

**BMC-100
BURNER MANAGEMENT SYSTEM**

MODEL NO: ACL 5100
24 VDC

**H-100
LINE HEATER**

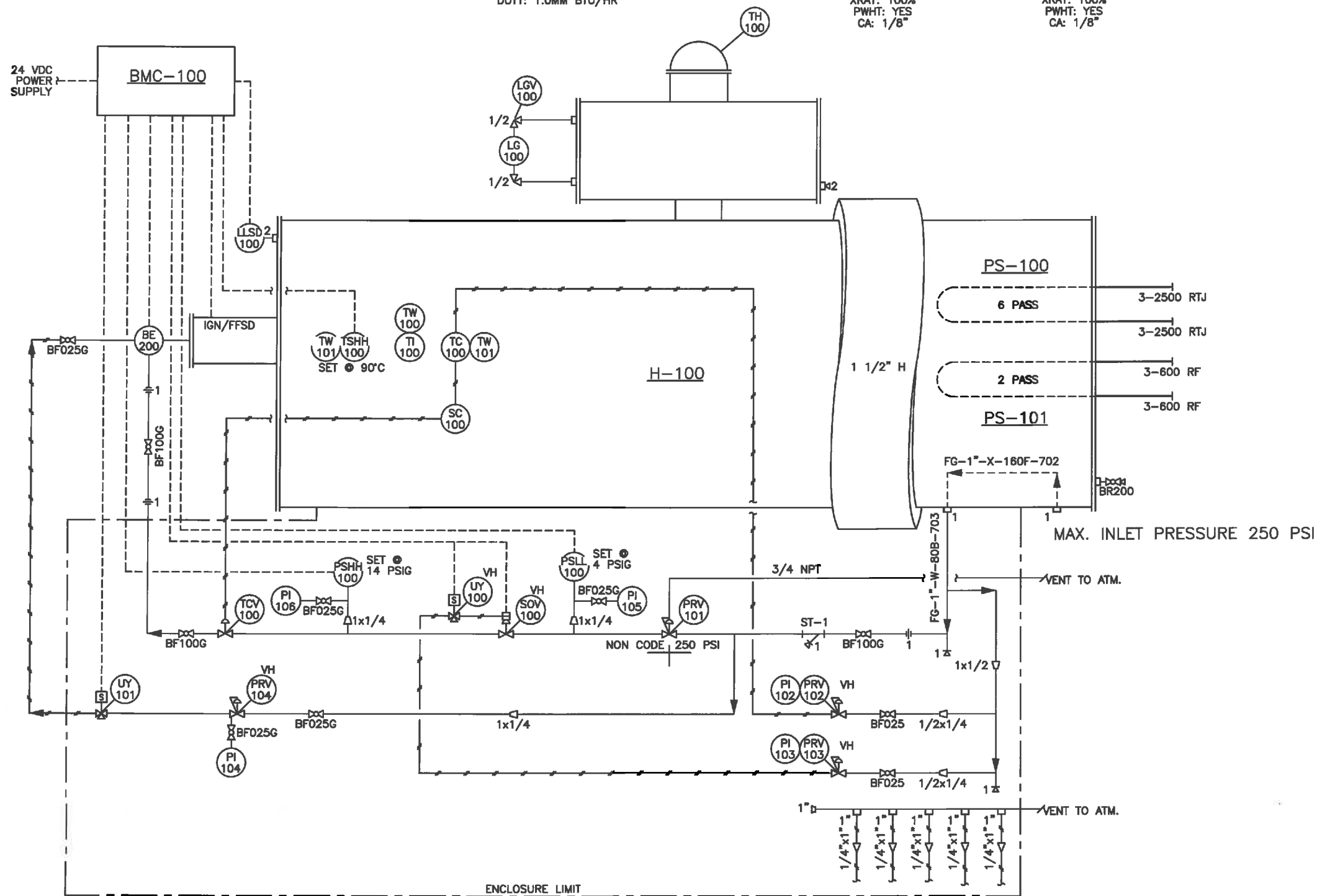
MFR: NWP INDUSTRIES
SIZE: #42" x 16' S/S
DUTY: 1.0MM BTU/HR

**PS-100
COIL A**

MFR: NWP INDUSTRIES
MAWP: 5031 PSIG @ 200°F
XRAY: 100%
PWHT: YES
CA: 1/8"

**PS-101
COIL B**

MFR: NWP INDUSTRIES
MAWP: 1350 PSIG @ 200°F
XRAY: 100%
PWHT: YES
CA: 1/8"



ORIGINAL

AS BUILT

ISSUED FOR CONSTRUCTION

SIGNED: _____
DATE: _____
W.O.: _____
S/N: _____



P.O. BOX 6280, INNISFAIL, AB T4G 1S9
PH: (403) 227-4100 FAX: (403) 227-4102

MURPHY OIL
LINEHEATER PACKAGE
1.0 MM BTU/HR 42" OD x 16' LG BATH
c/w 3" 2500# x 3" 600# SPLIT COILS
P & ID

DWN: MJH	CHK: <i>[Signature]</i>	APP: <i>[Signature]</i>
DATE: 01.18.13	DATE: JAN 31 2013	DATE: JAN 31 2013

SHEET: 1 OF 2	DWG: 08664-001-P-001	REV: 0
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REV	DATE	BY	CHK	APP	DESCRIPTION
0	01.25.13	MJH	<i>[Signature]</i>		ISSUED FOR CONSTRUCTION
A	01.18.13	MJH			ISSUED FOR APPROVAL

08664-001-G-001	GENERAL ARRANGEMENT
DRAWING NUMBER	REFERENCE DRAWING DESCRIPTION

LINETYPE LEGEND

- MAJOR PROCESS LINE
- UTILITY LINE
- BUILDING LIMITS
- ENCLOSURE LIMITS
- ALTERNATE LIMITS
- CUST./VENDOR SUPPL. LIMITS
- HIDDEN LINE
- EQUIPMENT OUTLINE
- INSTRUMENT PNEUMATIC LINE
- PROCESS/UTILITY TUBING LINE
- INSTRUMENT CAPILLARY LINE
- ELECTRICAL DATALINK LINE
- ELECTRICAL CONNECTION LINE
- HYDRAULIC LINE
- MECHANICAL LINK LINE

VALVE SYMBOL LEGEND

- BALL VALVE
- SPRING RETURN BALL VALVE
- GLOBE VALVE
- GATE VALVE
- CHECK VALVE
- PLUG VALVE
- NEEDLE VALVE
- INLINE CHOKE VALVE
- 4-WAY VALVE
- 3-WAY VALVE
- BUTTERFLY VALVE
- BASKET/CONE STRAINER
- TEE STRAINER
- Y STRAINER
- RUPTURE VALVE
- PRESSURE RELIEF VALVE
- ANGLE VALVE
- ANGLE CHOKE VALVE
- GAUGE VALVE

VALVE CONNECTION LEGEND

- THRD VALVE
- THRD/SW VALVE
- SW VALVE
- FLANGED VALVE

TOPWORKS SYMBOL LEGEND

- DIAPHRAGM ACTUATOR
- ACTUATOR WITH HANDWHEEL
- ACTUATOR WITH POSITIONER
- PRESS. REDUCING REGULATOR
- BACK PRESS. REGULATOR
- REGULATOR WITH HANDWHEEL
- PISTON ACTUATOR
- ACTUATOR WITH POSITIONER
- ROTARY PISTON ACTUATOR
- ROTARY MOTOR ACTUATOR
- SOLENOID
- SPRING WEIGHTED ACTUATOR
- MANUAL/HAND ACTUATOR

METERING

- METER RUN
- ORIFICE METER
- FLOW CONDITIONER
- VORTEX METER
- POSITIVE DISPLACEMENT METER
- TURBINE/PROPELLER METER
- MASS FLOW METER
- ROTOMETER
- VENTURI
- 5-VALVE MANIFOLD

MISC SYMBOLS LEGEND

- FLANGE / BLIND FLANGE
- BW CAP / THRD CAP
- UNION
- TOL/CPLG w/PLUG
- BREAK
- CONCENTRIC REDUCER
- CONCENTRIC SWAGE
- ECC REDUCERS
- ECC REDUCERS
- SKID EDGE SCARFED VENT
- FLEXIBLE HOSE
- EXPANSION JOINT
- HOSE/CAMLOCK CONNECTION
- SPEC. BLIND-CLOSED/OPEN
- FIELD WELD
- WEIR
- TRAP
- PIPE/TUBING FLOW ARROW
- SPEC./RESPONSIBILITY BREAK
- SPEC./RESPONSIBILITY BREAK
- FLANGED NOZZLE
- MANWAY
- CONNECTION INDICATOR
- LIGHT
- SPEED CONTROL
- PRESSURE ACTUATED CONTROL VALVE (AMOT)
- CONSTRUCTION REVISIONS
- EARTH
- ATO MUFFLER

INSULATION LEGEND

- 2.5" PP - THICKNESS C=COLD H=HOT PP=PERSONEL PROTECTION
- 3" C
- 25H ET - THICKNESS c/w TRACING ET=ELEC. TRACE GT=GLYCOL TRACE OT=OIL TRACE ST=STEAM TRACE
- 3"H GT

MISC TAG SYMBOL LEGEND

- IG 1 - INSTR. GAS TO AND FROM
- IA 1 - INSTR. AIR TO AND FROM
- RTU - RTU
- I/P - I/P ELECTRO PNEUMATIC

NOTES

- SHOP INSTALL ADDITIONAL PIPE SUPPORTS WHERE REQ'D.
- SHIP LOOSE ITEMS TO BE BOXED AND SEALED PRIOR TO SHIPMENT.
- PLUG AND PROTECT ALL OUTLETS PRIOR TO SHIPMENT.
- DESIGN PIPING TO ENSURE NO LIQUID TRAPS.
- ALL PIPING MATERIAL TO BE STANDARD TEST U.N.O.
- HYDROTEST WELDED PIPING TO 1.5 x M.A.W.P.
- WELDED PIPING BUTT WELDS TO BE 10% X-RAYED. U.N.O.
- ALL PIPING AND PROCESS TUBING LINES TO BE TESTED PER B31.3
- INSTRUMENT SUPPLY LINES TO BE TESTED PER ABSA AB-522.
- VESSELS TO BE FABRICATED TO THE LATEST EDITION OF THE ASME SECTION VIII DIVISION 1.
- SURFACE PREP: SSPC-SP6
- PRIMER: 1s/c CLOVERDALE CLOVACOAT OR EQUAL
- PAINT: UNINSULATED: 2s/c CLOVERDALE CLOVACOAT 300 EPOXY ENAMEL WARM GREY OR EQUAL ENAMEL
INSULATED: 1s/c CLOVERDALE CLOVACOAT 300 EPOXY ENAMEL WARM GREY OR EQUAL ENAMEL
FIRETB./STK1s/c HIGH HEAT BLACK.
- ELECTRICAL BY NWP.

ORIGINAL

VALVE TAGGING

XX XXX XX

025	1/4"
038	3/8"
050	1/2"
075	3/4"
100	1"
201	2" 150 ANSI
303	3" 300 ANSI
406	4" 600 ANSI
609	6" 900 ANSI
815	8" 1500 ANSI
1025	10" 2500 ANSI

G - GAS SERVICE
H - HIGH PRESSURE
L - LOW TEMP.
N - NACE
P - 0-789#
Q - 800#
R - 900#
S - 901# -1500#
T - 2000#
U - 2001# - 2499#
V - 2500#
W - 3000#
X - 6000#
Y - 10000#
Z - UNCLASSIFIED

LINE TAGGING

XX-Xⁿ-X-XXXX-XXX

0100-0199	PROCESS FLUID
0200-0299	PROCESS GAS
0300-0399	EMULSION
0400-0499	HYDROCARBONS
0500-0599	WATER
0600-0699	DRAIN
0700-0799	FUEL GAS
0800-0899	PRESSURE RELIEF
0900-0999	INSTR. AIR
1000-1099	VENT (NO TESTING)

INSTRUMENT TUBING
A - GALVANIZED TUBING w/ CS FITTINGS
B - 304W SS TUBING w/ CS FITTINGS
C - 304W SS TUBING w/ 316 SS FITTINGS
D - 316 SS TUBING w/ 316 SS FITTINGS
E - 316 SS TUBING w/ CS FITTINGS
F - NOT APPLICABLE

INSTRUMENTATION SYMBOLS AND IDENTIFICATION

LETTER	FIRST LETTER	PRIMARY ELEMENT	INDICATOR	RECORDER	CONTROLLER			TRANS-MITTER	CONTROL		CONTROL VALVE	REGULATOR	SELF ACTIVATED VALVE	RELAY OR COMPARATOR
					BLIND	INDICATING	RECORDING		SWITCH	ALARM				
A	ANALYSIS	AE	AI	AR	AC	AI	ARC	AT	AS(*)	AA(*)	AV			AY
B	BURNER COMBUSTION	BE	BI	BR	BC			BT	BS(*)	BA(*)	BV			BY
BP	BACK PRESSURE										BPV	BPCV		
C	CONDUCTIVITY	CE	CI	CR	CC	CIC	CRC	CT	CS(*)	CA(*)	CV			CY
D	DENSITY OR MASS	DE	DI	DR	DC	DIC	DRC	DT	DS(*)	DA(*)	DV			DY
E	VOLTAGE	EE	EI	ER	EC	EIC	ERC	ET	ES(*)	EA(*)	EV			EY
F	FLOW, FLOW RATE	FE	FI	FR	FC	FIC	FRC	FT	FS(*)	FA(*)	FV	FCV		FY
G	GAUGING	GE	GI	GR	GC	GIC	GRC	GT	GS(*)	GA(*)	GV			
H	HAND				HC	HIC	HRC	HT	HS(*)		HV	HCV	HY	
I	CURRENT	IE	II	IR	IC	IC	IRC	IT	IS(*)	IA(*)			IY	
J	POWER	JE	JI	JR	JC	JIC	JRC	JT	JS(*)	JA(*)			JY	
K	TIME, SCHEDULE		KI	KR	KC	KIC	KRC	KT	KS(*)	KA(*)			KY	
L	LEVEL	LE	LI	LR	LC	LIC	LRC	LT	LS(*)	LA(*)	LV	LCV	LY	
M	MOISTURE, HUMIDITY	ME	MI	MR	MC	MIC	MRC	MT	MS(*)	MA(*)	MV		MY	
N	USER'S CHOICE													
O	USER'S CHOICE													
P	PRESSURE	PE	PI	PR	PC	PIC	PRC	PT	PS(*)	PA(*)	PV	PRV	PCV	PY
Q	QUANTITY	QE	QI	QR	QC	QIC	QRC	QT	QS(*)	QA(*)	QV		QY	
R	RADIATION	RE	RI	RR	RC	RIC	RRC	RT	RS(*)	RA(*)			RY	
S	SPEED, FREQUENCY	SE	SI	SR	SC	SIC	SRC	ST	SS(*)	SA(*)	SV	SCV	SY	
T	TEMPERATURE	TE	TI	TR	TC	TIC	TRC	TT	TS(*)	TA(*)	TV	TCV	TY	
U	MULTI-VARIABLE		UI	UR	UC	UIC	URC				UV		UY	
V	VIBRATION, MECH. ANAL.	VE	VI	VR	VC	VIC	VRC	VT	VS(*)	VA(*)	W		WY	
W	WEIGHT, FORCE	WE	WI	WR	WC	WIC	WRC	WT	WS(*)	WA(*)	WV		WY	
X	UNCLASSIFIED	XE	XI	XR	XC	XIC	XRC	XT	XS(*)	XA(*)	XV		XY	
Y	EVENT, STATE, PRESENCE												YY	
Z	POSITION, DIMENSION	ZE	ZI	ZR	ZC	ZIC	ZRC	ZT	ZS(*)	ZA(*)	ZV		ZY	

ABBREVIATIONS

A/G	ABOVE GROUND	GS	GAS SUPPLY	PD	POSITIVE DISPLACEMENT
APP	APPROVED	GT	GLYCOL TRACE	PFS	PROCESS FLOW SHEET
AS	AIR SUPPLY	HC	HOSE CONNECTION	P/I	PNEUMATIC TO CURRENT
ASSY	ASSEMBLY	HLL	HIGH LIQUID LEVEL	P/L	PIPELINE
ATM	ATMOSPHERE	HP	HIGH POINT	PLC	PROGRAMMABLE LOGIC CONTR.
BBE	BEVEL BOTH ENDS	HPV	HIGH POINT VENT	PP	PROGRAMMABLE LOGIC CONTR.
BBL	BARREL	HS	HYDRAULIC SUPPLY	PO	PUMP OUT
BCD	BOLT CIRCLE DIAMETER	HT	HEAT TRACE	RF	RAISED FACE
BD	BLOWDOWN	IC	INTERNAL COMBUSTION	RO	RESTRICTION ORIFICE
BLD	BLIND	ID	INSIDE DIAMETER	RP	REDUCED PORT
BTU	BRITISH THERMAL UNITS	IG	INSTRUMENT GAS	RTU	REMOTE TRANSMITTING UNIT
CC	CORROSION COUPON	INJ. PT.	INJECTION POINT	SC	SAMPLE CONNECTION
CP	CORROSION PROBE	I/S	INSIDE	SG	SPECIFIC GRAVITY
CS	CARBON STEEL	I/P	CURRENT TO PNEUMATIC	S/D	SHUTDOWN
CSC	CAR SEAL CLOSED	INJ.	INJECTION POINT	SM	SEAMLESS
CSO	CAR SEAL OPEN	L	LOW LIQUID LEVEL	SMSL	SEAMLESS
c/w	COMPLETE WITH	LP	LOW POINT	SO	STEAM OUT
DBB	DOUBLE BLOCK & BLEED	LPD	LOW POINT DRAIN	SP	SET POINT
DBP	DESIGN PRESSURE	DP	DESIGN PRESSURE	SS	STEAM SUPPLY
DT	DESIGN TEMPERATURE	DS	DESIGN TEMPERATURE	SS	STAINLESS STEEL
ES	ELECTRIC SUPPLY	MAWP	MAX. ALLOW. WORK PRES.	S/S	SEAM TO SEAM
ESD	EMERGENCY SHUTDOWN	MDMT	MIN. DESIGN METAL TEMP.	ST	SOUR TRIM
ET	ELECTRICAL TRACE	MCC	MOTOR CONTROL CENTER	TK	TANK
FC	FAIL CLOSE	MFS	MECHANICAL FLOW SHEET	TSO	TIGHT SHUT-OFF
FFSD	FLAME FAILURE SHUTDOWN	NC	NORMALLY CLOSED	T/T	TANGENT TO TANGENT
FI	FAIL INTERMEDIATE	NLL	NORMAL LIQUID LEVEL	TW	THERMO WELL
FL	FAIL LOCKED	NO	NORMALLY OPEN	UA	UNIT ALARM
FLG	FLANGE	NS	NITROGEN SUPPLY	U/G	UNDER GROUND
FO	FAIL OPEN	NSPC	NON-SLAM PISTON CHECK	UNO	UNLESS NOTED OTHERWISE
FP	FULL PORT	NTS	NOT TO SCALE	WS	WATER SUPPLY
FS	FORGED STEEL	OD	OUTSIDE DIAMETER	VH	VENT HEADER
FW	FIELD WELD	O/S	OUTSIDE		
GO	GEAR OPERATED	PC	PURGE CONNECTION		

TAG LEGEND

	LOCALLY MOUNTED	PRIMARY LOC. OR PANEL NORMALLY ACCESS. TO OPER.	AUXILIARY LOC. OR PANEL NORMALLY ACCESS. TO OPER.	PRIMARY LOC. OR PANEL MOUNTED ON BACK OF PANEL	AUXILIARY LOC. OR PANEL MOUNTED ON BACK OF PANEL
DISCRETE	○	○	○	○	○
SHARED DISPLAY, SHARED CONTROL DISTRIBUTION, CONTROL VIDEO DISPLAY	○	○	○	○	○
COMPUTER FUNCTION, SOFTWARE FUNCTION	○	○	○	○	○
PROGRAMMABLE LOGIC CONTROL	○	○	○	○	○

AS BUILT

ISSUED FOR CONSTRUCTION

SIGNED: _____

DATE: _____

W.O.: _____

S/N: _____

0	01.25.13	MJH		ISSUED FOR CONSTRUCTION	
A	01.18.13	MJH		ISSUED FOR APPROVAL	
REV	DATE	BY	CHK	APP	DESCRIPTION

DRAWING REVISIONS

ALL DIMENSIONS IN INCHES

MURPHY OIL
LINEHEATER PACKAGE
1.0 MM BTU/HR 42" OD x 16' LG BATH
c/w 3" 2500# x 3" 600# SPLIT COILS
P & ID

NWP
INDUSTRIES INC.
Total oilfield supply.

P.O. BOX 6280, INNISFAIL, AB T4G 1S9
PH: (403) 227-4100 FAX: (403) 227-4102

DWN:	MJH	CHK:		APP:	
DATE:	01.18.13	DATE:	JAN 31 2013	DATE:	JAN 31 2013
SHEET:	2 OF 2	DWG:	08664-001-P-001	REV:	0

SCALE: N.T.S.