

# MTC100130449-0010-01

Siemens Industry, Inc.

Customer: Sulzer Pumps

SO# 3004419066-100,200,300

Document Title/Document #: Complete Test Report

Rev: AA

PURCHASER:	MEG ENERGY CORPORATION
END USER:	MEG ENERGY CORPORATION
PROJECT:	CHRISTINA LAKE REGIONAL PROJECT PHASE 3A- CENTRAL PLANT FACILITIES
CUSTOMER PO NO:	5411-01
SERVICE:	HIGH PRESSURE BOILER FEED WATER PUMP
SITE:	CHRISTINA LAKE REGIONAL PROJECT PHASE 3A
MOTOR TAG NO:	3A-PM-304A, 3A-PM-304B, 3A-PM-304C
PUMP OEM:	SULZER PUMPS (US) INC.
SULZER SAP NO./LINE ITEM NO.:	100130449-0010
SULZER PO NO:	4500572212

### COMPLETE TEST REPORT FOR INDUCTION MOTOR

Serial Number: 3004419066-100

Date of Test: January 27, 2016

Purchaser: Sulzer Pumps

Purchaser's Order Number: 4500572212-0

#### Nameplate Rating

Rated HP	Service Factor	Rated RPM	Rated Voltage	Freq (Hz)	Phase	Amps	Insul. Class	Temp Rise (°C)	Duty	Type	Frame
4425 (3300 KW)	1.0	3581	4000	60	3	560	F-VPI	85	Continuous	CGII	6813

#### Temperature Test

Conditions of Test					Temperature Rise, (°C)				
Hours Run	Line Voltage	Line Amperes	Cooling Air (°C)		Stator Winding Rise by	Temperature Rise	ODE Bearing	DE Bearing	
5.0	4064	560	27.5		Detector	67.3	38.0	28.3	

#### Test Characteristics

Rated Slip in Percent	No Load		Resistance between lines (ohms @ 25°C)
	Current (amperes)	Power (kilowatts)	
0.49	106.84	54.17	0.0399

#### Torque and Starting Current

Breakdown Torque (lb.-ft.)	Locked Rotor Torque	Starting Current	
13126	1570 lb.-ft. @ 61.6 %Volts	1766	Amps @ 61.6 % Volts

#### Efficiency & Power Factor

Load	Rated	75%	50%
Efficiency (%)	96.4	96.5	95.9
Power Factor (%)	89.4	88.5	84.4

#### Insulation Tests

Resistance Test		High Potential		
Megohms	Volts		Volts	Seconds
22400	5000		9000	60

#### No Load Vibration Levels<sup>1</sup>

Velocity Inch Per Second:

HOUSING:	Opposite Drive End (ODE)	Drive End (DE)
Vertical	0.009	0.018
Horizontal	0.071	0.098
Axial	0.010	0.015

Amplitude - Mils Peak-to-Peak:

SHAFT:	ODE	DE
Right - 45°	0.819	0.822
Left - 315°	0.473	0.553

<sup>1</sup> Unfiltered - Hot

#### Notes

- Noise Levels: Average Sound Pressure Level in Decibels at one meter: L (p) = 85 dBA at 1 meter after correction for ambient
- The bearings were inspected after test and the wear pattern was acceptable.
- Polarization Index: 3.74 @ 5000 volts

Data from test on this motor,

Issued By: Betty Koonce

Revision: AA

Siemens Industry, Inc.

Norwood Motor Plant

Report of Test for Induction Motor

Date of Test: January 27, 2016

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Order Number: 3004419066-100

Customer: Sulzer Pumps

### **UNBALANCE RESPONSE TEST:**

Unbalance response test performed with acceptable results.

There was a minimum 15% separation between critical and running speed when 5.4 ounce inches of unbalance were applied at each end of the rotor in phase and moved 90 degrees from the original placement.

<b>CUSTOMER NAME:</b>		<b>Sulzer Pumps</b>		<b>CUSTOMER NUMBER 100130449</b>		<b>DATE:</b>		<b>2/25/2016</b>	
<b>SIEMENS ORDER #:</b>		<b>3004419066-100 / 3A-PM-304A</b>		<b>SNCL/MEG PO# P5411-01</b>		<b>PREPARED BY:</b>		<b>Kim Knue</b>	
				<b>REV:</b>				<b>7</b>	

	<b>Action Codes:</b> <div style="display: flex; justify-content: space-between;"> <div> <b>CC</b>=Confirm Conformance  <b>DR/N</b>=Verifying Documents Retained / Not submitted  <b>DR/S</b>=Verifying Documents Retained / and Submitted to Customer </div> <div> <b>W</b>=Witnessed (Hold)  <b>RV</b>=Review Verifying Documents </div> </div>							

Ref	ACTIVITY REQUIRED	Loc.	REQUIREMENTS (Controlling Document)	ACCEPTANCE CRITERIA	VERIFYING DOCUMENT	ACTION			
						Siemens	SNC-L	MEG ENERGY	Sulzer
1.0	Motor Design	06	Data Sheet	Customer Receipt	Data Sheet	CC, DR/S	RV	RV	RV
2.0	Motor Configuration	06	OUT LINE NUMBER A5E32714720A	Customer Receipt	Certified Drawing	CC, DR/S	RV	RV	RV
3.0	Rotor Balancing	21	Engineering Specification: 51009475507 & 53683801401	Engineering Specifications	Balance Log	CC,DR/S	RV	RV	RV
					Residual unbalance	CC,DR/S	W	W	W
4.0	Coil Test	15	IEEE522 & Mfg. Method: M-15020	Pass/Fail	Routing	CC, DR/S	RV	RV	RV
5.0	Stator Test	16	IEEE522 & Mfg. Method: M-15020	Pass/Fail	Routing	CC, DR/S	RV	RV	RV
6.0	Air Gap Check	14	Item Sheet Value: +/- .180	Minimum - no less than 90% maximum, at each end	Master Operations Part control (routings)	CC, DR/N	RV	RV	RV
7.0	Assembly Inspection	14	CQF-11330 General Assembly Check List	QA Compliance	CQF 11330	CC, DR/N	RV	RV	RV
8.0	Motor Test See note 2 page 2	11	Engineering Specification Number(s): 53670200610 , 53670200471	Engineering Specifications	Test Reports	CC, DR/S	W	W	W
9.0	Final Inspection	54	Outline Drawing, Order Item sheets and Order Conformance System	Compliance Closure of Order Conformance System	Master Operations Part Control Routings	CC, DR/N	RV	RV	RV

CUSTOMER NAME: <b>Sulzer Pumps</b>	CUSTOMER NUMBER 100130449	DATE: 2/25/2016
SIEMENS ORDER #: <b>3004419066-100 / 3A-PM-304A</b>	PREPARED BY: <b>Kim Knue</b>	REV: 7

Action Codes:

CC=Confirm Conformance  
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SNCL/MEG PO# P5411-01

W=Witnessed  
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Item	SPECIAL REQUIREMENTS	VERIFYING DOCUMENT	ACTION			
			Siemens	SNC-L	MEG ENERGY	SULZER
1	Inspection & Test Plan		DR/S	RV	RV	RV
	TEST PROCEDURES 6 WEEKS PRIOR TO FINAL TEST		DR/S	RV	RV	RV
2	API 541 Complete Test 53670200610 (One unit only units 2 and 3 have API routine test only)		DR/S	W	W	W
3	Rotor Response-2 4.3.5.2.1 53670200471		DR/S	W	W	W
4	API541 4th: Complete surge test on coils after insertion, but before connecting.		DR/N	RV	RV	RV
5	Residual Unbalance Test on Rotor Per API 541 4th 2.4.6.3.6, 6.2.5.1 a with quote comments 53683801401 (First unit only as witness)		DR/S	W	W	W
6	Component Balance Per API 541 4th 4.3.6.3.1 with quote comments		DR/S	RV	RV	RV
7	Surge Comparison Test (4.3.4.2)		DR/N	RV	RV	RV
8	Check Balance with half Customer 1/2 coupling		DR/S	RV	RV	RV
9	Brg Dim Alignment check Before Test 4.3.2.1 j (First unit only as witness)		DR/S	RV	RV	W
10	Brg Dim Alignment check After Test 4.3.2.1 k (First unit only as witness)		DR/S	RV	RV	W
11	Vibration Recording 4.3.3.12 per quoted comments (First unit only as witness)		DR/S	W	W	W
12	Unbalance Response 4.3.5.3 (First unit only as witness)		DR/S	W	W	W
13	Shop Inspection for 1 motor.		DR/S	RV	RV	RV
14	Dimensions Inspection		DR/S	RV	RV	RV
15	Painting/Coating/Surface Finish/Profile Inspection		DR/S	RV	RV	RV
16	Visual Inspection		DR/S	RV	RV	RV
17	Shipment Packing and Marking inspection		DR/S	RV	RV	RV
18	Packing List		DR/S	RV	RV	RV
19	Nameplate Installation		DR/S	RV	RV	RV
20	Quality Surveillance Release		DR/S	RV	RV	RV
21	LCSA - LATERIAL CRITICAL SPEED ANALYSIS		DR/S	RV	RV	RV
Special Note: Purchase order Section IV " Seller Inspection requirements apply in conjunction with this applicable ITP except as noted on the latest quote comments/clarifications SNP00665-CokuKJ 3/14/2012						



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Print Certification

## Tollgate Tracking

**Order Data:**

Sales Order: 3004419066

Item: 100

Motor Status: **In Process**

Ship Date: N/A

Material: TYZ:API\_MOTOR\_H\_FA

Description: Final assembly, API horizontal motor

Customer Name: SULZER PUMPS (US) INC

Stator ID: 17.506

Rotor OD: **Motor Characteristics:**

Frame Size: 6813

Frame Type: CGII

Speed: 3600RPM

Voltage: 4000 V

Power: 3300 HP

Orientation: Horizontal

Bearing Type: K96

Rotor Construction: Copper Bar

**Previous TollGate(s):**[Stator Core](#)**Status:****Inspected By:****Date:****Coil**

◀ Custom Tollgate



Randolph, Michael

12/2/2014 8:12:05 AM

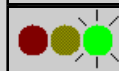
[Stator](#)

Lytle, Carl B

11/25/2014 10:25:35 AM

**Rotor**

◀ Custom Tollgate



Knue, Kimberly S

1/5/2015 10:32:08 AM

[Pre Assembly](#)

Braun, James R

11/3/2015 10:37:58 AM

**General Assembly**

◀ Custom Tollgate



Steinke, Kevin A

10/30/2015 9:12:16 AM

**Test**

◀ Custom Tollgate



271006

11/10/2015 9:47:33 PM

**Final Assembly**

◀ Custom Tollgate



Walker, Jeremy S

1/22/2016 10:57:40 AM



Walton, Duane M

2/12/2016 10:06:27 AM