



FABRICATION DRAWINGS BASED ON
WSP CERTIFIED ENGINEERING

2018/05/30



PT. NUSANA PROMEC MINING

CONSULTANT	591700
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ADINE DIVISION
TANK FARM

L
 METRIC
 C-100-PNT-CC10-0204


IN	PAGES	P
6010-2209	1/1	

010 0007	101
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LISTE DE MATERIEL

No	QTY	DNA	MATERIAL/CATALOGUE
1	926	MM	A 373 Gr. 6
2	1	1200100	A 420 Gr. WP.6
3	1	100	A 430 Gr. WP.6
4	1	150	A 350 Gr. LF2
5	2	150	ADNC B16.20
6	16	19	A 193 B7A 194 2H
7	1	150	GA-10
8	1	100	

PERMIT TO PRACTICE
LE GROUPE ULTRAGEN LTÉE


Signature

MAY 30 2018
Date

PERMIT NUMBER: P 1180
NTNU Association of Professional
Engineers and Geoscientists

1	2018/05/18	LINE NUMBERS & PROJECT TITLE REVISED	QVN
0	2017/07/07	ISSUED FOR CONSTRUCTION	QVN
	DATE	REVISION	PAR
No.			APP

[illegible]

AGNICO EAGLE



NUSSANA PROJECT MINING

ultragreen

CONSULTANT PROJECT NO. 591700

PROJECT	AGNICO EAGLE - MELTADINE DIVISION 416 - FUEL TANK FARM					
TITLE	INDUSTRIAL FABRICATION ISOMETRIC DIESEL FROM 65TNK416BZ TO 416-100-PDI-CG10-0204					
VOL. PARS			NO. PROJECT		NO. DESIGN	
DATE	APR/71		6515		416-100-PDI-CG10-0209	
DRAWN DATE	207/02/78				PAGES	
CHECKED DATE	PARS A/S				1 / 1	
DATE	207/02/78				REV.	
					1	
					EDELLE: RUCONE	

NO. DE CONDUITE		SPECIFICATION	PRODUIT	SYSTEME REVETEMENT	CODE DE COULEUR	SOLUTION ET TRAQUE	EPAISS. ISOLATION	PIPE SUPPORT DETAILS
PRESSION D'OPERATION	TEMPERATURE D'OPERATION							
416-100-PDI-CC10-0209		CC10	PDI					65-416-270-210
PRESSION D'OPERATION	TEMPERATURE D'OPERATION	PRESSION DE CONCEPTION	TEMPERATURE DE CONCEPTION	PRESSION D'ESSAI	CLASSE D'INSPECTION	CODE DE SERVICE	TRAITEMENT THERMIQUE	65-416-205-201
POSC	Y	POSC	Y	POSC				DESIGN DE REFERENCE

2014/05/30

Deposited: LE: May 14, 2012, 11:30am

FORM PRESSURE TEST REPORT

No.doc. : F172-08

Version : 02

Revision : a

Design Code	Design Test Pressure	Test Medium	Medium Temp.	Test Duration
	100psi	Air	-5C	60 min

P&ID (Highlight Boundaries)	Rev	Line	Drawing/ISO	Rev	Spool
See Attached		416-080-P01-CC10			
		- 0219			
		416-080-P01-CC10			
		223			

Pressure Test Specifications

	Contractor	Date (dd-mm-yy)	Client	Date (dd-mm-yy)
Pre-Hydro Inspection				
NDE/PWHT Clearance				
Release for Test	Promec	10/10/2018	Agnico eagle Meliadine	10/10/2018

Test Instruments


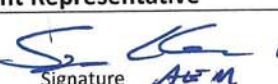
	Make/Model	Serial Number	Test Range (psi)	Calibration Date
Upper			0-300psi	06/09/2018
Lower				

Test Data


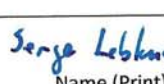
	Time	Test Pressure	Ambient Temp. (C)	Pipe Temp. (C)	Comments
Start					
Finish					

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

PRESSURE TEST COMPLETE

Contractor Representative	Client Representative
Robbie Lamothe  10/10/2018	Serge Leblanc  11-10-2018

LINE RESTORATION COMPLETE

Contractor Representative	Client Representative
Robbie Lamothe  10/10/2018	Serge Leblanc  11-10-2018

Prepared by : Stéphane Doré

Approved by : Éric Poulin

Date : 18-04-2018

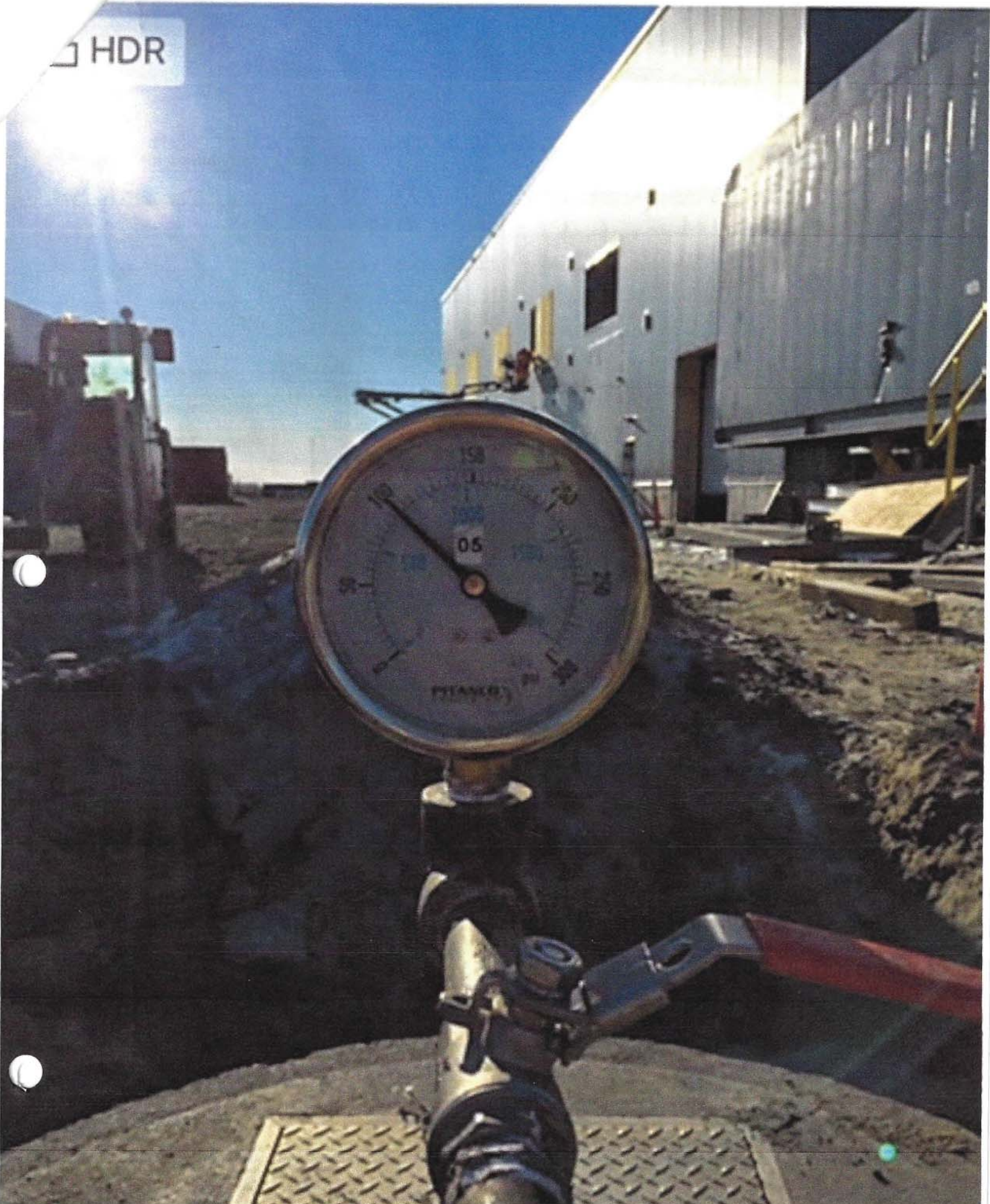
HDR



PILANTO

10:40 AM

HDR



**TO BE VALIDATED
AT A LATER DATE**

**TO BE VALIDATED
AT A LATER DATE**



3005

Pitfield boulevard

Saint-Laurent, Québec, Canada

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Tel.: 514.332.5110

Fax: 514.332.6260

info@vikingfire.ca

AUTOMATIC DRY CHEMICAL FIRE SUPPRESSION 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
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CONTRACT N° VMC04097

July 2017



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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 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.



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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

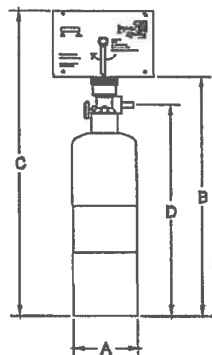
local tankside applications. It is rated to protect only Class "B" and "C" hazards.

► **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.

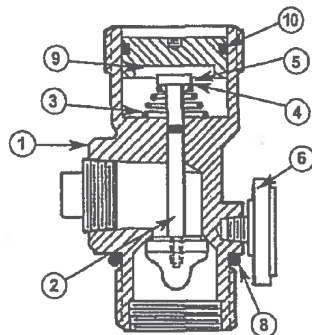


MODEL NO.	A	B	C	D	WEIGHT	MOUNTING BRACKET USED
PCI-15ABC	6.00	21.44	27.19	18.69	30 lbs.	MB-15
PCI-17ABC	8.00	24.81	30.56	22.06	50 lbs.	MB-15
PCI-25sABC/BC	8.00	24.81	30.56	22.06	58 lbs.	MB-15
PCI-35ABC	10.00	29.94	35.69	27.18	71 lbs.	MB-1
PCI-50sABC/BC	10.00	29.94	35.69	27.18	86 lbs.	MB-1
PCI-70ABC	12.00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

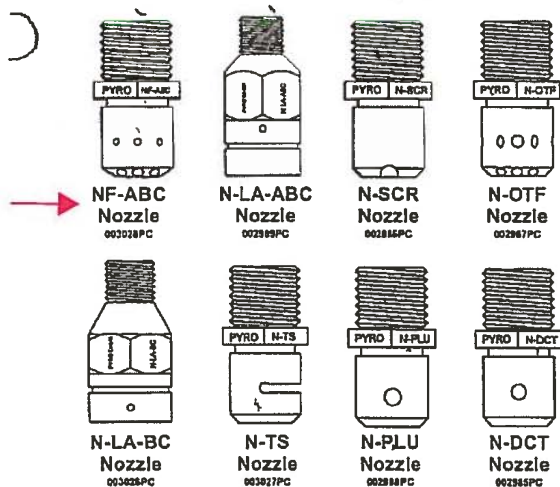


Figure 2-3. Nozzles.

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.

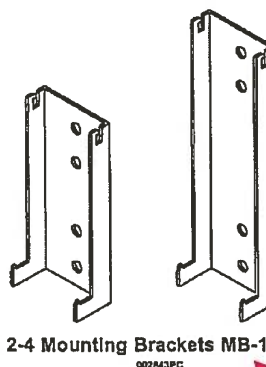


Figure 2-4 Mounting Brackets MB-15 and MB-1.

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

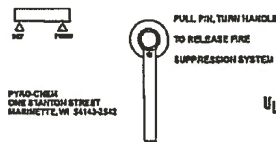


Figure 2-5. Mechanical Control Head.

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.

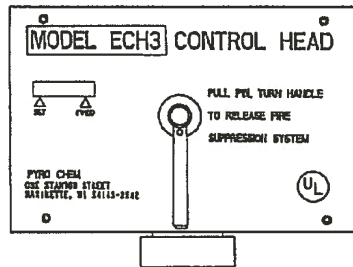


Figure 2-6. Electric Control Head.
004789PC

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.

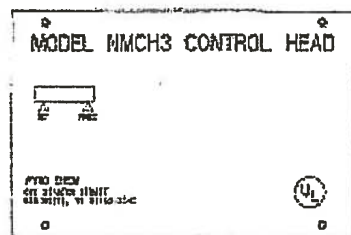


Figure 2-6a. Mechanical Control Head.
006843PC

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.

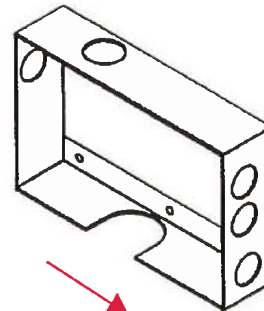


Figure 2-7. Model MB-P2 – Control Head Mounting Bracket.
002848PC

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.

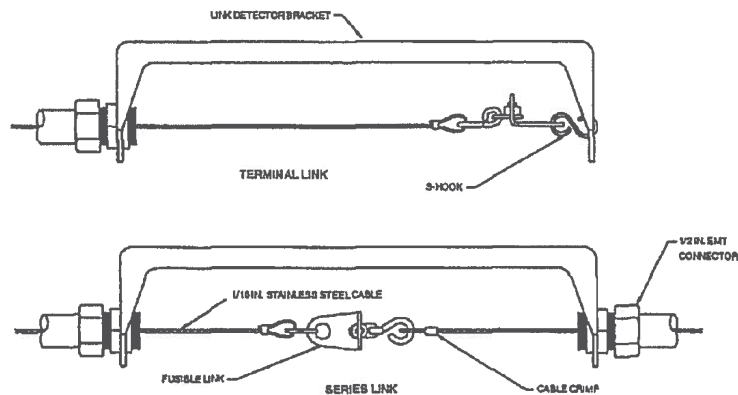


Figure 2-10. Model FLK-1 Fusible Link
007849PC

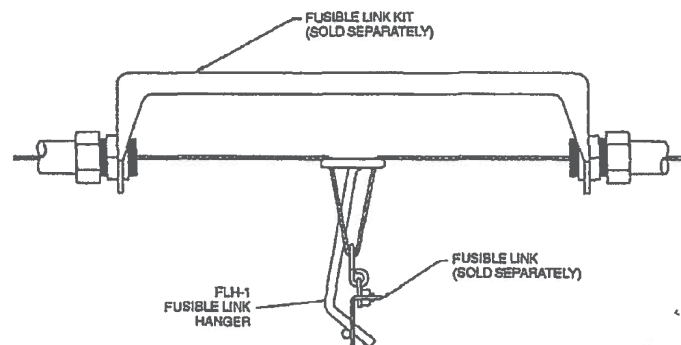


Figure 2-11. Model FLH-1 Fusible Link Hanger
002860PC

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.

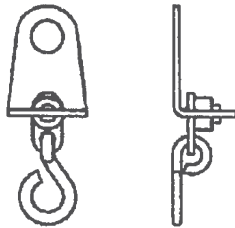


Figure 2-12. ML Style Fusible Link.
002851PC

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.

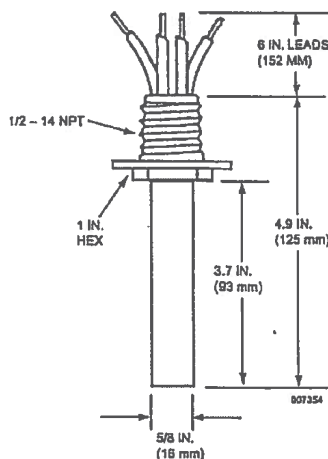


Figure 2-12a. Thermal Detector.

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.

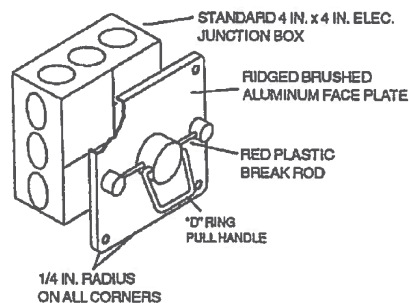
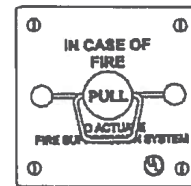


Figure 2-13. Model RPS-M Mechanical Pull Station.
002852PC

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.

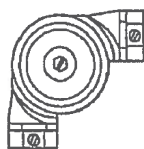


Figure 2-15. Model SBP-1 Corner Pulley.
000180

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.

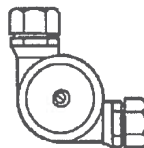


Figure 2-16. Model CBP-1 Corner Pulley.
000181

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.

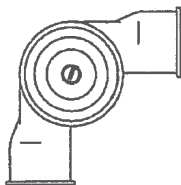


Figure 2-17. Model WBP-1 Corner Pulley.
000184PC

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.

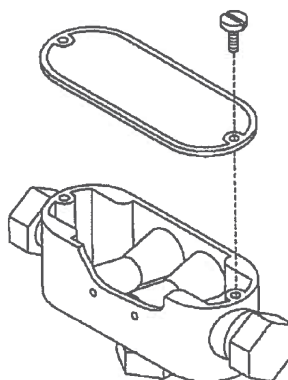


Figure 2-18. Model TP-1 Tee Pulley.
002887PC

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.

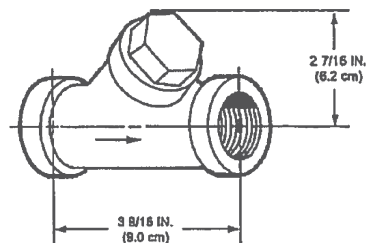


Figure 2-19. Swing Check Valve.
000430

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
250 VAC, 21A Resistive
250 VAC, 2 HP
125 VAC, 1 HP

ENEC Rating
IE4T105 μ Approved
250V, 21A Resistive
8A Motor Load

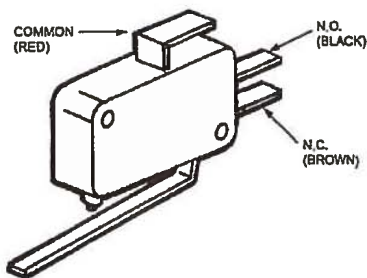


Figure 2-20a. Model MS-SPDT Micro Switch.
001612

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.

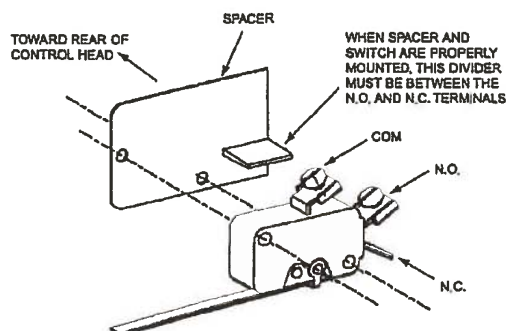


Figure 2-20b. Alarm Initiating Switch.
001610

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.

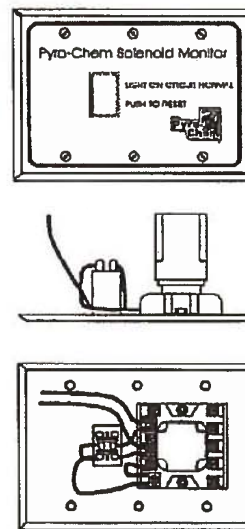


Figure 2-21. Model SM-24/120 Solenoid Monitor.
002860PC

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	550838
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	551058
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	550186
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



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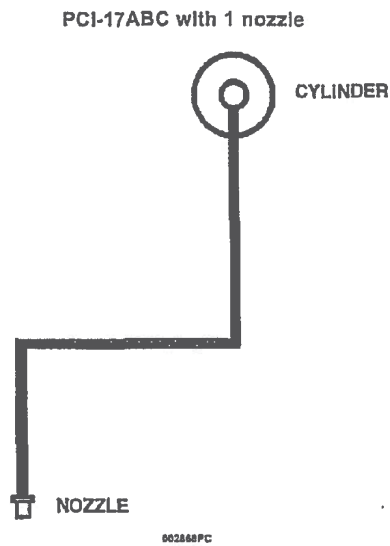
CHAPTER 3

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			

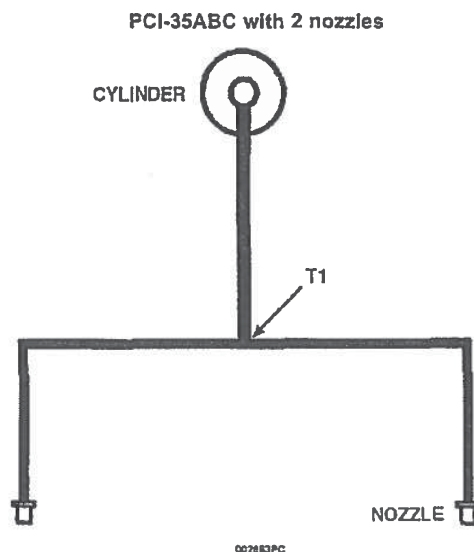


Total Flooding Piping Limits PCI-17ABC

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.

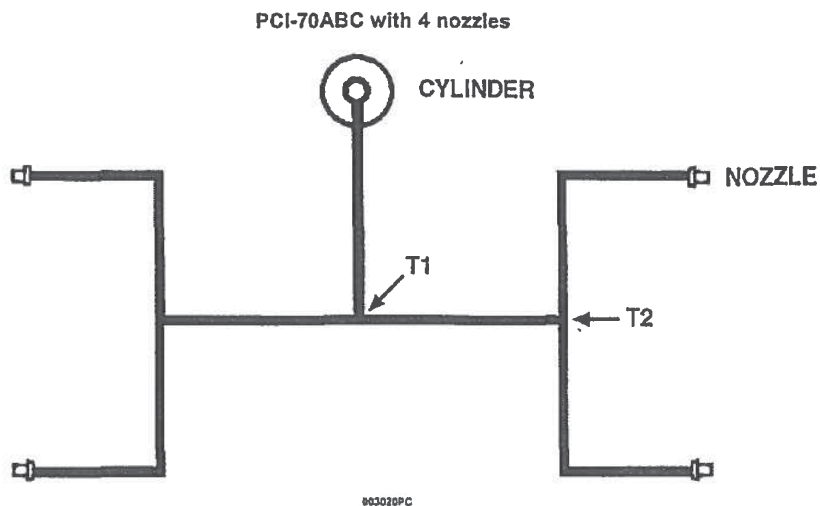


Total Flooding Piping Limits PCI-35ABC

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.



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.

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) – 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. (6.1 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 m²) 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.

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 m²) 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).



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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.

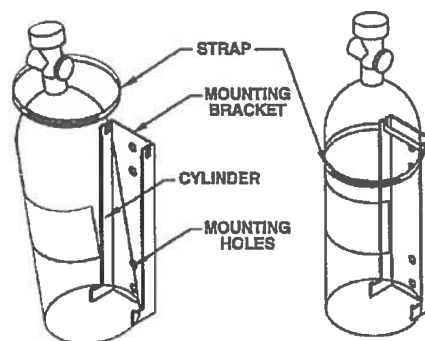


Figure 4-1. Cylinder and Mounting Bracket Installation.

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.

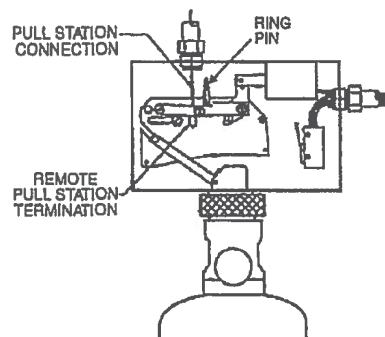
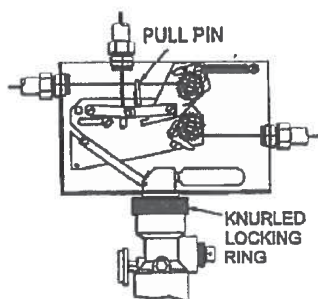


Figure 4-2. Single Cylinder Installation Using Model MCH3/ECH3/NMCH3 Control Head

002872PC/000647PC

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.

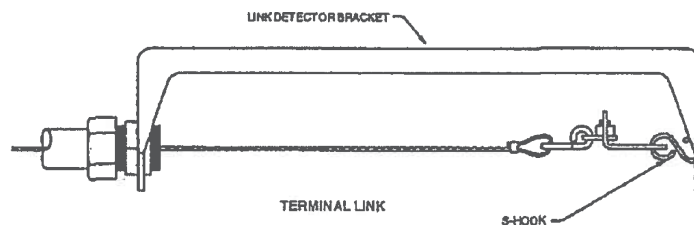


Figure 4-6. Terminal Link Installation.

002849b PC

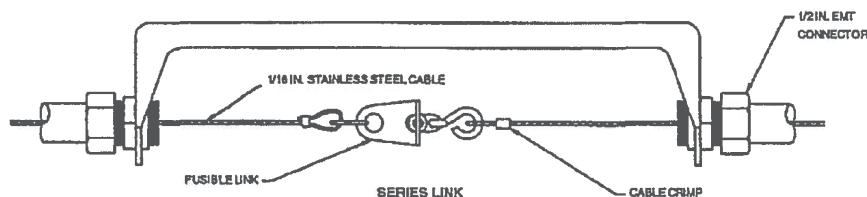


Figure 4-7. Series Link Installation.

002849b PC

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.

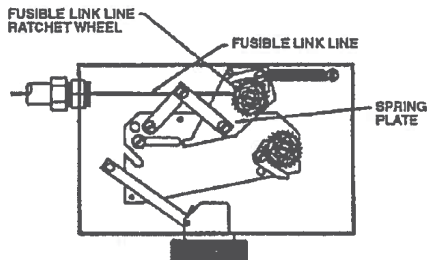


Figure 4-8. Fusible Link Line Termination.
002878PC

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.

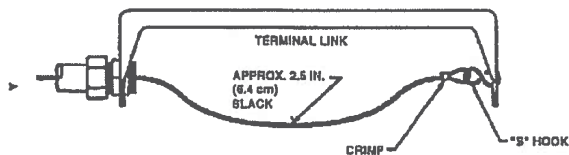


Figure 4-9. Terminal Bracket Connection.
002877PC

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

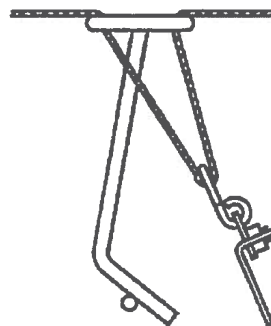


Figure 4-10. Fusible Link Connection.
002878PC

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

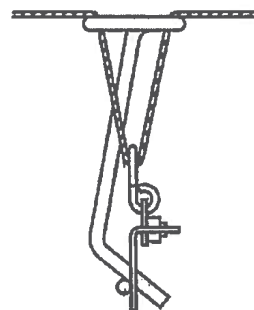


Figure 4-11. Fusible Link/Hanger Connection.
002878PC

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.

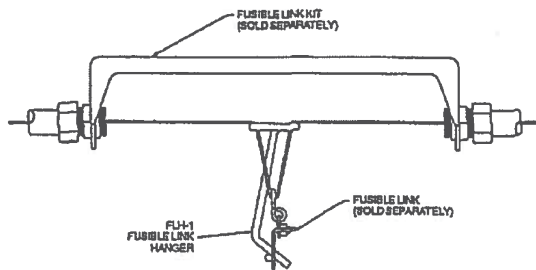


Figure 4-12. Fusible Link/Hanger in Set Position
002856PC

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.

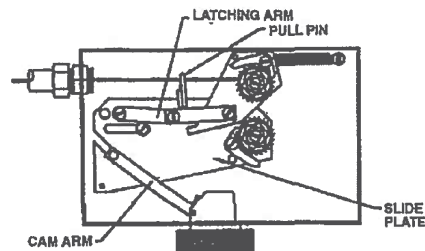


Figure 4-13. Control Head in Set Position.
002856PC

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).

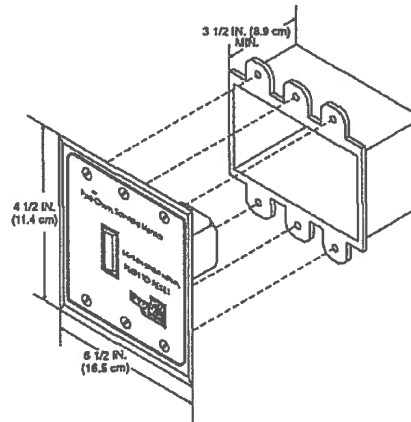


Figure 4-14. Solenoid Monitor Installation.

002681PC

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.

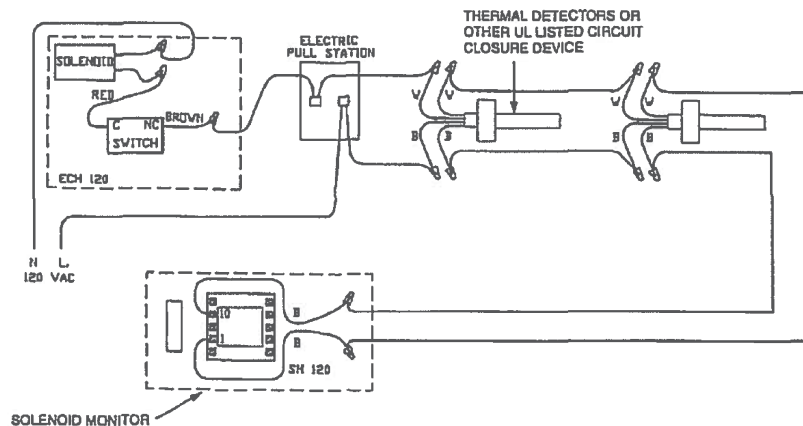


Figure 4-14.1. Wiring Diagram, Solenoid.

002682PC

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).

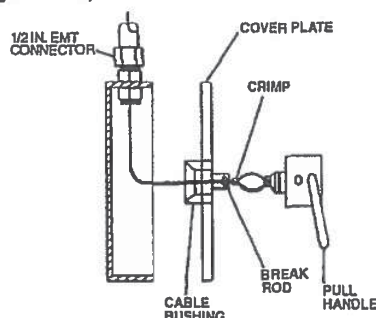


Figure 4-16. Model RPS-M Remote Pull Station Installation.

00284PC

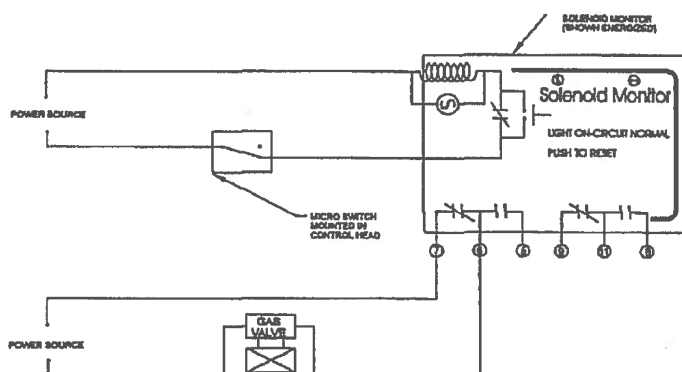


Figure 4-15. Solenoid Monitor Wiring With Electrical Gas Shut-off Valve.

002843PC

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.

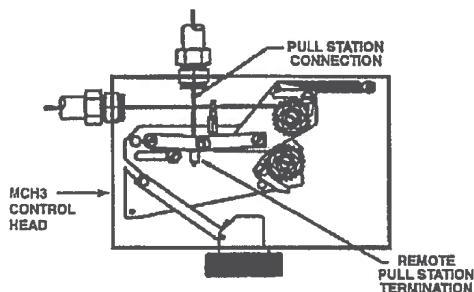


Figure 4-17. Model RPS-M Remote Pull Station Termination.

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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

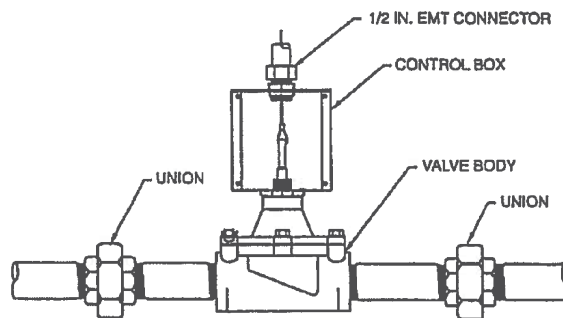
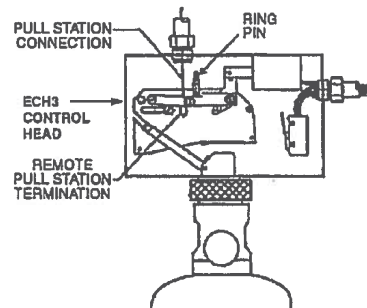


Figure 4-18. Gas Valve Installation.

002816PC

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.

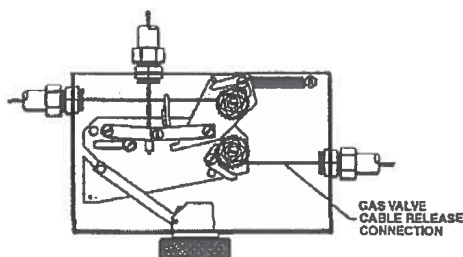


Figure 4-19. Gas Valve Line Termination.

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.

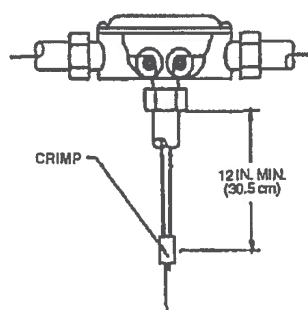


Figure 4-20. Tee Pulley Installation.

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.

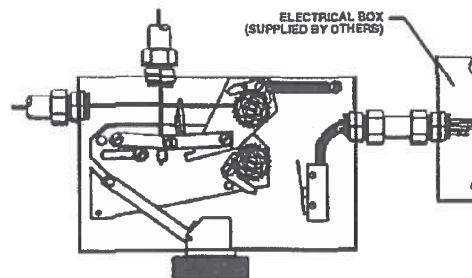


Figure 4-21. Micro Switch Installation in Model MCH3/NMCH3 Control Head.

002889PC

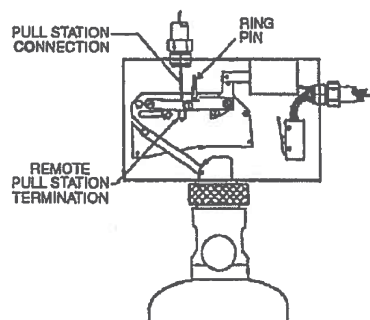


Figure 4-22. Micro Switch Installation In Model ECH3 Control Head.
0036-47PC

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

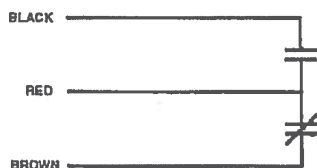
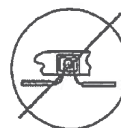
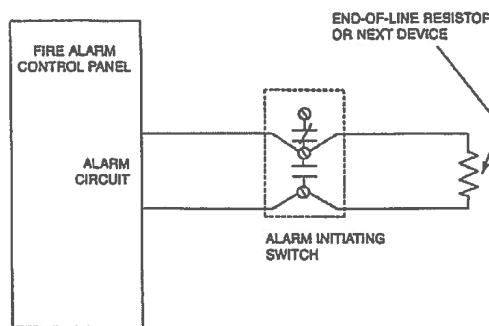


Figure 4-23. Wiring Diagram For Model MS-SPDT Micro Switch.
0028-03PC

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.



CORRECT – SEPARATE INCOMING AND OUTGOING CONDUCTORS

Figure 4-24. Wiring Diagram for Alarm Initiating Switch.
004801/004803

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.

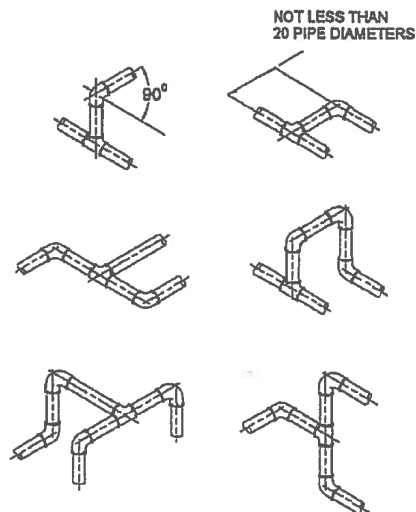


Figure 4-25. Acceptable Piping Methods.

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.

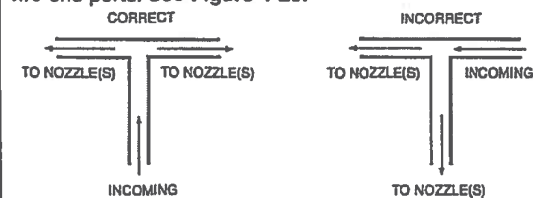


Figure 4-26. Tee Positioning

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).

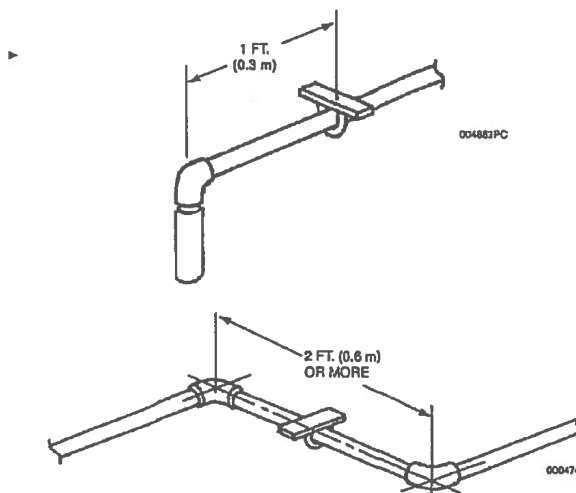


Figure 4-27. Hanger/Support.

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.

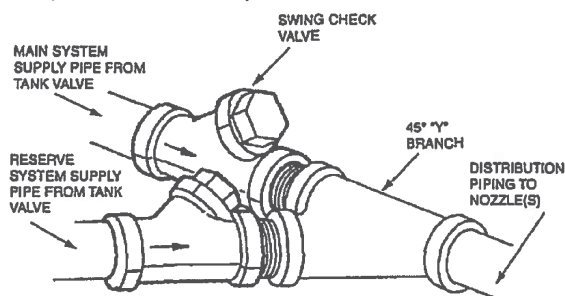


Figure 4-28. Main/Reserve System.

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.

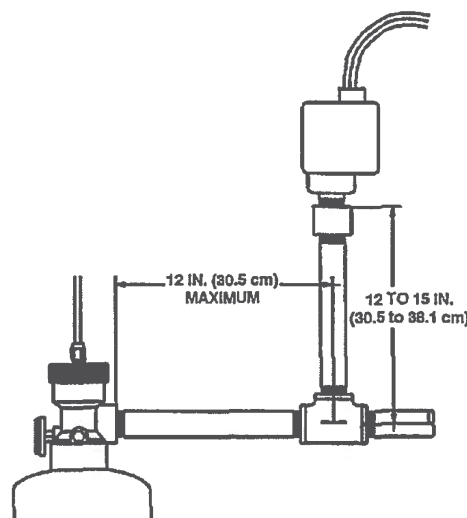


Figure 4-29. Pressure Switch Installation.

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.



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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 psf 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.
☐ Review 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**



Vendor Document Status

AGNICO EAGLE

- 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



**Agnico-Eagle Mines Ltd.
Notice of Final Completion**

ITR Number : AEM-GE-ITR-004
Contract no. : C22466T / C22498E



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.

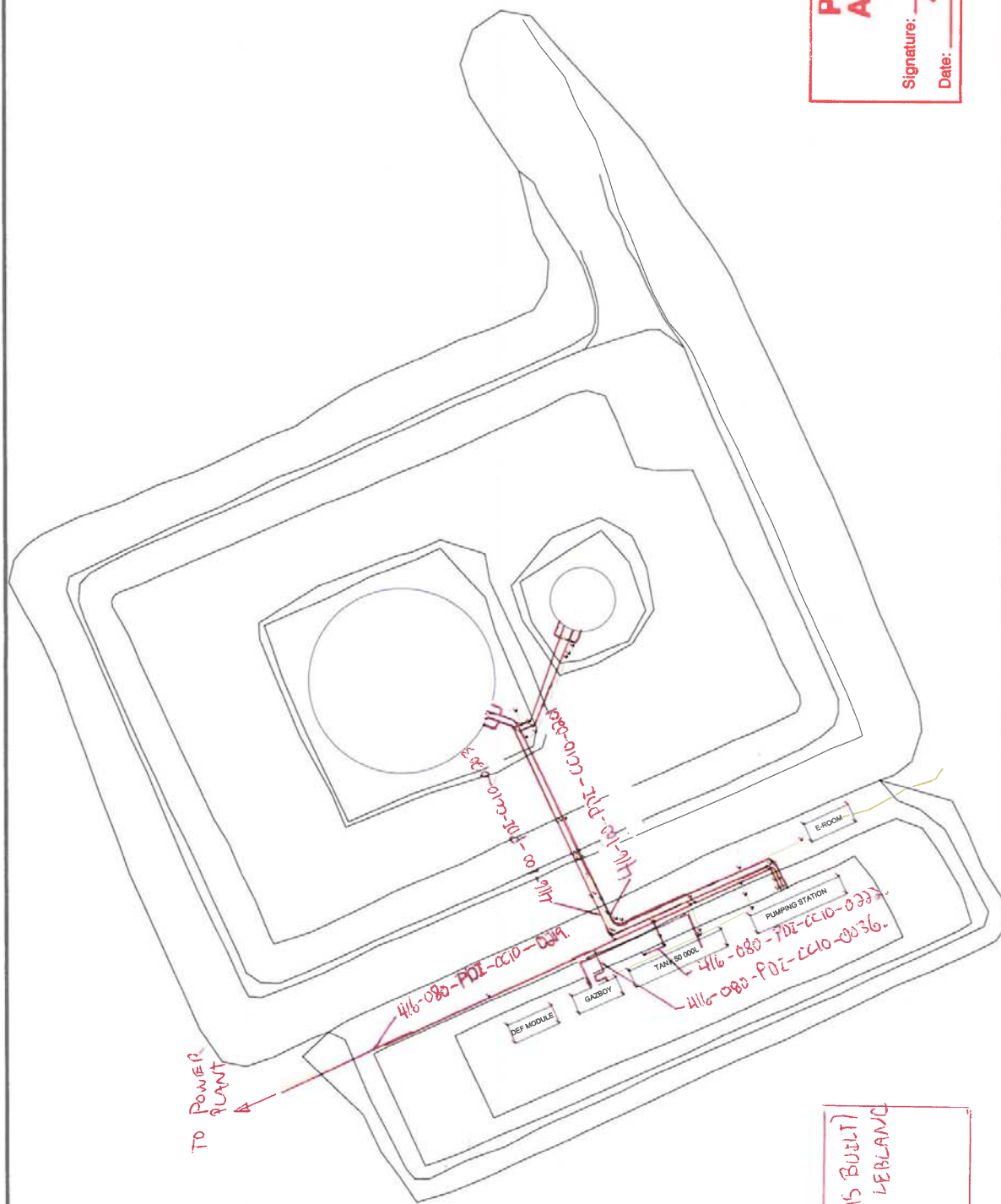
I do declare that I am, _____ (Responsible's Name),
HAVING AUTHORITY FROM MY COMPANY TO PETITION FOR THE ABOVE REFERRED TO
FINAL COMPLETION NOTICE.

Signature: _____

Name: _____

Title: _____

SECTION
AS-BUILTS DRAWINGS



**PROMEC
AS-BUILT**

Signature: 
Date: 2019/01/17

MARKUPS IN RED (AS BUILT)
BY JEAN-SEBASTIEN LERLAND
AUGUSTANA PROMEC
2018/11/13

	Système de Coord.: NAD83 UTM15 Echelle: m. & S.	No plan: AB-TANKFARM Linework 181021	403-ISFF-As-Built Building Layout	Agrico Eagle	Date des travaux : 2018 Date d'envoi : 2018-11-12	Dessiné par: J.F. Landreville Approuvé par: Hamel App.
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[illegible]

SECTION

WELD MAP



21

FABRICATION DRAWINGS BASED ON
WSP CERTIFIED ENGINEERING



**FABRICATION DRAWINGS BASED ON
NSP CERTIFIED ENGINEERING**

NO DE CONDUITE		SPÉCIFICATION		PROJET	SYSTÈME RECEVTEUR	CODE DE COULEUR	ÉQUATION ET MODÈLE	ÉPAISS. D'ISOLATION	65-403-270-200	PIPE SUPPORT DETAILS
4031-100-PDI-CC10-107	PRESSION D'ÉQUATION	CC10	PRESSION DE CONCEPTION	PDI	PRESSION ÉTISON	CLASSE D'IMPÉDANCE	CODE DE SERVICE	Traitement thermique	65-403-205-201	P&O
T		P&G		T	P&G				No. EXOSIN	DESSIN DE REFERENCE

DATE: 2017/07/07

DATE: 2017/07/07

DATE: 2017/07/07

DATE: 2017/07/07

DATE: 2017/07/07

DATE: 2017/07/07

DATE: 2017/07/07

DATE: 2017/07/07

DATE: 2017/07/07

DATE: 2017/07/07

LISTE DE MATERIEL				DESCRIPTION	
No	QTE	DA	MATIERE/CATALOGUE		
1	162 MM	100	A 333 G- 6	SCH STD, SMLS PIPE	
2	80	100	A 333 G- 6	SCH STD, SMLS PIPE	
3	1	100	A 333 G- 6	SCH STD, SMLS PIPE	
4	1	100	A 333 G- 6	SCH STD, SMLS PIPE	
5	1	100	A 333 G- 6	SCH STD, SMLS PIPE	
6	1	100	A 333 G- 6	SCH STD, SMLS PIPE	
7	1	100	A 333 G- 6	SCH STD, SMLS PIPE	
8	1	100	A 333 G- 6	SCH STD, SMLS PIPE	
9	1	100	A 333 G- 6	SCH STD, SMLS PIPE	
10	1	100	A 333 G- 6	SCH STD, SMLS PIPE	
11	1	100	A 333 G- 6	SCH STD, SMLS PIPE	
12	1	100	A 333 G- 6	SCH STD, SMLS PIPE	
13	1	100	A 333 G- 6	SCH STD, SMLS PIPE	
14	1	100	A 333 G- 6	SCH STD, SMLS PIPE	
15	1	100	A 333 G- 6	SCH STD, SMLS PIPE	
16	1	100	A 333 G- 6	SCH STD, SMLS PIPE	
17	1	100	A 333 G- 6	SCH STD, SMLS PIPE	
18	1	100	A 333 G- 6	SCH STD, SMLS PIPE	

0 2017/07/07 ISSUED FOR CONSTRUCTION

0 2017/07/07

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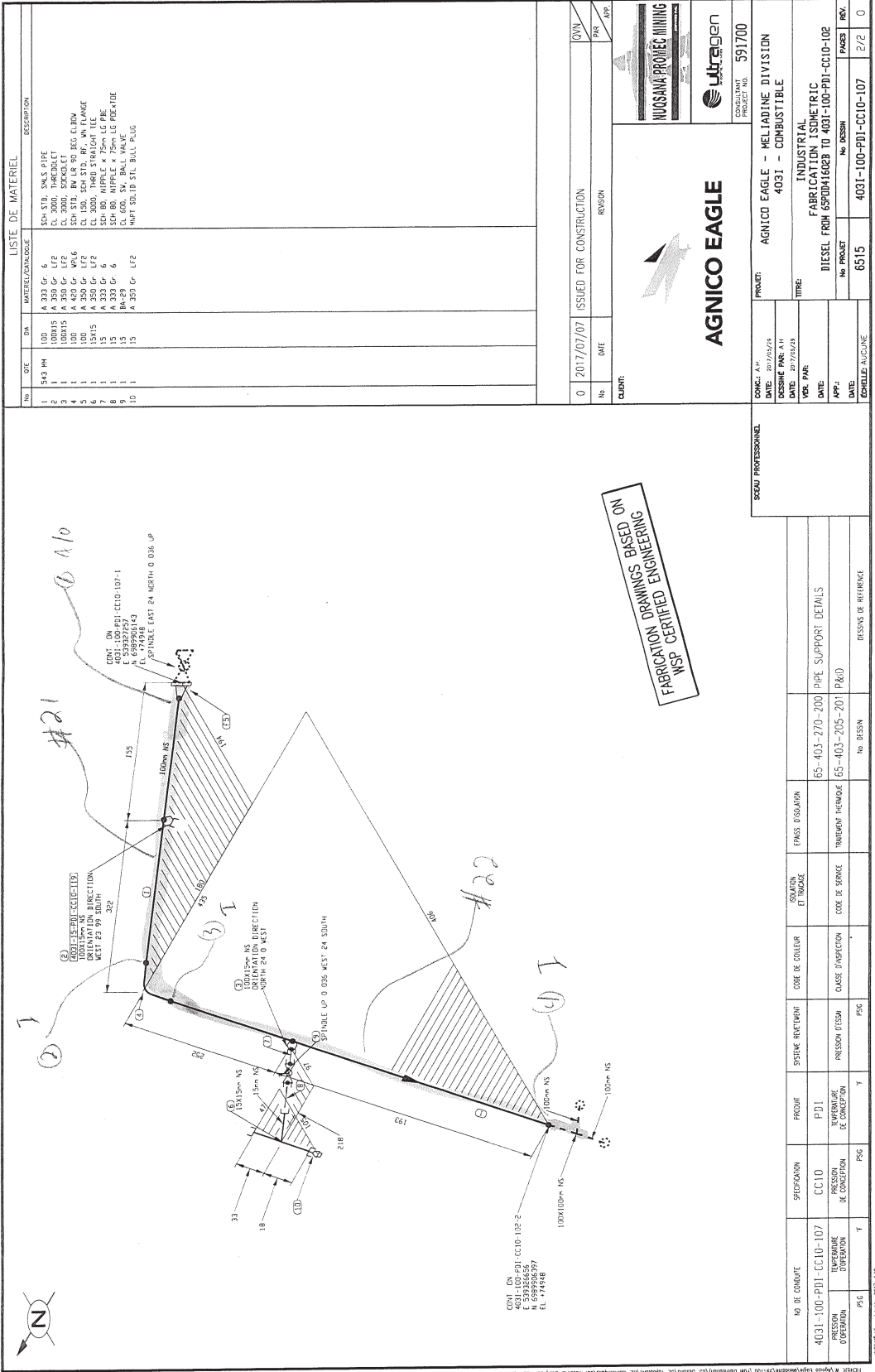
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LISTE DE MATERIEL			
No	QTE	DA	DESCRIPTION
1	543	MM	SCH STD, SMLS PIPE
2	1	100015	CL 3000, THREDOLET
3	1	100015	CL 3000, THREDOLET
4	1	100015	CL 3000, THREDOLET
5	1	100015	CL 3000, THREDOLET
6	1	100015	CL 3000, THREDOLET
7	1	100015	CL 3000, THREDOLET
8	1	100015	CL 3000, THREDOLET
9	1	100015	CL 3000, THREDOLET
10	1	100015	CL 3000, THREDOLET
11	1	100015	CL 3000, THREDOLET
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96	1	100015	CL 3000, THREDOLET
97	1	100015	CL 3000, THREDOLET
98	1	100015	CL 3000, THREDOLET
99	1	100015	CL 3000, THREDOLET
100	1	100015	CL 3000, THREDOLET

R-N

4031-MN-01



2-2



LISTE DE MATERIEL				
No	QTE	DN	MATERIEL/CHARGE	DESCRIPTION
1	2524	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
2	50	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
3	50	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
4	1	80X15	A 250 Gr. LFD	CL 2000. HATCHLET
5	2	80	A 400 Gr. WPL6	150H STD. 1/4" 90 DEG ELBOW
6	50	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
7	6	80	A 332 Gr. LFD	CL 150. 150H STD. 1/4" 90 FLANGE
8	1	25	BA-32	CL 600. 150H. BALL VALVE
9	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
10	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
11	11	1	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
12	6	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
13	24	16	A 153 B1VA 154 2H	CL 150. 4 - 15 875 X 10 STD BOLT 1/2 C/A 140
14	1	80	BA-21	CL 150. 90 DEG BALL VALVE
15	2	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
16	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
17	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
18	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
19	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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47	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
48	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
49	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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72	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
73	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
74	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
75	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
76	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
77	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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81	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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91	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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103	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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110	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
111	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
112	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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114	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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116	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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130	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
131	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
132	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
133	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
134	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
135	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
136	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
137	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
138	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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141	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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143	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
144	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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150	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
151	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
152	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
153	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
154	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
155	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
156	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
157	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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159	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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164	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
165	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
166	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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174	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
175	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
176	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
177	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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179	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
180	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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183	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
184	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
185	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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213	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
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215	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
216	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
217	1	80	A 332 Gr. 6	150H STD. 3M 1/2 PIPE
218	1	80	A 332	

SCAU PROFESSIONNEL															
NOI DE COMBATE		SPECIFICATION		PROCUR		SYSTEME RELEVEMENT		CODE DE COULEUR		LIGNATION ET MARQUE		EPISES D'ISOLATION		PIPE SUPPORT DETAILS	
4031-RJ1-001-CCI-0-110		CCI 0		PDI								65-403-270-200		PIPE SUPPORT DETAILS	
PRESSION SUPERIEURE DE COMPRESSION		DE COMPRESSION		SUPERIEURE DE COMPRESSION		PRESSION ETUDIM		CLASSE D'INJECTION		COTE DE SERVICE		NORMEIN MINIMUM		65-403-205-201	
Y		PISC		Y		Y		PISC				No DESIGN		DESIGNS DE REFERENCE	

2-2



R.N.



R-V

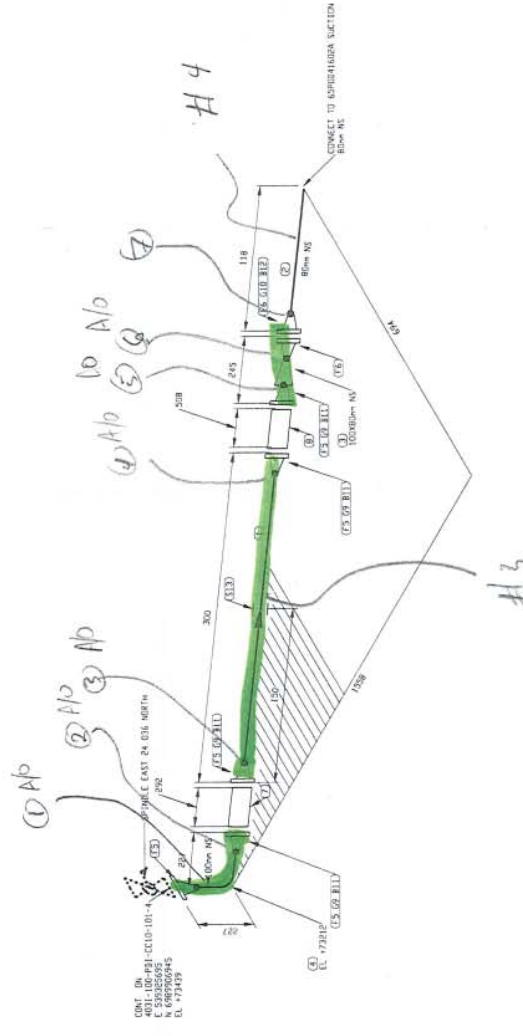


2-2

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FABRICATION DRAWINGS BASED ON
WSP CERTIFIED ENGINEERING

[illegible]

2.2

10-NW-1E04



R-V



2. N



Q. 12

FABRICATION DRAWINGS BASED ON
WSP CERTIFIED ENGINEERING

LISTE DE MATERIEL

NO	QTE	UN	DESCRIPTION
1	102	MM	A 250 Gr. WPL6
2	80080		A 250 Gr. WPL6
3	1		CL 3000, SOCKET
4	1		CL 3000, SOCKET
5	1		CL 3000, SOCKET
6	1		CL 3000, SOCKET
7	1		CL 3000, SOCKET
8	1		CL 3000, SOCKET
9	1		CL 3000, SOCKET
10	1		CL 3000, SOCKET
11	1		CL 3000, SOCKET
12	1		CL 3000, SOCKET
13	1		CL 3000, SOCKET
14	1		CL 3000, SOCKET
15	1		CL 3000, SOCKET
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96	1		CL 3000, SOCKET
97	1		CL 3000, SOCKET
98	1		CL 3000, SOCKET
99	1		CL 3000, SOCKET
100	1		CL 3000, SOCKET

AGNICO EAGLE

ISSUED FOR CONSTRUCTION

DATE: 2017/07/07

REVISION: 01

UN: 591700

PROJ: 4031-80-P01-CC10-129

TITLE: INDUSTRIAL FABRICATION ISOMETRIC DIESEL FROM 650M1603 TO 65M1603

NO. PROJECT: 6515

NO. DESIGN: 4031-80-P01-CC10-129

NO. 2/10

0

R-V

4031-MN-01



2-11)

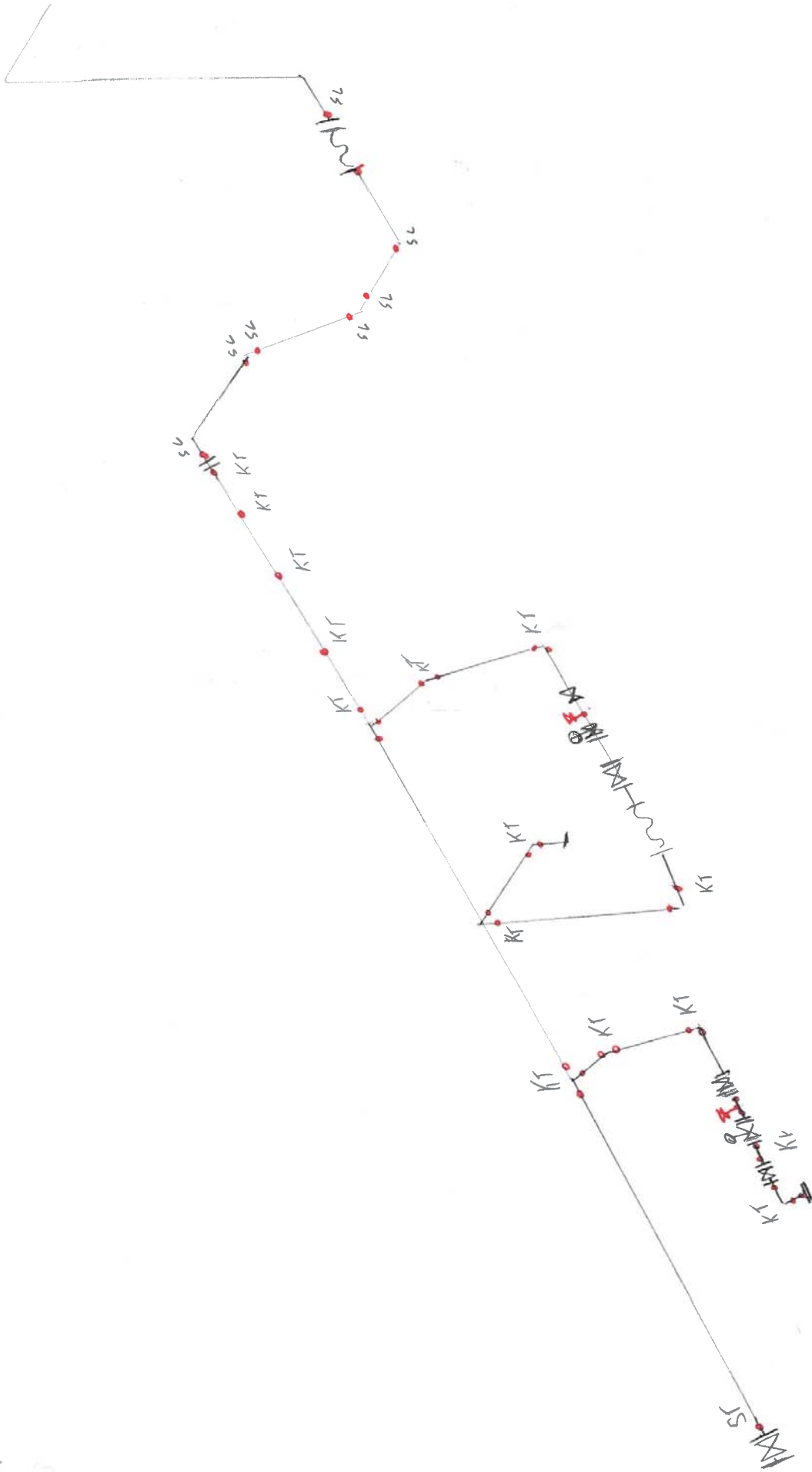
WORKSHEET 14 OF 14



AD31-MN-01

D-11

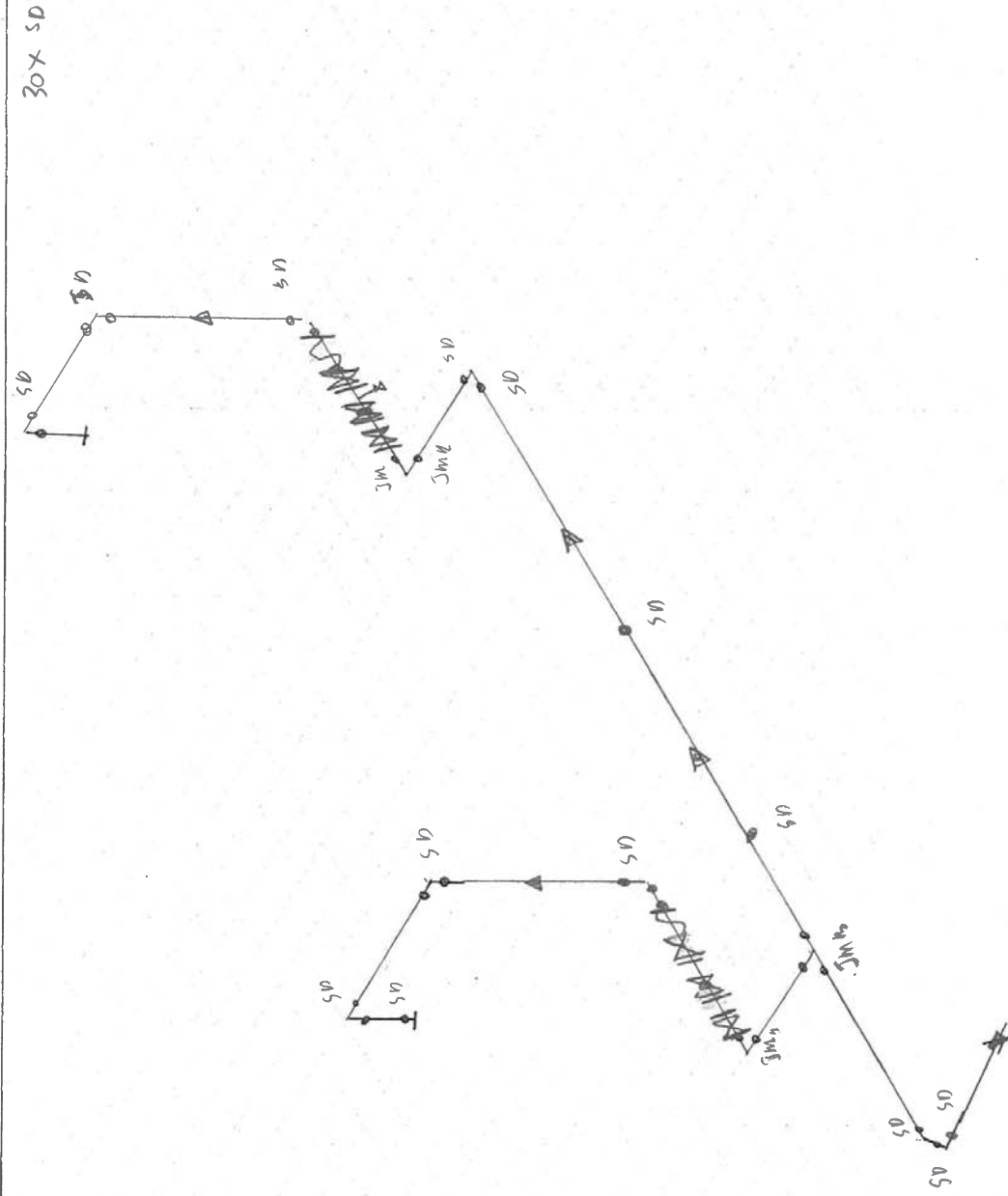
Vers 50000 l.l.c. 1.11.2 905 204



Ne pas oublier que il y a bracket de plus 10 bracket de plus pour

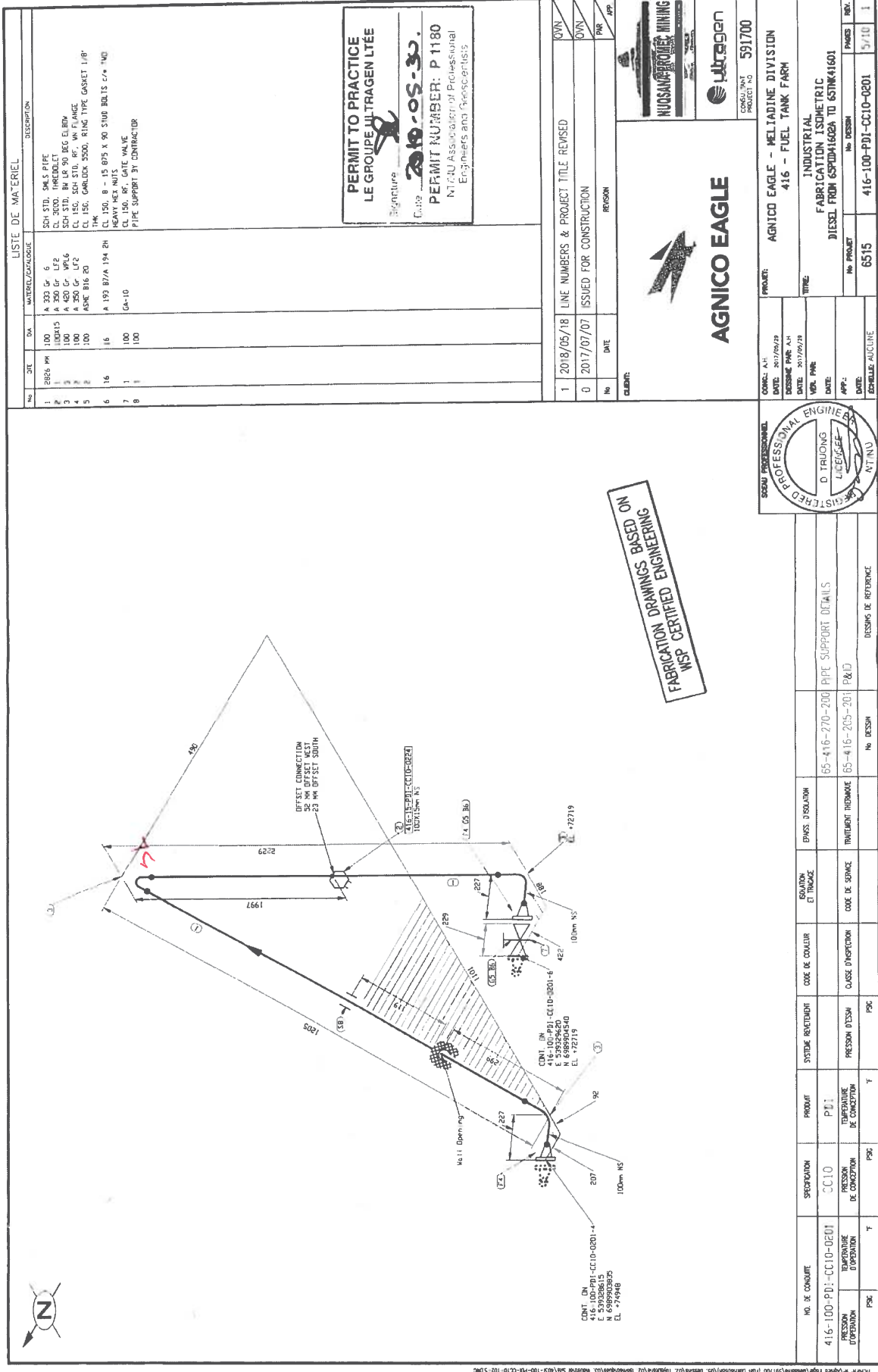
Le 3^e plus de la Fittin de la Région et la bout la coupe de la coupe

Industrial Tank Feed 25000 Litre

[illegible]

[illegible]

14



LISTE DE MATERIEL			
No	QTE	Ø	DESCRIPTION
1	2006 PM	100	Ø 100 SCH 40S PIPE
2	1	100	Ø 100 SCH 40S PIPE
3	1	100	Ø 100 SCH 40S PIPE
4	1	100	Ø 100 SCH 40S PIPE
5	1	100	Ø 100 SCH 40S PIPE
6	16	16	Ø 16 SCH 40S PIPE
7	1	100	Ø 100 SCH 40S PIPE
8	1	100	Ø 100 SCH 40S PIPE

PERMIT TO PRACTICE
LE GROUPE ULTRAGEN LTÉE
Signature: *[Signature]*
Date: 2010-05-31
PERMIT NUMBER: P 1180
NTNU Association of Professional
Engineers and Geoscientists

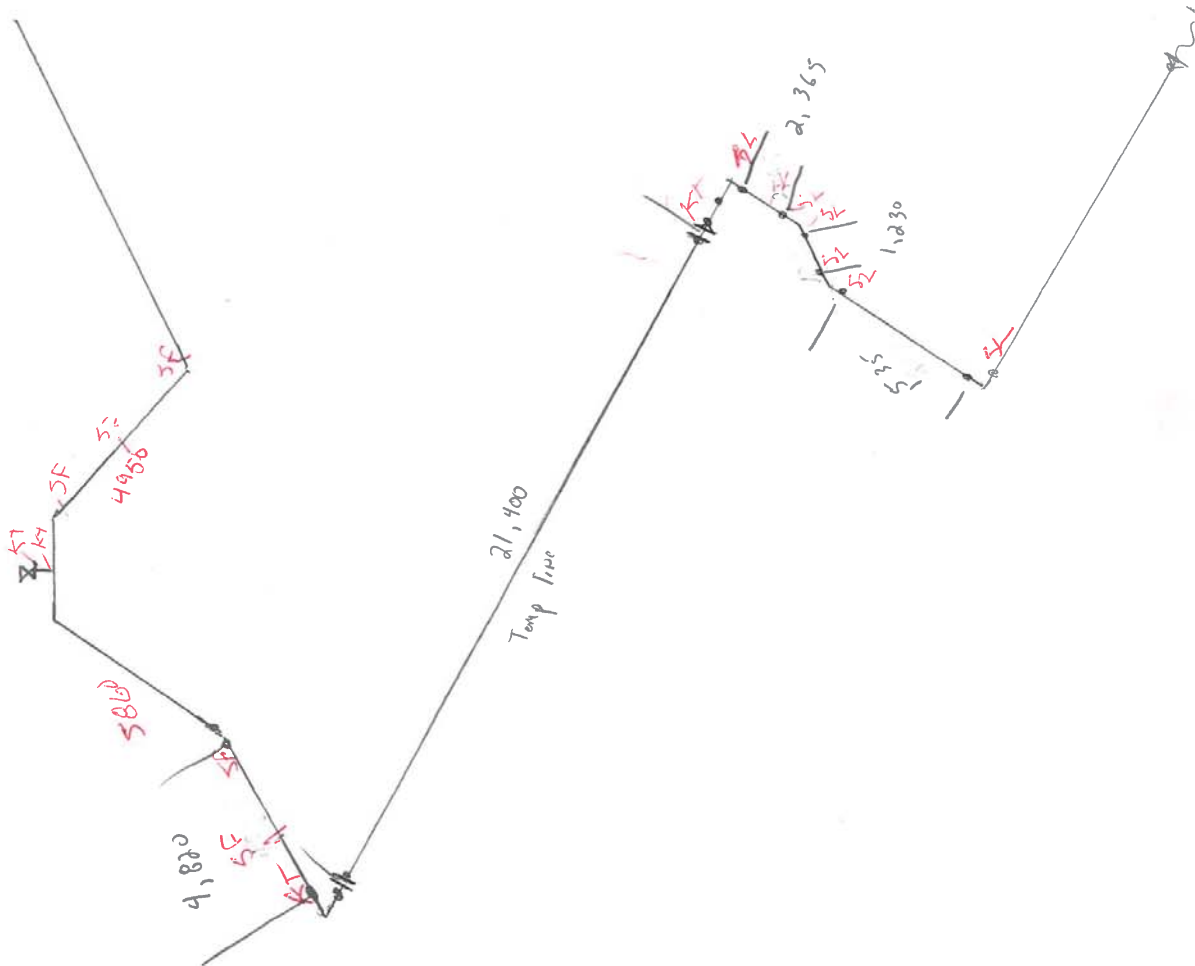
LINE NUMBERS & PROJECT TITLE REVISED		OWN
0	2017/07/07	OWN
ISSUED FOR CONSTRUCTION		OWN
No	DATE	REASON
1	2018/05/18	PROJECT NO
CLIENT:		APP
AGNICO EAGLE		591700
PROJECT:		AGNICO EAGLE - MELTADINE DIVISION
TITLE:		416 - FUEL TANK FARM
INDUSTRIAL		INDUSTRIAL
FABRICATION ISOMETRIC		FABRICATION ISOMETRIC
DIESEL FROM 65PD41602A TO 65TH41601		DIESEL FROM 65PD41602A TO 65TH41601
No PROJECT	No DESIGN	PHASE
6515	416-100-PD1-CC10-0201	5/10
EXEMPLE AUCUNE		REV.
		1

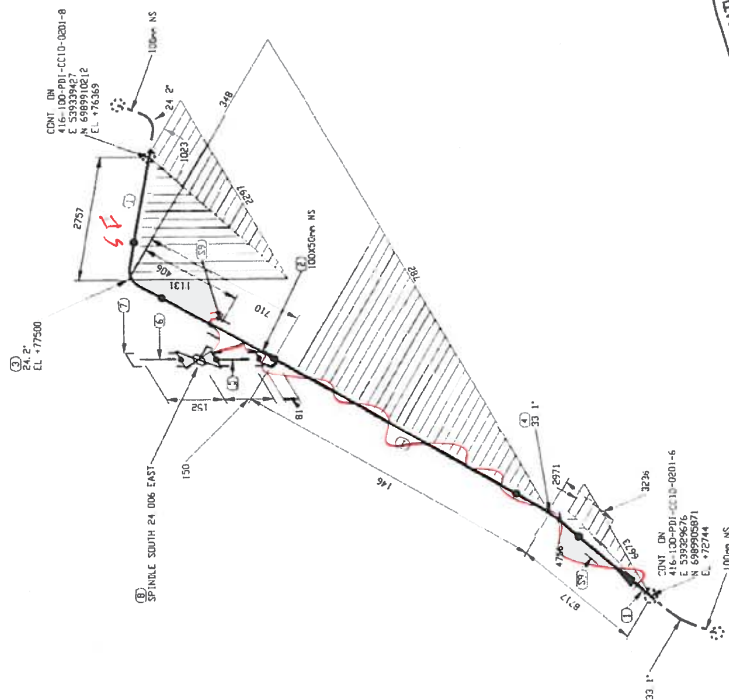
FABRICATION DRAWINGS BASED ON
WSP CERTIFIED ENGINEERING

2018/05/30

NO. DE CONSULT		PROJET	SISTÈME RECHERCHÉ	CODE DE CONSULT	ESQUISSE ET TRACÉ	ÉVALUATION
416-100-PD1-CC10-0201		P11	416-100-PD1-CC10-0201-4	416-100-PD1-CC10-0201-4	416-100-PD1-CC10-0201-4	416-100-PD1-CC10-0201-4
PRESSION D'OPERATION		PRESSION DE CONSTRUCTION	PRESSION D'ESSAI	CLASSE D'INSPECTION	CODE DE SOUS-CLASSE	TITREMENT INTRINÈQUE
416-100-PD1-CC10-0201		416-100-PD1-CC10-0201	416-100-PD1-CC10-0201	416-100-PD1-CC10-0201	416-100-PD1-CC10-0201	416-100-PD1-CC10-0201
PRESSION D'OPERATION		PRESSION DE CONSTRUCTION	PRESSION D'ESSAI	CLASSE D'INSPECTION	CODE DE SOUS-CLASSE	TITREMENT INTRINÈQUE
416-100-PD1-CC10-0201		416-100-PD1-CC10-0201	416-100-PD1-CC10-0201	416-100-PD1-CC10-0201	416-100-PD1-CC10-0201	416-100-PD1-CC10-0201
PRESSION D'OPERATION		PRESSION DE CONSTRUCTION	PRESSION D'ESSAI	CLASSE D'INSPECTION	CODE DE SOUS-CLASSE	TITREMENT INTRINÈQUE
416-100-PD1-CC10-0201		416-100-PD1-CC10-0201	416-100-PD1-CC10-0201	416-100-PD1-CC10-0201	416-100-PD1-CC10-0201	416-100-PD1-CC10-0201
PRESSION D'OPERATION		PRESSION DE CONSTRUCTION	PRESSION D'ESSAI	CLASSE D'INSPECTION	CODE DE SOUS-CLASSE	TITREMENT INTRINÈQUE
416-100-PD1-CC10-0201		416-100-PD1-CC10-0201	416-100-PD1-CC10-0201	416-100-PD1-CC10-0201	416-100-PD1-CC10-0201	416-100-PD1-CC10-0201

APPREUVE LE 14 May 2018 15:23





FABRICATION DRAWINGS BASED ON
WSP CERTIFIED ENGINEERING

[illegible]


DATE: May 16, 2018, 10:30am



WEDNESDAY May 14 2018 10:54am

2019/05/30

PERMIT TO PRACTICE
LE GROUPE ULTRAGEN LTÉE

Signature  MAY 30 2018

Date

PERMIT NUMBER: P 1180
NTNU Association of Professional
Engineers and Geoscientists

AGNICO EAGLE



ultragen
ultra-thin
CONCRETE
591700

HUSANG & SONS
MINING
EQUIPMENT
SALES & SERVICE
INC. 1990
10000 101st AVE. S.W.
VANCOUVER, B.C. V6V 1G6
TEL: 604-273-1111
FAX: 604-273-1112

CLUB

PROJECT:	AGNICO EAGLE - MELTADINE DIVISION 416 - FUEL TANK FARM
ATTN:	INDUSTRIAL FABRICATION ISOMETRIC DIESEL FROM 6SPD1402A TO 65TNK41601
NO PROJECT	NO DESIGN
6515	416-100-PJT-C310-0201 6/15

2018/05/30



AGNICO EAGLE

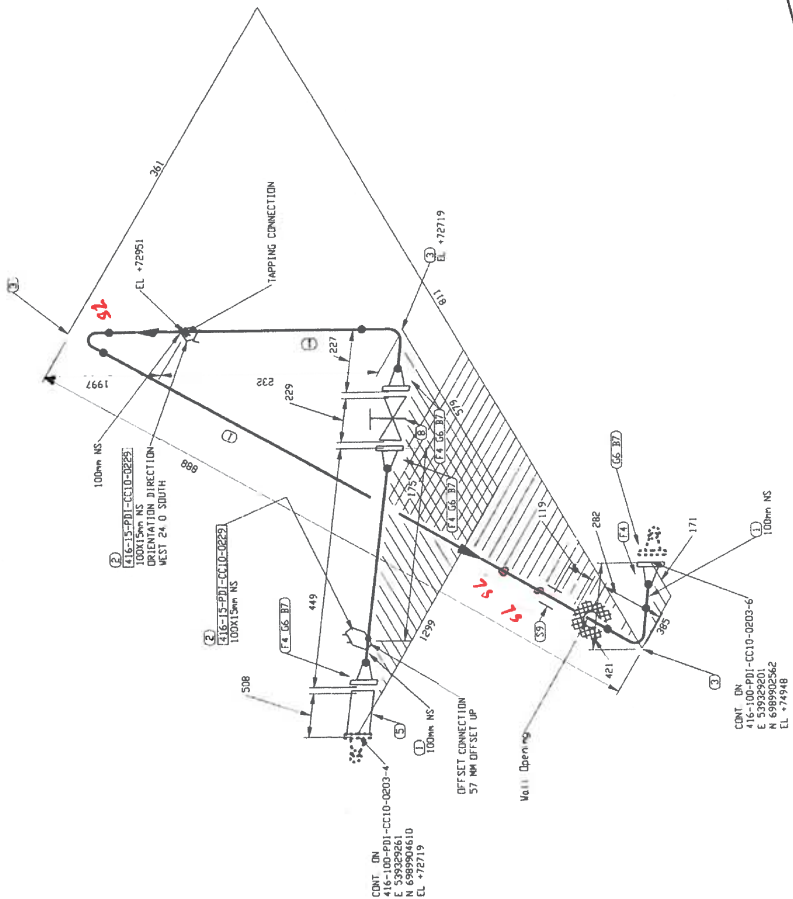
2019/05/30



2018/05/30

416-MN-01

04



FABRICATION DRAWINGS BASED ON
WSP CERTIFIED ENGINEERING

LISTE DE MATERIEL			
No	QTE	DA	DESCRIPTION
1	3003 MM	100	SDH STD. SNLS PIPE
2		100X15	CL 3000. THREEDLET
3	3	100	SDH STD. BW LR 90 DEG ELBOW
4	4	100	CL 150. SDH STD. RT. W/ FLANGE
5	1	100	CL 150. SDH STD. RT. W/ FLANGE
6	4	100	CL 150. SDH STD. RT. W/ FLANGE
7	32	16	THK 150. GARLOCK 5500. RING TYPE GASKET 1/8"
8	1	100	CL 150. 8 - 15 875 X 90 STUD BOLTS C/W TWO
9	1	100	CL 150. RT. GATE VALVE
			PIPE SUPPORT BY CONTRACTOR

PERMIT TO PRACTICE
LE GROUPE ULTRAGEN LTEE

Signature: _____
Date: **MAY 30 2018**
PERMIT NUMBER: P 1180
NTNU Association of Professional Engineers and Geoscientists

1	2018/05/18	LINE NUMBERS & PROJECT TITLE REVISED	OVN
0	2017/07/07	ISSUED FOR CONSTRUCTION	OVN
No.	DATE	REASON	APP.

AGNICO EAGLE

CLIENT:

NUSSAN PROPERTIES MINING

CONSULTANT PROJECT NO: 591700

PROJECT:

AGNICO EAGLE - MELIADINE DIVISION
416 - FUEL TANK FARM

COMPT. A.H.

DATE: 2017/05/23

DESIGNED BY: P.H.

DATE: 2017/05/23

VOI. P.H.

DATE: 2017/05/23

APP:

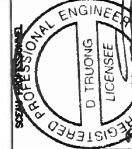
DATE: 2017/05/23

REVISEUR AUCUNE

TITLE:

INDUSTRIAL FABRICATION ISOMETRIC
DIESEL FROM 65TK41601 TO 65TK41603

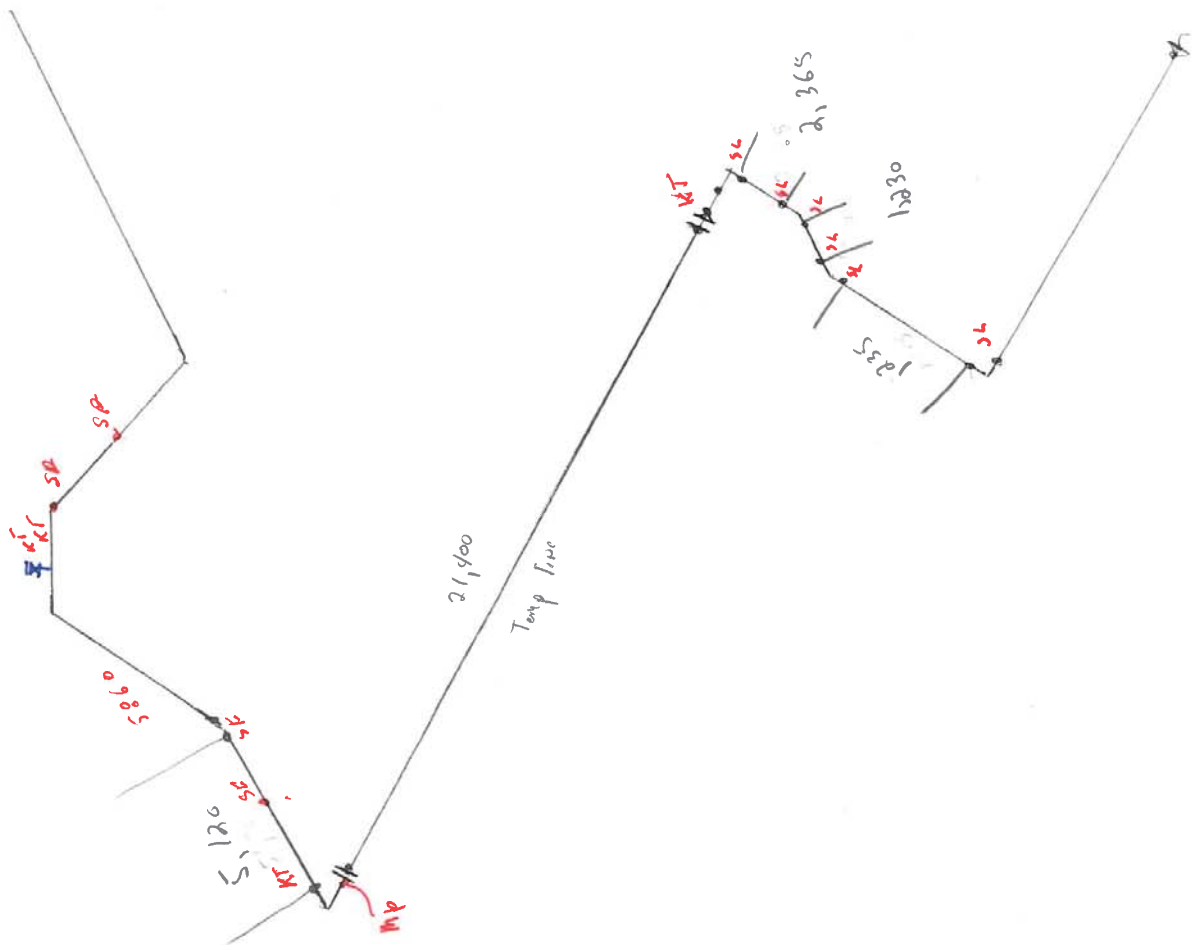
No. PROJECT	6515	No. DESIGN	5/7
No. PROJECT	6515	No. DESIGN	5/7



2018/05/30

NO. DE CONDUITE	SPECIFICATION	PRODOT	SYSTEME REPERTOIRE	CODE DE COULEUR	SOLUION ET TRACER	EMISS. D'ISOLATION	65-416-270-200	PIPE SUPPORT DETAILS
416-100-PDI-CC10-0203	CC10	PDI	TEMPERATURE DE CONDUCTION	PRESSION D'ESSAI	PRESSION D'ESSAI	PRESSION D'ESSAI	PRESSION D'ESSAI	PRESSION D'ESSAI
PRESSION D'ESSAI	PRESSION D'ESSAI	PRESSION D'ESSAI	PRESSION D'ESSAI	PRESSION D'ESSAI	PRESSION D'ESSAI	PRESSION D'ESSAI	PRESSION D'ESSAI	PRESSION D'ESSAI

04









AGNICO EAGLE


22/8/05/30

[illegible]


			 GEOLOGICAL CONSULTING LTD. 10000 100th Ave. NW Edmonton, Alberta T5H 3K1 Canada	 NUSSANA PROTECT MINING AKA VIKTORIA BANGALU MALLAKA KONGKON	 Ultragran LITHIUM CORP.	CONSULTANT 591700
<div></div>						
CLARIF:						
No.	DATE	REVISION	K.P.			
1	2018/05/18	LINE NUMBERS & PROJECT TITLE REVISED	OVN			
0	2017/07/07	ISSUED FOR CONSTRUCTION	OVN RAB			

No	QTE	DA	MATERIEL/VALOUE	DESCRIPTION
1	926 MM	100	A 333 Gr. 6	SCH STD. SMLS PIPE
2	1	150X100	A 420 Gr. WPL6	SCH STD. BW GDNK RED
3	1	100	A 420 Gr. WPL6	SCH STD. BW LR 90 DEG ELBOW
4	1	150	A 350 Gr. LTF2	CL 150, SCH STD. RF, WN FLANGE
5	2	150	ASME 316 20	CL 150, GARLOCK 5500, RING TYPE GASKET 1/8"
6	16	19	A 193 B7/A 194 2H	HW 150, 8 - 19 OS X 100 STUD BOLTS C/W 140 HEAVY HEX NUTS
7	1	150	GA-10	CL 150, RF, GATE VALVE
8	1	100		PIPE SUPPORT AS PER DETAIL 3, DWG 65-416-270-200

PERMIT TO PRACTICE
LE GROUPE MULTIRACEN LTÉE

Signature  Date **MAY 30 2018**

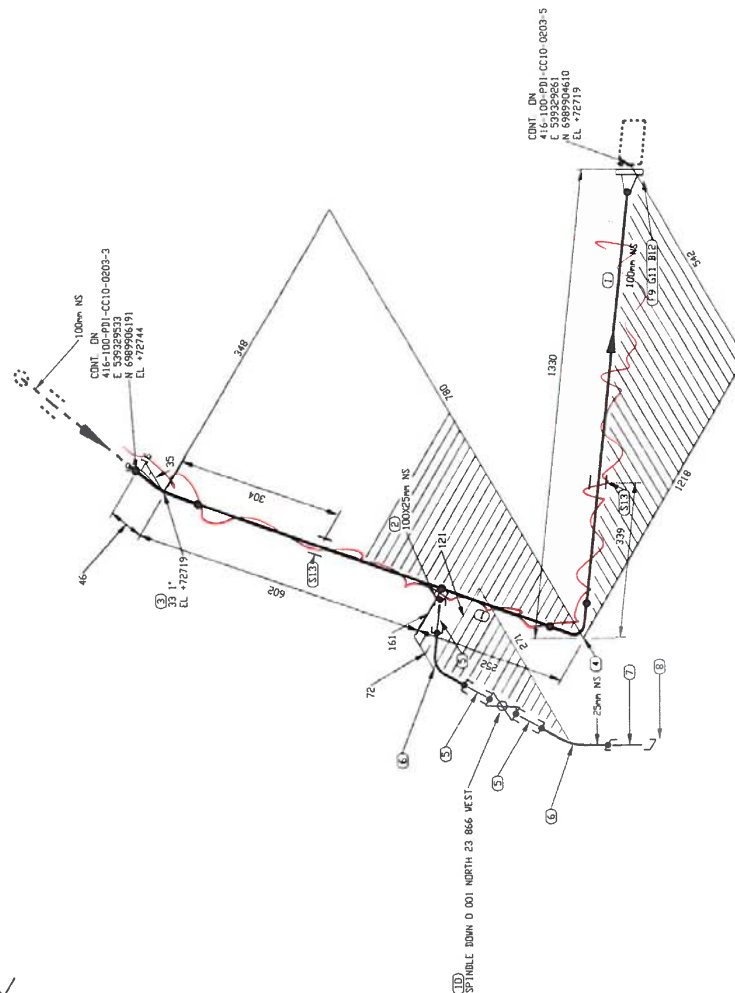
PERMIT NO. 1180
P 1180
NITROGEN ASSOCIATES, INC. Personal
Engineers, Inc. 1000 St. 1100

Signature  MAY 30 2018

Date


PERMIT NO. 103 P 1180

NTHU Assn. of Professional Engineers, Inc. 2018



AGNICO EAGLE

PERMIT TO PRACTICE
LE GROUPEULTRAGEN LTÉE



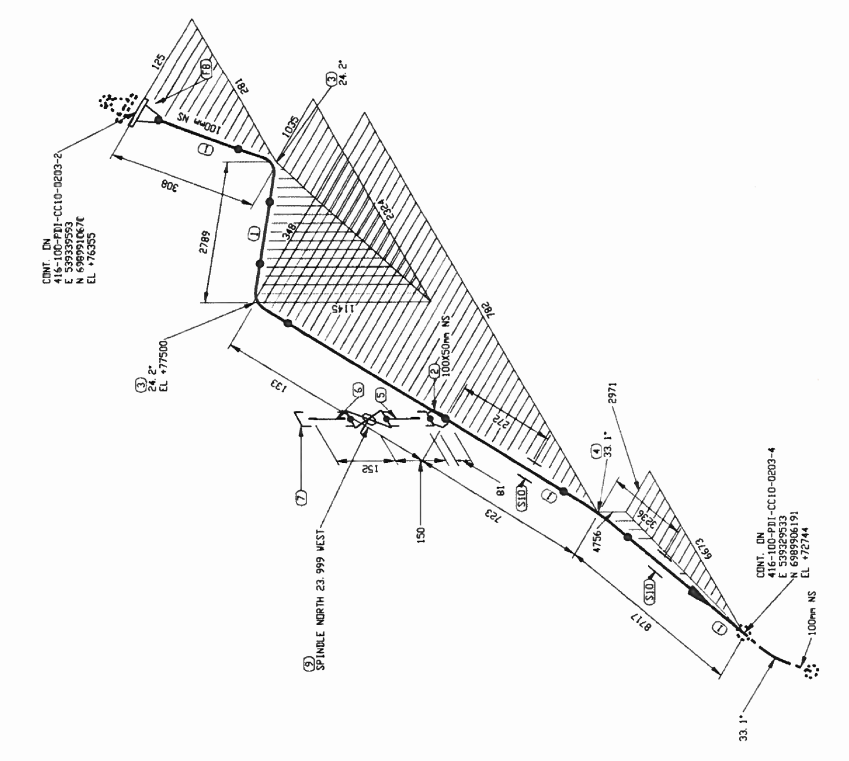
Signature _____ MAY 30 2018 _____
Date _____

PERMIT NUMBER: P 1130
NINJ ASSOCIATES Professional
Engineers and Geoscientists

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2018/05/30


416-MN-01



CONT. DN
 416-100-PD1-CC10-0203-2
 E 599335953
 N 6989910676
 EL. 76625

CONT. DN
 416-100-PD1-CC10-0203-4
 E 599335953
 N 6989910676
 EL. 76244

SPINDLE NORTH 23 999 WEST
 33.1'


PERMIT TO PRACTICE
LE GROUPE ULTRAGEN LTÉE
 Signature: 
 Date: **MAY 30 2018**
PERMIT NUMBER: P 1180
 NTNU Association of Professional Engineers and Geoscientists

AGNICO EAGLE

LISTE DE MATERIEL

No	QTE	QVA	MATERIEL/CATALOGUE	DESCRIPTION
1	12371	MM	A 333 Gr. 6	SCH STD. SMLS PIPE
2	2	100	A 350 Gr. 6	CL 3000. 1140 CAP. 100" UN FLANGE
3	2	100	A 420 Gr. WPL6	SCH STD. BW LR 45 DEG ELBOW TRIM TO 24.23
4	1	100	A 420 Gr. WPL6	SCH STD. BW LR 45 DEG ELBOW TRIM TO 33.07
5	1	50	A 333 Gr. 6	SCH STD. NIPPLE x 75mm LG PBE
6	1	50	A 333 Gr. 6	SCH STD. NIPPLE x 75mm LG PBE
7	1	50	A 333 Gr. 6	SCH STD. NIPPLE x 75mm LG PBE
8	1	50	A 350 Gr. 6	CL 3000. 1140 CAP. 100" UN FLANGE
9	1	50	A 350 Gr. 6	CL 3000. 1140 CAP. 100" UN FLANGE
10	2	100	A 420 Gr. WPL6	SCH STD. BW LR 45 DEG ELBOW TRIM TO 24.23
11	2	100	A 420 Gr. WPL6	SCH STD. BW LR 45 DEG ELBOW TRIM TO 33.07

LINE NUMBERS & PROJECT TITLE	REVISION	DATE	BY	APP
1 2018/05/18	ISSUED FOR CONSTRUCTION	2017/07/07	OVN	OVN
0 2017/07/07	ISSUED FOR CONSTRUCTION		FW	APP



AGNICO EAGLE

INDUSTRIAL
FABRICATION 150METRIC
DIESEL FROM 416-100-PD1-CC10-0203 TO 65PD041601A

PROJETS

COMP. A-L	DATE	DESIGNER	DATE	DATE	DATE	DATE	DATE
2017/05/29	2017/05/29	2017/05/29	2017/05/29	2017/05/29	2017/05/29	2017/05/29	2017/05/29

PROJETS

COMP. A-L	DATE	DESIGNER	DATE	DATE	DATE	DATE	DATE
2017/05/29	2017/05/29	2017/05/29	2017/05/29	2017/05/29	2017/05/29	2017/05/29	2017/05/29

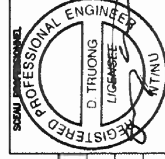
PROJETS

COMP. A-L	DATE	DESIGNER	DATE	DATE	DATE	DATE	DATE
2017/05/29	2017/05/29	2017/05/29	2017/05/29	2017/05/29	2017/05/29	2017/05/29	2017/05/29

PROJETS

COMP. A-L	DATE	DESIGNER	DATE	DATE	DATE	DATE	DATE
2017/05/29	2017/05/29	2017/05/29	2017/05/29	2017/05/29	2017/05/29	2017/05/29	2017/05/29

FABRICATION DRAWINGS BASED ON
 WSP CERTIFIED ENGINEERING



2018/05/30

NO. DE CONDUITE	PROJETS	SYSTEME REVETEMENT	CODE DE COULEUR	ESCALON ET TRACAGE	EMISE D'ISOLATION	DESIGN DE REFERENCE
416-100-PD1-CC10-0203	PDI	PRESSION D'ESSAI	PRESSION D'ESSAI	PRESSION D'ESSAI	PRESSION D'ESSAI	PRESSION D'ESSAI
PRESSION D'OPERATION	PRESSION D'OPERATION	PRESSION D'OPERATION	PRESSION D'OPERATION	PRESSION D'OPERATION	PRESSION D'OPERATION	PRESSION D'OPERATION
PRESSION D'OPERATION	PRESSION D'OPERATION	PRESSION D'OPERATION	PRESSION D'OPERATION	PRESSION D'OPERATION	PRESSION D'OPERATION	PRESSION D'OPERATION



2018/05/30

LISTE DE MATERIEL

No	QTE	DA	MATERIEL/CATALOGUE	DESCRIPTION
1	1		A 420 G- VR6	304 STD. BN CONC RED
2	1		A 420 G- VR6	304 STD. BN STRAIGHT TEE
3	1		A 350 G- LPE	CL 3000. THREDDLET
4	1		A 350 G- LPE	CL 3000. 150 STD. BN FLANGE
5	1		A 350 G- LPE	CL 150. 150 STD. BN FLANGE
6	1		A 350 G- LPE	CL 150. 150 STD. BN FLANGE
7	2		ASME B16.20	CL 150. FLEXIBLE
8	4		ASME B16.20	CL 150. GARLOCK 5500. RING TYPE GASKET 1/8"
9	16		ASME B16.20	CL 150. GARLOCK 5500. RING TYPE GASKET 1/8"
10	32		A 193 B7/A 194.2H	CL 150. 8 - 19.05 X 100 STUD BOLTS C/A TWO
11	1		A 193 B7/A 194.2H	HEAVY HEX NUTS
12	1		A 193 B7/A 194.2H	HEAVY HEX NUTS
13	1		GA-10	CL 150. RF. GATE VALVE
14	1		GA-10	CL 150. RF. GLOBE VALVE
15	1		GA-10	CL 150. RF. GATE VALVE

Signature _____
Date **MAY 3 0 2018**
PERMIT NUMBER: P 1180
NTNU Association of Professional Engineers and Geoscientists

No	DATE	PERSON	REASON
1	2018/05/18		LINE NUMBERS & PROJECT TITLE REVISED
0	2017/07/07		ISSUED FOR CONSTRUCTION

CLIENT: _____

CONSULTANT PROJECT NO. 591700

INDUSTRIAL FABRICATION ISOMETRIC

DIESEL FROM 65TK41601 TO 65TK41613

PROJECT: AGNICO EAGLE - MELIADINE DIVISION

416 - FUEL TANK FARM

TITLE: INDUSTRIAL FABRICATION ISOMETRIC

DIESEL FROM 65TK41601 TO 65TK41613

NO. PROJECT: 6515

NO. DESIGN: 416-100-PDI-CC10-0203

PAGES: 1/7

DATE: 2017/05/28

DATE: 2017/05/28

DATE: 2017/05/28

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DATE: 2017/05/28

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DATE: 2017/05/28

APPENDIX E

Inspection Report –Fuel Modules Quality Control Documents



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:

Date:

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-QCR-0006 R: Sub001

DOCUMENT FOR INFORMATION

AGNICO EAGLE MINE

Contract No. 6515-C-270-007



C-22498E

INDUSTRIAL SITE

Quality Control Documents