

MANUFACTURING AND QUALITY CONTROL PLAN

CQCM 11-470-1

IDP ORDER NO.: 050-61994

PUMP TYPE: 8HN-194

OPERATION	PROCEDURE	R E V	DOCUMENT AND COMMENT
3.6 Shaft			Straightness shall be verified by measuring runout at 0°, 90°, 180°, 270°, along entire length of shaft TIR. Shaft not to exceed .002".
3.7 Shaft	INQ-12 ISQ-33	9 1	LP examination entire shaft. No cracks allowed. Acceptance criteria. Document on QCM 112
3.8 Bearing Housing	Per drawing		Visually inspect. Document bearing fits and housing to SBE fit.
3.9 Bearings			Balls and races to be visually inspected for cracking, scoring, and signs of overheating. No damage acceptable.
4.0 Mechanical Seal			Visually inspect seal faces for wear, cracks, signs of overheating. No Damage allowed. Contact Engineering for disposition.
5.0 Stuffing Box Assembly	Per drawing		Visually inspect. Document casing fit, stuffing box bushing bore, and bearing housing fit.
6.0 Shaft Sleeve	Per drawing		Document all fits. All non-conformances to be documented and submitted to Engineering for disposition.

MANUFACTURING AND QUALITY CONTROL PLAN

CQCM 11-470-2

IDP ORDER NO.: 050-61994

PUMP TYPE: 8HN-194

OPERATION	PROCEDURE	R E V	DOCUMENT AND COMMENT
Pump Assembly			Nuclear Controlled Pump Program 10CFR21 Applies
1.0 Assemble pump Complete	Per drawing RX130855		Document following clearances: - Impeller to shaft - Wear rings to impeller - Stuffing box bushing to shaft sleeve - Bearings to shaft - Bearings to bearing housing -Check rotor end play -Check rotor for rub/bind

MANUFACTURING AND QUALITY CONTROL PLAN

CQCM 11-470-3

IDP ORDER NO.: 050-61994

PUMP TYPE: 8HN-194

OPERATION	PROCEDURE	R E V	DOCUMENT AND COMMENT
Pump Testing			Nuclear Controlled Pump Program 10CFR21 Applies
1.0 Standard Performance Test	Per PTI		Forward test results to Engineering - Manish Patel Curve approval required. <u>Hold Point:</u> <u>Customer Witness</u>
2.1 (14) day Endurance Test	Per PTI		Forward test results to engineering (Manish Patel). Test Report approval required.
2.2 Standard Performance Test	Per PTI		Forward test results to Engineering (Manish Patel). <u>Hold Point:</u> <u>Customer Witness:</u>

MANUFACTURING AND QUALITY CONTROL PLAN

CQCM 11-470-4

IDP ORDER NO.: 050-61994

PUMP TYPE: 8HN-194

OPERATION	PROCEDURE	R E V	DOCUMENT AND COMMENT
Dismantle Inspect Pump - After Test			Nuclear Controlled Pump Program 10CFR21 Applies
1.0 Dismantle Pump	Route Card		All ports to be moved to dedicated storage area.
2.0 Inventory All Ports	Route Card		Notify contract administrator if parts do not agree with BOM.
3.0 Inspect	Route Card		Per drawings.
3.1 Wear Rings	Per drawing		Visually inspect. Document bore sizes.
3.2 Casing Assembly	Per drawing		Visually inspect. Document stuffing box fit.
3.3 Impeller	Per drawing		Visually inspect. Document diameter, bore size, hub size check hub runout.
3.4 Impeller	INQ-12 ISQ-33	9 1	PT impeller shrouds within one inch of CD. Acceptance criteria. Document all cracks and submit to engineering (M. Patel). Document on QCM 112
3.5 Shaft	Per drawing		Visually inspect. Document impeller and bearing fits. Record shaft serial number.
3.6 Shaft			Straightness shall be verified by measuring runout at 0°, 90°, 180°, 270° along entire length of shaft TIR shaft not exceed .002". Document all readings.

MANUFACTURING AND QUALITY CONTROL PLAN

CQCM 11-470-4

IDP ORDER NO.: 050-61994

PUMP TYPE: 8HN-194

OPERATION	PROCEDURE	R E V	DOCUMENT AND COMMENT
Dismantle Inspect Pump - After Test			Nuclear Controlled Pump Program 10CFR21 Applies
3.7 Shaft	INQ-12 ISQ-33	9 1	LP examination entire shaft no cracks allowed. Acceptance criteria. Document on QCM 112
3.8 Bearing Housing	Per drawing		Visually inspect. Document bearing fits and housing to SBE fit.
3.9 Bearings			Balls and races to be visually inspected for cracking, scoring and signs of overheating. No damage acceptable.
4.0 Mechanical Seal			Visually inspect seal faces for wear, cracks, signs of overheating. No damage allowed. Contact engineering for disposition.
5.0 Stuffing Box Assembly	Per drawing		Visually inspect. Document casing fit and stuffing box bushing bore, and bearing housing fit.
6.0 Shaft Sleeve	Per drawing		Document all fits. All non-conformance to be documented and submitted to engineering for disposition.
			<p>HOLD POINT: Forward inspection records to Manish Patel in Engineering Dept. for review.</p> <p style="text-align: center;">Sh. 2 of 2</p>

MANUFACTURING AND QUALITY CONTROL PLAN

CQCM 11-470 - 5

P ORDER NO.: 050-61994

PUMP TYPE: 8HN-194

OPERATION	PROCEDURE	R E V	DOCUMENT AND COMMENT
Pump Re-Assembly 1.0 Assemble Pump Complete	Per drawing RX 130855		Nuclear Controlled Pump Program 10CFR21 Applies <u>Document following clearances</u> Wearing Rings to impeller Stuffing box bushing to shaft sleeve Shaft TIR Bearing to bearing housing fit <u>Note:</u> New bearings are to be installed prior to shipment.

QCM-582 Rev. 3
DATE: 24 FE 93

MANUFACTURING AND QUALITY CONTROL PLAN

CQCM 11-470 - 6

IDP ORDER NO.: 050-61994

PUMP TYPE: 8HN-194

OPERATION	PROCEDURE	R E V	DOCUMENT AND COMMENT
Shipment Package	Package per HLM-2 Level B	2	Nuclear Controlled Pump Program 10CFR21 Applies IDP shop requirements: Do not ship without Q.C. release and customer release. C of C required.

1/2



September 30, 1996

Mr. Philip Saltsman
Florida Power Corp
15760 Power Line St
Crystal River, FL 34428

RE:IDP 8HN-194 Decay Heat Pump
Review of Minimum Flow Requirements

Dear Mr. Saltsman:

Per our conversation IDP has dismantled and inspected the spare 8HN received from TMI. Attached are IDP's inspection results.

We are currently checking the casing perpendicularity and concentricity per your request. We should complete this by Wednesday.

Our schedule calls for assembly on Thursday 10/3 unless we hear otherwise from you. The test department will set up Friday 10/4 for the initial performance test 10/7.

If you have any questions regarding the above please let us know.

Very truly yours,

A handwritten signature in cursive script that reads "Michael Dozier".

Michael Dozier
Project Manager

cc:R Koch
M Patel
J Brown

3.1 Wear Rings

Casing Ring bore10.746"
Stuffing Box ring bore.....9.743"

3.2 Casing

Stuffing box fit.....19.251"

3.3 Impeller (Heat # 9636)

Diameter.....18.504"
Bore size.....2.125"
Front Hub.....10.719"
Back hub.....9.718"

3.4 Impeller

No indications found

3.5 Shaft (MR#4060)

Impeller fit.....2.1242"
Thrust bearing fit.....2.5592"
Radial bearing fit.....2.7563"

3.6 Shaft

TIR is .0005"

3.7 Shaft

No indications found

3.8 Bearing Housing

Perpendicularity/concentricity correct.
Thrust bearing fit.....5.5129"
Radial bearing fit.....4.9215"
SBE fit.....9.000"

3.9 Bearings

Thrust bearing ID.....2.559"
Thrust bearing OD.....5.512"
Radial bearing ID.....2.755"
Radial bearing OD.....4.921"

4.0 Mechanical seal

No visual damage

5.0 Stuffing box

Casing fit.....19.241"
SB bushing bore.....3.029"
Bearing housing fit.....8.998"
M seal gland fit.....4.995"

6.0 Shaft sleeve

OD dimension.....3.000"
All dimensions conform to dwg

INGERSOLL-DRESSER
PUMP COMPANY

Engineered Pump Group
Ingersoll-Dresser Pump Co.
Phillipsburg, NJ 08865

Procedure Number

QCM 112 REV. 14
NDE INSPECTION REPORT FORM
DATE 11 AP 95

PART NAME <i>Impeller</i>	SERIAL NO. <i>2</i>	HEAT NO. <i>9686</i>	MR NO.	RT. NO.	QUANTITY <i>1</i>
IDP ORDER NO. <i>R-05061994-01000</i>	IDP DWG. NO. <i>8HN</i>		IDP PART NO.	COV'T DWG. NO.	
CUSTOMER CONTRACT NO.	PURCHASE ORDER NO.	VENDOR	MATERIAL SPEC.		
WORK ORDER NO. <i>W0-00 52713</i>	NCR NO.	NDE EXAMINATION PERFORMED <input checked="" type="checkbox"/> PENETRANT <input type="checkbox"/> MAGNETIC PARTICLE			

Type: Fluorescent Solvent Removable Other _____
 Visible Post Emulsifiable
 Water Washable

NDE has been performed on the above material in accordance with the following:

Inspection Procedure *ING-12* Rev. *9* Date *19my 84*

Supplement _____ Rev. _____ Date _____

Written in accordance with MIL-STD-271 D E F

Acceptance Standard *ISO-33* Rev. *1* Date *12 00 5-9*

Supplement _____ Rev. _____ Date _____

The degree of examination is as follows:

100% / 2/2/86
 100% Remachined Areas
 Finished Machined Areas Weld Areas
 Other *Shroud within 1 inch of OD*

Quantity Inspected *1* Quantity Accepted *1*

Accepted Parts are marked PT, MP as applicable.

The examination and evaluation covered by this report has been performed in accordance with the applicable procedure and acceptance standards.

Operators/Inspectors Signature

<u><i>J. [Signature]</i></u>	<u><i>[Signature]</i></u>	<u><i>1007</i></u>	<u><i>9/25/96</i></u>
Name	Level	Man No.	Date
_____	_____	_____	_____
Name	Level	Man No.	Date

The above NDT personnel certified to *ESQ-3 (SNT-TC-1A)*

The above examination and evaluation have been performed to my satisfaction.

Customer/DCAS Witness _____ Date _____

QCM 268 Rev 4

INGERSOLL-DRESSER
PUMP COMPANY

Engineered Pump Group
Ingersoll-Dresser Pump Co.
Phillipsburg, NJ 08865

Procedure Number

QCM 112 REV. 14
NDE INSPECTION REPORT FORM
DATE 11 AP 95

PART NAME <u>shaft</u>	SERIAL NO. <u>2</u>	HEAT NO.	^{HP} MR NO. <u>1060</u>	RT. NO.	QUANTITY <u>1</u>
IDP ORDER NO. <u>R05061994-01000</u>	IDP DWG. NO. <u>8HN</u>		IDP PART NO.	GOV'T DWG. NO.	
CUSTOMER CONTRACT NO.	PURCHASE ORDER NO.	VENDOR	MATERIAL SPEC.		
WORK ORDER NO. <u>WO-0052213</u>	NCRR NO.	NDE EXAMINATION PERFORMED <input checked="" type="checkbox"/> PENETRANT <input type="checkbox"/> MAGNETIC PARTICLE			

Type: Fluorescent Solvent Removable Other _____
 Visible Post Emulsifiable
 Water Washable

NDE has been performed on the above material in accordance with the following:

Inspection Procedure TNG-12 Rev. 9 Date 19my 94

Supplement _____ Rev. _____ Date _____

Written in accordance with MIL-STD-271 D E F

Acceptance Standard TSQ-33 Rev. 1 Date 12 00 89

Supplement _____ Rev. _____ Date _____

The degree of examination is as follows:

100% Remachined Areas
 Finished Machined Areas Weld Areas
 Other _____

Quantity Inspected 1 Quantity Accepted 1

Accepted Parts are marked PT, MT as applicable.

The examination and evaluation covered by this report has been performed in accordance with the applicable procedure and acceptance standards.

Operators/Inspectors Signature

Name <u>J. Furr</u>	Level <u>II</u>	Man No. <u>1007</u>	Date <u>9/25/96</u>
Name _____	Level _____	Man No. _____	Date _____

The above NDT personnel certified to ESQ-3 (SNT-TC-1A)

The above examination and evaluation have been performed to my satisfaction.

Customer/DCAS Witness _____

Date _____

DEA CMM INSPECTION REPORT

INGERSOLL-DRESSER PUMPS

DATE: 9-30-96

TIME: 17:29

SER. NO. _____ HT _____ MR _____

BR. ORDER R-05061924 WO 52713 DWG 8HN-DISMAN/TEST

PROGRAM _____ INSPECTOR R. Albanese # 317

PART NAME _____ OPER. NO. _____

#	5	PLANE	Ref. sys	2	
		FLATNS			0.0010

#	8	CIRCLE	Ref. sys	2	
X		88.8219	0.0000		88.8219
Y		31.7996	0.0000		31.7996
DIA.		<u>19.2533</u>	0.0000		19.2533
RNDNESS					0.0088
TRUPOS					89.7447

CARLOS BERANDI

#	7	CIRCLE	Ref. sys	2	
X		0.0002	0.0000		0.0002
Y		0.0012	0.0000		0.0012
DIA.		<u>10.7452</u>	0.0000		10.7452
RNDNESS					0.0015
TRUPOS					0.0012

#	S	CIRCLE	MEASURED	Ref. sys	NOMINAL	DEVIATION
X			0.0008	2	0.0000	0.0008
Y			0.0017		0.0000	0.0017
DIAM.			10.7449		0.0000	10.7449
SS						0.0009
POS						0.0018

MANUFACTURING AND QUALITY CONTROL PLAN

CQCM 11-470-1

IDP ORDER NO.: 050-61994

PUMP TYPE: 8HN-194

OPERATION	PROCEDURE	REVISION	DOCUMENT AND COMMENT
Receive, Dismantle, Inspect Pump			NUCLEAR CONTROLLED PUMP PROGRAM 10CFR21 APPLIES
1.0 Receive Pump	INQ-13	0	Record pump serial number
2.0 Dismantle Pump	Route Card		All parts to be moved to dedicated storage area.
2.1 Inventory all Parts	Route Card		Notify contract administrator if parts do not agree with Bill of Material.
3.0 Inspect	Route Card		Per drawings
3.1 Wear Rings	Per drawing		Visually inspect. Document bore sizes.
3.2 Casing Assembly	Per drawing		Visually inspect. Document stuffing box fit.
3.3 Impeller	Per drawing		Visually inspect. Document diameter, bore size, hub size. Check hub runout.
3.4 Impeller	INQ-12	9	PT impeller shrouds within one inch of OD.
	ISQ-33	1	Acceptance criteria. Document all cracks and submit to Engineering - Manish Patel Document on QCM 112
3.5 Shaft	Per drawing		Visually inspect. Document impeller and bearing fits. Record shaft serial number