JOR

SPECIFICATION SHEET

GENERATOR

JOB NO. 620606 ITEM NO. TG-200
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REQUISITION NO.
PURCHASE ORDER NO.
INQUIRY NO. 0301-4-670606
BY TRD DATE 4-22-87 REV. NO. D

APPLICABLE TO: ○ PROPOSAL ● PURCHASE ○ AS-BUILT

FOR
SITE

Generator Operating Conditions

12222 KVA 11000 KW 0.9 P.F. 1800 RPM
4160 Volts 3 Phase 60 Cycles

Duty: ✓ Continuous ____ Intermittent ____ Standby

Location: ✓ Indoor ✓ Heated ____ Under Roof
____ Outdoor ____ Un-heated ____ Partial Sides
____ Grade ✓ Mezzanine
____ Winterization Req'd. ____ Tropicalization Req'd.

Generator Construction

Type: ✓ Sync. ____ Induction

No. of Poles ✓ Type of Poles: ✓ Salient ____ Non-Salient

No. of Leads ____ Winding Connection: ____ Delta ____ Wye

Insulation Class: Standard Class F ____ Other

Temperature: 40°C Standard ____ Other

Temperature Rise: 80 °C

Parallel Operation: ____ Yes ✓ No

Enclosure: TEWAC ✓ Open Dripproof ____

Temperature Detectors: 6-STATOR WINDINGS & 2-EACH BEARING 100 OHM PLATINUM

Excitation: ✓ Rotating Brushless

Permanent Magnet Generator: ✓ Yes ____ No

Telephone Influence Factor: ✓ Standard ____ Special

Space Heaters: ____ No ✓ Yes 460 Volts

Surge Capacitors: ✓ Yes ____ No

Surge Arrestors: ✓ Yes ____ No

Motor Starting Requirement ____

APPLICABLE STANDARDS & SPECIFICATIONS:
NEMA SM24-1985
SP. 620606-4-3-01

TG-200

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FLUOR
DATA SHEET

SYNCHRONOUS GENERATORS

SHORT-TIME CAPABILITY (PER NEMA SM-12/SM-13):

	TIME		ARM. CUR.	
☐	_____	Sec.	_____	%
☐	_____	Sec.	_____	%
☐	_____	Sec.	_____	%
☐	_____	Sec.	_____	%

AUXILIARY REQUIREMENTS:

● COOLING WATER:
___ Fresh ___ Seawater ✓ Other COOLING TOW.
Supply Press. 40 PSIG Design 80 PSIG
Supply Temp. 82 °F Max. Return 150 °F

● INSTRUMENT AIR SUPPLY:
Press. 80 MIN, 100 NOR, 150 DES, PSIG Temp. _____ °F

○ CONTROL CURRENT:
D.C. Volts 125 Source Battery
A.C. Volts 120 Phase 1 Cycles HZ 60

● ELECTRIC POWER:
___ HP To ___ HP Volts 460 Ph 3 Cycles HZ 60
½ HP & Less ___ Volts 120 Ph 1 Cycles HZ 60

○ AUXILIARY MOTOR ENCLOSURE:
○ TEFC ○ Exp. Proof ● Drip Proof ○ Open
○ Other _____
Insulation Class F

● Electrical Area Class _____ Group ___ Div. _____
UNCLASSIFIED

TOTAL UTILITY CONSUMPTION:

☒ COOLING WATER:
Air Cooler(s) 205 GPM †S.O. Cooler(s) _____ GPM
☐ Instrument Air _____ SCFM
☐ Oil Heater: _____ KW _____ Volts _____ Ph _____ Hz
☐ Space Heater: 3 KW 240 Volts 3 Ph 60 Hz
†☐ Main S.O. Pump Motor _____ KW
†☐ Aux. S.O. Pump Motor _____ KW

TIE-IN EQUIPMENT:

	LOCATION
● Differential Current Transformers	GEN TERM. BOX
● Relay Current Transformers	
○ Cross Current Current Transformers	
● Surge Capacitors	
● Lighting Arresters	
● Potential Transformers	

● Cables: Rated for 5000 Volts

MATERIALS OF CONSTRUCTION:

☐ Stator Core _____
☐ Rotor _____
☐ Collector Rings _____
☐ Shaft Seals _____

SHAFT:

☐ Diameter @ Exciter/Collector Rings (in.) _____
☐ Diameter @ Coupling (in.) _____
☐ Shaft End: ___ Tapered ___ Cylindrical

SHAFT SEALS:

☐ Type _____
☐ Seal System Type _____
☐ Buffer System Req'd.: ___ Start-up ___ Continuous
☐ Type Buffer Gas _____

ROTOR INERTIA:

☐ WK^2 _____ Lb-Ft^2

VIBRATION DETECTORS:

● Type PROXIMITY ☐ Model _____
● Mfr BENTLEY NEVADA
● No. at Each Shaft Bearing 2 Total No. 4
● Oscillator-Demodulators Supplied By _____
● Mfr _____ ☐ Model _____
● Monitor Supplied By DELAVAL
● Location _____ Enclosure PANEL
● Mfr BENTLEY NEVADA ☐ Model _____
☐ Scale Range ___ ○ Alarm: ☐ Set@ _____ Mils
○ Shutdown: ☐ Set @ ___ Mils ○ Time Delay _____ Sec.

AXIAL MOVEMENT DETECTOR:

○ Type _____ ☐ Model _____
○ Mfr _____ ○ No. Reqd. _____
○ Oscillator-Demodulators Supplied By _____
○ Mfr. _____ ☐ Model _____
○ Monitor Supplied By _____
○ Location _____ Enclosure _____
○ Mfr _____ ☐ Model _____
☐ Scale Range ___ ○ Alarm: ☐ Set @ _____ Mils
○ Shutdown: ☐ Set @ ___ Mils ○ Time Delay _____ Sec.

BEARING HOUSING CONSTRUCTION:

☐ Type (Separate, Integral) _____ Split ✓
☐ Material _____
● Insulation Req'd. YES ☐ Material _____

RADIAL BEARINGS:

☐ Type _____ Span (in.) _____
☐ Area (in.^{2}) _____ Loading (psi): Act. _____ Allow. _____

THRUST BEARING:

☐ Location _____ Type _____
☐ Mfr _____ Area (in.^{2}) _____
☐ Loading (psi): Actual _____ Allowable _____

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FLUOR
DATA SHEET

SYNCHRONOUS GENERATORS (Cont'd)

ENCLOSED COLLECTOR RINGS:

○ Purged: Medium ____ Press ____ PSIG
○ Explosion-Resistant Non-Purged
○ Forced Ventilation
☐ CFM ____ Press Drop ____ In. H_2O

BEARING TEMPERATURE DEVICES:

■ Type: ✓ R.T.D. ___Thermocouple ___Thermistor
■ Location: ___ Ea. Pad ___ Every Other Pad 2 PER BEARING
☐ Set @ ____°F for Alarm ____°F for Shutdown

SPACE HEATERS:

☐ ____ KW ○ ____ Volts ____ Phase ____ Cycles
○ Max. Sheath Temp. ____°F

WINDING TEMPERATURE DETECTORS

○ Thermistors: No. /Phase ____
○ Type: ___ Pos. Temp. Coeff. ___ Neg. Temp. Coeff.
○ Temperature Switch & Indicator by: ___ Purchr. ___ Mfr.
● Resistance Temperature Detectors: No./Phase 2
○ Resistance Matl. ____ ☐ ____ OHMS
● Selector Switch & Indicator By: ✓ Purchr. ___ Mfr. DELAVAL

○ Thermocouples: No./Phase ____
○ Selector Switch & Indicator By: ___ Purchr. ___ Mfr.
☐ Max. Stator Winding Temps.
____°F for Alarm ____°F for Shutdown

HUMIDITY DETECTOR:

☐ Model ____
☐ Set @ ____°F for Alarm ____°F for Shutdown

†LEAK DETECTOR:

☐ Model ____
☐ Set @ ____ for Alarm ____ for Shutdown

COUPLING

● Mount 1/2 Coupling ● Type DIAPHRAGM
☒ Mfr KOP-FLEX
☒ Spacer Reqd YES
● Coupling Furnished By DELAVAL
☐ Keyed (1) or (2); or Hydr. Fit ____
Generator Shaft: ___ Taper ___ Cylindrical
Driver Shaft: ___ Taper ___ Cylindrical
Coupling Guard: ___ Mfr. Std. ___ Other ____

CONNECTIONS:

SERVICE	NO.	SIZE	ANSI RATING	FACING
☒ Lube Oil Inlet	2	3/4"	150#	R.F.
☒ Lube Oil Outlet	2	1 1/2"	150#	R.F.
†☐ Seal Oil Inlet				
†☐ Seal Oil Outlet				
☒ Cooling Water Inlet	2	2 1/2	150#	R.F.
☒ Cooling Water Outlet	2	2 1/2	150#	R.F.
☐ Purge for:				
Brg. Housing				
Between Brg. & Seal				
† Between Seal & Gas				

CONTROL PANEL:

● Furnished By: ___ Vendor ✓ Purchaser ___ Others DELAVAL
● Mounting: ___ On Generator ✓ Free Standing Off Ground

BASEPLATE & SOLEPLATES:

○ Soleplates for: ___ Generator
● Baseplate, for: ___ Generator
○ Common (Under Gen., Gear & Driver)
● Under Gen. Only ○ Other ____
● Decked With Non-Skid Deck Plate ○ Open Constr.
● Drip Rim ● With Open Drain
● Horiz. Adjusting Screws for Equipment
○ Suitable for Point Support
● Suitable for Perimeter Support
● Foundation Bolts Furn. By: ___ Vendor ✓ Purchr. ___ Other FLUOR

SHOP INSPECTION AND TESTS:

	REQ'D	WITNESS
● Shop Inspection	X	X
○ Hydrostatic Piping	—	—
● Hydrostatic Cooler(s)	X	—
○ Rotor Balance: ___ Vacuum Pit ___ Std.	—	—
● Mechanical Run: ✓ W/Job Cplg. 1/2	X	X
● Gen. Run at Trip	X	X
○ Gen. Run at Overspeed	—	—
● Use Shop Driver	X	X
○ Use Job Driver	—	—
● Use Shop Lube & Seal System	X	X
○ Use Job Lube & Seal System	—	—
● Use Job Vib. & Axial Disp. Probes, Oscillator-Demodulators & Monitor	X	X
○ Use Shop Vibration Probes, etc.	—	—
● Open-Circuit Saturation	X	—
● Short-Circuit Saturation	X	—
● Insul. Resis. Field & Armature	X	—
● Cold Resis. Arm. & Field Windings	X	—
○ Phase Sequence & Volt. Balance	—	—
○ Short-Circuit @ Reduced Voltage	—	—
○ High-Potential Test	—	—
○ Check Brgs & Seals After Test	—	—
○ Noise Level Test	—	—
○ Auxiliary Equipment Test	—	—
● Test listed in Par 8.3 of Specs	X	—

PAINTING:

● Manufacturer's Standard
○ Others ____

REMARKS: ____

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FLUOR
DATA SHEET
SYNCHRONOUS GENERATORS
(Cont'd)

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REV. D DATE 4-22-87
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WEIGHTS:
- ☐ Generator 76,000 lbs.
- ☐ Rotor 17,240 lbs.
- † ☐ S.O. Console ____ lbs.
- ☐ Max. for Maintenance (Identify) Rotor 17,240 lbs.
- ☐ Total Shipping Weight ____ lbs.

MISCELLANEOUS:
- ○ Vendor's Review & Comments on Purchaser's Piping & Foundation
- ○ Optical Alignment Flats Required on Generator
- ○ Provisions for Field Balancing
- ○ Shipping Bearings Required
- ○ Frequency Controller Required

___ By Purchaser ___ By Vendor ___ By Other

SPACE REQUIREMENTS:
- ☐ Complete Unit: L ____ in. W ____ in. H ____ in.
- ☐ Control Panel: L ____ in. W ____ in. H ____ in
- † ☐ S.O. Console: L ____ in. W ____ in. H ____ in

SHIPMENT:
- ● Domestic
- ○ Export ○ Export Boxing Req'd
- ○ Outdoor Storage Over 6 Months
- ○ Waterproof Boxing Req'd

EXCITER & VOLTAGE REGULATOR

OPERATING CONDITIONS:

Rating:
☐ ____ KW ☐ ____ Volts ☐ ____ Amps
- ● Automatic Voltage Regulation (±%)
  Steady State ____ Transient ____
- ○ Manual Voltage Regulation
  ____ % to ____ % of Rated Voltage @ Rated Load

GENERATOR CURRENT @ RATED LOAD:
- ☐ Field ____ AMPS
- ☐ Terminal ____ AMPS

VOLTAGE REGULATOR:
- ☐ ____ Volts
- ☐ Type Unit ○ Static ○ Mechanical
- ☐ Time Constant ____ Sec.
- ☐ Input-Filter Time Constant ____ Sec.
- ☐ Stabilizing Circuit Time Constant ____ Sec.
- ☐ Amplifier Time Constant ____ Sec.
- ☐ Gain ____
- ☐ Stabilizing Circuit Gain ____

- ☐ Type Unit: √ Static √ Rotating Brushless
- ☒ Permanent Magnet Generator (PMG)
- ☐ Cooling Medium: ___ Air ___ Hydrogen ___ Water
  ___ Direct-Cooled ___ Indirect-Cooled
- ● Insulation Class F (Typ. 5[illegible]

TEMPERATURE RISE:
- ● Maximum above 104 °F:
  - ☐ Exciter ____ °F By ____
  - ☐ Rectifer Units ____ °F By ____

TIE-IN EQUIPMENT: LOCATION
- ● Surge Capacitors ____
- ● Lightning Arresters ____
- ● Potential Transformers ____
- ● Current-Voltage Transformers ____
- ● Saturable Current Transformers ____
- ● Cables: Rated for 5000 Volts
  3-750 MCM Per Phase

CHARACTERISTICS:
- ☐ Exciter Constant Rel. to Self-Excited Field ____
- ☐ Exciter Ceiling ____ Volts ____ KW
- ☐ Exciter Time Constant ____ Sec.
- ☐ Exciter Response Ratio ____
- ☐ Exciter Saturation @ 1.0 Exciter Output Voltage ____
- ☐ Exciter Saturation @ .75 Exciter Output Voltage ____

REMARKS: ____

INSTRUMENTATION:
- ● Under Frequency Protection Req'd
- ○ Exciter Field Ammeter & Shunt
- ● Exciter Field Switch TRANSFER
- ○ Variable Transformer
- ● Voltage Adjust Rheostats