
Efficiency (%)	: 0.9	Battery Charging Rate (%)	: 15		
Ramp Details	: None	Rectifier Type	: 4 pulse		
THDI %	: 45	THDV %	: 10		
Light Load + Reservoir SCADA		Single Phase	Quantity	: 1 In this Step	
Category	: Light - LED				
Running kW	: 5.7	Starting kW	: 5.7	Peak kW	: None
Running kVA	: 6.0	Starting kVA	: 6.0	Peak kVA	: None
Running PF	: 0.95	Starting PF	: 0.95	Cyclic	: No
Running Amps	: 50.0	Max. % Voltage Dip	: 35.0	Max. % Frequency Dip	: 12.0
Running NLL kVA	: 6.0				
Starting NLL kVA	: 6.0			Voltage	: 120
Alternator kW	: 8.6				
Battery Charger Load 1		Single Phase	Quantity	: 1 In this Step	
Category	: Battery Charger				
Running kW	: 0.5	Starting kW	: 0.5	Peak kW	: None
Running kVA	: 0.56	Starting kVA	: 0.56	Peak kVA	: None
Running PF	: 0.9	Starting PF	: 0.9	Cyclic	: No
Running Amps	: 4.67	Max. % Voltage Dip	: 35.0	Max. % Frequency Dip	: 12.0
Running NLL kVA	: 0.56				

Starting NLL kVA : 0.56

Alternator kW : 0.85

Voltage : 120

Output kW : 0.5

Efficiency (%) : 0.9

Rectifier Type : 4 pulse

THDI % : 45

THDV % : 10



Power Generation

Steps and Dips Details Report

Project - San Simeon CSD Well Gen

Project Requirements

Frequency, Hz	: 60.0	Generators Running in Parallel	: 1
Duty	: Standby	Site Altitude, ft(m)	: 361(110)
Voltage	: 277/480, Series Wye	Site Temperature, °C	: 25
Phase	: 3	Max. Altr Temp Rise, °C	: 125
Fuel	: Diesel	Project Voltage Distortion Limit, %	: 10
Emissions	: EPA, stationary emergency application		

Calculated Individual Generator Set Load Running and Peak Requirements

Running kW	: 39.0	Max. Step kW	: 78.8 In Step 1	Cumulative Step kW	: 78.8
Running kVA	: 43.2	Max. Step kVA	: 152.1 In Step 1	Cumulative Step kVA	: 152.1
Running PF	: 0.9	Peak kW	: None	Cumulative Peak kW	: None
Running NLL kVA	: 22.3	Peak kVA	: None	Cumulative Peak kVA	: None
Alternator kW	: 48.02				

Generator Set Configuration

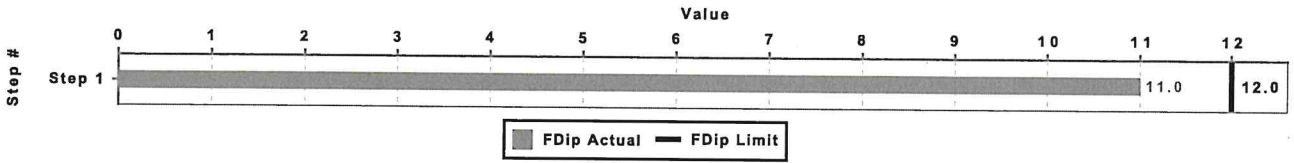
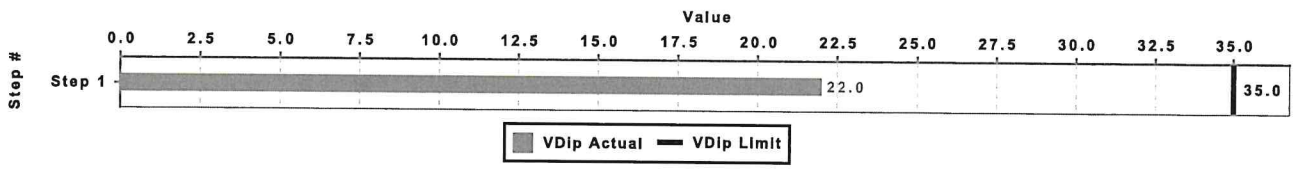
Model	: C80D6C	Alternator	: UCD2G
Engine Model	: QSB5-G13	Excitation	: PMG
Fuel	: Diesel		High Ambient

Step Level Dips Summary

Step #	Voltage Dip Limit (%)	Expected Step Voltage Dip (%)	Voltage Recovery Time (s) **	Frequency Dip Limit (%)	Expected Frequency Dip (%)	Frequency recovery Time (s) **
1	35	22	1.3	12	11	2.5

Note: Please refer to the model Spec. sheet for bandwidths used to report recovery times. For products manufactured in the United Kingdom it may be assumed that recovery times are based on ISO8528-5 G2 class bandwidths. Voltage and frequency recovery times are estimates. Typically, allow five to ten seconds between application of load steps when designing your system.

**Please note that in some cases the voltage and frequency recovery time estimates are not shown in list. This is a result of "dummy" data points temporarily being used to fill data gaps in the GenSize database. Please disregard these blank results.





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Phase	: 3	Max. Altr Temp Rise, °C	: 125
Fuel	: Diesel	Project Voltage Distortion Limit, %	: 10
Emissions	: EPA, stationary emergency application		

Calculated Individual Generator Set Load Running and Peak Requirements

Running kW	: 39.0	Max. Step kW	: 78.8 In Step 1	Cumulative Step kW	: 78.8
Running kVA	: 43.2	Max. Step kVA	: 152.1 In Step 1	Cumulative Step kVA	: 152.1
Running PF	: 0.9	Peak kW	: None	Cumulative Peak kW	: None
Running NLL kVA	: 22.3	Peak kVA	: None	Cumulative Peak kVA	: None
Alternator kW	: 48.02			Pct Rated Capacity	: 48.8

Generator Set Configuration

Alternator	: UCD2G	Engine	: QSB5-G13
BCode	: B943	Fuel	: Diesel
Excitation	: PMG	Displacement, cu in. (Litre)	: 272.0(4.5)
Voltage Range	: 220/440-240/480	Cylinders	: 4
Number of Leads	: 6	Altitude Knee, ft(m)	: 4750(1448)
Reconnectable	: Yes	Altitude Slope, % per 1000ft(304.8m)	: 2
Full Single Phase Output	: No	Temperature Knee, °F(°C)	: 104(40)
Increased Motor Starting	: No	Temperature Slope, % per 18°F(10.0°C)	: 16
Extended Stack	: No	Emissions	: *
		Cooling Package	: High Ambient

*Note: Consult your Cummins Power Generation Distributor for more information.

Set Performance

Load Requirements

Running At	: 48.8% Rated Capacity		
Max. Step Voltage Dip, %	: 22	Max. Allowed Step Voltage Dip	: 35 In Step 1
Max. Step Frequency Dip, %	: 11	Max. Allowed Step Frequency Dip	: 12 In Step 1
Peak Voltage Dip, %	:	Peak Voltage Dip Limit %	: 35.0
Peak Frequency Dip, %	:	Peak Frequency Dip Limit %	: 12
Site Rated Standby kW/kVA	: 80 / 100	Running kW	: 39.0
		Running kVA	: 43.2
Site Rated Max. SkW	: 95	Effective Step kW	: 66.4
Max. SKVA	: 306	Effective Step kVA	: 152.1
Temp Rise at Full Load, °C	: 120	Percent Non-Linear Load	: 52.0
Voltage Distortion	: 3.3	Voltage Distortion Limit	: 10
Site Rated Max Step kW Limit	:	Max Step kW	:

*Note: Higher temperature rise at full rated load.

*Note: All generator set power derates are based on open generator sets.



Power Generation

Loads Summary Report

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Phase	: 3	Max. Altr Temp Rise, °C	: 125
Fuel	: Diesel	Project Voltage Distortion Limit, %	: 10
Emissions	: EPA, stationary emergency application		

Loads Summary List

*Note: Detailed Loads and Step Report available below

Step No.	Load Name	Quantity	Running		Starting		Peak		Dip Limits, %		VTHD% Limit
			kW	kVA	kW	kVA	kW	kVA	Vdip	Fdip	
Step01	Well 1	1	18.65	20.96	58.41	129.8	None	None	35.0	12.0	0.0
Step01	CIP Pump	1	12.43	13.81	12.43	13.81	None	None	35.0	12.0	10.0
Step01	UPS Load 1	1	1.73	1.92	1.73	1.92	None	None	35.0	12.0	10.0
Step01	Light Load + Reservoir SCADA	1	5.7	6.0	5.7	6.0	None	None	35.0	12.0	10.0
Step01	Battery Charger Load 1	1	0.5	0.56	0.5	0.56	None	None	35.0	12.0	10.0
Step Summary			39.0	43.0	79.0	152.0	None	None	35.0	12.0	10.0
Project Summary			Running		Max Starting		Cumulative Step		Cumulative Peak		Project VTHD% Limit
			kW	kVA	kW	kVA	kW	kVA	kW	kVA	
			39.0	43.2	78.8	152.1	78.8	152.1	0.0	0.0	10.0

*Note: Detailed Loads and Step Report available below



Power Generation

Loads and Steps Detail Report

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Emissions	: EPA, stationary emergency application		

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Running PF	: 0.9	Peak kW	: None	Cumulative Peak kW	: None
Running NLL kVA	: 22.3	Peak kVA	: None	Cumulative Peak kVA	: None
Alternator kW	: 48.02				

Step1

Calculated Individual Generator Set Step Load Requirements

Running kW	: 39.0	Starting kW	: 79.0	Cumulative Step kW	: 79.0
Running kVA	: 43.0	Starting kVA	: 152.0	Cumulative Step kVA	: 152.0
Running Amps	: 52.0	Starting Non-linear kVA	: 22.0		
Running Non-linear kVA	: 22.0				
Alternator kW	: 48.02				
Voltage Distortion Limit for step	: 10				

Well 1		Three Phase	Quantity	: 1 In this Step
Category	: Motor			

Running kW	: 18.65	Starting kW	: 58.41	Peak kW	: None
Running kVA	: 20.96	Starting kVA	: 129.8	Peak kVA	: None
Running PF	: 0.89	Starting PF	: 0.45	Cyclic	: No
Running Amps	: 58.25	Max. % Voltage Dip	: 35.0	Max. % Frequency Dip	: 12.0
Alternator kW	: 18.65			Voltage	: 208
Shaft Hp	: 22.0	Method	: Across the line		
Shaft kW	: 16.41	Low Inertia	: No		
Efficiency (%)	: 0.88	LRkVA Factor	: 5.9		
Design	: Standard NEMA Design B,C or D	LRkVA Code	: G		
Load Factor	: 100.0				

CIP Pump		Three Phase	Quantity	: 1 In this Step	
Category	: Motor				
Running kW	: 12.43	Starting kW	: 12.43	Peak kW	: None
Running kVA	: 13.81	Starting kVA	: 13.81	Peak kVA	: None
Running PF	: 0.9	Starting PF	: 0.9	Cyclic	: No
Running Amps	: 16.63	Max. % Voltage Dip	: 35.0	Max. % Frequency Dip	: 12.0
Running NLL kVA	: 13.81				
Starting NLL kVA	: 13.81			Voltage	: 480
Alternator kW	: 16.99				
Shaft Hp	: 15.0	Type	: Variable Frequency Drive		
Shaft kW	: 11.19	Ramp Details	: None		
Rectifier Type	: 12 pulse filtered	THDI %	: 7		
Efficiency (%)	: 0.9	THDV %	: 10		
Load Factor	: 100.0				
UPS Load 1		Single Phase	Quantity	: 1 In this Step	
Category	: UPS				
Running kW	: 1.73	Starting kW	: 1.73	Peak kW	: None
Running kVA	: 1.92	Starting kVA	: 1.92	Peak kVA	: None
Running PF	: 0.9	Starting PF	: 0.9	Cyclic	: No
Running Amps	: 16.0	Max. % Voltage Dip	: 35.0	Max. % Frequency Dip	: 12.0
Running NLL kVA	: 1.92				
Starting NLL kVA	: 1.92			Voltage	: 120
Alternator kW	: 2.93				
Output Rated kVA	: 1.5	Loading Factor %	: 100		
Efficiency (%)	: 0.9	Battery Charging Rate (%)	: 15		
Ramp Details	: None	Rectifier Type	: 4 pulse		
THDI %	: 45	THDV %	: 10		
Light Load + Reservoir SCADA		Single Phase	Quantity	: 1 In this Step	
Category	: Light - LED				
Running kW	: 5.7	Starting kW	: 5.7	Peak kW	: None
Running kVA	: 6.0	Starting kVA	: 6.0	Peak kVA	: None
Running PF	: 0.95	Starting PF	: 0.95	Cyclic	: No
Running Amps	: 50.0	Max. % Voltage Dip	: 35.0	Max. % Frequency Dip	: 12.0
Running NLL kVA	: 6.0				
Starting NLL kVA	: 6.0			Voltage	: 120
Alternator kW	: 8.6				
Battery Charger Load 1		Single Phase	Quantity	: 1 In this Step	
Category	: Battery Charger				
Running kW	: 0.5	Starting kW	: 0.5	Peak kW	: None
Running kVA	: 0.56	Starting kVA	: 0.56	Peak kVA	: None
Running PF	: 0.9	Starting PF	: 0.9	Cyclic	: No
Running Amps	: 4.67	Max. % Voltage Dip	: 35.0	Max. % Frequency Dip	: 12.0
Running NLL kVA	: 0.56				

Starting NLL kVA : 0.56

Alternator kW : 0.85

Voltage : 120

Output kW : 0.5

Efficiency (%) : 0.9

Rectifier Type : 4 pulse

THDI % : 45

THDV % : 10



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Steps and Dips Details Report

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Running NLL kVA	: 22.3	Peak kVA	: None	Cumulative Peak kVA	: None
Alternator kW	: 48.02				

Generator Set Configuration

Model	: C80D6C	Alternator	: UCD2G
Engine Model	: QSB5-G13	Excitation	: PMG
Fuel	: Diesel		High Ambient

Step Level Dips Summary

Step #	Voltage Dip Limit (%)	Expected Step Voltage Dip (%)	Voltage Recovery Time (s) **	Frequency Dip Limit (%)	Expected Frequency Dip (%)	Frequency recovery Time (s) **
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