


Form 1 OPGP04-ZE-0309/R20		<b>DESIGN CHANGE PACKAGE (DCP)</b>				Page 1 of <u>13</u>									
DCP # 08-15484-2		Supp # 0	As-built: <input type="checkbox"/>	Trend Code: N/A	Unit: 2	System: RD									
Major Mod <input type="checkbox"/> JPR cert. 9017	Minor Mod <input type="checkbox"/> JPR cert. 9017	MC Enhancement <input type="checkbox"/> JPR cert. 9016	MC Other <input checked="" type="checkbox"/> JPR cert. 9016	Paper Chg <input type="checkbox"/> JPR cert. 9015	Admin <input type="checkbox"/>										
DCP Title: Rod Drive MG Set -Motor 21 Replacement				<u>32380365</u>											
TPNS / TAG #'s affected: 7Z172ERD101A				TPNS# continued on pg. <u>N/A</u>											
<b>DCP Scope Summary:</b> <b>Problem Statement:</b> While replacing the bearing for Rod Drive MG Set motors #1 and #2, small cracks were found in the red epoxy resin material between the stator bar slots of motor#1. Also, found some slots have the red epoxy resin material and some without it. In motor #2, red epoxy resin material found between the stator bar slots in a few places but no cracks were present. Contacted System Engineering for visual inspection. <b>Problem solution:</b> Replace the degraded motor (Westinghouse) with a new motor type "RGE". Revise the affected documents EC05000, EC5001, EC 5002, EC 5031 and setpoint record for 7Z172ERD101A in Setpoint Index database. <b>Technical Justification</b> The new motor "RGE" with the stock code 609-222 has been considered for replacing the old motor (RG motor). Per the vendor the Siemens RGE motor have the same torque speed curves as the Siemens DP 10 motors. The DP10 motor curves are used for the "RGE" motor. The horse power, voltage, service factor, kVA code are same as old motor. The new motor is a high efficiency motor (95%). Breaker set points will be in accordance with the criteria outlined in EC 5031, Section IV. <b>FMEA</b> There are no additional failure modes or effects due to this design change. ZE-0312 is not required since this is a simple design change and does not impact any programs.															
Plant Impact / Special / Interdisciplinary Reviews:				Bounding 50.59 Document # N/A											
Simulator (U) only	Testing/Program Eng	Work Control	System Eng	Training	NPM	Risk Mgmt	Operations-Software	Operations-Procedures only)	Operations-ECOs	Operations Mgmt-Train.	Additional on Continuation Pg.	As-Built Required  <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		ZE-0312 Required  <input type="checkbox"/> Yes, CR/Action If "Yes", THEN user to refer to the DCP CR-Action to determine if ZE-0312 has been revoked. <input checked="" type="checkbox"/> No	
												Implementing Work Order Numbers: <u>367514 - WAN</u> <u>WO: 474680</u>			
															
Hari Kodali / <u>Haidkodali</u> <u>10/16/08</u> Responsible Engineer (print/sign)      Date												<u>KEITH FRANK</u> <u>Brian Mingle</u> <u>10-18-08</u> Supervising Engineer (print/sign)      Date			
JPR certification required - see classification above															
N/A												N/A			
Engineering Manager (print/sign)      Date												Plant Manager (print/sign)      Date			

Form 2 OPGP04-ZE-0309/R20	DCP# 08-15484-2	SUPP 0	Page 7 of 7
<b>DCP/DCN CONTINUATION PAGE</b>			

<b>Design Input</b>	<b>Source</b>
Breaker set point criteria	EC 5031, Section IV.
Motor data -kVA code 'G', Service Factor 1.15, S. F Amps 270 -FLA 235, HP 200, kW 149.2	New motor stock code 609-222.
Torque speed curves equivalency between new and old motor	Per telecon with Siemens. See attached e-mails.
480 load center and motor TPNS #s	9-E-PEAE-01#2 , Rev. 10

#### **Installation Instructions**

The setpoint change will be performed in accordance with the applicable procedure as referenced in SetPoint Index database.

#### **Post Installation Testing**

Post Installation testing will be performed in accordance with the procedure OPMP05-NA-0015

**Note:** Revision 8 to calculation EC05031 is being created per CR 08-2307, Action 13 and the changes required to EC05031 to make it to agree with the setpoint index as shown in DCN 0802081.

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PAGE 3 OF

**Kodali, Hari**

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**From:** Schimpf, Peter  
**Sent:** Wednesday, October 15, 2008 4:54 PM  
**To:** Lanik, Alan; Parker, Robert; Kodali, Hari  
**Cc:** Migl, Brian  
**Subject:** RE: 200hp, 4p dp10.pdf - Adobe Acrobat Professional  
**Attachments:** RSMG\_Acceleration.xls

Using the previously forwarded torque speed curve and the inertia 1700 lb-ft<sup>2</sup>, the accelerating time is:

11.8 seconds at full voltage  
18.5 seconds at 80% voltage.

(Calculation attached)

*Peter Schimpf*  
*STP Large Motor Engineer*  
*361-972-7741 or STP pager 1205*

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**From:** Schimpf, Peter  
**Sent:** Wednesday, October 15, 2008 4:01 PM  
**To:** Lanik, Alan; Parker, Robert; Kodali, Hari  
**Cc:** Migl, Brian  
**Subject:** FW: 200hp, 4p dp10.pdf - Adobe Acrobat Professional

Per Siemens (Mary Harris at 1-800-654-8801), the Siemens RG motors have the same torque speed curves as the Siemens DP10 motors.

Attached is the Siemens DP10 torque speed curve for 200 hp 200hp 360vac 1800 rpm 60-hz 3-phase Frame 445 TS NEMA Design B motor which should be the same as our RG motor of the same rating.

*Peter Schimpf*  
*STP Large Motor Engineer*  
*361-972-7741 or STP pager 1205*

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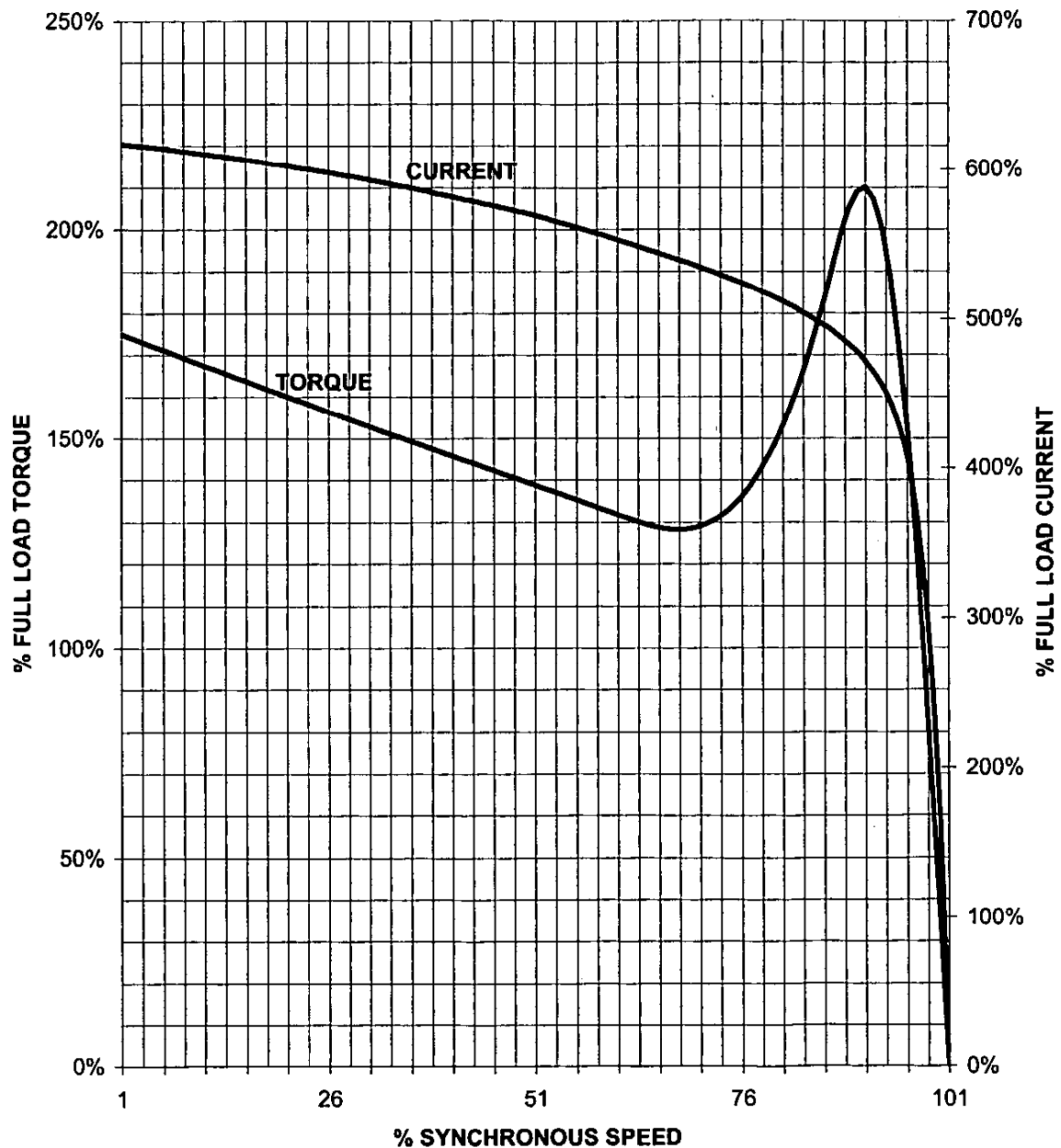
**From:** Harris, Mary SEA [mailto:mary.harris@siemens.com]  
**Sent:** Wednesday, October 15, 2008 3:28 PM  
**To:** Schimpf, Peter  
**Subject:** 200hp, 4p dp10.pdf - Adobe Acrobat Professional

10/15/2008

# SIEMENS ENERGY & AUTOMATION, INC.

HP 200 VOLTS 460 RPM 1800 TYPE DP10  
HZ 60 PHASE 3 FRAME 445 T/TS NEMA B

## TORQUE & CIRRENT VS. SPEED



CUSTOMER: \_\_\_\_\_ PO#: \_\_\_\_\_ ORDER#: \_\_\_\_\_

PERFORMANCE BASED ON DESIGN CALCULATIONS. SUBJECT TO CHANGE WITHOUT NOTICE.  
REV. 1

**SIEMENS ENERGY & AUTOMATION, INC.**  
**ELECTRICAL MOTOR DATA**

**CUSTOMER :**

**Order Number:**

**TYPE :** DP10

**HP :** 200

**VOLTAGE :** 460

**PHASE :** 3

**Hertz:** 60

**FRAME :** 445T

**SYNC. RPM :** 1800

**FULL LOAD RPM :** 1785

**EFFICIENCY :**

1/2	94.8
3/4	95.1
F.L.	95.0

**POWER FACTOR :**

1/2	73.5
3/4	81.5
F.L.	84.0

**FULL LOAD AMPS :** 235

**LOCKED ROTOR AMPS :** 1450

**FULL LOAD TORQUE (FT LB) :** 588

**STARTING TORQUE (FT LB) :** 1029

**BREAKDOWN TORQUE (FT LB) :** 1234.8

**INSULATION :** F

**SERVICE FACTOR :** 1.15

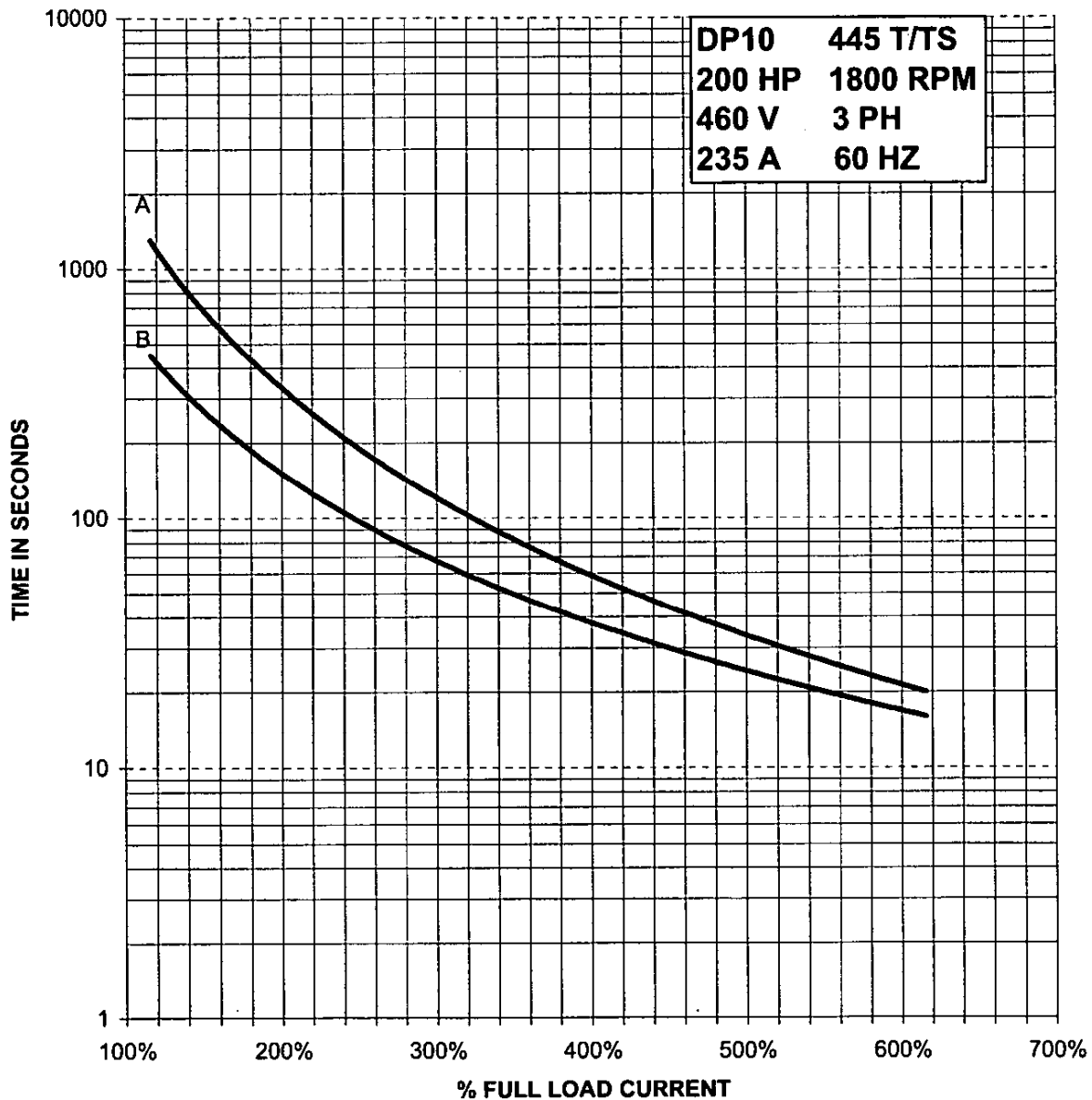
**AMBIENT TEMP :** 40 DEG C

# SIEMENS ENERGY & AUTOMATION, INC.

DCP08-15484-2 SUPP.0  
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CUSTOMER: \_\_\_\_\_ ORDER#: \_\_\_\_\_

## STALL TIME VS. CURRENT CURVE

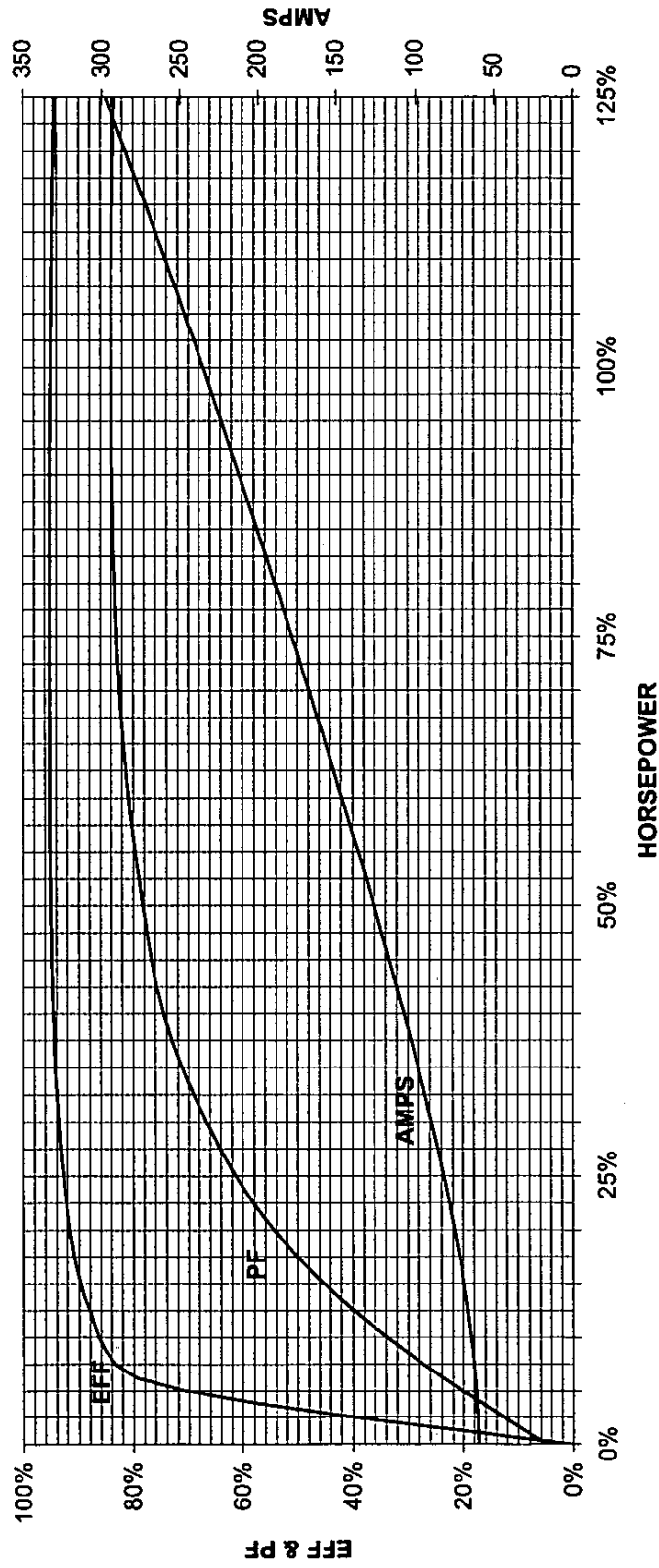


TIME MOTOR CAN RUN AT ANY GIVEN  
 AMPS STARTING WITH MOTOR AT:  
 A-AMBIENT TEMP. OF 40° C  
 B-FULL LOAD TEMP

PERFORMANCE BASED ON DESIGN CALCULATIONS. SUBJECT TO CHANGE WITHOUT NOTICE.  
 REV. 1

200 HP 1800 RPM 445 FRAME 460 VOLTS 3 PHASE NEMA DESIGN B

Siemens Energy & Automation, Inc.  
PERFORMANCE CURVE  
DP10



CUSTOMER \_\_\_\_\_ ORDER # \_\_\_\_\_ PO # \_\_\_\_\_

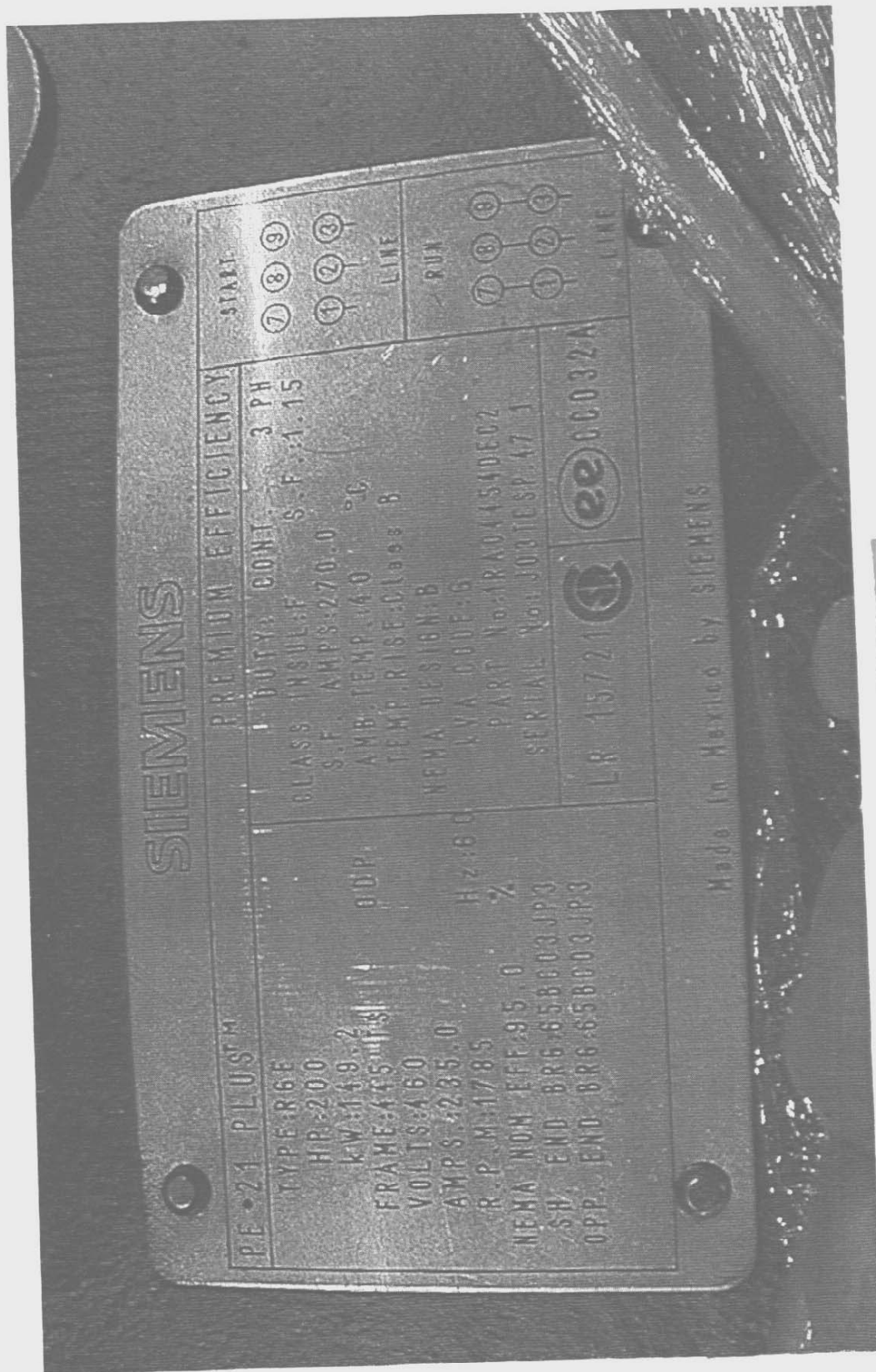
PERFORMANCE BASED ON DESIGN CALCULATIONS. SUBJECT TO CHANGE WITHOUT NOTICE.

REV. 1

DCP 08-15484-2, SUPP. 0

NEW MOTOR

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BEST AVAILABLE DOCUMENT






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GLD MOTOR

**BEST AVAILABLE DOCUMENT**

Supp. D

BASE	60	7905
3	1775	24
200	1775	40CTBDP
15	445TS	
460		
221		
77B23755		
65B003JPP3		
65B003JPP3		
THX-ESELEKT		

MADE IN U.S.A. 185P066H01D

Westinghouse Electric Corporation

	<b>0PDP01-ZE-0001</b>	<b>Rev. 3</b>	Page <u>1</u> of <u>1</u>
<b>Design Verification Process</b>			
Form 1	Design Verification Form (SAMPLE)		Page 1 of 1

Design Change Document #/Supplement/Rev #: DCP 08-15484-2 Supp.0

Design Verification method:

Design Review	<u>X</u>
Alternate Calculations	<u>      </u>
Qualification Testing	<u>      </u>

**Summary of Verification Performed and Results:**

This DCP is a minor change to change the motor for Unit 2 Rod Drive MG Set 7Z172ERD101A. The new motor has the same form, fit and function as the existing motor. The new motor is a high efficiency motor and thus the inrush current may be higher, which is accounted for by the raising of the instantaneous trip setting for the breaker feeding the motor.

There is no licensing impact, no impact on plant safety or the safe shutdown of the plant.

The technical justification is sufficient to allow the change.

All applicable design documents were reviewed and are being changed as needed.

All comments were resolved.

R. L. Parker

*R.L. Parker*

Design Verifier (Print / Sign)

10-17-08

Date

	OPGP05-ZA-0002	Rev. 15	
10CFR50.59 Evaluations		<i>Page 1 of 1</i>	
Form 1	10CFR50.59 Screen	Page 1 of 1	

I. Change Document Number: 08-15484-2

Rev 0

II. Title or Description of Change: Rod Drive MG Set – Motor 21 Replacement

III. ☐ Change is bounded by previous Screen or Evaluation # \_\_\_\_\_  
☐ Change is bounded by an NRC approved document \_\_\_\_\_

OR

Answer the following 10CFR50.59 Screen questions. See Section 5.2.2 of the 10CFR50.59 Resource Manual (RM) for additional guidance. If all questions cannot be answered NO, perform a 10CFR50.59 Evaluation.

- Does the proposed activity involve a change to an SSC that adversely affects an UFSAR described design function? (See Section 5.2.2.1 of the RM) X NO
- Does the proposed activity involve a change to a procedure that adversely affects how UFSAR described SSC design functions are performed or controlled? (See Section 5.2.2.2 of the RM) X NO
- Does the proposed activity involve revising or replacing an UFSAR described evaluation methodology that is used in establishing the design bases or used in the safety analyses? (See Section 5.2.2.3 of the RM) X NO
- Does the proposed activity involve a test or experiment not described in the UFSAR, where an SSC is utilized or controlled in a manner that is outside the reference bounds of the design for that SSC or is inconsistent with analyses or descriptions in the UFSAR? (See Section 5.2.2.4 of the RM) X NO

Document the basis for answering NO to the above questions. Identify relevant UFSAR describe SSCs and associated design functions, or, IF NONE, state so. If a UFSAR described design function, procedure, test or experiment, or methodology is affected, state why the change is NOT adverse. (Attach additional pages if necessary.)

See page 2 of 2 for response to Screen questions.

List documents reviewed, including sections, which support the basis for answering NO to the above question.

UFSAR, Section 8.0

Based on the above responses a 10CFR50.59 Evaluation is NOT required.

Prepared by: Hari Kodali / *Hari Kodali*  
(ESP200) (Print/Sign)

Date: 10/16/08

Reviewed by: Robert Parker / *R.L. Parker*  
(ESP200) (Print/Sign)

Date: 10/16/08

**1). Does the proposed activity involve a change to an SSC that adversely affects an UFSAR described design function?**

**NO.** the proposed activity is limited to replacing the existing motor (Westinghouse) with an equivalent motor (Siemens "RGE"). The new motor has critical characteristics that are equivalent to the existing motor. The torque speed curves for the new motor (RGE) are the same as the Siemens DP 10 motors. The breaker settings are not affected except for the instantaneous setting. This setting is increased from 3000A to 3600A to accommodate the increased inrush current for the new high efficiency motor and has no affect on breaker coordination with upstream devices. Therefore, the proposed activity does not involve a change to an SSC that adversely affects an UFSAR described design function.

**2). Does the proposed activity involve a change to a procedure that adversely affects how UFSAR described SSC design functions are performed or controlled?**

**NO.** The new motor replacement and post installation testing are in accordance with the existing STP procedures. Therefore, the proposed activity does not involve a change to a procedure that adversely affects the design function of switch board power supplies.

**3). Does the proposed activity involve revising or replacing an UFSAR described evaluation methodology that is used in establishing the design bases or used in the safety analyses? (See Section 5.2.2.3 of the RM)**

**NO.** UFSAR does not describe the evaluation methodology to determine the equivalency of a motor.

**4). Does the proposed activity involve a test or experiment not described in the UFSAR, where an SSC is utilized or controlled in a manner that is outside the reference bounds of the design for that SSC or is inconsistent with analyses or descriptions in the UFSAR? (See Section 5.2.2.4 of the RM)**

**NO.** This design change is limited to installing the new motor which is equivalent to the old motor. The new motor replacement does not involve a test or experiment where a component is utilized or controlled in a manner that is outside the reference bounds of the design for that component or is inconsistent with the analyses or descriptions in the UFSAR.

Form 4 (sample) OPGP04-ZE-0309/R20	DCP # 08-15484-2	SUPP 0		Page 13 of 13			
<b>IMPACTED DOCUMENTS</b>							
<b>New Documents</b>							
<b>Doc No./Sheet/Rev</b>	<b>Immed Distrib</b>	<b>WO No.</b>	<b>Doc No./Sheet/Rev</b>	<b>Immed Distrib</b>	<b>WO No.</b>		
<b>Revised Documents</b>							
<b>Doc No./ Sheet/Rev</b>	<b>Immed Distrib</b>	<b>WO No.</b>	<b>Doc No./Sheet/Rev</b>	<b>Immed Distrib</b>	<b>WO No.</b>		
<b>Amended Documents</b>							
<b>Doc No./Sheet/Rev</b>	<b>DCN No.</b>	<b>Immed Distrib</b>	<b>WO No.</b>	<b>Doc No./Sheet/Rev</b>	<b>DCN No.</b>	<b>Immed Distrib</b>	<b>WO No.</b>
EC05000/NA/12	0802078	No	367514				
EC05001/NA/6	0802079	No	367514				
EC05002/NA/14	0802080	No	367514				
5E540EL5031/NA/3	0802081	No	367514				
<b>Superseded / Voided Documents</b>							
<b>Document No./Sheet/Rev</b>	<b>Voided/Superseded by</b>			<b>Immediate Action</b>	<b>WO No.</b>		

This form is for Administrative use only.

(Identify Safeguards Documents with \*)