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LINE IDENTIFICATION

A–B–CD–E–FGH–I,I,I

A : NOMINAL LINE SIZE IN INCHES

B : FLUID

A	AMMONIA	IA	INSTR. AIR SUPPLY
C	CARBON DIOXIDE	IG	INSTR. GAS SUPPLY
CW	COOLING WATER	L	LUBE OIL (COMPRESSOR)
F	FUEL GAS	N	NITROGEN
G	GLYCOL	O	OXYGEN
H	HYDROGEN	P	PROPANE
HG	HYDROCARBON GAS	V	PRODUCED/PROCESS WATER
HL	HYDROCARBON LIQUID	W	WATER SUPPLY (SOFTENED)
HM	HEAT MEDIUM		

C : EQUIPMENT TYPE

B	BLOWER/FAN	P	PUMP
C	COMPRESSOR	S	OIL SKIMMER
E	EXCHANGER	T	TANK
F	FILTER	V	PRESSURE VESSEL
H	HEATER		

MODIFIER

E ENGINE

M MOTOR

D : EQUIPMENT NUMBER: 1 TO 999 SEQUENTIAL NUMBERS

E : LINE NUMBER: 1 TO 9 SEQUENTIAL NUMBERS FROM EQUIPMENT

FGH : PIPING SPECIFICATION

F : MATERIAL GROUP

- C CARBON STEEL
- L LOW TEMP. CARBON STEEL
- S STAINLESS STEEL

G : ANSI 16.5 FLANGE CLASS

1	150#	9	900#
3	300#	15	1500#
6	600#	25	2500#

H : LINE MATERIAL SPECIFICATION REFERENCE: 1 TO 9 SEQUENTIAL NUMBERS

III : MODIFIER / GENERAL

H	PLUS THICKNESS IN INCHES (HOT INSULATION)
C	PLUS THICKNESS IN INCHES (COLD INSULATION)
PP	PLUS THICKNESS IN INCHES (PERSONAL PROTECTION)
HT	PLUS THICKNESS IN INCHES (HEAT TRACING)
ST	STEAM TRACING
GT	GLYCOL TRACING
ET	ELECTRICAL TRACING

EXAMPLE: 3"–A–V1–2–C11–HT1", ET

- 3" – LINE SIZE
- A – AMMONIA
- V1 – VESSEL
- 2 – SECOND LINE FROM VESSEL
- C11 – CARBON STEEL LINE
  - 1 150# ANSI FLANGE RATING
  - 1 LINE MATERIAL SPECIFICATION REFERENCE
- HT1" – HEAT TRACING INSULATION 1" THICK
- ET – ELECTRIC TRACING

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)

VALVE IDENTIFICATION

A"BCDE,F

A : NOMINAL VALVE SIZE IN INCHES

B : TYPE

A	ANGLE GLOBE	N	NEEDLE
B	BALL	P	PLUG
C	CHECK	S	START–UP STRAINER
G	GATE	T	TEE STRAINER
L	GLOBE	Y	Y–STRAINER
M	MANIFOLD	U	BUTTERFLY

C : BODY MATERIAL

B	BRONZE	L	LOW TEMP. CARBON STEEL
C	CARBON STEEL	S	STAINLESS STEEL
I	CAST IRON		

D : END CONNECTIONS

1	FLANGED 150#	F	NPT BY FLANGE (MANIFOLD)
3	FLANGED 300#	N	NPT (THREADED)
6	FLANGED 600#	M	NPT MALE BY NPT FEMALE
9	FLANGED 900#	S	SW (SOCKETWELD)
B	BUTT WELD	T	TUBE (SWAGELOCK)
C	SW BY NPT		

E : IDENTIFIER – NUMBER USED TO SPECIFY VALVE REFER TO VALVE DATA SHEETS

F : MODIFIER

C	CHAIN OPERATOR	O	OXYGEN SERVICE/CLEANING
E	EXTENDED BONNET	P	FULL PORT DESIGN
G	GEAR OPERATOR	R	RTJ FLANGED
L	LOCKING DEVICE	S	SPRING HANDLE (CLOSE)
N	NACE TRIM	X	SPECIAL SPECIFICATIONS

EXAMPLE: 6"GC11,C

6"	VALVE SIZE	1	150#
G	GATE	1	API–600
C	CARBON STEEL	C	CHAIN OPERATOR

VALVES

- ANGLE GLOBE VALVE
- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- GATE VALVE
- GLOBE VALVE
- NEEDLE VALVE
- PLUG VALVE
- 3–WAY VALVE
- 4–WAY VALVE
- START–UP STRAINER
- TEE STRAINER
- Y–STRAINER

VALVE CONNECTIONS

- THREADED
- WELDED (BUTT OR SOCKET)
- THREADED BY WELDED
- FLANGED

CONTROL VALVES

- POSITIONER DIAPHRAGM CONTROL VALVE
- OUTLET PRESSURE REGULATOR (SELF–CONTAINED) (FLOW)
- INLET PRESSURE REGULATOR (SELF–CONTAINED) (FLOW)
- PRESSURE DIFFERENTIAL CONTROL VALVE (SELF–CONTAINED)
- TWO–WAY SOLENOID VALVE
- THREE–WAY SOLENOID VALVE
- MOTOR ACTUATOR
- HYDRAULIC / PNEUMATIC PISTON OPERATED
- VALVE W/ BLEED
- VALVE W/ PLUG
- PRESSURE SAFETY/ RELIEF VALVE
- XX – DESIGNATES ORIFICE LETTER (SIZE)

MISCELLANEOUS

- FLEXIBLE CONNECTION
- SPECTACLE BLIND (LINE OPEN)
- SPECTACLE BLIND (LINE CLOSED)
- FLOW GLASS
- RUPTURE DISC FOR PRESSURE RELIEF
- RUPTURE DISC FOR VACUUM RELIEF
- VORTEX BREAKER
- DIAPHRAM SEAL
- CONTINUOUS LIQUID DRAINER OR STEAM TRAP
- SKID TIE–POINTS
- OPEN DRAIN
- THICKNESS – IN/C – INSULATION – (C) COLD, (H) HOT, (HT) HEAT TRACING, (PP) PERSONAL PROTECTION
- IN/HT – ELECTRIC HEAT TRACE
- IN/HT – STEAM OR GLYCOL HEAT TRACE

INSTRUMENT IDENTIFICATION GENERAL REFERENCE (ISA – S5.1)

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

(C) –CLOSE (O) –OPEN
(H) –HIGH ALARM (L) –LOW ALARM
(HH)–HIGH SHUTDOWN (LL)–LOW SHUTDOWN

(XX)–DIAGNOSTIC SHUTDOWN (USED TO INDICATE THE DIAGNOSTIC CHECK REQ'D ON THE ANALOG INPUT

INSTRUMENTS

- THERMOWELL (THREADED)
- THERMOWELL (WELDED)
- LOCAL MOUNTED
- LOCAL PANEL MOUNTED
- MOUNTED BEHIND OR IN LOCAL PANEL
- MAIN PANEL MOUNTED
- MOUNTED BEHIND OR IN MAIN PANEL
- MAN / MACHINE INTERFACE IN MAIN PANEL
- PILOT LIGHT
  - * COLOUR– (A) AMBER, (G) GREEN, (R) RED, (B) BLUE, (O) ORANGE, (W) WHITE

TV * I/P – RELAY OR CONVERTER
* FOR INPUT/OUTPUT SEQUENCES

DESIGNATION: SIGNAL:

E	VOLTAGE
H	HYDRAULIC
I	CURRENT (ELECTRICAL)
O	ELECTROMAGNETIC OR SONIC
P	PNEUMATIC
R	RESISTANCE (ELECTRICAL)

XC – PROGRAMMABLE LOGIC CONTROLLER (PLC) XC REPRESENTS GENERAL LOGIC

X/Y – X = PLC NUMBER, Y = PLC RACK NUMBER

THE ABOVE IDENTIFICATION NUMBER WILL BE USED TO REFERENCE THE CONTROL PANELS.

- I – INTERLOCK
- E – ELECTRICAL (HARD WIRE) INTERLOCK

ABBREVIATIONS

AOUT	AUTOMATIC OUTPUT	MAWP	MAXIMUM ALLOWABLE WORKING PRESSURE
CA	CORROSION ALLOWANCE	MDMT	MINIMUM DESIGN METAL TEMPERATURE
CHO	CHAIN OPERATED	MIN	MINIMUM
CUST	CUSTOMER	MCC	MOTOR CONTROL CENTER
DIR	DIRECT ACTING	MOUT	MANUAL OUTPUT
DB	DEADBAND	MS	MOTOR STARTER
Δ	DELTA (DIFFERENTIAL)	NC	NORMALLY CLOSED
ESD	EMERGENCY SHUTDOWN	NLL	NORMAL LIQUID LEVEL
FC	FAIL CLOSED	NO	NORMALLY OPEN
FO	FAIL OPEN	MMI	MAN / MACHINE INTERFACE
FLP	FAIL LAST POSITION	PB	PUSH BUTTON
GAIN	GAIN	PL	PILOT LIGHT
HI	HIGH	PLC	PROGRAMMABLE LOGIC CONTROLLER
HS	HAND SWITCH	REV	REVERSE ACTING
HTR	HEATER	RST	RESET (INTEGRAL)
I/A	INSTRUMENT AIR SUPPLY	SCR	SILICON CONTROLLED RECTIFIER
I/G	INSTRUMENT GAS SUPPLY	S/F	SEAM TO FACE OF FLANGE
I/O	INPUT / OUPUT	SP	SETPOINT
LB/HR	POUNDS PER HOUR	SPC	CALCULATED SETPOINT
FT3/DAY	CUBIC FEET PER DAY	SS	SELECTOR SWITCH
FT3/HR	CUBIC FEET PER HOUR	S/S	SEAM TO SEAM
FT3/MIN	CUBIC FEET PER MINUTE	T/T	TANGENT TO TANGENT
LC	LOCKED CLOSED	TS/TS	TUBESHEET TO TUBESHEET
LO	LOCKED OPEN	T/L	TUBE LENGTH
MAX	MAXIMUM	V/H	VENT HEADER

GENERAL NOTES

1. TUBING TO BE 304SS, SEAMLESS. 0.035" WALL THICKNESS, CADMIUM PLATED CARBON STEEL FITTINGS WITH STAINLESS STEEL FERRULES.
2. ALL TEMPERATURE INSTRUMENTS TO BE PROVIDED WITH A THERMOWELL.

REV.	DESCRIPTION	DATE	BY	APPR.
2	AS BUILT	MAR 20/98	AP	DJ
1	ISSUED FOR CONSTRUCTION	JAN 21/98	AP	DJ
A	ISSUED FOR APPROVAL	JAN 09/98	GS	DJ

PERMIT TO PRACTICE STAMP

ENGINEER STAMP

TOROMONT / TOROMONT PROCESS SYSTEMS

DRAWN BY: G. STANGNESS	DATE: JAN 09, 1998
CHKD. BY: D. JAMES	SCALE: N/A
APPR. BY: D. JAMES	W.O. No: 10309101
CUST. PO No:	

TITLE: P & I FLOW DIAGRAM LEGEND

FOR: ROZSA PETROLEUM LTD
ROZSA ENCHANT BATTERY
100 HP BOOSTER UNIT
LSD: 10–20–12–60–W4M

DWG. No: 10309–101 | SHEET No: 3 OF 3 | REV: 2