No de pièces/ *Part Number :*	Esp Moyenne/ *Dft Average*	Vérifié par/ *Verified by:* Peintre/ *Painter*	Control Qualité/ *Quality control*	DATE
(13) 5389-04A	17.8			2017/06/12
(14) 5389-04A	18.9			
(15) 5389-04A	14.8			
(16) 5389-04A	15.2			
(17) 5389-04A	16.9			
(18) 5389-04A	14.8			
(19) 5389-04A	14.6			
(20) 5389-04A	15.9			
(21) 5389-04A	15.8			
(22) 5389-04A	14.9			
(23) 5389-04A	14.7			
(24) 5389-04A	16.2			
(25) 5389-04A	16.1			
(26) 5389-04A	17.3			
(27) 5389-04A	16.7			
(28) 5389-04A	15.2			
(29) 5389-04A	15.9			
(30) 5389-04A	15.8			
(31) 5389-04A	16.2			
(32) 5389-04A	16.4			
(33) 5389-04A	15.6			
(34) 5389-04A	15.8			
(35) 5389-04A	15.8			
(36) 5389-04A	15.6			
(37) 5389-04A	16.2			
(38) 5389-04A	18.2			
(39) 5389-04A	17.6			
(40) 5389-04A	17.2			
(41) 5389-04A	16.9			
(42) 5389-04A	14.8			
(43) 5389-04A	16.7			

RAPPORT INSPECTION DE PEINTURE F-90 / PAINT INSPECTION REPORT F-90

CONTRÔLE DE QUALITÉ / QUALITY CONTRÔLE

Projet / *Project #*: 5389-02 Client / *Customer* : Promec

Description : Pipe Support – Pipe Shoe

Référence spécification de peinture/ *Paint specifications ref* : AE Méliadine

Inspection visuel du sablage/ *Visual Sandblast inspection* SP6 (TYPE) [initials] (INITIAL)

Instruction spécial/ *Special instructions* : N/A

Testex PRESS-O-FILM™ HT X-Coarse www.testextape.com 1.5 to 4.5 mil 38 to 115 µm Made in USA — 5389B 2.9 MP 13-06-2017

Quantité sable utilisé/ *Quantity sand used:* 6 poches

Profile de sablage/ *Sandblast profil* :

#1 Quantité d'apprêt utilisée/ *Quantity primer used*: 4 gal # de lot d'appret primer/ *Lot # of primer:* TG6574VH Diluant/ *Thinner* : GTA 415

Temps de séchage/ *Drying time* 2 hrs Température pièce/ *Room Temperature* 23 °C Taux d'humidité/ *Humidity Level* 38%

#2 Quantité de peinture utilisée/ *Quantity paint used*: 4 gal # de lot de peinture/ *Lot # of paint:* TE5015UH Diluant/ *Thinner* : GTA 415

Temps de séchage/ *Drying time* 8 hrs Température pièce/ *Room Temperature* 24 °C Taux d'humidité/ *Humidity Level* 33%

#3 Quantité de peinture utilisée/ *Quantity paint used*: 4 gal # de lot de peinture/ *Lot # of paint:* SH9274UH Diluant/ *Thinner* : GTA 056.

Temps de séchage/ *Drying time* 8 hrs. Température pièce/ *Room Temperature* 21 °C Taux d'humidité/ *Humidity Level* 37.6%

No de pièces/ *Part Number* :	**Esp Moyenne/ *Dft Average***	**Vérifié par/ *Verified by:*** Peintre/ *Painter*	Control Qualité/ *Quality control*	**DATE**
(1) 5389-05A	16.2	[signature]	[signature]	2017/06/13
(2) 5389-05A	14.8			
(3) 5389-05A	15.9			
(4) 5389-05A	16.8			
(5) 5389-05A	16.9			
(6) 5389-05A	16.8			
(7) 5389-05A	18.2			
(8) 5389-05A	17.8			
(9) 5389-05A	14.9			
(10) 5389-05A	14.6			
(11) 5389-05A	14.8			
(12) 5389-05A	16.2	[signature]	[signature]	2017/06/13

Peintre / Painter: [signature]

Peinture rencontre les spécifications / *Paint meets specs* OUI / *YES* NON / *NO*

Contrôleur de qualité / *Quality Controller* : [signature] 2017/06/15

Signature Date

F-90 Rapport inspection de peinture / Paint Inspection Report
Reviseur : J.P. Leclerc
2017-03-27

AJP

No de pièces/ *Part Number :*	Esp Moyenne/ *Dft Average*	Vérifié par/ *Verified by:* Peintre/ *Painter*	Control Qualité/ *Quality control*	DATE
(13) 5389-05A	15.8			2017/06/13
(14) 5389-05A	17.2			
(15) 5389-05A	16.8			
(16) 5389-05A	16.8			
(17) 5389-05A	14.8			
(18) 5389-05A	15.6			
(19) 5389-05A	15.8			
(20) 5389-05A	16.2			
(21) 5389-05A	14.8			
(22) 5389-05A	15.9			
(23) 5389-05A	15.2			
(24) 5389-05A	16.8			
(25) 5389-05A	14.8			
(26) 5389-05A	16.2			
(27) 5389-05A	14.9			
(28) 5389-05A	15.8			
(29) 5389-05A	17.2			
(30) 5389-05A	15.8			
(31) 5389-05A	18.1			
(32) 5389-05A	18.6			
(33) 5389-05A	15.9			
(34) 5389-05A	16.9			
(35) 5389-05A	14.3			
(36) 5389-05A	16.2			
(37) 5389-05A	15.8			
(38) 5389-05A	14.9			
(39) 5389-05A	14.8			
(40) 5389-05A	16.2			
(41) 5389-05A	17.8			
(42) 5389-05A	14.9			2017/06/13

RAPPORT INSPECTION DE PEINTURE F-90 / PAINT INSPECTION REPORT F-90

CONTRÔLE DE QUALITÉ / QUALITY CONTRÔLE

Projet / *Project #*: 5389-02 Client / *Customer* : Promec

Description : Pipe Support – Pipe Shoe

Référence spécification de peinture/ *Paint specifications ref* : AE Méliadine

Inspection visuel du sablage/ *Visual Sandblast inspection* SP6 TYPE CB INITIAL

Instruction spécial/ *Special instructions* : N/A

Testex PRESS-O-FILM™ HT X-Coarse www.testextape.com 1.5 to 4.5 mil 38 to 115 µm Made in USA

Quantité sable utilisé/ *Quantity sand used*: 7 pocles.

Profile de sablage/ *Sandblast profil* : 2.3 MP 31-05-2017

#1 Quantité d'apprêt utilisée/ *Quantity primer used*: 4 gal # de lot d'appret primer/ *Lot # of primer*: TE68741 Diluant/ *Thinner* : GTA 415

Temps de séchage/ *Drying time* 2 hrs Température pièce/ *Room Temperature* 21 °C Taux d'humidité/ *Humidity Level* 23%

#2 Quantité de peinture utilisée/ *Quantity paint used*: 4 gal # de lot de peinture/ *Lot # of paint*: TE5015401 Diluant/ *Thinner* : GTA 415

Temps de séchage/ *Drying time* 10 hrs Température pièce/ *Room Temperature* 24.6 °C Taux d'humidité/ *Humidity Level* 28%

#3 Quantité de peinture utilisée/ *Quantity paint used*: 4 gal # de lot de peinture/ *Lot # of paint*: 5H927404 Diluant/ *Thinner* : GTA 050

Temps de séchage/ *Drying time* 10 hrs Température pièce/ *Room Temperature* 21.8 °C Taux d'humidité/ *Humidity Level* 22%

No de pièces/ *Part Number* :	Esp Moyenne/ *Dft Average*	Vérifié par/ *Verified by*: Peintre/ *Painter*	Control Qualité/ *Quality control*	DATE
(1) 5389-07A	14.8	[signature]	[signature]	2017/05/31
(2) 5389-07A	14.6			
(3) 5389-07A	14.9			
(4) 5389-07A	15.2			
(5) 5389-07A	15.6			
(6) 5389-07A	14.8			
(7) 5389-07A	14.9			
(8) 5389-07A	15.6			
(9) 5389-07A	15.4			
(10) 5389-07A	16.3			
(11) 5389-07A	14.8			
(12) 5389-07A	16.9	[signature]	[signature]	2017/05/31

Peintre / Painter: [signature]

Peinture rencontre les spécifications / *Paint meets specs* OUI / *YES* NON / *NO*

Contrôleur de qualité / *Quality Controller* : [signature] Signature 2017/06/02 Date

No de pièces/ *Part Number :*	Esp Moyenne/ *Dft Average*	Vérifié par/ *Verified by:* Peintre/ *Painter*	Control Qualité/ *Quality control*	DATE
(13) 5389-07A	14.6			2017/05/31
(14) 5389-07A	13.9			
(15) 5389-07A	15.2			
(16) 5389-07A	16.4			
(17) 5389-07A	16.8			
(18) 5389-07A	14.9			
(19) 5389-07A	15.2			
(20) 5389-07A	16.3			
(21) 5389-07A	15.8			
(22) 5389-07A	14.9			
(23) 5389-07A	15.3			
(24) 5389-07A	14.5			
(25) 5389-07A	14.6			
(26) 5389-07A	15.5			
(27) 5389-07A	16.3			
(28) 5389-07A	15.8			
(29) 5389-07A	16.8			
(30) 5389-07A	15.6			
(31) 5389-07A	16.8			
(32) 5389-07A	16.4			
(33) 5389-07A	17.8			
(34) 5389-07A	14.6			
(35) 5389-07A	14.9			
(36) 5389-07A	15.1			
(37) 5389-07A	16.8			
(38) 5389-07A	14.7			
(39) 5389-07A	15.9			
(40) 5389-07A	14.8			
(41) 5389-07A	16.2			
(42) 5389-07A	17.3			
(43) 5389-07A	15.8			
(44) 5389-07A	14.9			
(45) 5389-07A	16.9			
(46) 5389-07A	15.8			
(47) 5389-07A	14.7			
(48) 5389-07A	15.9			
(49) 5389-07A	16.2			
(50) 5389-07A	14.8			
(51) 5389-07A	14.2			2017/05/31

(52)	5389-07A	16.1			2017/08/31
(53)	5389-07A	17.8			
(54)	5389-07A	19.1			
(55)	5389-07A	18.4			
(56)	5389-07A	14.9			
(57)	5389-07A	15.16			
(58)	5389-07A	18.2			
(59)	5389-07A	17.1			
(60)	5389-07A	17.0			
(61)	5389-07A	16.4			
(62)	5389-07A	18.1			
(63)	5389-07A	17.6			
(64)	5389-07A	16.9			
(65)	5389-07A	16.8			
(66)	5389-07A	16.7			
(67)	5389-07A	17.8			
(68)	5389-07A	17.1			
(69)	5389-07A	18.4			
(70)	5389-07A	18.6			
(71)	5389-07A	16.4			
(72)	5389-07A	16.8			
(73)	5389-07A	17.4			
(74)	5389-07A	18.2			
(75)	5389-07A	16.4			
(76)	5389-07A	17.3			
(77)	5389-07A	15.9			
(78)	5389-07A	16.8			
(79)	5389-07A	15.9			
(80)	5389-07A	16.8			
(81)	5389-07A	17.3			
(82)	5389-07A	18.7			
(83)	5389-07A	16.7			
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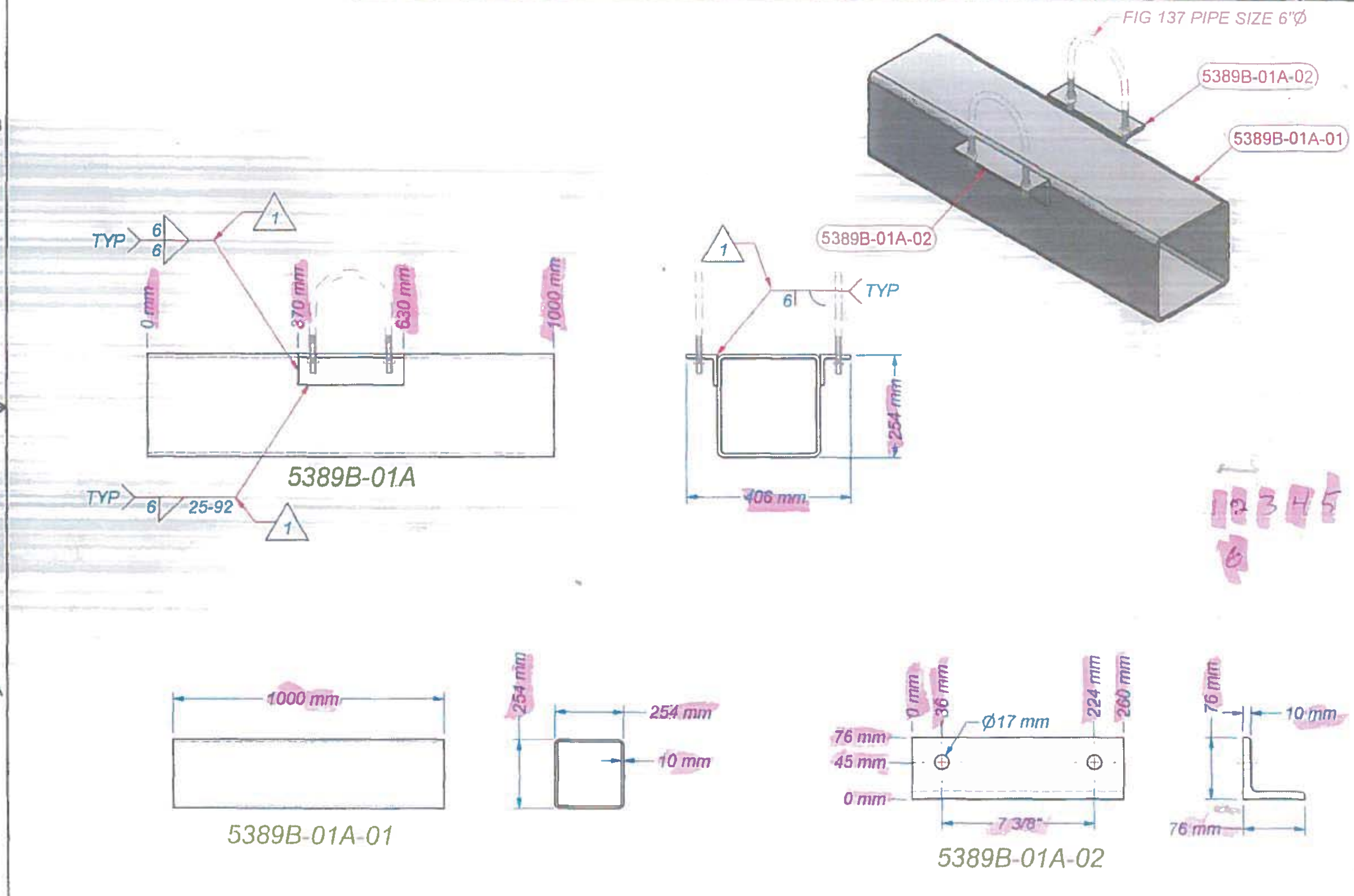
(95)	5389-07A	16.1			2017/05/31
(96)	5389-07A	14.9			
(97)	5389-07A	16.2			
(98)	5389-07A	17.3			
(99)	5389-07A	16.9			
(100)	5389-07A	14.8			2017/05/31

Parts listing (For 1 ass'y)

# Part	Description	Grade	Detail	Thick.	Width	Height	Length	Qty	Weight
5389B-01A-01	HSS	A500-C		9.5 mm	254 mm	254 mm	1000 mm	1	71 kg
5389B-01A-02	Steel angle	44W	PUNCH	9.5 mm	76 mm	76 mm	260 mm	2	3 kg



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NOTES GÉNÉRALES :
GENERAL NOTES :

1. FOR STRUCTURAL STEEL GENERAL NOTES SEE DRAWING SS-00
2. SPEC. PEINTURE : AE-Melladine-02 (Coating System 2. Color Code RAL 7030)

Historique des revisions / Revision history

Rev	Description	Date	Par / By
1	Mod soudures	2017-05-11	B.Lauzon

Promec

PROJET / PROJECT #: 5389

WO: WO-5389-02

CLIENT: AGNICO EAGLE

TITRE / TITLE: PIPING FUEL DISTRIBUTION PIPE SUPPORT

PIECE / PARTS: MARINE LINE SUPPORT

QTE / QTY: 55 req.

POIDS / WEIGHT: 77 kg

SCEAU & SIGNE / SEAL & SIGNED:

12 MAI 2017

DESSINE / DRAWN: B.Lauzon

VERIFIE / CHECKED: Rémi Jean

DATE: 2017-04-18

FEUILLE / SHEET: 1 / 1

DESSIN REFERENCE / REFERENCE DRAWING: 65-403-270-200

No DESSIN / DRAWING No: 5389B-01A

REV: 1

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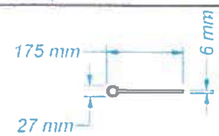
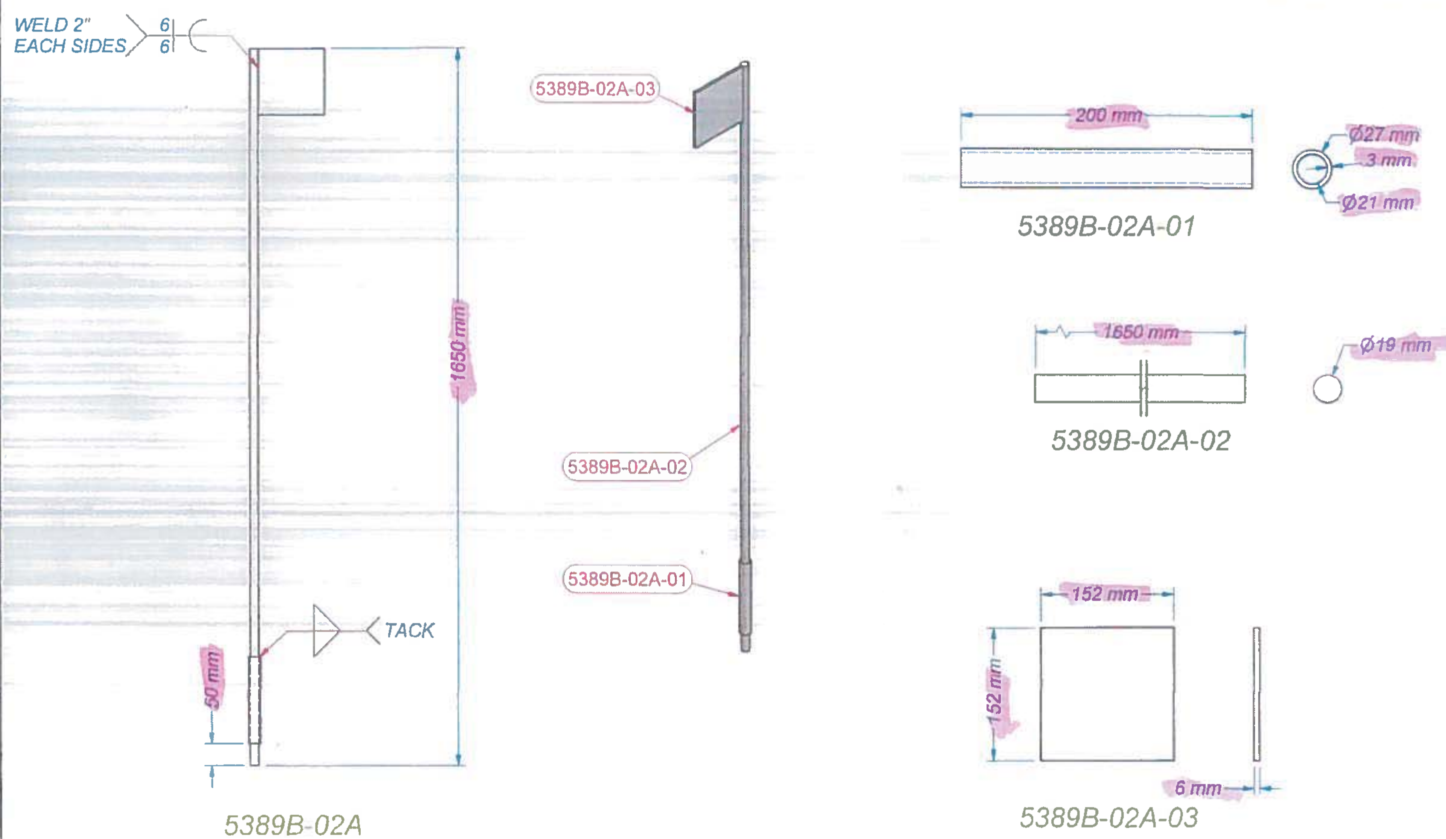


Parts listing (For 1 ass'y)

# Part	Description	Grade	Detail	Thick.	Width	Height	Length	Qty	Weight
5389B-02A-01	Tuyau Ø3/4" SCH40	A53		2.9 mm	27 mm	21 mm	200 mm	1	0 kg
5389B-02A-02	Steel rod	44W		19.1 mm			1650 mm	1	4 kg
5389B-02A-03	Flat Bar	44W		6.4 mm	152 mm		152 mm	1	1 kg



AJP
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Site Web: www.acierjp.com

NOTES GÉNÉRALES
GENERAL NOTES:

1. FOR STRUCTURAL STEEL GENERAL NOTES SEE DRAWING SS-00
2. SPEC. PEINTURE : AE-Meliadine-02 (Coating System 2, Color Code RAL 7030)

# PROJET / PROJECT #	5389 — # WO : WO-5389-02
CLIENT	AGNICO EAGLE
TITRE / TITLE	PIPING FUEL DISTRIBUTION — PIPE SUPPORT
PIÈCE / PARTS	IDENTIFICATION PLATE
QTÉ / QTY.	25 req.
POIDS / WEIGHT	5 kg
SCEAU & SIGNÉ / SEAL & SIGNED	15 MAI 2017
DESSINÉ / DRAWN	B.Lauzon
VÉRIFIÉ / CHECKED	Rémi Jean
DATE	2017-04-18
FEUILLE / SHEET	1 / 1
DESSIN RÉFÉRENCE / REFERENCE DRAWING	65-403-270-200
No DESSIN / DRAWING No.	5389B-02A
REV	0

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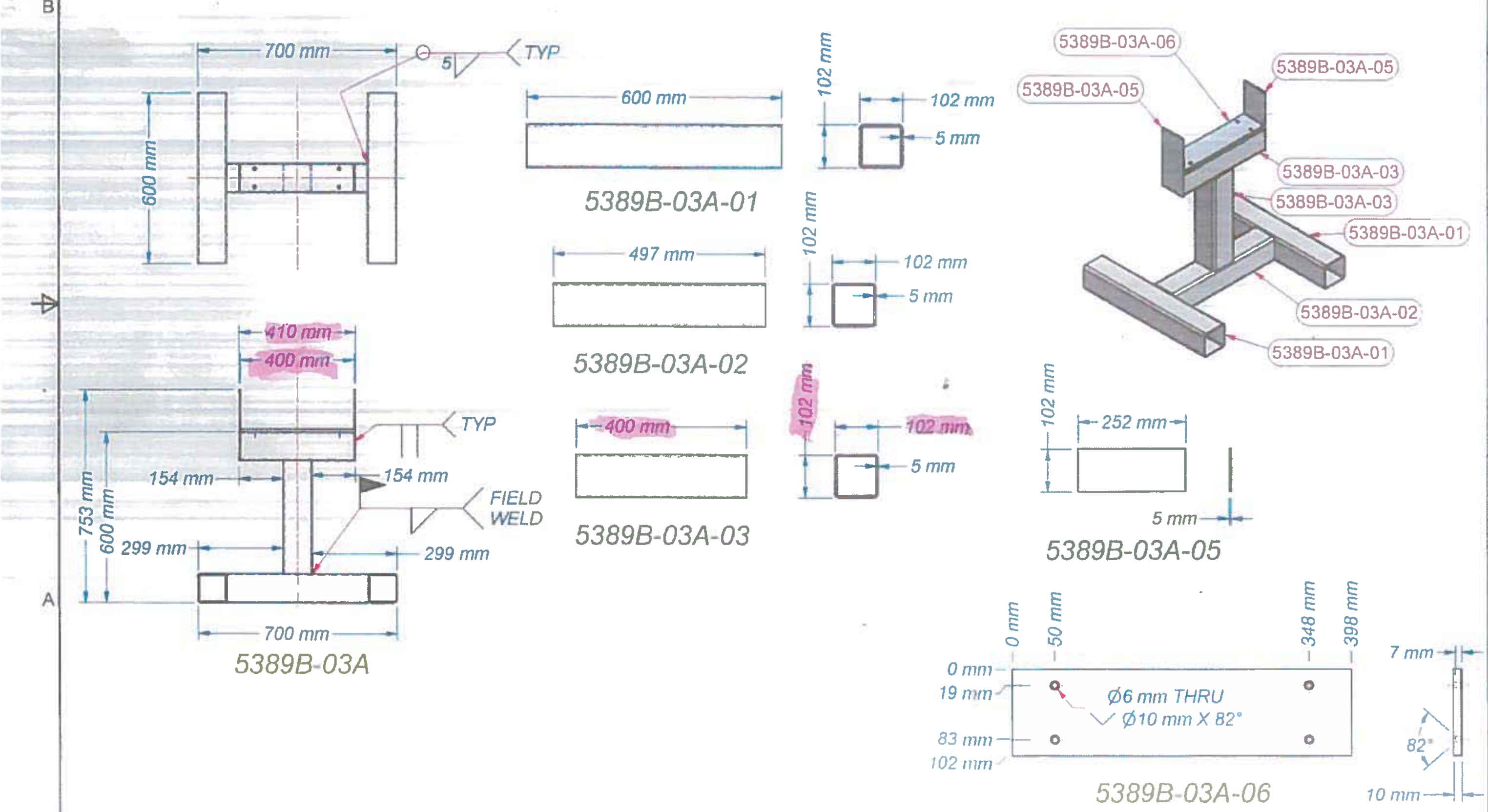
Parts listing (For 1 ass'y)

# Part	Description	Grade	Detail	Thick.	Width	Height	Length	Qty	Weight
5389B-03A-01	HSS	A500-C		4.8 mm	102 mm	102 mm	600 mm	2	8 kg
5389B-03A-02	HSS	A500-C		4.8 mm	102 mm	102 mm	497 mm	1	7 kg
5389B-03A-03	HSS	A500-C		4.8 mm	102 mm	102 mm	400 mm	2	6 kg
5389B-03A-05	Flat Bar	44W		4.8 mm	102 mm		252 mm	2	1 kg
5389B-03A-06	U.H.M.W	UHMW	DRILL	9.5 mm	102 mm		398 mm	1	0 kg
94195A177	SS Self-Tapping Screw #10 1 1/4"lg	SS						4	0 kg



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NOTES GÉNÉRALES
GENERAL NOTES :
1. FOR STRUCTURAL STEEL GENERAL NOTES SEE DRAWING SS-00
2. SPEC. PEINTURE : AE-Metladine-02 (Coating System 2, Color Code RAL 7030)

# PROJET / PROJECT # :	5389
# WO	WO-5389-02
CLIENT	AGNICO EAGLE
TITRE / TITLE	PIPING FUEL DISTRIBUTION PIPE SUPPORT
PIECE / PARTS	PIPE SUPPORT (1) PIPE
QTÉ / QTY	273 req.
POIDS / WEIGHT	37 kg
SCEAU & SIGNE / SEAL & SIGNED	
DESSINÉ / DRAWN	B.Lauzon
VÉRIFIÉ / CHECKED	Rémi Jean
DATE	2017-04-18
FEUILLE / SHEET	1 / 1
DESSIN REFERENCE / REFERENCE DRAWING	65-403-270-200
No DESSIN / DRAWING No	5389B-03A
REV.	0

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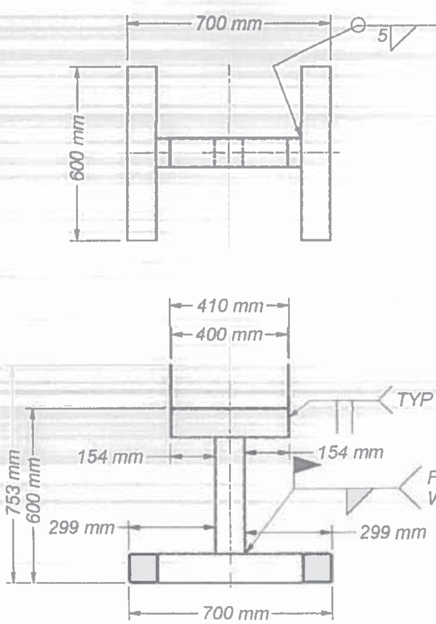
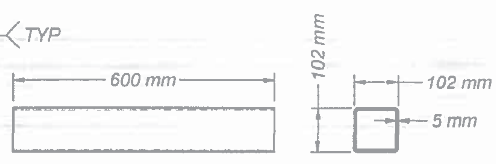
Parts listing (For 1 ass'y)									
# Part	Description	Grade	Detail	Thick.	Width	Height	Length	Qty	Weight
5389B-03A-01	HSS	A500-C		4.8 mm	102 mm	102 mm	600 mm	2	8 kg
5389B-03A-02	HSS	A500-C		4.8 mm	102 mm	102 mm	497 mm	1	7 kg
5389B-03A-03	HSS	A500-C		4.8 mm	102 mm	102 mm	400 mm	2	6 kg
5389B-03A-05	Flat Bar	44W		4.8 mm	102 mm		252 mm	2	1 kg



5389B-04A



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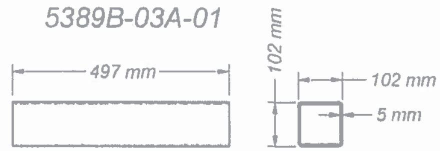

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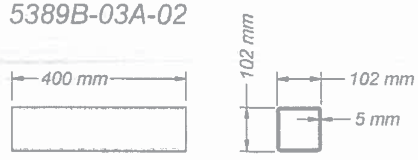

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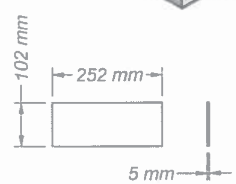

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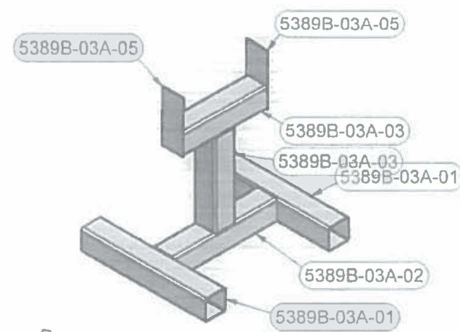

AJP

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NOTES GÉNÉRALES
GENERAL NOTES :

1. FOR STRUCTURAL STEEL GENERAL NOTES SEE DRAWING SS-00
2. SPEC. PEINTURE : AE-Meliadine-02 (Coating System 2, Color Code RAL 7030)

# PROJET / PROJECT #	5389
# WO	WO-5389-02
CLIENT	AGNICO EAGLE
TITRE / TITLE	PIPING FUEL DISTRIBUTION PIPE SUPPORT
PIECE / PARTS	PIPE SUPPORT (1) PIPE NO TEFLON
QTÉ / QTY	100 req.
POIDS / WEIGHT	37 kg
SCEAU & SIGNÉ / SEAL & SIGNED	
DESSINÉ / DRAWN	B.Lauzon
VÉRIFIÉ / CHECKED	Rémi Jean
DATE	2017-04-18
FEUILLE / SHEET	1 / 1
DESSIN REFERENCE / REFERENCE DRAWING	65-403-270-200
No DESSIN / DRAWING No	5389B-04A
REV	0

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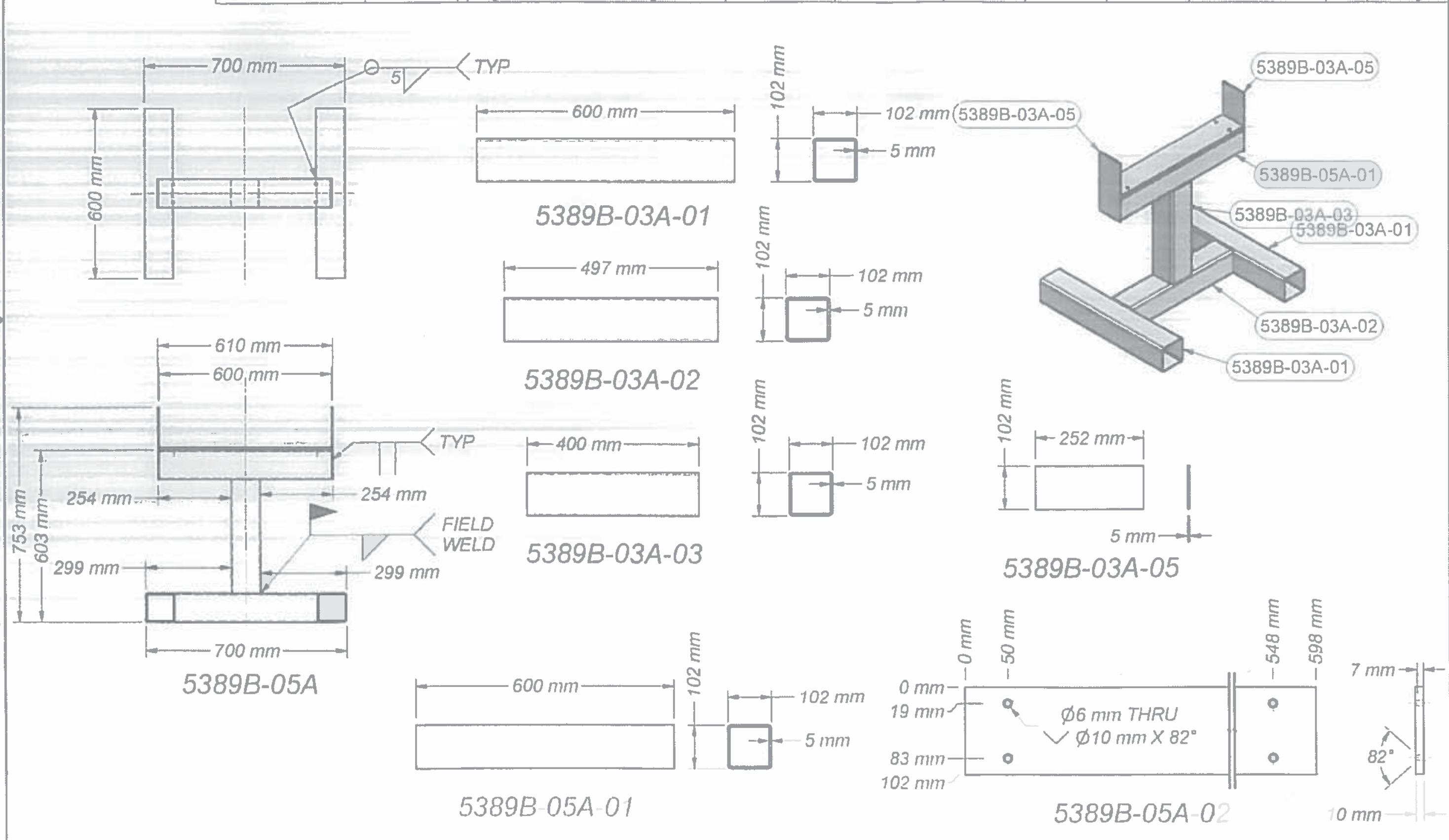
Parts listing (For 1 ass'y)

# Part	Description	Grade	Detail	Thick.	Width	Height	Length	Qty	Weight
5389B-03A-01	HSS	A500-C		4.8 mm	102 mm	102 mm	600 mm	2	8 kg
5389B-03A-02	HSS	A500-C		4.8 mm	102 mm	102 mm	497 mm	1	7 kg
5389B-03A-03	HSS	A500-C		4.8 mm	102 mm	102 mm	400 mm	1	6 kg
5389B-03A-05	Flat Bar	44W		4.8 mm	102 mm		252 mm	2	1 kg
5389B-05A-01	HSS	A500-C		4.8 mm	102 mm	102 mm	600 mm	1	8 kg
5389B-05A-02	U.H.M.W	UHMW	DRILL	9.5 mm	102 mm		598 mm	1	1 kg
94195A177	SS Self-Tapping Screw #10 1 1/4"lg	SS						4	0 kg



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E-Mail: info@acier.com
Site Web: www.acierjp.com

NOTES GENERALES :
GENERAL NOTES :
1. FOR STRUCTURAL STEEL GENERAL NOTES SEE DRAWING SS-00
2. SPEC. PEINTURE : AE-Meliadine-02 (Coating System 2, Color Code RAL 7030)

PROJET : / PROJECT # : 5389
WO: WO-5389-02

CLIENT : AGNICO EAGLE

TITRE / TITLE: PIPING FUEL DISTRIBUTION

PIPE SUPPORT

PIECE / PARTS: PIPE SUPPORT (2) PIPES

QTÉ / QTY: 42 req.
POIDS / WEIGHT: 40 kg

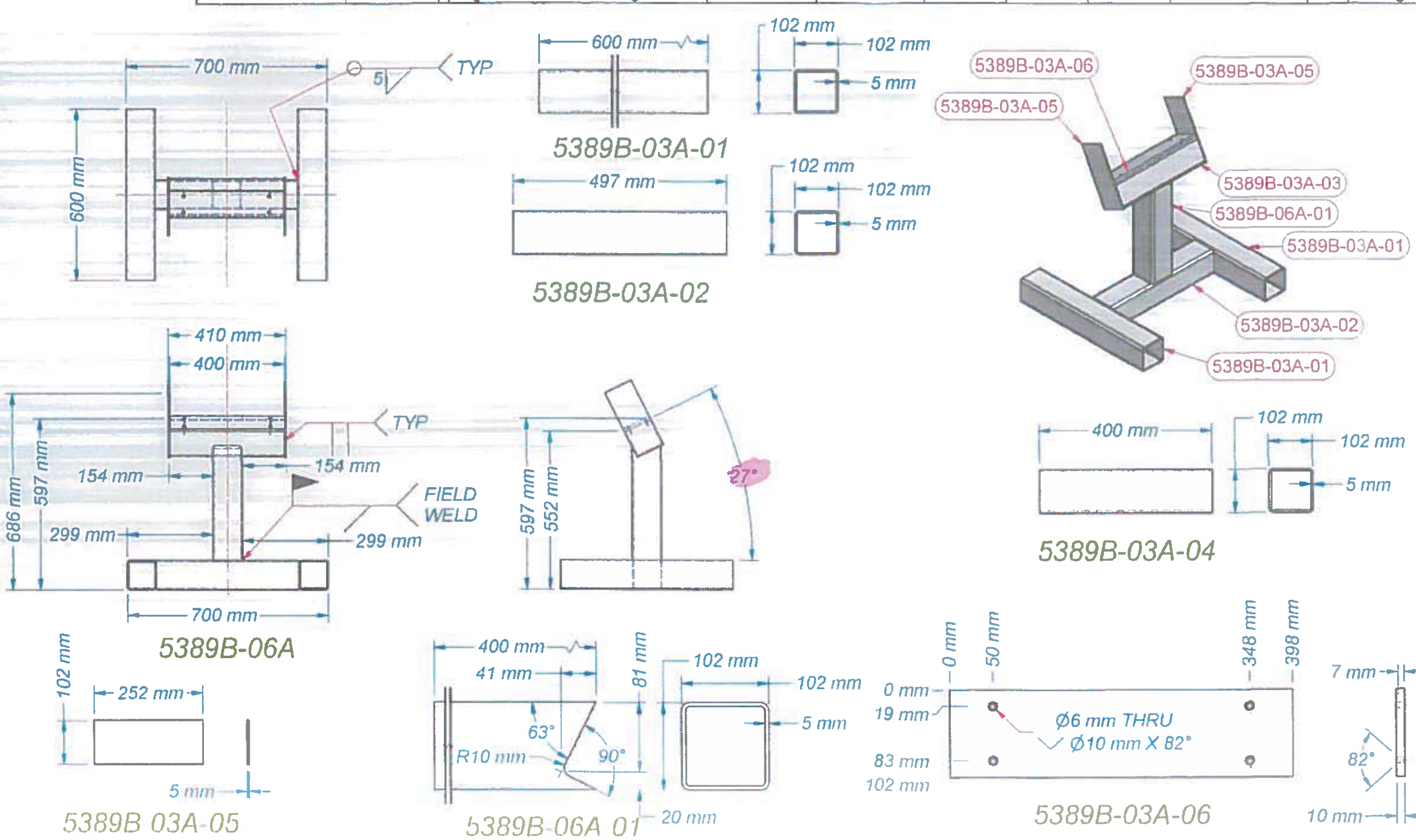
SCEAU & SIGNÉ / SEAL & SIGNED

DESSINÉ / DRAWN: B.Lauzon
VERIFIÉ / CHECKED: Rémi Jean
DATE: 2017-04-18
FEUILLE / SHEET: 1 / 1
DESSIN REFERENCE / REFERENCE DRAWING: 65-403-270-200
No. DESSIN / DRAWING No: 5389B-05A
REV: 0

P:\Clients\Promec\5389 Support tuyau\Des Fab\5389B-05A.idw

Parts listing (For 1 ass'y)

# Part	Description	Grade	Detail	Thick.	Width	Height	Length	Qty	Weight
5389B-03A-01	HSS	A500-C		4.8 mm	102 mm	102 mm	600 mm	2	8 kg
5389B-03A-02	HSS	A500-C		4.8 mm	102 mm	102 mm	497 mm	1	7 kg
5389B-03A-03	HSS	A500-C		4.8 mm	102 mm	102 mm	400 mm	1	6 kg
5389B-03A-05	Flat Bar	44W		4.8 mm	102 mm		252 mm	2	1 kg
5389B-03A-06	U.H.M.W	UHMW	DRILL	9.5 mm	102 mm		398 mm	1	0 kg
5389B-06A-01	HSS	A500-C	DETAIL	4.8 mm	102 mm	102 mm	400 mm	1	5 kg
94195A177	SS Self-Tapping Screw #10 1 1/4"lg	SS						4	0 kg



AJP
Tél. (819) 947-8291
Fax. (819) 947-8321
E-Mail: info@acer.com
Site Web: www.acerjp.com

NOTES GENERALES
GENERAL NOTES :
1. FOR STRUCTURAL STEEL GENERAL NOTES SEE DRAWING SS-00
2. SPEC. PEINTURE : AE-Meliadine-02 (Coating System 2, Color Code RAL 7030)

# PROJET / PROJECT #	5389
# WO	WO-5389-02
CLIENT	AGNICO EAGLE
TITRE / TITLE	PIPING FUEL DISTRIBUTION PIPE SUPPORT
PIECE / PARTS	PIPE SUPPORT (1) PIPE WITH SLOPE
QTE / QTY	4 req.
POIDS / WEIGHT	37 kg
SCEAU & SIGNE / SEAL & SIGNED	03 MAI 2017.
DESSINE / DRAWN	B.Lauzon
VERIFIE / CHECKED	Rémi Jean
DATE	2017-04-18
FEUILLE / SHEET	1 / 1
DESSIN REFERENCE / REFERENCE DRAWING	65-403-270-200
No DESSIN / DRAWING No	5389B-06A
REV.	0

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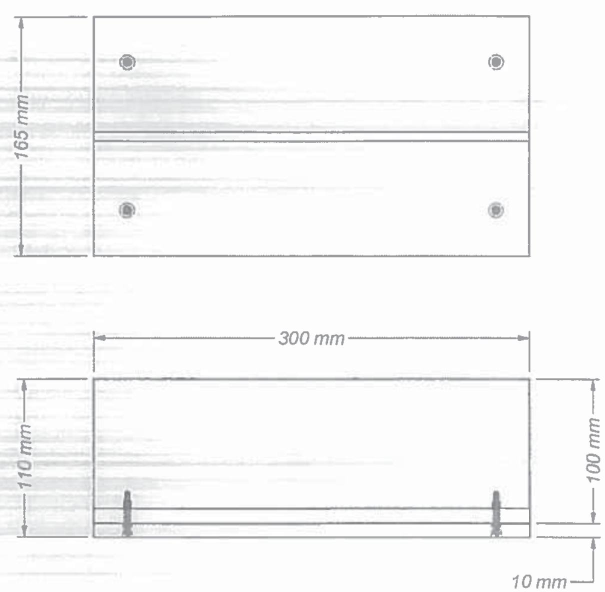
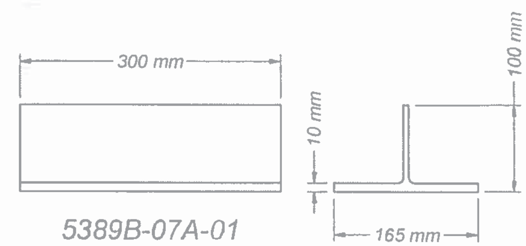
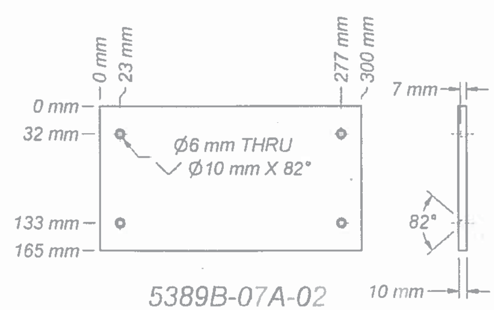
Parts listing (For 1 ass'y)									
# Part	Description	Grade	Detail	Thick.	Width	Height	Length	Qty	Weight
5389B-07A-01	W200x36 (W8x24)	50W	DETAIL				300 mm	1	5 kg
5389B-07A-02	U.H.M.W	UHMW	DRILL	9.5 mm	165 mm		300 mm	1	0 kg
94195A177	SS Self-Tapping Screw #10 1 1/4"lg	SS						4	0 kg



5389B-07A



5389B-07A-01



5389B-07A-02

AJP
Tél.:(819) 947-8291
Fax.:(819) 947-0321
E-Mail: info@acier.com
Site Web: www.acierajp.com

NOTES GÉNÉRALES
GENERAL NOTES :
1. FOR STRUCTURAL STEEL GENERAL NOTES SEE DRAWING SS-00
2. SPEC. PEINTURE : AE-Meliadine-02 (Coating System 2, Color Code RAL 7030)

# PROJET / PROJECT #	5389
# WO	WO-5389-02
CLIENT	AGNICO EAGLE
TITRE / TITLE	PIPING FUEL DISTRIBUTION PIPE SUPPORT
PIECE / PARTS	PIPE SHOE
QTÉ / QTY	100 req.
POIDS / WEIGHT	6 kg
SCEAU & SIGNÉ / SEAL & SIGNED	
DESSINÉ / DRAWN	B.Lauzon
VÉRIFIÉ / CHECKED	Rémi Jean
DATE	2017-04-18
FEUILLE / SHEET	1 / 1
DESSIN REFERENCE / REFERENCE DRAWING	65-403-270-200
No DESSIN / DRAWING No	5389B-07A
REV	0

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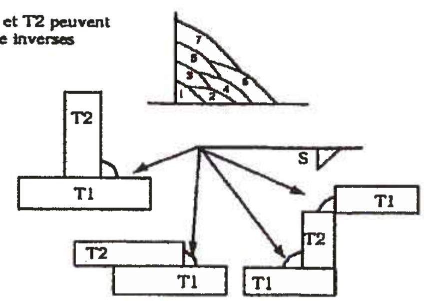
SPÉCIFICATION DE PROCÉDURE DE SOUDAGE FEUILLE DE DONNÉES DE PROCÉDURE DE SOUDAGE	No.:	MC-2F-045-MF			Rev.:	1
	Jour	2	Mois	1	Année	2012

Nom de la compagnie	Les Aciers J.P. Inc.	Norme(s) de référence:
Adresse:	15, 3ième ı ave	CSA W47.1 et CSA W59
	La Reine (QC) J0Z 2L0	

Procédés de soudage	1	MCAW	Pulsé	Oui ☐	Non ☑	2	N/A	Pulsé	Oui ☐ Non ☐
Gaz de protection		$92\ Ar\text{-}8\ CO_2$	Débit	15-25 l/min				Débit	

Position	1 er côté : Plat et Hor. 2 è côté:
Mode d'application	Manuel ☐ Semi-auto ☑ Machine ☐ Auto ☐
Type d'assemblage	☐ T ☑ ☑ ☑ ☐
Type de soudure	Complet ☐ Partiel E= ☐ Angle ☑
Support envers	Matériel : N/A Épaisseur:
Gougeage à l'envers	Oui ☐ Méthode : Non ☑ Profondeur : Largeur :
Longueur de fil libre	15-25 mm
Diamètre(s) de buses	12-16 mm
Classification du flux	N/A
Électrode de tungstène	Type: N/A Diamètre: N/A
Procédures de nettoyage	

T1 et T2 peuvent etre inverses



Identification du matériel de base (Pour CSA W186 indiquer le carbone équivalent et contenu maximum de souffre et de phosphore)

Pièce	Normes de référence et grade ou classe	Épaiss. Ou Diam.	Exigences spécifiques
I	CSA W59, Tableau 11-1 Groupes 1-2-3	3 mm min	
II	CSA W59, Tableau 11-1 Groupes 1-2-3	3 mm min	

Identification du métal d'apport

Procédé	Classification	Numéro(s) de(s) passe(s)	Exigences spécifiques
1	E491C-6M-HXX ou E492C-6M-HXX (XX = 4, 8 ou 16)	toutes	Protéger des saletés une fois
2			désemballé

Paramètres de soudage — Taux de dépôt(kg/hre): 4.56

Dimension S (mm)	Épaisseur T1 (mm)	Épaisseur T2 (mm)	No. de la couche	Numéro des passes	Diamètre du métal d'apport (mm)	Vitesse de dévidage (cm/min)	Polarité CCEP Courant +/-10%(A)	Tension +/-7% (Volts)	Vitesse d'arc +/-15% (mm/min)	Apport de chaleur (KJ/po)	Poids de soudure (kg/m)
4	3-4	3 min	1	1	1.2	1000	270	27.5	800		
5	5	5 min	1	1	1.2	1000	270	27.5	650		
5	6-12	6-12	1	1	1.2	1000	270	27.5	650		
6	6	6 min	1	1	1.2	1000	270	27.5	435		
6	8-20	8-20	1	1	1.2	1000	270	27.5	435		
8	8 min	8 min	1typ	1 typ	1.2	1000	270	27.5	250		
10	10 min	10 min	2	2-3	1.2	1000	270	27.5	435		
13	13 min	13 min	2-3	2-5	1.2	1000	270	27.5	370		
16	16 min	16 min	2-4	2-7	1.2	1000	270	27.5	500		

Caractéristique statique tension-courant: tension const.	Temp. entrepasse max.: N/A	Préch. min.:	CSA W59 Tab 5-3
Traitement Thermique N/A Degré C: N/A	Temp. entrepasse min.:	CSA W59 Tab 5-3	

Rem.:

Acceptation du CWB (Spécification)	Acceptation du CWB (Feuille de données)	Représentant de la cie
	CWB Accepté par le CWB January 19, 2012 Valide uniquement lorsque les produits d'apport sont certifiés par le CWB	INGÉNIEUR - ENGINEER Louis Croteau 40310 QUÉBEC JAN 17 2012

Omniweld
Solutions Intégrées

Spécification de mode opératoire de soudage

Application:

Cette spécification de mode opératoire de soudage (SMOS) s'applique au procédé **MCAW** et vise à compléter les feuilles de données de mode opératoire de soudage (FDMOS). Cette SMOS doit être reproduite à l'endos de chacune des FDMOS du mode opératoire MCAW. Elle n'indique que les informations qui ne sont pas déjà inscrites sur la FDMOS et qui sont exigées par les articles applicables des sections 10 et 11 de la norme W47.1-03.

Tout changement apporté aux variables essentielles d'une FDMOS ou SMOS, entraînera obligatoirement la révision ou la rédaction d'une nouvelle SMOS ou FDMOS.

Préparation du métal de base:

La préparation des bords ou des surfaces à joindre doit être effectuée par cisaillage, par meulage, par burinage, par usinage, par coupage ou par gougeage à l'arc au carbone avec jet d'air, par oxycoupage ou par gougeage avec oxygène.

Les surfaces à souder doivent être exemptes d'arêtes, de fissures ou autres défauts susceptibles de nuire à la qualité ou à la résistance de la soudure. Également, dans un rayon de 2" de la soudure, il ne doit pas avoir sur les surfaces, de calamine non adhérente, de laitier, de rouille écaillée, de peinture, de graisse, d'humidité ou autre corps étranger qui empêcheront l'obtention de soudures répondants aux critères de qualité de la norme ou qui dégageraient des vapeurs toxiques pour le soudeur.

Conditionnement des produits d'apport:

L'électrode de soudage doit être sèche et libre de rouille de surface, de poussière ou matière étrangère.

Gaz de protection:

Le gaz de protection utilisé doit avoir un point de rosé de -40C ou moins. Le soudage ne doit pas se faire dans un courant d'air ou au vent sauf si la zone de travail est protégée par un abris dont la forme et les matériaux utilisés permettront de réduire le vent à moins de 8 Km/h et empêchera la neige ou la pluie d'entrer.

Nettoyage des soudures:

Toute substance nuisible doit être enlevée avant l'application des passes suivantes.

Préchauffage/interpasse:

Le préchauffage doit être appliqué avant le début du soudage du côté opposé au soudage de façon à ce que la température atteigne la température de préchauffage spécifiée sur toute l'épaisseur du matériau et sur une largeur égale à l'épaisseur de la pièce mais pas moins que 3 po de chaque côté de la soudure et devant le point de soudage.

Si le soudage est interrompu et que la température du métal de base descend sous la température spécifiée, le préchauffage doit être appliqué à nouveau pour ramener la température de la pièce à la température de préchauffage spécifiée.

Quand le soudage est terminé, la pièce doit refroidir à l'air libre sans l'utilisation de moyens pour accélérer le refroidissement, comme de l'air comprimé soufflé sur la pièce, de l'eau et on ne doit pas la sortir dehors pour qu'elle soit exposée au froid l'hiver et/ou au vent à la pluie ou à la neige.

Traitement thermique:

Aucun PWHT n'est prévu sauf si les spécifications sont indiquées sur la feuille de données de mode opératoire de soudage et qu' elle n'ait été approuvées par le CWB.

Qualité:

Les soudures doivent être exemptes de défauts excédant les spécifications de la section 5 de la norme W59.

- Les défauts internes débouchant ou pas, (fissures, soufflures, inclusions, manque de fusion etc) doivent être réparés en enlevant la partie défectueuse et en ajoutant de la soudure pour obtenir une soudure saine conforme aux spécifications.
- Les défauts de surface (caniveau, cratère non rempli, soudure trop petite, etc.) peuvent être réparés par l'ajout de soudure.
- Les défauts de profil (convexité excessive, débordement etc.) peuvent être corrigés par meulage ou burinage.

CWB Accepté par le CWB
January 19, 2012
Valide uniquement lorsque les produits d'apport sont certifiés par le CWB

Approbation CWB

Approbation Compagnie

INGÉNIEUR · ENGINEER Louis Coteau 40910 QUÉBEC

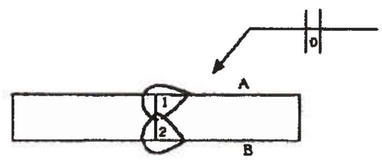
JAN 16 2012

SPÉCIFICATION DE PROCÉDURE DE SOUDAGE FEUILLE DE DONNÉES DE PROCÉDURE DE SOUDAGE	No.:	MC-F1-3-1G-MF-045			Rev.:	2
	Jour	2	Mois	1	Année	2012

Nom de la compagnie	Les Aciers J.P. Inc.	Norme(s) de référence:
Adressse:	15, 3ième : ave	CSA W47.1 et CSA W59
	La Reine (QC) J0Z 2L0	

Procédés de soudage	1	MCAW	Pulsé	Oui ☐	Non ☑	2	N/A Pulsé	Oui ☐	Non ☐
Gaz de protection		92 Ar-8 CO2	Débit	15-25 li/min			Débit		

Position	1 er côté : Plat 2 è côté: Plat
Mode d'application	Manuel ☐ Semi-auto ☑ Machine ☐ Auto ☐
Type d'assemblage	☑ T ☐ ☐ ☐ ☐
Type de soudure	Complet ☑ Partiel E= ☐ Angle ☐
Support envers	Matériel : N/A Épaisseur:
Gougeage à l'envers	Oui ☐ Méthode : Non ☑ Profondeur : Largeur :
Longueur de fil libre	15-25 mm
Diamètre(s) de buses	12-16 mm
Classification du flux	N/A
Électrode de tungstène	Type: N/A Diamètre: N/A
Procédures de nettoyage	



Identification du matériel de base (Pour CSA W186 indiquer le carbone équivalent et contenu maximum de souffre et de phosphore)

Pièce	Normes de référence et grade ou classe	Épaiss. Ou Diam.	Exigences spécifiques
I	CSA W59, Tableau 11-1 Groupes 1-2-3	3 à 6 mm	
II	CSA W59, Tableau 11-1 Groupes 1-2-3	3 à 6 mm	

Identification du métal d'apport

Procédé	Classification	Numéro(s) de(s) passe(s)	Exigences spécifiques
1	E491C-6M-HXX ou E492C-6M-HXX (XX = 4, 8 ou 16)	toutes	Protéger des saletés une fois
2			déemballé

Paramètres de soudage

Épaisseur des pièces (mm)	Gorge efficace E (mm)	No. du côté	No. de la couche	Numéro des passes	Diamètre du métal d'apport (mm)	Vitesse de dévidage (cm/min)	Polarité CCEP Courant +/-10%(A)	Tension +/-7% (Volts)	Vitesse d'arc +/-15% (mm/min)	Apport de chaleur (KJ/po)	Poids de soudure (kg/m)
									Taux de dépôt(kg/hre)		
3	3	A-B	1-2	1 - 2	1.2	900	230	26.5	500		
4	4	A-B	1-2	1 - 2	1.2	950	250	27.5	400		
5	5	A-B	1-2	1 - 2	1.2	1000	270	27.5	325		
6	6	A-B	1-2	1 - 2	1.2	1000	270	27.5	220		
T1 = 3	3	A-B	1-2	1 - 2	1.2	925	240	26.5	450		
T2 = 6											

Caractéristique statique tension-courant: tension const.	Temp. entrepasse max.:	N/A	Préch. min.:	10 C
Traitement Thermique N/A Degré C: N/A	Temp. entrepasse min.:	10 C		
Rem.:				

Acceptation du CWB (Spécification)	Acceptation du CWB (Feuille de données)	Représentant de la cie
	CWB Accepté par le CWB *January 19, 2012* Valide uniquement lorsque les produits d'apport sont certifiés par le CWB	INGÉNIEUR - ENGINEER Louis Croteau 40310 QUÉBEC JAN ... 2012

Omniweld™ Solutions Intégrées

Spécification de mode opératoire de soudage

Application:

Cette spécification de mode opératoire de soudage (SMOS) s'applique au procédé **MCAW** et vise à compléter les feuilles de données de mode opératoire de soudage (FDMOS). Cette SMOS doit être reproduite à l'endos de chacune des FDMOS du mode opératoire MCAW. Elle n'indique que les informations qui ne sont pas déjà inscrites sur la FDMOS et qui sont exigées par les articles applicables des sections 10 et 11 de la norme W47.1-03.

Tout changement apporté aux variables essentielles d'une FDMOS ou SMOS, entraînera obligatoirement la révision ou la rédaction d'une nouvelle SMOS ou FDMOS.

Préparation du métal de base:

La préparation des bords ou des surfaces à joindre doit être effectuée par cisaillage, par meulage, par burinage, par usinage, par coupage ou par gougeage à l'arc au carbone avec jet d'air, par oxycoupage ou par gougeage avec oxygène.

Les surfaces à souder doivent être exemptes d'arêtes, de fissures ou autres défauts susceptibles de nuire à la qualité ou à la résistance de la soudure. Également, dans un rayon de 2" de la soudure, il ne doit pas avoir sur les surfaces, de calamine non adhérente, de laitier, de rouille écaillée, de peinture, de graisse, d'humidité ou autre corps étranger qui empêcheront l'obtention de soudures répondants aux critères de qualité de la norme ou qui dégageraient des vapeurs toxiques pour le soudeur.

Conditionnement des produits d'apport:

L'électrode de soudage doit être sèche et libre de rouille de surface, de poussière ou matière étrangère.

Gaz de protection:

Le gaz de protection utilisé doit avoir un point de rosé de -40C ou moins. Le soudage ne doit pas se faire dans un courant d'air ou au vent sauf si la zone de travail est protégée par un abris dont la forme et les matériaux utilisés permettront de réduire le vent à moins de 8 Km/h et empêchera la neige ou la pluie d'entrer.

Nettoyage des soudures:

Toute substance nuisible doit être enlevée avant l'application des passes suivantes.

Préchauffage/interpasse:

Le préchauffage doit être appliqué avant le début du soudage du côté opposé au soudage de façon à ce que la température atteigne la température de préchauffage spécifiée sur toute l'épaisseur du matériau et sur une largeur égale à l'épaisseur de la pièce mais pas moins que 3 po de chaque côté de la soudure et devant le point de soudage.

Si le soudage est interrompu et que la température du métal de base descend sous la température spécifiée, le préchauffage doit être appliqué à nouveau pour ramener la température de la pièce à la température de préchauffage spécifiée.

Quand le soudage est terminé, la pièce doit refroidir à l'air libre sans l'utilisation de moyens pour accélérer le refroidissement, comme de l'air comprimé soufflé sur la pièce, de l'eau et on ne doit pas la sortir dehors pour qu'elle soit exposée au froid l'hiver et/ou au vent à la pluie ou à la neige.

Traitement thermique:

Aucun PWHT n'est prévu sauf si les spécifications sont indiquées sur la feuille de données de mode opératoire de soudage et qu' elle n'ait été approuvées par le CWB.

Qualité:

Les soudures doivent être exemptes de défauts excédant les spécifications de la section 5 de la norme W59.

- Les défauts internes débouchant ou pas, (fissures, soufflures, inclusions, manque de fusion etc) doivent être réparés en enlevant la partie défectueuse et en ajoutant de la soudure pour obtenir une soudure saine conforme aux spécifications.
- Les défauts de surface (caniveau, cratère non rempli, soudure trop petite, etc.) peuvent être réparés par l'ajout de soudure.
- Les défauts de profil (convexité excessive, débordement etc.) peuvent être corrigés par meulage ou burinage.

Accepté par le CWB
January 19, 2012
Valide uniquement lorsque les produits d'apport sont certifiés par le CWB

Approbation CWB

Approbation Compagnie

INGÉNIEUR - ENGINEER
Louis Croteau
40310
QUÉBEC

JAN 16 2012

LISTE DE PLANIFICATION DE PROJET POUR LA CERTIFICATION CSA W47.1-09 M à J #7

PROJET # : 5389-02	
ACHETEUR : Promec	
DESSINS ET SPÉCIFICATIONS DE RÉFÉRENCE : 5389	
MÉTAUX DE BASE UTILISÉ : 44W	
MÉTAUX D'APPORT (MARQUE, NOM DE COMMERCE ET CLASSIFICATION) : E491C6M	
NORMES APPLICABLES : 47.1	
INSTRUCTIONS CONCERNANT LES MÉTAUX DE BASES PARTICULIERS SOUDÉS AVEC DES MÉTAUX D'APPORT APPROPRIÉS. (Si applicable) Commentaires: N/A	
ESSAIS NON-DESTRUCTIFS À EFFECTUER ET STIPULÉS AU CONTRAT AINSI QUE LES EXIGENCES À RENCONTRER. (Si applicable) Commentaires: N/A	

POINTS À VÉRIFIER EN RAPPORT AU SOUDAGE

	OUI	NON	N/A
Y-a-t-il des écarts entre les renseignements inscrits au contrat et les capacités immédiates de l'entreprise à effectuer les travaux de soudage? Si oui, comment l'acheteur en a été avisé et quelles sont les actions à prendre pour remédier à la situation:		✓	
Les actions à prendre pour remédier aux écarts ont-elles toutes été prises avant le début du contrat? Si non, pourquoi:			✓
Le superviseur en soudage, ou son délégué, est-il aux emplacements où le soudage est effectué? Nom: Patrick Perreault	✓		
Une vérification à savoir si les équipements pour le soudage indiquent les mêmes paramètres que sur FDMOS a-t-elle été faite? Numéros des équipements utilisés:	✓		
Y-a-t-il des certificats de coulée (mill tests) ou bons de commandes pour identifier tous les matériaux soudés ? Numéros des bons de commandes/certificats de coulée: ...ique dans le dossier du client classé sou...	✓		
Les produits d'apport sont-ils dans des emballages étanches et entreposés dans un endroit au chaud et sec?	✓		
Les électrodes à bas hydrogène sont-ils dans des emballages scellées et/ou dans les fours aux températures prescrites?			✓
Des opérations de préchauffage sont-elles requises SELON LES MODES OPÉRATOIRES et/ou SELON LE TABLEAU 5.3 DE LA NORME CSA W59 selon la désignation de l'hydrogène diffusible des métaux d'apport utilisés (aucune, H16, H8, H4)?		✓	
Température de préchauffage et entre-passes à rencontrer (si requis) #FDMOS/Temp° :	Degré de température : NA		
Le métal de base a-t-il été préparé conformément aux exigences des SMOS et selon les exigences des normes applicables ?	✓		
La compagnie possède-t-elle toutes les SMOS/FDMOS pour les assemblages à souder?	✓		
Les Modes Opératoires de Soudage (SMOS/FDMOS) sont-ils disponibles pour l'atelier et/ou le chantier?	✓		
Tous les soudeurs effectuant le soudage pour le projet sont-ils qualifiés selon les travaux de soudage à réaliser? Nom des soudeurs utilisés ou rapports CWB mensuels à consulter (mois/année). ...es certifications ... employés ... Certifications CWB 201...	✓		
Y a-t-il un responsable externe de l'inspection visuelle pour que toutes les soudures rencontrent les exigences des normes, codes ou des spécifications applicables AVANT LIVRAISON? Nom(s):		✓	

Document approuvé par (lettres moulées): Patrick Perreault **Date:** 04/04/17

Signature du principal responsable de la planification du projet : [signature]

LISTE DE PLANIFICATION DE PROJET POUR LA CERTIFICATION CSA W47.1-09 M à J #7

PROJET # : 5389-02	
ACHETEUR : Promec	
DESSINS ET SPÉCIFICATIONS DE RÉFÉRENCE : 5389	
MÉTAUX DE BASE UTILISÉ : 44W	
MÉTAUX D'APPORT (MARQUE, NOM DE COMMERCE ET CLASSIFICATION) : E491C 6M	
NORMES APPLICABLES : 47.1	
INSTRUCTIONS CONCERNANT LES MÉTAUX DE BASES PARTICULIERS SOUDÉS AVEC DES MÉTAUX D'APPORT APPROPRIÉS. (Si applicable) Commentaires: N/A	
ESSAIS NON-DESTRUCTIFS À EFFECTUER ET STIPULÉS AU CONTRAT AINSI QUE LES EXIGENCES À RENCONTRER. (Si applicable) Commentaires: N/A	

POINTS À VÉRIFIER EN RAPPORT AU SOUDAGE

	OUI	NON	N/A
Y-a-t-il des écarts entre les renseignements inscrits au contrat et les capacités immédiates de l'entreprise à effectuer les travaux de soudage? Si oui, comment l'acheteur en a été avisé et quelles sont les actions à prendre pour remédier à la situation:		✓	
Les actions à prendre pour remédier aux écarts ont-elles toutes été prises avant le début du contrat? Si non, pourquoi:			✓
Le superviseur en soudage, ou son délégué, est-il aux emplacements où le soudage est effectué? Nom: Patrick Perreault	✓		
Une vérification à savoir si les équipements pour le soudage indiquent les mêmes paramètres que sur FDMOS a-t-elle été faite? Numéros des équipements utilisés:	✓		
Y-a-t-il des certificats de coulée (mill tests) ou bons de commandes pour identifier tous les matériaux soudés ? Numéros des bons de commandes/certificats de coulée:	✓		
Les produits d'apport sont-ils dans des emballages étanches et entreposés dans un endroit au chaud et sec?	✓		
Les électrodes à bas hydrogène sont-ils dans des emballages scellées et/ou dans les fours aux températures prescrites?			✓
Des opérations de préchauffage sont-elles requises SELON LES MODES OPÉRATOIRES et/ou SELON LE TABLEAU 5.3 DE LA NORME CSA W59 selon la désignation de l'hydrogène diffusible des métaux d'apport utilisés (aucune, H16, H8, H4)?		✓	
Température de préchauffage et entre-passes à rencontrer (si requis) #FDMOS/Temp° :	Degré de température : NA		
Le métal de base a-t-il été préparé conformément aux exigences des SMOS et selon les exigences des normes applicables ?	✓		
La compagnie possède-t-elle toutes les SMOS/FDMOS pour les assemblages à souder?	✓		
Les Modes Opératoires de Soudage (SMOS/FDMOS) sont-ils disponibles pour l'atelier et/ou le chantier?	✓		
Tous les soudeurs effectuant le soudage pour le projet sont-ils qualifiés selon les travaux de soudage à réaliser? Nom des soudeurs utilisés ou rapports GWB mensuels à consulter (mois/année).	✓		
Y a-t-il un responsable externe de l'inspection visuelle pour que toutes les soudures rencontrent les exigences des normes, codes ou des spécifications applicables AVANT LIVRAISON? Nom(s):		✓	

Document approuvé par (lettres moulées): Patrick Renaud **Date:** 04/08/17

Signature du principal responsable de la planification du projet : [signature]

RAPPORT	06	2017
POUR	MOIS	ANNÉE

Code de compagnie							
A	C	I	I	J	P	1	

Formulaire CWB 108F/2003-2

Page 1 de 1

# Employé	#	Nom de famille et prénom	QUALIFICATION Type	Procédé	Position / Classe / Catégorie	Niveau (W47.1 seul.)	Date expiration	Autorité de qualification	Usine (u) Chantier (c)
195	1	BRAULT, DARCY	S	FCAW	1 & 2 & 3		6 avr. 2019	CWB	U-C
		BRAULT, DARCY	S	MCAW	1 & 2 & 3		6 avr. 2019	CWB	U-C
		BRAULT, DARCY	S	FCAW/MCAW	1 & 2	MC-G8:G9	27 mars 2019	CWB	U-C
134	2	GAUTHIER, JEAN FRANÇOIS	S	FCAW	1 & 2 & 3		4 mai 2019	CWB	U-C
		GAUTHIER, JEAN FRANÇOIS	S	MCAW	1 & 2 & 3		4 mai 2019	CWB	U-C
270	3	AROUA, BASSEM	S	FCAW	1 & 2 & 3 & 4		25 mars 2019	CWB	U-C
		AROUA, BASSEM	S	MCAW	1 & 2 & 3 & 4		25 mars 2019	CWB	U-C
		AROUA, BASSEM	S	SMAW	1 & 2 & 3 & 4		25 juil. 2017	CWB	U-C
271	4	BERRACHED, MOHAMED	S	MCAW	1 & 2 & 3 & 4		4 mai 2019	CWB	U-C
		BERRACHED, MOHAMED	S	FCAW	1 & 2 & 3 & 4		4 mai 2019	CWB	U-C
		BERRACHED, MOHAMED	S	FCAW/MCAW	1 & 2	MC-G8:G9	27 mars 2019	CWB	U-C
15	5	MÉLANÇON, PIER-LUC	S	FCAW	1 & 2 & 3		4 mai 2019	CWB	U-C
		MÉLANÇON, PIER-LUC	S	MCAW	1 & 2 & 3		4 mai 2019	CWB	U-C
193	6	JEAN, SÉBASTIEN	S	FCAW	1		25 mars 2019	CWB	U-C
		JEAN, SÉBASTIEN	S	MCAW	1		25 mars 2019	CWB	U-C
336	7	MARIE-EVE BÉLANGER-MONAST	S	FCAW	1 & 2		30 avr. 2018	CWB	U-C
		MARIE-EVE BÉLANGER-MONAST	S	MCAW	1 & 2		30 avr. 2018	CWB	U-C
		MARIE-EVE BÉLANGER-MONAST	S	FCAW/MCAW	1 & 2	MC-G8:G9	27 mars 2019	CWB	U-C
330	8	JEAN-FRANÇOIS GILBERT	S	SMAW	1 & 2		30 avr. 2018	CWB	U-C
		JEAN-FRANÇOIS GILBERT	S	FCAW	1		20 oct. 2018	CWB	U-C
		JEAN-FRANÇOIS GILBERT	S	MCAW	1		20 oct. 2018	CWB	U-C
302	9	GIBBS SÉBASTIEN	S	FCAW	1 & 2		20 oct. 2018	CWB	U-C
		GIBBS SÉBASTIEN	S	MCAW	1 & 2		20 oct. 2018	CWB	U-C
331	10	DESROSIERS JACQUES	S	FCAW	1		20 oct. 2018	CWB	U-C
		DESROSIERS JACQUES	S	MCAW	1		20 oct. 2018	CWB	U-C
304	11	YVES LAROCHE	S	MCAW	1		11 févr. 2019	CWB	U-C
		YVES LAROCHE	S	FCAW	1		11 févr. 2019	CWB	U-C
204	12	KEVIN TREMBLAY	S	SMAW	1 & 2		30 avr. 2018	CWB	U-C
		KEVIN TREMBLAY	S	MCAW	1		25 mars 2019	CWB	U-C
		KEVIN TREMBLAY	S	FCAW	1		25 mars 2019	CWB	U-C
366	13	PILON MARC	S	SMAW	1		10 déc. 2018	CWB	U-C

PATRICK PERREAULT
MARC BRIÈRE
Signature du superviseur du soudage

NUQSANA PROMEC MINING SERVICES INC.

6515-C-270-007

Fuel Tanks Piping Supply and Installation

Weld Log

Document Number : AEM-GE-LOG-005
Contract Number : C22466T

AGNICO EAGLE

Field Weld #	Type	Diam.	Material	Schedule	Welder Ticket	Visual	NDE	Pass/Fail	Spool #	Isometric

Ultrasons
ULTRASONIC TESTING

Client / Customer	Fabricant / Manufacturer	Commande no / P.O. Number
Groupe Promec Inc.	Groupe Promec Inc.	22466T
Éric Poulin Responsable / Responsible	Éric Poulin Responsable / Responsible	WO-40383761 No d'ouvrage / Job no

Projet / Project	Description
AGNICO EAGLE-MELIADINE DIVISION 103-COMBUSTIBLE	UT sur des joints 4" et 3" SCH 40

Équipement / Equipment

Marque / Mark	Modèle / Model	# Série / Serial #
Olympus	Omniscan MX, 16/64M	100714

Palpeurs / Transducers — **Cable**: type BNC-microdot, L 6 pi/ft

Marque / Mark	MHz	Diam.	Angle	# Série / Serial #
Technisonic	2,25	1/2"	70°	43004

Matériau / Material	
Acier carbone	
Type de soudure / Weld type	Butt
Bloc de calibration / calibration bloc	IIW type 2 +Bloc ASME
Milieu de couplage / Coupling liquid	Echogel Grade-20

Doc. de référence / Reference Doc.

Norme / Code:	ASME
Section:	B31.1
Année / Year:	2016
Critères / Criteria:	--
Technique / Method	I-TEC-02

Identification Soudure / Weld	Face de contact / Contact Face	Epaisseur / Thickness	No réflecteur / Reflector Number	Angle de palpeur / of probe (°)	Evaluation: DAC, Référence / Reference (dB)	ou / or: Amplitude, de la DAC / from DAC (%)	Amplitude, de la DAC / from DAC (dB)	Type d'indication / Indication Type	Localisation / Localization: Longueur / Length	Trajet sonore / Soundpath	Profondeur à partir de la surface / Depth from the surface	Distance: De / From X	De / From Y	Acceptation / Acceptability
Une inspection par ultrasons a été réalisée sur 5% des joints à pleine pénétration.														
Pour l'idendification des joints inspectés se conférer au tableau de la page 2.														
Joint 4" # 1		SCH 40		0°	42									Accepté
		SCH 40		70°	53									Accepté
Joint 4" # 2		SCH 40		0°	42									Accepté
		SCH 40		70°	53									Accepté
Joint 4" # 3		SCH 40		0°	42									Accepté
		SCH 40		70°	53									Accepté
Joint 4" # 4		SCH 40		0°	42									Accepté
		SCH 40		70°	53									Accepté
Joint 3" # 5		SCH 40		0°	42									Accepté
		SCH 40		70°	53									Accepté
Joint 3" # 6		SCH 40		0°	42									Accepté
		SCH 40		70°	53									Accepté

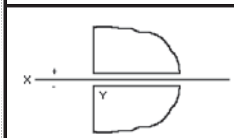
Technicien / Technician	Date	Approuvé par / Approved by	Niveau / Level		Vérifié par / Verified by
Pape Arago Bodian	2017-07-12	*Pape Arago Bodian*	ONGC / CGSB	2	KF

Ultrasons ULTRASONIC TESTING

Client / Customer	Fabricant / Manufacturer	Commande no / P.O. Number
Groupe Promec Inc.	Groupe Promec Inc.	22466T
Éric Poulin Responsable / Responsible	Éric Poulin Responsable / Responsible	WO-40383761 No d'ouvrage / Job no
Projet / Project: AGNICO EAGLE-MELIADINE DIVISION 103-COMBUSTIBLE	Description: UT sur des joints 4" et 3" SCH 40	

Identification Soudure / Weld	Face de contact / Contact Face	Epaisseur / Thickness	No réflecteur / Reflector Number	Angle de palpeur / of probe (°)	Evaluation: DAC, Référence / Reference (dB)	Evaluation ou / or: Amplitude, de la DAC / from DAC (%)	Evaluation ou / or: Amplitude, de la DAC / from DAC (dB)	Type d'indication / Indication Type	Localisation / Localization: Longueur / Length	Localisation / Localization: Trajet sonore / Soundpath	Localisation / Localization: Profondeur à partir de la surface / Depth from the surface	Distance: De / From X	Distance: De / From Y	Acceptation / Acceptability
Joint 3" # 7		SCH 40		0°	42									Accepté
		SCH 40		70°	53									Accepté
Joint 3" # 8		SCH 40		0°	42									Accepté
		SCH 40		70°	53									Accepté

Joint inspectée	N° DESSIN	N° SOUDURE	SOUDEUR
Joint 4" # 1	403-100-PDI-CC10-002 page (3/12)	#7	AO
Joint 4" # 2	403-100-PDI-CC10-002 page (2/12)	#2	AO
Joint 4" # 3	403-100-PDI-CC10-002 page (2/12)	#4	I
Joint 4" # 4	403-100-PDI-CC10-002 page (2/12)	#1	AO
Joint 3" # 5	403-80-PDI-CC10-029 page (1/10)	#2	AR
Joint 3" # 6	403-80-PDI-CC10-029 page (3/10)	#3	AO
Joint 3" # 7	403-80-PDI-CC10-029 page (3/10)	#6	AO
Joint 3" # 8	403-80-PDI-CC10-029 page (3/10)	#7	AO



LÉGENDE

Surf. : Surface / Surface	L.O.P. : Manque de pénétration / Lack of Penetration	B.T. ; Traversée / Burn Through
C. : Concavité / Concavity	L.O.F. : Manque de Fusion / Lack of Fusion	H.L. : Alignement défecteux / Misalignment
C.K. : Fissure / Crack	I.U.C. : Caniveau intérieur / Inside Undercut	S.I. : Inclusion de Laitier / Slag Inclusion
P. : Porosité / Porosity	O.U.C. : Caniveau Extérieur / Outside Undercut	F/A. : Défaut du film / Film Artefact

Technicien / Technician	Date	Approuvé par / Approved by	Niveau / Level		Vérifié par / Verified by
Pape Arago Bodian	2017-07-12	Pape Arago Bodian	ONGC / CGSB	2	KF

MISTRAS
Division Saguenay

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Radiographie
RADIOGRAPHY

Client / Customer	Fabricant / Manufacturer	Commande no / P.O. Number
Unies-Fab	Unies-Fab	N/A
Responsable / Responsible: Brian Savard	Responsable / Responsible: Brian Savard	No d'ouvrage / Job no: UF-2106

Projet / Project	Description
Promec	Radiographie sur tuyauteries

Source
Appareil/ Device: Delta 880 S/N D4446
Isotope: Iridium 192
Cu: 48 MA:
Exposition: varia min
Point focal/focal spot: po

Exposition
Méthode/method: Double paroi / double wall
Contact

Interprétation / viewing
Méthode/method: Lecture simple / simple viewing

FILMS

Film:	Qté / Qty	Type
3½ x 8½		
3½ x 17		
4½ x 8½	21	Fuji 80
4½ x 17		
7 x 17		
14 x 17		

Doc. de référence / Reference Doc.

Norme / Code:	ASME
Section:	B31.3
Année / Year:	2014
Critères / Criteria:	Condition Normal

Technique / Method
I TEC 03

Distance
Source/ surface: varia po/ Inch

Developpement / Processing
Méthode/method: Manuel/manual

Distance	Péné / I.Q.I.		Plomb / Lead	Film / cassette	Exposition Qté/Qty	Matériau / Material
Surface / film : varia po/ inch	ASTM 1B11	ASTM 1B11	0,010" /0,010"	Simple	21	Acier carbone/Carbone steel

Identification de la radiographie / Radiograph identification		Epaisseur / Thickness: Matériel / Matérial	Renforcement / Build up	Soudure / Weld	Soudeur / Welder	Evaluation Interprétations: ACC	REJ	Discontinuité et Localisation du manque / Discontinuity and Defect location			Contraste / Contrast	Brillance / Brightness
Joint 12 MK-54	O - 5	,236"	,125"	,350"	31	√						
403P-100-PDI-CC10-002 6/12	5 - 10	,236"	,125"	,350"	31	√						
	10 - O	,236"	,125"	,350"	31	√						
Joint 13 MK-67	O - 5	,236"	,125"	,350"	38	√						
403P-100-PDI-CC10-004 1/2	5 - 10	,236"	,125"	,350"	38	√						
	10 - O	,236"	,125"	,350"	38	√						
Joint 14 MK-52	O - 5	,236"	,125"	,350"	31	√						
403P-100-PDI-CC10-001 2/6	5 - 10	,236"	,125"	,350"	31	√						
	10 - O	,236"	,125"	,350"	31	√						
Joint 15 MK-53	O - 5	,236"	,125"	,350"	6	√						
403P-100-PDI-CC10-001 2/6	5 - 10	,236"	,125"	,350"	6	√						
	10 - O	,236"	,125"	,350"	6	√						
Joint 16 MK-55A	O - 5	,236"	,125"	,350"	24	√						
403P-100-PDI-CC10-002 6/12	5 - 10	,236"	,125"	,350"	24	√						
	10 - O	,236"	,125"	,350"	24	√						

LEGENDE / LEGEND

Surf. : Surface / Surface
C. : Concavité / Concavity
C.K. : Fissure / Crack
P. : Porosité / Porosity
L.O.P. : Manque de pénétration / Lack of Penetration
L.O.F. : Manque de Fusion / Lack of Fusion
I.U.C. : Caniveau intérieur / Inside Undercut
O.U.C. : Caniveau Extérieur / Outside Undercut
B.T. : Traversée / Burn Through
H.L. : Alignement défectueux / Misalignment
S.I. : Inclusion de Laitier / Slag Inclusion
F/A. : Défaut du film / Film Artefact
G : Glaçon / Icicle
A.D. : Arrêt-départ / Stop-start
T.I. : Inclusion de tungstène / tungsten incl.

Technicien / Technician	Date	Approuvé par / Approved by	Niveau / Level		Vérifié par / Verified by
Jean-Philip Gingras	2017-07-10	*Jean-Philip Gingras*	ONGC / CGSB	2	VR

Brian Savard 10/07/2017

MISTRAS
Division Saguenay

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Radiographie / RADIOGRAPHY

Client / Customer	Fabricant / Manufacturer	Commande no / P.O. Number
Unies-Fab	Unies-Fab	N/A
Responsable / Responsible: Brian Savard	Responsable / Responsible: Brian Savard	No d'ouvrage / Job no: UF-2106
Projet / Project: Promec	Description: Radiographie sur tuyauteries	

Identification de la radiographie / Radiograph Identification		Épaisseur / Thickness: Matériel / Matérial	Renforcement / Build up	Soudure / Weld	Soudeur / Welder	Évaluation / Interprétations: ACC	REJ	Discontinuité et Localisation du manque / Discontinuity and Defect location			CR: Contraste / Contrast	Brillance / Brightness
Joint 17 MK-55	O - 5	,236"	,125"	,350"	24	√						
403P-100-PDI-CC10-002 0/12	5 - 10	,238"	,125"	,360"	24	√						
	10 - O	,236"	,125"	,350"	24	√						
Joint 18 MK-65	O - 5	,236"	,125"	,350"	24	√						
403P-100-PDI-CC10-004 1/2	5 - 10	,236"	,125"	,350"	24	√						
	10 - O	,236"	,125"	,350"	24	√						

LEGENDE / LEGEND

- Surf. : Surface / Surface
- C. : Concavité / Concavity
- C.K. : Fissure / Crack
- P. : Porosité / Porosity
- L.O.P. : Manque de pénétration / Lack of Penetration
- L.O.F. : Manque de Fusion / Lack of Fusion
- I.U.C. : Caniveau intérieur / Inside Undercut
- O.U.C. : Caniveau Extérieur / Outside Undercut
- B.T. : Traversée / Burn Through
- H.L. : Alignement défecteux / Misalignment
- S.I. : Inclusion de Laitier / Slag Inclusion
- F/A. : Défaut du film / Film Artefact
- O. : [illegible]
- A.D. : Arrêt-départ / Stop-start
- T.I. : Inclusion de tungstène / tungsten incl.

Technicien / Technician	Date	Approuvé par / Approved by	Niveau / Level		Vérifié par / Verified by
Jean-Philip Gingras	2017-07-10	*Jean-Philip Gingras*	ONGC / CGSB	2	VR

Brian Savard 10/07/2017

TO BE VALIDATED

AT A LATER DATE

NDE Will be perform next summer. Temperature was too cold to be done.

AGNICO EAGLE

Vendor Document Status

1 ☐	Proceed to next submission and status.
2 ☐	Proceed with exceptions as noted to next submission and status.
3 ☐	Do not proceed. Revise as noted and resubmit next submission and status.
4 ☑	Complete, no further submission required.

By: JEAN-FRANCOIS TREMBLAY Date: 2017-06-22

Review and authorization to fabricate are only for general conformance with the design concept of the Project as expressed in the Contract Documents. Sole responsibility for the accuracy and completeness of this document, including but not limited to dimensions and quantities, remains with the Supplier/Contractor. Agnico Eagle does not warrant the accuracy or completeness of any of the information contained herein, nor does Agnico Eagle authorize or approve any construction means, methods, techniques, sequences or any safety precautions or procedures.

Agnico Eagle No. 6515-C-270-007-141-TES-0045 R: Sub002

DOCUMENT FOR INFORMATION

Agnico-Eagle Mines Ltd.
Pressure Test Report

ITR Number : AEM-PI-ITR-001
Contract no. : C22466T

Design Code	Design Test Pressure	Test Medium	Medium Temp.	Test Duration

P&ID (Highlight Boundaries)	Rev	Line	Drawing/ISO	Rev	Spool

Pressure Test Specifications

	Contractor	Date (dd-mm-yy)	Client	Date (dd-mm-yy)
Pre-Hydro Inspection				
NDE/PWHT Clearance				
Release for Test				

Test Instruments

	Make/Model	Serial Number	Test Range (psi)	Calibration Date
Upper				
Lower				

Test Data

	Time	Test Pressure	Ambient Temp. (C)	Pipe Temp. (C)	Comments
Start					
Finish					

Comments/Referenced Documents (e.g. applicable field reports):

PRESSURE TEST COMPLETE

Contractor Representative			Client Representative		
Name (Print)	Signature	Date	Name (Print)	Signature	Date

LINE RESTORATION COMPLETE

Contractor Representative			Client Representative		
Name (Print)	Signature	Date	Name (Print)	Signature	Date

ADDITIONAL LINES

P&ID	Rev	Line	Drawing/ISO	Rev	Spool

P&ID	Rev	Line	Drawing/ISO	Rev	Spool

P&ID	Rev	Line	Drawing/ISO	Rev	Spool
		Test 1	403P-100-PDI CC10 002	0	Py 5/12
					Jusgai 12/12
			403P-100-PDI CC10 003	0	1/1
			403P-100-PDI-CC10-004	0	1/2
					2/2
			403P-100 PDI-CC10 005		1/1
		Test 2	403P-100 PDI-CC10-008		1/10
					2/10 3/10 4/10
					5/10 6/10 7/10
			403P-100-PDI-CC10-009		1/3 2/3 3/3
			403P-100-PDI CC10-12		1/1
			403P-100-PDI-CC10-13		1/1

	Agnico-Eagle Mines Ltd. Pressure Test Report ITR Number : AEM-PI-ITR-001 Contract no. : C22466T	

Design Code	Design Test Pressure	Test Medium	Medium Temp.	Test Duration
	60 PSI	Pneumatic	-15°C	1h

P&ID (Highlight Boundaries)	Rev	Line	Drawing/ISO	Rev	Spool
65-416-205-200	1	403P-80 PD1-CC10-014	1/2 2/2	0	
		403P-80-PD1-CC10-015	1/19 2/19	0	

Pressure Test Specifications

	Contractor	Date (dd-mm-yy)	Client	Date (dd-mm-yy)
Pre-Hydro Inspection				
NDE/PWHT Clearance				
Release for Test	Promec	12/11/17	AEM	12/11/17

Test Instruments

	Make/Model	Serial Number	Test Range (psi)	Calibration Date
Upper	PFQ Series, Winters	617-0674	0-300	May 15 2017
Lower				

Test Data

	Time	Test Pressure	Ambient Temp. (C)	Pipe Temp. (C)	Comments
Start	5 h00 PM	60 PSI	-15°C	-15°C	
Finish	6 h00 PM	60 PSI	-15°C	-15°C	

Comments/Referenced Documents (e.g. applicable field reports):

PRESSURE TEST COMPLETE

Contractor Representative			Client Representative		
R Lamothe	[signature]	12/11/17	Reno Filliou	[signature]	
Name (Print)	Signature	Date	Name (Print)	Signature	Date

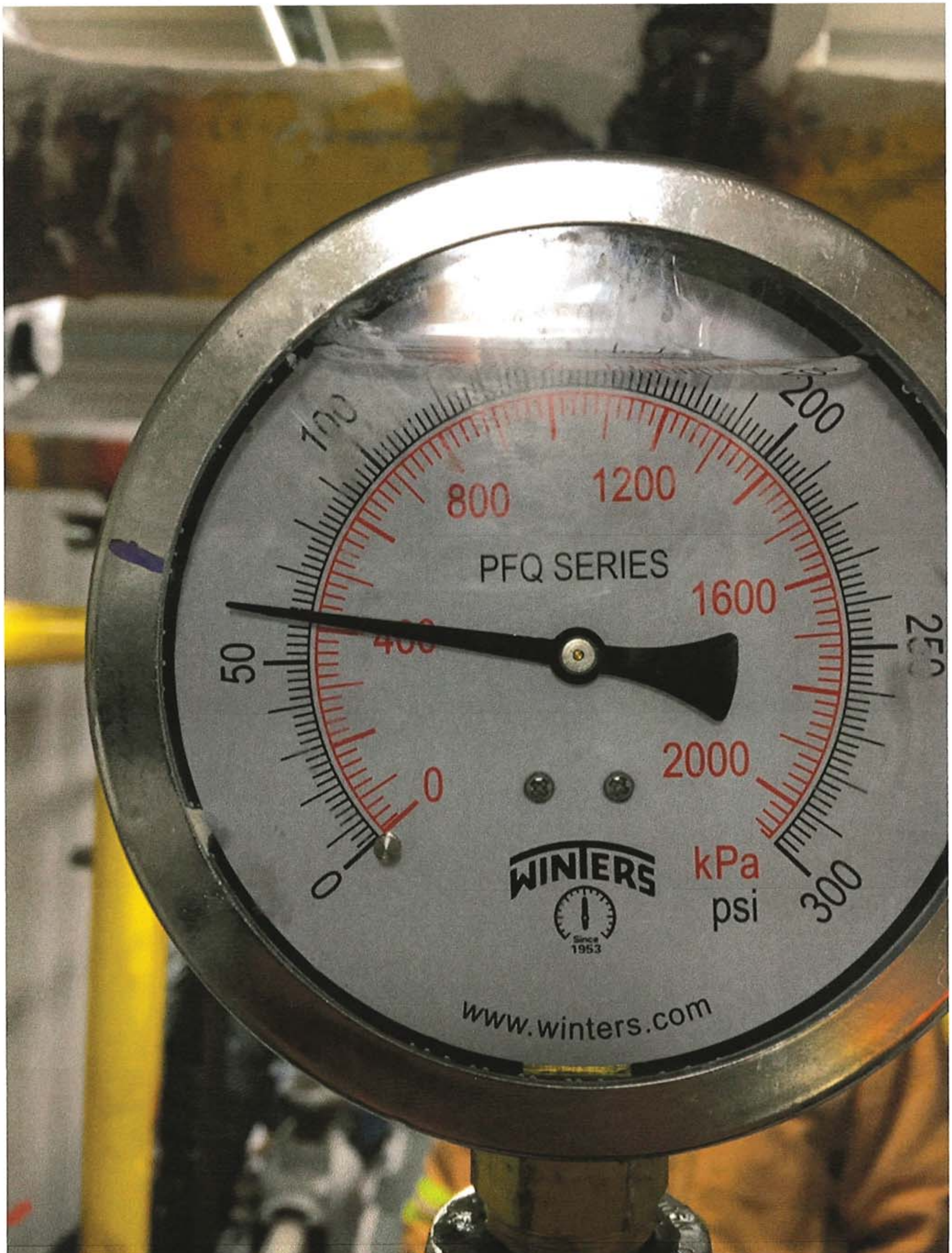
LINE RESTORATION COMPLETE

Contractor Representative			Client Representative		
R Lamothe	[signature]	12/11/17			
Name (Print)	Signature	Date	Name (Print)	Signature	Date

No Service 11:45 AM 77%

Yesterday
4:57 PM

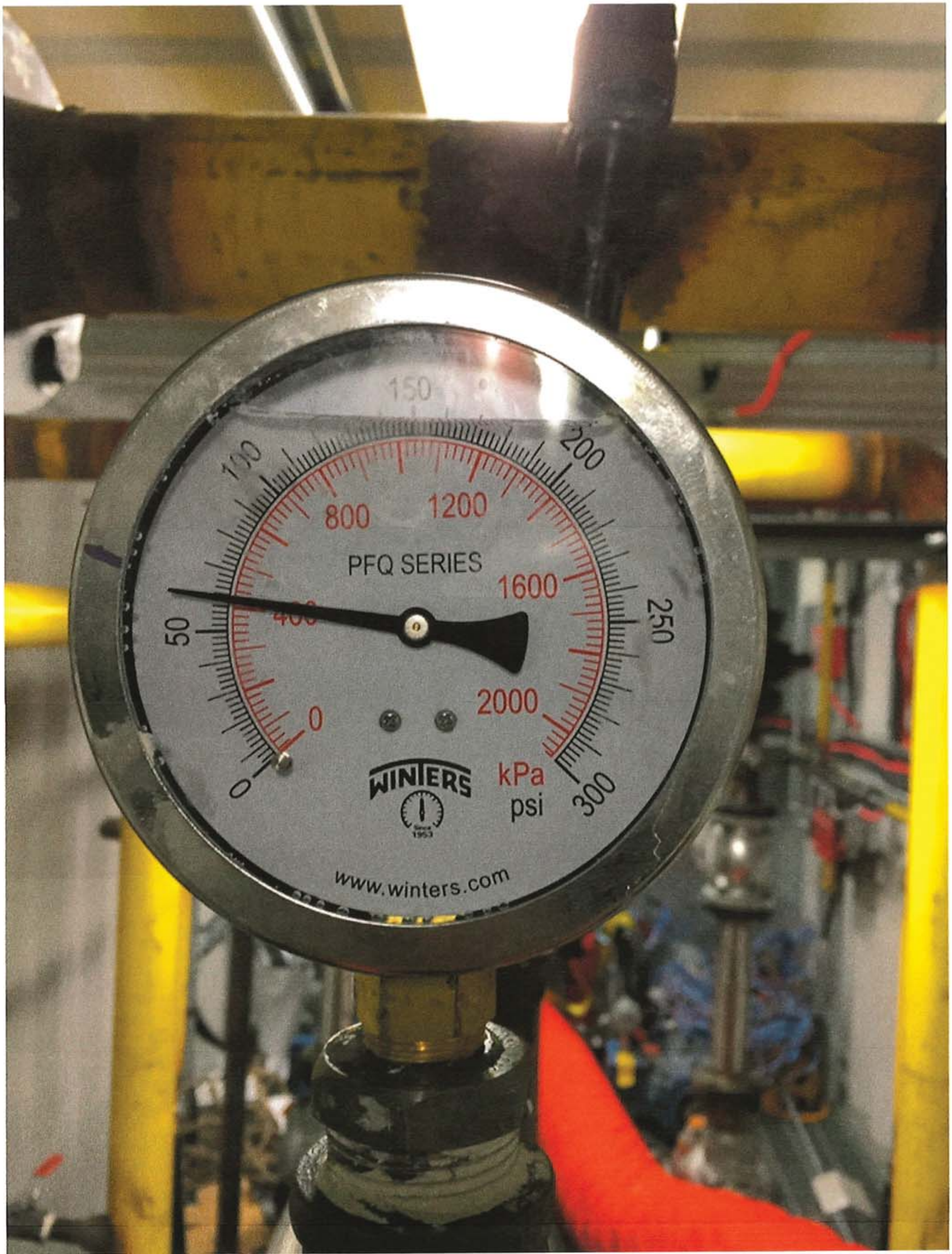
Edit



No Service 11:44 AM 77%

Today
6:56 AM

Edit



Test 1

NUQSANA-PROMEC MINING

Agnico-Eagle Mines Ltd.
Pressure Test Report

ITR Number : AEM-PI-ITR-001
Contract no. : C22466T

AGNICO EAGLE

Design Code	Design Test Pressure	Test Medium	Medium Temp.	Test Duration
	60 PSI	Pneumatic	-12°C	1h

P&ID (Highlight Boundaries)	Rev	Line	Drawing/ISO	Rev	Spool
		See Page 2			

Pressure Test Specifications

	Contractor	Date (dd-mm-yy)	Client	Date (dd-mm-yy)
Pre-Hydro Inspection				
NDE/PWHT Clearance				
Release for Test	Promec	10/11/17	AEM	10/11/17

Test Instruments

	Make/Model	Serial Number	Test Range (psi)	Calibration Date
Upper	PFQ Winters	617-0674	0-300	May 15 2017
Lower				

Test Data

	Time	Test Pressure	Ambient Temp. (C)	Pipe Temp. (C)	Comments
Start	7h30	60 PSI	-12°C	-12°C	
Finish	9h00	60 PSI	-12°C	-12°C	

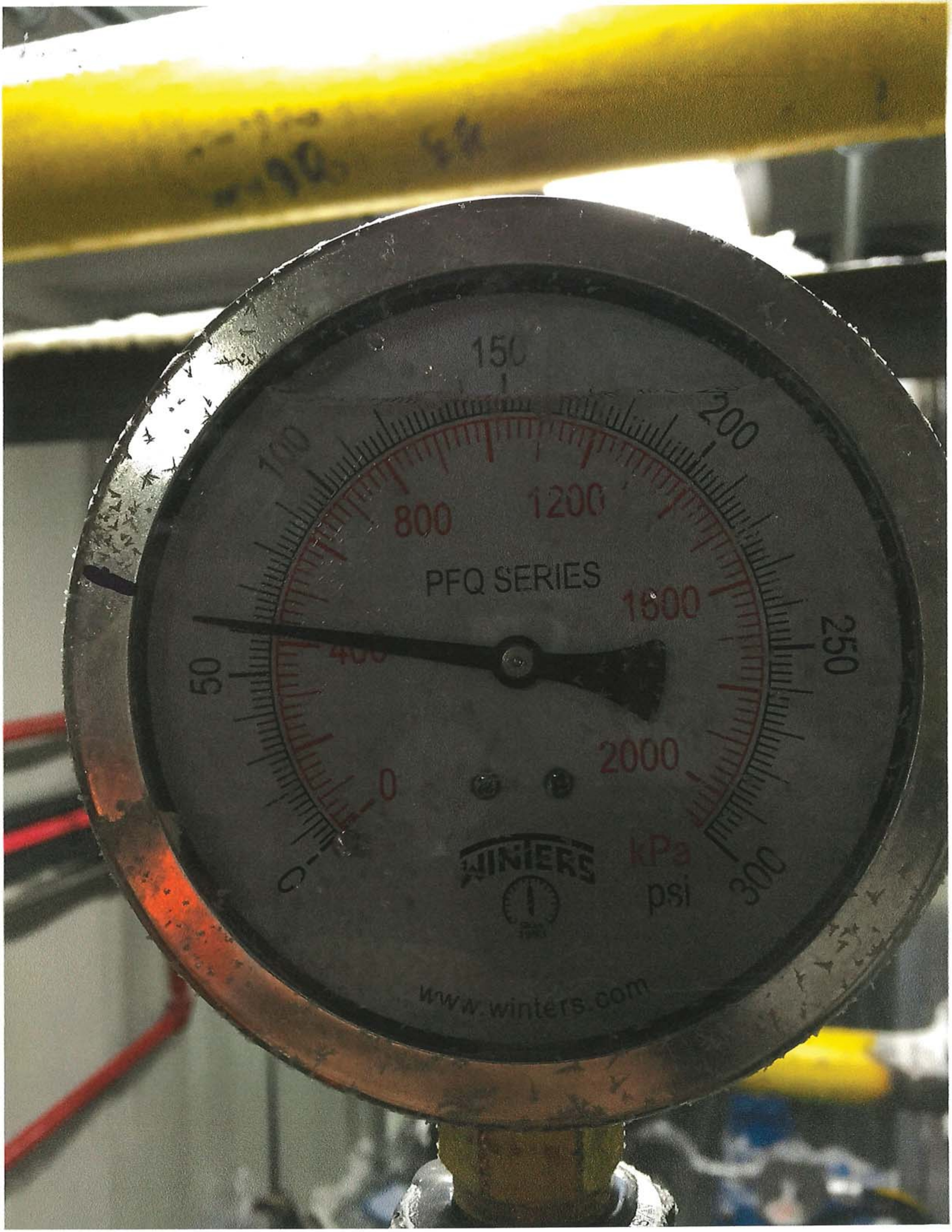
Comments/Referenced Documents (e.g. applicable field reports):

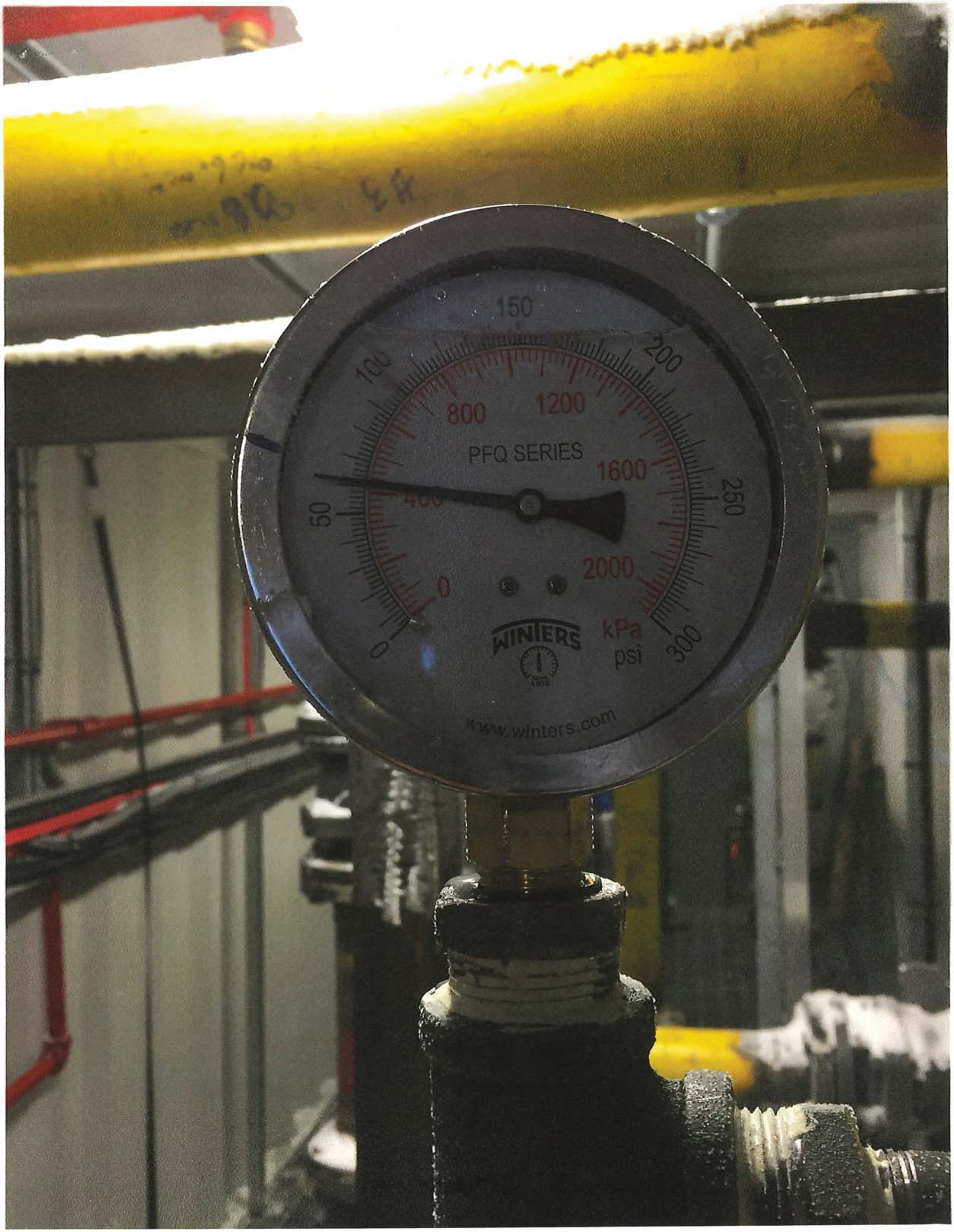
PRESSURE TEST COMPLETE

Contractor Representative			Client Representative		
Robbie Lamothe		10/11/17			
Name (Print)	Signature	Date	Name (Print)	Signature	Date

LINE RESTORATION COMPLETE

Contractor Representative			Client Representative		
		10/11/17			
Name (Print)	Signature	Date	Name (Print)	Signature	Date


PFQ SERIES
WINTERS
kPa
psi
www.winters.com


PFQ SERIES
WINTERS
kPa
psi
www.winters.com

Test 2

Agnico-Eagle Mines Ltd.
Pressure Test Report

ITR Number : AEM-PI-ITR-001
Contract no. : C22466T

Design Code	Design Test Pressure	Test Medium	Medium Temp.	Test Duration
	60 PSI	Pneumatic	-15 °C	1 h

P&ID (Highlight Boundaries)	Rev	Line	Drawing/ISO	Rev	Spool
		See Page 2			

Pressure Test Specifications

	Contractor	Date (dd-mm-yy)	Client	Date (dd-mm-yy)
Pre-Hydro Inspection				
NDE/PWHT Clearance				
Release for Test	Promec	10/11/17	AEM	10/11/17

Test Instruments

	Make/Model	Serial Number	Test Range (psi)	Calibration Date
Upper	PFQ Winters	617 0674	0-300	May 15 2017
Lower				

Test Data

	Time	Test Pressure	Ambient Temp. (C)	Pipe Temp. (C)	Comments
Start	7 h 30	60 PSI	-15°	-15°	
Finish	10 h 00	60 PSI	-15°	-15°	

Comments/Referenced Documents (e.g. applicable field reports):

PRESSURE TEST COMPLETE

Contractor Representative			Client Representative		
Robbie Landth		10/11/17			
Name (Print)	Signature	Date	Name (Print)	Signature	Date

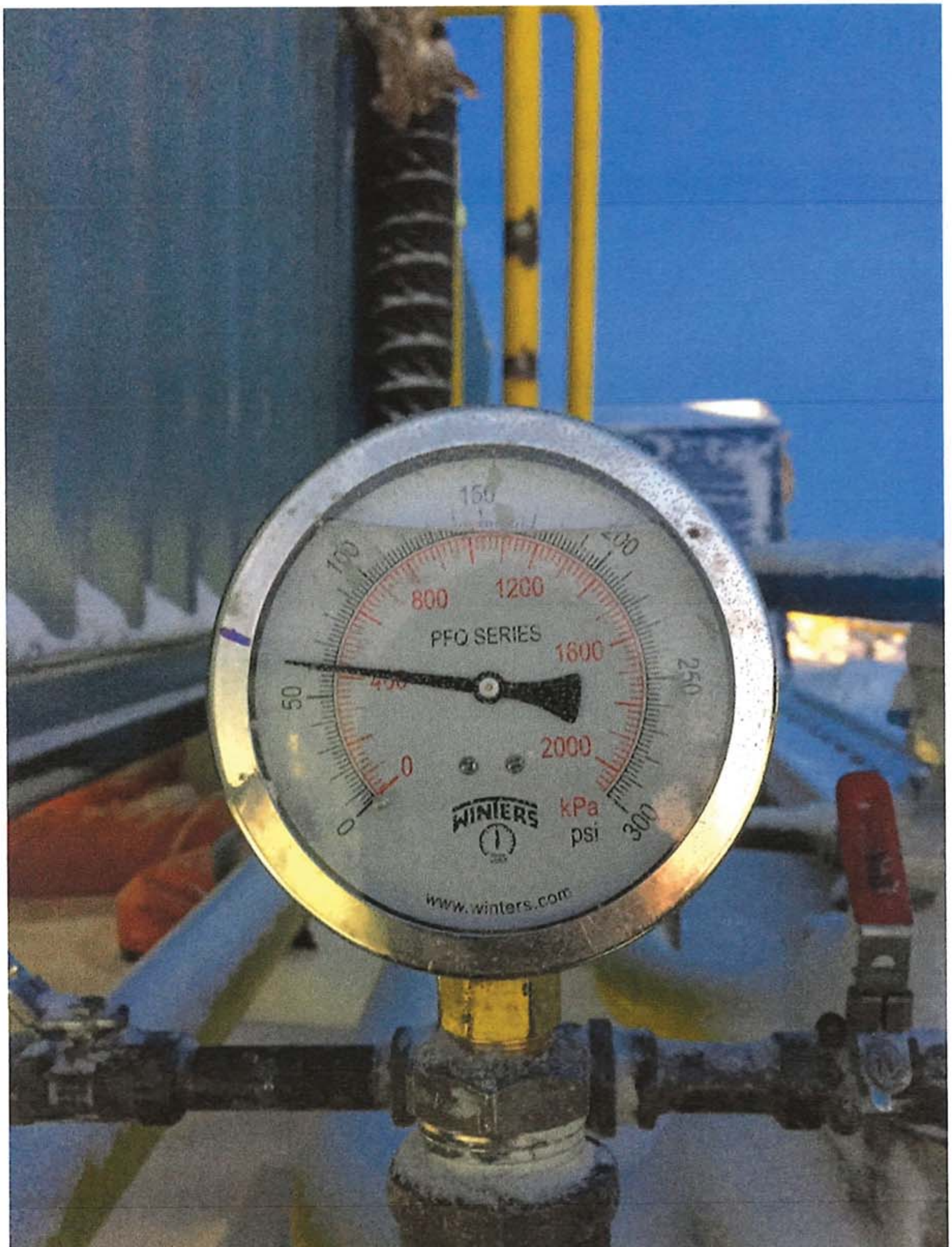
LINE RESTORATION COMPLETE

Contractor Representative			Client Representative		
	Robbie Landth	11/11/17			
Name (Print)	Signature	Date	Name (Print)	Signature	Date

No Service 9:59 AM 81%

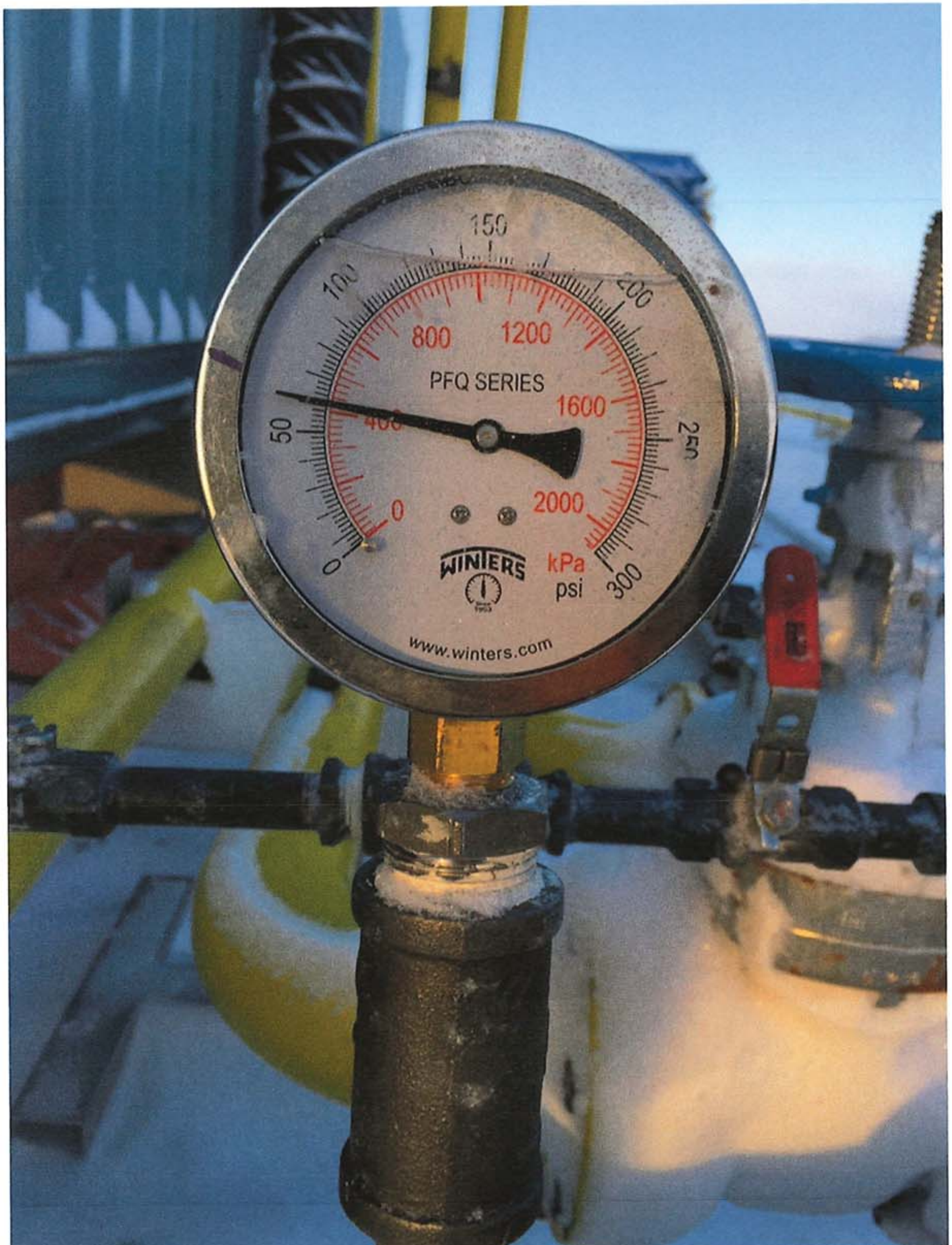
Today
7:29 AM

Edit



No Service 10:01 AM 81%

Today
9:54 AM
Edit



NUQSANA PROMEC MINING

Agnico-Eagle Mines Ltd.
Pressure Test Report

ITR Number : AEM-PI-ITR-001
Contract no. : C22466T

AGNICO EAGLE

Design Code	Design Test Pressure	Test Medium	Medium Temp.	Test Duration
	60 PSI	Pneumatic	-15°C	60 min

P&ID	Rev	Line	Drawing/ISO	Rev	Spool
See attached		??	??		
Drawings					
New line to Vent					
Raise Reservoir 50000	liter	Fuel			

Pressure Test Specifications

	Contractor	Date (dd-mm-yy)	Client	Date (dd-mm-yy)
Pre-Hydro Inspection				
NDE/PWHT Clearance				
Release for Test	R Lamothe Promec	2/12/17		

Test Instruments

	Make/Model	Serial Number	Test Range (psi)	Calibration Date
Upper			0-300 PSI	
Lower				

Test Data

	Time	Test Pressure	Ambient Temp. (C)	Pipe Temp. (C)	Comments
Start	11h08 AM	60 PSI	-15°C	-15°C	
Finish	1h46 PM	60 PSI	-15°C	-15°C	

Comments/Referenced Documents (e.g. applicable field reports):

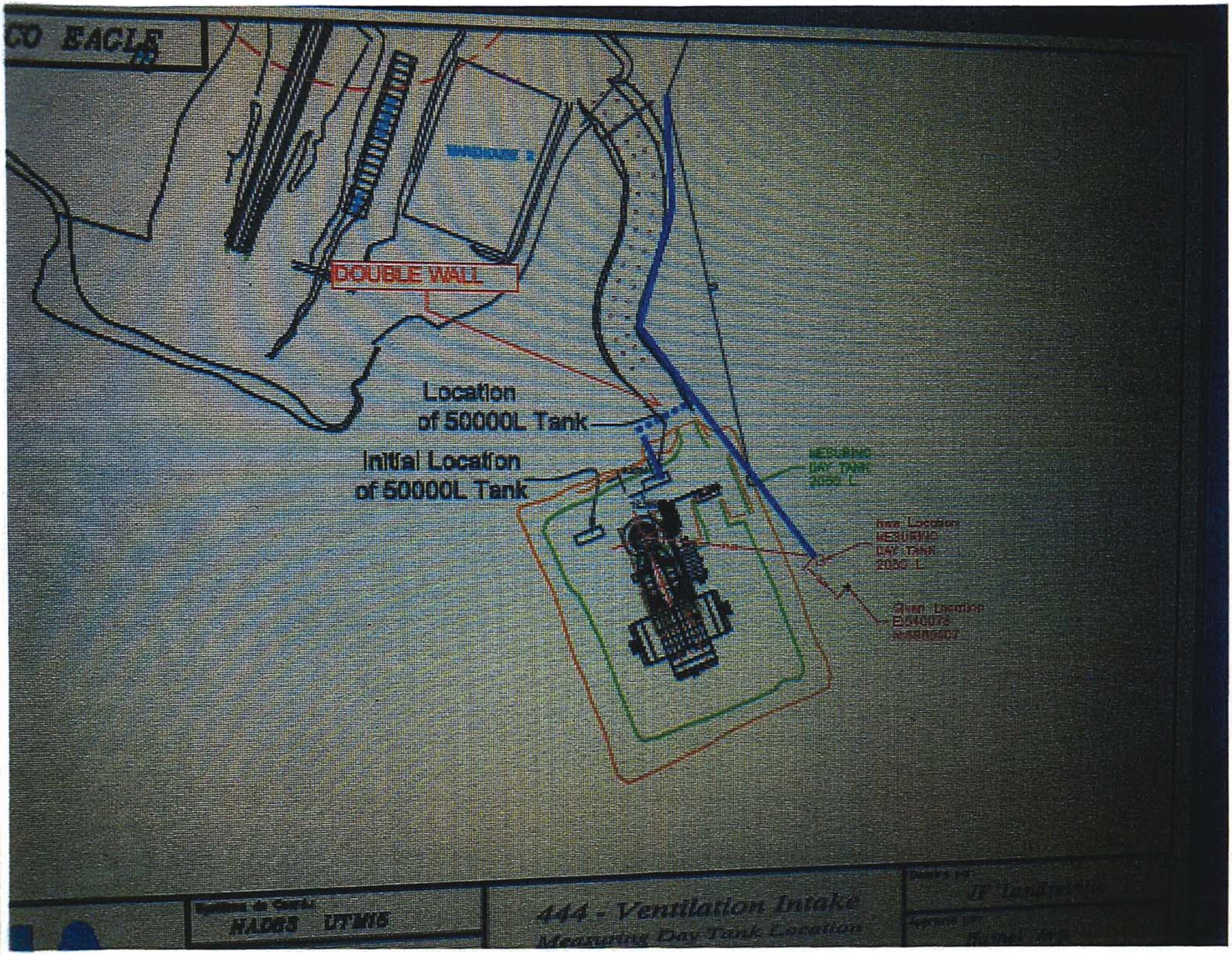
ECN-006 Added 50k liter tank.

PRESSURE TEST COMPLETE

Contractor Representative			Client Representative		
R Lamothe	[signature]	2/12/17	Serge leblanc	[signature]	02/12/2017
Name (Print)	Signature	Date	Name (Print)	Signature	Date

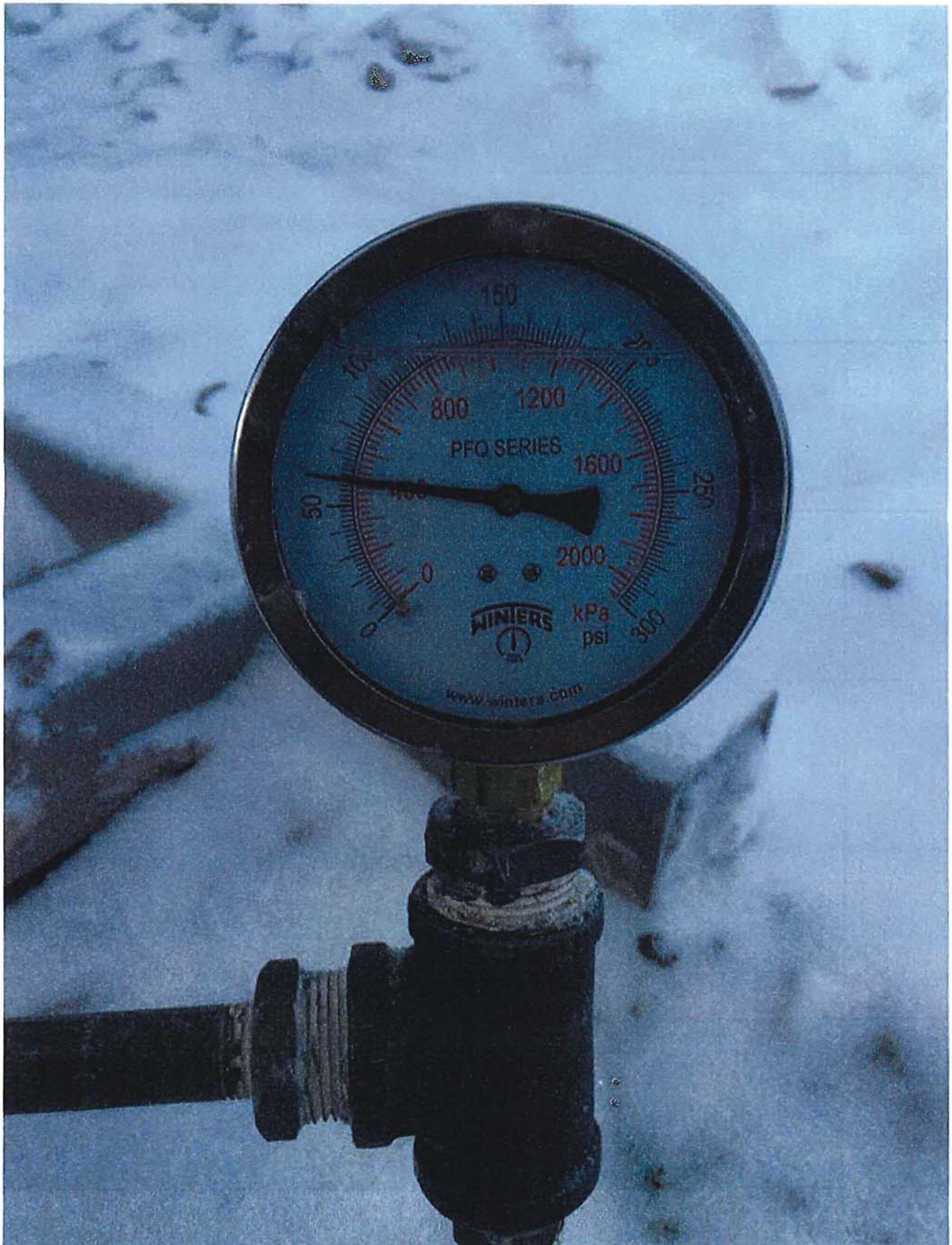
LINE RESTORATION COMPLETE

Contractor Representative			Client Representative		
R Lamothe	[signature]	2/12/17	Serge leblanc	[signature]	02/12/2017
Name (Print)	Signature	Date	Name (Print)	Signature	Date


CO EAGLE
DOUBLE WALL
Location
of 50000L Tank
Initial Location
of 50000L Tank
2050 L
New Location
DAY TANK
2050 L
NAD83 UTM18
444 - Ventilation Intake
Measuring Day Tank Location

Today
11:08 AM

Edit



Today
1:46 PM

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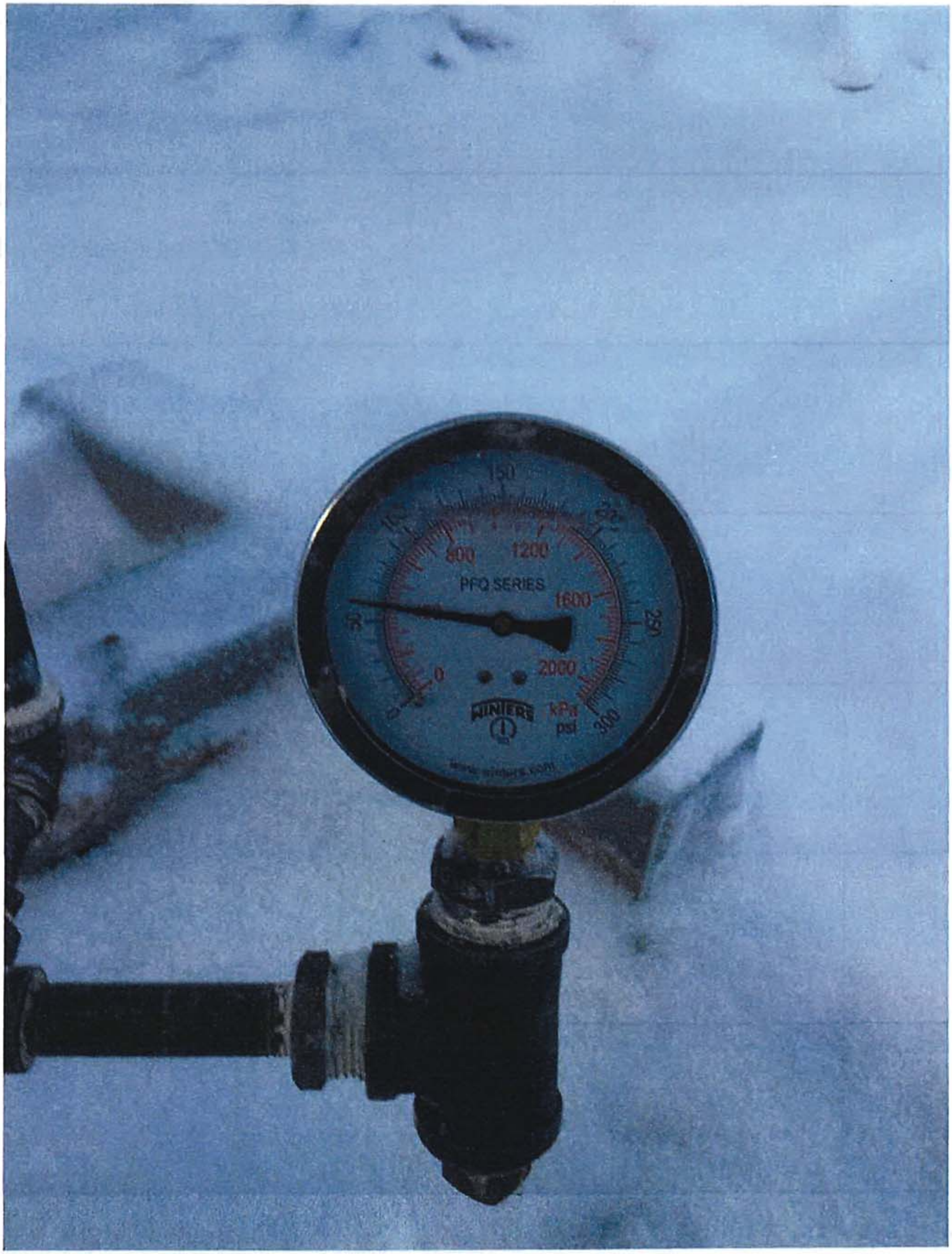


TO BE VALIDATED

AT A LATER DATE

TO BE VALIDATED

AT A LATER DATE

VIKING FIRE PROTECTION INC. 3005 | Pitfield boulevard | Saint-Laurent, Québec, Canada | H4S 1H4
Tel.: 514.332.5110 Fax: 514.332.6260 info@vikingfire.ca

AUTOMATIC DRY CHEMICAL FIRE SUPRESSION SYSTEMS

TECHNICAL MANUAL

FOR

AGNICO EAGLE
MELIADINE PROJECT
KIVALLIQ REGION,
NUNAVUT TERRITORY,
CANADA

C-270-007 – FUEL MODULES

SUBMITTED BY

VIKING FIRE PROTECTION INC.
3005, PITFIELD BOUL.
ST-LAURENT, QUÉBEC,
CANADA H4S 1H4
Tel.: 514-332-5110
Fax: 514-332-6260

CONTRACT N° VMC04097

July 2017

VIKING FIRE PROTECTION INC. 3005 Pitfield boulevard Saint-Laurent, Québec, Canada H4S 1H4
Tel.: 514.332.5110 Fax: 514.332.6260 info@vikingfire.ca

TABLE OF CONTENT

3005 | Pitfield boulevard | Saint-Laurent, Québec, Canada | H4S 1H4
Tel.: 514.332.5110 Fax: 514.332.6260 info@vikingfire.ca

CHAPTER 1

GENERAL INFORMATION

CHAPTER I
General Information

INTRODUCTION

PYRO-CHEM automatic dry chemical fire suppression systems are of the pre-engineered type as defined by the NFPA Standard for Dry Chemical Extinguishing Systems, NFPA-17. The extinguishing units described in this manual are intended to be installed, inspected, and maintained in accordance with NFPA-17. Limitations detailed in this manual have been established through extensive testing by Underwriters Laboratories, Inc. Installation and maintenance of the system must conform to the limitations detailed in this manual and be performed by an Authorized PYRO-CHEM dealer.

The PYRO-CHEM Industrial Fire Suppression System utilizes a either a sodium bicarbonate based dry chemical agent (specifically designed to suppress liquid, gas or electrical fires) or a monoammonium phosphate based dry chemical agent (specifically designed to suppress carbonaceous solid, liquid, gas or electrical fires). The system provides mechanical or electrical automatic actuation and can be manually actuated through a remote mechanical pull station. Upon actuation, the system discharges a pre-determined amount of agent to the hazard area.

The shutdown of fuel and power to the hazard area is required upon system actuation. Exhaust fan(s) in the ventilation system must be shut off during system discharge to allow the proper concentration of agent to build up in the hazard area.

TEMPERATURE LIMITATIONS

The operating temperature ranges of the PYRO-CHEM System are:

Monoammonium Phosphate (ABC) Total Flooding Systems: –20 °F (–28 °C) minimum to 120 °F (49 °C) maximum.

Local Application – Overhead Systems: 32 °F (0 °C) minimum to 120 °F (49 °C) maximum.

Local Application – Tankside Systems: –20 °F (–28 °C) minimum to 120 °F (49 °C) maximum.

UL LISTING

The PYRO-CHEM Industrial Fire Suppression System has been tested to the UL Standard for Pre-Engineered Dry Chemical Extinguishing System Units, UL1254 (Revised Sept. 29, 1998), and Listed by Underwriters Laboratories, Inc.

CHAPTER 2

COMPONENTS

CHAPTER II
COMPONENTS

CYLINDERS & VALVE

PYRO-CHEM automatic dry chemical systems are supplied in 17 pound, 25 pound, 35 pound, 50 pound, and 70 pound capacity cylinders. They are the Models PCI-15ABC, PCI-17ABC, PCI-25sBC, PCI-25sABC, PCI-35ABC, PCI-50sBC, PCI-50sABC, and PCI-70ABC. Each cylinder must be separately piped to its own nozzles. All models are charged with dry nitrogen to 350 psi @ 70° F. These systems are for indoor hazard protection only. The particular models are as follows:

PCI-15ABC. This system is charged with 12.5 pounds of monoammonium phosphate-based dry chemical, PYRO-CHEM Part No. 550170. It is Listed for use in total flooding applications. It is rated to protect Class "A," "B," and "C" hazards.

PCI-17ABC. This system is charged with 17 pounds of monoammonium phosphate based dry chemical, PYRO-CHEM Part No. 550170. It is Listed for use in total flooding applications. It is rated to protect Class "A," "B," and "C" hazards.

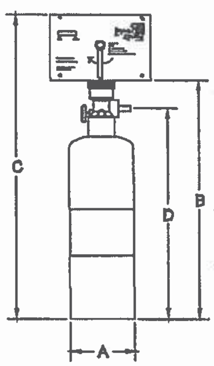
PCI-25sBC. This system is charged with 25 pounds of regular sodium bicarbonate based dry chemical, PYRO-CHEM Part No. 550162. It is Listed for use in local overhead and local tankside applications. It is rated to protect only Class "B" and "C" hazards.

PCI-25sABC. This system is charged with 25 pounds of monoammonium phosphate based dry chemical, PYRO-CHEM Part No. 550170. It is Listed for use in local overhead and local tankside applications. It is rated to protect Class "A," "B," and "C" hazards.

PCI-35ABC. This system is charged with 35 pounds of monoammonium phosphate based dry chemical, PYRO-CHEM Part No. 550170. It is Listed for use in total flooding applications. It is rated to protect Class "A," "B," and "C" hazards.

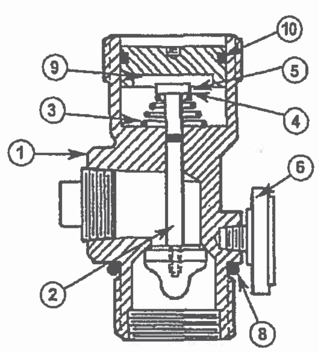
PCI-50sBC. This system is charged with 50 pounds of regular sodium bicarbonate based dry chemical, PYRO-CHEM Part No. 550162. It is Listed for use in local overhead and local tankside applications. It is rated to protect only Class "B" and "C" hazards.

PCI-50sABC. This system is charged with 50 pounds of monoammonium phosphate based dry chemical, PYRO-CHEM Part No. 550170. It is Listed for use in local overhead and local tankside applications. It is rated to protect Class "A," "B," and "C" hazards.



MODEL NO.	A	B	C	D	WEIGHT	MOUNTING BRACKET USED
PCI-15ABC	6.00	21.44	27.19	18.69	30 lbs.	MB-15
PCI-17ABC	8.00	24.81	30.56	22.06	50 lbs.	MB-15
PCI-25sABC/BC	8.00	24.81	30.56	22.06	58 lbs.	MB-15
PCI-35ABC	10.00	29.94	35.69	27.18	71 lbs.	MB-1
PCI-50sABC/BC	10.00	29.94	35.69	27.18	86 lbs.	MB-1
PCI-70ABC	12.00	35.31	41.06	32.56	130 lbs.	MB-1
ALL DIMENSIONS IN INCHES						

Figure 2-1 Cylinder and Valve Assemblies
002841PC



ITEM	PART NO.	DESCRIPTION
1	– – –	VALVE BODY
2	– – –	VALVE STEM & CAP ASSEMBLY
3	550022	CONICAL SPRING
4	550261	RETAINING WASHER
5	550024	E-RING
6	550025	PRESSURE GAUGE
7	550026	HIGH TEMPERATURE RELIEF PLUG
8	550029	VALVE BODY O-RING
9	550805	PISTON
10	550636	PISTON O-RING

Figure 2-2 Valve Cross Section
002842PC

PCI-70ABC. This system is charged with 70 pounds of monoammonium phosphate based dry chemical, PYRO-CHEM Part No. 550170. It is Listed for use in total flooding applications. It is rated to protect Class "A," "B," and "C" hazards.

The dimensions of the PCI-15/17/25s/35/50s/70 cylinder and valve assemblies are shown in **Figure 2-1**. The cylinder is manufactured, tested, and marked in accordance with DOT specification 4BW350.

The valve shown in Figure **2-2** is a pressure sealed, poppet type valve. It is used on the PCI-15/17/25s/35/50s/70, PAC-10, and PAC-200 cylinders. The valve discharge port is 3/4 in. NPT.

NOZZLES

Nozzles have been developed for total flooding, local application overhead, and local application tankside. The Model NF-ABC nozzle is used for total flooding protection. The Model N-SCR nozzle is used for screening the opening. The Model N-OTF nozzle is used for overhead total flooding application in the work area. The Model N-PLU nozzle is used for overhead application in the plenum area. The Model N-DCT nozzle is used for exhaust duct protection. The Models N-LA-ABC and N-LA-BC nozzles are used for local overhead application. The Model N-TS nozzle is used for local tankside application. See **Figure 2-3**.

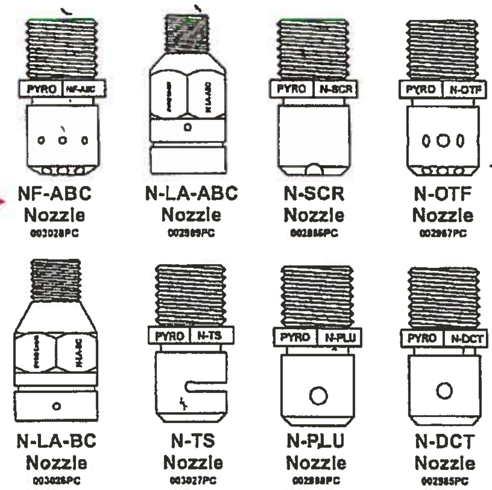


Figure 2-3. Nozzles.

CYLINDER BRACKETING

Vertical wall mounting for the **PCI-15ABC**, **PCI-17ABC**, and **PCI-25sBC/ABC**, is provided by the Model **MB-15** mounting bracket kit. Vertical wall mounting for the **PCI-35ABC**, **PCI-50sBC/ABC** and **PCI-70ABC** is provided by the Model **MB-1** mounting bracket kit. **See Figure 2-4.**

For vertical floor mounting of the **PCI-15ABC, PCI-17ABC, PCI-25sBC** and **PCI-25sABC**, an 8 in. unistrut type mounting bracket is available, the Model **MB-U8**.

For vertical floor mounting of the **PCI-35ABC, PCI-50sBC,** and **PCI-50sABC**, a 10 in. unistrut type mounting bracket is available, the Model **MB-U10**.

For vertical floor mounting of the **PCI-70ABC**, a 12 in. unistrut type mounting bracket is available, the Model **MB-U12**.

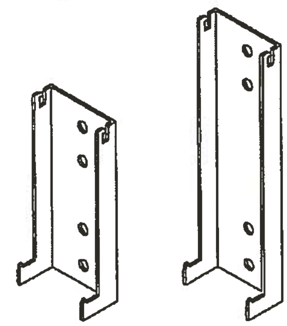


Figure 2-4 Mounting Brackets MB-15 and MB-1.
002843PC

MODEL MCH3 – MECHANICAL CONTROL HEAD

The Model MCH3 mechanical control head is a fully mechanical control head which can be connected to the PCI-15/17/25s/35/50s/70 cylinder valve. This control head will support a fusible link detection system, a remote mechanical pull station (Model RPS-M), and a mechanical or electric gas shut-off valve. A micro switch (Model MS-SPDT, MS-DPDT, MS-3PDT, or MS-4PDT) can be ordered separately and field installed. It is equipped with a local manual control handle that allows for mechanical system actuation. Operation of the local manual control requires removing the pull pin and rotating the handle clockwise. The Model MCH3 control head can actuate a maximum of five (5) cylinders. See **Figure 2-5.**

MODEL MCH3 CONTROL HEAD

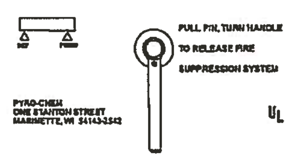


Figure 2-5. Mechanical Control Head.

MODEL ECH3 – ELECTRIC CONTROL HEAD

The Model ECH3 electric control head is an electrically operated control head which can be connected to the PCI-15/17/25s/35/50s/70 cylinder valve. This control head will support an electric thermal detection system, a remote mechanical pull station (Model RPS-M), and an electric gas shut-off valve. It will not support a fusible link detection system. A micro switch (Model MS-DPDT) is included. The Model ECH3 control head is available in both 120 VAC (Model ECH3-120) and 24 VDC (Model ECH3-24). It is equipped with a local manual control handle that allows for mechanical system actuation. Operation of the local manual control requires removing the pull pin and rotating the handle clockwise. The Model ECH3 control head can actuate a maximum of five (5) cylinders. See Figure 2-6.

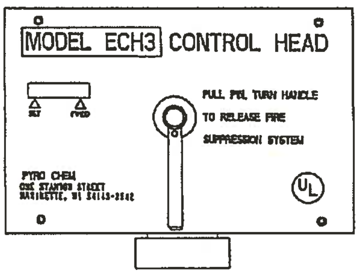


Figure 2-6. Electric Control Head.
004789PC

MODEL NMCH3 – MECHANICAL CONTROL HEAD

The Model NMCH3 Mechanical Control Head is a fully mechanical control head which can be connected to the PCI-15/17/25s/35/50s/70 cylinder valve. This control head will support a fusible link detection system, a remote mechanical pull station (Model RPS-M), and a mechanical or electric shut-off valve. A micro switch (Model MS-SPDT, MS-DPDT, MS-3PDT, or MS-4PDT) can be ordered separately and field installed. There is no local manual actuation for the Model NMCH3. The Model NMCH3 control head can actuate a maximum of five (5) cylinders. See Figure 2-6a.

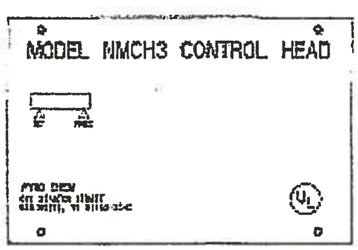


Figure 2-6a. Mechanical Control Head.
006843PC

MODEL MB-P2 - CONTROL HEAD MOUNTING BRACKET

The Model MB-P2 mounting bracket must be used to mount the Model MCH3, NMCH3 or ECH3 control head if the control head is not mounted directly on a cylinder valve. See Figure 2-7.

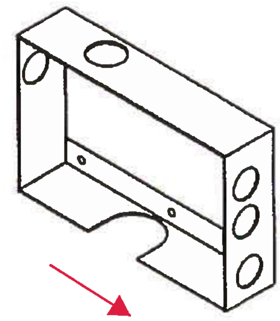


Figure 2-7. Model MB-P2 – Control Head Mounting Bracket.
002845PC

CAUTION

Do not screw the control head directly to a wall as this will warp the control head, not allowing the mechanism to actuate.

MODEL PDA-D2 PNEUMATIC ACTUATING ADAPTOR

The Model PDA-D2 Pneumatic Actuating Adaptor is used to open the cylinder valve when the system is actuated. It must be installed on the valve of each cylinder unless a control head has been mounted on the cylinder valve. See Figure 2-7a.

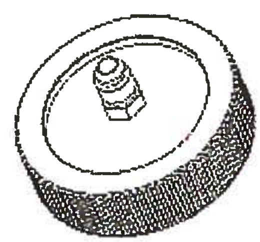


Figure 2-7a. Model PDA-D2 Pneumatic Actuating Adaptor.
006886PC

DETECTION EQUIPMENT

1. Model FLK-1.

The Model FLK-1 fusible link kit includes a 10 in. steel bracket, two (2) 1/2 in. EMT connectors, two (2) cable crimps, and two (2) "S" hooks. Fusible links must be ordered separately. See Figure 2-10.

2. Model FLK-1A.

The Model FLK-1A fusible link kit includes an 8 in. steel bracket, two (2) 1/2 in. EMT connectors, two (2) cable crimps, and two (2) "S" hooks. Fusible links must be ordered separately.

3. Model FLH-1.

The Model FLH-1 fusible link hanger is an accessory designed to simplify the installation of fusible links in the fusible link line. It can be used with the Model FLK-1/1A fusible link kits (kits must be ordered separately). The Fusible Link Hanger makes it possible to install fusible links without cutting and crimping loops in the fusible link line for each link. They are available in packages of 25 (FLH-25) only. See Figure 2-11.

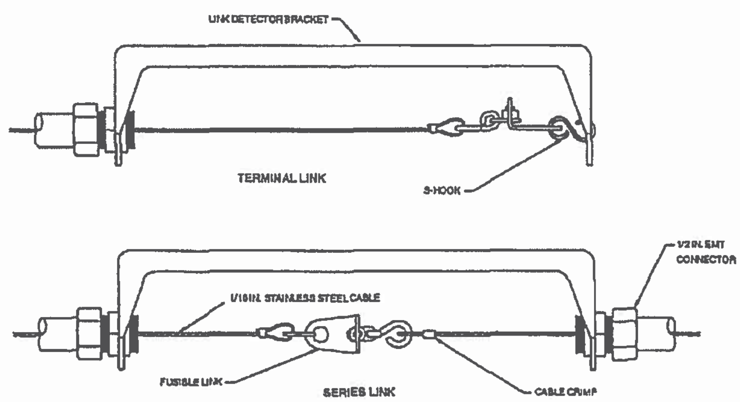


Figure 2-10. Model FLK-1 Fusible Link
002849PC

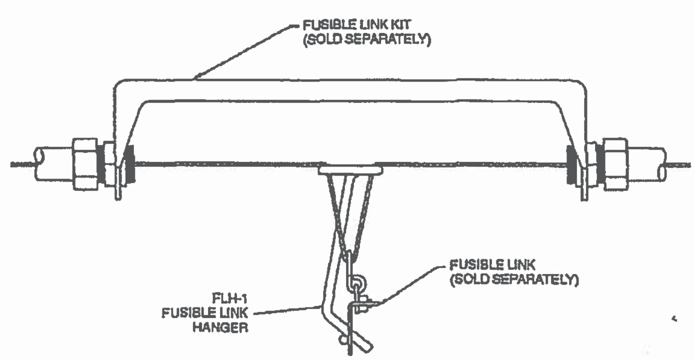


Figure 2-11. Model FLH-1 Fusible Link Hanger
002850PC

4. Fusible Links.

The fusible link is designed to separate at a specific temperature, releasing tension from the fusible link line, causing system actuation. See Figure 2-12.

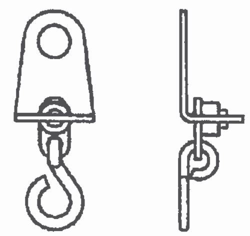


Figure 2-12. ML Style Fusible Link.
002851PC

After determining the maximum ambient temperature at the fusible link location, select the correct fusible link according to the temperature condition chart below:

Fusible Link Model No.	Maximum Ambient Temperature
FL-165	100° F. (38° C.)
FL-212	150° F. (66° C.)
FL-280	225° F. (107° C.)
FL-360	290° F. (143° C.)
FL-450	360° F. (182° C.)
FL-500	400° F. (204° C.)

5. Thermal Detectors.

Rate compensated temperature thermal detectors are normally open, mechanical contact closure switches designed to operate at a factory preset temperature. They are available in six preset temperatures which meet NFPA standards and are UL Listed and FM Approved.

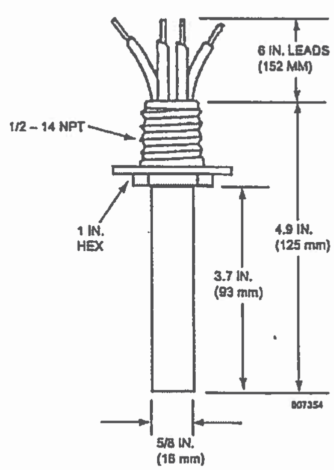


Figure 2-12a. Thermal Detector.

After determining the maximum ambient temperature at the thermal detector location, select the correct thermal detector according to the temperature condition chart below:

Thermal Detector Model No.	Maximum Ambient Temperature
TD-140	100° F. (38° C.)
TD-190	150° F. (66° C.)
TD-225	185° F. (85° C.)
TD-325	285° F. (141° C.)
TD-450	410° F. (210° C.)
TD-600	560° F. (293° C.)

REMOTE MECHANICAL PULL STATION

Model RPS-M

Remote manual control for system releasing devices is provided by the Model RPS-M remote mechanical pull station. It is connected to the system releasing device by stainless steel cable. This cable is enclosed in 1/2 in. EMT with corner pulleys at each change in direction. The remote mechanical pull station shall be located at the point of egress from the hazard area. See Figure 2-13.

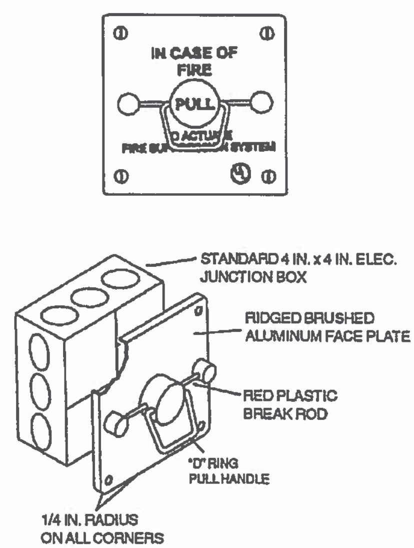


Figure 2-13. Model RPS-M Mechanical Pull Station.
002852PC

CORNER PULLEYS

1. Model SBP-1.

A corner pulley is used whenever a change in stainless steel cable direction is required. The Model SBP-1 corner pulley is equipped with a set screw fitting for connection to 1/2 in. EMT. See Figure 2-15.

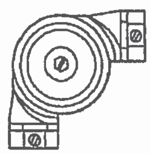


Figure 2-15. Model SBP-1 Corner Pulley.
000180

2. Model CBP-1.

A corner pulley is used whenever a change in stainless cable direction is required. The Model CBP-1 is a grease-tight corner pulley designed for areas likely to experience excessive deposit build-up. It is equipped with a compression fitting for connection to 1/2 in. EMT. See Figure 2-16.

Note: The Model CBP-1 is not a liquid tight sealing device.

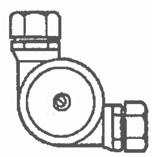


Figure 2-16. Model CBP-1 Corner Pulley.
000181

3. Model WBP-1.

A corner pulley is used whenever a change in stainless cable direction is required. The Model WBP-1 is a liquid-tight corner pulley designed for areas likely to experience excessive moisture build-up. It is equipped with a female pipe thread for connection to 1/2 in. rigid conduit. See Figure 2-17.

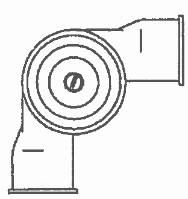


Figure 2-17. Model WBP-1 Corner Pulley.
005194PC

TEE PULLEY

The Model TP-1 tee pulley is used to connect two mechanical gas valves or two remote mechanical pull stations to a single control head. The tee pulley replaces two standard 90° corner pulleys. See Figure 2-18.

CAUTION

The Tee Pulley must never be used to connect multiple fusible link lines to a single control head.

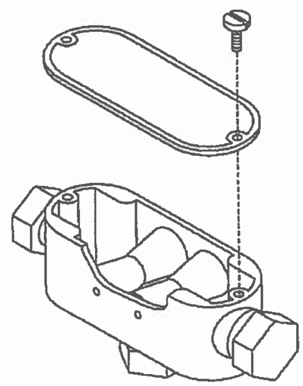


Figure 2-18. Model TP-1 Tee Pulley.
002887PC

SWING CHECK VALVE

The Swing Check Valve, Part No. 417788, is required when piping a main and reserve Monarch tank on the same distribution piping. It allows the dry chemical agent to discharge through the agent piping leading to the discharge nozzles, while preventing it from flowing into the piping from the other tank. The swing check valve body is constructed of brass with a 1 in. NPT female thread. See Figure 2-19.

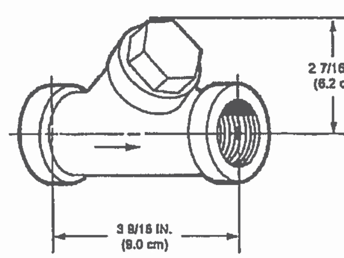


Figure 2-19. Swing Check Valve.
000430

ELECTRICAL SWITCHES

The electrical switches are intended for use with electric gas valves, alarms, contactors, lights, contractor supplied electric power shut-off devices and other electrical devices that are designed to shut off or turn on when the system is actuated.

Switches are available in kits: One Switch Kit, Part No. 551154; Two Switch Kit, Part No. 551155; Three Switch Kit, Part No. 551156, and Four Switch Kit, Part No. 551157. Mounting hardware and 12 in. wire assemblies are provided with each kit. Each switch has a set of single-pole, double-throw contacts rated:

UL/cUL/CSA Rating	ENEC Rating
250 VAC, 21A Resistive	IE4T105µ Approved
250 VAC, 2 HP	250V, 21A Resistive
125 VAC, 1 HP	8A Motor Load

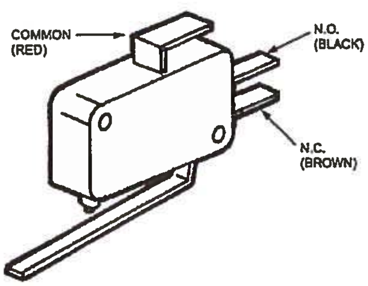


Figure 2-20a. Model MS-SPDT Micro Switch.
001812

The Alarm Initiating Switch Kit, Part No. 550077, can be field mounted within the control head. This switch must be used to close a supervised alarm circuit to the building main fire alarm panel when the control head actuates. This action will signal the fire alarm panel that there was a system actuation in the hazard area. The switch kit contains all necessary mounting components along with a mounting instruction sheet. The switch is rated 50 mA, 28 VDC.

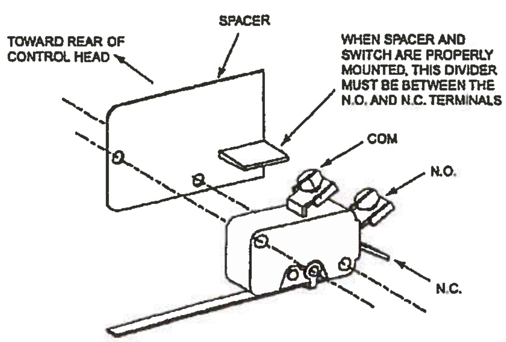


Figure 2-20b. Alarm Initiating Switch.
004890

See NFPA 72, "National Fire Alarm Code," Initiating Devices section, for the correct method of wiring connection to the fire alarm panel.

MODEL SM-120/24 SOLENOID MONITOR

The Model SM-120/24 solenoid monitor is used in conjunction with the Model ECH3 control head to supervise the actuation and detection circuits. In the event of a problem in the circuit, a light on the monitor goes out. The Model SM-120 is used with the Model ECH3-120 control head. The Model SM-24 is used with the Model ECH3-24 control head. Two sets of NO/NC dry contacts are provided. The unit mounts directly to a three gang wall outlet box. The Model SM-120 acts as a reset relay when used with an electric gas valve. Electric gas valve wiring instructions are provided in the installation section of this manual. See Figure 2-21.

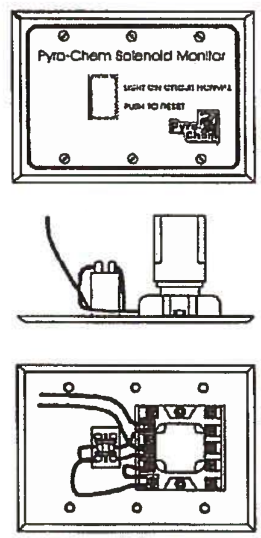


Figure 2-21. Model SM-24/120 Solenoid Monitor.
002860PC

COMPONENT LIST
GENERAL PURPOSE SYSTEM

MODEL NO.	DESCRIPTION	PART NO.
PCI-15ABC	15 lb. ABC Cylinder and Valve Assembly	550388
PCI-17ABC	17 lb. ABC Cylinder and Valve Assembly	551654
PCI-25sBC	25 lb. BC Cylinder and Valve Assembly	550391
PCI-25sABC	25 lb. ABC Cylinder and Valve Assembly	550390
PCI-35ABC	35 lb. ABC Cylinder and Valve Assembly	551097
PCI-50sBC	50 lb. BC Cylinder and Valve Assembly	550393
PCI-50sABC	50 lb. ABC Cylinder and Valve Assembly	550392
PCI-70ABC	70 lb. ABC Cylinder and Valve Assembly	551094
PAC-10	Pneumatic Actuating Cylinder	550104
PAC-200	Pneumatic Actuating Cylinder	550690
MB-P2	Control Head Mounting Bracket	550853
MB-15	Mounting Bracket (PCI-15,17,25s Cylinders)	550054
MB-1	Mounting Bracket (PCI-35,70 Cylinders)	550053
MB-U8	8 in. Unistrut Mounting Bracket	550324
MB-U10	10 in. Unistrut Mounting Bracket	550383
MB-U12	12 in. Unistrut Mounting Bracket	550638
MCH3	Mechanical Control Head	551200
NMCH3	Mechanical Control Head	551203
ECH3-24	24VDC Electrical Control Head	551201
ECH3-120	120VDC Electrical Control Head	551202
– – –	8 in. S.S. Actuation Hose	417582
– – –	16 in. S.S. Actuation Hose	31809
– – –	24 in. S.S. Actuation Hose	32336
– – –	42 in. S.S. Actuation Hose	430815
– – –	Male Elbow	31810
– – –	Male Tee	31811
– – –	Male Straight Connector	32338
PDA-D2	Pneumatic Actuating Adaptor	550829
– – –	Swing Check Valve	417788
NF-ABC	Nozzle Assembly	551678
N-LA-ABC	Nozzle Assembly	550646
N-LA-BC	Nozzle Assembly	550342
N-TS	Nozzle Assembly	550337
RPS-M	Remote Mechanical Pull Station	551074
RPS-E2	Remote Electric Pull Station	551166
FKL-1	10 in. Fusible Link Bracket	550131
FKL-1A	8 in. Fusible Link Bracket	550132
FLH-25	Fusible Link Hanger (25)	550876
FL-165	165° F Fusible Link	550368
FL-212	212° F Fusible Link	550365
FL-280	280° F Fusible Link	550366
FL-360	360° F Fusible Link	550009
FL-450	450° F Fusible Link	550367
FL-500	500° F Fusible Link	56816
SM-24	24VDC Solenoid Monitor	550303
SM-120	120VAC Solenoid Monitor	550302
TD-140	140° F Thermal Detector	550351
TD-190	190° F Thermal Detector	550352
TD-225	225° F Thermal Detector	550353
TD-325	325° F Thermal Detector	550354
TD-450	450° F Thermal Detector	550355
TD-600	600° F Thermal Detector	550356
GV-75	3/4 in. Mechanical Gas Valve	550593
GV-100	1 in. Mechanical Gas Valve	550594

COMPONENT LIST
GENERAL PURPOSE SYSTEM (Continued)

MODEL NO.	DESCRIPTION	PART NO.
GV-125	1 1/4 In. Mechanical Gas Valve	550595
GV-150	1 1/2 In. Mechanical Gas Valve	550596
GV-200	2 In. Mechanical Gas Valve	551049
GV-250	2 1/2 In. Mechanical Gas Valve	550185
GV-300	3 in. Mechanical Gas Valve	550186
EGVSO-75	3/4 in. Electric Gas Valve	550358
EGVSO-100	1 In. Electric Gas Valve	550359
EGVSO-125	1 1/4 In. Electric Gas Valve	550360
EGVSO-150	1 1/2 in. Electric Gas Valve	550361
EGVSO-200	2 In. Electric Gas Valve	550362
EGVSO-250	2 1/2 In. Electric Gas Valve	550363
EGVSO-300	3 In. Electric Gas Valve	550385
MS-SPDT	Micro-Switch – Single Pole Double Throw	551154
MS-DPDT	Micro-Switch – Double Pole Double Throw	551155
MS-3PDT	Micro-Switch – 3 Pole Double Throw	551156
MS-4PDT	Micro-Switch – 4 Pole Double Throw	551157
– – –	Alarm Initiating Switch	550077
PS-SPDT-XP	Pressure Switch – Single Pole Double Throw	550052
CO2-6	6 x CO_2 Cartridge	551059
CBP-1	Compression Bearing Corner Pulley	423250
SBP-1	Screw Bearing Corner Pulley	415670
WBP-1	Weather Proof Corner Pulley (10 Per Package)	550983
TP-1	Tee Pulley	550166
WC-100	Oval Sleeve Crimps (100 Per Package)	550122
– – –	Stop Sleeves (Pack of 10)	24919
– – –	Valve – Piston O-Ring	550636
– – –	Valve – Stem Washer	550284
– – –	Valve – Seat Washer	550021
– – –	Valve – Stem Head	550020
– – –	Valve – Body O-Ring	550029
– – –	Valve – Pressure Gauge	550025
– – –	Valve – Stem	550806
– – –	Valve – Stem O-Ring	550028
– – –	Valve – Conical Spring	550022
– – –	Valve – Piston	550805
FR-25sBC	Flow Restrictor	550235
– – –	Pressure Bleed Down Adaptor Assembly	551736
– – –	Dry Valve Rebuilding Kit	550037
– – –	Recharge Adaptor	550130
– – –	Dry Valve Hydrotest Adaptor	552182

CHAPTER 3

DESIGN

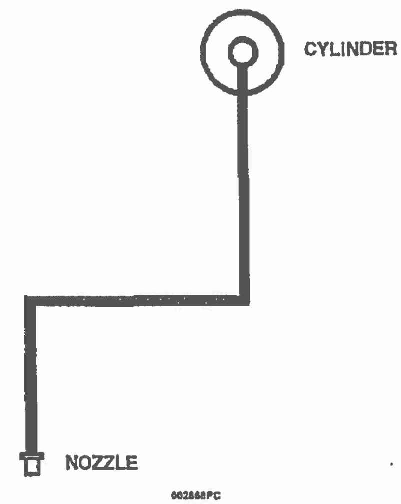
TABLE 3-1

Total Flooding Nozzle Protection Chart

Maximum Dimensions in feet/nozzle for one (1) Model NF-ABC

Side 1 (ft.)	Nozzle Height (ft.)	Maximum Side 2 (ft.)	Side 1 (ft.)	Nozzle Height (ft.)	Maximum Side 2 (ft.)	Side 1 (ft.)	Nozzle Height (ft.)	Maximum Side 2 (ft.)	Side 1 (ft.)	Nozzle Height (ft.)	Maximum Side 2 (ft.)
3	8	16.70	7	8	15.46	11	8	12.92	15	8	7.94
	9	16.70		9	15.46		9	12.92		9	7.94
	10	16.70		10	15.46		10	11.78		10	7.94
	11	16.70		11	15.46		11	10.71		11	7.85
	12	16.70		12	15.43		12	9.82		12	7.20
	13	16.70		13	14.24		13	9.06		13	6.65
	14	16.70		14	13.22		14	8.42		14	6.17
	15	16.70		15	12.34		15	7.85		15	5.76
	16	16.70		16	11.57		16	7.36		16	5.40
	17	16.70		17	10.89		17	6.93		17	5.08
	18	16.70		18	10.29		18	6.55		18	4.80
	19	16.70		19	9.74		19	6.20		19	4.55
	20	16.70		20	9.26		20	5.89		20	4.32
4	8	16.49	8	8	14.97	12	8	12.00	16	8	5.66
	9	16.49		9	14.97		9	12.00		9	5.66
	10	16.49		10	14.97		10	10.80		10	5.66
	11	16.49		11	14.73		11	9.82		11	5.66
	12	16.49		12	13.50		12	9.00		12	5.66
	13	16.49		13	12.46		13	8.31		13	5.66
	14	16.49		14	11.57		14	7.71		14	5.66
	15	16.49		15	10.80		15	7.20		15	5.40
	16	16.49		16	10.13		16	6.75		16	5.06
	17	16.49		17	9.53		17	6.35		17	4.76
	18	16.49		18	9.00		18	6.00		18	4.50
	19	16.49		19	8.53		19	5.68		19	4.26
	20	16.20		20	8.10		20	5.40		20	4.05
5	8	16.22	9	8	14.39	13	8	10.91			
	9	16.22		9	14.39		9	10.91			
	10	16.22		10	14.39		10	9.97			
	11	16.22		11	13.09		11	9.06			
	12	16.22		12	12.00		12	8.31			
	13	16.22		13	11.08		13	7.67			
	14	16.22		14	10.29		14	7.12			
	15	16.22		15	9.60		15	6.65			
	16	16.20		16	9.00		16	6.23			
	17	15.25		17	8.47		17	5.86			
	18	14.40		18	8.00		18	5.54			
	19	13.64		19	7.58		19	5.25			
	20	12.96		20	7.20		20	4.98			
6	8	15.87	10	8	13.71	14	8	9.59			
	9	15.87		9	13.71		9	9.59			
	10	15.87		10	12.96		10	9.26			
	11	15.87		11	11.78		11	8.42			
	12	15.87		12	10.80		12	7.71			
	13	15.87		13	9.97		13	7.12			
	14	15.43		14	9.26		14	6.61			
	15	14.40		15	8.64		15	6.17			
	16	13.50		16	8.10		16	5.79			
	17	12.71		17	7.62		17	5.45			
	18	12.00		18	7.20		18	5.14			
	19	11.37		19	6.82		19	4.87			
	20	10.80		20	6.48		20	4.63			

PCI-17ABC with 1 nozzle

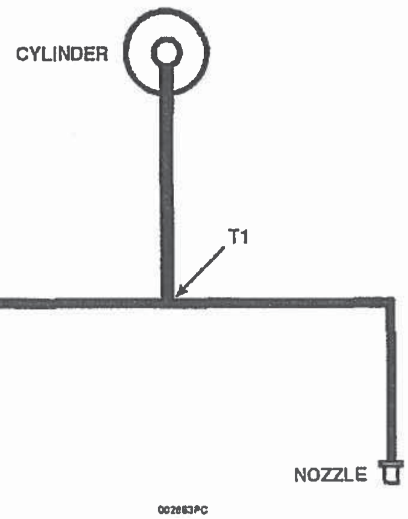


Total Flooding Piping Limits PCI-17ABC

Cylinder Size	Nozzle Quantity	Nozzle Type	Piping Section	Size	Length Maximum	Elbows Maximum
PCI-17ABC	1	NF-ABC	Cylinder to Nozzle	3/4 in.	30 ft.	4

NOTE:
1. PCI-17ABC uses one (1) NF-ABC nozzle.
2. A Main/Reserve Swing Check Valve, Part No. 417788, may be located between the cylinder and T1.

PCI-35ABC with 2 nozzles



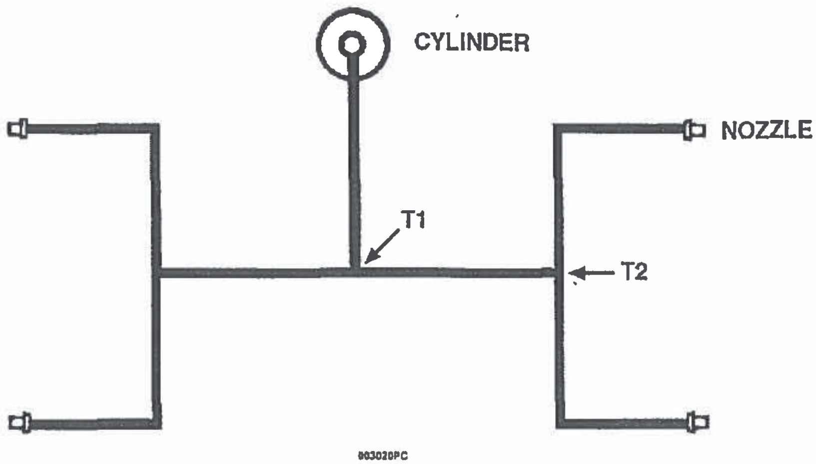
Total Flooding Piping Limits PCI-35ABC

Cylinder Size	Maximum Nozzle Quantity	Nozzle Type	Piping Section	Size	Length Maximum	Elbows Maximum
PCI-35ABC	2	NF-ABC	Cylinder to T1	3/4 in.	30 ft. (9.1 m)	4
			T1 to Nozzle	3/4 in.	9 ft. (2.7 m)	2

NOTE:

1. PCI-35ABC must always use two (2) NF-ABC nozzles.
2. System piping must be balanced. Balanced piping is that in which the difference between the shortest actual pipe length from T1 to nozzle and the longest actual pipe length from T1 to nozzle does not exceed 10% of the longest actual pipe length from T1 to nozzle. The number and type of fittings from all last tee to nozzle sections must be equal.
3. A Main/Reserve Swing Check Valve, Part No. 417788, may be located between the cylinder and T1.

PCI-70ABC with 4 nozzles



Total Flooding Piping Limits PCI-70ABC

Cylinder Size	Maximum Nozzle Quantity	Nozzle Type	Piping Section	Size	Length Maximum	Elbows Maximum
PCI-70ABC	4	NF-ABC	Cylinder to T1	1 in.	30 ft. (9.1 m)	3
			T1 to T2	1 in.	14 ft. (4.3 m)	2
			T2 to Nozzle	3/4 in.	9 ft. (2.7 m)	2

NOTE:

1. PCI-70ABC must always use four (4) NF-ABC nozzles.
2. System piping must be balanced. Balanced piping is that in which the difference between the shortest actual pipe length from T1 to nozzle and the longest actual pipe length from T1 to nozzle does not exceed 10% of the longest actual pipe length from T1 to nozzle. T2 to nozzle on the same branch must not exceed 10% of each other. The number and type of fittings from all last tee to nozzle sections must be equal.
3. A Main/Reserve Swing Check Valve, Part No. 417788, may be located between the cylinder and T1.

Detector Placement.

Thermal detectors are required in all hazard areas protected by the PYRO-CHEM Industrial Fire Suppression Systems if automatic system operation is required. Either mechanical or electrical thermal detectors can be used for automatic system operation. Mechanical detectors (fusible links) are used in conjunction with the PYRO-CHEM Models MCH3 and NMCH3 control devices. Electrical detectors are used in conjunction with the PYRO-CHEM Models ECH3-24 and ECH3-120 Control Heads.

TOTAL FLOODING (DETECTOR SPACING) – THERMAL

Ceiling Height	Spacing
Up to 14 ft. (4.2 m) Height	15 ft. (4.5 m) maximum between detectors 7 ft. 6 in. (2.3 m) max. from wall 225 sq. ft. (20.9 sq. m) max. coverage per detector
Greater than 14 ft. (4.2 m) up to 20 ft. (6.1 m) height	13 ft. (3.9 m) maximum between detectors 6 ft. 6 in. (1.9 m) max. from wall 169 sq. ft. (15.7 sq. m) max. coverage per detector
Greater than 20 ft. (6.9 m) up to 24 ft. (7.3 m)	11 ft. (3.4 m) max. between detectors 5 ft. 6 in. (1.7 m) max. from wall 121 sq. ft. (11.2 sq. m) max. coverage per detector
Greater than 24 ft. (7.3 m) up to 30 ft. (9.1 m)	9 ft. (2.7 m) max. between detectors 4 ft. 6 in. (1.4 m) max. from wall 81 sq. ft. (7.5 sq. m) max. coverage per detector

NOTE: For sloped ceiling (peaked type or shed type) installations, refer to NFPA-72, "National Fire Alarm Code" for detailed spacing requirements.

LOCAL APPLICATION – OVERHEAD (DETECTOR SPACING) – Maximum spacing per detector is 100 $ft.^2$ (9.3 m^2) or 5 ft. (1.5 m) from edge of hazard and 10 ft. (3.1 m) between detectors. When detectors are mounted below the ceiling in an open area, heat traps are recommended.

LOCAL APPLICATION – TANKSIDE (DETECTOR SPACING) – Detectors can be located either near the inner tank wall and flammable liquid surface or above the tank. If located above the tank, the rules for local application overhead would apply. If located on the tank wall, the detectors can be mounted horizontally or vertically in the freeboard area, but must be protected from damage during normal working operations. The maximum spacing per detector is 5 ft. (1.5 m) from edge of hazard and 10 ft. (3.1 m) between detectors.

A temperature survey must be performed to determine the maximum ambient temperature of the hazard survey. See Temperature Chart in Chapter 2 – Components.

TOTAL FLOODING (DETECTOR SPACING) – FUSIBLE LINKS

Ceiling Height	Spacing
Up to 14 ft. (4.2 m) Height	10 ft. (3.0 m) maximum detectors 5 ft. (1.5 m) max. from a wall* 100 sq. ft. (9.2 sq. m) max. coverage per detector
Greater than 14 ft. (4.2 m) up to 20 ft. (6.1 m) height	8 ft. (2.4 m) max. between detectors 4 ft. (1.2 m) max. from wall 64 sq. ft. (5.9 sq. m) max. coverage per detector

NOTE: For sloped ceiling (peaked type or shed type) installations, refer to NFPA-72, "National Fire Alarm Code" for detailed spacing requirements.

LOCAL APPLICATION – OVERHEAD (DETECTOR SPACING) – Maximum spacing per fusible link detector is 36 $ft.^2$ (3.3 m^2) or 3 ft. (.9 m) from edge of hazard and 6 ft. (1.8 m) between fusible link detectors.

When a detector(s) is mounted more than 1 ft. (.3 m) below ceiling or in an open area, heat trap(s) is recommended. Detectors should be mounted overhead at nozzle height or as close to the hazard as possible without interference, not to exceed 10 ft. (3 m).

Detectors should not be located where they will be susceptible to damage during the normal work operation.

LOCAL APPLICATION – TANKSIDE (DETECTOR SPACING) – Detectors can be located either near the inner tank wall and flammable liquid surface or above the tank. If located above the tank, the rules for local application overhead would apply. If located on the tank wall, the detectors can be mounted horizontally or vertically in the freeboard area but must be protected from damage during normal working operation. Detectors should be located at a maximum spacing per detector of 3 ft. (.9 m) from edge of hazard and 6 ft. (1.8 m) between detectors on the long side of the tank.

*For 14 ft. (4.3 m) wide booths with maximum height of 12 ft. (3.7 m), the detector location off the side wall can be a maximum of 7 ft. (2.1 m).

VIKING
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CHAPTER 4

INSTALLATION

CHAPTER IV
SYSTEM INSTALLATION

This chapter will detail the basic information necessary for proper installation of the PYRO-CHEM Industrial Fire Suppression System. However, before attempting any installation it is necessary to attend a Factory Certification Training Class and become Certified to install the PYRO-CHEM Industrial Fire Suppression System.

Pipe and fittings for the discharge piping, conduit (EMT), pipe straps, pipe hangers, mounting bolts, and other miscellaneous equipment are not furnished as part of the PYRO-CHEM Industrial Fire Suppression System. These items must be furnished by the installer.

Before attempting any installation, unpack the entire system and check that all necessary parts are on hand. Inspect parts for damage. Verify that cylinder pressure is within the acceptable range as shown on the gauge.

CYLINDER INSTALLATION

The cylinder and valve assembly is shipped with an anti-recoil plug in the valve discharge port.

CAUTION

The anti-recoil plug must remain in the valve discharge port until the discharge piping is connected to the valve.

The cylinder must be mounted vertically with the discharge port facing either left or right. The Models PCI-17 and PCI-25 cylinders must be mounted using a Model MB-15 Mounting Bracket Kit. The Model PCI-35, PCI-50, PCI-70, and PCI-cylinders must be mounted using a Model MB-1 Mounting Bracket Kit.

The bracket must be securely anchored to the wall using bolts or lag screws. The wall to which the bracket is attached must be sufficiently strong to support the cylinder. The bracket should never be fastened to dry wall or similar material. If this type of wall is encountered, studs must be located and the bracket fastened to them. See Figure 4-1.

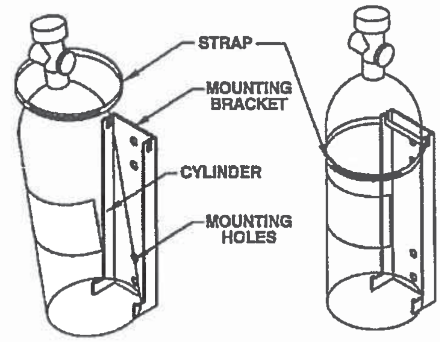


Figure 4-1. Cylinder and Mounting Bracket Installation.
002871PC

CONTROL HEAD INSTALLATION

1. Single Cylinder Installations.

For single cylinder system installations the Model MCH3/ECH3/NMCH3 Control Head can be installed directly onto the cylinder valve. When the control head is properly aligned in the desired position, tighten the knurled locking ring to secure the assembly. See Figure 4-2.

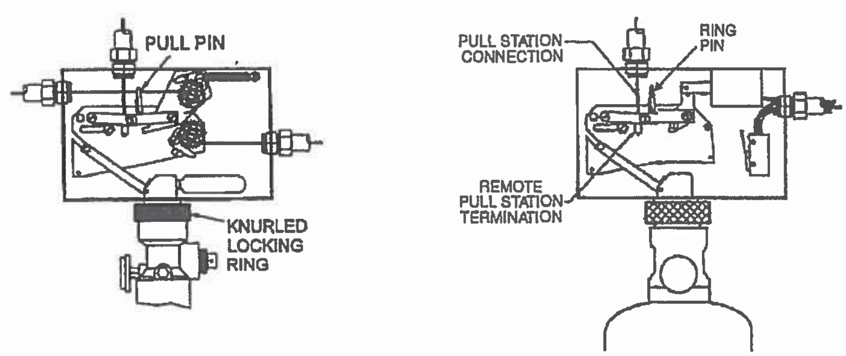


Figure 4-2. Single Cylinder Installation Using Model MCH3/ECH3/NMCH3 Control Head
002872PC/003647PC

FUSIBLE LINK DETECTOR INSTALLATION

Fusible links are always used in conjunction with the Model MCH3 Mechanical Control Head. After mounting the cylinder and control head, the fusible link line can be installed. The first step to installing the fusible link line is to install the detector bracket(s). These brackets must be installed in the plenum area, hazard area, and in each duct. See Chapter III for detector placement guidelines.

Note: Only ML-style Fusible Links can be used.

Connect the fusible link brackets together using 1/2 in. conduit and the conduit connectors supplied in the detector kit (Model FLK-1/1A). A PYRO-CHEM corner pulley must be used whenever a change in conduit direction is necessary. The conduit is connected to the control head through a knockout in the upper left-side corner.

In general, fusible links centered in the detector brackets are connected in series using 1/16 in. diameter stainless steel cable. The spring plate in the control head maintains tension on this series of fusible links. If the tension is released for any reason (i.e., a fusible link separates), the control head will operate and actuate the system. Maximum limitations for the fusible link detection line are as follows:

Fusible links can be installed with or without fusible link hangers (see Chapter II for description).

Fusible Link Line Limitations When Used With Model MCH3 and NMCH3 Control Heads and Part No. 415670 and 423250 Pulley Elbows	
Maximum # of Detectors:	20
Maximum length of cable:	150 ft. (45.7 m)
Maximum # of pulleys:	40

1. Fusible Link Installation Without Hangers.

Begin installing links at the terminal bracket. The link is connected to the far side of the terminal bracket using an "S" hook. The "S" hook must be crimped closed after the link is installed. A tight loop is then made in the cable and secured by the crimp provided. This loop is connected to the other side of the terminal link (see Figure 4-6) and the cable fed through the conduit to the next bracket. The cable proceeding from the terminal link will be used to connect the series links (see Figure 4-7). Series links must be centered in their detector brackets.

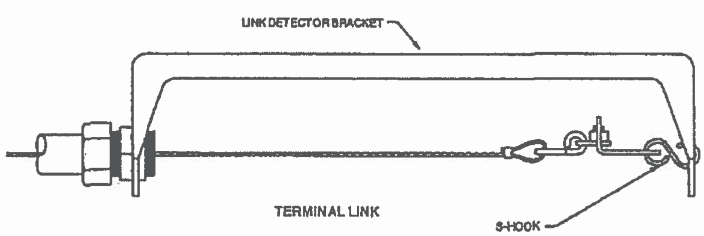


Figure 4-6. Terminal Link Installation.

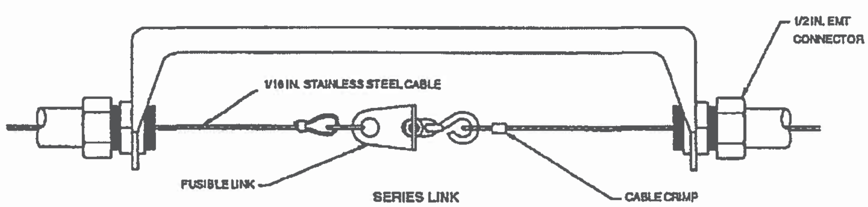


Figure 4-7. Series Link Installation.

After the last link in the series is connected, the cable should be fed through the conduit back to the control head. Thread the cable through the hole in the fusible link ratchet wheel. The line must then be crimped, and the crimp positioned inside the center of the ratchet wheel.

> **NOTE**
>
> Crimps must always be used in conjunction with two (2) cable lengths. Loops are the accepted method of connecting the cable to mechanical components. The crimp must never be used on a single cable. Exception: Single cable crimp allowed in detection and gas valve ratchet wheel using stop sleeve, Part No. 26317 (packages of 10: Part No. 24919).

The fusible link line can now be put into a set position by applying tension to the fusible link line. This is accomplished by using a 1/2 in. hex wrench on the fusible link line ratchet wheel. The ratchet wheel will be ratcheted in a clockwise direction until the spring plate makes contact with the top of the control head box. The fusible link line is now in a set position. See Figure 4-8.

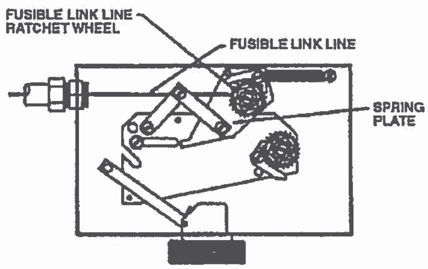


Figure 4-8. Fusible Link Line Termination.
002876PC

2. Fusible Link Installation Using Model FLH-1 Fusible Link Hangers.

Beginning at the control head, feed the stainless steel cable through the conduit and brackets to the terminal bracket in one continuous length. Allow approximately 2.5 in. (6.4 cm) of slack at each bracket for the installation of the Fusible Link Hangers. At the terminal link, a tight loop is made in the cable and secured by the crimp provided. The cable is attached to the far side of the terminal bracket using an "S" hook. The "S" hook must be crimped closed after the cable is installed. See Figure 4-9.

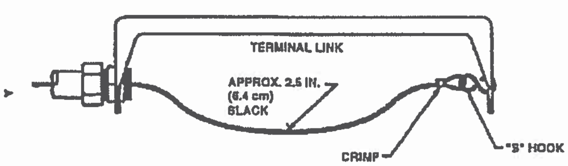


Figure 4-9. Terminal Bracket Connection.
002877PC

Begin installing the Fusible Link Hangers at the terminal bracket and work toward the control head. Loop the cable through the oval opening in the hanger and hook the fusible link on the loop. See Figure 4-10.

Note: Only ML-style Fusible Links can be used

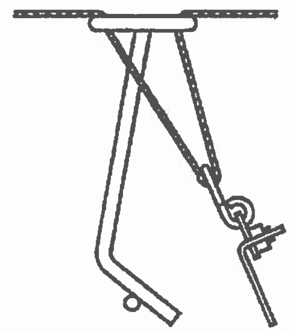


Figure 4-10. Fusible Link Connection.
002878PC

Hook the bottom of the link onto the bottom leg of the hanger. See Figure 4-11.

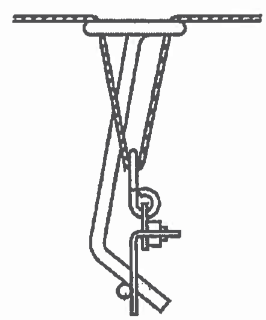


Figure 4-11. Fusible Link/Hanger Connection.
002879PC

Center the hanger/link in the fusible link bracket by sliding it along the link line. This is easily accomplished before any tension is applied to the link line. Repeat this procedure for all fusible links.

After the last hanger/link in the series is connected, the cable should be fed through the hole in the fusible link ratchet wheel. The line must then be crimped, and the crimp positioned inside the center of the ratchet wheel.

> **NOTE**
>
> Crimps must always be used in conjunction with two (2) cable lengths. Loops are the accepted method of connecting the cable to mechanical components. The crimp must never be used on a single cable. Exception: Single cable crimp allowed in detection and gas valve ratchet wheel using stop sleeve, Part No. 26317 (packages of 10: Part No. 24919).

The fusible link line can now be put into a set position by applying tension to the fusible link line. This is accomplished by using a 1/2 in. hex wrench on the fusible link line ratchet wheel. The ratchet wheel will be ratcheted in a clockwise direction until the spring plate makes contact with the top of the control head box. The fusible link line is now in a set position. See **Figure 4-8.** Check to ensure that the fusible link hanger(s) remain centered in the bracket after the fusible link line is set. See **Figure 4-12.**

THERMAL DETECTOR INSTALLATION

Thermal detectors are always used in conjunction with the Model ECH3 Electrical Control Head. After mounting the cylinder and control head, the thermal detector(s) can be installed. See Chapter III for detector placement guidelines. Follow the instructions included with the detector for proper detector mounting procedures.

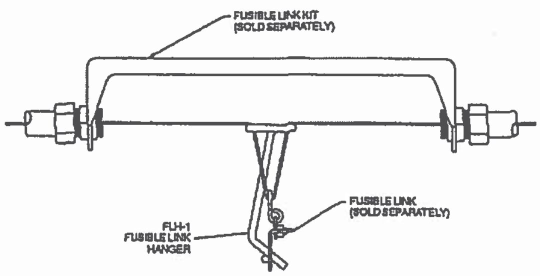


Figure 4-12. Fusible Link/Hanger In Set Position
002850PC

SETTING THE CONTROL HEAD

1. Model MCH3/NMCH3 Mechanical Control Head.

Once the fusible link line is set, the control head can be placed in the set position. To set the control head, the slide plate is moved from right to left, ensuring the bolt extending from the cam arm is in the slot provided in the slide plate. Continue moving the slide plate to the left until the latching arm is in the locked position. Insert the pull pin into the hole in the slide plate above the latching arm. This will lock the control head in the set position, eliminating accidental actuation during the rest of the installation procedure. See **Figure 4-13.**

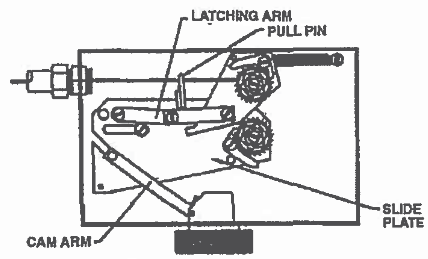


Figure 4-13. Control Head In Set Position.
002880PC

2. Model ECH3 Electrical Control Head.

Once the thermal detectors have been installed, the control head can be placed in the set position. To set the control head, the slide plate is moved from right to left, ensuring the bolt extending from the cam arm is in the slot provided in the slide plate. Continue moving the slide plate to the left until the latching arm is in the locked position. Insert the pull pin into the hole in the slide plate above the latching arm. This will lock the control head in the set position, eliminating accidental actuation during the rest of the installation procedure.

Once the Model ECH Electrical Control Head is in the set position, it can be connected to the detection/actuation circuit.

> **NOTE**
>
> No electrical connections shall be made inside the control head. All electrical wiring shall exit the control head through the knock-out on the side of the box. All electrical connections must be made in an approved electrical box.

Connect one of the black wires on the solenoid in the control head to the red wire of the Model MS-SPDT Micro Switch. The brown wire from the micro switch is then connected to one side of the first thermal detector in series. Connect the other side of the first thermal detector in series and the remaining black wire on the solenoid in the control head to the appropriate power source after installing the Model SM-24/120 Solenoid Monitor.

> **CAUTION**
>
> The solenoid must never be wired "hot" (not through the micro-switch). If wired this way, the non-field replaceable solenoid will be damaged and the complete control head will require replacement.

NOTE

A Model SM-24/120 Solenoid Monitor must always be used with an Electrical Control Head to supervise the actuation/detection circuit.

The Model ECH3-24 Electrical Control Head requires a UL Listed 24VDC power supply with a minimum 2A rating. The Model ECH3-120 Electrical Control Head requires a 1A, 120VAC power supply.

SOLENOID MONITOR INSTALLATION

1. Solenoid Monitor Installation In Detection Circuit.

After installing the thermal detectors and the control head, the Model SM-120/24 Solenoid Monitor can be installed. The Solenoid Monitor is connected to the wires leading from the last thermal detector. It should be mounted in a location where it can be readily observed.

The Solenoid Monitor is an end-of-line device that supervises the actuation/detection circuit. It is comprised of a push-type switch with a built-in indicator light, a plug-type relay, a relay socket, and a cover plate. The light, when illuminated, indicates that the detection/actuation circuit is in the normal condition. The Solenoid Monitor also provides two sets of dry contacts. The Solenoid Monitor's cover plate is used to mount the Solenoid Monitor in a standard 6 in. x 4 in. x 3 in. deep electrical box (See Figure 4-14).

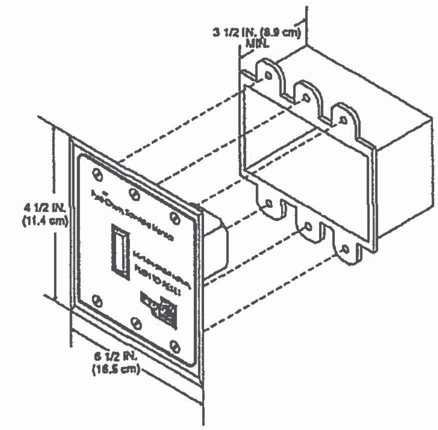


Figure 4-14. Solenoid Monitor Installation.
002881PC

All wire for circuits using the Model SM-24 shall be 18 gauge minimum, or as required by local code. All wire for circuits using the Model SM-120 shall be 14 gauge minimum, or as required by local code. The basic wiring diagram for both the Model SM-24 and Model SM-120 is shown in **Figure 4-14.1.**

After the Solenoid Monitor has been installed, the detection/actuation circuit can be connected to the appropriate power source and energized. To energize the detector/actuation circuit, depress the switch on the Solenoid Monitor. The light will illuminate to indicate that the circuit is properly installed. If the light fails to illuminate, the wiring must be checked.

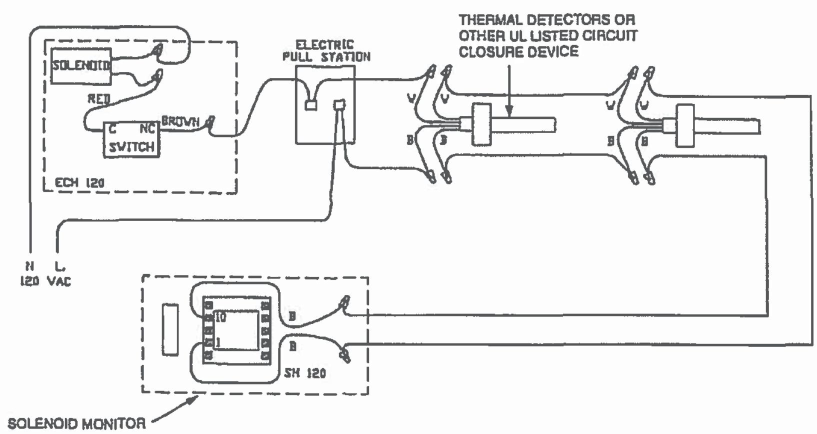


Figure 4-14.1. Wiring Diagram, Solenoid.
002882PC

2. Solenoid Monitor When Used As A Reset Relay

The Model SM-24/120 can be used as a reset relay when required. A reset relay is required whenever an electrical gas shut-off valve is used in conjunction with the Pyro-Chem Booth Industrial Fire Suppression System. For typical wiring connections, see Figure 4-15.

REMOTE PULL STATION INSTALLATION

1. Model RPS-M.

The Model RPS-M Remote Mechanical Pull Station is used for remote mechanical actuation of the Model MCH3/ECH3/NMCH3 Control Head. It is to be located near an exit in the path of egress from the hazard area no more than 4 ft. (1.2 m) above the floor.

NOTE

A model RPS-M remote mechanical pull station must be used for manual actuation of a Model NMCH3 releasing device.

The Pull Station can be surface mounted or recessed. It is connected to the control head using 1/16 in. diameter stainless steel cable. The cable enters the pull station box from the bottom, top, either side, or back. The cable enters the control head through the top-center knockout. The cable must be enclosed in 1/2 in. conduit with a PYRO-CHEM corner pulley at each change in conduit direction. Maximum limitations for the Model RPS-M Remote Mechanical Pull Station are as follows:

Model RPS-M Cable Run Limitations When Used With Model MCH3, ECH3, and NMCH3 Control Heads and Part No. 415670 and 423250 Pulley Elbows

Maximum length of cable:	150 ft. (45.7 m)
Maximum # of pulleys:	40

After mounting the pull station box and conduit, feed the stainless steel cable from the control head, through the conduit, and into the pull station box. Insert the bushing into the pull station's cover plate and secure it with the locknut provided. Feed the cable through the bushing and into the pull handle ensuring that the cable fully crosses the set screw hole. Fasten the cable to the pull handle with the set screw (see Figure 4-16).

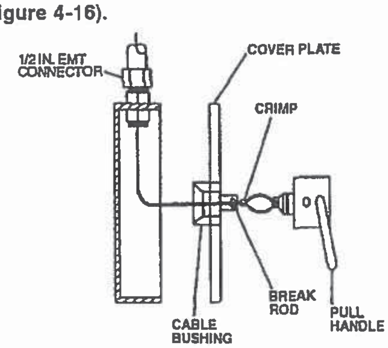


Figure 4-16. Model RPS-M Remote Pull Station Installation.

002884PC

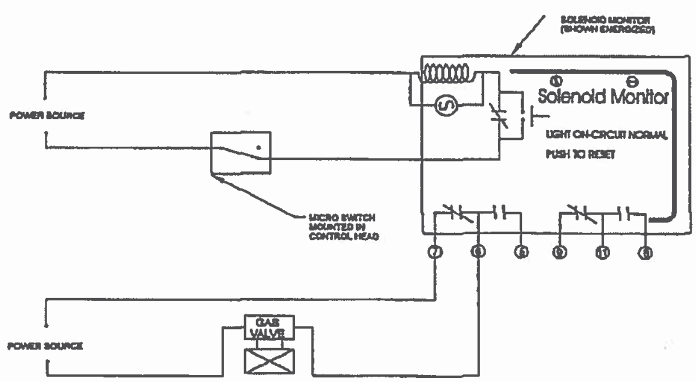


Figure 4-15. Solenoid Monitor Wiring With Electrical Gas Shut-off Valve.

002883PC

> **NOTE**
> Crimps must always be used in conjunction with two (2) cable lengths. Loops are the accepted method of connecting the cable to mechanical components. The **crimp must never be used on a single cable.** Exception: Single cable crimp allowed in detection and gas valve ratchet wheel using stop sleeve, Part No. 26317 (packages of 10: Part No. 24919).

Cut and thread the cable through the hole in the latching arm of the control head and pull the cable tight. Crimp the cable 6 in. (15.2 cm) below the latching arm.

Pull the pull handle until the crimp touches the latching arm. Coil the excess cable in the pull box and attach the cover plate with the four screws provided. Insert the pull handle into the cover plate and insert the pull pin through the bushing and the pull handle. Secure the pull pin with the nylon tie provided. See Figure 4-17.

2. Model RPS-E2.

The Model RPS-E2 remote electrical pull station is used for remote actuation of the Model ECH3 Control Head. It is to be located near an exit in the path of egress from the hazard area no more than 4 ft. (1.2 m) above the floor. The Model RPS-E2 is installed in the detection/actuation circuit and wired in accordance with the instructions included. See Figure 4-14.1 for typical circuit wiring.

GAS SHUT-OFF VALVE INSTALLATION

1. Mechanical Gas Shut-Off Valve Installation.

The Model MCH3/NMCH3 Control Head is used to operate the mechanical gas shut-off valve. This valve is located in the fuel gas supply line. The valve body has an arrow which indicates direction of gas flow through the valve. The gas shut-off valve is spring loaded and requires five pounds of force to hold it open. This force is supplied by a 1/16 in. diameter stainless steel cable that is connected to the control head. After the valve is installed in the gas line, 1/2 in. conduit must be run from the top center knockout of the gas valve box to the lower right-hand knockout in the control head. A PYRO-CHEM corner pulley is used wherever a change in conduit direction is required.

Gas Valve Cable Run Limitations When Used With Model NMCH3 or MCH3 Control Heads and Part No. 415670 and 423250 Pulley Elbows	
Maximum length of cable:	100 ft. (30.5 m)
Maximum # of pulleys:	30

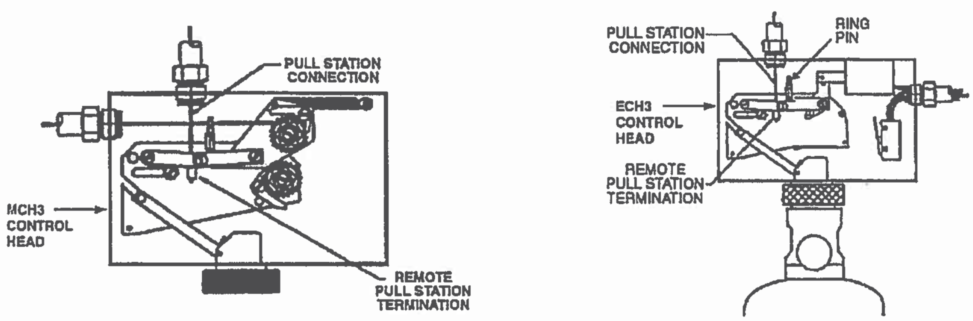


Figure 4-17. Model RPS-M Remote Pull Station Termination.

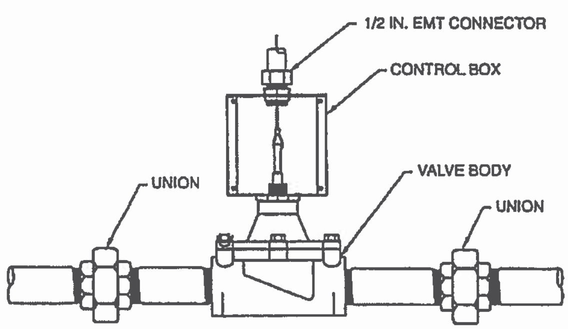


Figure 4-18. Gas Valve Installation.

Remove the gas valve cover and thread the stainless steel cable through the conduit back to the control head. Thread the cable through the hole in the gas valve ratchet wheel. The line must then be crimped, and the crimp positioned inside the center of the ratchet wheel.

At the gas valve, loop the cable through the valve stem and secure it with the crimp provided (see **Figure 4-18**).

Note: See Chapter 2 – Components for maximum dimension to extend valve stem.

The gas valve line can now be put into a set position by applying tension to the gas valve line. This is accomplished by using a 1/2 in. hex wrench on the gas valve ratchet wheel. The ratchet wheel will be ratcheted in a clockwise direction until the gas valve is fully open. Secure the gas valve cover plate to the gas valve box with the four (4) screws provided. The gas valve line is now in a set position. See **Figure 4-19.**

CAUTION

Overtightening the gas valve may cause the system not to actuate.

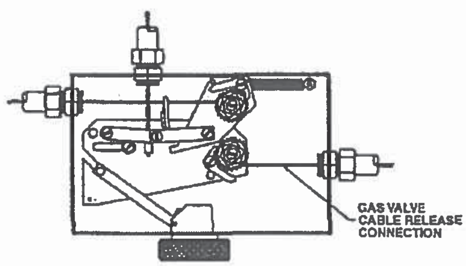


Figure 4-19. Gas Valve Line Termination.
002887PC

2. Electrical Gas Shut-Off Valve Installation.

The Model MCH3/ECH3/NMCH3 Control Head is used to operate the electrical gas shut-off valve. This valve is located in the fuel gas supply line. The valve body has an arrow which indicates direction of gas flow through the valve. A reset relay must always be used with an electrical gas shut-off valve. For proper wiring of the electrical gas shut-off valve, see **Figure 4-15.**

TEE PULLEY INSTALLATION

The Model TP-1 Tee Pulley is used to connect two (2) mechanical gas valves or two (2) remote mechanical pull stations to a single control head. The cable proceeding from the control head must always enter the branch of the tee pulley. See **Figure 4-20.**

A tee pulley that is used to close two (2) gas valves can only be used to close gas valves with similar stem travel. Gas valves from 3/4 in. up to 1 1/2 in. can be used on the same tee pulley. A 2 in. gas valve can be used only with another 2 in. gas valve. Gas valves from 2 1/2 in. up to 3 in. can be used on the same tee pulley. As an example, using a 3/4 in. gas valve with a 3 in. gas valve will not allow the 3 in. valve to fully open.

CAUTION

The tee pulley must never be used to connect multiple fusible link lines to a single control head.

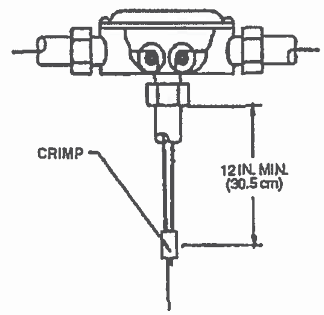


Figure 4-20. Tee Pulley Installation.
002888PC

MICRO SWITCH INSTALLATION

See NFPA 72, "National Fire Alarm Code," Initiating Devices section, for the correct method of wiring connection to the fire alarm panel.

The Model MS-SPDT, MS-DPDT, MS-3PDT, or MS-4PDT Micro Switch is available for use where an electrical output is required. These switches can be field installed in the control head. See **Figure 4-21** and **Figure 4-22** and refer to Instruction Sheet, Part No. 551159, included with switch shipping assembly, for detailed mounting instructions.

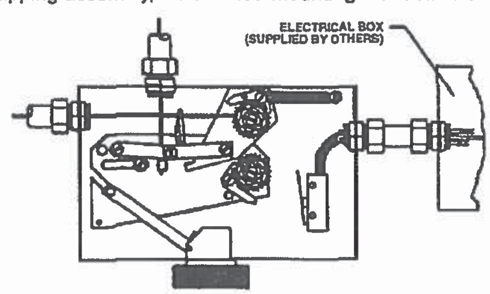


Figure 4-21. Micro Switch Installation in Model MCH3/NMCH3 Control Head.
002889PC

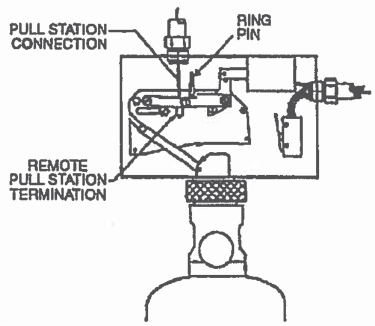


Figure 4-22. Micro Switch Installation in Model ECH3 Control Head.
003647PC

NOTE
The Model ECH3 Control Head is supplied with a Model MS-DPDT Micro Switch. This switch can be used in the actuation/detection circuit and for electrical output.

These switches may be used to provide an electrical signal to the main breaker and/or operate electrical accessories provided the rating of the switch is not exceeded. Wiring connections are shown in Figure 4-23. The contact ratings for the switches are as follows:

Contact Ratings For Micro Switches
21 amps, 1 HP, 125, 250, 277 VAC or 2 HP, 250, 277 VAC

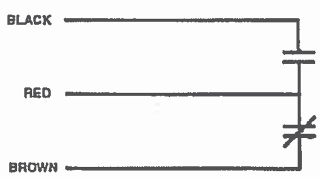


Figure 4-23. Wiring Diagram For Model MS-SPDT Micro Switch.
002903PC

The Alarm Initiating Switch, Part No. 550077, must be used to close a supervised alarm circuit to the building main fire alarm panel when the control head actuates. This will signal the fire alarm panel that there was a system actuation in the hazard area. This switch can be field installed in the control head. Refer to Instruction Sheet, Part No. 550081, included with the switch shipping assembly, for detailed mounting instructions. Wiring connections are shown in Figure 4-24. The switch is rated at 50mA, 28VDC.

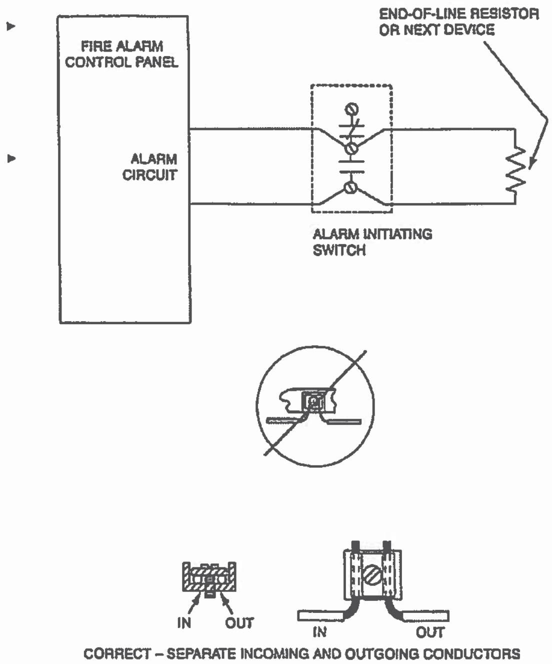


Figure 4-24. Wiring Diagram for Alarm Initiating Switch.
004891/004805

PIPE AND NOZZLE INSTALLATION

General Piping Requirements

1. Use Schedule 40 black iron (if used in a relatively non-corrosive atmosphere), galvanized, chrome-plated, or stainless steel pipe conforming to ASTM A120, A53, or A106. Fittings must be a minimum of 150 lb. Class. However, the PCI 35, 50, and 70 lb. cylinders must have a minimum of two (2) nozzles per cylinder to utilize the 150 lb. Class fittings. If the PCI 35, 50, or 70 lb. cylinder has one (1) nozzle, then a 300 lb. Class fitting must be used. The remaining Monarch cylinders have no limitations for the 150 lb. Class fittings. Distribution pipe sizes are 3/4 in. or 1 in. depending on number of nozzles.
2. Pipe unions are acceptable.
3. Use reducing tees for all pipe splits.
4. Reducing bushings are not acceptable.
5. Cast iron pipe and fittings are not acceptable.
6. **Pipe thread sealant or pipe joint compound is not allowed for distribution piping.**
7. Bell Reducer or any non-restrictive fittings are allowed.
8. Before assembling the pipe and fittings, make certain all ends are carefully reamed and blown clear of chips and scale. Inside of pipe and fittings must be free of oil and dirt.

9. If Teflon tape is used on threaded ends, start at the second male thread and wrap the tape clockwise around the threads, away from the pipe opening.
10. All system piping must comply with Section A-5-9.1 of NFPA-17.

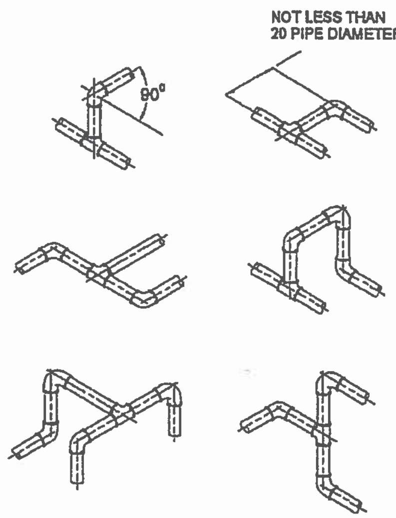


Figure 4-25. Acceptable Piping Methods.
002965PC

> **CAUTION**
> Do not apply Teflon tape to cover or overlap the pipe opening, as the pipe and nozzles could become blocked and prevent the proper flow of agent.

TEE POSITIONING

In order to obtain equal distribution at a tee, the dry chemical must enter the side port of the tee and exit through the two end ports. See Figure 4-26.

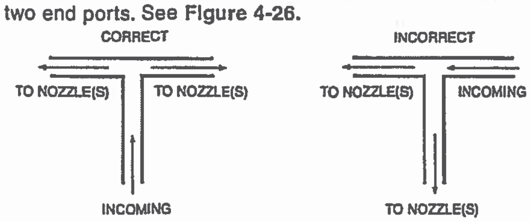


Figure 4-26. Tee Positioning
003125

Hanger/Support Installation

The hanger/supports must be installed in conjunction with the pipe and fittings. The spacing requirements for hangers/supports depend on the pipe size being utilized; refer to the Spacing Guidelines Chart.

PIPE HANGER SPACING GUIDELINES CHART

Distribution Pipe Size	Maximum Spacing Distance Hanger to Hanger	
in.	ft.	m
1/4	4	(1.2)
1/2	6	(1.8)
3/4	8	(2.4)
1	12	(3.6)

Other factors that influence hanger/support spacing are:

Hanger/Support must be placed within 1 ft. (0.3 m) of the discharge nozzle.

Hanger/Support must be placed between elbows when distance is greater than 2 ft. (0.6 m).

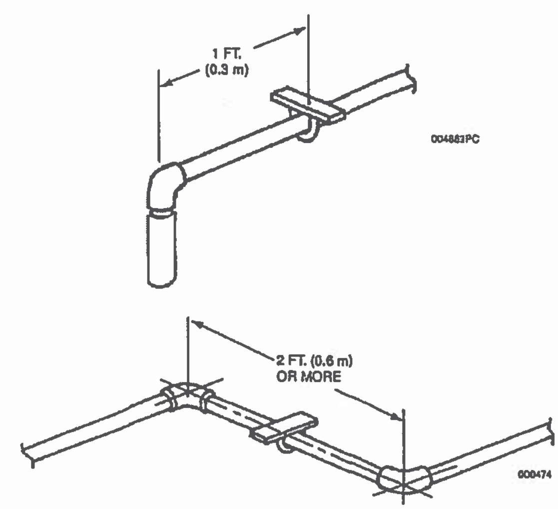


Figure 4-27. Hanger/Support.

MAIN/RESERVE SYSTEM

When a reserve system is being utilized, two 1 in. swing check valves, Part No. 417788, must be installed in the distribution piping network. They should be positioned as close as possible to the "Y" fitting joining the piping from the main and reserve tanks to one common supply pipe. See **Figure 4-28. Note:** Make certain to install swing check valves in the direction of dry chemical flow as shown with an arrow stamped on the valve body.

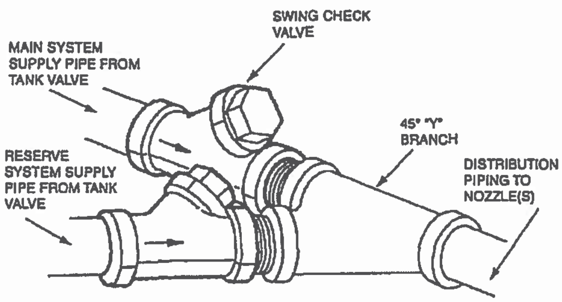


Figure 4-28. Main/Reserve System.
000480

PRESSURE SWITCH INSTALLATION

The Model PS-SPDT-X Pressure Switch is available for use when an electrical output is required. It must be installed in the discharge piping within 12 in. (30.5 cm) of the valve discharge port as shown in Figure 4-29. An inline tee is used for the installation. The switch is isolated from the chemical by a 12 in. to 15 in. (30.5 to 38.1 cm) column of air in the form of a vertical pipe nipple. The switch is then mounted at the top of this nipple.

> **NOTE**
>
> Piping for pressure switch must be included in total cylinder to T1 piping limitations. The fitting used to connect the pressure switch to the distribution piping counts as one (1) elbow in that section.

As an alternate, the switch may be connected directly to the copper tubing of a remotely mounted control head or a PAC cylinder. The PS-SPDT-X counts as one cylinder in this section, and the limitations on copper tubing and/or pipe previously stated in this manual apply.

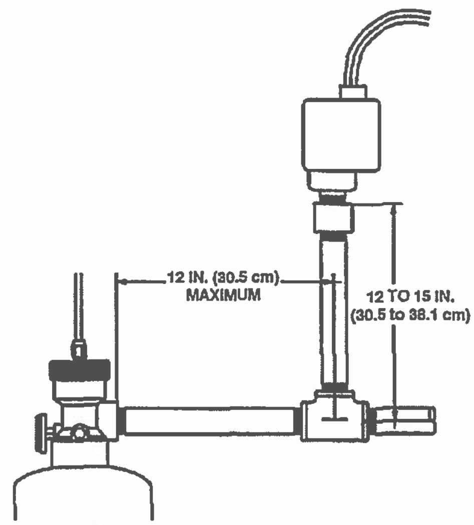


Figure 4-29. Pressure Switch Installation.
003025PC

SYSTEM CHECKOUT AFTER INSTALLATION

1. Model MCH3 Mechanical Control Head.

Before putting the system into service, all components must be checked for proper operation. During this checkout, assure that the carbon dioxide pilot cartridge is not installed in the control head actuator. Remove the pull pin from the hole in the slide plate.

To check satisfactory operation of the control head, cut the terminal link or the "S" hook holding the link. This will relieve all tension on the fusible link line and operate the control head. The slide plate will move fully to the right. The gas valve cable will be released, causing the gas valve to close. Any auxiliary equipment connected to the dry contacts of the solenoid monitor and/or the Micro Switch in the control head will operate.

If any of these events fail to occur, the problem must be investigated and repaired.

Repair the terminal link and put the fusible link line back into the set position. This is accomplished by using a 1/2 in. hex wrench on the fusible link line ratchet wheel. The ratchet wheel will be ratcheted in a clockwise direction until the spring plate makes contact with the top of the control head box.

3005 | Pitfield boulevard | Saint-Laurent, Québec, Canada | H4S 1H4
Tel.: 514.332.5110 Fax: 514.332.6260 info@vikingfire.ca

CHAPTER 5

MAINTENANCE

CHAPTER V
SYSTEM MAINTENANCE

GENERAL

This chapter will detail the basic information necessary for proper maintenance of the PYRO-CHEM Industrial Fire Suppression System. However, before attempting any system maintenance, it is necessary to attend a Factory Certification Training Class and become Certified to Install and maintain the PYRO-CHEM Industrial Fire Suppression System.

MAINTENANCE AFTER SYSTEM DISCHARGE

1. System Cleanup.

The hazard area cleanup after a system discharge is very basic. The dry chemical agent should be cleaned up by either sweeping or vacuuming. Residual dry chemical should be wiped off effected surfaces with a damp cloth.

2. System Cylinder Recharge.

CAUTION

Protective eye goggles and protective footwear must be worn when performing system maintenance.

1. Remove the cylinder from the control head or pneumatic adaptors and inspect for visual damage. If there is any damage the cylinder must be hydrostatically tested before being refilled. If there is no damage, the cylinder can be recharged.
2. Reset all pneumatic actuators (Models PDA-D2) by depressing the check valve on top and relieving the pressure. Remove the pneumatic actuator or control head from the valve and use any 1/4-20 UN screw or bolt to screw into the top of the piston. Pull up on the piston until the piston is flush with the top of the valve body and remove the screw or bolt from the piston.
3. Remove the valve and siphon tube assembly from the cylinder and unscrew the siphon tube from the valve.
4. Inspect the valve to make sure no mechanical damage has occurred. If there is evidence of any damage to the seals, rebuild the valve using the Dry Valve Rebuilding Kit (PYRO-CHEM Part Number 550037).
5. Screw the siphon tube back into the valve.
6. Refill the cylinder with agent. Use the table below for easy reference.

Cylinder	Recharge
PCI-15ABC	12.5 lb. ABC (Part No. 550170)
PCI-17ABC	17 lb. ABC (Part No.550170)
PCI-25sBC	25 lb. BC (Part No.550162)
PCI-25sABC	25 lb. ABC (Part No.550170)
PCI-35ABC	35 lb. ABC (Part No.550170)
PCI-50sBC	50 lb. BC (Part No.550162)
PCI-50sABC	50 lb. ABC (Part No.550170)
PCI-70ABC	70 lb. ABC (Part No.550170)

The Model RC-50ABC (Part No. 550170) is a 50 lb. pail of ABC dry chemical recharge agent available from PYRO-CHEM. The Model RC-50BC (Part No. 550162) is a 50 lb. pail of BC dry chemical recharge agent available from PYRO-CHEM.

7. Insert the siphon tube into the cylinder, and screw the valve onto the cylinder. Make sure that the valve is screwed completely into the cylinder.
8. Attach the Recharge Adaptor (PYRO-CHEM Part No. 550130) to the discharge port of the valve. The adaptor O-ring should be completely inside the discharge port. Attach a source of dry nitrogen to the adaptor.

   Charge the cylinder with dry nitrogen to 350 psi at 70°F.

NOTE

1. The pressure gauge attached to the cylinder valve should not be used to determine when the charging pressure has been reached. A pressure regulator should be used.
2. Higher pressure may be needed during the initial charging stage to blow the agent out of the siphon tube. Secure the cylinder during this stage, as it may jump as the agent is blown from the siphon tube.

9. Slowly disconnect the nitrogen source from the Recharge Adaptor. The cylinder valve will close when the Recharge Adaptor is depressurized. When the valve is closed and the nitrogen source is disconnected from the Recharge Adaptor, remove the recharge adaptor from the valve discharge port. Immediately screw the recoil preventer into the discharge port.

CAUTION

The recoil preventer must remain in the valve discharge port until the cylinder is attached to the piping network.

10. Reinstall the cylinder to the piping network. Reattach the control head or pneumatic adaptor.

3. Piping and Nozzles.

Piping should be blown out with air or dry nitrogen. Nozzle blow off caps should be replaced.

4. System Reset.

All fusible links should be replaced. The fusible link line can now be put into a set position by applying tension to the fusible link line. This is accomplished by using a 1/2 in. hex wrench on the fusible link line ratchet wheel. The ratchet wheel will be ratcheted in a clockwise direction until the spring plate makes contact with the top of the control head box. The fusible link line is now in a set position.

After setting the fusible link line, the system can be put back into service by following the SYSTEM CHECKOUT AFTER INSTALLATION Section of Chapter IV.

REGULAR SYSTEM MAINTENANCE

1. Six (6) Month Maintenance.

1. Check that the hazard has not changed.
2. Check that all nylon ties are in place and the system has not been tampered with.
3. Check the entire system for mechanical damage.
4. Check the solenoid monitor.
5. Disconnect the control head or pneumatic tubing from each agent cylinder. Remove the carbon dioxide pilot cartridge and exercise the control head to ensure it is functioning properly. Make sure the gas shut-off valve and the remote pull station are functioning properly.

> **NOTE**
> Before continuing, remove the cover from the control head and insert the pull pin in the hole in the slide plate above the latching arm. This will secure the system, preventing accidental discharge.

6. Inspect fusible link detectors for excessive grease buildup. Clean or replace links if necessary. Visually inspect thermal detectors.

> **NOTE**
> Methods and frequency of inspection, testing and maintenance of detectors should be in accordance with NFPA-72.

7. Reinstall the carbon dioxide pilot cartridge and replace the control head cover and nylon tie.

> **CAUTION**
> Before screwing the carbon dioxide pilot cartridge into the actuator, ensure that the actuator has an O-ring installed.

8. Inspect the cylinder pressure. Tap the gauge lightly to ensure the needle is moving freely. If the gauge shows a loss in pressure indicated by the needle being below the green band, the tank should be removed and recharged per the SYSTEM CYLINDER RECHARGE section of Chapter V (System Maintenance) in this manual.

2. Annual Maintenance.

1. Inspect as per six (6) month maintenance instructions.
2. Disconnect and remove the discharge piping from the system. Using air or nitrogen, blow out the discharge piping. Replace all nozzle caps.
3. Fixed temperature sensing elements of the fusible alloy type shall be replaced at least annually or more frequently, if necessary, to assure proper operation of the system.
4. Test thermal detectors and remote pull station per SYSTEM CHECKOUT AFTER INSTALLATION section located in Chapter IV (System Installation) of this manual. Per NFPA 72, two (2) or more detectors per circuit should be tested. Note individual detector location and date of testing. Within 5 years, all detectors in system must be tested.
5. Replace the carbon dioxide pilot cartridge, recording the date of installation on the cartridge with a felt-tipped marker.

> **CAUTION**
> Before screwing the carbon dioxide pilot cartridge into the actuator, ensure that the actuator has an O-ring installed.

3. Six (6) Year Maintenance.

1. Inspect as per annual maintenance instructions.
2. Examine the dry chemical. If there is evidence of caking, the dry chemical shall be discarded.

4. Hydrostatic Testing.

The dry chemical agent cylinder(s) and pneumatic cylinder(s) shall be hydrostatically tested at least every twelve (12) years as per NFPA-17.

> **NOTE**
> Refer to NFPA-17 for additional maintenance requirements.

AGNICO EAGLE

Vendor Document Status

1 ☐ Proceed to next submission and status.

2 ☐ Proceed with exceptions as noted to next submission and status.

3 ☐ Do not proceed.
Revise as noted and resubmit next submission and status.

4 ☑ Complete, no further submission required.

By: Jean-Francois Tremblay Date: 2017-05-02

Review and authorization to fabricate are only for general conformance with the design concept of the Project as expressed in the Contract Documents. Sole responsibility for the accuracy and completeness of this document, including but not limited to dimensions and quantities, remains with the Supplier/Contractor. Agnico Eagle does not warrant the accuracy or completeness of any of the information contained herein, nor does Agnico Eagle authorize or approve any construction means, methods, techniques, sequences or any safety precautions or procedures.

Agnico Eagle No. 6515-C-270-007-141-TES-0015 R: Sub001

DOCUMENT FOR INFORMATION

Fuel Tanks Piping

Supply and Installation

Punchlist

Document Number : AEM-GE-ITR-003
Contract Number : C22466T / C22498E

Equipment/System description:

ITEM No	DESCRIPTION	*CAT 1*	*CAT 2*	*CAT 3*	COMMENTS	*COMPLETED*
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

CAT 1 = Effects commissioning
CAT 2 = Effects operation
CAT 3 = Post operation

TO BE VALIDATED

AT A LATER DATE

AGNICO EAGLE

Vendor Document Status

1 ☐ Proceed to next submission and status.

2 ☐ Proceed with exceptions as noted to next submission and status.

3 ☐ Do not proceed.
Revise as noted and resubmit next submission and status.

4 ☑ Complete, no further submission required.

By: Jean-Francois Tremblay Date: 2017-05-02

Review and authorization to fabricate are only for general conformance with the design concept of the Project as expressed in the Contract Documents. Sole responsibility for the accuracy and completeness of this document, including but not limited to dimensions and quantities, remains with the Supplier/Contractor. Agnico Eagle does not warrant the accuracy or completeness of any of the information contained herein, nor does Agnico Eagle authorize or approve any construction means, methods, techniques, sequences or any safety precautions or procedures.

Agnico Eagle No. 6515-C-270-007-141-TES-0016 R: Sub001

DOCUMENT FOR INFORMATION

Date: ______________________________

To: ______________________________

Project No: ________________________

Contract No: ________________________

Contract Title: ____

Contractor: ____

We, ______________________________ (Contractor's Name), the Contractor for the above described contract, hereby certify that we have reviewed the Contract Documents pertaining to:

Contract No.: ____________________________________

Contract Name: ____________________________________

Partial Completion Certificates: ______________________________________

and having physically inspected the Work performed, do hereby file claim for a notice of Final Completion.

I do declare that I am, ____________________________ (Responsible's Name), HAVING AUTHORITY FROM MY COMPANY TO PETITION FOR THE ABOVE REFERRED TO FINAL COMPLETION NOTICE.

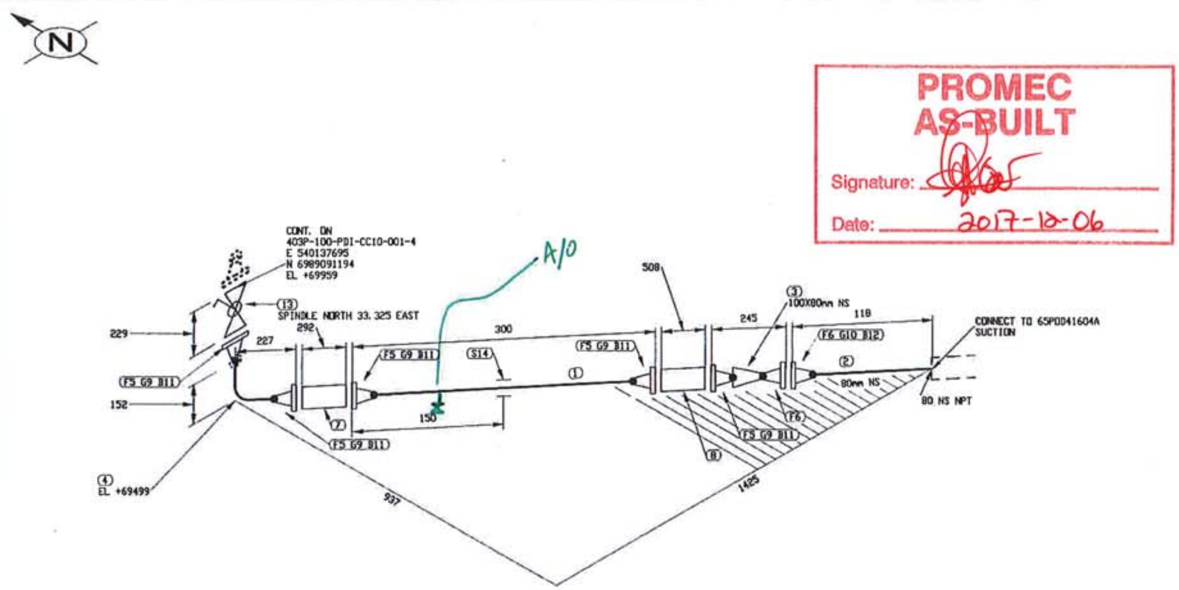
Signature: ____________________________

Name: ____________________________

Title: ____________________________

SECTION

AS-BUILTS DRAWINGS



PROMEC AS-BUILT
Signature:
Date: 2017-12-06

LISTE DE MATERIEL

No	QTE	DIA	MATERIEL/CATALOGUE	DESCRIPTION
1	150 MM	100	A 333 Gr. 6	SCH STD, SMLS PIPE
2	50 MM	80	A 333 Gr. 6	SCH STD, SMLS PIPE POExTOE
3	1	100X80	A 420 Gr. WPL6	SCH STD x 80, BW CONC RED
4	1	100	A 420 Gr. WPL6	SCH STD, BW LR 90 DEG ELBOW
5	5	100	A 350 Gr. LF2	CL 150, SCH STD, RF, WN FLANGE
6	2	80	A 350 Gr. LF2	CL 150, SCH STD, RF, WN FLANGE
7	1	100		CL 150, BASKET STRAINER
8	1	100		CL 150, SINGLE BRAIDED HOSE ASSEMBLY
9	5	100	ASME B16.20	CL 150, GARLOCK 5500, RING TYPE GASKET 1/8" THK
10	1	80	ASME B16.20	CL 150, GARLOCK 5500, RING TYPE GASKET 1/8" THK
11	40	16	A 193 B7/A 194 2H	CL 150, 8 - 15.875 X 90 STUD BOLTS c/w TWO HEAVY HEX NUTS
12	4	16	A 193 B7/A 194 2H	CL 150, 4 - 15.875 X 90 STUD BOLTS c/w TWO HEAVY HEX NUTS
13	1	100	BA-31	CL 150, RF, BALL VALVE
14	1	100		PIPE SUPPORT AS PER DETAIL 4, DWG 65-403-270-200

PERMIT TO PRACTICE
LE GROUPE ULTRAGEN LTÉE
Signature
Date JUL 1 1 2017
PERMIT NUMBER: P 1180
NT/NU Association of Professional Engineers and Geoscientists

REGISTERED PROFESSIONAL ENGINEER
D. TRUONG
LICENSEE
NT/NU
2017/07/14

FABRICATION DRAWINGS BASED ON WSP CERTIFIED ENGINEERING

No.	DATE	REVISION	PAR	APP.
0	2017/06/30	ISSUED FOR CONSTRUCTION	QVN	

CLIENT: AGNICO EAGLE

NUQSANA-PROMEC MINING

ultragen

CONSULTANT PROJECT NO. 591700

SCEAU PROFESSIONNEL

CONC.: KHV
DATE: 2017/05/29
DESSINÉ PAR: KVE
DATE: 2017/06/29
VÉR. PAR:
DATE:
APP.:
DATE:
ÉCHELLE: AUCUNE

PROJET: AGNICO EAGLE - MELIADINE DIVISION
403P - COMBUSTIBLE

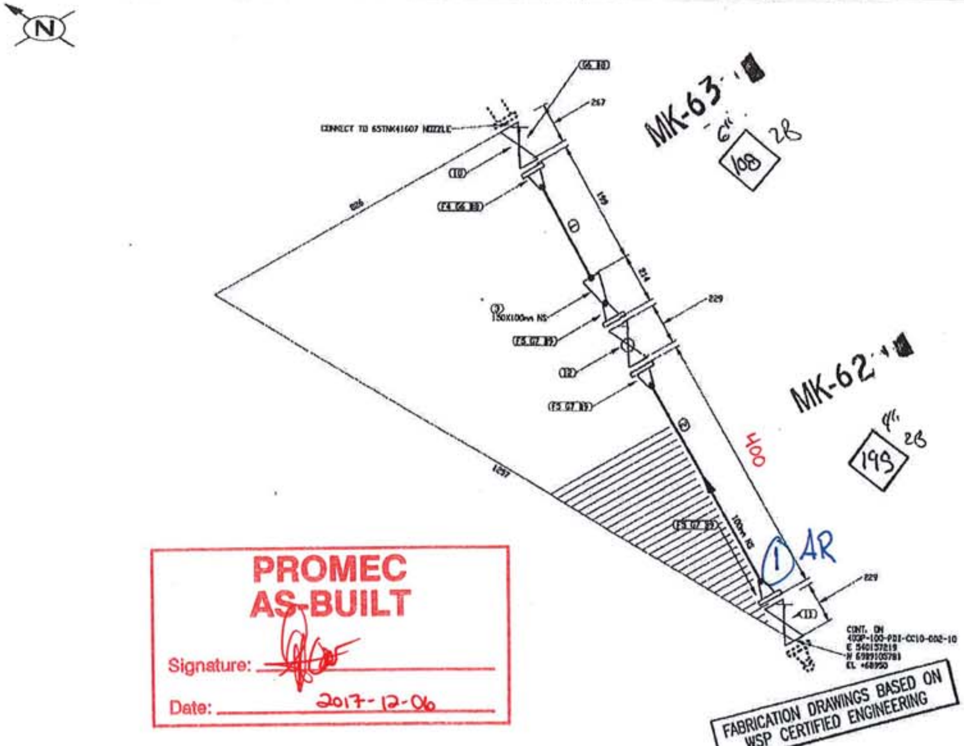
TITRE: PORTAIL #1
FABRICATION ISOMETRIC
FUEL FROM TRUCK UNLOADING TO 65PD041604A/B

No PROJET	No DESSIN	PAGES	REV.
6515	403P-100-PDI-CC10-001	5/6	0

NO. DE CONDUITE		SPECIFICATION	PRODUIT	SYSTEME REVETEMENT	CODE DE COULEUR	ISOLATION ET TRACAGE	EPAISS. D'ISOLATION		
403P-100-PDI-CC10-001		CC10	PDI					65-403-270-200	PIPE SUPPORT DETAILS
PRESSION D'OPERATION	TEMPERATURE D'OPERATION	PRESSION DE CONCEPTION	TEMPERATURE DE CONCEPTION	PRESSION D'ESSAI	CLASSE D'INSPECTION	CODE DE SERVICE	TRAITEMENT THERMIQUE	65-403-205-200	P&ID
PSIG	°F	PSIG	°F	PSIG				No. DESSIN	DESSINS DE REFERENCE

IMPRIMÉ LE: Jun 30, 2017, 8:19am

403P-MN-01



LISTE DE MATERIEL

No	QTE	DIA	MATERIEL/CATALOGUE	DESCRIPTION
1	111 MM	150	A 333 Gr. 6	SCH STD, SMLS PIPE
2	200 MM	100	A 333 Gr. 6	SCH STD, SMLS PIPE
3	1	150X100	A 420 Gr. WPL6	SCH STD, BW CONC RED
4	1	150	A 350 Gr. LF2	CL 150, SCH STD, RF, WN FLANGE
5	3	100	A 350 Gr. LF2	CL 150, SCH STD, RF, WN FLANGE
6	2	150	ASME B16.20	CL 150, GARLOCK 5500, RING TYPE GASKET 1/8" THK
7	3	100	ASME B16.20	CL 150, GARLOCK 5500, RING TYPE GASKET 1/8" THK
8	16	19	A 193 B7/A 194 2H	CL 150, 8 - 19.05 X 100 STUD BOLTS c/w TWO HEAVY HEX NUTS
9	24	16	A 193 B7/A 194 2H	CL 150, 8 - 15.875 X 90 STUD BOLTS c/w TWO HEAVY HEX NUTS
10	1	150	GA-10	CL 150, RF, GATE VALVE
11	1	100	GA-10	CL 150, RF, GATE VALVE
12	1	100	BA-31	CL 150, RF, BALL VALVE

CONTRAT UF
21.06 X 20

REÇU le
03 JUIL. 2017
Rép: ----------

EN ATELIER LE
04 JUIL. 2017
par: B5

PROMEC AS-BUILT
Signature:
Date: 2017-12-06

No	DATE	REVISION	PAR	APP.
0	2017/06/30	ISSUED FOR CONSTRUCTION	QVN	

CLIENT: AGNICO EAGLE

NUQSANA PROMEC MINING

ultragen

CONSULTANT PROJECT NO. 591700

SCEAU PROFESSIONNEL

CONC.: KHV
DATE: 2017/06/28
DESSINÉ PAR: KVC
DATE: 2017/06/28
VER. PAR:
DATE:
APP.:
DATE:
ECHELLE: AUCUNE

PROJET: AGNICO EAGLE - MELIADINE DIVISION
403P - COMBUSTIBLE

TITRE: PORTAIL #1
FABRICATION ISOMETRIC
FUEL FROM 65PDD41604A/B TO 65TNK41607 & 65TNK41608

No PROJET	No DESSIN	PAGES	REV.
6515	403P-100-PDI-CC10-002	11/12	0

403P-MN-01, 403P-MN-02

NO. DE CONDUITE		SPECIFICATION	PRODUIT	SYSTEME REVETEMENT	CODE DE COULEUR	ISOLATION ET TRACAGE	EPASS. D'ISOLATION		
403P-100-PDI-CC10-002		CC10	PDI					65-403-270-200	PIPE SUPPORT DETAILS
PRESSION D'OPERATION	TEMPERATURE D'OPERATION	PRESSION DE CONCEPTION	TEMPERATURE DE CONCEPTION	PRESSION D'ESSAI	CLASSE D'INSPECTION	CODE DE SERVICE	TRAITEMENT THERMIQUE	65-403-205-200	P&ID
PSIG	°F	N/A PSIG	10 à 15 °F	N/A PSIG		B-31.3		No. DESSIN	DESSINS DE REFERENCE

APPROUVÉ LE: Jun 30, 2017, 4:55pm

Fluide Désel Ext 5% RX

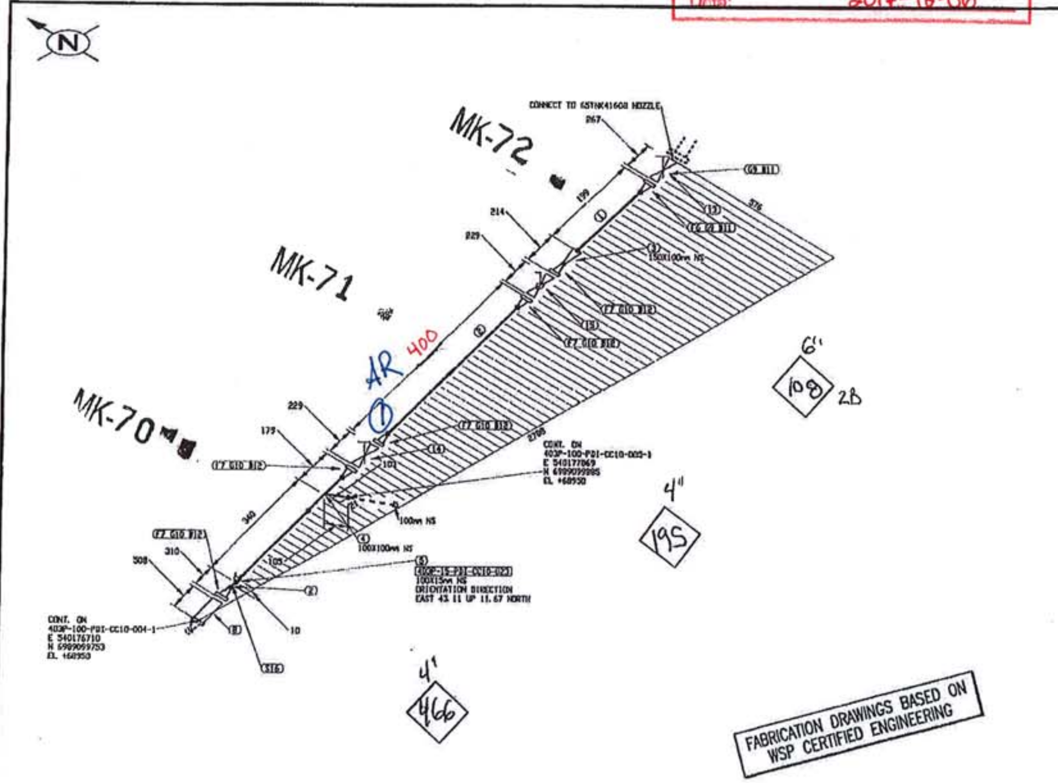
U-5

JG2216-6
PT-GMAW ACL-00
P1 à P1 H6

PROMEC AS-BUILT

Signature:

Date: 2017-12-06



LISTE DE MATERIEL

No	QTE	DIA	MATERIEL/CATALOGUE	DESCRIPTION
1	112 MM	150	A 333 Gr. 6	SCH STD, SMLS PIPE
2	671 MM	100	A 333 Gr. 6	SCH STD, SMLS PIPE
3	1	150X100	A 420 Gr. WPL6	SCH STD, BW CONC RED
4	1	100X100	A 420 Gr. WPL6	SCH STD, BW STRAIGHT TEE
5	1	100X15	A 350 Gr. LF2	CL 3000, THREDOLET
6	1	150	A 350 Gr. LF2	CL 150, SCH STD, RF, WN FLANGE
7	3	100	A 350 Gr. LF2	CL 150, SCH STD, RF, WN FLANGE
8	1	100		CL 150, SINGLE BRAIDED HOSE ASSEMBLY
9	2	150	ASME B16.20	CL 150, GARLOCK 5500, RING TYPE GASKET 1/8" THK
10	5	100	ASME B16.20	CL 150, GARLOCK 5500, RING TYPE GASKET 1/8" THK
11	16	19	A 193 B7/A 194 2H	CL 150, 8 - 19.05 X 100 STUD BOLTS c/w TWO HEAVY HEX NUTS
12	40	16	A 193 B7/A 194 2H	CL 150, 8 - 15.875 X 90 STUD BOLTS c/w TWO HEAVY HEX NUTS
13	1	150	GA-10	CL 150, RF, GATE VALVE
14	1	100	GA-10	CL 150, RF, GATE VALVE
15	1	100	BA-31	CL 150, RF, BALL VALVE
16	1	100		PIPE SUPPORT AS PER DETAIL 3, DWG 65-403-270-200

CONTRAT UF

21.06 X20

REÇU le 03 JUIL. 2017

Rép:

No.	DATE	REVISION	DWN	PAR	APP.
0	2017/06/30	ISSUED FOR CONSTRUCTION			

FABRICATION DRAWINGS BASED ON WSP CERTIFIED ENGINEERING

CLIENT: AGNICO EAGLE

NUQSANA PROMEC MINING

ultragen

CONSULTANT PROJECT NO. 591700

SCEAU PROFESSIONNEL

CONCU: KHV
DATE: 2017/05/29
DESSINÉ PAR: XVE
DATE: 2017/05/29
VÉR. PAR:
DATE:
APP.:
DATE:
ÉCHELLE: AUCUNE

PROJET: AGNICO EAGLE - MELIADINE DIVISION 403P - COMBUSTIBLE

TITRE: PORTAIL #1 FABRICATION ISOMETRIC FUEL FROM 403P-100-PDI-CC10-002 TO 65TNK41608 LOADING NOZZLE

No PROJET	No DESSIN	PAGES	RÉV.
6515	403P-100-PDI-CC10-004	2/2	0

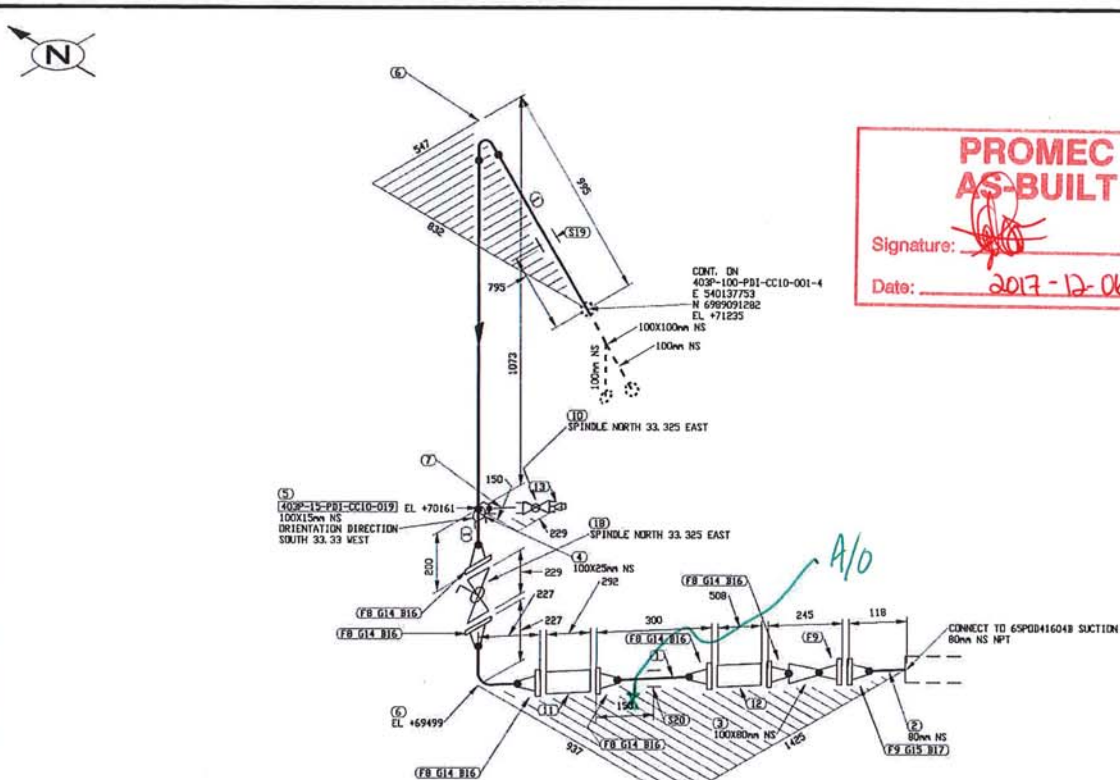
NO. DE CONDUITE		SPÉCIFICATION	PRODUIT	SYSTÈME REVÊTEMENT	CODE DE COULEUR	ISOLATION ET TRAÇAGE	ÉPAISS. D'ISOLATION		
403P-100-PDI-CC10-004		CC10	PDI					65-403-270-200	PIPE SUPPORT DETAILS
PRESSION D'OPÉRATION	TEMPÉRATURE D'OPÉRATION	PRESSION DE CONCEPTION	TEMPÉRATURE DE CONCEPTION	PRESSION D'ESSAI	CLASSE D'INSPECTION	CODE DE SERVICE	TRAITEMENT THERMIQUE	65-403-205-200	P&ID
PSG	°F	NA PSG	(a NG °F	NA PSG		B31.3		No. DESSIN	DESSINS DE RÉFÉRENCE

Fluid Dread Cnd : 5% RX

U-F.

JG2216.6
PT GMAW-NC.001 RC
Pl'a Pl

403P-MN-01



PROMEC AS-BUILT

Signature:

Date: 2017-12-06

FABRICATION DRAWINGS BASED ON WSP CERTIFIED ENGINEERING

LISTE DE MATERIEL

No	QTE	DIA	MATERIEL/CATALOGUE	DESCRIPTION
1	2039 MM	100	A 333 Gr. 6	SCH STD, SMLS PIPE
2	50 MM	80	A 333 Gr. 6	SCH STD, SMLS PIPE POExTOE
3	1	100X80	A 420 Gr. WPL6	SCH STD x 80, BW CONC RED
4	1	100X25	A 350 Gr. LF2	CL 3000, SOCKOLET
5	1	100X15	A 350 Gr. LF2	CL 3000, THREDOLET
6	2	100	A 420 Gr. WPL6	SCH STD, BW LR 90 DEG ELBOW
7	1	25	A 333 Gr. 6	SCH 80, NIPPLE x 75mm LG POExTOE
8	6	100	A 350 Gr. LF2	CL 150, SCH STD, RF, WN FLANGE
9	2	80	A 350 Gr. LF2	CL 150, SCH STD, RF, WN FLANGE
10	1	25	BA-32	CL 600, THRD, BALL VALVE
11	1	100		CL 150, BASKET STRAINER
12	1	100		CL 150, SINGLE BRAIDED HOSE ASSEMBLY
13	1	25	A 350 Gr. LF2	MNPT SOLID STL BULL PLUG
14	6	100	ASME B16.20	CL 150, GARLOCK 5500, RING TYPE GASKET 1/8" THK
15	1	80	ASME B16.20	CL 150, GARLOCK 5500, RING TYPE GASKET 1/8" THK
16	48	16	A 193 B7/A 194 2H	CL 150, 8 - 15.875 X 90 STUD BOLTS c/w TWO HEAVY HEX NUTS
17	4	16	A 193 B7/A 194 2H	CL 150, 4 - 15.875 X 90 STUD BOLTS c/w TWO HEAVY HEX NUTS
18	1	100	BA-31	CL 150, RF, BALL VALVE
19	1	100		PIPE SUPPORT BY CONTRACTOR
20	1	100		PIPE SUPPORT AS PER DETAIL 4, DWG 65-403-270-200

PERMIT TO PRACTICE
LE GROUPE ULTRAGEN LTÉE
Signature
Date JUL 14 2017
PERMIT NUMBER: P 1180
NT/NU Association of Professional Engineers and Geoscientists

REGISTERED PROFESSIONAL ENGINEER
D. TRUONG
LICENSEE
NT/NU
2017/07/14

No.	DATE	REVISION	PAR	APP.
0	2017/06/30	ISSUED FOR CONSTRUCTION	QVN	

CLIENT: AGNICO EAGLE

NUQSANA-PROMEC MINING

ultragen

CONSULTANT PROJECT NO. 591700

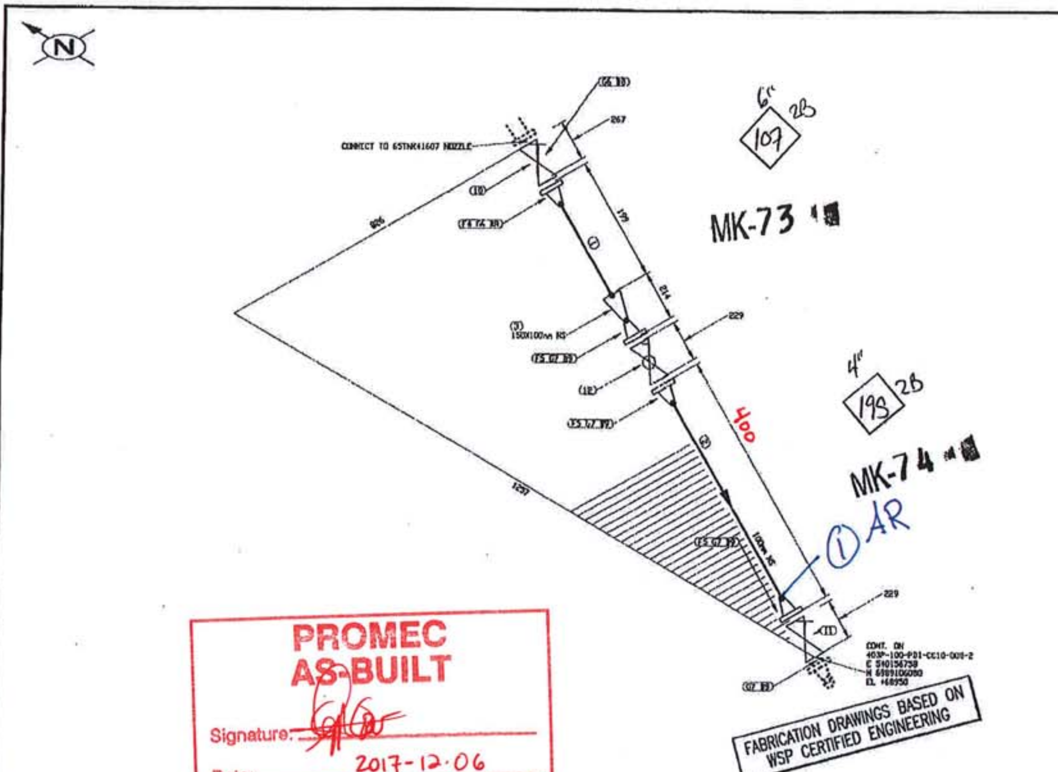
SCEAU PROFESSIONNEL

CONC.: KHV	PROJET: AGNICO EAGLE - MELIADINE DIVISION 403P - COMBUSTIBLE
DATE: 2017/05/29	
DESSINÉ PAR: KVE	
DATE: 2017/05/29	TITRE: PORTAIL #1 FABRICATION ISOMETRIC FUEL FROM TRUCK UNLOADING TO 65PDD41604B
VÉR. PAR:	
DATE:	
APP.:	No PROJET: 6515
DATE:	No DESSIN: 403P-100-PDI-CC10-006
ÉCHELLE: AUCUNE	PAGES: 1/1 — RÉV.: 0

NO. DE CONDUITE		SPECIFICATION	PRODUIT	SYSTÈME REVÊTEMENT	CODE DE COULEUR	ISOLATION ET TRAÇAGE	ÉPAISS. D'ISOLATION		
403P-100-PDI-CC10-006		CC10	PDI					65-403-270-200	PIPE SUPPORT DETAILS
PRESSION D'OPÉRATION	TEMPÉRATURE D'OPÉRATION	PRESSION DE CONCEPTION	TEMPÉRATURE DE CONCEPTION	PRESSION D'ESSAI	CLASSE D'INSPECTION	CODE DE SERVICE	TRAITEMENT THERMIQUE	65-403-205-200	P&ID
PSIG	°F	PSIG	°F	PSIG				No. DESSIN	DESSINS DE RÉFÉRENCE

IMPRIMÉ LE: Jun 30, 2017, 9:21am

403P-MN-01



PROMEC AS-BUILT
Signature:
Date: 2017-12-06

LISTE DE MATERIEL

No	QTE	DIA	MATERIEL/CATALOGUE	DESCRIPTION
1	111 MM	150	A 333 Gr. 6	SCH STD, SMLS PIPE
2	200 MM	100	A 333 Gr. 6	SCH STD, SMLS PIPE
3	1	150X100	A 420 Gr. WPL6	SCH STD, BW CONC RED
4	1	150	A 350 Gr. LF2	CL 150, SCH STD, RF, WN FLANGE
5	3	100	A 350 Gr. LF2	CL 150, SCH STD, RF, WN FLANGE
6	2	150	ASME B16.20	CL 150, GARLOCK 5500, RING TYPE GASKET 1/8" THK
7	4	100	ASME B16.20	CL 150, GARLOCK 5500, RING TYPE GASKET 1/8" THK
8	16	19	A 193 B7/A 194 2H	CL 150, 8 - 19.05 X 100 STUD BOLTS c/w TWO HEAVY HEX NUTS
9	32	16	A 193 B7/A 194 2H	CL 150, 8 - 15.875 X 90 STUD BOLTS c/w TWO HEAVY HEX NUTS
10	1	150	GA-10	CL 150, RF, GATE VALVE
11	1	100	GA-10	CL 150, RF, GATE VALVE
12	1	100	BA-31	CL 150, RF, BALL VALVE

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03 JUIL. 2017
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0 4 JUIL. 2017
par: BS

REV.	DATE	REVISION	PAR	APP.
0	2017/06/30	ISSUED FOR CONSTRUCTION	OVN	

CLIENT: AGNICO EAGLE

NUQSANA PROMEC MINING

ultragen
CONSULTANT PROJECT NO. 591700

SCEAU PROFESSIONNEL

CONCU PAR: XHV
DATE: 2017/06/28
DESSINE PAR: KVE
DATE: 2017/06/28
VER. PAR:
DATE:
APP.:
DATE:
ECHELLE: AUCUNE

PROJET: AGNICO EAGLE - MELIADINE DIVISION
403P - COMBUSTIBLE

TITRE: PORTAIL #1
FABRICATION ISOMETRIC
FUEL FROM 65TNK41607 UNLOADING NOZZLE TO 65PDD41603B

No PROJET	No DESSIN	PAGES	REV.
6515	403P-100-PDI-CC10-008	1/10	0

NO. DE CONDUITE	SPECIFICATION	PRODUIT	SYSTEME REVETEMENT	CODE DE COULEUR	ISOLATION ET TRACAGE	EPAISS. D'ISOLATION
403P-100-PDI-CC10-008	CC10	PDI				

PRESSION D'OPERATION	TEMPERATURE D'OPERATION	PRESSION DE CONCEPTION	TEMPERATURE DE CONCEPTION	PRESSION D'ESSAI	CLASSE D'INSPECTION	CODE DE SERVICE	TRAITEMENT THERMIQUE
PSG	°F	NA PSG	10°@15 °F	NA PSG		B31.3	

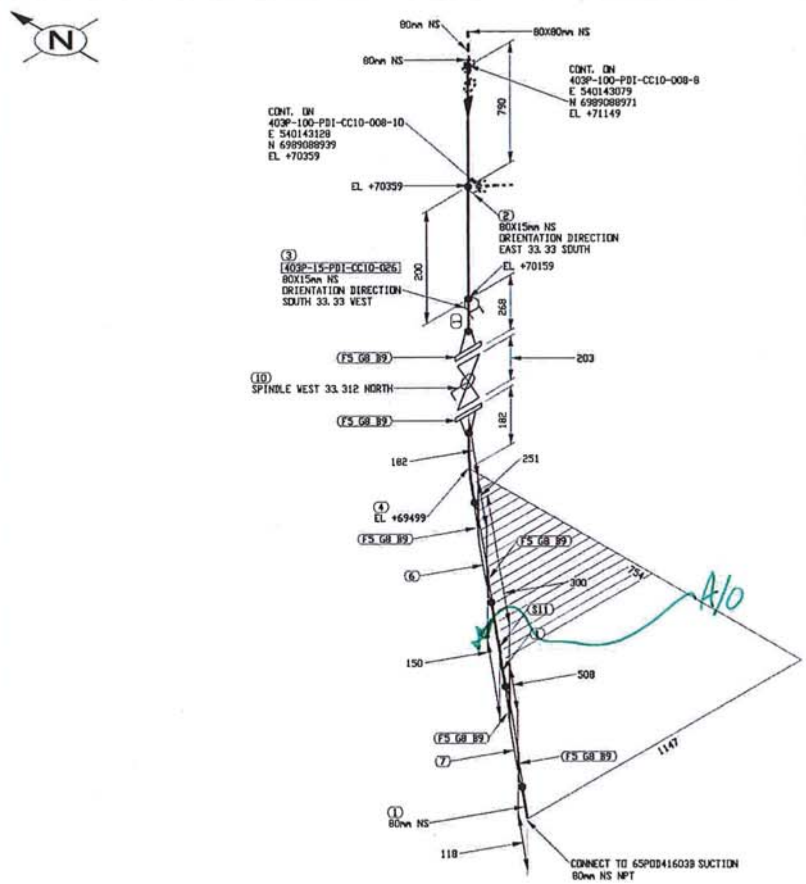
No. DESSIN	DESSINS DE REFERENCE
65-403-270-200	PIPE SUPPORT DETAILS
65-403-205-200	P&ID

Fluide : Diesel End - 5% Rx

U-F.

JQ2216.6
Pt GMAW Action 1C
P1 a P1

403P-MN-01



PROMEC AS-BUILT

Signature: [signature]

Date: 2017-12-06

FABRICATION DRAWINGS BASED ON WSP CERTIFIED ENGINEERING

LISTE DE MATERIEL

No	QTE	DIA	MATERIEL/CATALOGUE	DESCRIPTION
1	1403 MM	80	A 333 Gr. 6	SCH STD, SMLS PIPE PDExTOE
2	1	80X15	A 350 Gr. LF2	CL 3000, SOCKOLET
3	1	80X15	A 350 Gr. LF2	CL 3000, THREDOLET
4	1	80	A 420 Gr. WPL6	SCH STD, BV LR 90 DEG ELBOW
5	6	80	A 350 Gr. LF2	CL 150, SCH STD, RF, WN FLANGE
6	1	80		CL 150, BASKET STRAINER
7	1	80		CL 150, SINGLE BRAIDED HOSE ASSEMBLY
8	6	80	ASME B16.20	CL 150, GARLOCK 5500, RING TYPE GASKET 1/8" THK
9	24	16	A 193 B7/A 194 2H	CL 150, 4 - 15.875 X 90 STUD BOLTS c/w TWO HEAVY HEX NUTS
10	1	80	BA-31	CL 150, RF, BALL VALVE
11	1	80		PIPE SUPPORT AS PER DETAIL 4, DWG 65-403-270-200

PERMIT TO PRACTICE
LE GROUPE ULTRAGEN LTÉE

Signature [signature]

Date JUL 14 2017

PERMIT NUMBER: P 1180

NT/NU Association of Professional Engineers and Geoscientists

REGISTERED PROFESSIONAL ENGINEER
D. TRUONG
LICENSEE
NT/NU
2017/07/14

No.	DATE	REVISION	PAR	APP.
0	2017/06/30	ISSUED FOR CONSTRUCTION	QVN	

CLIENT: AGNICO EAGLE

NUQSANA-PROMEC MINING

ultragen

CONSULTANT PROJECT NO. 591700

NO. DE CONDUITE		SPECIFICATION	PRODUIT	SYSTEME REVETEMENT	CODE DE COULEUR	ISOLATION ET TRACAGE	EPAISS. D'ISOLATION		
403P-100-PDI-CC10-008		CC10	PDI					65-403-270-200	PIPE SUPPORT DETAILS
PRESSION D'OPERATION	TEMPERATURE D'OPERATION	PRESSION DE CONCEPTION	TEMPERATURE DE CONCEPTION	PRESSION D'ESSAI	CLASSE D'INSPECTION	CODE DE SERVICE	TRAITEMENT THERMIQUE	65-403-205-200	P&ID
PSIG	°F	PSIG	°F	PSIG				No. DESSIN	DESSINS DE REFERENCE

SCEAU PROFESSIONNEL

CONC.: KHV
DATE: 2017/05/29
DESSINÉ PAR: KVE
DATE: 2017/05/29
VÉR. PAR:
DATE:
APP.:
DATE:
ÉCHELLE: AUCUNE

PROJET: AGNICO EAGLE - MELIADINE DIVISION
403P - COMBUSTIBLE

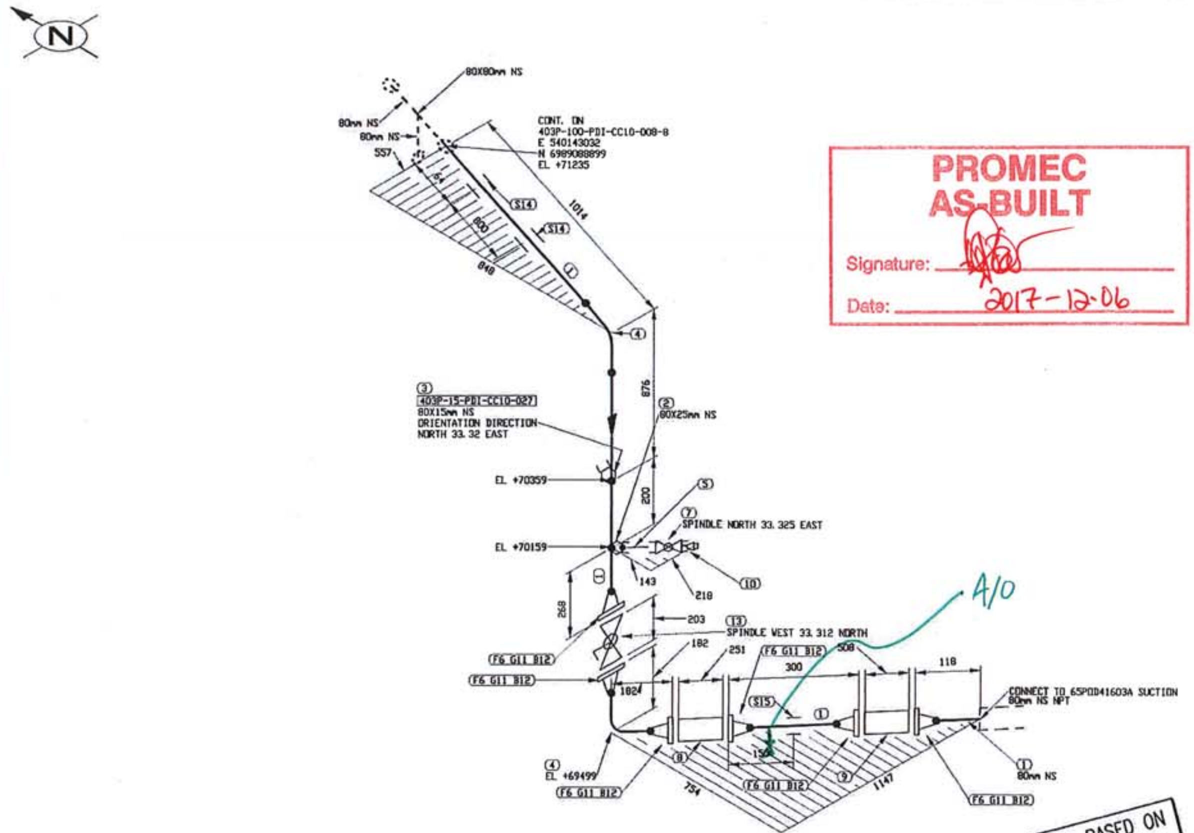
TITRE: PORTAIL #1
FABRICATION ISOMETRIC
FUEL FROM 65TNK41607 UNLOADING NOZZLE TO 65PDD41603B

No PROJET	No DESSIN	PAGES	RÉV.
6515	403P-100-PDI-CC10-008	9/10	0

403P-MN-01

FICHIER: K:\Ag\Meliadine\591700 (Fuel Distribution)\00. Dessins\02. Tuyauterie\02. Isométriques\02. Portail 1\403P-100-PDI-CC10-008-9.DWG

IMPRIMÉ LE: Jun 30, 2017, 10:02am



PROMEC AS-BUILT

Signature: [signature]

Date: 2017-12-06

FABRICATION DRAWINGS BASED ON WSP CERTIFIED ENGINEERING

LISTE DE MATERIEL

No	QTE	DIA	MATERIEL/CATALOGUE	DESCRIPTION
1	2275 MM	80	A 333 Gr. 6	SCH STD, SMLS PIPE POExTOE
2	1	80X25	A 350 Gr. LF2	CL 3000, SOCKOLET
3	1	80X15	A 350 Gr. LF2	CL 3000, THREDOLET
4	2	80	A 420 Gr. WPL6	SCH STD, BW LR 90 DEG ELBOW
5	1	25	A 333 Gr. 6	SCH 80, NIPPLE x 75mm LG POExTOE
6	6	80	A 350 Gr. LF2	CL 150, SCH STD, RF, WN FLANGE
7	1	25	BA-32	CL 600, THRD, BALL VALVE
8	1	80		CL 150, BASKET STRAINER
9	1	80		CL 150, SINGLE BRAIDED HOSE ASSEMBLY
10	1	25	A 350 Gr. LF2	MNPT SOLID STL BULL PLUG
11	6	80	ASME B16.20	CL 150, GARLOCK 5500, RING TYPE GASKET 1/8" THK
12	24	16	A 193 B7/A 194 2H	CL 150, 4 - 15.875 X 90 STUD BOLTS c/w TWO HEAVY HEX NUTS
13	1	80	BA-31	CL 150, RF, BALL VALVE
14	2	80		PIPE SUPPORT BY CONTRACTOR
15	1	80		PIPE SUPPORT AS PER DETAIL 4, DWG 65-403-270-200

PERMIT TO PRACTICE
LE GROUPE ULTRAGEN LTÉE

Signature [signature]

Date JUL 14 2017

PERMIT NUMBER: P 1180

NT/NU Association of Professional Engineers and Geoscientists

REGISTERED PROFESSIONAL ENGINEER
D. TRUONG
LICENSEE
NT/NU
2017/07/14

No.	DATE	REVISION	PAR	APP.
0	2017/06/30	ISSUED FOR CONSTRUCTION	QVN	

CLIENT:

AGNICO EAGLE

NUQSANA-PROMEC MINING

ultragen

CONSULTANT PROJECT NO. 591700

SCEAU PROFESSIONNEL

CONC.: KHV	PROJET: AGNICO EAGLE - MELIADINE DIVISION 403P - COMBUSTIBLE
DATE: 2017/06/29	
DESSINÉ PAR: KVE	
DATE: 2017/06/29	TITRE: PORTAIL #1 FABRICATION ISOMETRIC DIESEL FROM 403P-100-PDI-CC10-008 TO 65PDD41603A
VÉR. PAR:	
DATE:	
APP.:	
DATE:	
ÉCHELLE: AUCUNE	

No PROJET	No DESSIN	PAGES	RÉV.
6515	403P-80-PDI-CC10-010	1/1	0

NO. DE CONDUITE		SPECIFICATION	PRODUIT	SYSTEME REVETEMENT	CODE DE COULEUR	ISOLATION ET TRACAGE	EPAISS. D'ISOLATION		
403P-80-PDI-CC10-010		CC10	PDI					65-403-270-200	PIPE SUPPORT DETAILS
PRESSION D'OPERATION	TEMPERATURE D'OPERATION	PRESSION DE CONCEPTION	TEMPERATURE DE CONCEPTION	PRESSION D'ESSAI	CLASSE D'INSPECTION	CODE DE SERVICE	TRAITEMENT THERMIQUE	65-403-205-200	P&ID
PSIG	°F	PSIG	°F	PSIG				No. DESSIN	DESSINS DE REFERENCE

FICHIER: W:\Agn\Meliadine\591700 (Fuel Distribution)\03. Dessins\02. Tuyauterie\02. Isométriques\02. Portail 1\403P-80-PDI-CC10-010-1.DWG

IMPRIMÉ LE: Jun 30, 2017, 10:32am

403P-MN-01