CRYOVAT

MANUFACTURING RECORD BOOK

Cryogenic ISO 20' Tank Container

Client	:	**Cryotainer**
Order No.	:	**07-286**
Client reference no.	:	**CRYU 200812-6**
Manufacturing no.	:	**23703**
Description	:	**TC-20'/20.000L/2.4m/22b**
Registration no. Bureau Veritas	:	**BVCT 0870199/R**

Document No.	:	**23703 MB-01**	rev. **0**

Cryovat Internationaal BV
Nijverheidsstraat 10
NL-3861 RJ Nijkerk
Tel. : +31.(0)33 245 5959
Fax. : +31.(0)33 245 5958
E-mail [redacted]@cryovat.nl

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CRYOVAT

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Cryovat Internationaal BV
Nijverheidsstraat 10
NL-3861 RJ Nijkerk
Tel. : +31.(0)33 245 5959
Fax. : +31.(0)33 245 5958
E-mail [redacted]@cryovat.nl

Chapter 1

BUREAU VERITAS

CONTENEUR CITERNE / *TANK CONTAINER*

CERTIFICAT D'INSPECTION INITIALE / *INITIAL INSPECTION CERTIFICATE*

CONTENEUR CITERNE / *TANK CONTAINER* — Code : **CRYU200812/ 6**		BVCT : **0870199/R**
Masse brute maxi./*Maxi gross weight* : **36000** kg	Tare : **8840** kg	Charge utile/*Payload* : **27160** kg
PROPRIETAIRE / *OWNER* : **CRYOTAINER**		**EXPLOITANT** / *OPERATOR* :
Modèle/*Model* : **07-286** — Type : **UN T75** — N° de série/*Serial N°* : **23703** — Dimensions (mm) : **6058 x 2591 x 2260** mm		Code pays/*Country* : **NL** — Code type : **1CC 22T8**

CAPACITE / *CAPACITY* : Nominale/*Nominal* : **19600** l — Mesurée/*Measured* : **19530** l

PRESSION / *PRESSURE* : De service/*Working* : **22** bar — D'épreuve/*Test* : **29,9** bar

AGREMENTS / *APPROVALS* :

CSC	NL/BV/0033/03
IMDG	NL/CR/08079/BV
TIR	NL 11/05/2008
UIC	IC/70
ISO	1496-3

CRYOVAT

Cryovat Internationaal BV
Nijverheidsstraat 10
[redacted]

MATIERES AUTORISEES AU TRANSPORT / *SUBSTANCES SUITABLE FOR TRANSPORT* :
Suivant les réglementations applicables, tenant compte de la constitution de la citerne et de ses équipements / *According to applicable regulations, taking into account the constitution of the tank and its equipment*

CONSTRUCTEUR / *MANUFACTURER* : **CRYOVAT INTERNATIONAL BV., Nijkerk, NL**

DECLARATION DU CONSTRUCTEUR : Je soussigné, certifie que le conteneur citerne ci-dessus (N° de série **23703**) a été construit et contrôlé dans les mêmes conditions que le conteneur prototype de base certifié par BUREAU VERITAS, sous le N° BVCT **0370093/R**

STATEMENT OF THE MANUFACTURER : I, the undersigned, certify that the above mentionned tank container (serial N° 23703) has been manufactured and inspected in the same way as the basic prototype container certified by BUREAU VERITAS under BVCT N° 0370093/R

CARACTERISTIQUES / *CHARACTERISTICS*

PLAN D'ENSEMBLE N° / *GENERAL DRAW.N°* : **D0705502**
CODE CALCUL / *DESIGN* : **AD MERKBLATTER**
Temperature : **-196** °C — Pression/*Pressure* : **23** bar
MATERIAUX / *MATERIALS* :
Structure/*Frame* : **NF EN 10210-1 S275J2H**
Citerne/*Tank Head* : **EN 10028-7 1.4311**
Shell : **EN 10028-7 1.4311**
CITERNE / *TANK* :
Diamètre int/*Diameter* intern. : **2198** mm — Compart. Nb : **3**
Epaisseur mini de const/*Mini Design Thickn* : Virole/*Shell* : **10,8** mm — Fonds/*Heads* : **10** mm
Epaisseur équivalente/*Equivalent thickness.* : IMO : **14,1** mm — US-DOT : - mm

EQUIPEMENTS / *EQUIPMENTS* :
Calorifuge/*Insulation* :
Réchauf./*Heater* : **NO**
Pr. Service/*Work. Pr* : - bar — Pr. Epr/*Test Pr.* : - bar
Surface/*Area* : - sqm
Vidange/*Outlet* : Haute/*Top* : **NO** — Gravit./*Bottom* : **YES** — fermt/Clos. **1**

DISPOSITIFS DE SECURITE / *SAFETY DEVICES* :
Soupape(s)/*Relief valve(s)* : **2** — (Tarage/*Setting*) : **22** bar
Disque/*Rupture disk nb* : - — (Tarage/*Setting*) (20°C) : - bar — (Tarage/*Setting*) (60°C) : - bar
Montage/*Arrangement* : Serie **NO** — Paral. **NO**
Débit total en air/*Total vent. Capacity* : **1762** m^3/h (15°C - 1 bar)
PROTECTION / *COATING* :
Interne/*Internal* : **NO** — Externe/*External* : **Outer Shell**
ESSAIS à/ *TESTS at* : R = **36000** kg
Gerbage à/*Stacking at* : **192000** kg
Sollicitation dynamique à/*Impact test at* : **4,04** g — à/at R = **36000** kg

PLAN DE MARQUAGE / *MARKING DRAW* : **D0705500**

POINCONNAGE / *STAMPING* : **26-2-2008**

CONTROLES / *INSPECTIONS*

Ce conteneur citerne a été construit sous surveillance du BUREAU VERITAS, en accord avec les prescriptions suivantes / *This tank container has been manufactured under BUREAU VERITAS survey, in accordance with the following prescriptions* :

- Règlement du/*Rules of* : **BUREAU VERITAS**
- Specification : **IMDG/RID/ADR Section 6.7**

Les opérations de contrôle effectuées font l'objet des rapports de contrôle / *The inspections performed are subject to reports* :

BVCT 0870199/R

Essais de tension à/*Tension test at* : **15000** kg (montant/*post*)
Epreuve hydraulique à/*Hydraulic test at* : **29,9** bar
Effectuée le/*Performed on* : **26-2-2008**
Epreuve d'étanchéité à/*Tightness test at* : **6** bar
Effectuée le/*Performed on* : **25-4-2008**

OBSERVATIONS / *REMARKS* :
Epaisseur de corrosion/*Corrosion allowance* : mm
Contrôle radiographique/*X-Ray control* : **100 % SHELL** **100 % HEAD**
N° de Série de la Soupape de Sécurité/*Safety valve serial N°* :
394191 & 394190 and
394188 & 394186

Commentaires/*Comments* :
USE UN PORTABLE TANK RID/ADR AS PER SECTION 4.2
2 BAFFLES FITTED
Vacuum 0,004 mbar

Etabli à/*Issued at* : **ROTTERDAM** le/*on* : **25-4-2008**
Inspecté par/ *Inspected by* : [redacted]
Région-Bureau/ *Region-Office* :

BUREAU VERITAS EXPERTS D'AMERSFOORT PARIS 1828 INTERNATIONAL
Cachet/*Stamp* : [redacted]

ANNEXE / *ANNEX*

LISTE PRODUITS / *PRODUCTS LIST*
suivant RID/ADR ***according RID/ADR***

CONFIGURATION INITIALE ***INITIAL CONFIGURATION***

Classe 2	2 = Gaz: comprimes, liquefies ou	*Class 2*	*2 = Gases:compressed, liquefied or*
1073	Oxygene	*1073*	*Oxygen*
1951	Argon	*1951*	*Argon*
1977	Azote	*1977*	*Nitrogen*
2187	Carbon Dioxide	*2187*	*Carbon Dioxide, refrigerated*
2201	Protoxyde d'Azote	*2201*	*Nitrous Oxide*

BUREAU VERITAS EXPERTISE AMERSFOORT PARIS 1828 REGISTRE INTERNATIONAL

CERTIFICAAT VAN GOEDKEURING VERLEEND NA VERVAARDIGING

1. **Certificaat nr. NL 11/05/2008**

2. **De hieronder omschreven container is goedgekeurd voor het vervoer van goederen onder douaneverzegeling.**

3. **Aard van de container: Afzet Tankcontainer CRYU 200812- 6**

4. **Volgnummer dat door de fabrikant aan de container is toegekend: 23703**

5. **Gewicht: 9000 kg**

6. **Uitwendige afmetingen in centimeters: Lengte 605,8 cm, Breedte 243,8 cm, Hoogte 259,1 cm**

7. **Essentiële kenmerken van de bouw (soort van materialen, wijze van bouw enz.): Container bestaat uit een metalen frame, waaraan de tank is bevestigd. Aan de zijkant voorzien van een bedieningskast met twee(2) kleppen.**

8. **Verzegeling: Verzegeling dient te worden aangebracht op de sluitingen van de kleppen van de bedieningskast, twee(2) plomben per klep. De container dient te worden verzegeld met totaal vier(4) plomben.**

9. **Bijlage: Een(1) gewaarmerkt fotoblad van de container met de plaats van de versluitingen.**

10. **Afgegeven aan: Cryovat Internationaal B.V.**
Nijverheidstraat 33
3861 RJ Nijkerk

Die gemachtigd is een goedkeuringsplaat aan te brengen op de hiervoor omschreven container.

Duiven, 19 mei 2008

Het Hoofd van de Douane Noord, Kantoor Duiven.
Namens deze,

[redacted]

nederland
2008
042
arnhem


22T8
TANK UN TYPE T75
UN PORTABLE TANK
CRYU 200812 6
CRYOTAINER B.V.
FOKKERSTRAAT 507
3215 BD SCHIEDAM
THE NETHERLANDS
Tel. 0031 (0)10 262 30 53


CRYOVAT INTERNATIONAAL B.V.
NIJKERK - HOLLAND
CRYOVAT
IMO TANK TYPE NO. : UN-PORTABLE TANK T75
COUNTRY / YEAR OF MANUFACTURE : THE NETHERLANDS / 2008
MANUFACTURER'S NAME : CRYOVAT INTERNATIONAAL B.V.
MANUFACTURER SERIAL NR. : 23703
APPROVAL COUNTRY : THE NETHERLANDS
APPROVAL NUMBER UN-TYPE T75 : NL/CR/08079/BV
OWNER REG. NR. : CRYU 200812-6
DESIGN CODE : AD-2000
APPROVAL AGENCY : BUREAU VERITAS
APPROVAL AGENCY NO. : BVCT 0870199/R
APPROVALS : ADR/RID, IMDG, CSC, UIC, ISO, TIR
TEST PRESSURE : 29.9 Barg
MAX. ALLOW. WORKING PRESSURE : 22 Barg
TOTAL WATER CAPACITY AT 20°C. : 39500 Ltr.
ORIG. HYDR. TEST DATE (DD-MM-YY) : 28-2-2008
DESIGN TEMPERATURE : -196/+50 °C.
INNERVESSEL MATERIAL : 1.4311 EN-10028-7
EQUIVALENT THICKNESS REF. STEEL : SHELL 14.1 mm / HEADS 13.1 mm
TYPE OF INSULATION : VACUUM INSULATED MULTILAYER
EFFECTIVENESS OF INSULATION : 0.90 W/K
CONTENTS (UN-CODE)
TOTAL MASS
HOLDING TIME
1073 OXYGEN (LOx) : 16772 kg(75%) 65 Days @ 0 Barg
1977 NITROGEN (LIN) : 10610 kg(67%) 40 Days @ 0 Barg
1951 ARGON (LAr) : 20190 kg(74%) 51 Days @ 0 Barg
2187 CARBON-DIOXIDE (LCO2) : 19293 kg(89%) 60 Days @ 10 Barg
2201 NITROUS OXIDE (LN20) : 22345 kg(89%) 60 Days @ 0 Barg
MAX. PERMISSIBLE GROSS MASS : 36000 kg
TARE CONTAINER MASS : 8840 kg
MAX. PAYLOAD : 27160 kg
DATE DATE DATE DATE DATE
2½ YRS. INSPECTION
5 YRS. INSPECTION
CSC SAFETY APPROVAL
1. CSC NL/BV/0033/03
2. DATE MANUFACTURED 04 - 2008
3. IDENTIFICATION No. 23703
4. MAXIMUM GROSS WEIGHT


APPROVED FOR TRANSPORT
UNDER CUSTOMS SEAL
NL 11/05/2008
TYPE: N.A.
MANUFACTURER'S No.
OF THE CONTAINER: 23703

Chapter 2

Cryovat Internationaal BV Nijverheidsstraat 10 3861 RJ Nijkerk, the Netherlands Tel.: (0)33-2455959 / Fax.: (0)33-2455958	**DATA SHEET** **UN T75 Beamframe tankcontainer**	Project No. 07-286 Document No. 07-286 DS 01 Revision 0

Client	Description	Drawing	Rev.	Engineer	Manufacturing No.
Cryotainer	TC-T75 20'/19.600L-22,0b	D0705500	0	[redacted]	23702-23704

PROCESS DATA

Fluid Type	:	LIN, LOX, LAr		Operating temperature (inner vessel)	:	-196	°C
Max. operating pressure	:	22	bar	Design temperature (inner vessel)	:	-196	°C
Design pressure	:	23	bar	Design temperature (outer vessel)	:	-20 / +50	°C
Test pressure, hydraulic	:	29,9	bar	Geometric volume	:	19,600	m^3
Calc. evaporation rate (LOX; %/day)	:	0,27	%	Operating volume (= 98%)	:	19,208	m^3
Calc. evaporation rate (LIN; %/day)		0,53	%	Operating volume (= 82%)	:	16,072	m^3

MECHANICAL SPECIFICATION

Innervessel				*Outervessel*			
Design Code	:	AD-Merkblätter	+ASME +RToD	Design Code	:	AD-Merkblätter	+ RToD
Weld efficiency factor	:	1,00		Weld efficiency factor	:	1,00	
Shell diameter (O.D.)	:	2220	mm	Shell diameter (O.D.)	:	2420	mm
Length T/T	:	4420	mm	Length T/T	:	5090	mm
Wall thickness shell	:	10,7	mm (Min.)	Wall thickness shell	:	6,0	mm (Nom.)
Wall thickness heads	:	10,0	mm (Min.)	Wall thickness heads	:	6,0	mm (Nom.)
Type of heads	:	Elliptical 1:1.9		Type of heads	:	Klöpper	DIN 28011
Length of skirt (h)	:	30	mm	Length of skirt (h)	:	20	mm
Corrosion allowance	:	0,0	mm	Corrosion allowance	:	0,0	mm
Tolerance value	:	0,0	mm	Tolerance value	:	0,0	mm
Other	:			Other	:		

MATERIAL SPECIFICATION

Innervessel			*Outervessel*		
Shell	:	1.4311/EN 10028	Shell	:	1.4301/EN1028
Heads	:	1.4311/EN 10028	Heads	:	1.4301/EN1028
Reinforcing Rings	:	n.a.	Number of reinforcing rings	:	4
Flanges	:	n.a.	Type of reinforcing rings	:	T - 60
Insulation	:	Multi Layer Insulation	Insulation	:	n.a.
		at vacuumpressure	Other	:	

FABRICATION AND INSPECTION

Innervessel				*Outervessel*			
Design Code	:	AD-Merkblätter		Design Code	:	AD-Merkblätter	
Radiography (LW, CW, CR)	:	100	%	Radiography	:	none	
Material Certification	:	3.1B / EN 10204		Material Certification	:	3.1B / EN 10204	
Other	:	IMDG/ADR/TIR		Other	:	IMDG/ADR/TIR	

MISCELLANEOUS

Length Max. 92% fill	:	531	mm	LI range	:	0-310	mbar
Length Max. 98% fill	:	122	mm	Annular space	:	7,53	m^3
Total weight (appr.)	:	9400	kg	Initial vacuum (atmospheric temp.)	:	$< 10^{-4}$	mbar
Total length (appr.)	:	5600	mm	Final colour outervessel	:	RAL 9010	
Safety valve set pressure	:	22	bar	Final colour frame	:	RAL 9010	
Pressure build-up vaporiser	:	Standard		Liquid withdrawal by pump	:	20000	L/h
				PBU capacity (Argon) (@15 bar)	:	N.A.	Nm^3/h

NOTES

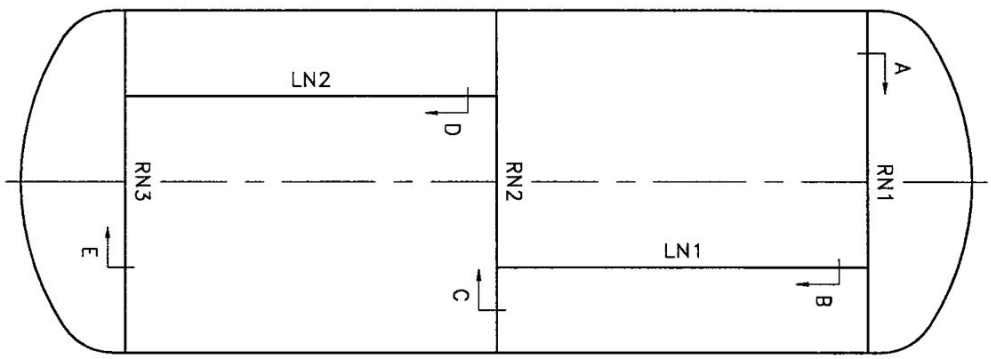
Date	Prepared	Checked	Approved	Page	of
15-1-2008	[redacted]	WvR		1	1

CRYOVAT INTERNATIONAAL QC 2

Chapter 3

Cryovat Internationaal B.V., Nijverheidsstraat 10, 3861 RJ Nijkerk, the Netherlands. Tel.: (0)33-2455959 Fax.: (0)33-2455958 CRYOVAT	**N.D.E. Ref. Plan** **Inner vessel**	Order No. **07-286** Document No. **23703 NDE-01** Revision **0**

Client	Description	Drawing	Reg. no. (BV)	Manufacturing no.
Cryotainer	**TC-20'/20.000L/2.4m/22b**	**D0705501**	**BVCT 0870199/R**	**23703**



Head 2 Shell 2 Shell 1 Head 1

Pos.	Film no.	Result
A	3.1 - 3.16	Accepted
B	1.1 - 1.6	Accepted
C	4.1 - 4.16	Accepted
D	2.1 - 2.6	Accepted
E	5.1 - 5.16	Accepted

☐ Witnessed ☐ Reviewed

BUREAU VERITAS 1828

2 6 FEB. 2008

BV MIV The Netherlands

It is herewith certified that the above mentioned pressure vessel has satisfactorily passed a non-destructive radiographic examination (locations as indicated on sketch),

Prepared : Signature :	Checked : Signature :	Approved : Signature :	Date : 26-2-2008 Page : 1 of 1

Chapter 4

Radiographic Examination report

RTD branch office Midden Nederland
Telephone number 0251220838
Fax 0251210405
Contact [redacted]

RTD report no 725-2008-04-004
RTD order no 20585/15
F&A-number 1104
Examination date 21-1-2008

Röntgen Technische Dienst bv
Delftweg 144 **Tel. (010) 208 82 08**
Postbus 10065 **Fax (010) 415 80 22**
3004 AB Rotterdam **E-mail rtd@rtd.nl**

Client Tankbouw Rootselaar B.V. **Order no** 07-286 **Report no client** **Drawing no** V23703

Film no		Film Dim. [cmxcm]	Discontinuity type / location Na [cm]	A/Na			Welder	Weld prep.	Weld geometry [mm x mm]	[kV]	[mA. min]	Pen. th. [mm]	D [mm]	d [mm]	Setup
LW1	1	10x48		A			W32	X	2250 x 10	200	6	12	788	12	C
	2			A											
	3			A											
	4			A											
	5			A											
	6			A											
LW2	1	10x48		A			W32	X	2250 x 10	200	6	12	788	12	C
	2			A											
	3			A											
	4			A											
	5			A											
	6			A											

Films and reporting

Film quantity 45

Page 4
Total pages 4

Operators

Name 7732 Heimgartner J.
Level 2 **Cert. no** 473/34

Applus RTD
ND Testing

Name 0416 de Korte P.
Level -- **Cert. no** --

Filminterpretation

Name
Level **Cert. no**

[redacted]

RTD Filminterpre
LRQ 473/07

Report checked for R
☐ Witnessed [redacted] Reviewed
Name

2 6 FEB. 2008

BV MIV The Netherlands
[redacted]

Radiographic Examination report

Röntgen Technische Dienst bv

Delftweg 144
Postbus 10065
3004 AB Rotterdam

Tel. (010) 208 82 08
Fax (010) 415 80 22
E-mail rtd@rtd.nl

RTD branch office	Midden Nederland	**RTD report no**	725-2008-04-004
Telephone number	0251220838	**RTD order no**	20585/15
Fax	0251210405	**F&A-number**	1104
Contact	[redacted]	**Examination date**	21-1-2008

Client	Tankbouw Rootselaar B.V.	**Carried out at**	Tankbouw Rootselaar B.V.	**Exam. standard**	ASME V Art.2	**Film type**	D5
Address	Nijverheidsstraat 33	**Address**	Nijverheidsstraat 33	**Exam. procedure**	RT 21003 **R** 16	**Screens (f/b)**	Pb0.027
Post code and city	3861 RJNijkerk	**Post code and city**	3861 RJNijkerk	**Accept. standard**	ASME VIII Div. 1 Par. UW51	**IQI**	10FeEn
Country	Nederland	**Country**	Nederland	**Accept. procedure**	RT 21005 **R** 15	**Pct. exam.**	100
Contact	[redacted]	**Contractor**		**Material**	C.St	**Set no**	**Focal spot eff.** 2.8 mm
Order no	07-286	**Project**	07-286	**Weld metal**	C.St	**Source type**	Röntgen 280 kV 6 mA
Request no	10097	**Drawing no**	V23703	**Weld method**	SAW		Ci GBq
Report no client		**Object**	V23703	**Heat treated**	☐ Yes ☒ No		

Remarks

Film no		Film Dim. [cmxcm]	Discontinuity type / location Na [cm]	A/Na			Welder	Weld prep.	Weld geometry [mm x mm]	[kV]	[mA. min]	Pen. th. [mm]	D [mm]	d [mm]	Setup
CW3	1	10x48		A			W32	X	Ø 2250 x 10	200	25	12	1125	12	A
	2			A											
	3			A											
	4			A											
	5			A											
	6			A											
	7			A											
	8			A											
	9			A											
	10			A											
	11			A											
	12			A											

Films and reporting		**Operators**		**Filminterpretation**	**Report checked for**
Film quantity	45	**Name** 7732 Heimgartner J.	**Name** 0416 de Korte P.	**Name** [redacted]	**Name** ☐ Witnessed [redacted] Reviewed
		Level 2 **Cert. no** 473/34	**Level** -- **Cert. no** --	**Level** **Cert**	**Date** 26 FEB. 2008
Page	1	Applus RTD ND Testing		RTD W.A. Hoy Filminterp LRQ 473/	BV MIV The Netherlands [redacted]
Total pages	4				

Radiographic Examination report

Röntgen Technische Dienst bv

Delftweg 144 — Tel. (010) 208 82 08
Postbus 10065 — Fax (010) 415 80 22
3004 AB Rotterdam — E-mail rtd@rtd.nl

RTD branch office	Midden Nederland	**RTD report no**	725-2008-04-004
Telephone number	0251220838	**RTD order no**	20585/15
Fax	0251210405	**F&A-number**	1104
Contact	[redacted]	**Examination date**	21-1-2008
Client	Tankbouw Rootselaar B.V.	**Order no**	07-286
Report no client		**Drawing no**	V23703

Film no		Film Dim. [cmxcm]	Discontinuity type / location Na [cm]	A/Na			Welder	Weld prep.	Weld geometry [mm x mm]	[kV]	[mA. min]	Pen. th. [mm]	D [mm]	d [mm]	Setup
CW3	13	10x48		A			W32	X	Ø 2250 x 10	200	25	12	1125	12	A
	14			A											
	15			A											
	16			A											
	17			A											

Films and reporting	Operators		Filminterpretation	Report checked for RTD
Film quantity 45	**Name** 7732 Heimgartner J.	**Name** 0416 de Korte P.	**Name**	Name ☐ Witnessed ☑ Reviewed
	Level 2 **Cert. no** 473/34	**Level** -- **Cert. no** --	**Level** **Cert. n** [redacted]	Date 26 FEB. 2008
Page 2	Applus RTD ND Testing		RTD Filminterpreter LRQ 473/071 [redacted]	BV MIV The Netherlands [redacted]
Total pages 4				

Radiographic Examination report

Röntgen Technische Dienst bv

Delftweg 144 — Tel. (010) 208 82 08
Postbus 10065 — Fax (010) 415 80 22
3004 AB Rotterdam — E-mail rtd@rtd.nl

RTD branch office	Midden Nederland	**RTD report no**	725-2008-04-004
Telephone number	0251220838	**RTD order no**	20585/15
Fax	0251210405	**F&A-number**	1104
Contact	[redacted]	**Examination date**	21-1-2008
Client	Tankbouw Rootselaar B.V.	**Order no**	07-286
Report no client		**Drawing no**	V23703

Film no		Film Dim. [cmxcm]	Discontinuity type / location Na [cm]	A/Na			Welder	Weld prep.	Weld geometry [mm x mm]	[kV]	[mA. min]	Pen. th. [mm]	D [mm]	d [mm]	Setup
CW4	1	10x48		A			W32	X	Ø 2250 x 10	200	25	12	1125	12	A
	2			A											
	3			A											
	4			A											
	5			A											
	6			A											
	7			A											
	8			A											
	9			A											
	10			A											
	11			A											
	12			A											
	13			A											
	14			A											
	15			A											
	16			A											

Films and reporting

Film quantity 45

Page 3

Total pages 4

Operators

Name 7732 Heimgartner J.
Level 2 **Cert. no** 734

Applus® RTD ND Testing

Name 0416 de Korte P.
Level -- **Cert. no** --

Filminterpretation

Name
Level **Cert. n** [redacted]

RTD W.A. Hoy Filminterpreter LRQ 473/07

Report checked for RTD

☐ Witnessed ☑ Review

Name

Date 26 FEB. 2008

BV MIV The Netherlands [redacted]

Radiographic Examination report

RTD branch office	Beverwijk	**RTD report no**	2426-2008-07-024
Telephone number	0251-226163	**RTD order no**	10097
Fax	0251-210405	**F&A-number**	5003-01.01097-121
Contact	Beverwijk	**Examination date**	14-02-2008

Röntgen Technische Dienst bv

Delftweg 144 **Tel. (010) 208 82 08**
Postbus 10065 **Fax (010) 415 80 22**
3004 AB Rotterdam **E-mail rtd@rtd.nl**

Client	Tank Bouw Rootselaar B.V	**Carried out at**	Shop Rootselaar	**Exam. standard**	ASME V Art. 2	**Film type**	D4 **Manufacturer** Agfa Gevaert
Address	Nijverheidsstraat 33	**Address**	Nijverheidsstraat 33	**Exam. procedure**	RT89116 **R** 21	**Screens (f/b)**	Pb 0.027 mm **Per cassette** 1
Post code and city	3861 RJ Nijkerk	**Post code and city**	3861 RJ Nijkerk	**Accept. standard**	ASME VIII div1 UW51	**IQI**	10 FE EN **Pct. exam.** 100 %
Country	The Netherlands	**Country**	The Netherlands	**Accept. procedure**	RT89116 **R** 21	**Processing**	Sectie Nijkerk
Contact	[redacted]	**Contractor**	xxx	**Material**	RVS	**Set no**	147 **Focal spot eff.** 2 mm
Order no	07-286	**Project**	xx	**Weld metal**	Same	**Source type**	Ir192 **kV** mA
Request no	xxx	**Drawing no**	xxx	**Weld method**	SAW		15 **Ci** 555 **GBq**
Report no client	xxx	**Object**	V23703	**Heat treated**	☐ Yes ☒ No		

Remarks

Film no		Film Dim. [cmxcm]	Discontinuity type / location Na [cm]	A/Na			Welder	Weld prep.	Weld [mm x mm]	[kV]	[Ci. min]	Pen. th. [mm]	D [mm]	d [mm]	Setup
F5	1	10 x 48		A		V23703	W32	V	2200 x 10.9		600	15	1100	10.9	A
F5	2	10 x 48		A		V23703	W32	V	2200 x 10.9		600	15	1100	10.9	A
F5	3	10 x 48		A		V23703	W32	V	2200 x 10.9		600	15	1100	10.9	A
F5	4	10 x 48		A		V23703	W32	V	2200 x 10.9		600	15	1100	10.9	A
F5	5	10 x 48		A		V23703	W32	V	2200 x 10.9		600	15	1100	10.9	A
F5	6	10 x 48		A		V23703	W32	V	2200 x 10.9		600	15	1100	10.9	A
F5	7	10 x 48		A		V23703	W32	V	2200 x 10.9		600	15	1100	10.9	A
F5	8	10 x 48		A		V23703	W32	V	2200 x 10.9		600	15	1100	10.9	A
F5	9	10 x 48		A		V23703	W32	V	2200 x 10.9		600	15	1100	10.9	A
F5	10	10 x 48		A		V23703	W32	V	2200 x 10.9		600	15	1100	10.9	A
F5	11	10 x 48		A		V23703	W32	V	2200 x 10.9		600	15	1100	10.9	A
F5	12	10 x 48		A		V23703	W32	V	2200 x 10.9		600	15	1100	10.9	A

Films and reporting

Film quantity 16

Page 1
Total pages 2

Operators

Name 7732 HEimgartner
Level 2 **Cert. no** 473-34

[redacted]

Name 0143 F.Diemeer
Level **Cert. no**

[redacted]

Filminterpretation

[redacted] **Cert. no** 473/33

[redacted] Filminterpreter

Report checked by

☐ Witnessed ☐ Reviewed

Name [redacted]

Date 26 FEB. 2008

BV MIV The Netherlands

[redacted]

5949

Radiographic Examination report

RTD branch office	Beverwijk	**RTD report no**	2426-2008-07-024
Telephone number	0251-226163	**RTD order no**	10097
Fax	0251-210405	**F&A-number**	5003-01.01097-121
Contact	Beverwijk	**Examination date**	14-02-2008
Client	Tank Bouw Rootselaar B.V	**Order no**	07-286

Röntgen Technische Dienst bv

Delftweg 144
Postbus 10065
3004 AB Rotterdam

Tel. (010) 208 82 08
Fax (010) 415 80 22
E-mail rtd@rtd.nl

Report no client xxx **Drawing no** xxx

Film no		Film Dim. [cmxcm]	Discontinuity type / location Na [cm]	A/Na		Welder	Weld prep.	Weld [mm x mm]	[kV]	[Ci. min]	Pen. th. [mm]	D [mm]	d [mm]	Setup
F5	13	10 x 48		A	V23703	W32	V	2200 x 10.9		600	15	1100	10.9	A
F5	14	10 x 48		A	V23703	W32	V	2200 x 10.9		600	15	1100	10.9	A
F5	15	10 x 48		A	V23703	W32	V	2200 x 10.9		600	15	1100	10.9	A
F5	16	10 x 48		A	V23703	W32	V	2200 x 10.9		600	15	1100	10.9	A

Films and reporting

Film quantity 16

Page 2
Total pages 2

Operators

Name 7732 HEimgartner
Level 2 **Cert. no** 473-34

Name 0143 F.Diemeer
Level **Cert. no**

[redacted]

minterpretation

Cert. no 473/33

[redacted]

Filminterpreter

Report checked by

Witnessed

Name [redacted]

Date 26 FEB. 2008

BV MIV The Netherlands

[redacted]

Chapter 5

Cryovat Internationaal B.V.,
Nijverheidsstraat 10,
3861 RJ Nijkerk,
the Netherlands.
Tel.: (0)33-2455959
Fax.: (0)33-2455958

CRYOVAT

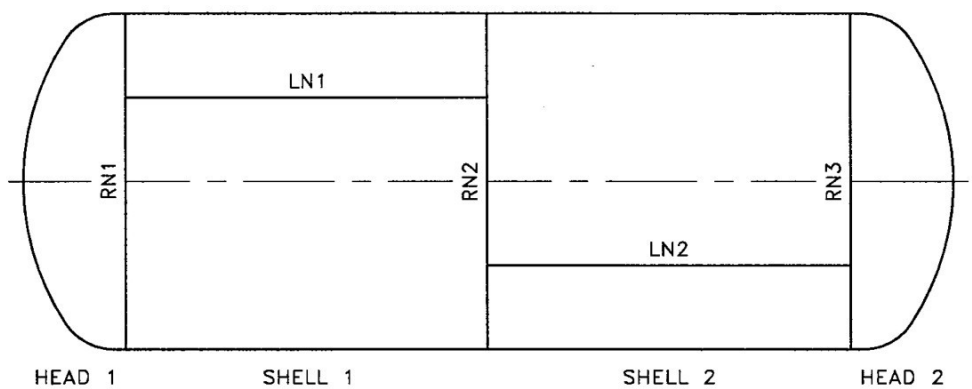
Material Identification Checklist

Inner vessel

Order No. 07-286
Document No. 23703 MCL-01
Revision 0

Client	Description	Drawing	Reg. no. (BV)	Manufacturing no.
Cryotainer	TC-20'/20.000L/2.4m/22b	D0705501	BVCT 0870199/R	23703

It is herewith certified that the above mentioned pressure vessel has been designed to use materials for the following parts for which certificates are enclosed



Part	Description	Material	Manufacturer	No., type, date & Cryovat-reg.no. of certificate	Cast No. and Heat No.
Head 1	Inner vessel Head 2220 x 10.0 Min	1.4311	Industeel Konig + CO (*)	3.1 / 27.11.06 / LTC 3.1 / 16.01.07 / MBJ	10911 529786.002
Head 2	Inner vessel Head 2220 x 10.0 Min	1.4311	Industeel Konig + CO (*)	3.1 / 27.11.06 / LTC 3.1 / 16.01.07 / MBJ	10911 529786.001
Shell 1	Inner vessel shell	1.4311	Industeel	3.1 / 31.10.06 / NCK	10911 529787.001
Shell 2	Inner vessel shell	1.4311	Industeel	3.1 / 15.11.06 / OOH	10911 530576.001
Baffles	Inner shell baffle	SA-240 304	Slawinski	3.1 / 23.01.07 / MGX	2006K0047599

*) Forming certificate

The above mentioned certificates will be stored for at least 10 years and a copy will be available on request

☐ Witnessed ☐ Reviewed

Prepared :	Checked :	Approved :	Date : 26-2-2008
Signature [redacted]	Signature : [redacted]	26 FEB. 2008 BV MIV The Netherlands [redacted]	Page : 1 of 1

Cryovat Internationaal B.V., Nijverheidsstraat 10, 3861 RJ Nijkerk, the Netherlands. Tel.: (0)33-2455959 Fax.: (0)33-2455958 CRYOVAT	**Material Identification Checklist** Piping	Order No. 07-286 Document No. 23703 MCL-03 Revision 0

Client	Manufacturing no.	Reg. No. (BV)	Client vessel no.
Cryotainer	TC-20'/20.000L/2.4m/22b	BVCT 0870199/R	23703

It is herewith certified that the above mentioned pressure vessel has been designed to use materials for the following parts for which certificates are enclosed

Part	Description	Material	Manufacturer	No., type and date of certificate	Cast No. and Heat No.
L5, L6	Pipe round 15.0x1.5 mm	1.4341	Tubi Acciaio Inox	OOI / 3.1	0573651
L10, L11	Pipe round 21.3x2.77 mm	304/304L	Froch Enterprise	NPA / 3.1	AMH050369
L7	Pipe round 33.7x2.0 mm	1.4301	Sitai Inox	LJY / 3.1	N505108
L3	Pipe round 48.3x2.77 mm	304/304L	Froch Enterprise	NPC / 3.1	AME050164
L1, L2, L8	Pipe round 60.3x2.9 mm	1.4341	Tubi Acciaio Inox	KXI / 3.1	493126
L1, L2, L8	Elbow 90° round 60.3x2.6 mm	1.4541 304/304L	Wilh. Schulz GmbH TA Chen Stainless	JCX / 3.1 OJO / 3.1	000043 244278A
L3	Elbow 90° round 48.3x2.6 mm	316/316L	TA Chen Stainless	NRO / 3.1	239787
L7	Elbow 90° round 33.7x2.0 mm	304/304L	ZIBO Wel-fit	OJG / 3.1	4100003

The above mentioned certificates will be stored for at least 10 years and a copy will be available on request

Prepared : [redacted]	Checked : [redacted]	☐ Witnessed [redacted] Reviewed Approved : Signature : 26 FEB. 2008 BV MIV The Netherlands [redacted]	Date : 25-2-2008 Page : 1 of 1

Chapter 6

INDUSTEEL
Groupe Arcelor

Tél.: 00 32/71/44.16.64
Fax: 16.28
INDUSTEEL (Belgium)
B.P. 1739 – B-6030 CHARLEROI

TOLES LAMINEES A CHAUD
HOT ROLLED PLATES
WARMGEWALZTE BLECHE
LAMIERE LAMINATE A CALDO

ESSAIS MECANIQUES - ANALYSES CHIMIQUES
MECHANICAL TESTS - CHEMICAL ANALYSIS
PRÜFUNGEN - CHEMISCHE ZUSAMMENSETZUNG
PROVE MECCANICHE - ANALISI CHIMICHE

INDUSTEEL EST ISO 9001 (CERT. 0078-2005, VALID 24/05/08) +MAQ REV 9 DU 01/05/04
INDUSTEEL IS ISO 9001 (CERT. 0078-2005, VALID 24/05/08) +QAM REV 9 DAT. 01/05/04

Certificat de contrôle des produits par l'usine : 3.1
Mill test certificate : EN 10204
Prüfzeugnis : ISO 10474
Certificato di controllo interno dei prodotti :

CLIENT / CUSTOMER / BESTELLER / CLIENTE

CRYOVAT PRODUKTIE B.V
NIJVERHEIDSSTRAAT 10
3861 RJ NIJKERK

REFERENCE / PURCHASER ORDER / BESTELL NR / REFERENZA
1/1764-2 PO-06516/06-120/129/148/EH

COMMANDE USINE NR / ORDER NR / WERKS NR / ORDINE NR
3544504

CCPU - CERTIFICATE - PRÜFZEUGNIS - CERTIFICATO
429975

BORDEREAU / DELIVERY / VERSANDANZEIGE / BORDERO
274435

ORGANISME DE CONTROLE/INSPECTION AUTHORITY/ÜBERWACHUNGSORGANISMO DI COLLAUDO
industeel belgium

PRODUIT - ARTICLE - PRÜFGEGENSTAND - PRODOTTO : **TOLES - PLATES - BLECHE - LAMIERE**

MATIERE / MATERIAL / WERKSTOFF / MATERIALE
X2CrNiN18-10 (1.4311) / 1.4311

SUIVANT / ACCORDING TO / ENTSPRECHEND / SECONDO
EN 10028-7:2000+AD2000W2 +W10

Ep(mm)	COULEE HEAT	ESSAIS	T°(C)	ETAT *	Traction transversale Transverse tensile test			
					Rp0.2% N/mm2	Rp 1% N/mm2	Rm/UTS N/mm2	A 5 %
11.00	10911	529786.2002	20	0	377	423	649	52
11.00	10911	529786.5001	20	0	341	382	635	63
Ep(mm)	COULEE HEAT	ESSAIS SAMPLES	T°(C)	ETAT *	Resilience charpy V transversale peau superieure Transverse charpy V notch test , sub-surface			
					INDIV. J	INDIV. J	INDIV. J	MOY/AV J
11.00	10911	529786.2002	-196	0	102	112	104	106
11.00	10911	529786.5001	-196	0	102	98	104	101

Corrosion Intergranulaire DIN 50914 (sensibilise)->Resultat satisfaisant. Pas de fissures.
Intergranular Corrosion DIN 50914 (sensitized)->Satisfactory. No cracks.

COULEE HEAT	C	Mn	P	S	Si	Ni	Cr	N			
10911	0.017	1.240	0.026	0.0003	0.666	9.193	19.061	0.1371			

*ETAT : 0 -> ETAT DE LIVRAISON AS DELIVERY

☐ Witnessed ☐ Reviewed
BUREAU VERITAS 1828
26 FEB. 2008
BV MIV The Netherlands
R. Ong A Kwien

ETAT DE LIVRAISON / STATE OF DELIVERY / Hypertrempe - Solution annealed - Lösungsgeglüht und abgeschreckt - Ipertemprato 1050°C/1100°C
LIEFERZUSTAND / STATO DI FORNITURA

PROCEDE D ' ELABORATION / MELTING PROCESS / ERSCHMELZUNGSART / PROCEDIMENTO DI ELABORAZIONE **E** + *VOD - Finish : no 1 - 1D*

MARQUAGE / MARKING / KENNZEICHNUNG / IDENTIFICAZIONE

- VG (SIGLE PRODUCTEUR) - NUANCE - NR COULEE - NR TOLE - POINÇON DE L ' EXPERT
- VG (TRADE MARK) - GRADE - HEAT NR - PLATE NR - INSPECTOR ' S STAMP
- VG (HERSTELLERZEICHEN) - MARKENBEZEICHNUNG - SCHMELZE NR - BLECH NR - STEMPEL DES SACHVERSTÄNDIGEN
- VG (SIGLA PRODUTTORE) - TIPO - NR COLATA - NR LAMIERA PUNZONE DEL COLLAUDATORE

MARQUE DU FABRICANT / BRAND OF THE MANUFACTURER / HERSTELLERZEICHEN / MARCA DEL PRODUTTORE : VG or VG

POINÇON DE L'EXPERT / INSPECTOR'S STAMP / STEMPEL DES SACHVERSTÄNDIGEN - PUNZONE DEL COLLAUDATORE : RF or RF

Liste descriptive - Extent of material delivery - Umfang der Lieferung - Descrizione del materiale

Marque Mark Zeichen Marca	Nombre Number Stückzahl Quantita	Désignation du produit Article Gegenstand Tipo di prodotto	N° de tôles Plates N° Bleche Nr Lamiere N°	N° coulée Heat N° Schmelze Nr N° colata	N° éprouvette Test N° Probe Nr Provetta N°	Kg Théor.
1-	2	5400x2700x11.00	529786/1->2	10911	529786.2002 529786.5001	2566

Résultats de l'inspection et du contrôle de dimensions : SANS REMARQUE.
Results of surface examination and dimensions controls : NO REMARK.
Ergebnis der Besichtigung und Maßkontrollen : OHNE BEANSTANDUNG.
Risultati delle inspezione e del controllo di dimensioni : SENZA OSSERVAZIONE .

INDUSTEEL (Belgium)

Gemäss Zertifikat vom 26/09/2006
hat der TÜV-Saarland
Gegenzeichnung verzichtet.

SPEKTROSKOPISCHE PRÜFUNG AUF WERKSTOFFVERWECHSLUNG OHNE BEANSTANDUNG.

Ausgestellt im Einvernehmen mit dem TÜV-Saarland
gemäss AD 2000-WO/TRD 100 Anerkennungsschreiben
B43/06/00994 vom 26/09/2006

Nous certifions que les produits énumérés ci-dessus sont conformes aux prescriptions de la commande
We hereby certify that the above mentioned products are consistent with the order prescriptions.
Wir bestätigen hiermit daß die obengenannten Erzeugnisse den Bestellungvorschriften entsprechen.
Certifichiamo che i prodotti enumerati qui sopra sono conformi alle prescrizione dell ' ordine.

Date - Datum - Data
27-NOV-2006

Q. C. Manager

Mill Inspector

717

MB7

KÖNIG + CO. GMBH

Bödenpresswerke - Netphen und Hockenheim-Baden
Hauptwerk / Main plant: D-57236 Netphen, Postfach / P.O.Box 1261 Telefon 0049 (0) 2738 601-0 Telefax 0049 (0) 2738 601-161

Werksbescheinigung

Works test certificate / Certificat d' usine
über/about/attestant
Kaltformgebung / cold forming / façonnage à froid

Besteller / Customer / Client: CRYOVAT PRODUKTIE B.V. , Nijkerk
Bestell-Nr. / Order-No. / Numéro de Commande: PO-06813/06-200&06-148/AN vom 24.11.2006
Werks-Nr. / Works-No. / Numéro d' usine: 6 / 20399
Lieferung vom / Date of delivery / Livraison du: 08.01.2007

Abnahmeprüfzeugnis 3.1 nach EN 10204
Inspection / test certificate 3.1 acc. to EN 10204
Certificat de réception d' usine suivant 3.1 - EN 10204

Prüfungsgrundlage: AD 2000-Merkblatt HP 8/1
Inspection basing on:
Base d'essai:

für kaltgeformte Böden, Konen, Verschlüsse, Verschlußteile.
for cold formed heads, cones, doors, door-parts.
pour fonds emboutis à froid cônes, fermentures, parties de fermeture.

Pos.-Nr. Item-No. Pos.-No.	Stückzahl Quantity Quantité	Art / Form Type / form Type / forme	Abmessung Dimensions Dimensions	Werkstoff Material Matériau	Schmelze / Probe / TÜV_Nr. Charge / sample Coulée / échantillon
1	10	**Elliptischer Boden / ellipsoidal head 1,9 : 1**	**Da/od = 2220 mm s = 10mm MW**	**1.4311**	**10911-529786-001+ 002 10121-524065-001-0 02-003**

Die verwendeten Bleche wurden, soweit erforderlich, umgestempelt und mit dem Herstellerzeichen versehen:
The used plates were restamped, if necessary, and provided with manufacturer's sign:
Les tôles utilisées ont été répoinçonnées si nécessaire et fournies avec la marque du fabricant:

KÖ **Herstellerzeichen**
Manufacturer's sign
La marque du fabricant

AD 2000-Merkblätter W2, HP7/1-4

Weiterbehandlung nach dem Pressvorgang keine,
further treatment after pressing procedure: none,
Traitement ultérieur: néant,

Oberflächenbehandlung /Surface treatment / Traitement de la surface: **gebeizt / pickled / décapage**

Zulassungen für die Herstellung von Druckbehälterteilen durch den Rheinisch-Westfäl. TÜV e.V.gemäß TRD 100,AD-W0,HP0,HP7/1 bis HP7/4.
Approvals by R-W TÜV e.V. for the manufacture of pressure-vessel components acc. to TRD 100, AD-W0. HP0, HP 7/1-HP 7/4.
Autorisation par R-W TÜV e.V. pour la construction des éléments de réservoirs sous pression selon TRD 100, AD-W0, HP0, HP 7/1-HP 7/4.

Zulassung für die Herstellung von Druckbehälterteilen durch LRQA Reg.-Nr. 0525, in Übereinstimmung mit den Anforderungen der DGRL 97/23/EC einschl. Anhg. I, 3.1 und 4.3.
Approvals by LRQA Reg.-Nr. 0525, for the manuf. of pressure-vessel components in conformity with the requirements of the PED 97/23/EC incl. app. I, 3.1 and 4.3.
Autorisation par LRQA Reg.-Nr. 0525, pour la constr. des éléments de réservoirs sous pression selon de la directive d'appareils de pression 97/23/EC, app. I, 3.1 et 4.3.

Ausreichende statistische Sicherheit für Blechdicken </= 30 mm gemäß AD 2000-Merkblatt W1 mit Zustimmung des RWTÜV vom 23.09.2004.
Sufficient statistical guarantee for plate thickness </= 30 mm according to AD 2000-data sheet W1 with approval of RWTÜV dated 23/09/2004.
Garantie statistique et suffisante pour une épaisseur de tôle </= 30 mm selon AD 2000-fiche technique W1 avec autorisation de RWTÜV du 23/09/2004.

Verwendet wurden: von Ihnen angelieferte Bleche
We used material supplied by yourself
Tôles utilisées: fournies par vous même

Besichtigung und Ausmessung ohne Beanstandung.
Visual and dimensional check without objection.
Inspection et vérification des dimensions sans objection.

nach EN 10204
acc. to EN 10204
selon EN 10204

Prüfung der fertigen Teile:
Inspection after forming:
Réception des pièces façonnées:

gem. Spezifikation:
according to:
selon spécification:

☐ Witnessed [redacted] Reviewed
BUREAU VERITAS 1828
26 FEB. 2008
BV MIV The Netherlands
[redacted]

König + Co. GmbH
[redacted]
Der Werkssachverständige
Inspecting engineer of manufacturer
L'expert de l'atelier

Netphen, 16.01.2007 LE

Dieses Zeugnis wird mit EDV erstellt und ist ohne Unterschrift gültig.
This certificate is issued by EDP and valid without signature.
Ce certificat est établi par l'ordinateur et est valable sans signature.

KÖNIG + CO

Bödenpresswerke

Hauptwerk :
Obere Industriestraße 24-26
57250 Netphen
Telefon: 02738 - 6010
Telefax: 02738 - 601161

Zweigwerk:
Eiserfelder Str. 98
57072 Siegen
Telefon: 0271 - 3371911
Telefax: 0271 - 3371999

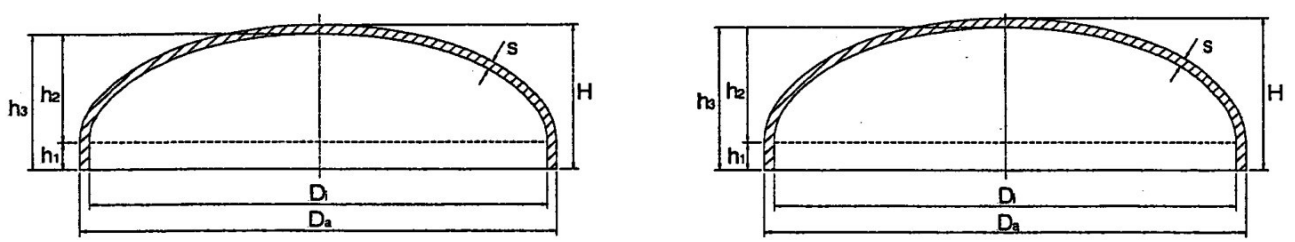
Zweigwerk:
Talhaus
68766 Hockenheim
Telefon: 06205 - 4097
Telefax: 06205 - 17429

MASSPROTOKOLL
DIMENSIONAL RECORD

Seite / sheet 1 von / of 2

Besteller / customer :	CRYOVAT International B.V.	Werks Nr. / works no. :	06 / 20399
Position Nr. / item no. :	1 / 1	Werkstoff Nr. / material no. :	1.4311

Form 2 : 1 ☐ **Form 1,9 : 1** ☒



s	= Wanddicke	s	= wall thickness
Da	= äußerer/ innerer Durchmesser	Da / Di	= outside / inside diameter
h1	= zyl. Bordhöhe	h1	= height of cylind. Part of rim
h3	= Gesamthöhe / Innenhöhe	H / h3	= total height / total height inside
U	= Umfang	U	= circumference

Boden Nr. / head no.	Charge / heat no.	Da mm	U mm	r1 mm	r2 mm	s mm	h1 mm	h3 mm
Soll / required		**2220**	**6974**			**10Mw.**	**40**	**619**
1	10911 529786-002	2221 / 2219	6976			10,2	40	632
2	10911 529786-002	2219 / 2216	6966			10,4	40	636
3	10121 524065-003	2220 / 2218	6972			10,3	40	638
4	10121 524065-002	2220 / 2218	6972			10,3	40	637
5	10121 524065-001	2219 / 2217	6969			10,2	40	636
6	10121 524065-001	2222 / 2217	6970			10,5	40	635
7	10911 529786-001	2216 / 2221	6967			10,1	40	632
		/						
		/						

Datum / date : 09.01.07 **Prüfer / testing operator :** [redacted] **Prüfaufsicht / testing supervisor:** [redacted]

KÖNIG + CO

Bödenpresswerke

Hauptwerk :
Obere Industriestraße 24-26
57250 Netphen
Telefon: 02738 - 6010
Telefax: 02738 - 601161

Zweigwerk:
Eiserfelder Str. 98
57072 Siegen
Telefon: 0271 - 3371911
Telefax: 0271 - 3371999

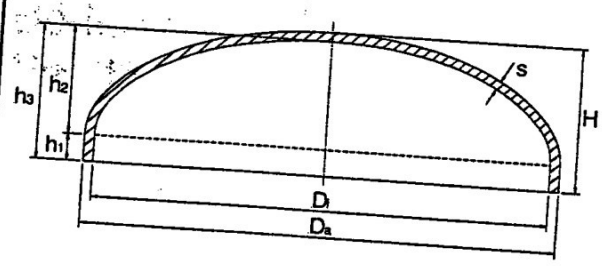
Zweigwerk:
Talhaus
68766 Hockenheim
Telefon: 06205 - 4097
Telefax: 06205 - 17429

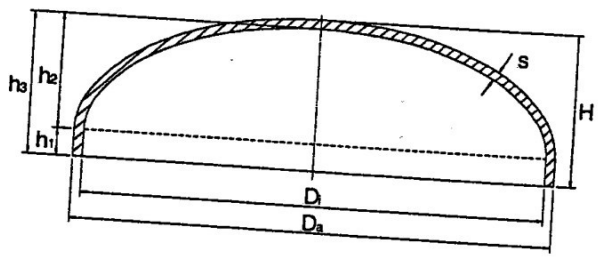
MASSPROTOKOLL
DIMENSIONAL RECORD

Seite / sheet 2 von / of 2

Besteller / customer :	CRYOVAT International B.V.	Werks Nr. / works no. :	06 / 20399
Position Nr. / item no. :	1 / 1	Werkstoff Nr. / material no. :	1.4311

Form 2 : 1 ☐ **Form 1,9 : 1** X





s = Wanddicke
Da = äußerer/ innerer Durchmesser
h1 = zyl. Bordhöhe
h3 = Gesamthöhe / Innenhöhe
U = Umfang

s = wall thickness
Da / Di = outside / inside diameter
h1 = height of cylind. Part of rim
H / h3 = total height / total height inside
U = circumference

Boden Nr. / head no.	Charge / heat no.	Da mm	U mm	r1 mm	r2 mm	s mm	h1 mm	h3 mm
Soll / required		**2220**	**6974**			**10Mw.**	**40**	**619**
8	10121 524065-003	2220 / 2216	6966			10,3	40	635
9	10121 524065-002	2222 / 2218	6973			10,6	40	633
10	10911 529786-001	2220 / 2218	6972			10,3	40	638

Datum / date : 09.01.07

Prüfer / testing operator : [redacted]

Prüfaufsicht / testing supervisor : [redacted]

INDUSTEEL
Groupe Arcelor

Tél.: 00 32/71/44.16.64
Fax: 16.28
INDUSTEEL (Belgium)
B.P. 1739 – B-6030 CHARLEROI

TOLES LAMINEES A CHAUD
HOT ROLLED PLATES
WARMGEWALZTE BLECHE
LAMIERE LAMINATE A CALDO

INDUSTEEL EST ISO 9001 { CERT. 0078-2005, VALID 24/05/08 } +MAQ REV 9 DU 01/05/04
INDUSTEEL IS ISO 9001 { CERT. 0078-2005, VALID 24/05/08 } +QAM REV 9 DAT. 01/05/04

Certificat de contrôle des produits par l'usine : 3.1
Mill test certificate : EN 10204
Prüfzeugnis : ISO 10474
Certificato di controllo interno dei prodotti :

CLIENT / CUSTOMER / BESTELLER / CLIENTE

CRYOVAT PRODUKTIE B.V
NIJVERHEIDSSTRAAT 10
3861 RJ NIJKERK

REFERENCE / PURCHASER ORDER / BESTELL NR / REFERENZA
1/1764-2 PO-06516/06-120/129/148/EH

COMMANDE USINE NR / ORDER NR / WERKS NR / ORDINE NR
3544503

CCPU - CERTIFICATE - PRÜFZEUGNIS - CERTIFICATO
431802

BORDEREAU / DELIVERY / VERSANDANZEIGE / BORDERO
274961

ORGANISME DE CONTROLE/INSPECTION AUTHORITHY/ÜBERWACHUNGORGANISMO DI COLLAUDO
Industeel belgium

PRODUIT - ARTICLE - PRÜFGEGENSTAND - PRODOTTO : **TOLES - PLATES - BLECHE - LAMIERE**

MATIERE / MATERIAL / WERKSTOFF / MATERIALE
X2CrNiN18-10 (1.4311) / 1.4311

SUIVANT / ACCORDING TO / ENTSPRECHEND / SECONDO
EN 10028-7:2000+AD2000W2 +W10

ETAT DE LIVRAISON / STATE OF DELIVERY / Hypertrempe - Solution annealed - Lösungsgeglüht und abgeschreckt - Ipertemprato 1050°C/1100°C
LIEFERZUSTAND / STATO DI FORNITURA

PROCEDE D ' ELABORATION / MELTING PROCESS / ERSCHMELZUNGSART / PROCEDIMENTO DI ELABORAZIONE **E + VOD - Finish : no 1 - 1D**

MARQUAGE / MARKING / KENNZEICHNUNG / IDENTIFICAZIONE

- VG (SIGLE PRODUCTEUR) - NUANCE - NR COULEE - NR TOLE - POINÇON DE L ' EXPERT
- VG (TRADE MARK) - GRADE - HEAT NR - PLATE NR - INSPECTOR ' S STAMP
- VG (HERSTELLERZEICHEN) - MARKENBEZEICHNUNG - SCHMELZE NR - BLECH NR - STEMPEL DES SACHVERSTÄNDIGEN
- VG (SIGLA PRODUTTORE) - TIPO - NR COLATA - NR LAMIERA PUNZONE DEL COLLAUDATORE

MARQUE DU FABRICANT / BRAND OF THE MANUFACTURER HERSTELLERZEICHEN / MARCA DEL PRODUTTORE **VG** or **RF**

POINÇON DE L'EXPERT / INSPECTOR'S STAMP STEMPEL DES SACHVERSTÄNDIGEN - PUNZONE DEL COLLAUDATORE

Liste descriptive - Extent of material delivery - Umfang der Lieferung - Descrizione del materiale

Marque Mark Zeichen Marca	Nombre Number Stückzahl Quantita	Désignation du produit Article Gegenstand Tipo di prodotto	N° de tôles Plates N° Bleche Nr Lamiere N°	N° coulée Heat N° Schmelze Nr N° colata	N° éprouvette Test N° Probe Nr Provetta N°	Kg Théor.
1-	1	6985x2185x10.80	529787/2->2	10911	529786.5001 529787.2002	1319

Résultats de l'inspection et du contrôle de dimensions : SANS REMARQUE.
Results of surface examination and dimensions controls : NO REMARK.
Ergebnis der Besichtigung und Maßkontrollen : OHNE BEANSTANDUNG.
Risultati delle inspezione e del controllo di dimensioni : SENZA OSSERVAZIONE .

INDUSTEEL (Belgium)

ESSAIS MECANIQUES - ANALYSES CHIMIQUES
MECHANICAL TESTS - CHEMICAL ANALYSIS
PRÜFUNGEN - CHEMISCHE ZUSAMMENSETZUNG
PROVE MECCANICHE - ANALISI CHIMICHE

Ep(mm)	COULEE HEAT	ESSAIS SAMPLES	T°(C)	ETAT *	Traction transversale Transverse tensile test			
					Rp0.2% N/mm2	Rp 1% N/mm2	Rm/UTS N/mm2	A 5 %
11.00	10911	529786.5001	20	0	341	382	635	63
10.80	10911	529787.2002	20	0	336	365	625	64
Ep(mm)	COULEE HEAT	ESSAIS SAMPLES	T°(C)	ETAT *	Resilience charpy V transversale peau superieure Transverse charpy V notch test , sub-surface			
					INDIV. J	INDIV. J	INDIV. J	MOY/AV J
11.00	10911	529786.5001	-196	0	102	98	104	101
10.80	10911	529787.2002	-196	0	114	102	104	107

Corrosion Intergranulaire DIN 50914 (sensibilise)->Resultat satisfaisant. Pas de fissures.
Intergranular Corrosion DIN 50914 (sensitized)->Satisfactory. No cracks.

COULEE HEAT	C	Mn	P	S	Si	Ni	Cr	N			
10911	0.017	1.240	0.026	0.0003	0.666	9.193	19.061	0.1371			

*ETAT : 0 -> ETAT DE LIVRAISON AS DELIVERY

☐ Witnessed ☐ Reviewed
26 FEB. 2008
BV MIV The Netherlands
R. Ong A Kwien

Gemäss Zertifikat vom 26/09/2006
hat der TÜV-Saarland
Gegenzeichnung verzichtet.

SPEKTROSKOPISCHE PRÜFUNG AUF WERKSTOFFVERWECHSLUNG OHNE BEANSTANDUNG.

Ausgestellt im Einvernehmen mit dem TÜV-Saarland
gemäss AD 2000-WO/TRD 100 Anerkennungsschreiben
843/06/00994 vom 26/09/2006

Nous certifions que les produits énumérés ci-dessus sont conformes aux prescriptions de la commande
We hereby certify that the above mentioned products are consistent with the order prescriptions.
Wir bestätigen hiermit daß die obengenannten Erzeugnisse den Bestellungvorschriften entsprechen.
Certifichiamo che i prodotti enumerati qui sopra sono conformi alle prescrizione dell ' ordine.

Date - Datum - Data	Q. C. Manager	Mill Inspector
8-DEC-2006	DESCHEPPER, MICHELE	BAYET, ALEXANDRA

[redacted]

[redacted]

INDUSTEEL
Groupe Arcelor

Tél.: 00 32/71/44.16.64
Fax: 16.28
INDUSTEEL (Belgium)
B.P. 1739 – B-6030 CHARLEROI

TOLES LAMINEES A CHAUD
HOT ROLLED PLATES
WARMGEWALZTE BLECHE
LAMIERE LAMINATE A CALDO

INDUSTEEL EST ISO 9001 (CERT. 0078-2005, VALID 24/05/08) +MAQ REV 9 DU 01/05/04
INDUSTEEL IS ISO 9001 (CERT. 0078-2005, VALID 24/05/08) +QAM REV 9 DAT. 01/05/04

Certificat de contrôle des produits par l'usine : 3.1
Mill test certificate : EN 10204
Prüfzeugnis : ISO 10474
Certificato di controllo interno dei prodotti :

CLIENT / CUSTOMER / BESTELLER / CLIENTE

CRYOVAT PRODUKTIE B.V
NIJVERHEIDSSTRAAT 10
3861 RJ NIJKERK

REFERENCE / PURCHASER ORDER / BESTELL NR / REFERENZA
1/1764-2 PO-06516/06-120/129/148/EH

COMMANDE USINE NR / ORDER NR / WERKS NR / ORDINE NR
3544501

CCPU - CERTIFICATE - PRÜFZEUGNIS - CERTIFICATO
428390

BORDEREAU / DELIVERY / VERSANDANZEIGE / BORDERO
274018

ORGANISME DE CONTROLE/INSPECTION AUTHORITHY/ÜBERWACHUNGSORGANISMO DI COLLAUDO
Industeel belgium

PRODUIT - ARTICLE - PRÜFGEGENSTAND - PRODOTTO : **TOLES - PLATES - BLECHE - LAMIERE**

MATIERE / MATERIAL / WERKSTOFF / MATERIALE
X2CrNiN18-10 (1.4311) / 1.4311

SUIVANT / ACCORDING TO / ENTSPRECHEND / SECONDO
EN 10028-7:2000+AD2000W2 +W10

ETAT DE LIVRAISON / STATE OF DELIVERY / Hypertrempe - Solution annealed - Lösungsgeglüht und abgeschreckt - Ipertemprato 1050°C/ 100°C
LIEFERZUSTAND / STATO DI FORNITURA

PROCEDE D ' ELABORATION / MELTING PROCESS /
ERSCHMELZUNGSART / PROCEDIMENTO DI ELABORAZIONE **E + VOD - Finish : no 1 - 1D**

MARQUAGE / MARKING / KENNZEICHNUNG / IDENTIFICAZIONE

- VG (SIGLE PRODUCTEUR) - NUANCE - NR COULEE - NR TOLE - POINÇON DE L ' EXPERT
- VG (TRADE MARK) - GRADE - HEAT NR - PLATE NR - INSPECTOR ' S STAMP
- VG (HERSTELLERZEICHEN) - MARKENBEZEICHNUNG - SCHMELZE NR - BLECH NR - STEMPEL DES SACHVERSTANDIGEN
- VG (SIGLA PRODUTTORE) - TIPO - NR COLATA - NR LAMIERA PUNZONE DEL COLLAUDATORE

MARQUE DU FABRICANT / BRAND OF THE MANUFACTURER
HERSTELLERZEICHEN / MARCA DEL PRODUTTORE **VG** or **VG**

POINÇON DE L'EXPERT / INSPECTOR'S STAMP
STEMPEL DES SACHVERSTANDIGEN - PUNZONE DEL COLLAUDATORE **RF** or **RF**

Liste descriptive - Extent of material delivery - Umfang der Lieferung - Descrizione del materiale

	Marque Mark Zeichen Marca	Nombre Number Stückzahl Quantita	Désignation du produit Article Gegenstand Tipo di prodotto	N° de tôles Plates N° Bleche Nr Lamiere N°	N° coulée Heat N° Schmelze Nr N° colata	N° éprouvette Test N° Probe Nr Provetta N°	Kg Théor.
1-		1	6985x2185x10.80	530576/1->1	10911	529786.5001 530576.2001	1319

Résultats de l'inspection et du contrôle de dimensions : SANS REMARQUE.
Results of surface examination and dimensions controls : NO REMARK.
Ergebnis der Besichtigung und Maßkontrollen : OHNE BEANSTANDUNG.
Risultati delle inspezione e del controllo di dimensioni : SENZA OSSERVAZIONE .

INDUSTEEL (Belgium)

ESSAIS MECANIQUES - ANALYSES CHIMIQUES
MECHANICAL TESTS - CHEMICAL ANALYSIS
PRÜFUNGEN - CHEMISCHE ZUSAMMENSETZUNG
PROVE MECCANICHE - ANALISI CHIMICHE

Ep(mm)	COULEE HEAT	ESSAIS SAMPLES	T°(C)	ETAT *	Traction transversale Transverse tensile test			
					Rp0.2% N/mm2	Rp 1% N/mm2	Rm/UTS N/mm2	A 5 %
11.00	10911	529786.5001	20	0	341	382	635	63
10.80	10911	530576.2001	20	0	338	376	632	65

Ep(mm)	COULEE HEAT	ESSAIS SAMPLES	T°(C)	ETAT *	Resilience charpy V transversale peau superieure Transverse charpy V notch test , sub-surface			
					INDIV. J	INDIV. J	INDIV. J	MOY/AV J
11.00	10911	529786.5001	-196	0	102	98	104	101
10.80	10911	530576.2001	-196	0	112	103	102	106

Corrosion Intergranulaire DIN 50914 (sensibilise)->Resultat satisfaisant. Pas de fissures.
Intergranular Corrosion DIN 50914 (sensitized)->Satisfactory. No cracks.

COULEE HEAT	C	Mn	P	S	Si	Ni	Cr	N			
10911	0.017	1.240	0.026	0.0003	0.666	9.193	19.061	0.1371			

*ETAT : 0 -> ETAT DE LIVRAISON
AS DELIVERY

☐ Witnessed [redacted] Reviewed

BUREAU VERITAS 1828

2 6 FEB. 2008

BV MIV The Netherlands

[redacted]

Gemäss Zertifikat vom 07/06/02
hat der TÜV-Saarland
Gegenzeichnung verzichtet.

SPEKTROSKOPISCHE PRÜFUNG AUF
WERKSTOFFVERWECHSLUNG OHNE BEANSTANDUNG.

Ausgestellt im Einvernehmen mit dem TÜV-Saarland
gemäss AD 2000-WO/TRD 100 Anerkennungsschreiben
843/02/0100 vom 07/06/02

Nous certifions que les produits énumérés ci-dessus sont conformes aux prescriptions de la commande
We hereby certify that the above mentioned products are consistent with the order prescriptions.
Wir bestätigen hiermit daß die obengenannten Erzeugnisse den Bestellungvorschriften entsprechen.
Certifichiamo che i prodotti enumerati qui sopra sono conformi alle prescrizione dell ' ordine.

Date - Datum - Data	Q. C. Manager	Mill Inspector
15-NOV-2006	DESCHEPPER, MICHELE	BAYET. ALEXANDRA

[redacted] [redacted]

0004

NCX

SLAWINSKI & CO. GMBH
Postfach 21 07 43
D-57031 Siegen

Industriestraße 11
D-57076 Siegen

Tel.: +49 (0) 271 / 7004-0
Fax: +49 (0) 271 / 7004-124

eMail: info@slawinski.de
http://www.slawinski.de

Abnahmeprüfzeugnis 3.1 nach EN 10204:2004

Inspection / Test Certificate 3.1 acc. to EN 10204:2004
Certificat de réception d'usine 3.1 suivant EN 10204:2004

Prüfgrundlage: **ASME VIII Div. 1, Ausgabe 2004**
Inspection based on: ASME VIII Div. 1, edition 2004
Base d'essai: ASME VIII Div. 1, edition 2004

Zulassungen: **Werkstoffhersteller nach DGR 97/23/EG durch den TÜV Rheinland Group**
Approvals: Manufacturer of materials in accordance to PED 97/23/EG by TÜV Rheinland Group
Autorisations: Producteur de matières selon Directive PED 97/23/EG par TÜV Rheinland Group

AD 2000-Merkblatt W0/TRD 100, HP0/TRD 201 durch den TÜV NORD
AD 2000-Merkblatt W0/TRD 100, HP0/TRD 201 by TÜV NORD
AD 2000-Merkblatt W0/TRD 100, HP0/TRD 201 par TÜV NORD

Daten der Lieferung / Dates on material delivered / Donnés de livraison

Besteller / Customer / Client : **Steelpoint B.V., Deventerseweg 10, NL- 2994 LD BARENDRECHT**

Bestell-Nr. / Order-No. / Numéro de commande : **SP 2977, vom 13.10.2006** 0670i/06-182/JN.

Werks-Nr. / Works-No. / Numéro d'usine : **20081**

Folgende Böden wurden von uns mit Rechnung vom *geliefert.
The following heads have been delivered by us together with our invoice dated * **23.01.2007 ***
Les fonds suivants ont été livrés par nous avec notre facture du *

Stück quantity quantité	Art / Norm(en) type / standard(s) type / norme(s)	Abmessung (mm) dimension (mm) dimension (mm)	Werkstoff material matériau	Schmelze-/probenummer heat/sample-no. numéro de charge / d'échantillon	Stahlwerk steelwork usine d'acier	Zeugnis-Nr. oder Datum certificate-no. or date numéro ou date du certificat
10	gewölbte Scheiben	2163 x 4 Ed.	SA 240 Type 304	629516/14	Ugine & Alz	2006K0047599

☐ Witnessed [redacted]eviewed
BUREAU VERITAS 1828
26 FEB. 2008
BV MIV The Netherlands
[redacted]

Prüfung und Besichtigung der fertigen Böden: Toleranzen nach UG 81, Rundheit nach UG 80
Examination and control of finished heads: tolerances acc. to. UG 81, roundness acc. to UG 80
Examination et contrôle des fonds finis: tolérances suivant UG 81, rodeur suivant UG 80

ohne Beanstandung
without complaint
sans objections

Verwendet wurden Bleche lt. beiliegendem Attest nach EN 10204 3.1
We used plates in accordance to attestation EN 10204
Nous avons utilisé des tôles conformes au certificat ci-joint EN10204

Die Bleche wurden von uns soweit erforderlich umgestempelt und mit unserem Stempel versehen.
The plates have been marked if necessary and have been provided with our stamp
Le report du poinçon de conrôle des tôles a été effectué si necessaire et les tôles ont été marqués par notre tampon

SLAWINSKI & CO. GMBH

[redacted]

Der Abnahmebeauftragte
Responsible person for the inspection
Personne responsable pour l'inspection

SL

D-57076 Siegen,
23.01.2007/BA

SLAWINSKI & CO. GMBH
Postfach 21 07 43
D-57031 Siegen

Industriestraße 11
D-57076 Siegen

Tel.: +49 (0) 271 / 7004-0
Fax: +49 (0) 271 / 7004-124

eMail: info@slawinski.de
http://www.slawinski.de

Anlage zum Abnahmeprüfzeugnis 3.1 für geschweißte Böden

Enclosure to Inspection / Test Certificate 3.1 for welded heads
Pièce jointe au certificat de réception d'usine 3.1 pour des fonds soudés

Prüfgrundlage: **AD 2000-Merkblatt HP 2/1, HP 5/2, HP 5/3**
Inspection based on: AD 2000-Merkblatt HP 2/1, HP 5/2, HP 5/3
Base d'essai: AD 2000-Merkblatt HP 2/1, HP 5/2, HP 5/3

Zulassungen: **Werkstoffhersteller nach DGR 97/23/EG durch den TÜV Rheinland Group**
Approvals: Manufacturer of materials in accordance to PED 97/23/EG by TÜV Rheinland Group
Autorisations: Producteur de matières selon Directive PED 97/23/EG par TÜV Rheinland Group

AD 2000-Merkblatt W0/TRD 100, HP0/TRD 201 durch den TÜV NORD
AD 2000-Merkblatt W0/TRD 100, HP0/TRD 201 by TÜV NORD
AD 2000-Merkblatt W0/TRD 100, HP0/TRD 201 par TÜV NORD

Daten der Lieferung / Dates on material delivered / Donnés de livraison

Besteller / Customer / Client : **Steelpoint B.V., Deventerseweg 10, NL- 2994 LD BARENDRECHT**

Bestell-Nr. / Order-No. / Numéro de commande : **SP 2977, vom 13.10.2006**

Werks-Nr. / Works-No. / Numéro d'usine : **20081**

Folgende Böden wurden von uns mit Rechnung vom *geliefert.
The following heads have been delivered by us together with our invoice dated * **23.01.2007 ***
Les fonds suivants ont été livrés par nous avec notre facture du *

Stück quantity quantité	Art / Norm(en) type / standard(s) type /norme(s)	Abmessung (mm) dimension (mm) dimension (mm)	Werkstoff material matériau
10	gewölbte Scheiben	2163 x 4 Ed.	SA 240 Type 304

☐ Witnessed [redacted] Reviewed
BUREAU VERITAS 1828
26 FEB. 2008
BV MIV The Netherlands
[redacted]

Lage der Schweißnaht :
Position of the welding seam:
position de la soudure:
innerhalb 0,6 x Da
within 0,6 x external diameter
à l'itérieure de 0,6 x diametre ext.

Berechnungsspannung:
Calculated Tension:
Tension calculée:
100 % nach AD 2000-Merkblatt B3, Abs. 5
100 % acc. to AD 2000-Merkblatt B3, Abs. 5
100 % suivant AD 2000-Merkblatt B3, Abs. 5

Nahtart / Type of welding seam / Type de la soudure: Stumpfnaht-BW / But weld - BW

Schweißverfahren / Welding procedure / Procédé de soudure: **Plasma-15**

Wärmebehandlung / Heat treatment / Traitment thermique: **ohne**

Zusatzwerkstoffe / Weld metal / Métal d'apport:: **Thermanit A Si**

Wir bestätigen, dass das Schweißverfahren nach AD 2000-Merkblatt HP 2/1 vom TÜV NORD überprüft und anerkannt ist.
We confirm that the welding process in accordane to AD 2000-Merkblatt HP 2/1 has been controlled an approved by the TÜV NORD.
Nous confirmons que le procédé de soudage suivant AD 2000-Merkblatt HP 2/1 a été contrôlé et approuvé par le TÜV NORD.

Prüfungen im Lieferzustand / Inspection of finished heads / Inspection à l'état de livrasion:

☒ **Besichtigung und Maßprüfung** / Inspection and dimensional inspection / Inspection et contrôle dimensional

☒ **Oberflächenrißprüfung: Blech beidseitig 100 %/** Inspection of superficial cracks: Both sides of the plate per 100 %
Inspection des fissures superficielles: Les duex côtés du tôle à 100 %

☐ **Röntgenprüfung** / X-ray inspection / Inspection par rayons X: nicht erforderlich

☐

Die Anforderungen nach AD 2000-Merkblatt HP 5/2 und HP 5/3 sind erfüllt.
All requirements acc. to AD 2000-Merkblatt HP 5/2 and HP 5/3 have been fulfilled.
Toutes les exigences suivant AD 2000-Merkblatt HP 5/2 et HP 5/3 sont accomplies.

SLAWINSKI & CO. GMBH
[redacted]
Der Abnahmebeauftragte
Responsible person for the inspection
Personne responsable pour l'inspection
D-57076 Siegen, 23.01.2007/BA

UGINE & ALZ
ARCELOR GROUP

UGINE & ALZ Belgium NV
Maatschappelijke zetel
Genk-Zuid : Zone 6A, Swinnenwijerweg 5, B 3600 Genk
Tel. (089) 30 21 11 - Telefax (089) 30 23 80
Telex 39058 aldozg b
H.R. Tongeren nr 41.051 - B.T.W. nr BE 401.277.914

MILL CERTIFICATE BS EN 10204/3.1
CERTIFICAT DE RECEPTION NF EN 10204/3.1
ABNAHMEPRUEFZEUGNIS DIN EN 10204/3.1

Approved as supplier according to AD2000- WO - TRD 100 statement W E 603
certified acc. PED (97/23/ec) by TÜV , NB 0035

N-Nr-N 2006K0047599

Manufacturer's works order number
N° de la commande usine productrice
Werksauftragsnummer
6UA622480/01-20733/817/01
Packing list:2006K632966

Surveyor's mark
Cachet de l'expert
Stempel des Werkssachverstaendigen
U & A.

Purchaser and/or consignee
Client et/ou destinataire
Besteller und/oder Empfaenger
RCC & WEHA GMBH

LISSABONER STR. 5

47229 DUISBURG-RHEINHAUSEN
DUITSLAND

Purchaser's order number
N° de commande client
Kundenbestellnummer
607616294

Customer article number
N° d'article client
Artikelnummer des Kunden
ART001340

Product - Produit - Erzeugnis
COILS, HOT ROLLED, ANNEALED AND PICKLED
COILS, LAMINE A CHAUD, RECUITS + DECAPE
COILS, WARMGEWALZT, GEGLUEHT UND GEBEIZT

Steel designation
Désignation de l'acier
Stahlbezeichnung
EN 10028-7/00 WNR 1.4307/1.4301
ASTM A 240(M)-06A TYPE 304L/304
ASME SA240(M)04A05 TYPE 304L/304
EN 10088-2/05 WNR 1.4307/1.4301

Finish
Présentation
Ausfuehrung
1D
NO 1
NO 1
1D

Steelmaking process
Mode d'élaboration de l'acier- Stahlherstellungsverfahren
Electric arc furnace-VOD/AOD-Continuous casting
Four à arc-VOD/AOD-Coulée continue
Elektro-Ofen-VOD/AOD-Stranggussanlage

Any supplementary requirements
Prescriptions supplémentaires - Zusätzliche Anforderungen
X2 CRNI 18-9

Product delivery condition
Etat de livraison du produit
Lieferzustand
Solution treated:
Hypertrempe:
Loesungsgegl+abgeschreckt: 1050 C
Forced air - Air forcé
Geblaese Luft

D 2000 W2/2004 -- AD 2000 W10/2003 -- EN 13445-2/2002

Identification of the product
Identification du produit-Identifizierung des Erzeugnisses

Dimensions
Dimensions - Abmessungen

Number of pieces
Nombre de pièces - Stueckzahl: 1

Coil n.	Heat n.	Thickness	Width	Length	Net weight
N° de bobine - Band Nr	N° de coulée - Schmelz Nr	Epaisseur - Dicke	Largeur - Breite	Longueur - Laenge	Poids net - Netto Gewicht
62951614	629516	4.00 mm	1250.00 mm		22000 KG

CHEMICAL ANALYSIS - ANALYSE CHIMIQUE - CHEMISCHE ZUSAMMENSETZUNG

	C	Si	Mn	Ni	Cr	Mo	Ti	N	S	P
Required-Exigé % mini				8.00	18.00					
Anforderung % maxi	0.030	0.75	2.00	10.00	19.50			0.100	0.015	0.045
Cast Analysis	0.019	0.39	1.39	8.07	18.15			0.053	0.004	0.034
Analyse coulee										
Analyse Schmelze	C71	C72	C73	C74	C75	C76	C77	C78	C79	C80

C81	C82	C83	C84	C85	C86

Tests to verify batch and quality have been carried out : OK
Tests de vérification de la conformité de la nuance fournie : OK
Verwechslungpruefung wurde durchgefuehrt : OK C04

α Ferrite | δ Ferrite C93

Bend test results are satisfactory EN ISO 7438 D52
Les essais de pliage sont satisfaisants 180 :ok
Ergebnisse des Biegeversuchs entsprechen den Vorschriften

Location (1)

MECHANICAL PROPERTIES - PROPRIETES MECANIQUES - MECHANISCHE WERTE EN 10002-1

Room temperature - Température ambiante - Raumtemperatur

Test Temperature : C03

Direction (2)		Yield strength Limite d'élasticité Dehngrenze MPa		Tensile strength Résistance à la traction Zugfestigkeit MPa	Elongation after fracture (A) Allongement après rupture Bruchdehnung %		Hardness Dureté Haerte	Yield strength Limite d'élasticité Dehngrenze MPa		Tensile str. Résist. MPa Zugfestigkeit	Elongation % Allongement Bruchdehnung
	Required Exigé Anforderung	Rp 0.2 %	Rp 1 %	Rm	A5	50mm	HRB C30	Rp 0.2 %	Rp 1 %	Rm	A5
	mini	210	250	520	45	45					
	maxi			670			92				
1 T	Obtained Obtenu Ergebnisse	282	327	634	57	56	81				
		C11	C14	C12	C13	C15	C16	C17	C18		C19

☐ Witnessed ☐ Reviewed

26 FEB. 2008

BV MIV The Netherlands

Impact strength test		Corrosion test	E0.2(T)/R(T)					Sample Thickness
Essai de résilience		Test de corrosion						
Kerbschlagzaehigkeitstest		Korrosionstest						
C40 Temp.	C44		%					
		EN ISO 3651/2 :OK	44					4.04mm
C42		D51	C50	C51	C52	C53	C54	C55 C05

Internal Cleanliness : A: B: C: D: C57

Location of the sample (1)
Emplacement de l'échantillon
Lage des Probenabschnittes
1. Front - Début - Anfang
2. Back - Fin - Ende
3. Middle - Milieu - Mitte C01

The delivery is in accordance with the order
La fourniture est conforme aux exigences de la commande
Die Lieferung entspricht den Bestellbedingungen Z01

Organisation inspection
Organisme et/ou service contrôle
Ueberwachungsabteilung A05
Metallurgical Department
22/08/2006

Direction of the test pieces (2)
Orientation des éprouvettes
Probenrichtung
T. Transverse - Travers - Quer
L. Longitudinal - long - laengs C02

Marking, inspection and measurement : without objection
Contrôle de marquage, d'aspect et de dimensions : satisfaisants
Pruefung der Stempelung, des Oberflaechenaspekts und der Abmessungen : ohne Beanstandung D01

The inspector
Le responsable
Der Werkssachverstae Z02

EQC601 29/07/2005

001

TUBI ACCIAIO INOX

A.T.I. s.r.l.
22036 Erba (Como)
Viale Resegone, 7

Telefono 031 - 3336-111
Telefax 031 - 3336-299

Reg. Trib. Como 10765
C.C.I.A.A. Como n. 155899
Cod. Fisc. e Part. IVA 00229520135
Part. IVA CEE IT 00229520135

TUBI ELETTROSALDATI LONGITUDINALMENTE SALDATI TUBES SOUDÉS LONGITUDINALEMENT

CERTIFICATO COLLAUDO / TEST CERTIFICATE / WERKS - PRÜFZEUGNIS / CERTIFICAT DE CONTRÔLE: EN 10204/2004 - Type 3.1 - ADW2

QUALITA' / QUALITY / WERKSTOFF / QUALITÉ: W. 1.4541

NORMA / STANDARD / NORME: DIN 17457 PK2 ANTIMIXTURE OK K3 D4/T3

NR. 02287 / 2007
REF. 40127
FAX. 0049 2173850085

ORDINE NR. / ORDER / BESTELLUNG / COMMANDE: 506068 / 250-7024613 del 04.12.2006

RIF.: ks-2659/06

QUALITA' / QUALITY / WERKSTOFF / QUALITÉ	DIMENSIONE (mm) / DIMENSION / ABMESSUNG / DIMENSION	QUANTITA' (mt) / QUANTITY / STÜCKZAHL / QUANTITÉ	PESO (kg) / WEIGHT / GEWICHT / POIDS	PEZZI nr / PIECES / STÜCKE / PIÈCES
W. 1.4541	15,00 X 1,50 X	6.000	1.302,000	660 / 217

COLATA-HEAT / SCHMELZE-COULÉE	C%	Si%	Mn%	P%	S%	Cr%	Ni%	Mo%	Ti%	N%	Co%
0573651	0,041	0,430	1,290	0,027	0,001	17,310	9,130	0,000	0,355	0,000	0,000

PROVA DI TRAZIONE / TENSION TEST-ZUGVERSUCH / ESSAI DE TRACTION

COLATA HEAT SCHMELZE COULÉE NR.	SNERVAMENTO - YIELD POINT: STRECKGRENZE LIMITE ELAST. Rp.0,2 N/mm²	SNERVAMENTO - YIELD POINT: DEHNGRENZE LIMITE ELAST. Rp.1% N/mm²	CARICO DI ROTTURA TENSILE - STRENGTH ZUGFESTIGK. CHARGE N/mm²	ALLUNGAMENTO ELONGATION DEHNUNG ALLONGEM. A%	DUREZZA HARDNESS HÄRTE DURETÉE HRB
0573651	243,00	276,00	610,00	54,00	75

PROVE CORRENTI PARASSITE / EDDY CURRENT TEST / WIRBELSTROMPRÜFUNG / CONTRÔLE PAR COURANT DE FOUCAULT: 100%SEP1914/100%SEP1925 OK

ESAME VISIVO E DIMENSIONALE / VISUAL AND DIMENSIONAL TEST / BESICHTIGUNG UND AUSMESSUNG / CONTRÔLE DIMENSIONEL: OK

CORROSIONE INTERCRISTALLINA / INTERGRANULAR CORROSION / INTERKRISTALLINE KORROSION / ESSAI DE CORROSION INTERGRANULAIRE: DIN 50914 OK

COLATA HEAT SCHMELZE COULÉE NR.	OMOLOGAZIONE / HOMOLOGATION / VERFAHRENSPRÜFUNG / HOMOLOGATION	PROVA DI SCHIACCIAMENTO / FLATTENING TEST / ABFLACHUNGVERSUCH / APLATISSEMENT	PROVA DI ALLARGAMENTO / FLARING TEST / ERWEITERUNGVERSUCH / EVASEMENT	PROVA DI PIEGA A ROVESCIO / REVERSE BEND TEST / FALTVERSUCH / PLIAGE	PROVA DI BORDATURA / FLANGE TEST / KREMPEVERSUCH / BORDAGE	TRATTAMENTO TERMICO / HEAT TREATMENT / WÄRMEBEHANDLUNG / TRAITEMENT THERMIQUE
0573651		100% OK				1050 C

Si certifica che il materiale sopra descritto è stato prodotto,controllato durante la lavorazione. Esaminato e collaudato con esito positivo in conformità alla richieste della specifica materiale e dell'ordine.
We hereby certify that material described above has been manufactured, controlled throughout processing. Examined and tested satisfactorily in conformity with the requirements of the material specification and the purchase order.

NOTE REMARKS BEMERKUNGEN NOTES
NO NO NO NO

☐ Witnessed ☑ Reviewed

8 FEB. 2008

MIV The Netherlands

ERBA, 13.04.2007

MARCATURA-MARKING-KENNZEICHNUNG-MARQUAGE : DIN 17457 K3 W2 SCHMELZE (COLATA) D

COLLAUDATORE-INSPECTOR-WERKSACHVERSTÄNDIGE-INSPECTEUR :

Registration Number: F070717011

檢 驗 證 明 書
MILL TEST CERTIFICATE
EN10204/3.1

ORIGINAL

彰源企業股份有限公司
FROCH ENTERPRISE CO.LTD
NO.122 INDUSTRIAL ROAD,TOU-LIU CITY
YUN-LIN 640 TAIWAN

Customer :	ARCUS NEDERLAND B.V.		
INVOICE NO.	CONTRACT NO.	L / C NO.	規 範 Specification
FEX20070865	IOG00512	FONL06M003010	ASTMA312/06/ASME SA 312/04,ASTM A999/ANSI B36.19

產品名稱 Description	項目 Item No.	產品尺寸 Size	鋼種 Type	爐號 Heat No.	數量 QTY (MTR)	重量 Weight(Kg)	熱處理 (℃) Heat Treatment Water Quenched	表面處理 Finish	水壓試驗 Hydrostatic Test (Mpa)	備註 Remark
STAINLESS STEEL WELDED PIPES ACCORDING TO APPLICANT'S ORDER IOH00512	1	1/2" X SCH 40S	304/304L	AMI1050369	654		1060	GOOD	18.00	

化學成分 Chemical Composition (%)

項目 Item No.	碳 C	矽 Si	錳 Mn	磷 P	硫 S	鉻 Cr	鎳 Ni	鉬 Mo
MIN						18.00	8.00	
MAX	.035	1.000	2.00	.045	.030	20.00	11.00	
1	.028	.500	1.34	.034	.006	18.37	8.10	

機械試驗 Mechanical Test

抗拉強度 Tensil (N/mm²)	降伏強度 0.2% Yield (N/mm²)	伸長率 % Elongation				硬度試驗 Hardness HRB	壓扁試驗 Flattening Test	彎曲試驗 Bend Test	擴口試驗 Expanding Test
			Direction	Width of specimen	Gauge Length				
			L.T	mm	mm			No Creak	No Creak
515.00	205.00	35.00	Longitudinal	Full size	50.00	85.00	OK		OK

☐ Witnessed ☐ Reviewed

26 FEB. 2008

BV MIV The Netherlands

R. Ong A Kwien

1. WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED BY US. IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS SPECIFIED BY YOU THAT IT SATISFIES THE REQUIREMENTS.
2. WE ARE A STAINLESS STEEL WELDED PIPE & TUBE MANUFACTURER CERTIFIED WITH ISO-9001 QUALITY MANAGEMENT AND ISO-14001 ENVIRONMENT MANAGEMENT.
3. THE MATERIAL DESCRIBED BY SUPPLIER AND HAS NO RADIATION CONTAIMINATION.
4. THE CHEMICAL COMPOSITIONS OF THE MATERIAL ARE INACCORDANCE WITH ASTM A240.
5. 1Ksi = 1000Psi , 1Mpa = 1 N/mm2 = 0.145038 Ksi
6. THE MATERIAL DESCRIBED HEREIN IS CERTIFIED FOR NO RADIATION CONTAMINATION BY ORIGINAL MANUFACTURER.

*ACCORDING TO EN10204/3.1 AND TO EVIDENCE IN CASE OF ASTM:
ASTMA312/06/ASME SA 312/04,ASTM A999/ANSI B36.19
PMI+IC ASTM A-262 PRACTICE,E NACE MR-0175
FLATTENING AND EXPANDING TEST
100 PCT HYDROSTATIC TESTED AND 100 PCT EDDY CURRENT TESTED ACC. TO SEP 1914
CERTIFIED 304/304L OR 316/316L
*DIMENSIONAL AND VISUAL EXAMINATION NO OBJECTION.
POSITIVE MATERIAL IDENTIFICATION RESULT IS SATISFIED.
*WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS SPECIFIED BY YOU THAT IT SATISFIES THE REQUIREMENTS.
ISO 9001 LLOYD'S REGISTER QUALITY ASSURANCE LTD. APPROVAL CERTIFICATE NO : 925916./QAM UNDER PED FSR4.3.
THE MATERIAL DESCRIBED BY SUPPLIER AND HAS NO RADIATION CONTAIMINATION.

Date: JUL 05,2007

NAME OF THE INSPECTION AUTHORITY:

[redacted]

Manager , QA Dept.

NPA

INSPECTION CERTIFICATE EN10204 /3.1

CERTIFICATO DI COLLAUDO
CERTIFICAT DE RECEPTION
ABNAHMEPRÜFZEUGNIS B° N. 095080

SHEET / PAG. / PAGE / SEITE 1 OF / DI / DE / VON 1

SITAI INOX S.p.A.
28077 PRATO SESIA (NO)
VIA VALSESIA, 2/B
TELEF. (0163) 8533
TELEFAX (0163) 853500

n° 170355 n° SLC - 0014

CARACTERISTIQUES GARANTIES
AM du 29/07/43 et AM du 24/03/76
C ≤ 0,25% - S ≤ 0,05% - P ≤ 0,05%
Rm ≤ 800 N/mm² - A% sur 5,65√S0 ≥ 16%
Rm x A ≥ 10500

CERTIFIED ACCORDING PED (97/23/EC) BY TÜV SÜDDEUTSCHLAND, NB N° 0036, CERTIFICATE N° 13873/04/ML
• DER TÜV SÜDWEST HAT MIT SCHREIBEN VOM 01.12.1994 AUF DIE GEGENZEICHNUNG VERZICHTET

CONFIRMATION NR.: CONFERMA NR. COMMANDE NR. BESTÄTIGUNG NR. 5101014209

CUSTOMER: CLIENTE CLIENT KUNDE

CUSTOMER ORDER N./ORDINE CLIENTE N./COMMANDE DU CLIENT N./AUFTRAGS NR.	SPECIFICATION SPECIFICA SPECIFICATION ANFORDERUNGEN	TEST N. PROVA N ESSAI N. PROBE N.	HEAT N. COLATA N. COULEE N. SCHMELZE NR.	METERS METRI METRES METER	PIECES N. N PEZZI N. DE PIECES STÜCKE	DIMENSIONS DIMENSIONI DIMENSIONS ABMESSUNGEN	LENGTH LUNGHEZZA LONGUEUR LÄNGE	STEEL TYPE TIPO DI ACCIAIO NUANCE D'ACIER MARKENBEZEICHNUNG
4500763946 Item 0004							m/n	
PRODUCT / PRODOTTO / PRODUIT / PRÜFGEGENSTAND LONGITUDINALLY WELDED STAINLESS STEEL TUBES TUBI SALDATI LONGITUDINALMENTE IN ACCIAIO INOX TUBES SOUDES LONGITUDINALEMENT EN ACIER INOX LÄNGSNAHTGESCHWEISSTE EDELSTAHLROHRE	EN 10217-7 TC2 Feb. 2005 OPTION 5: WLAb	A3178	N505108	546,91 Tot. 546,91	91 91	OD.mm.33,7x2		1.4301 / 1.4307

TEST RESULTS / RISULTATI DELLE PROVE / RESULTATS DES ESSAIS / ERGEBNIS DER PRÜFUNGEN (1 N/mm² = 1 MPa) (10 BAR = 1 MPa)

TEST N. PROVA N. ESSAI N. PROBE N.	TENSILE / TRAZIONE / TRACTION / ZUGVERSUCH * SENS	** DRAWING	Rp 0.2% N/mm²	Rp 1% N/mm²	Rm N/mm²	A % Lo = 2"	A % Lo = 5,65√So	HARDNESS DUREZZA DURETE HÄRTE	IMPACT TEST / RESILIENZA / RESILIENCE / KERBSCHLAGZÄHIGKEIT TEMPERATURE TEMPERATURE TEMPERATURE TEMPERATUR	NOTCH LOCATION POS. INTAGLIO POSITION ENTAILLE KERBESTELLUNG	JOULE	LATERAL EXPANSION ESPANS. LATERALE EXPANSION LATERALE SEITENAUSDEHNUNG mm	HYDROSTATIC TEST PROVA IDRAULICA ESSAI HYDRAULIQUE WASSERDRUCKVERSUCH BAR	FLATTENING SCHIACCIAMENTO APLATISSEMENT RINGFALTVERSUCH	FLARING ALLARGAMENTO EVASEMENT AUFWEITUNG	REVERSE FLATTENING SCHIAC. A ROVESCIO APLATISSEMENT INVERSE WURZEL SEITIGER RINGFALTVERSUCH	FACE BEND TEST PIEGA DI FACCIA PLIAGE ENDROIT	
A3178/01	L	M	262	316	609		59						EN 10246-2		S			
A3178/02	L	M	267	315	607		57											
													RING EXPANDING ALLARG. AD ANELLO DILATATION ANNEAUX RINGAUFDORNVERSUCH	FLANGING FLANGIATURA COLLETS BORDELVERSUCH	REVERSE BEND PIEGA ROVESCIO RETOURNEMENT WURZELSEITIGER BIEGERVERSUCH	RING TENSILE TRAZ. AD ANELLO TRACTION ANNEAUX RINGZUGVERSUCH	ROOT BEND TEST PIEGA DI RADICE PLIAGE ENVERS	

CHECKED BY ARCUS

* SENSO / DIRECTION / RICHTUNG: T = Transverse - Trasversale - Transversale - Quer; L = Longitudinal - Longitudinale - Longitudinal - Lange
** PRELIEVO / PRELEVEMENT / ENTNAHME: W = Weld - Saldatura - Soudure - Schweissung; M = Raw material - Materiale base - Metal de base - Rohmaterial
S = Satisfactory - Soddisfacente - Satisfaisant - Zufriedenstellend; H = HAZ-ZTA-ZAT-Wärmeeinfluss
NE = Not executed - Non eseguito - Pas effectuée - Nicht durchgeführt; "ON" = Tester n° - n° Collaudatore - n° Contrôleur - Zeichen des prüfers

HEAT TREATMENT / TRATTAMENTO TERMICO / TRAITEMENT THERMIQUE / WÄRMEBEHANDLUNG : **ANNEALED AT** / SOLUBILIZZAZIONE A / HYPERTREMPE A / LÖSUNGSGEGLÜHT AN 1050 °C
AND RAPIDLY COOLING / E RAFFREDDAMENTO VELOCE / ET REFROIDISSEMENT RAPIDE / UND ABGESCHRECKT

THE MATERIAL IS RESISTANT TO INTERCRYSTALLINE CORROSION IN ACCORDANCE WITH / IL MATERIALE E' RESISTENTE ALLA CORROSIONE INTERGRANULARE SECONDO / LE MATERIEL EST RESISTANT A LA CORROSION INTERGRANULAIRE SELON / DAS OBENGENANNTE MATERIALS IST BESTANDIG GEGEN INTERKRISTALLINE KORROSION GEMÄSS EN ISO 3651/2 A

JOINT EFFICENCY / FATTORE DI SALDATURA / COEFFICIENT DE SOUDURE / SCHWEISSFAKTOR: EJ = ; V = ; Z = ; V =

THE / IL / — 1008 **OF THE MATERIAL HAVE BEEN PASSED WITH SATISFACTORY RESULT THE** / DEL MATERIALE HA SUPERATO CON ESITO SODDISFACENTE IL CONTROLLO / DU MATERIEL SATISFAIT AU(X) CONTROLE(S) / DES MATERIALS HAT

EDDY CURRENT

TEST ACCORDING TO / SECONDO / SUIVANT / PRÜFUNG NACH EN 10246-3 BESTANDEN

VISUAL AND DIMENSIONAL CONTROL / CONTROLLO VISIVO E DIMENSIONALE / CONTROLE D'ASPECT ET DIMENSION / BESICHTIGUNG UND MABKONTROLLE : **SATISFACTORY** / SODDISFACENTE / SATISFAISANT / ZUFRIEDENSTELLEND

PROCEDURE QUALIFICATION RECORD N. / PROCEDIMENTO DI SALDATURA N. / PROCEDE DE SOUDAGE N. / SCHWEISSVERFAHRENSPEZIFIKAZION NR :

MARKING / MARCATURA / MARQUAGE / KENNZEICHNUNG : SITAI INOX EN 10217 TC2 WLAb 1.4301 / 1.4307 OD.mm.33,7x2 HEAT N505108 *ON* THE MATERIAL FULFILLS ALSO THE REQUIREMENTS OF DIN 17457 PK2 - 07.85 AD 2000 W2 / W10 2003

REMARKS / NOTE / NOTES / ANMERKUNG : STATEMENT OF CONFORMITY TO ANNEX 1, SECT. 4.3 OF PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC
WELDING PROCESS ACCORDING TO EN 288-1 1992 / EN 15614-1 2005, WELDERS OPERATORS QUALIFIED ACCORDING TO EN 287-1 1992
NDT OPERATORS QUALIFIED ACCORDING TO EN 10256 - 2000 AND OR EN 473 - 2000

PMI / PROVA ANTIMISCUGLIO / TEST DE NON MELANGE / VERWECHSELUNGSPRUEFUNG : S

PRODUCER TRADE MARK / TIMBRO DEL PRODUTTORE / MARQUE DU PRODUCTEUR / ZEICHEN DES LIEFERWERKS

HEAT ANALYSIS / ANALISI DI COLATA / ANALYSE DE COULEE / SCHMELZANALYSE

TEST N. PROVA N. ESSAI N. PROBE N.	HEAT N. COLATA N. COULEE N. SCHMELZE NR.	% C	% Mn	% Si	% P	% S	% Cr	% Ni	% Mo	% N	% Ti	%	%
A3178/01	N505108	0,023	1,60	0,45	0,036	0,004	18,33	8,07		0,079			

☐ Witnessed [redacted] Reviewed

26 FEB. 2008

SV MIV The Netherlands

PRODUCT ANALYSIS / ANALISI SUL PRODOTTO / ANALYSE SUR PRODUIT / STÜCKANALYSE

TEST N. PROVA N. ESSAI N. PROBE N.	HEAT N. COLATA N. COULEE N. SCHMELZE NR.	% C	% Mn	% Si	% P	% S	% Cr	% Ni	% Mo	% N	% R. [redacted]	%

INSPECTOR STAMP / TIMBRO DEL RESPONSABILE INCARICATO / CACHET DE L'INSPECTEUR / STEMPEL DES WERKSSACHVERSTÄNDIGEN

INSPECTOR SIGNATURE / FIRMA DEL RESPONSABILE INCARICATO / VISA DE L'INSPECTEUR / UNTERSCHRIFT DES WERSSACHVER STANDINGEN

[redacted]

PRATO SESIA , 19/06/2006

SITQUALITY.DOC REV. 9 01/10/08

Certificate NO	F070523014

檢 驗 證 明 書
MILL TEST CERTIFICATE
EN10204/3.1

ORIGINAL

彰源企業股份有限公司
FROCH ENTERPRISE CO.LTD
NO.122 INDUSTRIAL ROAD,TOU-LIU CITY
YUN-LIN 640 TAIWAN

Customer :	ARCUS NEDERLAND B.V.			PAGE: 5
INVOICE NO.	CONTRACT NO.	L / C NO.	規 範 Specification	ASTM A312/06/ASME SA 312/04, ASTM A999/ANSI B36.19
FEX20070369	IOH00250	FONL06M001827		

產品名稱 Description	項目 Item No.	產品尺寸 SIZE	鋼種 Type	爐號 Heat No.	數量 Q'TY (MTR)	重量 Weight(Kg)	熱處理 (℃) Heat Treatment Water Quenched	表面處理 Finish	水壓試驗 Hydrostatic Test (Mpa)	備註 REMARK
8928 MTR STAINLESS STEEL WELDED PIPES ACCORDING TO APPLICANT'S ORDER IOH00250	5	1-1/2" X SCH 10S	304/304L	AME050164	540		1060	GOOD	15.00	

化學成分 Chemical Composition (%)

項目 Item No.	碳 C	矽 Si	錳 Mn	磷 P	硫 S	鉻 Cr	鎳 Ni	鉬 Mo
MIN						18.00	8.00	
MAX	.035	1.000	2.00	.045	.030	20.00	11.00	
5	.024	.450	1.36	.033	.003	18.08	8.15	

機械試驗 Mechanical Test

抗拉強度 Tensil (N/mm^2)	降伏強度 0.2% Yield (N/mm^2)	伸長率 % Elongation				硬度試驗 Hardness HRB	壓扁試驗 Flattening Test	彎曲試驗 Bend Test	擴口試驗 Expanding Test
			Direction	Width of specimen	Gauge Length				
515.00	205.00	35.00	L.T	mm	mm			No Creak	No Creak
620.00	278.00	50.00	Longitudinal	19	50.00	83.00	OK		OK

☐ Witnessed ☐ Reviewed

26 FEB. 2008

BV MIV The Netherlands

1. WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED BY US. IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS SPECIFIED BY YOU THAT IT SATISFIES THE REQUIREMENTS.
2. WE ARE A STAINLESS STEEL WELDED PIPE & TUBE MANUFACTURER CERTIFIED WITH ISO-9001 QUALITY MANAGEMENT AND ISO-14001 ENVIRONMENT MANAGEMENT.
3. THE MATERIAL DESCRIBED BY SUPPLIER AND HAS NO RADIATION CONTAIMINATION.
4. THE CHEMICAL COMPOSITIONS OF THE MATERIAL ARE INACCORDANCE WITH ASTM A240.
5. 1Ksi = 1000Psi , 1Mpa = 1 N/mm2 = 0.145038 Ksi
6. THE MATERIAL DESCRIBED HEREIN IS CERTIFIED FOR NO RADIATION CONTAMINATION BY ORIGINAL MANUFACTURER.

*ASTM A312/ASMESA 312/ASTM A999/ANSIB36.19
PMI+IC ASTM A-262 PRACTICE,E NACE MR-0175
FLATTENING AND EXPANDING TEST
100 PCT HYDROSTATIC TESTED AND 100 PCT EDDY CURRENT TESTED ACC. TO SEP 1914
DUAL MARKED AND CERTIFIED 304/304L AND 316/316L
*DIMENSIONAL AND VISUAL EXAMINATION NO OBJECTION.
POSITIVE MATERIAL IDENTIFICATION RESULT IS SATISHED.
*WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS SPECIFIED BY YOU THAT IT SATISFIES THE REQUIREMENTS.
ISO 9001 LLOYD'S REGISTER QUALITY ASSURANCE LTD. APPROVAL CERTIFICATE NO : 925916.QAM UNDER PED ESR4.3.
THE MATERIAL DESCRIBED BY SUPPLIER AND HAS NO RADIATION CONTAIMINATION.

Date: MAY 16,2007

Manager , QA Dept.

KXI

TUBI ACCIAIO INOX

A.T.I. s.r.l.
22036 Erba (Como)
Viale Resegone, 7
Telefono 031 - 3336-111
Telefax 031 - 3336-299
Reg. Trib. Como 10766
C.C.I.A.A. Como n. 155898
Cod. Fisc. e Part. IVA 00229520135
Part. IVA CEE IT 00229520135

TUBI ELETTROSALDATI LONGWELDED TUBES/LANGSNAHTGESCHWEISSTE ROHRE
TUBES SOUDES LONGITUDINALEMENT

CERTIFICATO COLLAUDO
TEST CERTIFICATE
WERKS - PRÜFZEUGNIS
CERTIFICAT DE CONTRÔLE

EN 10204/2004 - Type 3.1 - ADW2

NR. 01399 / 2006
REF. 40127
FAX. 0049 2173850085

QUALITA'
QUALITY
WERKSTOFF
QUALITE

W. 1.4541

NORMA
STANDARD
NORME
NORME

DIN 17457 PK2 ANTIMIXTURE OK D3G D4/T3

ORDINE NR.
ORDER
BESTELLUNG
COMMANDE

505344 / 280-7021191
del 05.12.2005

RIF.

Ks 2344/05

QUALITA' QUALITY WERKSTOFF QUALITE	DIMENSIONE (mm) DIMENSION ABMESSUNG DIMENSION	QUANTITA' (mt) QUANTITY STÜCKZAHL QUANTITE	PESO (kg) WEIGHT GEWICHT POIDS	PEZZI (n) PIECES STÜCKE PIECES
W. 1.4541	60,30 X 2,90 X	6.000 540,000	2.040	90

COLATA/HEAT SCHMELZE-COULEE	C%	Si%	Mn%	P%	S%	Cr%	Ni%	Mo%	Ti%	N%	Co%
493126	0,036	0,530	0,980	0,028	0,001	17,160	9,070	0,000	0,351	0,000	0,000

PROVA DI TRAZIONE
TENSION TEST-ZUGVERSUCH
ESSAI DE TRACTION

COLATA HEAT SCHMELZE COULEE NR.	SNERVAMENTO - YIELD POINT STRECKGRENZE LIMITE ELAST. Rp0,2 N/mm²	SNERVAMENTO - YIELD POINT DEHNGRENZE LIMITE ELAST. Rp1% N/mm²	CARICO DI ROTTURA TENSILE - STRENGTH ZUGFESTIGK. CHARGE N/mm²	ALLUNGAMENTO ELONGATION DEHNUNG ALLONGEM. A%	DUREZZA HARDNESS HÄRTE DURETE HRB
493126	276,00	326,00	605,00	58,00	75

CHECKED BY
ARCUS

PROVE CORRENTI PARASSITE
EDDY CURRENT TEST
WIRBELSTROMPRÜFUNG
CONTRÔLE PAR COURANT DE FOUCAULT — 100%SEP1914/100%SEP1925 OK

ESAME VISIVO E DIMENSIONALE
VISUAL AND DIMENSIONAL TEST
SICHTPRÜFUNG UND AUSMESSUNG
CONTRÔLE DIMENSIONEL — OK

CORROSIONE INTERCRISTALLINA
INTERGRANULAR CORROSION
INTERKRISTALLINE KORROSION
ESSAI DE CORROSION INTERGRANULAIRE — DIN 50914 OK

COLATA HEAT SCHMELZE COULEE NR.	OMOLOGAZIONE HOMOLOGATION VERFAHRENSPRÜFUNG HOMOLOGATION	PROVA DI SCHIACCIAMENTO FLATTENING TEST ABFLACHUNGVERSUCH APLATISSEMENT	PROVA DI ALLARGAMENTO FLARING TEST ERWEITERUNGVERSUCH EVASEMENT	PROVA DI PIEGA A ROVESCIO REVERSE BEND TEST FALTVERSUCH PLIAGE	PROVA DI BORDATURA FLANGE TEST KREMPVERSUCH BORDAGE	TRATTAMENTO TERMICO HEAT TREATMENT WARMEBEHANDLUNG TRAITEMENT THERMIQUE
493126		100% OK				1050 C

Si certifica che il materiale sopra descritto è stato prodotto, controllato durante la lavorazione, esaminato e collaudato con esito positivo in conformità alle richieste della specifica materiale e dell'ordine.
We hereby certify that material described above has been manufactured, controlled throughout processing, Examined and tested with positive result in conformity with the requirements of the material specification and the purchase order.

NOTE REMARKS BEMERKUNGEN NOTES
NO NO NO NO

☐ Witnessed [redacted] eviewed

BUREAU VERITAS 1828
26 FEB. 2008
BV MIV The Netherlands

ERBA,
08.03.2006

MARCATURA-MARKING-KENNZEICHNUNG-MARQUAGE : ATI 1.45[redacted]IN 17457 D3 W[redacted]ELZ

COLLAUDATORE-INSPECTOR-WERKSACHVERSTÄNDIGE-INSPECTEUR :

CERTIFIED MATERIAL TEST REPORT

Abnahmeprüfzeugnis 3.1 B
acc. to/nach DIN 50 049
and/und EN 10 204

Wilh.Schulz GmbH
Werk Krefeld
Quality Assurance
Qualitätssicherung

Customer: Kunde	**Certificate No.** Zeugnis-Nr. 113993
	Date / Datum 28.10.02 DE
	Our Order / Item No. Unsere Kom. /Pos.Nr.

Order No. Bestell-Nr.			
Article Artikel	elbows, welded 90° type 3 Bogen, geschweißt 90° Bauart 3		
Qty. Stück	1000	**Dimension/ Abmessung** DN50 / 60,3x2,6	**Material Grade/Werkstoff-Nr.** 1.4541

Requirements/ Abnahmebedingungen:

Base material Vormaterial	DIN 17457 Pk2 / AD-W2 / TRB 100 V=1,0
Article Artikel	DIN 2605-T1/2609/TRD100/AD2000-W2/VdTÜV 1252 Druckgeräte-Richtlinie 97/23 EG / PED 97/23 EC

Cold formed Kaltverformt	**Heat Treatment / Wärmebehandlung** 1060 °C 1940°F 15 Min. Water/Wasser	CHECKED BY ARCUS

Intergranular corrosion Interkristalline Korrosion	DIN 50914	satisfactory ohne Beanstandung

PMI base- and fillermetal as applicable Grundwst./Schweißn. soweit anwendbar	100 % satisfactory ohne Beanstandung
Welding bevels acc. to Schweißphase gemäß	DIN 2559 Bl.1K1 (I)
Visual and dimensional contr. Besichtigung und Maßkontrolle	without complaints ohne Beanstandung

Marking

P M I
N-1.4541
CH: 000043
60,3x2,6-90-3 W
DIN 2605 T1
Germany
manufacturing date

NDE/ZfP
10 % FE der Schweißnähte gemäß AD-HP 5/3: o.B.
10 % PT of welds acc. to QKA 8 Rev.6:satisfactory

☐ Witnessed [redacted]eviewed

26 FEB. 2008

BV MIV The Netherlands

CERTIFIED MATERIAL TEST REPORT

Abnahmeprüfzeugnis 3.1 B
acc. to/nach DIN 50 049
and/und EN 10 204

Wilh.Schulz GmbH
Werk Krefeld
Quality Assurance
Qualitätssicherung

Mechanical Properties/ Mechanische Eigenschaften

Heat No. / Schmelze Nr.	000043	Test No. / Probe Nr.	043

	L T	Test-temp. Prüf-temp. °C	Yield Strength Streckgrenze 0,2% KSI	0,2% N/mm²	1,0% N/mm²	Tensile Strength Zug-festigkeit KSI	N/mm²	Elon-gation Dehnung %	Reduc-tion Ein-schn. %	Impact Strength Kerbschlagzähigkeit J lbf	ϕ	Hardness Härte Brinell
Requ. Soll	L	20		180	215		460- 680	35				
Bas	L	20		257	288		548	58.0				149 - 172
Bas	L	20		277	305		561	53.2				
Bas	L	20		263	295		555	56.1				
Bas	L	20		268	303		570	54.8				

Chemical Analysis / Chemische Analyse — acc. to base material certificate/gemäß Vormaterialzeugnis

Melting Process/ Erschmelzungsart : E/AOD
Heat No./Schmelze Nr. : 000043

% C	% Si	% Mn	% P	% S	% Cr	% Ni	% Mo	% Ti	% B	%	%
0.034	0.420	1.480	0.025	0.0070	17.420	9.180		0.430			
% Ta	% N	% V	% Cu	% Ce	% Nb	% Al	% Co	% Fe	% Pb		
	0.0110										

Remarks/Bemerkungen

ARGUS

This testimonial and certification respectively is recorded by computersystem and is valid without signature. Alteration or use for other products are regarded as falsification of documents and will be subject to criminal jurisdiction.
Dieses Zeugnis bzw. diese Bescheinigung wurde mit Hilfe der EDV erstellt und ist ohne Unterschrift gültig. Veränderungen sowie Verwendung für andere Erzeugnisse werden als Urkundenfälschungen und Betrug strafrechtlich verfolgt.

THIS IS TO CERTIFY THAT THE CONTENTS OF THE REPORT IS CORRECT AND ACCURATE AND THAT ALL TEST RESULTS AND OPERATIONS PERFORMED BY SCHULZ OR ITS SUBCONTRACTORS ARE IN COMPLIANCE WITH THE MATERIAL SPECIFICATIONS LISTED IF SO STATED ELSEWHERE IN THIS CMTR. WE HEREBY CERTIFY THAT THE MATERIAL USED FOR PRODUCT FORM CONVERSION CONFORMS TO THE APPLICABLE DIMENSIONAL REQUIREMENTS.

28.10.02 [redacted]

Date / Datum — QUALITY CERTIFIKATION REPRESENTATIVE / WERKSSACHVERSTÄNDIGER

AST

ABNAHMEPRUEFZEUGNIS
EN 10204/3.1B

BESTELLER	DATUM	ATTEST NR
AVESTA SHEFFIELD ROHR & FITTINGS GMBH POSTFACH 460254 D-47877 WILLICH TYSKLAND	98-02-17	N804148
	HERSTELLER AUFTRAGS NR: 97-18208	POS: 240.0
	BESTELLER AUFTRAGS NR: 16.2.2556	

ERZEUGNISFORM
GESCHWEISSTE ROSTFREIE ROHRE, NAHTGEGLÄTTET, WÄRMEBEHANDELT, GEBEIZT, IN FIXLÄNGEN,

LIEFERBEDINGUNGEN	TOLERANZEN
TRB 100;AD-W2;DIN 17457 PK 2 V=1.0	SPECIAL
	ZEICHEN DES HERSTELLER: AST-N

WERKSTOFF	HERSTELLERBEZEICHNUNG
W.NR 1.4541	18-10TI

ROHRKENNZEICHNUNG
W.NR 1.4541; K2G; W; PK 2;
MAR-N1,AST-N 18-10TI ,TV000043, 60.3 X 2.6 ,

UMFANG DER LIEFERUNG

ANZAHL	METER	KILO	ABMESSUNG	CHARGE NR
74	428.0		60.30 X 2.60 X 5800	000043

CHEMISCHE ZUSAMMENSETZUNG

	C	Si	Mn	P	S	Cr	Ni	N	TI		
SCHMELZEANALYSE	.034	.42	1.48	.025	.007	17.42	9.18	.011	.43		
KONTROLLANALYSE											

ERGEBNISSE DER PRÜFUNGEN

	TEMP C	Rp 0.2 N/mm²	Rp 1.0 N/mm²	Rm N/mm²	A 5 %	A %	HÄRTE		TEMP C	Rp 0.2 N/mm²	Rp 1.0 N/mm²	Rm N/mm²	A 5 %	A %	HÄRTE
ANFORDERUNGEN		200	235	500-730	35			ANFORDERUNGEN							
01L	20	282	323	575	60										

☐ Witnessed ☐ Reviewed
26 FEB. 2008
BV MIV The Netherlands

AUFWEITVERSUCH DIN 50135 : OHNE BEANSTANDUNG.
BESTÄNDIGKEIT GEGEN INTERKRISTALLINE KORROSION
DIN 50914 (700 C 30') : OHNE BEANSTANDUNG.
WIRBELSTROMPRUEFUNG SEP 1914 : OHNE BEANSTANDUNG.
DICHTHEITSPRUEFUNG SEP 1925 : OHNE BEANSTANDUNG.
VERWECHSLUNGSPRUEFUNG : OHNE BEANSTANDUNG.
UEBERPRUEFT NACH AD-MERKBLATT W0/TRD 100 DURCH DEN TUEV NORD E.V.
MIT VERZICHT AUF GEGENZEICHNUNG - TUEV-AKTENZEICHEN 0121WL04760.

CHECKED BY ARCUS

11152 [redacted]
05.03.98

TÜV CERT
DIN ISO 9002
Zertifikat: QA - 446

ERSCHMELZUNGS-ART	BESICHTIGUNG UND AUSMESSUNG	STEMPEL DES WERK SACHVERSTÄNDIGEN	DIE GESTELLTEN ANFORDERUNGEN SIND LAUT ANLAGE ERFÜLLT
E/AOD	OHNE BEANSTANDUNG		QC-ABT BJÖRN ZETTE
WÄRMEBEHANDLUNG: 1040-1065 C LUFT UND WASSER			AUSGESTELLT VON: BJÖRN ZETTERBERG [redacted]

AVESTA SANDVIK TUBE AB
TORSHÄLLA BOX 48 S-644 21 TORSHÄLLA SWEDEN

TELEPHONE NO	TELEPHONE QC-DEPT	TELEPHONE CERT.DEPT	TELEFAX QC/CERT.DEPT
+46 16 34 95 00	+46 16 34 95 80	+46 16 34 96 59	+46 16 34 97 00

EN 10204-3.1 / DIN 50049-3.1B

Inspection Certificate

Commodity: STAINLESS STEEL BUTT-WELDING FITTING
90 DEG SHORT RADIUS ELBOW

Specification: ASTM A403-2004/ASME SA403-2004
ANSI B16.28-1986

Grade: WP316/316L-W , WP304/304L-W

Supply Condition: HEATTREATED AT 1040° AND WATER QUENCHED

Customer:

Shipper: TA CHEN STAINLESS PIPE CO., LTD.

Destination: ROTTERDAM

Customer's O/N.: 22957...

Factory O/N: SL02H9256

Certificate No: HB0603003

Date: 2007/11/22

INVOICE No: SL02HB0603

TA CHEN STAINLESS PIPE CO., LTD.
NO. 125 HSIN-TIEN 2ND ST, HSIN-TIEN
JENG-TEH, TAINAN TAIWAN R.O.C
TEL:(06)2793254 · 2701756-8
FAX:(06)2701382 · 2791154

TA CHEN has established a QMS according to ISO 9001, which is certified by LRQA (cert. no. TWN0936925)

Item No.	Case No. (Crate No.)	Heat No.	Size	Quantity (Pcs)	Weight (Kgs)	Chemical Composition in %								
						C	Si	Mn	P	S	Ni	Cr	Mo	N
01	007,008,009	VLF032285	FBBSR-W316L -12-10S	30		0.018	0.580	0.900	0.037	0.002	10.07	16.390	2.057	-
02	039	244278A	FBBSR-W304L -2-10S	200		0.028	0.410	1.270	0.037	0.005	8.160	18.310	-	0.044
03	006	241074B	FBBSR-W316L -3-10S	100		0.021	0.550	1.130	0.026	0.002	10.18	16.670	2.180	0.018
04	039	239780	FBBSR-W304L -3-10S	100		0.028	0.490	1.420	0.032	0.005	8.020	18.150	-	0.047
05	040	146121	FBBSR-W304L -4-10S	100		0.023	0.360	1.550	0.033	0.013	8.110	18.210	-	0.038
06	005	243790	FBBSR-W316L -6-10S	30		0.020	0.560	0.860	0.028	0.004	10.05	16.370	2.090	0.016
			Total	560										

Item No.	Tensile Test				Hardness Test HRB	Bend Test	Heat Treatment TEMP. o F	Dimension And Surface Condition
	0.2%Yield Strength PSI	1%Yield Strength PSI	Tensile Strength PSI	Elongation %				
01	42400		86400	50.00	82.00		1960	OK
02	44500		88800	51.00	82.00		1960	OK
03	47400		85200	53.00	82.00		1960	OK
04	38400		91600	51.00	81.00		1960	OK
05	45600		89700	48.00	85.00		1960	OK
06	39700		83600	52.00	77.00		1960	OK

☐ Witnessed ☐ Reviewed

BUREAU VERITAS 1828

26 FEB. 2008

BV MIV The Netherlands

[redacted] ASSURANCE APPROVAL

11 Dec. 2007

Remarks

PREMATERIAL : WELDED PIPE A312
HARDNESS : NACE MR 0175-98 O.K.
ASTM A262 PRACTICE E : GUARANTEED
PMI TESTED : O.K.
ADDENDA ASME CODE SEC II PART A
&
LA SOCIETE...GARANTIT QUE LES PRODUITS OBJET DU PRESENT CERTIFICAT,RESPECTENT EN LEUR TOTALITE LES PRESCRIPTIONS DE L'ARTICLE 15 DE L'ARRETE MINISTERIEL DU 24 MARS 1978 MODIFIE.
C<=0.25%,P<=0.05%,S<=0.05%,R<=600N/MM2
E<=0.9 X R%, A%(LO=5.65 VSO) MIN. 16%
EN LONG. R(A-2)>=10500

CHECKED BY ARGUS

We here by certify the above statement to be true and correct every detail .. TA CHEN STAINLESS PIPE CO. LTD.

[redacted]

EN 10204-3.1

Inspection Certificate

TA CHEN STAINLESS PIPE CO., LTD.
NO. 125 HSIN-TIEN 2ND ST, HSIN-TIEN
JENG-TEH, TAINAN TAIWAN R.O.C
TEL.:(06)2793254 · 2701756-8
FAX:(06)2701382 · 2791154

TA CHEN has established a QMS according to ISO 9001, which is certified by LRQA (cert. no. TWN0936925)

Commodity: STAINLESS STEEL BUTT-WELDING FITTING
90 DEG LONG RADIUS ELBOW
Specification: ASTM A403-2004/ASME SA403-2004
ANSI B16.9-2003
Grade: WP304/304L-W , WP316/316L-W
Supply Condition: HEATTREATED AT 1040° AND WATER QUENCHED

Customer:
Shipper: TA CHEN STAINLESS PIPE CO., LTD.
Destination: ROTTERDAM

Customer's O/N. 22528...
Factory O/N SL02H1355

Certificate No HB0178001 (01 / 03)
Date : 2007/4/19
INVOICE No : SL02HB0178

Item No.	Case No. (Crate No.)	Heat No.	Size	Quantity (Pcs)	Weight (Kgs)	Chemical Composition in % C	Si	Mn	P	S	Ni	Cr	Mo	N
01	006	239787	FBBLR-W304L -1-10S	300		0.021	0.520	1.340	0.031	0.005	8.080	18.190	-	0.041
02	015	144374	FBBLR-W316L -1-1/2-10S	1000		0.018	0.630	1.090	0.029	0.003	10.25	16.760	2.130	0.018
03	006	239787	FBBLR-W304L -1-1/2-10S	500		0.021	0.520	1.340	0.031	0.005	8.080	18.190	-	0.041
04	017	143045	FBBLR-W316L -1-1/2-40S	200		0.019	0.650	0.830	0.028	0.003	10.05	16.240	2.080	0.014
05	016	141934	FBBLR-W316L -2-10S	1000		0.023	0.530	1.130	0.027	0.003	10.13	16.900	2.120	0.014
06	005 006	144550	FBBLR-W304L -2-10S	700		0.027	0.480	1.390	0.031	0.009	8.080	18.240	-	0.061
			Total	3700										

Item No.	Tensile Test 0.2%Yield Strength PSI	1%Yield Strength PSI	Tensile Strength PSI	Elongation %	Hardness Test HRB	Bend Test	Heat Treatment TEMP. °F	Dimension And Surface Condition
01	42400		92000	49.00	84.00		1960	OK
02	42700		87200	54.00	78.00		1960	OK
03	42400		92000	49.00	84.00		1960	OK
04	39800		83600	54.00	75.00		1960	OK
05	39200		83600	53.00	76.00		1960	OK
06	42900		94200	50.00	82.00		1960	OK

☐ Witnessed ☐ Reviewed

26 FEB. 2008

BV MIV The Netherlands

R. Ong A Kwien

[redacted]

Remarks

PREMATERIAL : WELDED PIPE A312
HARDNESS : NACE MR 0175-98 O.K.
ASTM A262 PRACTICE E : GUARANTEED
PMI TESTED : O.K.
ADDENDA ASME CODE SEC II PART A
&
LA SOCIETE...GARANTIT QUE LES PRODUITS OBJET DU PRESENT CERTIFICAT.RESPECTENT EN LEUR TOTALITE LES PRESCRIPTIONS DE l'ARTICLE 15 DE l'ARRETE MINISTERIEL DU 24 MARS 1978 MODIFIE.
C<=0.25%,P<=0.05%,S<=0.05%,R<=800N/MM2
E<=0.9 X R%, A%(LO=5.65 VSO) MIN. 16%
EN LONG. R(A-2)>=10500

We here by certify the above statement to be true and correct every detail

TA CHEN STAINLESS PIPE CO., LTD.

[redacted]

EN 10204-3.1

Inspection Certificate

TA CHEN STAINLESS PIPE CO., LTD.
NO. 125 HSIN-TIEN 2ND ST, HSIN-TIEN
JENG-TEH, TAINAN TAIWAN R.O.C
TEL.:(06)2793254 · 2701756-8
FAX:(06)2701382 · 2791154

TA CHEN has established a QMS according to ISO 9001, which is certified by LRQA (cert. no. TWN0936925)

Commodity: STAINLESS STEEL WELDED PIPE
Customer:
Shipper: TA CHEN STAINLESS PIPE CO., LTD.
Specification: ASTM A312-2004b
Destination: ROTTERDAM
Grade: TP-304/304L
Customer's O/N.: 22528...
Certificate No: HB0178001 (02 / 02)
Supply Condition: ANNEALED & PICKLED
Factory O/N:
Date: 2007/4/19
INVOICE No.: SL02HB0178

Item No.	Case No. (Crate No.)	Heat No.	Size	Quantity (Pcs)	Weight (Kgs)	Chemical Composition in % C	Si	Mn	P	S	Ni	Cr	Mo	N
07	006	239787	1" SCH10S			0.021	0.520	1.340	0.031	0.005	8.080	18.190	-	0.041
08	007	239787	1-1/2" SCH10S			0.021	0.520	1.340	0.031	0.005	8.080	18.190	-	0.041
09	018	50859	6" SCH40S			0.028	0.410	1.790	0.027	0.001	8.300	18.300	-	0.052
			Total											

Item No.	Tensile Test 0.2%Yield Strength PSI	1%Yield Strength PSI	Tensile Strength PSI	Elongation %	Hardness Test HRB	Bend Test	Flattening Test	Heat Treatment TEMP. oF	Dimension And Surface Condition	Hydrostatic Test PSI	
07	42400		92000	49.00	84.00		OK	1960	OK	2100	
08	42400		92000	49.00	84.00		OK	1960	OK	1400	
09	40400		86800	55.00	85.00		OK	1960	OK	1100	

Remarks

WELDING FACTOR V=1.0

HARDNESS : NACE MR 0175-98 O.K.

ASTM A262 PRACTICE E : GOOD

PMI TESTED : O.K.

RAW MATERIAL FOR BUTT-WELDING

PIPE FITTINGS

We here by certify the above statement to be true and correct every detail

TA CHEN STAINLESS PIPE CO., LTD.

[redacted]

ORIGINAL

MILL TEST CERTIFICATE

ZIBO WEL-FIT METAL PRODUCTS CO., LTD
NO 18, LUSHAN ROAD, LINZI, ZIBO, P.R.CHINA 255418

Purchaser: ARCUS NEDERLAND B.V.
Order No.: #OH00308
Invoice No.: ZWF07191S-1

Date: May 30, 2007
Certificate No: ZWF07191S-1
Certificate to: EN10204-2004 3.1

Material Specification
ASTM A403-06/ASME SA403
WP304(L) NACE MR0175-02

Specification for Inspection
ASME B16.9-03
MSS-SP43-91

Visual and Dimensional Inspection GOOD

Hardness
Max 22HRC
<22HRC

Cu+Ni+Cr+Mo

Cr+Mo

MT:(5)

RT:(5)

IGC:(5) GOOD

PMI(5): GOOD

Product Description		Heat I.D.	Quantity (Pcs)	Tension Test (1) YS Mpa	TS Mpa	E %	Chemical Composition % C	Si	Mn	P	S	Cr	Mo	Ni	Cu	V	Nb	CE(2)	Heat Treatment (3)	Raw Material Type (4)	Raw Material Manufacturer (6)
				205	515	28						18.0		8.0							
							0.030	1.00	2.00	0.045	0.030	20.0		11.0							
CON REDUCER SCH40S 304/304L -W	2 X 1-1/2	4400306	25	292	617	50	0.0230	0.48	1.460	0.0310	0.0060	18.260	-	8.330	-	-	-	4.47	SA	2	TYC
CON REDUCER SCH40S 304/304L -W	4 X 3	4400110	5	286	614	53	0.0190	0.48	1.380	0.0290	0.01	18.220	-	8.110	-	-	-	4.43	SA	2	TYC
CON REDUCER SCH40S 304/304L -W	8 X 4	441413	3	292	615	57	0.0210	0.33	1.650	0.0270	0.0010	18.020	-	8.060	-	-	-	4.44	SA	2	TYC
CON REDUCER SCH40S 304/304L -W	8 X 6	4400213	5	299	663	52	0.0180	0.45	1.390	0.0280	0.0060	18.250	-	8.100	-	-	-	4.44	SA	2	TYC
ECC REDUCER SCH10S 304/304L -W	2 X 1	4100106	10	277	648	48	0.0190	0.41	1.390	0.0320	0.0080	18.310	-	8.060	-	-	-	4.45	SA	2	TYC
ECC REDUCER SCH10S 304/304L -W	2 X 1-1/2	4100106	10	277	648	48	0.0190	0.41	1.390	0.0320	0.0080	18.310	-	8.060	-	-	-	4.45	SA	2	TYC
ECC REDUCER SCH10S 304/304L -W	4 X 2	4100110	10	273	650	50	0.03	0.38	1.460	0.0350	0.0040	18.180	-	8.110	-	-	-	4.45	SA	2	TYC
ECC REDUCER SCH10S 304/304L -W	6 X 4	4100412	5	260	618	52	0.0170	0.51	1.270	0.03	0.0060	18.160	-	8.140	-	-	-	4.40	SA	2	TYC
ECC REDUCER SCH10S 304/304L -W	8 X 4	4400213	5	299	663	52	0.0180	0.45	1.390	0.0280	0.0060	18.250	-	8.100	-	-	-	4.44	SA	2	TYC
ECC REDUCER SCH10S 304/304L -W	8 X 6	4100013	15	300	626	50	0.0210	0.58	1.350	0.0380	0.0130	18.200	-	8.120	-	-	-	4.43	SA	2	TYC
LR 45 ELBOW SCH10S 304/304L -W	1	4100203	50	279	615	53	0.0160	0.39	1.430	0.0270	0.0040	18.080	-	8.010	-	-	-	4.40	SA	2	TYC
LR 45 ELBOW SCH10S 304/304L -W	2	4100606	100	277	648	48	0.0190	0.41	1.390	0.0320	0.0080	18.310	-	8.060	-	-	-	4.45	SA	2	TYC
LR 45 ELBOW SCH10S 304/304L -W	3	4100108	50	275	655	51	0.0250	0.53	1.470	0.0290	0.0110	18.180	-	8.070	-	-	-	4.44	SA	2	TYC
LR 45 ELBOW SCH10S 304/304L -W	6	4100312	20	284	600	52	0.0210	0.43	1.410	0.03	0.0050	18.180	-	8.160	-	-	-	4.44	SA	2	TYC
LR 45 ELBOW SCH10S 304/304L -W	8	4100013	20	300	626	50	0.0210	0.58	1.350	0.0380	0.0130	18.200	-	8.120	-	-	-	4.43	SA	2	TYC
LR 45 ELBOW SCH10S 304/304L -W	12	4100215	5	282	645	51	0.0260	0.46	1.380	0.0320	0.0040	18.180	-	8.100	-	-	-	4.43	SA	2	TYC
LR 90 ELBOW SCH10S 304/304L -W	1/2	410001	750	256	620	54	0.0140	0.46	1.520	0.0250	0.0080	18.270	-	8.160	-	-	-	4.47	SA	2	TTC
LR 90 ELBOW SCH10S 304/304L -W	3/4	410102	300	296	584	37	0.0210	0.48	0.51	0.0230	0.0060	18.230	-	8.270	-	-	-	4.30	SA	2	KLG
LR 90 ELBOW SCH10S 304/304L -W	1	4100003	800	279	615	53	0.0160	0.39	1.430	0.0270	0.0040	18.080	-	8.010	-	-	-	4.40	SA	2	TYC
LR 90 ELBOW SCH10S 304/304L -W	1-1/4	411004	250	296	615	61	0.0250	0.42	1.730	0.0240	0.0050	18.350	-	8.340	-	-	-	4.54	SA	2	KLG

Note: (1) YS=Yield Strength TS=Tensile Strength E=Elongation (2) CE=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
Note: (3) HF: Hot formed (620~980 °C) and cooled in still air. S: Cold formed and normalized (900 °Cx0.5HR), cooled in still air.
SA: Cold formed and solution annealed at 1050 °C±10°C, water quenched. (4) 1=Seamless Pipe 2=Welded Pipe 3=Steel Plate
Note: (5) IGC=Intergrannular Corrosion Test to ASTM A262 E PMI=Positive Material Inspection RT=Radiographical Test MT=Magnetic Particle Test
Note: (6) TYC=TAIWAN YUEN CHYANG TTC=TACHEN S.S.PIPE KLG=LG INDUSTRIAL

ACCORDIT TO EN10204/3.1
MATERIAL : ASTM A 403/ASME SA403, ANSI B16.9 PMI+IC ASTM A-262 PRACT E,NACE MR-0175
BASE MATERIAL ACC TO EN10204/3.1 PED 97/23/EC ISO 9002 304/304L AND 316/316L

General Note: The analysis for the elements with an amount of less than 0.02% is reported as "<0.02" represented by a"-" above.

We hereby certify that the products detailed herein have been manufactured and inspected in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct. This material was manufactured, tested and inspected without mercuria[redacted]ination

☐ Witnessed [redacted] eviewed

淄博鑫利金属制品有限公司
ZIBO WEL-FIT METAL PRODUCTS CO., [redacted]

26 FEB. 2008

BV MIV The Netherlands

QUALITY ASSURANCE MANAGER [redacted]

Chapter 7

Cryovat Internationaal B.V.,
Nijverheidsstraat 10,
3861 RJ Nijkerk,
the Netherlands.
Tel.: (0)33-2455959
Fax.: (0)33-2455958

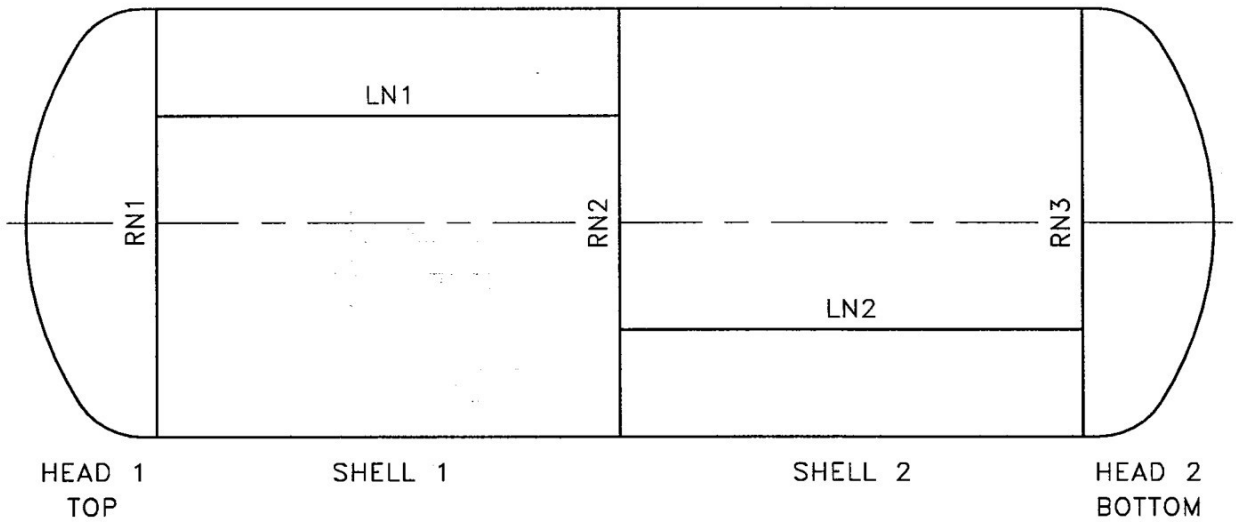
CRYOVAT

Welders Ref. Plan

Inner vessel

Order No. 07-286
Document No. 23703 WRP-01
Revision 0

Client	Description	Drawing	Reg. no. (BV)	Manufacturing no.
Cryotainer	TC-20'/20.000L/2.4m/22b	D0705501	BVCT 0870199/R	23703



Weld No.	WPS No	WPQ No.	RT	US	Penetrant	Visual	Welder	Welder No.
RN1	W41.33	MKA 98-0065A	100%	None	100%	100%	[redacted]	R32
RN2	W41.33	MKA 98-0065A	100%	None	100%	100%		R32
RN3	W42.16	MKA 98-0230A	100%	None	100%	100%		R32
LN1	W41.33	MKA 98-0065A	100%	None	100%	100%		R32
LN2	W41.33	MKA 98-0065A	100%	None	100%	100%		R32
PWTP	W41.40	MKW 03-0327	None	None	None	100%		R32

☐ Witnessed [redacted] Reviewed

26 FEB. 2008

BV MIV The Netherlands [redacted]

Prepared : [redacted]	Checked : [redacted]	Approved :	Date : 26-2-2008
Signature :	Signature :	Signature :	Page : 1 of 1

Chapter 8

Stork FDO B.V.

Certificate

WELDING PROCEDURE - AND PERFORMANCE QUALIFICATION
AD-HP 2/1 + DIN-EN 288-3 AND AD-HP 3 + DIN-EN 287-1

Customer : Cryovat Internationaal B.V.
Nijverheidsstraat 10, 3861 RJ Nijkerk
Order no cust. : WO 971650
WPS : W 41.33
Object : One production weld testplate t= 11 mm, no 971650
marked C5741/7783-5911 + stamp (V4)
Welder : [redacted]
Material : 1.4311
Welding process : GMAW/SAW
Welding position : 1G (PA)

Certificate no : MKA 98-0065A
Order no FDO : OMKA 8083
Amsterdam : 1998-01-21

RESULTS OF THE TESTS

1. NON DESTRUCTIVE EXAMINATION : X-ray no PP and Penetrant
Examination stated acceptable

2. TENSILE TEST

				Requirements
Specimen	no :	F65	F65A	according to
Dimensions	mm :	25.0x10.3	25.0x10.0	DIN 17440
Rm	N/mm2 :	645	630	min. 550
Place of fracture	:	plate	plate	

3. BEND TESTS
Angle of bending degr. : 180
Former diameter : 2xt
Type BU (face bend) : 2 specimens, good
BI (root bend) : 2 specimens, good

4. IMPACT TESTS
Type : ISO-V
Test temperature degr. C : minus 196

Notch perpendicular to weld surface

Location of the notch.	:	Weld	HAZ	Req.
Impact values	Joules :	43-35-35	86-92-[redacted]	W= min. 32

Notch parallel to weld surface

Location of the notch	:	HAZ	
Impact values	Joules :	138-132-71	[redacted] in. 16

[redacted]

24/04/03

[redacted]

5. MACRO EXAMINATION : acceptable

6. MICROSCOPIC EXAMINATION : no deviations, see appendix 1 + 2

7. CHEMICAL COMPOSITION % : weld metal
Analysis no : 12381

C	: 0.026
Mn	: 1.44
Si	: 0.58
P	: 0.027
S	: 0.016
Cr	: 21.7
Ni	: 9.2
Mo	: 0.26

8. CONCLUSION/REMARKS : Approved.

BUREAU VERITAS CERTO ROTTERDAM EXPERTISE REGISTRE INTERNATIONAL

Stork [redacted]
Mater[redacted]

Authorized : [redacted]

Witnessed : Der Sachverständige des RWTÜV e.V.
T.Ü.V. [redacted]

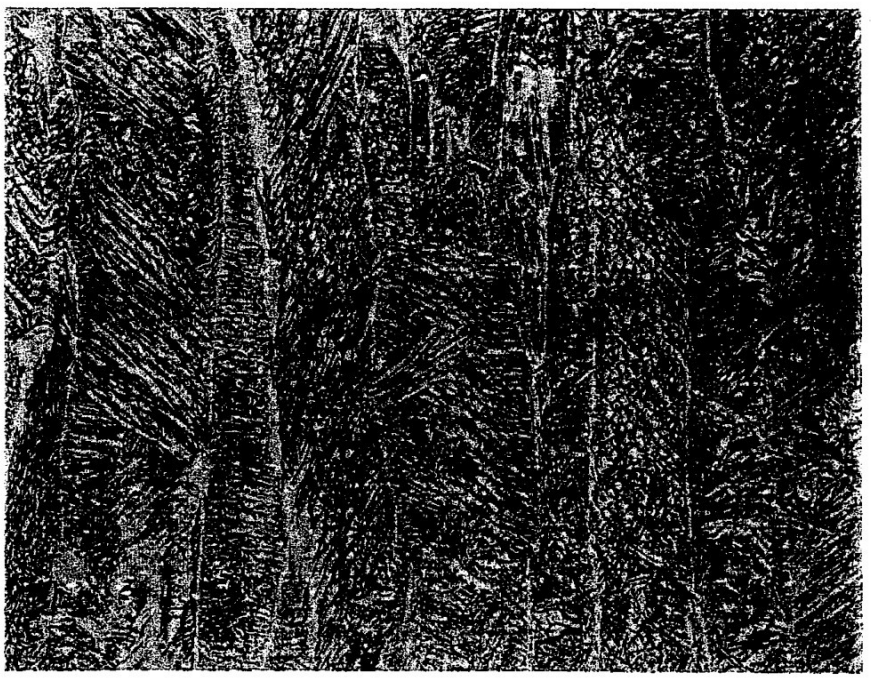
[redacted]

QUALIFIED BY STERLAB Reg.nr L 048

QUALIFIED BY STERIN Reg.nr I 007

MKA 98-0065A
appendix 2

Cryovat Internationaal B.V.



Micro-etch
no F65

Weld

Etchant :
Ammonium persulfate

Dendritic structure
with ≈ 10-12% δ-ferrite

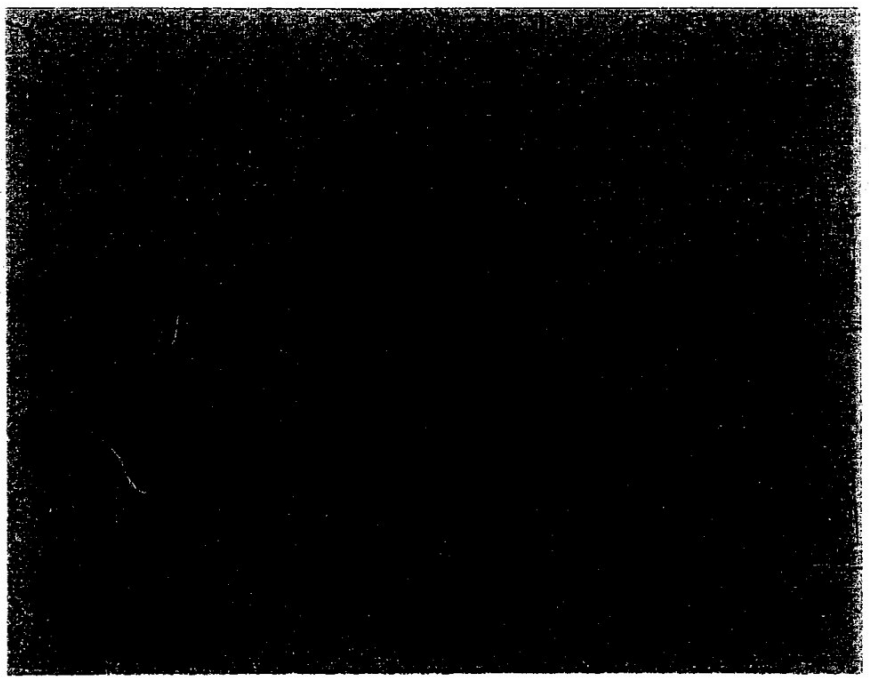
M ≈ 100x

QUALIFIED BY STERLAB Reg.nr L 048

QUALIFIED BY STERIN Reg.nr I 007

MKA 98-0065A
appendix 1

Cryovat Internationaal B.V.



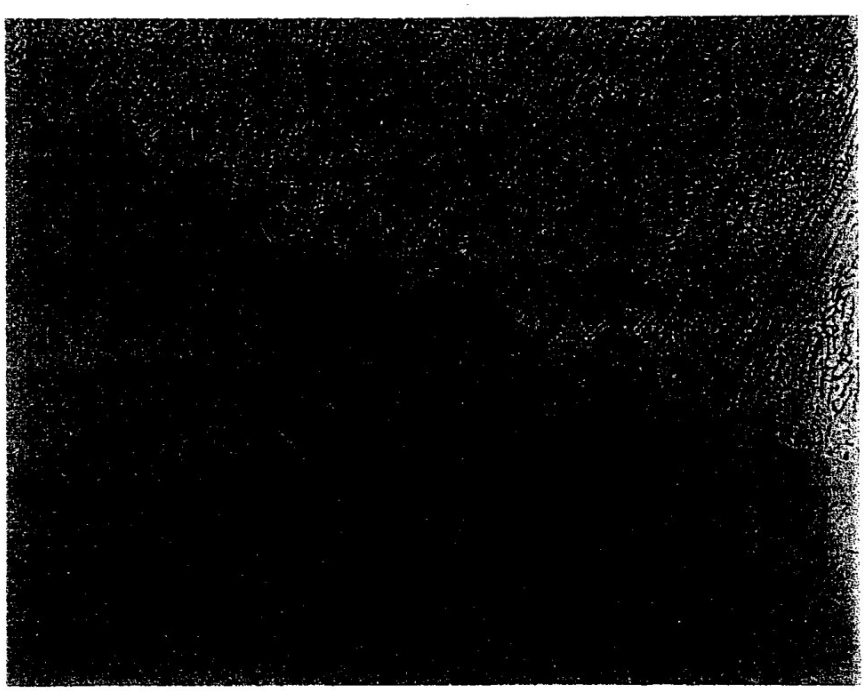
Micro-etch
no F65

Base material :
1.4311

Etchant :
Ammonium persulfate

Grainsize 5/6
acc. to ASTM E112

M ≈ 200x



Micro-etch
no F65

HAZ

Etchant :
Ammonium persulfate

Grainsize 5/6
acc. to ASTM E112

M ≈ 200x

Cryoval International BV
Nijverheidsstraat 10
3861 RJ Nijkerk
Tel.: 0033-(0)33 2468888 Fax: 0031-(0)33-2468858

WELDING PROCEDURE SPECIFICATION (WPS)

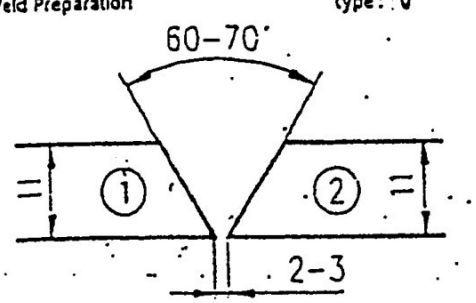
WPS No.: 41.33
Rev.: 0
Date: 13/01/99
Sheet: 1 of 1

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Covered by WPQ No.: _____ Thickness: _____ mm Authorized by: _____
Covered by WPQ No.: _____ Thickness: _____ mm Authorized by: _____

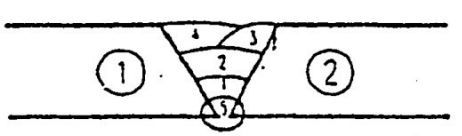
Base Material	1	W.Nr.1.4311; DIN 17440 Mat. Group 9
	2	W.Nr.1.4311; DIN 17440 Mat. Group 9
Welding Progression		Not weaving
Root treatment		Grinding & Metalcheck before backwelding
Pre-heat temperature		Shop temperature
Interpass temperature		< 150 °C
Preheating by		[redacted]
Postheat treatment		–
Prep. of weld edges		Cutting, Grinding, Machining

	ROOT WELD	FILLED WELD	BACK WELD
Welding process	MAGM	UP	SAW
Manual/Machine	Hand	Machine	Machine
Filler Metal	LNM 304LSi	LNS 304L	LNS 304L
Manufacturer	Lincoln Norweld	Lincoln Norweld	Lincoln Norweld
Filler Metal Class. (AWS A5-9)	SG X2 Cr Ni 19 9	SG X2 Cr Ni 19 9	SG X2 Cr Ni 19 9
Flux	–	P 2000 S	P 2000 S
Shielding gas	98% Ar / 2% CO2	–	–
Single/Multiple pass	Single	Single	Single
Single/multi Arc	Single	Single	Single

Weld Preparation type: V



Run Sequence and completed weld



Run Sequence		Gas	Wire	Current / Voltage			Travel Speed	Heat Input
Pass No.	Position	Flow l/min.	Size	Type & Polarity	Amps	Voltage	cm/min.	kJ/cm
1	PA	16	1.0	DC +	100-120	18-20	–	
2	PA	–	3.2	DC +	410-440	28-32	60	
3	PA	–	3.2	DC +	410-440	28-32		
4	PA	–	3.2	DC +	410-440	28-32		
5	PA	–	3.2	DC +	410-440	28-32		

Prepared: [redacted]
Signature:

Checked: [redacted]
Signature [redacted]

Approved [redacted]
Signature

Stork FDO B.V.

Certificate

WELDING PROCEDURE - AND PERFORMANCE QUALIFICATION

Customer : Cryovat Internationaal B.V.
Nijverheidsstraat 10, 3361 RJ Nijkerk
Order no cust. : 6645
WPS : W 42.16
Object : One welded testplate t= 11.8 mm, with backingstrip, no 6645, marked C6852/8095-1821
Welder : [redacted]
Material : 1.4311 Certificate no : MKA 98-0230A
Welding process : GTAW/SAW Order no FDO : OMKA 8167
Welding position : 1G (PA) Amsterdam : 1998-03-12

RESULTS OF THE TESTS

Code : NEN-EN 288-3 and NEN-EN 287-1

1. NON DESTRUCTIVE EXAMINATION : X-ray no PP and Penetrant Examination stated acceptable

2. TENSILE TESTS

				Requirements
Type and no		: TD F230	TD F230A	according to
Dimensions	mm	: 25.0x11.0	25.0x11.0	DIN 17440
Rm	N/mm2	: 647	647	min. 550
Place of fracture		: weld	weld	

3. BEND TESTS

Angle of bending	degr.	: 180
Former diameter		: 2xt
Type face bend		: acceptable
face bend		: acceptable
root bend		: acceptable
root bend		: acceptable

4. IMPACT TESTS

Type		: ISO-V	
Notch perpendicular to weld surface			
Test temperature	degr. C	: minus 196	
Location of the notch		: weld	HAZ
Impact values	Joules	: 39-45-45	112-120-116

5. MACROSCOPIC EXAMINATION : acceptable

6. CONCLUSION/REMARKS : Approved.
No requirements stated for impact tests.

BUREAU VERITAS EXPERTS DE ROTTERDAM PARIS 1828 REGISTRE INTERNATIONAL

22/6/98

Stork FDO B.V.
Materials Testing Department
[redacted]
Authorized : [redacted]

Survey : [redacted]

[redacted]

24/04/98

Cryovat International bv
Gt. Vasumweg 115
1033 SG Amsterdam

WELDING PROCEDURE SPECIFICATION (WPS)

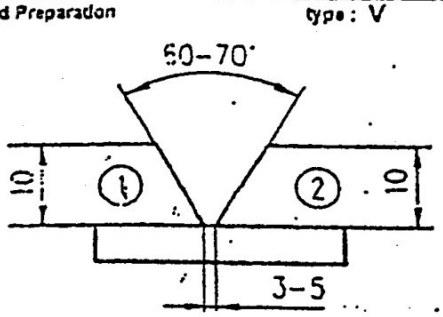
WPS No.: W42.16
Rev.: 1
Date: 4/1/94
Sheet: 1 of 1

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Covered by WPQ No.: _____ Thickness: _____ mm Authorised by: _____
Covered by WPQ No.: _____ Thickness: _____ mm Authorised by: _____

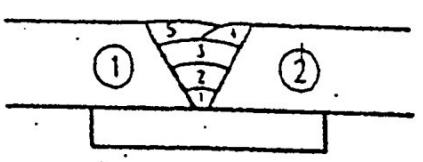
Base Material	1	W.Nr.1.4311; DIN 17440	Mat. Group 9
	2	W.Nr.1.4311; DIN 17440	Mat. Group 9
Welding Progression		Not weaving	
Root treatment		Grinding & Metalcheck before backwelding	
Pre-heat temperature		Shop temperature	
Interpass temperature		< 150 °C	
Preheating by		[redacted]	
Postheat treatment		[redacted]	
Prep. of weld edges		Cutting, Grinding, Machining	

	ROOT WELD	FILLED WELD	BACK WELD
Welding process	TIG	SAW	
Manual/Machine	Hand	Machine	
Filler Metal	LNT 304LSi	LNS 304L	
Manufacturer	Lincoln Norweld	Lincoln Norweld	
Filler Metal Class. (AWS A5-9)	ER308LSi	ER308L	
Flux	–	P 2000 S	
Shielding gas	99.99% Ar	–	
Single/Multiple pass	Single	Single	
Single/multi Arc	Single	Single	

Weld Preparation type : V



Run Sequence and completed weld



Run Sequence		Gas	Wire	Current / Voltage			Travel Speed	Heat Input
Pass No.	Position	Flow l/min.	Size	Type & Polarity	Amps	Voltage	cm/min.	kJ/cm
1	PA	16	2.4	DC +	160-180	18-20	–	
2	PA	–	3.2	DC +	410-440	28-32	60	
3	PA	–	3.2	DC +	410-440	28-32	60	
4	PA	–	3.2	DC +	410-440	28-32	60	
5	PA	–	3.2	DC +	410-440	28-32	60	

Prepared: [redacted]
Signature:

Checked: [redacted]
Signature [redacted]

Approved [redacted]
Signature

STORK CERTIFICATE Stork FDO B.V.

PAGE 1 OF 1

PRODUCTION WELD TEST

Customer	: Cryoval International B.V. Nijverheidsstraat 13, 3861 RJ Nijkerk		
Order no. customer	: 030710 t/m 030760		
WPS no.	: WI 41.40		
Test sample	: One production weld test plate thickness 10.8 mm, marked heat no. 11461/899218-3 + stamp (VCV1)		
Welder	: [redacted]		
Material	: 1.4311 (acc. EN 10028-7/ EN 10088-2	Certificate no.	: MKW 03-1112
Welding process	: 135/121 (GMAW/SAW)	Order no. FDO	: OMKW 3527
Welding position	: PA (1G)	Amsterdam	: 2003-06-27

RESULTS OF THE TESTS

CODE : ADR BIJLAGE B, AANHANGSEL B.1.d

1. VISUAL EXAMINATION WELD : accepted by customer

2. NON DESTRUCTIVE EXAMINATION : X-ray stated acceptable (RTD report no. 32-2003-24-013/film no. 1)

3. IMPACT TEST

				Requirements according to code
Specimen no.		: F1112		
Type		: Charpy V		
Notch perpendicular to weld surface				
Test temperature	°C	: minus 196		
Location of the notch		: weld	HAZ	
Impact values	J/cm²	: 63/50/54	266/186/175	req. average 34/ min. (1) 24

4. CONCLUSION/REMARKS : Approved

Stork FDO B.V., Materials Testing Department

Verified: [redacted]

Authorised: [redacted]

12/09/03.

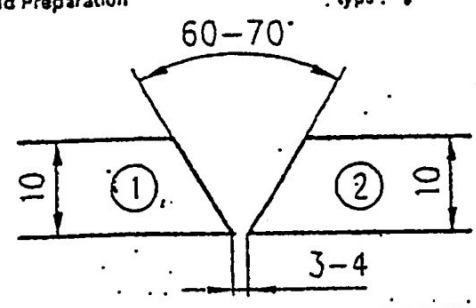
cryofuat	Cryofuat Internationaal BV J.J. Viottaweg 115 1033 SG Amsterdam Tel.: 020-6330011 Fax.: 020-6310175	WELDING PROCEDURE SPECIFICATION (WPS)	WPS no.: W 4140 Rev.: 1 Date: 4-1-94 Sheet: 1 of 1

Covered by WPQ No.: _____ Thickness: _____ mm Authorized by: _____
Covered by WPQ No.: _____ Thickness: _____ mm Authorized by: _____
Covered by WPQ No.: _____ Thickness: _____ mm Authorized by: _____

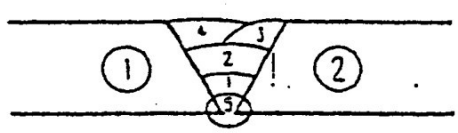
Base Material	1	W.Nr.1.4311; DIN 17440 Mat. Group 9
	2	W.Nr.1.4311; DIN 17440 Mat. Group 9
Welding Progression		Not weaving
Root treatment		Grinding & Metalcheck before backwelding
Pre-heat temperature		Shop temperature
Interpass temperature		< 150 °C
Preheating by		N.A.
Postheat treatment		N.A.
Prep. of weld edges		Cutting, Grinding, Machining

	ROOT WELD	FILLED WELD	BACK WELD
Welding process	GMAW	SAW	SAW
Manual/Machine	Hand	Machine	Machine
Filler Metal	LNM 304LSi	LNS 304L	LNS 304L
Manufacturer	Lincoln Norweld	Lincoln Norweld	Lincoln Norweld
Filler Metal Class. (AWS A5-9)	ER308LSi	ER308L	ER308L
Flux	--	P 2000 S	P 2000 S
Shielding gas	98% Ar / 2% CO_2	--	--
Single/Multiple pass	Single	Single	Single
Single/multi Arc	Single	Single	Single

Weld Preparation . type : V



Run Sequence and completed weld



Run Sequence		Gas	Wire	Current / Voltage			Travel Speed	Heat Input
Pass No.	Position	Flow l/min.	Size	Type & Polarity	Amps	Voltage	cm/min.	kJ/cm
1	PA	16	1.0	DC +	100-120	18-20	--	
2	PA	--	3.2	DC +	410-440	28-32	60	
3	PA	--	3.2	DC +	410-440	28-32	60	
4	PA	--	3.2	DC +	410-440	28-32	60	
5	PA	--	3.2	DC +	410-440	28-32	60	

Prepared: [redacted]
Signature:

Checked: [redacted]
Signature: [redacted]

Approved: [redacted]
Signature: [redacted]

STORK

CERTIFICATE

Stork FDO B.V.

PRODUCTION WELD TEST

Customer	: Cryovat Internationaal B.V. Nijverheidsstraat 10, 3861 RJ Nijkerk			
Order no. customer	: 20420			
WPS no.	: W 41.40			
Test sample	: One production weld test plate thickness 8 mm, marked 20420, heat no. A4473/16625			
Welder	: [redacted]			
Material	: 1.4311 (acc. DIN 17440)	Certificate no.	:	MKW 03-0087-1
Welding process	: 135/121 (GMAW/SAW)	Order no. FDO	:	OMKW 3043
Welding position	: PA (1G)	Amsterdam	:	2003-01-21

RESULTS OF THE TESTS

CODE: AD-MERKBLATT HP 5/2 (V=100%)

1. **NON DESTRUCTIVE EXAMINATION** : X-ray no. TP1 stated acceptable

2. **TENSILE TEST**

			Requirements according to code
Specimen no.		: F087-1	
Specimen dimensions	mm	: 25.0x6.6	
Cross section	mm^2	: 165.0	
Rm	N/mm^2	: 624	min. 550
Place of fracture		: weld	

3. **BEND TESTS**

Angle of bending	°	: 180
Former diameter		: 2xt
Type face bend		: acceptable
Type root bend		: acceptable

4. **MACRO EXAMINATION** : acceptable

5. **CONCLUSION/REMARKS** : approved

Bureau Veritas	
Date	21/01/03
Reviewed	[redacted]
Witnessed	/
Acceptable	yes
Name inspector	[redacted]

Stork FDO B.V., Ma[redacted]ting Department

Verified: [redacted]

Authorised: [redacted]

Stork FDO B.V. (Registration Chamber of Commerce Amsterdam number 33194017) member of the Stork group
Site Amsterdam: Czaar Peterstraat 229, 1018 PL, P.O. Box 379, 1000 AJ, Phone (020) 556 35 55, Fax (020) 556 55 56

Stork FDO B.V. is registered in the STERLAB register for laboratories under L 048 for the areas as specified in the accreditation

STORK

CERTIFICATE

Stork FDO B.V.

MKW 03-0087-Z, PAGE 1 OF 1

PRODUCTION WELD TEST

Customer	: Cryovat Internationaal B.V. Nijverheidsstraat 10, 3861 RJ Nijkerk			
Order no. customer	: 20420			
WPS no.	: W 41.40			
Test sample	: One production weld test plate thickness 8 mm, marked 20420, heat no. A4473/16625			
Welder	: [redacted]			
Material	: 1.4311 (acc. DIN 17440)	Certificate no.	:	MKW 03-0087-2
Welding process	: 135/121 (GMAW/SAW)	Order no. FDO	:	OMKW 3043
Welding position	: PA (1G)	Amsterdam	:	2003-01-21

RESULTS OF THE TESTS

CODE: AD-MERKBLATT HP 5/2 (V=100%)

1. NON DESTRUCTIVE EXAMINATION : X-ray no. TP2 stated acceptable

2. TENSILE TEST

			Requirements according to code
Specimen no.		: F087-2	
Specimen dimensions	mm	: 25.0x6.4	
Cross section	mm^2	: 160.0	
Rm	N/mm^2	: 623	min. 550
Place of fracture		: weld	

3. BEND TESTS

Angle of bending	°	: 180
Former diameter		: 2xt
Type face bend		: acceptable
Type root bend		: acceptable

4. MACRO EXAMINATION : acceptable

5. CONCLUSION/REMARKS : approved

Bureau Veritas	
Date	21/01/03
Reviewed	[redacted]
Witnessed	
Acceptable	yes
Name inspector	[redacted]

Stork FDO B.V., Materi[redacted]sting Department

Verified: [redacted]

Authorised: [redacted]

Chapter 9

QS-Document

PD10 — Revis… — Page 1 of 1

Welder initials & name	Welding process	Visual date of examination	Pipe ø	Thickness	Position	Backing	ASME P-No.	Filler Metal F-No.	Filler Metal Variety for GTAW	Consumable insert for GTAW	Progression (Uphill/ downhill)	Backing gas Fuel gas	GMAW transfer mode	GTAW welding current	Welder continuity RT report nr.
R3 = J.R.R. Rutgers	SMAW	20-04-2007	≥ 2 7/8" (73 mm)	0-32 mm.	F, H	With	1	1,2,3,4	-	-	-	-	-	-	2426-2007-46-001
R4 = G. Niessen	SMAW	26-04-2007	≥ 2 7/8" (73 mm)	0-32 mm.	F, H	With	1	1,2,3,4	-	-	-	-	-	-	2426-2007-17-023
R4 = G. Niessen	SMAW	11-04-2007	≥ 1" (25.4 mm)	0-11.08 mm.	F, H	With and without	1	1	-	-	-	-	-	-	2426-2007-28-021
R5 = G. van Wijngaarden	SMAW	20-04-2007	≥ 2 7/8" (73 mm)	0-21 mm.	F, H	With and without	1	1,2,3,4	-	-	-	-	-	-	2426-2007-46-047
R6 = T. de Wild	SMAW	26-04-2007	≥ 2 7/8" (73 mm)	0-24 mm.	F, H	With	1	1,2,3,4	-	-	-	-	-	-	2426-2007-38-034
R6 = T. de Wild	SAW	02-07-2007	≥ 2 7/8" (73 mm)	0-34 mm.	F	With	1	6	-	-	-	-	-	-	2426-2007-36-006
R7 = T. van Rootselaar	SMAW	26-04-2007	≥ 2 7/8" (73 mm)	0-16 mm.	F, H	With	1	1,2,3,4	-	-	-	-	-	-	2426-2007-46-005
R7 = T. van Rootselaar	SAW	24-04-2007	≥ 2 7/8" (73 mm)	0-34 mm.	F	With	1	6	-	-	-	-	-	-	2426-2007-38-033
R8 = G. de Bode	SMAW	23-04-2007	≥ 2 7/8" (73 mm)	0-24 mm.	F, H	With	1	1,2,3,4	-	-	-	-	-	-	2175-2007-17-101
R8 = G. de Bode	SAW	18-06-2007	≥ 2 7/8" (73 mm)	0-20 mm.	F	With	1	6	-	-	-	-	-	-	2426-2007-25-012
R8 = G. de Bode	SAW	20-06-2007	≥ 2 7/8" (73 mm)	19-200 mm.	F	With	1	6	-	-	-	-	-	-	2426-2007-17-034
R8 = G. de Bode	SAW	19-09-2007	≥ 2 7/8" (73 mm)	0-32 mm.	F	With	8	6	-	-	-	-	-	-	2426-2007-38-010
R9 = T. van de Veen	SAW	26-04-2007	≥ 2 7/8" (73 mm)	19-200 mm.	F	With	1	6	-	-	-	-	-	-	783-2007-17-064
R10 = A.W. van Veldhuizen	SMAW	03-05-2007	≥ 2 7/8" (73 mm)	0-24 mm.	F, H	With	1	1,2,3,4	-	-	-	-	-	-	2426-2007-46-006
R14 = A. v.d. Hoogen	SMAW	07-05-2007	≥ 2 7/8" (73 mm)	0-12 mm.	F, H	With and without	1	1,2,3,4	-	-	-	-	-	-	2426-2007-46-008
R15 = H. Pen	FCAW	11-06-2007	≥ 2 7/8" (73 mm)	0-20 mm.	All	With and without	8	6	-	-	-	Ar/Co_2,80/20	-	-	2426-2007-46-029
R16 = E. van Beek	SMAW	07-05-2007	≥ 2 7/8" (73 mm)	0-24 mm.	F,H	With	1	1,2,3,4	-	-	-	-	-	-	2426-2007-46-015
R19 = R.vd. Bunt	FCAW	19-06-2007	≥ 2 7/8" (73 mm)	0-20 mm.	All	With and without	8	6	-	-	-	Ar/Co_2,80/20	-	-	2426-2007-46-032
R20 = Hok-a-Hin	SMAW	09-05-2007	≥ 2 7/8" (73 mm)	0-28 mm.	F,H	With and without	1	1	-	-	-	-	-	-	2426-2007-46-016
R21 = W. Verdonk	SAW	10-05-2007	≥ 2 7/8" (73 mm)	0-32 mm.	F	With	8	6	-	-	-	-	-	-	2426-2007-46-034
R21 = W. Verdonk	GTAW	15-05-2007	≥ 2 7/8" (73 mm)	0-6 mm.	F,V,O	With	8	6	Solid	N.A.	Uphill	Argon,99.99%	-	DC -	2426-2007-46-014
R22 = Pvd. Bunt	GTAW	19-06-2007	≥ 2 7/8" (73 mm)	0-6 mm.	F,V,O	With	8	6	Solid	N.A.	Uphill	Argon,99.99%	-	DC -	2426-2007-46-033
R22 = Pvd. Bunt	FCAW	18-06-2007	≥ 2 7/8" (73 mm)	0-16.8 mm.	All	With and without	8	6	-	-	-	Ar/Co_2,85/15	-	-	2426-2007-46-027
R23 = Kolodziejczyk Krzystof	SMAW	15-05-2007	≥ 2 7/8" (73 mm)	0-24 mm.	F, H	With	1	1,2,3,4	-	-	-	-	-	-	2426-2007-46-017
R23 = Kolodziejczyk Krzystof	GMAW	15-06-2007	≥ 2 7/8" (73 mm)	0-14 mm.	F	With	1	1,2,3,4	-	-	-	-	-	-	2426-2007-46-045
R24 = Jankowski	SMAW	15-05-2007	≥ 2 7/8" (73 mm)	0-24 mm.	F, H	With	1	1,2,3,4	-	-	-	-	-	-	2426-2007-46-018
R24 = Jankowski	GMAW	15-06-2007	≥ 2 7/8" (73 mm)	0-14 mm.	F	With	1	1,2,3,4	-	-	-	-	-	-	2426-2007-46-043
R25 = Mrozinski	SMAW	18-06-2007	≥ 2 7/8" (73 mm)	0-24 mm.	F, H	With	1	1,2,3,4	-	-	-	-	-	-	2426-2007-46-026
R25 = Mrozinski	GMAW	15--06-2007	≥ 2 7/8" (73 mm)	0-14 mm.	F	With	1	1,2,3,4	-	-	-	-	-	-	2426-2007-46-044
R26 = G. Grevengoed	GTAW	12-04-2007	≥ 1" (25.4 mm)	0-5.4 mm.	All	With and without	8	6	Solid	N.A.	Uphil	Argon,99.99%	-	DC -	2426-2007-46-017
R27 = Sztok	SMAW	19-06-2007	≥ 2 7/8" (73 mm)	0-24 mm.	F, H	With	1	1,2,3,4	-	-	-		-	-	2426-2007-46-031
R27 = Sztok	GMAW	15-06-2007	≥ 2 7/8" (73 mm)	0-14 mm.	F	With	1	6	-	-	-	-	-	-	2426-2007-46-046
R28 = P. Oepkes	GTAW	14-06-2007	≥ 2 7/8" (73 mm)	0-9 mm.	F,V,O	With	8	6	Solid	N.A.	Uphil	Argon,99.99%	-	DC -	2426-2007-28-020
R29 = M. Libbinga	GMAW	17-05-2007	≥ 1" (25.4 mm)	0-5.2 mm.	F	With and without	8	6	-	-	-	Ar/Co_2,98/2	Spray	-	2426-2007-46-019
R29 = M. Libbinga	GMAW/SMAW	06-06-2007	≥ 2 7/8" (73 mm)	0-32 mm.	F,H	With and without	1	1	-	-	-	Ar/Co_2,98/2 (GMAW)	Short circuit	-	2426-2007-46-020
R29 = M. Libbinga	FCAW	04-04-2007	≥ 2 7/8" (73 mm)	0-16.8 mm.	All	With and without	8	6	-	-	-	Ar/Co_2,85/15	-	-	2426-2007-14-012
R29 = M. Libbinga	SAW	04-04-2007	≥ 2 7/8" (73 mm)	0-32 mm.	F	With	8	6	-	-	-	-	-	-	2426-2007-14-012
R30 = H. Horst	GTAW	19-06-2007	≥ 2 7/8" (73 mm)	0-9 mm.	F,V,O	With	8	6	Solid	N.A.	Uphil	Argon,99.99%	-	DC -	2426-2007-46-021
R30 = H. Horst	FCAW	18-06-2007	≥ 1" (25.4 mm)	0-11 mm.	F,H	With and without	8	6	-	-	-	Ar/Co_2,85/15	-	-	2426-2007-46-022
R31 = M. Seurer	SMAW	14-05-2007	≥ 2 7/8" (73 mm)	0-6 mm.	F	With	8	1,2,3,4	-	-	-	-	-	-	2426-2007-46-023
R31 = M. Seurer	GTAW	19-06-2007	≥ 1" (25.4 mm)	0-5.54 mm.	F,V,O	With and without	8	6	Solid	N.A.	Uphil	Argon,99.99%	-	DC -	2426-2007-46-024
R31 = M. Seurer	GTAW	19-06-2007	≥ 1" (25.4 mm)	0-7.4 mm.	All	With and without	10H	6	Solid	N.A.	Uphil	Argon,99.99%		DC -	2426-2007-46-025
R31 = M. Seurer	GTAW	14-05-2007	≥ 1" (25.4 mm)	0-16 mm.	F,H	With and without	10H	6	-	-	-	-		-	2426-2007-46-026
R32 = K. Adamus	GMAW	03-05-2007	≥ 2 7/8" (73 mm)	0-14 mm.	F	With	8	6	Solid	N.A.	-	Ar/Co_2,98/2	Spray	-	2426-2007-19-001
R32 = K. Adamus	FCAW	22-05-2007	≥ 2 7/8" (73 mm)	0-20 mm.	F	With and without	8	6	-	-	-	Ar/Co_2,85/15	-	-	2426-2007-21-002
R32 = K. Adamus	SAW	05-08-2007	≥ 2 7/8" (73 mm)	0-22 mm.	F	With	8	6	-	-	-	-	-	-	2426-2007-36-002
R37 = J. de Bode	SAW	06-08-2007	≥ 2 7/8" (73 mm)	0-22 mm.	F	With	8	6	-	-	-	-	-	-	2426-2007-46-042

Reviewed

Witnessed

02 OKT. 2007

BV MIV The Netherlands

[redacted]

29/09/2007

SOUW C 3 SELAAR

Visual date of examination: 29-09-2007

Chapter 10

Cryovat Internationaal B.V.,
Nijverheidsstraat 10,
3861 RJ Nijkerk,
the Netherlands.
Tel.: (0)33-2455959
Fax.: (0)33-2455958

CRYOVAT

Safety Valve List

Order No.	Document No.	Revision
07-286	23703 SVL-01	0

Client	Description	Drawing no.	Reg. no. (BV)	Manufacturing no.
Cryotainer	TC-20'/20.000L/2.4m/22b	D0705501	BVCT 0870199/R	23703

Description TAG	No. of certificate (Cryovat-reg.no.)	Manufacturer Type	Valve I.D.-no.	Set Pressure [barg]
Main safety valve SV-6A	TÜV Nord 07-780 OME	Herose 06388	00394191	22
Main safety valve SV-6B	TÜV Nord 07-780 OME	Herose 06388	00394190	22
Main safety valve SV-6C	TÜV Nord 07-780 OME	Herose 06388	00394188	22
Main safety valve SV-6D	TÜV Nord 07-780 OME	Herose 06388	00394186	22
Thermal relief valve SV-21A	07 202 1404 Z 0335 / 8 / D/0006 OMO	WITT SV 805	X01893	40
Thermal relief valve SV-21B	07 202 1404 Z 0784 / 7 / D001 OMP	WITT SV 805	W05387	40
Thermal relief valve SV-21B	07 202 1404 Z 0335 / 8 / D/0006 OMO	WITT SV 805	X01894	40

The above mentioned certificates will be stored for at least 10 years and a copy will be available on request

Prepared :	Checked :	Approved :	Date : 25-4-2008
Signature : [redacted]	Signature : [redacted]	Signature :	Page : 1 of 1

Chapter 11

OME

TÜV NORD

TÜV NORD Systems GmbH & Co. KG

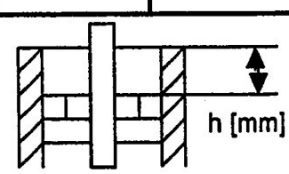
Große Bahnstr. 31
22525 Hamburg
Tel.: +49 (0) 40/8557-0

Abnahmeprüfzeugnis 3.2 nach EN 10204 über die Einstellung von Sicherheitsventilen
gemäß AD 2000-Merkblatt A2 Abschnitt 11.4, AD 2000-Merkblatt HP 512R Abschnitt 5, HP 512 Abschnitt 7 und DGR 97/23/EG, Anhang I Abschnitt 3.2.3

Inspection Certificate 3.2 acc. to EN 10204 for setting of safety valves
in compliance with AD 2000-Merkblatt A2 section 11.4, AD 2000-Merkblatt HP 512R section 5, HP 512 section 7 und DGR 97/23/EG, attachment I section 3.2.3

Hersteller Manufacturer	HEROSE GMBH ARMATUREN UND METALLE Elly – Heuss – Knapp – Str. 12 23843 Bad Oldesloe	**HEROSE-Kom-Nr.**	468126 / 80
Besteller Customer	CRYOVAT INTERNATIONAL B.V / Nijverheidsstraat 33 / 3861 RJ Nijkerk	**Bestell-Nr.** Order-No.	PO-08012C/07-225/ Vom: 09.01.08

Art.-Nr. Part No. 06388.1004.0000			**Anlüftung** Lifting device a	a = nicht anlüftbar, gasdicht / not liftable, gastight b = anlüftbar, offen / liftable, open c = anlüftbar, gasdicht / liftable, gastight		
12 **Stück** Piece(s) Pieces	☐ **Proportional** Relief-Proportionelles	☐ **Vollhub** Full-lift De compl. elevat.	☒ **Normal-Sicherheitsventil mit direkter Federbelastung** Normal-safety valves, spring loaded Soupapes de surete normale chargees par resort directe			
Bauteilprüf-Nr. Type-test approval No.	**d_o [mm]** Engst.-Ström. ø Flow diameter	**K_{dr} / α_w Ausflussziffer** Coefficient of discharge		**p_a [bar g]** Ansprechdruck Set pressure	**Eintritt** Inlet	**Austritt** Outlet
		DG Dämpfe / Gase Steam / Gase	**F** Flüssigkeiten Liquids			
07-780	10,5	0,58		22,0	G 1/ 2	G1

Ventil – Nr. Valve No. 394186 - 394197	**Gehäusewerkstoff** Body material CW610N	 h [mm]

Die Einstellung erfolgte mit: The setting was done with:	☒ Luft Air	☐ Wasser Water	☐ Dampf Steam	☐
	Umgebungstemperatur [°C] Ambient temperature		Temp.[°C]	Temp.[°C]

Zusätzliche Herstellerangaben Additional manufacturer´s information 0045	öl- und fettfrei für Sauerstoff / cleaned for oxygen service entspr. / acc. to EN 12300 – O_2
☒ Plombe gekennzeichnet mit	☐ Gehäuse gekennzeichnet mit body marked with

[redacted]

30.01.08

[redacted]

Werkssachverständiger

Systems GmbH & Co. KG

Akten-Nr. 111 FK HEROSE

OMP

TÜVNORD

ZERTIFIKAT

(Konformitätsbescheinigung) (Certificate of Conformity)

EG-Prüfung des Produktes / EC Product Test

nach Richtlinie 97/23/EG / according to Directive 97/23/EC

Zertifikat-Nr. / Certificate No.: 07 202 1404 Z 0784 / 7 / D 001

Name und Anschrift des Herstellers: **Name and address of manufacturer:**	**Witt GmbH & Co. Holding und Handels KG** **Postfach 25 50, 58415 Witten**

Hiermit wird bescheinigt, daß die Ergebnisse der an dem unten genannten Druckgerät vorgenommenen Prüfungen die Anforderungen der Richtlinie 97/23/EG erfüllen. Das Druckgerät entspricht dem Baumuster und ist mit dem abgebildeten Zeichen gekennzeichnet:

This is to certifity that the results of the tests carried out on the pressure equipment described below fulfil the requirements of Directive 97/23/EC. The pressure equipment corresponds to the type and is identified with the following mark:

CE 0045

Geprüft nach Richtlinie 97/23/EG: Test according to Directive 97/23/EC:	**EG – Prüfung des Produktes (Modul F)** **EC - Product Test (Modul F)**
Prüfbericht - Nr.: Test Report - No.:	**SV – L/200607/01**
Beschreibung des Druckgerätes: Description of pressure equipment:	**Sicherheitsventil** **Safety valve**
Kennzeichen auf den Ventilen: Type (test approval mark):	**TÜV . SV . 03 – 931 . 6,5 . D/G . 0,56**
Ansprechüberdruck: Set pressure	**40 bar**
Herstell - Nr.: Manufacturing - No.:	**W 05383 – W 05392**
Kategorie: Category:	**IV**
Zertifikat - Nr. des Baumusters: Certificate - No. of type:	**01 202 111 B- 0024**
WA Nr./ Artikel Nr./ Prüfmedium: Works No./ Part No./ Test medium	**267 551 / 200.095 / Luft**
Fertigungsstätte: Production shop:	**Witt Gasetechnik** **Salinger Feld 4 – 8, 58454 Witten**

Hagen, den 20.06.07

TÜV CERT-Zertifizierungsstelle
für Druckgeräte der TÜV NORD
Systems GmbH & Co. KG

[redacted]

Benannte Stelle, Kennummer 0045
Notified Body, Ident. No 0045

TÜV NORD Systems GmbH & Co. KG
Feithstr. 188
58097 Hagen
Rev 1
P-14-1.doc

Tel. ++49-2331/803-241
Fax ++49-2331/803-207
e-mail [redacted]@tuev-nord.de

Mitglied der
Member of CEOC
CONFÉDÉRATION EUROPÉENNE D'ORGANISMES DE CONTRÔLE

Chapter 12

Cryovat Internationaal B.V.,
Nijverheidsstraat 10,
3861 RJ Nijkerk,
the Netherlands.
Tel.: (0)33-2455959
Fax.: (0)33-2455958

CRYOVAT

Cleanliness Certificate

Inner vessel

Order No.	Document No.	Revision
07-286	23703 CLC-01	0

Client	Description	Reg. no. (BV)	Manufacturing no.
Cryotainer	TC-20'/20.000L/2.4m/22b	BVCT 0870199/R	23703

This is to certify that the above mentioned pressure vessel has been satisfactorily decontaminated oxygen clean.

Test has been carried out in the presence of :

[redacted]

Inspector of : Cryovat [redacted]

Mr. _____

Inspector of :

Remarks : --

☐ Witnessed [redacted] eviewed

BUREAU VERITAS 1828

2 6 FEB. 2008

BV MIV The Netherlands [redacted]

Prepared :	Checked :	Approved :	Date : 14-2-2008
Signature : [redacted]	Signature : [redacted]	Signature :	Page : 1 of 1

Chapter 13

Cryovat Internationaal B.V.,
Nijverheidsstraat 10,
3861 RJ Nijkerk,
the Netherlands.
Tel.: (0)33-2455959
Fax.: (0)33-2455958

CRYOVAT

Helium Leak Test Certificate

Order No.	Document No.	Revision
07-286	23703 HLC-01	0

Client	Description	Reg. no. (BV)	Manufacturing no.
Cryotainer	TC-20'/20.000L/2.4m/22b	BVCT 0870199/R	23703

It is herewith certified that the above mentioned pressure vessel has satisfactorily passed a Helium leak test with a leakage rate smaller or equal to: 1.10^{-4}mBar.L/s^{-1}, integral.

Type of test : **He - Leaktest with Mass spectrometer Alcatel ASM 120 H**
Sensitivity of the meter: 10.10^{-9}mBar.L/s^{-1}.

Test has been carried out in the pr[redacted]

Inspector of : **Cryovat Pr[redacted]**

Mr. _____
Inspector of :

Remarks :

1. **Leaktest:** **Innervessel inclusive piping before assembly inner- and outer vessel.**
   Testpressure: 1 bar g

2. **Leaktest:** **Inner- and outer vessel complete.**
   Testpressure: Innervessel: >1 barg
   Vacuumspace: < 0,15 mbar

Prepared :	Checked :	Approved :	Date : 14-4-2008
Signature :	Signature :	Signature :	Page : 1 of 1

Chapter 14

Cryovat Internationaal B.V., Nijverheidsstraat 10, 3861 RJ Nijkerk, the Netherlands. Tel.: (0)33-2455959 Fax.: (0)33-2455958 CRYOVAT	**Penetrant examination report**	Order No. **07-286** Document No. **23703 DPE-01** Revision **0**

Client	Description	Reg. no. (BV)	Manufacturing no.
Cryotainer	**TC-20'/20.000L/2.4m/22b**	**BVCT 0870199/R**	**23703**

It is herewith certified that the pressure vessel mentioned above has satisfactorily passed a penetrant examination at the conditions mentioned below.

Specification Code	:	**NEN-ISO 3452**
Assessment standard	:	**EN 25817-B**
Procedure	:	**NEN-EN 288/3**
Base material	:	**Stainless steel; Mat. group 9**
Welding process	:	**S.A.W.**
Part examined	:	**Inner vessel Circ. seams RN1, Long. seam LN1**
Object temperature	:	**Shop temperature**
Method	:	**Color contrast**
Technique	:	**Waterwashable**

Penetrant	:	**Matcon Penetrant Dye**	Penetration time	:	**30 Min.**
Remover	:	**Water**	Emulgator time	:	**0.5 min.**
Developer	:	**Matcon D 70**	Developing time	:	**15 min.**

Test has been carried out in the presenc

[redacted]

Inspector of : Cryovat [redacted]

Mr. _____

Inspector of :

Remarks : Penetrant examination was carried out on 100% of the welds of the Inner vessel

Results : No relevant indications were observed

Prepared :	Checked :	Approved :	Date : 21-2-2008
Signature [redacted]	Signature : [redacted]	Signature :	Page : 1 of 1

Chapter 15

Cryovat Internationaal B.V., Nijverheidsstraat 10, 3861 RJ Nijkerk, the Netherlands. Tel.: (0)33-2455959 Fax.: (0)33-2455958 CRYOVAT	**Hydraulic pressure test certificate**	Order No. **07-286** Document No. **23703 PTC-01** Revision **0**

Client	Description	Reg. no. (BV)	Manufacturing no.
Cryotainer	**TC-20'/20.000L/2.4m/22b**	**BVCT 0870199/R**	**23703**

This is to certify that the above mentioned pressure vessel has satisfactorily passed a hydrostatic pressure test at the test pressure mentioned below

Test	:	Acc. CRYOVAT spec. HPP-01
Final test pressure	:	29,9 Barg
Duration	:	1 Hour(s)
Test date	:	feb. 26, 2008

Test has been carried out in the prese[redacted]

[redacted]

Inspector of : Cryovat[redacted]

Remarks :

ASME manometer no. 206

[redacted] ☐ Witnessed ☐ Reviewed

Prepared :	Checked :	Approved :	Date :
Signature [redacted]	Signature : [redacted]	Signature : 26 FEB. 2008 BV MIV The Netherlands [redacted]	Page : 1 of 1

Cryovat Internationaal B.V., Nijverheidsstraat 10, 3861 RJ Nijkerk, the Netherlands. Tel.: (0)33-2455959 Fax.: (0)33-2455958 CRYOVAT	**DECLARATION OF CAPACITY**	Order No. **07-286** Document No. **23703 CAP-01** Revision **0**

Client	Description	Reg. no. (BV)	Manufacturing no.
Cryotainer	**TC-20'/20.000L/2.4m/22b**	**BVCT 0870199/R**	**23703**

This document is to certify that the above mentioned pressure vessel has satisfactory passed a capacity measurement under the conditions mentioned below:

All measurements in Liters water

Man. Serial number	Calculated	Measured	On dataplate	Date
23703	19600	19530	19530	26/02/08

Check has been carried out in the pre[redacted]

[redacted]

Inspector of : Cryova[redacted]

Remarks :

Prepared :	Checked :	Approved [redacted]	Date :
Signature [redacted]	Signature : [redacted]	Signature [redacted]	Page : 1 of 1

feb. 26/08.

Chapter 16

Cryovat Internationaal B.V.,
Nijverheidsstraat 10,
3861 RJ Nijkerk,
the Netherlands.
Tel.: (0)33-2455959
Fax.: (0)33-2455958

CRYOVAT

Pneumatic pressure test certificate

pressure piping

Order No.	Document No.	Revision
07-286	23703 PTC-02	0

Client	Description	Reg. no. (BV)	Manufacturing no.
Cryotainer	TC-20'/20.000L/2.4m/22b	BVCT 0870199/R	23703

This is to certify that the pressure piping of the above mentioned pressure vessel has satisfactorily passed a pneumatic pressure test at the test pressure mentioned below

Test	:	Acc. CRYOVAT-spec. PPP-01	
Initial test pressure	:	1,7	barg
Final test pressure	:	6	barg
Test fluid	:	Gaseous Nitrogen	
Duration	:	Leak test is maintained for min. 10 min.	

Test has been carried out in the presence of :

[redacted]

Inspector of : Cryovat [redacted]

Mr. _____

Inspector of :

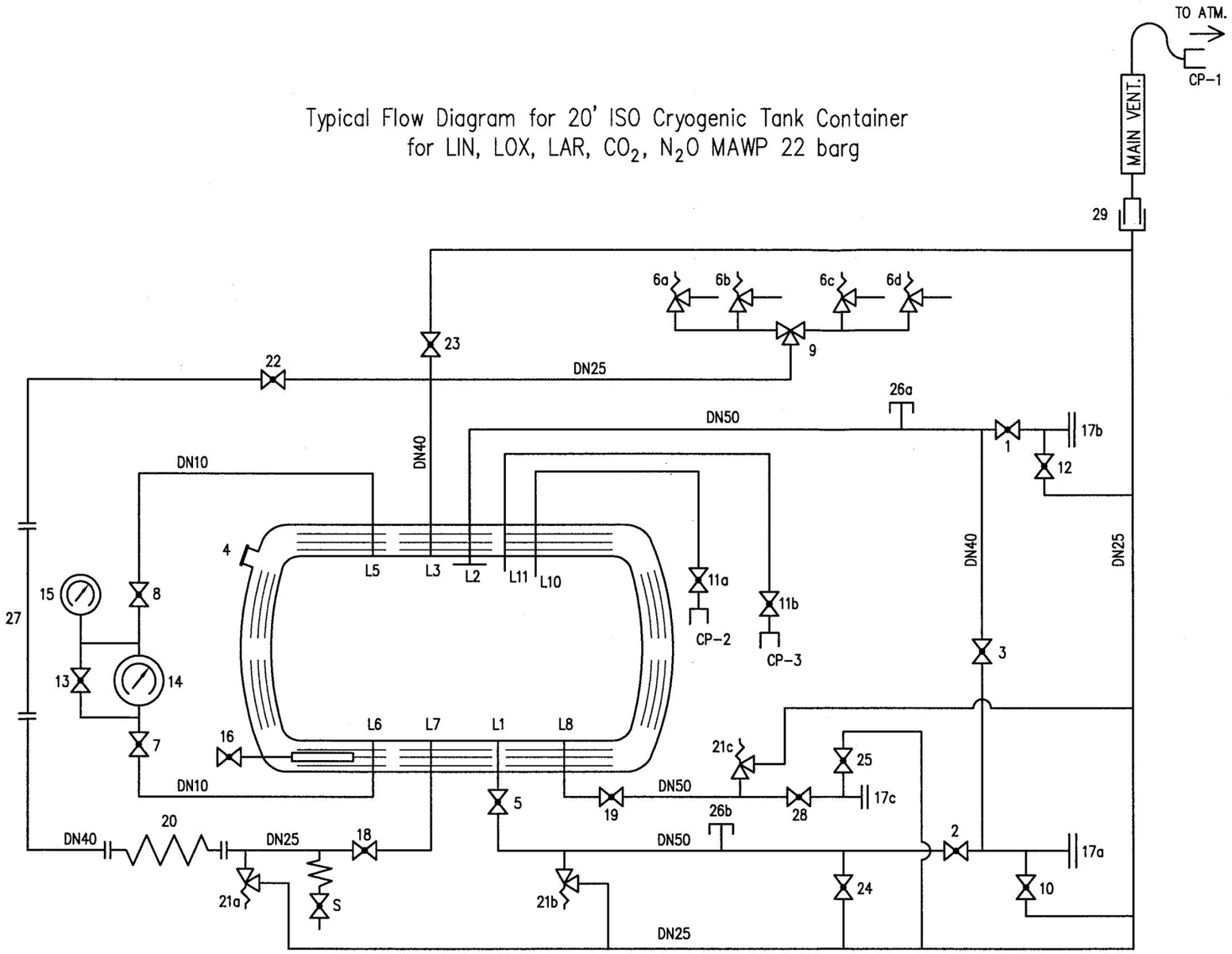
Remarks :

[redacted] Witnessed ☐ Reviewed

Prepared :	Checked :	Approved :	Date : 25-4-2008
Signature [redacted]	Signature : [redacted]	Signature : 25 APR. 2008 BV MIV The Netherlands R. Ong A Kwien	Page : 1 of 1

Chapter 17

Typical Flow Diagram for 20' ISO Cryogenic Tank Container for LIN, LOX, LAR, CO_2, N_2O MAWP 22 barg



1	Vapour Balance Line Valve
2	Bottom Fill Isolation Valve
3	Top Fill Isolation Valve
4	Bursting Disc Vacuum Jacket
5	Main bottom Valve
6a/b/c/d	Safety Valve
7	Instrument Liquid Valve
8	Instrument Gas Valve
9	3–Way Valve
10	Fill Line Purge Valve
11a/b	Trycock Nett Capacity 82–98% Valve
12	Vapour Line Purge Valve
13	Level Gauge Balance Line Valve
14	Levelindicator
15	Pressure Gauge
16	Vacuum Point
17a/b/c	Flange Connection with Counter Flange
18	Liquid to Pressure Build Up Valve
19	Discharge valve
20	Fin Vaporiser
21a/b/c	Thermal Relief Valve
22	Pressure Build Up Gas Return Valve
23	Vent Valve
24	Fill Line Purge Valve
25	Purge Valve
26a/b	Capped Connection
27	Replaceble Line between Flanges
28	Discharge valve
29	Coupling
S	Sample point
CP–1	Connectionpoint vent line
CP–2	Connectionpoint max. fill 82%
CP–3	Connectionpoint max. fill 98%

Witnessed ☐ Reviewed

25 APR. 2008

BV MIV The Netherlands [redacted]

R:\CAD\DWG2007\D0705501

REV	DATE	MODIFICATION NOTES
0	20/12/07	FIRST ISSUE
1	07/04/08	TEXT CORRECTED

Subject: FLOW DIAGRAM CRYOGENIC CONTAINER

Project: [redacted] 20' ISO TANK CONTAINER

CRYOVAT QC 2 INTERNATIONAAL

CRYOVAT

FORMAT: A3	SCALE: --	Remarks: CRYOTAINER BV
DRAWN [redacted]	DATE: 20/12/2007	
ISSUED [redacted]	DATE: 20/12/2007	Drawing NO. D0705501 Sh. 1 Rev. 1
TOLERANCES ACC. TO DIN UNLESS STATED OTHERWISE		

Nijverheidsstraat 33, 3861 RJ Nijkerk – NL
Tel. +31 (0)33 2455959
Fax +31 (0)33 2455958
E-mail: [redacted]@cryovat.nl

Order NO. 07–286

This drawing is property of Cryovat Internationaal BV and may not be copied or disclosed to third parties without written permission.

Chapter 18

Client	Cryotainer		INSTRUMENT / VALVE LIST					Doc. No	:	07-286 IL-01
Cryovat Internationaal B.V.			Project No.:	07-286				Date	:	07-04-08
Nijverheidsstraat 33			Description :	TC-T75 20'/19.600L-22,0 barg				Page	:	1
3861 RJ Nijkerk, Holland			Flow Diagram :	D0705501 rev.0				Rev.	:	1

No.	Tag No.	Description	Manufacturer	Type/Model	DN	PN	Range/Set point	Remarks
1	1	Vapour balance line valve	HEROSE	01311.5060.0010	50	50		
2	2	Bottom fill isolation valve	HEROSE	01311.5060.0010	50	50		
3	3	Top fill isolation valve	HEROSE	01311.4048.0010	40	50		
4	4	Bursting disc vacuum jacket	CRYOVAT		100	5	0,2 bar g	
5	5	Main bottom valve	HEROSE	01311.5060.0020	50	50		Spindle length H=370mm
6	6a/b/c/d	Safety valve	HEROSE	06388.1004.0000	20	50	22 bar g	
7	7	Instrument liquid valve	Swagelok	SS-1RS-8mm	8	40		
8	8	Instrument gas valve	Swagelok	SS-1RS-8mm	8	40		
9	9	3-Way valve	HEROSE	06510.2004.0010	20	50		
10	10	Fill line purge valve	HEROSE	01301.1515.0000	15	50		
11	11a	Trycock nett capacity shut off valve (98%)	HEROSE	01301.1515.0000	15	50		
12	11b	Trycock nett capacity shut off valve (82%)	HEROSE	01301.1515.0000	15	50		
13	12	Vapour line purge valve	HEROSE	01301.1515.0000	15	50		
14	13	Level gauge balance line valve	WIKA		8	40		incl. in tag 14
15	14	Levelindicator	WIKA	73.251.100.2170	--	40	0-311 mbar	Scale in 0-100%
16	15	Pressure gauge	WIKA	233.50	1/4"	50	0-40 bar	Scale in bar g
17	16	Vacuum pump plug connection	CRYOVAT		50KF			2 pcs.
18	17a/b/c	Flange connection with counter flange	CRYOVAT		65	40		DIN 2633 Form C with blindflange
19	18	Liquid to pressure build-up valve	HEROSE	01311.2533.0010	25	50		
20	19	Discharge valve	HEROSE	01311.5060.0020	50	50		Spindle length H=370mm
21	20	Fin pressure build-up vaporizer	CRYOVAT		1'	40		stainless steel liner in alu fin tube
22	21a/b/c	Thermal relief valve	WITT	SV805	1/4"	40		In: 1/4" NPT-M
23	22	Gas from pressure build-up valve	HEROSE	01311.4048.0010	40	50		
24	23	Vent valve	HEROSE	01311.2533.0010	25	50		
25	24	Fill line purge valve	HEROSE	01301.1515.0000	15	50		
26	25	Discharge line purge valve	HEROSE	01301.1515.0000	15	50		
27	26a/b	Capped connections	CRYOVAT		25	40		stainless steel
28	27	Replaceble line between flanges	CRYOVAT		40	40		stainless steel
29	28	Discharge valve	HEROSE	01311.5060.0020	50	50		Spindle length H=370mm
30	29	Coupling	CRYOVAT	Union	1"	150#		
31	S	Sample valve	Rego	9452DA	1/4"	40		new item number T009452
32	CP-1	Connectionpoint vent line	CRYOVAT	Socket	1"	NPT-F		
33	CP-2	Connectionpoint max. fill 82%	CRYOVAT	Socket	1/2"	NPT-F		
34	CP-3	Connectionpoint max. fill 98%	CRYOVAT	Socket	1/2"	NPT-F		

viewed
Witnessed
25 APR. 2008
BV MIV The Netherlands
BUREAU VERITAS 1828

Chapter 19

CRYOVAT

CRYOVAT INTERNATIONAAL B.V.
NIJKERK - HOLLAND

IMO TANK TYPE NO.	: UN-PORTABLE TANK T75
COUNTRY / YEAR OF MANUFACTURE	: THE NETHERLANDS / 2008
MANUFACTURER'S NAME	: CRYOVAT INTERNATIONAAL B.V.
MANUFACTURER SERIAL NR.	: 23703
APPROVAL COUNTRY	: THE NETHERLANDS
APPROVAL NUMBER UN-TYPE T75	: NL/CR/08079/BV
OWNER REG. NR.	: CRYU 200812-6

UN

DESIGN CODE	: AD-2000
APPROVAL AGENCY	: BUREAU VERITAS
APPROVAL AGENCY NO.	: BVCT 0870199/R
APPROVALS	: ADR/RID, IMDG, CSC, UIC, ISO, TIR

TEST PRESSURE	: 29.9	Barg
MAX. ALLOW. WORKING PRESSURE	: 22	Barg
TOTAL WATER CAPACITY AT 20°C.	: 19530	Ltr.
ORIG. HYDR. TEST DATE (DD-MM-YY)	: 28-2-2008	
DESIGN TEMPERATURE	: -196/+50 °C.	
INNERVESSEL MATERIAL	: 1.4311 EN-10028-7	
EQUIVALENT THICKNESS REF. STEEL	: SHELL 14.1 mm / HEADS 13.1 mm	
TYPE OF INSULATION	: VACUUM INSULATED MULTILAYER	
EFFECTIVENESS OF INSULATION	: 0.90 W/K	

CONTENTS (UN-CODE)	TOTAL MASS		HOLDING TIME
1073 OXYGEN (LOx)	: 16772	kg(75%)	65 Days @ 0 Barg
1977 NITROGEN (LIN)	: 10610	kg(67%)	40 Days @ 0 Barg
1951 ARGON (LAr)	: 20190	kg(74%)	51 Days @ 0 Barg
2187 CARBON-DIOXIDE (LCO2)	: 19293	kg(89%)	60 Days @ 10 Barg
2201 NITROUS OXIDE (LN20)	: 22345	kg(89%)	60 Days @ 0 Barg
MAX. PERMISSIBLE GROSS MASS	: 36000	kg	
TARE CONTAINER MASS	: 8840	kg	
MAX. PAYLOAD	: 27160	kg	

	DATE	DATE	DATE	DATE	DATE
2½ YRS. INSPECTION					
5 YRS. INSPECTION					

APPROVED FOR TRANSPORT UNDER CUSTOMS SEAL

NL 11/05/2008

TYPE: N.A.

MANUFACTURER'S No. OF THE CONTAINER: 23703

CSC SAFETY APPROVAL

1. CSC NL/BV/0033/03		
2. DATE MANUFACTURED	04 — 2008	
3. IDENTIFICATION No.	23703	
4. MAXIMUM GROSS WEIGHT	36000 kg	79366 lb
5. ALLOWABLE STACKING WEIGHT FOR 1.8 g	192000 kg	423320 lb
6. RACKING TEST LOAD VALUE	15000 kg	33069 lb
7. RE-EXAMINATION DUE DATE	04 — 2013	

CRYOVAT

CRYOVAT INTERNATIONAAL B.V.
NIJKERK - HOLLAND

IMO TANK TYPE NO.	: UN-PORTABLE TANK T75
COUNTRY / YEAR OF MANUFACTURE	: THE NETHERLANDS / 2008
MANUFACTURER'S NAME	: CRYOVAT INTERNATIONAAL B.V.
MANUFACTURER SERIAL NR.	: 23703
APPROVAL COUNTRY	: THE NETHERLANDS
APPROVAL NUMBER UN-TYPE T75	: NL/CR/08079/BV
OWNER REG. NR.	: CRYU 200812-6

U N

DESIGN CODE	: AD-2000
APPROVAL AGENCY	: BUREAU VERITAS
APPROVAL AGENCY NO.	: BVCT 0870199/R
APPROVALS	: ADR/RID, IMDG, CSC, UIC, ISO, TIR

TEST PRESSURE	: 29.9	Barg
MAX. ALLOW. WORKING PRESSURE	: 22	Barg
TOTAL WATER CAPACITY AT 20°C.	: 19530	Ltr.
ORIG. HYDR. TEST DATE (DD-MM-YY)	: 26-2-2008	
DESIGN TEMPERATURE	: -196/+50 °C.	
INNERVESSEL MATERIAL	: 1.4311 EN-10028-7	
EQUIVALENT THICKNESS REF. STEEL	: SHELL 14.1 mm / HEADS 13.1 mm	
TYPE OF INSULATION	: VACUUM INSULATED MULTILAYER	
EFFECTIVENESS OF INSULATION	: 0.90 W/K	

CONTENTS (UN-CODE)	TOTAL MASS		HOLDING TIME
1073 OXYGEN (LOx)	: 16772	kg(75%)	65 Days @ 0 Barg
1977 NITROGEN (LIN)	: 10610	kg(67%)	40 Days @ 0 Barg
1951 ARGON (LAr)	: 20190	kg(74%)	51 Days @ 0 Barg
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2201 NITROUS OXIDE (LN2O)	: 22345	kg(89%)	60 Days @ 0 Barg
MAX. PERMISSIBLE GROSS MASS	: 36000	kg	
TARE CONTAINER MASS	: 8840	kg	
MAX. PAYLOAD	: 27160	kg	

	DATE	DATE	DATE	DATE	DATE
2½ YRS. INSPECTION					
5 YRS. INSPECTION					

APPROVED FOR TRANSPORT
UNDER CUSTOMS SEAL

NL 11/05/2008

TYPE: N.A.

MANUFACTURER'S No.
OF THE CONTAINER: 23703

YRS. INSPECTION

CSC SAFETY APPROVAL

1. CSC NL/BV/0033/03		
2. DATE MANUFACTURED	04 — 2008	
3. IDENTIFICATION No.	23703	
4. MAXIMUM GROSS WEIGHT	36000 kg	79366 lb
5. ALLOWABLE STACKING WEIGHT		
FOR 1.8 g	192000 kg	423320 lb
6. RACKING TEST LOAD VALUE	15000 kg	33069 lb
7. RE-EXAMINATION DUE DATE	04 — 2013	

Chapter 20

Cryovat Internationaal BV
Nijverheidsstraat 10
3861 RJ Nijkerk
E-mail: [redacted]@cryovat.nl
Tel.: (0)33-245 59 59
Fax.: (0)33-245 59 58

CRYOVAT

QUALITY CONTROL & INSPECTION PLAN

PD12.2

Manufactering-nr.: **23703**

Document Nr.: **23703-QCP-01**

Prepared by :	Date:	Rev.:
[redacted]	15-1-2008	

Customer: **CRYOTAINER**

Subject/ Project: **TC IMDG T75/20'**

Seq.	Description of Test Items	Specification / Instruction	Approved by: [type* /sign] CRYOVAT	Customer	B.V.	Reported at / Remarks
1	Approval of technical file Check if design code is latest version!	IMDG/ADR/ AD-Merkblätter	[redacted]		HP 24/01 2008	23703-DC-01
2	Check of Welding Procedure Specification	EN287P1 EN288P3			RD 26/02	23703-QCP-01
3	Check of Welders Qualification Records	EN287			RD 26/02	23703-QCP-01
4	Inspection of material certificates	DIN50049/EN10204			RD 26/02	23703-MCL-01
5	Examination of radiofilms	AD-M HP-0			WP 26/02	Radiogr. Exam. Report
6	Internal Inspection, check of max. level pipes / visual inspection weldings	IMDG/ADR			HP 17/01 2008	23703-QCP-01
7	Internal cleaning	CLP-2			NA	23703-CLC-01
8	Inspection innervessel	IMDG/ADR/ AD-Merkblätter			HP 26/02	23703-PTC-01
9	Hydraulic pressure test	IMDG/ADR/ AD-Merkblätter			HP 26/02	23703-QCP-01-PTC-01 29.9 barg
10	Hydraulic pressure test vaporiser	IMDG/ADR/ AD-Merkblätter	N.A.		[redacted]	
11	Helium leak test for piping	HLP-2			[redacted]	23703-HLC-01
12	Container frame dimensional control	ISO 668			[redacted]	23703-DPE-01
13	Check of safety valves	IMDG/ADR			RD 25/01 2008	23703-SVL-01
14	Final inspection, pneumatic pressure test valves	IMDG/ADR			HP 25/01 2008	23703-PTC-02 5 barg
15	Check of labels and nameplate(s)	IMDG/ADR			WP 25/01 2008	D0705503
16	Initial final inspection measures, color etc.	IMDG/ADR			NA	
17						
18						
19						
20						

* Explanation (type of inspection)
HP = Hold Point
WP = Witness Point
RD = Review of Documents
NA = Not Applicable

Customer Quality Assurance

BUREAU VERITAS

Inspection Agency: Bureau Veritas