

WKR P STAHL
engesellschaft

SCHMIEDE UND BEARBEITUNG

ANNANNEPREFZEUGNIS

Inspection Test Certificate

practically-verified if possible

DDM 50049-2.1 8

Unsere Korn-Nr. / Werte-Nr. / Nr. Reference No.

181 965

17.10.83

Unsers Kom.-Nr. / Works No. / Reference No. _____
Besteller / Customer / Client: Delaval Turbine Inc., Oakland, California 94621 / USA

Bestell Nr. / Order No. / No. de Commande 14365 2-42 of 9.09.83

Bestell Nr. / Order No. / N° de Commande

1 crankshaft 8-throw test-no. 2698

Erzeugnistern / Article / Objet:

forged, finish machined, LS 8629

acc. to specification No. D 4774-4/81

Werkstoff / Material / Matériau:

CK CK 45 (ABS Grade 4 S)

Normbezeichnung / Standard / Désignation de la norme:

811 167 E

ABS

Chargen-Nr. / Cast-No. / No. de coulée:

Erhitzungsart / Melting Process / Mode de coulee:

electric steel vacuum degassed

Lieferzustand / Condition of delivery / Etat de livraison:

air-quenched + tempered, stress relieved

Prüfzustand / Test condition / Etat d'essai:

860°C 9 h/Luft - 605°C 12 h/Ofen

Prüfzustand / Test condition / état d'essai													
Varianten Specimen design Prüfungsposition	295		370	22	35								
Proben- nummer Test-Nr. Test-Nr. No. of specimens	0.7% Brinell Probe surface	Brinellprobe Test Probe	Legierung Legierung Temperatur Temperature Streckgrenze 0.2% Brinell 0.2% Brinell	Streckgrenze Tensile strength 0.2% Brinell 7-15.6	Streckgrenze Tensile strength 0.2% Brinell 7-15.6	Kerbschlagprüfung Impact Value Edinburg			Bruch Break Bruch Break	Bruch Break Bruch Break	Bruch Break Bruch Break	Bruch Break Bruch Break	Bruch Break Bruch Break
	0.2% Brinell Probe surface	Brinellprobe Test Probe	Legierung Legierung Temperatur Temperature Streckgrenze 0.2% Brinell 0.2% Brinell	Streckgrenze Tensile strength 0.2% Brinell 7-15.6	Streckgrenze Tensile strength 0.2% Brinell 7-15.6	Proben Probe	Temperatur Temp	Kerbschlagprüfung Impact Value Edinburg	Bruch Break Bruch Break	Bruch Break Bruch Break	Bruch Break Bruch Break	Bruch Break Bruch Break	Bruch Break Bruch Break
2698 "	363 335		695 695	24,0 23,0	50,9 49,8				205- 210			1 top 1 bottom	
Grade of purity acc. to ASTM E 45: majority ca. A2, majority ca. B1 and C1													
Charge C %	C %	Si %	Mn %	P %	S %	Cr %	Mo %	Ni %	V %				
811162	0,46	0,12	0,65	0,010	0,008	0,69							



8503280487 840920
PDR ADOCK 05000322
G PDR

Beschreibung u. Auswertung:

[correction and control of dimensions:]

(insert at specific coordinates):

Ergebnisse der Prüfungen:

2. *Figures 1 and 2*
 3. *Table 1*

Expenditure data complete:

Werks-Prototypen:

What's new?

Polymerization of monomers:

Herstellerzeichen:

Manufacturer's name:
Manufacturer's address:

Markus des Perseusant:

1) Sprungprüfung nach DIN 50054
Sprung von DIN 50051

2) *l* as *long*, *l* as *longitudinal*, *l* as *realist*, *gl* as *quail*
l as *longitudinal*, *l* as *long*, *l* as *realist*, *gl* as *quail*.

KRUPP/STAHL AG / 11

KRUPP STAHL

Aktiengesellschaft

SCHMIEDE UND BEARBEITUNG

ULTRASONIC-CERTIFICATE

about material testing

3.1 B

according to DIN 50049/

Certificate-No.

612/10/83

Krupp Stahl AG Schmelze u. Bearbeitung Postf. 101370 4630 Bochum

Delaval Turbine Inc.
Oakland
California 94621
USA

Purchaser: Delaval Turbine Inc. Oakland

14365-R-48 of 9.09.83

Order No.:

Manufacturer: Krupp Stahl AG
Schmelze und Bearbeitung

Works-Order No.: 181 965

Form of Product:

forged

Material Marking:

Ck 45 (AB S Grade 4 S)

Heat treatment:

untreated

Material-No.:

Examination Specification:

ASTM A 503-75

Examiner stamps:

KRUPP



Item	Unit	Testing objekt	Dimensions (mm)	Sample-No.	Heat-No.	Markung
1	1	Crank shaft	710 x 630 x 6930	2698	811 167 E	
Testing-Set: USIP 11, Krautkrämer			Coupling medium: paste	Amount of inspection: radial 100 %		
Wave attenuation: no measured		Transferkorrection: ./.		Time of testing: 1. after forged		Contact surface 4 plane surfaces
Adjustment: at componental parts				Finish: forged		
Direction of ultrasonic testing	Probe	MHz	Sensitivity	recording limit	allowable limit	
Radial	B2S-N ø 24 mm	2	1 RE + 30 dB	1 RE + 30 dB	————	
Axial			no technically possible			

Notes:

Examination result: Readings, subject to registration, have not been observed.
We hereby certify that the specified requirements are met.

Operator: Fitzke (Level II)

KRUPP STAHL AG
SCHMIEDE UND BEARBEITUNG
Qualitätswesen
Zerschnittswerkzeug Prüfwerk

17.10.83

Date

F. Knorr (Level III)
Examination supervisor-Works expert

Form 55.398.0883-B-

KRUPP STAHL

Aktiengesellschaft

SCHMIEDE UND BEARBEITUNG

ULTRASONIC-CERTIFICATE

about material testing

according to DIN 50049/

3.1 B

Certificate-No.

613/10/83

Krupp Stahl AG Schmiede u. Bearbeitung Post 101370 4630 Bochum

Delaval Turbine Inc.
Oakland
California 94621
USA

Purchaser: Delaval Turbine Inc. Oakland

Order No.: 14365-R-48 of 9.09.83

Manufacturer: Krupp Stahl AG
Schmiede und Bearbeitung
Works-Order No.: 181 965

Form of Product:
forged

Material Marking:

Ck 45 (AB S Grade 4 S)

Heat treatment:

quenched + tempered

Material-No.:

Examination Specification:

ASTM A 503-75

Examiner stamps:

KRUPP



Item:	Unit	Testing objekt	Dimensions (mm)	Sample-No.	Heat-No.	Markung
1	1	Crank shaft	8-throw x 6029,325	2698	811 167 E	
Testing-Set: USIP 11, Krautkrämer			Coupling medium: oil	Amount of inspection: radial: 100 % / axial: as technically possible		
Wave attenuation: 2 dB/m		Transferkorrection: ./.		Time of testing: 2. after quenched before bore	Contact surface total surface	
Adjustment: at componental parts				Finish: rough-machined, milled		
Direction of ultrasonic testing	Probe	MHz	Sensitivity	recording limit	allowable limit	
Radial	B4S-N ø 24 mm	4	1 RE + 36 dB	acc. to ASTM A 503, Point 9	acc. to ASTM A 503, Point 10	
*) Axial	B4S-N ø 24 mm	4	1 RE + 36 dB	" "	" "	

Notes:

*) as for as technically possible

Examination result: Readings, subject to registration, have not been observed.
We hereby certify that the specified requirements are met.

Operator: F. Knorr (Level II)

KRUPP STAHL AG
SCHMIEDE UND BEARBEITUNG
Qualitätswesen
Zerstörungsfreie Prüfung

17.10.83

Date

F. Knorr (Level II)

Examination supervisor-Works expert

Form S5-398.083-B-

KRUPP STAHL
Aktiengesellschaft

SCHMIEDE UND BEARBEITUNG

MAGNETIC-PARTICLE-CERTIFICATE

about material testing
according to DIN 50049/3.1B

Certificate-No.:
614/10/83

Krupp Stahl AG Schmelze u. Bearbeitung Post 101370 4630 Bochum 1

Purchaser: Delaval Turbine Inc. Oakland

Delaval Turbine Inc.
Oakland
California 94621
USA

Order-No.: 14365-R-48 of 9.09.83

Manufacturer: Krupp Stahl AG
Schmelze und Bearbeitung

Works-Order-No.: 181 965

Form of Product: forged

Material Marking:
Ck 45 (ABS Grade 4 S)

Heat Treatment: quenched + tempered

Material-No.

Examination Specification:

ASTM A 456-71

Examiner Stamps:

KRUPP



Item	Unit	Testing Object	Dimension (mm)	Sample-No.	Heat-No.	Markung
1	1	Crank shaft	8-throw x 6029,325	2698	181 965 E	

Testing Set:
Made by Krupp Stahl AG / Miebach 4000

Testing device:
Ferroflux concentrate, black
suspend in oil, Messrs. Tiede

Magnetizing force:

2400 A/m

Magnetizing according to DIN 54130

SSW LKW LSW

Testing sample:
Berthold

Finish:
finish machined

Amount of inspection:

100 %

Notes:

Examination result: Readings, subject to registration, have not been observed.
We hereby certify, that the specified requirements are met.

Operator: Filake (Level II)

KRUPP STAHL AG
SCHMIEDE UND BEARBEITUNG
Qualitätsmanagement
Zertifizierte Prüfung

17.10.83

Date

F. Knorr (Level II)

Examination supervisor-Works expert

NUCLEAR REGULATORY COMMISSION

Docket No. 50-322-OL Official Exh. No. C-38
 in the matter of LILCO - Shoreham
 Staff ✓ IDENTIFIED ✓
 Applicant ✓ RECEIVED ✓
 Intervenor _____ REJECTED _____
 Gen'l's Off'r _____ DATE 9-20-84
 Contractor _____ Witness Panel
 Other _____
 Reporter ACE