BMS-100
BURNER MANAGEMENT SYSTEM
MFR: ACL
MODEL NO.: ACL 5500
24 VDC

H-100
LINE HEATER
MFR: NWP INDUSTRIES
SIZE: 42" OD X 16' S/S
DUTY: 1,000,000 BTU/HR

E-100
ENCLOSURE
FOAM PANEL ENCLOSURE
24"W x 60"L x 72"H
1-1/2" POLYURETHANE FOAM PANEL
GALVALUME INTERIOR/EXTERIOR

COIL A
PREHEAT COIL
MFR: NWP INDUSTRIES
MADP: 3125 PSIG @ 200'F
MDMT: -20'F @3125 PSIG
XRAY: 100% PWHT: YES C.A.: 1/8"

COIL B
PREHEAT COIL
MFR: NWP INDUSTRIES
MADP: 3125 PSIG @ 200'F
MDMT: -20'F @3125 PSIG
XRAY: 100% PWHT: YES C.A.: 1/8"

SKID LIMIT

NOTE B
24 VDC POWER SUPPLY
BMC-100
LSLL 100
2" COUPLING
LG 100
1/2" COUPLING
TH 100
1/2" COUPLING
2" COUPLING
1/2"
1/2"
BR050
1 1/2" H
H-100
4" PLUG
12" FIRETUBE AND STACK
COIL-A
PRE-HEAT COIL
6 PASS - 3" CL1500 RTJ
3"CL1500 RTJ
3"CL1500 RTJ
COIL-B
RE-HEAT COIL
6 PASS - 3" CL1500 RTJ
3"CL1500 RTJ
3"CL1500 RTJ
PI 106
PI 105
BF025G
BF025G
BF025G
1/2"
1/4"x1/2"
1"
BE 100
IGN / FFSD
3/4" NPT CPLG CL3000
NOTE F
BF100G
SET @ 90 C
TSHH 100
TW 102
1" COUPLING
TI 100
TW 100
1" COUPLING
SET BY CLIENT IN FIELD
SCV 100
TC 100 VH
TW 101
1" COUPLING
3/8" TUBING 0.035"WT
FG-1"-X-160C-0700
1"NPT PIPE
2" COUPLING
BR200
1"NPT PIPE
NWP
CLIENT
1" CL3000 NPT
FUEL GAS
MAX INLET 130 PSIG
FG-1"-W-80A-0701
PSLL 100
SET @ 4 PSI FALLING (28 kPa)
PSHH 100
SET @ 14 PSI RISING (97 kPa)
PI 101
NM025
1/4"
PI 100
NM025
1/4"
BF025G CSO
ZSC ZSO
UY 100
BF025G CSO
RANGE 5-20 PSI FIELD SET
3/4" NPT
NOTE A & D VENT TO ATM.
14.9 PSI MAX
TCV 100
VH
FC
1"x1/4"
14.9 PSI MAX
SDV 100
VH
1"x1/4"
PRV 101
SY100
BF100G
1" CL3000
1" CL3000
5 PLACES TYP 1/4"x2"
14.9 PSI MAX
NOTE A & D VENT TO ATM.
2" NPS VENT STACK
XYV 101
NC
2 WAY
PRV 102
PI 102
0-35 PSI FIELD SET
VENT O/S INDIVIDUALLY NOTE D
BF025G
1/4"x1"
CSA B149.3 14.9 PSIG MAWP
ASME B31.3 NFS 130 PSIG MAWP
PRV 103
PI 103
SET @ 20 PSI (138 kPa)
VH
BR025
1/4"x1"
PRV 104
PI 104
SET @ 80 PSI (552 kPa)
VH
BR025
1/4"x1"
LPD
1/2"x2"
BR050
3/8" TUBING 0.035"WT
NWP STOCK VALVE TRAIN - SEE DWG NWPL-00030
SCV 101
3/8" TUBING 0.035"WT
E-100 ENCLOSURE LIMIT

ORIGINAL

SKID LIMIT SK-100

REV	DATE	BY	CHK	APP	DESCRIPTION
0	SEPT 16/19	SW			ISSUED FOR CONSTRUCTION

DRAWING REVISIONS

ISSUED FOR CONSTRUCTION

SIGNED: _____

DATE: _____

W.O.: _____

S/N: _____

ALL DIMENSIONS IN INCHES

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

NWP INDUSTRIES LP
1.0MM BTU/HR LINE HEATER
3" SCH 160 CL1500 RTJ 6 PASS COIL

PIPING AND INSTRUMENTATION DIAGRAM

DWN: GH	CHK:	APP:	SCALE: N.T.S.	SHEET: 1 OF 2	REV: 0
DATE: APR 26/16	DATE: SEP 16 2019	DATE: SEP 16 2019		DWG: 09128-001-P-000	

COPYRIGHT © NWP 2012 THIS DRAWING IS PROPERTY OF NWP INDUSTRIES LP AND MAY NOT BE REPRODUCED WITHOUT PERMISSION. THIS DRAWING MUST BE RETURNED UPON REQUEST.

LINE TYPE LEGEND

- MAJOR PROCESS LINE
- UTILITY LINE
- BUILDING/SKID 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

INSULATION LEGEND

2.5" PP / 3" C — " THICKNESS; C=COLD; H=HOT; PP=PERSONEL PROTECTION

.25H ET / 3"H GT — " THICKNESS c/w TRACING; ET=ELEC. TRACE; GT=GLYCOL TRACE; OT=OIL TRACE; ST=STEAM TRACE

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 DISC
- PRESSURE RELIEF VALVE
- ANGLE VALVE
- ANGLE CHOKE VALVE
- GAUGE VALVE
- BLOCK & BLEED NEEDLE VALVE
- MULTIIPORT MANIFOLD

VALVE CONNECTION LEGEND

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

TOPWORKS SYMBOL LEGEND

- DIAPHRAGM ACTUATOR
- ACTUATOR WITH HANDWHEEL
- ACTUATOR WITH POSITIONER
- REGULATOR WITH HANDWHEEL
- BACK PRESS. REGULATOR
- PRESS. REDUCING REGULATOR
- PISTON ACTUATOR
- ACTUATOR WITH POSTIONER
- ROTARY PISTON ACTUATOR
- ROTARY MOTOR ACTUATOR
- SOLENOID

METERING

- METER RUN
- ORIFICE METER
- FLOW CONDITIONER
- VORTEX METER
- POSITIVE DISPLACEMENT METER
- TURBINE/PROPELLER METER
- MASS FLOW METER
- FLOW INDICATOR

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

MISC SYMBOLS LEGEND

- FLANGE / BLIND FLANGE
- BW CAP / THRD CAP
- UNION
- TOL/CPLG w/PLUG
- BREAK
- CONCENTRIC REDUCER
- CONCENTRIC SWAGE
- FOT FOT — ECC REDUCERS
- SKID EDGE SCARFED VENT
- FLEXIBLE HOSE
- CAMLOCK CONNECTION
- SPEC. BLIND-CLOSED/OPEN
- PIPE/TUBING FLOW ARROW
- SPEC/RESPONSIBILITY BREAK
- FLANGED NOZZLE
- MANWAY
- PANEL LOAD
- GROUND
- SKID DRAIN
- PIG BAR
- CONNECTION INDICATOR/ PAGE CONTINUATOR
- LIGHT
- SPEED CONTROL
- VH — SWITCHING VALVE (AMOT)
- CONSTRUCTION REVISIONS
- MUFFLER

ORIGINAL

GENERAL NOTES

1. SHOP INSTALL ADDITIONAL PIPE SUPPORTS WHERE REQ'D.
2. SHIP LOOSE ITEMS TO BE BOXED AND SEALED PRIOR TO SHIPMENT.
3. PLUG AND PROTECT ALL OUTLETS PRIOR TO SHIPMENT.
4. ROUTE PIPING TO ENSURE NO LIQUID TRAPS.
5. ALL PIPING MATERIAL TO BE STANDARD TEMP U.N.O.
6. HYDROTEST PROCESS PIPING TO 1.5 x M.A.W.P.
7. ALL PIPING AND PROCESS TUBING LINES TO BE TESTED PER ASME B31.3 NFS
8. INSTRUMENT SUPPLY LINES TO BE TESTED PER ABSA AB-522 DIRECTIVE
9. SHOP TO ADD UNIONS AS REQUIRED

CUSTOMER NOTES

A. VENT TERMINATIONS MUST HAVE SCREENS AND POINT DOWNWARDS.
B. ACL DRIVERS MAY BE SUPPLIED FOR LOW WATTAGE APPLICATIONS.
C. ELECTRICAL BY NWP.
D. THE DISCHARGE OF VENT PIPING SHALL BE LOCATED MORE THAN 3FT FROM ANY BUILDING OPENING AND MORE THAN 10FT FROM ANY AIR INTAKE OR SOURCE OF IGNITION. EXTEND LINES AWAY FROM PERSONNEL AND BUILDING OPENINGS WITH SCREENS AND PROTECTED FROM WATER ENTRY.
E. THREADED PIPING C.A. 1/16"
F. BALL VALVE MUST BE WITHIN OPERATORS REACH AT FLAME ARRESTOR.

REV A

REV A

ABBREVIATIONS

ASSY – ASSEMBLY	HPV – HIGH POINT VENT	MISC. – MISCELLANOUS
ATM – ATMOSPHERE	HS – HYDRAULIC SUPPLY	PD – POSITIVE DISPLACEMENT
BBL – BARREL	HT – HEAT TRACE	P/I – PNEUMATIC TO CURRENT
BD – BLOWDOWN	IA – INSTRUMENT AIR	P/L – PIPELINE
BTU – BRITISH THERMAL UNITS	ID – INSIDE DIAMETER	PLC – PROGRAMMABLE LOGIC CONTR.
CC – CORROSION COUPON	IG – INSTRUMENT GAS	PO – PUMP OUT
CP – CORROSION PROBE	INJ. PT – INJECTION POINT	RF – RAISED FACE
CSC – CAR SEAL CLOSED	I/P – CURRENT TO PNEUMATIC	RO – RESTRICTION ORIFICE
CSO – CAR SEAL OPEN	I/S – INSIDE	RP – REDUCED PORT
c/w – COMPLETE WITH	LLL – LOW LIQUID LEVEL	RTJ – RING TYPE JOINT
DB&B – DOUBLE BLOCK & BLEED	LPD – LOW POINT DRAIN	RTU – REMOTE TRANSMITTING UNIT
ESD – EMERGENCY SHUTDOWN	LSD – LEGAL SUBDIVISION	SP – SAMPLE POINT
ET – ELECTRICAL TRACE	MAWP – MAX. ALLOW. WORK PRES.	s/c – SHOP COAT
FC – FAIL CLOSE	MDMT – MIN. DESIGN METAL TEMP.	SG – SPECIFIC GRAVITY
FFSD – FAIL CLOSE	MCC – MOTOR CONTROL CENTER	SS – STAINLESS STEEL
FO – FAIL OPEN	MISC. – MISCELLANOUS	S/S – SEAM TO SEAM
FRD – FLOAT RELEASE DEVICE	NC – NORMALLY CLOSED	TK – TANK
FP – FULL PORT	NLL – NORMAL LIQUID LEVEL	T/T – TANGENT TO TANGENT
GO – GEAR OPERATED	NO – NORMALLY OPEN	UNO – UNLESS NOTED OTHERWISE
GT – GLYCOL TRACE	NTS – NOT TO SCALE	VH – VENT HEADER
HC – HOSE CONNECTION	OD – OUTSIDE DIAMETER	ZSC – POSITION/LIMIT SWITCH CLOSE
HLL – HIGH LIQUID LEVEL	O/S – OUTSIDE	ZSO – POSITION/LIMIT SWITCH OPEN

REV A

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 FUCTION					
PROGRAMMABLE LOGIC CONTROL					

INSTRUMENTATION IDENTIFICATION AS PER ANSI/ISA-5.1-2009

LETTER	FIRST LETTERS		SUCCEEDING LETTERS		
	COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
	MEASURED/INITIATING VARIABLE	VARIABLE MODIFIER	READOUT/PASSIVE FUNCTION	OUTPUT/ACTIVE FUNCTION	FUNCTION MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL	CLOSE
D	USER'S CHOICE	DIFFERENCE, DIFFERENTIAL			DEVIATION
E	VOLTAGE		SENSOR, PRIMARY ELEMENT		
F	FLOW, FLOW RATE	RATIO			
G	USER'S CHOICE		GLASS, GAUGE, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT		INDICATE		
J	POWER		SCAN		
K	TIME, SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE				MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE, TOTALIZE	INTEGRATE, TOTALIZE		
R	RADIATION		RECORD		RUN
S	SPEED, FREQUENCY	SAFETY		SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL, PROBE		
X	UNCLASSIFIED	X-AXIS	ACCESSORY DEVICES, UNCLASSSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, PRESENCE	Y-AXIS		AUXILIARY DEVICES	
Z	POSITION, DIMENSION	Z-AXIS, SAFETY INSTRUMENTED SYSTEM		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

REV A.1

VALVE TAGGING

XX XXX XX

- BALL VALVE (FULL PORT) – BF
- BALL VALVE (REG. PORT) – BR
- BUTTERFLY VALVE – BU
- CHECK VALVE (BALL) – CB
- CHECK VALVE (PISTON) – CP
- CHECK VALVE (SWING) – CS
- CHECK VALVE (WAFER) – CW
- GATE VALVE – GA
- GLOBE VALVE – GL
- STRAINER (BASKET) – SB
- STRAINER (T) – ST
- STRAINER (Y) – SY
- SWAGELOK – SW
- NEEDLE VALVE (FEMALE x FEMALE) – NF
- NEEDLE VALVE (MALE x FEMALE) – NM
- MANIFOLD – MF

- 025 – 1/4"
- 038 – 3/8"
- 050 – 1/2"
- 075 – 3/4"
- 100 – 1"
- 200 – 2"
- 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
- Z – BOM CLARIFIER (1,2,...)

LINE TAGGING

XX–X"–X–XXXX–XXX

- DRAIN – D
- EMULSION – E
- FUEL GAS – FG
- GLYCOL – G
- HYDROCARBON – HC
- INSTRUMENT AIR/GAS – IA/IG
- PROCESS GAS – PG
- PRESSURE RELIEF – PR
- WATER – W
- VENT (ATMOS) – V

NOMINAL PIPE SIZE

- 150 ANSI – A
- 300 ANSI – B
- 600 ANSI – C
- 900 ANSI – D
- 1500 ANSI – E
- 2500 ANSI – F
- 2000# THRD/SW – T
- 3000# THRD/SW – W
- 6000# THRD/SW – X

PIPE SCHEDULE

- A – 316 SS TUBING w/ 316 SS FITTINGS
- B – 316 SS TUBING w/ CS FITTINGS
- C – NOT APPLICABLE

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

REV A.1

REV	DATE	BY	CHK	APP	DESCRIPTION
0	SEPT 16/19	SW	[illegible]	[illegible]	ISSUED FOR CONSTRUCTION

DRAWING REVISIONS

ISSUED FOR CONSTRUCTION

SIGNED: _____

DATE: _____

W.O.: _____

S/N: _____

ALL DIMENSIONS IN INCHES

NWP INDUSTRIES LP

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

NWP INDUSTRIES LP
1.0MM BTU/HR LINE HEATER
3" SCH 160 CL1500 RTJ 6 PASS COIL

PIPING AND INSTRUMENTATION LEGEND

DWN:	CHK:	APP:
GH	[illegible]	[illegible]
DATE: APR 26/16	DATE: SEP 16 2019	DATE: SEP 16 2019

SCALE:	SHEET:	DWG:	REV:
N.T.S.	2 OF 2	09128-001-P-000	0

COPYRIGHT © NWP 2012 THIS DRAWING IS PROPERTY OF NWP INDUSTRIES LP AND MAY NOT BE REPRODUCED WITHOUT PERMISSION. THIS DRAWING MUST BE RETURNED UPON REQUEST.