

FLOW SHEET SYMBOLS

	MAJOR FLOW LINES		FLOW SAFETY VALVE
	OBJECT OF MINOR FLOW LINES		CHOKER VALVE FIXED
	TRANSMISSION LINE (PNEUMATIC)		CHOKER VALVE ADJUSTABLE
	CAPILLARY LINE		CHOKER NIPPLE
	ELECTRICAL SIGNAL		PRESSURE SAFETY VALVE (SPRING OPERATED)
	HYDRAULIC SIGNAL		PRESSURE SAFETY VALVE (PILOT OPERATED)
	MATCH LINE		PRESSURE SAFETY VALVE (PRESSURE-VACUUM TYPE)
	EXISTING OR FUTURE EQUIPMENT		RUPTURE DISC
	ELECTRICAL HEAT TRACE		FLOW ELEMENT (VENTURI TYPE)
	STEAM HEAT TRACE		FLOW ELEMENT (MAGNETIC TYPE)
	ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED)		FLOW ELEMENT (TURBINE TYPE)
	ELECTROMAGNETIC OR SONIC SIGNAL (NOT GUIDED)		FLOW ELEMENT (ELECTRONIC TYPE)
	INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK)		FLOW ELEMENT (DRIFT TYPE)
	MECHANICAL LINK		FLOW ELEMENT (SENIOR DRIFT TYPE)
	INSULATED LINE (SHOW THICKNESS)		SONIC FLOW METER
	LINE SPEC BREAK (SEE PIPING CLASS SPEC. CHART)		POSITIVE DISPLACEMENT METER
	LINE CAP OR TERMINATION		CONE METER
	LINE FLANGE OR TERMINATION		FLOW STRAIGHTENING VANES
	SCREWED VALVE		FIXED FLOW RESTRICTION (PNEUMATIC LINES ONLY)
	FLANGED VALVE		ADJUSTABLE FLOW RESTRICTION (PNEUMATIC LINES ONLY)
	BUTT WELDED VALVE		ADJUSTABLE FLOW RESTRICTION WITH BLEED (PNEUMATIC LINES ONLY)
	SOCKET WELD VALVE		STRAINER (Y TYPE)
	THREE WAY VALVE		STRAINER (BASKET TYPE)
	FOUR WAY VALVE		STRAINER (TEMPORARY TYPE)
	ANGLE VALVE		CONTINUOUS DRAINER WITH EQUALIZING LINE
	CONTROL VALVE TWO WAY		TRAP
	CONTROL VALVE THREE WAY		FLEXIBLE HOSE
	CONTROL VALVE FOUR WAY		HOSE COUPLING
	CONTROL VALVE WITH HANDWHEEL		
	CONTROL VALVE WITH POSITIONER		
	PRESSURE REGULATOR (SELF-CONTAINED)		
	PRESSURE REGULATOR WITH EXTERNAL TAP		
	ELECTRIC MOTOR DRIVEN CONTROL VALVE		
	CONTROL VALVE WITH SINGLE PISTON OPERATED ACTUATOR		
	CONTROL VALVE WITH DOUBLE ACTING PISTON ACTUATOR		
	ELECTRO-HYDRAULIC MOTOR DRIVEN VALVE		
	ELECTRIC SOLENOID VALVE TWO WAY		
	ELECTRIC SOLENOID VALVE THREE WAY		
	PNEUMATIC PILOT VALVE MANUAL		
	BALL VALVE		
	GATE VALVE		
	GLOBE VALVE		
	PLUG VALVE		
	NEEDLE VALVE		
	MULTI-PORT GAUGE VALVE		
	BUTTERFLY VALVE		

FLOW SHEET ABBREVIATIONS

AC	AIR CLOSE
A/D	ANALOG TO DIGITAL
A/M	AUTOMATIC/MANUAL SELECTOR
AD	AIR OPEN
ASD	ALARM SHUTDOWN
BS&W	BASIC SEDIMENT & WATER
C	COMMON
CB	CONTROL BUILDING
CD	CONTINUOUS DRAINER
CH	CHOKER-FIXED
CHA	CHOKER-ADJUSTABLE
CSC	CAR SEAL CLOSED
CSD	CAR SEAL OPEN
E/H	VOLTAGE TO HYDRAULIC CONVERTER
ES	ELECTRICAL SUPPLY
ESD	EMERGENCY SHUTDOWN
FC	FAIL CLOSED
FI	FAIL INDETERMINATE
FL	FAIL LOCKED (LAST POSITION)
FP	FULL PORT
GA	GAS ANALYZER
GA1	GAS ANALYZER INDICATOR
GD	GENERATOR DIESEL PRIME MOVER
GG	GENERATOR GAS PRIME MOVER
GS	GAS SUPPLY
HMS	HAND MOMENTARY SWITCH
HDA	HAND SELECTOR SWITCH
HS	HYDRAULIC SUPPLY
I	UNDEFINED INTERLOCK LOGIC
IA	INSTRUMENT AIR
IG	INSTRUMENT GAS
I/P	CURRENT TO PNEUMATIC CONVERTER
LO	LOCKED OPEN
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NDC	NET OIL COMPUTER
NS	NITROGEN SUPPLY
O/E	RADIO TO VOLTAGE CONVERTER
P	PURGE OR FLUSHING DEVICE
PA	PLANT AIR
P/I	PNEUMATIC TO CURRENT CONVERTER
R	RESET FOR LATCHTYPE ACTUATOR
SP	REMOTE SET POINT
SS	STEAM SUPPLY
TS	TEMPORARY STRAINER
WS	WATER SUPPLY

VALVE IDENTIFICATION

PRESSURE RATING SPEC. SEE PIPING CLASS CHART SHOWN IN LINE IDENTIFICATION PROCEDURE	
VALVE TYPE 1 = GATE 2 = BALL 3 = PLUG 4 = GLOBE 5 = CHECK 6 = NEEDLE 7 = WAFFER (BUTTERFLY) 8 = SPECIAL	VALVE END CONNECTIONS B = WELDED F = FLAT FACE FLANGE J = RING JOINT FLANGE R = RAISE FACE FLANGE S = SCREWED U = UNION X = OTHER Z = SOCKET WELD
VALVE BODY PATTERN (OPTIONAL) F = FULL PORT L = LIFT (CHECK) S = SHORT PATTERN V = WAFFER X = OTHER	SPECIAL SERVICE SPECIFICATION (OPTIONAL) C = LOW TEMPERATURE H = HIGH TEMPERATURE N = SOUR SERVICE (NACE MR-01-75) X = OTHER

LINE IDENTIFICATION

SERVICE DESIGNATION C CHEMICAL CA COMBUSTION AIR EG EXHAUST GAS F FLARE, RELIEF AND VENTS G GLYCOL H HYDRAULIC P PROCESS GAS AND LIQUID AD ATMOSPHERIC DRAIN BG BLANKET GAS DF DIESEL FUEL FG FUEL GAS FW FIRE WATER HM HEAT MEDIUM IA INSTRUMENT AIR IG INSTRUMENT GAS PD PRESSURE DRAIN PL PIPELINE PW POTABLE WATER UA UTILITY AIR UG UTILITY GAS	
PIPING CLASS (FLANGE RATING) CODE ANSI RATING API RATING WOG RATING A 150# 200 WOG B 300# 2000# WOG D 600# 1500# WOG E 900# 2000# WOG F 1500# 3000# WOG G 2500# 3000# WOG H 2000# API J 3000# API K 5000# API L 10,000# API 10,000# WOG M 15,000# API N 20,000# API	

INSTRUMENT SYMBOLS

(PER INSTRUMENT SOCIETY OF AMERICA)

IDENTIFICATION TABLE AND COMBINATION OF LETTERS

*** FIRST LETTER	INDICATING OR MEASURED VARIABLE	CONTROLLERS				READOUT DEVICES		* SWITCH & ALARM			TRANSMITTERS			SOLENOIDS AND RELAYS		PRIMARY ELEMENT	TEST POINT	WELL OR PROBE	VIEWING DEVICE, GLASS	SAFETY DEVICE	FINAL ELEMENT
		RECORDING	INDICATING	BLIND	SELF-ACTUATING CONTROL VALVE	RECORDING	INDICATING	HIGH	LOW	COMB	RECORDING	INDICATING	BLIND								
A	ANALYSIS	ARC	AIC	AC		AR	AI	ASH	ASL	ASHL	ART	ATT	AT	AY	AE	AP	AW				AV
B	BURNER/COMBUSTION	BRC	BIC	BC		BR	BI	BSH	BSL	BSHL	BRT	BIT	BT	BY	BE	BP	BW				BZ
E	VOLTAGE	ERC	ETC	EC		ER	EI	ESH	ESL	ESHL	ERT	ETT	ET	EY	EE						EZ
F	FLOW RATE	FRC	FIC	FC	FCV, FICV	FR	FI	FSH	FSL	FSLH	FRT	FIT	FT	FY	FE	FP			FG		FV
Q	FLOW QUANTITY	FORC	FQIC			FQR	FQI	FQSH	FQSL	FQSLH					FQE						FQV
FF	FLOW RATIO	FFRC	FFIC	FFC		FFR	FFI	FFSH	FFSL	FFSLH					FFE						FV
H	HAND	HIC	HC																		HV
I	CURRENT (ELECTRICAL)	IRC	IIC			IR	II	ISH	ISL	ISHL	IRT	IIT	IT	IY	IE						IZ
J	POWER	JRC	JIC			JR	JI	JSH	JSL	JSLH	JRT	JIT	JT	JY	JE						JV
K	TIME, TIME SCHEDULER	KRC	KIC	KC	KCV	KR	KI	KSH	KSL	KSLH	KRT	KIT	KT	KY	KE						KV
L	LEVEL	LRC	LIC	LC	LCV	LR	LI	LSH	LSL	LSHL	LRT	LIT	LT	LY	LE		LW	LG			LV
P	PRESSURE/VACUUM	PRC	PIC	PC	PCV	PR	PI	PSH	PSL	PSHL	PRT	PIT	PT	PY	PE	PP			PSV, PSE		PV
PD	PRESSURE, DIFFERENTIAL	PDR	PDI	PDC	PDCV	PDR	PDI	PDSH	PDSL	PDSHL	PDR	PDI	PDT	PDY	PDE	PP					PV
Q	QUANTITY	QRC	QIC	QC	QCV	QR	QI	QSH	QSL	QSLH	QRT	QIT	QT	QY	QE						QZ
R	RADIATION	RRC	RIC	RC	RCV	RR	RI	RSH	RSL	RSLH	RRT	RIT	RT	RY	RE		RW				RZ
S	SPEED/FREQUENCY	SRC	SIC	SC	SCV	SR	SI	SSH	SSL	SSLH	SRT	SIT	ST	SY	SE						SZ
T	TEMPERATURE	TRC	TIC	TC	TCV	TR	TI	TSH	TSL	TSLH	TRT	TIT	TT	TY	TE	TP	TW		TSE		TV
TD	TEMPERATURE, DIFFERENTIAL	TDR	TDI	TDC	TDCV	TDR	TDI	TDSH	TDSL	TDSHL	TDR	TDI	TDT	TDY	TE	TP	TW				TDV
U	MULTIVARIABLE					UR	UI							UY							UV
V	VIBRATION/ MACHINERY ANALYSIS					VR	VI	VSH	VSL	VSLH	VRT	VIT	VT	VY	VE						VZ
W	WEIGHT/FORCE	WRC	WIC	WC	WCV	WR	WI	WSH	WSL	WSHL	WRT	WIT	WT	WY	WE						WZ
WD	WEIGHT/FORCE, DIFFERENTIAL	WDR	WDI	WDC	WDCV	WDR	WDI	WDSH	WDSL	WDSHL	WDR	WDI	WDT	WDY	WE						WZ
X	UNCLASSIFIED																				
Y	EVENT/STATE/PRESENCE		YIC	YC		YR	YI	YSH	YSL	YSLH				YT	YY	YE					YZ
Z	POSITION/DIMENSION	ZRC	ZIC	ZC	ZCV	ZR	ZI	ZSH	ZSL	ZSLH	ZRT	ZIT	ZT	ZY	ZE						ZV
ZD	GAUGING/DEVIATION	ZDR	ZDI	ZDC	ZDCV	ZDR	ZDI	ZDSH	ZDSL	ZDSHL	ZDR	ZDI	ZDT	ZDY	ZDE						ZV

* THE LETTERS 'H' AND 'L' MAY BE OMITTED IN THE UNDEFINED CASE.
** 'A', ALARM, THE ANNUNCIATING DEVICE, MAY BE USED IN THE SAME FASHION AS 'S', SWITCH, THE ACTUATING DEVICE.
*** LETTERS 'C', 'D', 'G', 'M', 'N' & 'O' ARE DEFINED AS 'USERS CHOICE'. SEE ISA-S5.1, SECTION 5.1, NOTE #1.

OTHER POSSIBLE COMBINATIONS:
FD (RESTRICTION DRIFTER)
FRK, HIK (CONTROL STATION)
FX (ACCESSORIES)
HMS (HAND MOMENTARY SWITCH)

KQI (RUNNING TIME INDICATOR)
LLH (PILOT LIGHT)
PFR (RATID)
QQI (INDICATING COUNTER)

TJR (SCANNING RECORDER)
WKIC (RATE-OF-WEIGHTLOSS RECORDER)

INSTRUMENT SYMBOLS

(PER INSTRUMENT SOCIETY OF AMERICA)

	MOUNTED ON LOCAL BOARD	LOCALLY MOUNTED	MOUNTED IN CONTROL ROOM	
DISCRETE INSTRUMENT				 PANEL MOUNTED PATCHBOARD POINT
PLC CONTROL				 PURGE DEVICE, RESET FOR LATCHTYPE ACTUATOR OR UNDEFINED INTERLOCK LOGIC
COMPUTER FUNCTION				 NORMALLY INACCESSIBLE DEVICES OR FUNCTIONS MAY BE DEPICTED BY USING THE SAME SYMBOL BUT WITH A DASHED HORIZONTAL BAR AS SHOWN BELOW.
BMS FUNCTION				

COMPONENT IDENTIFICATION PROCEDURE

(PER AMERICAN PETROLEUM INSTITUTE, RP-14C)

FIRST LETTER		SECOND LETTER		SUCCEEDING IDENTIFIER	
X		XX		XXXX	
COMPONENT TYPE		COMMON MODIFIER		COMPONENT IDENTIFIER	
CODE	COMPONENT	COMMON MODIFIERS	CODE	COMPONENT	USER ASSIGNED IDENTIFICATION UNIQUE TO EQUIPMENT AT LOCATION
A	ATMOSPHERIC VESSEL (AMBIENT TEMPERATURE)	BH, BJ, BM	AA	BI-DIRECTIONAL BLOWCASE	
B	ATMOSPHERIC VESSEL (HEATED)	AP, BC, BK, BM	AB	BOILER	
C	COMPRESSOR	NONE	AC	COALESCE	
D	ENCLOSURE	AE, AN, AU, BB	AD	COMPRESSOR	
E	FIRE OR EXHAUST HEATED COMPONENT	AL, AW, BN	AE	CONTACTOR	
F	FLOWLINE	A1-A9	AG	CONTROL UNIT	
G	HEADER	AR, AS, AT, AY	AH	DEPARTING FILTER	
H	HEAT EXCHANGER	AZ	AJ	FILTER	
J	INJECTION LINE	AR, AS, AT	AK	FILTER-SEPARATOR	
K	PIPELINE	AA, AH, AQ	AL	FORCED DRAFT	
L	PLATFORM	AG	AM	FREEWATER KNOCKOUT	
M	PRESSURE VESSEL (AMBIENT TEMPERATURE)	AB, AD, AF, AJ	AN	GENERATOR	
		AK, AM, AV, BD, BF, BH, BJ, BL, BM	AP	HEATER	
		AC, AF, AM, AP, BC, BD, BG, BJ, BK	AQ	INCENDING	
N	PRESSURE VESSEL (HEATED)	AX, BA, BE	AR	INJECTION, GAS	
		AR, AT, AY, AZ	AS	INJECTION, GAS LIFT	
			AT	INJECTION, WATER	
			AU	METER	
			AV	METERING VESSEL	
			AW	NATURAL DRAFT	
			AX	PIPELINE	
P	PUMP		AY	PRODUCTION, HYDROCARBON	
Q	WELLHEAD		AZ	PRODUCTION, WATER	
Z	OTHER		A1-A9	FLOWLINE SEGMENT	
			BA	PROCESS, OTHER	
			BB	PUMP	
			BC	REBOILER	
			BD	SEPARATOR	
			BE	SERVICE	
			BF	SCRUBBER	
			BG	SHELL AND TUBE	
			BH	SUMP	
			BJ	TANK	
			BK	TREATER	
			BL	VOLUME BOTTLE	
			BM	WATER TREATING	
			BN	EXHAUST HEATED	
			BZ	OTHER	

NOTE:
IF A MODIFIER IS NOT USED, ENTER #

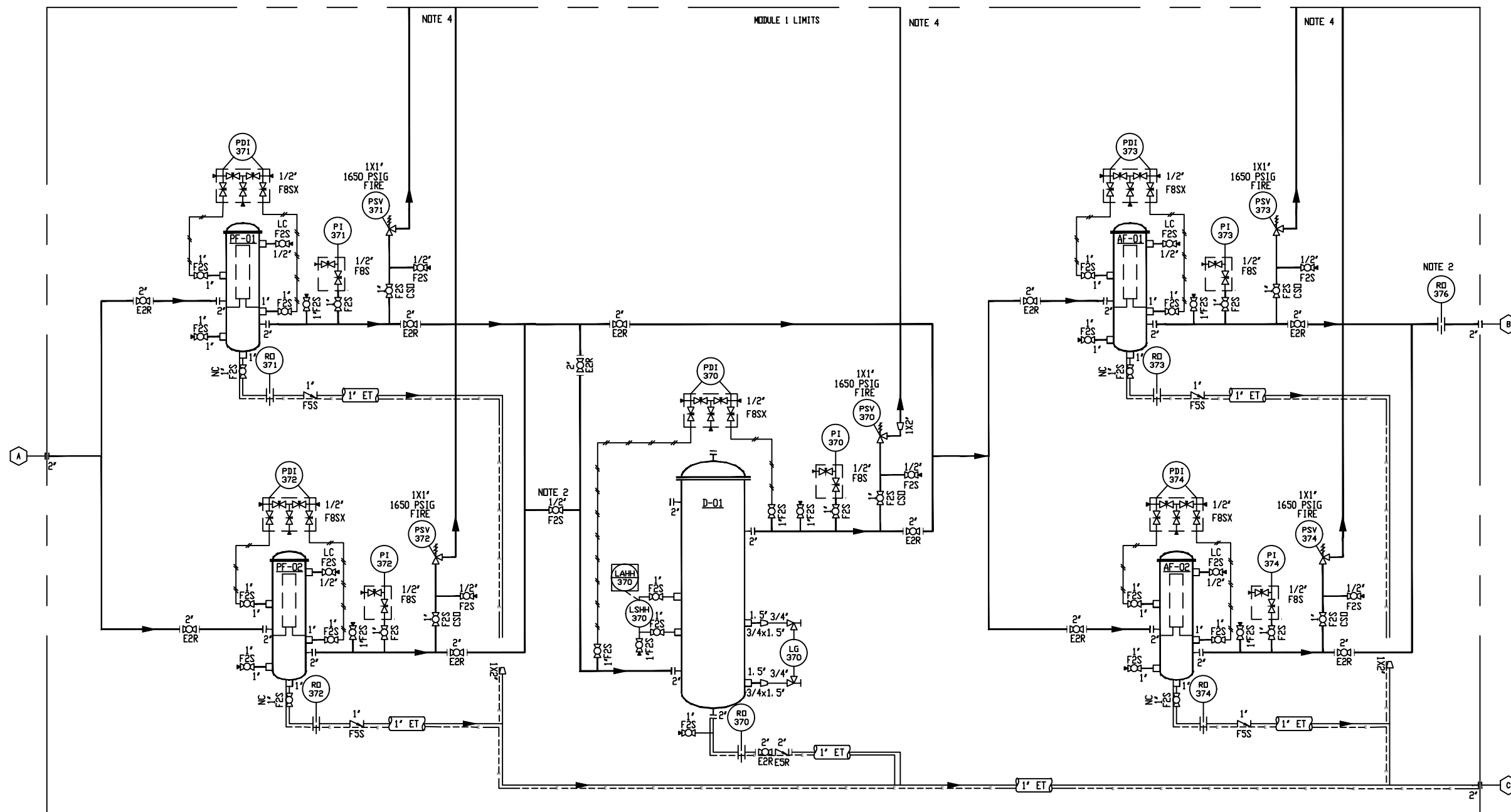
PF-01/PF-02
DRY GAS PRE-FILTER SEPARATORS
SIZE: 6" PIPE x 72" S/S
DESIGN: 1650 PSIG @ -40/200°F
CORROSION ALLOWANCE: 0.125"
CODE: ASME SEC VIII DIV 1

D-01
DELIQUESCENT DRYER
MODEL: PLD 24-14.5
DESIGN: 1650 PSIG @ -40/200°F
CORROSION ALLOWANCE: 0.125"
CODE: ASME SEC VIII DIV 1

AF-01/AF-02
DRY GAS AFTER-FILTER SEPARATORS
SIZE: 6" PIPE x 72" S/S
DESIGN: 1650 PSIG @ -40/200°F
CORROSION ALLOWANCE: 0.125"
CODE: ASME SEC VIII DIV 1

TIE IN LEGEND

- A ESD GAS INLET
2"-900# RF FLANGE
- B ESD GAS OUTLET
2"-900# RF FLANGE
- C DRAIN OUTLET
2"-900# RF FLANGE



NOTES:

1. AREA CLASSIFICATION IS CLASS 1 DIV 2 GROUP D
2. THE DELIQUESCENT DRYER SHALL BE PRESSURIZED FIRST, BY CLOSING THE DRYER OUTLET VALVE AND USING UPSTREAM 1/2" PRESSURIZATION VALVE TO PRESSURIZE THE DRYER. THE REMAINING SYSTEM SHALL THEN BE PRESSURIZED BY OPENING THE DRYER OUTLET VALVE IN A CONTROLLED MANNER, RESTRICTING FLOW THROUGH THE RESTRICTION ORIFICE. THE PURPOSE OF THIS IS TO AVOID EXCESSIVE FLOW THROUGH THE DRYER WHICH COULD CAUSE CARRYOVER OF THE SUPPORT GRID, DESICCANT AND/OR RETENTION SCREENS.
3. DRAIN LINE TO BE ELECTRIC HEAT TRACED AND INSULATED WITH MINERAL WOOL INSULATION WITH ALUMINUM JACKET BY OTHERS ON SITE
4. VENT TO ATMOSPHERE 8' FROM WORKING LEVEL.
5. STAINLESS STEEL TUBING AND FITTINGS IS SWAGelok
6. PIPING CORROSION ALLOWANCE IS 0.0625"

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Gastech Engineering LLC 2120 Industrial Rd Sapulpa, OK 74366		JOB NUMBER 50006	
PAID FOR ESD POWER-PILOT GAS CONDITIONING SKID MARITIMES & NORTHEAST PIPELINE LLC BAILEYVILLE STATION, BAILEYVILLE, ME ENBRIDGE, PO# 3100061895		DATE ACCEPSED REV. 1	
A 5/4/21 IN 25 BY ISSUED APPROVAL		FILE NO. 50006-100	
No. DATE BY CHKD APPD DESCRIPTION		SCALE: NONE APP. DATE: 5/4/21	
REVISIONS		DRAWN BY: IN DATE: 5/4/21	
		BRAYNE NUMBER: 50006-100	
		SHEET: 1 OF 4	