

P101
PROCESSING CARRY PUMP
MAKE: TARG
MODEL: 3000A
NOMINAL FLOW: 1.8 L/MIN
FLUID: HCL
WEIGHT: 30 KGS
(PUMP & MOTOR)

PM101
PROCESSING CARRY PUMP MOTOR
BUILD: 1994
SIZE: 3/4" KW @ 1750 RPM
2 POLE
3 / 60 / 480 VAC
ENCLOSURE: T3P
INTERIOR DUTY
56 FRAME, NEMA C

V101
1ST STAGE Suction SCRUBBER
SIZE: 324 MM O.D. X 1792 MM S/S
W.A.M.P.: 4516 KRG @ 140 DEGC
M.O.M.T.: -29 DEGC @ 4516 KRG
C.A.: 1.5 MM
SHELL MATERIAL: SA-105-B
HEAD MATERIAL: SA-204-WF8
WEIGHT: 340 KGS

V102
2ND STAGE Suction SCRUBBER
SIZE: 508 MM O.D. X 1451 MM S/S
W.A.M.P.: 4516 KRG @ 140 DEGC
M.O.M.T.: -29 DEGC @ 4516 KRG
C.A.: 1.5 MM
SHELL MATERIAL: SA-105-B
HEAD MATERIAL: SA-204-WF8
WEIGHT: 340 KGS

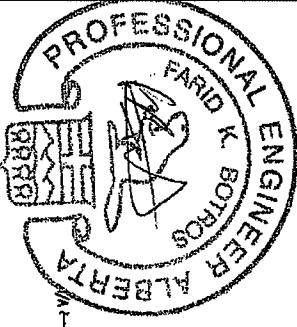
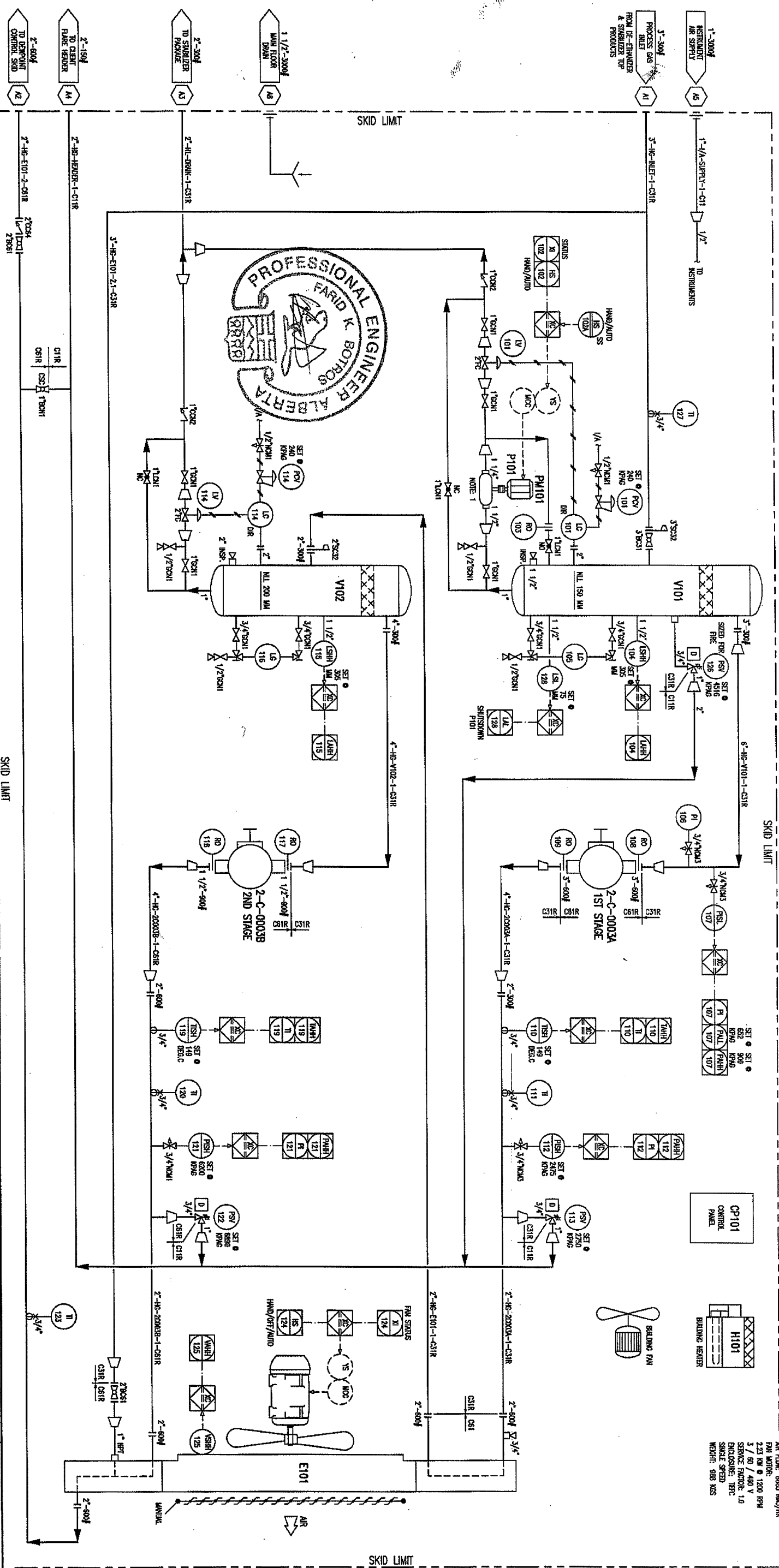
2-C-0003A
CYLINDER #1
MAKE: GEMIN
MODEL: 450
BORE: 5.000"
W.A.M.P.: 8816 KRG

2-C-0003B
CYLINDER #2
MAKE: GEMIN
MODEL: 450
BORE: 5.000"
W.A.M.P.: 8816 KRG

CP101
CONTROL PANEL
MAKE: TARG
TYPE: T3U-101-1 ANNUNCIATOR
CLASS 1, DIV. 2

H101
BUILDING HEATER
MAKE: RHEINEX ELECTRIC
MODEL: FY-480-350-150T
DIME: 51,200 BTU/H
3 / 60 / 480 VAC
WEIGHT: 82 KGS

E101
COOLER
MAKE: AIR-X-CHANGERS
MODEL: 32 EH
W.A.M.P.: 8886 KRG @ 177 DEGC
M.O.M.T.: -29 DEGC @ 8886 KRG
HEAD MATERIAL: SA-516-70
C.A.: 32 MM
F.W.: (1) MOORE CLIX
(4) BLADES
FAN SPEED: 1150 RPM
FAN MOTOR: 8853 MA/HR
AIR FLOW: 1200 RPM
2.23 KW @ 480 V
3 / 60 / 480 V
SERVICE FACTOR: 1.0
ENCLOSURE: T3P
SINGLE SPEED
WEIGHT: 988 KGS



NOTE: 1
PUMP WAMP IS 1696 KRG & IS PROTECTED BY PSH-308 (ON 2-200).

REV.	DESCRIPTION	DATE	BY	APPR.
4	AS BUILT	MAY 17/07	TM	FB
3	GENERAL REVISIONS	MAR 20/07	TM	FB
2	ISSUED FOR CONSTRUCTION	FEB 21/07	TM	FB
1	REMOVED TAG NUMBERS & GENERAL REVISIONS	FEB 2/07	TM	FB
A	ISSUED FOR APPROVAL	JAN 19/07	TM	FB

NEXT AVAILABLE TAG NUMBER: 129

PERMIT TO PRACTICE
TOROMONT ENERGY SYSTEMS INC.
Signature: *[Signature]*
Date: MAY 17 2007

PERMIT NUMBER: P 8651
The Association of Professional Engineers,
Geologists and Geophysicists of Alberta

ENGINEER SIGNATURE



TITLE: **P & I FLOW DIAGRAM**

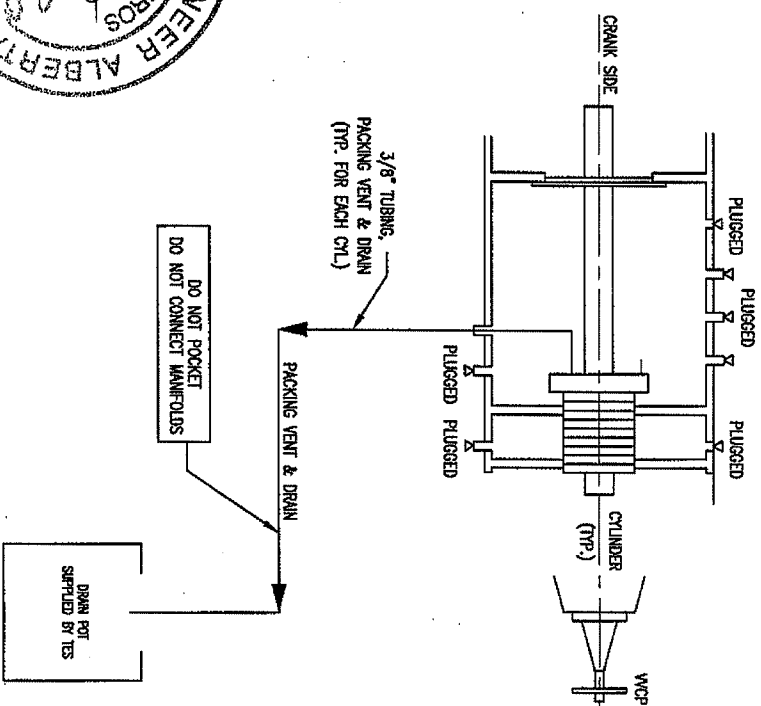
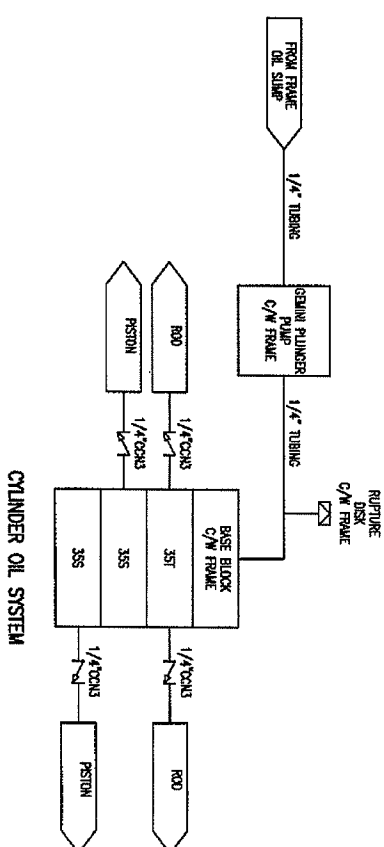
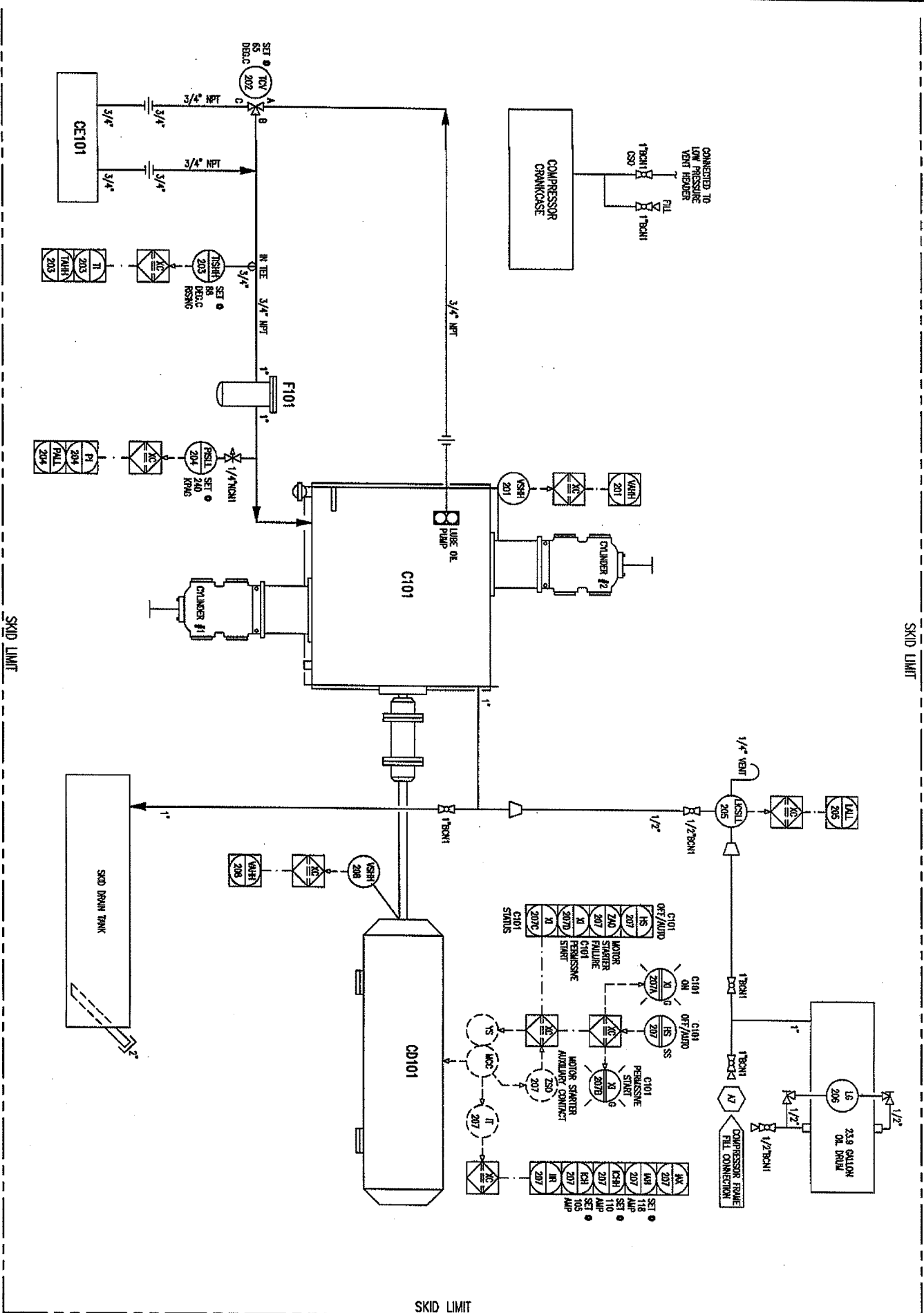
FOR: **HUSKY ENERGY OVERHEADS COMPRESSOR ANSELL GAS PLANT**

DESIGN BY:	DATE:
THOMAS MAH	JAN. 19, 2007
CHECK BY:	DATE:
F. BOTROS	N/A
APPROV. BY:	DATE:
F. BOTROS	12/31/10

NO.	12317-101	SHEET NO.	4
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CD101
COMPRESSOR MOTOR

WAVE: TEO
MODEL: PDM030B012
FRAME: 40S
S.F.: 1,15
INSULATION: CLASS F
ENCLOSURE: TPT
ELECTRIC: 3/60/450W, 1200 RPM
CLASS: 1, DV 2, GROUPS C & D
WEIGHT: 590 KGS



NEXT AVAILABLE TAG NUMBER: 209					
4	AS BUILT	MAY 17/07	TU	FB	
3	GENERAL REVISIONS	MAY 20/07	TU	FB	
2	ISSUED FOR CONSTRUCTION	FEB 21/07	TU	FB	
1	REISED TAG NUMBERS & GENERAL REVISIONS	FEB 2/07	TU	FB	
A	ISSUED FOR APPROVAL	JUN 19/07	TU	FB	
REV.	DESCRIPTION	DATE	BY	APPR.	

PERMIT TO PRACTICE

TOROMONT ENERGY SYSTEMS INC.

Signature _____
Date MAY 17 2007

PERMIT NUMBER: P 8651

The Association of Professional Engineers,
Geologists and Geophysicists of Alberta

ENGINEER STAMP

		DESIGN BY: THOMAS MAH GRAB. NO. F. BOTROS	DATE: JAN. 19, 2007 SCALE N/A
		APPR. BY: F. BOTROS CERT. NO. INC.	T.O. INC. 12317101

TITLE	P & I FLOW DIAGRAM
PROJ. NO.	HUSKY ENERGY OVERHEADS COMPRESSOR ANSELL GAS PLANT
TAG NO.	12317-101
PAGE NO.	2 OF 4

LINE IDENTIFICATION

A-B-CCDD-E-FGH-I-J,K,L

A : NOMINAL LINE SIZE IN INCHES

B : FLUID

C : CARBON DIOXIDE

CG : COOLING WATER

FW : FUEL GAS

G : GLYCOL

HG : HYDROCARBON GAS

HL : HYDROCARBON LIQUID

I/A : INSTRUMENT AIR

I/G : INSTRUMENT GAS

L : LUBE OIL (COMPRESSOR)

MG : NATURAL GAS

P : PROPANE

PG : PURGE GAS

V : PRODUCED WATER

C : EQUIPMENT TYPE / MONITOR (IF REQUIRED)

CP : COMPRESSOR

CP : CONTROL PANEL

D : DRYER (MOTOR/ENGINE)

E : EXCHANGER

F : FILTER

H : HEATER

P : PUMP

T : TANK

V : PRESSURE VESSEL

D : EQUIPMENT NUMBER

101 TO 999 SEQUENTIAL NUMBERS

E : LINE NUMBER

1 TO 9 SEQUENTIAL NUMBERS

FROM EQUIPMENT

FH : PUMP SPECIFICATION

F : MATERIAL GROUP

C : CARBON STEEL

L : LOW TEMPERATURE CARBON STEEL

S : STAINLESS STEEL

G : ANSI 16.5 FLANGE CLASS

0 : NON CODE

1 : 150#

3 : 300#

6 : 600#

9 : 900#

15 : 1500#

25 : 2500#

H : LINE MATERIAL SPECIFICATION REFERENCE

1 TO 9 SEQUENTIAL NUMBERS

I : PIPE SPECIFICATION REFERENCE

R : REPROCESSING

J : INSULATION TYPE (IF REQUIRED)

C : COOL

H : HOT

HC : HOT/COLD

HT : HEAT TRACING

PP : PERSONAL PROTECTION

K : INSULATION THICKNESS (IF REQUIRED)

THICKNESS IN MILLIMETERS OR INCHES

L : TRACING (IF REQUIRED)

ET : ELECTRICAL TRACING

GT : GLYCOL TRACING

ST : STEAM TRACING

EXAMPLE: 3"-HG-V101-1-C6IR-H100XET

3" - LINE SIZE

HG - HYDROCARBON GAS

V101 - PRESSURE VESSEL TAG NUMBER

1 - FIRST LINE FROM VESSEL

C6IR - C CARBON STEEL LINE

600# ANSI FLANGE RATING

1 LINE MATERIAL SPECIFICATION REFERENCE

R PIPE SPECIFICATION REFERENCE

HT - HEAT TRACING INSULATION

XX - THICKNESS IN MILLIMETERS OR INCHES (?)

VALVE IDENTIFICATION

A BODEF

A : NOMINAL VALVE SIZE IN INCHES

B : TYPE

A : ANGLE GLOBE

B : BALL

C : CHECK

G : GATE

L : GLOBE

M : MANIFOLD

N : NEEDLE

P : PLUG

S : START-UP STRAINER

T : TEE STRAINER

U : BUTTERFLY

Y : Y PATTERN STRAINER

C : BODY MATERIAL

B : BRONZE

C : CARBON STEEL

I : CAST IRON

D : END CONNECTIONS

1 : FLANGED 150#

3 : FLANGED 300#

6 : FLANGED 600#

9 : FLANGED 900#

15 : FLANGED 1500#

25 : FLANGED 2500#

F : UNIQUE DESCRIPTION

REFER TO VALVE DATA SHEETS

F : MODIFIER

C : CHAIN OPERATOR

E : EXTENDED BOWNET

G : GEAR OPERATOR

L : LOCKING DEVICE

N : NACE TRIM

X : SPECIAL SPECIFICATIONS

EXAMPLE: 6"GC11,C

6" VALVE SIZE

C : CARBON STEEL

1 : 150#

1 : API-600

C : CHAIN OPERATOR

CONTROL VALVES

POSITIONER

DIAPHRAGM CONTROL VALVE

OUTLET PRESSURE REGULATOR

INLET PRESSURE REGULATOR

PRESSURE DIFFERENTIAL CONTROL

VALVE (SELF-CONTAINED)

MISCELLANEOUS

PRESSURE SAFETY/RELIEF VALVE

ORIFICE SIZE

RUPTURE DISC FOR VACUUM RELIEF

RUPTURE DISC FOR PRESSURE RELIEF

CONTINUOUS LIQUID DRAINER OR STEAM TRAP

VORTEX BREAKER

DIAPHRAGM SEAL

SKID TIE-POINTS

OPEN DRAIN

SPECTACLE BLIND (LINE OPEN)

SPECTACLE BLIND (LINE CLOSED)

CONE START-UP STRAINER

BRACKET START-UP STRAINER

Y-PATTERN STRAINER

TEE STRAINER

THICKNESS

INSULATION TYPE

ELECTRIC HEAT TRACE

GLYCOL OR STEAM HEAT TRACE

VALVE TYPES

ANGLE GLOBE VALVE

BALL VALVE

BUTTERFLY VALVE

CHECK VALVE

GATE VALVE

GLOBE VALVE

NEEDLE VALVE

PLUG VALVE

3-WAY VALVE

4-WAY VALVE

VALVE W/BLEED

VALVE W/PLUG

WELDED (BUTT OR SOCKET)

THREADED BY WELDED

FLANGED

LINE CODE

PRIMARY PROCESS LINE

SECONDARY PROCESS LINE

INSTRUMENT PROCESS LINE (TUBING)

BY OTHERS

SKID LIMIT

PNEUMATIC SIGNAL

ELECTRIC SIGNAL

CAPILLARY TUBING

INSTRUMENT SYSTEM LINK (ELECTRONIC MEMORY SHARING)

INSTRUMENTS

RELAY OR CONVERTER

* FOR INPUT/OUTPUT SEQUENCES

DESIGNATION: SIGNAL

I : CURRENT (ELECTRICAL)

P : PNEUMATIC

PROGRAMMABLE LOGIC CONTROLLER (PLC)

XC REPRESENTS GENERAL LOGIC

INTERLOCK

ELECTRICAL (HARD WIRE) INTERLOCK

MAN MACHINE INTERFACE

IN MAIN PANEL

BY OTHERS

PILOT LIGHT

* COLOUR

(A) AMBER (B) BLUE

(G) GREEN (O) ORANGE

(R) RED (W) WHITE

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INSTRUMENT IDENTIFICATION GENERAL REFERENCE (ISA - SS-1)

FIRST LETTER	SUCCEEDING LETTERS	PRIMARY ELEMENT	INDICATOR	REORDER	CONTROL				TRANS-MITTER	CONTROL		SELF-VALVE OR ACTUATOR	RELAY OR CONVERTER
					BLIND	INDICATING	RECORDING	WITTER		SWITCH	ALARM		
A	ANALYSIS	ALARM	AE	AI	AC	AC	ARC	AI	AS	AS	AI	AV	AV
B	USER'S CHOICE	CONTROL OR CLOSE	CE	CI	CC	CC	CR	CI	CS	CS	CI	CV	CV
C	CONDUCTIVITY	DIFFERENTIAL	DE	DI	DC	DC	DR	DI	DS	DS	DI	DV	DV
D	DENSITY OR MASS (DIFFERENTIAL)	PRIMARY ELEMENT	EE	ED	EC	EC	ER	ED	ES	ES	ED	EY	EY
E	VOLTAGE	SHUTDOWN FIRST OUT	FE	FI	FC	FC	FR	FI	FS	FS	FI	FV	FV
F	FLOW (RATIO OR FRACTION)	GLASS	GE	GI	GC	GC	GR	GI	GS	GS	GI	GV	GV
G	GALVING	HIGH	HE	HI	HC	HC	HR	HI	HS	HS	HI	HV	HV
H	HAND	INDICATE	IE	II	IC	IC	IR	II	IS	IS	II	IV	IV
I	CURRENT	CONTROL STAND	JE	JI	JC	JC	JR	JI	JS	JS	JI	JV	JV
J	POWER (SCAN)	CONTROL STAND	KE	KI	KC	KC	KR	KI	KS	KS	KI	KV	KV
K	TIME	LOW	LE	LI	LC	LC	LR	LI	LS	LS	LI	LV	LV
L	LEVEL	MIDDLE OR INTERMEDIATE	ME	MI	MC	MC	MR	MI	MS	MS	MI	MV	MV
M	MOISTURE, HUMIDITY	ORIFICE OR OPEN	OE	OI	OC	OC	OR	OI	OS	OS	OI	OV	OV
N	USER'S CHOICE	RECORD OR PRINT	RE	RI	RC	RC	RR	RI	RS	RS	RI	RV	RV
O	USER'S CHOICE	RECORD OR PRINT	RE	RI	RC	RC	RR	RI	RS	RS	RI	RV	RV
P	PRESSURE OR VACUUM	RECORD OR PRINT	RE	RI	RC	RC	RR	RI	RS	RS	RI	RV	RV
Q	QUANTITY OR EVENT (INTEGRATE/TOTALIZE)	RECORD OR PRINT	RE	RI	RC	RC	RR	RI	RS	RS	RI	RV	RV
R	RELIEF OR RESTRICTION	RECORD OR PRINT	RE	RI	RC	RC	RR	RI	RS	RS	RI	RV	RV
S	SPEED OR FREQUENCY	RECORD OR PRINT	RE	RI	RC	RC	RR	RI	RS	RS	RI	RV	RV
T	TEMPERATURE	RECORD OR PRINT	RE	RI	RC	RC	RR	RI	RS	RS	RI	RV	RV
U	MULTI-VARIABLE	RECORD OR PRINT	RE	RI	RC	RC	RR	RI	RS	RS	RI	RV	RV
V	VARIATION	RECORD OR PRINT	RE	RI	RC	RC	RR	RI	RS	RS	RI	RV	RV
W	WEIGHT OR FORCE	RECORD OR PRINT	RE	RI	RC	RC	RR	RI	RS	RS	RI	RV	RV
X	UNCLASSIFIED (DIAGNOSTIC)	RECORD OR PRINT	RE	RI	RC	RC	RR	RI	RS	RS	RI	RV	RV
Y	USER'S CHOICE	RECORD OR PRINT	RE	RI	RC	RC	RR	RI	RS	RS	RI	RV	RV
Z	POSITION	RECORD OR PRINT	RE	RI	RC	RC	RR	RI	RS	RS	RI	RV	RV

ABBREVIATIONS

(C) - CLOSE (H) - HIGH ALARM (HH) - HIGH SHUTDOWN (LL) - LOW SHUTDOWN (O) - OPEN (L) - LOW ALARM (LS) - LOW SHUTDOWN (X) - DIAGNOSTIC SHUTDOWN (USED TO INDICATE THE DIAGNOSTIC CHECK READ ON THE ANALOG INPUT)

ABBREVIATIONS

M2 SQUARE METERS
M3 CUBIC METERS
MAX MAXIMUM
MAMP MAXIMUM ALLOWABLE WORKING PRESSURE
MCC MOTOR CONTROL CENTER
MDDT MAXIMUM DESIGN METAL TEMPERATURE
MANU MANUAL
MM MILLIMETER
MMOUT MAXIMUM OUTPUT
MS MOTOR STARTER
NC NORMALLY CLOSED
NO NORMALLY OPEN
NPT NATIONAL PIPE THREAD
O.I. OUTSIDE DIAMETER
O.D. OUTSIDE DIAMETER
P.B. PUSH BUTTON
PSM POUNDS / SQUARE INCH ABSOLUTE
PSID POUNDS / SQUARE INCH DIFFERENTIAL
PSIG POUNDS / SQUARE INCH GAUGE
PLC PROGRAMMABLE LOGIC CONTROLLER
REV REVERSE ACTING
RST RESET (INTER