632756

LINE SYMBOLS

- PRIMARY PROCESS PIPING
- SECONDARY PROCESS PIPING
- FLEXIBLE LINE OR HOSE
- DOUBLE WALLED PIPE
- PIPING BY OTHERS
- BOUNDARY OR MODULE BREAK
- CONTAINMENT ENCLOSURE
- INSTRUMENT SUPPLY OR CONNECTION TO PROCESS (1)
- PNEUMATIC SIGNAL LINE (2)
- ELECTRICAL SIGNAL LINE
- INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK)
- MECHANICAL LINK
- CAPILLARY TUBING
- ELECTROMAGNETIC, OPTICAL, OR SONIC SIGNAL (GUIDED) (3)
- ELECTROMAGNETIC, OPTICAL, OR SONIC SIGNAL (NOT GUIDED) (3)
- HYDRAULIC SIGNAL

OPTIONAL BINARY (ON-OFF) SYMBOLS

- PNEUMATIC BINARY SIGNAL
- ELECTRICAL BINARY SIGNAL

NUMBERS IN PARENTHESES REFER TO EXPLANATORY NOTES BELOW

LINE SYMBOL NOTES:

1. THE FOLLOWING ABBREVIATIONS ARE SUGGESTED TO DENOTE THE TYPES OF POWER SUPPLY. THESE DESIGNATIONS MAY ALSO BE APPLIED TO PURGE FLUID SUPPLIES.

   BA-BREATHING AIR — HA-100# AIR
   CS-CHILLED SUPPLY — LA2-20# AIR

   FOR A COMPLETE LIST OF ABBREVIATIONS SEE INEEL AE STANDARD, APPENDIX M.

2. THE PNEUMATIC SIGNAL SYMBOL APPLIES TO A SIGNAL USING ANY GAS AS THE SIGNAL MEDIUM. IF A GAS OTHER THAN AIR IS USED, THE GAS MAY BE IDENTIFIED BY A NOTE ON THE SIGNAL SYMBOL OR OTHERWISE.
3. ELECTROMAGNETIC PHENOMENA INCLUDE HEAT, RADIO WAVES, NUCLEAR RADIATION, AND LIGHT.

PIPE VALVE SYMBOLS

- GATE
- GLOBE
- BALL
- BUTTERFLY
- PLUG
- CHECK
- WAFER CHECK
- ANGLE
- ANGLE (MULITPLE RESTRICTION ORIFICE)
- DIAPHRAGM
- NEEDLE
- PINCH
- 3-WAY
- 4-WAY
- POST-INDICATING VALVE
- FLOAT
- BACKFLOW PREVENTER
- SELF-CONTAINED RECIRCULATION VALVE
- VALVE IN PIT
- SLIDE GATE
- ROTARY VALVE
- SPECIALTY BALL VALVE

PIPING AND INSTRUMENT DIAGRAM SYMBOLS

- QUICK DISCONNECT/ REMOTELY MAINTAINABLE CONNECTOR
- FLANGED JOINT
- BLIND FLANGE
- FLEX HOSE
- PIPE CAP
- THREADED PIPE CAP
- SCREWED PLUG
- SPECTACLE BLIND (OPEN)
- LINE SIZE CHANGE
- EXPANSION JOINT
- SPRAY NOZZLE
- FT — FLOAT DRAIN
- T — TRAP
- FLAME ARRESTOR
- HEPA FILTER
- E — MIXING BOX
- SP — SAMPLE POINT
- V — AUTOMATIC VENT
- HOSE CONNECTOR
- DUPLEX STRAINER
- INTAKE FILTER/SILENCER
- SILENCER
- BASKET STRAINER
- TS — TEMPORARY STRAINER
- Y-TYPE STRAINER
- T-TYPE STRAINER
- FILTER
- FLOOR/AREA DRAIN
- PULSATION DAMPENER
- E — DISTRIBUTION NOZZLE/ARRAY
- VENT
- INSTRUMENT ROOT
- VENT/DRAIN
- PENETRATION THROUGH SHIELD
- IN-LINE STATIC MIXER

P&ID EQUIPMENT SYMBOLS

- CENTRIFUGAL PUMP
- VACUUM PUMP
- VERTICAL PUMP (CAN)
- POSITIVE DISPLACEMENT PUMP
- PERISTALTIC PUMP
- HEAT EXCHANGER
- EQUIPMENT VENDOR CONNECTION TAG IDENTIFIER
- CHEMICAL TOTE
- RADIATOR
- SUMP PUMP
- FAN/BLOWER
- GRINDER PUMP
- PARTICLE SIZE CLASSIFIER
- COMPRESSED AIR COALESCING FILTER
- NITROGEN EDUCTOR/ EJECTOR
- GAS BOTTLE
- MIXING CHAMBER
- 55 GAL DRUM
- AIR COMPRESSOR
- MIXER/AGITATOR
- FAN
- CALIBRATION COLUMN
- M — MOTOR
- VFD — VARIABLE FREQUENCY DRIVE
- VIBRATORY FEEDER
- STEAM SUPERHEATER
- DAMPER

FIRE SYMBOLS

- DRY PIPE VALVE
- NON-RISING STEM GATE VALVE
- BUTTERFLY VALVE W/TAMPER SWITCH
- DELUGE/PREACTION VALVE
- ALARM VALVE W/TRIM
- RATE COMPENSATED HEAT DETECTOR
- HOSE REEL
- HOSE RACK
- SPRINKLER OR SPRAY NOZZLE
- POST INDICATOR VALVE
- TAMPER SWITCH
- PRESSURE SWITCH
- FIRE HYDRANT
- FIRE DEPARTMENT CONNECTION
- FACP — FIRE ALARM CONTROL PANEL

SAFETY SYMBOLS

- SAFETY SHOWER/EYEWASH
- DECONTAMINATION SHOWER

EQUIPMENT DESIGNATIONS

ALOK	AIRLOCK
AUG	AUGER
BAS	BREATHING AIR SUPPLY
BLO	BLOWER
CHT	CHUTE
COL	COOLER
COM	COMPRESSOR
CRN	CRANE
CRT	CART
CVR	CONVEYOR
CYC	CYLINDER
D	DAMPER
DRI	DRYER
DSE	DISENGAGEMENT VESSEL
DSS	DECON SPRAY SYSTEM
F	FILTER
FEED	FEEDER
FUN	FUNNEL
HE	HEAT EXCHANGERS
HOP	HOPPER, BIN
HST	HOIST
HTR	HEATER
INRT	INSERT
JET	JET
LD	LIFTING DEVICE
NOZ	ATOMIZING SPRAY NOZZLE
P	PUMP
PTS	PNEUMATIC TRANSFER SYSTEM
ROTV	ROTARY VALVE
SAM	SAMPLER
SG	SLIDE GATE
SLD	SHIELD
SPL	SPECIAL EQUIPMENT
SSW	SAFETY SHOWER
STK	STACK
SU	SUMP
SV	SOLIDS VALVE
TK	TANK
VES	VESSEL
VIB	VIBRATOR
WF	WEIGHT FEEDER
WIN	WINDOW SHIELDING

MISC. ABBREVIATIONS

AG	- ABOVE GROUND
AWFCO	- AUTOMATIC WASTE FEED CUT-OFF
CHWG	- CH2M WG IDAHO LLC
C.O.	- CLEAN OUT
FC	- FAIL CLOSED
FO	- FAIL OPEN
IA	- INSTRUMENT AIR
INL	- IDAHO NATIONAL LABORATORY
I.S.	- INSIDE
LC	- LOCK CLOSED
LO	- LOCK OPEN
NC	- NORMALLY CLOSED
NCC	- AREA ABBREVIATION FOR NWCF
NO	- NORMALLY OPEN
O.S.	- OUTSIDE
RSS	- RAPID SHUTDOWN SYSTEM
SBW	- SODIUM BEARING WASTE
SS	- SAFETY SIGNIFICANT
TTT	- THOR TREATMENT TECHNOLOGIES, LLC
UG	- UNDER GROUND
(V)	- VENDOR SUPPLIED
WGI	- WASHINGTON GROUP INTERNATIONAL, INC.
VTA	- VENT TO ATMOSPHERE

PIPING ITEM ABBREVIATIONS

BF	BACKFLOW PREVENTER
EJ	EXPANSION JOINT
F	FILTER
FH	FLEX HOSE
HYD	HYDRANT
PF	PERMANENT STRAINER
PIV	POST INDICATING VALVE
RO	RESTRICTION ORIFICE
T	TRAP
TS	TEMPORARY STRAINER
V	VALVE

PIPE LINE NUMBERING SYSTEM

3"-HW-SH-160001-H

- SIZE
- SERVICE CODE
- PIPE SPECIFICATION
- INSULATION
- LINE SEQUENCE NUMBER

INSULATION

SEE PIPE LINE NUMBERING SYSTEM TYPES:

H	HOT, HEAT CONSERVATION & FREEZE PROTECTION
C	COLD & ANTI-SWEAT
P	PERSONNEL PROTECTION
N	NO INSULATION REQUIRED
NP	NOISE PROTECTION
HF	HOT FOAM
CG	CELLULAR GLASS

EQUIPMENT NUMBERING SYSTEM

P-AAA-120-A

- EQUIPMENT TYPE
- PLANT AREA
- ALPHA IDENTIFIER FOR REDUNDANT/STANDBY EQUIPMENT
- TEAM MEMBER NUMBER

DRAWING INDEX BY SYSTEM

632756 - 632757	GENERAL
632759 - 632765	SODIUM BEARING WASTE STEAM REFORMING UNIT
632779 - 632783	ADDITIVE FEED SYSTEMS
632787 - 632793	PRODUCT TRANSFER AND LOADOUT
632797 - 632799	PROCESS VENTILATION SYSTEM
632801	FLUIDIZING GAS SYSTEMS
632804 - 632826	UTILITY SYSTEMS

PIPING BREAKS & LABELS

- DEFINING BREAK LINE (ANGLED)
- DEFINING BREAK LINE (STRAIGHT)
- CHANGE IN MATERIAL CLASS (SEE NOTE 1 BELOW)
- CHANGE IN CONSTRUCTION STATUS (FUTURE, EXISITNG) (SEE NOTE 1 BELOW)
- CHANGE IN SUPPLY RESPONSIBILITY (SEE NOTE 1 BELOW)
- LINE NUMBER BREAK (STRAIGHT)
- LINE NUMBER BREAK (ANGLED)
- LINE DIAMETER CHANGE FOR DATABASE ONLY

NOTE:
1. USED W/ DEFINING BREAK LINES

INSTRUMENT NUMBERING SYSTEM

PIT-SRB 100-031B

- ISA FORMAT PROCESS VARIABLE IDENTIFIER
- PLANT AREA
- TEAM MEMBER
- SEQUENCE NUMBER WITH ALPHA IDENTIFIER FOR REDUNDANT/STANDBY EQUIPMENT

DCS NUMBERING SYSTEM

P-C VND 100-3

- ABBREVIATED ISA SYMBOL
- LAST LETTER OF AREA DESIGNATION
- VND = VENDOR SUPPLIED LOGIC (HOLD)
- TEAM MEMBER
- SEQUENCE NUMBER NO LEADING ZEROS IN SEQUENCE NUMBER

SAMPLE INSTRUMENT NUMBER COMPLETE:
PIT-SRB-120-031B

PIT	INSTRUMENT TYPE
SRB OR B	AREA IDENTIFIER
120	TEAM MEMBER NUMBER
031	SEQUENCE NUMBER
B	ALPHA IDENTIFIER

OFF-PAGE CONNECTORS

00410 632760 TO SWB WASTE FEED SYSTEM

- OFF PAGE CONNECTOR NUMBER
- CONNECTING DRAWING NUMBER
- FLAG DESCRIPTION
- LINE TERMINATION DESCRIPTION
- LINE TERMINATION FLAG/ VENDOR INTERFACE (NO LINE CONTINUATION)

BOUNDARIES & LINE IDENTIFIERS

SUPPLY RESPONSIBILITY BASED ON (V) PLACEMENT TO THE LEFT OF BREAK.

- (V) PIP DCT AG UG — PIPING CODE CHANGE AND/OR SYSTEM BOUNDARY CHANGE
- PIPING LINE NUMBER AND MATERIAL BREAKS
- PIPING INSULATION BREAK

PIPING COMPONENT INLINE TAGGING SYSTEM

8" NRV-SRB-540-001

- PIPING SERVICE ABBREVIATION
- PLANT AREA
- SEQUENCE NUMBER
- TEAM MEMBER

GENERAL NOTES

1. ALL SENTINEL PSV CONNECTIONS SHALL BE 3/4" BRANCH CONNECTIONS.
2. BRANCH FITTINGS AND ROOT VALVES SHALL CONFORM TO THE MATERIAL AND PRESSURE RATING OR WALL THICKNESS OF THE APPROPRIATE LINE SPEC. IN SPECIFICATION NO. (LATER) FOR PIPING MATERIALS.
3. * DENOTES MECHANICAL SPECIALTY ITEMS FURNISHED WITH EQUIPMENT.
4. CONTROL VALVE STATION DRAINS SHALL BE 3/4" UNLESS NOTED OTHERWISE.

PIPING SERVICE ABBREVIATIONS

AF	ANTIFOAM
AT	ADDITIVE TRANSFER
BA	BREATHING AIR
CA	CARBON ADDITIVE
CN	CALCINE
CT	STEAM CONDENSATE
CW	POTABLE WATER
DR	DRAIN
FG	FLUIDIZING GAS
FW	FIREWATER
HA	HIGH PRESSURE AIR
HI	INSTRUMENT AIR
HS	HIGH PRESSURE STEAM
HW	HIGH ACTIVITY WASTE
IN	INHIBITOR
LN	LIQUID NITROGEN
LS	LOW PRESS STEAM < 50 PSIG
NA	NITRIC ACID
NR	NITROGEN
OL	LIQUID OXYGEN
ON	OXYGEN
PB	PROCESS BED MATERIAL
PG	PROCESS GAS
RC	RECYCLE WATER
SA	SAMPLE TRANSFER
SW	SERVICE WASTE
TW	TREATED WATER
VA	VACUUM AIR
VG	VESSEL OFF-GAS
VN	VENTILATION
WS	WASH SOLUTION
WW	WASTEWATER

P&ID DRAWING INDEX

632756	SYMBOLS & NOMENCLATURE SHEET 1
632757	SYMBOLS & NOMENCLATURE SHEET 2
632758	DETAILS AND TYPICALS
632759	SBW WASTE TRANSFER
632760	SBW WASTE FEED SYSTEM
632761	SBW DMR FEED
632762	DENITRATION MINERALIZATION REFORMER
632763	PROCESS GAS FILTERS
632764	CARBON REDUCTION REFORMER
632765	SBW OFF-GAS
632766	OFF-GAS COOLER
632779	REFORMER ADDITIVES SHEET 1
632780	REFORMER ADDITIVES SHEET 2
632781	STORAGE SILO BAG FILTER
632782	DMR ADDITIVE BIN
632783	CRR ADDITIVE BIN
632787	PRODUCT RECEIVER AND CANISTER FILLING - SHEET 1
632788	PRODUCT RECEIVER AND CANISTER FILLING - SHEET 2
632789	PRODUCT RECEIVER AND CANISTER FILLING - SHEET 3
632790	PRODUCT COOLING
632791	CANISTER VACUUM
632792	CANISTER HANDLING
632793	SAMPLE TRANSFER
632797	PROCESS HEPA FILTERS
632798	MERCURY ADSORBERS
632799	PROCESS EXHAUST MONITORING AND DISCHARGE
632801	DMR FLUID GAS SYSTEM
632802	VOID
632804	NITROGEN STORAGE SHEET 1
632805	NITROGEN STORAGE SHEET 2
632806	NITROGEN STORAGE SHEET 3
632807	NITRGEN VAPORIZATION
632808	NITROGEN DISTRIBUTION
632809	BREATHING AIR
632810	OXYGEN STORAGE
632812	OXYGEN VAPORIZATION
632813	OXYGEN DISTRIBUTION
632814	COMPRESSED AIR
632815	VOID
632816	AIR RECEIVER AND DISTRIBUTION
632817	STEAM SUPPLY
632818	STEAM PREHEATER
632819	SINTERED STEAM FILTER
632821	DRAINS AND SUMPS - SHEET 1
632822	DRAINS AND SUMPS - SHEET 2
632825	TREATED WATER, NITRIC ACID, DECON/WASHDOWN WATER SYSTEM
632826	COLD POTABLE WATER
632827	FIREWATER SYSTEM
632828	P&ID SAMPLING MATRIX

PREMIER TECHNOLOGY PREFABRICATED SKIDS/PACKAGES

SKID NO.	SKID DESCRIPTION
P01	WASTE FEED TANK SKID
P03	WASTE FEED NON-RAD VALVE/INSTRUMENT RACK
P04	DMR PROCESS SKID
P05	DMR NON-RAD VALVE/INSTRUMENT RACK
P06	SBW PROCESS GAS FILTERS SKID
P07	SBW PROCESS GAS FILTERS NON-RAD VALVE/INSTRUMENT RACK
P08	CRR PROCESS SKID
P09	CRR PROCESS NON-RAD VALVE/INSTRUMENT RACK
P10	OFF-GAS COOLER SKID
P11	OFF-GAS COOLER NON-RAD VALVE/INSTRUMENT RACK
P12	SBW OFF-GAS FILTER SKID
P13	SBW OFF-GAS FILTER NON-RAD VALVE/INSTRUMENT RACK
P14	SBW OFF-GAS BLOWER PACKAGE
P15	CHARCOAL STORAGE HOPPER PACKAGE
P16	CHARCOAL TRANSFER SYSTEM
P17	CARBON STORAGE HOPPER SYSTEM
P18	CARBON TRANSFER SYSTEM
P19	DMR SOLIDS ADDITIVE FEED SKID
P20	CRR SOLIDS ADDITIVE FEED SKID
P22A	PRODUCT RECEIVER SKID NO. 1
P22B	PRODUCT RECEIVER SKID NO. 2
P22C	PRODUCT RECEIVER SKID NO. 3
P24	PRODUCT RECEIVER NON-RAD VALVE/INSTRUMENT RACKS
P25	PRODUCT PACKAGING BLOWER PACKAGE
P26	FLUIDIZING GAS SUPERHEATER PACKAGE

VENDOR SUPPLIED PREFABRICATED SKIDS/PACKAGES

SKID NO.	SKID DESCRIPTION
V03	NITRIC ACID PACKAGE
V04	PRODUCT SAMPLING PACKAGE
V05A/B/C	CANISTER FILL SYSTEM
V06	CANISTER FILL CRANE & HOISTS PACKAGE (TRANSFER BELL)
V07	MERCURY ADSORBER PACKAGE
V08	PROCESS HEPA FILTER PACKAGE
V09	BUILDING HEPA FILTER PACKAGE
V10	BUILDING VENTILATION BLOWER PACKAGE
V11	RADIATION MONITORING SYSTEM PACKAGE
V12	CEMS SKID
V17	STEAM SEPARATOR PACKAGE
V19	LIQUID OXYGEN PACKAGE
V20	LIQUID NITROGEN PACKAGE
V22	VOID
V23	SERVICE/INSTRUMENT AIR RECEIVER/DRYER PACKAGE
V27	TREATED WATER PACKAGE
V28	DRAINS AND SUMPS
V29	PROCESS EXHAUST BLOWER PACKAGE
V30	CPP-2719 (PDC 1)
V31	VOID
V32	BREATHING AIR DISTRIBUTION SYSTEM
V33	STORAGE SILO BAG FILTER PACKAGE
V34	NORTH PIPE CHASE SKID
V35	SOUTH PIPE CHASE SKID
V36	EAST PIPE CHASE SKID
V39	MAINTENANCE EQUIPMENT
V40	HVAC PACKAGE
V43	SAFETY SHOWER SYSTEM
V44	STEAM PRE-HEATER/FILTER PACKAGE
V45	CRR BLOWERS
V46	AIR PALLET AIR COMPRESSOR

PFD DRAWING INDEX

632750	SODIUM BEARING WASTE TREATMENT
632751	VOID
632752	ADDITIVE FEED
632753	SBW PRODUCT TRANSFER AND LOADOUT
632754	PROCESS EXHAUST AND BUILDING VENTILATION
632755	RAPID SHUTDOWN SYSTEM (RSS) SHEETS 1 AND 2

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CIVIL	—	—	NUCLEAR		
ELECTRICAL		10/13/06	PIPING		10/13/06
ENVIRON.	—	—	PROCESS	RLK	10/12/06
GEN. ARRANG.		10/12/06	QA / QC		10-12-06
HVAC		10/12/06	STRUCTURAL		10-12-06
I & C		10-12-06	REMOTE HDL.	—	—
			SYS. ENG.		10-12-06

DRAWING STATUS				
ISSUED	REV	DATE	LDE	PEM
PRELIMINARY	G	09/22/06	RLH	NDA
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SIZE	
E	FOR DRAWING INDEX SEE DRAWING NO. 200-1696-24-923-623756

REV	DATE	DESCRIPTION	By/Chk'd
0	10/12/06	ISSUED FOR DESIGN FREEZE	MJK/SA

NOTES

REFERENCE DRAWINGS

DRAWING NO.	DRAWING TITLE

IDAHO CLEANUP PROJECT INTEGRATED WASTE TREATMENT UNIT

PIPING & INSTRUMENT DIAGRAM SYMBOLS AND NOMENCLATURE SHEET 1

Washington Group International
7800 E. Union Ave. - Denver, CO 80237 - (303) 843-2000

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