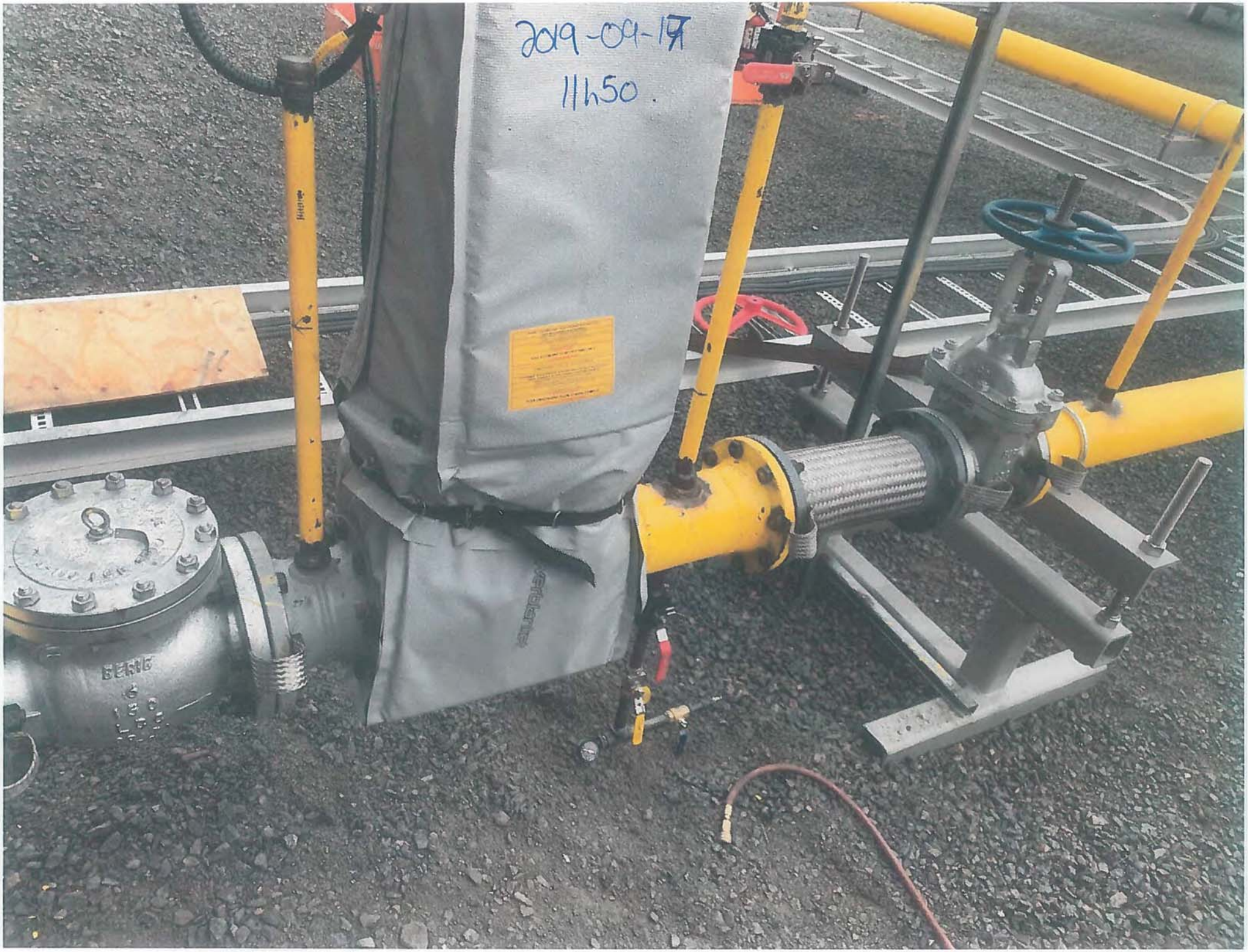

2019-09-15
14:30
NORGREN
IMI
MPa
bar
psi


2019-09-17
11h50.


MPa
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psi
NORGREN
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5

MLTS_6056-18731
Heat# SEE BELOW

CCTF CORPORATION

4151 North Service Road, Burlington, ON L7L 4X6 (905) 335-5320

Date: 6/5/2019

Mill Test Reports

Invoice: 1596625-00
PO: 4072649

Customer: 49300-001
A.B.F MINES INC (ROUYN NORANDA
LIVRER A EQUIPEMENT KN
8254 RANG DU VIEUX PONT
ROUYN-NORANDA, QC J9Y 0H4

Line	Heat#	Product	Description
2	176433	2530031	1 A333-6 STD BLK SMLS SRL
3	141352	2530074	2 A333-6 STD BLK SMLS SRL
4	610879	2530090	4 A333-6 STD BLK SMLS SRL
5	175147	2530104	6 A333-6 STD BLK SMLS SRL
5	178322	2530104	6 A333-6 STD BLK SMLS SRL
6	175142	2530112	8 A333-6 STD BLK SMLS SRL
6	175146	2530112	8 A333-6 STD BLK SMLS SRL
6	176433	2530112	8 A333-6 STD BLK SMLS SRL
6	177833	2530112	8 A333-6 STD BLK SMLS SRL

Heat codes followed by ** have been corrected, change may not show on the packing slip

vallourec
Vallourec Soluções Tubulares do Brasil S.A.
Barreiro Plant - Av. Olinto Meireles, 65
ZIP 30640-010 - Belo Horizonte, MG

EcoTube

RINA
ISO 9001 - ISO/TS 16949
ISO 14001 - ISO 50001 - OHSAS 18001
Certified management systems

Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030030837 / 00 Sheet: 1 / 4

Customer: VALLOUREC CANADA INC

Country: Canada

Material Number: 276243
Work Order: 531796 / 10
Customer Order: VM-4682 - P.O 4038589-00

Inspection: Vallourec Soluções Tubulares do Brasil S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED , PLAIN ENDS , NORMALIZED
DIMENSIONS: 33,40 mm X 3,38 mm **SCHEDULE:** 040 **GRADE:** GRADE 290 # GR 1 # 6 # B 1 STD 2530031
STANDARD: CSA-Z245.1-14 - CATEGORY II
IN ACCORDANCE ALSO TO THE STANDARDS: ASTM A 333M - 16 ASTM A 999M - 18 # ASTM A 106M - 18 ASTM A 530M - 12 # ASTM A 53M - 12 # ASME SA-333M - 17 ASME SA 999M - 17 # ASME SA-106M - 17 ASME SA 530M - 17
CUSTOMER SPECIFICATION: CCTF GrB,1,6,290 Cat II SS , 20.11.2017
SURFACE PROTECTION: EXTERNAL: LACQUER **PIPE ENDS PROTECTOR:** PLASTIC CAP
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -0,40 mm / +0,40 mm **WALL THICKNESS:** -0,42 mm / +0,68 mm
TOLERANCES(PIPE ENDS): OUTSIDE DIAMETER: -0,40 mm / +0,40 mm
LENGTH: RANDOM 5486,00 mm - 6706,00 mm
STANDARD MARKING: PAINT STENCILED IN THE PIPE BODY: 531796/10 MANUFACTURER CSA-Z245.1-14 33,40 X 3,38 290 CAT II SS S HN HEAT NUMBER ASTM A/ASME SA 333, 1/6 HF SCH 040 LT -46C ASTM A/ASME SA 106 B 20700 KPA ASTM A 53 B NPS 1" X SCH 40 VSB LOGO
SHIPPING MARKING: NACE MR 0175/NACE MR 0103 - MADE IN BRAZIL * VM4682 / P.O # 4038589-00/ITEM-1 * TORONTO * CCTF

Heat	Pieces
176433	337
Total	**337**

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # FLATTENING TEST # BENDING TEST # ENDS INSPECTION : UNTESTED ENDS CROPPED # HYDROSTATIC TEST: 20700,0 KPA 5 S # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST : CSAZ245.1-N10,LON/TRAN,OUT/INS # ULTRASONIC TEST FOR LAMINAR DEFECTS: ACC. CSA Z245.1-SOUR SERVICE #

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ISO 14001 ISO 50001 OHSAS 18001
Certified management systems

Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030030837 / 00

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: CSA-Z245.1-CE11 — Ceq: C+Mn/6+(Cr+Mo+V)/5 +(Ni+Cu)/15 — CE1: Cr + Cu + Mo + Ni + V

		C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	B	Ti	N	Ca	Ceq	Ceq	CE1
Heat Analisys	Min		0,400			0,100														
	Max	0,240	1,350	0,025	0,025	0,500	0,400	0,300	0,120		0,400	0,080	0,020	0,0010	0,110			0,400	0,430	1,000
Product Analisys	Min		0,400			0,100														
	Max	0,240	1,350	0,025	0,025	0,500	0,400	0,300	0,120		0,400	0,080	0,020	0,0010	0,110			0,400	0,430	1,000
Heat Control Lot																				
176433 030003101210		0,10	1,27	0,012	0,004	0,28	0,03	0,06	0,01	0,029	0,070	0,004	0,015	0,0004	0,002	0,0099	0,0012	0,265	0,333	0,174
Check 1		0,11	1,29	0,011	0,004	0,29	0,03	0,06	0,01	0,029	0,074	0,005	0,017	0,0003	0,002	0,0098	0,0013	0,277	0,347	0,179
Check 2		0,10	1,29	0,011	0,004	0,29	0,03	0,06	0,01	0,029	0,074	0,005	0,017	0,0003	0,002	0,0088	0,0013	0,267	0,337	0,179

Ceq: Carbon Equivalent; Ceq: Carbon Equivalent; CE: Combined Elements;

Tensile Test

Specimen Direction: Longitudinal — **Temperature:** Room Temperature — **Wall Thickness:** 3,38 mm — **Gage Length:** L0=2"

Method:Elong.Total Under Load 0,50 %

		Type of Specimen	Area (MM2)	YS (MPA)	TS (MPA)	E (%)
Required: Min				290	415	25
Max					625	
Heat Control Lot						
176433 030003101210		FULL SECTION	321,3	349	477	44
		FULL SECTION	330,4	355	490	45

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

Hardness Test Through Wall

Scale: HV

		Individual	MW1	MW2	MW3	Avg
Required: Min						
Max		246,0				
Heat Control Lot						
176433 030003101210	Q1		160,0	159,0	162,0	160,3

MW - Middle Wall;

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ISO 9001 - ISO/TS 16949
ISO 14001 ISO 50001 OHSAS 18001
Certified Management Systems

Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030030837 / 00 Sheet:3 / 4

Impact Test

Test Specimen: CHARPY 10X55X2.5 V NOTCH **Direction:** Longitudinal **Temperature:** -55°C **Striker radius:** 8 mm

	AE1 (J)	AE2 (J)	AE3 (J)	AE4 (J)	AE5 (J)	AE Avg (J)	SA1 (%)	SA2 (%)	SA3 (%)	SA4 (%)	SA5 (%)	SA Avg (%)	LE1 (Mils)	LE2 (Mils)	LE3 (Mils)	LE Avg (Mils)
Required: Min	7	7	7			7	50	50	50			60				
Max																
Heat Control Lot																
176433 030003101210	52	56	55			54	100	100	100			100	55	55	55	55

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

Remarks:

1. MATERIAL IN ACCORDANCE WITH NACE MR 0175
PAR. 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1. ALL LATEST
EDITIONS

2. SKU 2530031

3 THE WORKS OPERATE A QUALITY MANAGEMENT SYSTEM ACCORDING TO EUROPEAN
DIRECTIVE 2014/68/UE ANNEX I PAR. 4.3 (CERTIFICATE 2016 BH MP 02-03
VALID UNTIL 12.05.2019).
- MATERIAL ACCORDING TO PED 2014/68/UE ANNEX I PAR. 7.5

"STEEL MADE BY BOF PROCESS"

4. - NO WELD REPAIR
- FREE OF MERCURY CONTAMINATION
- NO RADIOACTIVE CONTAMINATION
- FINE GRAIN PRACTICE
- FULLY KILLED STEEL.
- MATERIAL FROM BRAZIL

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ISO 9001 - ISO/TS 16949
ISO 14001 - ISO 50001 OHSAS 18001
Certified Management Systems

Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030030837 / 00 Sheet:4 / 4

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2773

e-mail:luis.silva@vallourec.com

ENG. LUIZ FERNANDO DA SILVA - CREA/MG 58834-D
TECHNICAL RESPONSIBLE

DATE
11.20.2018

vallourec

Vallourec Soluções Tubulares do Brasil S.A.
Barreiro Plant - Av. Olinto Meireles, 65
ZIP 30640-010 - Belo Horizonte, MG

EcoTube

RINA

Inspection Certificate

(According to DIN EN 10204.3.1)

N°.: 0030023868 / 00 Sheet: 1 / 3

Customer: VALLOUREC CANADA INC

Country: Canada

Material Number: 273193
Work Order: 509784 / 10
Customer Order: VM4238/P.O # 4037205-00

Inspection: Vallourec Soluções Tubulares do Brasil S.A

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED , BEVELED ENDS 30 DEG. , NORMALIZED
DIMENSIONS: 60.30 mm X 3.90 mm SCHEDULE: 040 GRADE: GRADE 290 # 6 # GR I 2 STD 2530074
STANDARD: CSA-Z245.1-14 - CATEGORY II
IN ACCORDANCE ALSO TO THE STANDARDS: ASTM A 333M - 16 ASTM A 999M - 16 # ASME SA-333M - 15
SURFACE PROTECTION: EXTERNAL: LACQUER PIPE ENDS PROTECTOR: PLASTIC CAP
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -0,60 mm / +0,60 mm WALL THICKNESS: -0,49 mm / +0,78 mm
LENGTH: RANDOM 5486,00 mm - 6706,00 mm
STANDARD MARKING: Paint stenciled in the pipe body: 509784/10 MANUFACTURER CSA-Z245.1-14 60.30 X 3,90 290 CAT II SS S HN LENGTH HEAT NUMBER ASTM A/ASME SA 333, 1/6 HF SCH 040 LT -46C NACE MR 0175/NACE MR 0103 VSB LOGO
SHIPPING MARKING: MADE IN BRAZIL * VM4238 / P.O # 4037205-00 * VANCOUVER
TOLERANCES(PIPE ENDS): OUTSIDE DIAMETER: -0,40 mm / +0,80 mm

Heat	Pieces
141352	122
Total	122

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # FLATTENING TEST # ENDS INSPECTION : UNTESTED ENDS CROPPED # HYDROSTATIC TEST: 20700,0 KPA 5 S # RESIDUAL MAGNETISM: MAX 30 GAUSS # TESTE ELETROMAGNÉTICO : ACCORDING TO CSA Z245.1 # ULTRASONIC TEST FOR LAMINAR DEFECTS: ACC. CSA Z245.1-SOUR SERVICE #

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: CSA-Z245.1-CE11 CE1: Mn/C

		C	Mn	P	S	Si	Ni	Cr	Mo	Cu	V	Nb	B	Ti	Ceq	CE1
Heat Analisys	Min		0,400			0,100										3,000
	Max	0,240	1,350	0,025	0,025	0,500	0,400	0,300	0,120	0,400	0,080	0,020	0,0010	0,110	0,400	
Product Analisys	Min		0,400			0,100										3,000
	Max	0,240	1,350	0,025	0,025	0,500	0,400	0,300	0,120	0,400	0,080	0,020	0,0010	0,110	0,400	
Heat	Control Lot															
141352	030002889902	0,10	1,32	0,020	0,001	0,31	0,01	0,07	0,03	0,010	0,006	0,015	0,0002	0,002	0,342	13,200
	Check 1	0,10	1,32	0,020	0,001	0,31	0,01	0,07	0,03	0,012	0,006	0,016	0,0002	0,002	0,343	12,941
	Check 2	0,10	1,32	0,020	0,001	0,31	0,01	0,07	0,03	0,012	0,006	0,016	0,0002	0,002	0,343	12,816

Ceq: Carbon Equivalent; CE: Combined Elements;

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RINA

Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030023868 / 00

Tensile Test

Specimen Direction: Longitudinal Temperature: Room Temperature Gage Length: L0=2" Method:Elong.Total Under Load 0.50 %

		Type of Specimen	Area (MM2)	YS (MPA)	TS (MPA)	E (%)
	Required: Min			290	415	26
	Max				625	
Heat	Control Lot					
141352	0300023889902	STRIP WIDTH 19.05 MM	83.6	406	517	37

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

Hardness Test Through Wall

Scale: HV

		Individual	AE2	AE3
	Required: Min			
	Max	246.0		

Heat	Control Lot		MW1	MW2	MW3	Avg
141352	0300023889902	Q1	163.0	166.0	160.0	163.0

MW - Middle Wall;

Impact Test

Test Specimen: CHARPY 10X55X2.5 V NOTCH Direction: Longitudinal Temperature: -57°C Striking imp: 8 mm

		AE1 (J)	AE2 (J)	AE3 (J)	AE4 (J)	AE5 (J)	AE Avg (J)
	Required: Min	4	4	4			5
	Max						
Heat	Control Lot						
141352	0300023889902	42	40	46			43

AE - Absorbed Energy;

Remarks:
1. MATERIAL IN ACCORDANCE WITH NACE MR 0175
PAR. 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1. ALL LATEST EDITIONS.

2. SKU 2530074

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RINA

Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030023868 / 00 Sheet:3 / 3

3. - MATERIAL SOUR SERVICE AS DEFINED IN PARAGRAPH 16 OF CSA Z241.1, BUT WITHOUT HIC TEST

4. MATERIAL:
- NO WELD REPAR
- FREE OF MERCURY
- FINE GRAIN PRACTICE
- FULLY KILLED STEEL
- MATERIAL FROM BRAZIL

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2617

e-mail:gustavo.pinheiro@vallourec.com

DR. GUSTAVO ALVES PINHEIRO - CREA/MG-109170/D
TECHNICAL RESPONSIBLE

DATE
08.14.2017

ECO TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 100.000 ha of forest planted by Vallourec Florestal Ltda.. With the acquisition of 4,6 ton(s) os steel tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 8,3 ton(s) of Carbon Dioxide CO2 in the atmosphere.

Benteler Steel/Tube GmbH
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: + 49.5254.81-0 Fax: + 49.5254.13666

BENTELER
Steel/Tube

ABNAHMEPRÜFZEUGNIS EN 10204-3.1

INSPECTION CERTIFICATE EN 10204-3.1
CERTIFICAT DE RECEPTION EN 10204-3.1
EN 10204:2005-01

Benteler Steel/Tube GmbH - Postfach 1340 - 33043 Paderborn - Deutschland

CCTF Corporation
Unit 2 4151 North Service Road
BURLINGTON, ON ON L7L 4X6
CANADA

Dokument-Nr.: 65-1069887/001/E
Document No.:
No. du document:

Prüf-Nr.:
Inspection No.:
No. du certificat:

Blatt: 1 / 6
Page:
Page:

Kunden-Bestell-Nr.: 46005849 / CCTF 4038177-00
Purchase Order No.:
No. de commande du client:

Hersteller: Warmrohrwerk Dinslaken
Manufacturer: (DIN EN ISO 9001, ISO/TS-16949 CERTIFIED BY TUEV NORD CERT)
Producteur: (PED 2014/68/EU CERTIFIED BY TUEV NORD SYSTEMS)

Benteler Auftrags-Nr.: 1646606
Benteler Order No.:
No. de commande Benteler:

Herstellerzeichen:
Manufacturer's brand:
Marque du producteur:

Versandanzeigen-Nr.: 6591130
Dispatch Note No.:
No. d'avis d'expédition:

Stempel des Abnahmebeauftragten: WA
Stamp of the inspection representative:
Poinçon du contrôleur:

Produkt: NAHTLOSE STAHLROHRE
Product: SEAMLESS STEEL TUBES
Produit: TUBES D' ACIER SANS SOUDURE

Stahlerschmelzungsverfahren: ELEKTROSTAHL
Steelmaking process: ELECTRIC FURNACE
Procédé d'élaboration de l'acier: FOUR ELECTRIQUE

Lieferbedingungen: **Terms of delivery:** Conditions de livraison:	ASTM-A 106-2015, ASTM-A 333-2016-HF, ASME SA-106, ASME BPVC.II.A-2017, ASME SA-333-HF, ASME BPVC.II.A-2017, CSA Standard Z245.1-14 Category II, Sour Service, ANSI/NACE MR0175/ISO 15156-1: 2015, ANSI/NACE MR0175/ISO 15156-2: 2015
Maße - Toleranzen: **Dimensions-tolerances:** Dimensions-tolérances:	ASME SA-106, ASME BPVC.II.A-2017, ASTM-A 106-2015, ASME SA-999 ASME BPVC.II.A-2017, ASTM-A 999-2016
Stahlsorte: **Steel grade:** Nuance d'acier:	GRADE 1, GRADE 290, GRADE 6, GRADE B
Lieferzustand: **Delivery condition:** État de livraison:	Normalized
Produktkennzeichnung: **Product marking:** Marquage du produit:	FS: BENTELER Z.245.1 - 14 - A / SA-106 / A / SA-333 B/1/6/290 CATEGORIE 2 SS HEAT-NO. LT 50 SMLS HN DIMENSION TEST PRESSURE S6 WA GERMANY PO 4038177-00 / 2530090 DIMENSIONS SCHEDULE PS: HEAT-NO. DIMENSIONS SCHEDULE B/1/6/290 SS

AEZ = Ätztintenbeschriftung, Etching ink marking, Gravure à l'encre . FK = Farbkennzeichnung, color marking, marquage par couleur . FS = Farbschablonierung, paint stenciling, marquage par peinture . FSD = Farbstrahldrucker, Color jet printer, Imprimante à jet d'encre de couleur . LK = Laserkennzeichnung, Laser marking, Marquage laser . PKE = Etikettenkennzeichnung, tag marking, marquage sur étiquette . PS = Prägestempel, die stamp, marquage par poinçonnage . TS = Tintenstrahlkennzeichnung, Ink jet spray marking, Imprimante à jet d'encre

Benteler Steel/Tube GmbH
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: + 49.5254.81-0 Fax: + 49.5254.13666

BENTELER
Steel/Tube

ABNAHMEPRÜFZEUGNIS EN 10204-3.1

INSPECTION CERTIFICATE EN 10204-3.1
CERTIFICAT DE RECEPTION EN 10204-3.1

Dokument-Nr.: / **Document No.:** / No. du document: 65-1069887/001/E

Prüf-Nr.: / **Inspection No.:** / No. du certificat:

Blatt: / **Page:** / Page: 2 / 6

Pos. / **Item** / Poste	Stück / **Number** / Nombre	Maße / **Dimensions** / Dimensions		Gesamtlänge / **Length total** / Longueur totale	Gewicht / **Weight** / Poids	Schmelzen-Nr. / **Heat No.** / No. de coulée	Prüfdruck / **Test pressure** / Pression d'épreuve		Rohr-Nr.-Gruppe / **Tube number group** / Série de no. des tubes	Vielfachlängen / **Multiple lengths** / Longueurs multiples
			feet	feet	lbs		PSI	s		
0002	72	4" NPS * Sched. 40 20 FT - 22 FT	2530090	1570,90	17284	610879	2650	5		

Schmelzenanalyse [%] / **Heat analysis [%]** / Analyse sur coulée [%]

Pos. / **Item** / Poste	Schmelzen-Nr. / **Heat No.** / No. de coulée	C	SI	MN	P	S	CR	MO	NI	CU	V	NB	TI	B
0002	610879	0,130	0,320	1,25	0,008	0,001	0,14	0,06	0,25	0,11	0,062	0,014	0,003	0,0003

1. Formel: CE IIW= C+ (Mn/6)+ ((Cr+ Mo+ V)/5)+ ((Cu+ Ni)/15)< = 0,42 %
2. Formel: CEV= C+ F* ((Mn/6)+ (Si/24)+ (Cu/15)+ (Ni/20)+ ((Cr+ Mo+ V+ Nb)/5) + (5* B)) < = 0,40 %
3. Formel: Mn / C > = 3 / 1
4. Formel: Cr+ Cu+ Mo+ Ni+ V< = 1,00 %

Formelergebnisse / **Formula results** / Résultats des formules

Pos. / **Item** / Poste	Schmelzen-Nr / **Heat No.** / No. de coulée	1. Formel / **1.** / 1.	2. Formel / **2.** / 2.	3. Formel / **3.** / 3.	4. Formel / **4.** / 4.
0002	610879	0,415	0,369	9,615	0,622

Produktanalyse [%] / **Product analysis [%]** / Analyse sur produit [%]

Pos. / **Item** / Poste	Schmelzen-Nr. / **Heat No.** / No. de coulée	C	SI	MN	P	S	CR	MO	NI	CU	V	NB	TI	B
0002	610879	0,130	0,320	1,21	0,004	0,003	0,15	0,06	0,26	0,09	0,067	0,017	0,005	0,0004

1. Formel: CE IIW= C+ (Mn/6)+ ((Cr+ Mo+ V)/5)+ ((Cu+ Ni)/15)< = 0,42 %
2. Formel: CEV= C+ F* ((Mn/6)+ (Si/24)+ (Cu/15)+ (Ni/20)+ ((Cr+ Mo+ V+ Nb)/5) + (5* B)) < = 0,40 %
3. Formel: Mn / C > = 3 / 1
4. Formel: Cr+ Cu+ Mo+ Ni+ V< = 1,00 %

Benteler Steel/Tube GmbH
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: + 49.5254.81-0 Fax: + 49.5254.13666

BENTELER
Steel/Tube

ABNAHMEPRÜFZEUGNIS EN 10204-3.1
INSPECTION CERTIFICATE EN 10204-3.1
CERTIFICAT DE RECEPTION EN 10204-3.1

Dokument-Nr.: 65-1069887/001/E
Document No.:
No. du document:

Prüf-Nr.:
Inspection No.:
No. du certificat:

Formelergebnisse / **Formula results** / Résultats des formules

Pos.	Schmelzen-Nr	1. Formel	2. Formel	3. Formel	4. Formel
Item	**Heat No.**	**1.**	**2.**	**3.**	**4.**
Poste	No. de coulée	1.	2.	3.	4.
0002	610879	0,410	0,366	9,308	0,627

Prüfergebnisse / **Test results** / Résultats des essais

Die Rohre sind auf Dichtheit geprüft durch: **The tubes have been submitted to a leak tightness test by:** Les tubes ont passé un contrôle d'étanchéité par:	Hydrostatic test: acc. to CSA Z245.1, holding time min 5 seconds, Test pressure/Time-record	PASSED
Die Rohre wurden zerstörungsfrei geprüft: **The tubes are non destructive tested:** Les tubes ont passé un essai non destructif:	ET-test: acc. to CSA Z245.1; for imperfections; drilled hole: 3,20 mm	PASSED

Augensichtkontrolle: **Visual inspection:** Examen visuel:	PASSED	Maßkontrolle: **Dimensions examination:** Vérification des dimensions:	PASSED	Ringfaltversuch: **Flattening test:** Essai d'aplatissement:	PASSED

Ergebnisse der mechanischen Prüfung / **Results of mechanical testing** / Résultats des essais mécaniques

Die Probennahme erfolgte an Vielfachlängen.
The sampling was carried out on multiple lengths.
L'echantillonage etait realise aux longueurs multiples.

Zugversuch längs bei RT, Streifenprobe / **Tensile test longitudinal at RT, Strip test specimen** / Essai de traction longitudinale à TA, Bande decoupee sur tube

Pos.	Proben-Nr.	Schmelzen-Nr.	Probenabmessung	Streckgrenze	Zugfestigkeit	Dehnung	
Item	**Specimen No.**	**Heat No.**	**Specimen dimensions**	**Yield strength**	**Tensile strength**	**Elongation**	
Poste	No. de l'éprouv.	No. de coulée	Dimensions de l'éprouv.	Limite élastique	Résistance à la traction	Allongement	
Anforderungen				RT 0,5 %	Rm	A2"	1. Formel
Requirements			mm	PSI	PSI	%	**1. Formula**
Exigences				42206-71794	60046-90504	MIN 32.00	1. Formule
0002	000001	610879	25,40 X 5,80	59175	77740	32,00	
0002	000002	610879	25,40 X 6,10	58305	78320	32,00	
0002	000003	610879	25,40 X 6,20	58885	77305	32,00	
0002	000004	610879	25,40 X 6,20	59466	79336	34,00	

Benteler Steel/Tube GmbH
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Tel.: + 49.5254.81-0 Fax: + 49.5254.13666

BENTELER
Steel/Tube

ABNAHMEPRÜFZEUGNIS EN 10204-3.1

INSPECTION CERTIFICATE EN 10204-3.1
CERTIFICAT DE RECEPTION EN 10204-3.1

Dokument-Nr.: **Document No.:** No. du document: 65-1069887/001/E
Prüf-Nr.: **Inspection No.:** No. du certificat:
Blatt: 4 / 6 **Page:** Page:

Härteprüfung / Hardness test / Essai de dureté

Pos. Item Poste	Proben-Nr. Specimen No. No. de l'éprouv.	Schmelzen-Nr. Heat No. No. de coulée	Härte Hardness Dureté				
Anforderungen Requirements Exigences			HRC	HB MAX 200	HV	HRB	HBW
0002	000001	610879		159			
0002	000002	610879		158			
0002	000003	610879		160			
0002	000004	610879		156			

Kerbschlagbiegeversuch Notched bar impact test / Essai de flexion par choc (résilience) [1 CHARPY_V]

Probenlage: längs (L); Prüftemperatur: -51 °F
Specimen position: longitudinal (L);Test temperature: -51 °F
Position de l'éprouvette: longitudinal (L);Température d'essai: -51 °F

Pos. Item Poste	Proben-Nr. Specimen No. No. de l'éprouv.	Schmelzen-Nr. Heat No. No. de coulée	Probenabmessung Specimen dimensions Dimensions de l'éprouvette			Kerbschlagarbeit Absorbed energy Energie absorbée		Kerbschlagzähigkeit Impact strength Résistance au choc		Verf.-Bruchanteil Shear fracture Rupture ductile		Laterale Breitung Lateral expansion Expansion latérai		Sprödbruchanteil Brittle Fracture Rupture Fragile	
Anforderungen Requirements Exigences			Länge Length Longueur	Breite Width Largeur	Höhe Height Hauteur	einzel single individuelle	mittel average moyenne	einzel single individuelle	mittel average moyenne	einzel single individuelle	mittel average moyenne	einzel single individuelle	mittel average moyenne	einzel single individuelle	mittel average moyenne
			mm 55	mm 5,00	mm 10,00	J MIN 014	J	J/cm²		%	%	mm	mm		
0002	000001	610879	55	5,00	10,00	88				70		2,20			
				5,00	10,00	89				70		2,10			
				5,00	10,00	85	87			70	70	2,00	2,10		

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ABNAHMEPRÜFZEUGNIS EN 10204-3.1

INSPECTION CERTIFICATE EN 10204-3.1
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Dokument-Nr.: 65-1069887/001/E
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No. du document:

Prüf-Nr.:
Inspection No.:
No. du certificat:

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Kerbschlagbiegeversuch **Notched bar impact test** / Essai de flexion par choc (résilience) [2 CHARPY_V]

Probenlage: quer (Q); Prüftemperatur: -51 °F
Specimen position: transversal (Q);Test temperature: -51 °F
Position de l'éprouvette: transversal (Q);Température d'essai: -51 °F

Pos. Item Poste	Proben-Nr. Specimen No. No. de l'éprouv.	Schmelzen-Nr. Heat No. No. de coulée	Probenabmessung Specimen dimensions Dimensions de l'éprouvette			Kerbschlagarbeit Absorbed energy Energie absorbée		Kerbschlagzähigkeit Impact strength Résistance au choc		Verf.-Bruchanteil Shear fracture Rupture ductile		Laterale Breitung Lateral expansion Expansion latéral		Sprödbruchanteil Brittle Fracture Rupture Fragile	
Anforderungen Requirements Exigences			Länge Length Longueur	Breite Width Largeur	Höhe Height Hauteur	einzel single individuelle	mittel average moyenne	einzel single individuelle	mittel average moyenne	einzel single individuelle	mittel average moyenne	einzel single individuelle	mittel average moyenne	einzel single individuelle	mittel average moyenne
			mm	mm	mm	J	J	J/cm²		%	%	mm	mm		
			55	5,00	10,00	MIN 014	MIN 020			MIN 50	MIN 60				
0002	000001	610879	55	5,00	10,00	35				60		1,20			
				5,00	10,00	32				60		1,10			
				5,00	10,00	33	33			60	60	1,00	1,10		

Wärmebehandlung / **Heat treatment** / Traitement thermique

Normalizing temperature: 920°C, Holding time: 5 min., Cooling: Air

Restmagnetismus / **Demagnetize** / Démagnétiser

demagnetized tubes; 1 measurement per 4 hours on both tube ends Two readings 180°apart around the circumference. Average value max 3.0 Millitesla (24 A/cm), individual value max 3.5 Millitesla (28 A/cm)

Vermerk / **Remark** / Remarque

NACE Standard: Hardness acc. to NACE Standard MR0175 HRC max. 22., The material meets the requirements of NACE MR0103, Region 3, in accordance to Figure 1 and Appendix A.2, ANSI/NACE MR0175/ISO 15156-2:2015; Certificate remarks: fully killed fine grained steel, This is to confirm that the seamless linepipe supplied by BENTELER and verified to CSA Standard Z245.1-14 meets the requirement for micro hardness of max. 248 HV 500 gf., No weld repair has been carried out, Sour Service, The Material is Aluminium deoxydized and inclusion shape controlled with Calcium-Silicon treatment, It is the end user's responsibility to ensure that all environmental requirements as well as the requirements regarding engineering, construction and operation of facilities are fulfilled in the country of use. Fit for purpose of the parts as well as homologation is not the scope of this contract., Steelmaking: BENTELER Steel Mill Lingen

Grain size: acc. to ASTM-E 112; Grain size and finer: 6

Verkäufer(in) / **Sales Personnel** / Personne chargée : Mr Dyka, Tel.: 05254/81-4265-204265, Fax: 204229

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BENTELER
Steel/Tube

ABNAHMEPRÜFZEUGNIS EN 10204-3.1
INSPECTION CERTIFICATE EN 10204-3.1
CERTIFICAT DE RECEPTION EN 10204-3.1

Dokument-Nr.: 65-1069887/001/E
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No. du certificat:

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Dinslaken, 13.04.2018, TEL.: 02064.623-5360 FAX: 02064.623-5390

Abnahmebeauftragter
Inspection representative
Contrôleur
i. A. Patrick Hanraths / LABACH

Es wird bestätigt, daß die gelieferten Erzeugnisse den techn. Lieferbedingungen des Auftrages entsprechen.Dieses Dokument wurde mittels EDV erstellt und ist ohne Unterschrift rechtsgültig.
We certify that the supplied products comply with the order specifications. This document was prepared by means of electronic data processing and is valid without signature.
Nous attestons que les produits livrés sont conformes aux stipulations de la commande.Ce document a été établi par traitement électronique de l'information et est valide sans signature.

vallourec

Vallourec Soluções Tubulares do Brasil S.A.
Barreiro Plant - Av. Olinto Meireles, 65
ZIP 30640-010 - Belo Horizonte, MG

EcoTube

RINA

Inspection Certificate

(According to DIN EN 10204 3.1)

N°.: 0030032296 / 00 Sheet: 1 / 4

Customer: VALLOUREC CANADA INC

Country: Canada

Material Number: 276430
Work Order: 536721 / 20
Customer Order: VM-4811/P.O.4038915-00

Inspection: Vallourec Soluções Tubulares do Brasil S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED , BEVELED ENDS 30 DEG. , NORMALIZED
DIMENSIONS: 168,30 mm X 7,11 mm **GRADE:** GRADE 290 # GR I # 6 # B 6 STD 2530104
STANDARD: CSA-Z245.1-18 - CATEGORY II
IN ACCORDANCE ALSO TO THE STANDARDS: ASTM A 333M - 18 ASTM A 999M - 18 # ASTM A 106M - 18 ASTM A 530M - 18 # ASTM A 53M - 18 # ASME SA-333M - 17 ASME SA 999M - 17 # ASME SA-106M - 17 ASME SA 530M - 17
CUSTOMER SPECIFICATION: CCTF GrB,1,6,290 Cat II SS , 20.11.2017
SURFACE PROTECTION: EXTERNAL: LACQUER **PIPE ENDS PROTECTOR:** PLASTIC CAP
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -0,80 mm / +1,26 mm **WALL THICKNESS:** -0,89 mm / +1,07 mm
TOLERANCES(PIPE ENDS): OUTSIDE DIAMETER: -0,40 mm / +1,60 mm
LENGTH: RANDOM 5486,00 mm - 6706,00 mm
STANDARD MARKING: PAINT STENCILED IN THE PIPE BODY: 536721/20 MANUFACTURER CSA-Z245.1-18 168,30 X 7,11 290 CAT II M46C SS S HN LENGTH HEAT NUMBER ASTM A/ASME SA 333, 1/6 HF SCH 040 LT -46C ASTM A/ASME SA 106 B 18400 KPA WEIGHT ASTM A 53 B VSB LOGO
SHIPPING MARKING: NPS 6" X SCH 40 NACE MR 0175/NACE MR 0103 - MADE IN BRAZIL * VM4811 / P.O # 4038915-00/ITEM-2 * TORONTO * CCTF

Heat	Pieces
175147	11
175724	24
178322	89
Total	**124**

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # FLATTENING TEST # ENDS INSPECTION : UNTESTED ENDS CROPPED # HYDROSTATIC TEST: 18400,0 KPA 5 S # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST : CSAZ245.1-N10,LON/TRAN,OUT/INS # ULTRASONIC TEST FOR LAMINAR DEFECTS: ACC. CSA Z245.1-SOUR SERVICE #

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ISO 9001 ISO/TS 16949
ISO 14001 ISO 50001 OHSAS 18001

Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030032296 / 00

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: CSA-Z245.1-CE11 — Ceq: C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 — CE1: Cr + Cu + Mo + Ni + V

Heat	Control Lot		C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	B	Ti	N	Ca	Ceq	Ceq	CE1
Heat Analisys		Min		0,400			0,100														
		Max	0,240	1,350	0,025	0,025	0,500	0,400	0,300	0,120		0,400	0,080	0,020	0,0010	0,110			0,400	0,430	1,000
Product Analisys		Min		0,400			0,100														
		Max	0,240	1,350	0,025	0,025	0,500	0,400	0,300	0,120		0,400	0,080	0,020	0,0010	0,110			0,400	0,430	1,000
175147	030003127653		0,12	1,31	0,010	0,007	0,30	0,01	0,04	0,01	0,027	0,025	0,004	0,016	0,0004	0,003	0,0055	0,0013	0,309	0,351	0,084
	Check 1		0,12	1,29	0,010	0,005	0,29	0,01	0,04	0,01	0,028	0,024	0,004	0,017	0,0002	0,003	0,0050	0,0011	0,309	0,348	0,088
	Check 2		0,12	1,29	0,010	0,006	0,28	0,01	0,04	0,01	0,027	0,023	0,004	0,016	0,0002	0,002	0,0050	0,0012	0,308	0,347	0,086
175724	030003127905		0,11	1,30	0,009	0,003	0,30	0,02	0,05	0,01	0,029	0,030	0,004	0,015	0,0004	0,002	0,0045	0,0015	0,284	0,347	0,115
	Check 1		0,11	1,31	0,009	0,002	0,29	0,02	0,05	0,01	0,031	0,029	0,004	0,016	0,0002	0,002	0,0050	0,0013	0,285	0,346	0,116
	Check 2		0,11	1,32	0,009	0,002	0,28	0,02	0,05	0,01	0,030	0,029	0,003	0,016	0,0002	0,002	0,0050	0,0013	0,287	0,346	0,115
178322	030003155671		0,10	1,28	0,012	0,003	0,29	0,04	0,06	0,02	0,028	0,080	0,004	0,016	0,0004	0,002	0,0071	0,0015	0,267	0,348	0,201
	Check 1		0,10	1,29	0,013	0,003	0,29	0,04	0,06	0,02	0,030	0,083	0,002	0,017	0,0002	0,002	0,0071	0,0014	0,269	0,350	0,197
	Check 2		0,10	1,27	0,011	0,004	0,30	0,04	0,06	0,02	0,029	0,082	0,004	0,015	0,0002	0,003	0,0075	0,0013	0,267	0,347	0,203

Ceq: Carbon Equivalent; Ceq: Carbon Equivalent; CE: Combined Elements;

Tensile Test

Specimen Direction: Longitudinal — **Temperature:** Room Temperature — **Wall Thickness:** 7,11 mm — **Gauge Length:** L0=2"

Method:Elong.Total Under Load 0,50 %

Heat	Control Lot	Type of Specimen	Area (MM2)	YS (MPA)	TS (MPA)	E (%)
	Required: Min			290	415	33
	Max				625	
175147	030003140032	STRIP WIDTH 25,4 MM	188,5	376	500	40
		STRIP WIDTH 25,4 MM	190,0	382	505	40
175724	030003127905	STRIP WIDTH 25,4 MM	188,8	371	486	39
		STRIP WIDTH 25,4 MM	186,2	369	500	39
	030003140031	STRIP WIDTH 25,4 MM	188,8	370	489	39
		STRIP WIDTH 25,4 MM	189,2	373	492	40
178322	030003155671	STRIP WIDTH 25,4 MM	186,5	355	488	39
		STRIP WIDTH 25,4 MM	185,9	360	492	40

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

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Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030032296 / 00

Hardness Test

Scale: HV

		Max
	Required: Min	
	Max	246,0
Heat	Control Lot	
175147	030003140032	156,0 156,0
175724	030003127905	163,0 167,0
	030003140031	163,0 167,0
178322	030003155671	143,0 143,0

Impact Test

Test Specimen: CHARPY 10X55X5 V NOTCH — Direction: Longitudinal — Temperature: -53°C — Striker radius: 8 mm

		AE1 (J)	AE2 (J)	AE3 (J)	AE4 (J)	AE5 (J)	AE Avg (J)	SA1 (%)	SA2 (%)	SA3 (%)	SA4 (%)	SA5 (%)	SA Avg (%)	LE1 (Mils)	LE2 (Mils)	LE3 (Mils)	LE Avg (Mils)
	Required: Min	14	14	14			14	50	50	50			60				
	Max																
Heat	Control Lot																
175147	030003140032	122	123	123			123	100	100	100			100	64	64	65	67
175724	030003140031	122	122	122			122	100	100	100			100	64	64	67	67
178322	030003155671	144	142	151			146	100	100	100			100	79	79	66	75

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

Impact Test

Test Specimen: CHARPY V 10X55X5 FLATTENED — Direction: Transverse — Temperature: -46°C — Striker radius: 8 mm

		AE1 (J)	AE2 (J)	AE3 (J)	AE4 (J)	AE5 (J)	AE Avg (J)	SA1 (%)	SA2 (%)	SA3 (%)	SA4 (%)	SA5 (%)	SA Avg (%)	LE1 (Mils)	LE2 (Mils)	LE3 (Mils)	LE Avg (Mils)
	Required: Min	14	14	14			14	50	50	50			60				
	Max																
Heat	Control Lot																
175147	030003140032	121	121	122			121	100	100	100			100	53	58	59	64
175724	030003140031	121	122	121			122	100	100	100			100	55	60	55	68
178322	030003155671	106	111	104			106	100	100	100			100	76	80	72	76

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

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Inspection Certificate
(According to DIN EN 10204 3.1)
N°.: 0030032296 / 00 Sheet 4 / 4

Remarks:
1. MATERIAL IN ACCORDANCE WITH NACE MR 0175 PAR. 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1. ALL LATEST EDITIONS

2. SKU 2530104

3. THE WORKS OPERATE A QUALITY MANAGEMENT SYSTEM ACCORDING TO EUROPEAN DIRECTIVE 2014/68/UE ANNEX I PAR. 4.3 (CERTIFICATE 2016 BH MP 02-03 VALID UNTIL 12.05 2019).

- MATERIAL ACCORDING TO PED 2014/68/UE ANNEX I PAR. 7.5

4. - NO WELD REPAIR
- FREE OF MERCURY CONTAMINATION
- NO RADIOACTIVE CONTAMINATION
- FINE GRAIN PRACTICE
- FULLY KILLED STEEL
- MATERIAL FROM BRAZIL

NORMALIZED
TEMPERATURE 892°C
SOAKING TIME 40 MINUTES
METHOD OF COOLING : AIR

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2773

e-mail:luiz.silva@vallourec.com

ENG. LUIZ FERNANDO DA SILVA - CREA/MG 58834-D
TECHNICAL RESPONSIBLE

DATE
02.27.2019

vallourec

Vallourec Soluções Tubulares do Brasil S.A
Barreiro Plant - Av. Olinto Meireles, 65
ZIP 30640-010 - Belo Horizonte, MG

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RINA
ISO 9001 ISO/TS 16949
ISO 14001 ISO 50001 OHSAS 18001

Inspection Certificate
(According to DIN EN 10204 3.1)
N°.: 0030032296 / 00 Sheet:1 / 4

Customer: VALLOUREC CANADA INC

Country: Canada

Material Number: 276430
Work Order: 536721 / 20
Customer Order: VM-4811/P.O.4038915-00

Inspection: Vallourec Soluções Tubulares do Brasil S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED , BEVELED ENDS 30 DEG. , NORMALIZED
DIMENSIONS: 168,30 mm X 7,11 mm **GRADE:** GRADE 290 # GR 1 # 6 # B 6 STD 2530104
STANDARD: CSA-Z245.1-18 - CATEGORY II
IN ACCORDANCE ALSO TO THE STANDARDS: ASTM A 333M - 18 ASTM A 999M - 18 # ASTM A 106M - 18 ASTM A 530M - 18 # ASTM A 53M - 18 # ASME SA-333M - 17 ASME SA 999M - 17 # ASME SA-106M - 17 ASME SA 530M - 17
CUSTOMER SPECIFICATION: CCTF GrB,1,6,290 Cat II SS , 20.11.2017
SURFACE PROTECTION: EXTERNAL: LACQUER **PIPE ENDS PROTECTOR:** PLASTIC CAP
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -0,80 mm / +1,26 mm **WALL THICKNESS:** -0,89 mm / +1,07 mm
TOLERANCES(PIPE ENDS): OUTSIDE DIAMETER: -0,40 mm / +1,60 mm
LENGTH: RANDOM 5486,00 mm - 6706,00 mm
STANDARD MARKING: PAINT STENCILED IN THE PIPE BODY: 536721/20 MANUFACTURER CSA-Z245.1-18 168,30 X 7,11 290 CAT II M46C SS S HN LENGTH HEAT NUMBER ASTM A/ASME SA 333, 1/6 HF SCH 040 LT -46C ASTM A/ASME SA 106 B 18400 KPA WEIGHT ASTM A 53 B VSB LOGO
SHIPPING MARKING: NPS 6" X SCH 40 NACE MR 0175/NACE MR 0103 - MADE IN BRAZIL * VM4811 / P.O # 4038915-00/ITEM-2 * TORONTO * CCTF

Heat	Pieces
175147	11
175724	24
178322	89
Total	**124**

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # FLATTENING TEST # ENDS INSPECTION : UNTESTED ENDS CROPPED # HYDROSTATIC TEST: 18400,0 KPA 5 S # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST : CSAZ245.1-N10,LON/TRAN,OUT/INS # ULTRASONIC TEST FOR LAMINAR DEFECTS: ACC. CSA Z245.1-SOUR SERVICE #

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RINA

Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030032296 / 00

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: CSA-Z245.1-CE11 — Ceq: C+Mn/6+(Cr+Mo+V)/5 +(Ni+Cu)/15 — CE1: Cr + Cu + Mo + Ni + V

Heat	Control Lot	C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	B	Ti	N	Ca	Ceq	Ceq	CE1
Heat Analisys	Min		0,400			0,100														
	Max	0,240	1,350	0,025	0,025	0,500	0,400	0,300	0,120		0,400	0,080	0,020	0,0010	0,110			0,400	0,430	1,000
Product Analisys	Min		0,400			0,100														
	Max	0,240	1,350	0,025	0,025	0,500	0,400	0,300	0,120		0,400	0,080	0,020	0,0010	0,110			0,400	0,430	1,000
175147	030003127653	0,12	1,31	0,010	0,007	0,30	0,01	0,04	0,01	0,027	0,025	0,004	0,016	0,0004	0,003	0,0055	0,0013	0,309	0,351	0,084
	Check 1	0,12	1,29	0,010	0,005	0,29	0,01	0,04	0,01	0,028	0,024	0,004	0,017	0,0002	0,003	0,0050	0,0011	0,309	0,348	0,088
	Check 2	0,12	1,29	0,010	0,006	0,28	0,01	0,04	0,01	0,027	0,023	0,004	0,016	0,0002	0,002	0,0050	0,0012	0,308	0,347	0,086
175724	030003127905	0,11	1,30	0,009	0,003	0,30	0,02	0,05	0,01	0,029	0,030	0,004	0,015	0,0004	0,002	0,0045	0,0015	0,284	0,347	0,115
	Check 1	0,11	1,31	0,009	0,002	0,29	0,02	0,05	0,01	0,031	0,029	0,004	0,016	0,0002	0,002	0,0050	0,0013	0,285	0,346	0,116
	Check 2	0,11	1,32	0,009	0,002	0,28	0,02	0,05	0,01	0,030	0,029	0,003	0,016	0,0002	0,002	0,0050	0,0013	0,287	0,346	0,115
178322	030003155671	0,10	1,28	0,012	0,003	0,29	0,04	0,06	0,02	0,028	0,080	0,004	0,016	0,0004	0,002	0,0071	0,0015	0,267	0,348	0,201
	Check 1	0,10	1,29	0,013	0,003	0,29	0,04	0,06	0,02	0,030	0,083	0,002	0,017	0,0002	0,002	0,0071	0,0014	0,269	0,350	0,197
	Check 2	0,10	1,27	0,011	0,004	0,30	0,04	0,06	0,02	0,029	0,082	0,004	0,015	0,0002	0,003	0,0075	0,0013	0,267	0,347	0,203

Ceq: Carbon Equivalent; Ceq: Carbon Equivalent; CE: Combined Elements;

Tensile Test

Specimen Direction: Longitudinal — **Temperature:** Room Temperature — **Wall Thickness:** 7,11 mm — **Gauge Length:** L0=2"

Method:Elong.Total Under Load 0,50 %

Heat	Control Lot	Type of Specimen	Area (MM2)	YS (MPA)	TS (MPA)	E (%)
	Required: Min			290	415	33
	Max				625	
175147	030003140032	STRIP WIDTH 25,4 MM	188,5	376	500	40
		STRIP WIDTH 25,4 MM	190,0	382	505	40
175724	030003127905	STRIP WIDTH 25,4 MM	188,8	371	486	39
		STRIP WIDTH 25,4 MM	186,2	369	500	39
	030003140031	STRIP WIDTH 25,4 MM	188,8	370	489	39
		STRIP WIDTH 25,4 MM	189,2	373	492	40
178322	030003155671	STRIP WIDTH 25,4 MM	186,5	355	488	39
		STRIP WIDTH 25,4 MM	185,9	360	492	40

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

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Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030032296 / 00

Hardness Test

Scale: HV

		Min	Max
	Required: Min		
	Max	246,0	
Heat	Control Lot		
175147	030003140032	156,0	156,0
175724	030003127905	163,0	167,0
	030003140031	163,0	167,0
178322	030003155671	143,0	143,0

Impact Test

Test Specimen: CHARPY 10X55X5 V NOTCH — Direction: Longitudinal — Temperature: -53°C — Striker radius: 8 mm

		AE1 (J)	AE2 (J)	AE3 (J)	AE4 (J)	AE5 (J)	AE Avg (J)	SA1 (%)	SA2 (%)	SA3 (%)	SA4 (%)	SA5 (%)	SA Avg (%)	LE1 (Mils)	LE2 (Mils)	LE3 (Mils)	LE Avg (Mils)
	Required: Min	14	14	14			14	50	50	50			60				
	Max																
Heat	Control Lot																
175147	030003140032	122	123	123			123	100	100	100			100	64	64	65	67
175724	030003140031	122	122	122			122	100	100	100			100	64	64	67	67
178322	030003155671	144	142	151			146	100	100	100			100	79	79	66	75

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

Impact Test

Test Specimen: CHARPY V 10X55X5 FLATTENED — Direction: Transverse — Temperature: -46°C — Striker radius: 8 mm

		AE1 (J)	AE2 (J)	AE3 (J)	AE4 (J)	AE5 (J)	AE Avg (J)	SA1 (%)	SA2 (%)	SA3 (%)	SA4 (%)	SA5 (%)	SA Avg (%)	LE1 (Mils)	LE2 (Mils)	LE3 (Mils)	LE Avg (Mils)
	Required: Min	14	14	14			14	50	50	50			60				
	Max																
Heat	Control Lot																
175147	030003140032	121	121	122			121	100	100	100			100	53	58	59	64
175724	030003140031	121	122	121			122	100	100	100			100	55	60	55	68
178322	030003155671	106	111	104			106	100	100	100			100	76	80	72	76

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

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RINA

Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030032296 / 00 Sheet 4 / 4

Remarks:
1. MATERIAL IN ACCORDANCE WITH NACE MR 0175 PAR. 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1 ALL LATEST EDITIONS

2. SKU 2530104

3. THE WORKS OPERATE A QUALITY MANAGEMENT SYSTEM ACCORDING TO EUROPEAN DIRECTIVE 2014/68/UE ANNEX I PAR. 4.3 (CERTIFICATE 2016 BH MP 02-03 VALID UNTIL 12.05.2019).

- MATERIAL ACCORDING TO PED 2014/68/UE ANNEX I PAR. 7.5

4. - NO WELD REPAIR
- FREE OF MERCURY CONTAMINATION
- NO RADIOACTIVE CONTAMINATION
- FINE GRAIN PRACTICE
- FULLY KILLED STEEL
- MATERIAL FROM BRAZIL

NORMALIZED
TEMPERATURE 892°C
SOAKING TIME 40 MINUTES
METHOD OF COOLING : AIR

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2773

e-mail:luiz.silva@vallourec.com

ENG. LUIZ FERNANDO DA SILVA - CREA/MG 58834-D
TECHNICAL RESPONSIBLE

DATE
02.27.2019

vallourec
Vallourec Soluções Tubulares do Brasil S.A.
Barreiro Plant - Av. Olinto Meireles, 65
ZIP 30640-010 - Belo Horizonte, MG

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ISO 9001 - ISO/TS 16949
ISO 14001 ISO 50001 OHSAS 18001

Inspection Certificate

(According to DIN EN 10204.3.1)

N°.: 0030030841 / 00 Sheet:1 / 4

Customer: VALLOUREC CANADA INC

Country: Canada

Material Number: 274465
Work Order: 531796 / 50
Customer Order: VM-4682 - P O 4038589-00

Inspection: Vallourec Soluções Tubulares do Brasil S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED , BEVELED ENDS 30 DEG. , NORMALIZED
DIMENSIONS: 219,10 mm X 8,18 mm **SCHEDULE:** 040 **GRADE:** GRADE 290 # GR 1 # 6 # B 8 STD 2530112
STANDARD: CSA-Z245.1-14 - CATEGORY II
IN ACCORDANCE ALSO TO THE STANDARDS: ASTM A 333M - 16 ASTM A 999M - 18 # ASTM A 106M - 18 ASTM A 530M - 12 # ASTM A 53M - 12 # ASME SA-333M - 17 ASME SA 999M - 17 # ASME SA-106M - 17 ASME SA 530M - 17
CUSTOMER SPECIFICATION: CCTF GrB,1.6,290 Cat II SS , 20.11.2017
SURFACE PROTECTION: EXTERNAL: LACQUER **PIPE ENDS PROTECTOR:** PLASTIC CAP
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -0,80 mm / +1,60 mm **WALL THICKNESS:** -1,02 mm / +1,23 mm
TOLERANCES(PIPE ENDS): OUTSIDE DIAMETER: -0,40 mm / +1,60 mm
LENGTH: RANDOM 5486,00 mm - 6706,00 mm
STANDARD MARKING: PAINT STENCILED IN THE PIPE BODY: 531796/50 MANUFACTURER CSA-Z245.1-14 219,10 X 8,18 290 CAT II SS S IIN LENGTH HEAT NUMBER ASTM A/ASME SA 333, 1/6 HF SCH 040 LT -46C ASTM A/ASME SA 106 B 16300 KPA WEIGHT ASTM A 53 B NPS 8" X SCH 40 VSB LOGO
SHIPPING MARKING: NACE MR 0175/NACE MR 0103 - MADE IN BRAZIL * VM4682 / P.O # 4038589-00/ITEM-5 * TORONTO * CCTF

Heat	Pieces
175141	6
175142	8
176433	28
Total	**42**

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # FLATTENING TEST # ENDS INSPECTION : UNTESTED ENDS CROPPED # HYDROSTATIC TEST: 16300,0 KPA 5 S # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST : CSAZ245.1-N10,LON/TRAN,OUT/INS # ULTRASONIC TEST FOR LAMINAR DEFECTS: ACC. CSA Z245.1-SOUR SERVICE #

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Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030030841 / 00

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: CSA-Z245.1-CE11 — Ceq: C+Mn/6+(Cr+Mo+V)/5 −(Ni+Cu)/15 — CE1: Cr + Cu + Mo + Ni + V

Heat	Control Lot		C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	B	Ti	N	Ca	Ceq	Ceq	CE1
Heat Analisys		Min		0,400			0,100														
		Max	0,240	1,350	0,025	0,025	0,500	0,400	0,300	0,120		0,400	0,080	0,020	0,0010	0,110			0,400	0,430	1,000
Product Analisys		Min		0,400			0,100														
		Max	0,240	1,350	0,025	0,025	0,500	0,400	0,300	0,120		0,400	0,080	0,020	0,0010	0,110			0,400	0,430	1,000
175141	030003103023		0,10	1,28	0,009	0,003	0,27	0,02	0,05	0,01	0,026	0,028	0,001	0,016	0,0005	0,001	0,0070	0,0019	0,262	0,329	0,109
	Check 1		0,10	1,26	0,008	0,003	0,28	0,02	0,04	0,01	0,026	0,030	0,004	0,015	0,0003	0,001	0,0065	0,0016	0,258	0,324	0,104
	Check 2		0,11	1,28	0,008	0,002	0,28	0,02	0,04	0,01	0,026	0,031	0,004	0,016	0,0002	0,001	0,0065	0,0016	0,270	0,338	0,105
175142	030003103024		0,11	1,29	0,010	0,004	0,28	0,02	0,05	0,01	0,030	0,025	0,001	0,015	0,0004	0,002	0,0077	0,0016	0,283	0,340	0,106
	Check 1		0,11	1,28	0,011	0,003	0,28	0,03	0,06	0,01	0,031	0,021	0,005	0,016	0,0003	0,002	0,0072	0,0013	0,283	0,342	0,126
	Check 2		0,11	1,29	0,009	0,003	0,28	0,02	0,04	0,01	0,029	0,025	0,004	0,015	0,0003	0,002	0,0075	0,0014	0,281	0,339	0,099
176433	030003103452		0,10	1,27	0,012	0,004	0,28	0,03	0,06	0,01	0,029	0,070	0,004	0,015	0,0004	0,002	0,0099	0,0012	0,265	0,333	0,174
	Check 1		0,11	1,29	0,013	0,004	0,29	0,03	0,06	0,01	0,028	0,066	0,005	0,016	0,0003	0,002	0,0096	0,0013	0,277	0,346	0,171
	Check 2		0,11	1,26	0,013	0,004	0,28	0,03	0,06	0,01	0,028	0,066	0,005	0,016	0,0002	0,002	0,0096	0,0013	0,273	0,341	0,171

Ceq: Carbon Equivalent; Ceq: Carbon Equivalent; CE: Combined Elements;

Tensile Test

Specimen Direction: Longitudinal — **Temperature:** Room Temperature — **Wall Thickness:** 8,18 mm — **Gage Length:** L0=2"

Method:Elong.Total Under Load 0,50 %

Heat	Control Lot	Type of Specimen	Area (MM2)	YS (MPA)	TS (MPA)	E (%)
	Required: Min			290	415	35
	Max			495	625	
175141	030003103023	STRIP WIDTH 38,1 MM	336,8	360	472	41
		STRIP WIDTH 38,1 MM	348,7	389	455	40
175142	030003103024	STRIP WIDTH 38,1 MM	318,9	395	502	42
		STRIP WIDTH 38,1 MM	330,1	401	490	40
176433	030003103452	STRIP WIDTH 38,1 MM	328,0	396	508	43
		STRIP WIDTH 38,1 MM	341,8	410	495	40

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

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Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030030841 / 00

Hardness Test

Scale: HV

		Max
	Required: Min	
	Max	246,0
Heat	Control Lot	
175141	030003103023	158,0 160,0
175142	030003103024	162,0 164,0
176433	030003103452	169,0 170,0

Impact Test

Test Specimen: CHARPY 10X55X7.5 V NOTCH — Direction: Longitudinal — Temperature: -46°C — Striker radius: 8 mm

		AE1 (J)	AE2 (J)	AE3 (J)	AE4 (J)	AE5 (J)	AE Avg (J)	SA1 (%)	SA2 (%)	SA3 (%)	SA4 (%)	SA5 (%)	SA Avg (%)	LE1 (Mils)	LE2 (Mils)	LE3 (Mils)	LE Avg (Mils)
	Required: Min	21	21	21			21	50	50	50			60				
	Max																
Heat	Control Lot																
175141	030003103023	267	264	261			264	100	100	100			100	75	75	75	75
175142	030003103024	270	267	255			264	100	100	100			100	80	80	80	80
176433	030003103452	245	235	245			242	100	100	100			100	80	80	80	80

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

Impact Test

Test Specimen: CHARPY 10X55X6.67 V NOTCH — Direction: Transverse — Temperature: -46°C — Striker radius: 8 mm

		AE1 (J)	AE2 (J)	AE3 (J)	AE4 (J)	AE5 (J)	AE Avg (J)	SA1 (%)	SA2 (%)	SA3 (%)	SA4 (%)	SA5 (%)	SA Avg (%)	LE1 (Mils)	LE2 (Mils)	LE3 (Mils)	LE Avg (Mils)
	Required: Min	18	18	18			18	50	50	50			60				
	Max																
Heat	Control Lot																
175141	030003103023	196	208	213			206	100	100	100			100	75	78	81	78
175142	030003103024	203	179	187			190	100	100	100			100	82	82	82	82
176433	030003103452	160	187	156			168	100	100	100			100	80	82	78	80

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

Remarks:

1. MATERIAL IN ACCORDANCE WITH NACE MR 0175
PAR. 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1. ALL LATEST

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Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030030841 / 00 Sheet 4 / 4

EDITIONS

2. SKU 2530112

3. THE WORKS OPERATE A QUALITY MANAGEMENT SYSTEM ACCORDING TO EUROPEAN DIRECTIVE 2014/68/UE ANNEX I PAR. 4.3 (CERTIFICATE 2016 BH MP 02-03 VALID UNTIL 12.05.2019).
- MATERIAL ACCORDING TO PED 2014/68/UE ANNEX I PAR. 7.5

"STEEL MADE BY BOF PROCESS"

4. - NO WELD REPAIR
- FREE OF MERCURY CONTAMINATION
- NO RADIOACTIVE CONTAMINATION
- FINE GRAIN PRACTICE
- FULLY KILLED STEEL.
- MATERIAL FROM BRAZIL

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2773

e-mail:luis.silva@vallourec.com

ENG. LUIZ FERNANDO DA SILVA - CREA-MG 58834-D
TECHNICAL RESPONSIBLE

DATE
11.20.2018

vallourec

Vallourec Soluções Tubulares do Brasil S.A.
Barreiro Plant - Av. Olinto Meireles, 65
ZIP 30640-010 - Belo Horizonte, MG

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Inspection Certificate

(According to DIN EN 10204.3.1)

N°.: 0030031810 / 00 Sheet: 1 / 4

Customer: VALLOUREC CANADA INC

Country: Canada

Material Number: 276624
Work Order: 534782 / 80
Customer Order: VM-4748 - P.O 4038825-00

Inspection: Vallourec Soluções Tubulares do Brasil S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED , BEVELED ENDS 30 DEG, , NORMALIZED
DIMENSIONS: 219,10 mm X 8,18 mm SCHEDULE: 040 GRADE: GRADE 290 # GR 1 # 6 # B 8 STD 2530112
STANDARD: CSA-Z245.1-18 - CATEGORY II
IN ACCORDANCE ALSO TO THE STANDARDS: ASTM A 333M - 16 ASTM A 999M - 18 # ASTM A 106M - 18 ASTM A 530M - 12 # ASTM A 53M - 12 # ASME SA-333M - 17 ASME SA 999M - 17 # ASME SA-106M - 17 ASME SA 530M - 17
CUSTOMER SPECIFICATION: CCTF GrB.1,6.290 Cat II SS , 20.11.2017
SURFACE PROTECTION: EXTERNAL: LACQUER PIPE ENDS PROTECTOR: PLASTIC CAP
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -0,80 mm / +1,60 mm WALL THICKNESS: -1,02 mm / +1,23 mm
TOLERANCES(PIPE ENDS): OUTSIDE DIAMETER: -0,40 mm / +1,60 mm
LENGTH: RANDOM 5486,00 mm - 6706,00 mm
STANDARD MARKING: PAINT STENCILED IN THE PIPE BODY: 534782 80 MANUFACTURER CSA-Z245.1-18 219,10 X 8,18 290 CAT II M46C SS S HN LENGTH HEAT NUMBER ASTM A ASME SA 333, 1 6 HF SCH 040 LT -46C ASTM A/ASME SA 106 B 16300 KPA WEIGHT ASTM A 53 B NPS 8" X SCH 40 VSB LOGO
SHIPPING MARKING: NACE MR 0175/NACE MR 0103 - MADE IN BRAZIL * VM4748 / P.O # 4038825-00#ITEM-8 * TORONTO * CCTF

Heat	Pieces
175146	12
177833	26
Total	38

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # FLATTENING TEST # ENDS INSPECTION ; UNTESTED ENDS CROPPED # HYDROSTATIC TEST 16300,0 KPA 5 S # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST : CSAZ245.1-N10,LONTRAN,OUTLINS # ULTRASONIC TEST FOR LAMINAR DEFECTS: ACC. CSA Z245.1-SOUR SERVICE #

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ISO 9001 ISO/TS 16949
ISO 14001 ISO 50001 OHSAS 18001

Inspection Certificate

(According to DIN EN 10204.3.1)

N°.: 0030031810 / 00

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: CSA-Z245.1-CE11 — **Ceq:** C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 — **CE1:** Cr + Cu + Mo + Ni + V

		C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	B	Ti	N	Ca	Ceq	Ceq	CE1
Heat Analisys	Min		0,400			0,100														
	Max	0,240	1,350	0,025	0,025	0,500	0,400	0,300	0,120		0,400	0,080	0,020	0,0010	0,110			0,400	0,430	1,000
Product Analisys	Min		0,400			0,100														
	Max	0,240	1,350	0,025	0,025	0,500	0,400	0,300	0,120		0,400	0,080	0,020	0,0010	0,110			0,400	0,430	1,000
Heat	Control Lot																			
175146	030003113164	0,11	1,29	0,010	0,004	0,29	0,01	0,04	0,01	0,027	0,022	0,004	0,015	0,0004	0,002	0,0074	0,0012	0,281	0,338	0,086
	Check 1	0,11	1,29	0,010	0,005	0,30	0,01	0,05	0,01	0,028	0,022	0,005	0,015	0,0005	0,002	0,0077	0,0012	0,284	0,340	0,097
	Check 2	0,11	1,30	0,009	0,005	0,31	0,01	0,04	0,01	0,029	0,020	0,004	0,016	0,0002	0,002	0,0079	0,0014	0,283	0,339	0,084
177833	030003140903	0,11	1,29	0,010	0,004	0,28	0,03	0,07	0,01	0,029	0,090	0,004	0,014	0,0003	0,002	0,0067	0,0018	0,289	0,350	0,204
	Check 1	0,11	1,28	0,011	0,003	0,27	0,03	0,07	0,01	0,030	0,090	0,003	0,015	0,0002	0,002	0,0064	0,0018	0,287	0,348	0,203
	Check 2	0,10	1,28	0,011	0,003	0,27	0,03	0,07	0,01	0,030	0,090	0,003	0,015	0,0002	0,002	0,0067	0,0016	0,272	0,338	0,203

Ceq: Carbon Equivalent; Ceq: Carbon Equivalent; CE: Combined Elements;

Tensile Test

Specimen Direction: Longitudinal — **Temperature:** Room Temperature — **Wall Thickness:** 8,18 mm — **Gauge Length:** 1.0-2"

Method:Elong.Total Under Load 0,50 %

		Type of Specimen	Area (MM2)	YS (MPA)	TS (MPA)	E (%)
Required: Min				290	415	35
Max				495	625	
Heat	Control Lot					
175146	030003113164	STRIP WIDTH 38 MM	324,3	383	502	41
		STRIP WIDTH 38 MM	329,7	399	515	40
177833	030003140903	STRIP WIDTH 38,1 MM	305,2	420	519	42
		STRIP WIDTH 38,1 MM	300,7	425	525	40

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

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RINA

Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030031810 / 00 Sheet: 3 4

Hardness Test

Scale: HV

		Min	Max
	Required: Min		
	Max	246,0	
Heat	Control Lot		
175146	030003113164	148,0	150,0
177833	030003140903	152,0	155,0

Impact Test

Test Specimen: CHARPY 10X55X7.5 V NOTCH — Direction: Longitudinal — Temperature: -46°C — Striker radius: 8 mm

		AE1 (J)	AE2 (J)	AE3 (J)	AE4 (J)	AE5 (J)	AE Avg (J)	SA1 (%)	SA2 (%)	SA3 (%)	SA4 (%)	SA5 (%)	SA Avg (%)	LE1 (Mils)	LE2 (Mils)	LE3 (Mils)	LE Avg (Mils)
	Required: Min	21	21	21			21	50	50	50			60				
	Max																
Heat	Control Lot																
175146	030003113164	270	275	262			269	100	100	100			100	78	81	80	80
177833	030003140903	275	263	270			269	100	100	100			100	71	79	69	73

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

Impact Test

Test Specimen: CHARPY 10X55X6.67 V NOTCH — Direction: Transverse — Temperature: -46°C — Striker radius: 8 mm

		AE1 (J)	AE2 (J)	AE3 (J)	AE4 (J)	AE5 (J)	AE Avg (J)	SA1 (%)	SA2 (%)	SA3 (%)	SA4 (%)	SA5 (%)	SA Avg (%)	LE1 (Mils)	LE2 (Mils)	LE3 (Mils)	LE Avg (Mils)
	Required: Min	18	18	18			18	50	50	50			60				
	Max																
Heat	Control Lot																
177833	030003140903	210	186	174			190	100	100	100			100	88	87	88	88

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

Remarks:
1. MATERIAL IN ACCORDANCE WITH NACE MR 0175
PAR. 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1, ALL LATEST
EDITIONS

2. SKU 2530112

3. THE WORKS OPERATE A QUALITY MANAGEMENT SYSTEM ACCORDING TO EUROPEAN

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RINA

Inspection Certificate
(According to DIN EN 10204 3.1)
N°.: 0030031810 / 00 Sheet:4 4

DIRECTIVE 2014/68/UE ANNEX I PAR. 4.3 (CERTIFICATE 2016 BH MP 02-03
VALID UNTIL 12.05.2019).
- MATERIAL ACCORDING TO PED 2014/68/UE ANNEX I PAR. 7.5

4. - NO WELD REPAIR
- FREE OF MERCURY CONTAMINATION
- NO RADIOACTIVE CONTAMINATION
- FINE GRAIN PRACTICE
- FULLY KILLED STEEL
- MATERIAL FROM BRAZIL

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2773

e-mail:luiz.silva@vallourec.com

ENG. LUIZ FERNANDO DA SILVA - CREA-MG 58834-D
TECHNICAL RESPONSIBLE

DATE
01.22.2019

vallourec

Vallourec Soluções Tubulares do Brasil S.A.
Barreiro Plant - Av. Olinto Meireles, 65
ZIP 30640-010 - Belo Horizonte, MG

EcoTube

RINA
ISO 9001 / ISO/TS 16949
ISO 14001 ISO 50001 OHSAS 18001
Certified Management Systems

Inspection Certificate

(According to DIN EN 10204.3.1)

N°.: 0030030841 / 00 Sheet: 1 / 4

Customer: VALLOUREC CANADA INC

Country: Canada

Material Number: 274465
Work Order: 531796 / 50
Customer Order: VM-4682 - P O 4038589-00

Inspection: Vallourec Soluções Tubulares do Brasil S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED , BEVELED ENDS 30 DEG. , NORMALIZED
DIMENSIONS: 219,10 mm X 8,18 mm **SCHEDULE:** 040 **GRADE:** GRADE 290 # GR 1 # 6 # B 8 STD 2530112
STANDARD: CSA-Z245.1-14 - CATEGORY II
IN ACCORDANCE ALSO TO THE STANDARDS: ASTM A 333M - 16 ASTM A 999M - 18 # ASTM A 106M - 18 ASTM A 530M - 12 # ASTM A 53M - 12 # ASME SA-333M - 17 ASME SA 999M - 17 # ASME SA-106M - 17 ASME SA 530M - 17
CUSTOMER SPECIFICATION: CCTF GrB,1,6,290 Cat II SS , 20.11.2017
SURFACE PROTECTION: EXTERNAL: LACQUER **PIPE ENDS PROTECTOR:** PLASTIC CAP
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -0,80 mm / +1,60 mm **WALL THICKNESS:** -1,02 mm / +1,23 mm
TOLERANCES(PIPE ENDS): OUTSIDE DIAMETER: -0,40 mm / +1,60 mm
LENGTH: RANDOM 5486,00 mm - 6706,00 mm
STANDARD MARKING: PAINT STENCILED IN THE PIPE BODY: 531796/50 MANUFACTURER CSA-Z245.1-14 219,10 X 8,18 290 CAT II SS S HN LENGTH HEAT NUMBER ASTM A/ASME SA 333, 1/6 HF SCH 040 LT -46C ASTM A/ASME SA 106 B 16300 KPA WEIGHT ASTM A 53 B NPS 8" X SCH 40 VSB LOGO
SHIPPING MARKING: NACE MR 0175/NACE MR 0103 - MADE IN BRAZIL * VM4682 / P.O # 4038589-00/ITEM-5 * TORONTO * CCTF

Heat	Pieces
175141	6
175142	8
176433	28
Total	**42**

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # FLATTENING TEST # ENDS INSPECTION : UNTESTED ENDS CROPPED # HYDROSTATIC TEST: 16300,0 KPA 5 S # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST : CSAZ245.1-N10,LON/TRAN,OUT/INS # ULTRASONIC TEST FOR LAMINAR DEFECTS: ACC. CSA Z245.1-SOUR SERVICE #

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Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030030841 / 00

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: CSA-Z245.1-CE11 — Ceq: C+Mn/6+(Cr+Mo+V)/5 -(Ni+Cu)/15 — CE1: Cr + Cu + Mo + Ni + V

Heat	Control Lot		C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	B	Ti	N	Ca	Ceq	Ceq	CE1
Heat Analisys		Min		0,400			0,100														
		Max	0,240	1,350	0,025	0,025	0,500	0,400	0,300	0,120		0,400	0,080	0,020	0,0010	0,110			0,400	0,430	1,000
Product Analisys		Min		0,400			0,100														
		Max	0,240	1,350	0,025	0,025	0,500	0,400	0,300	0,120		0,400	0,080	0,020	0,0010	0,110			0,400	0,430	1,000
175141	030003103023		0,10	1,28	0,009	0,003	0,27	0,02	0,05	0,01	0,026	0,028	0,001	0,016	0,0005	0,001	0,0070	0,0019	0,262	0,329	0,109
	Check 1		0,10	1,26	0,008	0,003	0,28	0,02	0,04	0,01	0,026	0,030	0,004	0,015	0,0003	0,001	0,0065	0,0016	0,258	0,324	0,104
	Check 2		0,11	1,28	0,008	0,002	0,28	0,02	0,04	0,01	0,026	0,031	0,004	0,016	0,0002	0,001	0,0065	0,0016	0,270	0,338	0,105
175142	030003103024		0,11	1,29	0,010	0,004	0,28	0,02	0,05	0,01	0,030	0,025	0,001	0,015	0,0004	0,002	0,0077	0,0016	0,283	0,340	0,106
	Check 1		0,11	1,28	0,011	0,003	0,28	0,03	0,06	0,01	0,031	0,021	0,005	0,016	0,0003	0,002	0,0072	0,0013	0,283	0,342	0,126
	Check 2		0,11	1,29	0,009	0,003	0,28	0,02	0,04	0,01	0,029	0,025	0,004	0,015	0,0003	0,002	0,0075	0,0014	0,281	0,339	0,099
176433	030003103452		0,10	1,27	0,012	0,004	0,28	0,03	0,06	0,01	0,029	0,070	0,004	0,015	0,0004	0,002	0,0099	0,0012	0,265	0,333	0,174
	Check 1		0,11	1,29	0,013	0,004	0,29	0,03	0,06	0,01	0,028	0,066	0,005	0,016	0,0003	0,002	0,0096	0,0013	0,277	0,346	0,171
	Check 2		0,11	1,26	0,013	0,004	0,28	0,03	0,06	0,01	0,028	0,066	0,005	0,016	0,0002	0,002	0,0096	0,0013	0,273	0,341	0,171

Ceq: Carbon Equivalent; Ceq: Carbon Equivalent; CE: Combined Elements;

Tensile Test

Specimen Direction: Longitudinal — **Temperature:** Room Temperature — **Wall Thickness:** 8,18 mm — **Gage Length:** L0=2"

Method:Elong.Total Under Load 0,50 %

Heat	Control Lot	Type of Specimen	Area (MM2)	YS (MPA)	TS (MPA)	E (%)
	Required: Min			290	415	35
	Max			495	625	
175141	030003103023	STRIP WIDTH 38,1 MM	336,8	360	472	41
		STRIP WIDTH 38,1 MM	348,7	389	455	40
175142	030003103024	STRIP WIDTH 38,1 MM	318,9	395	502	42
		STRIP WIDTH 38,1 MM	330,1	401	490	40
176433	030003103452	STRIP WIDTH 38,1 MM	328,0	396	508	43
		STRIP WIDTH 38,1 MM	341,8	410	495	40

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

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Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030030841 / 00 Sheet: 3 / 4

Hardness Test

Scale: HV

		Max
Required: Min		
Max	246,0	
Heat	**Control Lot**	
175141	030003103023	158,0 160,0
175142	030003103024	162,0 164,0
176433	030003103452	169,0 170,0

Impact Test

Test Specimen: CHARPY 10X55X7.5 V NOTCH — Direction: Longitudinal — Temperature: -46°C — Striker radius: 8 mm

		AE1 (J)	AE2 (J)	AE3 (J)	AE4 (J)	AE5 (J)	AE Avg (J)	SA1 (%)	SA2 (%)	SA3 (%)	SA4 (%)	SA5 (%)	SA Avg (%)	LE1 (Mils)	LE2 (Mils)	LE3 (Mils)	LE Avg (Mils)
Required: Min		21	21	21			21	50	50	50			60				
Max																	
Heat	**Control Lot**																
175141	030003103023	267	264	261			264	100	100	100			100	75	75	75	75
175142	030003103024	270	267	255			264	100	100	100			100	80	80	80	80
176433	030003103452	245	235	245			242	100	100	100			100	80	80	80	80

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

Impact Test

Test Specimen: CHARPY 10X55X6.67 V NOTCH — Direction: Transverse — Temperature: -46°C — Striker radius: 8 mm

		AE1 (J)	AE2 (J)	AE3 (J)	AE4 (J)	AE5 (J)	AE Avg (J)	SA1 (%)	SA2 (%)	SA3 (%)	SA4 (%)	SA5 (%)	SA Avg (%)	LE1 (Mils)	LE2 (Mils)	LE3 (Mils)	LE Avg (Mils)
Required: Min		18	18	18			18	50	50	50			60				
Max																	
Heat	**Control Lot**																
175141	030003103023	196	208	213			206	100	100	100			100	75	78	81	78
175142	030003103024	203	179	187			190	100	100	100			100	82	82	82	82
176433	030003103452	160	187	156			168	100	100	100			100	80	82	78	80

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

Remarks:

1. MATERIAL IN ACCORDANCE WITH NACE MR 0175
PAR. 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1. ALL LATEST

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Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030030841 / 00 Sheet 4 / 4

EDITIONS

2. SKU 2530112

3. THE WORKS OPERATE A QUALITY MANAGEMENT SYSTEM ACCORDING TO EUROPEAN DIRECTIVE 2014/68/UE ANNEX I PAR. 4.3 (CERTIFICATE 2016 BH MP 02-03 VALID UNTIL 12.05.2019).
- MATERIAL ACCORDING TO PED 2014/68/UE ANNEX I PAR. 7.5

"STEEL MADE BY BOF PROCESS"

4. - NO WELD REPAIR
- FREE OF MERCURY CONTAMINATION
- NO RADIOACTIVE CONTAMINATION
- FINE GRAIN PRACTICE
- FULLY KILLED STEEL
- MATERIAL FROM BRAZIL

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2773

e-mail:luis.silva@vallourec.com

ENG. LUIZ FERNANDO DA SILVA - CREA-MG 58834-D
TECHNICAL RESPONSIBLE

DATE
11.20.2018

vallourec
Vallourec Soluções Tubulares do Brasil S.A.
Barreiro Plant - Av. Olinto Meireles, 65
ZIP 306-40-010 - Belo Horizonte, MG

EcoTube

RINA
ISO 9001 - ISO/TS 16949
ISO 14001 - ISO 30000 - OHSAS 18001
Certified Management Systems

Inspection Certificate
(According to DIN EN 10204_3.1)
N°.: 0030031810 / 00 Sheet: 1 / 4

Customer: VALLOUREC CANADA INC

Country: Canada

Material Number: 276624
Work Order: 534782 / 80
Customer Order: VM-4748 - P.O 4038825-00

Inspection: Vallourec Soluções Tubulares do Brasil S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED , BEVELED ENDS 30 DEG. , NORMALIZED
DIMENSIONS: 219,10 mm X 8,18 mm **SCHEDULE:** 040 **GRADE:** GRADE 290 # GR 1 # 6 # B 8 STD 2530112
STANDARD: CSA-Z245.1-18 - CATEGORY II
IN ACCORDANCE ALSO TO THE STANDARDS: ASTM A 333M - 16 ASTM A 999M - 18 # ASTM A 106M - 18 ASTM A 530M - 12 # ASTM A 53M - 12 # ASME SA-333M - 17 ASME SA 999M - 17 # ASME SA-106M - 17 ASME SA 530M - 17
CUSTOMER SPECIFICATION: CCTF GrB.1.6.290 Cat II SS - 20.11.2017
SURFACE PROTECTION: EXTERNAL: LACQUER **PIPE ENDS PROTECTOR:** PLASTIC CAP
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -0,80 mm / +1,60 mm **WALL THICKNESS:** -1,02 mm / +1,23 mm
TOLERANCES(PIPE ENDS): OUTSIDE DIAMETER: -0,40 mm / +1,60 mm
LENGTH: RANDOM 5486,00 mm - 6706,00 mm
STANDARD MARKING: PAINT STENCILED IN THE PIPE BODY: 534782 80 MANUFACTURER CSA-Z245.1-18 219,10 X 8,18 290 CAT II M46C SS S HN LENGTH HEAT NUMBER ASTM A/ASME SA 333, 1 6 HF SCH 040 LT -46C ASTM A/ASME SA 106 B 16300 KPA WEIGHT ASTM A 53 B NPS 8" X SCH 40 VSB LOGO
SHIPPING MARKING: NACE MR 0175/NACE MR 0103 - MADE IN BRAZIL * VM4748 / P.O # 4038825-00/ITEM-8 * TORONTO * CCTF

Heat	Pieces
175146	12
177833	26
Total	38

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # FLATTENING TEST # ENDS INSPECTION : UNTESTED ENDS CROPPED # HYDROSTATIC TEST 16300,0 KPA 5 S # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST : CSA/Z245.1-N10,LON/TRAN,OUT INS # ULTRASONIC TEST FOR LAMINAR DEFECTS: ACC. CSA Z245.1-SOUR SERVICE #

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RINA

Inspection Certificate
(According to DIN EN 10204.3.1)
N°.: 0030031810 / 00 Sheet:2 4

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: CSA-Z245.1-CE11 Ceq: C+Mn/6+(Cr+Mo+V) 5 +(Ni+Cu) 15 CE1: Cr + Cu + Mo + Ni + V

		C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	B	Ti	N	Ca	Ceq	Ceq	CE1
Heat Analisys	Min		0,400			0,100														
	Max	0,240	1,350	0,025	0,025	0,500	0,400	0,300	0,120		0,400	0,080	0,020	0,0010	0,110			0,400	0,430	1,000
Product Analisys	Min		0,400			0,100														
	Max	0,240	1,350	0,025	0,025	0,500	0,400	0,300	0,120		0,400	0,080	0,020	0,0010	0,110			0,400	0,430	1,000
Heat Control Lot																				
175146 030003113164		0,11	1,29	0,010	0,004	0,29	0,01	0,04	0,01	0,027	0,022	0,004	0,015	0,0004	0,002	0,0074	0,0012	0,281	0,338	0,086
Check 1		0,11	1,29	0,010	0,005	0,30	0,01	0,05	0,01	0,028	0,022	0,005	0,015	0,0005	0,002	0,0077	0,0012	0,284	0,340	0,097
Check 2		0,11	1,30	0,009	0,005	0,31	0,01	0,04	0,01	0,029	0,020	0,004	0,016	0,0002	0,002	0,0079	0,0014	0,283	0,339	0,084
177833 030003140903		0,11	1,29	0,010	0,004	0,28	0,03	0,07	0,01	0,029	0,090	0,004	0,014	0,0003	0,002	0,0067	0,0018	0,289	0,350	0,204
Check 1		0,11	1,28	0,011	0,003	0,27	0,03	0,07	0,01	0,030	0,090	0,003	0,015	0,0002	0,002	0,0064	0,0018	0,287	0,348	0,203
Check 2		0,10	1,28	0,011	0,003	0,27	0,03	0,07	0,01	0,030	0,090	0,003	0,015	0,0002	0,002	0,0067	0,0016	0,277	0,338	0,203

Ceq: Carbon Equivalent; Ceq: Carbon Equivalent; CE: Combined Elements;

Tensile Test

Specimen Direction: Longitudinal Temperature: Room Temperature Wall Thickness: 8.18 mm Gauge Length: 1.0 2"

Method:Elong.Total Under Load 0.50 "»

		Type of Specimen	Area (MM2)	YS (MPA)	TS (MPA)	E (%)
Required: Min				290	415	35
Max				495	625	
Heat Control Lot						
175146 030003113164		STRIP WIDTH 38 MM	324,3	383	502	41
		STRIP WIDTH 38 MM	329,7	399	515	40
177833 030003140903		STRIP WIDTH 38,1 MM	305,2	420	519	42
		STRIP WIDTH 38,1 MM	300,7	425	525	40

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

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ISO 9001 · ISO/TS 16949 · ISO 14001 · ISO 50001 · OHSAS 18001

Inspection Certificate

(According to DIN EN 10204.3.1)

N°.: 0030031810 / 00 Sheet:3 -4

Hardness Test

Scale: HV

		Max	
	Required: Min		
	Max	246,0	
Heat	Control Lot		
175146	030003113164	148,0	150,0
177833	030003140903	152,0	155,0

Impact Test

Test Specimen: CHARPY 10X55X7.5 V NOTCH Direction: Longitudinal Temperature: -46°C Striker radius: 8 mm

		AE1 (J)	AE2 (J)	AE3 (J)	AE4 (J)	AE5 (J)	AE Avg (J)	SA1 (%)	SA2 (%)	SA3 (%)	SA4 (%)	SA5 (%)	SA Avg (%)	LE1 (Mils)	LE2 (Mils)	LE3 (Mils)	LE Avg (Mils)
	Required: Min	21	21	21			21	50	50	50			60				
	Max																
Heat	Control Lot																
175146	030003113164	270	275	262			269	100	100	100			100	78	81	80	80
177833	030003140903	275	263	270			269	100	100	100			100	71	79	69	73

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

Impact Test

Test Specimen: CHARPY 10X55X6.67 V NOTCH Direction: Transverse Temperature: -46°C Striker radius: 8 mm

		AE1 (J)	AE2 (J)	AE3 (J)	AE4 (J)	AE5 (J)	AE Avg (J)	SA1 (%)	SA2 (%)	SA3 (%)	SA4 (%)	SA5 (%)	SA Avg (%)	LE1 (Mils)	LE2 (Mils)	LE3 (Mils)	LE Avg (Mils)
	Required: Min	18	18	18			18	50	50	50			60				
	Max																
Heat	Control Lot																
177833	030003140903	210	186	174			190	100	100	100			100	88	87	88	88

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

Remarks:

1. MATERIAL IN ACCORDANCE WITH NACE MR 0175 PAR. 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1. ALL LATEST EDITIONS

2. SKU 2530112

3. THE WORKS OPERATE A QUALITY MANAGEMENT SYSTEM ACCORDING TO EUROPEAN

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RINA

ISO 9001 ISO/TS 16949
ISO 14001 ISO 50001 OHSAS 18001

Inspection Certificate
(According to DIN EN 10204 3.1)
N°.: 0030031810 / 00 Sheet: 4 4

DIRECTIVE 2014/68/UE ANNEX I PAR. 4.3 (CERTIFICATE 2016 BH MP 02403
VALID UNTIL 12/05/2019).
- MATERIAL ACCORDING TO PED 2014/68/UE ANNEX I PAR. 7.5

4. - NO WELD REPAIR
- FREE OF MERCURY CONTAMINATION
- NO RADIOACTIVE CONTAMINATION
- FINE GRAIN PRACTICE
- FULLY KILLED STEEL
- MATERIAL FROM BRAZIL

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2773

e-mail:luiz.silva@vallourec.com

ENG. LUIZ FERNANDO DA SILVA - CREA MG 58834-D
TECHNICAL RESPONSIBLE

DATE
01.22.2019

MLTS_6059-18732
Heat# 61B1013 18.38332

CCTF CORPORATION

4151 North Service Road, Burlington, ON L7L 4X6 (905) 335-5320

Date: 6/11/2019

Mill Test Reports

Invoice: 1596643-01
PO: 2610087

Customer: 27403-261
EQUIPEMENT KN
POUR ABF MINES
8254 RANG DU VIEUX PONT
ROUYN-NORANDA, QC J9Y 0H4

Line	Heat#	Product	Description
3	61b01013 **	7561296	8 STD LR 45 WELD ELL A420WPL6
10	18/38332	7583949	8 300 RF WN FLG STD A350LF2

Heat codes followed by ** have been corrected, change may not show on the packing slip

PO#: 4039378 Seq: 3
WF 8 STD 45 L6 Part Description: Weld Fittings 8" (219.1mm O.D.) STD 45 DEG ELBOW A/SA420-WPL6
Heat#: 61B01013 Mill: BKL - Thai Benkan

Purchaser : _____

INSPECTION CERTIFICATE

TO EN10204 3.1

BENKAN.
Thai Benkan Co., Ltd.
58 Soi Watkrunai, Bangkru, Prapadaeng,
Samutprakarn, 10130 Thailand.

Purchase Order No. Job No.

D M Y Certificate No.
08/08/2018 T - 2018020878

E-No.	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspection
ME-567	A234-18/SA234-17 Gr.WPB/A420-16/SA420-17 Gr.WPL6 CSA Z245.11-17 GR.241 CAT II MSC 9S	ASME B16.9-2012,B16.25-2017	Good	Good

MFG. No.	Product & Size (T:*1)	Quantity	Hardness Actual Data
61B01013	7561296 45 EL WPB/WPL6 8 STD	50	HBW.123,126,129

	Material Heat No.	Chemical Composition%(Note1)	Boron (%)	
	J6K1189	Ti= 1	0.0001	

Specification	Chemical Composition %													*2 Tension Test transverse			HARDNESS MAX 197 HB : GOOD
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	YS	TS	E	Impact Test (J) longitudinal 10 X 6.7 X 2V AT -46 °C
	x 100	x 100	x 100	x 1000	x 1000	x 100	x 100	x 100	x 100	x 1000	x 1000	x 1000	x 100	MPa		%	
Min.		15	50											240	415	30	116
Max.	23	40	135	35	40	40	40	30	12		80	20	40		585		127 AVE. 111
	12	27	127	13	1	1	3	11	1		0	0	36	295	452	46	90

NORMALIZING 910 C X 40 MINUTES. COOLED IN STILL AIR

(Note 1) : Specification of Ti Composition (%) : Max 11 (Ti x 100) Material according to ANSI/NACE MR0175/ISO 15156-2-2015 Annex A & MR0103-2015 (SSC Region 3)

Fully killed and fine grain practiced *Steel making process : Basic Oxygen* Tensile test with longitudinal specimen and 50 mm. gauge length.

Rungnapa Kamphaeon
Quality Assurance Manager
Thai Benkan Co., Ltd.

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV GL = ISO 9001 = = ISO 14001 =	METALFAR PRODOTTI INDUSTRIALI SPA A01 23861 CESANA BRIANZA (LC) - ITALY VIA G. PARINI, 28 PHONE + 39 031 655441 - FAX +39 031 655149 certificate@metalfaritaly.com	COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV GL = ISO 9001 = = ISO 14001 =

INSPECTION CERTIFICATE EN 10204:2004 / 3.1 A02 — Nr A03 2018-C_MFF-04299 — Data / Dated 31.10.2018 Z00

SILBO INDUSTRIES A06
50 CHESTNUT RIDGE ROAD SUITE 204
07645 MONTVALE N.J US

Ordine / PO	69051/BG A07
Item	015
DDT / Delivery note	2018-3E301-0004398
Packing List	2018-3E401-0004238
Fattura / Invoice	2018-3E401-0004238 A08
Ns. rif. / Our ref.	2017-3E201-0003478-0015

Dest. A05
CA

Cod. colata / Heat Code B07	Nr. colata / Heat Nr B07	Quantità / Quantity B06	Descrizione / Description B01 - (B06 - B11)
	18/38332	50,00	7583949 W/N 300 RF 8" STD LF2CL1

Mat. in acc. a / Mat. in acc. to B02
ASTM A 350M -18 ,ASME SA 350 M - 17 ,ASME CODE SECT. II, PART A, ED. 2017
ASTM A350 LF2 CL1
ASTM A105M - 18 , ASME SA105M-17 ASME CODE SECT. II, PART A, ED. 2017
NACE MR-0175/2015 ISO 15156 Part 2 _ Annex A - SOUR SERVICE
NACE MR-0103/2015 ISO 17495- SOUR SERVICE
CSA Z245.12-17 GRADE 248 CAT.II SOUR SERVICE
CSA Z245.12-17 GRADE 248 CAT.I SOUR SERVICE
Q.A.S.IN ACCORD.WITH PRESS.EQUIPM.DIRECT.2014/68/EU(PED) ANNEX I,PARAGRAPH 4.3
CERT 4687-2014-CE-ITA-DNV GL

Ann. mat. / Mat. remarks B02
FULLY KILLED STEEL AND FINE GRAIN PRACTICED
GRAIN SIZE : 7 OR FINER
NO WELD REPAIR

Elementi / Elements (C71 - C92)	C	Si	Mn	S	P	Cr	Ni	Mo	Ti	Cu	V	Nb	N
LADLE ANALYSIS	0,185	0,220	1,090	0,008	0,009	0,110	0,050	0,010	0,016	0,160	0,002	0,001	0,008
PRODUCT ANALYSIS	0,184	0,228	1,096	0,007	0,012	0,116	0,055	0,013	0,019	0,164	0,004	0,002	0,007
	Al	B	Ca						CE		F1	F2	PREN
LADLE ANALYSIS	0,025	0,0004	0,002						0,407		0,332	0,120	--
PRODUCT ANALYSIS	0,027	0,0000	0,002						0,408		0,352	0,129	--

CE=C+F(Mn/6+Si/24+Cu/15+Ni/20+(Cr+Mo+V+Nb)/5+5B) F1=Cu+Ni+Cr+Mo+V F2=Cr+Mo

Provetta / Test specimen Sez/Sect mm2	Gauge L.mm	Forma / Shape C10 1=O - 2=□	°C C23	Snervamento>0,2% / Yield Strength>0,2% C11 MPa	Snervamento>1,0% / Yield Strength>1,0% C11 MPa	Rottura / Tensile C12 MPa	Allungamento / Elongation C13 %	Contrazione / Reduction of area C15 %
126,60	50,80	1	20	335,0	--	530,0	37,0	69,0

DUREZZA / HARDNESS C22 HBW	Tipo/Type C40	Provetta / Test Specimen	°C C21	1-Joule C42	2-Joule C42	3-Joule C42	Media/Average C43
162,0 ; 166,0 ; 160,0	KV	10x10 mm	-46	57	60	50	55,7

Tratt. Term. / Heat treatment C70	NORMALIZED AT 930 °C - COOLED IN STILL AIR	GAS FURNACE
Dim in acc. a / Dim. acc. to B14	ASME/ANSI B16.5 -2017 ; ASME/ANSI B36.10M -2015 ; ASME/ANSI B16.25 -2017	
Finitura / Roughness	ASME/ANSI B46.1 -2009 125-250 u/in AARH	

Marcatura in acc. B06 / Marking in acc. to	ANSI/MSS SP-25-2018	Vis. & Dim.	SATISFACTORY	Origine / Origin of Steel	ITALY

Note / Notes 100% MANUFACTURED IN ITALY

Introduction of flanges on the furnace at temperature below 200°C
Heating of piece of 150°C every hour till 930°C
Holding time 1 hour/ Inch. - min 2 hours - Cooled in still air
Test specimen orientation : Longitudinal

UFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTMENT A05	ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY Z03	MARCHIO PRODUZIONE / MANUFACTURER'S SYMBOL A04
S. Frigeno		MFF

MLTS_6056-18732
Heat# SEE BELOW

CCTF CORPORATION

4151 North Service Road, Burlington, ON L7L 4X6 (905) 335-5320

Date: 6/14/2019

Mill Test Reports

Invoice: 1597082-00
PO: 2610096

Customer: 27403-261
A.B.F MINES/2985080
1310 AVE DAVY
REF 18777-6056
ROUYN NORANDA, QC J9Y 0A8

Line	Heat#	Product	Description
1	956v	7561733	8 STD WELD TEE A420WPL6
2	508105d	7586891	8 150 RF WN FLG STD A350LF2
3	508101C	7585666	8 300 RF BLIND FLG A350LF2
4	886v	7561288	6 STD LR 45 WELD ELL A420WPL6
5	18c1054	7561725	6 STD WELD TEE A420WPL6
6	508105g	7586832	6 150 RF WN FLG STD A350LF2
7	b03459	7585585	6 150 RF BLIND FLG A350LF2

Heat codes followed by ** have been corrected, change may not show on the packing slip

INSPECTION CERTIFICATE

Customer : CCTF CORPORATION
Product : SEAMLESS LOW TEMPERATURE CARBON STEEL BUTT WELD FITTINGS
Spec : ASTM A420-16/ASME SA420-15 WPL6, CSA Z245.11-17 Gr 241 Cat II -45C SS NACE MR0175/ISO 15156-2 Region 3-15 & NACE MR0103-16, ASTM A234-18/ASME SA234-15 WPB

ACCORDANCE WITH EN 10204-3.1
CHUP HSIN ENTERPRISE CO., LTD.
17, TUNG LI ROAD, HSIAO KANG DISTRICT,
KAOHSIUNG CITY, TAIWAN, R.O.C.
TEL:(07)831-9157 FAX:(07)821-7500, 831-2942

Certificate No : O0700020-0401
Order No : 4038285-00
Date : 2018/12/11

Raw Material	Specification for Inspection	Visual Inspection	Dimensional Inspection
ASTM A106 GR.B/GREEN PIPE FOR A333-6	ASME B16.9-2012	PASS	PASS

Item	Description		Quantity	Heat ID	Heat No	Raw Material Certificate No.	NDE MT	Impact Test: Test Temp ℃	Size of specimen mm	Charpy V.-Notch Impact Value J			Ave. J
3	90 E L/R WPL6 STD	3	100	A606	18321606	BAOSTEEL BGSAG1801240000400		-45	10 X 5.0 X 55	62	48	56	55.33
9	90 E L/R WPL6 XS	2	120	C023	18322023	BAOSTEEL BGSAG1804020007200		-45	10 X 5.0 X 55	48	40	52	46.67
10	90 E L/R WPL6 XS	8	5	A304	18323304	BAOSTEEL BGSAG1804250001100		-45	10 X 10 X 55	230	216	212	219.33
16	TEE WPL6 STD	8	5	956V	1535956V	HENGYANG C201538794-1	PASS	-45	10 X 7.5 X 55	46	52	48	48.67

7560109
7560873
7560926
7561733

Specification	Chemical Composition%												Tensile Test			Hardness Test	Heat Treatment	REMARK
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E	Y.S	T.S	E			
	X100	X100	X100	X1000	X1000	X100	X100	X100	X100	X1000	X1000	X100	P.S.I	P.S.I	%	HB		
Min.		15	50										35000	60000	30			
Max.	30	40	135	35	40	40	40	30	12	80	20	50		95000		197		
3	13	17	78	10	3	4	2	4	1	<1	<1	27	42950	66700	39.0	133-134	NORM. 910℃x0.5HR AC	
9	12	16	80	7	6	2	1	3	1	<1	<1	26	41208	67300	35.0	133-134		
10	13	16	73	11	3	3	2	4	1	<1	20	26	44256	65300	44.0	134-135		
16	12	27	124	13	3	2	1	7	2	5	2	35	46722	67000	42.0	133-134		

C.E. = C+Mn / 6 + (Cr+Mo+V)/5 + (Ni+Cu)/15

We hereby certify that the material herein described has been manufactured, sampled, tested and inspected in accordance with, and was found to meet, the requirements of above specifications and purchaser's order.

K. Y. Tsai
Chief of Quality Assurance Section

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST&H CORPORATION
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

Certificate No. MJH0165-02/07 **Date :** DEC. 20. 2018
Customer CCTF CORPORATION
Contract No. 4038829-00
Spec. For Material ASTM A105N-18,ASME SA105N-17,ASTM A350 LF2 CL1-18,ASME SA350 LF2 CL1-17,NACE MR0175/ISO 15156-2:2015,NACE MR0103/ISO 17495-1:2016
Heat Treatment 930°C NORMALIZED & A.C **Dimensional inspection**ASME B16.5 - 2017

ITEM / SIZE		Q'ty	Heat No./ Batch No.	Size of Test Specimen D mm	Size of Test Specimen GL mm		Tension Test Y.S MPa	Tension Test T.S MPa	Tension Test E.L %	Tension Test R.A %	Hardness Test (HB)		Charpy Impact Test (10X10mm Specimen Size) Indiv. 16J	Charpy Impact Test (10X10mm Specimen Size) Ave. 20J	Charpy Impact Test (10X10mm Specimen Size) Notch V	Charpy Impact Test (10X10mm Specimen Size) Temp. -46°C
						Max		655			187					
				12.5	50.0	Min	250	485	22.0	30.0			Test Result (J)			Ave.(J)
7586502	150LBS TH RF 6"	5	508105C	12.5	50.0		330	522	33	73	150	155	136	154	142	144
7581210	300LBS WN RF XH 6"	20	508105C	12.5	50.0		330	522	33	73	150	155	136	154	142	144
7586891	150LBS WN RF STD 8"	20	508105D	12.5	50.0		330	522	33	73	150	155	136	154	142	144
7586867	300LBS WN RF STD 4"	25	508105D	12.5	50.0		330	522	33	73	150	155	136	154	142	144
7585496	300LBS WN RF STD 6"	35	508105D	12.5	50.0		330	522	33	73	150	155	136	154	142	144
	BLANK		BLANK					BLANK			BLANK					

Heat No./ Batch No.		Chemical Composition (%) C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	CE	NDE UT	MT	PT
	Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020				
	Min		0.150	0.600												
	H	0.159	0.234	1.260	0.011	0.003	0.019	0.077	0.005	0.017	0.001	0.004	0.388			
508105C	P	0.160	0.244	1.250	0.014	0.003	0.017	0.079	0.006	0.018	0.001	0.004	0.387			
	H	0.159	0.234	1.260	0.011	0.003	0.019	0.077	0.005	0.017	0.001	0.004	0.388			
508105D	P	0.160	0.244	1.250	0.014	0.003	0.017	0.079	0.006	0.018	0.001	0.004	0.387			
									BLANK							

REMARK * H : Heat Analysis P : Product Analysis

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST&H CORPORATION
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

Certificate No. MJH0137-07/11 **Date :** DEC. 19. 2018
Customer CCTF CORPORATION
Contract No. 4038743-00
Spec. For Material ASTM A10SN-18,ASME SA10SN-17,ASTM A350 LF2 CL1-18,ASME SA350 LF2 CL1-17,NACE MR0175/ISO 15156-2:2015,NACE MR0103/ISO 17495-1:2016
Heat Treatment 930°C NORMALIZED & A.C **Dimensional inspection**ASME B16.5 - 2017

ITEM / SIZE		Q'ty	Heat No./ Batch No.	Size of Test Specimen D mm	Size of Test Specimen GL mm	Tension Test	Y.S MPa	T.S MPa	E.L %	R.A %	Hardness Test (HB)		Charpy Impact Test (10X10mm Specimen Size) Indiv. 16J	Ave. 20J	Notch V	Temp. -46°C
						Max		655			187		Test Result (J)			Ave.(J)
				12.5	50.0	Min	250	485	22.0	30.0						
7585585	150LBS BL RF 6"	40	508101C	12.5	50.0		339	525	34	78	159	162	188	165	195	183
7585666	300LBS BL RF 8"	25	508101C	12.5	50.0		339	525	34	78	159	162	188	165	195	183
7580185	900/1500LBS SW RF S160 2"	20	508101C	12.5	50.0		339	525	34	78	159	162	188	165	195	183
7580219	150LBS SO RF 10"	20	508101F	12.5	50.0		339	525	34	78	159	162	188	165	195	183
7586507	150LBS SO RF 3"	50	508101F	12.5	50.0		339	525	34	78	159	162	188	165	195	183
7586508	150LBS SO RF 4"	25	508101F	12.5	50.0		339	525	34	78	159	162	188	165	195	183
7586509	150LBS SO RF 6"	70	508101F	12.5	50.0		339	525	34	78	159	162	188	165	195	183
7580218	150LBS SO RF 8"	25	508101F	12.5	50.0		339	525	34	78	159	162	188	165	195	183
	BLANK		BLANK					BLANK			BLANK					

Heat No./ Batch No.		Chemical Composition (%) C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb						CE	NDE UT	MT	PT
	Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020									
	Min		0.150	0.600																	
	H	0.160	0.207	1.250	0.009	0.007	0.020	0.091	0.002	0.024	0.001	0.004						0.390			
508101C	P	0.164	0.220	1.250	0.009	0.005	0.013	0.092	0.002	0.022	0.003	0.004						0.394			
	H	0.160	0.207	1.250	0.009	0.007	0.020	0.091	0.002	0.024	0.001	0.004						0.390			
508101F	P	0.164	0.220	1.250	0.009	0.005	0.013	0.092	0.002	0.022	0.003	0.004						0.394			
										BLANK											

REMARK * H : Heat Analysis P : Product Analysis

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

INSPECTION CERTIFICATE

Customer : CCTF CORPORATION
Product : SEAMLESS LOW TEMPERATURE CARBON STEEL BUTT WELD FITTINGS
Spec : ASTM A420-16/ASME SA420-15 WPL6, CSA Z245.11-17 Gr 241 Cat II -45C SS NACE MR0175/ISO 15156-2 Region 3-15 & NACE MR0103-16, ASTM A234-18/ASME SA234-15 WPB

ACCORDANCE WITH EN 10204-3.1
CHUP HSIN ENTERPRISE CO., LTD.
17, TUNG LI ROAD, HSIAO KANG DISTRICT,
KAOHSIUNG CITY, TAIWAN, R.O.C.
TEL:(07)831-9157 FAX:(07)821-7500, 831-2942

Certificate No : 00700220-0110
Order No : 4039057-00
Date : 2019/03/19

Raw Material	Specification for Inspection	Visual Inspection	Dimensional Inspection
ASTM A106 GR.B/GREEN PIPE FOR A333-6	ASME B16.9-2012	PASS	PASS

Item	Description		Quantity	Heat ID	Heat No	Raw Material Certificate No.	NDE MT	Impact Test: Test Temp ℃	Size of specimen mm	Charpy V-Notch Impact Value J			Ave. J
123	45 E L/R WPL6 STD 1288	6	35	886V	1834886V	HENGYANG C201841289-1		-45	10 X 5.0 X 55	56	62	62	60
131	RED TEE WPL6 STD 2824	4 X 2	10	885V	1834885V	HENGYANG C201841281-1	PASS	-45	10 X 5.0 X 55	54	48	52	51.33
132	RED TEE WPL6 STD 2808	4 X 3	15	885V	1834885V	HENGYANG C201841281-1	PASS	-45	10 X 5.0 X 55	54	48	52	51.33
135	TEE WPL6 XS 1938	6	8	A248	18322248	BAOSTEEL BGSAG1803080005100	PASS	-45	10 X 10 X 55	128	142	150	140
136	TEE WPL6 XS 1946	8	2	E274	34274H	BAOSTEEL BGSQG1804040002900	PASS	-45	10 X 10 X 55	162	184	178	174.67

Specification	Chemical Composition%												Tensile Test			Hardness Test	Heat Treatment	REMARK
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E	Y.S	T.S	E			
	X100	X100	X100	X1000	X1000	X100	X100	X100	X100	X1000	X1000	X100	P.S.I	P.S.I	%	HB		
Min.		15	50										35000	60000	30			
Max.	30	40	135	35	40	40	40	30	12	80	20	50		95000		197		
123	13	31	98	11	1	5	2	6	1	1	<1	31	49044	68100	42.5	135-138	NORM. 910 C x0.5HR AC	
131	13	31	100	11	2	5	2	6	2	<1	<1	31	47738	67600	37.0	138-139		
132	13	31	100	11	2	5	2	6	2	<1	<1	31	47738	67600	37.0	138-139		
135	13	15	74	6	4	4	2	4	1	<1	<1	27	39322	63600	40.0	138-139		
136	15	18	89	9	4	1	3	4	<1	<1	1	31	38306	68100	35.5	134-135		

C.E. = C+Mn / 6 + (Cr+Mo+V)/5 + (Ni+Cu)/15

We hereby certify that the material herein described has been manufactured, sampled, tested and inspected in accordance with, and was found to meet, the requirements of above specifications and purchaser's order.

K. Y. Tsai
Chief of Quality Assurance Section

INSPECTION CERTIFICATE

RIGID INDUSTRIES CO., LTD.
8. MEI-CHUNG RD. NIAO-SONG,
KAOHSIUNG 83301,TAIWAN
TEL: 886-77310527~8
FAX: 886-77315887

PURCHASER: SEYBOLD INT'L CORP.
STANDARD: ASTM A420 WPL6-16 / ASME SA420 WPL6-04 / CSA Z245.11-17 Gr.290 CAT II Sour Service
MATERIALS: ASTM A333-6
INSP SPEC: ASME B16.9 -12

DATE: 2019-01-07
ORDER NO: 7014596/4038286-00
P.I. NO: 18B05-1
CERTIFI. NO: 181212-1

ACCORDING TO EN10204/DIN50049/3.1

ITEM NO.	PRODUCT & SIZE	QUANTITY PCS	MFG NO.	VISUAL & DIMENTIONAL INSPECTION	HARDNESS MAX. 197 HB	HEAT TREATMENT (NOTE)	MAGNETIC PARTICLE EXAMINATION	IMPACT TEST (J)
35	TEE 6"WPL6 STD 7561725	25	18C1054	GOOD	132-143	N	GOOD	10 x 5.0 x 2V AT -45 °C 112.4 115.3 129.7 119.1

ITEM NO.	MATERIAL CHARGE NO.		CHEMICAL COMPOSITION %													* PHYSICAL TEST					
			C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x100	Nb x1000	Ti x100	B x1000	Y S KSI	T S KSI	E %	**	*CE x100	*CEQ x100
	STANDARD	MIN.		15	60											42.0	60.0	27.0			
		MAX.	30	50	160	50	60	150	100	25	25	13	100	2	1		95.0			50	50
35	J4LB254		11	26	130	14	3	1	2	12	1	<1	<1	2	<1	44.1	66.9	30.9	L	35	29

(NOTE): A:HOT FORMED WITH FINAL TEMPERATURE BETWEEN 620°C-980°C, AIR COOLING.
N:NORMALIZING AT TEMPERATURE 880°C X0.5HR, AIR COOLING S:STRESS RELIEF AT TEMPERATURE 650°C X0.5HR
NACE MR0175-2015/ISO15156-1 NACE MR0103-2015/ISO17945:SATISFACTORY

WE HEREBY CERTIFY THAT THE PRODUCT DESCRIBED HEREIN HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE SPECIFICATIONS CONCERNED AND ALSO WITH THE PURCHASER' S REQUIREMENTS AND THAT THE TEST RESULTS SHOWN HEREIN ARE CORRECT.

* TYPE OF SPECIMEN:STRIP(WIDTH:1 in./GAUGE LENGTH:2 in.) ** SAMPLING DIRECTION:L=LONGITUDINAL, T=TRANSVERSE
*CE=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15 *CEQ=C+F(Mn/6+Si/24+Cu/15+Ni/20+(Cr+Mo+V+Nb)/5+5B)

Ou C Lan

MANAGER OF Q.A. DEPT.

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST&H CORPORATION
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

RPS 0150309 / 01

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

Certificate No. MJH0165-03/07 **Date :** DEC. 20. 2018
Customer CCTF CORPORATION
Contract No. 4038829-00
Spec. For Material ASTM A105N-18,ASME SA105N-17,ASTM A350 LF2 CL1-18,ASME SA350 LF2 CL1-17,NACE MR0175/ISO 15156-2:2015,NACE MR0103/ISO 17495-1:2016
Heat Treatment 930℃ NORMALIZED & A.C **Dimensional inspection** ASME B16.5 - 2017

ITEM / SIZE		Q'ty	Heat No./ Batch No.	Size of Test Specimen		Tension Test					Hardness Test (HB)		Charpy Impact Test (10X10mm Specimen Size)			
				D	GL		Y.S	T.S	E.L	R.A			Indiv.	Ave.	Notch	Temp.
				mm	mm	Max	MPa	MPa	%	%	187		16J	20J	V	-46℃
				12.5	50.0	Min	250	485	22.0	30.0			Test Result (J)			Ave.(J)
7585860	150LBS BL RF 8"	5	508105E	12.5	50.0		330	522	33	73	150	155	136	154	142	144
7585640	300LBS BL RF 4"	10	508105E	12.5	50.0		330	522	33	73	150	155	136	154	142	144
7585658	300LBS BL RF 6"	10	508105E	12.5	50.0		330	522	33	73	150	155	136	154	142	144
7585666	300LBS BL RF 8"	5	508105E	12.5	50.0		330	522	33	73	150	155	136	154	142	144
7586832	150LBS WN RF STD 6"	50	508105G	12.5	50.0		330	522	33	73	150	155	136	154	142	144
	BLANK		BLANK					BLANK			BLANK					

Heat No./ Batch No.		Chemical Composition (%)																	NDE		
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb						CE			
	Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020							UT	MT	PT
	Min		0.150	0.600																	
	H	0.159	0.234	1.260	0.011	0.003	0.019	0.077	0.005	0.017	0.001	0.004						0.388			
508105E	P	0.160	0.244	1.250	0.014	0.003	0.017	0.079	0.006	0.018	0.001	0.004						0.387			
	H	0.159	0.234	1.260	0.011	0.003	0.019	0.077	0.005	0.017	0.001	0.004						0.388			
508105G	P	0.160	0.244	1.250	0.014	0.003	0.017	0.079	0.006	0.018	0.001	0.004						0.387			
										BLANK											

REMARK * H : Heat Analysis P : Product Analysis

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST&H CORPORATION
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

Certificate No. MJH0290-01/05 Date : FEB. 14. 2019
Customer CCTF CORPORATION
Contract No. 4039095-00
Spec. For Material ASTM A105N-18,ASME SA105N-17,ASTM A350 LF2 CL1-18,ASME SA350 LF2 CL1-17,NACE MR0175/ISO 15156-2:2015,NACE MR0103/ISO 17495-1:2016
Heat Treatment 930℃ NORMALIZED & A.C Dimensional inspectionASME B16.5 - 2017

ITEM / SIZE		Q'ty	Heat No./ Batch No.	Size of Test Specimen D mm	Size of Test Specimen GL mm	Tension Test	Y.S MPa	T.S MPa	E.L %	R.A %	Hardness Test (HB)		Charpy Impact Test (10X10mm Specimen Size) Indiv. 16J	Ave. 20J	Notch V	Temp. -46℃
						Max		655			187					
				12.5	50.0	Min	250	485	22.0	30.0			Test Result (J)			Ave.(J)
7585585	150LBS BL RF 6"	20	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7585860	150LBS BL RF 8"	10	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7580218	150LBS SO RF 8"	20	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7580202	150LBS SO RF 14"	2	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7586502	150LBS TH RF 6"	5	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7586824	150LBS WN RF STD 4"	50	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7586832	150LBS WN RF STD 6"	30	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7586891	150LBS WN RF STD 8"	20	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7583949	300LBS WN RF STD 8"	10	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7585321	150LBS WN RF STD 10"	20	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80

Heat No./ Batch No.		Chemical Composition (%) C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb						CE	NDE UT	MT	PT
	Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020									
	Min		0.150	0.600																	
	H	0.163	0.226	1.230	0.012	0.002	0.057	0.138	0.017	0.147	0.001	0.006						0.412			
B03459	P	0.162	0.224	1.240	0.011	0.002	0.054	0.136	0.014	0.138	0.001	0.001						0.411			

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REMARK * H : Heat Analysis P : Product Analysis

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

MLTS_6056-18777
Heat# SEE BELOW

CCTF CORPORATION
5407 53rd Avenue, Edmonton, AB T6B 3G2 (780) 463-8700

Date: 6/14/2019

Mill Test Reports

Invoice: 5736215-00
PO: WT

Customer: 498
A.B.F. MINES/2985080 CANADA
1310 AVE DAVY
REF 18777-6056
ROUYN-NORANDA, QC J9Y 0A8

Line	Heat#	Product	Description
1	61k01m028	7561296	8 STD LR 45 WELD ELL A420WPL6
1	61m01m049	7561296	8 STD LR 45 WELD ELL A420WPL6
1	61n01m031-1	7561296	8 STD LR 45 WELD ELL A420WPL6
2	b21a8	7583949	8 300 RF WN FLG STD A350LF2

Heat codes followed by ** have been corrected, change may not show on the packing slip

Purchaser : CCTF CORPORATION

INSPECTION CERTIFICATE

TO EN10204 3.1

BENKAN

Thai Benkan Co., Ltd.
58 Soi Watkrunai, Bangkru, Prapadaeng,
Samutprakarn, 10130 Thailand.

Purchase Order No. 4901180-00 | Job No.

D M Y Certificate No.
09/11/2018 T - 2018031531

E-No.	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspection
TA-162	ASTM A420-16 / ASME SA420-17 Gr.WPL6 CSA Z245.11-17 Gr.241 CAT II NHSC Sour Service	ASME B16.9-2012,B16.25-2017	Good	Good

MFG. No.	Product & Size (T:*1)	Quantity	Hardness Actual Data
61K01M028	45 EL WPL6 8 STD	10	HBW:115-145

	Material Heat No.	Item No.		
	184740	7561296		

Specification	Chemical Composition %													*2 Tension Test transverse			HARDNESS MAX 197 HB : GOOD	
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	YS	TS	E	Impact Test (J) longitudinal 10 X 6.7 X 2V AT -45 °C	
	X 100	X 100	X 100	X 1000	X 1000	X 100	X 100	X 100	X 100	X 1000	X 1000	X 1000	X 100	MPa.		%		
Min.		15	50											241	415	30	120	
Max.	30	35	135	35	40	40	40	30	12		80	20			585		129	AVE. 127
	15	21	105	9	5	6	4	5	2		1	1	35	305	481	41	131	

NORMALIZING 910 C X 40 MINUTES. COOLED IN STILL AIR

The product was manufactured,sampled,tested, and inspected as specified in this Standard and the purchase order, and was found to have met such requirements.

The material meet ANSI/NACE MR0175/ISO15156-2 (Region 3) :2015 & MR0103-2015

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation

Form T7-61/1

Rungnapa Kampiranon
Quality Assurance Manager
Thai Benkan Co., Ltd.

Purchaser : CCTF CORPORATION

INSPECTION CERTIFICATE

TO EN10204 3.1

BENKAN.
Thai Benkan Co., Ltd.
58 Soi Watkrunai, Bangkru, Prapadaeng,
Samutprakarn, 10130 Thailand.

Purchase Order No. 4901220-00 | Job No.

D M Y Certificate No.
09/11/2018 T - 2018031547

E-No.	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspection
TA-169	ASTM A420-16 / ASME SA420-17 Gr.WPL6 CSA Z245.11-17 Gr.241 CAT II M45C Sour Service	ASME B16.9-2012,B16.25-2017	Good	Good

MFG. No.	Product & Size (T:*1)	Quantity	Hardness Actual Data
61M01M049	45 EL WPL6 8 STD	10	HBW:115-146

	Material Heat No.	Item No.		
	J8K4597	7561296		

Specification	Chemical Composition %													*2 Tension Test transverse			HARDNESS MAX 197 HB : GOOD	
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	Y S	T S	E	Impact Test (J) longitudinal	
	x 100	x 100	x 100	x 1000	x 1000	x 100	x 100	x 100	x 100	x 1000	x 1000	x 1000	x 100	MPa.		%	10 X 6.7 X 2V AT -46 °C	
Min.		15	50											241	415	30	161	
Max.	30	35	135	35	40	40	40	30	12		80	20			585		174	AVE. 173
	12	27	128	11	1	2	2	11	1		0	0	36	286	458	46	183	

NORMALIZING 910 C X 40 MINUTES. COOLED IN STILL AIR

The product was manufactured,sampled,tested, and inspected as specified in this Standard and the purchase order, and was found to have met such requirements.

The material meet ANSI/NACE MR0175/ISO15156-2 (Region 3) :2015 & MR0103-2015

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation

Form T7-61/1

Rungnapa Kamptraroo
Quality Assurance Manager
Thai Benkan Co., Ltd.

Purchaser : CCTF CORPORATION

INSPECTION CERTIFICATE

TO EN10204 3.1

BENKAN

Thai Benkan Co., Ltd.
58 Soi Watkrunai, Bangkru, Prapadaeng,
Samutprakarn, 10130 Thailand.

Purchase Order No. 4901279-00

Job No.

D M Y: 11/12/2018

Certificate No.: T - 2018031649

E-No.	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspection
TA-194	ASTM A420-16 / ASME SA420-17 Gr.WPL6 CSA Z245.11-17 Gr 241 CAT II M45C Sour Service	ASME B16.9-2012,B16.25-2017	Good	Good

MFG. No.	Product & Size (T:*1)	Quantity	Hardness Actual Data
61N01M031-1	45 EL WPL6 8 STD	9/10	HBW:115-145

	Material Heat No.	Item No.		
	185081	7561296		

Specification	Chemical Composition %													*2 Tension Test transverse			HARDNESS MAX 197 HB : GOOD	
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	YS	TS	E	Impact Test (J) longitudinal 10 X 7.5 X 2V AT -46 °C	
	x 100	x 100	x 100	x 1000	x 1000	x 100	x 100	x 100	x 100	x 1000	x 1000	x 1000	x 100	MPa.		%		
Min.		15	50											241	415	30	115	
Max.	30	35	135	35	40	40	40	30	12		80	20			585		118	AVE. 118
	16	25	106	10	4	6	4	5	2		1	1	36	309	460	40	120	

NORMALIZING 910 C X 40 MINUTES. COOLED IN STILL AIR

The material meet ANSI/NACE MR0175/ISO15156-2 (Region 3) :2015 & MR0103-2015

The product was manufactured,sampled,tested, and inspected as specified in this Standard and the purchase order, and was found to have met such requirements.

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation

Form TZ-6J/1

Rungnapa Kamphrapon

Quality Assurance Manager

Thai Benkan Co., Ltd.

CLIENTE / Customer / Client
CCTF CORPORATION (ONTARIO)
4151 NORTH SERVICE RD.
UNIT 2
BURLINGTON, ONTARIO
L7L4X6 - CANADA
CAN

CERTIFICADO DE INSPECCION

UNE EN 10204:06 / 3.1
Inspection Certificate - Certificat de Réception ISO 10474:15 / 3.1

FECHA: Date: 27/06/2018 | N.º No. 196066 | HOJA: Page: 2

SGI 1922164 SGI 6000236 SGI 6009987 ULMA FORJA, S.COOP.
Management Systems certified by LRQAE
Certified acc. PED 97/23/EC+AD2000-W0
PED 14/68/UE
by TÜV Rheinland
N.º 01 202 E/Q 02 7443
Bº Zubillaga, 3 - Apdo. 14
20560 OÑATI (Gipuzkoa) SPAIN
Tel.: 34 - 943 780552
Fax: 34 - 943 781808
E-mail: ulma@ulmapiping.com

PRODUCTO / Article - Produit: FLANGES

SU PEDIDO N.º / Your Order No. / Votre Cde. N.º: 43038605-00 TORONTO

DE / of. - de: 28/05/2018

NORMAS APLICABLES / Requirements - Normes Applicables: ASME B16.5-17

MARCA DEL FABRICANTE / Mark of factory / Marque du fabricant

Packing 140699

MATERIAL CORRESPONDIENTE / Material Correspondent - Qualité: ASME SA350LF2CL1-2-17, ASTM A350LF2CL1-2-17

MODO DE FUSION (*) / Steel Making - Elaboration de l'acier / E = Elec. Y = Oxigeno básico: NACE MR0175/ISO15156-02/03-15 & NACE MR0103/ISO17495-15 Clause 7.2.1.4, Annex A.2 and SSC Region 3. CSA-Z245.12-17 GR248 CAT II-SS (WN & BLIND FLANGES ONLY)

DEPARTAMENTO / Section / Département: QUALITY ASSURANCE

PARTIDA / Item / Poste	CANTIDAD / Quantity / Quantité	DESCRIPCION / Description / Description	LOTE	OBSERVACIONES / Remarks / Observations (*)	COLADA N.º / Heat No / N.ºCoulée	RESISTENCIA / T.Strength / Resist Rupt N/mm2	LIMITE ELAST / Y.Strength 0,2 % N/mm2	ALARGAM / Elongation Allongement Lo:50mm/4d %	ESTRICCION / Red. Area / Striction %	RESILIENCIA / Impact test / Résilience Joules			CHARPY V 10x10mm MEDIA / Average / Moyenne	°C	DUREZA / Hardness / Durete HBW	
39 7580201	30	WN 1.1/2 150LB XS/80 RF A350LF2	24Y16	NE	A45A6	517	320	26,00	45,00	58	63	65	62	-50	152	156
45 7581005	1	BLIND 14 150LB RF A350LF2	02M18G	NE	25AV8	522	308	30,20	62,80	59	57	64	60	-50	150	154
46 7581006	1	BLIND 16 150LB RF A350LF2	06J803	NE	69AV8	507	304	30,40	58,20	60	58	63	60	-50	147	148
46 7581006	1	BLIND 16 150LB RF A350LF2	19D17	NE	B64A7	499	296	33,30	66,70	45	35	42	40	-50	144	148
48 7583949	1	WN 8 300LB STD/40 RF A350LF2	16Y816	NE	97AV8	517	307	29,80	60,70	75	71	70	72	-50	150	151
48 7583949	7	WN 8 300LB STD/40 RF A350LF2	04J802	NE	B21A8	515	298	32,60	67,30	69	76	67	70	-50	148	150
52 7582780	3	BLIND 8 600LB RF A350LF2	22Y827	NE	73AV8	511	297	36,30	69,80	58	50	62	57	-50	147	148
52 7582780	3	BLIND 8 600LB RF A350LF2	23Y809	NE	73AV8	502	319	38,10	70,10	90	69	62	74	-50	146	149

COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE

COLADA N.º / Heat No / N.ºCoulée	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	B %	CEq %
25AV8	0,190	0,230	1,050	0,005	0,007	0,068	0,090	0,014	0,002	0,004	0,180	0,025	0,002	0,0003	0,40
69AV8	0,184	0,200	1,115	0,012	0,003	0,055	0,147	0,017	0,001	0,001	0,138	0,033	0,001	0,0001	0,40
73AV8	0,190	0,193	1,073	0,011	0,003	0,062	0,075	0,015	0,001	0,001	0,112	0,037	0,002	0,0001	0,40
97AV8	0,190	0,220	1,110	0,005	0,007	0,045	0,072	0,012	0,003	0,005	0,150	0,027	0,002	0,0003	0,40
A45A6	0,195	0,222	0,994	0,007	0,008	0,053	0,103	0,024	0,000	0,001	0,212	0,028	0,001	0,0005	0,40
B21A8	0,170	0,190	1,060	0,011	0,004	0,110	0,090	0,009	0,004	0,000	0,180	0,029	0,001	0,0004	0,39
B64A7	0,190	0,170	1,030	0,011	0,004	0,100	0,060	0,008	0,007	0,006	0,150	0,041	0,001	0,0002	0,40

- Las dimensiones y la condición superficial se hallaron satisfactorias.
- Dimension and surface condition were found acceptable
- Les dimensions et états de surface sont satisfaisants.

- Los materiales citados cumplen las normas aplicables.
- Manufacturing requirements are satisfied.
- Les normes applicables sont respectées.

EL INSPECTOR
Works Inspector - L'Inspecteur

ULMA FORJA S. COOP
Dpto. de Garantía de Calidad
Quality Assurance Dept.

(*) OBSERVACIONES. Remarks Observations: N_NORMALIZED AT 900 C AND ALLOWED TO COOL IN STILL AIR.

MLTS_6056-18929
Heat# B03238 A07A9 B011568B B05432B

CCTF CORPORATION

4151 North Service Road, Burlington, ON L7L 4X6 (905) 335-5320

Date: 8/8/2019

Mill Test Reports

Invoice: 1599344-00
PO: 2610155

Customer: 27403-261
A.B.F. MINES/2985080
1310 AVE DAVY
ROUYN-NORANDA, QC J9Y 0A8

Line	Heat#	Product	Description
1	b03238	7586832	6 150 RF WN FLG STD A350LF2
2	a07a9	7586824	4 150 RF WN FLG STD A350LF2
3	b01568b	7586509	6 150 RF SO FLG A350LF2
4	b05432b	7586508	4 150 RF SO FLG A350LF2

Heat codes followed by ** have been corrected, change may not show on the packing slip

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST&H CORPORATION
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

CE
RPS 0150209 / 01

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

Certificate No. MJH0103-10/16 **Date :** AUG. 27. 2018
Customer CCTF CORPORATION
Contract No. 4038603-00
Spec. For Material ASTM A105N-14,ASME SA105N-17,ASTM/ASME A/SA350 LF2 CL1-17,NACE MR0175/ISO 15156-2:2015,NACE MR0103/ISO 17495-1:2016
Heat Treatment 930°C NORMALIZED & A.C **Dimensional inspection** ASME B16.5 - 2017

ITEM / SIZE	Q'ty	Heat No./ Batch No.	Size of Test Specimen D mm	Size of Test Specimen GL mm		Tension Test Y.S MPa	Tension Test T.S MPa	Tension Test E.L %	Tension Test R.A %	Hardness Test (HB)		Charpy Impact Test (10X10mm Specimen Size) Indiv. 16J	Ave. 20J	Notch V	Temp. -46°C
					Max		655			187					
			12.5	50.0	Min	250	485	22.0	30.0			Test Result (J)			Ave.(J)
7586502 150LBS TH RF 6"	2	B03238	12.5	50.0		375	545	35	67.5	151	153	118	145	68	110
7586824 150LBS WN RF STD 4"	50	B03238	12.5	50.0		375	545	35	67.5	151	153	118	145	68	110
7586832 150LBS WN RF STD 6"	50	B03238	12.5	50.0		375	545	35	67.5	151	153	118	145	68	110
7585267 150LBS WN RF XH 4"	10	B03238	12.5	50.0		375	545	35	67.5	151	153	118	145	68	110
7580014 300LBS SO RF 4"	5	B03238	12.5	50.0		375	545	35	67.5	151	153	118	145	68	110
7587735 300LBS SO RF 6"	2	B03238	12.5	50.0		375	545	35	67.5	151	153	118	145	68	110
7585259 600LBS WN RF STD 3"	10	B03238	12.5	50.0		375	545	35	67.5	151	153	118	145	68	110
7581040 600LBS WN RF XH 3"	25	B03238	12.5	50.0		375	545	35	67.5	151	153	118	145	68	110
7581007 150LBS BL RF 18"	2	B03776	12.5	50.0		375	540	38	74.5	152	154	135	80	118	111
7580205 150LBS SO RF 20"	2	B03776	12.5	50.0		375	540	38	74.5	152	154	135	80	118	111

Heat No./ Batch No.		Chemical Composition (%) C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	CE	NDE UT	MT	PT
	Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020				
	Min		0.150	0.600												
	H	0.176	0.201	1.060	0.015	0.004	0.032	0.077	0.004	0.050	0.001	0.001	0.374			
B03238	P	0.178	0.216	1.060	0.016	0.002	0.036	0.073	0.007	0.050	0.002	0.001	0.376			
	H	0.172	0.220	1.290	0.013	0.007	0.012	0.045	0.006	0.008	0.004	0.019	0.399			
B03776	P	0.174	0.220	1.290	0.011	0.003	0.012	0.044	0.006	0.008	0.001	0.015	0.400			

BLANK

REMARK * H : Heat Analysis P : Product Analysis

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

ST&H CORPORATION QUALITY MANAGEMENT

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

CLIENTE / Customer / Client
CCTF CORPORATION (ONTARIO)
4151 NORTH SERVICE RD.
UNIT 2
BURLINGTON, ONTARIO
L7L4X6 - CANADA
CAN

CERTIFICADO DE INSPECCION

UNE EN 10204:06 / 3.1
Inspection Certificate - Certificat de Réception ISO 10474:15 / 3.1

FECHA: Date: 21/05/2019 N.º No. 203034 HOJA: Page: 2

SGI 1922164 SGI 6000236 SGI 6009987

ULMA FORJA, S.COOP.
Management Systems certified by LRQAE
Certified acc. PED 97/23/EC+AD2000-W0
PED 14/68/UE
by TÜV Rheinland
N.º 01 202 E/Q 02 7443
Bº Zubillaga, 3 - Apdo. 14
20560 OÑATI (Gipuzkoa) SPAIN
Tel.: 34 - 943 780552
Fax: 34 - 943 781808
E-mail: ulma@ulmapiping.com

PRODUCTO Article - Produit: FLANGES

SU PEDIDO N.º Your Order No. Votre Cde. N.º: 4039198-00

DE of. - de: 18/02/2019

NORMAS APLICABLES Requirements - Normes Applicables: ASME B16.5-17

MARCA DEL FABRICANTE Mark of factory Marque du fabricant

Packing 148506

MATERIAL CORRESPONDIENTE Material Correspondent - Qualité: ASME SA350LF2CL1-2-17, ASTM A350LF2CL1-2-18

MODO DE FUSION (*) Steel Making - Elaboration de l'acier E = Elec. Y = Oxigeno básico: NACE MR0175/ISO15156-02/03-15 & NACE MR0103/ISO17495-15 Clause 7.2.1.4, Annex A.2 and SSC Region 3. CSA-Z245.12-17 GR248 CAT II-SS (WN & BLIND FLANGES ONLY)

DEPARTAMENTO Section Département: QUALITY ASSURANCE

PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	LOTE	OBSERVACIONES Remarks Observations (*)	COLADA N.º Heat No N.º Coulée	RESISTENCIA T.Strength Resist Rupt N/mm2	LIMITE ELAST Y.Strength 0.2 % N/mm2	ALARGAM. Elongation Allongement Lo:50mm/4o %	ESTRICCION Red Area Striction %	RESILIENCIA Impact test Résilience Joules			CHARPY V 10x10mm MEDIA Average Moyenne	°C	DUREZA Hardness Dureté HBW	
15 7586824	56	WN 4 150LB STD/40 RF A350LF2	18M912	NE	A07A9	502	300	36,44	71,53	102	137	99	113	-50	146	148
22 7585496	24	WN 6 300LB STD/40 RF A350LF2	01F901	NE	B88A8	494	301	36,14	74,27	125	124	55	101	-50	138	138
30 7586646	10	BLIND 2 600LB RF A350LF2	09A901	NE	A63A9	512	314	30,40	72,40	112	106	100	106	-50	140	146

COLADA N.º Heat No Ladle: L Product: P	COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE																Origin of Steel
	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	B %	CEq %		
A07A9 L	0,192	0,206	1,138	0,008	0,004	0,037	0,050	0,017	0,000	0,002	0,053	0,034	0,001	0,0002	0,40		Germany
B88A8 L	0,182	0,206	1,153	0,010	0,005	0,050	0,057	0,014	0,001	0,002	0,061	0,028	0,001	0,0004	0,40		Germany
A63A9 L	0,189	0,223	1,151	0,011	0,005	0,049	0,055	0,012	0,001	0,002	0,094	0,028	0,002	0,0002	0,40		Germany

- Las dimensiones y la condición superficial se hallaron satisfactorias.
- Dimension and surface condition were found acceptable.
- Les dimensions et états de surface sont satisfaisants.

- Los materiales citados cumplen las normas aplicables.
- Manufacturing requirements are satisfied.
- Les normes applicables sont respectées.

EL INSPECTOR
Works Inspector - L'Inspecteur

ULMA FORJA S. COOP.
Dpto. de Garantía de calidad
Quality Assurance Dept.

(*) OBSERVACIONES: Remarks Observations: N_NORMALIZED AT 900 C AND ALLOWED TO COOL IN STILL AIR.

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST&H CORPORATION
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

Certificate No. MJH0427-06/08 **Date :** JUN. 17. 2019
Customer CCTF CORPORATION
Contract No. 4039342-00
Spec. For Material ASTM A105N-18,ASME SA105N-17,ASTM A350 LF2 CL1-18,ASME SA350 LF2 CL1-17,NACE MR0175/ISO15156-2:2015,NACE MR0103/ISO17945:2015
Heat Treatment 930°C NORMALIZED & A.C **Dimensional inspection**ASME B16.5 - 2017

ITEM / SIZE		Q'ty	Heat No./ Batch No.	Size of Test Specimen D mm	Size of Test Specimen GL mm	Tension Test	Y.S MPa	T.S MPa	E.L %	R.A %	Hardness Test (HB)		Charpy Impact Test (10X10mm Specimen Size) Indiv. 16J	Ave. 20J	Notch V	Temp. -46°C
						Max		655			187		Test Result (J)			Ave.(J)
				12.5	50.0	Min	250	485	22.0	30.0	137					
7580219	150LBS SO RF 10"	15	B01568B	12.5	50.0		356	515	39	76	147	154	83	78	81	80
7580220	150LBS SO RF 12"	25	B01568B	12.5	50.0		356	515	39	76	147	154	83	78	81	80
7586509	150LBS SO RF 6"	70	B01568B	12.5	50.0		356	515	39	76	147	154	83	78	81	80
7580218	150LBS SO RF 8"	12	B01568B	12.5	50.0		356	515	39	76	147	154	83	78	81	80
7580200	150LBS WN RF STD 1"	15	B01568B	12.5	50.0		356	515	39	76	147	154	83	78	81	80
7586832	150LBS WN RF STD 6"	45	B01568B	12.5	50.0		356	515	39	76	147	154	83	78	81	80
7583949	300LBS WN RF STD 8"	40	B01568B	12.5	50.0		356	515	39	76	147	154	83	78	81	80
7580203	150LBS SO RF 16"	4	B01979E	12.5	50.0		344	541	35	75.5	150	152	60	65	59	61
7580204	150LBS SO RF 18"	5	B01979E	12.5	50.0		344	541	35	75.5	150	152	60	65	59	61
7580205	150LBS SO RF 20"	2	B01979E	12.5	50.0		344	541	35	75.5	150	152	60	65	59	61

Heat No./ Batch No.		Chemical Composition (%) C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb						CE	NDE UT	MT	PT
	Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020									
	Min		0.150	0.600																	
	H	0.172	0.243	1.290	0.011	0.004	0.026	0.094	0.017	0.020	0.001	0.001						0.412			
B01568B	P	0.177	0.250	1.300	0.012	0.005	0.029	0.101	0.015	0.020	0.002	0.001						0.420			
	H	0.177	0.212	1.270	0.009	0.003	0.010	0.061	0.004	0.009	0.001	0.012						0.403			
B01979E	P	0.180	0.229	1.280	0.009	0.002	0.012	0.038	0.006	0.012	0.001	0.015						0.403			

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REMARK * H : Heat Analysis P : Product Analysis * C:Mn = 1≤5

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST&H CORPORATION
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

Certificate No. MJH0427-07/08 **Date :** JUN. 17. 2019
Customer CCTF CORPORATION
Contract No. 4039342-00
Spec. For Material ASTM A105N-18,ASME SA105N-17,ASTM A350 LF2 CL1-18,ASME SA350 LF2 CL1-17,NACE MR0175/ISO15156-2:2015,NACE MR0103/ISO17945:2015
Heat Treatment 930℃ NORMALIZED & A.C **Dimensional inspection**ASME B16.5 - 2017

ITEM / SIZE		Q'ty	Heat No./ Batch No.	Size of Test Specimen D mm	Size of Test Specimen GL mm	Tension Test	Y.S MPa	T.S MPa	E.L %	R.A %	Hardness Test (HB)		Charpy Impact Test (10X10mm Specimen Size) Indiv. 16J	Ave. 20J	Notch V	Temp. -46℃ Ave.(J)
						Max		655			187		Test Result (J)			
				12.5	50.0	Min	250	485	22.0	30.0	137					
7589925	300LBS SO RF 12"	2	B01979E	12.5	50.0		344	541	35	75.5	150	152	60	65	59	61
7580216	150LBS SO RF 1"	15	B05432B	12.5	50.0		357	515	41	76	150	154	89	86	99	91
7586504	150LBS SO RF 2"	25	B05432B	12.5	50.0		357	515	41	76	150	154	89	86	99	91
7586507	150LBS SO RF 3"	50	B05432B	12.5	50.0		357	515	41	76	150	154	89	86	99	91
7586508	150LBS SO RF 4"	80	B05432B	12.5	50.0		357	515	41	76	150	154	89	86	99	91
7587602	150LBS SW RF XH 1"	25	B05432B	12.5	50.0		357	515	41	76	150	154	89	86	99	91
7587603	150LBS SW RF XH 1 1/2"	25	B05432B	12.5	50.0		357	515	41	76	150	154	89	86	99	91
7587600	150LBS SW RF XH 1/2"	250	B05432B	12.5	50.0		357	515	41	76	150	154	89	86	99	91
7587604	150LBS SW RF XH 2"	50	B05432B	12.5	50.0		357	515	41	76	150	154	89	86	99	91
7587601	150LBS SW RF XH 3/4"	25	B05432B	12.5	50.0		357	515	41	76	150	154	89	86	99	91

Heat No./ Batch No.		Chemical Composition (%) C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb						CE	NDE UT	MT	PT
	Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020									
	Min		0.150	0.600																	
	H	0.177	0.212	1.270	0.009	0.003	0.010	0.061	0.004	0.009	0.001	0.012						0.403			
B01979E	P	0.180	0.229	1.280	0.009	0.002	0.012	0.038	0.006	0.012	0.001	0.015						0.403			
	H	0.175	0.251	1.250	0.014	0.003	0.010	0.010	0.003	0.016	0.001	0.001						0.387			
B05432B	P	0.178	0.249	1.250	0.014	0.003	0.011	0.011	0.004	0.015	0.001	0.001						0.391			

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REMARK * H : Heat Analysis P : Product Analysis * C:Mn = 1≤5

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

MLTS_6056-18945-1
Heat# 7690075, 7690149, 7690199

CERTIFIED MILL TEST REPORT

The Best Value - *Price, Quality, Service* All The Time.

LOG NO. F00000000100245 Page 1 of 2

BONNEY FORGE CORPORATION
P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

CUSTOMER: CCTF CORPORATION **DATE** 10/04/2017

CUSTOMER ORDER NO.: 4037926-00 **BONNEY ORDER NO.** B000229128

SHIP TO: CCTF CORPORATION (BURLINGTON)
4151 NORTH SERVICE ROAD
UNIT 2
BURLINGTON ON L7L 4X6
Canada

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:	
3	50	50196	36-3X1 3M LF2 FLEX T	SA/A350 LF2 CL1
7690075			Al 0.032 C 0.200 Co 0.002 Cr 0.040 Cu 0.030 Mn 1.050 Mo 0.003 Nb 0.014	
			Ni 0.020 P 0.005 S 0.019 Si 0.270 V 0.003	
			CE(Long Formula) = 0.39	
			T/S(PSI) 71,610 Y/S(PSI) 47,449 EL(%) 36.85 RA(%) 57.04	
			Brinell 135 BHN 135 BHN	
			Charpy -50 F 77/66/56 (Ft-Lbs)	
			Average 66.30	
5	50	50076	36-11/2X3/4 3M LF2 FLEX S	SA/A350 LF2 CL1
7690149			Al 0.027 C 0.200 Co 0.004 Cr 0.050 Cu 0.100 Mn 0.970 Mo 0.016 Nb 0.013	
			Ni 0.060 P 0.011 S 0.019 Si 0.220 V 0.003	
			CE(Long Formula) = 0.39	
			T/S(PSI) 76,500 Y/S(PSI) 53,000 EL(%) 31.00 RA(%) 64.00	
			Brinell 159 BHN 146 BHN	
			Charpy -50 F 42/58/45 (Ft-Lbs)	
			Average 48.30	
6	50	50196	36-3X1 3M LF2 FLEX S	SA/A350 LF2 CL1
7690199			Al 0.032 C 0.200 Co 0.002 Cr 0.040 Cu 0.030 Mn 1.050 Mo 0.003 Nb 0.014	
			Ni 0.020 P 0.005 S 0.019 Si 0.270 V 0.003	
			CE(Long Formula) = 0.39	
			T/S(PSI) 71,610 Y/S(PSI) 47,449 EL(%) 36.85 RA(%) 57.04	
			Brinell 135 BHN 135 BHN	
			Charpy -50 F 77/66/56 (Ft-Lbs)	
			Average 66.30	

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Kylee Ruiz

Kylee Ruiz
QUALITY PROCESS MANAGER

CMTR: REV2

CERTIFIED MILL TEST REPORT

The Best Value - *Price, Quality, Service* All The Time.

LOG NO. F00000000100245 Page 2 of 2

BONNEY FORGE CORPORATION
P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

CUSTOMER: CCTF CORPORATION **DATE** 10/04/2017

CUSTOMER ORDER NO.: 4037926-00 **BONNEY ORDER NO.** B000229128

SHIP TO: CCTF CORPORATION (BURLINGTON)
4151 NORTH SERVICE ROAD
UNIT 2
BURLINGTON ON L7L 4X6
Canada

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO. CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. CERTIFYING TO ASTM A350 LF2 07 REVISION.
3. THE MATERIAL OF THE FITTINGS SUPPLIED IS ASTM A350-LF2 BUT MEETS THE REQUIREMENTS OF ASME SA350-LF2.
4. THE CHARPY V-NOTCH IMPACT TEST WAS PERFORMED AT -50 DEGREES FAHRENHEIT IN ACCORDANCE WITH A350-LF2.
5. THE MATERIAL SUPPLIED AS A350 LF2 CL1 MEETS THE REQUIREMENTS OF BOTH NACE MR0103-2007 AND NACE MR0175/ISO 15156-2.
6. THE MATERIAL SUPPLIED WAS NORMALIZED IN ACCORDANCE WITH ASTM A350 HEAT TREATING REQUIREMENTS.
7. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
8. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE REPORTED IN PSI.
9. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Kylee Ruiz

Kylee Ruiz
QUALITY PROCESS MANAGER

CMTR: REV2

MLTS_6056-18945
Heat# B01568B B03238 50313

CCTS CORPORATION

4151 North Service Road, Burlington, ON L7L 4X6 (905) 335-5320

Date: 8/13/2019

Mill Test Reports

Invoice: 1599535-00
PO: 2610160-00

Customer: 27403-261
A.B.F. MINES
1310 AVE DAVY
ROUYN-NORANDA, QC J9Y 0A8

Line	Heat#	Product	Description
1	b01568b	7583949	8 300 RF WN FLG STD A350LF2
2	b03238	7586832	6 150 RF WN FLG STD A350LF2
3	50313 **	7690199	1 X 3-36 3000 SOL A350LF2

Heat codes followed by ** have been corrected, change may not show on the packing slip

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST&H CORPORATION
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

Certificate No. MJH0427-06/08 **Date :** JUN. 17. 2019
Customer CCTF CORPORATION
Contract No. 4039342-00
Spec. For Material ASTM A105N-18,ASME SA105N-17,ASTM A350 LF2 CL1-18,ASME SA350 LF2 CL1-17,NACE MR0175/ISO15156-2:2015,NACE MR0103/ISO17945:2015
Heat Treatment 930°C NORMALIZED & A.C **Dimensional inspection**ASME B16.5 - 2017

ITEM / SIZE		Q'ty	Heat No./ Batch No.	Size of Test Specimen D mm	Size of Test Specimen GL mm	Tension Test	Y.S MPa	T.S MPa	E.L %	R.A %	Hardness Test (HB)		Charpy Impact Test (10X10mm Specimen Size) Indiv. 16J	Ave. 20J	Notch V	Temp. -46°C
						Max		655			187					
				12.5	50.0	Min	250	485	22.0	30.0	137		Test Result (J)			Ave.(J)
7580219	150LBS SO RF 10"	15	B01568B	12.5	50.0		356	515	39	76	147	154	83	78	81	80
7580220	150LBS SO RF 12"	25	B01568B	12.5	50.0		356	515	39	76	147	154	83	78	81	80
7586509	150LBS SO RF 6"	70	B01568B	12.5	50.0		356	515	39	76	147	154	83	78	81	80
7580218	150LBS SO RF 8"	12	B01568B	12.5	50.0		356	515	39	76	147	154	83	78	81	80
7580200	150LBS WN RF STD 1"	15	B01568B	12.5	50.0		356	515	39	76	147	154	83	78	81	80
7586832	150LBS WN RF STD 6"	45	B01568B	12.5	50.0		356	515	39	76	147	154	83	78	81	80
7583949	300LBS WN RF STD 8"	40	B01568B	12.5	50.0		356	515	39	76	147	154	83	78	81	80
7580203	150LBS SO RF 16"	4	B01979E	12.5	50.0		344	541	35	75.5	150	152	60	65	59	61
7580204	150LBS SO RF 18"	5	B01979E	12.5	50.0		344	541	35	75.5	150	152	60	65	59	61
7580205	150LBS SO RF 20"	2	B01979E	12.5	50.0		344	541	35	75.5	150	152	60	65	59	61

Heat No./ Batch No.		Chemical Composition (%) C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	CE	NDE UT	MT	PT
	Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020				
	Min		0.150	0.600												
	H	0.172	0.243	1.290	0.011	0.004	0.026	0.094	0.017	0.020	0.001	0.001	0.412			
B01568B	P	0.177	0.250	1.300	0.012	0.005	0.029	0.101	0.015	0.020	0.002	0.001	0.420			
	H	0.177	0.212	1.270	0.009	0.003	0.010	0.061	0.004	0.009	0.001	0.012	0.403			
B01979E	P	0.180	0.229	1.280	0.009	0.002	0.012	0.038	0.006	0.012	0.001	0.015	0.403			

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REMARK * H : Heat Analysis P : Product Analysis * C:Mn = 1≤5

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST&H CORPORATION
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

Certificate No. MJH0103-10/16 **Date :** AUG. 27. 2018
Customer CCTF CORPORATION
Contract No. 4038603-00
Spec. For Material ASTM A105N-14,ASME SA105N-17,ASTM/ASME A/SA350 LF2 CL1-17,NACE MR0175/ISO 15156-2:2015,NACE MR0103/ISO 17495-1:2016
Heat Treatment 930℃ NORMALIZED & A.C **Dimensional inspection** ASME B16.5 - 2017

ITEM / SIZE	Q'ty	Heat No./ Batch No.	Size of Test Specimen		Tension Test				Hardness Test (HB)		Charpy Impact Test (10X10mm Specimen Size)			
			D	GL		Y.S	T.S	E.L	R.A		Indiv.	Ave.	Notch	Temp.
			mm	mm	Max	MPa	MPa	%	%		16J	20J	V	-46℃
			12.5	50.0	Min	250	485	22.0	30.0	187	Test Result (J)			Ave.(J)
7586502 150LBS TH RF 6"	2	B03238	12.5	50.0		375	545	35	67.5	151 153	118	145	68	110
7586824 150LBS WN RF STD 4"	50	B03238	12.5	50.0		375	545	35	67.5	151 153	118	145	68	110
7586832 150LBS WN RF STD 6"	50	B03238	12.5	50.0		375	545	35	67.5	151 153	118	145	68	110
7585267 150LBS WN RF XH 4"	10	B03238	12.5	50.0		375	545	35	67.5	151 153	118	145	68	110
7580014 300LBS SO RF 4"	5	B03238	12.5	50.0		375	545	35	67.5	151 153	118	145	68	110
7587735 300LBS SO RF 6"	2	B03238	12.5	50.0		375	545	35	67.5	151 153	118	145	68	110
7585259 600LBS WN RF STD 3"	10	B03238	12.5	50.0		375	545	35	67.5	151 153	118	145	68	110
7581040 600LBS WN RF XH 3"	25	B03238	12.5	50.0		375	545	35	67.5	151 153	118	145	68	110
7581007 150LBS BL RF 18"	2	B03776	12.5	50.0		375	540	38	74.5	152 154	135	80	118	111
7580205 150LBS SO RF 20"	2	B03776	12.5	50.0		375	540	38	74.5	152 154	135	80	118	111

Heat No./ Batch No.		Chemical Composition (%)																NDE		
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb					CE	UT	MT	PT
	Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020								
	Min		0.150	0.600																
	H	0.176	0.201	1.060	0.015	0.004	0.032	0.077	0.004	0.050	0.001	0.001					0.374			
B03238	P	0.178	0.216	1.060	0.016	0.002	0.036	0.073	0.007	0.050	0.002	0.001					0.376			
	H	0.172	0.220	1.290	0.013	0.007	0.012	0.045	0.006	0.008	0.004	0.019					0.399			
B03776	P	0.174	0.220	1.290	0.011	0.003	0.012	0.044	0.006	0.008	0.001	0.015					0.400			

BLANK

REMARK * H : Heat Analysis P : Product Analysis

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

CERTIFIED MILL TEST REPORT

The Best Value - *Price, Quality, Service* All The Time.

LOG NO. F00000000110349 Page 1 of 2

BONNEY FORGE CORPORATION
P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

CUSTOMER: CCTF CORPORATION **DATE** 07/13/2018

CUSTOMER ORDER NO.: 4038733-00 **BONNEY ORDER NO.** B000243044

SHIP TO: CCTF CORPORATION (BURLINGTON)
4151 NORTH SERVICE ROAD
UNIT 2
BURLINGTON ON L7L 4X6
Canada

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO. CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:
3	50	50200	36-3/4 X 1/2 3M LF2 FLEX T — SA/A350 LF2 CL1
7690072			Al 0.024 C 0.200 Co 0.002 Cr 0.030 Cu 0.050 Mn 1.040 Mo 0.005 Nb 0.012 Ni 0.020 P 0.006 S 0.022 Si 0.230 V 0.003 CE(Long Formula) = 0.39 T/S(PSI) 71,500 Y/S(PSI) 48,100 EL(%) 35.00 RA(%) 69.00 Brinell Hardness 137 BHN 135 BHN Charpy -50 F 78/55/52 (Ft-Lbs) Average 61.70
4	50	50313	36-3X1 3M LF2 FLEX S — SA/A350 LF2 CL1
7690199			Al 0.036 C 0.200 Co 0.002 Cr 0.060 Cu 0.080 Mn 1.000 Mo 0.006 Nb 0.014 Ni 0.030 P 0.006 S 0.023 Si 0.240 V 0.003 CE(Long Formula) = 0.39 T/S(PSI) 73,427 Y/S(PSI) 48,233 EL(%) 35.25 RA(%) 61.22 Brinell Hardness 135 BHN 135 BHN Charpy -50 F 27/28/33 (Ft-Lbs) Average 29.30
5	100	50295	36-11/2X3/4 3M LF2 FLEX S — SA/A350 LF2 CL1
7690149			Al 0.021 C 0.200 Co 0.002 Cr 0.030 Cu 0.080 Mn 1.020 Mo 0.007 Nb 0.011 Ni 0.030 P 0.005 S 0.023 Si 0.260 V 0.003 CE(Long Formula) = 0.39 T/S(PSI) 73,778 Y/S(PSI) 50,401 EL(%) 36.55 RA(%) 65.23 Brinell Hardness 135 BHN 135 BHN Charpy -50 F 43/68/39 (Ft-Lbs) Average 50.00

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Kylee Ruiz

Kylee Ruiz
QUALITY PROCESS MANAGER

CMTR: REV2

CERTIFIED MILL TEST REPORT

The Best Value - *Price, Quality, Service* All The Time.

LOG NO. F00000000110349

BONNEY FORGE CORPORATION
P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

CUSTOMER: CCTF CORPORATION **DATE** 07/13/2018

CUSTOMER ORDER NO.: 4038733-00 **BONNEY ORDER NO.** B000243044

SHIP TO: CCTF CORPORATION (BURLINGTON)
4151 NORTH SERVICE ROAD
UNIT 2
BURLINGTON ON L7L 4X6
Canada

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO. CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. CERTIFYING TO ASTM A350 LF2 17 REVISION.
3. THE MATERIAL OF THE FITTINGS SUPPLIED IS ASTM A350-LF2 BUT MEETS THE REQUIREMENTS OF ASME SA350-LF2.
4. THE CHARPY V-NOTCH IMPACT TEST WAS PERFORMED AT -50 DEGREES FAHRENHEIT IN ACCORDANCE WITH A350-LF2.
5. THE MATERIAL SUPPLIED AS A350 LF2 CL1 MEETS THE REQUIREMENTS OF BOTH NACE MR0103/ISO 17945 - 2015 & NACE MR0175/ISO 15156-2 - 2015 EDITION.
6. THE MATERIAL SUPPLIED WAS NORMALIZED IN ACCORDANCE WITH ASTM A350 HEAT TREATING REQUIREMENTS.
7. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
8. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE REPORTED IN PSI.
9. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Kylee Ruiz

Kylee Ruiz
QUALITY PROCESS MANAGER

CMTR: REV2

BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, REN-SIN ROAD, REN-WU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C.(81460)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : http://www.bothwell.com.tw E-Mail : box@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

MLTS_6056-18953
Heat# 35596, X1651

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : SEYBOLD INTERNATIONAL CORP. PAGE : 19
CERT NO. : 180410 INVOICE NO. : 5200011852 DATE : 02/12/2018
ORDER NO. : 7013926 L/C NO. : ORIGIN : TAIWAN

ITEM	RAW HEAT NO. / HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. / CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
108	355196 / YB0001	100 PCS	UNION NUT(OCT)-BODY(ROD) LF2 CL1 (N) 1-1/2" 3000# S/W SQK3U1.5-BW C:0.18 Si:0.25 Mn:1.05 P:0.014 S:0.005 Cu:0.04 Cr:0.07 Ni:0.03 Mo:0.01 V:0.003 Nb:0.003 N:0.0099 Ti:0.002 CE:0.38 TS(KSI):73.8 YS 0.2%(KSI):55.5 EL(%):32.5 R.A.(%):69.1 HARDNESS 1(HBW):141 HARDNESS 2(HBW):143 IMPACT TEST -46℃ (-50.8°F) 1:48 J 2:87 J 3:67 J AVG:67 J

1½" #3000 FS SW
union A350LF2

REMARK :
THE MATERIAL SUPPLIED IDENTIFIED AS ASTM A350-15, ASME SA350-2015ED. LF2 CL.1
THE FITTING SUPPLIED IDENTIFIED AS MSS SP-83 - 2014
THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH SPECIFICATION(SURFACE & DIM.) : GOOD
STANDARD : CHEMICAL COMPOSITION(%) & MECHANICAL PROPERTIES.

	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Cb(Nb)
MIN	-	0.15	0.60	-	-	-	-	-	-	-	-
MAX	0.30	0.30	1.35	0.035	0.040	0.40	0.30	0.40	0.12	0.08	0.02
	N	Al	Ti	Zr	CE	TS(KSI)	YS(KSI)	YS 0.2%(KSI)	EL(%)	R of A(%)	HARDNESS(HBW)
MIN	-				-	70		36	22	30	-
MAX	-				0.47	95		-	-	-	197

HEAT TREATMENT : NORMALIZED 900℃(1652°F) A.C.
CONFORM TO NACE MR0175-15/ISO 15156-15/MR0103-15
FULLY KILLED AND FINE GRAIN PRACTICE
FREE FROM RADIATION CONTAMINATION
REF#90817ABW

WE CERTIFY THE ABOVE MENTIONED FITTINGS HAVE BEEN MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH THE SPECIFICATIONS SHOWN

C.C. Huang — Q.C. MANAGER

C.L. Ko — INSPECTOR

柏威鋼工股份有限公司
高雄縣仁武鄉烏林村仁心路 303 號
BOTH-WELL STEEL FITTINGS CO., LTD.
NO.303, JEN-HSIN ROAD JEN-WU HSIANG
KAOHSIUNG HSIEN, TAIWAN R.O.C.(81460)
TEL: 886-7-371-0497, 371-1536, 372-0260 FAX: 886-7-371-3864 , 371-3882
web site :http://www.bothwell.com.tw e-mail:bothwell@www.bothwell.com.tw or box@mail.bothwell.com.tw

An ISO 9001:2000 Registered Manufacturer

ISO 9001 BUREAU VERITAS Certification N° TW00091Q

ANAB ACCREDITED

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN10204/DIN50049/3.1.B

ORIGIN: TAIWAN

CUSTOMER: WEIFANG STEEL CANADA LTD. INVOICE NO: BW089706095 DATE: 12/10/08

CERT NO: 83363-2 ORDER NO: AG0031-LF2 L/C NO: PAGE: 4

ITEM	BOTH WELL HT.CD.	RAW MATERIAL HEAT NO.	DESCRIPTION	QUANTITY	SPECIFICATION: ASTM A350 -04a ASME SA350 -E04 LF2-Class1 DIMENSION: ASME B16.11-2005 SURFACE: BY VISUAL...GOOD
014	Y050	X1651	TEE 3/4" 3000# NPT	300 PC	
023	Y050	X1651	FULL CPLG 1-1/2" 3000# NPT	1000 PC	
029	Y050	X1651	HALF CPLG 1-1/2" 3000# NPT	300 PC	
035	Y050	X1651	CAP 1-1/2" 3000# NPT	400 PC	
036	Y050	X1651	CAP 2" 3000# NPT	600 PC	
070	Y047	X1653	90D ELBOW 2" 3000# S/W	110 PC	
070	Y047	X1653	90D ELBOW 2" 3000# S/W	50 PC	

CHEMICAL COMPOSITION (%)

ITEM	BOTH WELL HT.CD	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Cb(Nb)	N
Min		-	0.150	0.600	-	-	-	-	-	-	-	-	-
Max		0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.400	0.120	0.080	0.020	-
014	Y050	0.200	0.190	1.040	0.007	0.001	0.030	0.060	0.030	0.010	0.001	0.000	-
023	Y050	0.200	0.190	1.040	0.007	0.001	0.030	0.060	0.030	0.010	0.001	0.000	-
029	Y050	0.200	0.190	1.040	0.007	0.001	0.030	0.060	0.030	0.010	0.001	0.000	-
035	Y050	0.200	0.190	1.040	0.007	0.001	0.030	0.060	0.030	0.010	0.001	0.000	-
036	Y050	0.200	0.190	1.040	0.007	0.001	0.030	0.060	0.030	0.010	0.001	0.000	-
070	Y047	0.200	0.220	1.050	0.012	0.001	0.040	0.190	0.040	0.020	0.010	0.000	-
070	Y047	0.200	0.220	1.050	0.012	0.001	0.040	0.190	0.040	0.020	0.010	0.000	-

MECHANICAL TEST

ITEM	BOTH WELL HT.CD	Tensile Strength (KSI)	Yield Strength (KSI)	Elon-Gation (%)	R of A (%)	Hardness (AVG.) (HB)
Min		70.0	36.0	22.0	30.0	-
Max		95.0	-	-	-	197
014	Y050	79.7	60.7	34.6	76.2	151
023	Y050	79.7	60.7	34.6	76.2	151
029	Y050	79.7	60.7	34.6	76.2	151
035	Y050	79.7	60.7	34.6	76.2	151
036	Y050	79.7	60.7	34.6	76.2	151
070	Y047	78.1	58.1	36.2	80.3	144
070	Y047	78.1	58.1	36.2	80.3	144

Remark:
CONFORM TO NACE MR0175-2003/MR0103
STEEL MAKING PROCESS : ELECTRIC FURNACE
HEAT TREATED(℃) NORMALIZED:900℃ TEMPERED:620℃
IMPACT VALUE(CHARPY) -50°F(-46.0℃)

HEAT NO.	HT.CD.	JOULE(J)			AVG.(J)
X1653	Y047	285	272	257	271.333
X1651	Y050	242	188	175	201.667

WE CERTIFY THE ABOVE MENTIONED FITTINGS HAVE BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH THE SPECIFICATIONS SHOWN

C.C. Chin — Q.C. MANAGER CHIN CHENG HSIEH

C.C. Huang — INSPECTOR CHUN CHIEH HUANG

CapProducts, Ltd.
25 Winnipeg St
Vanastra, ON N0M 1L0

Commanding a Higher Standard℠

Phoenix * Capitol * Camco
CapProducts

Certified Material Test Report

Printed: 8/20/2019
Certified: 12/18/2018

Customer
EMCO DISTRIBUTION GROUP
PO BOX 5300 STATION A
LONDON, ON N6A 4N7

P.O. 2610174-00
Tag 3050060

Heat No 174321
Heat Code 87AH
Phoenix Order # 1481945

Material ASTM A333 GR6 2015/ASME SA333 GR6 2015 Edition

Part Number
15111512CSA

Description
1-1/2X6 XHSML BK STL NIPL A333 GR6 CSA

Chemical Properties

C	Mn	P	S	Si	Cu	Ni	Cr
0.1300	1.3200	0.0090	0.0050	0.3100	0.0390	0.0200	0.0600

C Eq. Long
0.3687

Mo	V	Co	Al	Cb	N	Pb	Sn	Ta	Ti
0.0100	0.0040			0.0180					0.0020

Additional Chemical Properties

B				
0.00030				

Cr + Cu + Ni
0.1190

Mechanical Properties

Tensile (PSI)	Yield (PSI)	Elong. % in 2 in. or 4D	R of A	HBW	HBW2
72,374	55,985	37.0%		150	0

Charpy Minimum Impact - ft/lbs

Test 1	Test 2	Test 3	Average	Test Temp.
48	41	49	46.00	-54

* Bend test passed.
We hereby certify that these parts were manufactured, sampled, tested, and inspected in accordance with the product specifications stated and were found to meet the requirements.
We further certify that this material was inspected using independentinspectors conforming to the requirements of EN 10204 3.1. These products meet the requirements of the latest editions of NACE MR0175, NACE MR0103, and ISO 15156. No weld repair has been performed on these products. This material was not exposed to mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession

Comments:

Flattening test passed. Ultrasonic test passed.
Charpy V Impact Tested at -54° C. Specimen size - 10 x 3.33 mm
Hot finished, Normalized

CapProducts, Ltd.
25 Winnipeg St
Vanastra, ON N0M 1L0

Commanding a Higher Standard℠

Phoenix * Capitol * Camco
CapProducts
Certified Material Test Report

Printed: 8/20/2019
Certified: 06/07/2019

Customer
EMCO DISTRIBUTION GROUP
PO BOX 5300 STATION A
LONDON, ON N6A 4N7

P.O. 2610174-00
Tag 3050060

Heat No 608622
Heat Code 87HU
Phoenix Order # 1481945

Material ASTM A333 GR6 2015/ASME SA333 GR6 2015 Edition

189553-60856

Part Number
15111512CSA

Description
1-1/2X6 XHSML BK STL NIPL A333 GR6 CSA

Chemical Properties

C	Mn	P	S	Si	Cu	Ni	Cr
0.1300	0.7200	0.0140	0.0030	0.2000	0.0900	0.0700	0.0900

C Eq. Long
0.2833

Mo	V	Co	Al	Cb	N	Pb	Sn	Ta	Ti
0.0200	0.0030			0.0140					0.0020

Additional Chemical Properties

Boron				
0.00010				

Cr + Cu + Ni
0.2500

Mechanical Properties

Tensile (PSI)	Yield (PSI)	Elong. % in 2 in. or 4D	R of A	HBW	HBW2
64,107	44,672	34.0%		134	0

Charpy Minimum Impact - ft/lbs

Test 1	Test 2	Test 3	Average	Test Temp.
44	44	46	44.67	-55

* Hydro test passed. at 3000 psi.

* Bend test passed.
We hereby certify that these parts were manufactured, sampled, tested, and inspected in accordance with the product specifications stated and were found to meet the requirements.
We further certify that this material was inspected using independentinspectors conforming to the requirements of EN 10204 3.1. These products meet the requirements of the latest editions of NACE MR0175, NACE MR0103, and ISO 15156. No weld repair has been performed on these products. This material was not exposed to mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession

Comments:

Flattening test passed.
Charpy V Impact Tested at -55° C. Specimen size - 10 x 4 mm.
Normalized

CapProducts, Ltd.
25 Winnipeg St
Vanastra, ON N0M 1L0

Commanding a Higher Standard℠

Phoenix * Capitol * Camco
CapProducts
Certified Material Test Report

Printed: 8/20/2019
Certified: 06/07/2019

Customer
EMCO DISTRIBUTION GROUP
PO BOX 5300 STATION A
LONDON, ON N6A 4N7

P.O. 2610174-00
Tag 3050060

Heat No 608622
Heat Code 87HU
Phoenix Order # 1481945

Material ASTM A333 GR6 2015/ASME SA333 GR6 2015 Edition

MLTS_6056-18953-1
Heat# 608622, 174321

Part Number
15111512CSA

Description
1-1/2X6 XHSML BK STL NIPL A333 GR6 CSA

Chemical Properties

C	Mn	P	S	Si	Cu	Ni	Cr
0.1300	0.7200	0.0140	0.0030	0.2000	0.0900	0.0700	0.0900

C Eq. Long
0.2833

Mo	V	Co	Al	Cb	N	Pb	Sn	Ta	Ti
0.0200	0.0030			0.0140					0.0020

Additional Chemical Properties

Boron				
0.00010				

Cr + Cu + Ni
0.2500

Mechanical Properties

Tensile (PSI)	Yield (PSI)	Elong. % in 2 in. or 4D	R of A	HBW	HBW2
64,107	44,672	34.0%		134	0

Charpy Minimum Impact - ft/lbs

Test 1	Test 2	Test 3	Average	Test Temp.
44	44	46	44.67	-55

* Hydro test passed. at 3000 psi.

* Bend test passed.
We hereby certify that these parts were manufactured, sampled, tested, and inspected in accordance with the product specifications stated and were found to meet the requirements.
We further certify that this material was inspected using independentinspectors conforming to the requirements of EN 10204 3.1. These products meet the requirements of the latest editions of NACE MR0175, NACE MR0103, and ISO 15156. No weld repair has been performed on these products. This material was not exposed to mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession

Comments:

Flattening test passed.
Charpy V Impact Tested at -55° C. Specimen size - 10 x 4 mm.
Normalized

CapProducts, Ltd.
25 Winnipeg St
Vanastra, ON N0M 1L0

Commanding a Higher Standard℠

Phoenix * Capitol * Camco
CapProducts

Certified Material Test Report

Printed: 8/20/2019
Certified: 12/18/2018

Customer
EMCO DISTRIBUTION GROUP
PO BOX 5300 STATION A
LONDON, ON N6A 4N7

P.O. 2610174-00
Tag 3050060

Heat No 174321
Heat Code 87AH
Phoenix Order # 1481945

Material ASTM A333 GR6 2015/ASME SA333 GR6 2015 Edition

Part Number
15111512CSA

Description
1-1/2X6 XHSML BK STL NIPL A333 GR6 CSA

Chemical Properties

C	Mn	P	S	Si	Cu	Ni	Cr
0.1300	1.3200	0.0090	0.0050	0.3100	0.0390	0.0200	0.0600

C Eq. Long
0.3687

Mo	V	Co	Al	Cb	N	Pb	Sn	Ta	Ti
0.0100	0.0040			0.0180					0.0020

Additional Chemical Properties

B				
0.00030				

Cr + Cu + Ni
0.1190

Mechanical Properties

Tensile (PSI)	Yield (PSI)	Elong. % in 2 in. or 4D	R of A	HBW	HBW2
72,374	55,985	37.0%		150	0

Charpy Minimum Impact - ft/lbs

Test 1	Test 2	Test 3	Average	Test Temp.
48	41	49	46.00	-54

* Bend test passed.
We hereby certify that these parts were manufactured, sampled, tested, and inspected in accordance with the product specifications stated and were found to meet the requirements.
We further certify that this material was inspected using independentinspectors conforming to the requirements of EN 10204 3.1. These products meet the requirements of the latest editions of NACE MR0175, NACE MR0103, and ISO 15156. No weld repair has been performed on these products. This material was not exposed to mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession

Comments:

Flattening test passed. Ultrasonic test passed.
Charpy V Impact Tested at -54° C. Specimen size - 10 x 3.33 mm
Hot finished, Normalized

MLTS_6056-18971
Heat# B03459

CCTF CORPORATION

4151 North Service Road, Burlington, ON L7L 4X6 (905) 335-5320

Date: 9/9/2019

Mill Test Reports

Invoice: 1600715-00
PO: 2610192

Customer: 27403-261
A.B.F. MINES/2985080 CANA 261
1310 AVE DAVY
.
ROUYN NORANDA, QC J9Y 0A8

Line	Heat#	Product	Description
1	b03459	7585585	6 150 RF BLIND FLG A350LF2

Heat codes followed by ** have been corrected, change may not show on the packing slip

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST&H CORPORATION
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

CE
RPS 0160308 / 01

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

Certificate No. MJH0290-01/05 **Date :** FEB. 14. 2019
Customer CCTF CORPORATION
Contract No. 4039095-00
Spec. For Material ASTM A105N-18,ASME SA105N-17,ASTM A350 LF2 CL1-18,ASME SA350 LF2 CL1-17,NACE MR0175/ISO 15156-2:2015,NACE MR0103/ISO 17495-1:2016
Heat Treatment 930℃ NORMALIZED & A.C **Dimensional inspection**ASME B16.5 - 2017

ITEM / SIZE		Q'ty	Heat No./ Batch No.	Size of Test Specimen		Tension Test					Hardness Test (HB)		Charpy Impact Test (10X10mm Specimen Size)			
				D	GL		Y.S MPa	T.S MPa	E.L %	R.A %			Indiv. 16J	Ave. 20J	Notch V	Temp. -46℃
				mm	mm	Max		655			187		Test Result (J)			Ave.(J)
				12.5	50.0	Min	250	485	22.0	30.0						
7585585	150LBS BL RF 6"	20	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7585860	150LBS BL RF 8"	10	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7580218	150LBS SO RF 8"	20	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7580202	150LBS SO RF 14"	2	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7586502	150LBS TH RF 6"	5	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7586824	150LBS WN RF STD 4"	50	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7586832	150LBS WN RF STD 6"	30	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7586891	150LBS WN RF STD 8"	20	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7583949	300LBS WN RF STD 8"	10	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80
7585321	150LBS WN RF STD 10"	20	B03459	12.5	50.0		330	520	34	76	150	156	80	75	86	80

Heat No./ Batch No.		Chemical Composition (%)																	NDE		
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb						CE	UT	MT	PT
	Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020									
	Min		0.150	0.600																	
	H	0.163	0.226	1.230	0.012	0.002	0.057	0.138	0.017	0.147	0.001	0.006						0.412			
B03459	P	0.162	0.224	1.240	0.011	0.002	0.054	0.136	0.014	0.138	0.001	0.001						0.411			
										BLANK											

REMARK * H : Heat Analysis P : Product Analysis

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

ST&H CORPORATION QUALITY MANAGEMENT

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

6

CAMERON

NEWCO® | OIC® | DOUGLAS CHERO™

13127 Trinity Dr., Stafford, TX 77477
Tel: 281-302-4900 Fax: 281-302-4801

Material Test Report

06/17/19

Cert No: 1087586

Cameron Newco is a 9001 certified registered company
CRN: OC7998.5C - EN 10204-3.1

Item No: B3080030F*LCCW27B*****GA
Size/Type: 8" / Swing Check
Quantity: 1
Country of Origin: China
FigNo: 33F--LCC4/2-NC

Inspection
Dimension: Passed
Visual: Passed

Valve Materials meet the requirements for NACE MR0103 and NACE MR0175

Pressure Test Result

Item	Test Pressure (Mpa)	Test Pressure (PSI)	Duration (sec)	Test Result
Shell	7.757	1125	120	Passed
Backseat	-	-	-	
Seat Hydro	5.688	825	120	Passed
Seat Air	-	-	-	

Standard: API 598 / ASME B16.34

Customer: EMCO
Customer Number: 32043
Customer PO: 2610091-00
Cameron SO: QRC SO# 1007020
Project Name:
Valve Serial No:
Description: 300# RF A352-LCC (TRIM 12) BC SWING CHECK NACE
Customer Tag No:

MLTS_6056-18734
Cert# 1087586

Part: Body Type 3.1 — Material Code: A352 LCC — Heat No: N9183W

Heat Treatment: QUENCHING+TEMPERING
Notes:

Chem Comp (%)	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	V
Spec: Min:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max:	0.25	0.50	0.30	1.20	0.20	0.50	0.040	0.05	0.60	0.03
Val:	0.180	0.040	0.018	1.040	0.002	0.014	0.021	0.010	0.520	0.004

Physical Props	Tensile KSI	Yield KSI	Elong %	Reduct %	Hard(HB)
	70.0	39.9	22.0	35.0	100.0
	95.0	999.9	100.0	100.0	225.0
	79.0	54.4	32.0	66.0	169.0

Impact Tests @-50 deg F	lb/ft
	# 1: 140
	# 2: 18
	# 3: 20
	Avg: 59

Part: Bonnet/Cap Type 3.1 — Material Code: A350 LF2 — Heat No: LF2-B025

Heat Treatment: QUENCHING+TEMPERING
Notes:

Chem Comp (%)	C	Cr	Cu	Mn	Mo	Nb	Ni	P	S	Si	V
Spec: Min:	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.001	0.00	0.15	0.00
Max:	0.30	0.30	0.40	1.35	0.12	0.02	0.40	0.035	0.04	0.30	0.08
Val:	0.220	0.200	0.210	0.900	0.070	0.000	0.220	0.010	0.013	0.210	0.010

Physical Props	Tensile KSI	Yield KSI	Elong %	Reduct %	Hard(HB)
	70.0	36.0	22.0	30.0	1.0
	95.0	999.9	100.0	100.0	197.0
	81.2	38.4	35.0	50.0	170.0

Impact Tests @-50 deg F	lb/ft
	# 1: 36
	# 2: 25
	# 3: 47
	Avg: 36

Comments: Cameron declares that the parts above are in accordance with applicable material specification and purchase order requirements.
No Asbestos is contained in this product. Packing: | Gasket: Graphite Spiral Wound (316)
Valves covered in this certificate are in full compliance with purchase order requirements and specifications.

MTR created by: DR

Signature 06/17/19

Material Test Report

06/17/19

Cert No: 1087587

CAMERON
NEWCO® | OIC® | DOUGLAS CHERO™

13127 Trinity Dr., Stafford, TX 77477
Tel: 281-302-4900 Fax: 281-302-4801

Cameron Newco is a 9001 certified registered company
CRN: OC7998.5C - EN 10204-3.1

Item No: B3080030F*LCCW27B*****GA
Size/Type: 8" / Swing Check
Quantity: 1
Country of Origin: China
FigNo: 33F--LCC4/2-NC

Inspection
Dimension: Passed
Visual: Passed

Valve Materials meet the requirements for NACE MR0103 and NACE MR0175

Pressure Test Result

Item	Test Pressure (Mpa)	Test Pressure (PSI)	Duration (sec)	Test Result
Shell	7.757	1125	120	Passed
Backseat	-	-	-	
Seat Hydro	5.688	825	120	Passed
Seat Air	-	-	-	

Standard: API 598 / ASME B16.34

Customer: EMCO
Customer Number: 32043
Customer PO: 2610091-00
Cameron SO: QRC SO# 1007020
Project Name:
Valve Serial No:
Description: 300# RF A352-LCC (TRIM 12) BC SWING CHECK NACE
Customer Tag No:

MLTS_6056-18734
Cert# 1087587

Part: Body Type 3.1 — Material Code: A352 LCC — Heat No: N9158W

Heat Treatment: QUENCHING+TEMPERING
Notes:

Chem Comp (%)	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	V
Spec: Min:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max:	0.25	0.50	0.30	1.20	0.20	0.50	0.040	0.05	0.60	0.03
Val:	0.190	0.025	0.015	1.090	0.004	0.014	0.023	0.009	0.550	0.005

Physical Props	Tensile KSI	Yield KSI	Elong %	Reduct %	Hard(HB)
	70.0	39.9	22.0	35.0	100.0
	95.0	999.9	100.0	100.0	225.0
	85.6	59.5	33.0	66.0	180.0

Impact Tests @-50 deg F (lb/ft): # 1: 30, # 2: 20, # 3: 23, Avg: 25

Part: Bonnet/Cap Type 3.1 — Material Code: A350 LF2 — Heat No: LF2-B025

Heat Treatment: QUENCHING+TEMPERING
Notes:

Chem Comp (%)	C	Cr	Cu	Mn	Mo	Nb	Ni	P	S	Si	V
Spec: Min:	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.001	0.00	0.15	0.00
Max:	0.30	0.30	0.40	1.35	0.12	0.02	0.40	0.035	0.04	0.30	0.08
Val:	0.220	0.200	0.210	0.900	0.070	0.000	0.220	0.010	0.013	0.210	0.010

Physical Props	Tensile KSI	Yield KSI	Elong %	Reduct %	Hard(HB)
	70.0	36.0	22.0	30.0	1.0
	95.0	999.9	100.0	100.0	197.0
	81.2	38.4	35.0	50.0	170.0

Impact Tests @-50 deg F (lb/ft): # 1: 36, # 2: 25, # 3: 47, Avg: 36

Comments: Cameron declares that the parts above are in accordance with applicable material specification and purchase order requirements.
No Asbestos is contained in this product. Packing: | Gasket: Graphite Spiral Wound (316)
Valves covered in this certificate are in full compliance with purchase order requirements and specifications.

MTR created by: DR

Signature 06/17/19

MLTS_6056-18734
Cert# GATE BERIC

M. A. Stewart & Sons Ltd.
VALVES AND FITTINGS

HEAT / SERIAL NUMBER RECORD

(FORM 4.15.4A)

COMPANY; Emco / EQuipment - KN (for ABF mines)
PAGE; 1 OF 1
BRANCH; Rouyn - Noranda, QC
MAS SALES REGISTER; 1436324
ATTN; Richard Knight
DATE June 10/19
PO# 26/0090 - 00

ITEM	QTY	SIZE	VALVE NO.	BODY	BONNET#/CAP#	~~ACTUATOR#~~ ~~SOLENOID# INDICATOR#~~
1	3	8"	Beric	HCNNC	HCNNC	DF-01-105-180206-12
2			103-RF-AH12-H-N	LDRAC	LDRAC	DF-01-306-180901-12
3				LDRAC	LDRAC	DF-01-305-180901-12.
7						
8	1	8"	Beric	LDRAC	LDRAC	DF-01-250-180901-12
9			101-RF-AH12-H-N			
10						
11						
12	2	6"	Beric	GDN71	GDN71	DF-01-216-190116-12
13			101-RF-AH12-H-N	LDRAC	LDRAC	DF-01-247-180901-12
14						
15						
16	1	6"	Beric	GDN71	GDN71	DF-01-228-190116-12
17			301-RF-FH12-X-N			
18						
19						
20						
21						
22						
23						
24						
25						

FAX STAMP

MATERIAL TEST REPORT

(CHEMICAL, PHYSICAL & HYDROSTATIC)

Beric-Davis Companies International, Ltd.
6059 South Loop East
Houston, TX 77087
Phone: 713 673-2073
Fax: 713 673-4641

DATE : SEP.1.2018
ARTICLE : 8 GATE VALVE RF 300 TRIM 12
FIGURE. NO. : 103-08-RF-AH12-H-N
SERIAL NO. : DF-01-305-180901-12

TAG NO.: 103-08-RF-AH12-H-N

SIZE :	NPS 8	Class Rating:	300	Q'ty :	1 Pcs

PARTS NAME		Body (BD)	Bonnet (BN)	Wedge/Disc (WD/DS)	Body Seat Ring	Stem
MATERIAL	ASTM	A352 LCC	A352 LCC	A352 LCC+316	A350 LF2+HF	A182 F316

DIMENSION INSPECTION (mm)								PRESSURE TEST (ASME B16.34 & API 598)			VISUAL TEST
INSPECTION	Face to Face (End to End)	Flange Diameter	Bolt Circle	Dia. Of Raised Face	Flange Thickness	No. of Bolt Hole	Bolt Hole Diameter	SHELL (PSIG)	SEAT(Air) (PSIG)	BACK SEAT (PSIG)	VISUAL
STANDARD	**419±1.6**	**381**	**330**	**270**	**42**	**12**	**25**	**1125**	**80**	**815**	**MSS-SP-55**
RESULT	※ W.T	W.T	W.T	W.T	W.T	W.T	W.T	GOOD	GOOD	GOOD	GOOD

※ W.T : Within Tolerance

SERIAL NO. BATCH	PARTS	HEAT NUMBER	CHEMICAL COMPOSITION (%) (ASTM STD.)													TENSION TEST(MIN.) (ASTM)				HARDNESS	CHARPY
			C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V				T.S (MPa)	Y.P (MPa)	EL. %	R.A %	(HB)	
STANDARD	A352 LCC	Min.	0.250	0.600	1.200	0.040	0.045	0.500	0.500	0.200	0.300	0.030				485	275	22.0	35.0	237	Min≥16J Avg≥20J
		Max.														655					
DF-01-305-180901-12	BODY	LDRAC	0.210	0.420	0.960	0.006	0.013	0.015	0.060	0.010	0.010	0.001				563	352	29.0	53.0	160	46-38-32
	BONNET	LDRAC	0.210	0.420	0.960	0.006	0.013	0.015	0.060	0.010	0.010	0.001				563	352	29.0	53.0	160	46-38-32
	WEDGE/DISC	LDRAC	0.210	0.420	0.960	0.006	0.013	0.015	0.060	0.010	0.010	0.001				563	352	29.0	53.0	160	46-38-32

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REMARKS : IN ACCORDANCE WITH EN 10204.3.1
HEAT TREATMENT; LCC QUENCHED; 930℃ X 3HR(W.C)+TEMPERED 700℃ X 3HR(A.C)
TO NACE MR0103

Manager, Q.A Department *Jane*

Witness Inspector *ALEX*

Valve design and construction is in accordance with API 600, ASME B16.34
Products supplied are in compliance with the requirements of the purchase order

MATERIAL TEST REPORT

(CHEMICAL, PHYSICAL & HYDROSTATIC)

Beric-Davis Companies International, Ltd.
6059 South Loop East
Houston, TX 77087
Phone: 713 673-2073
Fax: 713 673-4641

DATE : SEP.1.2018
ARTICLE : 8 GATE VALVE RF 300 TRIM 12
FIGURE. NO. : 103-08-RF-AH12-H-N
SERIAL NO. : DF-01-306-180901-12

TAG NO.: 103-08-RF-AH12-H-N

SIZE :	NPS 8	Class Rating:	300	Q'ty :	1 Pcs

PARTS NAME		Body (BD)	Bonnet (BN)	Wedge/Disc (WD/DS)	Body Seat Ring	Stem
MATERIAL	ASTM	A352 LCC	A352 LCC	A352 LCC+316	A350 LF2+HF	A182 F316

DIMENSION INSPECTION (mm)								PRESSURE TEST (ASME B16.34 & API 598)			VISUAL TEST
INSPECTION	Face to Face (End to End)	Flange Diameter	Bolt Circle	Dia. Of Raised Face	Flange Thickness	No. of Bolt Hole	Bolt Hole Diameter	SHELL (PSIG)	SEAT(Air) (PSIG)	BACK SEAT (PSIG)	VISUAL
STANDARD	**419±1.6**	**381**	**330**	**270**	**42**	**12**	**25**	**1125**	**80**	**815**	**MSS-SP-55**
RESULT	※ W.T	W.T	W.T	W.T	W.T	W.T	W.T	GOOD	GOOD	GOOD	GOOD

※ W.T : Within Tolerance

SERIAL NO. BATCH	PARTS	HEAT NUMBER	CHEMICAL COMPOSITION (%) (ASTM STD.)													TENSION TEST(MIN.) (ASTM)				HARDNESS	CHARPY
			C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V				T.S (MPa)	Y.P (MPa)	EL. %	R.A %	(HB)	
STANDARD	A352 LCC	Min.	0.250	0.600	1.200	0.040	0.045	0.500	0.500	0.200	0.300	0.030				485	275	22.0	35.0	237	Min≥16J
		Max.														655					Avg≥20J
DF-01-306-180901-12	BODY	LDRAC	0.210	0.420	0.960	0.006	0.013	0.015	0.060	0.010	0.010	0.001				563	352	29.0	53.0	160	46-38-32
	BONNET	LDRAC	0.210	0.420	0.960	0.006	0.013	0.015	0.060	0.010	0.010	0.001				563	352	29.0	53.0	160	46-38-32
	WEDGE/DISC	LDRAC	0.210	0.420	0.960	0.006	0.013	0.015	0.060	0.010	0.010	0.001				563	352	29.0	53.0	160	46-38-32

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REMARKS : IN ACCORDANCE WITH EN 10204.3.1
HEAT TREATMENT; LCC QUENCHED; 930℃ X 3HR(W.C)+TEMPERED 700℃ X 3HR(A.C)
TO NACE MR0103

Manager, Q.A Department *Jane*

Witness Inspector *ALEX*

Valve design and construction is in accordance with API 600, ASME B16.34
Products supplied are in compliance with the requirements of the purchase order

MATERIAL TEST REPORT

(CHEMICAL, PHYSICAL & HYDROSTATIC)

Beric-Davis Companies International, Ltd.
6059 South Loop East
Houston, TX 77087
Phone: 713 673-2073
Fax: 713 673-4641

DATE : FEB.6.2018

TAG NO.: 103-08-RF-AH12-H-N

ARTICLE : 8 GATE VALVE RF 300 TRIM 12

SIZE :	NPS 8	Class Rating:	300	Q'ty : 1 Pcs

FIGURE. NO. : 103-08-RF-AH12-H-N

PARTS NAME		Body (BD)	Bonnet (BN)	Wedge/Disc (WD/DS)	Body Seat Ring	Stem
MATERIAL	ASTM	A352 LCC	A352 LCC	A352 LCC+316	LF2+HF	F316

DIMENSION INSPECTION (mm)								PRESSURE TEST (ASME B16.34 & API 598)			VISUAL TEST
INSPECTION	Face to Face (End to End)	Flange Diameter	Bolt Circle	Dia. Of Raised Face	Flange Thickness	No. of Bolt Hole	Bolt Hole Diameter	SHELL (PSIG)	SEAT(AIR) (PSIG)	BACK SEAT (PSIG)	VISUAL
STANDARD	**419±1.6**	**381**	**330**	**270**	**42**	**12**	**25**	**1125**	**80**	**825**	**MSS-SP-55**
RESULT	※ W.T	W.T	W.T	W.T	W.T	W.T	W.T	GOOD	GOOD	GOOD	GOOD

※ W.T : Within Tolerance

SERIAL NO. BATCH	PARTS	HEAT NUMBER	CHEMICAL COMPOSITION (%) (ASTM STD.)													TENSION TEST(MIN.) (ASTM)				HARDNESS	CHARPY
			C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V				T.S (MPa)	Y.P (MPa)	EL. %	R.A %	(HB)	
STANDARD	A352 LCC	Min.	0.250	0.600	1.200	0.040	0.045	0.500	0.500	0.200		0.030				485	275	22.0	35.0	237	Min≥16J
		Max.														655					Avg≥20J
DF-01-105-180206-12	BODY	HCNNC	0.181	0.399	0.999	0.021	0.011	0.005	0.047	0.014	0.021	0.007				612	435	31.0	61.0	172	36-40-39
	BONNET	HCNNC	0.181	0.399	0.999	0.021	0.011	0.005	0.047	0.014	0.021	0.007				612	435	31.0	61.0	172	36-40-39
	WEDGE/DISC	HCNNC	0.181	0.399	0.999	0.021	0.011	0.005	0.047	0.014	0.021	0.007				612	435	31.0	61.0	172	36-40-39

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REMARKS : IN ACCORDANCE WITH EN 10204.3.1
HEAT TREATMENT; LCC QUENCHED; 930℃ X 3HR(W.C)+TEMPERED 700℃ X 3HR(A.C)
TO NACE MR0103

Manager, Q.A Department *Jane*

Witness Inspector *ALEX*

Valve design and construction is in accordance with API 600, ASME B16.34
Products supplied are in compliance with the requirements of the purchase order

MATERIAL TEST REPORT

(CHEMICAL, PHYSICAL & HYDROSTATIC)

Beric-Davis Companies International, Ltd.
6059 South Loop East
Houston, TX 77087
Phone: 713 673-2073
Fax: 713 673-4641

DATE : SEP.1.2018
ARTICLE : 6 GATE VALVE RF 150 TRIM 12
FIGURE. NO. : 101-06-RF-AH12-H-N
SERIAL NO. : DF-01-247-180901-12

TAG NO.: 101-06-RF-AH12-H-N

SIZE :	NPS 6	Class Rating:	150	Q'ty : 1 Pcs

PARTS NAME		Body (BD)	Bonnet (BN)	Wedge/Disc (WD/DS)	Body Seat Ring	Stem
MATERIAL	ASTM	A352 LCC	A352 LCC	A352 LCC+316	A350 LF2+HF	A182 F316

DIMENSION INSPECTION (mm)								PRESSURE TEST (ASME B16.34 & API 598)			VISUAL TEST
INSPECTION	Face to Face (End to End)	Flange Diameter	Bolt Circle	Dia. Of Raised Face	Flange Thickness	No. of Bolt Hole	Bolt Hole Diameter	SHELL (PSIG)	SEAT(Air) (PSIG)	BACK SEAT (PSIG)	VISUAL
STANDARD	**267±1.6**	**279**	**241.5**	**216**	**26**	**8**	**22**	**450**	**80**	**315**	**MSS-SP-55**
RESULT	※ W.T	W.T	W.T	W.T	W.T	W.T	W.T	GOOD	GOOD	GOOD	GOOD

※ W.T : Within Tolerance

SERIAL NO. BATCH	PARTS	HEAT NUMBER	CHEMICAL COMPOSITION (%) (ASTM STD.)													TENSION TEST(MIN.) (ASTM)				HARDNESS	CHARPY
			C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V				T.S (MPa)	Y.P (MPa)	EL. %	R.A %	(HB)	
STANDARD	A352 LCC	Min.	0.250	0.600	1.200	0.040	0.045	0.500	0.500	0.200	0.300	0.030				485	275	22.0	35.0	237	Min≥16J
		Max.														655					Avg≥20J
DF-01-247-180901-12	BODY	LDRAC	0.210	0.420	0.960	0.006	0.013	0.015	0.060	0.010	0.010	0.001				563	352	29.0	53.0	160	46-38-32
	BONNET	LDRAC	0.210	0.420	0.960	0.006	0.013	0.015	0.060	0.010	0.010	0.001				563	352	29.0	53.0	160	46-38-32
	WEDGE/DISC	LDRAC	0.210	0.420	0.960	0.006	0.013	0.015	0.060	0.010	0.010	0.001				563	352	29.0	53.0	160	46-38-32

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REMARKS : IN ACCORDANCE WITH EN 10204.3.1
HEAT TREATMENT; LCC QUENCHED; 930℃ X 3HR(W.C)+TEMPERED 700℃ X 3HR(A.C)
TO NACE MR0103

Manager, Q.A Department *Jane*

Witness Inspector *ALEX*

Valve design and construction is in accordance with API 600, ASME B16.34
Products supplied are in compliance with the requirements of the purchase order

MATERIAL TEST REPORT

(CHEMICAL, PHYSICAL & HYDROSTATIC)

Beric-Davis Companies International, Ltd.
6059 South Loop East
Houston, TX 77087
Phone: 713 673-2073
Fax: 713 673-4641

DATE : JAN.16.2019
ARTICLE : 6 GATE VALVE RF 150 TRIM 12
FIGURE. NO. : 101-06-RF-AH12-H-N
SERIAL NO. : DF-01-216-190116-12

TAG NO.: 101-06-RF-AH12-H-N

SIZE :	NPS 6	Class Rating:	150	Q'ty : 1 Pcs

PARTS NAME		Body (BD)	Bonnet (BN)	Wedge/Disc (WD/DS)	Body Seat Ring	Stem
MATERIAL	ASTM	A352 LCC	A352 LCC	A352 LCC+316	A350 LF2+HF	A182 F316

DIMENSION INSPECTION (mm)								PRESSURE TEST (ASME B16.34 & API 598)			VISUAL TEST
INSPECTION	Face to Face (End to End)	Flange Diameter	Bolt Circle	Dia. Of Raised Face	Flange Thickness	No. of Bolt Hole	Bolt Hole Diameter	SHELL (PSIG)	SEAT(Air) (PSIG)	BACK SEAT (PSIG)	VISUAL
STANDARD	**267±1.6**	**279**	**241.5**	**216**	**26**	**8**	**22**	**450**	**80**	**320**	**MSS-SP-55**
RESULT	※ W.T	W.T	W.T	W.T	W.T	W.T	W.T	GOOD	GOOD	GOOD	GOOD

※ W.T : Within Tolerance

SERIAL NO. BATCH	PARTS	HEAT NUMBER	CHEMICAL COMPOSITION (%) (ASTM STD.)													TENSION TEST(MIN.) (ASTM)				HARDNESS	CHARPY
			C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V				T.S (MPa)	Y.P (MPa)	EL. %	R.A %	(HB)	
STANDARD	A352 LCC	Min.	0.250	0.600	1.200	0.040	0.045	0.500	0.500	0.200	0.300	0.030				485	275	22.0	35.0	237	Min≥16J Avg≥20J
		Max.														655					
DF-01-216-190116-12	BODY	GDN71	0.200	0.480	1.140	0.027	0.014	0.015	0.103	0.028	0.028	0.002				534	348	32.0	55.0	151	33-37-40
	BONNET	GDN71	0.200	0.480	1.140	0.027	0.014	0.015	0.103	0.028	0.028	0.002				534	348	32.0	55.0	151	33-37-40
	WEDGE/DISC	GDN71	0.200	0.480	1.140	0.027	0.014	0.015	0.103	0.028	0.028	0.002				534	348	32.0	55.0	151	33-37-40

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REMARKS : IN ACCORDANCE WITH EN 10204.3.1
HEAT TREATMENT; LCC QUENCHED; 930℃ X 3HR(W.C)+TEMPERED 700℃ X 3HR(A.C)
TO NACE MR0103

Manager, Q.A Department Jane

Witness Inspector ALEX

Valve design and construction is in accordance with API 600, ASME B16.34
Products supplied are in compliance with the requirements of the purchase order

MATERIAL TEST REPORT

(CHEMICAL, PHYSICAL & HYDROSTATIC)

Beric-Davis Companies International, Ltd.
6059 South Loop East
Houston, TX 77087
Phone: 713 673-2073
Fax: 713 673-4641

DATE : SEP.1.2018
ARTICLE : 8 GATE VALVE RF 150 TRIM 12
FIGURE. NO. : 101-08-RF-AH12-H-N
SERIAL NO. : DF-01-250-180901-12

TAG NO.: 101-08-RF-AH12-H-N

SIZE :	NPS 8	Class Rating:	150	Q'ty : 1 Pcs

PARTS NAME		Body (BD)	Bonnet (BN)	Wedge/Disc (WD/DS)	Body Seat Ring	Stem
MATERIAL	ASTM	A352 LCC	A352 LCC	A352 LCC+316	A350 LF2+HF	A182 F316

DIMENSION INSPECTION (mm)								PRESSURE TEST (ASME B16.34 & API 598)			VISUAL TEST
INSPECTION	Face to Face (End to End)	Flange Diameter	Bolt Circle	Dia. Of Raised Face	Flange Thickness	No. of Bolt Hole	Bolt Hole Diameter	SHELL (PSIG)	SEAT(Air) (PSIG)	BACK SEAT (PSIG)	VISUAL
STANDARD	**292±1.6**	**343**	**298.5**	**270**	**29**	**8**	**22**	**450**	**80**	**315**	**MSS-SP-55**
RESULT	※ W.T	W.T	W.T	W.T	W.T	W.T	W.T	GOOD	GOOD	GOOD	GOOD

※ W.T : Within Tolerance

SERIAL NO. BATCH	PARTS	HEAT NUMBER	CHEMICAL COMPOSITION (%) (ASTM STD.)										TENSION TEST(MIN.) (ASTM)				HARDNESS	CHARPY
			C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	T.S (MPa)	Y.P (MPa)	EL. %	R.A %	(HB)	
STANDARD	A352 LCC	Min.	0.250	0.600	1.200	0.040	0.045	0.500	0.500	0.200	0.300	0.030	485	275	22.0	35.0	237	Min≥16J
		Max.											655					Avg≥20J
DF-01-250-180901-12	BODY	LDRAC	0.210	0.420	0.960	0.006	0.013	0.015	0.060	0.010	0.010	0.001	563	352	29.0	53.0	160	46-38-32
	BONNET	LDRAC	0.210	0.420	0.960	0.006	0.013	0.015	0.060	0.010	0.010	0.001	563	352	29.0	53.0	160	46-38-32
	WEDGE/DISC	LDRAC	0.210	0.420	0.960	0.006	0.013	0.015	0.060	0.010	0.010	0.001	563	352	29.0	53.0	160	46-38-32

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REMARKS : IN ACCORDANCE WITH EN 10204.3.1
HEAT TREATMENT; LCC QUENCHED; 930℃ X 3HR(W.C)+TEMPERED 700℃ X 3HR(A.C)
TO NACE MR0103

Manager, Q.A Department Jane

Witness Inspector ALEX

Valve design and construction is in accordance with API 600, ASME B16.34
Products supplied are in compliance with the requirements of the purchase order

MATERIAL TEST REPORT

(CHEMICAL, PHYSICAL & HYDROSTATIC)

Beric-Davis Companies International, Ltd.
6059 South Loop East
Houston, TX 77087
Phone: 713 673-2073
Fax: 713 673-4641

DATE : JAN.16.2019
ARTICLE : 6 CHECK VALVE RF 150 TRIM 12
FIGURE. NO. : 301-06-RF-FH12-X-N
SERIAL NO. : DF-01-228-190116-12

TAG NO.: 301-06-RF-FH12-X-N

SIZE :	NPS 6	Class Rating:	150	Q'ty : 1 Pcs

PARTS NAME		Body (BD)	Bonnet (BN)	Wedge/Disc (WD/DS)	Body Seat Ring	Pin
MATERIAL	ASTM	A352 LCC	A352 LCC	A350 LF2+316	A350 LF2+HF	A182 F316

DIMENSION INSPECTION (mm)								PRESSURE TEST (ASME B16.34 & API 598)			VISUAL TEST
INSPECTION	Face to Face (End to End)	Flange Diameter	Bolt Circle	Dia. Of Raised Face	Flange Thickness	No. of Bolt Hole	Bolt Hole Diameter	SHELL (PSIG)	SEAT(Hydro) (PSIG)	BACK SEAT (PSIG)	VISUAL
STANDARD	**356±1.6**	**279**	**241.5**	**216**	**26**	**8**	**22**	**450**	**320**	**N/A**	**MSS-SP-55**
RESULT	※ W.T	W.T	W.T	W.T	W.T	W.T	W.T	GOOD	GOOD	N/A	GOOD

※ W.T : Within Tolerance

SERIAL NO. BATCH	PARTS	HEAT NUMBER	CHEMICAL COMPOSITION (%) (ASTM STD.)													TENSION TEST(MIN.) (ASTM)				HARDNESS	CHARPY
			C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V				T.S (MPa)	Y.P (MPa)	EL %	R.A %	(HB)	
STANDARD	A352 LCC	Min.														485	275	22.0	35.0		Min≥16J
		Max.	0.250	0.600	1.200	0.040	0.045	0.500	0.500	0.200	0.300	0.030				655				237	Avg≥20J
	LF2	Min.		0.15	0.60											485	250	22.0	30.0		Min≥16J
		Max.	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080				655					Avg≥20J
DF-01-228-190116-12	BODY	GDN71	0.200	0.480	1.140	0.027	0.014	0.015	0.103	0.028	0.028	0.002				534	348	32.0	55.0	151	33-37-40
	BONNET	GDN71	0.200	0.480	1.140	0.027	0.014	0.015	0.103	0.028	0.028	0.002				534	348	32.0	55.0	151	33-37-40
	WEDGE/DISC	1606106	0.230	0.240	1.210	0.015	0.001	0.010	0.020	0.002	0.010	0.001				535	325	34.0	69.0	165	27-28-29

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REMARKS : IN ACCORDANCE WITH EN 10204.3.1
HEAT TREATMENT; LCC QUENCHED; 930℃ X 3HR(W.C)+TEMPERED 700℃ X 3HR(A.C)
TO NACE MR0103

Manager, Q.A Department *Jane*

Witness Inspector *ALEX*

Valve design and construction is in accordance with API 594, ASME B16.34
Products supplied are in compliance with the requirements of the purchase order

MLTS_6056-18734
Cert# GATE POWELL

HEAT / SERIAL NUMBER RECORD

M. A. Stewart & Sons Ltd.
VALVES AND FITTINGS

(FORM 4.15.4A)

COMPANY; Emco / EQuipment - KN (for ABF mines) PAGE; 1 OF 1

BRANCH; Rouyn - Noranda, QC MAS SALES REGISTER; 1436324

ATTN; Richard Knight DATE June 10/19

PO# 26/0090-00

4						
5	(1)	8"	Powell 3003FK	C5CL54	C5CL54	7F19226
6			8GXXX			
7						
19						
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FAX STAMP

FORM 4.3.2C REV-2-15-08

VALVE CERTIFICATION

POWELL VALVES

CERTIFIED MATERIAL TEST REPORT/CERTIFICATE OF CONFORMANCE
CERTIFIED TO ISO 9001 QUALITY STANDARDS

CERTIFICATE NUMBER: **7F19226**
DATE: 7/15/15

2503 Spring Grove Ave.
Cincinnati, OH 45214 U.S.A
Tel: 513-852-2000
info@powellvalves.com

CUSTOMER: M. A. STEWART & SONS LTD.
CUSTOMER PO #: 1001802
POWELL ORDER: 904159
ITEM NUMBER: 8.0 3003FK8GXXX
DESCRIPTION: CLASS 300, BOLTED BONNET, GATE VALVE, FLG END, A352 LCC, API TRIM 8, GRAPHITE PACKING, S.W. GRAPHITE GASKET

PRESSURE TEST

Standard: API-598

SHELL	1125	PASS
SEAT (AIR)	80	PASS
SEAT (HYDRO)	N/A	N/A
BACKSEAT	825	PASS

(Values are PSI minimums)

INSPECTION

Dimensional:	PASS
Operational:	PASS
Visual:	PASS

We certify that the valve meets the requirements of one or more of the following industry standards:

API 598	Valve Inspection and Testing
API 600	Bolted Bonnet Cast Steel Valves
API 602	Forged Valves
API 603	Bolted Bonnet Cast Stainless Steel Valves
API 622/624	Fugitive Emissions
ASME B16.10	End to End Dimensions
ASME B16.34	Valves
MSS SP25	Valve Markings
MSS SP55	Casting Surface Inspection

COMPONENT DATA (Chemical Properties)

BODY — HEAT NO: C5CL54 — MATERIAL: A352LCC — PHYSICAL PROPERTIES

C	SI	MN	P	S	NI	CR	MO	CU	V					Tensile (KSI)	Yield (KSI)	Elong%	Reduct%	HB	
.19	.432	.86	.019	.011	.214	.047	.015	.031	.001					76.4	53.9	30.0	62.0	152	

Normalized 1650°F Min, Liquid Quench, Temper 1100°F Min

BONNET/CAP — HEAT NO: C5CL54 — MATERIAL: A352LCC — PHYSICAL PROPERTIES

C	SI	MN	P	S	NI	CR	MO	CU	V					Tensile (KSI)	Yield (KSI)	Elong%	Reduct%	HB	
.19	.432	.86	.019	.011	.214	.047	.015	.031	.001					76.4	53.9	30.0	62.0	152	

Normalized 1650°F Min, Liquid Quench, Temper 1100°F Min

DISC — HEAT NO: C5C680 — MATERIAL: A352LCC — PHYSICAL PROPERTIES

C	SI	MN	P	S	NI	CR	MO	CU	V					Tensile (KSI)	Yield (KSI)	Elong%	Reduct%	HB	
.197	.446	.915	.022	.009	.274	.058	.007	.026	.006					91.6	66.1	31.0	62.0	159	

Normalized 1650°F Min, Liquid Quench, Temper 1100°F Min

CHARPY IMPACT RESULT

SHELL TEST : 10 MIN MINIMUN DURATION

BODY	BONNET/CAP	DISC	
28.7	28.7	34.6	MIN. OF 1 SPECIMEN (FT-LB)
28.7	28.7	37.6	AVG OF 3 SPEC., MIN. OF 2 SPEC. (FT-LAB)
-50	-50	-50	TEST TEMPERATURE (DEGREES F)

WE CERTIFY THAT THE ABOVE PRODUCT(S) CONFORM TO THE APPLICABLE REQUIREMENTS OF THE PURCHASE ORDER.
THESE RESULTS ARE IN ACCORDANCE WITH EN 10204 TYPE 3.1. http://www.powellvalves.com

CERTIFIED TO ISO 9001 QUALITY STANDARDS

Willard E. Painter Jr.

Quality Manager
THE WM. POWELL COMPANY
Form F.10.6 2/23/11

WE CERTIFY THAT THE ABOVE PRODUCT(S) CONFORM TO THE APPLICABLE REQUIREMENTS OF THE PURCHASE ORDER.
THESE RESULTS ARE IN ACCORDANCE WITH EN 10204 TYPE 3.1. http://www.powellvalves.com

CERTIFIED TO ISO 9001 QUALITY STANDARDS

Apollo Valves

Division of Conbraco Industries

Conway, SC 29526

FAX: 843/347-1773

PHONE: 843/347-4666

ISO 9001:2015 NSAI CERTIFIED

MLTS_6056-18735
Cert# BV APOLLO

MATERIAL TEST REPORT

We certify that the below listed components were manufactured, tested, and inspected in accordance with the requirements of the procurement documents as stated.

Model Number: **83I**
Size: **2"**
Quantity: **8**
Material Specification: **ASTM A352-18 LCC(LCC)**

Customer Name: **Masdom LTD**
Customer Order Number: **19503**
Valve Part Number: **83L-248-24**
User Tag Number: **B36652**

Heat Code	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	V	Cb	TENSILE PSI	YIELD PSI	%ELO 2"	%RA	HARDNESS (RB unless noted)
AX	0.1965	1.3639	0.0109	0.0128	0.2577	0.1313	0.0341	0.0134	0.0443	0.0027		81002	54270	25	74	80
BW	0.1901	1.3903	0.0123	0.0138	0.3772	0.064	0.0364	0.0047	0.0433	0.0025		79634	53506	30	65	77
HU	0.197	1.34	0.014	0.008	0.334	0.061	0.038	0.012	0.115	0.003		83872	54730	31	67	81
KW	0.2085	1.314	0.0139	0.0115	0.2952	0.0273	0.0216	0.0052	0.0327	0.0023	0	77629	52937	27	70	79

Charpy Impact Test: Conducted in accordance with ASTM A370 Sections 19 Through 20. Standard full size test specimen.

Test Temperature: -50F	Heat Code	Average of 3 Test	Test 1	Test 2	Test 3
	AX	36.52	32.95	29.95	46.67
	BW	20.5333	20	20.4	21.2
	HU	21.4667	23.2	20.8	20.4
	KW	22.8667	22.8	23.6	22.2

TESTING PROCEDURE: All Apollo Valves are 100% tested in accordance with their standard of construction. Valves designed to the requirements of ASME B16.34 are tested to meet or exceed the requirements of

API 598, ASME B16.34, MSS SP-61 and MSS SP-72. Valves designed to the requirements of MSS SP-110, are tested to meet or exceed the requirements of MSS SP-110. Specification sheets are available at www.apollovalves.com.

We certify that the above listed components meet the requirements of the procurement documents as stated.
This material certificate complies with EN 10204-2004 Type 3.1 (formerly Type F3.1.B).

Date: **08/01/19**
Signed:

Steve Causey
Quality Assurance Manager

The above listed information is certified to be true and accurate to the best of my knowledge and belief.

Apollo Valves

Division of Conbraco Industries

Conway, SC 29526
FAX: 843/347-1773
PHONE: 843/347-4666

ISO 9001:2015 NSAI CERTIFIED

MATERIAL TEST REPORT

We certify that the below listed components were manufactured, tested, and inspected in accordance with the requirements of the procurement documents as stated.

Model Number: **831**
Size: **1"**
Quantity: **8**
Material Specification: **ASTM A352-18 LCC(LCC)**

Customer Name: **Masdom LTD**
Customer Order Number: **19503**
Valve Part Number: **83L-245-24**
User Tag Number: **B36652**

Heat Code	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	V	Cb	TENSILE PSI	YIELD PSI	%ELO 2"	%RA	HARDNESS (RB unless noted)
AX	0.1965	1.3639	0.0109	0.0128	0.2577	0.1313	0.0341	0.0134	0.0443	0.0027		81002	54270	25	74	80
KW	0.2085	1.314	0.0139	0.0115	0.2952	0.0273	0.0216	0.0052	0.0327	0.0023	0	77629	52937	27	70	79
LW	0.1848	1.3624	0.0111	0.002	0.2961	0.1055	0.0326	0.0114	0.0266	0.0021		77277	50671	27.2	71.7	79

Charpy Impact Test: Conducted in accordance with ASTM A370 Sections 19 Through 20. Standard full size test specimen.

Test Temperature: -50F

Heat Code	Average of 3 Test	Test 1	Test 2	Test 3
AX	36.52	32.95	29.95	46.67
KW	22.8667	22.8	23.6	22.2
LW	25.6	20	21.1	35.7

TESTING PROCEDURE: All Apollo Valves are 100% tested in accordance with their standard of construction. Valves designed to the requirements of ASME B16.34 are tested to meet or exceed the requirements of API 598, ASME B16.34, MSS SP-61 and MSS SP-72. Valves designed to the requirements of MSS SP-110, are tested to meet or exceed the requirements of MSS SP-110. Specification sheets are available at www.apollovalves.com.

We certify that the above listed components meet the requirements of the procurement documents as stated.
This material certificate complies with EN 10204-2004 Type 3.1 (formerly Type F3.1.B).

Date: **08/01/19**
Signed:

The above listed information is certified to be true and accurate to the best of my knowledge and belief.

Steve Causey
Quality Assurance Manager

SO 1SL047059-1 PO No. 00026111

CURTISS-WRIGHT

Certificate of Compliance (QC-02)

FARRIS ENGINEERING
DIV. OF CURTISS-WRIGHT FCC
10195 BRECKSVILLE RD
BRECKSVILLE OH 44141
UNITED STATES

Date: 07/10/2019

MLTS_6056-18735
Cert# PRV FARRIS

Sales Order No.: 1SL047059
Customer:
Customer Order No.: 00026111
CRN No.: CSA-0G11969.5CL

Line	Tag Number	Model Number	Serial Number
1		27EA34-M20	942333-1-KE
1		27EA34-M20	942333-2-KE
1		27EA34-M20	942333-3-KE
1		27EA34-M20	942333-4-KE

We hereby certify that the valve(s) indicated above have been designed, manufactured and tested in accordance with ASME Section VIII, Division 1 by Curtiss-Wright Flow Control Corp.- Farris Engineering in accordance with the company's Quality Control Program. The Brecksville Facility's Quality Control Program is registered to ISO 9001:2015, Certificate Identity No. 10076249. We hereby certify that they were produced in conformance with the contract and Farris Worldwide Quality Manual Revision N, dated 13-Sep-18.

The representative signing the document states that the above information is correct and true.

Anthony Korinek

Certified Individual

Date:07/10/2019

CURTISS-WRIGHT

Material Test Reports (QC-04)

FARRIS ENGINEERING
DIV. OF CURTISS-WRIGHT FCC
10195 BRECKSVILLE RD
BRECKSVILLE OH 44141
UNITED STATES

Sales Order No.: 1SL047059 Line No.: 1 Qty: 4
Customer:
Customer Order No.: 00026111
Model No.: 27EA34-M20
Serial No.: 942333-1-KE, 942333-2-KE, 942333-3-KE, 942333-4-KE
Tag No.:

Serial No.	Component	Item Number	Lot Number	Material Description
942333-1-KE	BODY 1 X 1/2 MNPT 2700	325737X1-010	872-0118	ASME SA-479 316SS
942333-1-KE	DISC 2700	325742-010	900758	ASME SA-479 316SS
942333-1-KE	BONNET 2700	326076X2-023	640G	ASME SA-216 WCB
942333-2-KE	BODY 1 X 1/2 MNPT 2700	325737X1-010	872-0118	ASME SA-479 316SS
942333-2-KE	DISC 2700	325742-010	900758	ASME SA-479 316SS
942333-2-KE	BONNET 2700	326076X2-023	640G	ASME SA-216 WCB
942333-3-KE	BODY 1 X 1/2 MNPT 2700	325737X1-010	872-0118	ASME SA-479 316SS
942333-3-KE	DISC 2700	325742-010	900758	ASME SA-479 316SS
942333-3-KE	BONNET 2700	326076X2-023	640G	ASME SA-216 WCB
942333-4-KE	BODY 1 X 1/2 MNPT 2700	325737X1-010	872-0118	ASME SA-479 316SS
942333-4-KE	DISC 2700	325742-010	900758	ASME SA-479 316SS
942333-4-KE	BONNET 2700	326076X2-023	640G	ASME SA-216 WCB

Note: Traceability of individual parts to their NDE and special process reports is maintained through Lot Codes created by serializing the lot number shown on the material manufacturer's Material Test Report.

产品质量证明书 INSPECTION CERTIFICATE
---EN10204 3.1

TJ8868

江阴市不锈钢材料厂JIANGYINSHI STAINLESS STEEL MATERIAL FACTORY

地址：中国江苏省江阴市周庄镇路口桥
Add: Lukouqiao Zhouzhuang Town JiangYin JiangSu China
TEL:(0510)86236681 FAX:(0510)86905200

收货单位：成飞机械 执行标准：ASME SA479 2015 合同号：7969 编号：20180901

SOLD TO: Curtisswrigh (Tian jin) Flow Control CO.,LTD EXECUTIVE STANDARDS: CONTRACT NO: Serial number:

序号 No	钢号 Grade	规格 Size	冶炼炉号 Heat No.	支数 Bundles	重量 Weight (kg)	化学成分 Chemical Composition (%) C.	Si	Mn	P	S	Cr:	Mo	Ni
						≤0.030	≤1.00	≤2.00	≤0.045	≤0.030	16.00-18.00	2.00-3.00	10.00-14.00
1	316/316L	Φ78	872-0118	9	1120	0.03	0.4	1.76	0.034	0.025	16.52	2.07	10.2
2	316/316L	Φ72	872-0117	18	2176	0.026	0.4	1.74	0.034	0.02	16.64	2.05	10.14
3	316/316L	Φ72	872-0117	9	1075	0.026	0.4	1.74	0.034	0.02	16.64	2.05	10.14
4	316/316L	Φ50.8	872-0118	15	1093	0.03	0.4	1.76	0.034	0.025	16.52	2.07	10.2
5	316/316L	Φ50.8	872-0118	9	984	0.03	0.4	1.76	0.034	0.025	16.52	2.07	10.2

机械性能：Mechanical Properties

序号 No.	热处理炉号 Heat treatment furnace no.	热处理状态Heat treatment condition	抗拉强度 Tensile Strength Rm (Mpa)≥ 515	屈服强度 Yield Strength Rp0.2(Mpa) ≥205	伸长率 Elongation A (%)≥ 30	断面收缩率 Reduction of Area Z (%)≥40	冲击试验Impact charpy Individual Kv2(J)≥ 41 Individual单个功	Average平均功	硬度 HardnessHB≤ 189	交货状态 The delivery status
1	180326-1	固溶处理 Solution treatme	587	310	58	80			161	光亮Bright
2	180326-1		592	311	56	78			163	
3	180315-1		595	314	55	76			164	
4	180407-1		590	312	57	79			162	
5	180407-1		590	312	57	79			162	

APPROVED
2018-11-30
FARRIS ENGINEERING
QUALITY CONTROL
BY QC 04

说明：1.有异议时，来函请标明钢号、炉号、规格、发货日期、原因，并将实物保管好。
Notes: (1) When there is any complain,you are kindly requested to mark the Steel Grade,Heat No.,Size,Delivery Date,Causes and reserve the materials in the condition

备注：Heat treatment:Solution treatment :1900℉,1hours minimum,rapidly cooled to below 90℉.

The material supplied meets the requirements of the current versions of NACE MR0103 and MR0175/ISO 15156, 提供的材料符合NACE MR0103 and MR0175/ISO15156标准要求.

热处理：固溶处理：1040℃最少1小时保温，出炉急冷到32℃以下。

签发日期：2018/9/10 Issued Date 制单：卞玉霞 Principal 审核： examime and verify 质量部门盖章有效 Stamp of Department of Quality Assurance

江阴市不锈钢材料厂 质量检验章

TJ9105

福建省明溪县长虹精密铸钢有限公司
Fujian Mingxi Changhong Precision Steel Casting Co.,Ltd.
Address: Pingpu industrial Park Mingxi county, Fujian, China. Tel:0598-2866208, Fax:0598-2867736

材料质量证明书
Material Inspection
EN 10204 3.1

CHHJZ

Customer:Curtiss-wright Flow Control
Farris Engneering
Address: No.3 Quanhui Road, Wuqing Development Area, Tianjin China. Tel:86-22-82166100, Fax:86-22-82166160

证书编号Cert. No.: 201901085

No.	产品名称 Product	零件号 Part No.	执行标准 Product Std.	材质 Material	数量 Quantity	炉号 Heat No.	订单号 Order No.
1	Bonnet	326076X2-023	ASME SA216-2015	WCB	12	637G	6PR002478
2	Bonnet	326076X2-023	ASME SA216-2015	WCB	10	638G	6PR002478
3	Bonnet,	326076X2-023	ASME SA216-2015	WCB	10	639G	6PR002478
4	Bonnet	326076X2-023	ASME SA216-2015	WCB	25	640G	6PR002478
5	Bonnet	326076X2-023	ASME SA216-2015	WCB	22	641G	6PR002478
6	Bonnet	326076X2-023	ASME SA216-2015	WCB	17	642G	6PR002478/2480
7	Bonnet	326076X2-023	ASME SA216-2015	WCB	20	752G	6PR002480

化学成分 Chemical Compositions

Spec.	C	Si	Mn	P	S	Cr	Ni	Mo	Cu	V	N
标准值	≤0.3 ✓	≤0.6 ✓	≤1.0 ✓	≤0.04 ✓	≤0.045 ✓	≤0.5 ✓	≤0.5 ✓	≤0.2 ✓	≤0.3 ✓	≤0.03 ✓	
637G	0.222	0.197	0.772	0.017	0.007	0.071	0.024	0.004	0.011	0.001	
638G	0.213	0.210	0.703	0.020	0.008	0.071	0.017	0.002	0.010	0.002	
639G	0.215	0.212	0.703	0.020	0.008	0.071	0.017	0.002	0.010	0.001	
640G	0.261	0.204	0.672	0.022	0.008	0.099	0.026	0.003	0.011	0.002	
641G	0.212	0.230	0.675	0.018	0.006	0.096	0.030	0.003	0.011	0.002	
642G	0.212	0.229	0.677	0.019	0.006	0.096	0.029	0.003	0.011	0.002	
752G	0.220	0.218	0.689	0.021	0.006	0.057	0.030	0.004	0.011	0.002	

	抗拉强度 Tensile Strength	屈服强度 Yieid Strength	延伸率 Elongation	断面收缩率 Reduction of Area	冲击功 Charpy Impact Test (J)				硬度 Hardness
Spec.	(MPa)	(MPa)	%	%	Temp. ℃	Average	Individual		HB
标准值	485-655 ✓	≥250 ✓	≥22 ✓	≥35 ✓	-29	≥27J ✓	≥19J ✓	≥19 ≥19	≤237 ✓
637G	550	360	37	60					159
638G	553	350	36	62					158
639G	555	363	36	60					157
640G	546	357	38	59					156
641G	549	352	37	61					156
642G	549	348	36	60					153
752G	537	361	35	63					158

热处理 Heat Treatment

序号 No.	热处理炉号 Heat Lot.	浇注炉号 Heat No.	入炉时间 Charging time	入炉温度℃ Charging Temp.	到温时间 Start Time	到温温度℃ Hold Temp.	出炉时间 Finished Time	出炉温度℃ Finish Temp.	保温时间 H Soak time (H)	冷却方式 Cooling
1	181030-1	637G	7:25	413	9:20	905	11:20	907	2:00	Air空气
2	181030-1	638G	7:25	413	9:20	905	11:20	907	2:00	Air空气
3	181030-1	639G	7:25	413	9:20	905	11:20	907	2:00	Air空气
4	181108-1	640G	7:16	520	9:00	902	11:00	906	2:00	Air空气
5	181106-1	641G	8:00	368	10:00	901	12:00	905	2:00	Air空气
6	181106-1	642G	8:00	368	10:00	901	12:00	905	2:00	Air空气
7	180830-1	752G	7:25	425	9:20	908	11:20	910	2:00	Air空气

其他信息 Other Informations

序号 No.	外观尺寸检查 Visual & Dimension		无损探伤 NDT MT/PT	UT	RT	交货状态 Delivery Condition
1	OK.	OK				正火状态 Normalized

1. We hereby certify that the materials described herein have been manufactured, inspected and tested in accordance with the customer's specification(s), and that they satisfy the requirements.
2. All of casting visual inspection according to MSS-SP-55.
3. The material supplied meets the requirments of the current version of NACE MR0103 and MR0175/ISO 15156.

APPROVED

编 制 Prepared By: 谢海荣 2019-1-25

审 批 Approved By: 易娟 2019-1-25

2019-11-30

FARRIS ENGINEERING
QUALITY CONTROL
BY QC 03

sidenor

MILL TEST CERTIFICATE

Basauri Plant

ISO 9001; ISO-TS 16949; ISO 14001 Y OHSAS 18001

Product Made in Spain

CUSTOMER:MAGELLAN CORPORATION		WORKS REFERENCE:1910594
REFERENCE:211222	SALES ORDER:299090-2	HEAT NUMBER:900758
PRODUCT NR:	MASTER REFERENCE:215719	ROLLED:04.01.2017

REQUIRED PRODUCT

AISI316/316L ROUND BARS TURNED SOLUTION ANNEALED 0.8750" SPECIFICATION´S TOLERANCE 12'-12'2" NORMAL

EXPEDITION DELIVERY:0080571873 WEIGHT (KG):4.614 BUNDLES:6 UNITS:400

MADE ACCORDING TO

AISI STAINLESS STEELS - 01.03.1999; ASME SA182-SA182M SECTION II, PART A - . . .2015
ASME SA193-SA193M/SECTION II, PART A - . . .2015; ASME SA320-SA320M/SECTION II, PART A 2013 . . . 2013
ASME SA479-SA479M SECTION II, PART A - . . .2015; ASTM A182-A182M 2015 01.06.2015
ASTM A193-A193M 2015 01.06.2015; ASTM A276/A276M 15 01.01.2015; ASTM A314 2015 15.07.2015
ASTM A320-A320M 2015 01.05.2015; ASTM A370 2014 15.05.2014; ASTM A473 13 01.11.2013
ASTM A479-A479M 2015 15.07.2015; ASTM A484-A484M 15 01.03.2015; ASTM A751 2014 01.03.2014
EN 10204 :2004 OCT. 2004 3.1; MAGELLAN MIC 1751 AMD12.3 21.12.2016
MAGELLAN MIC 1751 SUPP AISI316/AISI316L - 24.06.2015; NACE MR0103-2005 - 2005
NACE MR0175/ISO 15156-1 3ª EDICION 23.11.2015; NACE MR0175/ISO 15156-3 3ª EDICION 23.11.2015
SAE AMS 5648 L . .09.2012; SAE AMS 5653 H .. 11.2012; SAE AMS-QQ-S-763 D 03.2015

CHEMICAL ANALYSIS OF HEAT U:% HEAT NUMBER:900758

	C	Mn	Si	P	S	Cr	Ni	Mo	V	W	Co
Min.		1,250			0,020	16,500	10,000	2,000			
Max.	0,030	2,000	0,750	0,040	0,030	18,000	13,000	2,500	0,100	0,100	0,3000
Cer.	0,015	1,490	0,488	0,026	0,025	16,700	10,120	2,030	0,060	0,082	0,2280

	Cu	Al	Ti	Nb	N
Min.					
Max.	0,750	0,100	0,1000	0,1000	0,1000
Cer.	0,337	0,006	0,0050	0,0160	0,0730

INCLUSIONS (MICROINCLUSIONS)

Standard(ASTM E45 2013 . . . 2013); Type/method(A); A(t):2,5; A(h):1; B(t):0,5; B(h):0,5; C(t):1,5
C(h):1; D(t):0,5; D(h):0,5

APPROVED
PARTS ENGINEERING - QUALITY CONTRO
NOV. 14 2018
BY № 1005557
+JH 7722

MECHANICAL PROPERTIES AS SUPPLIED (TEST)

Sample:Supply section (bar prolongation); Specimen Test location:Nucleus
Standard(1)(ASTM A370 2014 15.05.2014); Standard(2)(ASTM E8/E8M 2015A 15.05.2015)
Tensile direction:Longitudinal; Tensile test Temp.(Room temperature):Room temperature
Ts(83.000/120.000PSI):88.605PSI; Ys(0,2% >=30.000PSI):0,2% 44.089PSI; El.(2" >=40%):2" 57,2%
Z(>=50%):74,9%; Standard(ASTM E23 07-AE1 2007)
Notch impact direction:Longitudinal; Notch Impact sample type(CHARPY-V):CHARPY-V
Notch Impact Temp.(68°F):68°F; K(1):203Ft.Lb; K(2):206Ft.Lb; K(3):205Ft.Lb; K (average):204,67
K (single)(>=75Ft.Lb):203Ft.Lb; Hardness Standard(1)(ASTM A370 2014 15.05.2014)
Hardness Standard(2)(ASTM E10 2015 01.05.2015)
Surface hardness(of the bar 140/223HB):of the bar 208HB
Hardness at(at 1/2 radius of the bar 140/223HB):at 1/2 radius of the bar 162HB

ADDITIONAL TESTS

Standard(ASTM A262 - 01.07.2014); Type / Method(Practice E):Practice E
Standard(ASTM E112 2013 01.10.2013); Grain size:Austenitic 6; Standard(ASTM E381 2001 R2006)
macroetching(1):S 1; macroetching(2):R 1; macroetching(3):C 1; Intercrystalline Corrosion:O.K.

TECHNOLOGY & QUALITY CERTIFIES THAT THE PRODUCT FULL FILLS THE ORDER´S SPECIFICATION

APPROVED BY:ALBERTO CUBERO ZABALA SIGN:

DATE:21.02.2017

REF.:1002484420000

Analyst of Quality certificates

sidenor BASAURI

Sidenor

MILL TEST CERTIFICATE

Basauri Plant

ISO 9001; ISO-TS 16949; ISO 14001 Y OHSAS 18001

Product Made in Spain

CUSTOMER:MAGELLAN CORPORATION		WORKS REFERENCE:1910594
REFERENCE:211222	SALES ORDER:299090-2	HEAT NUMBER:900758
PRODUCT NR:	MASTER REFERENCE:215719	ROLLED:04.01.2017

NON DESTRUCTIVE TESTS

U.T. standard(1)(ASTM A388-A388M 2015 15.07.2015); U.T. type/method(1)(FBH)
U.T. standard(2)(API SPEC 6A 20°ED.+ER1&2+AD12.3 . .03.2013); U.T. type/method(2)(PSL3)
U.T. standard(3)(ISO 10423 4°ED.2009 15.12.2009); U.T. type/method(3)(PSL3)
ULTRASONIC INSPECTION 100% : O.K. (1) =<1,5 mm.(according to Suplem.1 ASTM A388)
ULTRASONIC INSPECTION 100% : O.K. (2) according to: API 6A/ISO-10423 "PSL3"
ULTRASONIC INSPECTION 100% : O.K. (3); CRACKS CONTROL 100% : O.K.

ADDITIONAL INFORMATION

Reduction ratio:49,7; "Macrostructure: Satisfactory"
Ultrasonic Inspection Results ("ASTM A388: Satisfactory"); DFARS Compliant
HEAT MELTED AT OUTOKUMPU (UK) AND PROCESSED AT SIDENOR (SPAIN); RoHs Compliant
Material Cold Finished, Peeled and Reeled; CONTINUOUS CASTING 150 X 150 mm.
SOLUTION ANNEALED at 1922°F - IN AIR; .; .

Material manufactured through the Electric Arc Furnace and AOD.
Steel not exposed to Mercury, or to any other metal alloy that is liquid, at ambient temperatures during processing or while in Sidenor's possession.
Steel is free from Uranium or any other harmful radioactive contamination.
Steel products were not repaired by welding.
100% anti mix test performed by spectrometry.

APPROVED
FARRIS ENGINEERING – QUALITY CONTROL
NOV 14 2018
BY № 1005557
#W7722

TECHNOLOGY & QUALITY CERTIFIES THAT THE PRODUCT FULL FILLS THE ORDER'S SPECIFICATION

APPROVED BY:ALBERTO CUBERO ZABALA SIGN:

DATE:21.02.2017

REF.:1002484420000

Analyst of Quality certificates

sidenor BASAURI

M.A. Stewart & Sons Ltd.

PICK TICKET

MAS Edmonton Branch
1315473

PICK DATE	PICK TICKET	ORDER NUMBER
8/20/2019	1315473	1452662

SHIP TO NO	CUSTOMER NO	PAGE
103449	103449	1 of 1

PICKED BY:	CHECKED BY:

MTR's WHEN APPLICABLE

SOLD TO
EMCO LTD WESTLUND (261) ROUYN-NORANDA
PO BOX 5300 STN A
WESTLUND
LONDON, ON N6A 4N7
CANADA

Ex EDM
MTL

Ordered By: Chantal Gregoire

SHIP TO
ABF MINES CANADA INC. (2985080)
1310 AVE DAVY
ROUYN-NORANDA, QC J9Y 0A8
CANADA

ORDER DATE	CUSTOMER PO / ORDER NUMBER	CARRIER	TAKER
8/20/2019	DO2610173-00	Purolator	ANDREN

Delivery / Quick Notes	QTY	Item	Box ID	Skid ID

Delivery Instructions: EX: EDMONTON / PUROLATOR # 7334590

18FF	4 EA	014-53208 MAS LSSF3-HDFS-N 1 3000WOG FP LCC IP 3PC FS NACE BALL
18FF 18SF BC	1 EA	014-53214 MAS LSSF3-HDFS-N 2 2000WOG FP LCC IP 3PC FS NACE BALL

Total Lines: 2
Total Pieces: 5
Total Weight: 32.891

Total Skids / Boxes:	Shipment Weight:

* Complete Order *
12.10.807 - 08/03/12

MLTS_6056-18953
Cert# BV MAS

JY VALVE & MFG. CO., LTD.

(Qianguo Village,Huangtang Town)Chengxi Taiwanese Business Base
Huian County,Quanzhou,Fujian,China 362101
TEL : (0595) 2730-1335 FAX : (0595) 2730-1336

MESSRS.: M. A. STEWART & SONS LTD.

DELIVER TO: VANCOUVER SHEET NO.: LSSF3HDFSN-F181206-1

P.O. NO. #1011686 DATE : DEC. 26, 2018

CERTIFICATE OF COMPLIANCE

WE, JY VALVE & MFG. CO., LTD. HEREBY CERTIFY THAT OUR PRODUCTS AS SHOWN ON DRAWINGS OF OUR MODEL LSSF3-HDFS-N ARE MANUFACTURED, INSPECTED AND TESTED FULLY IN ACCORDANCE WITH THE FOLLOWING STANDARDS:

PRESSURE-TEMPERATURE RATING	1/4" TO 1"	3000 PSIG @100°F
	1-1/4" TO 2"	2000 PSIG @100°F
	2-1/2" TO 3"	1000 PSIG @100°F
BODY & CAP	ASTM A352-LCC	
SEAT MATERIAL	R-PTFE	
VALVE TESTING	API 598 ※	
FIRE TEST STANDARD	API 607 5TH EDITION	
END CONNECTION	NPT THREADS TO ANSI B1.20.1	

※ HIGH PRESSURE SHELL TEST AND LOW PRESSURE SEAT TEST ARE PERFORMED 100%.

- NACE MR-0175-2002 AND MR-0103 COMPLIANCE

JY VALVE & MFG. CO., LTD.

CHARLES CHAN, PRESIDENT

JY VALVE & MFG. CO., LTD.

(Qianguo Village,Huangtang Town)Chengxi Taiwanese Business Base Huian County,Quanzhou,Fujian,China 362101
Tel: 86-595-27301335 Fax: 86-595-27301336

INSPECTION CERTIFICATE

MESSRS. : M. A. STEWART & SONS LTD.
T O : VANCOUVER
P.O. NO.: : #1011686

SHEET NO. : LSSF3HDFSN-F181206-2
EXPORT NO. : F181206
DATE : DEC. 26, 2018

Jason Huang

WITNESSED BY: JY VALVE & MFG. CO., LTD.

JASON HUANG, QC MANAGER

VALVE MODEL	DESCRIPTION	SIZE (INCH)	Q'TY (PCS)	PRESSURE TEST (PSIG)			RESULT	MATERIAL	DIMENSION	VISUAL	OPERATION
				SHELL	SEAT						
				HYDRO	HYDRO	AIR					
LSSF3-HDFS-N	3000/2000/1000 WOG CARBON STEEL 3-PIECE TYPE INVESTMENT CAST BALL VALVES (NACE-MR-0175)	1"	18	4500		80	GOOD	GOOD	GOOD	GOOD	GOOD

MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
TO : VANCOUVER
P.O. NO. : #1011686

SHEET NO. : LSSF3HDFSN-F181206-3
EXPORT NO : F181206
DATE : DEC. 26, 2018

VALVE MODEL : LSSF3-HDFS-N
3000/2000/1000 WOG BALL VALVE
REVIEWED BY : QUAN ZHOU JING YING VALVE CO., LTD.

SIZE : 1"
MATERIAL: ASTM-A352 GRADE LCC

Jason Huang

JASON HUANG, QC MANAGER
JY VALVE & MFG. CO., LTD.

CHEMICAL REQUIREMENT (%)													
ELEMENT		C	Si	Mn	P	S	Ni	Cr	Mo	V			
SPEC (MAX.)		0.250	0.600	1.200	0.040	0.045	0.500	0.500	0.200	0.030			
Production No	Parts Name	B For each reduction of 0.01% below the specified maximum carbon content, an increase of 0.04% Mn above the specified maximum will be permitted up to a maximum of 1.28%											
18FF	BODY & CAP	0.2010	0.4400	0.6900	0.0150	0.0048	0.3230	0.4000	0.0740	0.0120			

TENSILE REQUIREMENTS		Tensile Stength (MPa)	Yield Strength (MPa)	Elongation (%)	Reduction of area (%)	Hardness (HB)	Charpy V-Notch Energy value
Production No	Parts Name	485 - 655	Min. 275	Min. 22	Min. 35	Max. 187	Min. 20
18FF	BODY & CAP	524	288	36	45	160	52
Heat treatment	NORMALIZED @890 DEGREE C - 1H AIR COOLING AND TEMPERED						

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIED ARE SATSIFACTORY IN ACCORDANCE WITH THE SPECIFICAITON.

MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
TO : VANCOUVER
P.O. NO. : #1011686

SHEET NO. : LSSF3HDFSN-F181206-4
EXPORT NO : F181206
DATE : DEC. 26, 2018

VALVE MODEL : LSSF3-HDFS-N
3000/2000/1000 WOG BALL VALVE

SIZE : 1"
MATERIAL: ASTM-A351 GRADE CF8M

REVIEWED BY : FUZHOU SHI GANG VALVE MANUFACTURE CO.,LTD

Jason Huang

JASON HUANG, QC MANAGER
JY VALVE & MFG. CO., LTD.

CHEMICAL REQUIREMENT (%)											
ELEMENT		C	Mn	Si	S	P	Cr	Ni	Mo		
SPEC (MAX.)		0.080	1.500	1.500	0.040	0.040	18.0-21.0	9.0-12.0	2.0-3.0		
Production No	Parts Name										
B-1118	BALL	0.0510	0.7900	0.5090	0.0083	0.0383	18.0900	9.0400	2.0700		

TENSILE REQUIREMENTS		Tensile Stength (MPa)	Yield Strength (MPa)	Elongation (%)	Hardness (HB)	
Production No	Parts Name	Min.485	Min. 205	Min. 30	Max. 187	
B-1118	BALL	515	225	35	165	
Heat treatment	SOLUTION TREATMENT: @1080 DEGREE C - 1H WATER QUENCHING					

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIED ARE SATSIFACTORY IN ACCORDANCE WITH THE SPECIFICAITON.

MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
TO : VANCOUVER
P.O. NO. : #1011686

SHEET NO. : LSSF3HDFSN-F181206-5
EXPORT NO : F181206
DATE : DEC. 26, 2018

VALVE MODEL : LSSF3-HDFS-N
3000/2000/1000 WOG BALL VALVE

SIZE : 1"
MATERIAL: ASTM-A276 TYPE 316

REVIEWED BY : GAOYOU WEI DA STAINLESS STEEL CO., LTD.

Jason Huang

JASON HUANG, QC MANAGER
JY VALVE & MFG. CO., LTD.

CHEMICAL REQUIREMENT (%)											
ELEMENT		C	Mn	P	S	Si	Cr	Ni	Mo		
SPEC (MAX.)		0.080	2.000	0.045	0.030	1.000	16.0-18.0	10.0-14.0	2.00-3.00		
Production No	Parts Name										
S-1118	STEM	0.0780	0.9800	0.0020	0.0210	0.6500	16.6200	10.8000	2.0800		

TENSILE REQUIREMENTS		Tensile Stength (MPa)	Yield Strength (MPa)	Elongation (%)	Reduction of area (%)	Hardness (HB)
Production No	Parts Name	Min. 515	Min. 205	Min. 40	Min. 50	Max. 187
S-1118	STEM	518	218	48	53	166
Heat treatment	HOT-FINISHED					

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIED ARE SATSIFACTORY IN ACCORDANCE WITH THE SPECIFICAITON.

JY VALVE & MFG. CO., LTD.

(Qianguo Village,Huangtang Town)Chengxi Taiwanese Business Base
Huian County,Quanzhou,Fujian,China 362101
TEL : (0595) 2730-1335 FAX : (0595) 2730-1336

MESSRS.: M. A. STEWART & SONS LTD.

DELIVER TO: VANCOUVER SHEET NO.: LSSF3HDFSN-F190403-1

P.O. NO. #1011686 DATE : APR. 24, 2019

CERTIFICATE OF COMPLIANCE

WE, JY VALVE & MFG. CO., LTD. HEREBY CERTIFY THAT OUR PRODUCTS AS SHOWN ON DRAWINGS OF OUR MODEL LSSF3-HDFS-N ARE MANUFACTURED, INSPECTED AND TESTED FULLY IN ACCORDANCE WITH THE FOLLOWING STANDARDS:

PRESSURE-TEMPERATURE RATING	1/4" TO 1"	3000 PSIG @100°F
	1-1/4" TO 2"	2000 PSIG @100°F
	2-1/2" TO 3"	1000 PSIG @100°F
BODY & CAP	ASTM A352-LCC	
SEAT MATERIAL	R-PTFE	
VALVE TESTING	API 598 ※	
FIRE TEST STANDARD	API 607 5TH EDITION	
END CONNECTION	NPT THREADS TO ANSI B1.20.1	

※ HIGH PRESSURE SHELL TEST AND LOW PRESSURE SEAT TEST ARE PERFORMED 100%.

- NACE MR-0175-2002 AND MR-0103 COMPLIANCE

JY VALVE & MFG. CO., LTD.

CHARLES CHAN, PRESIDENT

JY VALVE & MFG. CO., LTD.

(Qianguo Village,Huangtang Town)Chengxi Taiwanese Business Base Huian County,Quanzhou,Fujian,China 362101
Tel: 86-595-27301335 Fax: 86-595-27301336

INSPECTION CERTIFICATE

MESSRS. : M. A. STEWART & SONS LTD.
T O : VANCOUVER
P.O. NO.: : #1011686

SHEET NO. : LSSF3HDFSN-F190403-2
EXPORT NO. : F190403
DATE : APR. 24, 2019

Jason Huang

WITNESSED BY: JY VALVE & MFG. CO., LTD.

JASON HUANG, QC MANAGER

VALVE MODEL	DESCRIPTION	SIZE (INCH)	Q'TY (PCS)	PRESSURE TEST (PSIG)				MATERIAL	DIMENSION	VISUAL	OPERATION
				SHELL	SEAT		RESULT				
				HYDRO	HYDRO	AIR					
LSSF3-HDFS-N	3000/2000/1000 WOG CARBON STEEL 3-PIECE TYPE INVESTMENT CAST BALL VALVES (NACE-MR-0175)	2"	50	3000		80	GOOD	GOOD	GOOD	GOOD	GOOD

MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
TO : VANCOUVER
P.O. NO. : #1011686

SHEET NO. : LSSF3HDFSN-F190403-3
EXPORT NO : F190403
DATE : APR. 24, 2019

VALVE MODEL : LSSF3-HDFS-N
3000/2000/1000 WOG BALL VALVE
REVIEWED BY : QUAN ZHOU JING YING VALVE CO., LTD.

SIZE : 2"
MATERIAL: ASTM-A352 GRADE LCC

Jason Huang

JASON HUANG, QC MANAGER
JY VALVE & MFG. CO., LTD.

CHEMICAL REQUIREMENT (%)													
ELEMENT		C	Si	Mn	P	S	Ni	Cr	Mo	V			
SPEC (MAX.)		0.250	0.600	1.200	0.040	0.045	0.500	0.500	0.200	0.030			
Production No	Parts Name	B For each reduction of 0.01% below the specified maximum carbon content, an increase of 0.04% Mn above the specified maximum will be permitted up to a maximum of 1.28%											
18FF	BODY	0.2010	0.4400	0.6900	0.0150	0.0048	0.3230	0.4000	0.0740	0.0120			
18JF	CAP	0.2010	0.4400	0.6900	0.0150	0.0048	0.3230	0.4000	0.0740	0.0120			

TENSILE REQUIREMENTS		Tensile Stength (MPa)	Yield Strength (MPa)	Elongation (%)	Reduction of area (%)	Hardness (HB)	Charpy V-Notch Energy value
Production No	Parts Name	485 - 655	Min. 275	Min. 22	Min. 35	Max. 187	Min. 20
18FF	BODY	524	288	36	45	160	52
18JF	CAP	524	288	36	45	160	52
Heat treatment	NORMALIZED @890 DEGREE C - 1H AIR COOLING AND TEMPERED						

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIED ARE SATSIFACTORY IN ACCORDANCE WITH THE SPECIFICAITON.

MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
TO : VANCOUVER
P.O. NO. : #1011686

SHEET NO. : LSSF3HDFSN-F190403-4
EXPORT NO : F190403
DATE : APR. 24, 2019

VALVE MODEL : LSSF3-HDFS-N
3000/2000/1000 WOG BALL VALVE

SIZE : 2"
MATERIAL: ASTM-A351 GRADE CF8M

REVIEWED BY : FUZHOU SHI GANG VALVE MANUFACTURE CO.,LTD

Jason Huang

JASON HUANG, QC MANAGER
JY VALVE & MFG. CO., LTD.

CHEMICAL REQUIREMENT (%)											
ELEMENT		C	Mn	Si	S	P	Cr	Ni	Mo		
SPEC (MAX.)		0.080	1.500	1.500	0.040	0.040	18.0-21.0	9.0-12.0	2.0-3.0		
Production No	Parts Name										
B-0319	BALL	0.0503	0.6880	0.4740	0.0065	0.0378	18.3200	9.1600	2.0500		

TENSILE REQUIREMENTS		Tensile Stength (MPa)	Yield Strength (MPa)	Elongation (%)	Hardness (HB)	
Production No	Parts Name	Min.485	Min. 205	Min. 30	Max. 187	
B-0319	BALL	545	245	47	140	
Heat treatment	SOLUTION TREATMENT: @1080 DEGREE C - 1H WATER QUENCHING					

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIED ARE SATSIFACTORY IN ACCORDANCE WITH THE SPECIFICAITON.

MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
TO : VANCOUVER
P.O. NO. : #1011686

SHEET NO. : LSSF3HDFSN-F190403-5
EXPORT NO : F190403
DATE : APR. 24, 2019

VALVE MODEL : LSSF3-HDFS-N SIZE : 2"
3000/2000/1000 WOG BALL VALVE MATERIAL: ASTM-A276 TYPE 316
REVIEWED BY : GAOYOU WEI DA STAINLESS STEEL CO., LTD.

Jason Huang

JASON HUANG, QC MANAGER
JY VALVE & MFG. CO., LTD.

CHEMICAL REQUIREMENT (%)											
ELEMENT		C	Mn	P	S	Si	Cr	Ni	Mo		
SPEC (MAX.)		0.080	2.000	0.045	0.030	1.000	16.0-18.0	10.0-14.0	2.00-3.00		
Production No	Parts Name										
S-0319	STEM	0.0700	0.9600	0.0020	0.0230	0.7500	16.8200	10.6000	2.2500		

TENSILE REQUIREMENTS		Tensile Stength (MPa)	Yield Strength (MPa)	Elongation (%)	Reduction of area (%)	Hardness (HB)
Production No	Parts Name	Min. 515	Min. 205	Min. 40	Min. 50	Max. 187
S-0319	STEM	518	218	48	53	166
Heat treatment	HOT-FINISHED					

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIED ARE SATSIFACTORY IN ACCORDANCE WITH THE SPECIFICAITON.

CAMERON

NEWCO® | OIC® | DOUGLAS CHERO™

13127 Trinity Dr., Stafford, TX 77477
Tel: 281-302-4900 Fax: 281-302-4801

Material Test Report

09/09/19

Cert No: 1101809

Cameron Newco is a 9001 certified registered company
CRN: OC7998.5C - EN 10204-3.1

Item No: B1060015FHLCCW27RF***GZA
Size/Type: 6" / Gate
Quantity: 1
Country of Origin: China
FigNo: 11F-LCC4/2-NC

Inspection
Dimension: Passed
Visual: Passed

Valve Materials meet the requirements for NACE MR0103 and NACE MR0175

Pressure Test Result

Item	Test Pressure (Mpa)	Test Pressure (PSI)	Duration (sec)	Test Result
Shell	3.103	450	60	Passed
Backseat	2.241	325	60	Passed
Seat Hydro	-	-	-	
Seat Air	0.552	80	60	Passed

Standard: API 598 / ASME B16.34

Customer: EMCO
Customer Number: 32043
Customer PO: 2610191-00
Cameron SO: QRC SO# 1010576
Project Name:
Valve Serial No:
Description: 150# RF A352-LCC (TRIM 12) OS&Y BB GATE
NACE
Customer Tag No:

MLTS_6056-18971
Cert# 1101809

Part: Body Type 3.1 — Material Code: A352 LCC — Heat No: N86718

Heat Treatment: QUENCHING+TEMPERING

Notes:

Chem Comp (%)	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	V
Spec: Min:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max:	0.25	0.50	0.30	1.20	0.20	0.50	0.040	0.05	0.60	0.03
Val:	0.180	0.063	0.018	1.070	0.007	0.016	0.027	0.008	0.440	0.004

Physical Props	Tensile KSI	Yield KSI	Elong %	Reduct %	Hard(HB)
	70.0	39.9	22.0	35.0	100.0
	95.0	999.9	100.0	100.0	225.0
	80.5	53.7	30.0	65.0	174.0

Impact Tests @-58 deg F (lb/ft)
1: 45
2: 58
3: 33
Avg: 45

Part: Bonnet/Cap Type 3.1 — Material Code: A352 LCC — Heat No: N86718

Heat Treatment: QUENCHING+TEMPERING

Notes:

Chem Comp (%)	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	V
Spec: Min:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max:	0.25	0.50	0.30	1.20	0.20	0.50	0.040	0.05	0.60	0.03
Val:	0.180	0.063	0.018	1.070	0.007	0.016	0.027	0.008	0.440	0.004

Physical Props	Tensile KSI	Yield KSI	Elong %	Reduct %	Hard(HB)
	70.0	39.9	22.0	35.0	100.0
	95.0	999.9	100.0	100.0	225.0
	80.5	53.7	30.0	65.0	174.0

Impact Tests @-58 deg F (lb/ft)
1: 45
2: 58
3: 33
Avg: 45

Comments: Cameron declares that the parts above are in accordance with applicable material specification and purchase order requirements.
No Asbestos is contained in this product. Packing: Flexible Graphite | Gasket: Corrugated (316) W/ Grafoil
Valves covered in this certificate are in full compliance with purchase order requirements and specifications.

MTR created by: DR

Signature 09/09/19

CAMERON

NEWCO® | OIC® | DOUGLAS CHERO™

13127 Trinity Dr., Stafford, TX 77477
Tel: 281-302-4900 Fax: 281-302-4801

Material Test Report

09/09/19

Cert No: 1101813

Cameron Newco is a 9001 certified registered company
CRN: OC7998.5C - EN 10204-3.1

Item No: B1060015FHLCCW27RF***GZA
Size/Type: 6" / Gate
Quantity: 1
Country of Origin: China
FigNo: 11F-LCC4/2-NC

Inspection
Dimension: Passed
Visual: Passed

Valve Materials meet the requirements for NACE MR0103 and NACE MR0175

Pressure Test Result

Item	Test Pressure (Mpa)	Test Pressure (PSI)	Duration (sec)	Test Result
Shell	3.103	450	60	Passed
Backseat	2.241	325	60	Passed
Seat Hydro	-	-	-	
Seat Air	0.552	80	60	Passed

Standard: API 598 / ASME B16.34

Customer: EMCO
Customer Number: 32043
Customer PO: 2610191-00
Cameron SO: QRC SO# 1010576
Project Name:
Valve Serial No:
Description: 150# RF A352-LCC (TRIM 12) OS&Y BB GATE
NACE
Customer Tag No:

MLTS_6056-18971
Cert# 1101813

Part: Body Type 3.1 — Material Code: A352 LCC — Heat No: N86708

Heat Treatment: QUENCHING+TEMPERING
Notes:

Chem Comp (%)	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	V
Spec: Min:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max:	0.25	0.50	0.30	1.20	0.20	0.50	0.040	0.05	0.60	0.03
Val:	0.190	0.034	0.017	1.030	0.002	0.017	0.033	0.012	0.520	0.004

Physical Props	Tensile KSI	Yield KSI	Elong %	Reduct %	Hard(HB)
	70.0	39.9	22.0	35.0	100.0
	95.0	999.9	100.0	100.0	225.0
	80.5	52.9	28.0	55.0	181.0

Impact Tests @-58 deg F (lb/ft)
1: 22
2: 30
3: 19
Avg: 24

Part: Bonnet/Cap Type 3.1 — Material Code: A352 LCC — Heat No: N86707

Heat Treatment: QUENCHING+TEMPERING
Notes:

Chem Comp (%)	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	V
Spec: Min:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max:	0.25	0.50	0.30	1.20	0.20	0.50	0.040	0.05	0.60	0.03
Val:	0.190	0.052	0.018	1.120	0.006	0.016	0.029	0.007	0.490	0.004

Physical Props	Tensile KSI	Yield KSI	Elong %	Reduct %	Hard(HB)
	70.0	39.9	22.0	35.0	100.0
	95.0	999.9	100.0	100.0	225.0
	80.5	56.6	29.0	60.0	172.0

Impact Tests @-58 deg F (lb/ft)
1: 31
2: 46
3: 31
Avg: 36

Comments: Cameron declares that the parts above are in accordance with applicable material specification and purchase order requirements.
No Asbestos is contained in this product. Packing: Flexible Graphite | Gasket: Corrugated (316) W/ Grafoil
Valves covered in this certificate are in full compliance with purchase order requirements and specifications.

MTR created by: DR

Signature 09/09/19

Appendix A6

Construction Summary Report: Baker Lake Fuel Storage Tank 8 (2021)

SNC·LAVALIN

Construction Summary Report

Baker Lake Fuel Storage Tank #8

Agnico Eagle Mines Ltd

Engineering, Design and Project Management

07 | 12 | 2021

report
Internal ref. 681783-0000-40ER-0001_R0

SNC·LAVALIN
Building what matters

CONSTRUCTION SUMMARY REPORT
Baker Lake Fuel Storage Tank #8

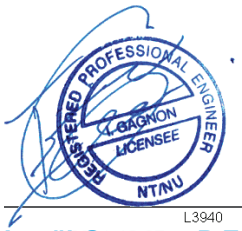
Agnico Eagle Mines Ltd

Report

6129-740-132-REP-001

December 7, 2021

Authorized Signatory:



L3940

2021-12-07

Israël Gagnon, P.Eng., MBA
Mechanical engineer

EXECUTIVE SUMMARY

SNC Lavalin Inc. was retained by Agnico Eagle Mines Limited to prepare a construction summary (as built) report for the fuel storage tank #8 facilities of the Meadowbank Gold Project, Nunavut. SNC Lavalin Inc. previously prepared the construction drawings and specifications for the fuel storage tank facilities.

SNC Lavalin Inc. wasn't involved in the construction of the fuel storage tank, the information presented in this report was provided in part by Agnico Eagle.

The construction of the fuel storage tank facilities was completed in October 2021. The construction monitoring and quality assurance was managed by Agnico Eagle.

This report summarizes the construction as-built information for the fuel storage tank #8 facilities.

Table of content

Figure

Tables

Appendices

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1. Introduction

This document presents the fuel storage tank 8 facilities construction summary report required by the Water Licence 2AM-MEA1530 Part D Item 14 and Part G Item 4. As required by Water Licence Schedule D, this report contains the final design and construction drawings, a summary of construction activities including pictures recorded before, during and after construction. The as-built drawings, detailed explanation of field decision to reflect any deviations from the original construction drawings/plans and how such deviations may affect performance of engineered structures, a discussion of the mitigation measures implemented during construction and its effectiveness are also presented.

2. Construction Summary

2.1 Site location plan

Agnico Eagle is developing the Whale Tail Project in the Kivalliq Region of Nunavut (65°24'25" N, 96°41'50" W). The 99,878-hectare Amaruq property is located on Inuit-owned and federal crown land, approximately 55 km north of the Meadowbank mine. The Meadowbank mine is accessible from Baker Lake, located 70 kilometers to the south. The Baker Lake Bulk Fuel Storage Tank Facility is located east of the hamlet of Baker Lake, on the north shore of Baker Lake.

Figure 1 – Baker Lake Fuel Farm Site Overview (tank #7 and #8)

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2.2 Fuel tank size

Baker Lake fuel farm now includes eight (8) 10M liter fuel storage tank. This report is based on tank #8 construction, built in summer/fall 2021.

The Table 1 below presents the tank main dimensions.

Table 1 – Description of the fuel farm

Fuel farm Description	Baker Lake fuel tank 8
Product	Diesel
Volume (liter)	10 M
Diameter (m)	33.5
Height (m)	12.2

The detailed design drawings of the tank 8 are presented in Appendix A.

2.3 Tank Foundations Design

The tank foundation pad is built 2 meters lower than the surrounding ground with a minimum total thickness of 800 mm of compacted material which includes the liner system. A 3 m shoulder surround the tank with a slope of 1V:2H away from the tank. The embankments of the foundation pad are no steeper than 1V:2H.

The Table 2 below presents the design parameters for the tank foundations.

Table 2 – Design parameters for the tank foundations

Tank Foundation Pad	
Tank Diameter (m)	33.5
Tank foundation pad top (m)	2x 18.0 x 18.0
Tank foundation pad average thickness, above surrounding ground (m)	1.2
Slope on shoulder	1V:2H
Embankment slope	1V:2H

2.4 Berms Design

The storage tank is enclosed inside berms to contain accidental spillage of fuel product. The berms are made of granular material and are made impervious with a geomembrane. For more detail regarding containment, consult document 653281-0004-40ER-0005_0 Baker Lake Fuel Storage Tank #7 and Containment Facilities construction summary report.

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2.5 Secondary Containment Capacity

The required capacity of the fuel farms section was calculated based on the following codes and regulations:

- National Fire Code of Canada (NFCC);
- National Fire Protection Association (NFPA); and
- Design Rationale for Fuel Storage and Distribution Facility (DRFS).

As per the latest edition of NFCC, art. 4.3.7.3, the required secondary containment capacity for a fuel farm must have a volumetric capacity of not less than the sum of:

- A) The capacity of the largest storage tank located in the contained space, and;
- B) 10% of the greater of:
    i. The capacity specified in Clause (A), or;
    ii. The aggregate capacity of all other storage Tanks located in the contained space.

The volume occupied by the Tank foundation is considered in the total secondary containment capacity. The height of the secondary containment capacity is 300 mm lower than the berms' maximum elevation. Based on the above-mentioned, the secondary containment capacity requirements and the available capacity for fuel farms are summarized in the Table 3.

Table 3 – Fuel farm containment capacity

New section	
Volume (liter)	20 M (2X 10M)
Required Containment Capacity (liter)	12 M
Available Containment Capacity (liter)	20M

2.6 Drawings and photographs

Fuel farm tank final design and construction drawings are available in the Appendix A, construction pictures are available in Appendix C.

2.7 Timeline

The baker lake fuel storage tank # 8 was built in 2021. Earth work started on July 2021, followed by tank and piping fabrication in August and September 2021. Tank #8 construction ended September 8th, 2021, Piping installation work were finalised on October 12th, 2021.

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3. Field decisions

3.1 Equipment and controls

Fuel tank #8 was built as in Document 6120-C-260-001-REP-001 Fuel Tank Storage and Containment Facilities Design Report and Drawings. This document presents the rational and decisions that led to its construction. No modifications were performed, and the Fuel storage tank is operational as it was designed.

3.2 Piping

Piping between filling line and the fuel tank respect the point-to-point design. The piping can be seen on photos in Appendix C and respect the P&ID. Red mark drawings can be consulted in Appendix B. Modifications made to the piping won't affect the construction performance in any ways.

4. Mitigation measure

No Quarrying activities where required to build tank #8. No blast were done on the construction site. During the fuel storage tank construction, no sediments were released in water from construction areas and no water was used to manage dust emissions from construction activity.

5. Construction monitoring and inspection test plan

5.1 Tank weld

During the tank construction, a testing protocol was followed by the construction team. To meet API Standard 650, companies building tank are required to monitor their work trough an inspection program. In this program, the contractor registers welder's qualifications, confirm construction material quality and outlines its testing protocol. The results from weld tests are also registered there. All that information is required by API 650 standard. Testing on welds took place during the whole construction process. To attest welds quality, inspector relied on visual inspection, magnetic particulate tests and high penetration oil tests. To review those tests results, the materials quality and weld inspection results can be consulted in Appendix D.

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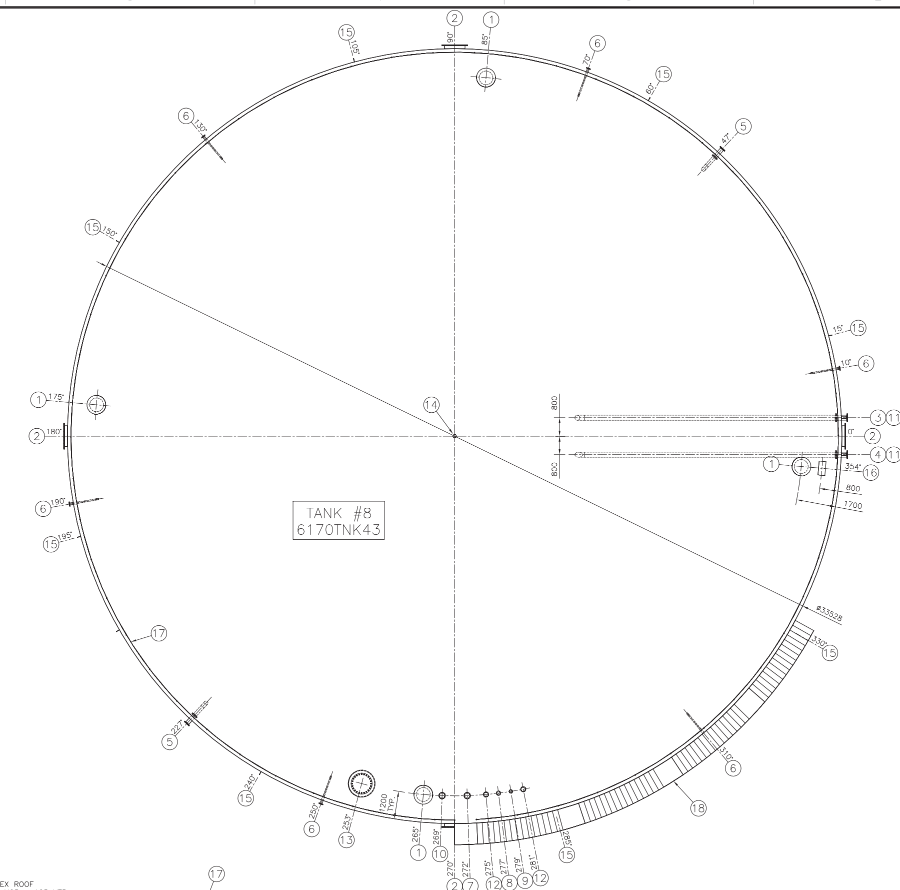
Appendix A

Final construction drawing

NO. DESSIN DRAWING NO. 61-740-260-201

FORMAT ARCHD

TANK #8 - 6170TNK43 - DIESEL				
SPECIFICATIONS:			NOMINAL DIAMETER (METERS): ORIGINAL NOMINAL HEIGHT (METERS): NOMINAL CAPACITY: WORKING CAPACITY:	± 33.528m (TO BE CONFIRMED BY MANUFACTURER) ± 12.192m (TO BE CONFIRMED BY MANUFACTURER) 10,780,000 LITERS 10,000,000 LITERS
TAG	QTY.	DIA.	DESCRIPTION	REMARKS
1	4	600	ROOF MANHOLE	TO API 650 STANDARDS
2	4	900	SHELL MANHOLE	TO API 650 STANDARDS
3	1	200	FIXED PIPE - TANK LOADING 11.7m LG.	TO API 650 STANDARDS, SEE DETAIL
4	1	200	FIXED PIPE - TANK UNLOADING 11.7m LG.	TO API 650 STANDARDS, SEE DETAIL
5	2	150	PUMPING LOW LEVEL	TO API 650 STANDARDS, SEE DETAIL
6	6	80	WATER DRAW-OFF	TO API 650 STANDARDS, SEE DETAIL
7	1	150	GAUGE HATCH	TO API 650 STANDARDS, SEE DETAIL
8	1	80	OVERFILL PROTECTION	TO API 650 STANDARDS, SEE DETAIL
9	1	50	TEMPERATURE & WATER DETECTION PROBE	TO API 650 STANDARDS, SEE DETAIL
10	1	150	RADAR - LEVEL DETECTION	TO API 650 STANDARDS, SEE DETAIL
11	2	50	ROOF PRESSURE RELIEF LINE CONNECTION, HALF COUPLING 25mm DIA.	TO API 650 STANDARDS AND NBC, SEE DETAIL
12	2	100	SPARE	TO API 650 STANDARDS, SEE DETAIL
13	-	600	VENT OPENING	TO API 2000 & 650 STANDARDS. DIA. AND QTY. TO BE DETERMINATE BY THE MANUFACTURER, SEE DETAIL
14	1	100	PAINTER SCAFFOLD CABLE SUPPORT	TO API 650 STANDARDS
15	8	-	GROUNDING LUG	TO API 650 STANDARDS, SEE DETAIL
16	1	-	ROOF INSPECTION FRAME	TO API 650 STANDARDS
17	1	-	ROOF GUARDRAIL	TO API 650 STANDARDS AND NBC
18	1	-	SPIRAL STAIRWAY, GUARDRAIL & HANDRAIL	TO API 650 STANDARDS AND NBC
19	12	-	BRACKET FOR PRV PIPING	TO API 650 STANDARDS AND NBC



PLAN VIEW
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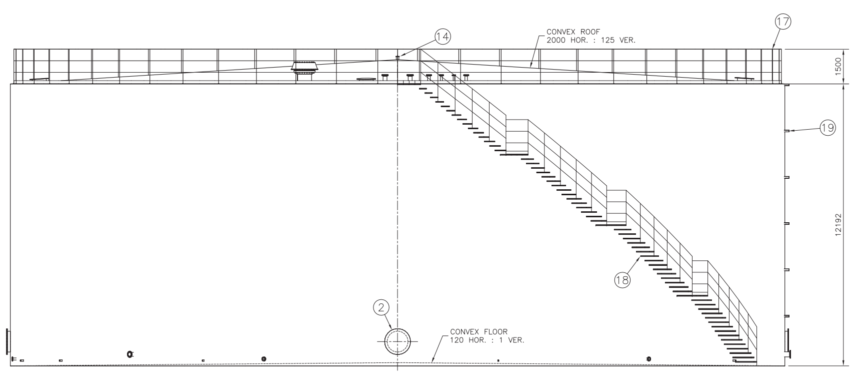
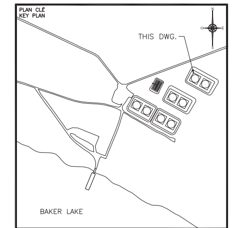


ELEVATION VIEW
SCALE: 1:100

PLAN CLÉ
KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

GENERAL ARRANGEMENT ONLY, TANK SHALL BE DESIGNED AS PER API 650 AND FABRICATION DRAWING APPROVED BY PROFESSIONAL ENGINEER OF NUNAVUT (NAPEG). REFER TO DOCUMENT NUMBER: 6120-C-260-001-SOW-001.

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2021-02-23

SNC·LAVALIN
SNC-Lavalin Stavibel inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél. : 819 764-5181 Fax : 819 797-0158
www.snclavalin.com

Project # : 671087-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
–	–
–	–
TANK #8 – PIPING	61-740-270-001
TANK #7 & #8 – LOCATION PLAN	61-740-210-201
TANK #7 & #8 – DETAILS	61-740-260-202
TANK #7 – PLAN & ELEVATION	61-740-260-200

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
2	2021-02-23	ISSUED FOR CONSTRUCTION	ST.MAR	A.OUE	N.MÉN.
1	2019-03-12	ISSUED FOR TENDER	B.LEM	M.HÉN	N.MÉN.
0	2018-12-10	ISSUED FOR TENDER	B.LEM	M.HÉN	N.MÉN.

REVISIONS

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
PLATEWORK
PLAN & ELEVATION
10M LITERS DIESEL TANK
TANK #8 – 6170TNK43

DESSINÉ PAR / DRAWN BY	B.LEMIEUX, Tech.	DATE 2018/11/16
VÉRIFIÉ PAR / CHECKED BY	R. LAVOIE, Jr. Eng.	2018/11/16
APPROUVÉ PAR / APPROVED BY	M. HÉNAULT, P. Eng.	2018/11/16
ÉCHELLE / SCALE	INDICATED	DATE 2018/11/16
NO. DESSIN / DRAWING NO.	61-740-260-201	
NO. PROJET / PROJECT NO. 6120	REVISION 2	FEUILLE / SHT 1 / 1

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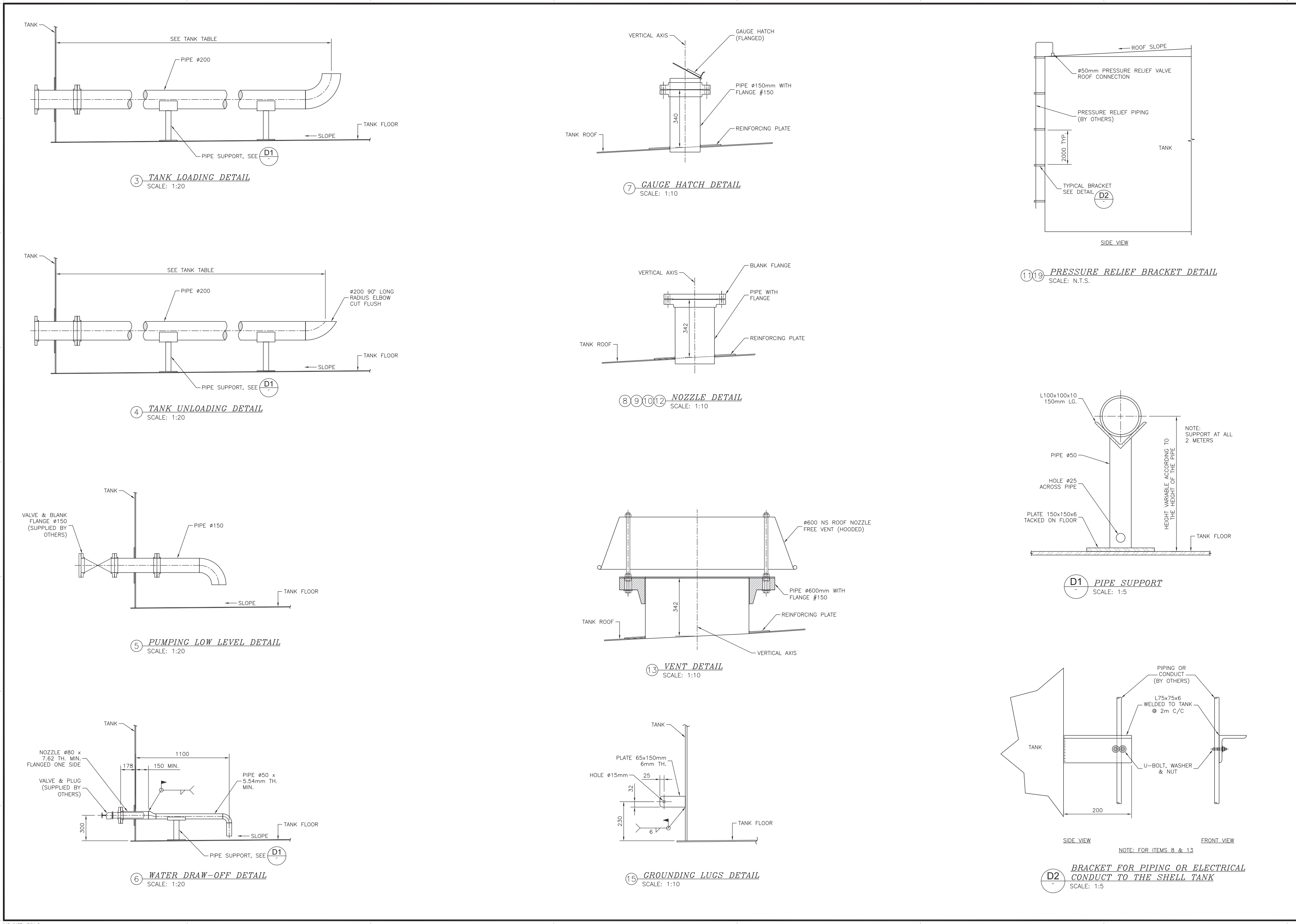
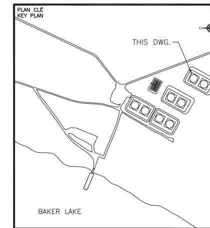


PLAN CLÉ / KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION / FOR CONSTRUCTION
DATE : 2021-02-23

SNC-LAVALIN
SNC-Lavalin Stavibel inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél.: 819 764-5181 Fax: 819 797-0158
www.snclavalin.com

Project # : 671087-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
–	–
–	–
–	–
TANK #7 & #8 – LOCATION PLAN	61-740-210-201
TANK #8 – PLAN & ELEVATION	61-740-260-201
TANK #7 – PLAN & ELEVATION	61-740-260-200

AGNICO EAGLE

REVISIONS

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
1	2021-02-23	ISSUED FOR CONSTRUCTION	ST.MAR	A.OUE.	N.MÉN
0	2018-12-10	ISSUED FOR TENDER	B.LEM	M.HÉN	N.MÉN

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
PLATEWORK
DETAILS
10M LITERS DIESEL TANK
TANK #7 & #8

		DATE
DESSINÉ PAR / DRAWN BY	B.LEMIEUX, Tech.	2018/11/16
VÉRIFIÉ PAR / CHECKED BY	R. LAVOIE, Jr. Eng.	2018/11/16
APPROUVÉ PAR / APPROVED BY	M. HÉNAULT, P. Eng.	2018/11/16
ÉCHELLE / SCALE	INDICATED	2018/11/16

NO. DESSIN / DRAWING NO. 61-740-260-202

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
6120	1	1 / 1

NO. DESSIN / DRAWING NO. 61-740-260-202

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AE-CART-ARCH D

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NO. DESSIN / DRAWING NO. 61-740-270-200

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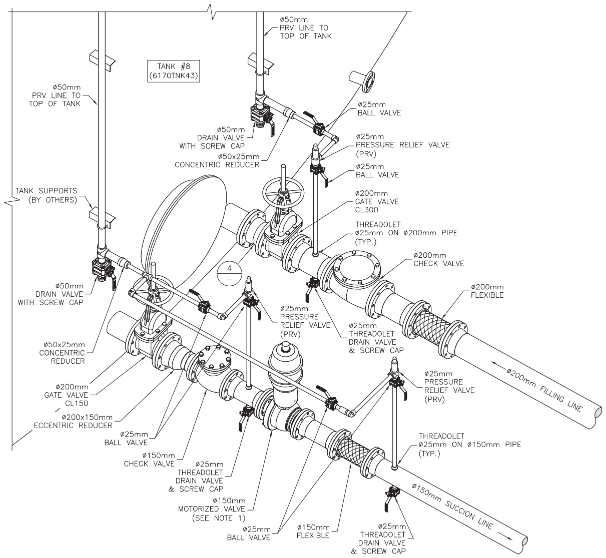

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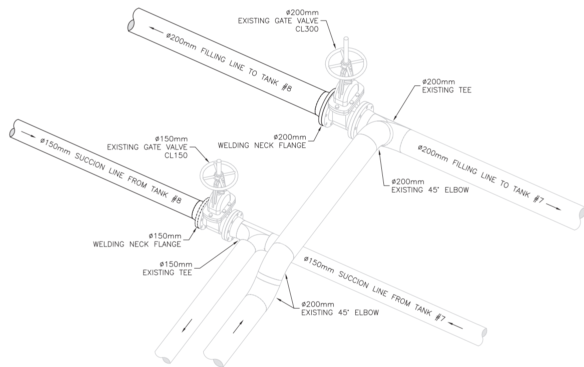

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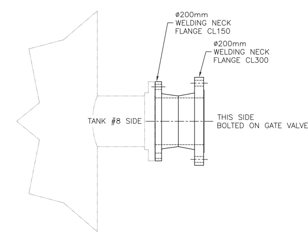
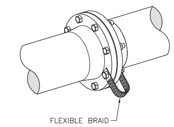
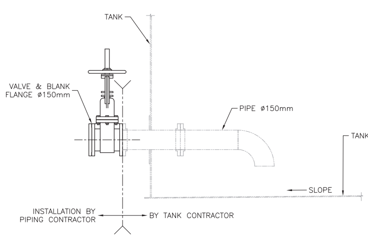


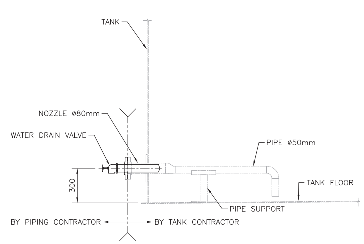
DETAIL 4/–
SCALE: N.T.S.



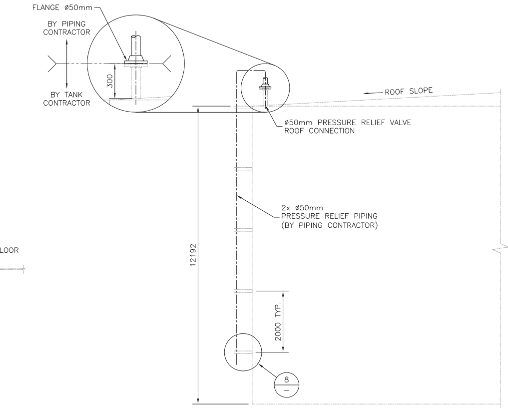
TYPICAL FLANGE DETAIL
SCALE: N/A



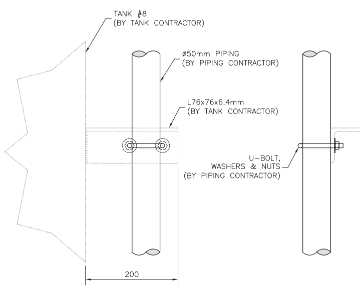
DETAIL 5/200
SCALE: 1:20
QTY.: 2



DETAIL 6/200
SCALE: 1:20
QTY.: 6

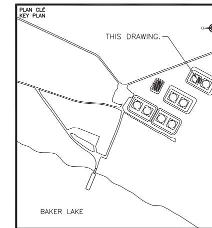


DETAIL 7/200
SCALE: N.T.S.



DETAIL 8/–
SCALE: 1:5

PLAN CLÉ / KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

NOTE 1:
SUPPLY OF MOTORIZED VALVE BY AEM AND INSTALLATION BY CONTRACTOR.

NOTE 2:
AEM WILL SUPPLY VALVES, PIPING AND ACCESSORIES. CONTRACTOR ARE RESPONSIBLE OF INSTALLATION.

NOTE 3:
REFER TO DOCUMENT NUMBER 6129-C-265-002-SPT-001 FOR INSTALLATION SPECIFICATIONS.

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2021-03-23

SNC-LAVALIN
SNC-Lavalin Stavibel inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél.: 819 764-5181 Fax: 819 797-0158
www.snclavalin.com

Project #: 671087-0000 REV.: 0

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
P&ID	61-740-J-0100_2/2
TANK 7 & 8 PIPE SUPPORTS – DETAILS	61-740-270-202
TANK 7 & 8 PIPING – ELEV. & DETAILS	61-740-270-201
10M L. DIESEL TNK #7 & TNK #8 PIPING	61-740-270-200
–	–
–	–

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2021-03-23	ISSUED FOR CONSTRUCTION	D.L.L.	A.OUE	N.MÉN

REVISIONS

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
270 – PIPING
DETAILS
10M LITERS DIESEL TANK #8 (6170TNK43)

		DATE
DESSINÉ PAR / DRAWN BY	ST. MARCOTTE, Tech.	2021/02/24
VÉRIFIÉ PAR / CHECKED BY	R. LAVOIE, P. Eng.	2021/02/24
APPROUVÉ PAR / APPROVED BY	A. OUELLET, P. Eng.	2021/02/23
ÉCHELLE / SCALE	AS SHOWN	2021/02/24

NO. DESSIN / DRAWING NO. 61-740-270-001

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
6129	0	1 / 1

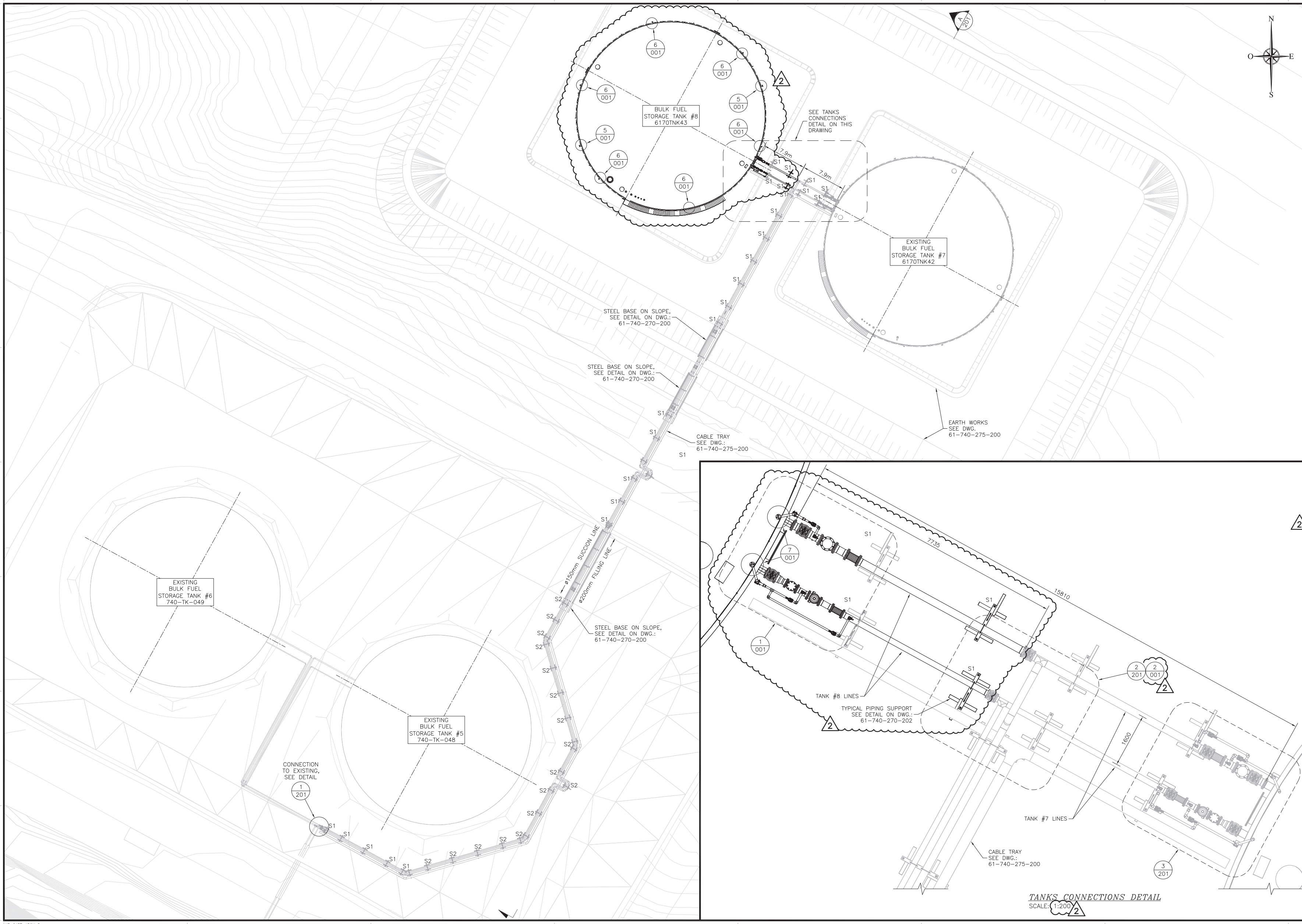
AE-CART-ARCH D

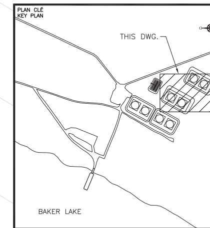
\\sll.bz\stavibel\Projet\300-RN\671087\0000\0-Docs Emis\02 – Tank No.8 Baker Lake\2021-03-23 – Construction\61-740-270-001_R0.dwg-2013-02-19 14:03:29

FILE NO. 61-740-270-001_R0.dwg

NO. DESSIN DRAWING NO. 61–740–270–200

FORMAT ARCHD





NOTES GÉNÉRALES / GENERAL NOTES

S1: PIPE SUPPORT TYPE 1
S2: PIPE SUPPORT TYPE 2
SEE DWG. # 61–740–270–202

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2021–03–23

SNC·LAVALIN

SNC-Lavalin Stavibel inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel. : 819 764-5181 Fax : 819 797-0158
www.snclavalin.com

Project # : 671087-0000 REV.: 2

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DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
GENERAL EARTH WORKS	61–740–230–200 TO 205
ELECTRICAL	61–740–275–200 TO 201
P&ID	61–740–J–0100_1 & 2
10M LITERS DIESEL TANK #8 (6170TNK43)	61–740–270–001
TANK 7 & 8 PIPE SUPPORTS – DETAILS	61–740–270–202
TANK 7 & 8 PIPING – ELEV. & DETAILS	61–740–270–201

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
2	2021–03–23	ISSUED FOR CONSTRUCTION	D.L.L.	A.OUE	N.MÉN
1	2019–06–03	ISSUED FOR CONSTRUCTION	B.L.	A.O.	B.ROY
0	2019–04–25	ISSUED FOR TENDER	B.L.	A.O.	N.MÉN

REVISIONS

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
PIPING
PLAN VIEW
10M LITERS DIESEL TANK #7 (6170TNK42)
& TANK #8 (6170TNK43) PIPING

		DATE
DESSINÉ PAR / DRAWN BY	B. LEMIEUX, Tech.	2019/02/15
VÉRIFIÉ PAR / CHECKED BY	R. LAVOIE, Jr. Eng.	2019/02/15
APPROUVÉ PAR / APPROVED BY	A. OUELLET, P. Eng.	2019/02/15
ÉCHELLE / SCALE	1 : 300	2019/02/15

NO. DESSIN DRAWING NO. 61–740–270–200

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
6120	2	1 / 1

AE-CART-ARCH D

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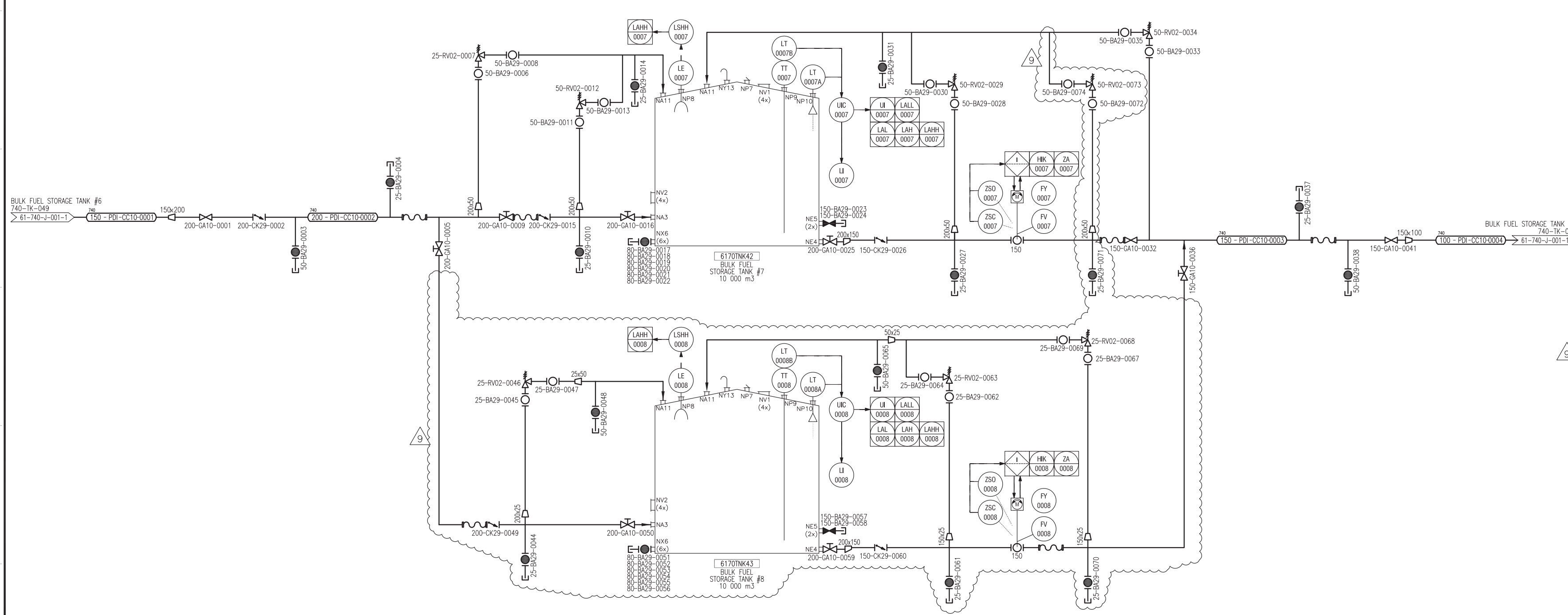
FILE NO. 61-740-270-200_R2.dwg

NO. DESSIN
DRAWING NO. 61-740-J-0100-2_R9

FORMAT ARCHD



POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2021-03-23
AGNICO EAGLE

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

SNC·LAVALIN

SNC-Lavalin Stavibel inc.
532, 7e Rue Ouest, Bureau 101
Amos (Québec) J9T 3W7
Tél. : 819 732-8355 Téléc. : 819 732-0259
www.snclavalin.com

Projet No. : 671087-0000 REV.: 9

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DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
TANK #5 AND #6 – FUEL DIST. PIPING	61-740-M-0100
10M LITERS DIESEL TANK #8 (6170TNK43)	61-740-270-001
10M L. DIESEL TNK #7 & TNK #8 PIPING	61-740-270-200
–	–
–	–
–	–

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
8	2019-12-16	AS BUILT	S.P.	B.R.	–
7	2019-06-03	ISSUED FOR CONSTRUCTION	B.L.	A.O.	B.ROY
6	2019-05-03	ADDENDUM AIR / DRAIN VALVE	P.O.C.	A.O.	N.MÉN.
5	2019-04-25	ISSUED FOR TENDER	B.L.	A.O.	N.MÉN.
4	2018-12-12	FOR COMMENTS	B.L.	M.H.	N.MÉN.
9	2021-03-23	ISSUED FOR CONSTRUCTION	D.L.L.	A.OUE	N.MÉN

REVISIONS

TITRE / TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
–
PROCESS AND INSTRUMENTATION DIAGRAM
–
–

DESSINÉ PAR / DRAWN BY	FRANCIS ROSE, TECH	DATE 2009/03/27
VERIFIÉ PAR / CHECKED BY	PATRICK GIARD, P.ENG	–
APPROUVÉ PAR / APPROVED BY	PATRICK GIARD, P.ENG	–
ÉCHELLE / SCALE	N.T.S.	DATE 2009-03-27
NO. DESSIN / DRAWING NO.	61-740-J-0100	
NO. PROJET / PROJECT NO. 6120	REVISION 9	FEUILLE / SHT 2 / 2

AE-CART-ARCH D

\\sll.bz\stavibel\Projet\300-RN\671087\0000\4-Ingenierie\0-Dessins maitres\48-IC\61-740-J-0100-2_R9.dwg-2013-02-19 14:03:29

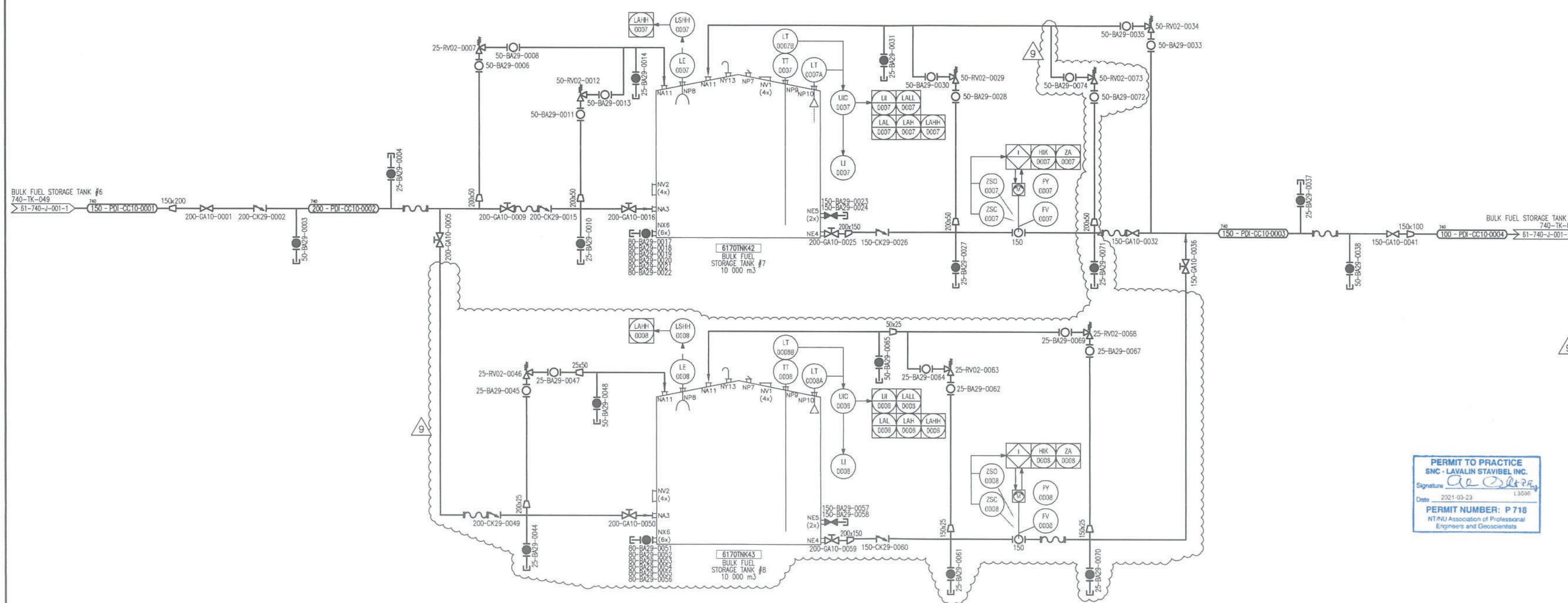
FILE NO. 61-740-J-0100-2_R9.dwg

Appendix B

As built drawing

NO. DESSIN DRAWING NO. 61-740-J-0100-2_R9

FORMAT ARCHD



PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2021-03-23
L3595
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2021-03-23

SNC·LAVALIN

SNC-Lavalin Stavibel inc.
532, 7e Rue Ouest, Bureau 10
Amos (Québec) J9T 3W7
Tél. : 819 732-8355 Téléc. : 819 732-0259
www.snclavalin.com

Projet No. : 671087-0000 REV.: 9

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DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
TANK #5 AND #6 – FUEL DIST. PIPING	61-740-M-0100
10M LITERS DIESEL TANK #8 (6170TNK43)	61-740-270-001
10M L. DIESEL TNK #7 & TNK #8 PIPING	61-740-270-200
–	–
–	–
–	–

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
8	2019-12-16	AS BUILT	S.P.	B.R.	–
7	2019-06-03	ISSUED FOR CONSTRUCTION	B.L.	A.O.	B.ROY
6	2019-05-03	ADDENDUM AIR / DRAIN VALVE	P.O.C.	A.O.	N.MÉN.
5	2019-04-25	ISSUED FOR TENDER	B.L.	A.O.	N.MÉN.
4	2018-12-12	FOR COMMENTS	B.L.	M.H.	N.MÉN.
9	2021-03-23	ISSUED FOR CONSTRUCTION	D.L.L.	A.OUE	N.MÉN

REVISIONS

A. OUELLET
LICENSEE
L3595
2021-03-23

TITRE / TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
–
PROCESS AND INSTRUMENTATION DIAGRAM
–
–

DESSINÉ PAR / DRAWN BY	FRANCIS ROSE, TECH	DATE	2009/03/27
VÉRIFIÉ PAR / CHECKED BY	PATRICK GIARD, P.ENG		–
APPROUVÉ PAR / APPROVED BY	PATRICK GIARD, P.ENG		–
ÉCHELLE / SCALE	N.T.S.	DATE	2009-03-27
NO. DESSIN / DRAWING NO.	61-740-J-0100		
NO. PROJET / PROJECT NO.	6120	REVISION 9	FEUILLE / SHT 2 / 2

AE-CART-ARCH D

FILE NO. 61-740-J-0100-2_R9.dwg

NO. DESSIN / DRAWING NO. 61-740-285-200

FORMAT ANSI B-11x17

Panel Ident.: 6174-DP-06

Power source:	120 208 Volts
Feeder :	6174-TX-04
Mount:	Surface
Localisation:	BAKER LAKE SEA CAN
Type:	Schneider QO Series

Encl. Type :	NEMA 1
Main breaker:	N/A
Nb. of circuit:	42
Bars (Amps):	225A
Cap. rupt. (kA)	10

Local and description	TYPE REF	TYPE Qty	WATTS	DISJ. TYPE	DISJ. AMP	CT #		CT #	DISJ. AMP	DISJ. TYPE	WATTS	TYPE Qty	TYPE REF	Local and description
6174-PLC-02 Power	D				15	1	A	2	15				E	Sea Can Lighting
6174-XV-01 - Elect. Actuator valve	M				15	3	B	4	15				P	Sea Can Receptacle
6174-XV-02 - Elect. actuator valve	M				15	5	C	6	15					Spare breaker
6174-XV-03 - Elect. actuator valve	M				15	7	A	8	15					Spare breaker
6174-XV-04 - Elect. actuator valve	M				15	9	B	10	15					Spare breaker
6174-XV-05 - Elect. actuator valve	M				15	11	C	12	15					Spare breaker
6174-XV-06 - Elect. actuator valve	M				15	13	A	14	15					Spare breaker
6174-IOP-003 power	D				15	15	B	16	15					Spare breaker
Spare breaker					15	17	C	18	30					Spare breaker
Spare breaker					15	19	A	20						
6174-XV-07 Res. #7 Valve Actuator	M				15	21	B	22	15	GFI			C	6174-HEA-07 Res. #7 Valve Heating
						23	C	24						
6174-XV-08 Res. #8 Valve Actuator	M				15	25	A	26	15	GFI			C	6174-HEA-08 Res. #8 Valve Heating
						27	B	28						
Space						29	C	30						Space
Space						31	A	32						Space
Space						33	B	34						Space
Space						35	C	36						Space
Space						37	A	38						Space
Space						39	B	40						Space
Space						41	C	42						Space

TYPE (REF)	(W) total	Qty
(E) Lighting	0	0
(P) Parking plug	0	0
(C) Heating	0	0
(M) Motor	0	0
(W) Water heater	0	0
(D)Other	0	0
	0	0

TYPE (REF)	Qty (ref)
(L) Spare	0
(S) Space	0
	0
	0
	0

	Watts	Amp
Phase A	0	0,00
Phase B	0	0,00
Phase C	0	0,00
Total R	0	0,00

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2021-03-10

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2021-03-17
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

J. BOURNIVAL LICENSEE NWT/NU
2021-03-17

		REV	DESCRIPTION	DATE	PAR BY
_	_	4	ISSUED FOR CONSTRUCTION	2021-03-10	J.BOU
_	_	3	AS BUILT	2020-01-24	S.MAR
_	_	2	ISSUED FOR CONSTRUCTION	2019-06-03	P.LEM.
_	_	1	ISSUED FOR TENDER	2019-05-03	P.LEM.
_	_	0	ORIGINAL DRAWING WAS 6174-E-002	JUNE/16	M.B.
TITRE / TITLE	# DWG	REV	DESCRIPTION	DATE	PAR BY

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

REVISIONS

AGNICO EAGLE

SNC·LAVALIN
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel. : 819 764-5181 Fax : 819 797-0158
www.snclavalin.com

Project # : 660534-0000
REV:1

DESSINÉ PAR / DRAWN BY	MV	MAY/16
VÉRIFIÉ PAR / CHECKED BY	ST	JUNE/16
APPROUVÉ PAR / APPROVED BY	ST	JUNE/16
No. PROJET / PROJECT NO.	6120	
DATE	JUNE/16	

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TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
285 – SERVICE ELECTRICAL – LIGHT AND DISTRIBUTION
6174-DP-06 PANEL SCHEDULE
BAKER LAKE SEA CAN – DISTRIBUTION PANEL 120/208VAC

ÉCHELLE/ SCALE	N/A	FICHIER / FILE	61-740-285-200_R4.dwg
No. DESSIN/ DRAWING NO.	61-740-285-200	REVISION	4
		FEUILLE/SHT	1 / 1

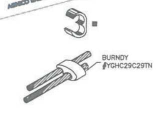
AE-CART-ANSI B

C:\Users\pelld4\Desktop\Projet\Agnico\671087\61-740-285-200_R4.dwg-2013-02-19 14:03:29

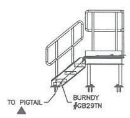
NO. DESSIN DRAWING NO. 61-740-275-201

FORMAT ARCHD

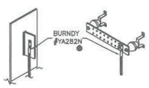
POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE DATE : 2021-03-10



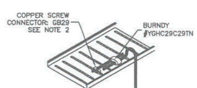
C-TAPS (1)
SCL: NTS
CONDUCTOR TO CONDUCTOR CONNECTOR



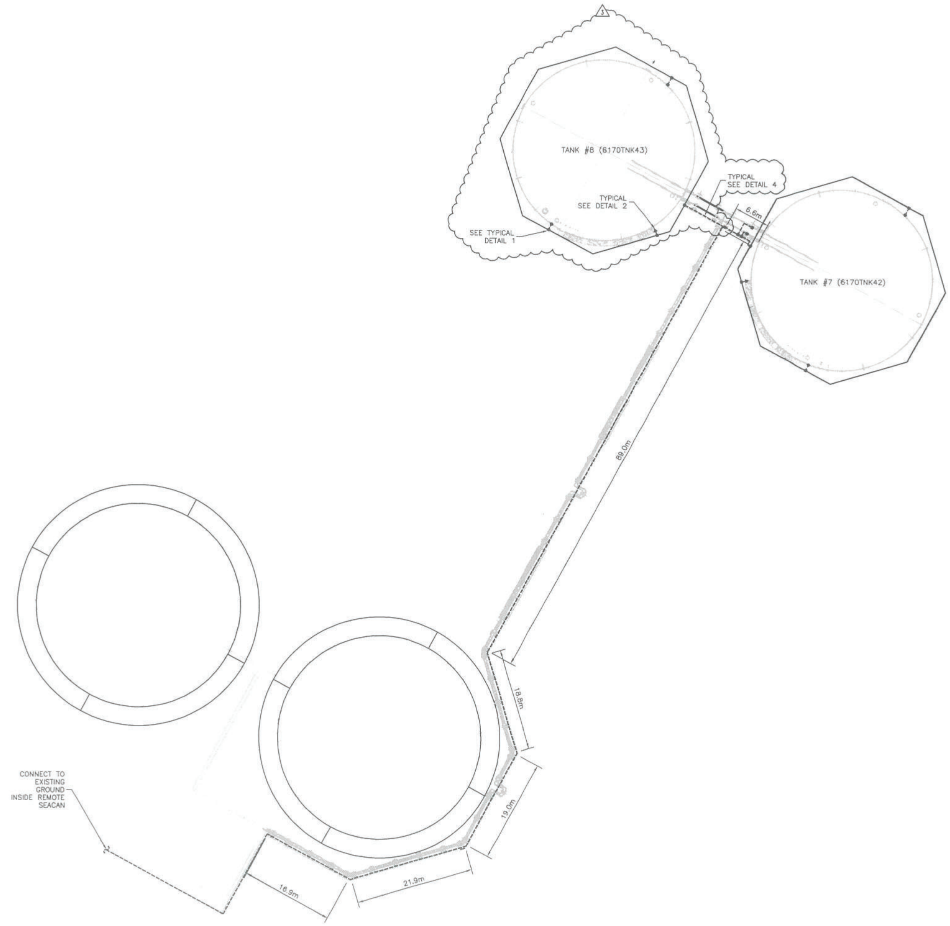
STAIRS (2)
SCL: NTS



LUG YA-28 (3)
SCL: NTS
EQUIPEMENT, CONTAINER, GROUND BAR



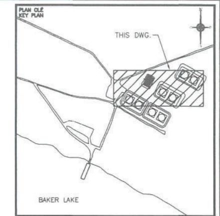
CABLE TRAY (4)
SCL: NTS



PLAN VIEW
SCALE: 1:400

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2021-03-17
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

PLAN CLÉ
KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

LEGEND

———	BURIED STRANDED TINNED BARE COPPER CONDUCTOR #4/0 AWG
- - - - -	SURFACE STRANDED TINNED BARE COPPER CONDUCTOR #4/0 AWG IN CABLE TRAY

NOTES

1– THE PERIMETER GROUND CONDUCTOR OF THE TANK MUST BE ABOVE THE GEOMEMBRANE

2– THE GROUND CONDUCTOR MUST BE FIXED TO THE CABLE TRAY TO ALL 15 METER MINIMUM WITH MECHANICAL CONNECTOR BURNDY MODEL GB29

SNC·LAVALIN
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Tél.: 819 764-5181 Fax: 819 797-0458
www.snclavalin.com

Project # : 660534-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
–	–
–	–
–	–
–	–
–	–

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
3	2021-03-10	ISSUED FOR CONSTRUCTION	D.PEL.	J.BOU.	
2	2020-01-24	AS BUILT	S.MAR.		C.LAV.
1	2019-06-03	ISSUED FOR CONSTRUCTION	S.MAR.	P.LEM.	
0	2019-05-03	ISSUED FOR TENDER	D.PEL.	P.LEM.	

REVISIONS

2021-03-17

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 – BAKER LAKE AREA
275 – POWER ELECTRICAL ARRANGEMENT
10M LITERS DIESEL TANK #7 (6170TNK42) & TANK #8 (6170TNK43) GROUNDING

DESSINÉ PAR / DRAWN BY	DONALD PELLERIN, Tech.	DATE 2019-04-24
VÉRIFIÉ PAR / CHECKED BY	PHILIPPE LEMIRE, P. Eng.	2019-04-25
APPROUVÉ PAR / APPROVED BY	PHILIPPE LEMIRE, P. Eng.	2019-05-03
ÉCHELLE / SCALE	INDICATED	DATE 2019-04-24
NO. DESSIN / DRAWING NO.	61-740-275-201	
NO. PROJET / PROJECT NO. 6120	REVISION 3	FEUILLE / SHT 1/1

AE-CART-ARCH B

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FILE NO. 61-740-275-201_R3.dwg

NO. DESSIN / DRAWING NO. 61-740-280-209

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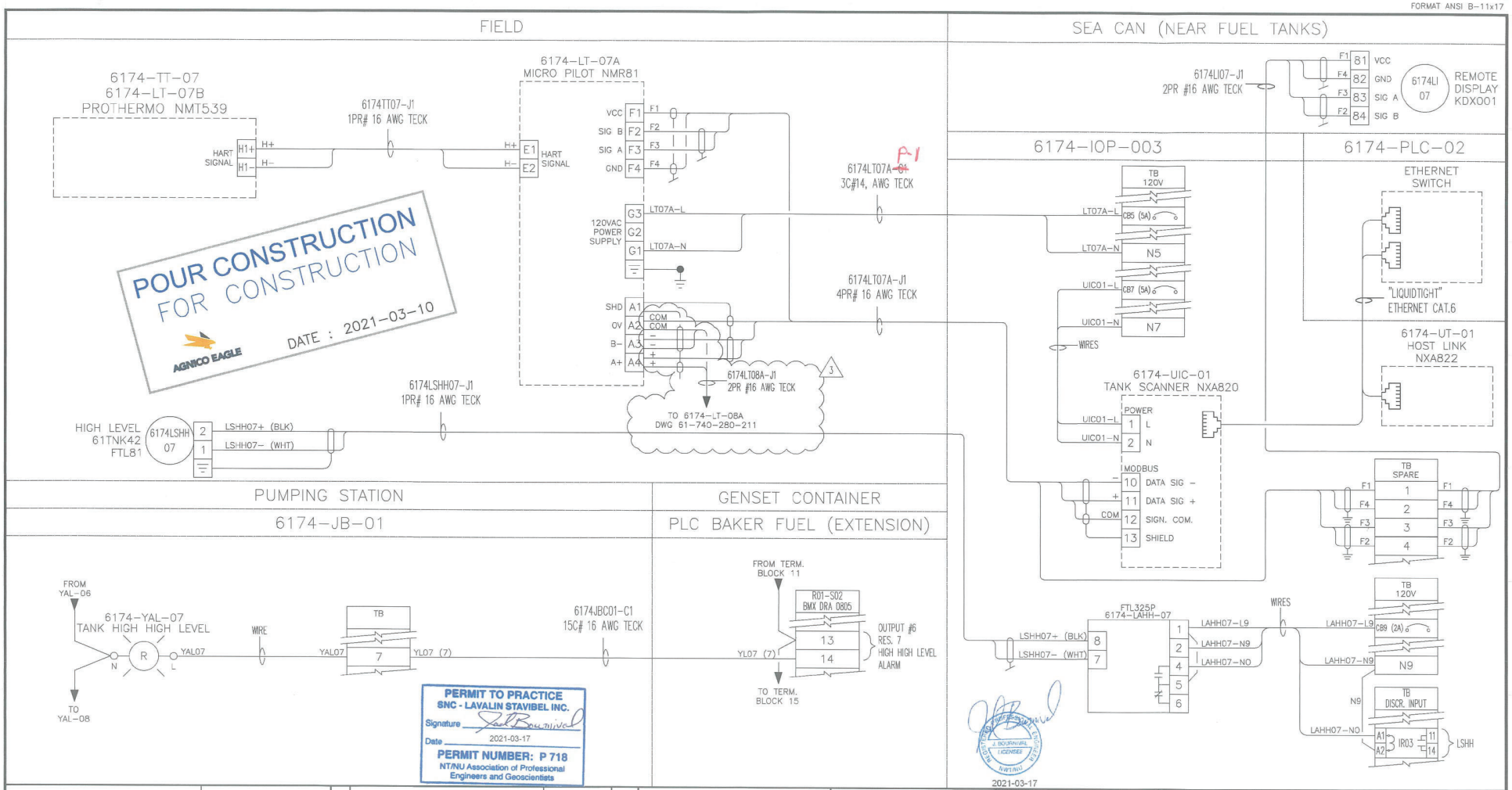

6174JBC01 – ARRANGEMENT / WIRING	61-740-280-214	3	ISSUED FOR CONSTRUCTION	2021-03-10	J.BOU
PLC BAKER FUEL (EXT.) – WIRING DIAGRAM	61-740-280-213	2	AS BUILT	2020-01-24	S.MAR
6174IOP003 – WIRING DIAGRAM	61-740-280-207	1	ISSUED FOR CONSTRUCTION	2019-06-03	P.LEM.
61TNK43 – LEVEL MONITORING	61-740-280-211	0	ISSUED FOR TENDER	2019-05-03	P.LEM
TITRE / TITLE	# DWG	REV	DESCRIPTION	DATE	PAR BY
DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS		REVISIONS			

AGNICO EAGLE

Project # : 660534-0000

SNC·LAVALIN
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel. : 819 764-5181 Fax : 819 797-0158
www.snclavalin.com

DESSINÉ PAR / DRAWN BY	S.MARCOTTE, TECH.	2019-04-29
VÉRIFIÉ PAR / CHECKED BY	PHILIPPE LEMIRE, P.ENG.	2019-04-29
APPROUVÉ PAR / APPROVED BY	PHILIPPE LEMIRE, P.ENG.	2019-05-03
No. PROJET / PROJECT NO.	6120	
DATE	2019-04-29	

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
280 – INSTRUMENTATION & CONTROL
WIRING DIAGRAM
61TNK42 – LEVEL MONITORING

ÉCHELLE / SCALE: NTS
FICHIER / FILE: 61-740-280-209_R3.dwg
No. DESSIN / DRAWING NO.: 61-740-280-209
REVISION: 3
FEUILLE / SHT: 1 / 1

AE-CART-ANSI B

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NO. DESSIN / DRAWING NO. 61-740-280-212

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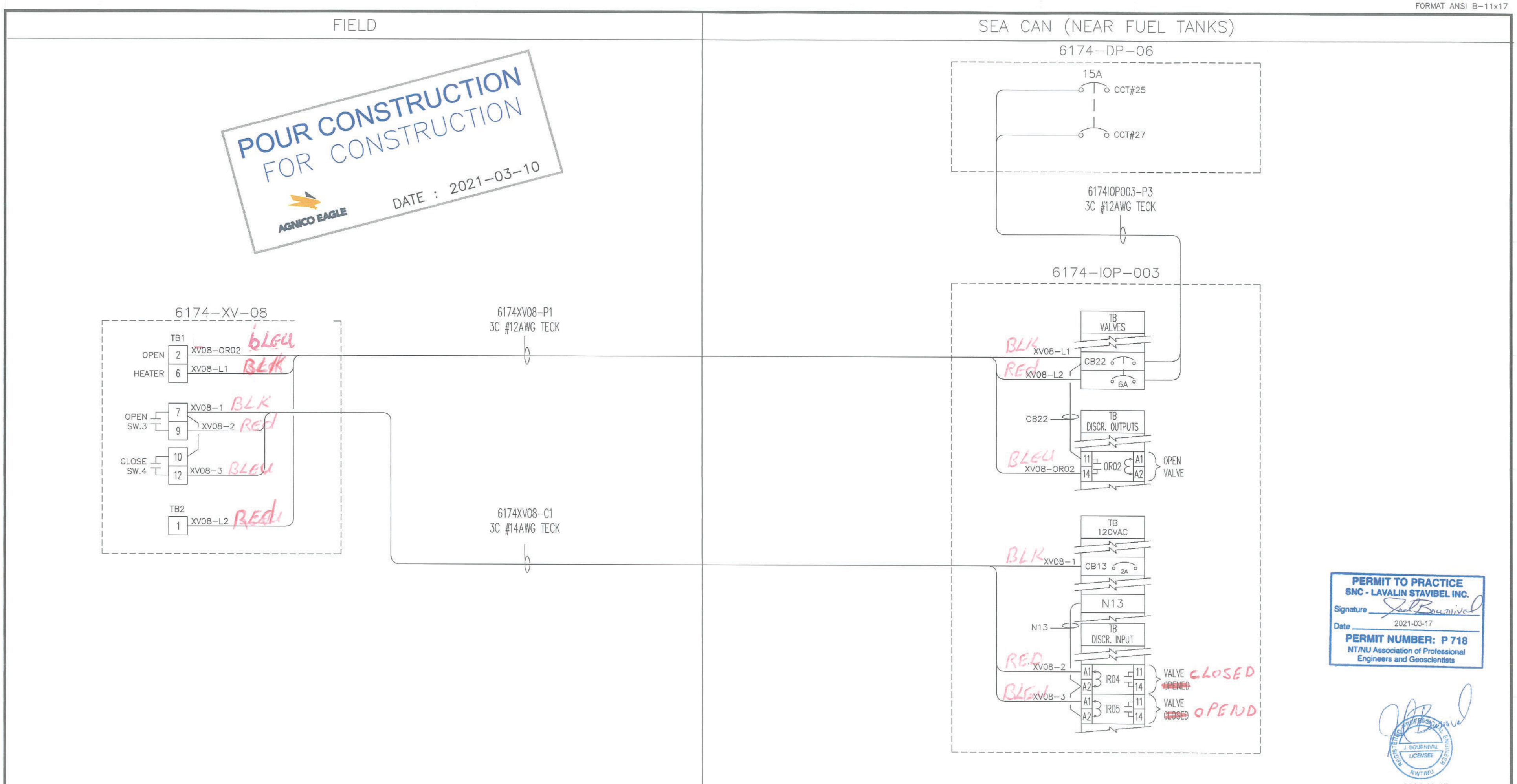

		REV	DESCRIPTION	DATE	PAR BY
		3	ISSUED FOR CONSTRUCTION	2021-03-10	J.BOU
		2	AS BUILT	2020-01-24	S.MAR
6174-DP-06 – SCHEDULE	61-740-285-200	1	ISSUED FOR CONSTRUCTION	2019-06-03	P.LEM
6174IOP003 – WIRING DIAGRAM	61-740-280-207	0	ISSUED FOR TENDER	2019-05-03	P.LEM
TITRE / TITLE	# DWG				

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS — REVISIONS

AGNICO EAGLE

SNC·LAVALIN
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel. : 819 764-5181 Fax : 819 797-0158
www.snclavalin.com

Project # : 660534-0000

		DATE
DESSINÉ PAR / DRAWN BY	S.MARCOTTE, TECH.	2019-04-30
VÉRIFIÉ PAR / CHECKED BY	PHILIPPE LEMIRE, P.ENG.	2019-04-30
APPROUVÉ PAR / APPROVED BY	PHILIPPE LEMIRE, P.ENG.	2019-05-03
No. PROJET / PROJECT NO.	6120	
DATE	2019-04-30	

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
280 – INSTRUMENTATION & CONTROL
WIRING DIAGRAM
6170TNK43 – VALVE 6174-XV-08

ÉCHELLE/SCALE: NTS
FICHIER/FILE: 61-740-280-212_R3.dwg
No. DESSIN/DRAWING NO.: 61-740-280-212
REVISION: 3
FEUILLE/SHT: 1 / 1

AE-CART-ANSI B

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NO. DESSIN / DRAWING NO. 61-740-280-211

FORMAT ANSI B-11x17

FIELD

6174-TT-08
6174-LT-08B
PROTHERMO NMT539

HART SIGNAL H1+ H+ H1- H-

6174TT08B-J1
1PR# 16 AWG TECK

6174-LT-08A
MICRO PILOT NMR81

VCC F1 SIG B F2 SIG A F3 GND F4

6174LI08-C1
2PR#16 AWG TECK

6174LT08A-C1
3C# AWG TECK

120VAC POWER SUPPLY G3 G2 G1 LT08A-L LT08A-N

FROM 6174-LT-07A
DWG 61-740-280-209

6174LT08A-J1
2PR# 16 AWG TECK

SHD A1 0V A2 B- A3 A+ A4 COM - +

6174LSHH08-J1
1PR# 16 AWG TECK

HIGH LEVEL 61TNK43 FTL81 — 6174LSHH 08 — 2 LSHH08+ (BLK) 1 LSHH08- (WHT)

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2021-03-10
AGNICO EAGLE

SEA CAN (NEAR FUEL TANKS)

F1 81 VCC F4 82 GND F3 83 SIG A F2 84 SIG B — 6174LI 08 — REMOTE DISPLAY KDX001

6174-IOP-003

TB 120V
LT08A-L CB10 (5A)
LT08A-N N10
LAHH08-L12 CB12 (2A)
LAHH08-N12 N12
TB DISCR. INPUT
LAHH08-NO A1 A2 IR06 11 14 LSHH

WIRES

FTL325P 6174LAHH08
LSHH08+ (BLK) 8
LAHH08- (WHT) 7
1 LAHH08-L12
2 LAHH08-N12
4 LAHH08-NO
5
6

PUMPING STATION

6174-JBC-01

FROM YAL-07
6174-YL-08
TANK HIGH HIGH LEVEL
R N L

WIRE

TB
YAL08 8 YAL08 (8)
YAL-N 9 YAL-N22 (9)

TO YAL-01

6174JBC01-C1
15C# 16 AWG TECK

GENSET CONTAINER

PLC BAKER FUEL (EXTENSION)

TB 120VAC
YAL-N22 (9) N22

FROM TERM. BLOCK 13
RO1-SO2 BMX DRA 0805
YL08 (8) 15 16
OUTPUT #7 RES. 08 HIGH HIGH LEVEL ALARM

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2021-03-17
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

J. BOURNIVAL LICENSEE NWT/NU

2021 03 17

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS		REVISIONS			
TITRE / TITLE	# DWG	REV	DESCRIPTION	DATE	PAR BY
6174JBC01 – ARRANGEMENT / WIRING	61-740-280-214	3	ISSUED FOR CONSTRUCTION	2021-03-10	J.BOU
PLC BAKER FUEL (EXT.) – WIRING DIAGRAM	61-740-280-213	2	AS BUILT	2020-01-24	S.MAR
6174IOP003 – WIRING DIAGRAM	61-740-280-207	1	ISSUED FOR CONSTRUCTION	2019-06-03	P.LEM
61TNK42 – LEVEL MONITORING	61-740-280-209	0	ISSUED FOR TENDER	2019-05-03	P.LEM

AGNICO EAGLE

SNC·LAVALIN
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel. : 819 764-5181 Fax : 819 797-0158
www.snclavalin.com

Project # : 660534-0000

DESSINÉ PAR / DRAWN BY	S.MARCOTTE, TECH.	DATE 2019-04-29
VÉRIFIÉ PAR / CHECKED BY	PHILIPPE LEMIRE, P.ENG.	2019-04-29
APPROUVÉ PAR / APPROVED BY	PHILIPPE LEMIRE, P.ENG.	2019-05-03
No. PROJET / PROJECT NO.	6120	
DATE	2019-04-29	

INFORMATION CI-CONTENUE EST LA PROPRIÉTÉ DE AGNICO EAGLE LTÉE ET NE PEUT ÊTRE REPRODUITE SUR QUELQUE SUPPORT QUE CE SOIT, TRANSMISE OU COPIÉE À AUTRUI ET TOUTE UTILISATION AUTRE QUE CELLE POUR LAQUELLE L'AUTORISATION EST PRÉVUE SONT INTERDITES. © AGNICO EAGLE LTÉE

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TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
280 – INSTRUMENTATION & CONTROL
WIRING DIAGRAM
61TNK43 – LEVEL MONITORING

ÉCHELLE/ SCALE	FICHIER FILE	REVISION	FEUILLE/SHT
NTS	61-740-280-211_R3.dwg	2	1 / 1

No. DESSIN/ DRAWING NO. 61-740-280-211

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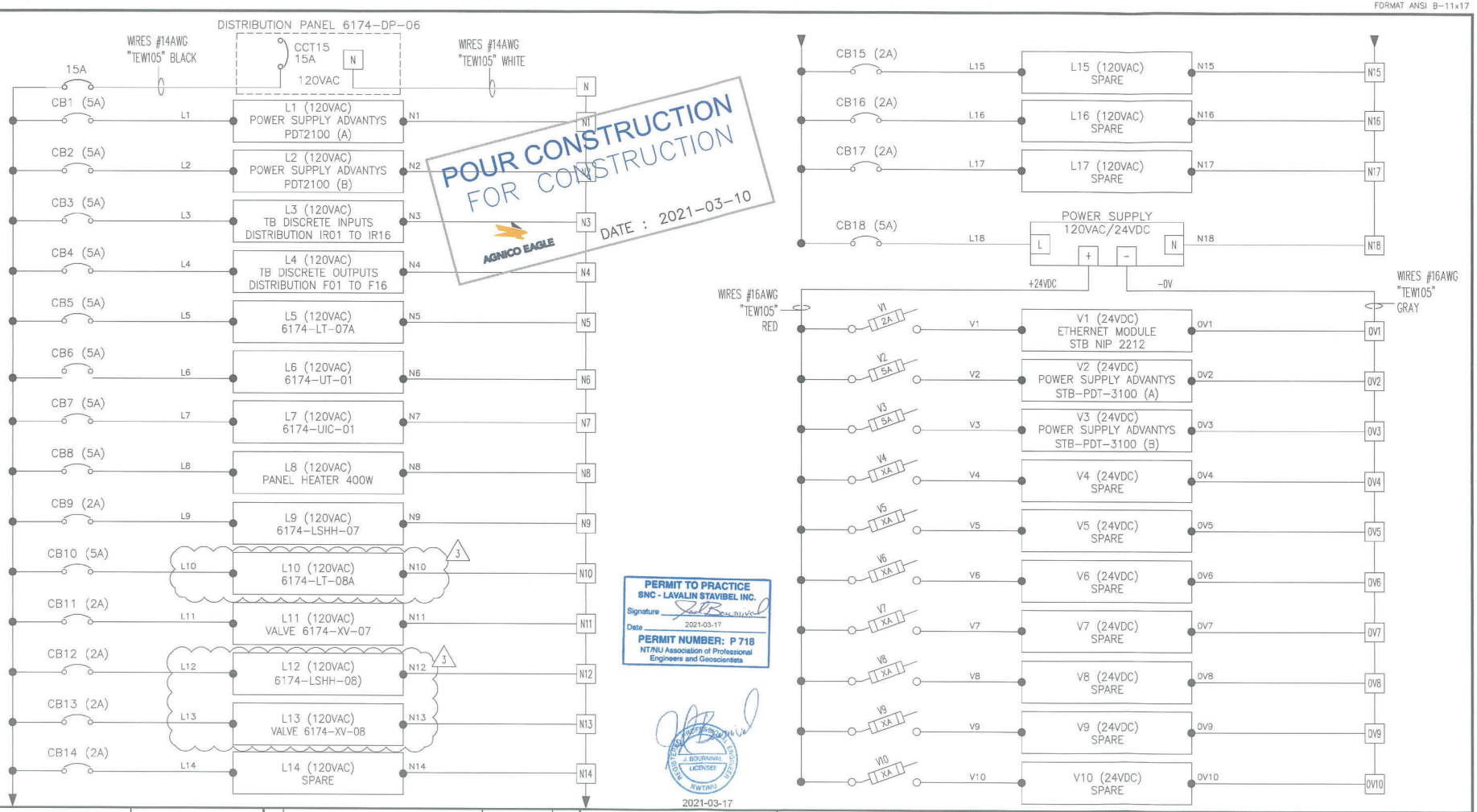
NO. DESSIN
DRAWING NO. 61-740-280-208

FORMAT ANSI B-11x17



POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2021-03-10
AGNICO EAGLE

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2021-03-17
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

J. BOURNIVAL LICENSEE
2021-03-17

		REV	DESCRIPTION	DATE	PAR BY
		3	ISSUED FOR CONSTRUCTION	2021-03-10	J.BOU
		2	AS BUILT	2020-01-24	S.MAR
6174IOP003 – WIRING DIAGRAM	61-740-280-207	1	ISSUED FOR CONSTRUCTION	2019-05-15	P.LEM
6174IOP003 – ARRANGEMENT	61-740-280-206	0	ISSUED FOR TENDER	2019-05-03	P.LEM
TITRE / TITLE	# DWG	REV	DESCRIPTION	DATE	PAR BY
DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS		REVISIONS			

AGNICO EAGLE

Project # : 660534-0000

SNC·LAVALIN
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel. : 819 764-5181 Fax : 819 797-0158
www.snclavalin.com

DESSINÉ PAR DRAWN BY	S.MARCOTTE, TECH.	DATE 2019-04-25
VERIFIÉ PAR CHECKED BY	PHILIPPE LEMIRE, P.ENG.	2019-04-25
APPROUVÉ PAR APPROVED BY	PHILIPPE LEMIRE, P.ENG.	20190-05-03
No. PROJET PROJECT NO.	6120	
DATE	2019-04-18	

L'INFORMATION CI-CONTENUE EST LA PROPRIÉTÉ DE AGNICO EAGLE LTÉE ET NE DOIT ÊTRE REPRODUITE, SOUS QUELQUE FORME QUE CE SOIT, NI UTILISÉE À D'AUTRES FINS QUE CELLE POUR LAQUELLE L'INFORMATION EST PRÊTÉE, SANS AUTORISATION ÉCRITE PRÉALABLE.
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TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
280 – INSTRUMENTATION & CONTROL
WIRING DIAGRAM
120VAC AND 24VDC DISTRIBUTION

ÉCHELLE/ SCALE	NTS	FICHIER FILE	61-740-280-208_R3.dwg
No. DESSIN/ DRAWING NO.	61-740-280-208	REVISION	3
		FEUILLE/SHT	1 / 1

AE-CART-ANSI B

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SNC·LAVALIN	OWNER	Agnico Eagle Mines	BY:	Nathan Bisson	AGNICO EAGLE
	PROJECT NAME:	Baker Lake Fuel Farm	APPROVED:	Roxanne Lavoie, P.Eng. (OIQ) / I.Gagnon P.Eng.	
	PROJECT NO:	6129-S-265-020	REV:	0 - For Tender	
	DOC NO:	6129-S-265-020-MTO-002	REV DATE:	2021-06-30	
		MTO Piping - Baker Lake Fuel Farm Drawing number: 61-740-270-003	MATERIAL TAKE OFF Description		

Rev. Date	Qty[1]	Unit	Description	ND	STANDARD	SCH./PN	PACKAGE #	MTO #	MATERIAL	MANUFACTURER	MODEL	REMARKS
PIPING AND FITTING TABLE												
2021-06-30	260	m	STEEL PIPING	Ø150mm	ASTM A333 GR.6	SCH. STD			CARBON STEEL			SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW
2021-06-30	20	UNIT	WIELDING NECK FLANGE	Ø150mm	A350 GR. LF2	CL150			FORGED STEEL			SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW
2021-06-30	2	UNIT	BLIND FLANGE	Ø150mm	ASTM A420 GR.WPL6	CL150			FORGED STEEL			SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW
2021-06-30	19	UNIT	45° ELBOW BUTT WELD	Ø150mm	ASTM A420 GR.WPL6, BW	SCH. STD			FORGED STEEL			SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW
2021-06-30	4	UNIT	90° LONG RADIUS ELBOW BUTT WELD	Ø150mm	ASTM A420 GR.WPL6, BW	SCH. STD			FORGED STEEL			SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW
2021-06-30	5	UNIT	STRAIGHT TEE BUTT WELD	Ø150mm	ASTM A420 GR.WPL6, BW	SCH. STD			FORGED STEEL			SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW
2021-06-30	1	UNIT	WELDED 45° LATERAL BUTT WELD	Ø150mm	ASTM A420 GR.WPL6, BW	SCH. STD			FORGED STEEL			SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW
2021-06-30	2	UNIT	FLEXIBLE HOSE, 350 mm Lg.	Ø150mm	FLANGED	CL150			STAINLESS STEEL	SENIOR FLEXTRONICS	SA-BSFS SERIES	
2021-06-30	1	UNIT	FLEXIBLE HOSE, 450 mm Lg.	Ø150mm	FLANGED	CL150			STAINLESS STEEL	SENIOR FLEXTRONICS	SA-BSFS SERIES	
2021-06-30	6	UNIT	ECCENTRIC REDUCER BUTT WELD	Ø150x100mm	ASTM A420 GR.WPL6, BW	SCH. STD			CARBON STEEL			SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW
2021-06-30	6	UNIT	BLIND FLANGE	Ø100mm	ASTM A420 GR.WPL6	CL150			FORGED STEEL			SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW
2021-06-30	10	UNIT	WIELDING NECK FLANGE	Ø100mm	A350 GR. LF2	CL150			FORGED STEEL			SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW
2021-06-30	3	UNIT	THREADOLET FOR Ø150mm PIPE	Ø25mm	ASTM A350 GR.LF2	CL3000			FORGED STEEL			
2021-06-30	2	m	PIPING	Ø25mm	ASTM A333 GR.6	SCH. 80			CARBON STEEL			SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW
2021-06-30	3	UNIT	SCREW CAP	Ø25mm	FORGED STEEL	CL3000			FORGED STEEL			
2021-06-30	22	UNIT	FLEXIBLE BRAID	-	-	-				NVENT	MBJ 35-250-25	
PIPING AND SUPPORT TABLE												
2021-06-30	12	UNIT	TYPE 1 PREFAB PIPING SUPPORT ON DRAWING 61-740-270-XXX	-	HSS G40 350 W OR ASTM A500	-			STRUCTURAL STEEL			SHOP PAINTED AS PER 60-000-245-GGD-001. GREY
2021-06-30	43	UNIT	TYPE 2 PREFAB PIPING SUPPORT ON DRAWING 61-740-270-XXX	-	HSS G40 350 W OR ASTM A500	-			STRUCTURAL STEEL			SHOP PAINTED AS PER 60-000-245-GGD-001. GREY
2021-06-30	4	UNIT	TYPE 3 PREFAB PIPING SUPPORT ON DRAWING 61-740-270-XXX	-	HSS G40 350 W OR ASTM A500	-			STRUCTURAL STEEL			SHOP PAINTED AS PER 60-000-245-GGD-001. GREY
2021-06-30	15	UNIT	EXTRA GREY PAINT GALLONS	-	-	-			-			FOR PAINT TOUCH-UP ON SITE
2021-06-30	10	UNIT	EXTRA YELLOW PAINT GALLON	-	-	-			-			FOR PAINT TOUCH-UP ON SITE
VALVE TABLE												
2021-06-30	7	UNIT	GATE VALVE	Ø150mm	ASTM A-352, FLANGED	CL150			LCC	BERIC	API 600, LCC BODY	
2021-06-30	3	UNIT	BALL VALVE API 607	Ø25mm	SOCKET WELD				LCC	APOLLO	83L-240-24 SERIES	

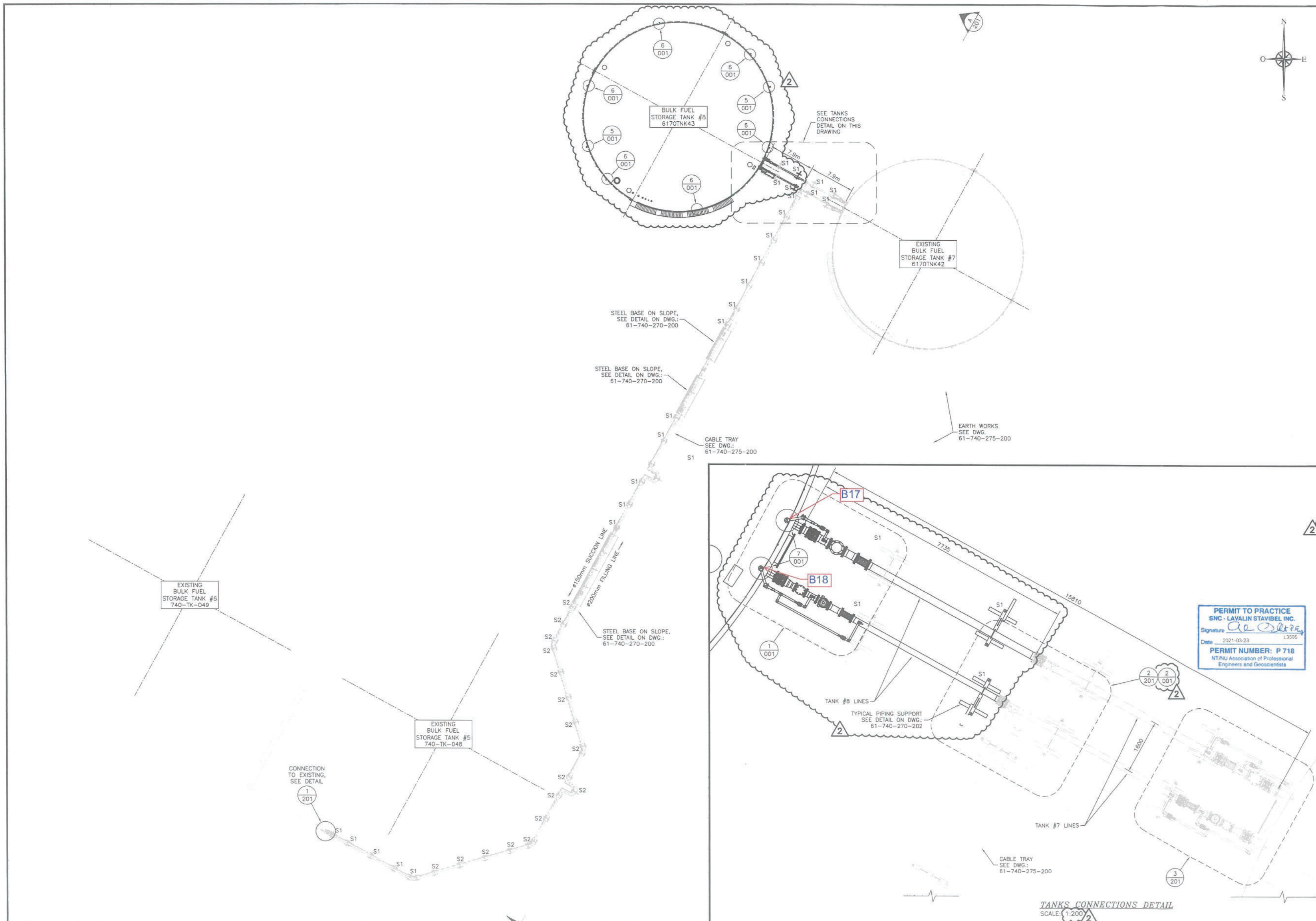
[1] *No contingency was planned on material take off list and no material was planned for field adjustment.*

Roxanne Lavoie

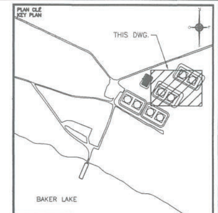
ing. L3940 2021-06-30

NO. DESSIN / DRAWING NO. 61-740-270-200

FORMAT ARCHD



PLAN CLÉ / KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

S1: PIPE SUPPORT TYPE 1
S2: PIPE SUPPORT TYPE 2
SEE DWG. # 61-740-270-202

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2021-03-23

SNC-LAVALIN
SNC-Lavalin Stavibel inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel. : 819 764-5181 Fax : 819 797-0156
www.snclavalin.com

Project # : 671087-0000 REV.: 2

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DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
GENERAL EARTH WORKS	61-740-230-200 TO 205
ELECTRICAL	61-740-275-200 TO 201
P&ID	61-740-J-0100_1 & 2
10M LITERS DIESEL TANK #8 (6170TNK43)	61-740-270-001
TANK 7 & 8 PIPE SUPPORTS - DETAILS	61-740-270-202
TANK 7 & 8 PIPING - ELEV. & DETAILS	61-740-270-201

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
2	2021-03-23	ISSUED FOR CONSTRUCTION	D.L.L.	A.OUE	N.MÉN
1	2019-06-03	ISSUED FOR CONSTRUCTION	B.L.	A.O.	B.ROY
0	2019-04-25	ISSUED FOR TENDER	B.L.	A.O.	N.MÉN

REVISIONS

REGISTERED PROFESSIONAL ENGINEER
A. OUELLET
LICENSEE
L3595
NT/NU
2021-03-23

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2021-03-23
L3595
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

TITRE / TITLE
AGNICO EAGLE - MEADOWBANK DIVISION
740 BAKER LAKE AREA
PIPING
PLAN VIEW
10M LITERS DIESEL TANK #7 (6170TNK42) & TANK #8 (6170TNK43) PIPING

DESSINÉ PAR / DRAWN BY	B. LEMIEUX, Tech.	DATE 2019/02/15
VÉRIFIÉ PAR / CHECKED BY	R. LAVOIE, Jr. Eng.	2019/02/15
APPROUVÉ PAR / APPROVED BY	A. OUELLET, P. Eng.	2019/02/15
ÉCHELLE / SCALE	1 : 300	DATE 2019/02/15
NO. DESSIN / DRAWING NO.	61-740-270-200	
NO. PROJET / PROJECT NO. 6120	RÉVISION 2	FEUILLE / SHT 1/1

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FILE NO. 61-740-270-200_R2.dwg

NO. DESSIN DRAWING NO. 61–740–270–200

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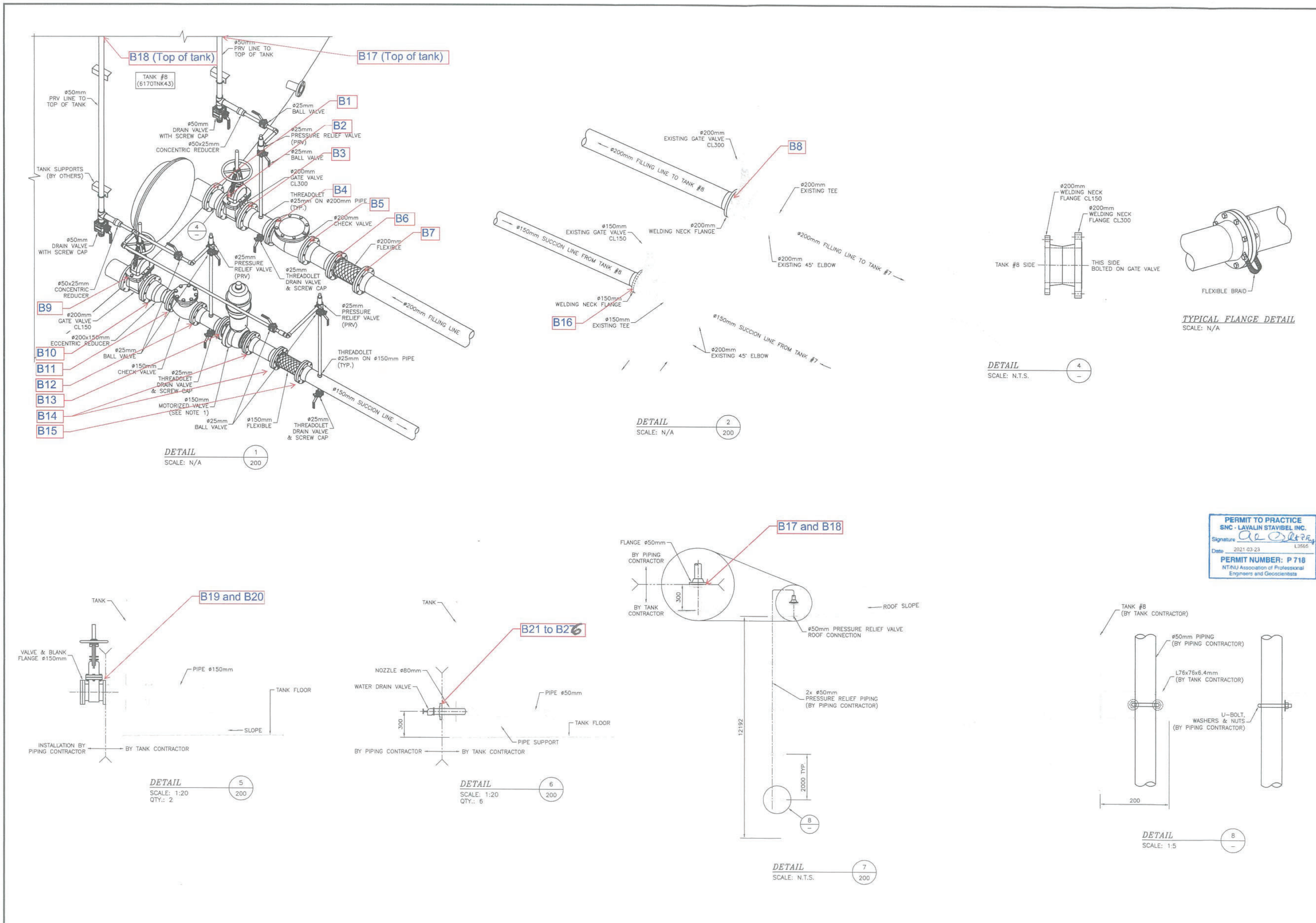

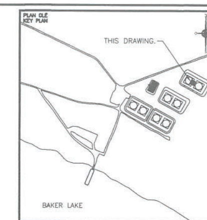

NOTES GÉNÉRALES / GENERAL NOTES

NOTE 1:
SUPPLY OF MOTORIZED VALVE BY AEM AND INSTALLATION BY CONTRACTOR.

NOTE 2:
AEM WILL SUPPLY VALVES, PIPING AND ACCESSORIES. CONTRACTOR ARE RESPONSIBLE OF INSTALLATION.

NOTE 3:
REFER TO DOCUMENT NUMBER 6129–C–265–002–SPT–001 FOR INSTALLATION SPECIFICATIONS.

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2021-03-23

SNC·LAVALIN

SNC-Lavalin Stavibel inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél. : 819 764-5181 Fax : 819 797-0156
www.sncd.avalin.com

Project # : 671087-0000 REV.: 0

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
P&ID	61–740–J–0100_2/2
TANK 7 & 8 PIPE SUPPORTS – DETAILS	61–740–270–202
TANK 7 & 8 PIPING – ELEV. & DETAILS	61–740–270–201
10M L DIESEL TNK #7 & TNK #8 PIPING	61–740–270–200

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2021-03-23
L3595
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2021-03-23	ISSUED FOR CONSTRUCTION	D.L.L.	A.OUE	N.MEH

REVISIONS

PROFESSIONAL ENGINEER
A. OUELLET
LICENSEE
L3595
NT/NU
2021-03-23

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
270 – PIPING
DETAILS
10M LITERS DIESEL TANK #8 (6170TNK43)

		DATE
DESSINÉ PAR DRAWN BY	ST. MARCOTTE, Tech.	2021/02/24
VÉRIFIÉ PAR CHECKED BY	R. LAVOIE, P. Eng.	2021/02/24
APPROUVÉ PAR APPROVED BY	A. OUELLET, P. Eng.	2021/02/23
ÉCHELLE SCALE	AS SHOWN	2021/02/24

NO. DESSIN DRAWING NO. 61–740–270–001

NO. PROJET PROJECT NO. 6129 REVISION 0 FEUILLE / SHT 1 / 1

AE–CART–ARCH D

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FILE NO. 61–740–270–001_R0.dwg

NO. DESSIN DRAWING NO. 61-740-270-200

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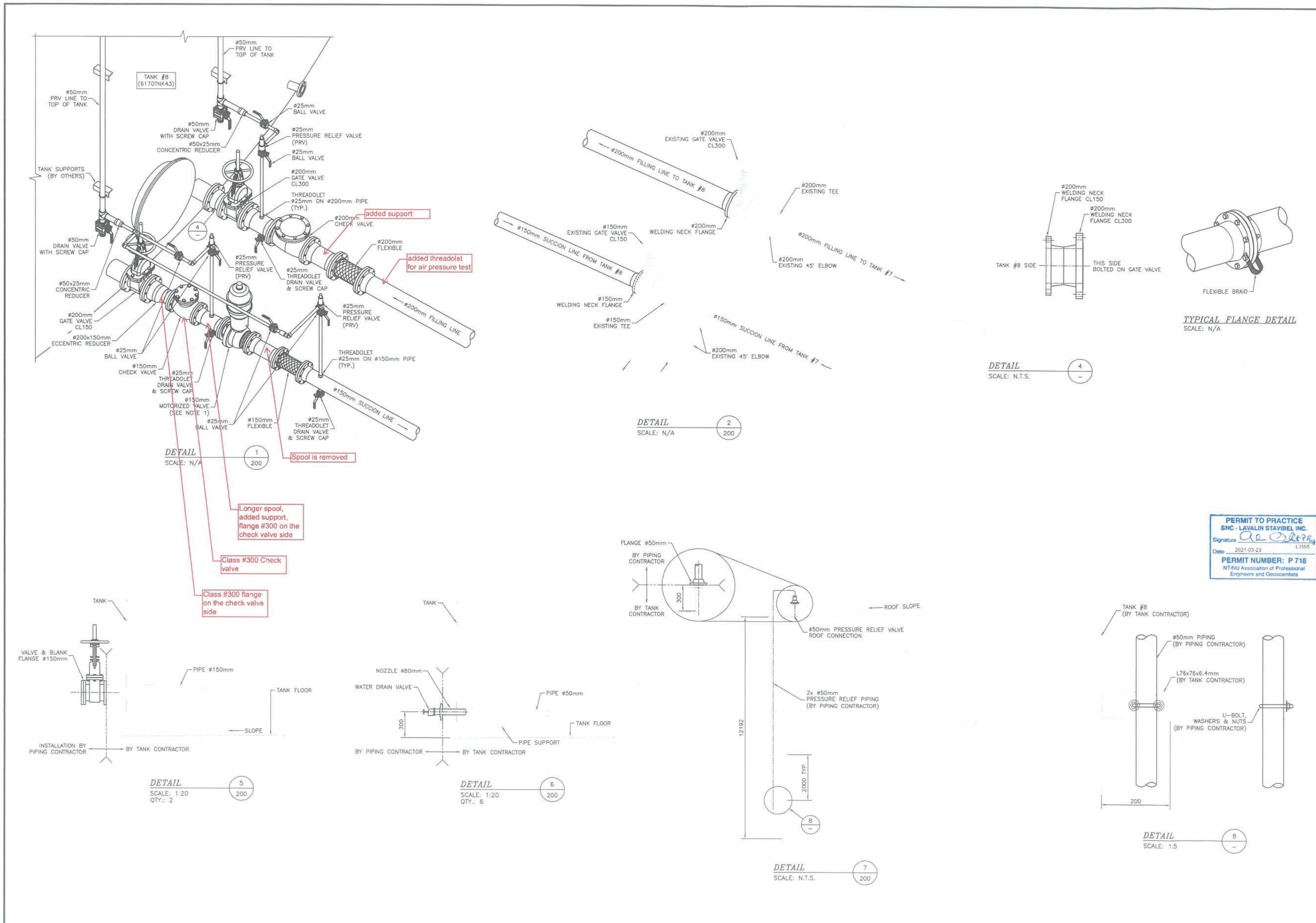

PLAN CLÉ / KEY PLAN

THIS DRAWING

BAKER LAKE

NOTES GÉNÉRALES / GENERAL NOTES

NOTE 1:
SUPPLY OF MOTORIZED VALVE BY AEM AND INSTALLATION BY CONTRACTOR.

NOTE 2:
AEM WILL SUPPLY VALVES, PIPING AND ACCESSORIES. CONTRACTOR ARE RESPONSIBLE OF INSTALLATION.

NOTE 3:
REFER TO DOCUMENT NUMBER 6129-C-265-002-SPT-001 FOR INSTALLATION SPECIFICATIONS.

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2021-03-23

SNC·LAVALIN

SNC-Lavalin Stavibel inc.
Project # : 671087-0000 REV.: 0

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
P&ID	61-740-J-0100_2/2
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10M L. DIESEL TNK #7 & TNK #8 PIPING	61-740-270-200

PERMIT TO PRACTICE
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Signature
Date 2021-03-23
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2021-03-23	ISSUED FOR CONSTRUCTION	D.LL	A.OUE	N.MEN

REVISIONS

PROFESSIONAL ENGINEER – A. OUELLET – LICENSEE L3595 – NT/NU – 2021-03-23

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
270 – PIPING
DETAILS
10M LITERS DIESEL TANK #8 (6170TNK43)

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APPROUVÉ PAR / APPROVED BY	A. OUELLET, P. Eng.	2021/02/23
ÉCHELLE / SCALE	AS SHOWN	2021/02/24

NO. DESSIN / DRAWING NO. 61-740-270-001

NO. PROJET / PROJECT NO. 6129 | RÉVISION 0 | FEUILLE / SHT 1 / 1

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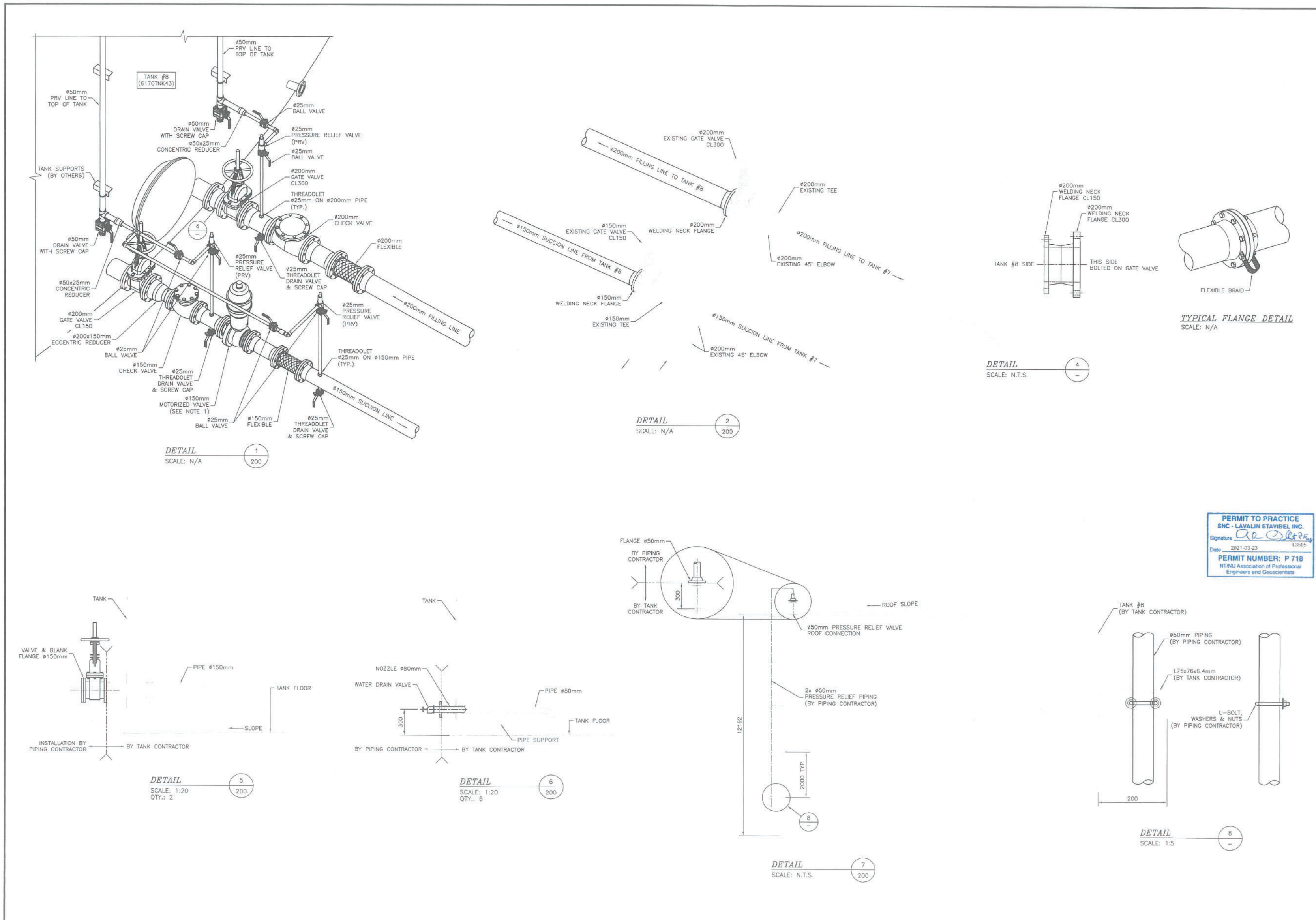
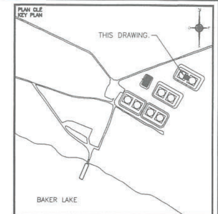
FILE NO. 61-740-270-001_R0.dwg

NO. DESSIN DRAWING NO. 61-740-270-200

FORMAT ARCHD



PLAN CLÉ / KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

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POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2021-03-23

SNC·LAVALIN

SNC-Lavalin Stavibel inc.
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10M L. DIESEL TNK #7 & TNK #8 PIPING	61-740-270-200

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2021-03-23
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

AGNICO EAGLE

RÉV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2021-03-23	ISSUED FOR CONSTRUCTION	D.L.L.	A.OUE	N.MEN

REVISIONS

REGISTERED PROFESSIONAL ENGINEER
A. OUELLET
LICENSEE
L3506
NT/NU
2021-03-23

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
270 – PIPING
DETAILS
10M LITERS DIESEL TANK #8 (6170TNK43)

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DESSINÉ PAR / DRAWN BY	ST. MARCOTTE, Tech.	2021/02/24
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APPROUVÉ PAR / APPROVED BY	A. OUELLET, P. Eng.	2021/02/23
ÉCHELLE / SCALE	AS SHOWN	2021/02/24

NO. DESSIN / DRAWING NO. 61-740-270-001

NO. PROJET / PROJECT NO. 6129 — RÉVISION 0 — FEUILLE / SHT 1/1

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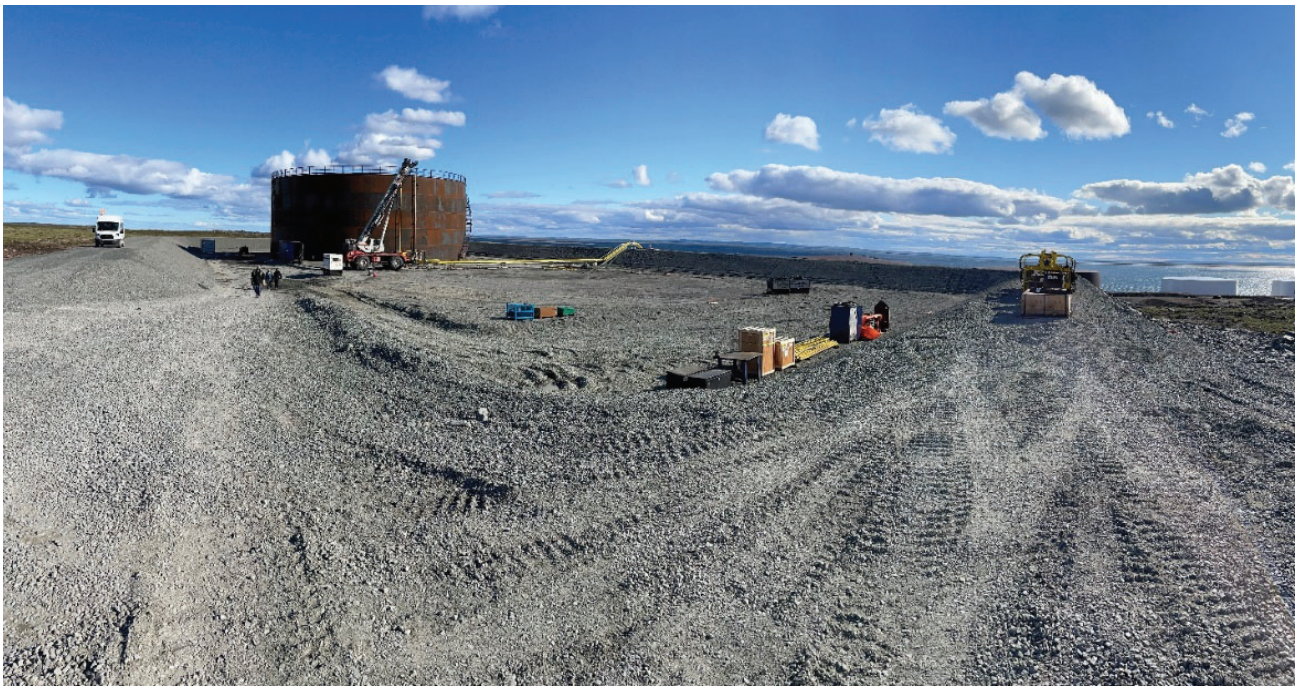
FILE NO. 61-740-270-001_R0.dwg

Appendix C

Photographs



Tank #8 pad before construction

Tank floor construction

Weld testing with vacuum

Tank wall welding

Tank wall third ring installation

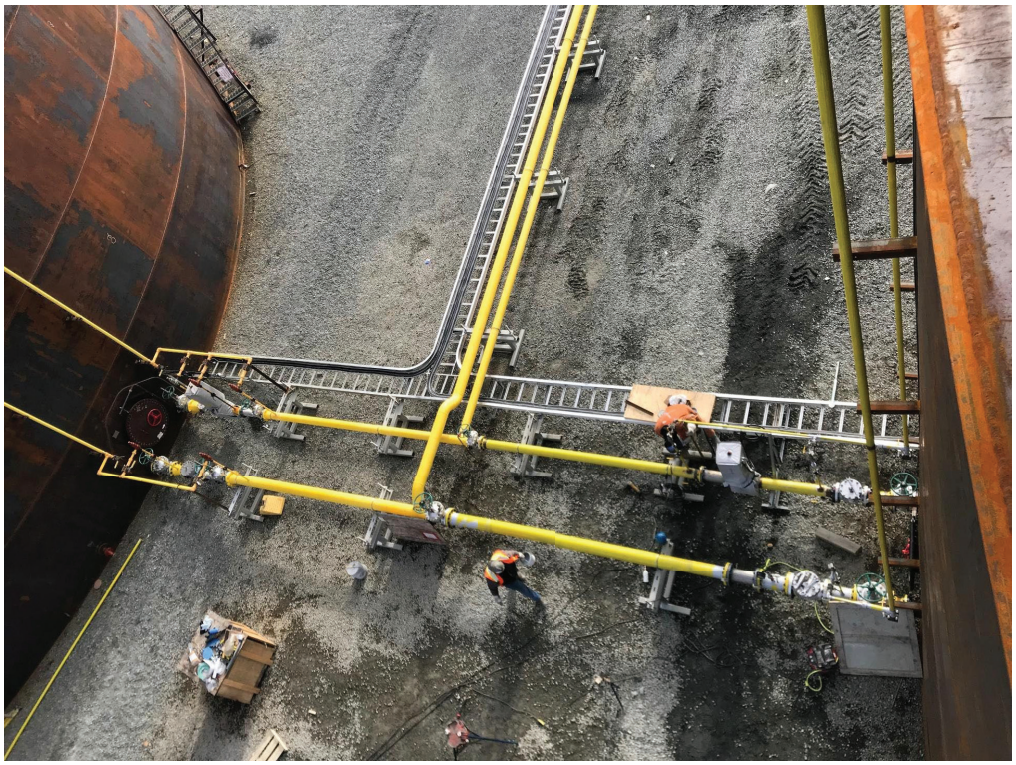
Tank general view

Tank roof structure

Tank roof plate welding

Control cable tray and over pressure valve piping

Tank #8 piping installation



Tank #8 piping overview