

Figure 1.3-1 – Production Building Subfloor Plans Preliminary Arrangement

Security-Related Information – Withhold Under 10 CFR 2.390

Figure 1.3-2 – Production Building Floor Plans Preliminary Arrangement

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Figure 1.3-3 – Production Building Sections Preliminary Arrangement

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Figure 1.3-4 – SHINE Facility Site Layout

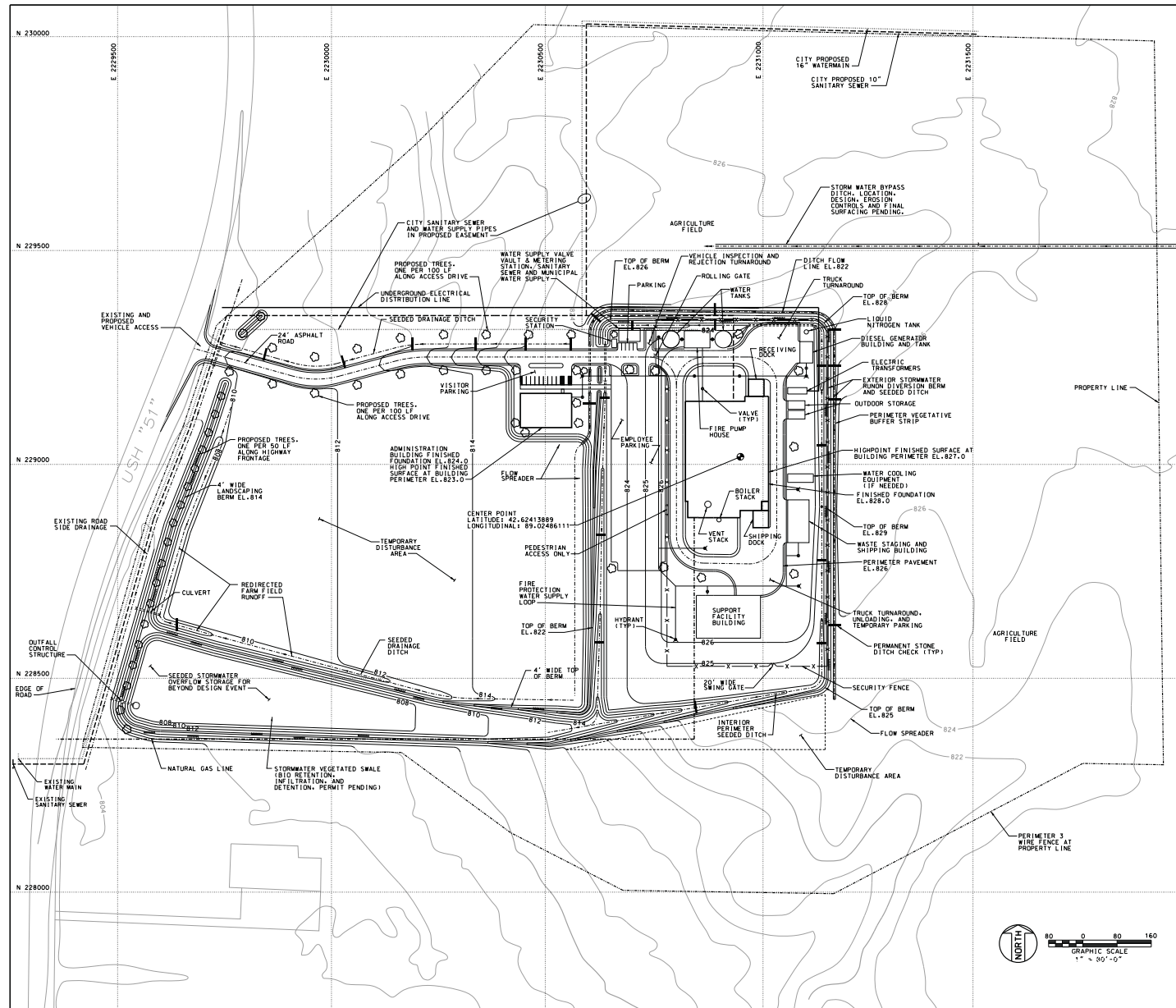


Figure 1.3-5 – RCA Boundaries

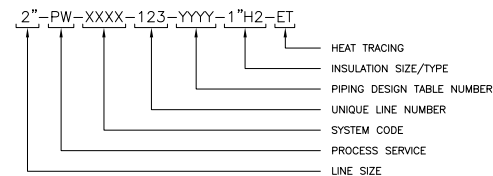
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Figure 1.3-6 – Legend for Process Flow Diagrams
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PIPING NUMBERING SYSTEM



PROCESS SERVICE IDENTIFICATION

A	– AIR	MS	– MEDIUM PRESSURE STEAM
AH	– AMMONIUM HYDROXIDE	NG	– NATURAL GAS
AV	– ATMOSPHERIC VENT	N	– NITROGEN
BA	– BREATHING AIR	NA	– CAUSTIC
BD	– BLOWDOWN	NH	– AMMONIA
BFW	– BOILER FEED WATER	NT	– NITRIC ACID
C	– CHEMICAL FEED (MISC.)	OX	– OXYGEN
CD	– CONDENSATE	OWS	– OILY WATER SEWER
CG	– COVER GAS	PA	– PLANT AIR
CHS	– CHEMICAL SEWER	PC	– PROCESS CONDENSATE
CHW	– CHILLED WATER	PG	– PROCESS GAS
CO2	– CARBON DIOXIDE	PP	– POTASSIUM PERMANGANATE
CWR	– COOLING WATER RETURN	PTW	– POTABLE WATER
CWS	– COOLING WATER SUPPLY	PW	– PROCESS WATER
DMW	– DEMINERALIZED WATER	RV	– RELIEF VENT
DR	– DRAIN	RW	– RADIOACTIVE LIQUID WASTE
FF	– FLUSHING FLUID	SA	– SULFURIC ACID
FO	– FUEL OIL	SC	– STEAM CONDENSATE
FW	– FIRE WATER	SL	– UREX SOLVENT
GLR	– GLYCOL RETURN	SO	– SEAL OIL
GLS	– GLYCOL SUPPLY	SS	– SANITARY SEWER
H	– HYDROGEN	STS	– STORM SEWER
HA	– HOT FLUE GAS	TS	– TARGET SOLUTION
HS	– HIGH PRESSURE STEAM	UN	– URANYL NITRATE
IA	– INSTRUMENT AIR	V	– VACUUM
LO	– LUBE OIL	WW	– WASTE WATER
LN	– LIQUID NITROGEN		
LS	– LOW PRESSURE STEAM		

ABBREVIATIONS

AG	– ABOVE GROUND
ATM	– ATMOSPHERE
BYP	– BYPASS
CC	– CHEMICAL CLEANOUT
CL	– CENTERLINE
CO	– CLEANOUT
CONN	– CONNECTION
DES	– DESIGN
D/P	– DIFFERENTIAL PRESSURE
EL	– ELEVATION
ESD	– EMERGENCY SHUTDOWN
FOF	– FACE OF FLANGE
FLG	– FLANGE
FP	– FULL PORT
FV	– FULL VACUUM
GO	– GEAR OPERATED
GR	– GRADE
HC	– HOSE CONNECTION
HH	– HAND HOLE
HP	– HIGH PRESSURE
IAS	– INSTRUMENT AIR SUPPLY
ISBL	– INSIDE BATTERY LIMITS
LP	– LOW PRESSURE
MOC	– MATERIALS OF CONSTRUCTION
NNF	– NORMALLY NO FLOW
OSBL	– OUTSIDE BATTERY LIMITS
OVHD	– OVERHEAD
R	– RELOCATED
REQD	– REQUIRED
SC	– SAMPLE CONNECTION
SCH	– SCHEDULE
SD	– SHUTDOWN
SG	– SPECIFIC GRAVITY
SP	– SET POINT
SS	– STAINLESS STEEL
STD	– STANDARD
T/C	– THERMOCOUPLE
TEMP	– TEMPERATURE
THRD	– THREADED
TL	– TANGENT LINE
T/T	– TANGENT TO TANGENT
TYP	– TYPICAL
UG	– UNDERGROUND
VF	– VENDOR FURNISHED

VALVE LIST KEY

1st LETTER	2nd NO TYPE	3rd NO CLASS	4th NO END CONNECTION	5th NO MATERIAL
V – VALVE	1 – BALL 2 – CHECK 3 – GATE 4 – GLOBE 5 – BUTTERFLY 6 – PLUG 7 – TRIPLE OFFSET	0 – 125 1 – 150 2 – 300 3 – 600 4 – 800 5 – 900 6 – 1500	1 – SW 2 – SW/BW 3 – BW 4 – BW/FLG 5 – FLG 6 – THREADED 7 – LUGGED 8 – NON-LUGGED 9 – WAFER 0 – SWxFLG	1 – CAST IRON/DUCTILE IRON 2 – LOW CARBON STEEL 3 – STAINLESS 4 – KILLED CARBON STEEL (NACE MR0175 COMPLIANT) 5 – LOW & INTERMEDIATE ALLOY STEEL

ABBREVIATIONS FOR VALVES

FO	– FAIL OPEN	FTV	– FAIL TO VENT	HPT	– HIGH POINT	LPT	– LOW POINT
FC	– FAIL CLOSED	CSO	– CAR SEAL OPEN	LO	– LOCK OPEN	NO	– NORMALLY OPEN
FL	– FAIL IN LAST POSITION	CSC	– CAR SEAL CLOSED	LC	– LOCK CLOSED	NC	– NORMALLY CLOSED

ABBREVIATIONS FOR HAND SWITCHES

HOA	– HAND OFF AUTOMATIC	F/R	– FORWARD REVERSE	OCA	– OPEN CLOSED AUTOMATIC	S/S	– START/STOP
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ABBREVIATIONS FOR EQUIPMENT TAGS

A	– EXCHANGERS, CONDENSERS
C	– (LATER)
D	– COMPRESSORS, BLOWERS, VACUUM PUMPS, FANS, EXHAUSTERS, REFRIGERATION UNITS AND THEIR DRIVES, GEARS, AND FLUID DRIVES
E	– DEMINERALIZERS, ABSORBERS, CLARIFIERS, AIR DRYERS, EVAPORATORS, AERATORS, DECARBONATORS, AND DEGASIFIERS
F	– ELECTRICAL EQUIPMENT (INCLUDING SWITCHGEAR, MOTOR CONTROL CENTERS, TRANSFORMERS, SWITCH BOARDS, ETC.)
G	– FILTERS, STRAINERS, PURIFIERS, CENTRIFUGES, AND SILENCERS
H	– HANDLING EQUIPMENT, CRANES, HOISTS, AND DRIVERS
I	– HUMIDIFICATION/DEHUMIDIFICATION EQUIPMENT
J	– INSTRUMENT AND CONTROL BOARDS, PANELS, AND CABINETS
K	– DIESEL GENERATORS, DIESEL ENGINES
M	– PUMPING SPECIALTIES (TRAPS, HOSES, EXPANSION JOINTS, RESTRICTION ORIFICES, ETC.)
P	– PUMPS AND THEIR DRIVES, GEARS, AND FLUID DRIVES
R	– RACKS
S	– SPECIAL PACKAGED ITEMS OR SYSTEMS
T	– TANKS AND RESERVOIRS
V	– VESSELS
X	– MISCELLANEOUS AIR HANDLING DEVICES (INCLUDING AIR MIXING BOXES, DUCT SILENCERS, DAMPERS, ETC.)
Y	– (LATER)
Z	– MISCELLANEOUS EQUIPMENT

INSULATION/HEAT TRACING

AC	– ACOUSTIC CONTROL INSULATION	HJ	– HOT FLUID JACKETED
CC	– COLD SERVICE INSULATION	HT	– HOT FLUID TRACED
CJ	– CHILLED FLUID JACKETED	PF	– PREVENTION FROM FREEZING INSULATION
CP	– CONDENSATION CONTROL	PI	– PERSONNEL PROTECTION INSULATION
CT	– CHILLED FLUID TRACED	PS	– PROCESS STABILITY INSULATION
ET	– ELECTRIC TRACED	SJ	– STEAM JACKETED
FP	– FIRE PROTECTION INSULATION	ST	– STEAM TRACED
HC	– HEAT CONSERVATION INSULATION		

INSTRUMENT IDENTIFICATION TABLE

SYMBOL	FIRST LETTER	MEASURING DEVICES								CONTROLLING DEVICES								ALARMS*								SWITCHES*				MISC.
		E	W	R	I	T	RT	IT	G	RC	IC	C	CV	V	Z	A	L	LL	H	HH	IS	S	YSL	XSH						
MEASURED OR INITIAL VARIABLE		PRIMARY ELEMENT	WELL	READOUT (RECORDING)	TRANSDUCER (RECORDING)	TRANSMITTER (BLIND)	TRANSFORMER (RECORDING)	TRANSFORMER (LOCAL)	CONTROLLERS (RECORDING)	CONTROLLERS (RECORDING)	CONTROLLERS (BLIND)	S. CONTAINED CONTROL VALVE	CONTROL VALVE	FINAL CONTROL ELEMENT	BLIND	LOW	LOW	LOW	HIGH	HIGH	INDICATING	BLIND	RELAY	SHUTDOWN LOW (XSL)	SHUTDOWN HIGH (XSH)					
A	ANALYZER	AE	AW	AR	AI	AT	ART	AIT		ARC	AIC	AC		AV		AA	AAL/MALL	AAH/MAHH	AIS	AS	AY	AXSL	AXSH							
B	BURNER, COMBUSTION	BE	BW	BR	BI	BT	BRT	BIT	BG	BRC	BIC	BC			BZ	BA	BAL/BALL	BAH/BAHH	BIS	BS	BY	BXSL	BXSH							
C	CONDUCTIVITY (ELECTRICAL)	CE		CR	CI	CT	CRT	CIT	CRC	CIC	CC				CZ	CA	CAL/CALL	CAH/CAHH	CIS	CS	CY	CXSL	CXSH							
D	DENSITY OR SPEC. GRAV.	DE		DR	DI	DT	DRT	DIT	DRC	DIC	DC				DA	DA	DAL/DALL	DAH/DAHH	DIS	DS	DY	DXSL	DXSH							
E	VOLTAGE	EE		ER	EI	ET	ERT	ETI	ERC	EIC	EC				EZ	EA	EAL/EALL	EAH/EAHH	EIS	ES	EY	EXSL	EXSH							
F	FLOW	FE		FR	FI	FT	FRT	FIT	FG	FRC	FIC	FC	FCV	FV		FA	FAL/FALL	FAH/FAHH	FIS	FS	FY	FXSL	FXSH							
G	USER'S CHOICE																													
H	HAND INITIATED									HIC	HC	HCV	HV							HS	HY									
I	CURRENT (ELECTRICAL)	IE		IR	II	IT	IRT	ITIT		IRC	IIC				IZ	JA	JAL/JALL	JAH/JAHH	JIS	JS	JY	JXSL	JXSH							
J	POWER	JE		JR	JI	JT	JRT	JIT		JRC	JIC				JZ	JA	JAL/JALL	JAH/JAHH	JIS	JS	JY	JXSL	JXSH							
K	TIME OR TIME SCHEDULE	KE		KR	KI	KT	KRT	KIT		KRC	KIC	KC	KCV		KZ	KA	KAL/KALL	KAH/KAHH	KIS	KS	KY	KXSL	KXSH							
L	LEVEL	LE	LV	LR	LI	LT	LRT	LIT	LG	LRC	LIC	LC	LCV	LV		LA	LAL/LALL	LAH/LAHH	LIS	LS	LY	LXSL	LXSH							
M	MOISTURE OR HUMIDITY	ME		MR	MI	MT	MRT	MIT		MRC	MIC	MC			MA	MAL/MALL	MAH/MAHH	MIS	MS	MY	MXSL	MXSH								
N	USER'S CHOICE																													
O	USER'S CHOICE																													
P	PRESSURE OR VACUUM	PE		PR	PI	PT	PRT	PIT		PRC	PIC	PC	PCV	PV		PA	PAL/PALL	PAH/PAHH	PIS	PS	PY	PXSL	PXSH	PSV	PSE					
Q	QUANTITY OR EVENT	QE		QR	QI	QT	QRT	QIT		QRC	QIC				QZ	QA	QAL/QALL	QAH/QAHH	QIS	QS	QY	QXSL	QXSH							
R	RADIOACTIVITY	RE	RW	RR	RI	RT	RRT	RIT		RRC	RIC	RC			RZ	RA	RAL/RALL	RAH/RAHH	RIS	RS	RY	RXSL	RXSH							
S	SPEED OR FREQUENCY	SE		SR	SI	ST	SRT	SIT		SRC	SIC	SC	SCV	SV	SZ	SA	SAL/SALL	SAH/SAHH	SIS	SS	SY	SXSL	SXSH							
T	TEMPERATURE	TE	TW	TR	TI	TT	TRT	TIT		TRC	TIC	TC	TCV	TV		TA	TAL/TALL	TAH/TAHH	TIS	TS	TY	TXSL	TXSH	TSE						
U	MULTI-VARIABLE			VE	VI	VT	VRT	VIT						UV		UA			VAH/VAHH	VIS	VS	VY	VXSL	VXSH						
V	VIBRATION																													
W	WEIGHT OR FORCE	WE		WR	WI	WT	WRT	WIT		WRC	WIC	WC	WCV		WZ	WA	WAL/WALL	WAH/WAHH	WIS	WS	WY	WXSL	WXSH							
X	SHUTDOWN													XV		XA	XAL/XALL	XAH/XAHH				XS	XY							
Y	EVENT, STATE OR PRESENCE																													
Z	POSITION	ZE		ZR	ZI	ZT	ZRT	ZIT		ZRC	ZIC	ZC	ZCV	ZV		ZA	ZAL/CLOSE	ZAH/OPEN	ZIS	ZS	ZY									
*S, SWITCH, THE ACTUATING DEVICE MAY BE USED IN THE SAME FASHION AS A, ALARM, THE ANNUNCIATING DEVICE.																														
THE FOLLOWING IS A GUIDE FOR ADDING ABBREVIATIONS (USUAL OR PREFERRED USAGE)																														
FIRST POSITION		SECOND POSITION		THIRD POSITION		FOURTH POSITION		FIRST POSITION		SECOND POSITION		THIRD POSITION		FOURTH POSITION																
A ANALYSIS		ALARM		ALARM BOARD		CONTROLLER		O PRESSURE OR VACUUM		ORIFICE (RESTRICTION) POINT (TEXT CONN.)		RECORDER		RECORDER																
B BURNER		CONTROL, CONTROLLER		CONTROL, CONTROLLER				P QUANTITY OR EVENT		INTEGRATE (TOTALIZE)																				
C CONDUCTIVITY (ELECTRICAL)		DIFFERENTIAL ELEMENT		DIFFERENTIAL ELEMENT				R RADIOACTIVITY		RECORDER																				
D DENSITY OR SPECIFIC GRAVITY		F FLOW		F FLOW				S SPEED OR FREQUENCY		SWITCH, SAFETY																				
E VOLTAGE (EMF)		FRACTION (RATIO)		GLASS				T TEMPERATURE		TRANSMITTER																				
F FLOW								U MULTIVARIABLE		MULTIFUNCTION VALVE, DAMPER, LOUVER																				
G								V VIBRATION, MECH. ANALYSIS		WELL																				
H HAND INITIATED								W WEIGHT OR FORCE																						
I CURRENT (ELECTRICAL)								X SHUTDOWN																						
J POWER								Y EVENT, STATE OR PRESENCE																						
K TIME OR TIME SCHEDULE								Z POSITION																						
L LEVEL																														
M MOISTURE OR HUMIDITY																														