

Attachment 51 – Appendix 5.0
WTP Common
P & ID Symbols and Legends

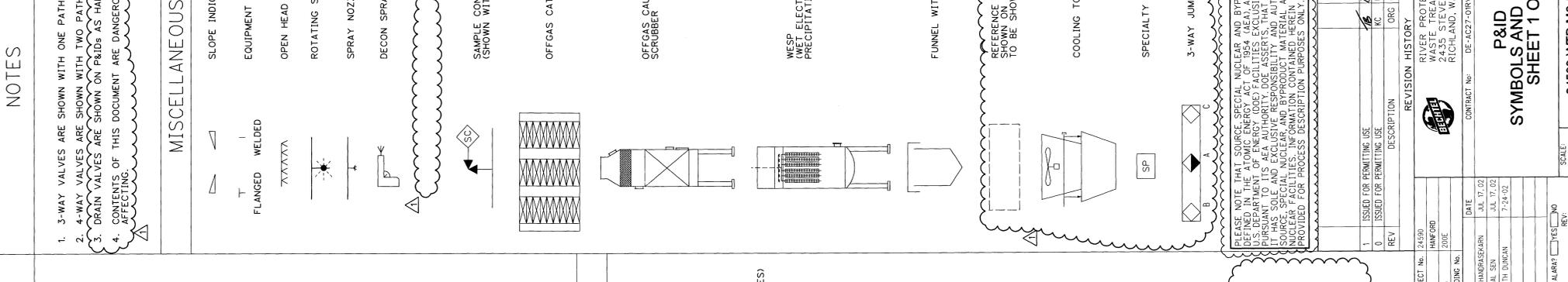
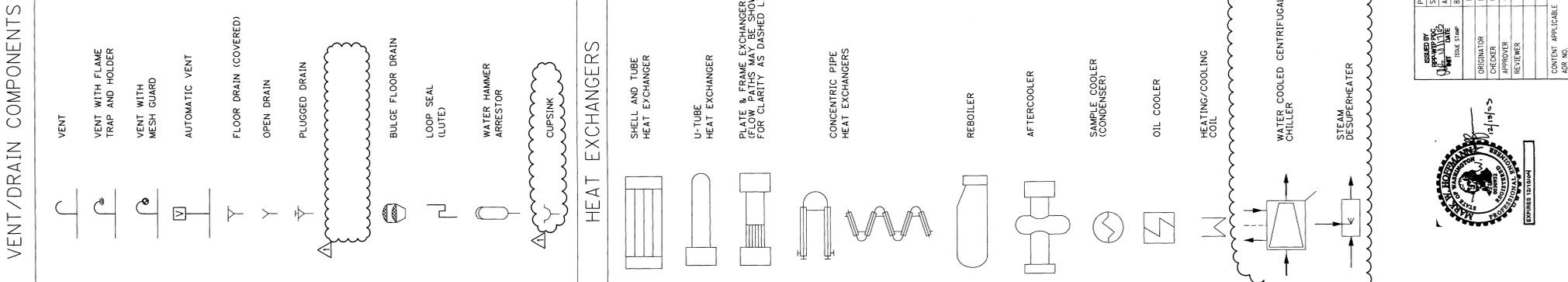
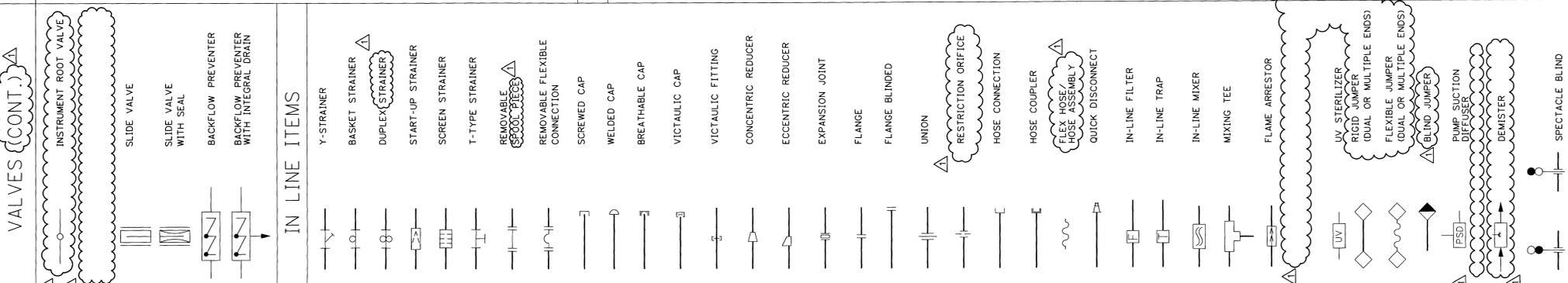
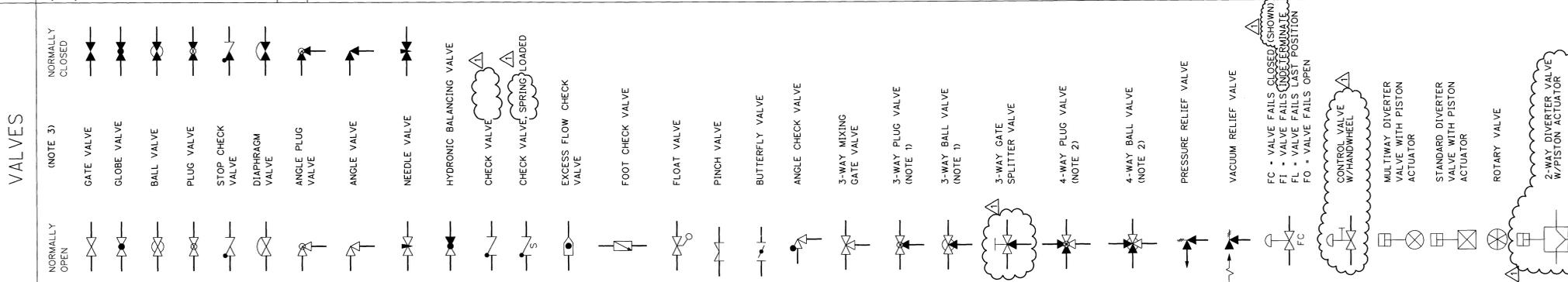
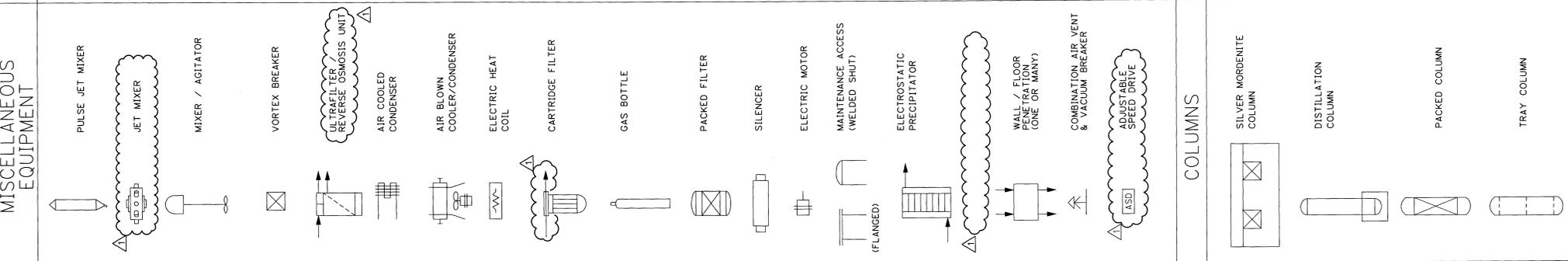
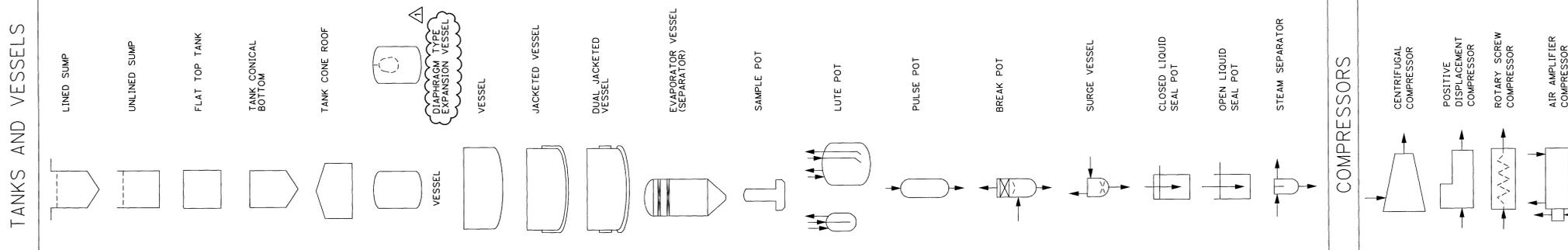
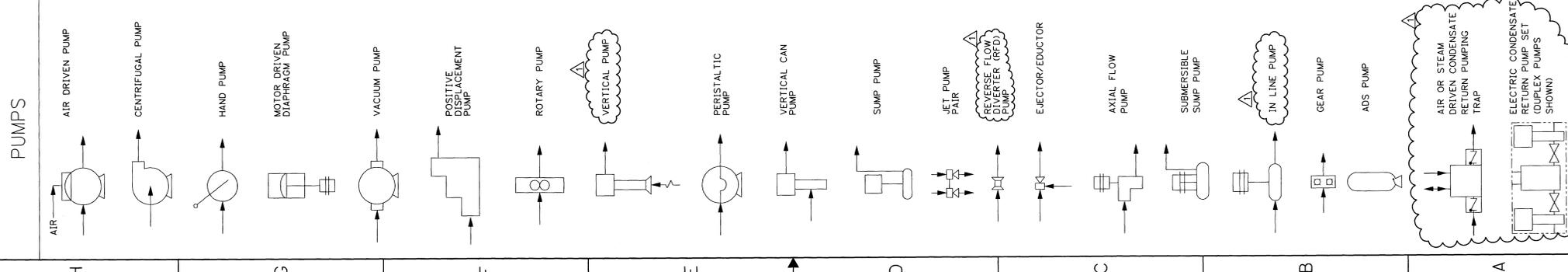
Where information regarding treatment, management, and disposal of the radioactive source, byproduct material, and/or special nuclear components of mixed waste (as defined by the Atomic Energy Act of 1954, as amended) has been incorporated into this permit, it is not incorporated for the purpose of regulating the radiation hazards of such components under the authority of this permit and chapter 70.105 RCW. In the event of any conflict between Permit Condition III.10.A. and any statement relating to the regulation of source, special nuclear, and byproduct material contained in portions of the permit application that are incorporated into this permit, Permit Condition III.10.A. will prevail.

Additional appendices will be added to this appendix as new information is incorporated into this permit.

Attachment 51 – Appendix 5.0
WTP Common
P&ID Symbols and Legends

The following drawings have been incorporated into Appendix 5.0 and can be viewed at the Ecology Richland Office. **New drawings are in bold lettering.**

Drawing/Document Number	Description
<u>24590-WTP-M6-50-P0001, Rev 1</u>	P&ID Symbols and Legend Sheet 1 of 6
<u>24590-WTP-M6-50-P0002, Rev 1</u>	P&ID Symbols and Legend Sheet 2 of 6
<u>24590-WTP-M6-50-P0003, Rev 1</u>	P&ID Symbols and Legend Sheet 3 of 6
<u>24590-WTP-M6-50-P0004, Rev 1</u>	P&ID Symbols and Legend Sheet 4 of 6
<u>24590-WTP-M6-50-P0005, Rev 1</u>	P&ID Symbols and Legend Sheet 5 of 6
<u>24590-WTP-M6-50-P0006, Rev 1</u>	P&ID Symbols and Legend Sheet 6 of 6
RESERVED	RESERVED



PROJECT No: 24590
SITE: HANFORD
BUILDING No: 201C

ISSUED FOR PERMITTING USE
REV 1: 05-05-02
REV 0: 05-05-02

DESCRIPTION: RIVER PROTECTION PROJECT
2453 STEVENS CENTER PLACE
RICHLAND, WA 99352

CONTRACT No: DE-AC27-01R14135

DATE: 7-24-02

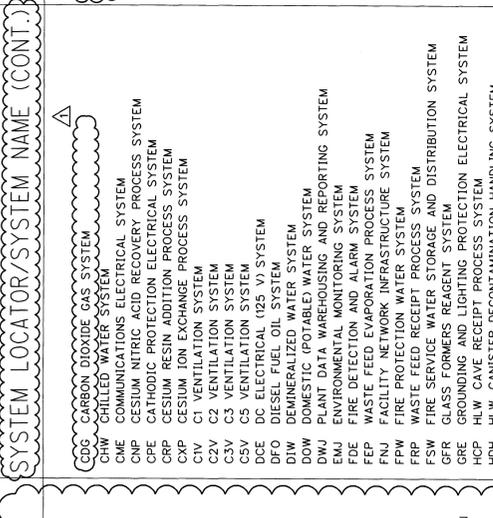
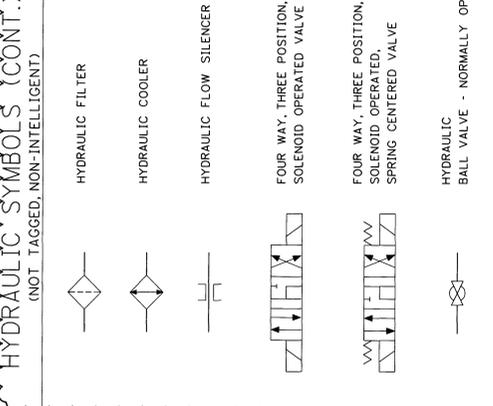
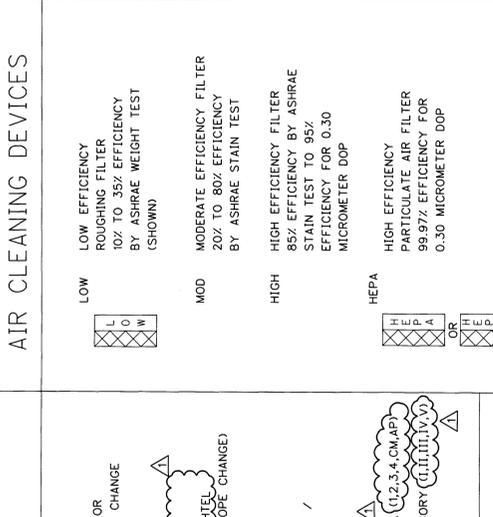
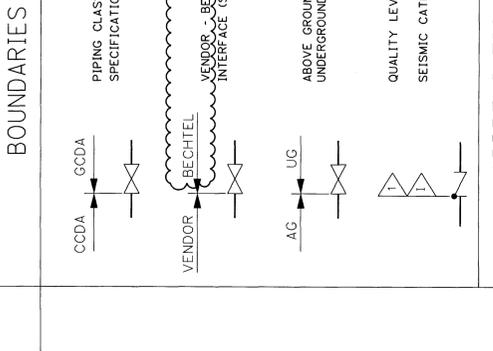
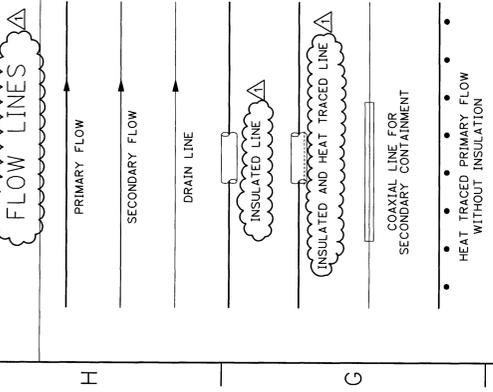
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CHECKED BY: [Signature]
APPROVED BY: [Signature]
REVIEWER: [Signature]

SCALE: NONE
REV: 1

24590-WTP-M6-50-P0001

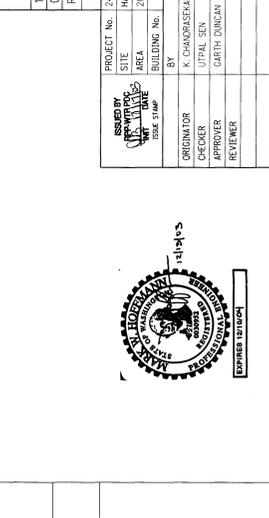
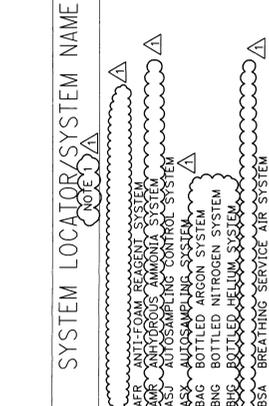
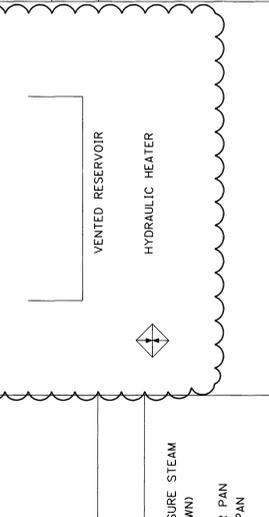
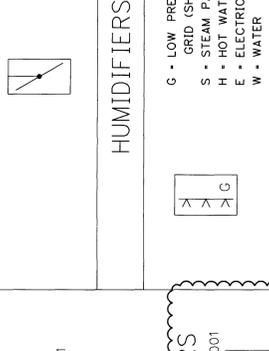
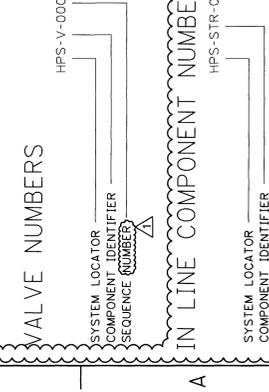
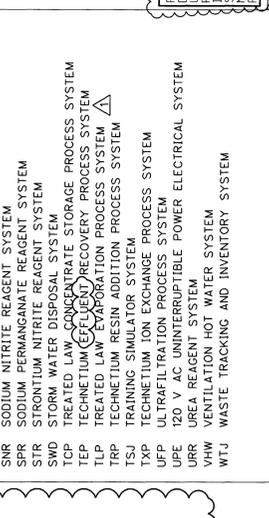
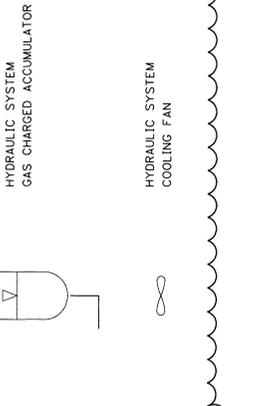
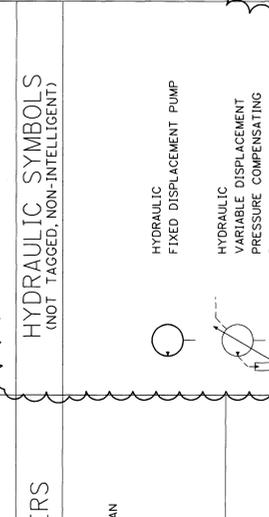
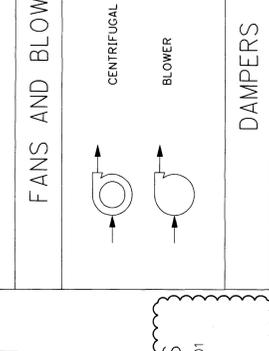
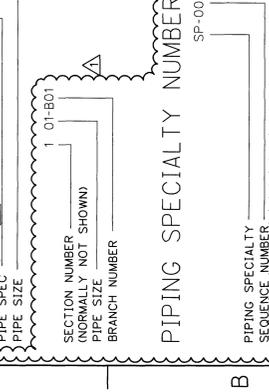
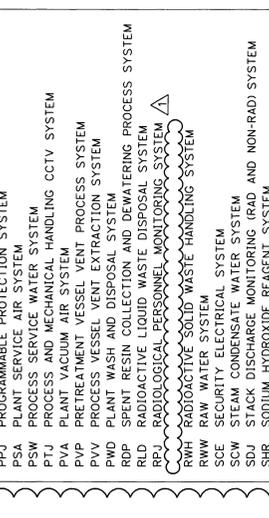
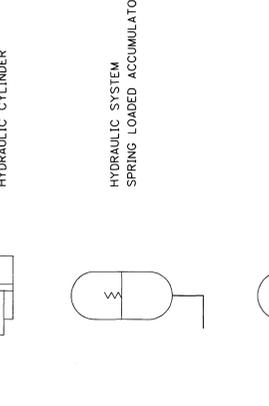
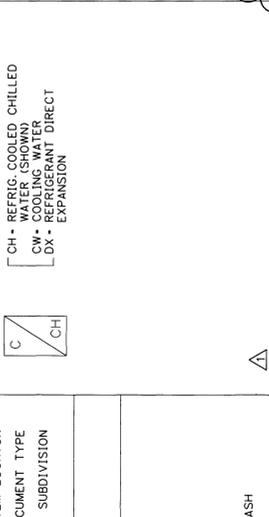
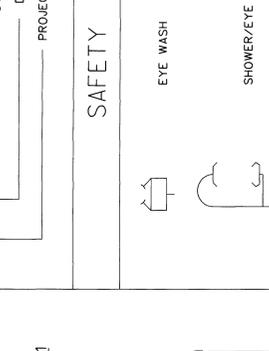
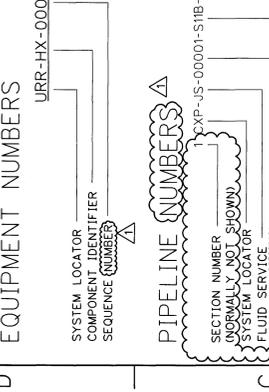
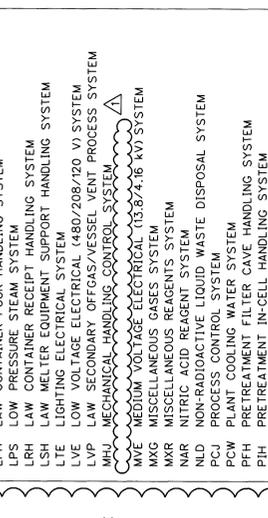
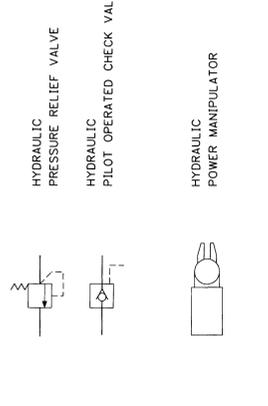
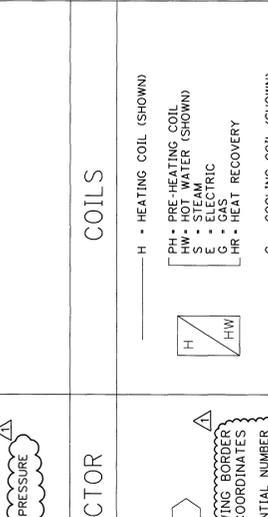
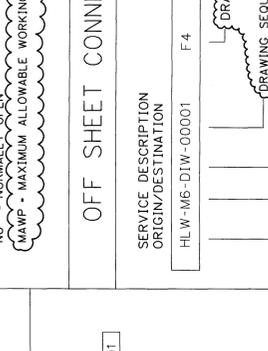
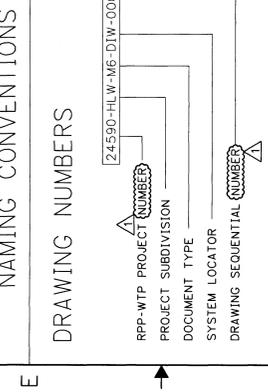
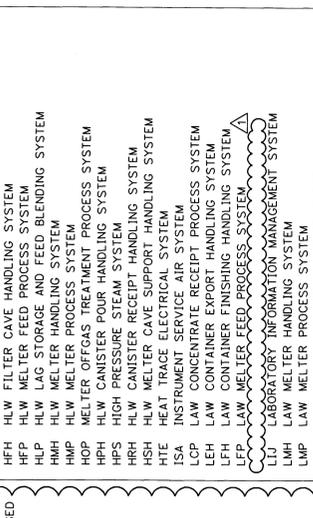
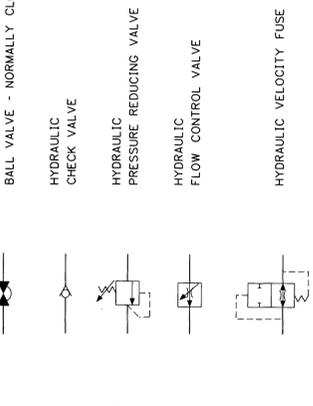
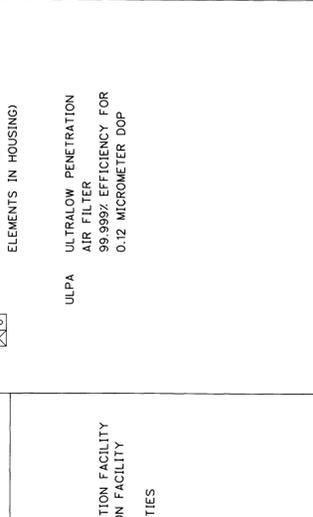
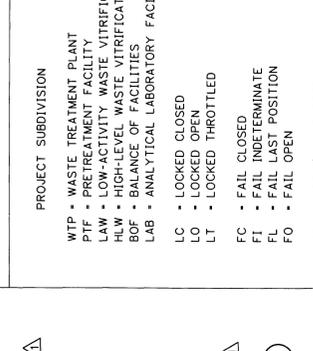
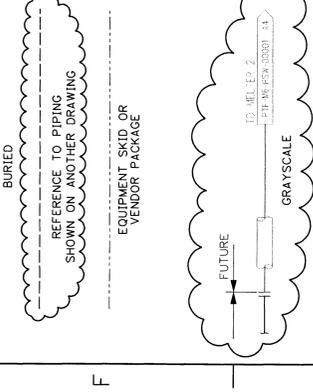
P&ID SYMBOLS AND LEGEND SHEET 1 OF 6

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NOTES

- SYSTEM DESIGNATOR SHALL BE IN ACCORDANCE WITH SYSTEM LOCATOR/SYSTEM NAME AND DIVISION OF RESPONSIBILITY 24590-WTP-M6-50-P0002, LATEST REVISION.
- CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.



NOTES

PLEASE NOTE THAT SOURCE SPECIAL NUCLEAR AND BYPRODUCT MATERIALS, AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954 (AEA), ARE REGULATED AT THE FEDERAL LEVEL BY THE U.S. DEPARTMENT OF ENERGY (DOE). IT IS THE POLICY OF THE U.S. DEPARTMENT OF ENERGY TO REGULATE THE AEA MATERIALS AND BYPRODUCT MATERIALS IN ACCORDANCE WITH THE AEA REGULATIONS AND AUTHORITY TO REGULATE NUCLEAR MATERIALS AND BYPRODUCT MATERIALS. THE REGULATIONS PROVIDED FOR PROCESS DESCRIPTION PURPOSES ONLY.

REVISION HISTORY

REV	ISSUED FOR PERMITTING USE	DESCRIPTION	DATE	ORG	CHKD	RWD	APVD	DATE
1			7-24-02	IC	US	GD		
0								

PROJECT INFORMATION

PROJECT No.	24590
ISSUED BY	IC
SITE	HANFORD
AREA	200E
BUILDING No.	
BY	K. CHANDRASEKHAR
DATE	JUL 17, 02
ORIGINATOR	UTPAL SEN
CHECKER	GARTH DUNCAN
APPROVER	
REVIEWER	

REVISION HISTORY

PROJECT No.	24590
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APPROVER	
REVIEWER	

INSTRUMENT DISCRETE DEVICE AND / OR FUNCTION SYMBOLS

ACCESSIBLE TO OPERATOR	INSTRUMENT OR DEVICE LOCATION	
	FIELD MOUNTED (NO PANEL)	ANY CONTROL ROOM (MAIN, FACILITY STAND-BY)
NOT ACCESSIBLE TO OPERATOR		
HARDWARE		
CONTINUOUS SOFTWARE		
DISCRETE SOFTWARE		

NOTES

A. 'ACCESSIBLE' IS NOT APPLICABLE TO FIELD MOUNTED INSTRUMENTS OR DEVICES THAT ARE NOT MOUNTED ON A PANEL.

B. A PANEL MOUNTED INSTRUMENT OR DEVICE IS ACCESSIBLE TO THE OPERATOR WHEN THE PARAMETER IS VISUALLY DISPLAYED.

C. A CONTROL ROOM INSTRUMENT OR DEVICE IS ACCESSIBLE TO THE OPERATOR WHEN THE PARAMETER IS DISPLAYED ON A CRT (SOFTWARE) OR VISUALLY DISPLAYED (HARDWARE).

FUNCTION SYMBOLS

- INTEGRATE
- SQUARE ROOT EXTRACTOR
- GAIN OR ATTENUATE (INPUT-OUTPUT)
- ADD OR SUMMATION
- AVERAGE
- DIFFERENCE
- DIVIDE
- MULTIPLY
- CHARACTERIZE
- LOW SELECTOR
- HIGH SELECTOR
- BIAS
- REVERSE
- DIRECT
- MATHEMATIC CALCULATION FUNCTION
- SELECT

INSTRUMENT TO PROCESS CONNECTIONS (ANY VARIABLES)

- DIRECT CONNECTION
- CAPILLARY FILLED SYSTEM WITH DIAPHRAGM SEAL
- IN-LINE DEVICE
- ELECTROMAGNETIC OR SONIC

MISCELLANEOUS SYMBOLS AND EXAMPLES

- PILOT LIGHT
- SIGNAL CONTINUATION ON THE SAME DRAWING. THE POINTER ON THE CIRCLE INDICATES THE DIRECTION OF THE PAIR POINTS ON THE DRAWING.
- DAMPENER
- CCTV CAMERA
- HORN
- LIGHT
- CONTINUOUS AIR MONITOR

- FLOW**
- FLOW ORIFICE WITH DIFFERENTIAL TYPE FLOW TRANSMITTER (CORNER TAPS, FLANGE TAPS OR PIPE TAPS)
 - VENTURI TUBE OR FLOW NOZZLE WITH DIFFERENTIAL TYPE FLOW TRANSMITTER
 - SINGLE PORT PITOT OR VENTURI TUBE WITH DIFFERENTIAL TYPE FLOW TRANSMITTER
 - AVERAGING PITOT TUBE WITH DIFFERENTIAL TYPE FLOW TRANSMITTER
 - POSITIVE DISPLACEMENT FLOW TOTALIZER WITH LOCAL TRANSMITTER
 - TURBINE OR PROPELLER TYPE FLOW ELEMENT (TANGENTIAL FLOW ELEMENT) TO FLOW ELEMENT
 - VORTEX OR SWIRL METER MULTI-VARIABLE TYPE TRANSMITTER INTEGRAL TO FLOW ELEMENT
 - VORTEX OR SWIRL METER TYPE FLOW ELEMENT (TRANSMITTER REMOTE MOUNTED)
 - VARIABLE AREA FLOW INDICATOR WITH INTEGRAL VALVE
 - VARIABLE AREA FLOW TRANSMITTER WITH INTEGRAL VALVE
 - VARIABLE AREA FLOW INDICATOR WITHOUT INTEGRAL VALVE
 - VARIABLE AREA FLOW TRANSMITTER WITHOUT INTEGRAL VALVE
 - MAGNETIC TYPE FLOW ELEMENT (TRANSMITTER INTEGRAL TO FLOW ELEMENT)
 - MAGNETIC TYPE FLOW ELEMENT (TRANSMITTER REMOTE MOUNTED)
 - CORIOLIS MULTI-VARIABLE TYPE FLOW ELEMENT (TRANSMITTER INTEGRAL TO FLOW ELEMENT)
 - CORIOLIS TYPE FLOW ELEMENT (TRANSMITTER REMOTE MOUNTED)
 - THERMAL TYPE FLOW ELEMENT (TRANSMITTER REMOTE MOUNTED) REPLACE FT WITH FS FOR SWITCH
 - FLOW SIGHT GLASS
 - FLOW RESTRICTION ORIFICE

- LEVEL**
- INTEGRAL FLOW ORIFICE ASSEMBLY WITH DIFFERENTIAL TRANSMITTER (ONE SINGLE UNIT)
 - GAUGE GLASS EXTERNAL FLOAT OR DISPLACEMENT TYPE LEVEL INSTRUMENT
 - DIFFERENTIAL PRESSURE PRESSURIZED TANK
 - DIFFERENTIAL PRESSURE ATMOSPHERE TANK (NOTE 4)
 - DIFFERENTIAL PRESSURE LEVEL MEASUREMENT BUBBLER TYPE
 - TYPE MOUNTED ON SIDE OF TANK, INTERNAL FLOAT DISPLACER
 - TYPE MOUNTED ABOVE TANK (NUMBER OF DISPLACERS INTERNAL FLOAT OR DISPLACER)
 - PROBE TYPE (DIP TUBE, CONDUCTIVE, CAPACITANCE, FLOTTING, NON-FLOTTING, TANK OPTIONAL)

- PRESSURE**
- DIRECT - CONNECTED
 - DIRECT - CONNECTED WITH REMOTE DIAPHRAGM SEAL PIPE MOUNTED
 - DIRECT - CONNECTED WITH REMOTE MOUNTED FLUSH DIAPHRAGM SEAL

- TESTPOINTS**
- ANALYTICAL POINT NOTE 13
 - SAMPLE PROBE NOTE 13
 - PRESSURE POINT NOTE 14
 - TEMPERATURE POINT NOTES 13, 14
 - TEMPERATURE & PRESSURE POINT NOTES 13, 14

- ANALYSIS AND RADIATION**
- GREAT SAMPLER TYPE RETURN TO PROCESS
 - FLOW - THROUGH TYPE (EXAMPLE FOR OXYGEN ANALYZER)
 - RADIATION ALPHA, BETA OR GAMMA MONITOR LIQUID PROCESS INDICATION (ONLINE)

- SELF - ACTUATED DEVICES - PRESSURE**
- PRESSURE REDUCING REGULATOR, SELF-CONTAINED
 - PRESSURE REDUCING EXTERNAL PRESSURE TAP
 - DIFFERENTIAL PRESSURE TRANSMITTER WITH INTEGRAL VALVE, EXTERNAL PRESSURE TAPS
 - BACKPRESSURE REGULATOR SELF-CONTAINED
 - BACKPRESSURE REGULATOR EXTERNAL PRESSURE TAP
 - PRESSURE RELIEF OR SAFETY VALVE, ANGLE PATTERN, SPRING OR WITH INTEGRAL PILOT
 - VACUUM RELIEF VALVE, ANGLE PATTERN, SPRING OR WITH INTEGRAL PILOT
 - RUPTURE DISK FOR VACUUM RELIEF
 - RUPTURE DISK FOR PRESSURE RELIEF

- SELF - ACTUATED DEVICES - FLOW**
- FLOW REGULATOR SELF-CONTAINED
 - LEVEL REGULATOR WITH MECHANICAL LINKAGE

- SELF - ACTUATED DEVICES - TEMPERATURE**
- TEMPERATURE REGULATOR, FILLED-SYSTEM TYPE

- SOLENOID OPERATED PILOT VALVE - TYPICAL SYMBOLS**
- VENT
 - VENT

- MOTOR OPERATED MULTIWAY DIVERTER**
- MULTIWAY DIVERTER

- VALVES - ACTUATORS**
- DIAPHRAGM SPRING OPPOSED BALANCED
 - DIAPHRAGM PRESSURE BALANCED
 - ROTARY MOTOR (SHOWN EXTERNALLY WITH ELECTRIC SIGNAL)
 - PNEUMATIC CYLINDER SINGLE-ACTING, SPRING OPPOSED
 - HYDRAULIC CYLINDER DOUBLE-ACTING
 - PNEUMATIC CYLINDER DOUBLE-ACTING
 - SINGLE SOLENOID
 - SINGLE SOLENOID (SHOWN WITH MANUAL RESET)
 - ELECTRO-HYDRAULIC
 - ELECTRO-PNEUMATIC
 - HAND ACTUATOR MOUNTED AT TOP, SIDE OR BOTTOM OF DEVICE AS APPLICABLE
 - UNASSIGNED (TYPE OF ACTUATOR TO BE WRITTEN ADJACENT TO THE SYMBOL)
 - VALVE WITH INTEGRAL (E/P)-POSITIONER

- TEMPERATURE**
- IN LINE TEMPERATURE ELEMENT WITH TRANSMITTER
 - VESSEL
 - VESSEL TEMPERATURE ELEMENT WITH TRANSMITTER
 - LOCAL TEMPERATURE INDICATOR
 - RESISTANCE TEMPERATURE DETECTOR (RTD) OR THERMOCOUPLE (T/C)
 - SURFACE MOUNTED TEMPERATURE ELEMENT
 - THERMOWELL

- TEMPERATURE**
- NOTE 8

- TEMPERATURE**
- RESISTANCE TEMPERATURE DETECTOR (RTD) OR THERMOCOUPLE (T/C)
 - SURFACE MOUNTED TEMPERATURE ELEMENT
 - THERMOWELL

- TEMPERATURE**
- NOTE 8

- NOTES:**
- THE SYMBOLS AND LEGENDS SHOWN ARE BASED ON ISA STANDARD, ANSI/ISA-55.1-1984 R1992 "INSTRUMENTATION SYMBOLS AND IDENTIFICATION" AND "STANDARD ISA-55.3-1983 GRAPHIC SYMBOLS FOR DISTRIBUTED CONTROL SYSTEMS".
 - DELETED.
 - TEXT LOCATION AROUND INSTRUMENTATION SYMBOLS ARE:
 - J1: INSTRUMENT FUNCTION CODE, E.G., POISH
 - J2: UNIQUE LOOP NUMBER
 - J3: FUNCTION (E.G. $\sqrt{}$) OR DEVICE DESIGNATION (L/P, P/L, V/L, P/H, ETC.)
 - Z: Z DESIGNATES SAFETY ITEM.
 - J4: FIL CIN - ASSOCIATES PING DATABASE ENTRY WITH GRAPHIC (NORMALLY TRANSPARENT ON PIDs)
 - J5: ALPHA SYSTEM NUMBER, NORMALLY TRANSPARENT ON PAID. EXCEPTION IS DIFFERENT SYSTEM NUMBER ON A GIVEN SYSTEM P&ID.
 - THE UPPER IMPULSE LINE IS OMITTED IF LEVEL IS MEASURED USING ATMOSPHERIC PRESSURE AS REFERENCE.
 - NORMAL OPERATION MEANS PLANT EQUIPMENT IS IN OPERATING MODE FOR A CONTINUOUS OR BATCH PROCESS.
 - EXAMPLES OF USE OF TANGENTIAL INSTRUMENT CIRCLES, TO DENOTE A SINGLE INSTRUMENT WITH TWO VARIABLES AND/OR TWO FUNCTIONS:
 - TWO VARIABLES - "TT" FOR TOP BALLOON AND "FT" IN THE BOTTOM - MULTI-VARIABLE VORTEX FLOW METER.
 - TWO FUNCTIONS - "L" FOR LEVEL AND "T" FOR TEMPERATURE. THE BOTTOM FUNCTION LEVEL INSTRUMENT, ONE A TRANSMITTER, ONE A CONTROLLER.
 - INSTRUMENT NUMBERS ON PIDS LIST THE INSTRUMENT FUNCTION CODE AND THE UNIQUE LOOP IDENTIFIER.
 - THERMOWELL INFERRED (NOT TO BE SHOWN).
 - MAIN CONTROL ROOM SYMBOLOGY SAME AS FOR INDIVIDUAL FACILITY CONTROL ROOM AND STAND-BY CONTROL ROOM.
 - THE FOLLOWING ABBREVIATIONS ARE SUGGESTED TO DENOTE THE TYPES OF POWER SUPPLY AND PURGE FLUID:
 - ISA/PSA - AIR SUPPLY
 - ES - ELECTRIC SUPPLY
 - WS - WATER SUPPLY
 - NS - NITROGEN SUPPLY
 - GS - GAS SUPPLY
 - DELETED.
 - RX - SHIELDING (IN THIS USAGE ONLY).
 - TEST POINTS MAY BE USED WITH A HOT TAP TESTING (UTILITY/SERVICE SYSTEMS ONLY).
 - TEST POINTS NOT ASSOCIATED WITH AN INSTRUMENT TAG.
 - CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.

- TEMPERATURE**
- IN LINE TEMPERATURE ELEMENT WITH TRANSMITTER
 - VESSEL
 - VESSEL TEMPERATURE ELEMENT WITH TRANSMITTER
 - LOCAL TEMPERATURE INDICATOR
 - RESISTANCE TEMPERATURE DETECTOR (RTD) OR THERMOCOUPLE (T/C)
 - SURFACE MOUNTED TEMPERATURE ELEMENT
 - THERMOWELL

- TEMPERATURE**
- NOTE 8

- TEMPERATURE**
- RESISTANCE TEMPERATURE DETECTOR (RTD) OR THERMOCOUPLE (T/C)
 - SURFACE MOUNTED TEMPERATURE ELEMENT
 - THERMOWELL

- TEMPERATURE**
- NOTE 8

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 - J4: FIL CIN - ASSOCIATES PING DATABASE ENTRY WITH GRAPHIC (NORMALLY TRANSPARENT ON PIDs)
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 - NORMAL OPERATION MEANS PLANT EQUIPMENT IS IN OPERATING MODE FOR A CONTINUOUS OR BATCH PROCESS.
 - EXAMPLES OF USE OF TANGENTIAL INSTRUMENT CIRCLES, TO DENOTE A SINGLE INSTRUMENT WITH TWO VARIABLES AND/OR TWO FUNCTIONS:
 - TWO VARIABLES - "TT" FOR TOP BALLOON AND "FT" IN THE BOTTOM - MULTI-VARIABLE VORTEX FLOW METER.
 - TWO FUNCTIONS - "L" FOR LEVEL AND "T" FOR TEMPERATURE. THE BOTTOM FUNCTION LEVEL INSTRUMENT, ONE A TRANSMITTER, ONE A CONTROLLER.
 - INSTRUMENT NUMBERS ON PIDS LIST THE INSTRUMENT FUNCTION CODE AND THE UNIQUE LOOP IDENTIFIER.
 - THERMOWELL INFERRED (NOT TO BE SHOWN).
 - MAIN CONTROL ROOM SYMBOLOGY SAME AS FOR INDIVIDUAL FACILITY CONTROL ROOM AND STAND-BY CONTROL ROOM.
 - THE FOLLOWING ABBREVIATIONS ARE SUGGESTED TO DENOTE THE TYPES OF POWER SUPPLY AND PURGE FLUID:
 - ISA/PSA - AIR SUPPLY
 - ES - ELECTRIC SUPPLY
 - WS - WATER SUPPLY
 - NS - NITROGEN SUPPLY
 - GS - GAS SUPPLY
 - DELETED.
 - RX - SHIELDING (IN THIS USAGE ONLY).
 - TEST POINTS MAY BE USED WITH A HOT TAP TESTING (UTILITY/SERVICE SYSTEMS ONLY).
 - TEST POINTS NOT ASSOCIATED WITH AN INSTRUMENT TAG.
 - CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.

- TEMPERATURE**
- IN LINE TEMPERATURE ELEMENT WITH TRANSMITTER
 - VESSEL
 - VESSEL TEMPERATURE ELEMENT WITH TRANSMITTER
 - LOCAL TEMPERATURE INDICATOR
 - RESISTANCE TEMPERATURE DETECTOR (RTD) OR THERMOCOUPLE (T/C)
 - SURFACE MOUNTED TEMPERATURE ELEMENT
 - THERMOWELL

- TEMPERATURE**
- NOTE 8

- TEMPERATURE**
- RESISTANCE TEMPERATURE DETECTOR (RTD) OR THERMOCOUPLE (T/C)
 - SURFACE MOUNTED TEMPERATURE ELEMENT
 - THERMOWELL

REVISION HISTORY

REV	DESCRIPTION	ORG	CHKD	RWD	APVD	DATE
1	ISSUED FOR PERMITTING USE	KS	US	GD		12/15/03
0	ISSUED FOR PERMITTING USE	KS	US	GD		7-24-02

PROJECT INFORMATION

PROJECT No: 24590
 SITE: HANFORD
 BUILDING No: 201E

PERSONNEL

ORIGINATOR: K. CHANDRASEKARAN
 CHECKER: UTPAL SEN
 APPROVER: DARTH DUNCAN
 REVIEWER: []

DATE: JAN. 17, 02
 DATE: JAN. 17, 02
 DATE: 7-24-02

CONTRACT No: DE-AC27-ORR14135

WASTE PROTECTION PROJECT
 WASTE PRETREATMENT PLANT
 2435 STEVENS CENTER PLACE
 RICHLAND, WA 99352

SCALE: NONE

DATE: 12/10/2003 08:55:34 AM

24590-WTP-M6-50-P0003

SYMBOLS AND LEGEND
SHEET 3 OF 6

INSTRUMENT CODE LETTER IDENTIFICATION

SUCCESSING LETTERS (* FUNCTION IDENTIFIER COMBINATION IS NOT USED (NOTE 13))

Table with columns: FIRST LETTER, SENSING DEVICE, DISPLAY DEVICE, CONTROL DEVICE, SWITCH, MISCELLANEOUS DEVICE. Rows include symbols like AE, BE, CE, DE, EE, FE, etc., and their corresponding function codes.

NOTES:

- 1. THE INSTRUMENT LEGEND IS BASED ON ISA-S5.1-1984, INSTRUMENT SYMBOLS AND IDENTIFICATION STANDARD...
2. WHEN A PILOT LIGHT IS PART OF AN INSTALLED LOOP...
3. WHEN 'A' IS USED FOR ANALYSIS VARIABLES NOT ASSIGNED...
4. MODIFYING LETTERS 'H'-HIGH AND 'L'-LOW SHALL HAVE THE FOLLOWING MEANING...
5. THE LETTER 'Z' WHICH FOLLOWS A MEASURED VARIABLE...
6. 'O' DESIGNATES FLOW RESTRICTION ORIFICE...
7. BURNER/COMBUSTION 'B' SHALL BE USED FOR ALL FIRE PROTECTION AND BURNER/COMBUSTION APPLICATIONS...
8. TEST POINT IS A PROCESS CONNECTION TO WHICH NO INSTRUMENT IS PERMANENTLY CONNECTED...
9. INTEGRATED INDICATORS WILL BE PROVIDED WITH TRANSMITTERS ON WHEN SPECIFIED ON THE APPLICABLE INSTRUMENT DATA SHEET...
10. EXAMPLES OF EQUIPMENT USING 'X' INCLUDE BARCODE OR OPTICAL CHARACTER RECOGNITION (OCR) SYSTEMS, TELEVISION SYSTEMS, PHOTOCELL, ETC.
11. 'R' DESIGNATES RUPTURE DISKS ON PRESSURE AND VACUUM RELIEF DEVICES...
12. THE DESIGNATION 'D' REPRESENTS HVAC CONTROL DAMPERS...
13. ANY FIRST LETTER WHEN COMBINED WITH MODIFYING LETTER 'C' FOR A SUCCEEDING LETTER IS PERMITTED FOR DIGITAL ON/OFF CONTROL FOR A 'C' TAG, IN ALL OTHER CASES...
14. USING 'X' AS A MODIFIER DESIGNATES AN ACCESSORY PURCHASED WITH AN INSTRUMENT SYSTEM...
15. USE OF 'C' (FOR A SUCCEEDING LETTER) IS PERMITTED FOR DIGITAL ON/OFF CONTROL FOR A 'C' TAG, IN ALL OTHER CASES...
16. SHORT TEST LEG IS DEFINED AS THE 'BALANCE' LEG, (NOZZLE A).
17. FOR USE WITH P.I.M. THEN NO 'A' SUFFIX IS REQUIRED.
18. CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.

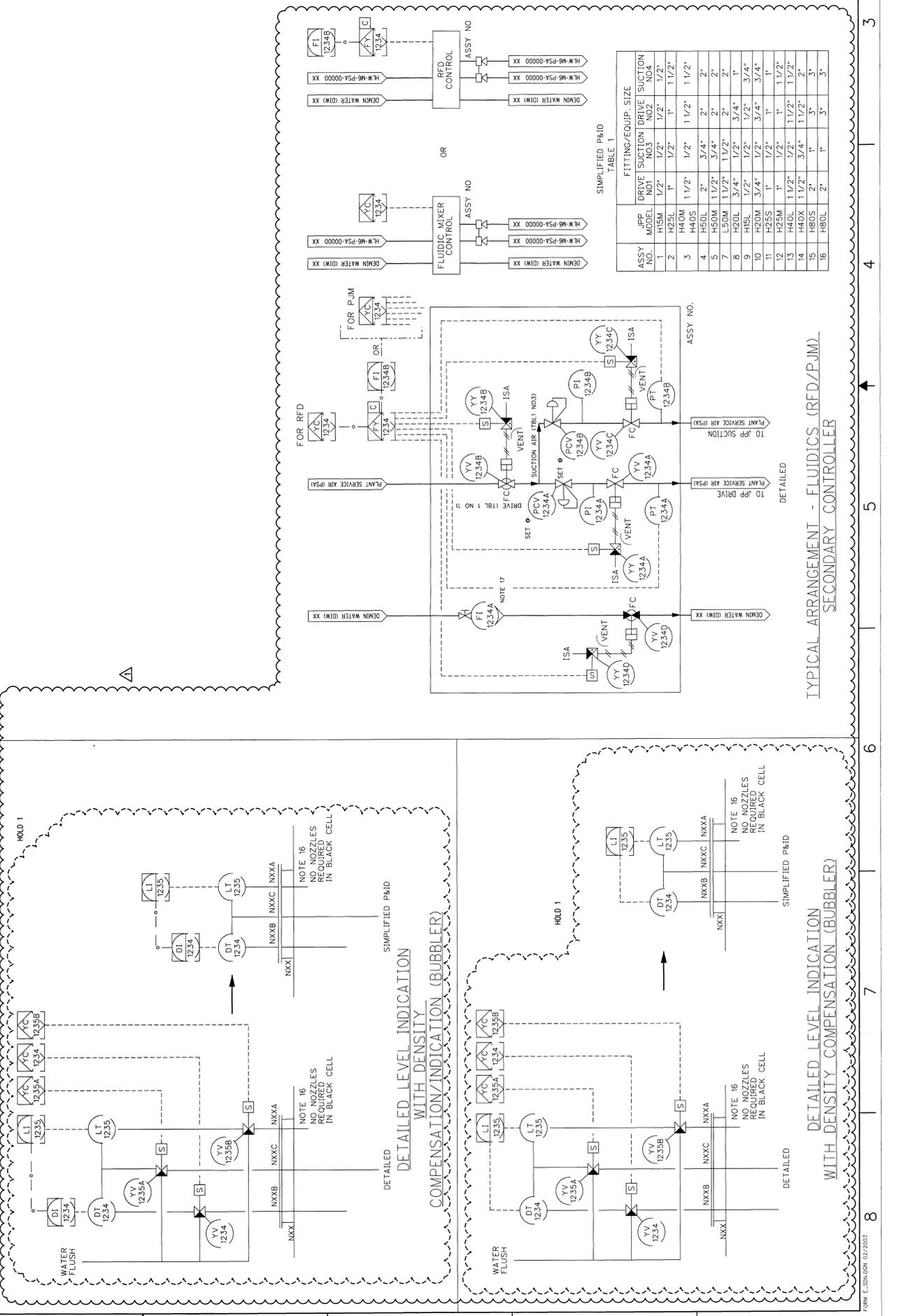
HOLD/OPEN ITEMS:

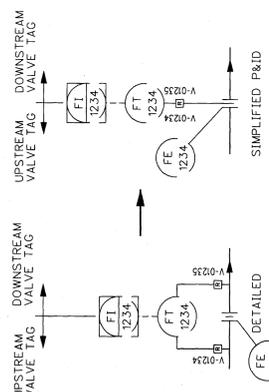
- 1. DESIGN PENDING A REVISED DESIGN AND DCA APPROVAL.

REVISION HISTORY table with columns: REV, DESCRIPTION, ORG, CHKD, RVD, JAP, DATE. Includes project information: PROJECT NO. 24590, SITE NAME, BUILDING NO., etc.

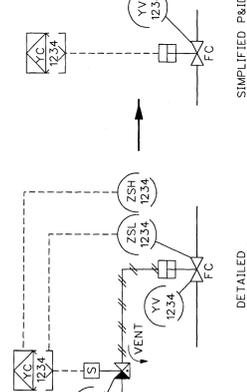


SYMBOLS AND LEGEND SHEET 4 OF 6. Includes a legend for symbols like FT, YV, YS, etc., and a table for FITTING/EQUIP. SIZE.

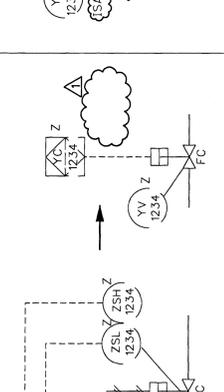




PARALLEL ROOT VALVE DETAIL

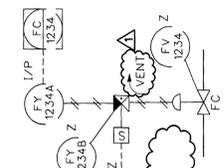


TYPICAL OPEN/CLOSE VALVE CONTROL



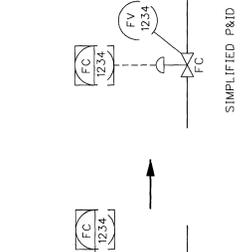
TYPICAL OPEN/CLOSE VALVE CONTROL

SAFETY APPLICATION FOR OPEN/CLOSE VALVE CONTROL

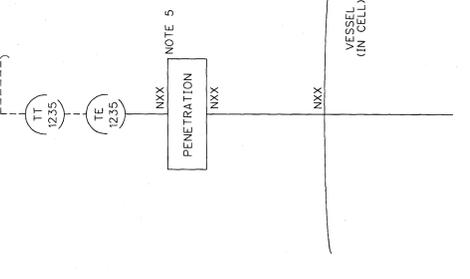


SAFETY APPLICATION FOR THROTTLING VALVE CONTROL WITH SAFETY SOLENOID S/D

SAFETY APPLICATION FOR THROTTLING VALVE CONTROL WITH SAFETY SOLENOID S/D

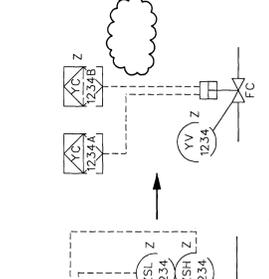


TYPICAL THROTTLING VALVE CONTROL



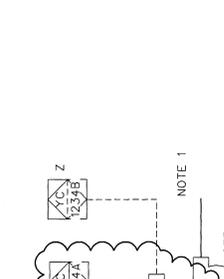
EXTENDED THERMOWELL VESSEL TEMPERATURE ELEMENT WITH TRANSMITTER

REMOIE VESSEL TEMPERATURE ELEMENT WITH INSTRUMENT SIGNAL JUMPER AND TRANSMITTER



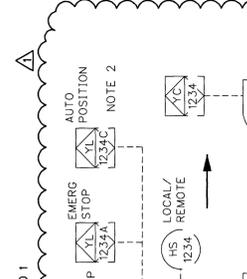
REMOIE VESSEL TEMPERATURE ELEMENT WITH INSTRUMENT SIGNAL JUMPER AND TRANSMITTER

SAFETY APPLICATION FOR OPEN/CLOSE VALVE CONTROL WHERE ABILITY TO OPERATE THROUGH ICM IS REQUIRED AND PERMISSIBLE

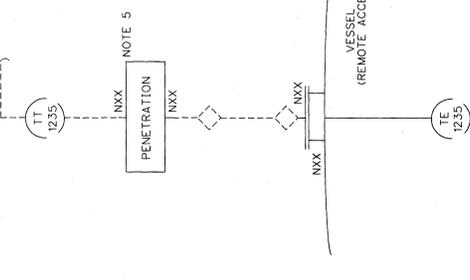


SAFETY APPLICATION FOR OPEN/CLOSE VALVE CONTROL WHERE ABILITY TO OPERATE THROUGH ICM IS REQUIRED AND PERMISSIBLE

SAFETY APPLICATION FOR OPEN/CLOSE VALVE CONTROL WHERE ABILITY TO OPERATE THROUGH ICM IS REQUIRED AND PERMISSIBLE

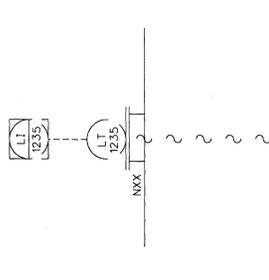


TYPICAL MOTOR RUN CIRCUIT WITH DCS STARTING/STOPPING



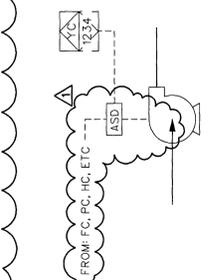
REMOIE VESSEL TEMPERATURE ELEMENT WITH INSTRUMENT SIGNAL JUMPER AND TRANSMITTER

REMOIE VESSEL TEMPERATURE ELEMENT WITH INSTRUMENT SIGNAL JUMPER AND TRANSMITTER



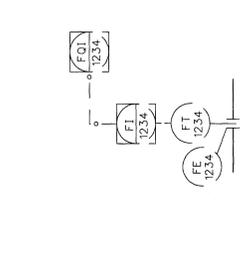
DETAILED LEVEL INDICATION LOCAL NON-GUIDED RADAR LEVEL FOR VESSEL

DETAILED LEVEL INDICATION LOCAL NON-GUIDED RADAR LEVEL FOR VESSEL



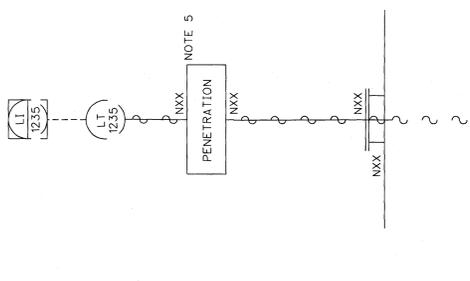
THERMO TYPE MASS FLOW METER WITH INTEGRATOR FLOW CONTROLLER

THERMO TYPE MASS FLOW METER WITH INTEGRATOR FLOW CONTROLLER



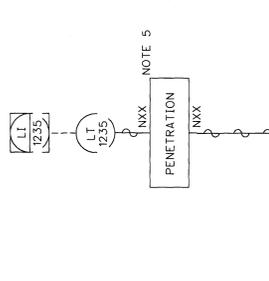
MOTOR WITH ADJUSTABLE SPEED DRIVE

DETAILED FLOW INDICATION WITH TOTALIZATION



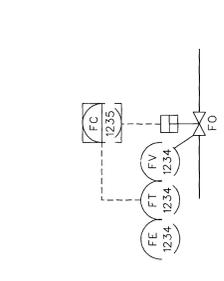
DETAILED LEVEL INDICATION NON-GUIDED RADAR LEVEL FOR SUMPS

DETAILED LEVEL INDICATION NON-GUIDED RADAR LEVEL FOR SUMPS



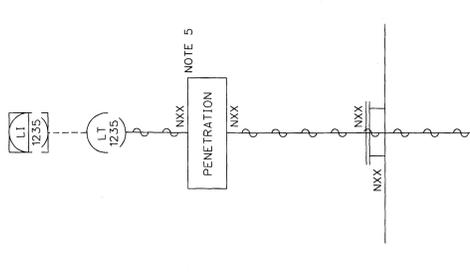
DETAILED LEVEL INDICATION REMOTE GUIDED RADAR LEVEL FOR SUMPS

DETAILED LEVEL INDICATION REMOTE GUIDED RADAR LEVEL FOR SUMPS



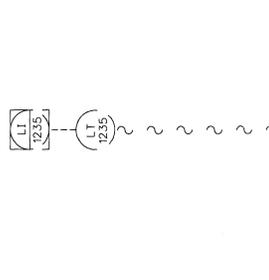
SURFACE TEMPERATURE REMOTE SENSING INDICATOR

SURFACE TEMPERATURE REMOTE SENSING INDICATOR



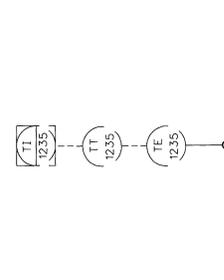
DETAILED LEVEL INDICATION REMOTE GUIDED RADAR LEVEL FOR VESSELS

DETAILED LEVEL INDICATION REMOTE GUIDED RADAR LEVEL FOR VESSELS



DETAILED LEVEL INDICATION REMOTE GUIDED RADAR LEVEL FOR VESSELS

DETAILED LEVEL INDICATION REMOTE GUIDED RADAR LEVEL FOR VESSELS



PRESSURE WITH AIR/WATER FLUSH

PRESSURE WITH AIR/WATER FLUSH

NOTES:

- ALL SHARED DISPLAY DEVICES IDENTIFIED AS SAFETY ITEMS WILL INCLUDE SHARED CRT INDICATION ON THE ION THE LETTER 'Z' REPRESENTS AN INSTRUMENT WIRED TO ITS SHUTDOWN SYSTEM (PPJ) WHERE SHUTDOWN LOGIC EXISTS.
- YL'S ARE DRY CONTACT INPUT FROM THE MOTOR CONTROL CENTER (MCC) TO THE PCI FOR INDICATION ONLY. YC IS CONTACT OUTPUT FROM DCS FOR MOTOR START/STOP WITH RUNNING INDICATION FEEDBACK.
- DELETED.
- DELETED. (MOVED TO SHEET 24590-WTP-M6-50-00004)
- PENETRATION WILL BE DEFINED AND THE BOX WILL ONLY BE USED WHEN APPLICABLE.
- CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.

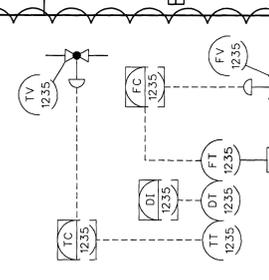
HOLD/OPEN ITEMS:

- DETAILED SIGNAL EXCHANGE BETWEEN MCC AND DCS TO BE DETERMINED.
- DELETED. (MOVED TO SHEET 24590-WTP-M6-50-00004)

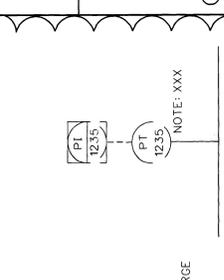
NOTES:

- DETAILED AND SIMPLIFIED P&ID IDENTICAL

DETAILED VIEW OF SAFETY APPLICATION FOR ANALOG INPUTS



TEMP/DENSITY/FLOW CORIOLIS TEMP- FLOW CONTROL



TEMP/DENSITY/FLOW CORIOLIS TEMP- FLOW CONTROL

NOTES:

- THIS PROJECT IS A SPECIAL NUCLEAR AND BYPRODUCT MATERIALS FACILITY. ALL MATERIALS AND BYPRODUCT MATERIALS ARE TO BE USED IN ACCORDANCE WITH THE REGULATIONS OF THE U.S. DEPARTMENT OF ENERGY (DOE) FACILITIES EXCLUSIVELY BY DOE ACTING PURSUANT TO ITS AREA AUTHORITY. DOE ASSETS, THAT PURSUANT TO THE AREA AUTHORITY, ARE NOT TO BE USED FOR ANY OTHER PURPOSES. SOURCE SPECIAL NUCLEAR AND BYPRODUCT MATERIAL AT DOE-OWNED ISOLATE NUCLEAR FACILITIES. INFORMATION CONTAINED HEREIN ON RADIOACTIVE IS PROVIDED FOR PROCESS DESCRIPTION PURPOSES ONLY.

REV	DESCRIPTION	DATE	BY	CHKD	DATE
1	ISSUED FOR PERMITTING USE	07/17/02	XXX	YYY	07/17/02
0	ISSUED FOR PERMITTING USE	07/24/02	XXX	YYY	07/24/02

PROJECT No. 24590
SITE HANFORD
AREA 200E
BUILDING No. 1200

REVISION HISTORY

RIVER PROTECTION PROJECT
WASTE TREATMENT PLANT
24590-WTP-M6-50-00005
RICHLAND, WA 99352

CONTRACT No. DE-AC27-00RV14138

DATE 2002-07-14
DESIGNED BY PHS CHANDRASEKAR
CHECKED BY DPHL SKR
APPROVED BY GARTH DUNCAN
REVIEWER

SCALE: NONE
REV: 1

24590-WTP-M6-50-P0005

12/10/2003 09:22:59 AM
COMPUTER GENERATED MANUAL
CHECKS NOT PERMITTED

SYMBOLS AND LEGEND SHEET 5 OF 6

