Region 1	Region 2	Region 3	Region 3	Reg. 3
Region 2	Region 2	Region 3	Region 3	Reg. 3
Region 1	Region 2	Region 3	Region 3	Reg. 3
Region 2	Region 2	Region 2	Region 2	Reg. 2
Region 1	Region 2	Region 1	Region 2	Reg. 1
Region 2	Region 2	Region 1	Region 2	Reg. 1
Region 1	Region 2	Region 2	Region 2	Reg. 2
Region 2	Region 2	Region 3	Region 3	Reg. 3
Region 1	Region 2	Region 3	Region 3	Reg. 3
Region 2	Region 2	Region 3	Region 3	Reg. 3

Figure 9.1A-1 Representation of the KENO5a Reference MZTR Calculational Model

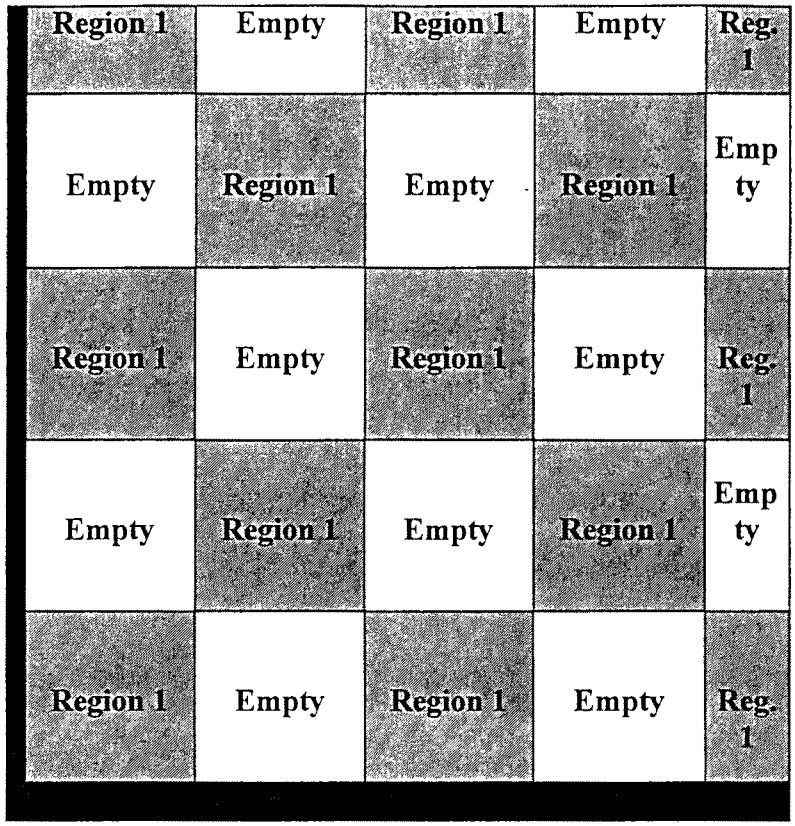

Figure 9.1A-2 Representation of the KENO5a Reference Checkerboard Calculational Model

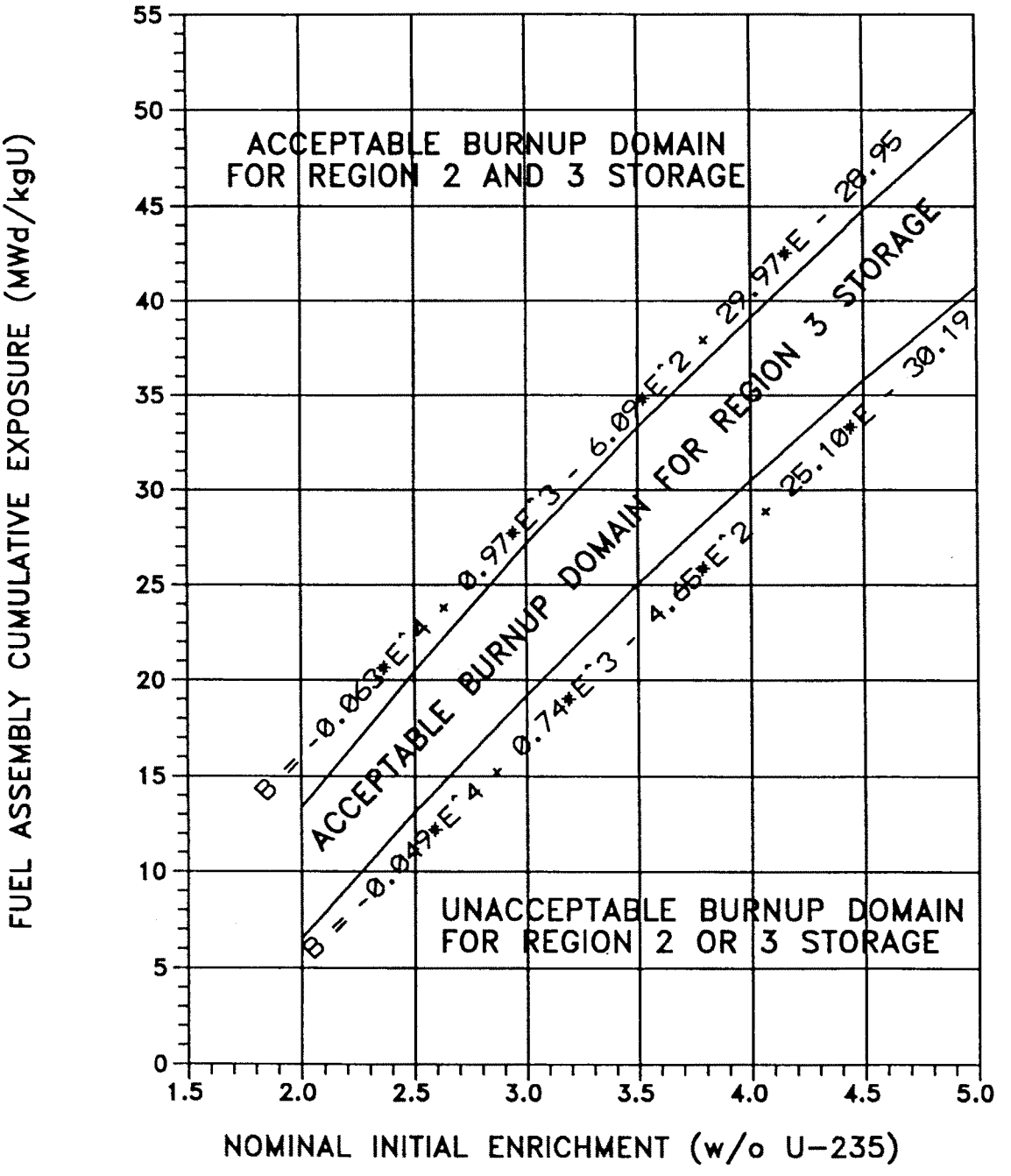

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FIGURE 9.1A-3 Minimum Required Fuel Assembly Burnup as a Function of Nominal Initial Enrichment to Permit Storage in Regions 2 and 3 (Fuel assemblies with enrichments less than 2.0 wt% ^{235}U will conservatively be required to meet the burnup requirements of 2.0 wt% ^{235}U assemblies).

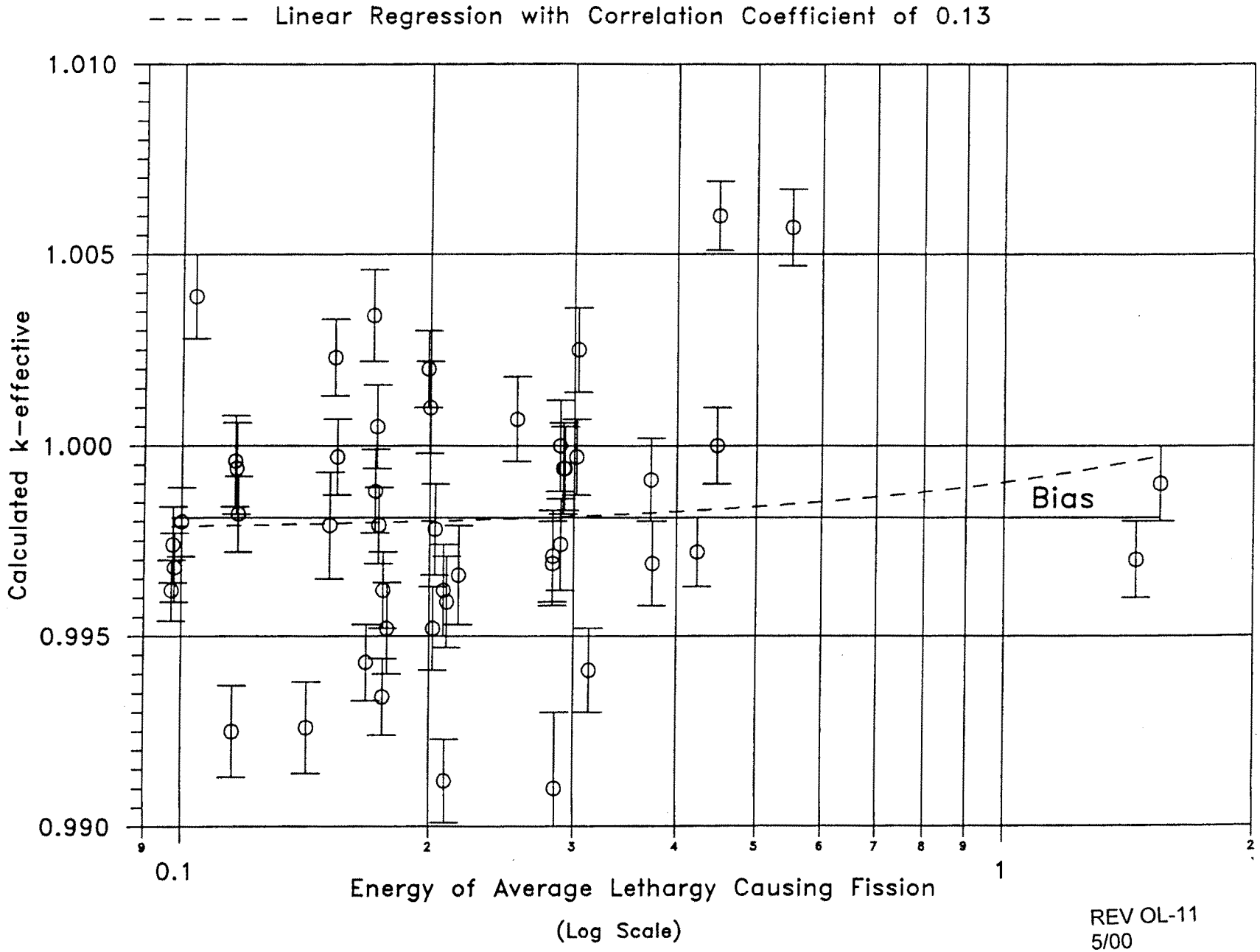


FIGURE 9.1A-4 MCNP CALCULATED k–eff VALUES for VARIOUS VALUES OF THE SPECTRAL INDEX

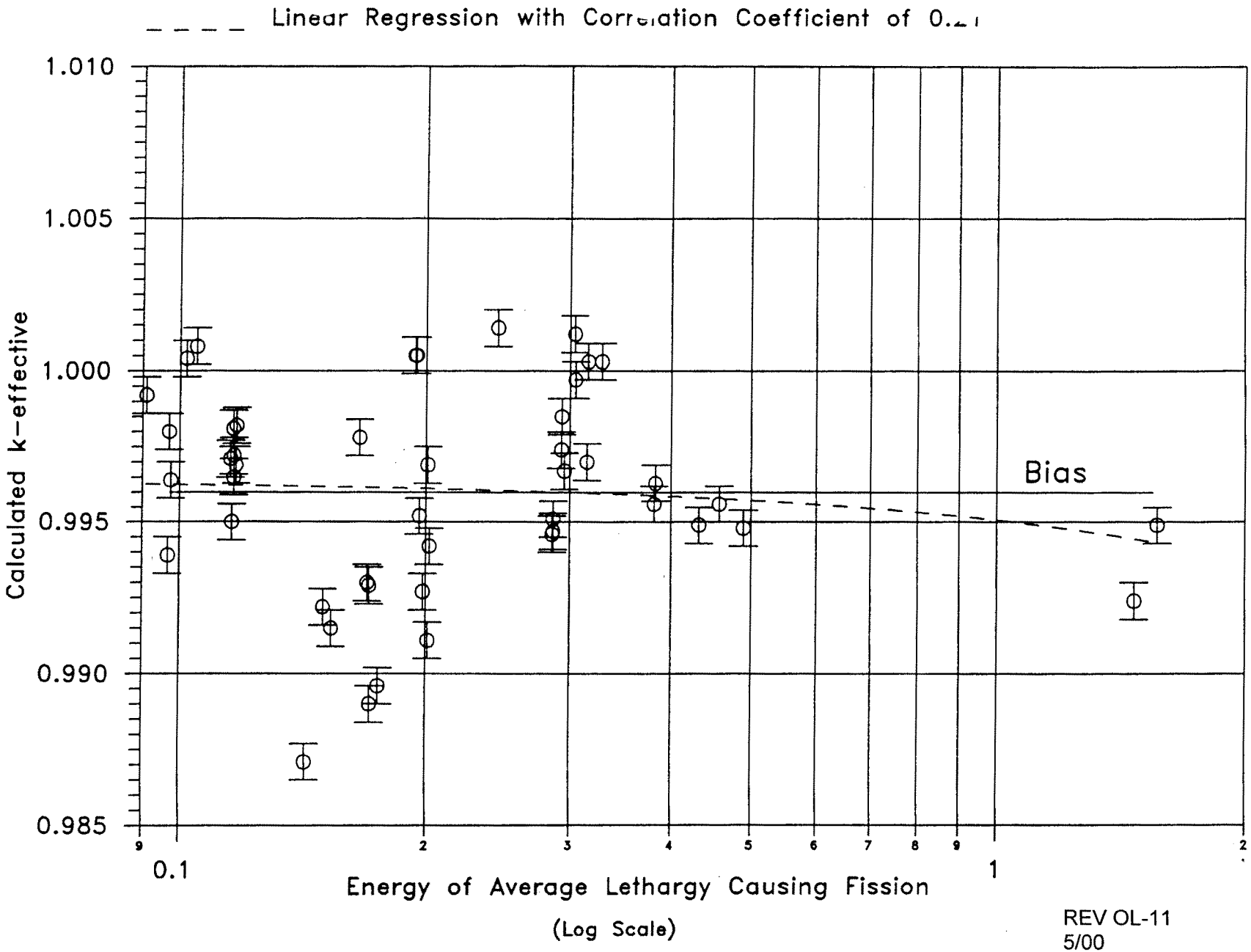
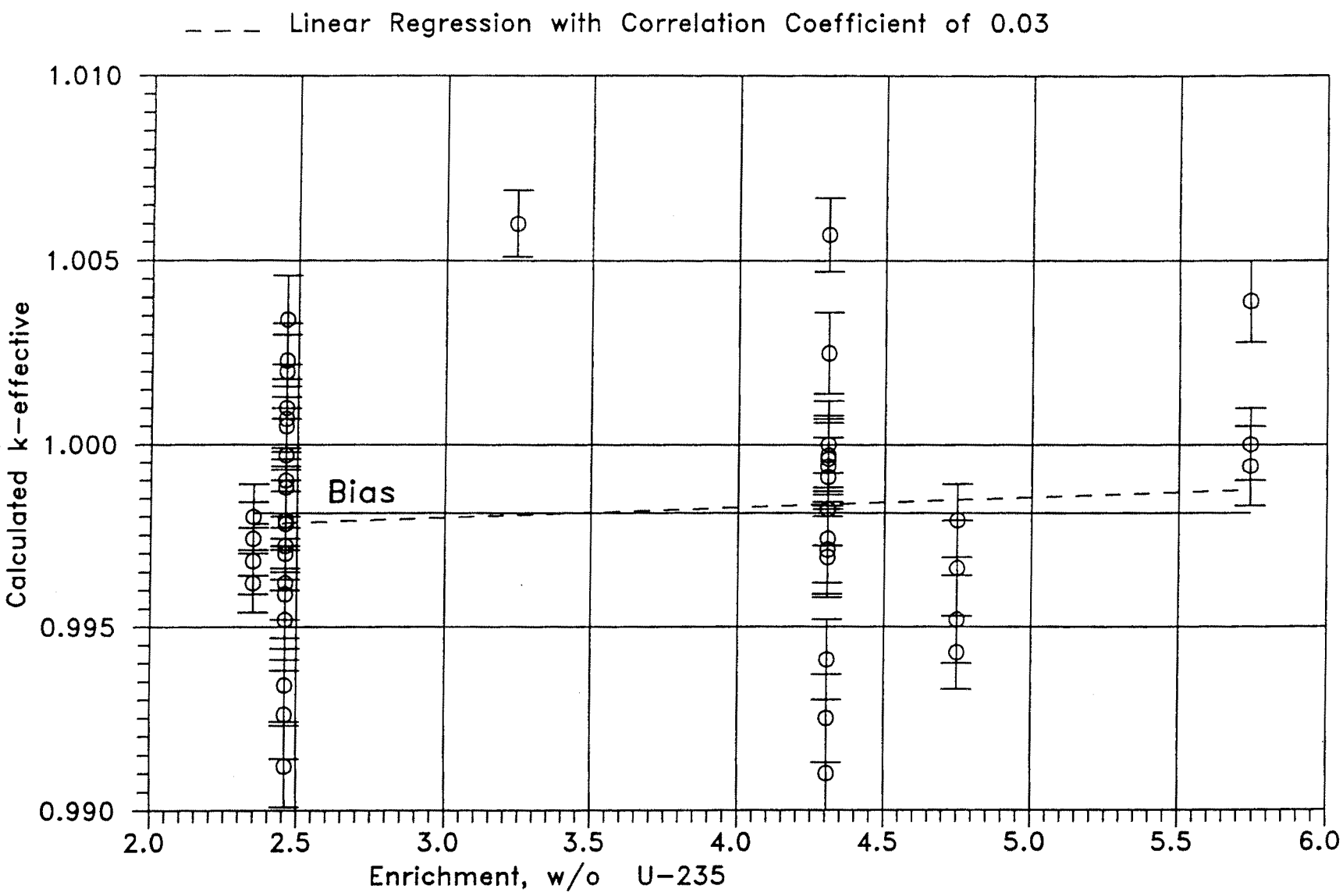
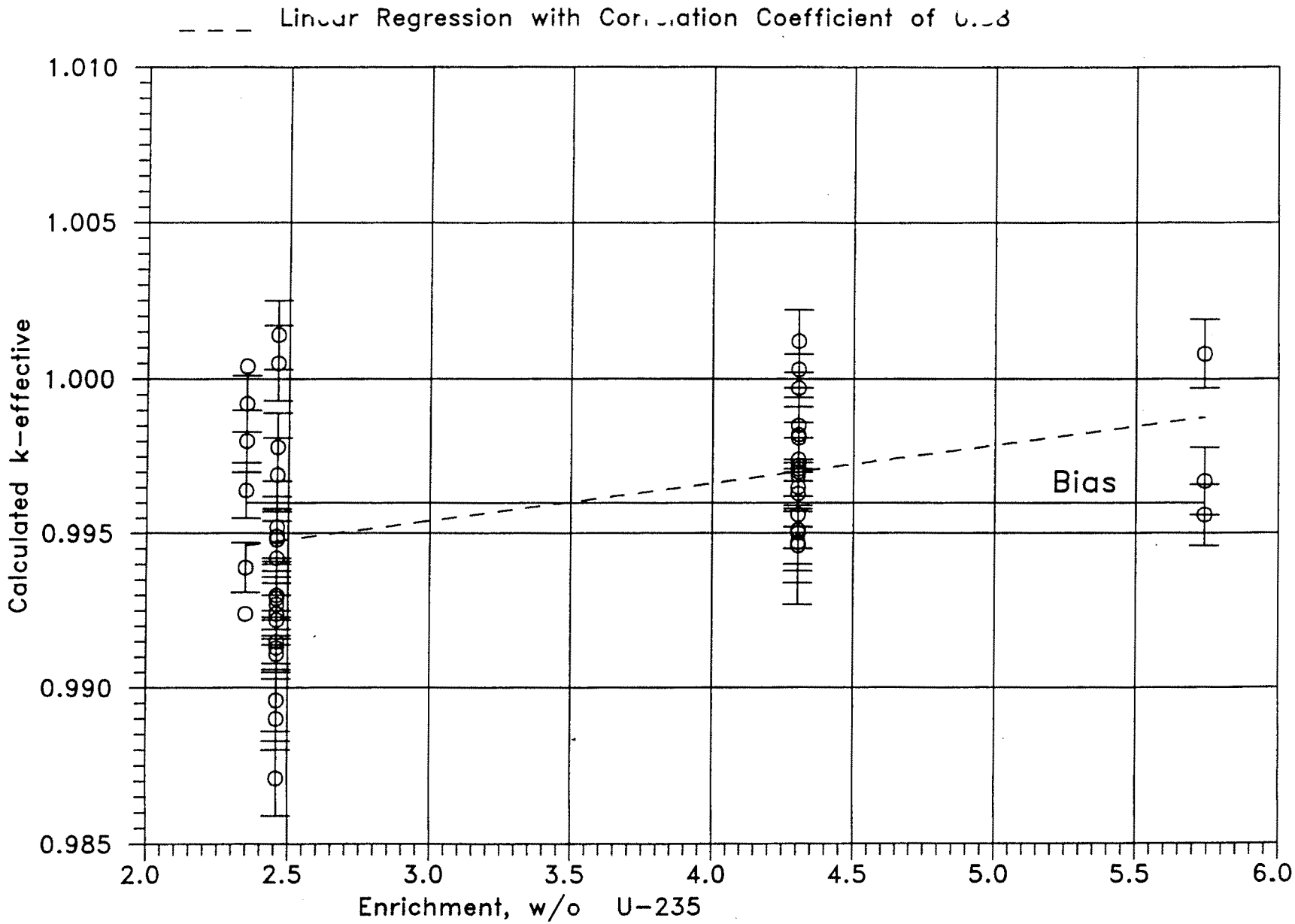


FIGURE 9.1A-5 KENO5a CALCULATED k-eff VALUES FOR VARIOUS VALUES OF THE SPECTRAL INDEX



REV OL-11
5/00

FIGURE 9.1A-6 MCNP CALCULATED k-eff VALUES AT VARIOUS U-235 ENRICHMENTS



REV OL-11
5/00

FIGURE 9.1A-7 KENO CALCULATED k-eff VALUES AT VARIOUS U-235 ENRICHMENTS

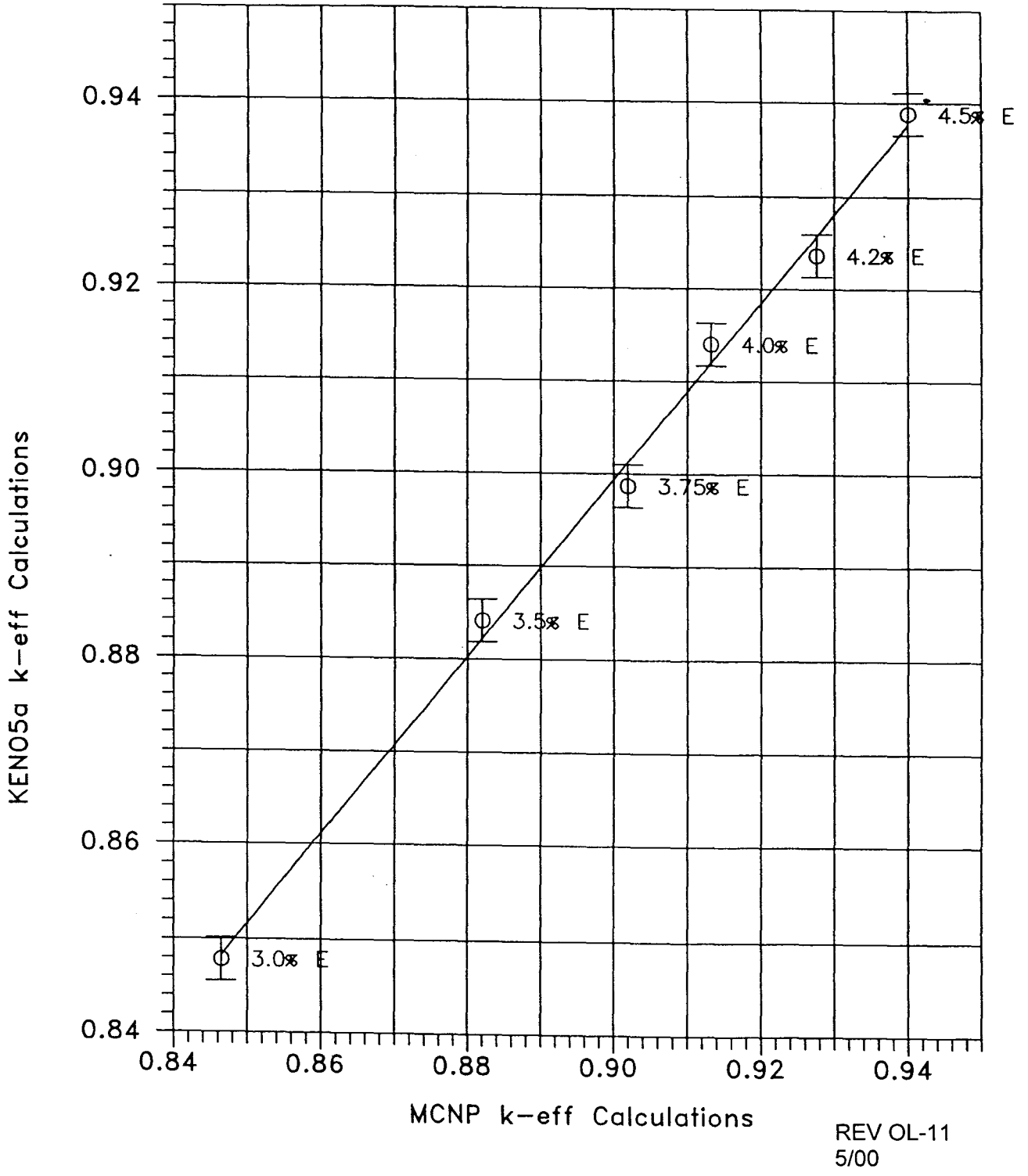


FIGURE 9.1A-8 COMPARISON OF MCNP AND KENO5A CALCULATIONS FOR VARIOUS FUEL ENRICHMENTS

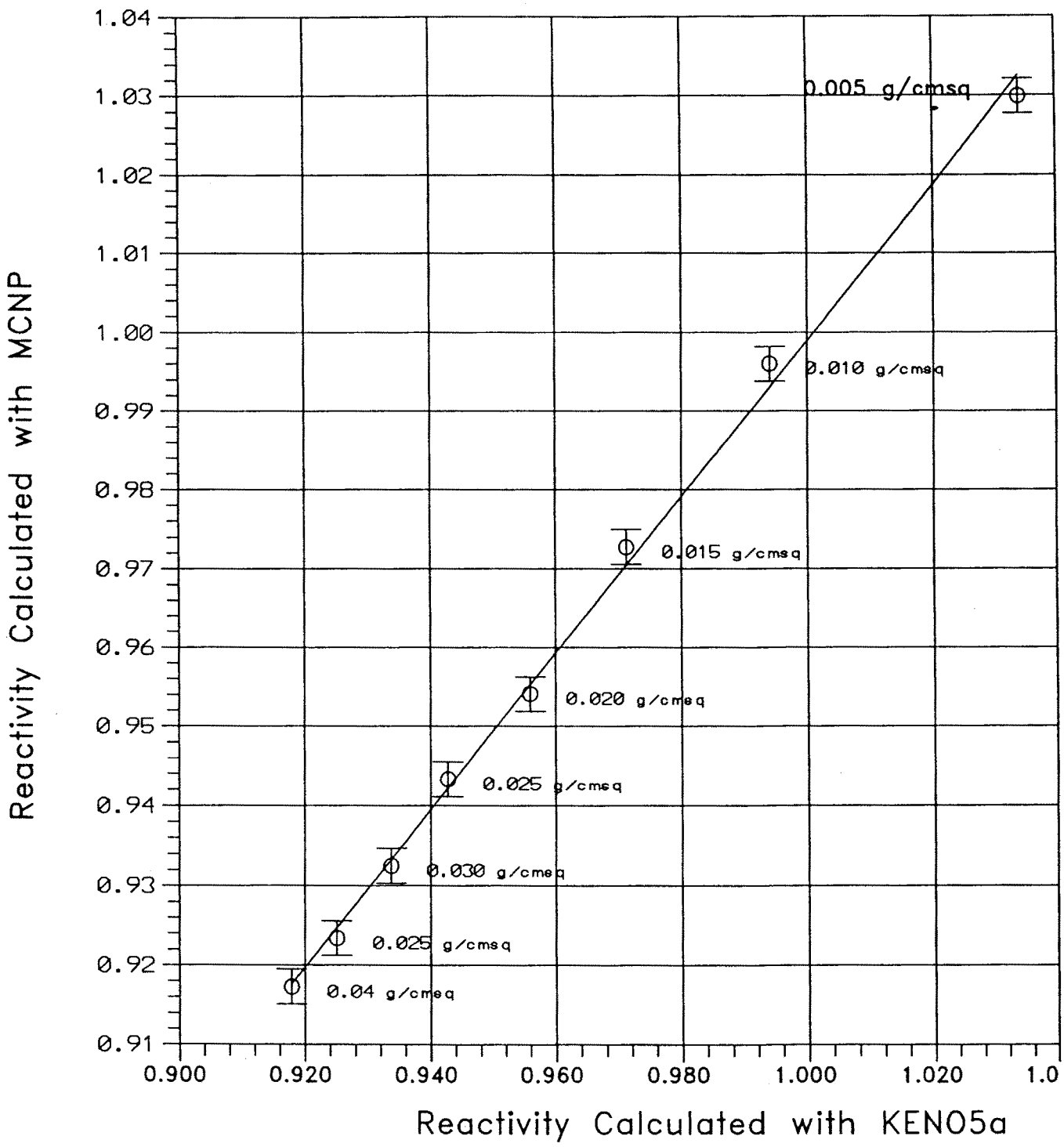


FIGURE 9.1A-9 COMPARISON OF MCNP AND KENO5a CALCULATIONS FOR VARIOUS BORON-10 AREAL DENSITIES

REV OL-11
5/00

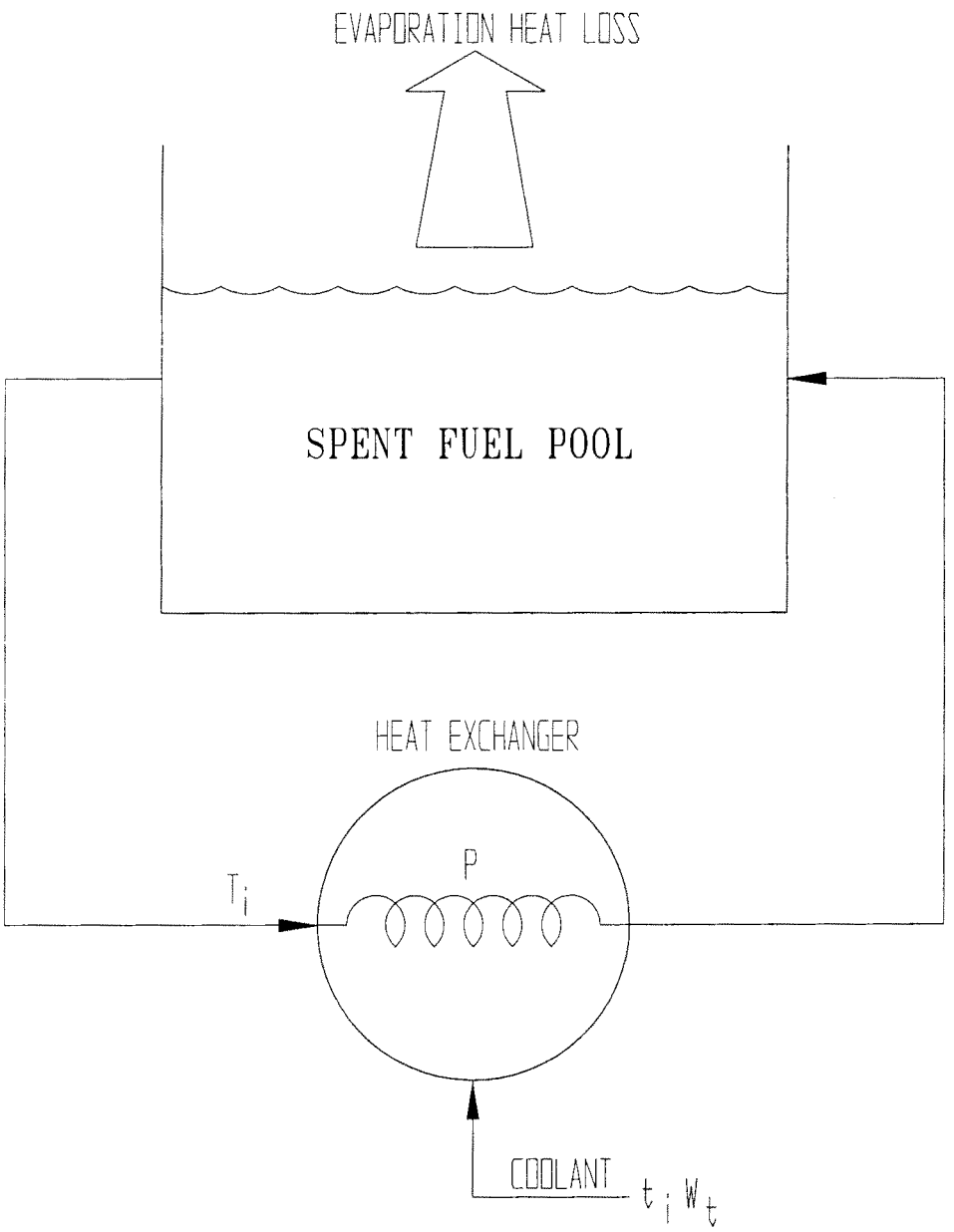


FIGURE 9.1A-10; SPENT FUEL COOLING MODEL

REV OL-11
5/00

CALLAWAY 3-D CFD MODEL

REV OL-11
5/00

FIGURE 9.1A-11 Isometric View of Spent Fuel Pool CFD Model

Figure 9.1A-12 Callaway Elevation 2007'
Spent Fuel Pool Time History Accelerogram
X Direction Bounding OBE Spectra (2% Damping)

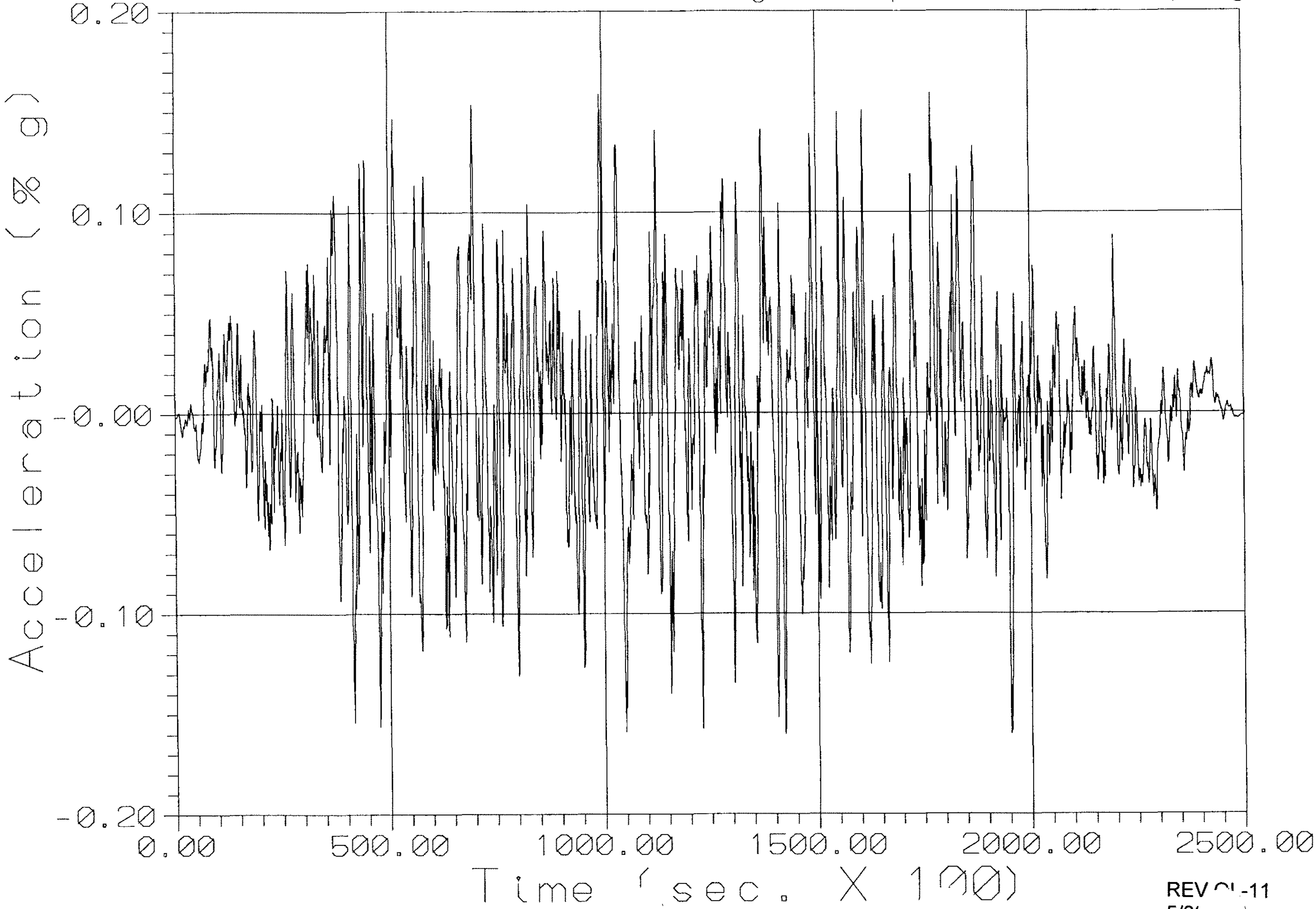
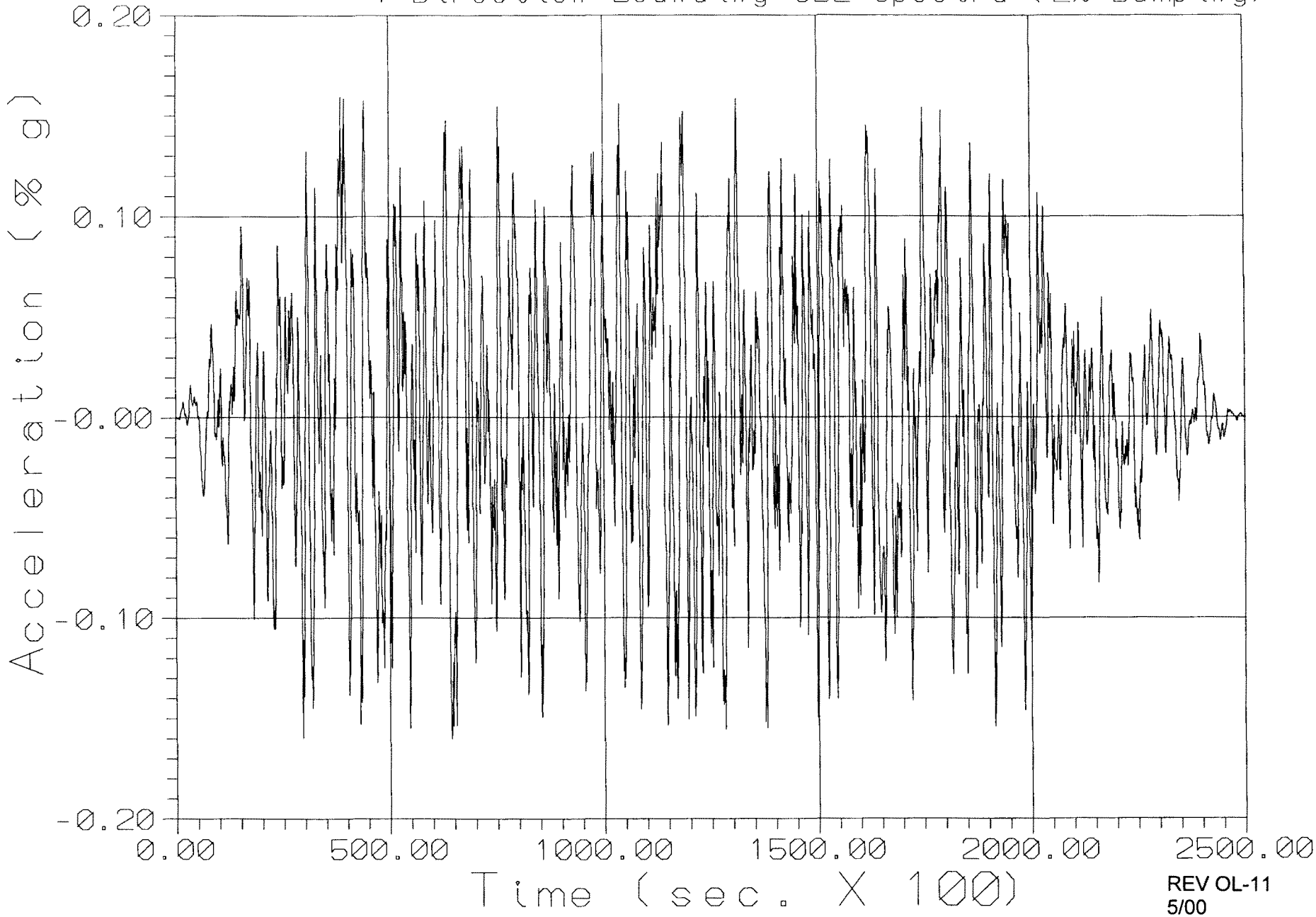
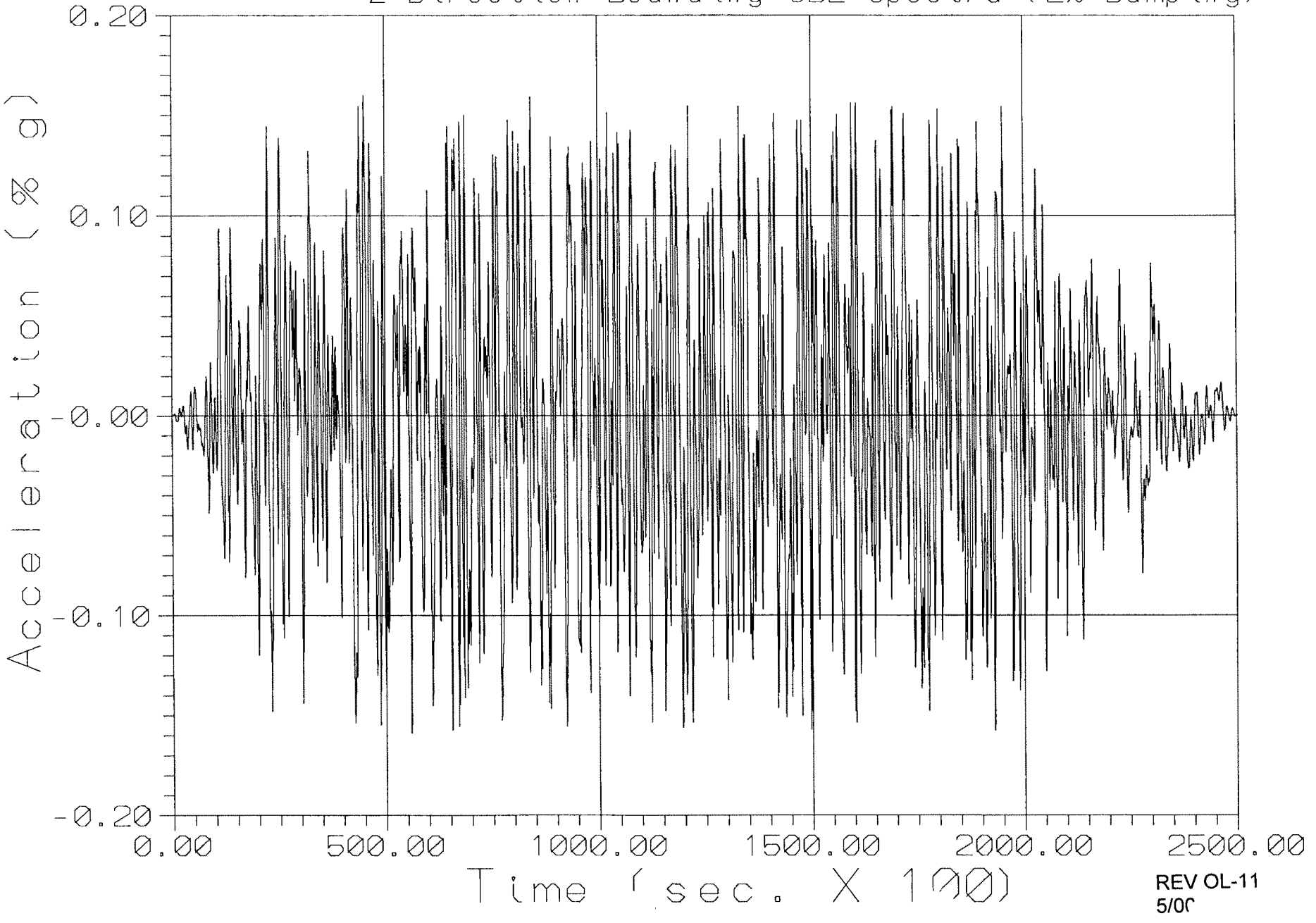


Figure 9.1A-13 Callaway Elevation 2007'
Spent Fuel Pool Time History Accelerogram
Y Direction Bounding OBE Spectra (2% Damping)



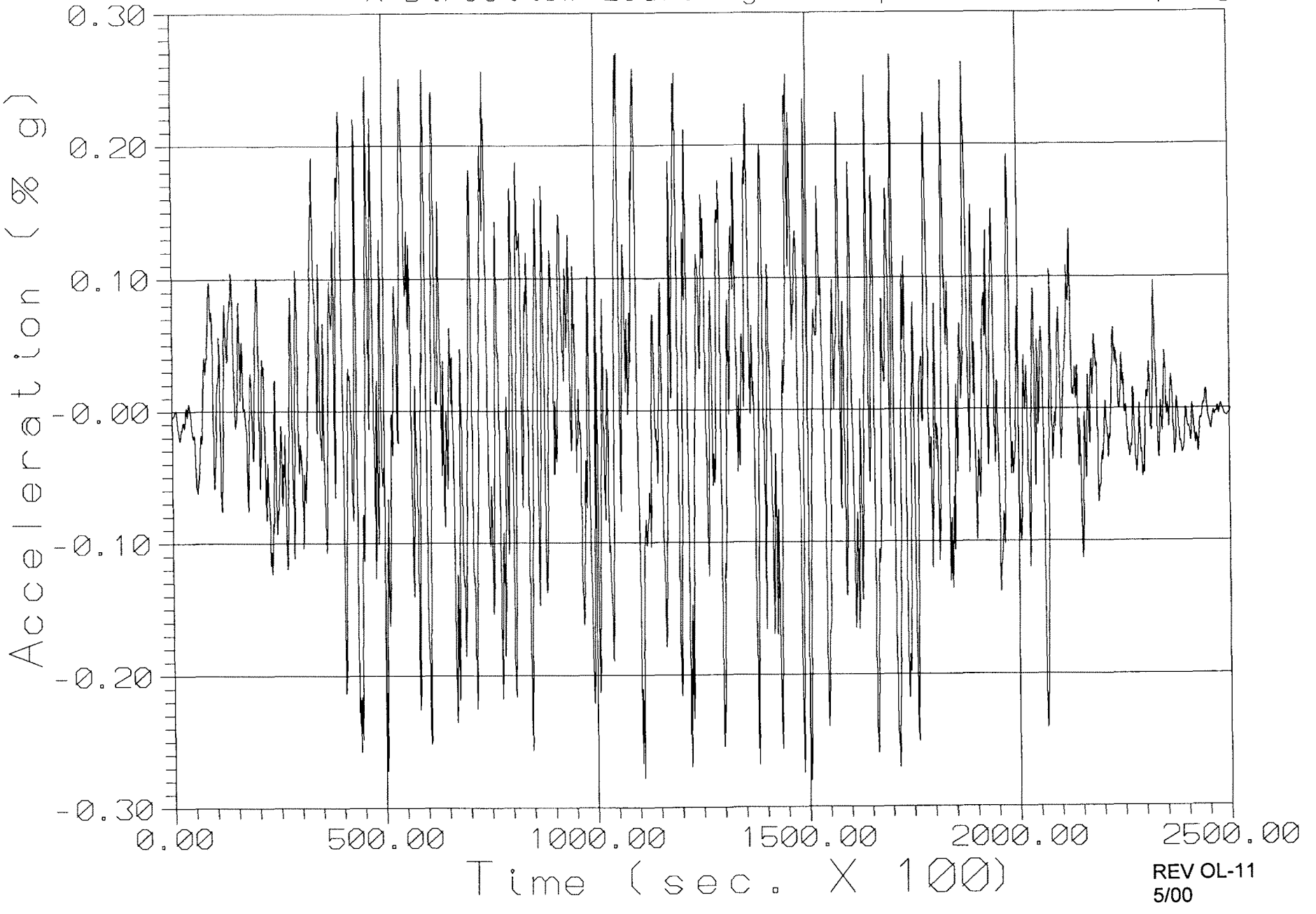
REV OL-11
5/00

Figure 9.1A-14 Callaway Elevation 2007'
Spent Fuel Pool Time History Accelerogram
Z Direction Bounding OBE Spectra (2% Damping)



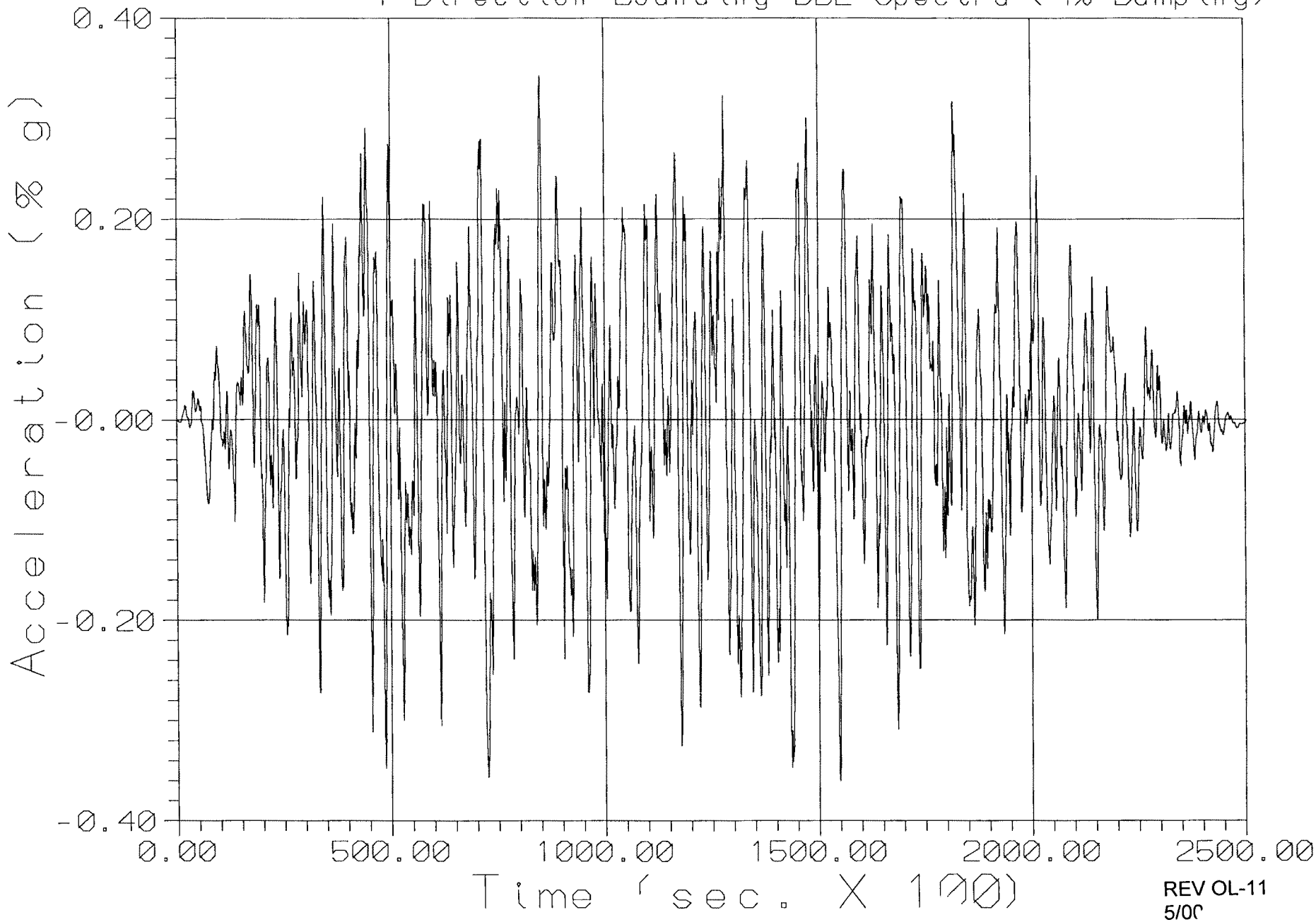
REV OL-11
5/0(

Figure 9.1A-15 Callaway Elevation 2007'
Spent Fuel Pool Time History Accelerogram
X Direction Bounding DBE Spectra (4% Damping)



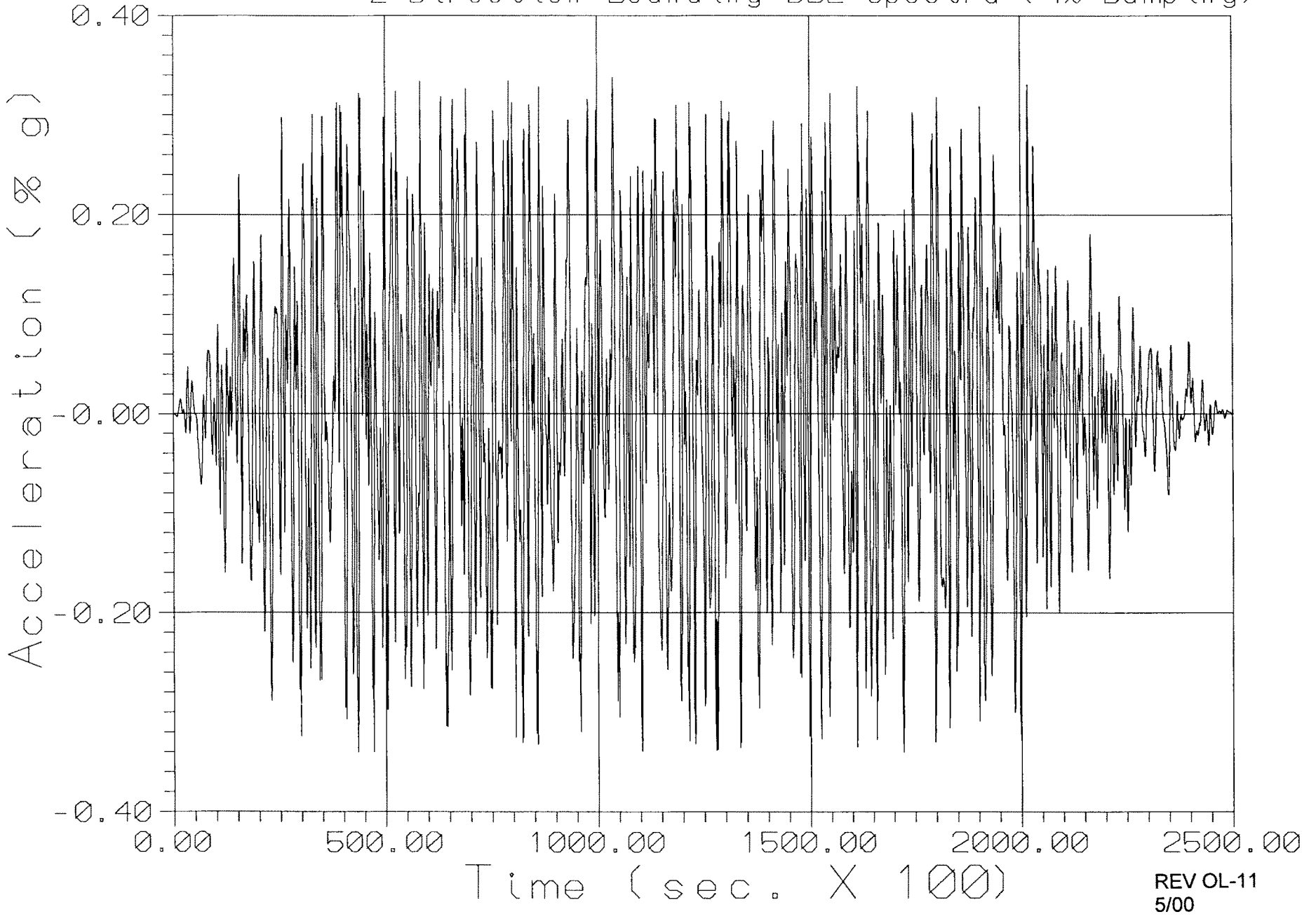
REV OL-11
5/00

Figure 9.1A-15a Callaway Elevation 2007'
Spent Fuel Pool Time History Accelerogram
Y Direction Bounding DBE Spectra (4% Damping)

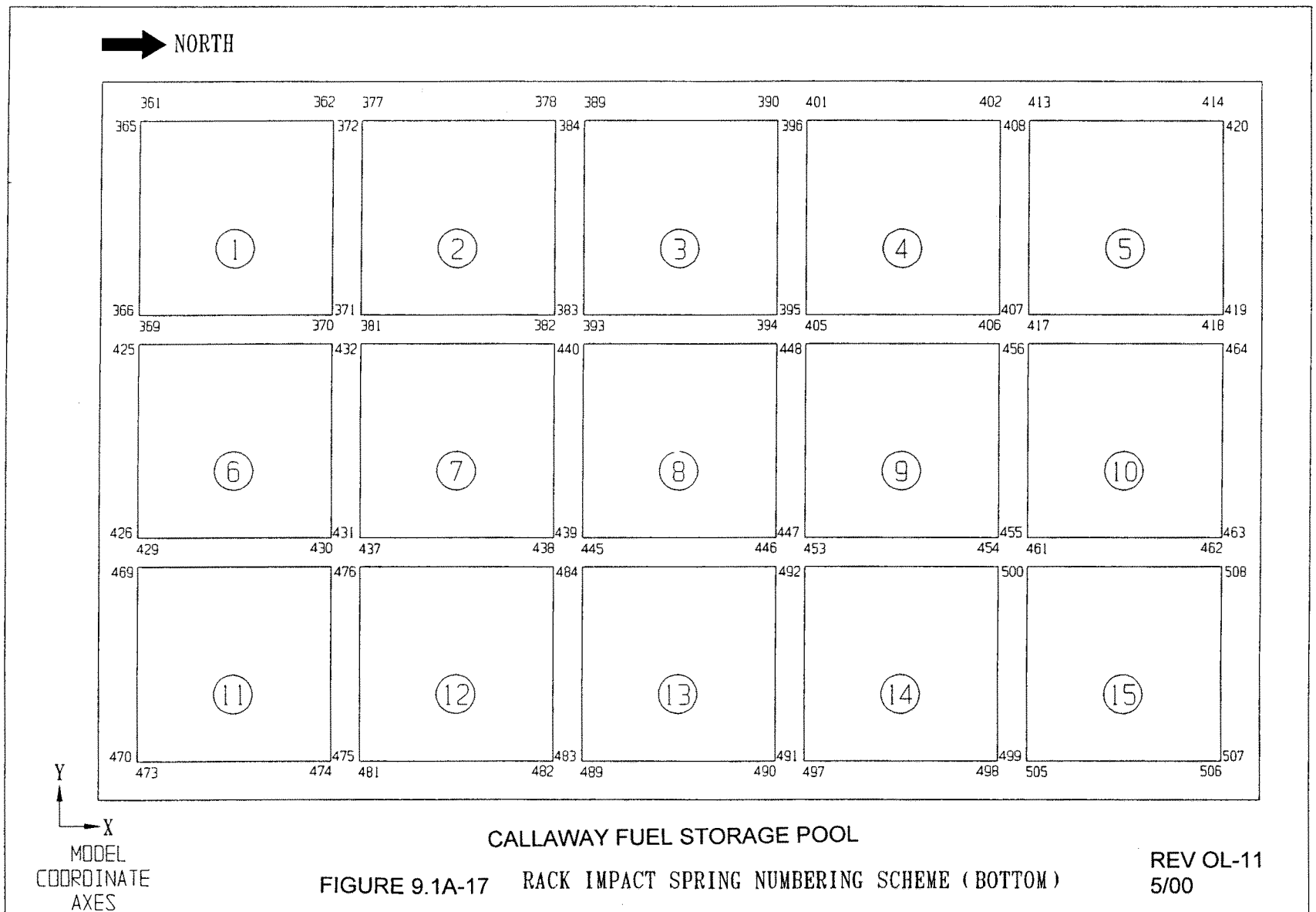


REV OL-11
5/00

Figure 9.1A-16 Callaway Elevation 2007'
Spent Fuel Pool Time History Accelerogram
Z Direction Bounding DBE Spectra (4% Damping)



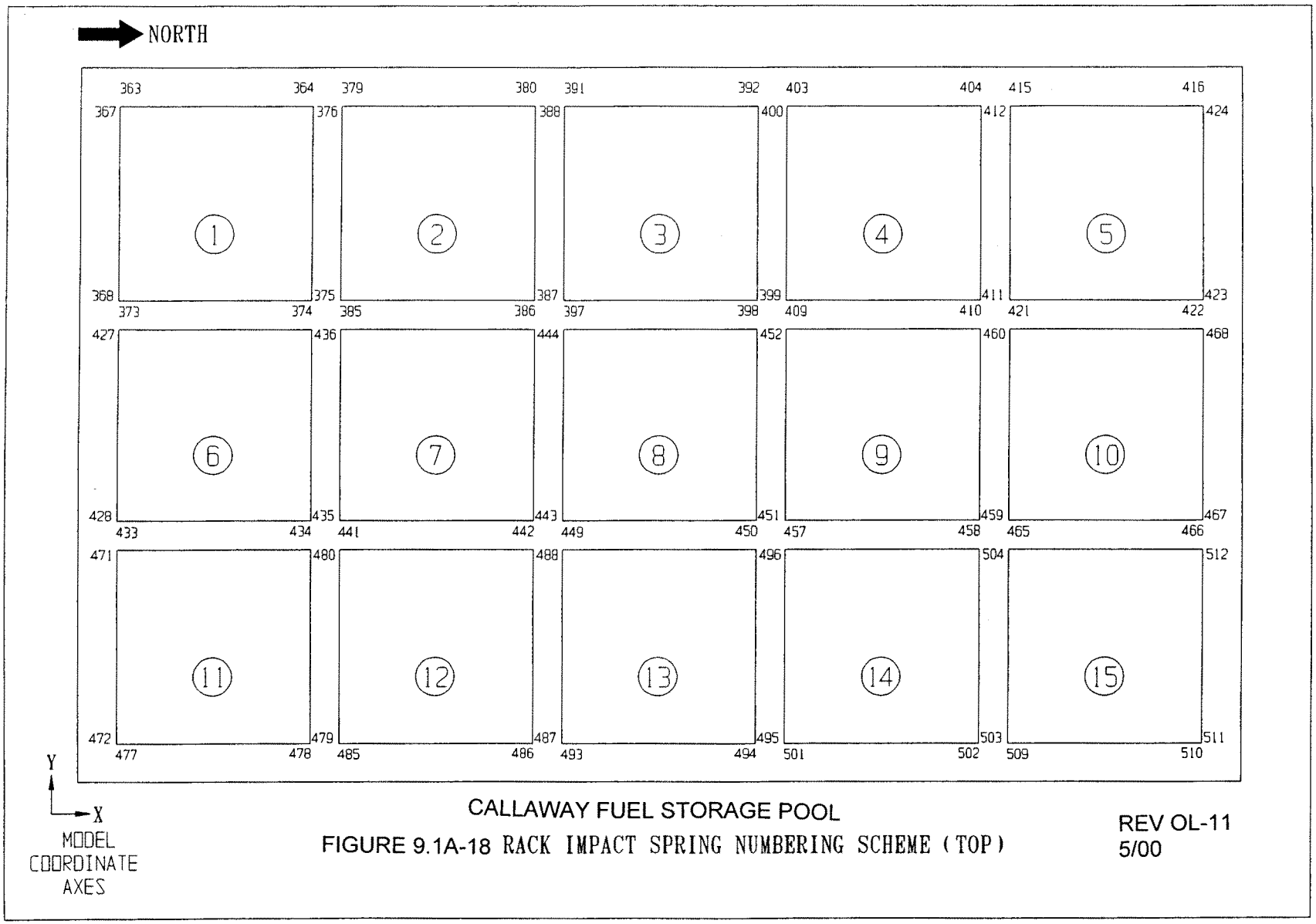
REV OL-11
5/00



CALLAWAY FUEL STORAGE POOL

FIGURE 9.1A-17 RACK IMPACT SPRING NUMBERING SCHEME (BOTTOM)

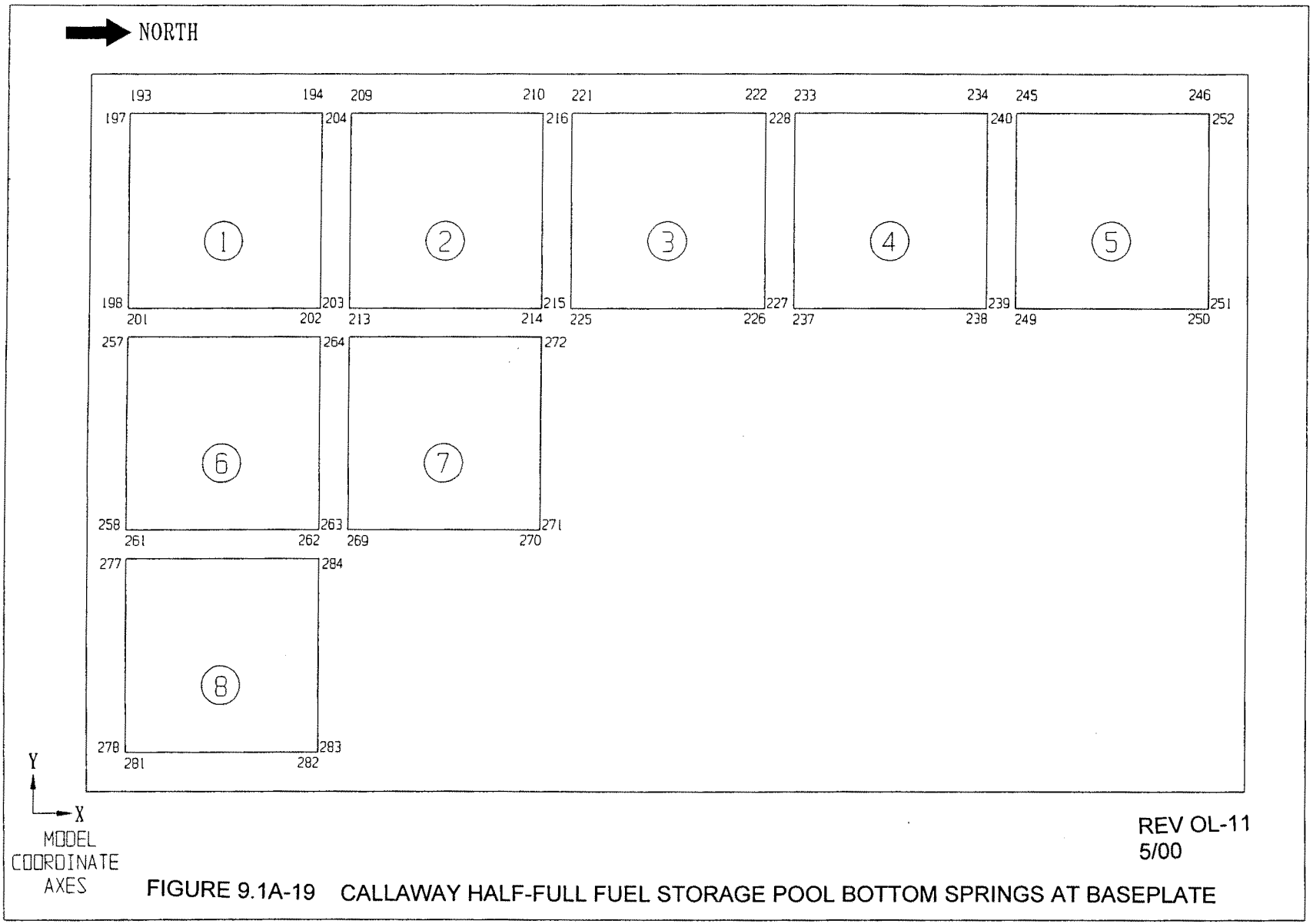
REV OL-11
5/00



CALLAWAY FUEL STORAGE POOL

FIGURE 9.1A-18 RACK IMPACT SPRING NUMBERING SCHEME (TOP)

REV OL-11
5/00



REV OL-11
5/00

FIGURE 9.1A-19 CALLAWAY HALF-FULL FUEL STORAGE POOL BOTTOM SPRINGS AT BASEPLATE

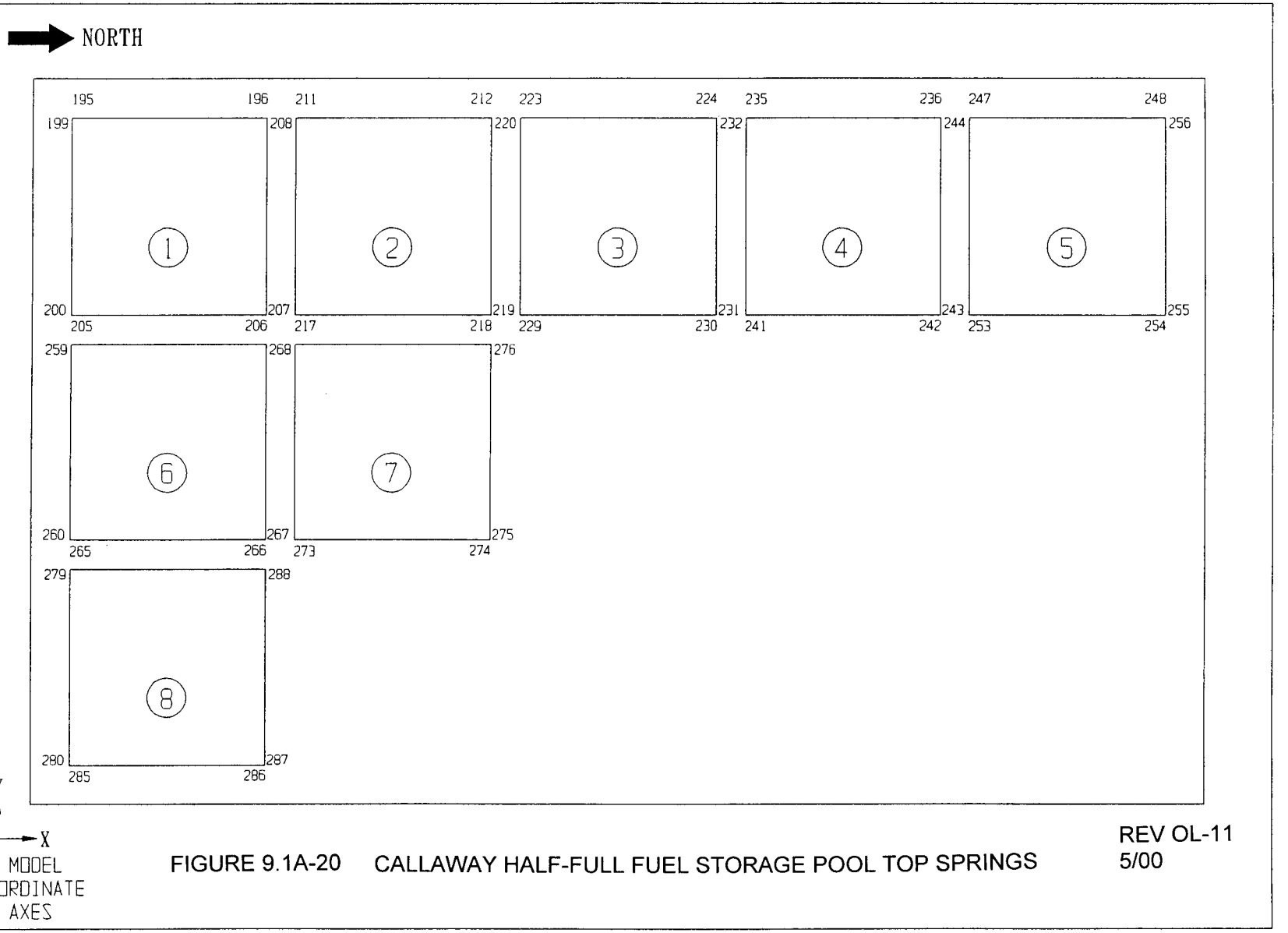


FIGURE 9.1A-20 CALLAWAY HALF-FULL FUEL STORAGE POOL TOP SPRINGS

REV OL-11
5/00

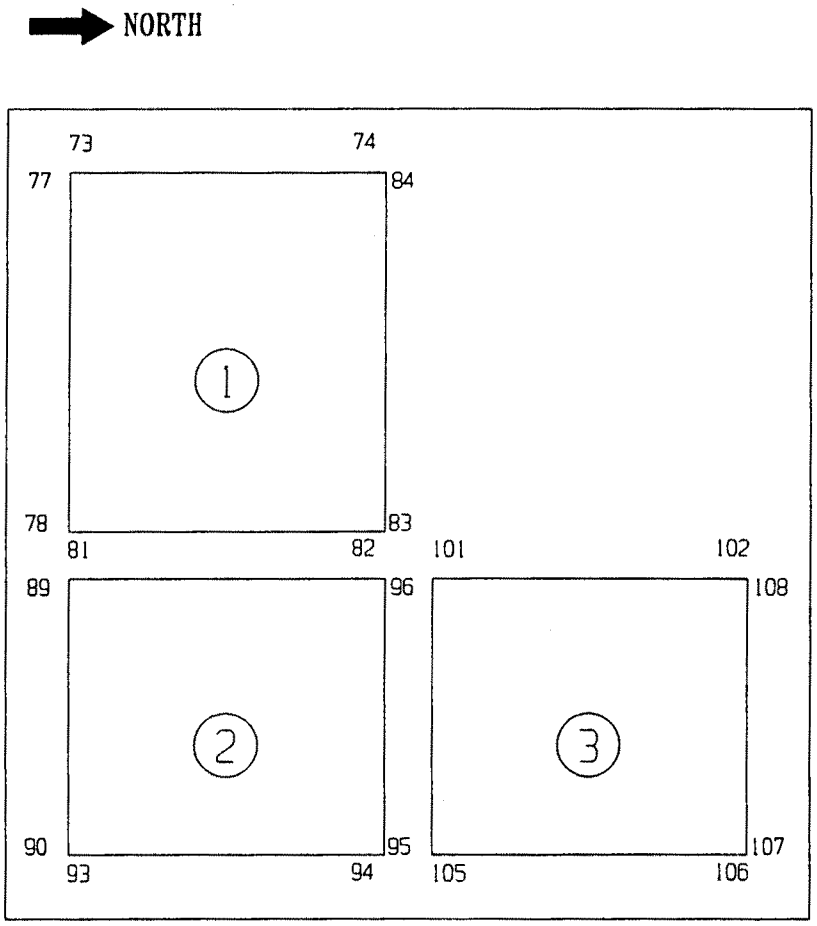


FIGURE 9.1A-21 CALLAWAY CASK LOADING POOL BOTTOM SPRINGS

REV OL-11
5/00

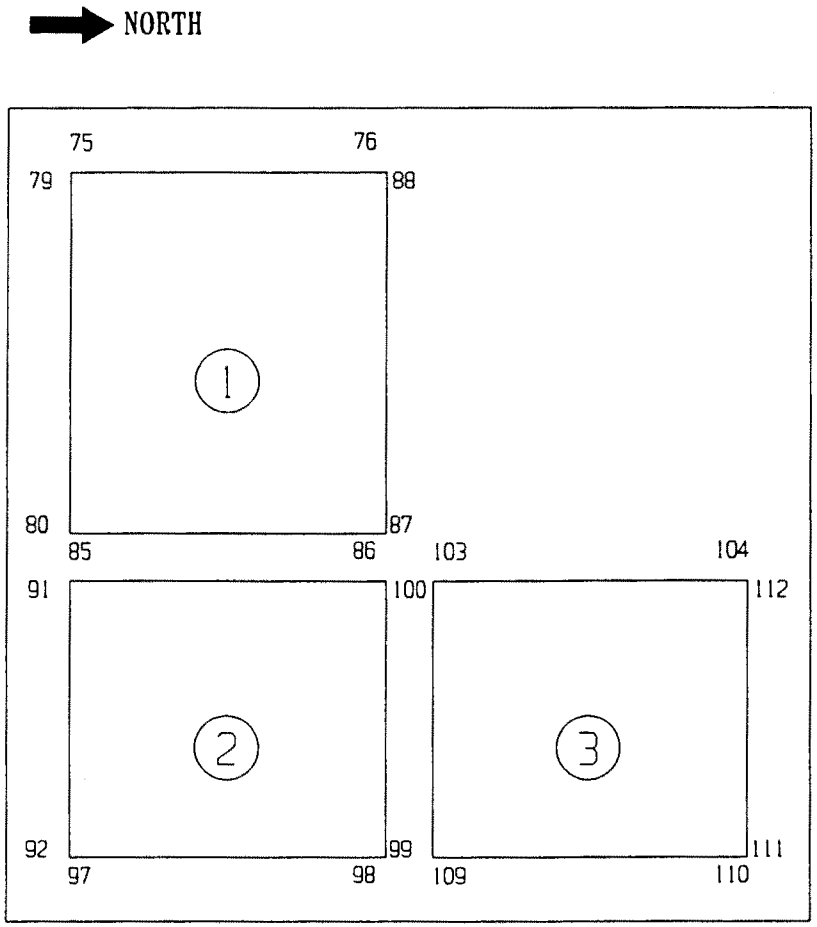


FIGURE 9.1A-22 CALLAWAY CASK LOADING POOL TOP SPRINGS

REV OL-11
5/00

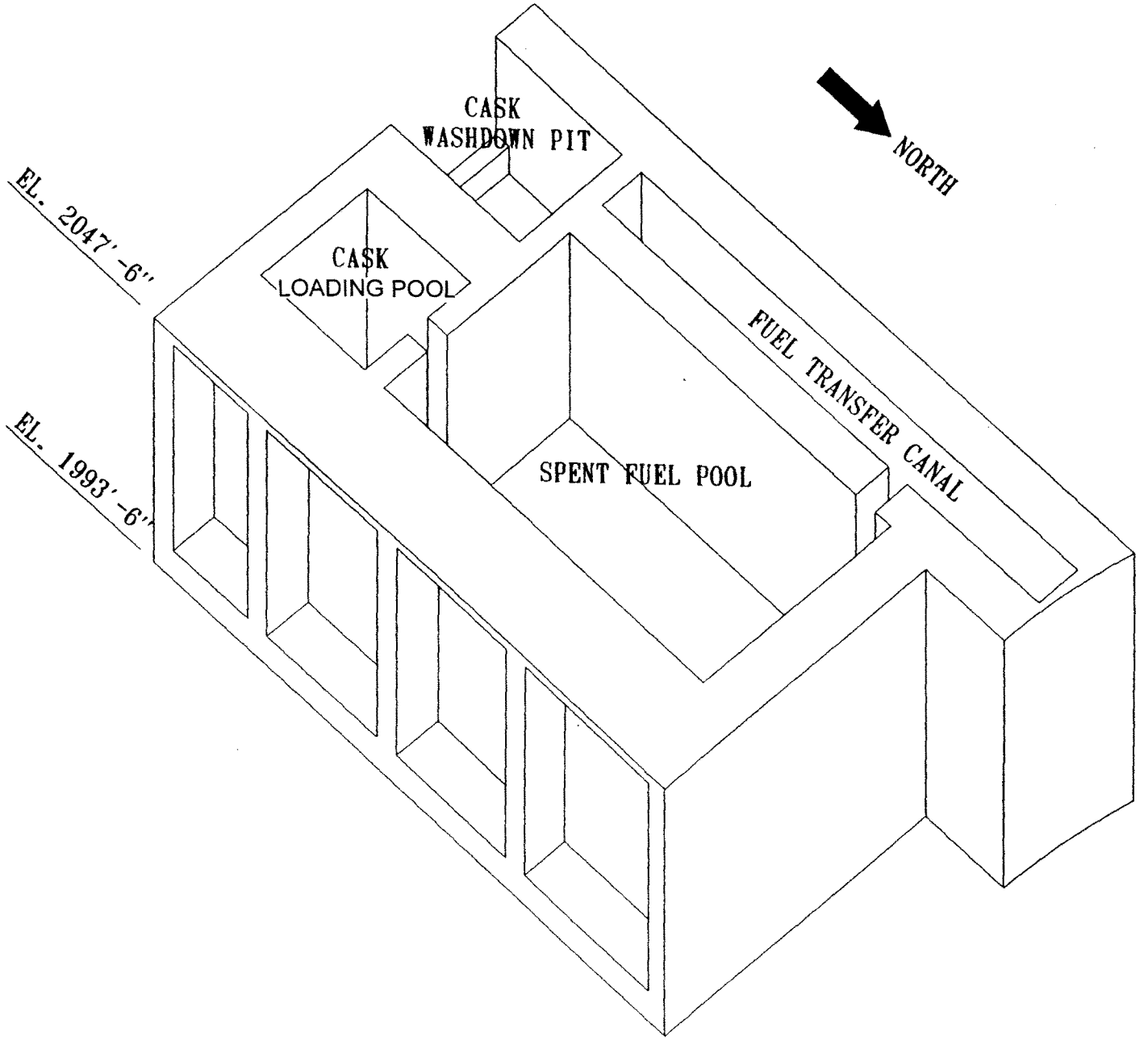


FIGURE 9.1A-23 Isometric View of the Spent Fuel Pool Area

REV OL-11
5/00

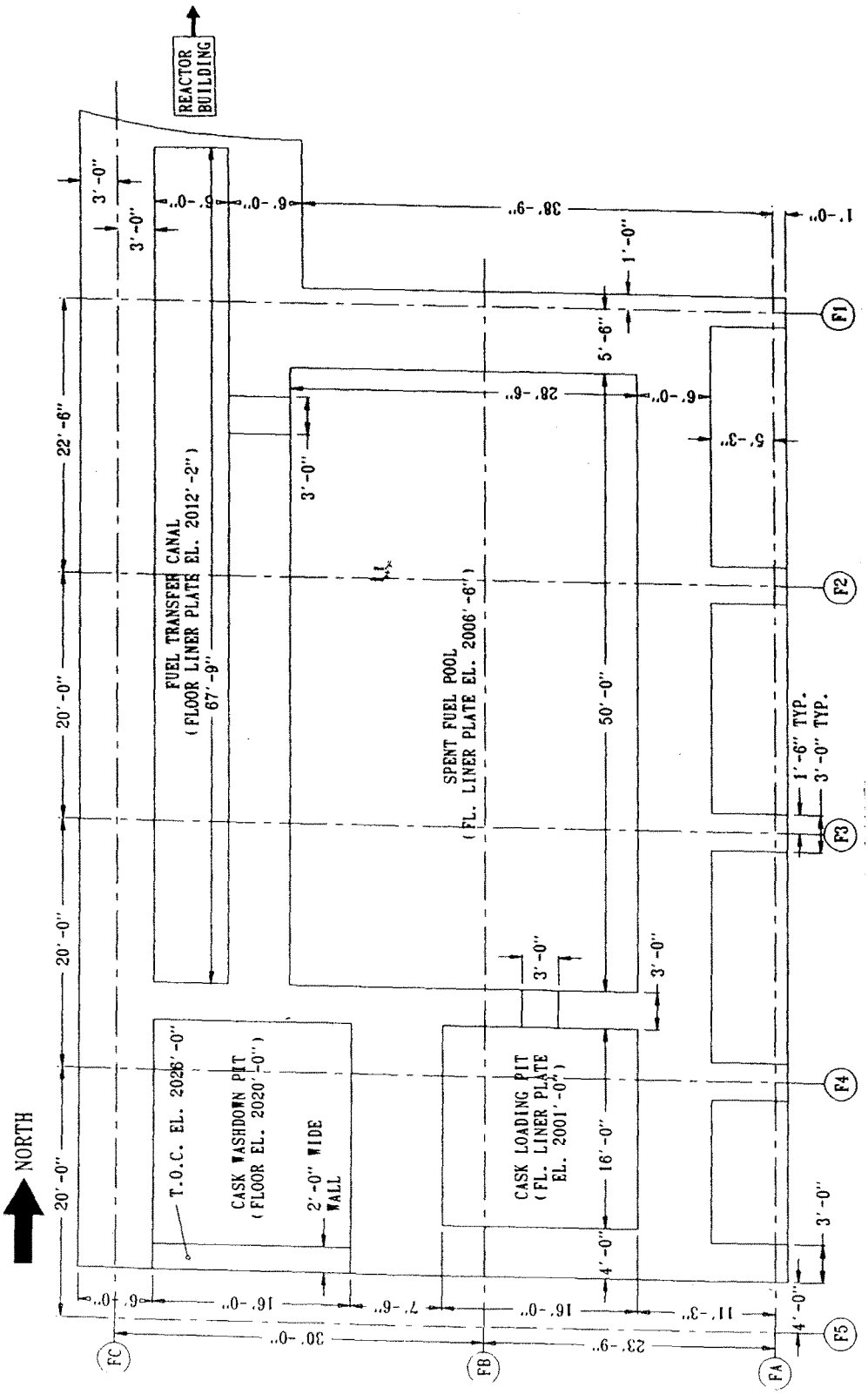


FIGURE 9.1A-24 Plan View and Dimensions of the Spent Fuel Pool Area

REV OL-11
5/00

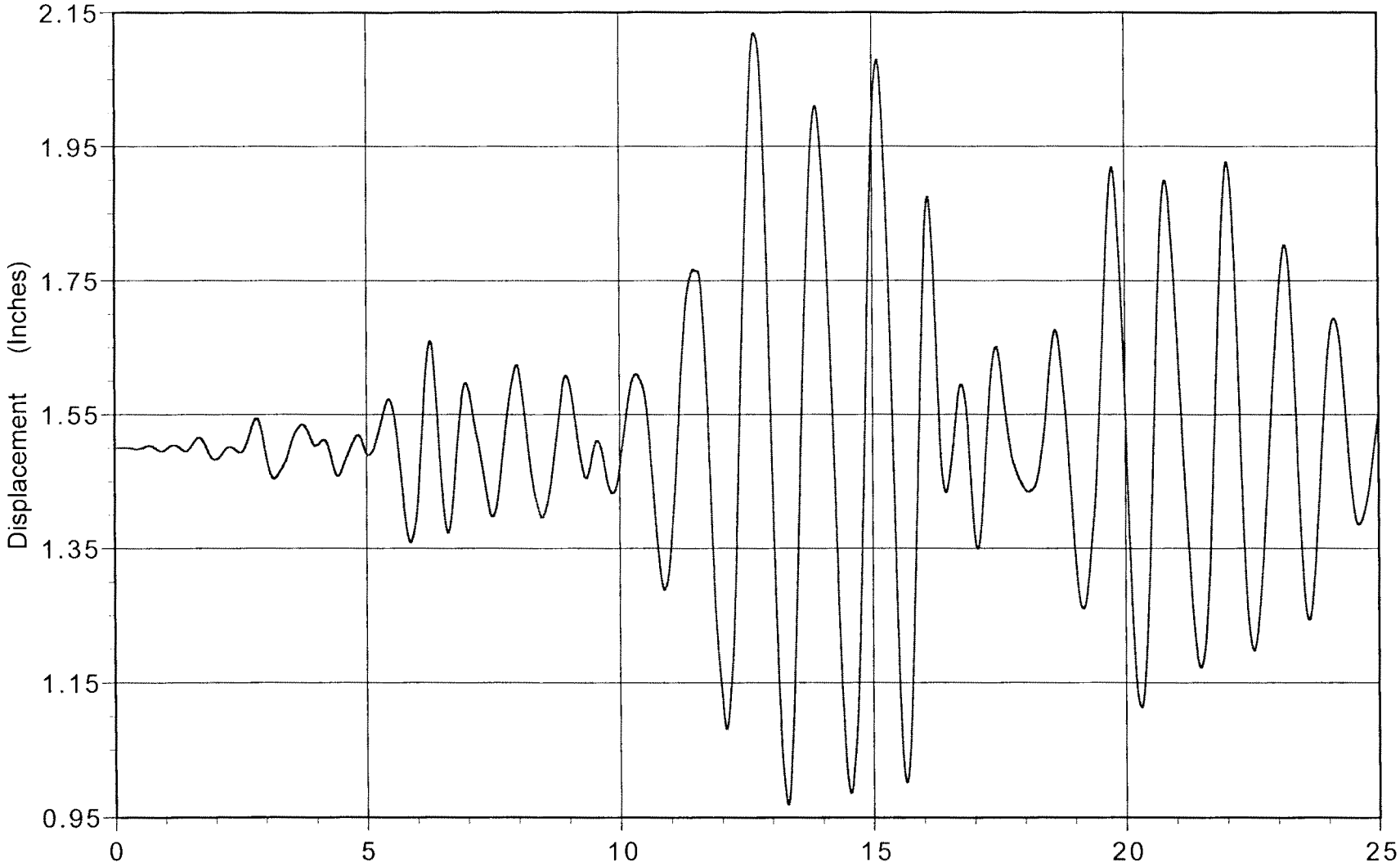


FIGURE 9.1A-25

Plot of Gap Between Racks 13 and 14 at Spring No. 496 in Full SFP Model

REV OL-11
5/00

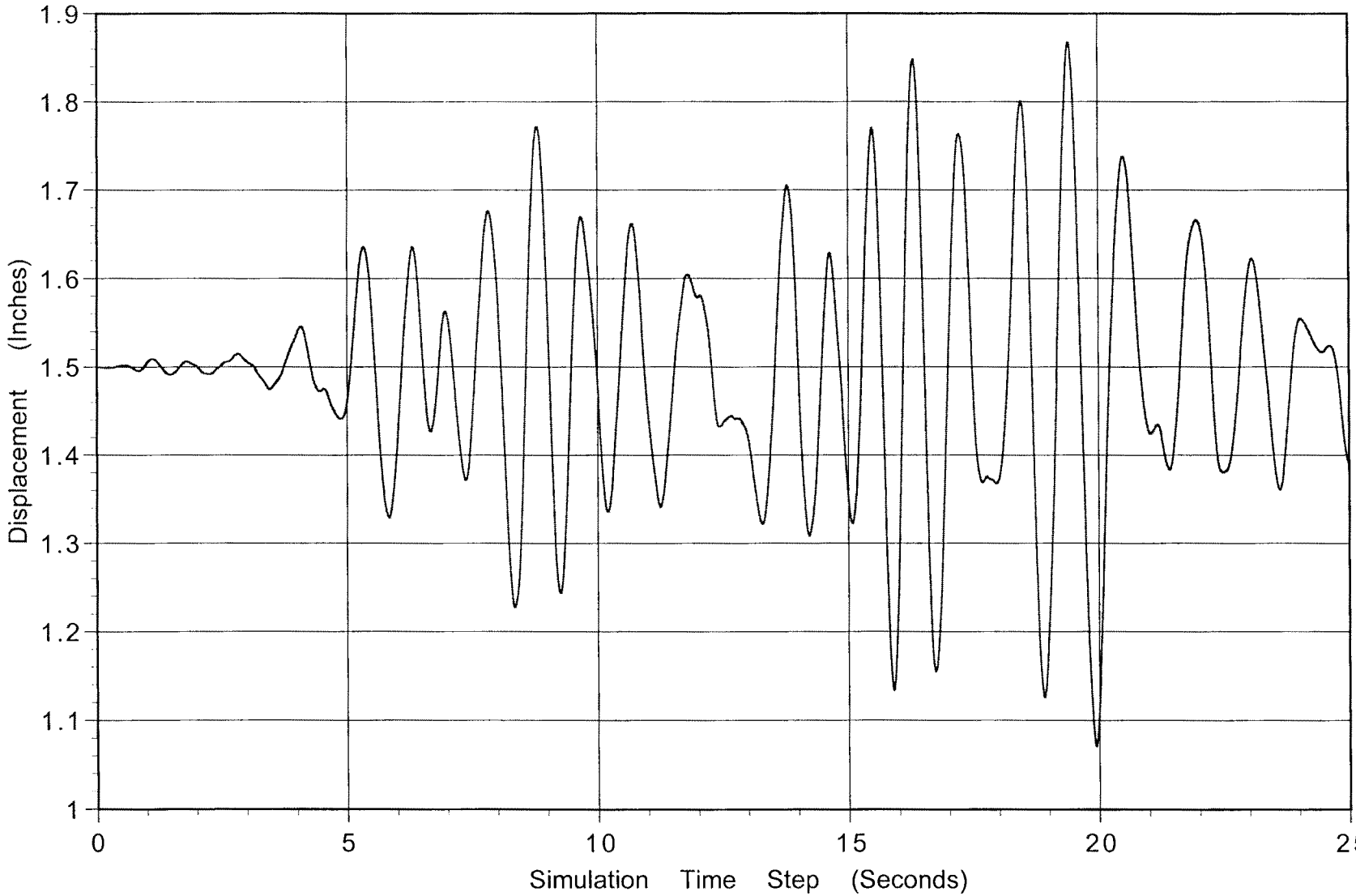


FIGURE 9.1A-26

Plot of Gap Between Racks 14 and 15 at Spring No. 504 in Full SFP Model

REV OL-11
5/00

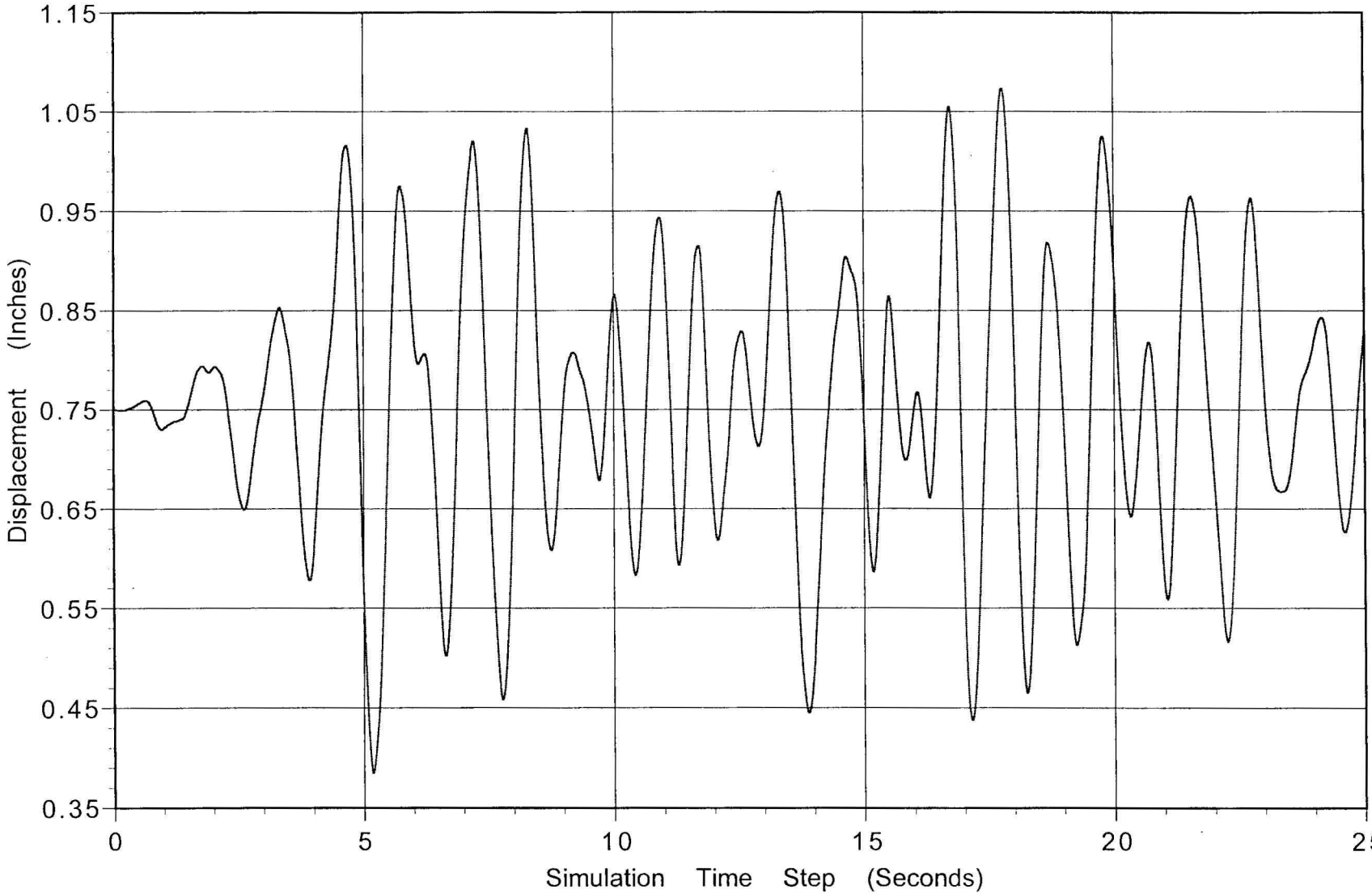
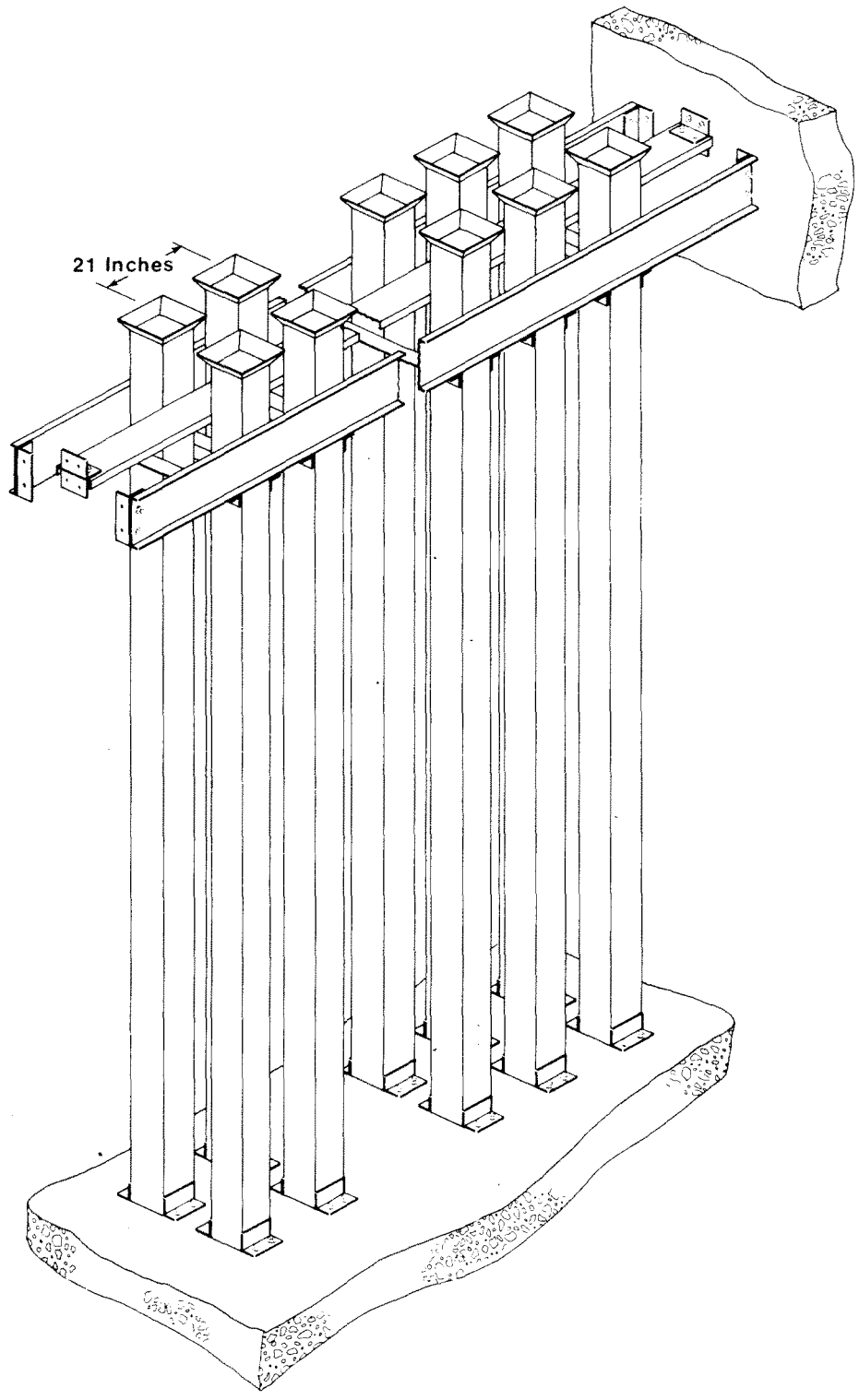


FIGURE 9.1A-27 Plot of Gap Between Rack 14 and the wall at Spring No. 501 in Full SFP Model

REV OL-11
5/00

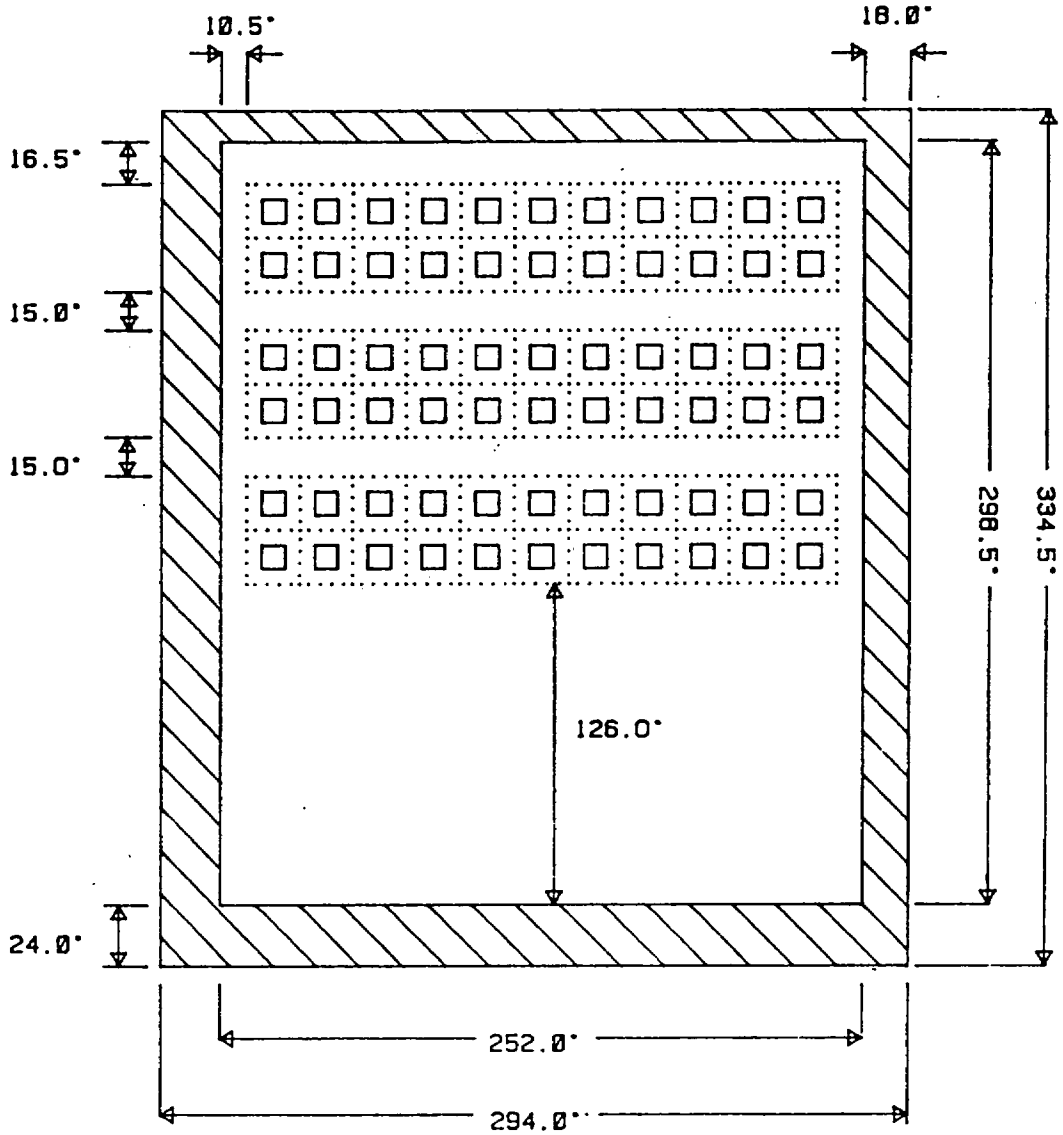


Rev. OL-0
6/86

CALLAWAY PLANT

FIGURE 9.1-1

NEW FUEL STORAGE RACK



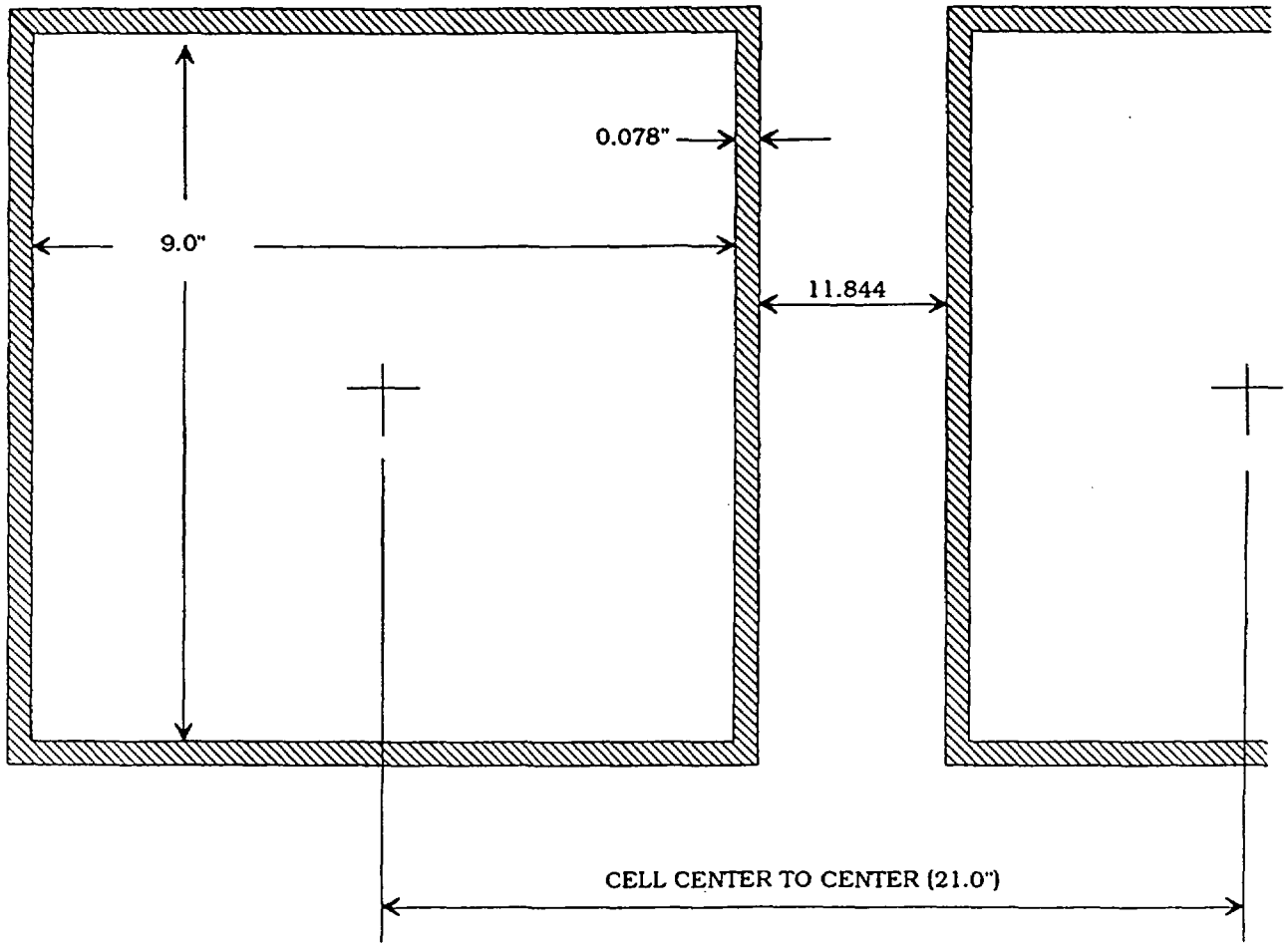
BASIC CELL 21"X 21"

REV OL-4
6/90

CALLAWAY PLANT

FIGURE 9.1-1a

CALLAWAY FRESH FUEL STORAGE ARRAY LAYOUT



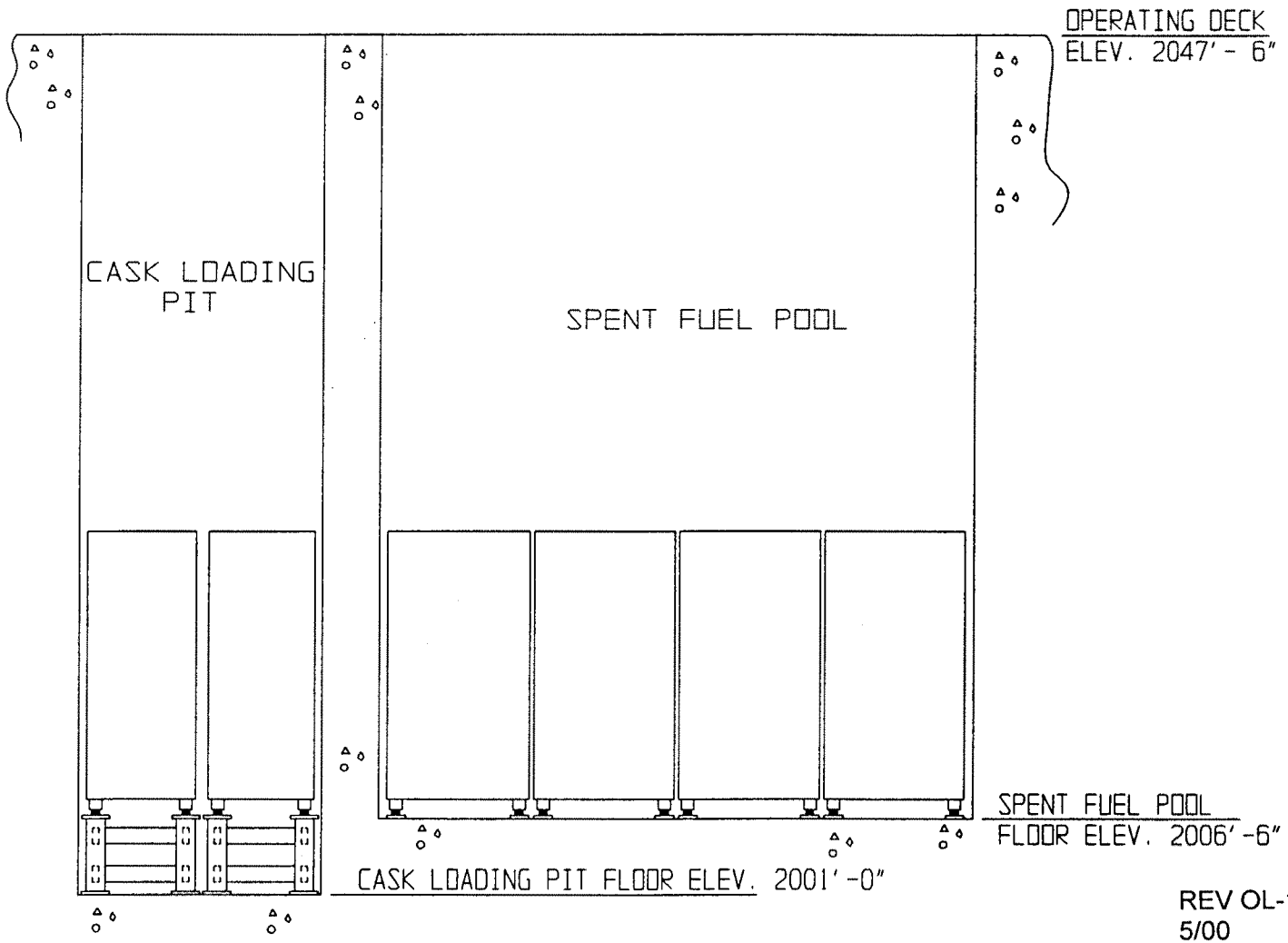
REV OL-4
6/90

CALLAWAY PLANT

FIGURE 9.1-1b

CALLAWAY FRESH FUEL STORAGE CELL

NOMINAL DIMENSIONS



REV OL-11
5/00

FIGURE 9.1-2 ELEVATION VIEW OF RACK LAYOUT

SHEET 1

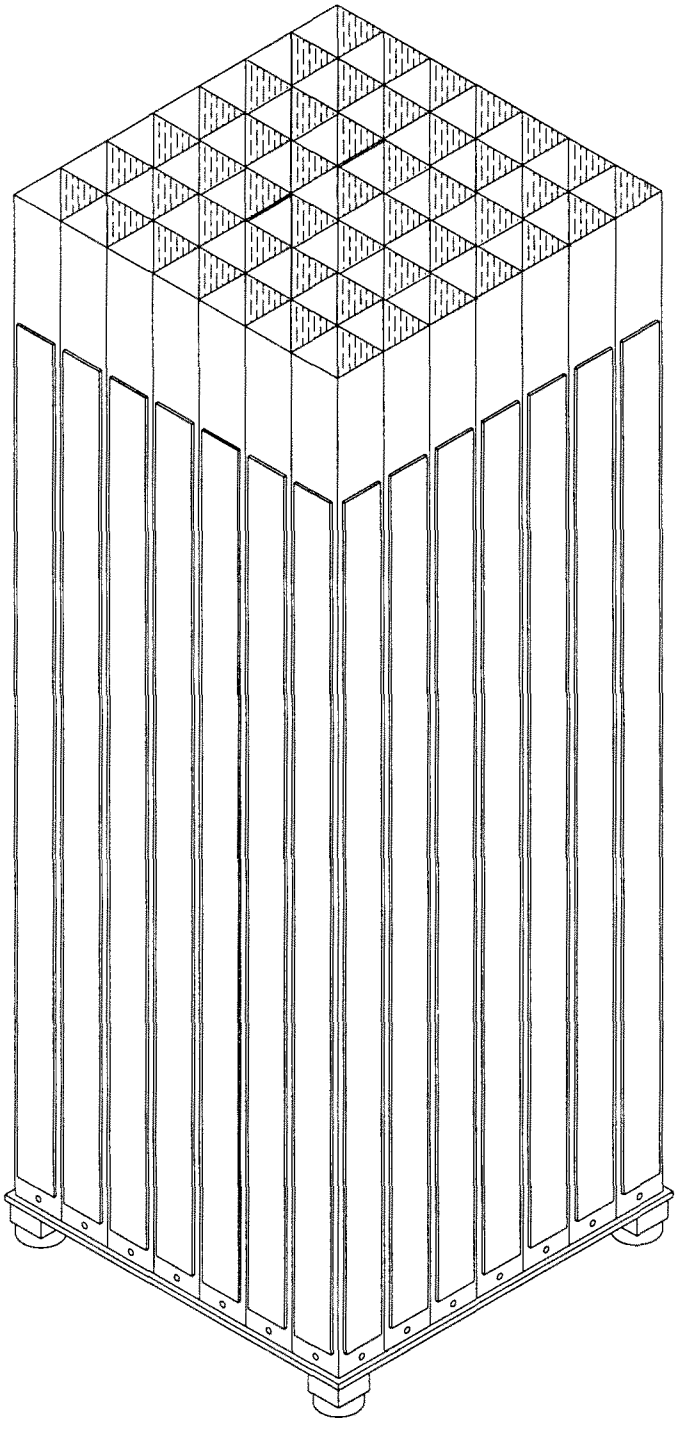
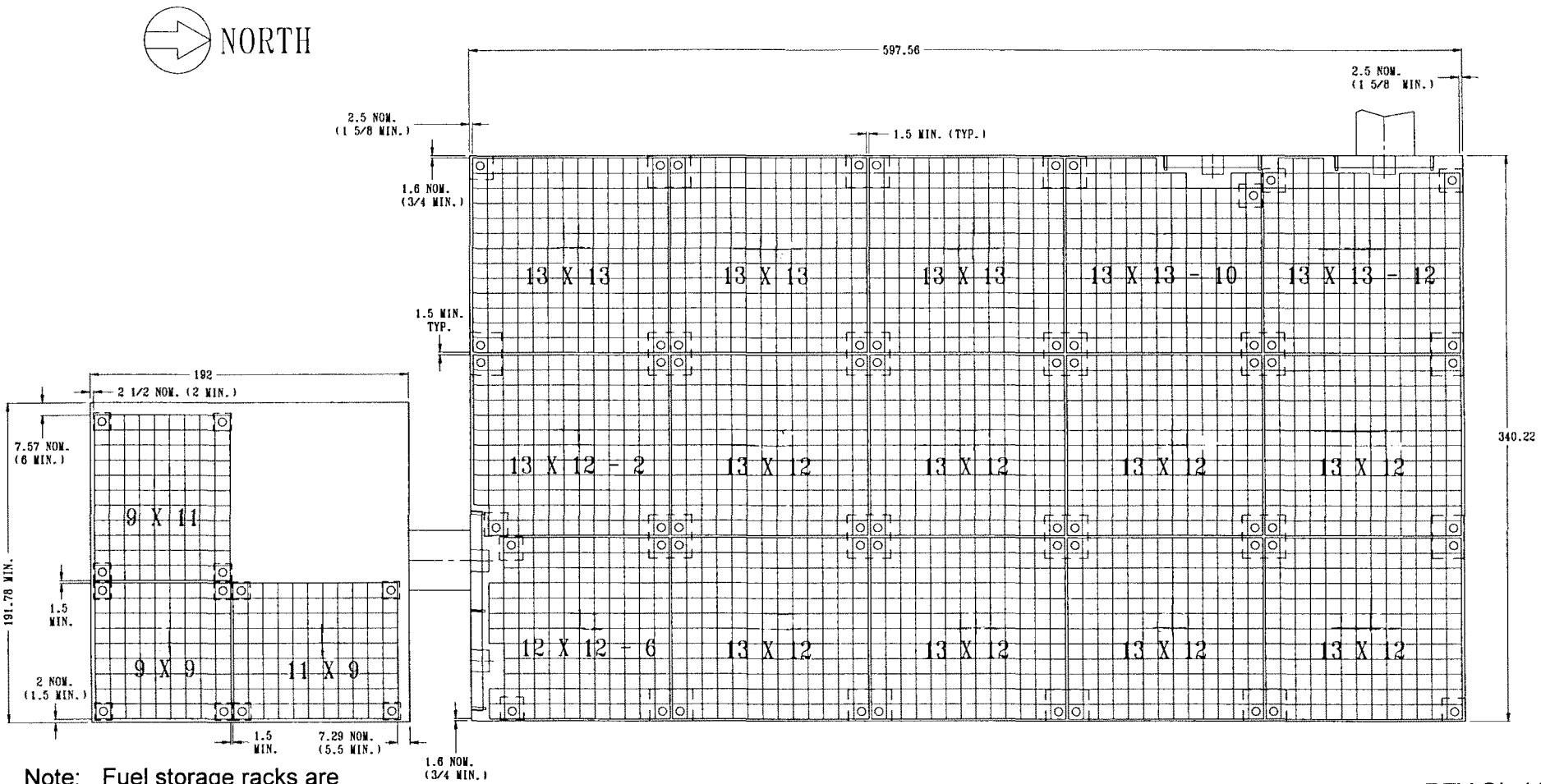


FIGURE 9.1-2 PICTORIAL VIEW OF TYPICAL RACK STRUCTURE

REV OL-11
5/00

SHEET 2



Note: Fuel storage racks are currently not installed in the cask loading pool.

FIGURE 9.1-2: POOL LAYOUT FOR CALLAWAY

REV OL-11
5/00

SHEET 3

M-22EC01(Q)

GENERAL NOTES:

1. PIPING PENETRATES POOL BOUNDARY 3'-0" BELOW THE NORMAL WATER LEVEL OF THE POOL SUCTION AT 6'-0" BELOW NORMAL WATER LEVEL.
2. PIPING PENETRATES POOL BOUNDARY AT 18" BELOW THE NORMAL WATER LEVEL OF THE POOL.
3. PIPING PENETRATES POOL BOUNDARY 6'-0" BELOW NORMAL WATER LEVEL.
4. DELETED.
5. ALL PIPING THAT PENETRATES POOL BOUNDARY DOES SO AT EXTREME END OF FUEL TRANSFER CANAL OPPOSITE FUEL TRANSFER TUBE. WITH THE EXCEPTION OF 79-HCD-3" & 86-HCD-2 1/2".
6. DELETED.
7. 3" DIA. VENT HOLES TO BE LOCATED WITH CENTERLILNE AT ELEVATION 2043'-2".
8. PIPING PENETRATES POOL BOUNDARY 6 INCHES BELOW NORMAL POOL WATER LEVEL.
9. PIPING PENETRATES REFUELING POOL AT BOTTOM OF ROD CLUSTER CONTROL (RCC) CHANGING FIXTURE PIT.
10. PIPING PENETRATES REFUELING POOL ABOVE NORMAL WATER LEVEL AT THE CONTROL ROD DRIVE MECHANISM (CRDM) SEISMIC SUPPORT POCKET. REMOVABLE ELBOW. WHICH EXTENDS 13 INCHES BELOW NORMAL WATER LEVEL. WILL BE PROVIDED.
11. PIPING PENETRATES FUEL TRANSFER CANAL WALL 6" ABOVE NORMAL WATER LEVEL.
12. REFUELING POOL DRAIN LINES. FLANGED ONLY DURING REFUELING.
13. 1/4" DIAMETER VENT AND ANTI-SIPHON HOLES LOCATED ON TOP OF PIPE. COMPOSED OF SHIM STOCK WITH 2 HOSE CLAMPS TO HOLD SHIM STOCK IN PLACE.
14. EXPANSION JOINT FOR FUEL TRANSFER SLEEVE ONLY.
15. CONTAINMENT PENETRATION LINES 067, 072, AND 081 TO BE SCHEDULE 80S.
16. LINE NO'S. 102, 103, 104, 105 ARE EMBEDDED AND SLOPED AND CONNECT THE FUEL TRANSFER SYSTEM'S CONTROL CONSOLE WITH THE UPENDING MACHINE.
17. LINE NO. 107-HCD-2" TO EXTEND TO AT LEAST ELEVATION 2050' BEFORE GOOSENECK.
18. DELETED
19. INLET STRAINER.
20. DRAIN PIPE THREADED FOR HYDROSTATIC PRESSURE TEST CONNECTION ONLY. PIPE CAPS ARE NOT TO BE INSTALLED.
21. HOSE CONNECTION FOR FILLING AND DRAINING OF FUEL TRANSFER CANAL.
22. STRAINER OPTIONAL PER RFR-15740A.
23. THESE CONNECTIONS ARE TO BE USED FOR BEYOND-DESIGN-BASIS (FLEX) SPENT FUEL POOL MAKE-UP / SPRAY.

REV.	DATE	DRAWN
6	091991	MAL
CHKD.	SUPV.	APPD.
DLB	TJM	N/A

REDRAWN FOR CLARITY

REV.	DATE	DRAWN
7	071492	DLB
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. RFR-09976

REV.	DATE	DRAWN
8	090992	MAL
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. CMP 89-1035A (PARTIAL)

REV.	DATE	DRAWN
9	110492	SBR
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. CMP 89-1035A (PARTIAL)

REV.	DATE	DRAWN
10	121892	DLB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. 92-10084 (MINOR MOD) DEC 940

REV.	DATE	DRAWN
11	072795	MAL
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. CMP 89-1035A (PARTIAL).

REV.	DATE	DRAWN
12	090194	DLB
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. RFR-15150A

REV.	DATE	DRAWN
13	041196	RAM
CHKD.	SUPV.	APPD.
EWM	AMR	N/A

INCORP. RFR-15740A

REV.	DATE	DRAWN
14	041796	DLB
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. DEC-1246

REV.	DATE	DRAWN
15	042498	DLB
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. DEC-1251

REV.	DATE	DRAWN
16	091598	RLW
CHKD.	SUPV.	APPD.
DLB	AMR	N/A

INCORP. CMP 89-1035A (PARTIAL)

REV.	DATE	DRAWN
17	022598	DLB
CHKD.	SUPV.	APPD.
SKC	JHC	N/A

INCORP. CMP 97-1016A

REV.	DATE
18	071904
DRAWN	CHKD.	SUPV.
RLW	MAL	SKC

INCORPORATE MP 89-1035A (PARTIAL)

REV.	DATE
19	110904
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR-22941A

REV.	DATE
20	090905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. MP 98-1027A.

REV.	DATE
21	080607
DRAWN	CHKD.	SUPV.
MAL	TJC	SKC

INCORP. MP 89-1035A (PARTIAL).

REV.	DATE
22	082007
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE MP 89-1035A.

REV.	DATE
23	111607
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE CAR 20070707

REV.	DATE
24	051208
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE MP 07-0067

REV.	DATE
25	090814
DRAWN	CHKD.	SUPV.
MAL	TJC	DME

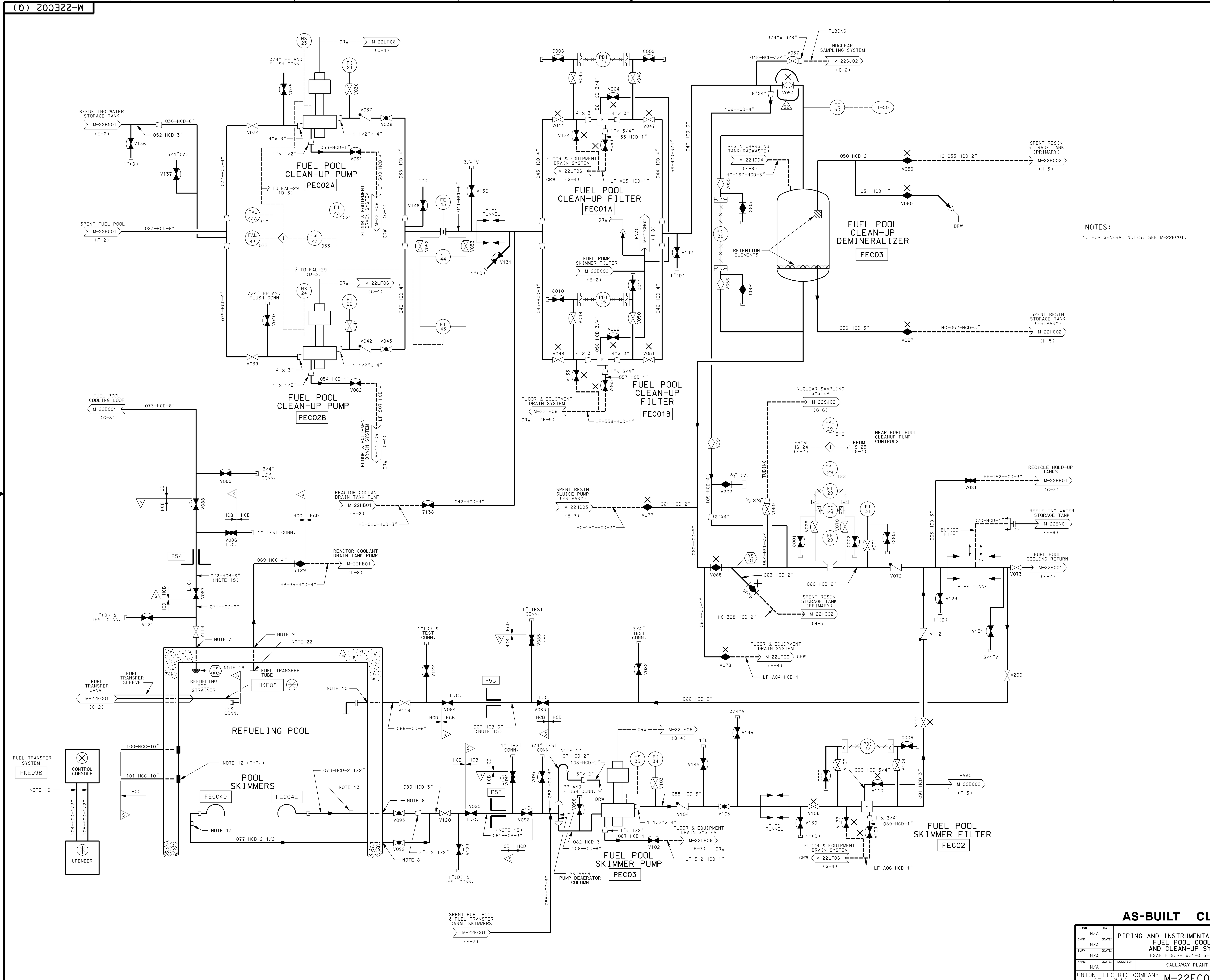
INCORP. MP 13-0026, REV. 0 & ADD REDUCER PER M-23EC10.

REV.	DATE
26	111014
DRAWN	CHKD.	SUPV.
MAL	RLW	LMP

INCORP. MP 13-0027, REV. 0.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM FUEL POOL COOLING AND CLEAN-UP SYSTEM		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A	FSAR FIGURE 9.1-3 SHEET 1		
APPD. (DATE) N/A	LOCATION	CALLAWAY ENERGY CENTER	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22EC01(Q)		REV. 26



REV.	DATE	DRAWN	CHKD.	SUPV.	APPD.	DESCRIPTION
7		HLP	DLBr	TJM	N/A	REDRAWN FOR CLARITY
8	032392	MAL	RLW	TJM	N/A	INCORP. CMP 90-1053.
9	032692	MAL	RLW	TJM	N/A	INCORP. CMP 89-1035A (PARTIAL).
10	050892	JHK	DLBr	TJM	N/A	INCORP. RFR-10166 (MINOR MOD).
11	081392	RLW	DLBr	TJM	N/A	INCORP. RFR-10157A.
12	090992	MAL	RLW	TJM	N/A	INCORP. CMP 89-1035A (PARTIAL)
13	110692	SBR	RLW	TJM	N/A	INCORP. CMP 89-1035A (PARTIAL)
14	100593	MAL	RLW	TJM	N/A	INCORP. CMP 89-1035A (PARTIAL)
15	071994	SBR	HLP	AMR	N/A	INCORP. CMP 89-1035A (PARTIAL)
16	041195	RAM	EWM	AMR	N/A	INCORP. RFR-15740A
17	101895	RLW	DLBr	AMR	N/A	INCORP. CMP 89-1035A (PARTIAL)
18	112999	MAL	JHK	AMR	N/A	INCORP. CMP 95-1003A.
19	022300	MAL	SKC	JHC	N/A	INCORP. RFR 20422A.
20	042104	RLW	MAL	DLB		INCORPORATE MP 89-1035A (PARTIAL)
21	051304	RLW	MAL	RWW		INCORPORATE MP 89-1035A (PARTIAL)
22	110904	MAL	RLW	TWS		INCORP. RFR-22941A
23	111004	RLW	MAL	TWS		INCORPORATE MP 89-1035A (PARTIAL)
24	080106	RLW	EWM	TWS		INCORPORATE MP 89-1035A (PARTIAL)
25	081706	RLW	MAL	SKC		INCORPORATE MP 89-1035A (PARTIAL)
26	030507	RLW	EWM	SKC		INCORPORATE MP 89-1035A (PARTIAL)
27	040407	RLW	EWM	TWS		INCORPORATE MP 89-1035A (PARTIAL)
28	041407	TJC	MAL	JHK		INCORPORATE MP 89-1035A (PARTIAL)
29	082007	RLW	EWM	TWS		INCORPORATE MP 89-1035A (PARTIAL)
30	082307	RLW	EWM	TWS		INCORPORATE MP 89-1035A (PARTIAL)
31	121807	RLW	EWM	TWS		INCORPORATE MP 89-1035A
32	040110	MAL	TJC	TWS		INCORP. CAR 201001528.

AS-BUILT CLASS 1

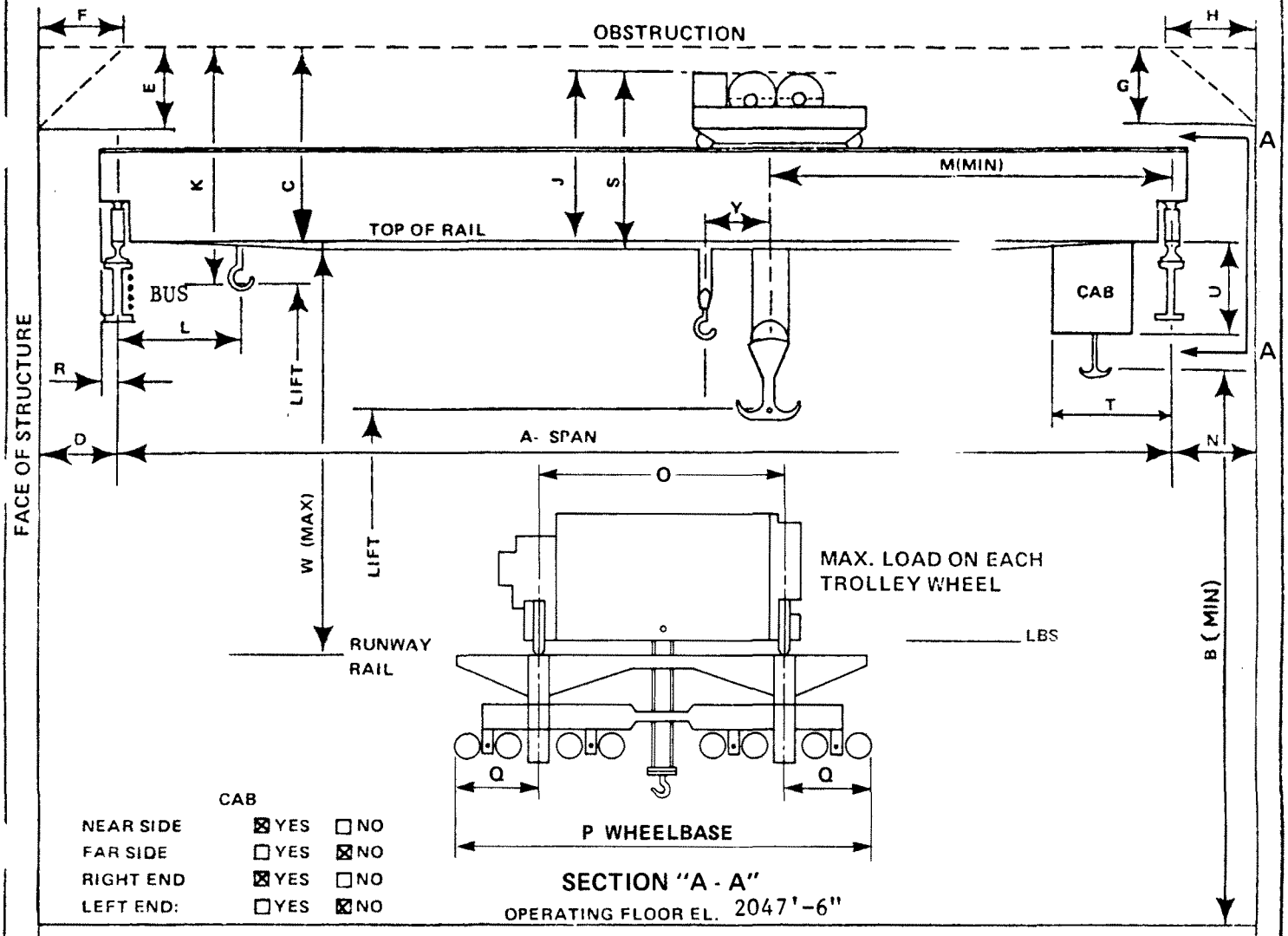
PIPING AND INSTRUMENTATION DIAGRAM
FUEL POOL COOLING AND CLEAN-UP SYSTEM
FSAR FIGURE 9.1-3 SHEET 2

DRAWN N/A | CHKD. N/A | SUPV. N/A | APPD. N/A

LOCATION: CALLAWAY PLANT

UNION ELECTRIC COMPANY ST. LOUIS, MO

M-22EC02 (Q) REV. 32



CAB

NEAR SIDE	☒ YES	☐ NO
FAR SIDE	☐ YES	☒ NO
RIGHT END	☒ YES	☐ NO
LEFT END:	☐ YES	☒ NO

CAPACITY - MAIN 260 TONS
CAPACITY - AUX. 25 TONS
LIFT - MAIN 103 FT 11 IN
LIFT - AUX. 126 FT 3 IN

A	134	FT 0	IN
B	72	FT 10	IN (HIGH HOOK)
C	N/A	FT N/A	IN
D	3	FT 0	IN
E	0	FT 0	IN
F	0	FT 0	IN
G	0	FT 0	IN
H	0	FT 0	IN
J	18	FT 6	IN
K	N/A	FT N/A	IN
L	9	FT 9	IN
M	6	FT 6	IN
N	3	FT 0	IN
O	25	FT 0	IN
P	45	FT 0	IN
Q	10	FT 0	IN
R	1	FT 6	IN
S		FT	IN
T	14	FT 9	IN
U	9	FT 0	IN
W	121	FT 0	IN
Y	4	FT 6	IN

LENGTH OF MAIN LINE RUNWAY N/A FT N/A IN
MAX. LOAD ON EACH WHEEL 180,300 LBS
RUNWAY RAIL 175 LBS

NOTE: "NEAR SIDE" & "LEFT/RIGHT" - FACING CRANE DRIVE SIDE.
Top of Rail Elevation 2122'-6" "N" is 1'-8" to Obstruction

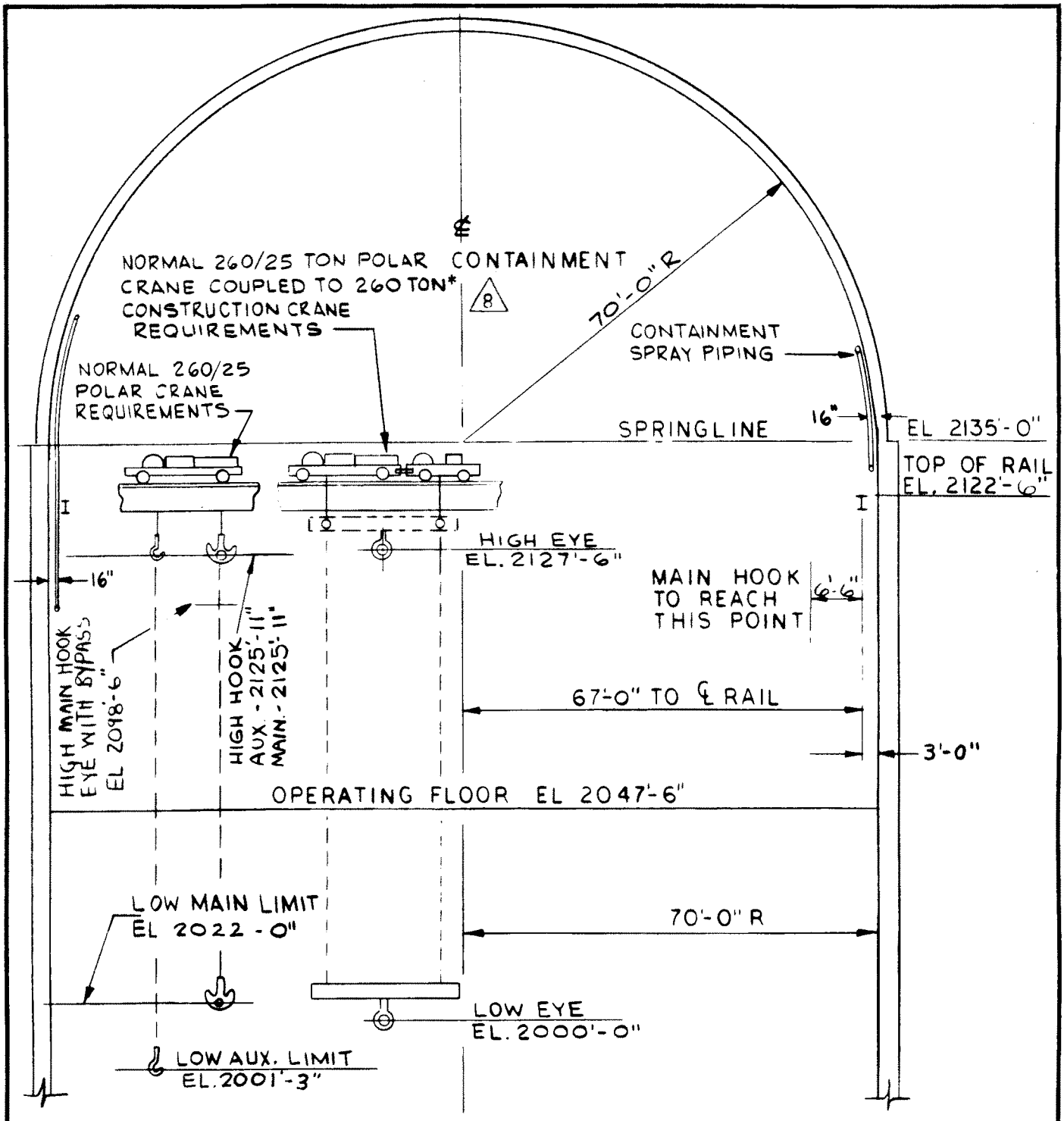
NOTE : Not as-built; information only

Rev. OL-4
6/90

CALLAWAY PLANT

FIGURE 9.1-4

**ARRANGEMENT DRAWING
CONTAINMENT BUILDING
POLAR CRANE**



NOTE : Not as-built; information only

ACCESS TO CRANE IS AT ELEVATION 2113' 8"

* 260-TON DESIGN, 220-TON RATED

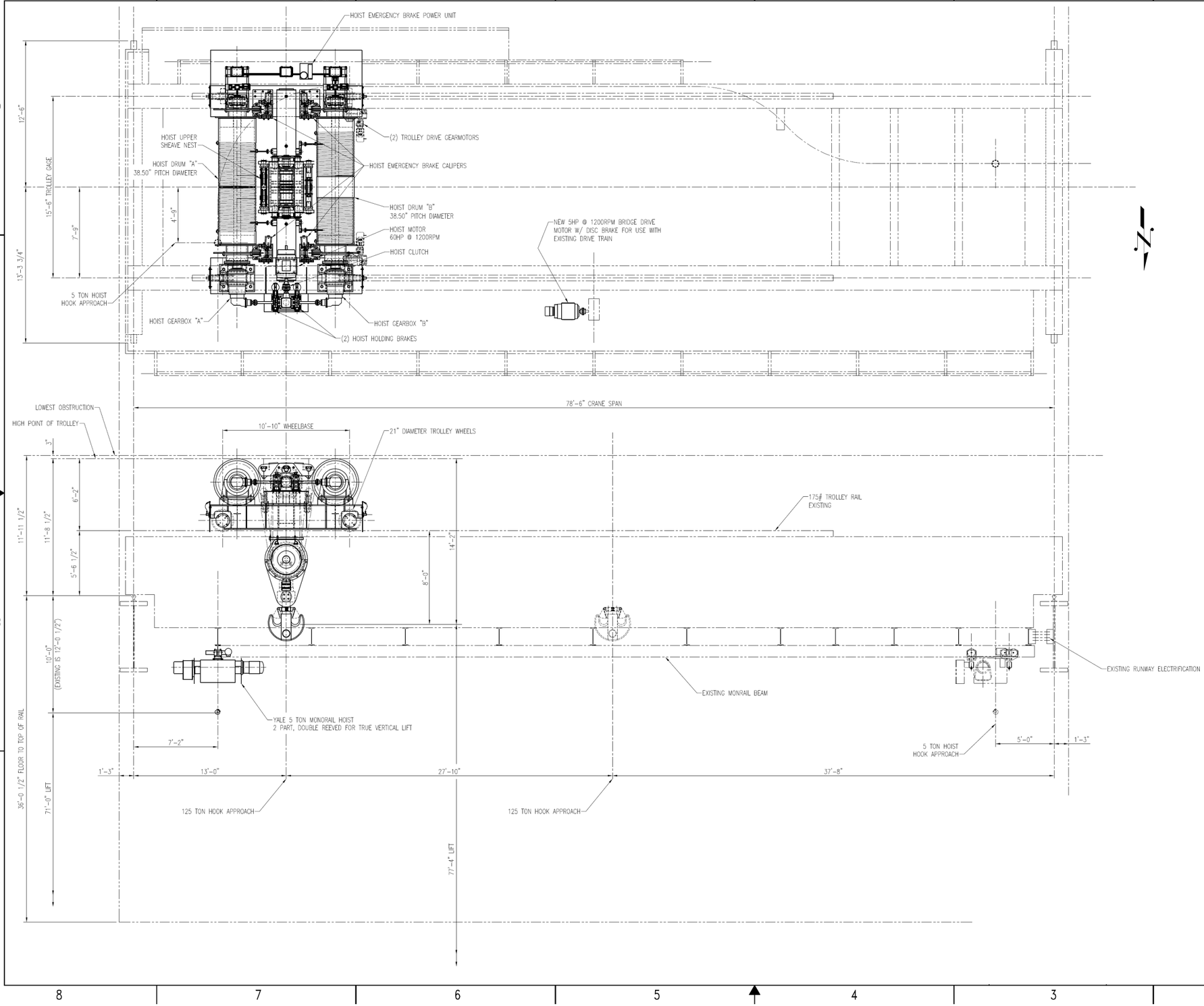
Rev. OL-4
6/90

ELEVATION MEASURED FROM LOWEST POINT OF HOOK

CALLAWAY PLANT

FIGURE 9.1-5

HOOK LIMITS FOR CONTAINMENT BUILDING POLAR CRANE



CRANE DATA	
EQUIPMENT NO.	3179
CAPACITIES	MAIN HOIST: DRL = 125 TONS MCL = 125 TONS TROLLEY: DRL = 125 TONS MCL = 125 TONS MONORAIL HOIST: 5 TONS
MAIN HOIST SPEED	0.25–5.0 F.P.M. INFINITELY VARIABLE, (RATED LOAD) 0.25–7.5 F.P.M. VARIABLE, (NO LOAD/LIGHT LOAD UP TO 25% CAP.) INFINITELY VARIABLE FROM .25–5.0 F.P.M. STEPPED FUNCTION FROM 5.0–7.5 F.P.M.
TROLLEY SPEED	1.00–20 FPM, VARIABLE
BRIDGE SPEED	1.00–20 FPM, VARIABLE
MONORAIL HOIST SPEED	20 FPM, VARIABLE
MONORAIL TROLLEY SPEED	30 F.P.M., VARIABLE
TROLLEY WEIGHT	90,000 LBS. (ESTIMATED)
BRIDGE WEIGHT	150,000 LBS (EXISTING)
MAXIMUM BRIDGE WHEEL LOAD, W/O IMPACT	UPGRADED < 114,500 LBS. (EXISTING)
APPLICATION	NUREG 0554, CLASS "A", INDOORS
POWER SUPPLY	460V – 3ø – 60Hz AC (+ OR – 10%)
OPERATORS CONTROLS	RADIO REMOTE CONTROL WITH BACK–UP PENDANT, FESTOONED FROM NORTH GIRDER.
CONTROL ENCLOSURE	NEW NEMA 12, WHERE REQUIRED
RUNWAY ELECTRIFICATION	EXISTING 4–BAR CONDUCTOR BAR SYSTEM W/ GROUND
RUNWAY LENGTH	APPROX. 120 FEET
SURFACE PREPARATION & COATING DATA	SURFACE PREP: SSPC–SP6 PRIMER: 4 TO 6 MILS CARBOLINE 890, EPOXY FINISH COAT: 4 TO 6 MILS CARBOLINE 890 EPOXY COLOR SCHEME: SAFETY YELLOW

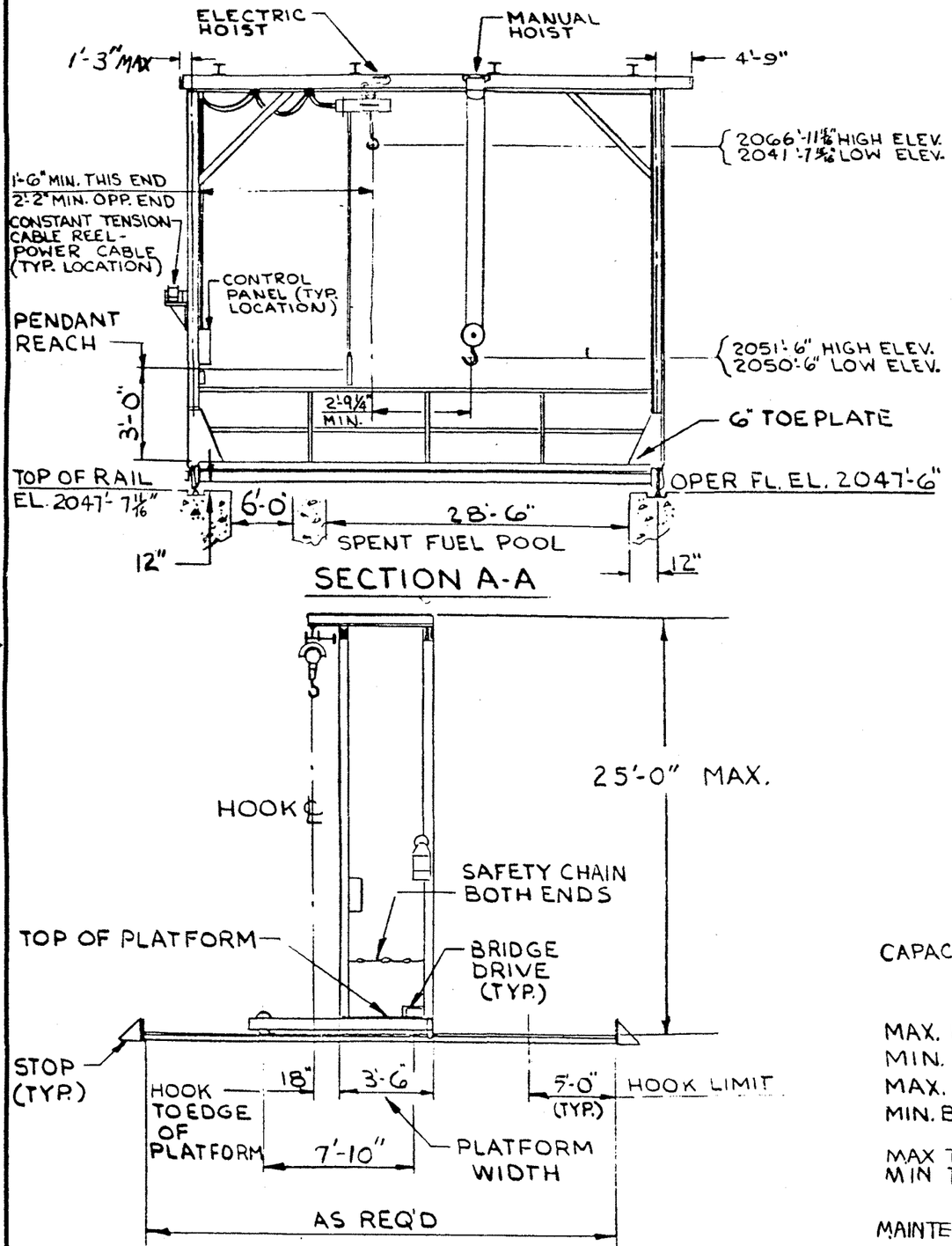
HKE14

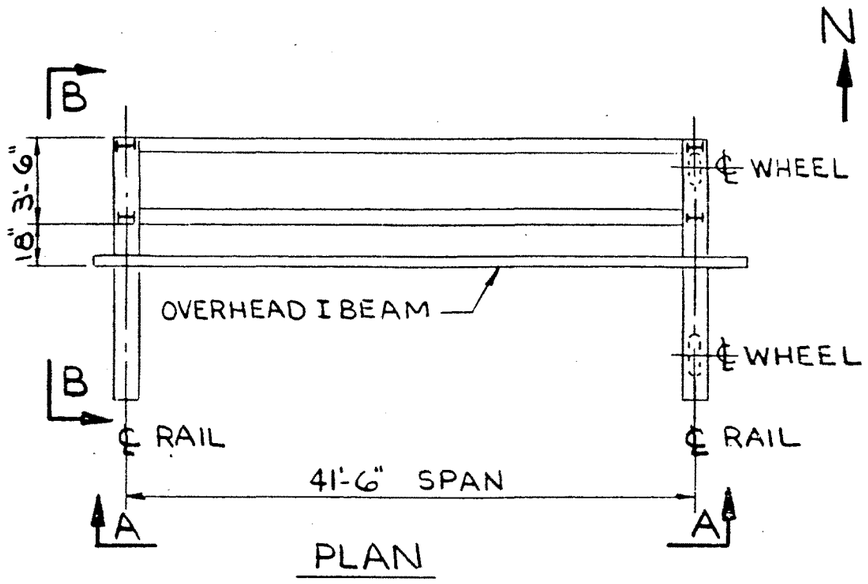
CALLAWAY PLANT

FIGURE 9.1-6

ARRANGEMENT DRAWING FUEL BUILDING CASK HANDLING CRANE REV. 5 5/15

Figure 9.1-7 has been deleted.





NOTE:
1. DOES NOT SHOW OFFSET HANDLING TOOL TO BE USED TO ACCESS CELLS BEYOND THE NORMAL HOIST TRAVEL RANGE.

CAPACITY:	BRIDGE	- 5 TON
	ELEC. HOIST	- 2 TON
	MANUAL HOIST	- 5 TON
MAX. LIFT SPEED		- 21FPM ± 10%
MIN. LIFT SPEED		- 7FPM ± 10%
MAX. BRIDGE SPEED		- 30 FPM ± 10%
MIN. BRIDGE SPEED		- 10 FPM ± 10%
MAX TROLLEY SPEED		30 FPM ± 10%
MIN TROLLEY SPEED		10 FPM ± 10%

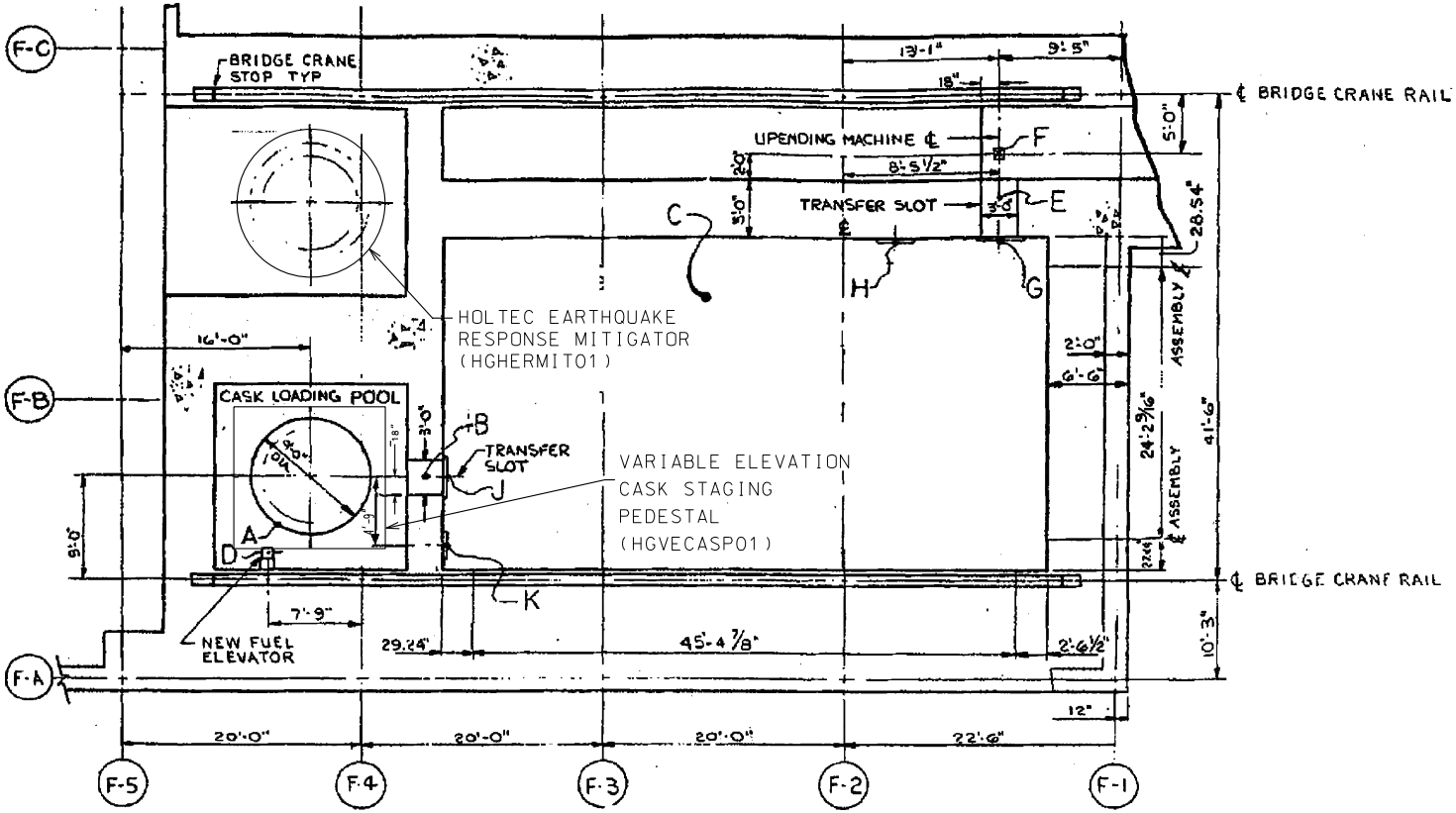
MAINTENANCE PLATFORM - NOT SHOWN
TOP OF RAIL ELEVATION 2047'-7⅛"

REV OL-11
5/00

CALLAWAY PLANT

FIGURE 9.1-8

ARRANGEMENT DRAWING SPENT FUEL BRIDGE CRANE



PLAN

N

NOTES:

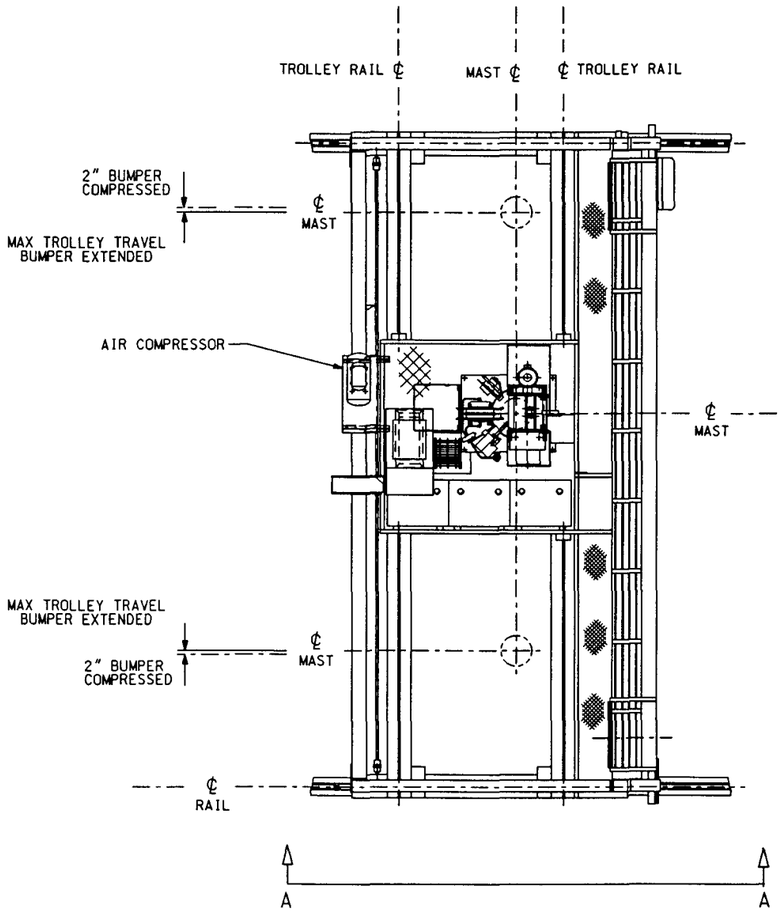
1. SPACING BETWEEN FUEL ELEMENT ASSEMBLIES TO BE 8.99" ON CENTER. INDEX POSITIONING OF CRANE TO BE DESIGNED TO HANDLE ASSEMBLIES.
2. DOES NOT SHOW RACKS IN CASK LOADING POOL.
3. SHOWS NORMAL CRANE TRAVEL LIMITS. THESE LIMITS ARE NOT APPLICABLE WHEN ACCESSING CELLS LOCATED NEAR THE PERIPHERY OF THE FUEL STORAGE POOL WALLS.

REV. OL-12
11/16

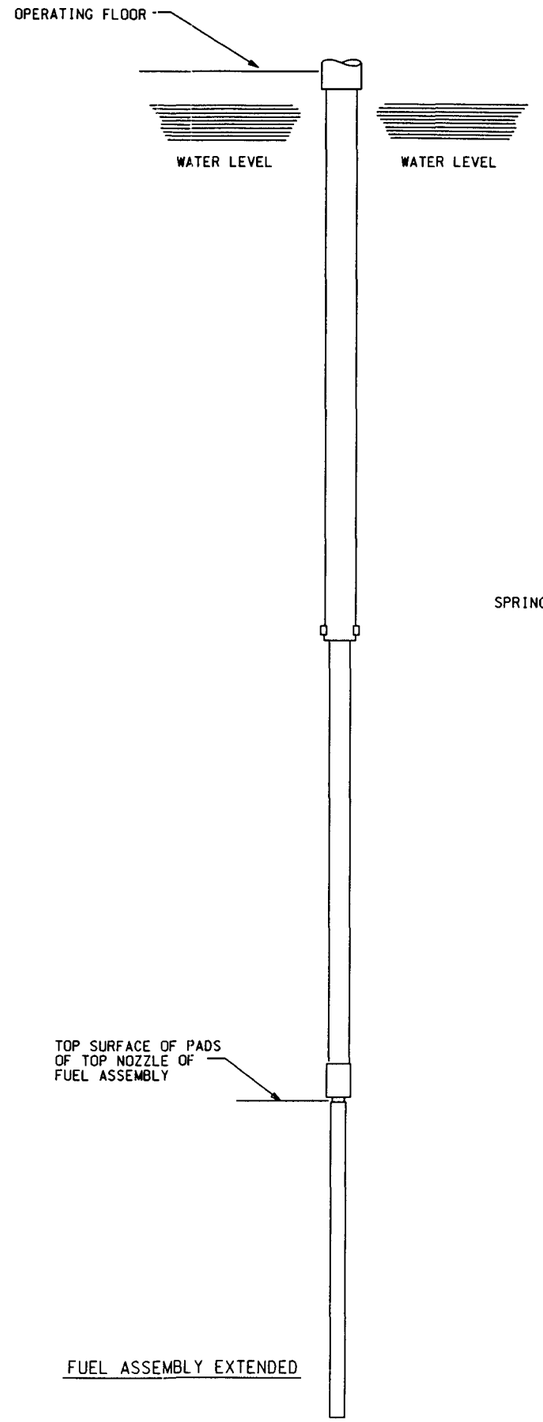
CALLAWAY PLANT

FIGURE 9.1-9

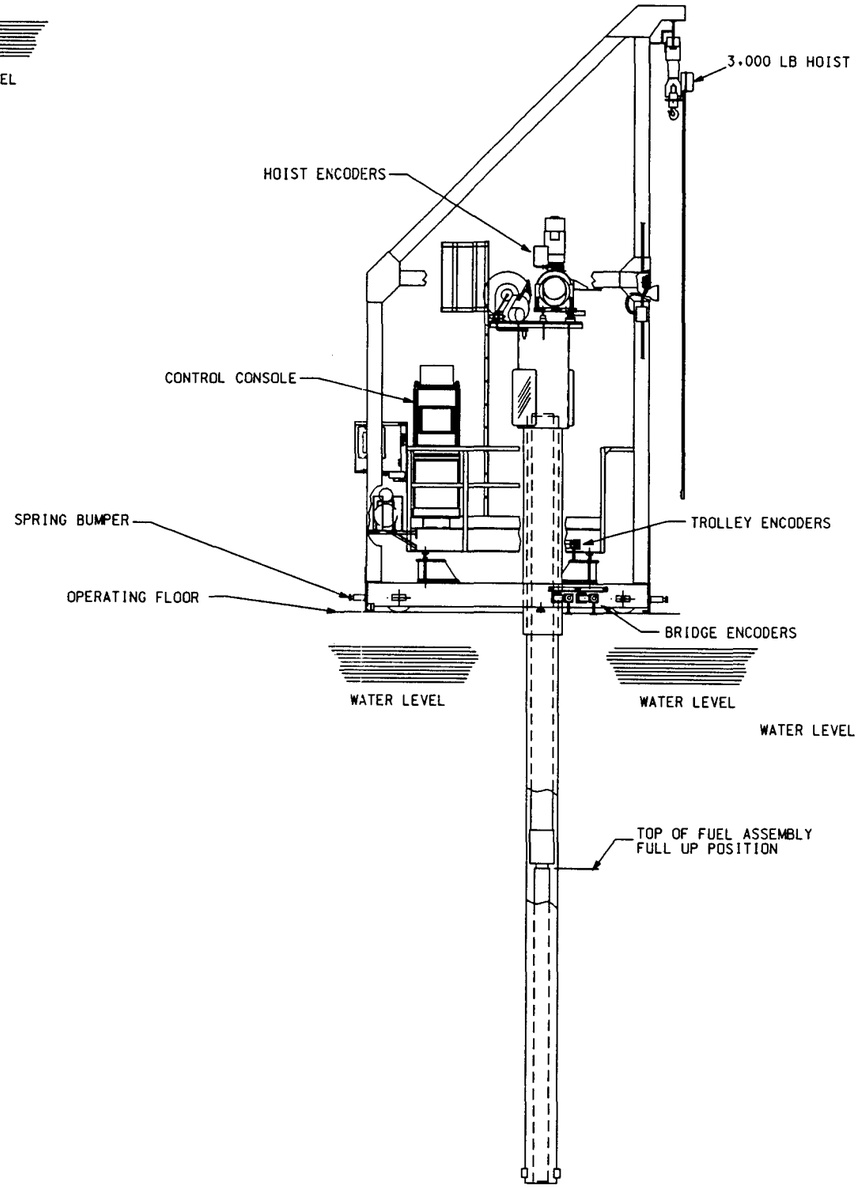
HOOK LIMITS FOR SPENT FUEL POOL BRIDGE CRANE



PLAN VIEW



FUEL ASSEMBLY EXTENDED

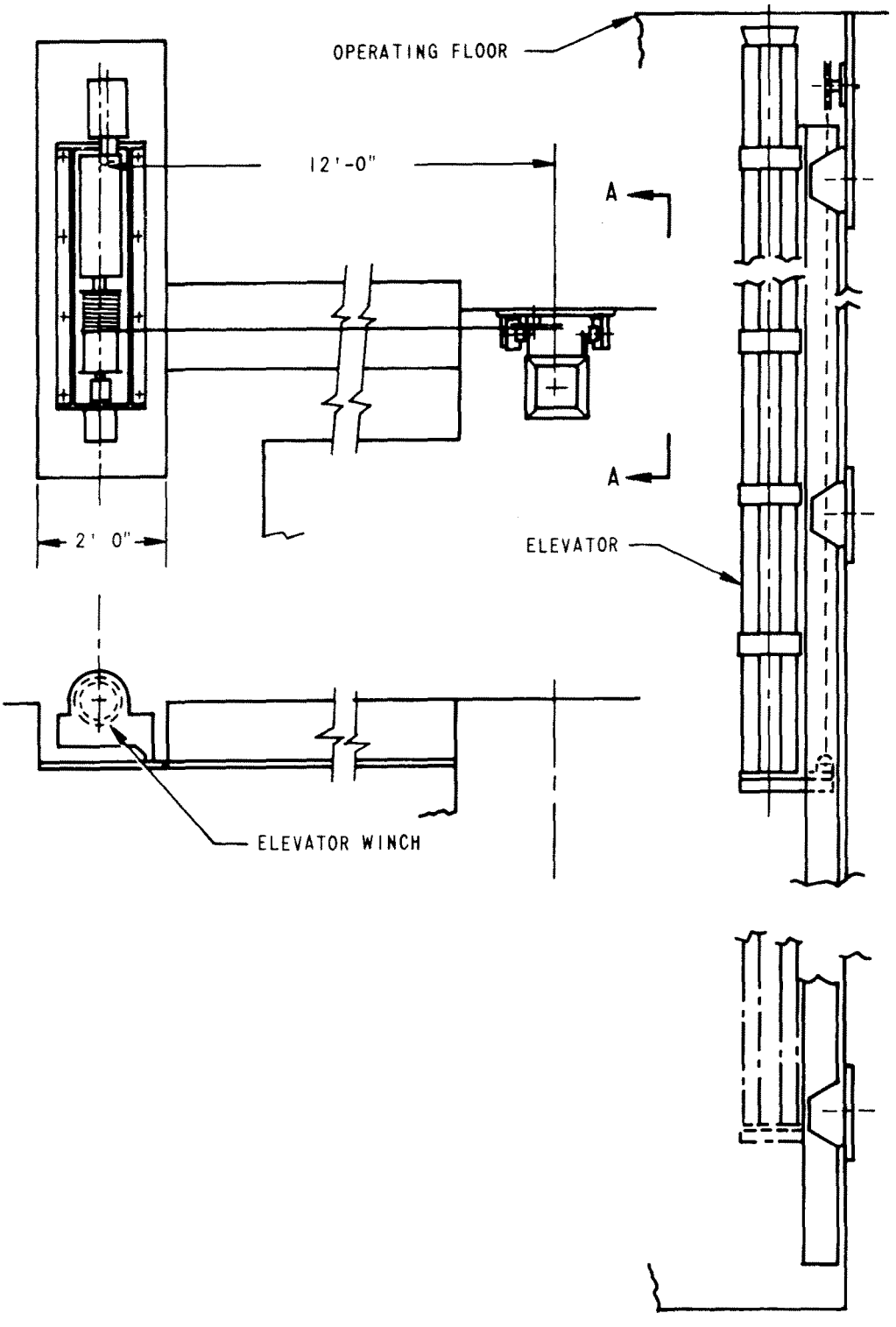


FUEL ASSEMBLY RETRACTED
SECTION AA

REV. OL-10
11/98

CALLAWAY PLANT

FIGURE 9.1-10
REFUELING MACHINE

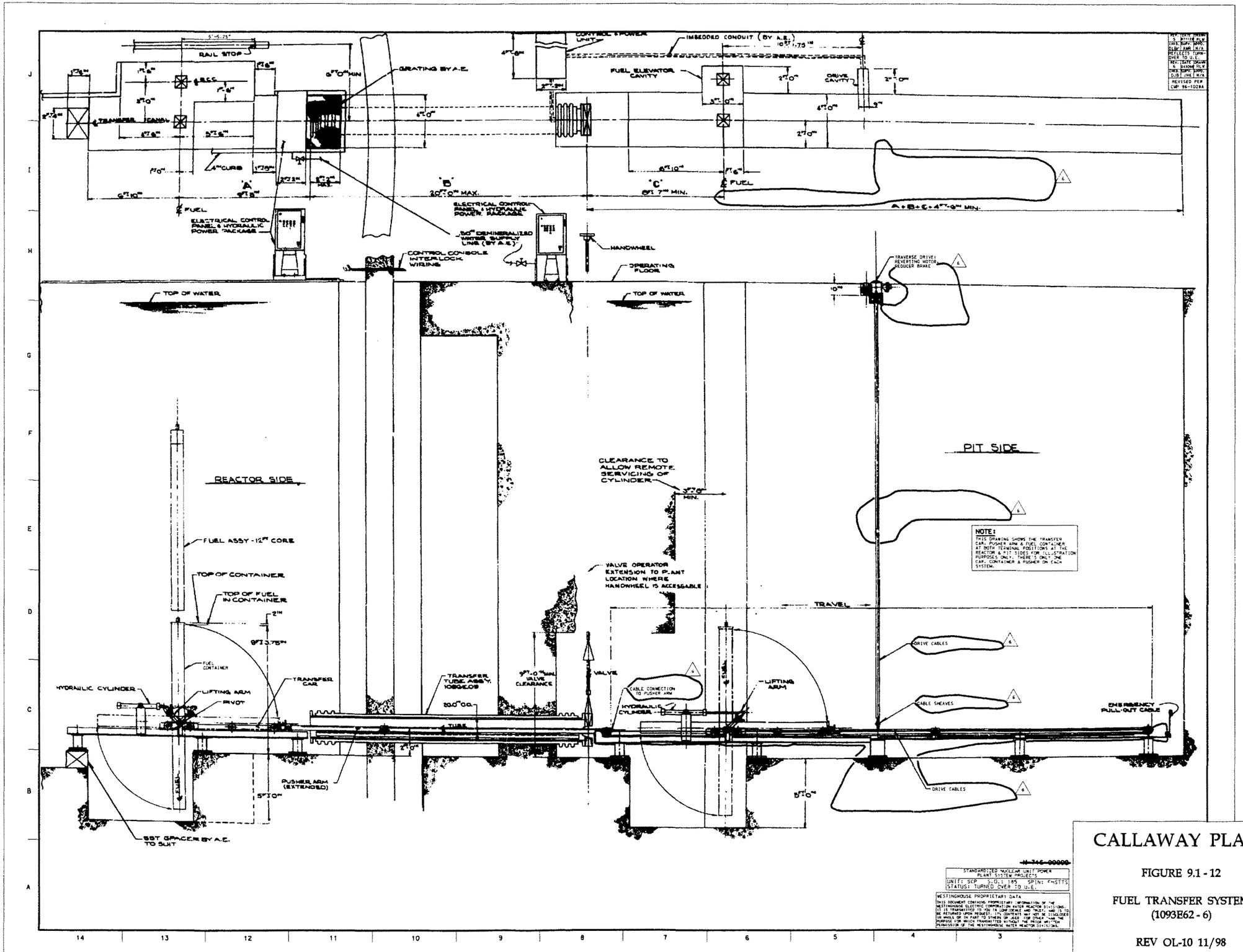


Rev. OL-0
6/86

CALLAWAY PLANT

FIGURE 9.1-11

NEW FUEL ELEVATOR

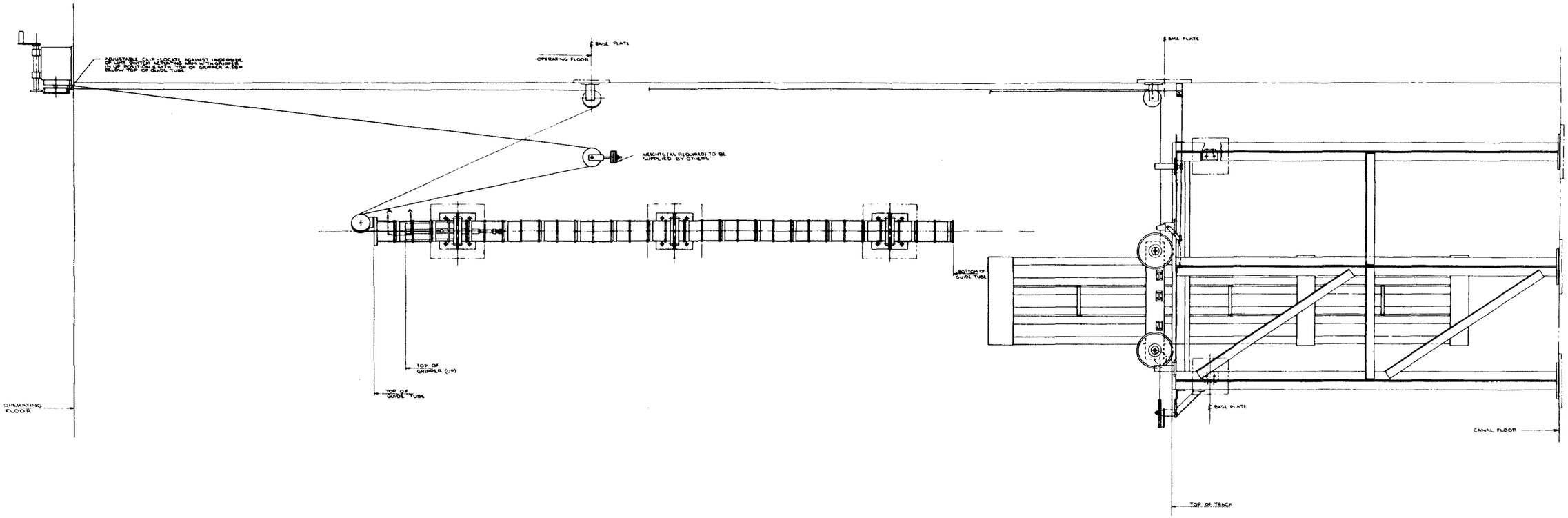


CALLAWAY PLANT

FIGURE 9.1 - 12

FUEL TRANSFER SYSTEM
(1093E62 - 6)

REV OL-10 11/98

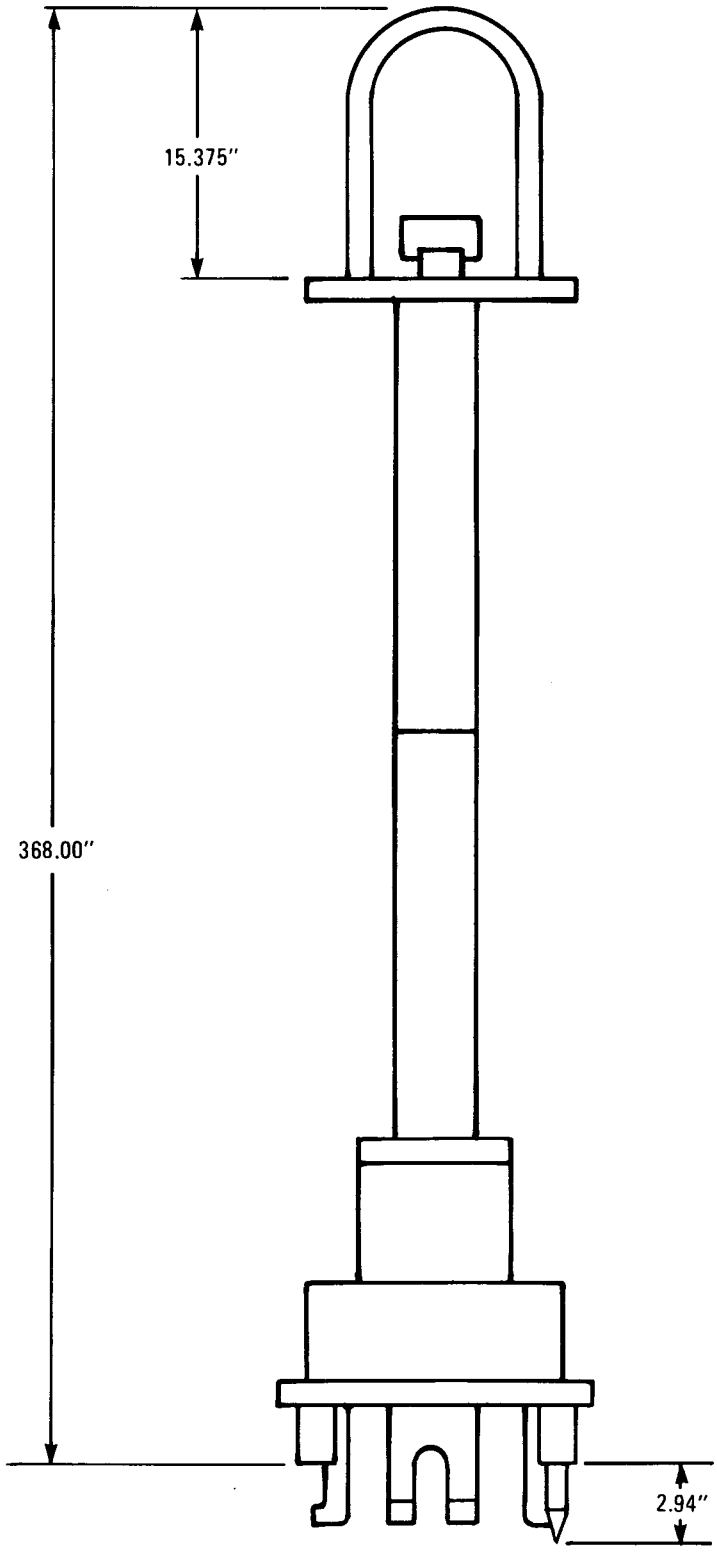


Rev. OL-0
6/86

CALLAWAY PLANT

FIGURE 9.1-13

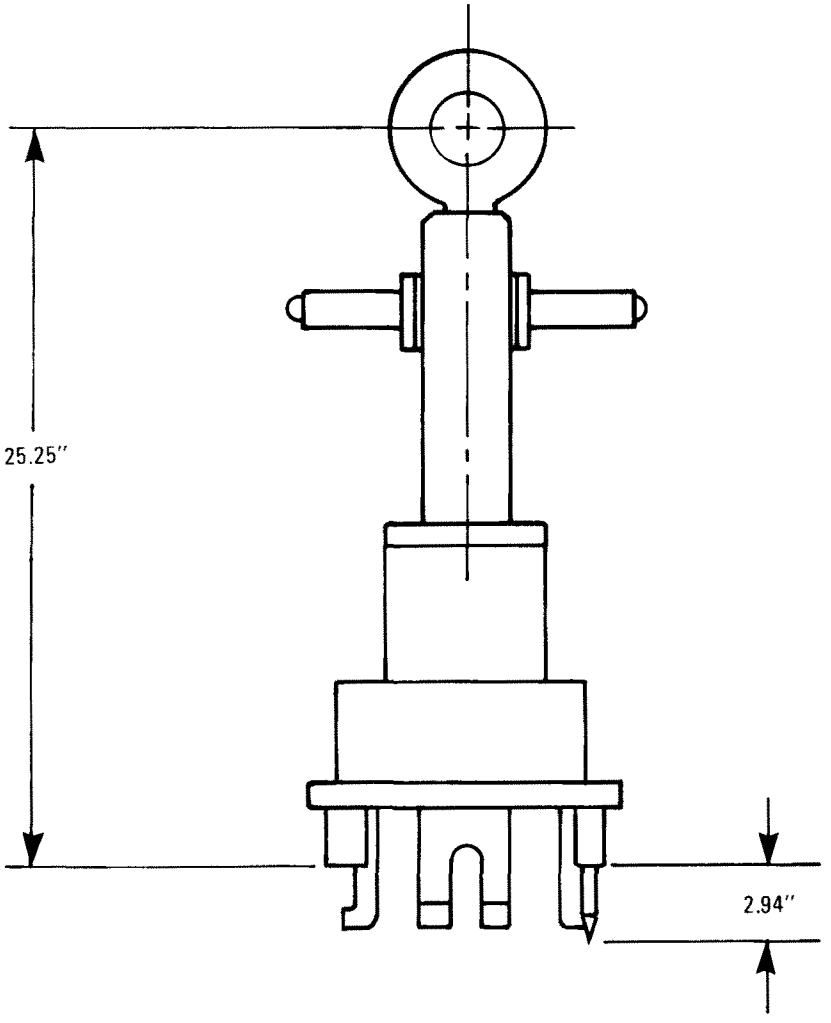
ROD CLUSTER CONTROL CHANGING FIXTURE



Rev. OL-0
6/86

CALLAWAY PLANT

FIGURE 9.1-14
SPENT FUEL HANDLING TOOL



Rev. OL-0
6/86

CALLAWAY PLANT

FIGURE 9.1-15
NEW FUEL HANDLING TOOL

Figure 9.1-16 Deleted

Figure 9.1-17a Deleted

Figure 9.1-18 has been deleted.

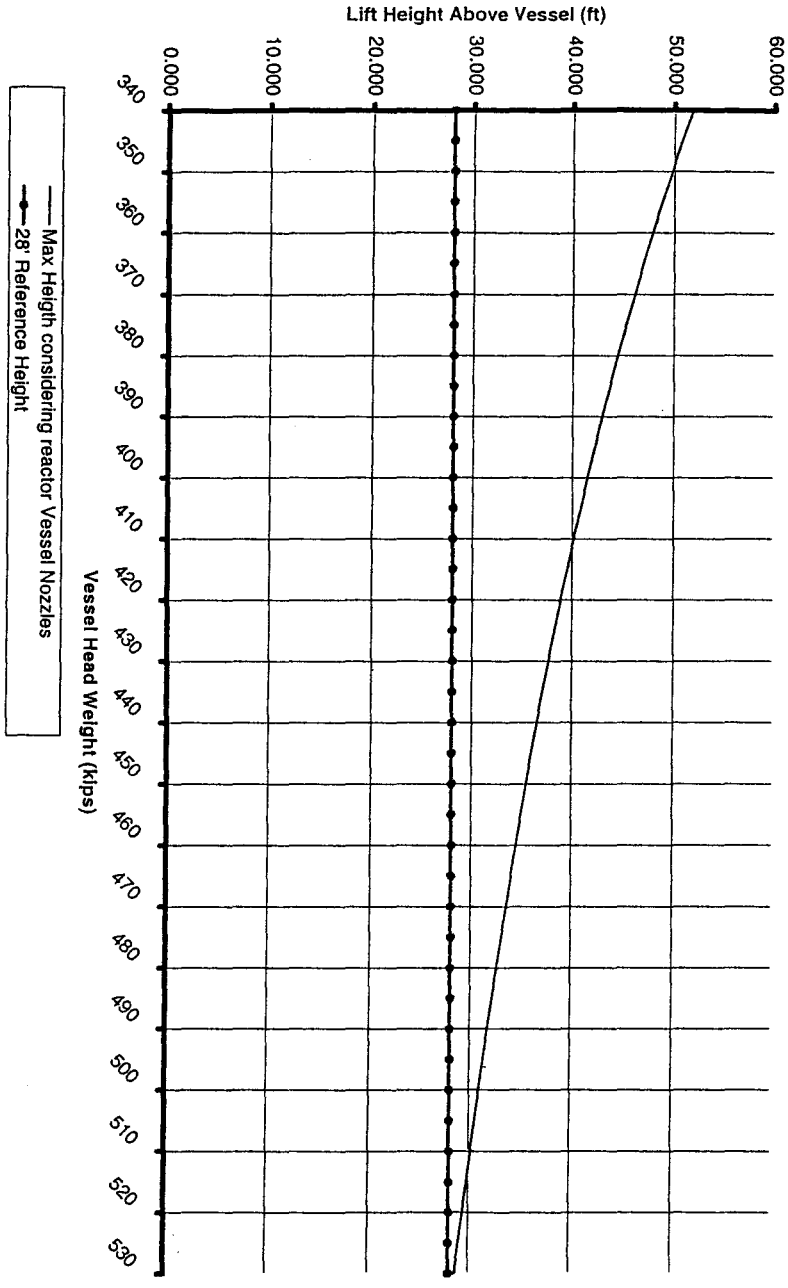
Figure 9.1-19 has been deleted.

Figure 9.1-20 has been deleted.

Figure 9.1-21 has been deleted.

Figure 9.1-22 has been deleted.

Figure 9.1-23 has been deleted.



REV OL-13
5/03

CALLAWAY PLANT

FIGURE 9.1-25

Head Weight vs. Lift Height

8600-X-89607

CIRC WTR PMP MTR O/C
IA B13 RK014

DAI0101H

TO BYPASS VALVES 8600-X-89615 (D4)

CIRCUIT BREAKER AUX. CONTACTS

OVERCURRENT

FROM CIRC WATER PUMP B OVER CURRENT 8600-X-89608 (D4)

FROM CIRC WATER PUMP C OVER CURRENT 8600-X-89609 (D4)

FROM CIRC WATER PUMP B VIBRATION SENSORS 8600-X-89608 (C3)

FROM CIRC WATER PUMP C VIBRATION SENSORS 8600-X-89609 (C3)

TO VDA2101A THIS SHEET (D1)

TO VDA2101B 8600-X-89608 (D1)

TO VDA2101C 8600-X-89609 (D1)

DAII 12103 MOTOR CURRENT RL013 — ITDA 2101 PB121

TA 1 CPDA2104 — TADA 2101 TOP BEARING TEMP CPDA2104 — TEDA 2101A

TA 2 CPDA2104 — TADA 2102 BOTTOM BEARING TEMP CPDA2104 — TEDA 2101B

TA 33 CPDA2104 — TADA 2110 THRUST BEARING TEMP CPDA2104 — TEDA 2102A

YIDA 2101A CPDA2104 — PUMP VIBRATION — YEDA 2101A

YEDA 2101B

YIDA 2101B CPDA2104 — PUMP VIBRATION — YEDA 2101D

YEDA 2101E

FROM CIRC WATER PUMP B VIBRATION SENSORS 8600-X-89608 (C3)

FROM CIRC WATER PUMP C VIBRATION SENSORS 8600-X-89609 (C3)

SSDA 2101 MOTOR REVERSE ROTATION → TO CIRC WATER PUMP A LOCKOUT

TEDA 2103A

TEDA 2103B

TEDA 2103C

TEDA 2103D

TEDA 2103E

TEDA 2103F

SCDA 2101 CPDA2104 — MOTOR STATOR TEMP — CPDA2104 — TA 12 CPDA2104

DA2-158-(R53)-3/4″

1 1/4″ × 3/4″ BUSHING

3/4″ × 1 1/2″ BUSHING

DA2-158-(R53)-1 1/2″

DA2-151-(R53)-3/4″

1 1/4″ × 3/4″ BUSHING

DA2-152-(R53)-1″

VDA2209

VENDOR

VENDOR

VENDOR

1″ × 1 1/2″ BUSHING

DA2-196-(R53)-1″

DA2-193-(R53)-1″

SDA2116A SEAL

PIDA 2109D — CW PUMP A MOTOR COOLING EQUIP. RACK — VDA2159G

PSDA 2101D CW INSTR RACK — VDA2155D — NOTE 2 — VDA2154D — VDA2156D

PIDA 2109A — VDA2159D

PSDA 2101A CW INSTR RACK — VDA2155A — NOTE 2 — VDA 2154A — VDA2156A

CW PUMP A LUBE WATER EQUIP. RACK

VDA2147A

VDA2211A — VDA2212A — FIDA 2102A SIGHT GLASS — VDA2213A — FSDA 2102A

VDA2214A — VDA2215A — FIDA 2101A SIGHT GLASS — VDA2216A — FSDA 2101A

VDA2204

VDA2203

DA2-148-(R53)-2″

2″ × 3/4″

2″ × 1″ BUSH.

DA2-185-(R53)-2″

DA2-185-(R53)-2″

VDA2168A

(R53) (F4) SDA2108A SEAL

VDA2168D — YS — VDA2168G

VDA2167A

FROM LUBE WATER FILTERS 8600-X-89610 (D1)

DA2-117-(F4)-2″

FDA2108A STRAINER

1/2″ (R53)

YEDA 2101F

YEDA 2101C

VENDOR

PDA2101A

CIRCULATING WATER PUMP A

PIDA 2101A

VDA2159A

AVDA2102A V 1″ (F4)

VDA2160A

PSEDA 2101A

SDA2123 CIRCULATING WATER MANIFOLD

VDA2101A

DA2-144-(F6)-3″

VDA2139A

1/2″ (F4) VDA2154R

VDA2154S 1/2″ × 3/8″

SDA2109A SEAL

TO YARD PIPING 8600-X-89615 (B3)

DA2-101-(F6)-4″

TO SAMPLE VALVE VDA2108A 8600-X-89616 (D4)

TO CIRC WATER PUMP A START PERMISSIVE

F & PA 7 CPDA2104

XA E13 RK014 CIRC WATER VALVE TROUBLE

DAQ0103T

FROM VDA2101B 8600-X-89608 (C1)

FROM VDA2101C 8600-X-89609 (C1)

FROM CIRC WATER PUMP A THIS SHEET (D4)

FROM CIRC WATER PUMP B 8600-X-89608 (D4)

TO CIRC WATER PUMP A LOCKOUT

TO CIRC WATER PUMP A TRIP

FROM CIRC WATER PUMP C 8600-X-89609 (D4)

PLC 12.6 CPDD1116

ZSDA 2101A OPEN — HSDA 2101A CPDA2106

RL ZLDA 2101A RL013 — GL ZLDA 2101A RL013

RL PLDA 2101A CPDA2106 — ZSDA 2101B CLOSED — GL PLDA 2102A CPDA2106

SEE HYDRAULIC SYSTEM 8600-X-89619

NOTES:

1. SEE DRAWING 8600-X-89718 FOR SYMBOLS AND LEGEND.
2. INSTRUMENTATION TUBING (3/8″ X .065 PER SPEC. 4645-11A SECTION 15Q) FROM ROOT VALVE VDA2154 ( ) TO INSTRUMENT AND BLOWDOWN VALVE VDA2156 ( ).
3. THE PIPING, FITTINGS AND VALVES ASSOCIATED WITH EACH OF THE FLOW INDICATOR BYPASS LINES ARE TO BE IN ACCORDANCE WITH BECHTEL'S MS-2, CLASS HCD FOR THE PIPING AND FITTINGS AND CLASS HBD FOR THE VALVES.

REV.	DATE	DRAWN
10	7/3/91	SBR
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

REDRAWN FOR CLARITY. INCORP. EMP-91-3015

REV.	DATE	DRAWN
11	022592	MAL
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR-09023B (MINOR MOD).

REV.	DATE	DRAWN
12	092992	JHK
CHKD.	SUPV.	APPD.
RAM	TJM	N/A

INCORP. EMP 89-3001.

REV.	DATE	DRAWN
13	102694	RAM
CHKD.	SUPV.	APPD.
EWM	AMR	N/A

INCORP. RFR-04903C.

REV.	DATE	DRAWN
14	050998	RAM
CHKD.	SUPV.	APPD.
EWM	AMR	N/A

INCORPORATES MP 93-2023

REV.	DATE	DRAWN
15	092600	JHK
CHKD.	SUPV.	APPD.
MAL	TWS	N/A

INCORP. MP 97-2011 FCN-05.

REV.	DATE
16	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A

REV.	DATE
17	092208
DRAWN	CHKD.	SUPV.
EWM	RLW	TWS

INCORPORATE CAR 200805310

AS-BUILT CLASS 1

FOR DRAWING INDEX SEE DRAWING NO. 8600-X-89846

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM CIRCULATING WATER PUMP PDA2101A (DA2) CIRC. & SERV. WATER PUMPHOUSE FSAR FIGURE 9.2-1 SHEET 1		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION 843	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	8600-X-89607		REV. 17

80968-X-0098

REV.	DATE	DRAWN
10	7/3/91	SBR
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

REDRAWN FOR CLARITY INCORP. EMP-91-3015

REV.	DATE	DRAWN
11	092592	MAL
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR-09238 (MINOR MOD).

REV.	DATE	DRAWN
12	092992	JHK
CHKD.	SUPV.	APPD.
RAM	TJM	N/A

INCORP. EMP 89-3001.

REV.	DATE	DRAWN
13	011498	RAM
CHKD.	SUPV.	APPD.
HLP	AMR	N/A

INCORPORATES MP 93-2023

REV.	DATE	DRAWN
14	092602	JHK
MAL	TWS	N/A

INCORP. MP 97-2011 FCN-05.

REV.	DATE
15	101304
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. MP 97-2011 FCN-22.

REV.	DATE
16	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A

REV.	DATE
17	092208
DRAWN	CHKD.	SUPV.
EWM	RLW	TWS

INCORPORATE CAR 200805310

TO BYPASS VALVES 8600-X-89615 (D4)

CIRCUIT BREAKER AUX. CONTACTS

MOTOR OVERCURRENT

TO CIRC WATER PUMP OVER CURRENT ALARM 8600-X-89607 (D4)

TO VDA2101A 8600-X-89607 (D1)

TO VDA2101B THIS SHEET (D1)

TO VDA2101C 8600-X-89609 (D1)

DAII 12203 — MOTOR CURRENT — ITDA 2102 (RL013 / PB122)

TA 3 — TADA 2103 — TOP BEARING TEMP — TEDA 2105A (CPDA2104)

TA 4 — TADA 2104 — BOTTOM BEARING TEMP — TEDA 2105B (CPDA2104)

TA 34 — TADA 2111 — THRUST BEARING TEMP — TEDA 2102B (CPDA2104)

TO CIRC. PUMP VIBRATION MONITOR 8600-X-89607 (D3) — PUMP VIBRATION — YEDA 2101G / YEDA 2101H

TO CIRC. PUMP VIBRATION MONITOR 8600-X-89607 (C4) — PUMP VIBRATION — YEDA 2101J / YEDA 2101K

SSDA 2102 — MOTOR REVERSE ROTATION — TO CIRC WATER PUMP B LOCKOUT

TEDA 2106A / TEDA 2106B / TEDA 2106C / TEDA 2106D / TEDA 2106E / TEDA 2106F

SCDA 2102 — MOTOR STATOR TEMP — CPDA2104 — TA 13 (CPDA2104)

DA2-159-(R53)-3/4"

3/4" x 1 1/2" BUSHING

1 1/4" x 3/4" BUSHING

DA2-153-(R53)-3/4"

DA2-159-(R53)-1 1/2"

DA2-154-(R53)-1"

VENDOR

DA2-197-(R53)-1"

1" x 1 1/2" BUSHING

DA2-194-(R53)-1"

PIDA 2109E — VDA2159H — CW PUMP B MOTOR COOLING EQUIP. RACK

PIDA 2109B — VDA2159E — CW PUMP B LUBE WATER EQUIP. RACK

PSDA 2101E — CW INSTR RACK — VDA2155E — VDA2156E — NOTE 2 — VDA2154E

PSDA 2101B — CW INSTR RACK — VDA2155B — VDA2156B — NOTE 2 — VDA 2154B

VDA2211B / VDA2212B / FIDA 2102B (SIGHT GLASS) / VDA2213B / FSDA 2102B / VDA2206

VDA2147B / VDA2214B / VDA2215B / FIDA 2101B (SIGHT GLASS) / VDA2216B / FSDA 2101B / VDA2205

2"x 3/4" — DA2-149-(R53)-2" — DA2-186-(R53)-2" — DA2-183-(R53)-2"

2"x 1" BUSH.

VDA2168B — VDA2168E — YS — VDA2168H — VDA2167B

(R53) (F4) — SDA2108B SEAL — FDA2108B STRAINER — 1/2" (R53)

FROM LUBE WATER FILTERS 8600-X-89610 (D1) — DA2-118-(F4)-2"

YEDA 2101L — YEDA 2101I

PDA2101B — CIRCULATING WATER PUMP B

VDA2159B — PIDA 2101B — SDA2116B SEAL — AVDA2102B — 1" (F4) — VDA2160B — PSEDA 2101B

SDA2123 CIRCULATING WATER MANIFOLD

FROM CIRC WATER PUMP A 8600-X-89607 (C4)

FROM CIRC WATER PUMP B THIS SHEET (C4)

TO CIRC WATER PUMP B LOCKOUT

TO CIRC WATER PUMP B TRIP

FROM CIRC WATER PUMP C 8600-X-89609 (C4)

PLC I3.0 CPDD1116

TO CIRC WATER PUMP DISCHARGE VALVE TROUBLE ALARM 8600-X-89607 (D1)

ZSDA 2102A — OPEN — RL ZLDA 2101B (RL013) — RL PLDA 2101B (CPDA2106)

HSDA 2101B (CPDA2106)

ZSDA 2102B — CLOSED — GL ZLDA 2101B (RL013) — GL PLDA 2102B (CPDA2106)

SEE HYDRAULIC SYSTEM 8600-X-89619

VDA2139B

DA2-145-(F6)-3" — 1/2" (F4) — VDA2154T — VDA2154U — 1/2" x 3/8"

SDA2109B SEAL — TO YARD PIPING 8600-X-89615 (B3)

VDA2101B

DA2-102-(F6)-4" — TO SAMPLE VALVE VDA2108B 8600-X-89616 (D4)

TO CIRC WATER PUMP B START PERMISSIVE

F & PA 8 — CPDA2104

NOTES:

1. SEE DRAWING 8600-X-89718 FOR SYMBOLS AND LEGEND.
2. INSTRUMENTATION TUBING (3/8" X .065 PER SPEC. 4645-11A SECTION 15Q) FROM ROOT VALVE VDA2154 ( ) TO INSTRUMENT AND BLOWDOWN VALVE VDA2156 ( ).
3. THE PIPING, FITTINGS AND VALVES ASSOCIATED WITH EACH OF THE FLOW INDICATOR BYPASS LINES ARE TO BE IN ACCORDANCE WITH BECHTEL'S MS-2, CLASS HCD FOR THE PIPING AND FITTINGS AND CLASS HBD FOR THE VALVES.

AS-BUILT CLASS 1

FOR DRAWING INDEX SEE DRAWING NO. 8600-X-89846

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM CIRCULATING WATER PUMP PDA2101B (DA2) CIRC. & SERV. WATER PUMPHOUSE	
CHKD. (DATE) N/A		
SUPV. (DATE) N/A	FSAR FIGURE 9.2-1 SHEET 2	
APPD. (DATE) N/A	LOCATION 843	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	CALLAWAY PLANT	8600-X-89608 REV. 17

TO BYPASS VALVES
8600-X-89615
(D4)

CIRCUIT BREAKER AUX. CONTACTS

MOTOR OVERCURRENT

TO CIRC WATER PUMP OVERCURRENT ALARM
8600-X-89607
(D4)

TO VDA2101A
8600-X-89607
(D1)

TO VDA2101B
8600-X-89608
(D1)

TO VDA2101C
THIS SHEET
(C1)

DAII 12302 — MOTOR CURRENT — ITDA 2103
RL013 PB123

TA 5 — TADA 2105 — TOP BEARING TEMP — TEDA 2107A
CPDA2104 CPDA2104

TA 6 — TADA 2106 — BOTTOM BEARING TEMP — TEDA 2107B
CPDA2104 CPDA2104

TA 35 — TADA 2112 — THRUST BEARING TEMP — TEDA 2102C
CPDA2104 CPDA2104

SSDA 2103 — MOTOR REVERSE ROTATION → TO CIRC WATER PUMP C LOCKOUT

TEDA 2108A
TEDA 2108B
TEDA 2108C
TEDA 2108D
TEDA 2108E
TEDA 2108F

SCDA 2103 — MOTOR STATOR TEMP — CPDA2104
CPDA2104

TA 14 — CPDA2104

TO CIRC. WATER PUMP VIBRATION MONITOR
8600-X-89607
(D3)

PUMP VIBRATION

YEDA 2101M
YEDA 2101N

TO CIRC. WATER PUMP VIBRATION MONITOR
8600-X-89607
(C4)

PUMP VIBRATION

YEDA 2101Q
YEDA 2101R

DA2-155-(R53)-3/4"
DA2-156-(R53)-1"
1 1/4" × 3/4" BUSHING
VENDOR
VENDOR
VENDOR
DA2-160-(R53)-3/4"
3/4" × 1 1/2" BUSHING
1 1/4" × 3/4" BUSHING
DA2-160-(R53)-1 1/2"
BUSHING 1" × 1 1/2"
DA2-198-(R53)-1"
DA2-195-(R53)-1"
VDA2210
SDA2116C SEAL

PIDA 2109F
PSDA 2101F
CW INSTR RACK
VDA2155F
VDA2156F
NOTE 2
VDA2154F
VDA2159I
CW PUMP C MOTOR COOLING EQUIP. RACK

PIDA 2109C
PSDA 2101C
CW INSTR RACK
VDA2155C
VDA2156C
NOTE 2
VDA 2154C
VDA2159F
CW PUMP C LUBE WATER EQUIP. RACK

VDA2159C
PIDA 2101C
AVDA2102C
V
1" (F4)
VDA2160C
PSEDA 2101C

VDA2211C
VDA2212C
FIDA 2102C
SIGHT GLASS
VDA2213C
FSDA 2102C
VDA2208
VDA2147C
VDA2214C
VDA2215C
FIDA 2101C
SIGHT GLASS
VDA2216C
FSDA 2101C
VDA2207

SDA2123 CIRCULATING WATER MANIFOLD
VDA2101C

VDA2139C
VDA2154V
1/2" (F4)
DA2-146-(F6)-3"
VDA2154W
1/2" × 3/8"
SDA2109C SEAL
TO YARD PIPING
8600-X-89615
(B3)

DA2-150-(R53)-2"
2" × 3/4"
2" × 1" BUSH.
DA2-187-(R53)-2"
DA2-184-(R53)-2"
VDA2168C
(R53)
(F4)
SDA2108C SEAL
VDA2168F
YS
VDA2168I
VDA2167C
1/2" (R53)
FDA2108C STRAINER
FROM LUBE WATER FILTERS
8600-X-89610
(D1)
DA2-119-(F4)-2"

YEDA 2101S
YEDA 2101P
VENDOR
VENDOR
PDA2101C
CIRCULATING WATER PUMP C

DA2-103-(F6)-4"
TO SAMPLE VALVE VDA2108C
8600-X-89616
(D3)

TO CIRC WATER PUMP C START PERMISSIVE

F & PA 15
CPDA2104

FROM CIRC WATER PUMP A
8600-X-89607
(C4)

FROM CIRC WATER PUMP B
8600-X-89608
(C4)

TO CIRC WATER PUMP C LOCKOUT
TO CIRC WATER PUMP C TRIP

FROM CIRC WATER PUMP C
THIS SHEET
(C4)

PLC I4.0
CPDD1116

TO CIRC WATER PUMP DISCHARGE VALVE TROUBLE ALARM
8600-X-89607
(D1)

ZSDA 2103A
OPEN
HSDA 2101C
CPDA2106

RL ZLDA 2101C
RL013

GL ZLDA 2101C
RL013

RL PLDA 2101C
CPDA2106

ZSDA 2103B
CLOSED

GL PLDA 2102C
CPDA2106

SEE HYDRAULIC SYSTEM
8600-X-89619

NOTES:

1. SEE DRAWING 8600-X-89718 FOR SYMBOLS AND LEGEND.
2. INSTRUMENTATION TUBING (3/8" X .065 PER SPEC. 4645-11A SECTION 15Q) FROM ROOT VALVE VDA2154 ( ) TO INSTRUMENT AND BLOWDOWN VALVE VDA2156 ( ).
3. THE PIPING, FITTINGS AND VALVES ASSOCIATED WITH EACH OF THE FLOW INDICATOR BYPASS LINES ARE TO BE IN ACCORDANCE WITH BECHTEL'S MS-2, CLASS HCD FOR THE PIPING AND FITTINGS AND CLASS HBD FOR THE VALVES.

REV.	DATE	DRAWN
11	7/3/91	SBR
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

REDRAWN FOR CLARITY INCORP. EMP-91-3015

REV.	DATE	DRAWN
12	022592	MAL
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR-09023B (MINOR MOD).

REV.	DATE	DRAWN
13	092992	JHK
CHKD.	SUPV.	APPD.
RAM	TJM	N/A

INCORP. EMP 89-3001.

REV.	DATE	DRAWN
14	050598	RAM
CHKD.	SUPV.	APPD.
EWM	AMR	N/A

INCORPORATES MP 93-2023

REV.	DATE	DRAWN
15	092602	JHK
CHKD.	SUPV.	APPD.
MAL	TWS	N/A

INCORP. MP 97-2011 FCN-05.

REV.	DATE
16	101304
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. MP 97-2011 FCN-22.

REV.	DATE
17	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A

REV.	DATE
18	092208
DRAWN	CHKD.	SUPV.
EWM	RLW	TWS

INCORPORATE CAR 200805310

AS-BUILT CLASS 1

FOR DRAWING INDEX SEE DRAWING NO. 8600-X-89846

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM CIRCULATING WATER PUMP PDA2101C (DA2)		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A	CIRC. & SERV. WATER PUMPHOUSE FSAR FIGURE 9.2-1 SHEET 3		
APPD. (DATE) N/A	LOCATION 843		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	CALLAWAY PLANT	8600-X-89609	REV. 18

8600-X-89611

TO BYPASS VALVES
8600-X-89615
(C4)

CIRCUIT BREAKER AUX. CONTACTS

SERVICE WATER PUMP A TRIP
SERVICE WATER PUMP B TRIP
SERVICE WATER PUMP C TRIP

EAII 12104 — MOTOR CURRENT — ITEA 2101 — PB121
RL013

TA 1 — TAEA 2101 — TOP BEARING TEMP — TEEA 2101A — CPEA2105
TA 2 — TAEA 2102 — BOTTOM BEARING TEMP — TEEA 2101B — CPEA2105

FROM SERV WATER PUMP B VIBRATION SENSORS
8600-X-89612
(D4)

FROM SERV WATER PUMP C VIBRATION SENSORS
8600-X-89613
(D4)

YIEA 2101A — CPEA2105

PUMP VIBRATION

YEEA 2101A
YEEA 2101B
YEEA 2101D
YEEA 2101E

YIEA 2101B — PUMP VIBRATION — CPEA2105

FROM SERV WATER PUMP B VIBRATION SENSORS
8600-X-89612
(C4)

FROM SERV WATER PUMP C VIBRATION SENSORS
8600-X-89613
(C4)

SSEA 2101 — MOTOR REVERSE ROTATION → SERVICE WATER PUMP A LOCKOUT

TEEA 2102A
TEEA 2102B
TEEA 2102C
TEEA 2102D
TEEA 2102E
TEEA 2102F

SCEA 2101 — MOTOR STATOR TEMP — CPEA2105
TA 12 — CPEA2105

PIEA 2109A

PSEA 2101A — SW INSTR RACK
VEA2137A
VEA2138A
NOTE 2
VEA2139D
VEA2136A
SW PUMP A LUBE WATER EQUIP RACK

3/4" × 3/8" BUSHING

FISEA 2101A

3/4" × 3/8" BUSHING

VEA2149

3/4" (R53)

EA2-151-(R53)-3/4"
VEA2143D
YS
FEA2103A STRAINER
VEA2143G NOTE 3
1/2" (R53) VEA2143A
VEA2144A (TO BAY)
R53
R53
SEA2107A SEAL
EA2-154-(R53)-3/4"
19

FROM LUBE WATER FILTERS
8600-X-89614
(D4)
EA2-111-(R53)-3/4"

SERV WATER PUMP A LOCKOUT
SERV WATER PUMP A TRIP
F&P A 7 — CPEA2105

VENDOR

YEEA 2101F
YEEA 2101C

1/2" (R53)
(TO BAY)

PEA2101A
SERVICE WATER PUMP A

TA 9 — CPEA2105
PLC 12.7 CPDD1116
HSEA 2015A — CPEA2110

VEA2139A
PIEA 2101A

PIEA 2016A
PDSEA 2015A
PIEA 2017A
1" (F4)
VEA2140A
PSEEA 2101A
3/4" (V)
AVEA2102A
VEA2165A
VEA2168A
VEA2167A
VEA2166A
FEA2015A STRAINER
1"(D)
VEA2164A
4"x3" RED.
VEA2161A
VEA2163A 1"(D)
VEA2162A
EA2-164-(R1)-4"
6"x4" RED.
EA2-163-(R1)-6"
8600-X-89612

VEA2101A

FROM VEA2101B
8600-X-89612
(A4)

FROM VEA2101C
8600-X-89613
(A4)

EAQ0102T
SERV WTR VLV TROUBLE
XA E12
RK014

RL ZLEA 2101A — RL013
GL ZLEA 2101A — RL013

ZSEA 2101A — OPEN
HSEA 2101A — CPEA2107
SERVICE WATER PUMP A LOCKOUT
SERVICE WATER PUMP A TRIP

RL PLEA 2101A — CPEA2107
ZSEA 2101B — CLOSED
GL PLEA 2102A — CPEA2107

SEE HYDRAULIC SYSTEM
8600-X-89619

SEA2116 SERVICE WATER MANIFOLD
EA2-136-(F6)-3"
VEA2125A
TO SERV WATER MANIFOLD
8600-X-89615
(B3)

NOTES:

1. SEE DRAWING 8600-X-89718 FOR SYMBOLS AND LEGEND.
2. INSTRUMENTATION TUBING (3/8" x .065 PER SPEC. 4645-11A SECTION 15Q) FROM ROOT VALVE VDA2136 ( ) TO INSTRUMENT AND BLOWDOWN VALVE VDA2138 ( ).
3. DRAIN LOCATION TO FACILITATE STRAINER FLUSHING.

REV.	DATE	DRAWN
6	6/18/90	JHK
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

REDRAWN FOR CLARITY

REV.	DATE	DRAWN
7	1/24/91	MAL
CHKD.	SUPV.	APPD.
HLP	TJM	N/A

INCORP. EMP-88-3018.

REV.	DATE	DRAWN
8	03191	JHK
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR-09131A.

REV.	DATE	DRAWN
9	01894	JHK
CHKD.	SUPV.	APPD.
RAM	AMR	N/A

INCORP. RFR-04903C.

REV.	DATE	DRAWN
10	09279 5	RBF
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INC'D. RFR-16166A

REV.	DATE	DRAWN
11	011498	RAM
CHKD.	SUPV.	APPD.
HLP	AMR	N/A

INCORPORATES MP 93-2023

REV.	DATE	DRAWN
12	050401	RLW
CHKD.	SUPV.	APPD.
MAL	DLB	N/A

INCORP. MP 00-2007 FCN-01

REV.	DATE	DRAWN
13	052401	JHK
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. MP 00-2007 FCN-02.

REV.	DATE	DRAWN
14	092602	JHK
CHKD.	SUPV.	APPD.
MAL	TWS	N/A

INCORP. MP 97-2011 FCN-05.

REV.	DATE
15	101304
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. MP 97-2011 FCN-22.

REV.	DATE
16	010405
DRAWN	CHKD.	SUPV.
RLW	MAL	TWS

INCORPORATE MINOR CHANGE CAR 200407615

REV.	DATE
17	042105
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A.

REV.	DATE
18	092208
DRAWN	CHKD.	SUPV.
EWM	RLW	TWS

INCORPORATE CAR 200805310

REV.	DATE
19	052009
DRAWN	CHKD.	SUPV.
EWM	RLW	TWS

INCORPORATE CAR 200902535

AS-BUILT CLASS 1

FOR DRAWING INDEX SEE DRAWING NO. 8600-X-89846

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM SERVICE WATER PUMP PEA2101A (EA2) CIRC. & SERV. WATER PUMPHOUSE		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A	FSAR FIGURE 9.2-1 SHEET 4		
APPD. (DATE) N/A	LOCATION 843	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	8600-X-89611		REV. 19

8600-X-89612

REV.	DATE	DRAWN
7	090893	RBF
CHKD.	SUPV.	APPD.
RLW	TJM	N/A
REDRAWN FOR CLARITY		
REV.	DATE	DRAWN
8	092895	RBF
CHKD.	SUPV.	APPD.
DJB	AMR	N/A
INC'D. RFR-16166A		
REV.	DATE	DRAWN
9	011498	RAM
CHKD.	SUPV.	APPD.
HLP	AMR	N/A
INCORPORATES MP 93-2023		
REV.	DATE	DRAWN
10	111999	RAM
CHKD.	SUPV.	APPD.
EWM	TWS	N/A
INCORPORATES DEC-1653		
REV.	DATE	DRAWN
11	050401	RLW
CHKD.	SUPV.	APPD.
MAL	DLB	N/A
INCORP. MP 00-2007 FCN-01		
REV.	DATE	DRAWN
12	052401	JHK
CHKD.	SUPV.	APPD.
MAL	AMR	N/A
INCORP. MP 00-2007 FCN-02.		
REV.	DATE	DRAWN
13	092602	JHK
CHKD.	SUPV.	APPD.
MAL	TWS	N/A
INCORP. MP 97-2011 FCN-05.		
REV.	DATE	
14	010405	
DRAWN	CHKD.	SUPV.
RLW	MAL	TWS
INCORPORATE MINOR CHANGE CAR 200407615		
REV.	DATE	
15	042105	
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS
INCORP. RFR 22941A.		
REV.	DATE	
16	092208	
DRAWN	CHKD.	SUPV.
EWM	RLW	TWS
INCORPORATE CAR 200805310		

TO BYPASS VALVES 8600-X-89615 (C4)

CIRCUIT BREAKER AUX. CONTACTS

EAII 12204 — MOTOR CURRENT — IT EA2 102 — RL013 — PB122

SS EA2 102 — MOTOR REVERSE ROTATION — SERVICE WATER PUMP B LOCKOUT

TA 3 — CPEA2105 — TA EA2 103 — TOP BEARING TEMP — TE EA2 103A — CPEA2105

TE EA2 104A

TA 4 — CPEA2105 — TA EA2 104 — BOTTOM BEARING TEMP — TE EA2 103B — CPEA2105

TE EA2 104B

TO SERV WATER PUMP VIBRATION MONITOR 8600-X-89611 (C4) — PUMP VIBRATION — YE EA2 101G

TE EA2 104C

YE EA2 101H

SC EA2 102 — MOTOR STATOR TEMP — CPEA2105 — CPEA2105

TE EA2 104D

TA 13 — CPEA2105

TO SERV WATER PUMP VIBRATION MONITOR 8600-X-89611 (C3) — PUMP VIBRATION — YE EA2 101J

TE EA2 104E

YE EA2 101K

TE EA2 104F

GL ZLEA 2101B — RL013

RL ZLEA 2101B — RL013

TO SERV WATER PUMP DISCHARGE VALVE TROUBLE ALARM 8600-X-89611 (A4)

TA 9 — CPEA2105 — HS EA2 015B — CPEA2110

PLC 13.2 — CPDD1116

ZS EA2 102A — OPEN — HS EA2 101B — CPEA2107

SERVICE WATER PUMP B LOCKOUT

SERVICE WATER PUMP B TRIP

PI EA2 109B — EA2-145-(R53)-3/8"

VEA2139B — PI EA2 101B — CPEA2110

RL PLEA 2101B — CPEA2107

ZS EA2 102B — CLOSED — GL PLEA 2102B — CPEA2107

1" (F4) — PSE EA2 101B — VEA2140B

PIEA 2016B — PDSEA 2015B — PIEA 2017B — AVEA2102B — 3/4" (V) — VEA2165B

SEE HYDRAULIC SYSTEM 8600-X-89619

VEA2168B — VEA2167B — VEA2166B

FEA2015B STRAINER — 4" X 3" REDUCER — VEA2164B — 1"(D)

VEA2101B

SEA2116 SERVICE WATER MANIFOLD

VEA2161B — VEA2163B — 1"(D) — VEA2162B

EA2-165-(R1)-4"

8600-X-89611 — EA2-163-(R1)-6" — 8600-X-89613

VEA2125B

EA2-137-(F6)-3"

TO SERV WATER MANIFOLD 8600-X-89615 (A3)

VENDOR

PS EA2 101B — SW INSTR RACK — VEA2139E — SW PUMP B LUBE WATER EQUIP RACK

VEA2137B — NOTE 2 — VEA2136B

VEA2138B

3/4" X 3/8" BUSHING

FIS EA2 101B

3/4" X 3/8" BUSHING

VEA2150

3/4" (R53)

EA2-152-(R53)-3/4" — VEA2143E — YS — FEA2103B STRAINER — VEA2143H NOTE 3 — VEA2144B

1/2" (R53)

R53 — R53 — SEA2107B SEAL — VEA2143B — EA2-155-(R53)-3/4"

FROM LUBE WATER FILTERS 8600-X-89614 (D4) — EA2-113-(R53)-3/4"

VENDOR

YE EA2 101L

YE EA2 101I

1/2" (R53) — (TO BAY)

16

PEA2101B
SERVICE WATER PUMP B

SERV WATER PUMP B LOCKOUT

SERV WATER PUMP B TRIP

F&P A 8 — CPEA2105

NOTES:

1. SEE DRAWING 8600-X-89718 FOR SYMBOLS AND LEGEND.
2. INSTRUMENTATION TUBING (3/8" x .065 PER SPEC. 4645-11A SECTION 15Q) FROM ROOT VALVE VDA2136() TO INSTRUMENT AND BLOWDOWN VALVE VDA2138().
3. DRAIN LOCATION TO FACILITATE STRAINER FLUSHING.

AS-BUILT CLASS 1

FOR DRAWING INDEX SEE DRAWING NO. 8600-X-89846

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM SERVICE WATER PUMP PEA2101B (EA2) CIRC. & SERV. WATER PUMPHOUSE FSAR FIGURE 9.2-1 SHEET 5		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION 843	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	8600-X-89612		REV. 16

8600-X-89613

TO BYPASS VALVES 8600-X-89615 (C4)
CIRCUIT BREAKER AUX. CONTACTS
EA II 12303 — MOTOR CURRENT — IT EA2 103 — RL013 — PB123
SS EA2 103 — MOTOR REVERSE ROTATION → SERVICE WATER PUMP C LOCKOUT
TA 5 — CPEA2105 — TA EA2 105 — TOP BEARING TEMP — TE EA2 105A — CPEA2105
TA 6 — CPEA2105 — TA EA2 106 — BOTTOM BEARING TEMP — TE EA2 105B — CPEA2105
TE EA2 106A
TE EA2 106B
TE EA2 106C
TE EA2 106D
TE EA2 106E
TE EA2 106F
TO SERV WATER PUMP VIBRATION MONITOR 8600-X-89611 (D4) — PUMP VIBRATION — YE EA2 101M — YE EA2 101N
TO SERV WATER PUMP VIBRATION MONITOR 8600-X-89611 (C4) — PUMP VIBRATION — YE EA2 101Q — YE EA2 101R
SC EA2 103 — MOTOR STATOR TEMP — CPEA2105 — TA 14 — CPEA2105
TA 9 — CPEA2105 — HS EA2 015C — CPEA2110
PLC 14.2 — CPDD1116
CPEA2110
GL ZLEA 2101C — RL013
RL ZLEA 2101C — RL013
TO SERV WATER PUMP DISCHARGE VALVE TROUBLE ALARM 8600-X-89611 (A4)
ZS EA2 103A — OPEN
HS EA2 101C — CPEA2107
SERVICE WATER PUMP C LOCKOUT
SERVICE WATER PUMP C TRIP
VEA2139C
PI EA2 101C
PI EA2 109C
EA2-146-(R53)-3/8"
1" (F4)
PSE EA2 101C
VEA2140C
PIEA 2016C
PDSEA 2015C
PIEA 2017C
AVEA2102C
3/4" (V)
VEA2168C
VEA2167C
VEA2166C
VEA2165C
RL PLEA 2101C — CPEA2107
ZS EA2 103B — CLOSED
GL PLEA 2102C — CPEA2107
SEE HYDRAULIC SYSTEM 8600-X-89619
PS EA2 101C — SW INSTR RACK
VEA2137C
VEA2138C
NOTE 2
VEA2136C
VEA2139F
SW PUMP C LUBE WATER EQUIP RACK
3/4" X 3/8" BUSHING
FIS EA2 101C
VENDOR
FEA2015C STRAINER
VEA2164C
1"(D)
4" X 3" REDUCER
VEA2161C
VEA2163C
1"(D)
VEA2162C
VEA2101C
SEA2116 SERVICE WATER MANIFOLD
TO CHEMICAL ADDITION SYSTEM 8600-X-9061 (H-8)
VDD1333
SCREEN WASH CONNECTION
VEA2125C
VEA2160
EA2-138-(F6)-3"
TO SERV WATER MANIFOLD 8600-X-89615 (A3)
1/2" (R53)
(TO BAY)
YE EA2 101S
YE EA2 101P
PEA2101C
SERVICE WATER PUMP C
3/4" X 3/8" BUSHING
VEA2151
3/4" (R53)
EA2-153-(R53)-3/4"
VEA2143F
YS
FEA2103C STRAINER
VEA2143I NOTE 3
VEA2144C
1/2" (R53)
R53
R53
SEA2107C SEAL
VEA2143C
EA2-156-(R53)-3/4"
FROM LUBE WATER FILTERS 8600-X-89614 (C4)
EA2-114-(R53)-3/4"
EA2-166-(R1)-4"
TO BLOWDOWN LINE
8600-X-89612
EA2-163-(R1)-6"
8600-X-89618
SERV WATER PUMP C LOCKOUT
SERV WATER PUMP C TRIP
F&P A 15 — CPEA2105

NOTES:

1. SEE DRAWING 8600-X-89718 FOR SYMBOLS AND LEGEND.
2. INSTRUMENTATION TUBING (3/8" X .065 PER SPEC. 4645-11A SECTION 150) FROM ROOT VALVE VDA2136( ) TO INSTRUMENT AND BLOWDOWN VALVE VDA2138( ).
3. DRAIN LOCATION TO FACILITATE STRAINER FLUSHING.

REV.	DATE	DRAWN
7	090893	RBF
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

REDRAWN FOR CLARITY

REV.	DATE	DRAWN
8	092895	RBF
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INC'D. RFR-16166A

REV.	DATE	DRAWN
9	062596	RBF
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INC'D. RFR-16180D

REV.	DATE	DRAWN
10	011498	RAM
CHKD.	SUPV.	APPD.
HLP	AMR	N/A

INCORPORATES MP 93-2023

REV.	DATE	DRAWN
11	050401	RLW
CHKD.	SUPV.	APPD.
MAL	DLB	N/A

INCORP. MP 00-2007 FCN-01 (PARTIAL)

REV.	DATE	DRAWN
12	051001	EWM
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INCORP. MP 00-2007 FCN-01

REV.	DATE	DRAWN
13	052401	JHK
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. MP 00-2007 FCN-02.

REV.	DATE	DRAWN
14	051702	RAM
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INCORPORATES MP 97-2011 FCN-06.

REV.	DATE	DRAWN
15	082902	MAL
CHKD.	SUPV.	APPD.
SKC	TWS	N/A

INCORP. MP 97-2011 FCN-09.

REV.	DATE	DRAWN
16	052602	JHK
CHKD.	SUPV.	APPD.
MAL	TWS	N/A

INCORP. MP 97-2011 FCN-05.

REV.	DATE
17	101304
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. MP 97-2011 FCN-22.

REV.	DATE
18	010405
DRAWN	CHKD.	SUPV.
RLW	MAL	TWS

INCORPORATE MINOR CHANGE CAR 200407615

REV.	DATE
19	042105
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A.

REV.	DATE
20	092208
DRAWN	CHKD.	SUPV.
EWM	RLW	TWS

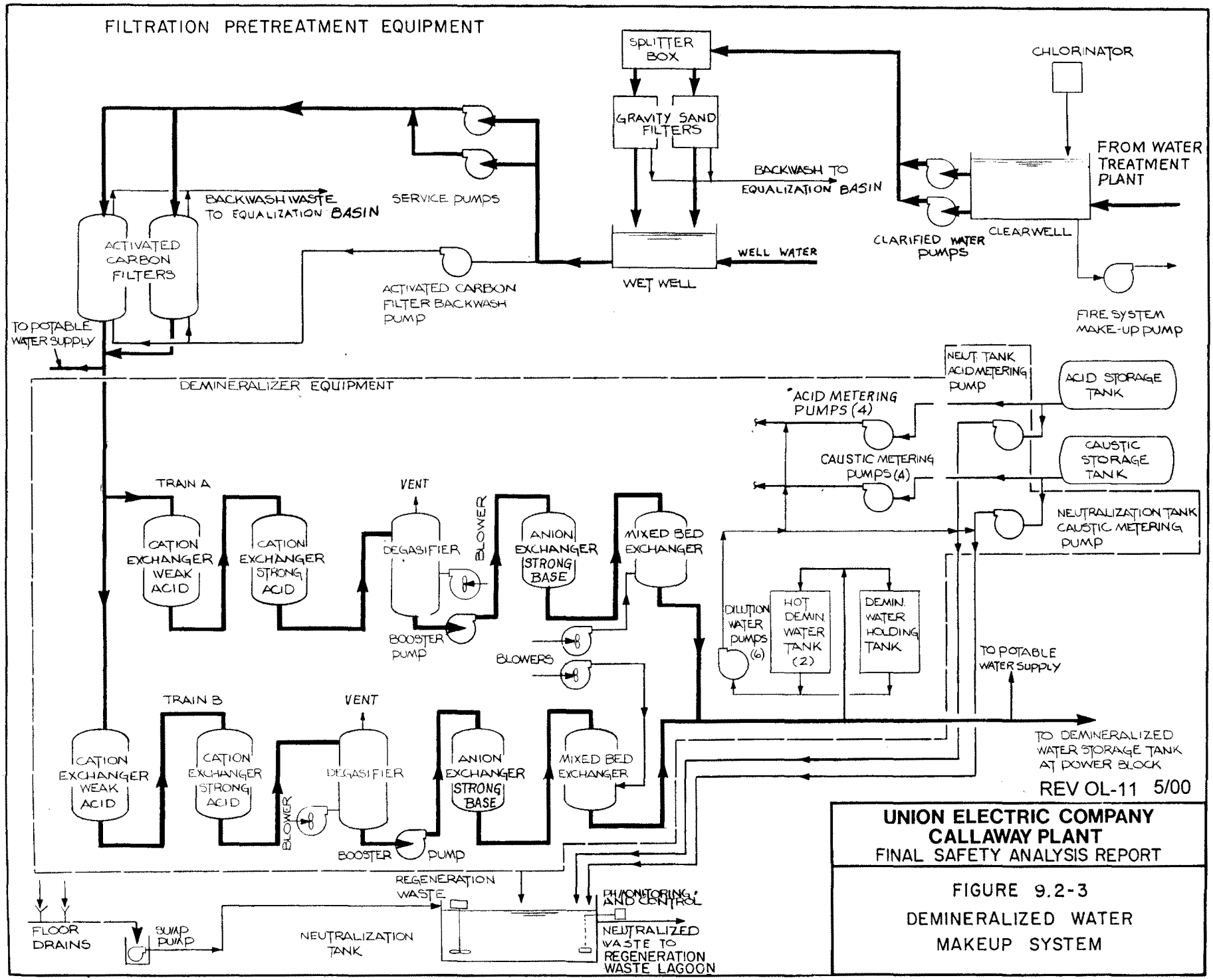
INCORPORATE CAR 200805310

AS-BUILT CLASS 1

FOR DRAWING INDEX SEE DRAWING NO. 8600-X-89846

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM SERVICE WATER PUMP PEA2101C (EA2) CIRC. & SERV. WATER PUMPHOUSE FSAR FIGURE 9.2-1 SHEET 6		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION 843	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	8600-X-89613		REV. 20

FIGURE 9.2-2 has been deleted



UNION ELECTRIC COMPANY
CALLAWAY PLANT
FINAL SAFETY ANALYSIS REPORT

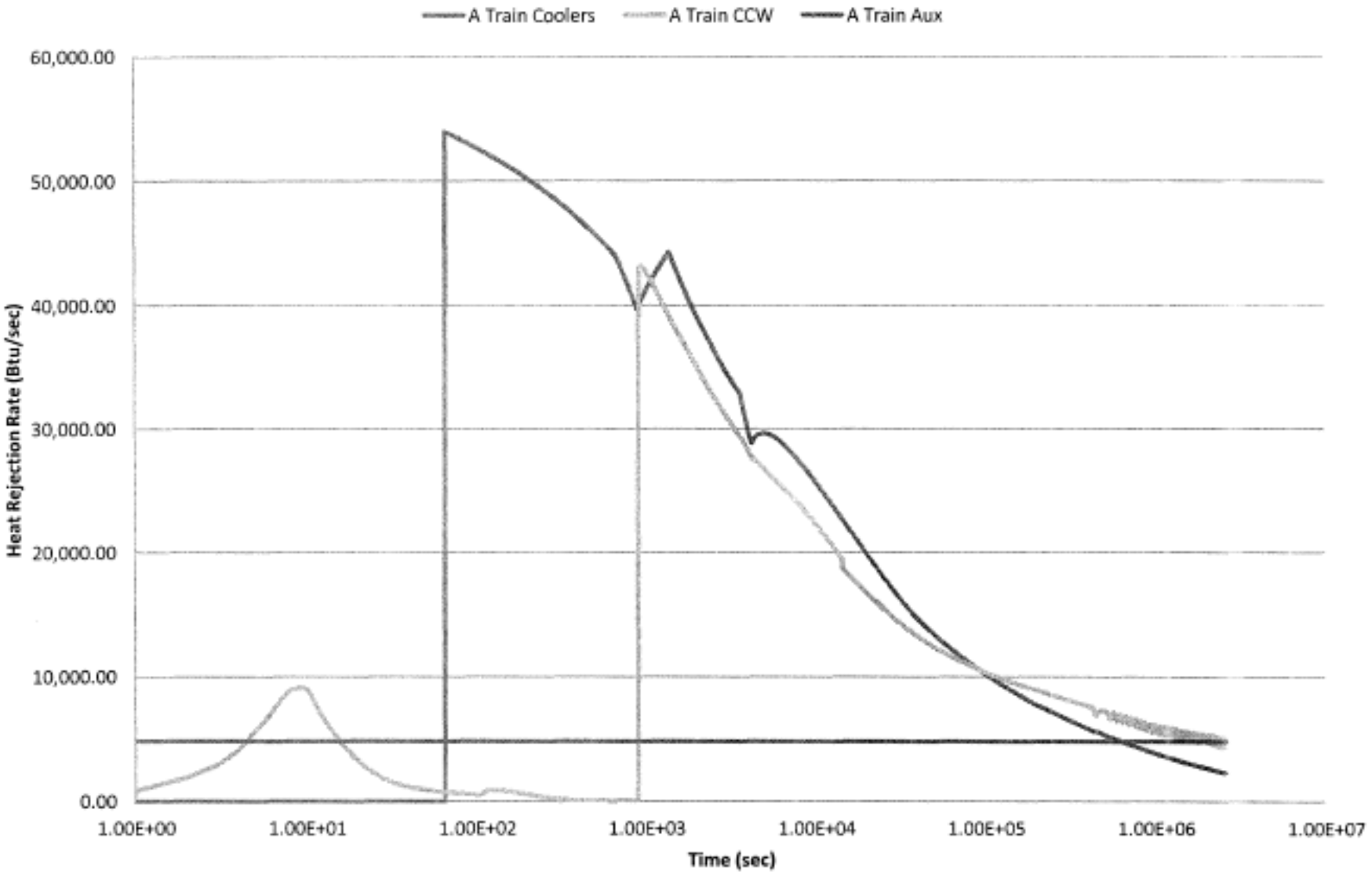
FIGURE 9.2-3
DEMINERALIZED WATER MAKEUP SYSTEM

Figure 9.2-4 Deleted

FIGURE 9.2-5 HAS BEEN DELETED

Figure 9.2-6 replaced with Figures 9.2-6(a) thru 9.2-6(f)

CALLAWAY PLANT
FIGURE 9.2-6 DELETED REV. 16 9/14

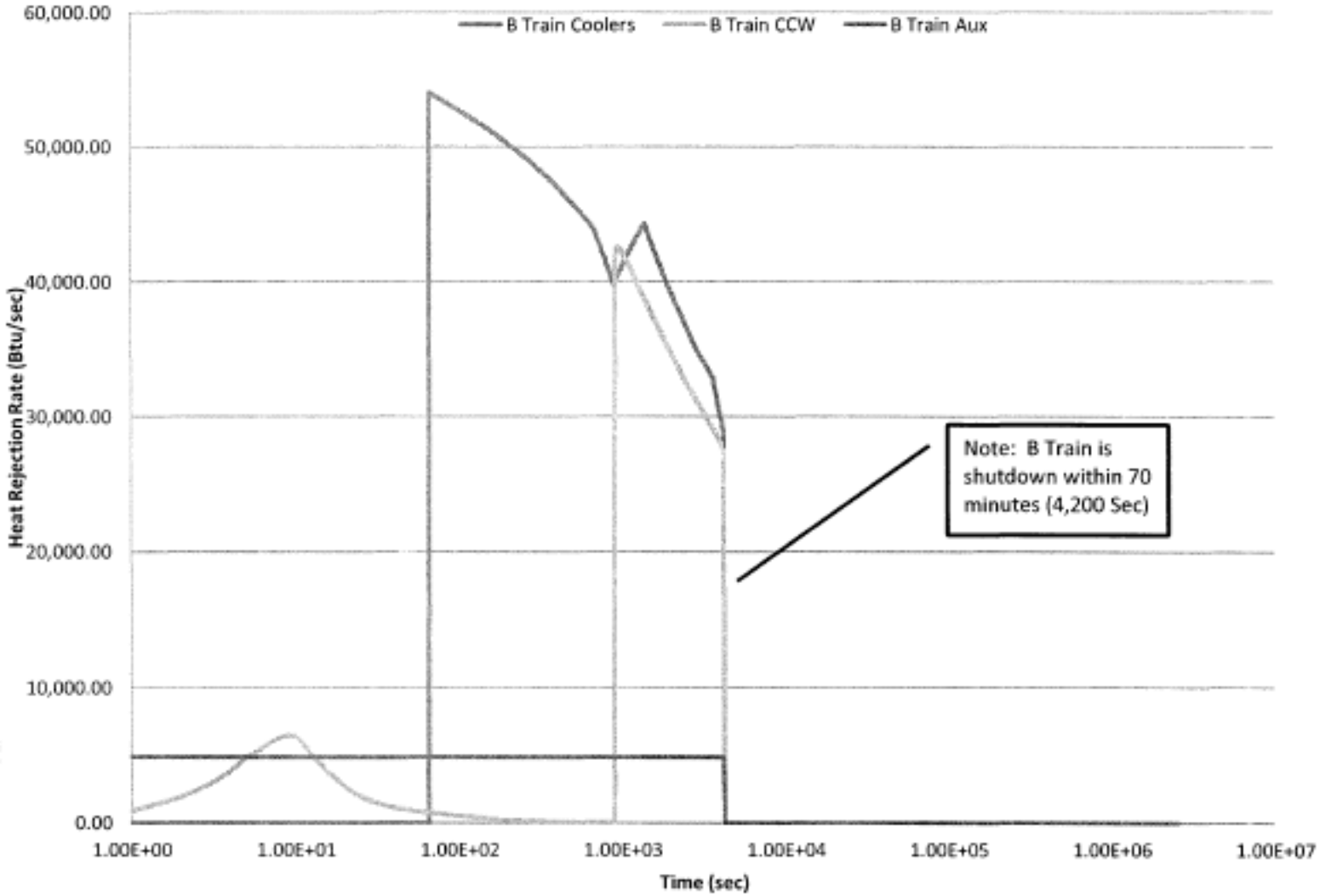


CALLAWAY PLANT

FIGURE 9.2-6(a)

A TRAIN HEAT LOADS TO UHS LBLOCA (MAXEVAP MODEL W/ VALVE FAILURE)

REV. 0 9/14

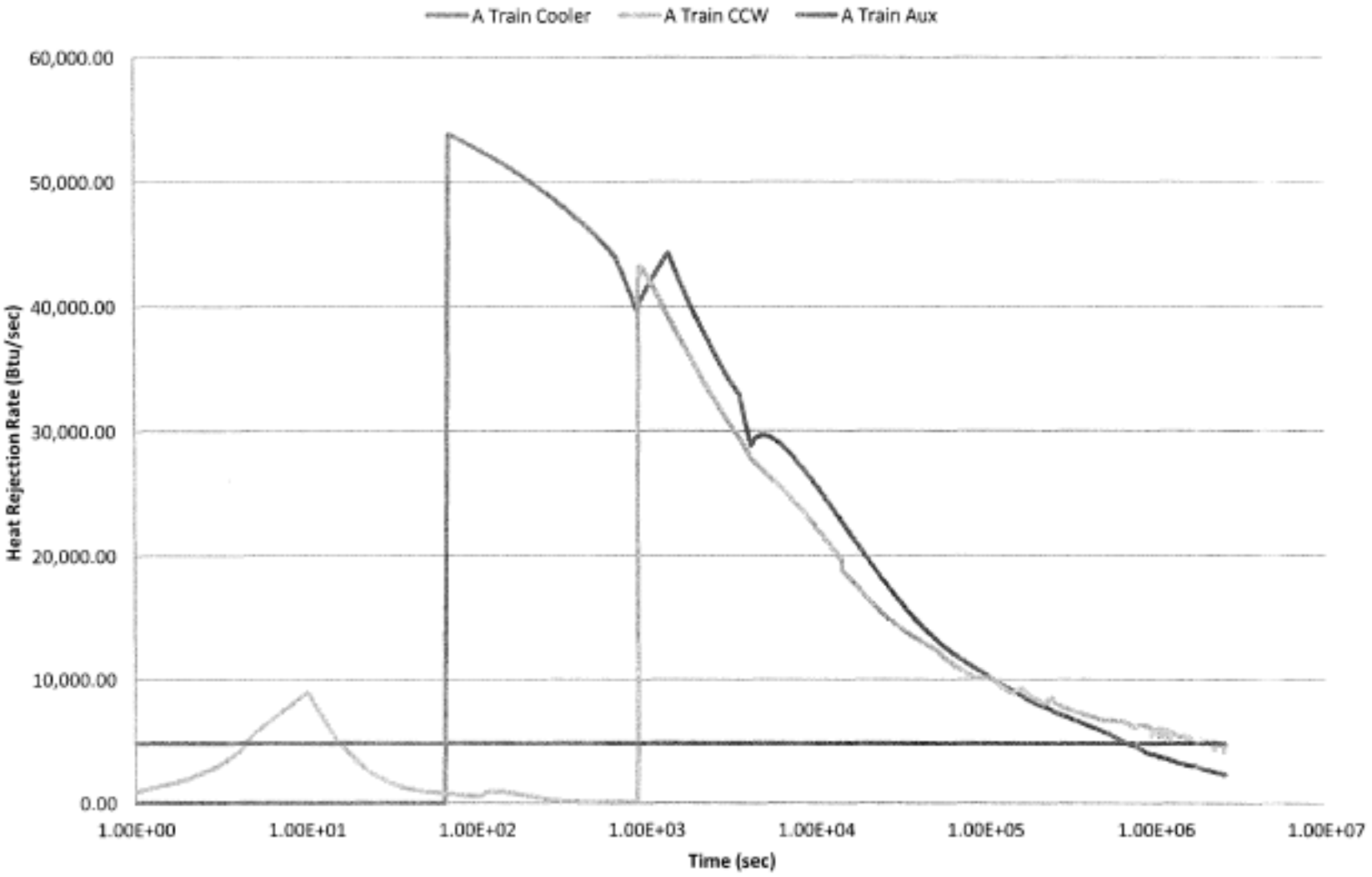


CALLAWAY PLANT

FIGURE 9.2-6(b)

B TRAIN HEAT LOADS TO UHS LBLOCA (MAXEVAP MODEL W/ VALVE FAILURE)

REV. 0 9/14

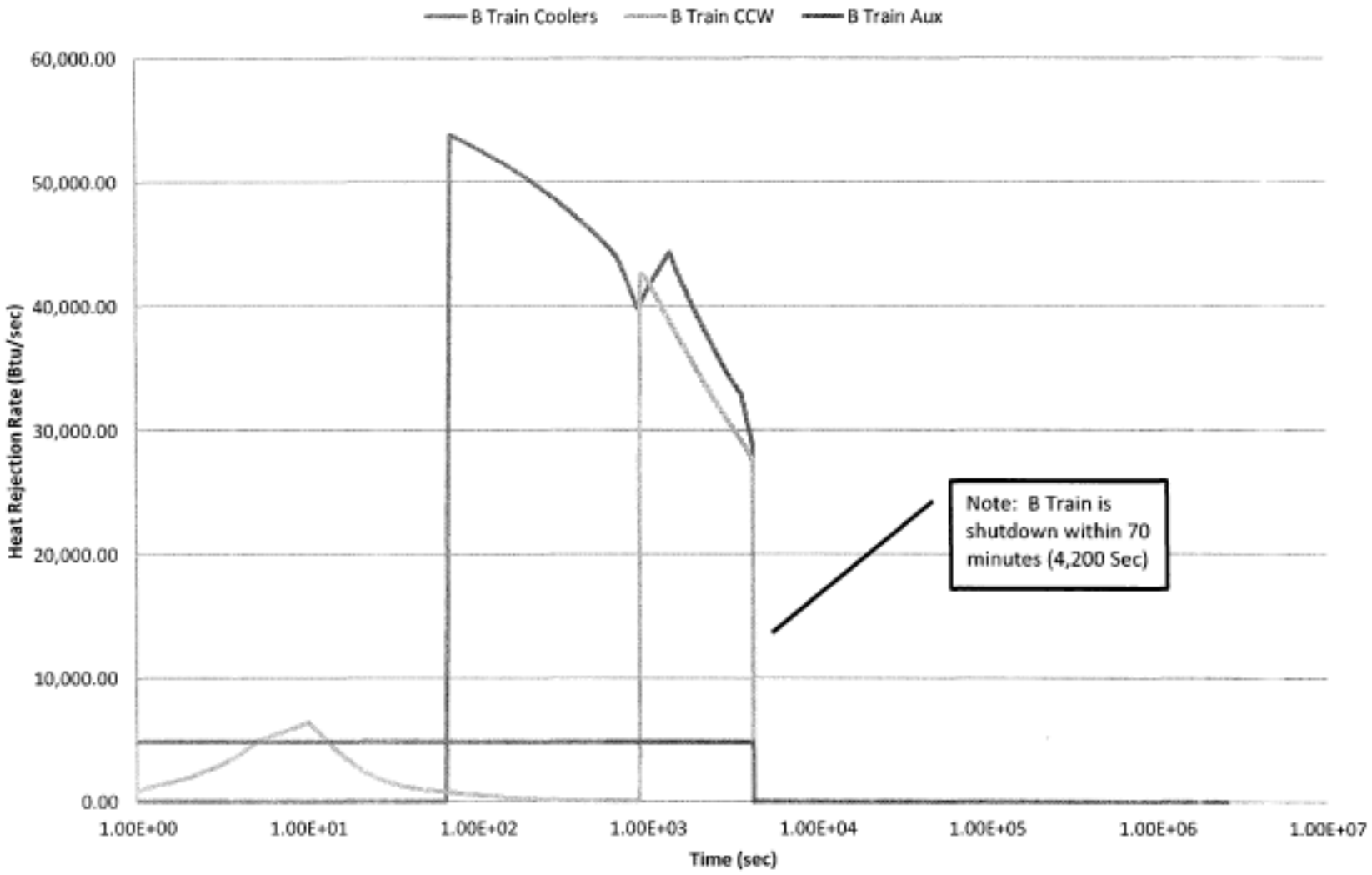


CALLAWAY PLANT

FIGURE 9.2-6(c)

A TRAIN HEAT LOADS TO UHS LBLOCA (MINHT MODEL W/ VALVE FAILURE)

REV. 0 9/14

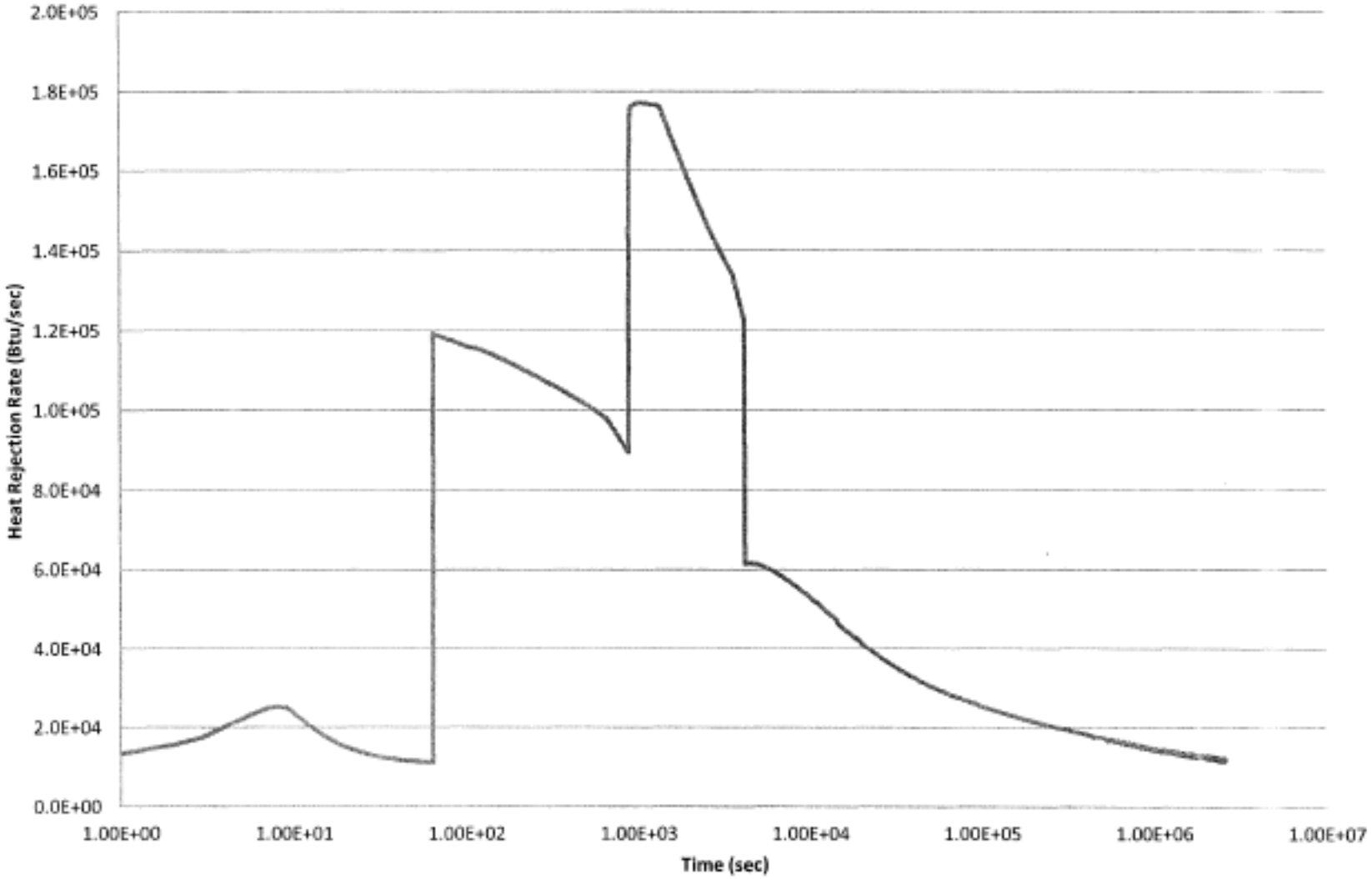


CALLAWAY PLANT

FIGURE 9.2-6(d)

B TRAIN HEAT LOADS TO UHS LBLOCA (MINHT MODEL W/ VALVE FAILURE)

REV. 0 9/14

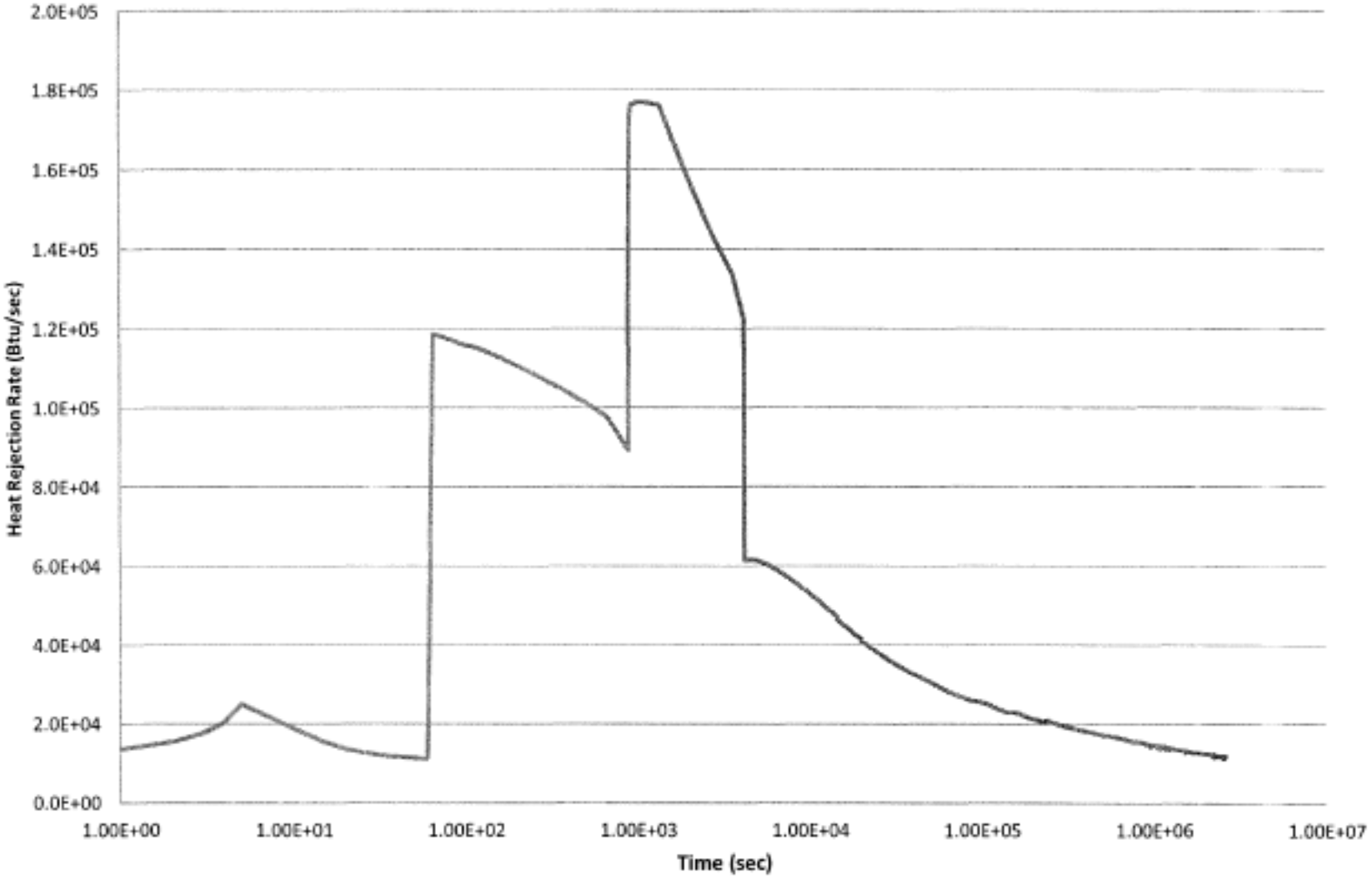


CALLAWAY PLANT

FIGURE 9.2-6(e)

TOTAL HEAT REJECTION RATE TO THE UHS
LBLOCA
(MAXEVAP MODEL W/ VALVE FAILURE)

REV. 0 9/14



CALLAWAY PLANT

FIGURE 9.2-6(f)

TOTAL HEAT REJECTION RATE TO THE UHS
LBLOCA
(MINHT MODEL W/ VALVE FAILURE)

REV. 0 9/14

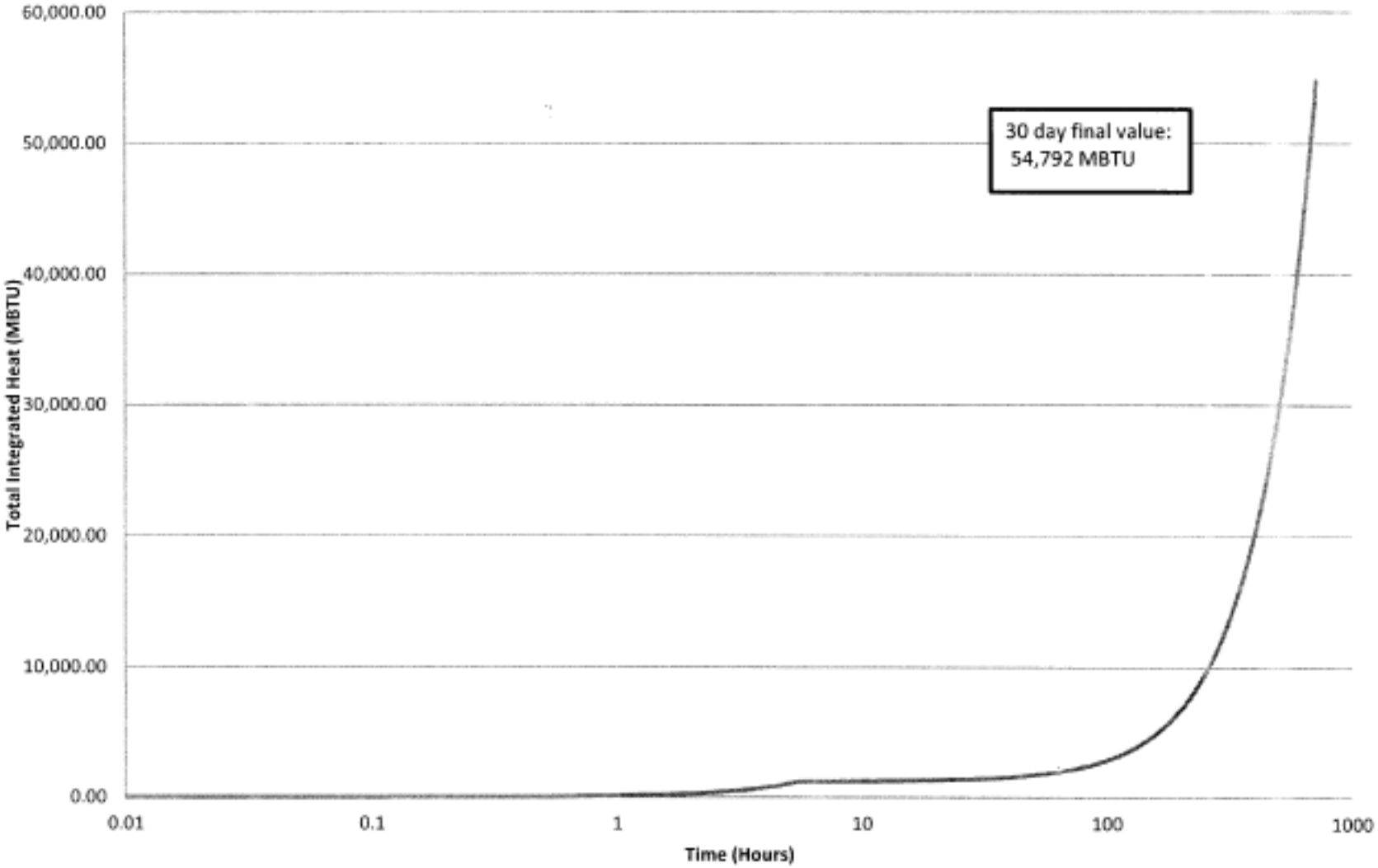
Figure 9.2-7 replaced with Figure 9.2-7(a) and 9.2-7(b)

CALLAWAY PLANT

FIGURE 9.2-7

DELETED

REV. 16 9/14

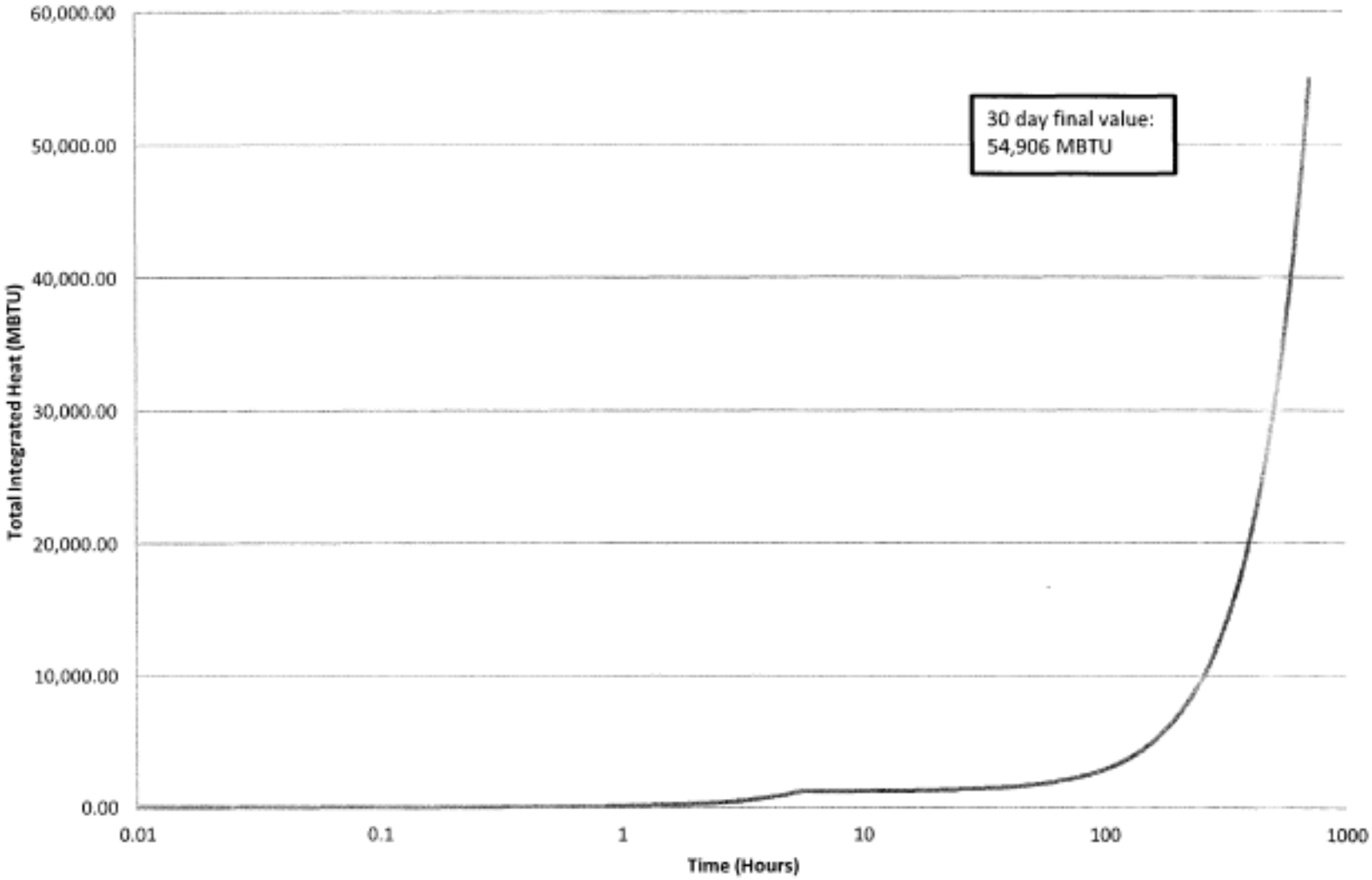


CALLAWAY PLANT

FIGURE 9.2-7(a)

30 DAY TOTAL INTEGRATED HEAT TO UHS LBLOCA (MAXEVAP MODEL W/ VALVE FAILURE)

REV. 0 9/14

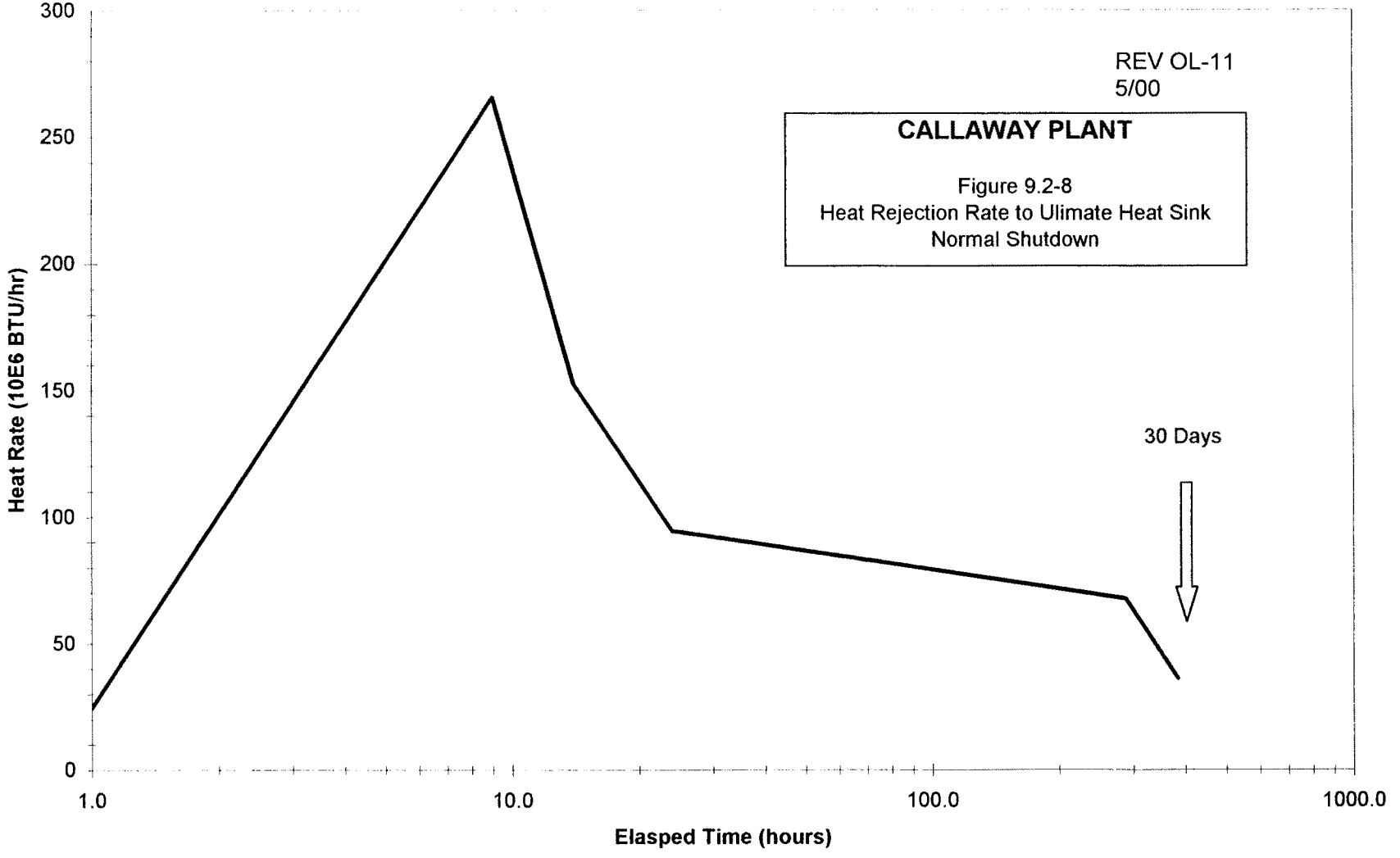


CALLAWAY PLANT

FIGURE 9.2-7(b)

30 DAY TOTAL INTEGRATED HEAT TO UHS LBLOCA (MINHT MODEL W/ VALVE FAILURE)

REV. 0 9/14

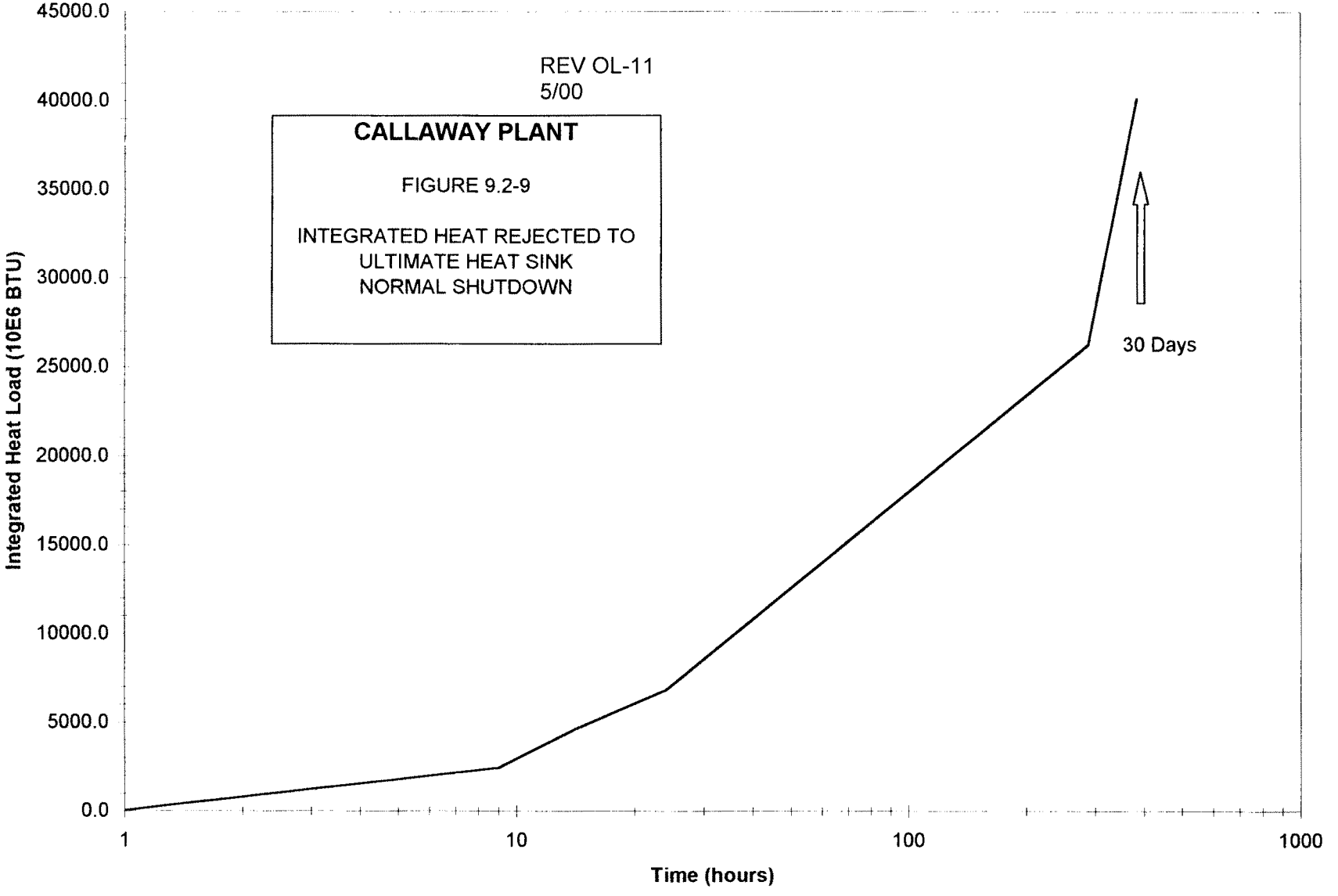

REV OL-11
5/00
CALLAWAY PLANT
Figure 9.2-8
Heat Rejection Rate to Ulimate Heat Sink
Normal Shutdown
30 Days
Heat Rate (10E6 BTU/hr)
300
250
200
150
100
50
0
1.0
10.0
100.0
1000.0
Elasped Time (hours)

REV OL-11
5/00

CALLAWAY PLANT

FIGURE 9.2-9

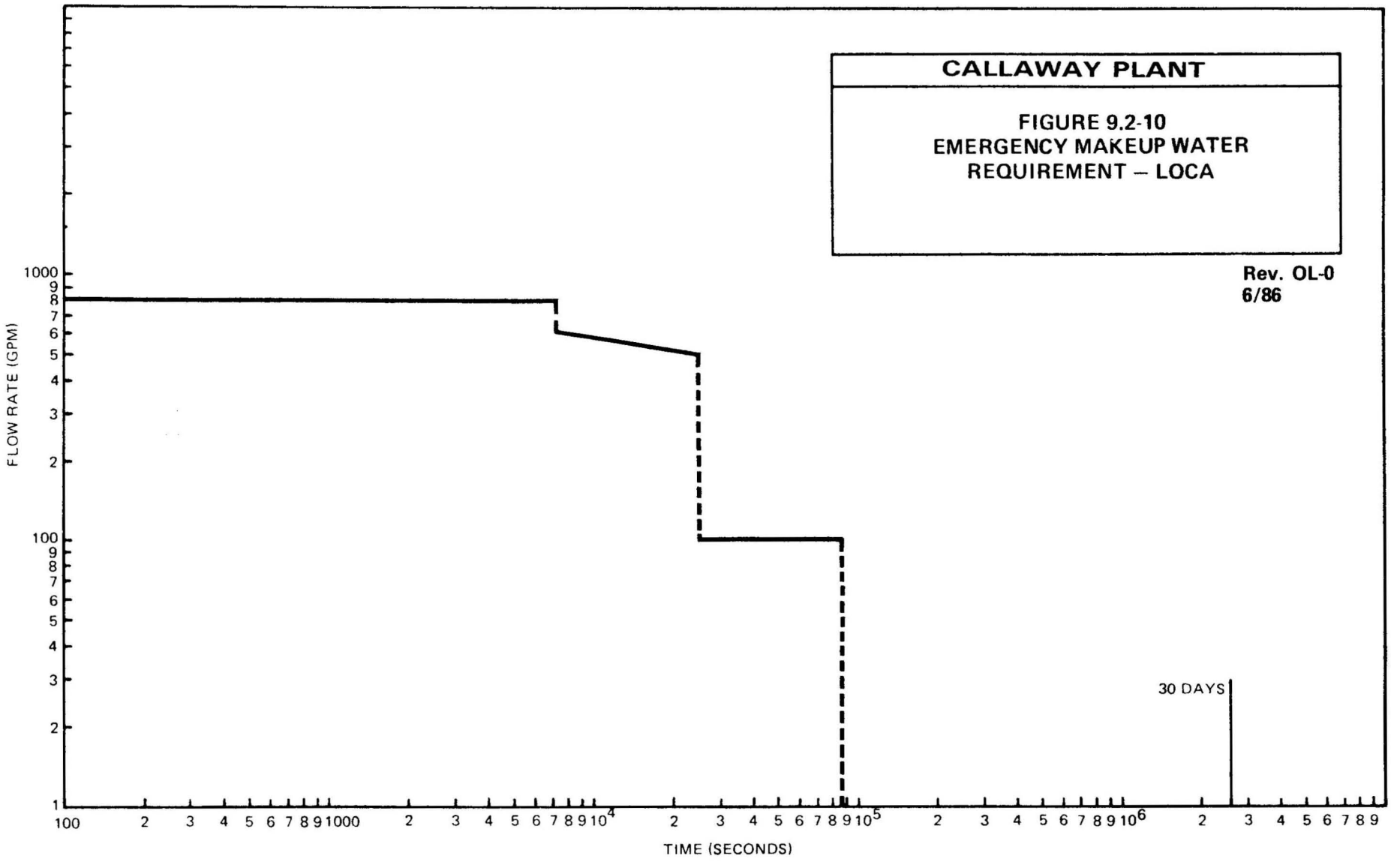
INTEGRATED HEAT REJECTED TO
ULTIMATE HEAT SINK
NORMAL SHUTDOWN

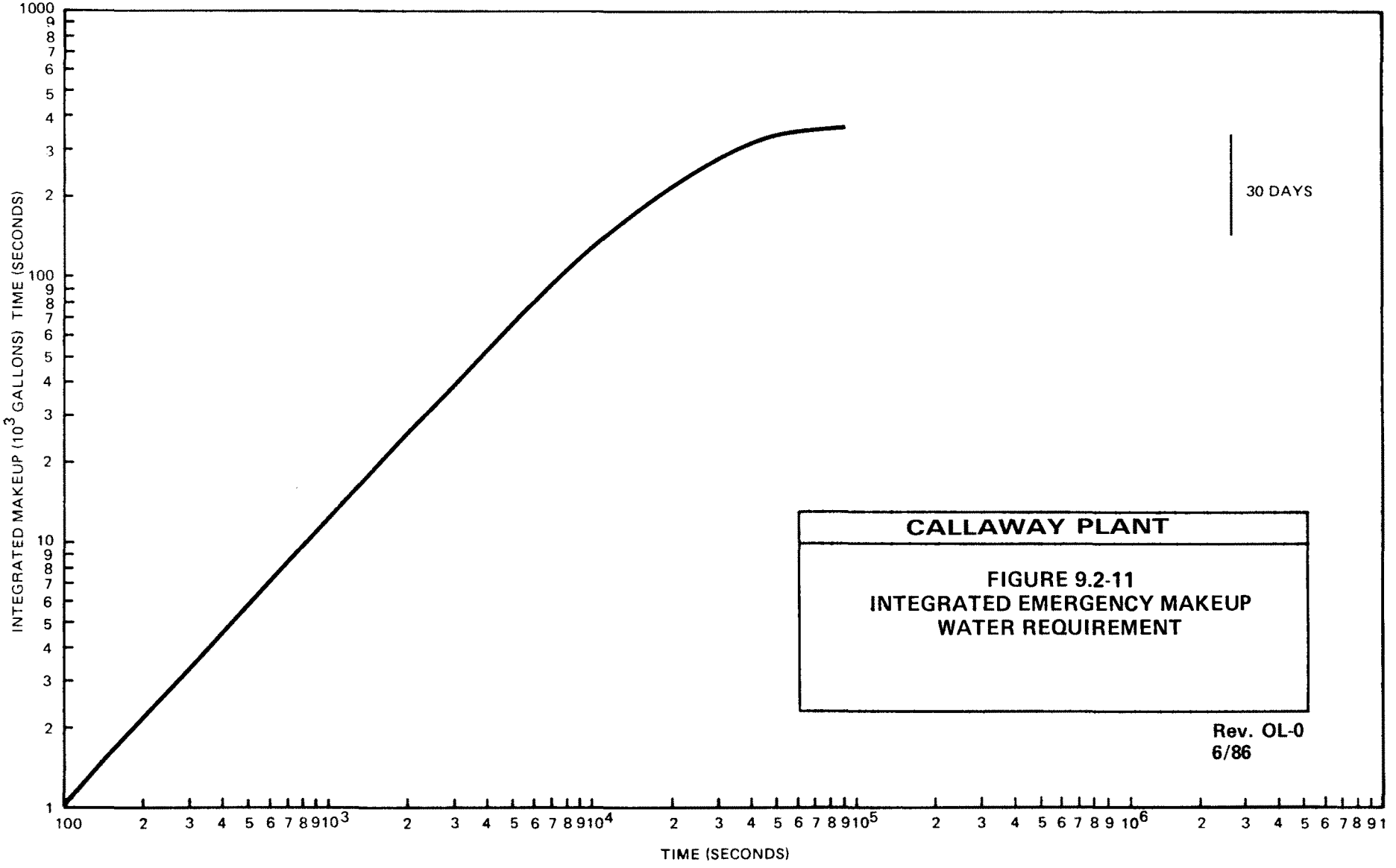


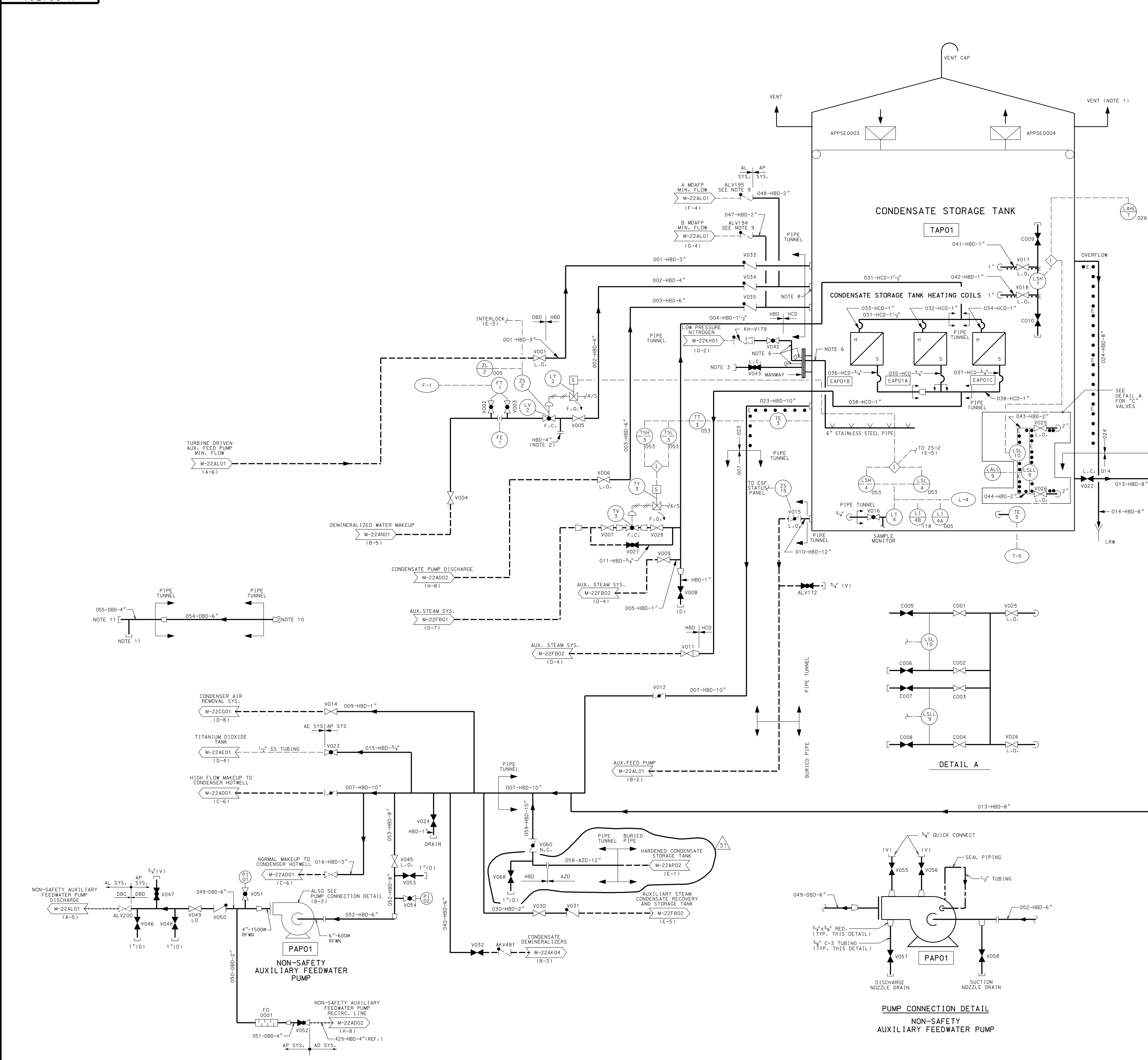
CALLAWAY PLANT

FIGURE 9.2-10
EMERGENCY MAKEUP WATER REQUIREMENT – LOCA

Rev. OL-0
6/86




INTEGRATED MAKEUP (10^3 GALLONS) TIME (SECONDS)
1000
100
10
1
TIME (SECONDS)
100
10^3
10^4
10^5
10^6
30 DAYS
CALLAWAY PLANT
FIGURE 9.2-11
INTEGRATED EMERGENCY MAKEUP
WATER REQUIREMENT
Rev. OL-0
6/86



NOTES:

1. COMBINED VENT AND INSPECTION HATCH.
2. THESE POINTS TO PROVIDE CONNECTION POINTS FOR REMOVABLE DEOXYGENATION EQUIPMENT.
3. THIS POINT TO PROVIDE A CONNECTION FOR REMOVABLE DEOXYGENATION EQUIPMENT AND A CONNECTION FOR EMERGENCY CST FILL FROM THE FIRE PROTECTION SYSTEM. DO NOT REMOVE THE FLANGE WITHOUT SS/OS PERMISSION SINCE THIS IS AN EOP REQUIREMENT. THIS CONNECTION IS ALSO USED FOR BEYOND-DESIGN-BASIS (FLEX) EMERGENCY CORE COOLING PUMP SUCTION.
4. DELETED.
5. DELETED.
6. THIS PIPING IS STAINLESS STEEL. REF. RFR-21817A.
7. DELETED.
8. SCREEN INSTALLED OVER THE DEMINERALIZED WATER MAKE UP. SCREEN DETAILS ARE SHOWN ON DRAWING M-109-00098.
9. INTERNALS HAVE BEEN REMOVED FROM THIS VALVE.
10. THIS CONNECTION IS FOR BEYOND-DESIGN-BASIS (FLEX) EMERGENCY CORE COOLING ONLY. THIS CONNECTION REDUCES FROM 6" TO 4".
11. THIS CONNECTION IS FOR BEYOND-DESIGN-BASIS (FLEX) EMERGENCY CORE COOLING ONLY. SEE M-22AL01 (A-6) AND (G-5) FOR TIE-IN LOCATION.

REV.	DATE	DRAWN	CHKD.	SUPV.	APPD.	DESCRIPTION
6	4/15/91	SKC	HLP	TJM	N/A	REDRAWN FOR CLARITY
7	121691	JHK	EWM	TJM	N/A	INCORP RFR-09628A.
8	022892	SBR	HLP	TJM	N/A	INCORP. RMP 88-2016
9	050792	JHK	RLW	TJM	N/A	INCORP. RFR-09204B (MINOR MOD).
10	030695	MAL	RBF	AMR	N/A	INCORP. RFR-07462B.
11	092895	RBF	DJB	AMR	N/A	INC'D. RFR-16374A
12	030896	RBF	DJB	AMR	N/A	INC'D. TEMP MOD 95-M010
13	051596	RBF	DJB	AMR	N/A	INC'D. RFR-16974A
14	102500	JHK	MAL	AMR	N/A	INCORP. RFR-09204D.
15	010801	JHK	MAL	AMR	N/A	INCORP. MP 99-2019 FCN-01.
16	020402	JHK	MAL	AMR	N/A	INCORP. RFR-21798D.
17	020802	JHK	MAL	JHC	N/A	INCORP. RFR-21817A.
18	021902	JHK	MAL	AMR	N/A	INCORP. TEMP. MOD. 02-0005.
19	031802	JHK	MAL	AMR	N/A	REMOVE TEMP. MOD. 02-0005.
20	111102	MAL	RLW	DLB		INCORP. MP 02-1012A.
21	060204	EWM	JHK	MAM		INCORPORATE MP 02-1018 FCN 10.
22	110904	TJC	MAL	TWS		INCORPORATE RFR-22941A.
23	032105	RLW	EWM	TWS		INCORPORATE MP 02-1008A
24	041905	MAL	RLW	TWS		INCORP. MINOR CHANGE CARS 200500826.
25	120505	JHK	MAL	SKC		INCORP. AC 05-000115.
26	060710	RLW	EWM	TWS		INCORPORATE MP 10-0031
27	063010	MAL	TJC	LMP		INCORP. MP 10-0032, REV. 0.
28	041311	MAL	TJC	SKC		INCORP. CAR 201101980.
29	110114	TJC	JHK	SKC		INCORP. MP 13-0024, REV. 0.
30	041216	RLW	MAL	LMP		INCORPORATE MP 13-0033 REV. 0, FCN-02 (PARTIAL).
31	042216	MAL	RLW	JEN		INCORP. MP 13-0033, REV. 0, FCN-02 (FINAL).

AS-BUILT CLASS 1

DRAWN N/A (DATE)
CHKD. N/A (DATE)
SUPV. N/A (DATE)
APPD. N/A (DATE)

PIPING AND INSTRUMENTATION DIAGRAM
CONDENSATE STORAGE AND TRANSFER SYSTEM
FSAR FIGURE 9.2-12

LOCATION: CALLAWAY ENERGY CENTER
CLASS

UNION ELECTRIC COMPANY ST. LOUIS, MO

M-22AP01 REV. 31

M-22BL01 (Q)

REACTOR MAKE-UP WATER STORAGE TANK

TBL01

REACTOR MAKE-UP WATER TRANSFER PUMP

PBL01A

REACTOR MAKE-UP WATER TRANSFER PUMP

PBL01B

6" BREATHER CAP

DIAPHRAGM

REACTOR MAKE-UP STORAGE TANK HEATING COILS

SEE NOTE 9

SEE NOTE 6

DEMINERALIZED WATER SYSTEM M-22AN01 (F-1)

RECYCLE EVAPORATOR CONDENSATE FILTER M-22HE03 (C-2)

WASTE EVAPORATOR CONDENSATE PUMP M-22HB03 (D-2)

DEMINERALIZED WATER SYSTEM M-22AN01 (F-2)

LOCAL SAMPLE CONN.

NUCLEAR SAMPLING SYSTEM M-22SJ01 (D-8)

TSJ01 FILL/FLUSH LINE

CIS-A CLOSES

AUXILIARY STEAM SYSTEM M-22FB02 (G-5)

AUXILIARY STEAM SYSTEM M-22FB02 (G-4)

AUXILIARY STEAM SYSTEM M-22FB02 (G-4)

FLOOR AND EQUIPMENT DRAIN SYSTEM M-22LF06 (E-7)

GASEOUS RADWASTE SYSTEM COMPONENTS M-22HA01 (G-7)

TO EVAP. BOTTS TANK PUMP SEC.

SOLID RADWASTE SYSTEM COMPONENTS M-22HC01 (A-8)

BORON RECYCLE EVAP. CNDS. DEMINERALIZER M-22HE03 (G-2)

RESIN CHARGING TANK RADWASTE M-22HC04 (H-8)

LIQUID RADWASTE RECYCLE EVAPORATORS M-22HE03 (H-3)

SECONDARY LIQUID WASTE EVAPORATOR M-22HF04 (F-8)

RESIN CHARGING SYSTEM (CVCS) M-22HC04 (D-7)

CHEMICAL AND VOLUME CONTROL SYSTEM COMPONENTS M-22BG05 (E-4)

DEMINERALIZED WATER DEGASIFIER M-22HB03 (B-5)

BORON INJECTION TANK DILUTION LINE M-22EM02 (E-4)

TO DECONTAMINATION ROOM M-22HD01 (H-8)

REACTOR COOLANT PUMP "A" STANDPIPE M-22BB03A (E-4)

REACTOR COOLANT PUMP "D" STANDPIPE M-22BB03D (E-4)

REFUELING POOL CLEAN-UP (SEE NOTE 7)

REACTOR VESSEL HEAD DECONTAMINATION & REFUELING POOL CLEAN-UP

REACTOR COOLANT PUMP "B" STAND PIPE M-22BB03B (E-4)

REACTOR COOLANT PUMP "C" STAND PIPE M-22BB03C (E-4)

SPENT FUEL POOL M-22EC01 (G-2)

PRESSURIZER RELIEF TANK M-22BB02 (F-2)

SPENT FUEL SHIPPING CASK WASH DOWN PIT M-22HD01 (B-6)

FUEL TRANSFER SYSTEM ELECTRICAL CONTROL AND HYDRAULIC POWER UNIT HKE09B

FUEL TRANSFER SYSTEM ELECTRICAL CONTROL AND HYDRAULIC POWER UNIT HKE09A

TO EVAP. BOTTS TANK PUMP PRI.

1" PIPE TO 1/2" TUBING SWMP TUBING ADAPTORS

NOTES:

1. THE PORTIONS OF THE REACTOR MAKE-UP WATER SYSTEM WHICH ARE Q-LISTED INCLUDE THE PIPING AND VALVES ASSOCIATED WITH CONTAINMENT ISOLATION ONLY.
2. DELETED.
3. AN ABOVE GRADE STRUCTURE IS PROVIDED TO HOUSE PIPING AND VALVES ADJACENT TO THE REACTOR MAKE-UP WATER STORAGE TANK.
4. FOR P&ID LEGEND & SYMBOLS, SEE DRAWINGS M-220101 THRU M-220104.
5. DELETED.
6. START-UP FLUSHING CONNECTIONS.
7. THESE LOCATIONS ARE ACCEPTABLE FOR TEMPORARY HOSE CONNECTIONS TO OBTAIN WATER FOR HEAD DECONTAMINATION AND REFUELING POOL CLEANUP. MATERIAL AND DESIGN RATINGS OF HOSE CONNECTIONS MUST BE COMPATIBLE WITH THE PIPE CLASS.
8. CAM LOCK TYPE FITTINGS ARE EQUIVALENT REPLACEMENTS FOR NPT PIPE CAPS AS LIMITED BY RFR-15026 FOR THE BL SYSTEM.
9. NITROGEN IS ADDED BELOW THE DIAPHRAGM TO PREVENT ADHESION TO THE TANK WALL. THE NITROGEN IS MAINTAINED PER PM'S TIED TO TBL01 COMPONENT I.D.

AS-BUILT CLASS 1

DRAWN	(DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM REACTOR MAKE-UP WATER SYSTEM	
CHKD.	(DATE) N/A	FSAR FIGURE 9.2-13	
SUPV.	(DATE) N/A		
APPD.	(DATE) N/A	LOCATION: CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO		M-22BL01 (Q)	REV. 26

REV.	DATE	DRAWN
7	042991	GDC
CHKD.	SUPV.	APPD.
HLP	TJM	N/A

REDRAWN FOR CLARITY. DEC-645 & RFR-08970A

REV.	DATE	DRAWN
8	101691	JHK
CHKD.	SUPV.	APPD.
RAM	TJM	N/A

INCORP. CMP 87-1012 FCN-04.

REV.	DATE	DRAWN
9	022692	MAL
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. RMP 90-2005 & DEC-0787.

REV.	DATE	DRAWN
10	032693	RLW
CHKD.	SUPV.	APPD.
DLBr	TJM	N/A

INCORP. RFR-10750.

REV.	DATE	DRAWN
11	122894	RLW
CHKD.	SUPV.	APPD.
DLBr	JHC	N/A

INCORP. RFR-15026A.

REV.	DATE	DRAWN
12	093096	DJB
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. RMP 93-2033

REV.	DATE	DRAWN
13	012297	RLW
CHKD.	SUPV.	APPD.
DLBr	AMR	N/A

INCORP. RFR-17575A

REV.	DATE	DRAWN
14	112697	RLW
CHKD.	SUPV.	APPD.
DLBr	AMR	N/A

INCORP. DEC-1488.

REV.	DATE	DRAWN
15	092398	RLW
CHKD.	SUPV.	APPD.
DJB	JHC	N/A

INCORP. MP 89-1035 (PARTIAL)

REV.	DATE	DRAWN
16	112498	RLW
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INCORP. MP 89-1035 (PARTIAL)

REV.	DATE	DRAWN
17	080502	SKC
CHKD.	SUPV.	APPD.
DJB	TWS	N/A

INCORP. MP 01-1002A

REV.	DATE
18	020403
DRAWN	CHKD. SUPV.
RLW	EWM TDH

INCORPORATE MP 89-1035A (PARTIAL)

REV.	DATE
19	082003
DRAWN	CHKD. SUPV.
RLW	MAL TWS

INCORPORATE MINOR CHANGE CAR 200305155

REV.	DATE
20	013004
DRAWN	CHKD. SUPV.
RLW	MAL TWS

INCORPORATE RFR-23139A

REV.	DATE
21	110904
DRAWN	CHKD. SUPV.
MAL	RLW TWS

INCORP. RFR-22941A.

REV.	DATE
22	031705
DRAWN	CHKD. SUPV.
RLW	TJC SKC

INCORPORATE MP 01-1018A

REV.	DATE
23	110308
DRAWN	CHKD. SUPV.
RLW	EWM LMR

INCORPORATE MP 89-1035A (PARTIAL)

REV.	DATE
24	030910
DRAWN	CHKD. SUPV.
EWM	RLW TWS

INCORPORATE CAR 201000524

REV.	DATE
25	101910
DRAWN	CHKD. SUPV.
RLW	TJC SKC

INCORPORATE MP 89-1035A (FINAL)

REV.	DATE
26	120710
DRAWN	CHKD. SUPV.
TJC	MAL TWS

INCORP. CAR 201010361.

M-22EB01

REV.	DATE
18	033006
DRAWN	CHKD. | SUPV.
RLW	EWM | TWS
INCORPORATE AC 06-000011, CAR 200600194	
REV.	DATE
19	021407
DRAWN	CHKD. | SUPV.
RLW	EWM | TWS
INCORPORATE AC 06-000185, RFR 200600956	
REV.	DATE
20	042107
DRAWN	CHKD. | SUPV.
EWM	TJC | SKC
INCORPORATE MP 06-0005A	
REV.	DATE
21	050707
DRAWN	CHKD. | SUPV.
EWM	RLW | TWS
INCORPORATE MP 06-0004	
REV.	DATE
22	112508
DRAWN	CHKD. | SUPV.
MAL	TJC | TWS
INCORP. CHANGE REQUEST CAR 08-000185 (CAR 200801744, ACTION 6.7).	

EHC FLUID COOLERS

ECH01A

ECH01B

EHC OIL COOLERS

EHC FLUID (SEE NOTE 2)

HEATER DRAIN PUMP MOTOR AND SEAL COOLERS

EFC01A

EFC01B

EFC01C

EFC01D

STEAM GENERATOR FEEDWATER PUMP TURBINE LUBE OIL COOLERS

PAF01A

PAF01B

CONDENSATE PUMP MOTOR BEARING OIL COOLERS

PAD01A

PAD01B

PAD01C

SECONDARY SYSTEM SAMPLE COOLER

GENERATOR ISOPHASE BUS DUCT COOLER

EMA01

CORROSION COUPON RACK

TO LOCAL ALARM PANEL TVMA06

STEAM GENERATOR RECIRCULATION SAMPLE COOLERS

EBM03C

EBM03B

EBM03A

EBM03D

CLOSED COOLING WATER CHEMICAL ADDITION TANK

TEB02

CLOSED COOLING WATER SURGE TANK

TEB01

CLOSED COOLING WATER PUMP

PEB01A

CLOSED COOLING WATER PUMP

PEB01B

CLOSED COOLING WATER HEAT EXCHANGERS

EEB01A

EEB01B

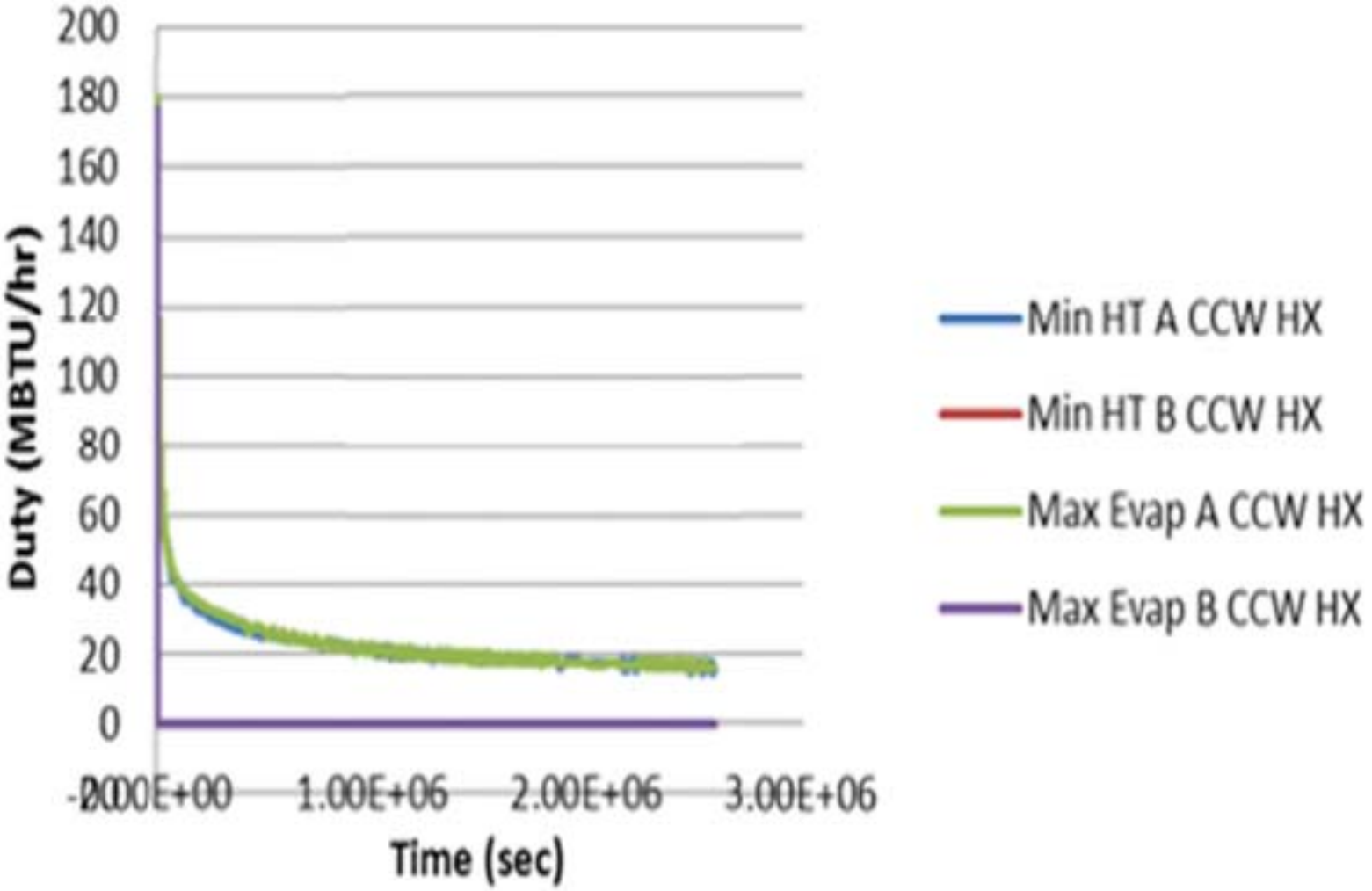
DETAIL A

NOTES:

1. ALL CAPPED DRAINS-DRAIN TO PORTABLE CONTAINER OR TO CLOSED COOLING WATER SURGE TANK VIA PORTABLE PUMP.
2. REFER TO GENERAL ELECTRIC DWG. 162C1916, SHEETS 8 & 26 (BECHTEL NO. M-855-00008 & 026).
3. DELETED
4. TE-71 BELONGS TO THE (CH) SYSTEM.
5. DELETED
6. THE ORIFICE PLATE HAS BEEN REMOVED FROM EB-FE-0037.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM CLOSED COOLING WATER SYSTEM FSAR FIGURE 9.2-14		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22EB01		REV. 22

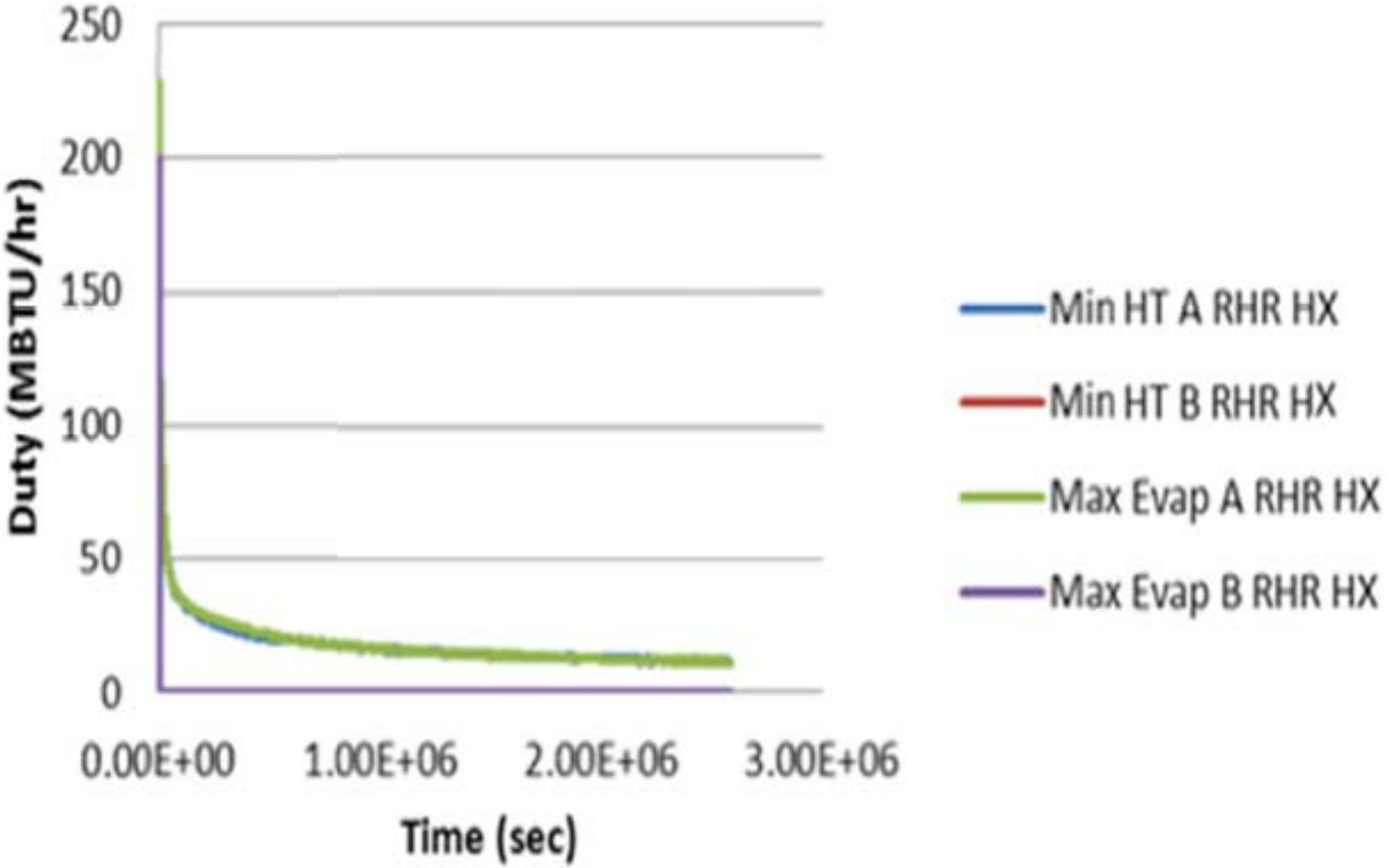


CALLAWAY PLANT

FIGURE 9.2-15

CLOSED COOLING WATER HEAT EXCHANGER LOCA DUTY

Rev. 0 3/13



CALLAWAY PLANT

FIGURE 9.2-16

RESIDUAL HEAT REMOVAL HEAT EXCHANGER LOCA DUTY

Rev. 0 3/13

M-22KA01(Q)

REV.	DATE	DRAWN
28	062999	DLBr
CHKD.	SUPV.	APPD.
SKC	AMR	N/A
INCORP RFR-19822A		
REV. 29	DATE 042005	
DRAWN TJC	CHKD. MAL	SUPV. TWS
INCORP. RFR 22941A		
REV. 30	DATE 033006	
DRAWN JHK	CHKD. MAL	SUPV. SKC
INCORP. AC 06-000052.		
REV. 31	DATE 061208	
DRAWN MAL	CHKD. TJC	SUPV. TWS
INCORP. TM 08-0003.		
REV. 32	DATE 062408	
DRAWN MAL	CHKD. TJC	SUPV. TWS
INCORP. CHANGE REQUEST TM 08-0003 REM. (REMOVE TM 08-0003).		
REV. 33	DATE 052512	
DRAWN TJC	CHKD. RLW	SUPV. SKC
INCORP. MP 08-0005 FCN-03.		
REV. 34	DATE 021213	
DRAWN MAL	CHKD. RLW	SUPV. DME
INCORP. MP 08-0005 FCN-05 (PARTIAL FOR CKA01A AND CKA01C ONLY).		
REV. 35	DATE 031213	
DRAWN MAL	CHKD. RLW	SUPV. LMP
INCORP. MP 08-0005 FCN-05 (FINAL). CKA01B ONLY		

NOTES:

1. COMPRESSOR P&ID IS SHOWN ON DRAWING M-22KA07.
2. DELETED.
3. ALTERNATE COOLING SUPPLY CONNECTIONS.
4. VALVE HANDWHEEL LOCKED IN NEUTRAL POSITION.
5. FOR INFORMATION REFERING TO LETTER & NUMBER (A84) DESIGNATION AT PIPE LINE CAP (ZONE B-1), REFER TO M-22KA09.
6. WHEN ALTERNATE AIR SUPPLY IS CONNECTED, A BLANK PLATE MUST BE INSTALLED AT KAF00367. AN ELECTRIC AIR COMPRESSOR IS PREFERRED AS THE ALTERNATE AIR SUPPLY TO PREVENT DIESEL EXHAUST FROM DRAWING INTO THE BREATHING AIR SYSTEM OR TURBINE BLDG VENTILATION.
7. THE INTERNALS FOR CHECK VALVE KAV0214 HAVE BEEN REMOVED. THIS VALVE IS NOT FUNCTIONAL, REF. CMP 85-0215A.
8. A TEMPORARY HEADER MAY BE CONNECTED FOR TESTING PURPOSES.
9. DELETED.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM COMPRESSED AIR SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.3-1 SHEET 1		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CALLAWAY ENERGY CENTER	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KA01(Q)		REV. 35

M-22KA02(Q)

DIESEL GENERATORS BUILDING

PIPE TUNNEL

CONTROL BUILDING

COMMUNICATIONS CORRIDOR

TURBINE BUILDING

AUXILIARY BUILDING

LAUNDRY DECONTAMINATION FACILITY

RADWASTE BUILDING

FUEL BUILDING

REACTOR BUILDING

ALTERNATE AIR SUPPLY CONNECTION

NOTES:

1. DRAIN TRAPS MAY BE LOCATED AT THE LOWEST POINT OF THE CLOSED LOOP OR THE LOWEST ELEVATION OF THE OPEN ENDED SUPPLY HEADER. LOCATION MAY BE CHOSEN TO SUIT EXISTING FLOOR DRAIN.
2. ALL PIPING IS JBD UNLESS SHOWN OTHERWISE.
3. AIR JACKS (CLAW COUPLING) ARE 1" UNLESS SHOWN OTHERWISE.
4. THE PORTION OF THIS SYSTEM THAT IS Q-LISTED INCLUDES THE PIPING AND VALVES ASSOCIATED WITH CONTAINMENT ISOLATION ONLY.
5. ALL HORIZONTAL BRANCH RUNS SHALL BE PITCHED 1/4" PER FOOT BACK TOWARDS THE VERTICAL HEADER.
6. ELEVATIONS INDICATED ARE FLOOR ELEVATIONS.
7. HANSON 2-H16 MALE AND FEMALE COUPLING SET WITH 1/4" FPT PROVIDED WITH EACH PNEUMATIC SEAL (2 SEALS PER GATE). FLEXIBLE HOSE AND HARDPIPE COUPLING SET TO BE FURNISHED BY UTILITY. FLEXIBLE HOSE TO REMAIN IN PLACE DURING GATE USE.
8. AS LIMITED BY RFR-17088A. CONNECTION MAY BE USED FOR LAUNDRY TRAILERS.
9. DELETED.

REV.	DATE	DRAWN
14	061200	RAM
CHKD.	SUPV.	APPD.
JHK	AMR	N/A

INCORPORATE TEMP. MOD 00-0006.

REV.	DATE	DRAWN
15	072500	RAM
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INCORPORATE TEMP MOD 00-0009.

REV.	DATE	DRAWN
16	102500	RAM
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

REMOVE TEMP MOD 00-0009.

REV.	DATE	DRAWN
17	103100	JHK
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. MP 00-1007A.

REV.	DATE	DRAWN
18	013101	MAL
CHKD.	SUPV.	APPD.
SKC	AMR	N/A

INCORP. RFR 19222A.

REV.	DATE	DRAWN
19	030701	DJB
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. TEMP. MOD. 00-0011

REV.	DATE	DRAWN
20	031900	RAM
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INCORPORATES TEMP. MOD. 01-0003. REMOVES TEMP. MODS 00-0006 & 00-0011.

REV.	DATE
21	050403
DRAWN	CHKD. SUPV.
RLW	SKC TWS

INCORPORATE DEC-1902

REV.	DATE
22	010604
DRAWN	CHKD. SUPV.
JHK	RLW TWS

INCORP. MP 01-1001 FCN-05.

REV.	DATE
23	041104
DRAWN	CHKD. SUPV.
JHK	EWM TWS

REMOVE TEMP. MOD. 01-0009.

REV.	DATE
24	110904
DRAWN	CHKD. SUPV.
MAL	RLW TWS

INCORP. RFR 22941A.

REV.	DATE
25	060707
DRAWN	CHKD. SUPV.
EWM	RLW TWS

INCORPORATE MP 06-0004 FCN 01

REV.	DATE
26	122910
DRAWN	CHKD. SUPV.
TJC	MAL LMP

INCORP. RFR CAR 200909932.

REV.	DATE
27	022614
DRAWN	CHKD. SUPV.
MAL	RLW DME

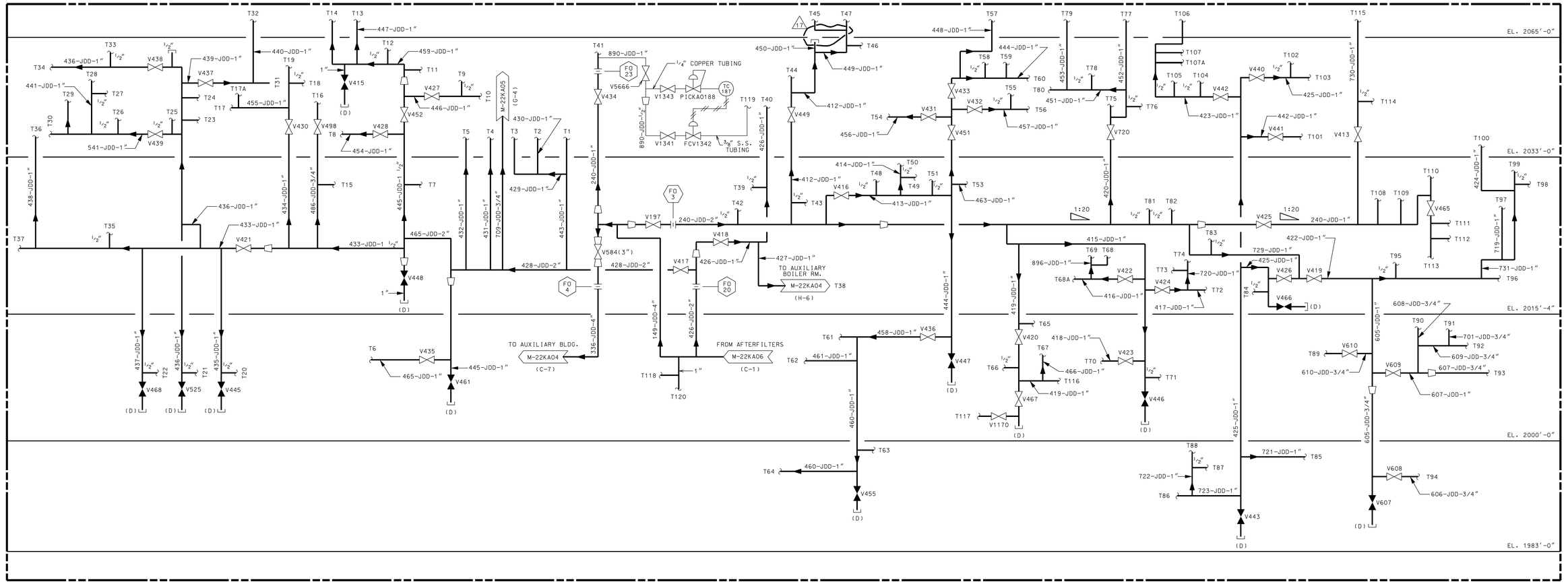
INCORP. CAR 201309647.

AS-BUILT CLASS 1

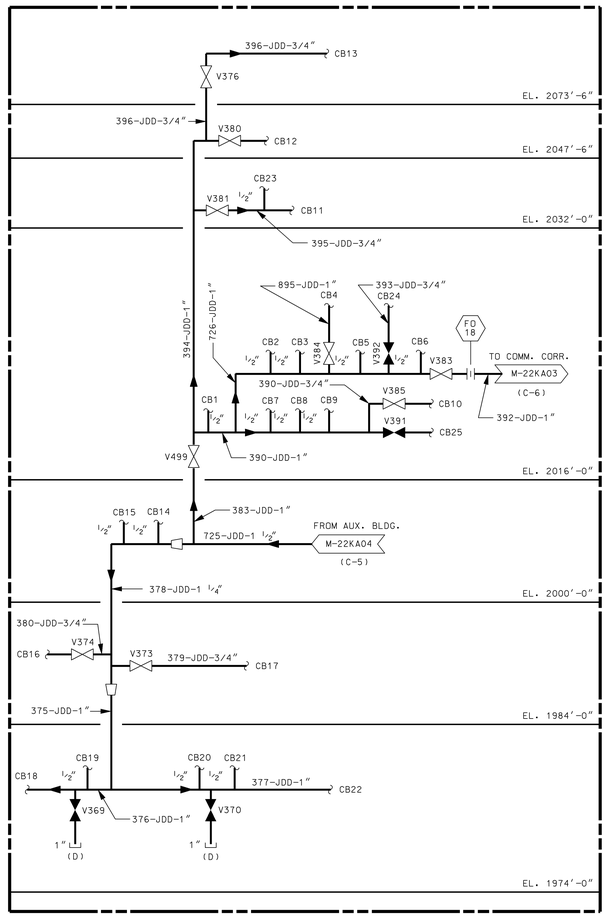
DRAWN	(DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM COMPRESSED AIR SYSTEM (SERVICE AIR)	27
CHKD.	(DATE) N/A	FSAR FIGURE 9.3-1 SHEET 2	
SUPV.	(DATE) N/A		
APPD.	(DATE) N/A	LOCATION: CALLAWAY ENERGY CENTER	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO		M-22KA02(Q)	REV. 27

M-22KA03

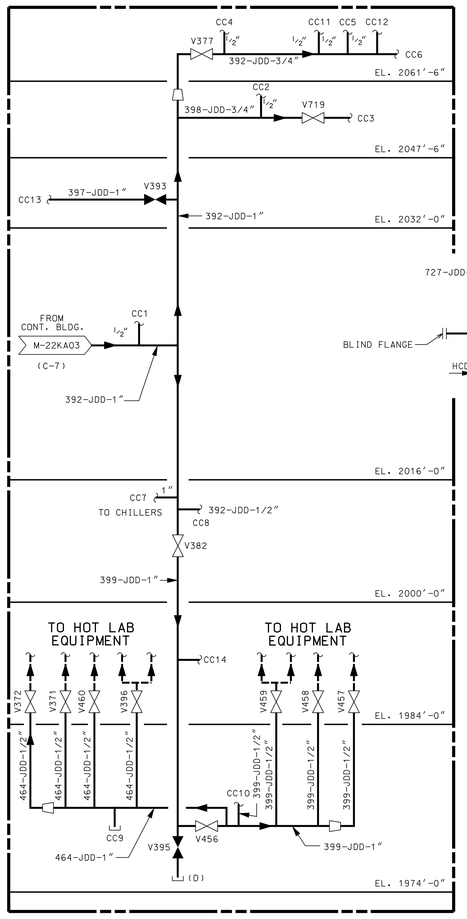
TURBINE BUILDING



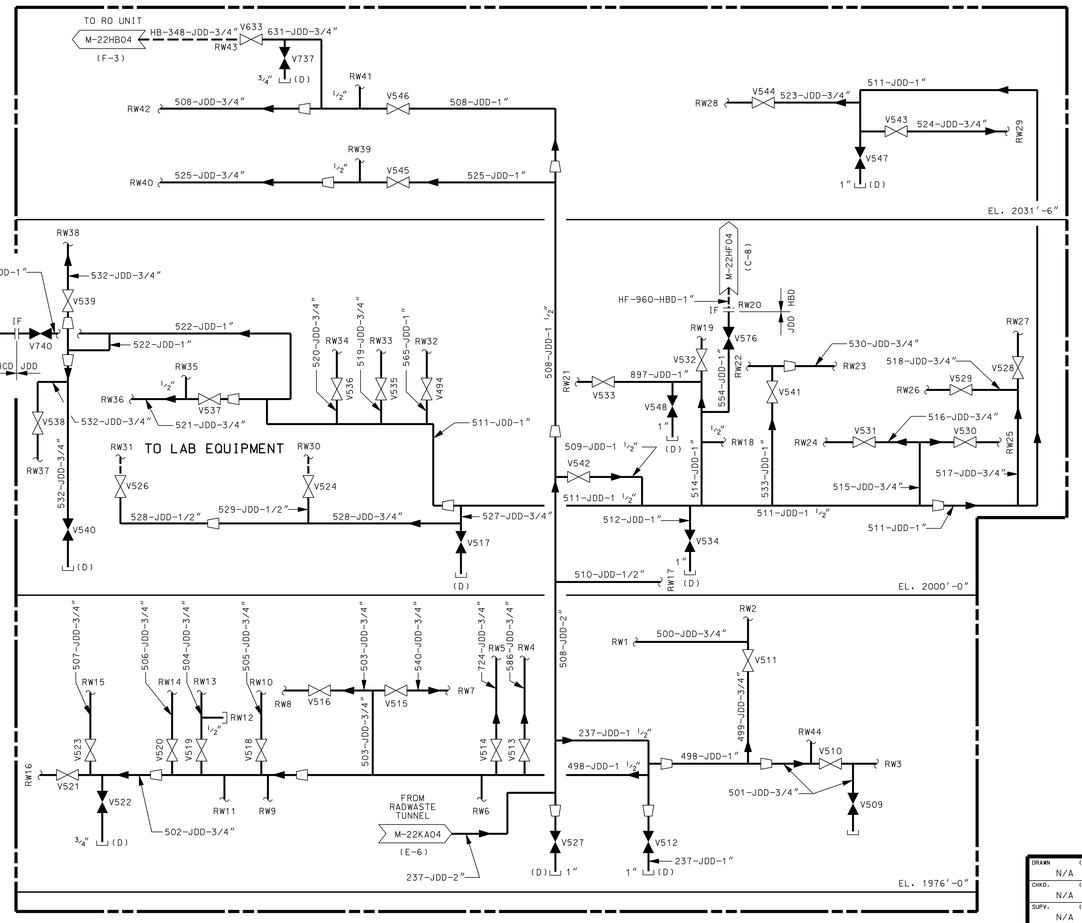
CONTROL BUILDING



COMMUNICATIONS CORRIDOR



RADWASTE BUILDING



NOTES:

1. THE INSTRUMENT AIR SYSTEM P & ID'S DEPICT THE INSTRUMENT AIR HEADERS & BRANCHES. TUBING TO THE VARIOUS SERVICES SHALL BE FIELD ROUTED IN ACCORDANCE WITH THE APPROPRIATE INSTALLATION DETAIL DWGS. J-27G10 AND J-27N01.
2. THE HORIZONTAL PIPE RUNS SHALL SLOPE AT A MINIMUM OF 1/16" PER FOOT UNLESS OTHERWISE NOTED.
3. ALL BRANCH LINES AND TEES ARE CAPPED DURING SYSTEM INSTALLATION TO PROVIDE THE SYSTEM PRESSURE BOUNDARY AND TO PROMOTE SYSTEM CLEANLINESS. CAPS ARE REMOVED AS REQUIRED WHEN INSTRUMENT AIR TUBING IS FIELD ROUTED AND CONNECTED TO THE INSTRU ENT AIR SYSTEM.
4. BRANCHES WITHOUT LINE SEQUENCE NUMBERS ARE CAPPED TEES ONLY.
5. DRAIN LINES CARRY THE LINE SEQUENCE NUMBER OF THE LINE THEY ARE BRANCHING FROM UNLESS OTHERWISE INDICATED.
6. FOR INFORMATION REFERING TO LETTER(S) & NUMBER DESIGNATIONS AT PIPE LINE CONTINUATION ∿, REFER TO M-22KA08.

REV.	DATE	DRAWN
4	071991	SBR
CHKD.	SUPV.	APPD.
HLP	TJM	N/A

REDRAWN FOR CLARITY

REV.	DATE	DRAWN
5	010793	HLP
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR-10545: ADDED LETTER AND NUMBER DESIGNATIONS TO PIPE CAPS

REV.	DATE	DRAWN
6	052695	HLP
CHKD.	SUPV.	APPD.
SKC	AMR	NA

INCORP RFR-15622A

REV.	DATE	DRAWN
7	082295	HLP
CHKD.	SUPV.	APPD.
SKC	AMR	NA

INCORP RMP 93-2036 FCN-01

REV.	DATE	DRAWN
8	032196	JHK
CHKD.	SUPV.	APPD.
EWM	AMR	NA

INCORP RMP 94-2016 FCN-04 (PARTIAL)

REV.	DATE	DRAWN
9	041096	JHK
CHKD.	SUPV.	APPD.
EWM	WAW	NA

INCORP RMP 94-2016 FCN-04.

REV.	DATE	DRAWN
10	070902	JHK
CHKD.	SUPV.	APPD.
EWM	TWS	NA

INCORP. MP 02-2005A.

REV.	DATE	
11	112403	
DRAWN	CHKD.	SUPV.
JHK	MAL	MAM

INCORP. MP 01-1001 FCN-04.

REV.	DATE	
12	110904	
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A.

REV.	DATE	
13	033006	
DRAWN	CHKD.	SUPV.
MAL	JHK	SKC

INCORP. ACO6-000053 (RFR 200509237).

REV.	DATE	
14	012408	
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. CHANGE REQUEST CAR 07-000266 (CAR 200710578)

REV.	DATE	
15	090109	
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 200605108.

REV.	DATE	
16	011211	
DRAWN	CHKD.	SUPV.
TJC	MAL	TWS

INCORP. RFR CAR 200909932.

REV.	DATE
17	051011
DRAWN	CHKD.	SUPV.
RLW	MAL	TWS

INCORPORATE MP 10-0035

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM INSTRUMENT AIR SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.3-1 SHEET 3		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KA03		REV. 17

M-22KA04

REV.	DATE	DRAWN
3	073095	MAL
CHKD.	SUPV.	APPD.
HLP	TJM	N/A

REDRAWN FOR CLARITY

REV.	DATE	DRAWN
4	091195	MAL
CHKD.	SUPV.	APPD.
HLP	TJM	N/A

INCORP. RFR-09383A.

REV.	DATE	DRAWN
5	010795	HLP
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR-10545: ADDED LETTER AND NUMBER DESIGNATIONS TO PIPE CAPS

REV.	DATE	DRAWN
6	030593	HLP
CHKD.	SUPV.	APPD.
SKC	TJM	N/A

INCORP. RFR-13159

REV.	DATE	DRAWN
7	040895	DLBr
CHKD.	SUPV.	APPD.
SKC	JHC	N/A

INCORP. CMP 90-1008

REV.	DATE	DRAWN
8	052695	HLP
CHKD.	SUPV.	APPD.
SKC	AMR	N/A

INCORP. RFR-15622A

REV.	DATE	DRAWN
9	040198	EWM
CHKD.	SUPV.	APPD.
MAL	JHK	N/A

INCORP. CMP 97-1006A FCN12.

REV.	DATE	DRAWN
10	080600	SKC
CHKD.	SUPV.	APPD.
DJB	TWS	N/A

INCORP. MP 01-1002A

REV.	DATE
11	021705
DRAWN	CHKD.	SUPV.
RLW	MAL	SKC

INCORPRATE MP 01-1018A

REV.	DATE
12	042005
DRAWN	CHKD.	SUPV.
TJC	MAL	TWS

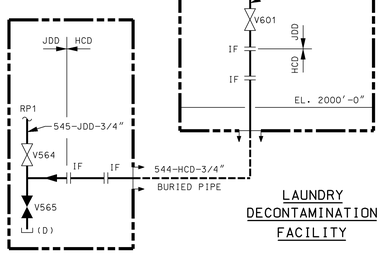
INCORP. RFR 22941A

REV.	DATE
13	050507
DRAWN	CHKD.	SUPV.
EWM	RLW	TWS

INCORPORATE MP 06-0056

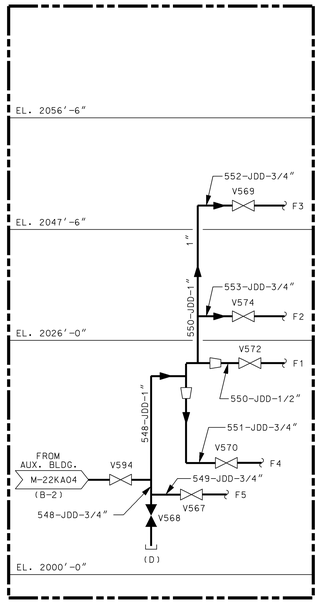
REV.	DATE
14	111407
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. CAR 200710389.

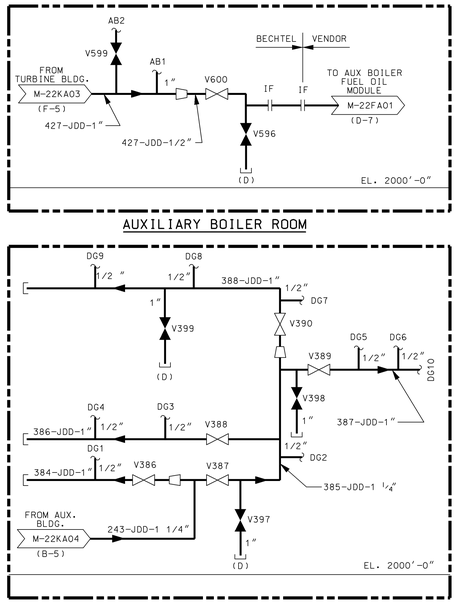


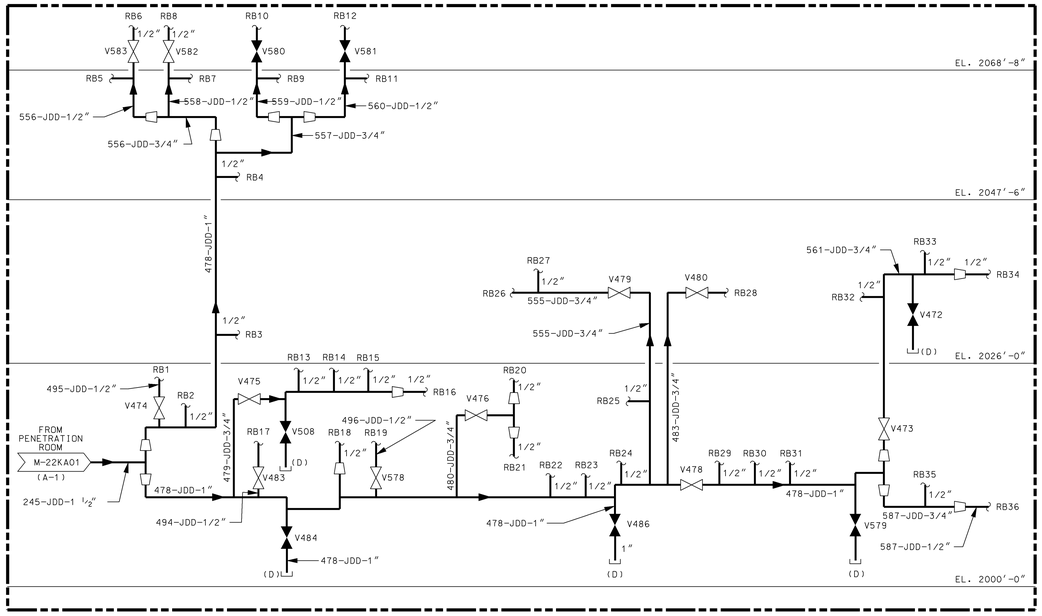
REFUELING WATER STORAGE TANK VALVE PIT

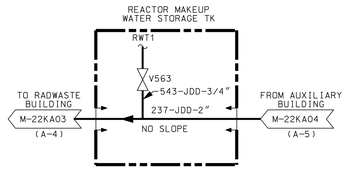
LAUNDRY DECONTAMINATION FACILITY



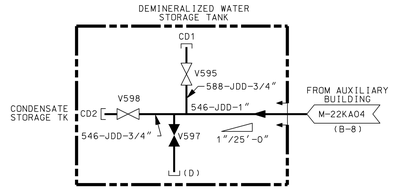
FUEL BUILDING







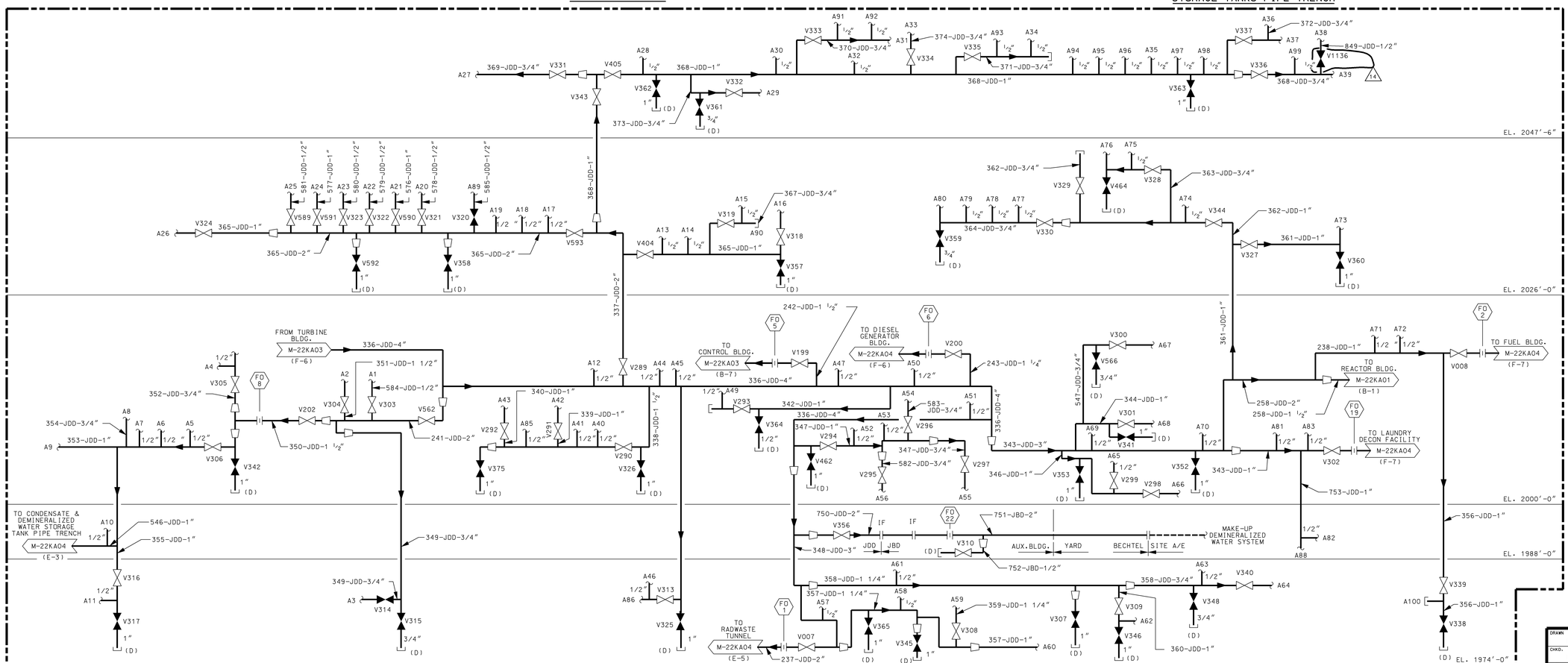
RADWASTE TUNNEL



CONDENSATE & DEMINERALIZED WATER STORAGE TANKS PIPE TRENCH

NOTES:

1. FOR NOTES, SEE DWG. M-22KA03.
2. FOR INFORMATION REFERING TO LETTER(S) & NUMBER DESIGNATIONS AT PIPE LINE CONTINUATIONS (~). REFER TO M-22KA09.



AUXILIARY BUILDING

AS-BUILT CLASS 1

DRAWN	(DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM INSTRUMENT AIR SYSTEM FSAR FIGURE 9.3-1 SHEET 4	
CHKD.	(DATE) N/A		
SUPV.	(DATE) N/A		
APPD.	(DATE) N/A	LOCATION: CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO		M-22KA04	REV. 14

M-22KA05(Q)

NOTE:

1. SEE SPECIFICATION J601A FOR PCV DESIGN REQUIREMENTS.
2. KA-V-0642 IS CYCLED TO MAINTAIN N_2 PRESSURE IN TKA06.

REV.	DATE	DRAWN
8	062295	JHK
CHKD. RAM	SUPV. AMR	APPD. N/A

INCORP. CMP 91-1046

REV.	DATE	DRAWN
9	081095	HLP
CHKD. SKC	SUPV. AMR	APPD. N/A

INCORP. CMP 91-1046 FCN-02

REV.	DATE	DRAWN
10	022098	HLP
CHKD. RAM	SUPV. AMR	APPD. N/A

INCORP. MP 95-2016A

REV.	DATE	DRAWN
11	102599	DJB
CHKD. RLW	SUPV. AMR	APPD. N/A

INCORP. MP 98-2015A

REV.	DATE	DRAWN
12	102899	RLW
CHKD. DJB	SUPV. AMR	APPD. N/A

INCORP. MP 98-2005A.

REV.	DATE	DRAWN
13	110399	JHK
CHKD. MAL	SUPV. JHC	APPD. N/A

INCORP. MP 98-1004A.

REV.	DATE
14	042005
DRAWN TJC	CHKD. MAL	SUPV. TWS

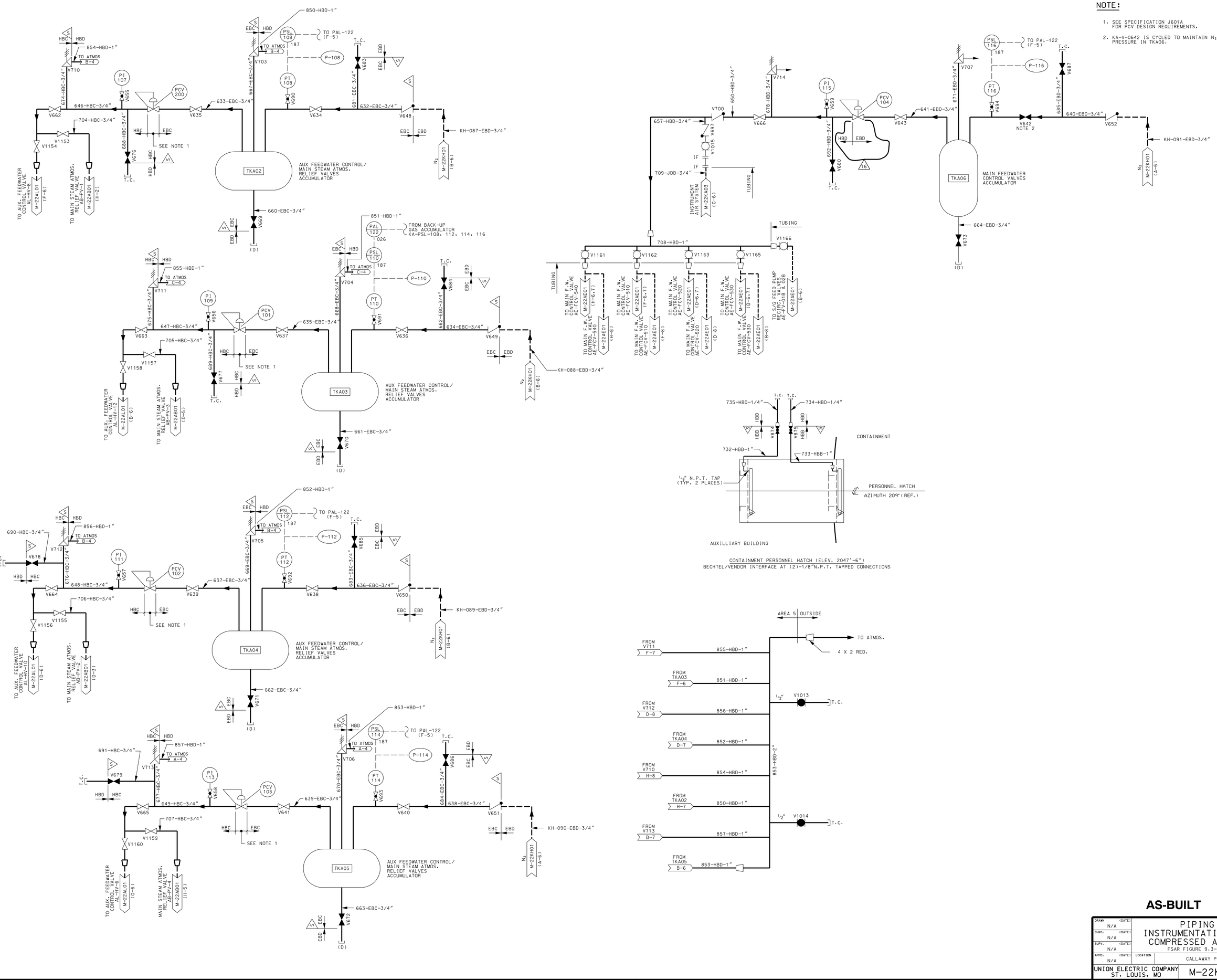
INCORP. RFR 22941A

REV.	DATE
15	111505
DRAWN MAL	CHKD. JHK	SUPV. SKC

INCORP. MP 00-1009 FCN-34.

REV.	DATE
16	012209
DRAWN MAL	CHKD. TJC	SUPV. TWS

INCORP. MP 07-0073.

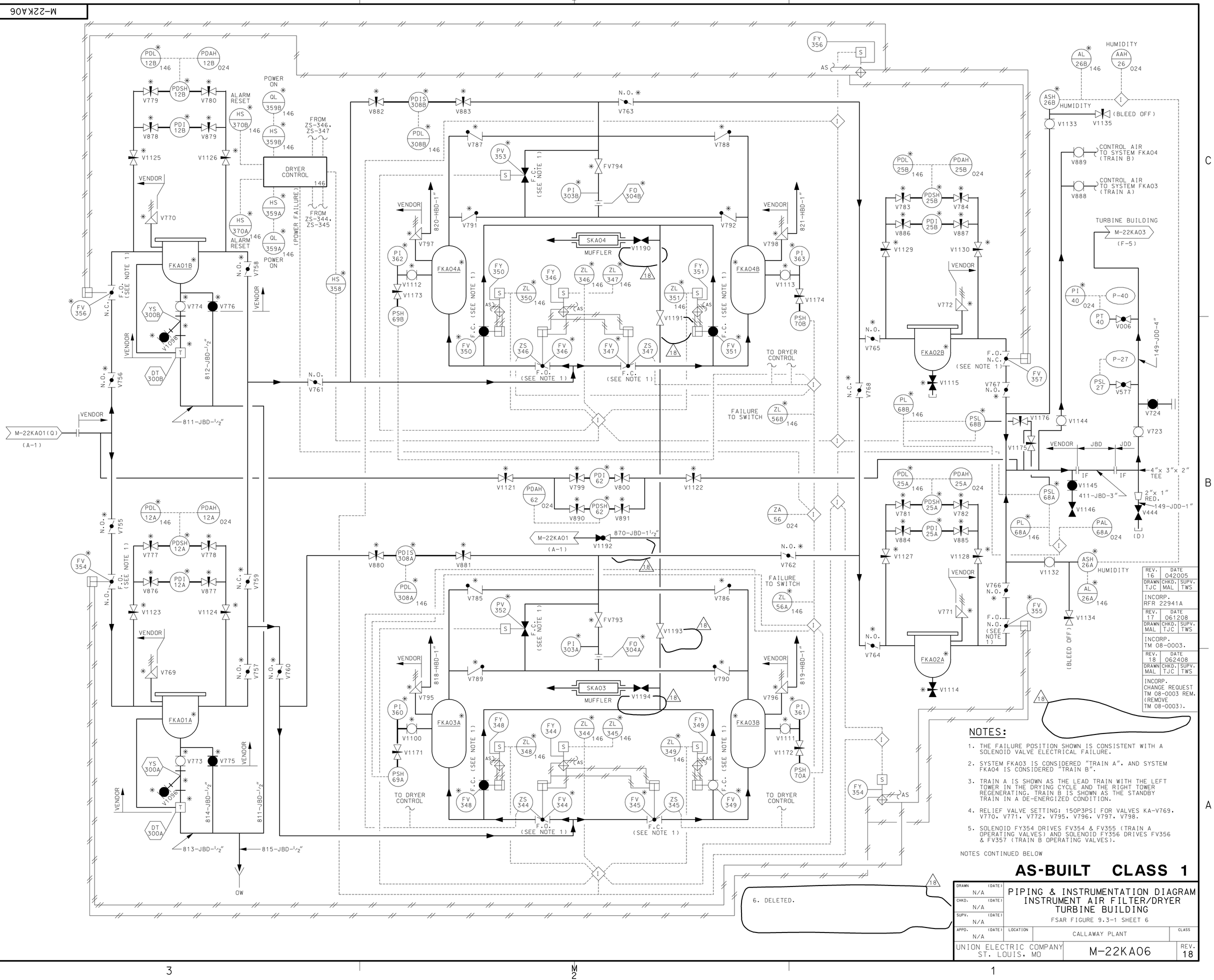


CONTAINMENT PERSONNEL HATCH (ELEV. 2047'-6")
BECHTEL/VENDOR INTERFACE AT (2)-1/8"N.P.T. TAPPED CONNECTIONS

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM COMPRESSED AIR SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.3-1 SHEET 5		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CLASS	
UNION ELECTRIC COMPANY ST. LOUIS, MO	CALLAWAY PLANT		
	M-22KA05(Q)		REV. 16

M-22KA06



REV.	DATE
16	042005
DRAWN TJC	CHKD. MAL	SUPV. TWS
INCORP. RFR 22941A	
REV.	DATE
17	061208
DRAWN MAL	CHKD. TJC	SUPV. TWS
INCORP. TM 08-0003.	
REV.	DATE
18	062408
DRAWN MAL	CHKD. TJC	SUPV. TWS
INCORP. CHANGE REQUEST TM 08-0003 REM. (REMOVE TM 08-0003).	

NOTES:

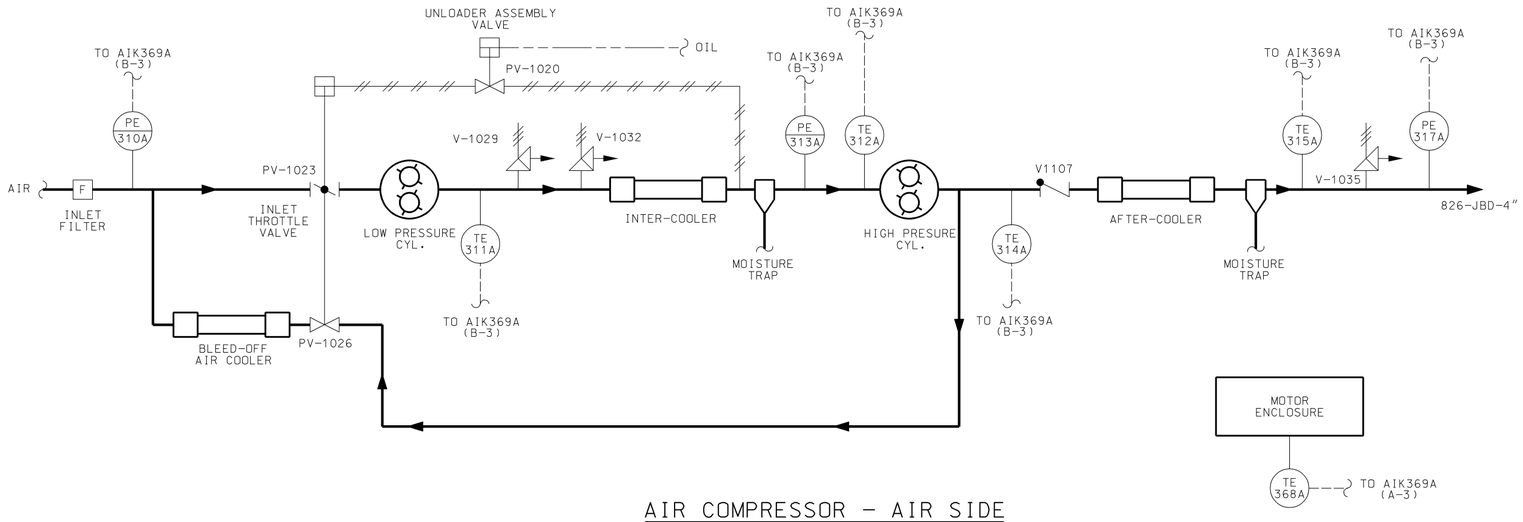
1. THE FAILURE POSITION SHOWN IS CONSISTENT WITH A SOLENOID VALVE ELECTRICAL FAILURE.
2. SYSTEM FKA03 IS CONSIDERED "TRAIN A", AND SYSTEM FKA04 IS CONSIDERED "TRAIN B".
3. TRAIN A IS SHOWN AS THE LEAD TRAIN WITH THE LEFT TOWER IN THE DRYING CYCLE AND THE RIGHT TOWER REGENERATING. TRAIN B IS SHOWN AS THE STANDBY TRAIN IN A DE-ENERGIZED CONDITION.
4. RELIEF VALVE SETTING: 150P3PSI FOR VALVES KA-V769, V770, V771, V772, V795, V796, V797, V798.
5. SOLENOID FY354 DRIVES FV354 & FV355 (TRAIN A OPERATING VALVES) AND SOLENOID FY356 DRIVES FV356 & FV357 (TRAIN B OPERATING VALVES).

NOTES CONTINUED BELOW

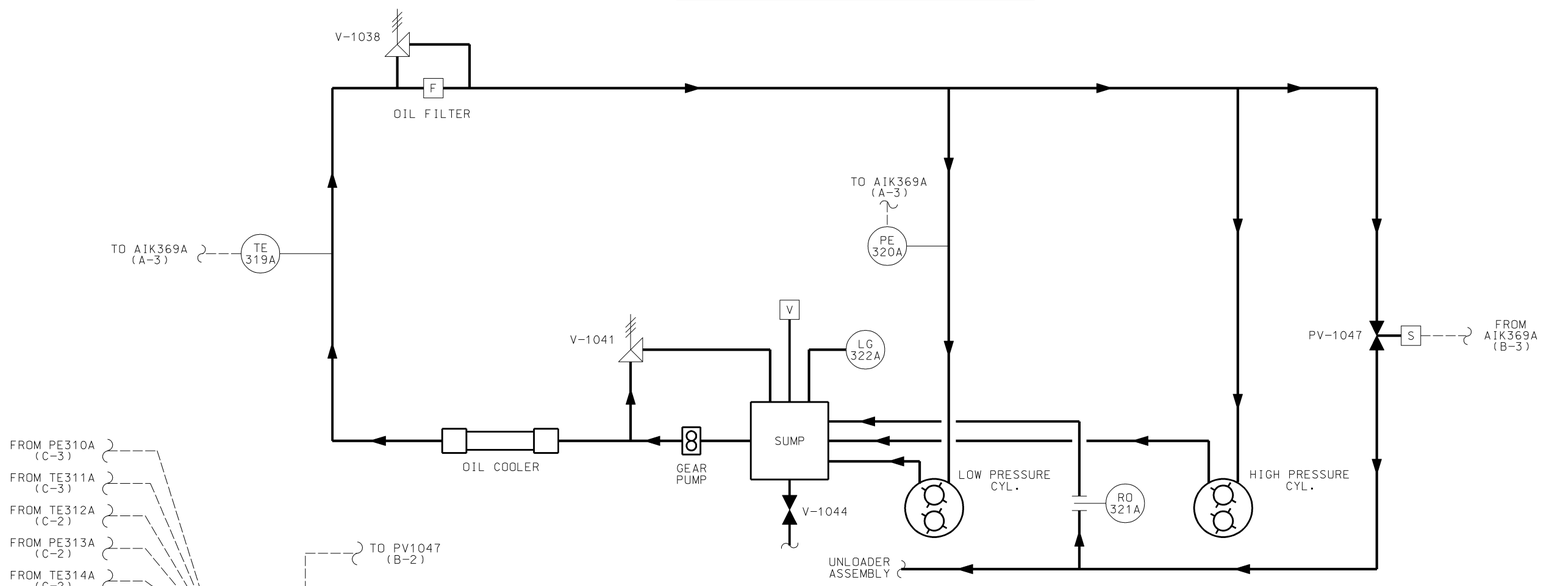
6. DELETED.

AS-BUILT CLASS 1

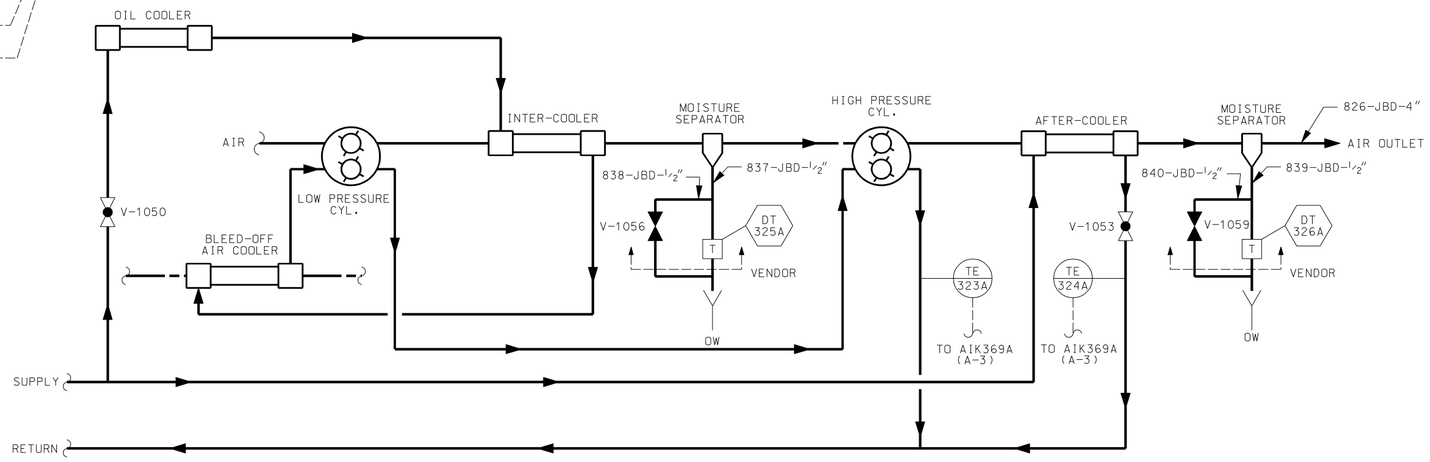
DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM INSTRUMENT AIR FILTER/DRYER TURBINE BUILDING		
CHKD. (DATE) N/A	FSAR FIGURE 9.3-1 SHEET 6		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KA06		REV. 18



AIR COMPRESSOR – AIR SIDE



AIR COMPRESSOR – LUBRICATING OIL SYSTEM



AIR COMPRESSOR COOLING WATER SYS. & DRAIN TRAPS

DEVICE TABLE

	DEVICE	CKA01A	CKA01B	CKA01C
AIR SIDE	INTAKE AIR FILTER PRESSURE	PE-310A	PE-310B	PE-310C
	UNLOADER ASSEMBLY VALVE	PV-1020	PV-1021	PV-1022
	INLET THROTTLE VALVE	PV-1023	PV-1024	PV-1025
	HP UNLOADING VALVE	PV-1026	PV-1027	PV-1028
	INTERCOOLER RELIEF VALVE	V-1029	V-1030	V-1031
	INTERCOOLER RELIEF VALVE	V-1032	V-1033	V-1034
	LOW PRESSURE OUTLET AIR TEMP.	TE-311A	TE-311B	TE-311C
	HIGH PRESSURE INLET AIR TEMP.	TE-312A	TE-312B	TE-312C
	INTERCOOLER AIR PRESSURE IND.	PE-313A	PE-313B	PE-313C
	HIGH PRESSURE OUTLET AIR TEMP.	TE-314A	TE-314B	TE-314C
	DELIVERY AIR TEMP.	TE-315A	TE-315B	TE-315C
	UNLOADER PRESSURE	PE-317A	PE-317B	PE-317C
	SECOND STAGE DISCH. CK. VALVE	V-1107	V-1108	V-1109
	AFTERCOOLER RELIEF VALVE	V-1035	V-1036	V-1037
	MOTOR ENCLOSURE TEMP.	TE-368A	TE-368B	TE-368C
LUBRICATING OIL	OIL PRESSURE	PE-320A	PE-320B	PE-320C
	OIL TEMPERATURE	TE-319A	TE-319B	TE-319C
	UNLOADER ASS'Y OIL RELIEF ORIFICE	RO-321A	RO-321B	RO-321C
	OIL FILTER BY-PASS VALVE	V-1038	V-1039	V-1040
	OIL PUMP BY-PASS VALVE	V-1041	V-1042	V-1043
	OIL SUMP DRAIN VALVE	V-1044	V-1045	V-1046
	UNLOADING SOLENOID VALVE	PV-1047	PV-1048	PV-1049
	OIL SUMP LEVEL GAUGE	LG-322A	LG-322B	LG-322C
COOLING WTR. SYSTEM & DRAIN TRAPS	OIL COOLER COOLING WATER SUPPLY	V-1050	V-1051	V-1052
	AFTER COOLER COOLING WATER RETURN	V-1053	V-1054	V-1055
	COMPRESSOR COOLING WATER RETURN TEMP.	TE-323A	TE-323B	TE-323C
	AFTERCOOLER COOLING WATER RETURN TEMP.	TE-324A	TE-324B	TE-324C
	INTERCOOLER MOIST. SEPARATOR DRAIN TRAP	DT-325A	DT-325B	DT-325C
	AFTERCOOLER MOIST. SEPARATOR DRAIN TRAP	DT-326A	DT-326B	DT-326C
	INTERCOOLER DRAIN TRAP BY-PASS	V-1056	V-1057	V-1058
	AFTERCOOLER DRAIN TRAP BY-PASS	V-1059	V-1060	V-1061
	AIR OUTLET	826-JBD-4"	825-JBD-4"	824-JBD-4"
	INTERCOOLER CONDENSATE DRAIN	837-JBD-1/2"	841-JBD-1/2"	845-JBD-1/2"
	AFTERCOOLER CONDENSATE DRAIN	839-JBD-1/2"	843-JBD-1/2"	847-JBD-1/2"
	INTERCOOLER COND. TRAP BY-PASS	838-JBD-1/2"	842-JBD-1/2"	846-JBD-1/2"
	AFTERCOOLER COND. TRAP BY-PASS	840-JBD-1/2"	844-JBD-1/2"	848-JBD-1/2"
	AIR CMPSR. CONTROLLER/HMI	AIK-369A	AIK-369B	AIK-369C

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NOTES

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1. P & ID SHOWN IS COMPRESSOR CKA01A. COMPRESSORS CKA01B & CKA01C ARE IDENTICAL EXCEPT FOR DEVICE IDENTIFICATION. FOR DEVICE IDENTIFICATION, REFER TO THE DEVICE TABLE.
2. FOR DETAILED AIR COMPRESSOR SKID PIPING, REFER TO M-1047-00003.
3. ALL VALVES AND INSTRUMENTATION SHOWN ARE VENDOR FURNISHED.
4. DELETED.
5. CONFIGURABLE CONTROLLER ALARMS INCLUDE HIGH LP OUTLET AIRTEMP (311A), HIGH HP INLET AIRTEMP (312A), HIGH HP OUTLET AIRTEMP (314A), DISCHARGE AIR TEMP (315A), HIGH OIL TEMP (319A) AND HIGH MOTOR ENCLOSURE TEMP (368A).
6. ENGINEERING CONTROLLED (DIRECTOR) CONTROLLER COMPRESSOR TRIPS INCLUDE HIGH LP OUTLET TEMP (311A), HIGH HP INLET TEMP (312A), HIGH HP OUTLET TEMP (314A), DISCHARGE AIRTEMP (315A), HIGH HIGH DISCHARGE AIR PRESSURE (REMOTE LOAD OVERRIDE)(317A), HIGH OIL TEMP (319A), LOW OIL PRESSURE (320A), LOW COOLING WATER FLOW (334A), HIGH MAIN DRIVE MOTOR CURRENT, HIGH FAN MOTOR CURRENT AND EMERGENCY STOP.

REV.	DATE	DRAWN
4	8/30/91	JHK
CHKD. HLP	SUPV. TJM	APPD. N/A
REDRAWN FOR CLARITY.		
REV. 5	DATE 042005	
DRAWN TJC	CHKD. MAL	SUPV. TWS
INCORP. RFR 22941A		
REV. 6	DATE 052512	
DRAWN TJC	CHKD. RLW	SUPV. SKC
INCORP. MP 08-0005 FCN-03.		
REV. 7	DATE 021213	
DRAWN MAL	CHKD. RLW	SUPV. DME
INCORP. MP 08-0005, FCN-05 (PARTIAL FOR CKA01A AND CKA01C ONLY).		
REV. 8	DATE 031213	
DRAWN MAL	CHKD. RLW	SUPV. LMP
INCORP. MP 08-0005, FCN-05 (FINAL). (CKA01B ONLY)		

CLASS 1 AS-BUILT

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM COMPRESSED AIR SYSTEM SKIDS CKA01A, CKA01B, CKA01C		
CHKD. (DATE) N/A	FSAR FIGURE 9.3-1 SHEET 7		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION CALLAWAY ENERGY CENTER		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KA07		REV. 8

TURBINE BUILDING

DESIGNATOR ON M-22KA03 & (DRAWING LOC)	FIRST ISO VALVE FROM MAIN HEADER (KA SYSTEM)	LAST ISO VALVE BEFORE END USER	END USER
T1 (G-6)	V6090	AEFCV0560V1 AEFY0560V1 AEFCV0570V1 AEFY0570V1	AEFCV0560 CAPPED AEFCV0570 CAPPED
T2 (G-6)	V6092	AEFCV0550V1 AEFY0550V1	AEFCV0550 CAPPED
T3 (G-6)	NONE	NONE	CAPPED
T4 (G-6)	V6085	AEFCV0580V1 AEFY0580V1 SRM01V11	AEFCV0580 CAPPED SRM01
T5 (G-6)	NONE	NONE	CAPPED
T6 (F-6)	① V435	CGV5000A CGV5000A CGV5000B CGV5000B CGV5000C CGV5000C CHV0077 EBTV0035AV1 EBTV0035BV1 EBTIC0035V1 ABFV0029V1 ABFV0027V1 ABFV0025V1 ABFV0023V1	CGPV0001 CGPV0004 CGPV0002 CGPV0005 CGPV0003 CGPV0006 CHV0074 EBTV0035A EBTV0035B EBTIC0035 ABFV0029 ABFV0027 ABFV0025 ABFV0023
T7 (G-6)	V6081	CAPV0013V1 CAPV0014AV1 CAPC0013V1 CAPC0014V1 CAPV0014BV1 NONE	CAPV0013 CAPV0014A CAPC0013 CAPC0014 CAPV0014B CAPPED
T8 (G-7)	① V428	AFLV0018V1 AFLV0017V1 NONE	AFLV0018 AFLV0017 CAPPED
T9 (H-6)	V6123	AFLV0001V1 AFLV0028V1 NONE	AFLV0001 AFLV0028 CAPPED
T10 (H-6)	V6127	AFLV0002V1 AFLV0029V1	AFLV0002 AFLV0029
T11 (H-6)	V6117	AFLC0018V1 AFLC0017V1 AFLC0029V1 AFLC0028V1 NONE AFLC0002V1	AFLC0018 AFLC0017 AFLC0029 AFLC0028 CAPPED AFLC0002
T12 (H-6)	V6116	ACPV0186AV1 ACPT0181AV1 NONE	ACPV0186A ACPT0181A AC149
T13 (H-6)	V6131	GETV0023V1	GETV0023
T14 (H-7)	V6114 V6113	GEHC0126V1 ACHV0250V1	GEHC0126 ACHV0250
T15 (G-7)	V5974	⑧EATY0009V1 { EATV0009V1 EATV0008V1 GETIC0023V1	EATY0009 EATIC0009 EATV0009 EATV0008 GETIC0023
T16 (H-7)	① V498	GETV0028V1	GETV0028
T17 (H-7)	V5995	AFLV0206V1 AFLC0092V1 AFLC0143V1 AFLV0136AV1 AFLV0207V1 AFLC0135V1 AFLV0143V1 AFLC0097V1 AFLV0113AV1 AFLV0097V1 ACPT0124V1	AFLV0206 AFLC0092 AFLC0143 AFLV0136A AFLV0207 AFLC0135 AFLV0143 AFLC0097 AFLV0113A AFLV0097 ACPT0124
T17A (H-7)	V5990	AFLV0106AV1 AFLC0114V1 AEFV0036V1	AFLV0106A AFLC0114 AEFV0036
T18 (H-7)	V5983	AFLC0105V1 AFLV0114V1	AFLC0105 AFLV0114
T19 (H-7)	V5993		AIR SUPPLY TO TURBINE FRONT STANDARD AIR RELIEF DUMP VALVE
T20 (F-7)	V5982	AFLV0092V1	AFLV0092
T21 (F-7)	V5677	AFLV0122V1	AFLV0122
T22 (F-7)	V5679	AFLV0152V1	AFLV0152
T23 (H-7)	V5952	NONE	CAPPED
T24 (H-7)	V5953	AFLV0128V1 AFLV0174V1 AFLV0159V1 AFLC0128V1 AFLC0159V1	AFLV0128 AFLV0174 AFLV0159 AFLC0128 AFLC0159
T25 (H-7)	V5685	AFLC0174V1	AFLC0174
T26 (H-8)	V5687	AFLV0208V1	AFLV0208
T27 (H-8)	V5691	AFLV0218V1 AFLV0165AV1 AFLC0152V1	AFLV0218 AFLV0165A AFLC0152
T28 (H-8)	V5697	ACFV0191V1 AFLV0173AV1 AFLV0211V1 AFLV0214V1	ACFV0191 AFLV0173A AFLV0211 AFLV0214
T29 (H-8)	V5703	AFLV0144AV1	AFLV0144A
T30 (H-8)	V5705	AFLC0122V1	AFLC0122
T31 (H-7)	NONE	NONE	CAPPED
T32 (H-7)	① V437	ACPV0186CV1 ACPT0181CV1	ACPV0186C ACPT0181C
T33 (H-8)	V5969	AFLC0219V1 AFLC0218V1 AFLV0219V1	AFLC0219 AFLC0218 AFLV0219
T34 (H-8)	V5962	AFLV0212V1 AFLV0215V1 AFLC0211V1 AFLC0212V1 AFLC0215V1 AFLC0214V1	AFLV0212 AFLV0215 AFLC0211 AFLC0212 AFLC0215 AFLC0214
T35 (G-8)	V5681	NONE	CAPPED
T36 (G-8)	V5682	GEHZ0085V1	GEHZ0085
T37 (G-8)	V5683	GEHZ0105V1	GEHZ0105
T38 (G-5)	GOES TO AUX BOILER		
T39 (G-5)	V5669	GEHZ0037V1	GEHZ0037
T40 (H-5)	V5673	GETI0144V1 GEHC0030V1	GETI0144 GEHC0030
T41 (H-5)	① V434	FBLC0008V1 FBPIC0010V1 FBLV0015V1 GATIC0016V1	FBLC0008 FBPIC0010 FBLV0015 GATIC0016
T42 (G-5)	V5877	NONE	CAPPED
T43 (G-4)	V5879	GEHZ0035V1	GEHZ0035
T44 (H-4)	V6005	GEHZ0027V1	GEHZ0027
T45 (H-4)	V6013	FBLC0015V1 GEHZ0015V1	FBLC0015 GEHZ0015
T46 (H-4)	V6011	FBLC0022V1 FBLC0023V1	FBLC0022 FBLC0023
T47 (H-4)	V6014	FBPV0017AV1 FBPY0300V1 FBPIC0017BV1 FBPV0017BV1 FBPY0017AV1 FBPY0017BV1	FBPV0017A FBPY0300 FBPIC0017B FBPV0017B FBPY0017A FBPY0017B
T48 (G-4)	V5881	NONE	CAPPED
T49 (G-4)	V5888	BMPV0039AV1 BMPV0039BV1 BMPV0072V1 BMPY0039V1	BMPV0039A BMPV0039B BMPV0072 BMPY0039
T50 (G-4)	V5883	BMTV0040V1 BMPIC0072V1 AFLC0074V1 AFLC0716V1 AFLV0045V1 FBLV0023V1	BMTV0040 BMPIC0072 AFLC0074 AFLC0716 AFLV0045 FBLV0023
T51 (G-4)	V5875	AFLV0013V1	AFLV0013
T53 (G-4)	V5878	NONE	CAPPED
T54 (H-4)	① V431	AFLV0059V1 AFLC0059V1 AFLC0046V1 AFLC0045V1 AFLC0009V1 AFLC0008V1 ABPV0360V1	AFLV0059 AFLC0059 AFLC0046 AFLC0045 AFLC0009 AFLC0008 ABPV0360
T55 (H-3)	V6028	AFLV0039V1 AFLV0040V1 AFLV0033V1 AFLV0034V1 AFLV0053V1 AFLV0052V1	AFLV0039 AFLV0040 AFLV0033 AFLV0034 AFLV0053 AFLV0052
T56 (H-3)	V6034	AFLC0013V1 AFLC0014V1	AFLC0013 AFLC0014
T57 (H-4)	NONE NONE	ACPV0186BV1 ACPT0181BV1	ACPV0186B ACPT0181B
T58 (H-4)	V6038	AFLV0008V1	AFLV0008
T59 (H-3)	V6041	AFLC0039V1 AFLC0040V1 AFLC0034V1 AFLC0033V1 AFLC0053V1 AFLC0052V1	AFLC0039 AFLC0040 AFLC0034 AFLC0033 AFLC0053 AFLC0052
T60 (H-3)	V6045	AFLV0024AV1 AFLV0064AV1 AFLV0012AV1 AFLV0044AV1 AFLV0007AV1 AFLV0058AV1 FBLV0022V1	AFLV0024A AFLV0064A AFLV0012A AFLV0044A AFLV0007A AFLV0058A FBLV0022
T61 (F-4)	V5824	AFLV0046V1 AFLV0060V1 AFLV0014V1 AFLV0009V1 ACFV0079V1 ACFV0078V1	AFLV0046 AFLV0060 AFLV0014 AFLV0009 ACFV0079 ACFV0078
T62 (F-4)	V5594	AFFV0072BV1 AFFV0073BV1 AFLV0093V1 ABLV0050V1 FCHY0114V1	AFFV0072B AFFV0073B AFLV0093 ABLV0050 FCHY0114
T63 (E-4)	V5604	EAHV0003V1 AFLC0071V1 AFLV0071AV1 AFLV0071BV1	EAHV0003 AFLC0071 AFLV0071A AFLV0071B
T64 (E-5)	V5605	ADLV0079BBV1 ADLV0079BAV1 BMLV0016BV1 LELV0017V1 BMLV0016CV1 ADLV0079AV1 ANHV0026AV1 ANHV0027AV1 ANLC0012V1	ADLV0079BB ADLV0079BA BMLV0016B LELV0017 BMLV0016C ADLV0079A ANHV0026A ANHV0027A ANLC0012
T65 (F-3)	V5627	GEHC0038V1 FCHV0014V1 FCTV0155BV1 ABLV0051V1 FCTIC0155AV1 FCTV0155AV1	GEHC0038 FCHV0014 FCTV0155B ABLV0051 FCTIC0155A FCTV0155A
T66 (F-4)	V5634	LEFV0067V1 LERV0059V1	LEFV0067 LERV0059
T67 (F-3)	V5639	GEHV0040V1 GEHC0087V1	GEHV0040 GEHC0087
T68 (G-3)	V5625	AFLC0093V1 AFLC0099V1 AFLV0105V1 AFLC0115V1 AFLC0107V1	AFLC0093 AFLC0099 AFLV0105 AFLC0115 AFLC0107
T68A (G-3)	VALVE NOT IDENTIFIED	ABUV0034V1 ABUV0035V1 ABUV0036V1 ABUV0037V1	ABUV0034 ABUV0035 ABUV0036 ABUV0037
T69 (G-3)	V5617	AFLV0099V1 AFLV0115V1 AFLV0107V1	AFLV0099 AFLV0115 AFLV0107
T70 (F-3)	① V423	ADFV0007BV1 ADFV0022BV1 AFLV0123V1	ADFV0007B ADFV0022B AFLV0123

T71 (F-3)	V5649	AFLV0074BV1
		AFLV0074AV1
		AEPDV0058V1 {
		FCHV0103V1
		AFLCV0716V1
		RM185V1
		NONE
		FCTV0055AV1
		FCHV0003V1
		AEPDV0052V1 {
			AFLV0074B
			AFLV0074A
			AEPDV0058
			AEPCV0061
			FCHV0103
			AFLCV0716
			RM185
			FCTIC0055
			FCTV0055A
			FCHV0003
			AEPDV0052
			AEPCV0055

T72 (F-3)	V5872	ABUV0038V1 ABUV0039V1 ABUV0040V1	ABUV0038 ABUV0039 ABUV0040
T73 (G-3)	V5864	AFLC0123V1 AEFV0001BV1 AEFV0002BV1 AFLC0137V1 AFLC0146V1 AFLC0130V1 AFLV0135V1	AFLC0123 AEFV0001B AEFV0002B AFLC0137 AFLC0146 AFLC0130 AFLV0135
T74 (G-3)	V5868	AFLV0130V1 AFLV0146V1 AFLV0137V1	AFLV0130 AFLV0146 AFLV0137
T75 (H-3)	V5836	GEHZ0033V1	GEHZ0033
T76 (H-3)	V5838	GEHZ0091V1	GEHZ0091
T77 (H-3)	V5843	GEHC0110V1	GEHC0110
T78 (H-3)	V5841	NONE	CAPPED
T79 (H-3)	V5842	GEHC0014V1	GEHC0014
T80 (H-3)	NONE	NONE	CAPPED
T81 (G-3)	V5844	NONE	CAPPED
T82 (G-3)	V5845	NONE	CAPPED
T83 (G-3)	V5846	NONE	CAPPED
T84 (F-2)	V5847	NONE	CAPPED
T85 (E-2)	V5719 V5715	ABLV0052V1 ABLV0053V1 AFLV0153V1 ADFV0015BV1	ABLV0052 ABLV0053 AFLV0153 ADFV0015B
T86 (E-3)	V5711	LEFV0066V1	LEFV0066
T87 (E-3)	V5709	NONE	CAPPED
T88 (E-3)	V5710	NONE	CAPPED
T89 (F-2)	① V610	NONE	COLD LAB
T90 (F-2)	NONE	NONE	COLD LAB
T91 (F-1)	V5832	NONE	COLD LAB
T92 (F-1)	V5833	NONE	COLD LAB
T93 (F-1)	NONE	NONE	COLD LAB
T94 (E-2)	① V608	NONE	COLD LAB
T95 (G-2)	V5848	NONE	CAPPED
T96 (G-1)	V5913	HFHV0061V1 HFLV0084V1 HFHV0063V1	HFHV0061 HFLV0084 HFHV0063
T97 (G-1)	V5919	EBTIC0009V1 EAHV0030V1 EBTV0009V1	EBTIC0009 EAHV0030 EBTV0009
T98 (G-1)	V5925	EAHV0001V1 EBTV0036V1 EATV0007V1 ⑩CEPV0013V1 CETV0007V1 ⑩CE131V1	EAHV0001 EBTV0036 EATV0007 CEPV0013 CETV0007 CE131
T99 (G-1)	NONE	NONE	CAPPED
T100 (G-1)	V5924	EBTIC0036V1	CAPPED
T101 (G-2)	① V441	ABUV0045V1 AFLC0153V1	ABUV0045 AFLC0153
T102 (H-2)	V5900	ACTT0239V1 ACZY0030V1 AFLC0230V1 AFLC0231V1 AFLC0226V1 AFLC0227V1	ACTT0239 ACZY0030 AFLC0230 AFLC0231 AFLC0226 AFLC0227
T103 (H-2)	V5907	AFLC0222V1 AFLC0223V1	AFLC0222 AFLC0223
T104 (H-3)	V5893	AFLV0167V1 AFLV0230V1 AFLV0226V1 AFLV0227V1 AFLV0231V1	AFLV0167 AFLV0230 AFLV0226 AFLV0227 AFLV0231
T105 (H-3)	V5933	AFLV0222V1 AFLC0167V1 AFLV0223V1	AFLV0222 AFLC0167 AFLV0223
T106 (H-3)	V5951	ACPT0181DV1 ACPV0186DV1	ACPT0181D ACPV0186D
T107 (H-3)	V5941	ABUV0041V1 ABUV0042V1 ABUV0043V1 ABUV0044V1 ABFV0032V1	ABUV0041 ABUV0042 ABUV0043 ABUV0044 ABFV0032
T107A (H-3)	V5940	AFLV0166V1 AFLV0175V1 AFLV0160V1	AFLV0166 AFLV0175 AFLV0160
T108 (G-2)	V5765	AKPCV0311V1	AKPCV0311
T109 (G-2)	V5761	AKTV0322V1	AKTV0322
T110 (G-2)	V5771	AK182V1	AK182
T111 (G-2)	SKA50V1A	NONE AK203V1 AKHV0208V1 AKHV0209V1 AKHV0007V1 AKHV0005V1 AKHV0010V1 AKHV0008V1 AKHV0002AV1 AKHV0009V1 AKHV0012AV1 AKHV0018V1 AKHV0019V1 AKHV0015V1 AKHV0017V1 AKHV0020V1 AKHV0035V1 AKHV0037V1 AKHV0040V1 AKHV0025V1 AKHV0027V1 AKHV0030V1 AKHV0022AV1 AKHV0028V1 AKHV0029V1 AKHV0032AV1 AKHV0038V1 AKHV0039V1 AK206V1 AKHV0055V1 AKHV0060V1 AKHV0207V1	⑥ SKA50 AK203 AKHV0208 AKHV0209 AKHV0007 AKHV0005 AKHV0010 AKHV0008 AKHV0002A AKHV0009 AKHV0012A AKHV0018 AKHV0019 AKHV0015 AKHV0017 AKHV0020 AKHV0035 AKHV0037 AKHV0040 AKHV0025 AKHV0027 AKHV0030 AKHV0022A AKHV0028 AKHV0029 AKHV0032A AKHV0038 AKHV0039 AK206 AKHV0055 AKHV0060 AKHV0207
T111 CONT. ABOVE		AK207V1	AK207
T111 CONT.		AK208V1 AKHV0057V1 AKHV0058V1 AKHV0052AV1 AKHV0059V1 AKHV0211V1 AKHV0212V1 HFHV0081V1 HFHV0064V1 AKHV0045V1 AKHV0050V1 AKHV0205V1 AKHV0206V1 AKHV0042AV1 AKHV0048V1 AKHV0049V1 AKHV0047V1	AK208 AKHV0057 AKHV0058 AKHV0052A AKHV0059 AKHV0211 AKHV0212 HFHV0081 HFHV0064 AKHV0045 AKHV0050 AKHV0205 AKHV0206 AKHV0042A AKHV0048 AKHV0049 AKHV0047
T112 (G-1)	SKA50V1B	NONE AKLV0313V1 TAK02V1 TAK03V1 TAK04V1 AKCV0401AV1B AKCV0401BV1B AKHV0321V1	⑥ SKA50 AKLV0313 TAK02 TAK03 TAK04 AKCV0401A AKCV0401B AKHV0321
T113 (G-2)	V5773	NONE	TURBINE BLDG. INSTR. AIR SAMPLE TAP
T114 (H-2)	V5855	GEHC0107V1 GETV0109V1 GETIC0109V1	GEHC0107 GETV0109 GETIC0109
T115 (H-2)	V5861	GEHZ0018V1	GEHZ0018
T116 (F-3)	NONE	NONE	CAPPED
T117 (F-4)	V1170	FCV0316A FCV0316B	SFC02A SFC02B
T118 (F-5)	V5662	BMTV0023V1 BMTIC0023V1 BMTIC0040V1	BMTV0023 BMTIC0023 BMTIC0040
T-119 (H-5)	V5666	FCV1342 FCV1342	SKA05A SKA05B
T-120 (F-5)	V5658	KAPV0011V1	KAPV0011

CONTROL BUILDING

DESIGNATOR ON M-22KA03 & (DRAWING LOC)	FIRST ISO VALVE FROM MAIN HEADER (KA SYSTEM)	LAST ISO VALVE BEFORE END USER	END USER
CB1 (C-8)	V5194	NONE	CAPPED
CB2 (C-7)	V5192	NONE	CAPPED
CB3 (C-7)	V5193	NONE	CAPPED
CB4 (C-7)	① V384	GKTV0108V1 ② GKTC0108V1 GKTI0108V1	GKTV0108 GKTC0108 GKTI0108
CB5 (C-7)	V5195	NONE	CAPPED
CB6 (C-7)	V5200	GKAZ0162AV1 GKAZ0162BV1	GKAZ0162A GKAZ0162B
CB7 (C-7)	V5190	GKHZ0098BV1	GKHZ0098B
CB8 (C-7)	V5189	GKHZ0098AV1	GKHZ0098A
CB9 (C-7)	V5223	NONE	CAPPED
CB10 (C-7)	① V385	GKAZ0164AV1 GKAZ0164BV1	GKAZ0164A GKAZ0164B
CB11 (D-7)	V5216	GKHZ0059AV1 GKHZ0059BV1	GKHZ0059A GKHZ0059B
CB12 (D-7)	① V380	GKHZ0057AV1 GKHZ0057BV1	GKHZ0057A GKHZ0057B
CB13 (D-7)	① V376	GKHZ055AV1 GKHZ055BV1	GKHZ055A GKHZ055B
CB14 (C-8)	V5212	NONE	CAPPED
CB15 (C-8)	V5211	GKHZ0122AV1 GKHZ0122BV1	GKHZ0122A GKHZ0122B
CB16 (B-8)	① V374	GKHZ0123AV1	GKHZ0123A
CB17 (B-7)	① V373	GKHZ0123BV1 GKHZ0123CV1	GKHZ0123B GKHZ0123C
CB18 (A-8)	V5207	NONE	CAPPED
CB19 (B-8)	V5206	NONE	CAPPED
CB20 (B-8)	V5205	NONE	CAPPED
CB21 (B-7)	V5204	NONE	CAPPED
CB22 (A-7)	V5203	NONE	CAPPED
CB23 (D-7)	V5215	NONE	CAPPED
CB24 (C-7)	① V392	NONE	CAPPED
CB25 (C-7)	① V391	NONE	CAPPED

COMMUNICATIONS CORRIDOR

DESIGNATOR ON M-22KA03 & (DRAWING LOC)	FIRST ISO VALVE FROM MAIN HEADER (KA SYSTEM)	LAST ISO VALVE BEFORE END USER	END USER
CC1 (C-6)	V5060	GBLV0003V1 GBLC0003V1	GBLV0003 GBLC0003
CC2 (D-6)	V5058	GETIC0066V1	GETIC0066
CC3 (D-5)	① V719	GETIC0056V1	GETIC0056
CC4 (D-6)	V5031	SGE09V1	SGE09
CC5 (D-5)	V5033	GEHZ0058V1 GETV0056BV1 GETV0056AV1 GEMV0055V1 GEMC0059V1 GETY0059AV1	GEHZ0058 GETV0056B GETV0056A GEMV0055 GEMC0059 GETY0059A
CC6 (D-5)	V5035	GEHZ0068V1 GETV0066AV1 GEMV0065V1 GEMC0069V1 GETY0069V1 GETV0066BV1	GEHZ0068 GETV0066A GEMV0065 GEMC0069 GETY0069A GETV0066B
CC7 (C-6)	⑦ V5070 ⑦ V6052	GBV5007 GBTC5050AV1 GBPC0019V1 GBPV0019V1 GBV5014 GBTC5050BV1 GBPC0020V1 GBPV0020V1	VANE OPERATOR FOR SGB01A GBTC5050A CTRL CABINET FOR SGB01A GBPC0019 GBPV0019 VANE OPERATOR FOR SGB01B GBTC5050B CTRL CABINET FOR SGB01B GBPC0020 GBPV0020
CC8 (C-6)	NONE	NONE	CAPPED
CC9 (A-6)	V5172	NONE	CAPPED
CC10 (A-6)	V5173	NONE	CAPPED
CC11 (D-5)	V5032	NONE	CAPPED
CC12 (D-5)	V5034	NONE	CAPPED
CC13 (D-6)	① V393	NONE	CAPPED
CC14 (B-6)	V5052	GKTIC0179V1 GKTV0179V1	GKTIC0179 GKTV0179

RADWASTE BUILDING

DESIGNATOR ON M-22KA03 & (DRAWING LOC)	FIRST ISO VALVE FROM MAIN HEADER (KA SYSTEM)	LAST ISO VALVE BEFORE END USER	END USER
RW1 (B-3)	V5185	NONE	CAPPED
RW2 (B-3)	V5186	NONE NONE KAV5187 HALCV1030DV1 HALCV1030BV1 HAPCV1028CV1 HAPCV1030CV1 HALCV1030AV1 HAPCV1030EV1 HAPT1065V1 HAPCV7923V1 NONE NONE HALCV1032DV1 HALCV1032BV1 HAPCV1035CV1 HAPCV1032CV1 HALCV1032AV1 HAPCV1032EV1 HALT1030V1 HALT1032V1	SHA01A HA161 HAPCV0258A HALCV1030D HALCV1030B HAPCV1028C HAPCV1030C HALCV1030A HAPCV1030E HAPT1065 HAPCV7923 SHA01B HA162 HALCV1032D HALCV1032B HAPCV1035C HAPCV1032C HALCV1032A HAPCV1032E HALT1030 HALT1032
RW3 (B-2)	V5175	HEPCV0251V1	HEPCV0251
RW4 (B-3)	① V513	HAPCV7812V1 HAPT1092V1 HAPT1039V1 HAPT1052V1 HAPT1053V1 HAPT1055V1 HAPT1054V1	HAPCV7812 HAPT1092 HAPT1039 HAPT1052 HAPT1053 HAPT1055 HAPT1054
RW5 (B-3)	① V514	BMFY0054BV1 BMLV0016AV1 HCHV0028V1 HBLT1002V1	BMFY0054B BMLV0016A HCHV0028 HBLT1002
RW6 (A-3)	V5082	HBLT1001V1	HBLT1001
RW7 (B-4)	① V515	HCHV0045BV1 HCHV0043BV1 HCHV0043DV1	HCHV0045B HCHV0043B HCHV0043D
RW8 (B-4)	① V516	HAPT1038V1 HAPT1037V1 HAPT1036V1 HAPCV7891V1 HAPCV7896V1 HAHCV0014V1	HAPT1038 HAPT1037 HAPT1036 HAPCV7891 HAPCV7896 HAHCV0014
RW9 (A-4)	V5072	HBLT1077BV1	HBLT1077B
RW10 (B-4)	① V518	HCHV0045CV1 HCHV0043CV1	HCHV0045C HCHV0043C
RW11 (A-4)	V5088	HBLT1077AV1	HBLT1077A
RW12 (B-4)	V5085	HCHV0043EV1	HCHV0043E
RW13 (B-4)	V5087	NONE	CAPPED
RW14 (B-4)	① V520	NONE	CAPPED
RW15 (B-5)	① V523	HBLT1012V1 HBFV0866V1 KHPT1066V1	HBLT1012 HBFV0866 KHPT1066
RW16 (A-5)	① V521	HBLT1083V1 HBFV0886V1 HBFV0887V1 HBFT1085BV1	HBRY0018 HBLT1083 HBFV0886 HBFV0887 HBFT1085B
RW17 (B-3)	V5114	FBPIC0029V1	FBPIC0029
RW18 (C-3)	V5112	NONE	CAPPED
RW19 (C-3)	① V532	NONE	CAPPED
RW20 (C-3)	① V576	HF183V1	HF183
RW21 (C-3)	① V533	NONE	CAPPED
RW22 (C-3)	V5127	HCHV0045AV1 HCHV0043AV1	HCHV0045A HCHV0043A
RW23 (C-2)	V5126	HFFV0800V1	HFFV0800
RW24 (C-2)	① V531	HBTCV0325V1 HBPCV0337V1 SHB01V1	HBTCV0325 HBPCV0337 SHB01
RW25 (C-2)	① V530	HBKV0031V1 HBFCV0329V1	HBKV0031 HBFCV0329
RW26 (C-2)	① V529	HEFCV0307V1	HEFCV0307
RW27 (C-2)	① V528	HETCV0304V1 HEPCV0316V1	HETCV0304 HEPCV0316 SHB02
RW28 (D-3)	① V544	HERY0016V1 HCFT1011V1	HERY0016 HCFT1011
RW29 (D-2)	① V543	HETY0250V1	HETY0250
RW30 (C-4)	① V524		RADWASTE SAMPLE LAB CABINETS
RW31 (C-5)	① V526		RADWASTE SAMPLE LAB CABINETS
RW32 (C-4)	① V494	HB135V1 HB136V1 HE114V1 HB115V1 HA116V1 HA134AV1 HA134BV1	HB135 HB136 HE114 HB115 HA116 HA134A HA134B
RW33 (C-4)	① V535	GHTIC0011V1 GHTV0011AV1 GHTV0011BV1	GHTIC0011 GHTV0011A GHTV0011B
RW34 (C-4)	① V536	HCHV0038V1 HCHV0043FV1 HCHV0055V1 HCHV0037V1 HCHV0039V1	HCHV0038 HCHV0043F HCHV0055 HCHV0037 HCHV0039
RW35 (C-4)	V5165	HFRV0045V1	HFRV0045
RW36 (C-5)	V5166	HFHV0062V1	HFHV0062
RW37 (C-5)	① V538	HCPT1006V1 HCHV7309V1 HCHV7303V1 HCLT1005V1 HCPCV7336V1 HCHV7305V1	HCPT1006 HCHV7309 HCHV7303 HCLT1005 HCPCV7336 HCHV7305
RW38 (D-5)	① V539	HCHV7325V1	HCHV7325
RW39 (D-4)	V5148	GHTV0013V1 GHTV0012V1 V5152 { NONE NONE NONE NONE GHTT0012BV1 GHTT0012AV1 GHTT0012CV1	GHTV0013 GHTV0012 GHTI0013 GHTC0013 GHTI0012 GHTIC0012 GHTY0012B GHTY0012C GHTT0012B GHTT0012A GHTT0012C
RW40 (D-4)	V5153	GHPDZ0006V1 GHPDIC0006V1	GHPDZ0006 GHPDIC0006
RW41 (D-4)	V5147	HBLT1010V1	HBLT1010
RW42 (D-4)	V5144	HBFT1085AV1 HBLT1082V1	HBFT1085A HBLT1082
RW43 (D-4)	① V633	NONE	SHB04
RW44 (B-2)	V5176	HELT0261V1 HELT0262V1	HELT0261 HELT0262

REV.	DATE	DRAWN	CHKD.	SUPV.	
18	042107	EWM	TJC	SKC	INCORPORATE MP 06-0005 FCN 03
19	012408	MAL	TJC	TWS	INCORP. CHANGE REQUEST CAR 07-000266 (CAR 200710578).
20	042408	MAL	TJC	TWS	INCORP. CHANGE REQUEST CAR 08-000101 (CAR 200802166).
21	102508	EWM	RLW	LMR	INCORPORATE MP 08-0012
22	090109	MAL	RLW	TWS	INCORP. RFR 200605108.
23	022311	RLW	EWM	SKC	INCORPORATE CR CAR 10-000339; CAR 201010850.
24	051011	RLW	MAL	TWS	INCORPORATE MP 10-0035
25	110811	RLW	MAL	LMP	INCORPORATE CR CAR 11-000245; CAR 201108448
26	021512	MAL	RLW	TWS	INCORP. RFR 201107029.
27	081513	MAL	RLW	SKC	INCORP. MP 03-1002, FCN-09.

NOTES:

① THIS VALVE IS SHOWN ON M-22KA03.

② THIS VALVE SUPPLIES GKTC0108 AND GKTI0108.

③ DELETED

④ DELETED

⑤ USE THIS DRAWING WITH M-22KA03.

⑥ THE AIR REGULATION RACK (SKA50) SUPPLIES AIR TO T111 AND T112.

⑦ KAV5070 WILL ISOLATE AIR TO THE A CHILLER. KAV6052 WILL ISOLATE AIR TO THE B CHILLER.

⑧ EATY0009V1 SUPPLIES EATY0009 AND EATIC0009.

9. DELETED.

⑩ CE131V1 IS DOWNSTREAM OF CEPV0013V1 AND CEV0010. SEE M-22CE01 AND ACTUAL A/S TUBE ROUTING.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM INSTRUMENT AIR SYSTEM FSAR FIGURE 9.3-1 SHEET 8	
CHKD. (DATE) N/A		
SUPV. (DATE) N/A		
APPD. (DATE) N/A	LOCATION: CALLAWAY ENERGY CENTER	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KA08	REV. 27

M-22KA09

AUXILIARY BUILDING

DESIGNATOR ON M-22KA04 & (DRAWING LOC.)	FIRST ISO VALVE FROM MAIN HEADER (KA SYSTEM)	LAST ISO VALVE BEFORE END USER	END USER
A1 (C-7)	① V303	NONE	CAPPED
A2 (C-7)	① V304	EMHV8964V1	EMHV8964
A3 (A-7)	① V314		
A4 (C-7)	V305	NONE	CAPPED
A5 (B-7)	V5270	NONE	CAPPED
A6 (B-8)	V5271	ALHV0006V1 ALHV0008V1	ALHV0006 ALHV0008
A7 (B-8)	V5273	NONE	CAPPED
A8 (B-8)	V5275	ALHV0012V1 ALHV0010V1	ALHV0012 ALHV0010
A9 (B-8)	V5274	SFC03V1	SFC03
A10 (B-8)	V5253 25 FBLC0043V1 ALHV0220V1	FBLV0043AV1 FBLV0043AV1 FCFV0310V1 FCLV0010V1 FBLC0043V1 ALHV0220V1	FBLV0043A FBLV0043B FCFV0310 FCLV0010 FBLC0043 ALHV0220
A11 (A-8)	NONE	NONE	CAPPED
A12 (C-6)	V5284	EFHV0043V1 EFHV0044V1	EFHV0043 EFHV0044
A13 (C-5)	VALVE NOT TAGGED	GLD0016V1	GLD0016
A14 (C-5)	V5477	EGTV0029V1	EGTV0029
A15 (C-5)	① V319	NONE	CAPPED
A16 (C-5)	① V318	GLAZ51AV1 GLAZ51BV1	GLAZ51A GLAZ51B
A17 (C-6)	V5554	NONE	CAPPED
A18 (C-6)	V5553	NONE	CAPPED
A19 (C-6)	V5551	GLD0019V1	GLD0019
A20 (C-6)	① V321 ⑧ V5549	AEFV0046V1 BMHV0004V1 ABPV0004V1	AEFV0046 BMHV0004 ABPV0004
A21 (C-6)	① V590 ⑨ V5557 V5558	AEFV0042V1 AEFV0039V1 ABHV0012V1 ABLV0009V1 ABLV0010V1 ABHV0015V1 ABHV0018V1 ABHV0021V1	AEFV0042 AEFV0039 ABHV0012 ABLV0009 ABLV0010 ABHV0015 ABHV0018 ABHV0021
A22 (C-7)	① V322 ⑧ V5569	ABPV0001V1 AEFV0043V1 BMHV0001V1	ABPV0001 AEFV0043 BMHV0001
A23 (C-7)	① V323 ⑧ V5572	ABPV0002V1 AEFV0044V1 BMHV0002V1	ABPV0002 AEFV0044 BMHV0002
A24 (C-7)	① V591 ⑨ V5574 V5575	AEFV0040V1 AEFV0041V1 ABHV0005V1 ABHV0048V1 ABLV0007V1 ABLV0008V1	AEFV0040 AEFV0041 ABHV0005 ABHV0048 ABLV0007 ABLV0008
A25 (C-7)	① V589 ⑧ V5590	ABPV0003V1 AEFV0045V1 BMHV0003V1	ABPV0003 AEFV0045 BMHV0003
A26 (C-8)	① V324	ABHV0006V1 ABHV0049V1	ABHV0006 ABHV0049
A27 (D-6)	① V331	GLTI0005V1 GLTI0006V1 GEPDZ0078V1	GLTI0005 GLTI0006 GEPDZ0078
A28 (D-6)	VALVE NOT TAGGED	GLTV0005V1 GLTV0006V1 GFTV0003V1 GFTV0560V1 GTTV0002V1 GTTV0003V1 GTTV0014V1	GLTV0005 GLTV0006 GFTV0003 GFTV0560 GTTV0002 GTTV0003 GTTV0014
A29 (D-5)	① V332	GKTV0011V1 GKTV0012V1	GKTV0011 GKTV0012
A30 (D-5)	V5507	② GKTC0011V1 GKHZ0013GV1 GKHZ0184DV1 GTTC0003V1 GTTIC0002V1	GKTC0011 GKTC0012 GKHZ0013G GKHZ0184D GTTC0003 GTTIC0002
A31 (D-5)	V1147	GKHZ0013EV1 GKHZ0013FV1 GKHZ0013DV1 GKHZ0184CV1 GKHZ0013CV1 GKHZ0184BV1 GKHZ0013BV1	GKHZ0013E GKHZ0013F GKHZ0013D GKHZ0184C GKHZ0013C GKHZ0184B GKHZ0013B
A32 (D-5)	V5544	GKPDIC0044V1 GKPDZ0044V1 GKHZ0184EV1 GKHZ0013HV1	GKPDIC0044 GKPDZ0044 GKHZ0184E GKHZ0013H
A33 (D-4)	① V334	GTHZ0006V1 GTHZ0004V1 GTTI0014V1 GTTI0014V1	GTHZ0006 GTHZ0004 GTTI0014 GTTC0014
A34 (D-4)	V5534	GKHZ0013AV1 GKHZ0184AV1	GKHZ0013A GKHZ0184A
A35 (D-4)	V5526	GLPDZ0020V1 GLPDIC0020V1 GTPDIC0016V1 GTPDZ0016V1	GLPDZ0020 GLPDIC0020 GTPDIC0016 GTPDZ0016
A36 (D-3)	V5518	EGRV0010V1 EGLV0002V1	EGRV0010 EGLV0002
A37 (D-3)	V5521	EGRV0009V1 EGLV0001V1	EGRV0009 EGLV0001
A38 (D-3)	① V1136	GTFT0021BAV1	CAPPED
A39 (D-3)	V5516	GTHZ0009V1 GTHZ0012V1	GTHZ0009 GTHZ0012
A40 (B-6)	V5282	NONE	CAPPED
A41 (B-6)	V5281	BGPC8155V1 BGPC8156V1	BGPC8155 BGPC8156
A42 (B-6)	① V291	BGFCV0110BV1 BGFCV0111BV1 BGFCV0111AV1 HAHV7805V1 HAHCV1094V1 HAPCV7800V1 BGPCV0115V1 BGFYO111EV1	BGFCV0110B BGFCV0111B BGFCV0111A HAHV7805 HAHCV1094 HAPCV7800 BGPCV0115 BGFYO111E
A43 (B-6)	① V292	NONE	CAPPED
A44 (C-5)	V5286	EKD01V1	EKD01 (RETIRED IN PLACE)
A45 (C-5)	V5287	NONE	CAPPED

DESIGNATOR ON M-22KA04 & (DRAWING LOC.)	FIRST ISO VALVE FROM MAIN HEADER (KA SYSTEM)	LAST ISO VALVE BEFORE END USER	END USER
A46 (A-5)	① V313	BGFYO124V1 BGFCV0124V1 BGFYO121BV1 BGFCV0121V1 BGHYO182V1 BGHCV0182V1	BGFYO124 BGFCV0124 BGFYO121B BGFCV0121 BGHYO182 BGHCV0182
A47 (B-5)	V5291	NONE	CAPPED
A49 (B-5)	V5293	NONE BGHV8135V1	SJ357 CHLORIDE ANLZR BGHV8135
A50 (B-4)	V5333	NONE	CAPPED
A51 (B-4)	V5335	NONE	CAPPED
A52 (B-5)	V5328	NONE	CAPPED
A53 (B-5)	V5332	NONE	CAPPED
A54 (B-4)	① V296	BGHV7010AV1 BGHV7010BV1	BGHV7010A BGHV7010B
A55 (B-4)	① V297	NONE	ELBOW
A56 (B-5)	① V295	BGHV7010DV1 BGHV7010EV1	BGHV7010D BGHV7010E
A57 (A-5)	V5239	NONE	CAPPED
A58 (A-4)	V5240 ⑥	BGTCV0386V1 BGTCV0386V3 BGFYO375V1 BGFCV0375V1	BGTCV0386 BGTCV0386 BGFYO375 BGFCV0375
A59 (A-4)	① V308	BGTCV0381AV1 BGTY0381AV1 BGUV7046V1 BGUV7045V1 BGUV7022V1 BGUV7002BV1 BGUV7040V1 BGHV8245V1 BGHY7054V1 BGUV7041V1 BGUV7002AV1 BGHV8130V1 BGHCV0387V1 BGUV7056V1 BGUV7057V1	BGTCV0381A BGTY0381A BGUV7046 BGUV7045 BGUV7022 BGUV7002B BGUV7040 BGHV8245 BGHY7054 BGUV7041 BGUV7002A BGHV8130 BGHCV0387 BGUV7056 BGUV7057
A60 (A-4)	V5241	NONE	CAPPED
A61 (A-4)	V5238	NONE	CAPPED
A62 (A-3)	NONE	NONE	CAPPED
A63 (A-3)	V5237	NONE	CAPPED
A64 (A-3)	① V340	BGFY0110EV1 BGFCV0110AV1	BGFY0110E BGFCV0110A
A65 (B-4)	① V299	NONE	CAPPED
A66 (B-3)	① V298	BGLCV0112AV1 BGLY0112AV1 BGHV8133V1	BGLCV0112A BGLY0112A BGHV8133
A67 (C-3)	① V300	EJFCV0619V1 EJFY0619XV1 EJHY0607V1 EJHCV0607V1	EJFCV0619 EJFY0619X EJHY0607 EJHCV0607
A68 (B-3)	① V301	EJFCV0618V1 EJHY0606V1 EJFY0618XV1 EJHCV0606V1	EJFCV0618 EJHY0606 EJFY0618X EJHCV0606
A69 (B-4)	V5299	NONE	CAPPED
A70 (B-3)	V5312	NONE	CAPPED
A71 (C-2)	V5310	NONE	CAPPED
A72 (C-2)	V5311	HBHV7150V1 EPPCV8893V1 HBPCV7152V1 HBPCV7155V1 EMHV8888V1 BLHV8047V1	HBHV7150 EPPCV8893 HBPCV7152 HBPCV7155 EMHV8888 BLHV8047
A73 (C-3)	① V327	NONE	CAPPED
A74 (C-3)	V5466	GLAZO063AV1 GLAZO063BV1	GLAZO063A GLAZO063B
A75 (C-4)	① V328	NONE	CAPPED
A76 (C-4)	NONE	NONE	CAPPED
A77 (C-4)	V5471	NONE	CAPPED
A78 (C-4)	V5472	EGTIC0030V1	EGTIC0030
A79 (C-4)	V5473	EGTV0030V1	EGTV0030
A80 (C-4)	NONE	NONE	CAPPED
A81 (B-3)	V5309	EGHV0070AV1 EGHV0070BV1 EGHV0069AV1 EGHV0069BV1	EGHV0070A EGHV0070B EGHV0069A EGHV0069B
A82 (B-3)	V5258	BNHCV8800BV1 BNHCV8800AV1	BNHCV8800B BNHCV8800A
A83 (B-3)	V5308	NONE	CAPPED
A84 (B-1) ON DWG M-22KA01	V277	KAFV0029V1 LFFV0096V1 EPHV8880V1 BBPCV8034V1 BBHV8027V1 HBHV7136V1 BGHV8152V1	KAFV0029 LFFV0096 EPHV8880 BBPCV8034 BBHV8027 HBHV7136 BGHV8152
A85 (B-6)	NONE	NONE	CAPPED
A86 (A-6)	NONE	NONE	CAPPED
A87 (B-5)	NONE	NONE	CAPPED
A88 (A-3)	NONE	NONE	CAPPED
A89 (C-6)	① V320	NONE	CAPPED
A90 (C-5)	NONE	NONE	CAPPED
A91 (D-5)	V1148	NONE	CAPPED
A92 (D-5)	V1149	NONE	CAPPED
A93 (D-4)	V5533	NONE	CAPPED
A94 (D-4)	NONE	NONE	CAPPED
A95 (D-4)	V5532	NONE	CAPPED
A96 (D-4)	V5531	NONE	CAPPED
A97 (D-3)	V5525	NONE	CAPPED
A98 (D-3)	V5524	NONE	CAPPED
A99 (D-3)	V5517	NONE	CAPPED
A100 (D-5)	V5226	BGTV0130V1 BGTYO381BAV1 BGTCV0381BV1 BGHYO128V1 BGHCV0128V1 BGPYO131V1 BGPCV0131V1 BGTCV0129V1	BGTV0130 ⑥ BGTCV0381B BGTCV0381B ⑥ BGHCV0128 BGHCV0128 ⑥ BGPCV0131 BGPCV0131 BGTCV0129

DIESEL GENERATOR BUILDING

DESIGNATOR ON M-22KA04 & (DRAWING LOC.)	FIRST ISO VALVE FROM MAIN HEADER (KA SYSTEM)	LAST ISO VALVE BEFORE END USER	END USER
DG1 (F-6)	① V386	KAV1333	CAPPED
DG2 (F-5)	KAV1334	NONE	CAPPED
DG3 (F-5)	V5028	NONE	CAPPED
DG4 (F-6)	V5029	GMHZ0009V1	GMHZ0009
DG5 (G-5)	V5051	NONE	CAPPED
DG6 (G-5)	NONE	NONE	CAPPED (STUB)
DG7 (G-5)	V5050	NONE	CAPPED
DG8 (G-5)	V5049	NONE	CAPPED
DG9 (G-6)	V5048	GMHZ0019V1	GMHZ0019
DG10 (G-5)	NONE	NONE	CAPPED(STUB)

CONDENSATE & DEMINERALIZED WATER STORAGE TANKS PIPE TRENCH

DESIGNATOR ON M-22KA04 & (DRAWING LOC.)	FIRST ISO VALVE FROM MAIN HEADER (KA SYSTEM)	LAST ISO VALVE BEFORE END USER	END USER
CD1 (E-3)	① V595	ANTV0007V1	ANTV0007
CD2 (E-3)	① V598	APTV0003V1 APLV0002V1	APTV0003 APLV0002

LAUNDRY DECON FACILITY

DESIGNATOR ON M-22KA04 & (DRAWING LOC.)	FIRST ISO VALVE FROM MAIN HEADER (KA SYSTEM)	LAST ISO VALVE BEFORE END USER	END USER
H1 (G-8)	① V602	KAV1184 KAV1185 KAV1186 KAV1187 KAV1188 KAV1189 KAV1195 KAV1196	SHD07A SHD07B SHD07C SHD06A SHD06B SHD06C GLHY205 GLHY206

FUEL BUILDING

DESIGNATOR ON M-22KA04 & (DRAWING LOC.)	FIRST ISO VALVE FROM MAIN HEADER (KA SYSTEM)	LAST ISO VALVE BEFORE END USER	END USER
F1 (G-6)	① V572	LFLV0123V1	LFLV0123
F2 (G-6)	① V574	GGTV0002V1 GGTV0029V1 GGTC0003V1 GGTC0003V1 GGTI0002V1 GGTI0002V1 GGTV0059V1 GGTIC0059V1	GGTV0002 GGTV0029 GGTC0003 GGTI0003 GGTI0002 GGTC0002 GGTV0059 GGTIC0059
F3 (G-6)	① V569	NONE	CAPPED
F4 (F-6)	① V570	NONE	CAPPED
F5 (F-6)	① V567	NONE	CAPPED

REFUELING WATER STORAGE TANK VALVE PIT

DESIGNATOR ON M-22KA04 & (DRAWING LOC.)	FIRST ISO VALVE FROM MAIN HEADER (KA SYSTEM)	LAST ISO VALVE BEFORE END USER	END USER
RP1 (F-8)	① V564	BNTV0006V1	BNTV0006

RADWASTE TUNNEL

DESIGNATOR ON M-22KA04 & (DRAWING LOC.)	FIRST ISO VALVE FROM MAIN HEADER (KA SYSTEM)	LAST ISO VALVE BEFORE END USER	END USER
RWT1 (E-6)	① V563	XXPIC5000V1	XXPIC5000

AUXILIARY BOILER ROOM

DESIGNATOR ON M-22KA04 & (DRAWING LOC.)	FIRST ISO VALVE FROM MAIN HEADER (KA SYSTEM)	LAST ISO VALVE BEFORE END USER	END USER
AB1 (H-5)	V5338	FAFV0003V1 GFTZ0040AV1 GFTZ0040BV1 EFA01V1 FAV5003 FAV5004 FABE0016AV1 FAXZ0096V1 FAZS0083V1 FAZS0084V1 FABE0016BV1 FAFZ0085V1 FAFZ0100V1	FAFV0003 GFTZ0040A GFTZ0040B EFA01 FAFV0033 FAFV0033A FABE0016A FAXZ0096 FAZS0083 FAZS0084 FABE0016B FAFZ0085 FAFZ0100
AB2 (H-6)	V599	NONE	CAPPED

REACTOR BUILDING

DESIGNATOR ON M-22KA04 & (DRAWING LOC.)	FIRST ISO VALVE FROM MAIN HEADER (KA SYSTEM)	LAST ISO VALVE BEFORE END USER	END USER
RB1 (G-4)	① V474	EMHV8824V1 EMHV8823V1	EMHV8824 EMHV8823
④ RB2 (F-4)	V5356	EPHV8877DV1	EPHV8877D
RB3 (G-4)	V1167	EPHV8875DV1 EPHV8878DV1 EPHV8875AV1 EPHV8878AV1	EPHV8875D EPHV8878D EPHV8875A EPHV8878A
RB4 (G-4)	V5400	BBLCV0178V1 BBLCV0181V1 LFLV0100V1 LFLV0099V1	BBLCV0178 BBLCV0181 LFLV0100 LFLV0099
RB5 (H-4)	V5414	GTHZ0011V1	GTHZ0011
RB6 (H-4)	① V583 ⑤ BBPCV0455BV1 BBPCV0455BV4 BBPCV0455BV5 ⑤ BBPCV0455CV1 BBPCV0455CV4 BBPCV0455CV5	BGHV8145V1 BBPCV0455BV1 BBPCV0455BV4 BBPCV0455BV5 BBPCV0455CV1 BBPCV0455CV4 BBPCV0455CV5	BGHV8145 BBPCV0455B BBPCV0455B BBPCV0455B BBPCV0455C BBPCV0455C BBPCV0455C
RB7 (H-4)	V5415	GTHZ0008V1	GTHZ0008
RB8 (H-4)	① V582	NONE	CAPPED
RB9 (H-4)	V5457	GTHZ0005V1	GTHZ0005
RB10 (H-4)	① V580	KAV1351 KAV1353	HANSEN FITTING HANSEN FITTING
RB11 (H-3)	V5405	GTHZ0007V1	GTHZ0007
RB12 (H-4)	① V581	KAV1351 KAV1353	HANSEN FITTING HANSEN FITTING
④ RB13 (G-4)	V5362	EPHV8879DV1	EPHV8879D
④ RB14 (G-3)	V5361	BBHV8141DV1	BBHV8141D
④ RB15 (G-3)	V5360	NONE	CAPPED
④ RB16 (F-3)	NONE	NONE	CAPPED
RB17 (F-4)	① V483 ⑥ BGHCV0123V1 BGHYO123V1	BGHV8143V1 EJHCV8825V1 EMHV8889DV1 EJHCV8890BV1 BGHCV0123V1 BGHYO123V1	BGHV8143 EJHCV8825 EMHV8889D EJHCV8890B BGHCV0123 BGHCV0123
RB18 (F-3)	V5365 ⑥ HBLCV1003V1 HBLY1003V1	BGHV8160V1 HBHV7176V1 HBHV7126V1 HBLCV1003V1 HBLY1003V1	BGHV8160 HBHV7176 HBHV7126 HBLCV1003 HBLCV1003
RB19 (F-3)	① V578	NONE	CAPPED
④ RB20 (F-3)	V5374	NONE	CAPPED
④ RB21 (F-3)	V5366	EPHV8877CV1 EPHV8879CV1 BBHV8141CV1	EPHV8877C EPHV8879C BBHV8141C
RB22 (F-3)	V5363	HBHV7127V1 HBHV7144V1 BBHV8031V1 HBHV7143V1 BBHV7141V1 BBHV8045V1 BBHV8032V1	HBHV7127 HBHV7144 BBHV8031 HBHV7143 BBHV7141 BBHV8045 BBHV8032
RB23 (F-3)	V5367	LFLV0122V1	LFLV0122
RB24 (F-3)	V5386	EPHV8878CV1	EPHV8878C
④ RB25 (F-3)	V5426	BGLCV0460V1 BGLCV0459V1	BGLCV0460 BGLCV0459
RB26 (G-3)	V5433	EPHV8875CV1 BBLCV0179V1 BBLCV0180V1 LFLV0098V1 LFLV0097V1	EPHV8875C BBLCV0179 BBLCV0180 LFLV0098 LFLV0097
RB27 (G-3)	V5430	BGHV8149AV1 BGHV8149BV1 BGHV8149CV1	BGHV8149A BGHV8149B BGHV8149C
RB28 (G-2)	① V480	BGHV8146V1 BGHV8147V1 EPHV8875BV1	BGHV8146 BGHV8147 EPHV8875B
RB29 (F-2)	V5439	EPHV8878BV1 EMHV8889CV1 EMHV8889BV1	EPHV8878B EMHV8889C EMHV8889B
RB30 (F-2)	V5459	EMHV8881V1	EMHV8881
RB31 (F-2)	V5452	NONE	CAPPED
④ RB32 (G-2)	V5448	BBHV8141AV1 EMHV8889AV1 EPHV8879AV1 EPHV8877AV1	BBHV8141A EMHV8889A EPHV8879A EPHV8877A
RB33 (G-2)	V5444	EMHV8882V1 EMHV8843V1	EMHV8882 EMHV8843
RB34 (G-1)	V5443	EMHV8871V1 EJHCV8890AV1	EMHV8871 EJHCV8890A
④ RB35 (F-2)	V5449	BBHV8141BV1	BBHV8141B
④ RB36 (F-1)	V6054	EPHV8877BV1 EPHV8879BV1	EPHV8877B EPHV8879B

NOTES:

① VALVE SHOWN ON M-22KA04.
② VALVE SUPPLIES GKTC0011 AND GKTC0012.
③ USE THIS DWG. WITH M-22KA04.
④ INSIDE OF BIOSHIELD.
⑤ COMPONENT HAS THREE AIR SUPPLIES.
⑥ COMPONENT HAS TWO AIR SUPPLIES.
⑦ TO LOCATE A COMPONENT ON THIS DRAWING, CHECK DRAWING LIST ON CEL FOR DESIGNATOR.
⑧ VALVE IS A DRAIN FOR THE INSTRUMENT AIR LINE.
⑨ DOWNSTREAM ISO VALVES

15	062201	MAL
CHKD. JHK	SUPV. JAM	APPD. N/A

INCORP. RFR 21101A.

REV. 16	DATE 111202
DRAWN EWM	CHKD. DJB	SUPV. JDW

INCORPORATE MP 96-1026A.

REV. 17	DATE 111502
DRAWN MAL	CHKD. RLW	SUPV. DLB

INCORP. MP 00-1006A.

REV. 18	DATE 082603
DRAWN MAL	CHKD. EMM	SUPV. TWS

INCORP. MP 00-1006 FCN-02.

REV. 19	DATE 110904
DRAWN MAL	CHKD. RLW	SUPV. TWS

INCORP. RFR 22941A.

REV. 20	DATE 101105
DRAWN JHK	CHKD. MAL	SUPV. TWS

INCORP. MP 04-1015.

REV. 21	DATE 111505
DRAWN MAL	CHKD. JHK	SUPV. SKC

INCORP. MP 00-1009 FCN-34.

REV. 22	DATE 042007
DRAWN RLW	CHKD. EMM	SUPV. TWS

INCORPORATE MP 00-1009B

REV. 23	DATE 050507
DRAWN EMM	CHKD. RLW	SUPV. TWS

INCORPORATE MP 06-0056

REV. 24	DATE 090109
DRAWN MAL	CHKD. RLW	SUPV. TWS

INCORP. RFR 200605108.

REV. 25	DATE 042216
DRAWN MAL	CHKD. RLW	SUPV. JEN

INCORP. MP 13-0033. REV. 0.

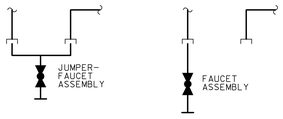
AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM INSTRUMENT AIR SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.3-1 SHEET 9 (25)		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION CALLAWAY ENERGY CENTER		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KA09		REV. 25

M-22SJ01(Q)

NOTES

1. ALL VENDOR SAMPLE LINES ARE AUSTENITIC STAINLESS STEEL TUBING IN ACCORDANCE WITH STANDARD CODES FOR POWER PIPING ANSI B31.1-1973. ALL TUBING IS 3/8 INCH O.D. X .065 INCH WALL THICKNESS UNLESS OTHERWISE NOTED. TUBING THROUGH THE SAMPLE COOLERS MAY BE 1/4 INCH O.D. TUBING DOWNSTREAM OF THE MAIN ISOLATION VALVES MAY BE 1/4 INCH O.D. TUBING THROUGHOUT THE RADWASTE BUILDING PANEL (M-22SJ02) MAY BE 1/4 INCH O.D. DRAIN MANIFOLD HEADERS, AND COOLER PIPING/TUBING SHALL ALSO MEET THE REQUIREMENTS OF ANSI B31.1-1973.
2. THIS VALVE IS AN ADJUSTABLE ROD-IN-TUBE TYPE FOR PRESSURE DROP AND FLOW CONTROL.
3. VALVE POSITIONS ARE SHOWN WHEN THE SAMPLE SYSTEM IS NOT IN OPERATION.
4. DIRECT DISCHARGE VIA A CLOSED CONNECTION TO A SINK DRAIN HEADER [TO AUX. BLDG. EQUIP. DRAIN SUMP (CRW)].
5. DIRECT DISCHARGE VIA A CLOSED CONNECTION TO A SINK DRAIN HEADER [TO AUX. BLDG. SUMP (DRW)].
6. DIRECT DISCHARGE VIA A CLOSED CONNECTION TO A SINK DRAIN HEADER [TO RADWASTE BLDG. EQUIP. DRAIN SUMP (CRW)].
7. DIRECT DISCHARGE VIA A CLOSED CONNECTION TO A SINK DRAIN HEADER [TO RADWASTE BLDG. SUMP (DRW)].
8. THE SAMPLE VESSEL CONFIGURATION SHOWN IS AN EXAMPLE ONLY. OTHER ACCEPTABLE CONFIGURATIONS ARE SHOWN BELOW. THE FAUCET ASSEMBLIES ARE PROVIDED FOR PURPOSES OF OBTAINING GRAB SAMPLES INTO AN OPEN CONTAINER. THE FAUCET ASSEMBLIES ARE TO BE IN A NORMALLY CLOSED POSITION WHEN NOT TAKING SAMPLES. ADDITIONAL CONFIGURATIONS WITH ANALYZERS, JUMPERS, ETC., ARE ACCEPTABLE IF THEY MEET THE REQUIREMENTS OF RFR-17881C. THE CONFIGURATIONS MAY VARY BY HAVING ADDITIONAL ISOLATION, VENT, AND DRAIN VALVES.



9. FOR INSTRUMENT PIPING CLASS SPECIFICATION FOR STAINLESS STEEL TUBING SEE DWG. J-27G10.
10. THIS SAMPLE SHALL BE TAKEN, AT HIGHER PROCESS PRESSURES TO PREVENT FLASHING IN ANY PORTION OF THE SAMPLE LINE, FOR PURPOSES OF DETERMINING DISSOLVED GAS CONCENTRATIONS.
11. REMOVABLE IN-LINE FILTERS. FOR TRANSPORT TO THE HOT LABORATORY FOR FURTHER ANALYSIS.
12. FOUR (4) SPARE SAMPLE LINES. COMPLETE WITH TUBING, INSTRUMENTS, ISOLATION VALVES, QUICK DISCONNECTS AND THROTTLE VALVES, SHALL BE BUILT INTO THE VENDOR'S PANEL AS SHOWN. FOR FUTURE EXPANSION. THE VENDOR SHALL CAP EACH SAMPLE LINE, AT THE INLET AND OUTLET, ON THE EXTERNAL SIDE OF HIS BULKHEAD FITTINGS.
13. THIS VALVE IS USED TO RELEASE THE SAMPLE LINE PRESSURE TO ATMOSPHERE. BEFORE QUICK DISCONNECTING THE SAMPLE VESSEL. WHEN OBTAINING HIGH PRESSURE RCS PROCESS SAMPLES.
14. THE PRESSURE SENSING LINE SHOULD FORM A DEAD LEG OR A LOOP SEAL TO PROVIDE THERMAL BARRIER. IN THE CASE OF LOSS OF COMPONENT COOLING WATER TO THE SAMPLE COOLER.
15. ⊛ ITEMS SUPPLIED BY WESTINGHOUSE ELECTRIC CORP. (NSSS).
16. DIGITAL PRESSURE INDICATOR BLEED VALVE SHALL BE PANEL MOUNTED IN CLOSE PROXIMITY TO THE INDICATOR. DIGITAL PRESSURE INDICATOR USED TO CALIBRATE REACTOR COOLANT SYSTEM PRESSURE INSTRUMENTATION.
17. THE Q-LISTED PORTION OF THIS SYSTEM IS ONLY THE PIPING AND VALVES ASSOCIATED WITH CONTAINMENT PENETRATIONS.
18. CONTAINMENT PENETRATION PIPING 003-ECB-1" IS SCH. 80S.
19. SWITCH PROVIDED FOR POWER LOCKOUT.
20. DELETED
21. A CHEMICAL ADDITION TANK (CAT) PER THE REQUIREMENTS OF RFR-17881A AND RFR-17881C CAN BE CONNECTED TO THIS LOCATION.
22. SJV0802 AND SJV0803 WERE CHANGED TO NORMALLY CLOSED BY RFR 18900C.

REV.	DATE	DRAWN
7	020698	DLBr
CHK'D.	SUPV.	APPD.
RBF	AMR	N/A
INCORP. RFR-17881C		
REV.	DATE	DRAWN
8	030298	RLW
CHK'D.	SUPV.	APPD.
DLBr	AMR	N/A
INCORP. RFR-15308B.		
REV.	DATE	DRAWN
9	061998	DJB
CHK'D.	SUPV.	APPD.
EWM	JHC	N/A
INCORP CMP 98-1015A		
REV.	DATE	DRAWN
10	062598	SKC
CHK'D.	SUPV.	APPD.
DLBr	AMR	N/A
INCORP. RFR-18922A		
REV.	DATE	DRAWN
11	061199	RLW
CHK'D.	SUPV.	APPD.
DLBr	JHC	N/A
INCORP. RFR-18900A		
REV.	DATE	DRAWN
12	010802	MAL
CHK'D.	SUPV.	APPD.
SKC	JAM	N/A
INCORP. RFR-18900C.		
REV.	DATE	DRAWN
13	030102	RLW
CHK'D.	SUPV.	APPD.
EWM	AMR	N/A
INCORP. RFR-21871A		
REV.	DATE	DRAWN
14	041802	DJB
CHK'D.	SUPV.	APPD.
RAM	AMR	N/A
INCORP. RFR-20872A		
REV.	DATE	DRAWN
15	083002	RLW
CHK'D.	SUPV.	APPD.
EWM	TWS	N/A
INCORP. RFR-22105A		
REV.	DATE	
16	041003	
DRAWN	CHK'D.	SUPV.
RLW	EWM	TWS
INCORPORATE RFR-22319A		
REV.	DATE	
17	102103	
DRAWN	CHK'D.	SUPV.
RLW	MAL	TWS
INCORPORATE RFR-20058D		
REV.	DATE	
18	110904	
DRAWN	CHK'D.	SUPV.
MAL	RLW	TWS
INCORP. RFR-22941A.		
REV.	DATE	
19	050305	
DRAWN	CHK'D.	SUPV.
RLW	MAL	TWS
INCORPORATE MP 01-1018A (PARTIAL)		
REV.	DATE	
20	050605	
DRAWN	CHK'D.	SUPV.
RLW	MAL	SKC
INCORP. MP 01-1018A.		
REV.	DATE	
21	070105	
DRAWN	CHK'D.	SUPV.
RLW	MAL	TDH
INCORPORATE MP 01-1018A AND FCN-03.		
REV.	DATE	
22	112305	
DRAWN	CHK'D.	SUPV.
RLW	EWM	TWS
INCORPORATE AC 05-000087. CAR 200507317		
REV.	DATE	
23	091009	
DRAWN	CHK'D.	SUPV.
RLW	TJC	LMR
INCORPORATE AC 09-000063. RFR 200801863		
REV.	DATE	
24	102109	
DRAWN	CHK'D.	SUPV.
MAL	TJC	TWS
INCORP. CAR 200903322		
REV.	DATE	
25	100710	
DRAWN	CHK'D.	SUPV.
TJC	MAL	TWS
INCORP. CAR 201007021		
REV.	DATE	
26	040511	
DRAWN	CHK'D.	SUPV.
MAL	TJC	TWS
INCORP. TM 10-0009 AND CAR 201002162 (ACTION 1).		
REV.	DATE	
27	080111	
DRAWN	CHK'D.	SUPV.
MAL	TJC	SKC
REMOVE TM 10-0009, REV. 0.		
REV.	DATE	
28	083011	
DRAWN	CHK'D.	SUPV.
MAL	TJC	LMP
INCORP. CAR 201105752.		
REV.	DATE	
29	111611	
DRAWN	CHK'D.	SUPV.
MAL	RLW	LMP
INCORP. CAR 201101763.		

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM NUCLEAR SAMPLING SYSTEM		
CHK'D. (DATE) N/A			
SUPV. (DATE) N/A	FSAR FIGURE 9.3-2 SHEET 1		
APPD. (DATE) N/A	LOCATION	CALLAWAY ENERGY CENTER	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22SJ01(Q)		REV. 29

M-22SJ03

NOTES:
SEE SHEET M-22SJ01 FOR NOTES

REV.	DATE	DRAWN
1	032492	RAM
CHKD.	SUPV.	APPR.
RLW	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE
2	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A

REV.	DATE
3	050305
DRAWN	CHKD.	SUPV.
RLW	MAL	TWS

INCORPORATE MP 01-1018 FCN-02 (PARTIAL)

REV.	DATE
4	050605
DRAWN	CHKD.	SUPV.
RLW	MAL	SKC

INCORPORATE MP 01-1018 FCN-02 (PARTIAL)

REV.	DATE
5	051005
DRAWN	CHKD.	SUPV.
RLW	MAL	TWS

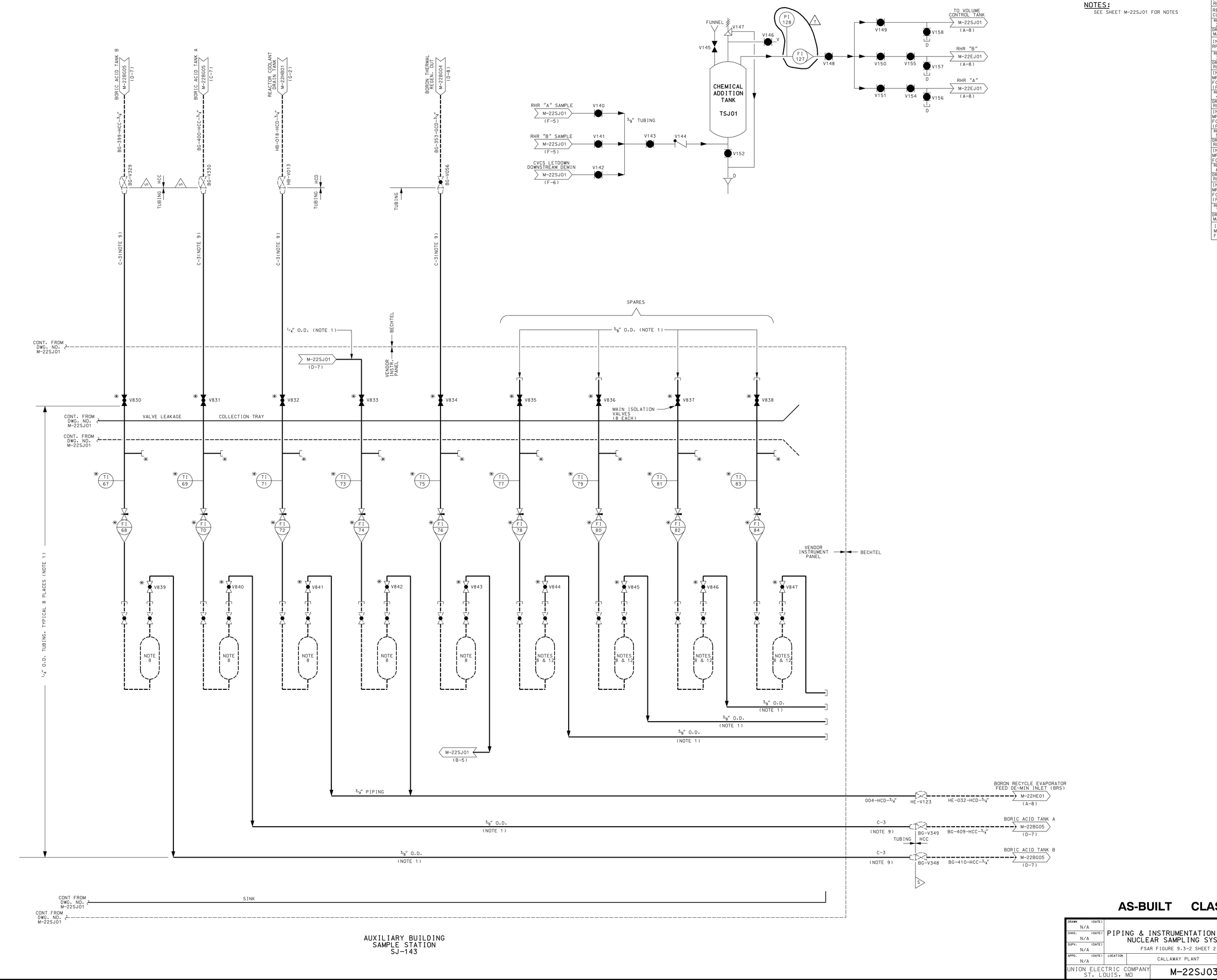
INCORPORATE MP 01-1018 FCN-02

REV.	DATE
6	070105
DRAWN	CHKD.	SUPV.
RLW	MAL	TDH

INCORPORATE MP 01-1018 FCN-03 (PARTIAL)

REV.	DATE
7	072105
DRAWN	CHKD.	SUPV.
MAL	JHK	TWS

INCORP. MP 01-1018 FCN-03.



AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM NUCLEAR SAMPLING SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.3-2 SHEET 2		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22SJ03		REV. 7

M-22SJ02

REV.	DATE	DRAWN
2	040392	DLBr
CHKD. RLW	SUPV. TJM	APPD. N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
3	101196	RLW
CHKD. DJB	SUPV. AMR	APPD. N/A

INCORP. RFR-16248C.D.

REV.	DATE	DRAWN
4	051101	RLW
CHKD. MAL	SUPV. AMR	APPD. N/A

INCORP. DEC-1776

REV.	DATE
5	041905
DRAWN MAL	CHKD. RLW	SUPV. TWS

INCORP. RFR 22941A

REV.	DATE
6	113007
DRAWN EWM	CHKD. RLW	SUPV. TWS

INCORPORATE CAR 20070932O

NOTES:

SEE SHEET M-22SJ01 FOR NOTES.

BORON RECYCLE EVAPORATOR DISTILLATE PUMP DISCH (LRS) M-22HE03 (E-5) HE-119-HCD-3/4" HB-V087 TUBING HCD

WASTE EVAPORATOR PACKAGE DISTILLATE PUMP DISCH (LRS) M-22HB02 (E-2) HB-109-HCD-3/4" HB-V104 TUBING HCD

WASTE EVAPORATOR CONDENSATE TANK PUMP DISCH (LRS) M-22HB03 (E-3) HB-154-HCD-3/4" HB-V147 TUBING HCD

WASTE HOLD-UP TANK PUMP DISCH (LBS) M-22HB02 (H-6) HB-085-HCD-3/4" HB-V076 TUBING HCD

FUEL POOL CLEAN-UP DEMIN INFLUENT M-22EC02 (H-3) EC-048-HCD-3/4" EC-V025 TUBING HCD

FUEL POOL CLEAN-UP DEMIN EFFLUENT M-22EC02 (E-3) EC-064-HCD-3/4" EC-V080 TUBING HCD

BORON RECYCLE HOLD-UP TANK PUMP DISCH (LBS) M-22HE02 (B-4) HE-101-HCD-3/4" HB-V069 TUBING HCD

FLOOR DRAIN TANKS PUMP DISCH (LRS) M-22HB02 (C-6) HB-186-HCD-3/4" HB-V193 TUBING HCD

WASTE MONITOR TANKS PUMP DISCH (LRS) M-22HB03 (C-5) HB-208-HCD-3/4" HB-V212 TUBING HCD

WASTE MONITOR TANK B PUMP DISCH (LRS) M-22HB04 (C-6) HB-287-HCD-3/4" HB-V324 TUBING HCD

LAUNDRY & HOT SHOWER TANK A PUMP DISCH (LRS) M-22HB04 (B-2) HB-260-HCD-3/4" HB-V266 TUBING HCD

LAUNDRY & HOT SHOWER TANK B PUMP DISCH (LRS) M-22HB04 (G-5) HB-233-HCD-3/4" HB-V241 TUBING HCD

CHEMICAL DRAIN TANK PUMP (LRS) M-22HB03 (G-2) HB-273-HCD-3/4" HB-V279 TUBING HCD

EVAPORATOR DISTILLATE PUMP DISCH (SLWS) M-22HF04 (F-1) HF-879-HCD-1" HF-V797 TUBING HCD

MONITOR TANK PUMP DISCH (SLWS) M-22HF02 (H-2) HF-101-HCD-3/4" HF-V129 TUBING HCD

STEAM GENERATOR BLOWDOWN SURGE TANK PUMP DISCHARGE M-22BM04 (F-3) BM-151-HBD-3/4" BM-V162 TUBING HBD

DISCH MONITOR TANK TRANSFER PUMP A DISCH M-22HB05 (F-3) HB-V852 TUBING HCD

DISCH MONITOR TANKS TRANSFER PUMP B DISCH M-22HB05 (D-3) HB-V853 TUBING HCD

VENDOR BECHTEL PANEL

C-3 (NOTE 9)

3/8" O.D. (NOTE 1)

187-5NL-8"

RADWASTE BLDG HVAC M-22GH02 (C-8)

TO PDAL 125

PDS 125A

SPARES

100-5NL-8"

M-22GH02 (C-7)

PDAL 125

FROM PDS 125A

PDS 125B

3/4"(V)

V074

3/4" PIPING

010-HCD-3/4"

REACTOR MAKE-UP WATER M-22BL01 (F-2)

BL-V080

BL-100-HCD-3/4"

V073

3/4"D

V885

V886

SAMPLE HOOD

FLEXIBLE HOSE

MAIN ISOLATION VALVES

V848 V849 V850 V851 V852 V853 V854 V855 V856 V857 V858 V859 V860 V861 V862 V863 V864 V865 V866 V867

TI 85 TI 87 TI 89 TI 91 TI 93 TI 95 TI 97 TI 99 TI 101 TI 103 TI 105 TI 107 TI 109 TI 111 TI 113 TI 115 TI 117 TI 119 TI 121 TI 123

FI 86 FI 88 FI 90 FI 92 FI 94 FI 96 FI 98 FI 100 FI 102 FI 104 FI 106 FI 108 FI 110 FI 112 FI 114 FI 116 FI 118 FI 120 FI 122 FI 124

V868 V869 V870 V871 V872 V873 V874 V875 V876 V877 V878 V879 V880 V881

NOTE 8 NOTE 6 NOTE 7 NOTES 8&12

V898 V899 V900 V897

STM. GEN BLOWDOWN SURGE TANK M-22BM04 (G-7) BM-V356 BM-150-HCD-3/4"

MONITOR TANKS (SLWS) M-22HF02 (H-3) HF-V159 HF-117-HCD-3/4"

EVAPORATOR FEED LINE (SLWS) M-22HF04 (H-1) HF-V926 HF-880-HCD-3/4"

CHEMICAL DRAIN TANK M-22LD01 (F-2) LD-V048 LD-056-HCD-3/4"

LAUNDRY & HOT SHOWER TANKS M-22HB04 (G-8) HB-V346 HB-309-HCD-3/4"

TUBING HCD

WASTE EVAP PKG DISTILLATE PUMP SUCTION (LRS) M-22HB02 (D-2) HB-110-HCD-3/4" HB-V105

BORON RECYCLE EVAP DISTILLATE PUMP SUCTION (BRS) M-22HE03 (D-5) HE-V125 HB-033-HCD-3/4"

BORON RECYCLE HOLD-UP TANK INLETS (BRS) M-22HE02 (G-8) HE-075-HCD-3/4" HE-V046

BECHTEL VENDOR PANEL

SINK

SEE NOTE 6 (TYP. OF 4)

LOOP SEAL

SEE NOTE 7 (TYP. OF 2)

V887 V888 V882

2" PIPING

V883 V884

2" x 2 1/2"

M-22LF07 (E-3)

DRW

CRW M-22LF06 (E-8)

VENDOR BECHTEL PANEL

RADWASTE BUILDING
SAMPLE STATION
SJ-144

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM NUCLEAR SAMPLING SYSTEM		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A	FSAR FIGURE 9.3-3		
APPD. (DATE) N/A	LOCATION	CLASS	
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22SJ02	REV. 6	
	CALLAWAY PLANT		

M-22RM01

NOTES:

1. ALL VENDOR SAMPLE LINES ARE AUSTENITIC STAINLESS STEEL TUBING. IN ACCORDANCE WITH STANDARD CODES FOR POWER PIPING ANSI B 31.1. ALL TUBING IS ¼ INCH O.D. x .065 INCH WALL UNLESS OTHERWISE NOTED. TUBING, THRU THE SAMPLE COOLERS SHALL BE ½ INCH O.D. TUBING DOWNSTREAM OF THE CONSTANT HEAD CHAMBER TAKE OFF LINE SHALL BE ½ INCH O.D. DRAIN MANIFOLD, HEADER, COOLER, INSTRUMENT RACK AND CHILLER PIPING/TUBING SHALL ALSO MEET THE REQUIREMENTS OF ANSI B 31.1.
2. ALL INSTRUMENT VALVES ARE TO BE RATED FOR ANSI 1500 LB. CLASS.
3. INPUTS TO RMAIK20AA (LOCATED AT SAMPLE STATION) ARE LISTED IN THE TABLE ON DRAWING NO M-22RM03.
4. THIS VALVE IS AN ADJUSTABLE ROD-IN TUBE TYPE FOR PRESSURE DROP AND FLOW CONTROL.
5. ALL VENDOR SUPPLIED EQUIPMENT SHALL BE CONTAINED WITHIN THE FOLLOWING INSTRUMENT PANELS OR EQUIPMENT:

   RM 17J
   PROCESS SAMPLING CONTROL & RECORDER INSTRUMENT PANEL. (DRY PANEL)

   RM 17Z
   PROCESS SAMPLING CONDITIONING & ANALYSIS INSTRUMENT PANEL. (WET PANEL)

   RM185
   CONDENSER-IN-LEAK DETECTION INSTRUMENT RACK.

   ERM01
   PROCESS SAMPLING CONSTANT TEMPERATURE BATH CHILLER PACKAGE.

6. FOR INSTRUMENT PIPING CLASS SPECIFICATION FOR STAINLESS STEEL TUBING, SEE DWG. J-27G10.
7. ALL INSTRUMENTS AND COMPONENTS DESIGNATED BY AN ASTERISK (*) ARE VENDOR SUPPLIED.
8. ALL ALARMS FROM THE SUPPLIER'S ANNUNCIATOR WILL BE IDENTIFIED BY A COMMON ALARM IN THE MAIN CONTROL ROOM (QA-642 AND COMPUTER I/O Q-642).
9. SIX CONDENSER HOTWELL SAMPLES SHALL BE AUTOMATICALLY AND SEQUENTIALLY DRAWN BY RMAIK20AA FOR A DWELL TIME AT IO MINUTES EACH. EACH ANALYZER OUTPUT SHALL BE SEQUENTIALLY RECORDED BY RMAIK20AA.
10. AIT-1 IS MULTIPLE CHANNEL pH ANALYZING TRANSMITTER PROCESSING 6 INPUTS & OUTPUTS CONTINUOUSLY.
11. CIRC. WTR. SAMPLE OVERFLOW ROUTED TO EQUIPMENT DRAIN BY FIELD.
12. ALL ANNUNCIATORS ARE SOFTWARE GENERATED AND CAN BE ACCESSED VIA MANAGEMENT STATION VIEWING MONITOR (RMAY20).
13. TO TRM01A VIA DRAIN TRAY
14. TO LRW VIA TURBINE BLDG SUMP.
15. NOT A CLOSED CONNECTION. TUBE EXTENDS INTO OPENING IN ADJACENT TUBE.
16. VALVE IS A PORTION OF THE SAMPLE SKID.
17. OPTIONAL ALTERNATE FLOW PATH.
18. INDICATES CONNECTION TO VENDOR SUPPLIED CORROSION MONITORING EQUIPMENT.
19. QUICK DISCONNECT CLEANOUT.

SOURCE	PARAMETER	P & ID	INPUT	RECORDER NO.	SUPPLIER'S ANNUNCIATOR
CONDENSATE DEMINERALIZER	FLOW VIA DIFFERENTIAL PRESSURE	M-22AK01	AK-FT-1 (H-5) AK-FT-11 (H-5) AK-FT-21 (H-5) AK-FT-31 (H-5) AK-FT-41 (H-5) AK-FT-51 (H-5)	RM-AIK-20 B	N/A
CONDENSATE DEMINERALIZER	CATION CONDUCTIVITY	M-22AK01	AK-CIT-66 (A-5) AK-CIT-76 (A-5) AK-CIT-86 (A-5) AK-CIT-96 (A-5) AK-CIT-106 (A-5) AK-CIT-116 (A-5)	RM-AIK-20 B	LOCAL AT AK182 SEE M-22AK01 & NOTE 12
CONDENSATE DEMINERALIZER	Na+	M-22AK01	AK-AIT-201 (D-6) AK-AIT-202 (D-4)	RM-AIK-20 B	NOTE 12

AS-BUILT CLASS 1

DRAWN	(DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM PROCESS SAMPLING SYSTEM	
CHKD.	(DATE) N/A	FSAR FIGURE 9.3-4 SHEET 1	
SUPV.	(DATE) N/A		
APPD.	(DATE) N/A	LOCATION: CALLAWAY ENERGY CENTER	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO		M-22RM01	REV. 32

REV.	DATE
21	070203
DRAWN: SKC	CHKD.: JHK
SUPV.: TWS	
INCORP MP 99-2016 FCN-13	
22	022204
RLW	MAL
SKC	
INCORPORATE MINOR CHANGE CAR 200400608	
23	110904
MAL	RLW
TWS	
INCORP. RFR 22941A.	
24	030810
MAL	TJC
TWS	
INCORP. CAR 200908119 ACTION 1.	
25	033010
MAL	TJC
TWS	
INCORP. TM 10-0002.	
26	042611
MAL	TJC
TWS	
REMOVE TM 10-0002.	
27	050211
MAL	TJC
TWS	
INCORP. TM 11-0001.	
28	092214
MAL	TJC
DME	
INCORP. MP 11-0003, REV. 0 & FCN-01.	
29	120715
MAL	RLW
DME	
INCORP. RFR 201404139.	
30	121015
RLW	TJC
DME	
INCORPORATE MP 15-0007 (PARTIAL P011)	
31	121815
CNS	MAL
DME	
INCORPORATE MP 15-0007, REMOVE TEMP. MOD. TM 11-0001	
32	123015
CNS	MAL
DME	
INCORPORATE MP 11-0003. FCN-02.	

M-22RM02

NOTES:

1. FOR GENERAL NOTES. SEE M-22RM01.
2. DELETED.
3. CHEMISTRY SAMPLE POINT TO BE USED WITH AFV0778 OR AFV0779. RFR 21883A.

REV.	DATE	DRAWN
8	030292	MAL
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
9	110692	SBR
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RMP 91-2021 FCN-02.

REV.	DATE	DRAWN
10	072293	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR 13875A RFR 13731A

REV.	DATE	DRAWN
11	110993	MAL
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

INCORP. EMP 92-3006.

REV.	DATE	DRAWN
12	010494	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR-14450A

REV.	DATE	DRAWN
13	072794	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. RFR-15013A

REV.	DATE	DRAWN
14	082594	RBF
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INCORP. DEC-1185

REV.	DATE	DRAWN
15	010396	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. RFR-15013B

REV.	DATE	DRAWN
16	030896	RBF
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INC'D TEMP MOD 93-M013

REV.	DATE	DRAWN
17	022597	RBF
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INC'D MP 93-2034 FCN-01

REV.	DATE	DRAWN
18	030497	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. RMP 93-2026 (PARTIAL)

REV.	DATE	DRAWN
19	031797	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. RMP 93-2026

REV.	DATE	DRAWN
20	120401	DJB
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. RFR-21663A

REV.	DATE
21	070203
DRAWN	CHKD. SUPV.
SKC	JHK TWS

INCORP MP 99-2016 FCN-13

REV.	DATE
22	031004
DRAWN	CHKD. SUPV.
RLW	MAL TWS

INCORPORATE MINOR CHANGE CAR 200401191

REV.	DATE
23	072104
DRAWN	CHKD. SUPV.
SKC	JHK TWS

INCORP. RFR-21883A.

REV.	DATE
24	110904
DRAWN	CHKD. SUPV.
MAL	RLW TWS

INCORP. RFR 22941A.

REV.	DATE
25	062606
DRAWN	CHKD. SUPV.
MAL	JHK MWH

INCORP. MP 06-0037.

REV.	DATE
26	030810
DRAWN	CHKD. SUPV.
MAL	TJC TWS

INCORP. CAR 200908119 ACTION 1.

REV.	DATE
26	030810
DRAWN	CHKD. SUPV.
MAL	TJC TWS

INCORP. CAR 200908119 ACTION 1.

REV.	DATE
27	092214
DRAWN	CHKD. SUPV.
MAL	TJC DME

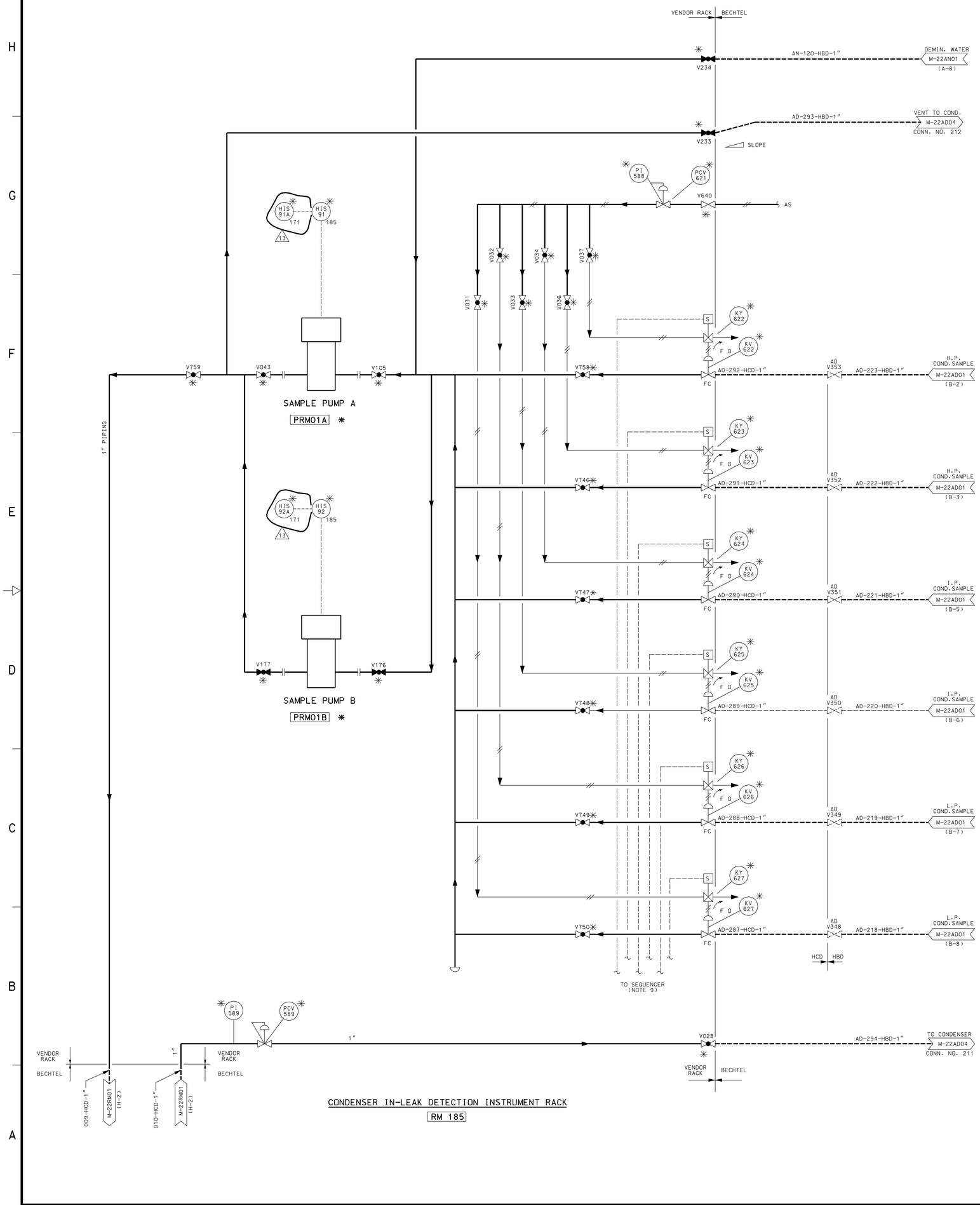
INCORP. MP 11-0003. REV. 0 & FCN-01.

REV.	DATE
28	123015
DRAWN	CHKD. SUPV.
CNS	MAL DME

INCORP. MP 11-0003. FCN-02.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM PROCESS SAMPLING SYSTEM		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A	FSAR FIGURE 9.3-4 SHEET 2		
APPD. (DATE) N/A	LOCATION: CALLAWAY ENERGY CENTER		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22RM02		REV. 28



CONDENSER IN-LEAK DETECTION INSTRUMENT RACK

RM 185

REV. 5	DATE 022692	DRAWN DLBr
CHKD. DJB	SUPV. TJM	APPD. N/A
REDRAWN FOR CLARITY.		
REV. 6	DATE 110993	DRAWN MAL
CHKD. DJB	SUPV. TJM	APPD. N/A
INCORP. EMP 92-3006.		
REV. 7	DATE 022697	DRAWN RBF
CHKD. DJB	SUPV. AMR	APPD. N/A
INCMP 93-2034 FCN-01		
REV. 8	DATE 030497	DRAWN DJB
CHKD. RBF	SUPV. AMR	APPD. N/A
INCORP. RMP 93-2026		
REV. 9	DATE 110600	DRAWN MAL
CHKD. SKC	SUPV. AMR	APPD. N/A
INCORP. MP 98-2020A.		
REV. 10	DATE 121701	DRAWN JHK
CHKD. SKC	SUPV. AMR	APPD. N/A
INCORP. MP 00-1016A.		
REV. 11	DATE 031004	
DRAWN RLW	CHKD. MAL	SUPV. TWS
INCORPORATE MINOR CHANGE CAR 20040100O		
REV. 12	DATE 110904	
DRAWN MAL	CHKD. RLW	SUPV. TWS
INCORP. RFR 22941A.		
REV. 13	DATE 041305	
DRAWN MAL	CHKD. JHK	SUPV. TWS
INCORP. RFR 23710A.		

NOTES:

FOR GENERAL NOTES SEE DRAWING M-22RM01.

REFERENCE NOTE 3:

SOURCE	PARAMETER	P&ID	INPUT	RECORDER NO.	SUPPLIER'S ANNUNCIATOR (NOTE 8)
STM. GEN. BLOWDOWN	pH	M-22RM01	AE-244(C-7)	RM-AIK20AA	(NOTE 12)
STM. GEN.F.W.	pH	M-22RM01	AE-516(C-3)		
LP.F.W.HTR.OUT	pH	M-22RM02	AE-470(D-4)		
CIRC.WTR.	pH	M-22DA01	PHL-4016-CH		
COND.PUMP DISCH.	--	M-22RM02	AE-566(D-2)		
			SPARES (9)		
STM. GEN. BLOWDOWN	CAT. COND.	M-22RM01	CE-117(C-7),CE-125(C-6)	RM-AIK20AA	(NOTE 12)
STM. GEN. BLOWDOWN	CAT. COND.	M-22RM01	CE-142(C-5),CE-150(C-4)		
STM. GEN.F.W.	CAT. COND.	M-22RM01	CE-174(C-3)		
HTR.DR.PUMP DISCH.	CAT. COND.	M-22RM02	CE-415(C-5)		
COND.DEMIN.OUT	CAT. COND.	M-22RM02	CE-573(C-5)		
COND.PUMP DISCH.	CAT. COND.	M-22RM02	CE-564(C-2)		
			SPARES(7)		
DEMINERALIZED WATER	SPEC.COND.	M-22RM02	CE-26(C-7)		
COND.PUMP DISCH.	SPEC.COND.	M-22RM02	CE-596(C-2)		
LP.F.W.HTR.OUT	SPEC.COND.	M-22RM02	CE-462(B-4)		
			SPARES(8)		
STM. GEN. BLOWDOWN	Na+	M-22RM01	AE/AIT-112(C-7) (4 INPUTS)	RM-AIK20AA	(NOTE 12)
STM. GEN. F.W.	N_2H_4	M-22RM01	AE/AIT-164(C-3)		
COND.DEMIN.OUT	Na+	M-22RM02	AE-447(B-4)		
COND.PUMP DISCH.	Na+	M-22RM02	AE-567(C-1)		
			SPARES(8)		
STM. GEN. F.W.	O_2	M-22RM01	AE/AIT-169(H-3)	RM-AIK20AA	(NOTE 12)
COND.PUMP DISCH.	O_2	M-22RM02	AE-565(C-2)		
			SPARES(13)		
CONDENSER HOT WELL	CAT. COND.	M-22RM01	CE-262(SEQ.SEL.6 SAMP) (C-2)	RM-AIK20AA	(NOTE 12)
			SPARES(9)		
CONDENSER HOT WELL	Na+	M-22RM01	AE19(SEQ.SEL.6 SAMP) (C-2)	RM-AIK20AA	(NOTE 12)
			SPARES(9)		
SAMPLE RETURN OVERPRESSURE	PRESSURE	M-22RM02	N/A	N/A	RM-PA-9
HOTWELL SECTION 1 SPECIFIC COND.	SPEC. COND.	M-22AD01	CIT-34	RM-AIK20AB	(NOTE 12)
HOTWELL SECTION 2 SPECIFIC COND.	SPEC. COND.	M-22AD01	CIT-34		
HOTWELL SECTION 3 SPECIFIC COND.	SPEC. COND.	M-22AD01	CIT-32		
HOTWELL SECTION 4 SPECIFIC COND.	SPEC. COND.	M-22AD01	CIT-32		
HOTWELL SECTION 5 SPECIFIC COND.	SPEC. COND.	M-22AD01	CIT-30		
HOTWELL SECTION 6 SPECIFIC COND.	SPEC. COND.	M-22AD01	CIT-30		

AS-BUILT CLASS 1

DRAWN (DATE) N/A		
CHKD. (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM PROCESS SAMPLING SYSTEM	
SUPV. (DATE) N/A	FSAR FIGURE 9.3-4 SHEET 3	
APPD. (DATE) N/A	LOCATION CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22RM03	REV. 13

M-22LA01

REV.	DATE	DRAWN
2	7-30-91	SBR
CHKD.	SUPV.	APPD.
GDC	TJM	N/A

REDRAWN FOR CLARITY

REV.	DATE
3	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A

COMMUNICATIONS CORR. ROOF EL. 2087'-2"

TURBINE BLDG. CORR. ROOF EL. 2087'-1½"

TURBINE BLDG. ROOF EL. 2138'-0"

TURBINE BLDG. FLOOR EL. 2065'-0"

TURBINE BLDG. FLOOR EL. 2033'-0"

TURBINE BLDG. FLOOR EL. 2000'-0"

COMM. CORR. FLOOR EL. 1974'-0"

WOMEN'S TOILET
MEN'S TOILET
MEN'S TOILET
WOMEN'S TOILET
MEN'S TOILET
TOILET AREA
WOMEN'S TOILET
MEN'S TOILET
WOMEN'S TOILET
ADJACENT TO NORTHWEST STAIRWAY
ADJACENT TO JANITOR'S CLOSET
JANITOR'S CLOSET
MEN'S TOILET
MEN'S TOILET
WOMEN'S TOILET
MEN'S TOILET
WOMEN'S TOILET
ELECTRIC HOT WATER HEATER

SANITARY WASTE DISCHARGE
8600-X-89848
BY SITE A/E (B-4) (M-10) NOTE 7

SITE A/E
CONTRACTOR
IF
JRG
JNG

CONTROL BLDG. (ACCESS CONTROL AREA) SANITARY DRAINAGE SYSTEM M-22LA02 (C-2)

CONTROL BLDG. (CONTROL ROOM) SANITARY DRAINAGE SYSTEM M-22LA02 (C-2)

ALTERNATOR (SEE NOTE 6)

HS 1 · LS 4 · HS 2
0-1 · 0-2
LAH 3 · 024 · LSH 3
V704 · V702 · V703 · V701

XNG · XHG

PLA01B · PLA01A

SANITARY LIFT STATION

NOTES:

1. PIPING, FITTINGS, VALVES, FIXTURES AND OTHER COMPONENTS, AS INDICATED, FOR THE SANITARY DRAINAGE SYSTEM SHALL BE FURNISHED, INSTALLED, CLEANED AND TESTED IN ACCORDANCE WITH THE UNIFORM PLUMBING CODE AND/OR THE APPLICABLE LOCAL OR STATE CODES.
2. WATER CLOSETS AND URINALS ARE PROVIDED WITH INTEGRAL TRAPS.
3. ADDITIONAL SYMBOLS NOT SHOWN ON DWG. M-220103 ARE AS FOLLOWS.

   ◉ = CLEANOUT

   DS = DEEP SINK

   GD = GARBAGE DISPOSAL

   PS = PANTRY SINK
4. PIPING CLASS FOR THE SANITARY WASTE SYSTEM SHALL BE AS FOLLOWS: EXCEPT AS NOTED.

MATERIAL	SERVICE
CLASS "XHG" EXTRA HEAVY CAST IRON SOIL PIPE.HUB AND PLAIN END.	SANITARY WASTE PIPE, CONTROL BLDG. & COMM. CORR. EL. 1984'-0" & BELOW, AND TURBINE BLDG. EL. 2000'-0" & BELOW.
CLASS "XNG" GALVANIZED CARBON STEEL PIPING AND SCREWED CAST IRON DRAINAGE FITTINGS.	OTHER SANITARY WASTE AND ALL VENT PIPING.
CLASS "JNG" GALVANIZED CARBON STEEL WITH FLANGED FITTINGS.	DISCHARGE PIPING FROM THE SANITARY LIFT STATION EXCEPT AS NOTED BELOW.
CLASS "JRG" DUCTILE IRON PRESSURE PIPING WITH FLANGED CONNECTIONS.	SANITARY LIFT STATION DISCHARGE PIPING PENETRATING THE EXTERIOR WALL OF THE COMM. CORR.

5. PLUMBING FIXTURES SHALL BE PER THE REQUIREMNETS OF SPECIFICATION A-220.
6. ALTERNATOR ALTERNATES PUMP OPERATION WHEN SUMP LEVEL IS HIGH, BOTH PUMPS RUN WHEN SUMP LEVEL IS HIGH-HIGH, AND BOTH PUMPS STOP ON LOW LEVEL.
7. MECHANICAL DESIGNATION PER M-2G001.
8. THE SANITARY LIFT STATION PUMPS AND COVER ARE PROCURED BY BECHTEL. ALL OTHER EQUIPMENT IN THIS SYSTEM IS OWNER PROCURED EXCEPT WHERE INDICATED.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM SANITARY LIFT STATION & TURB. BLDG. SANITARY DRAINAGE SYSTEM	
CHKD. (DATE) N/A		
SUPV. (DATE) N/A	FSAR FIGURE 9.3-5 SHEET 1 (3)	
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22LA01	REV. 3

M-22LA02

REV.	DATE	DRAWN
1	7/30/91	SBR
CHKD.	SUPV.	APPD.
GDC	TJM	N/A

REDRAWN FOR CLARITY

REV.	DATE	DRAWN
2	021292	MAL
CHKD.	SUPV.	APPD.
DLBr	TJM	N/A

INCORP RMP 90-2010.

REV.	DATE	DRAWN
3	050399	JHK
CHKD.	SUPV.	APPD.
RAM	JHC	N/A

INCORP. MP 97-2014.

REV.	DATE	DRAWN
4	031301	MAL
CHKD.	SUPV.	APPD.
DJB	JHC	N/A

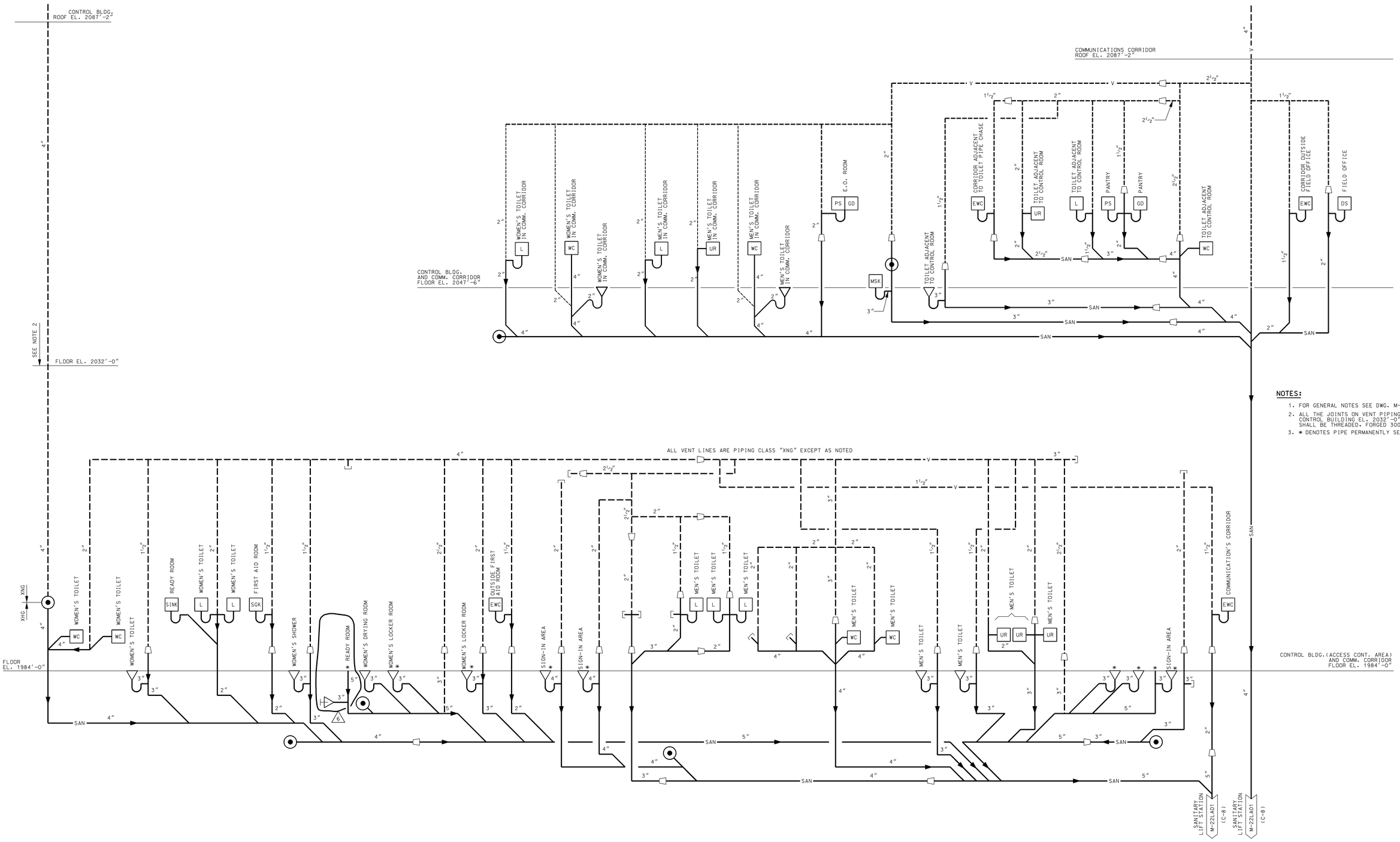
INCORP. MP 00-1007 FCN-07.

REV.	DATE
5	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A

REV.	DATE
6	072908
DRAWN	CHKD.	SUPV.
MAL	TJC	LMR

INCORP. CHANGE REQUEST MP 07-0066 FCN-05.



NOTES:

1. FOR GENERAL NOTES SEE DWG. M-22LA01
2. ALL THE JOINTS ON VENT PIPING PASSING THRU CONTROL BUILDING EL. 2032'-0" TO EL. 2087'-2" SHALL BE THREADED. FORGED 3000# STEEL FITTINGS.
3. ✱ DENOTES PIPE PERMANENTLY SEALED AT FLOOR.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM COMMUNICATIONS CORRIDOR AND CONTROL BLDG. SANITARY DRAINAGE SYSTEM	
CHKD. (DATE) N/A	FSAR FIGURE 9.3-5 SHEET 2	
SUPV. (DATE) N/A		
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22LA02	REV. 6

M-22LD01

REV.	DATE	DRAWN
4	042992	RBF
CHKD.	SUPV.	APPD.
GDC	TJM	N/A
REDRAWN FOR CLARITY.		
REV.	DATE	DRAWN
5	032495	JHK
CHKD.	SUPV.	APPD.
HLP	AMR	N/A
INCORP. RFR-15644.		
REV.	DATE	DRAWN
6	093096	DJB
CHKD.	SUPV.	APPD.
RLW	AMR	N/A
INCORP. RMP 93-2033		
REV.	DATE	DRAWN
7	030498	JHK
CHKD.	SUPV.	APPD.
EWM	AMR	N/A
INCORP. CMP 97-1006A FCN-06.		
REV.	DATE	DRAWN
8	031099	JHK
CHKD.	SUPV.	APPD.
MAL	JHC	N/A
INCORP. CMP 97-1006A FCN-18.		
REV.	DATE	DRAWN
9	091300	JHK
CHKD.	SUPV.	APPD.
MAL	AMR	N/A
INCORP. RFR-20622A.		
REV.	DATE	DRAWN
10	031304	MAL
CHKD.	SUPV.	APPD.
DJB	JHC	N/A
INCORP. MP 00-1007 FCN-07.		
REV.	DATE	
11	041905	
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS
INCORP. RFR 22941A		

NOTE 6
006-HCD-4"
NOTE 6
007-HCD-2 1/2"
NOTE 6
004-HCD-4"
NOTE 6
005-HCD-4"
LAUNDRY/RESPRO. DECON AREA
RESPRO. WASH
S S S
WASHER/ DRYER
W
REF. NOTE 11 ON DRAWING M-2F3211.
DECON SINKS
DS DS
C.O.
039-HCD-2"
DECON SHOWER HSH
010-HCD-4"
MEN'S SHOWER HSH
008-HCD-4"
NOTE 6
050-HCD-2"
050-HCD-4"
006-HCD-4"
SRW
SRW

DW
HOT LAB
009-HCD-2 1/2"
RADWASTE BUILDING
LAUNDRY AND HOT SHOWER TANK
M-22HB04
(H-8)
1"
LD SYS
LF SYS
V034
PIPE TUNNEL
DRW (D)
LF-A19-HCD-2"
LAUNDRY DECONTAMINATION FACILITY SUMP
M-22LF09
(B-5)
ACCESS CONTROL EXHAUST SYSTEM
SRV
V
4"
M-22GK04
(B-7)
066-HCD-2"
V023
C007 C009 C011
C001 C003 C005
LSL 6A
LSH 6B
LSHH 6C
C002 C004 C006
C008 C010 C012
027-HCD-3"
ALTERNATOR (SEE NOTE 1)
OVERFLOW
031-HCD-4"
DRW
LAHH 11 024
LSHH 11 053
LI 11
LT 11
065-HCD-3/4"
V025
DETEREGENT DRAIN TANK
TLD02
067-HCD-2"
V024
019-HCD-1"
V014
V013
PD-10
FD 003
PDS 10
PDI 10
PI 8
PI 12
V026
BS 001
V027
V028
V032
V008
V007
017-HCD-2 1/2"
V006
023-HCD-1/2"
PLD02A
V016
023-HCD-1"
DRW
FD 004
V018
V017
033-HCD-1"
012-HCD-3"
015-HCD-2 1/2"
PD-9
PDS 9
PDI 9
PI 7
PI 13
V029
BS 002
V030
V031
V033
V011
V010
018-HCD-2 1/2"
014-HCD-1"
V012
DRW
V009
026-HCD-1/2"
V020
026-HCD-1"
DRW
PLD02B
DETEREGENT DRAIN TANK PUMPS
(LOCATED IN CONTROL BUILDING)
HIS 2
O-2
Q-1
HIS 1
SRW

3/8" TUBING (SJ)
RADWASTE BLDG SAMPLE PANEL (CHEMICAL DRAIN TANK SAMPLE)
M-22SJ02
(C-2)
056-HCD-3/4"
V048
056-HCD-2 1/2"
RADWASTE BLDG SAMPLE LAB (FUME HOOD)
SK
049-HCD-4"
RECYCLE EVAPORATOR AND RECYCLE EVAPORATOR REAGENT TANK
046-HCD-4"
WASTE EVAPORATOR AND WASTE EVAPORATOR REAGENT TANK
044-HCD-4"
SECONDARY LIQUID WASTE EVAPORATOR AND SECONDARY LIQUID WASTE EVAPORATOR REAGENT TANK
EVAP BOTTOMS TANK OVERFLOW (PRIMARY & SECONDARY)
C.O.
038-HCD-4"
034-HCD-2 1/2"
035-HCD-2 1/2"
SK
HOT LAB (FUME HOOD)
CONTROL BUILDING
ARW
002-HCD-4"
049-HCD-4"
ARW
V005
CHEMICAL DRAIN TANK
M-22HB03
(H-3)
C.O.
051-HCD-4"
RADWASTE BUILDING
3/4" (V)
V047
042-HCD-2"
ARW
030-HCD-2 1/2"
PIPE TUNNEL
1"
V035
DRW (D)
GL-339-HCD-1 1/2"
ALTERNATOR (SEE NOTE 2)
V001
V002
HS 3
LS 14
HS 4
I
Q-3
V003
V004
Q-4
LAH 5 024
LSH 5
HCD | TNL
ARV
043-HCD-4"
V
4"
ACCESS CONTROL EXHAUST SYSTEM
M-22GK04
(B-8)
040-HCD-1 1/2"
041-HCD-1 1/2"
PLD01B
PLD01A
CHEMICAL EQUIPMENT DRAIN SUMP AND PUMPS
(LOCATED IN CONTROL BUILDING)

SINK
LS-4
FUME HOOD
LHF-3
SINK
LS-3
057-HCD-2 1/2"
058-HCD-2 1/2"
073-HCD-2 1/2"
069-HCD-1"
V049
073-HCD-1"
V050
55 GALLON DRUM
DEMINERALIZER
V042
072-HCD-1"
DEMINERALIZER
070-HCD-1"
V052
071-HCD-1"
V051
LRW
TURBINE BUILDING SAMPLE LAB SINKS EL 2010'-0"

NOTES:

1. ELECTRICAL ALTERNATOR ALTERNATES PUMP OPERATION WHEN TANK LEVEL IS HIGH. BOTH PUMPS RUN WHEN TANK LEVEL IS HIGH-HIGH.
2. MECHANICAL ALTERNATOR ALTERNATES PUMP OPERATION WHEN SUMP LEVEL IS HIGH. BOTH PUMPS RUN WHEN SUMP LEVEL IS HIGH-HIGH.
3. DS = DEEP SINK.
4. HSH AND DS TO BE USED FOR DECONTAMINATION PURPOSES ONLY.
5. HSH = HOT SHOWER.
6. PIPING CUT DOWN TO FLOOR LEVEL & FILLED WITH EXPANSIVE GROUT THROUGH THE FLOOR.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM CHEMICAL & DETERGENT WASTE		
CHKD. (DATE) N/A	FSAR FIGURE 9.3-5 SHEET 3 (11)		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22LD01		REV. 11

M-22LE01

REV.	DATE	DRAWN
7	042292	DJB
CHKD.	SUPV.	APPD.
GDC	TJM	N/A

REDRAWN FOR CLARITY.

MISC. DRAIN HUB FOR MAIN STEAM ISOLATION VALVES AND SAFETY VALVE LEAKOFFS
119-HCD-4"
MISC. DRAIN HUBS FOR MAIN STEAM ISOLATION VALVES AND SAFETY VALVE LEAKOFFS
499-HCD-4"
489-HCD-4"
474-HCD-4"
MAIN STEAM ISOLATION VALVE AREA
121-HCD-4"
120-HCD-4"
MAIN STEAM LINE PENETRATION AREA
324-HCD-4"
513-HCD-4"
519-HCD-4"
502-HCD-4"
FL. EL. 2026'-0"
MOTOR DRIVEN AUX. FEEDWATER PUMPS AREA
015-HCD-4"
016-HCD-4"
FL. EL. 2013'-6"
TURBINE DRIVEN AUX. F. W. PUMP ROOM VALVE COMPARTMENT
013-HCD-4"
014-HCD-4"
008-HCD-4"
009-HCD-4"
TURBINE DRIVEN AUX. F. W. PUMP AND ROOM
010-HCD-4"
011-HCD-4"
012-HCD-4"
034-HCD-4"
MOTOR DRIVEN AUX. F. W. PUMP ROOM AND ROOM COOLER
035-HCD-4"
036-HCD-4"
MOTOR DRIVEN AUX. F. W. PUMP ROOM VALVE COMPARTMENT
037-HCD-4"
038-HCD-4"
MOTOR DRIVEN AUX. F. W. PUMP AND ROOM
LAH 68
024
LSH 68
LRW
022-HCD-6"
027-HCD-4"
028-HCD-4"
MOTOR DRIVEN AUX. F. W. PUMP ROOM VALVE COMPARTMENT
029-HCD-4"
030-HCD-4"
CORRIDOR
031-HCD-4"
033-HCD-4"
032-HCD-4"
MOTOR DRIVEN AUX. F. W. PUMP ROOM AND ROOM COOLER
FL. EL. 2000'-0"
MISC. DRAIN HUB
005-HCD-4"
AUX. FEEDWATER PIPE CHASE
SEE NOTE 1
006-HCD-4"
SEE NOTE 1
007-HCD-4"
GRATING
CONDENSATE AND DEMINERALIZED WATER STORAGE TANK PIPE TRENCH SUMP
023-HCD-4"
AUX. FEEDWATER PIPE CHASE
025-HCD-4"
026-HCD-4"
AUX. FEEDWATER PIPE CHASE
024-HCD-4"
FL. EL. 1989'-0"
SUMP AREA
002-HCD-4"
003-HCD-4"
004-HCD-4"
034-HCD-4"
001-HCD-6"
FL. EL. 1974'-0"
168-HCD-2 1/2"
169-HCD-2 1/2"
PCV 46
SERVICE AIR M-22KA02 (C-4)
VENDOR BECHTEL
018-HCD-4"
MISC. DR. HUB
019-HCD-4"
SUMP AREA
020-HCD-4"
MISC. DR. HUB SEE NOTE 2
021-HCD-4"
SUMP AREA
017-HCD-6"
V004
V006
V005
V003
V706
V705
LAH 64
024
Q-61
Q-62
HS 61
I
S
LY 61
LS 63
HS 62
LY 62
FC
LRV
4"
LSH 64A
ALTERNATOR
2 1/2"X3"
PLE12B
PLE12A
AUX. FEEDWATER PUMP ROOMS SUMP (LRW)
583-HCD-4"
672-HCD-4"
583-HCD-4"
FEEDWATER CHEMICAL ADDITION UNIT AND AREA
CORRIDOR
582-HCD-4"
MISC. DR. HUB
567-HCD-4"
CONDENSER VACUUM PUMP UNIT AND AREA
092-HCD-4"
566-HCD-4"
MISC. DR. HUB
565-HCD-6"
100-HCD-4"
S.G.B. FLASH TANK AREA
CONDENSER VACUUM PUMP UNIT AND AREA
091-HCD-4"
097-HCD-4"
MISC. DR. HUB
581-HCD-4"
564-HCD-6"
560-HCD-4"
099-HCD-4"
S.G.B. REGENERATIVE HEAT EXCHANGER UNIT AND AREA
S.G.B. NON-REGENERATIVE HEAT EXCHANGER UNIT AND AREA
563-HCD-4"
078-HCD-4"
096-HCD-4"
DRAIN HUB FOR REBOILER ON EL. 2065'-0"
514-HCD-6"
562-HCD-4"
MISC. DR. HUB
093-HCD-4"
MISC. DR. HUB
FL. EL. 2000'-0"
MISC. DR. HUB
052-HCD-4"
HEATER DR. TANK PUMP AREA
051-HCD-4"
MISC. DR. HUB
050-HCD-4"
044-HCD-4"
049-HCD-4"
048-HCD-4"
ST. GEN. FEED PUMP TURBINE AND AREA
047-HCD-4"
046-HCD-4"
045-HCD-4"
HEATER DR. TANK PUMPS AND AREA
485-HCD-6"
625-HCD-4"
059-HCD-4"
PIPE TRENCH AND AREA
524-HCD-4"
MISC. DRAIN HUB
CONDENSER PIT SUMP AREA
043-HCD-4"
MISC. DR. HUB
042-HCD-4"
541-HCD-6"
040-HCD-4"
SUMP AREA
MISC. DR. HUB
060-HCD-4"
STAIRWAY AREA
061-HCD-4"
056-HCD-4"
MISC. DR. HUB
MISC. CNDS. DR. TANK
055-HCD-4"
057-HCD-4"
MISC. CNDS. DR. TANK AREA
SUMP AREA
054-HCD-4"
053-HCD-6"
432-HCD-6"
484-HCD-6"
039-HCD-6"
SECONDARY LIQUID WASTE DRAIN COLLECTION TANK AND AREA
690-HCD-4"
691-HCD-4"
692-HCD-4"
SECONDARY LIQUID WASTE DRAIN COLLECTION TANK AND AREA
611-HCD-4"
114-HCD-4"
LOW TDS COLLECTION TANK AREA
689-HCD-4"
CNDS. CHEMICAL ADDITION UNIT
111-HCD-4"
113-HCD-4"
MISC. DR. HUB
610-HCD-4"
CONDENSATE CHEMICAL ADDITION UNIT AREA
115-HCD-4"
CNDS. CHEMICAL ADDITION UNIT
109-HCD-4"
110-HCD-4"
FL. EL. 2000'-0"
STEAM GEN. F.P. TURBINE AND AREA
090-HCD-4"
089-HCD-4"
088-HCD-4"
OIL AND WATER SEPERATOR AND AREA
074-HCD-4"
555-HCD-4"
556-HCD-4"
557-HCD-4"
087-HCD-4"
086-HCD-4"
085-HCD-4"
084-HCD-4"
083-HCD-4"
082-HCD-4"
CNDS. PUMPS, STRAINERS AND AREA
SECONDARY LIQUID DR. COLLECTION TANKS AND PUMP AREA
072-HCD-4"
071-HCD-4"
081-HCD-4"
MISC. DRAIN HUB
080-HCD-4"
CNDS. PUMP STRAINER
522-HCD-4"
SUMP AREA
SECONDARY LIQUID WASTE DR. COLLECTION TANK PUMPS AREA
077-HCD-4"
589-HCD-4"
588-HCD-6"
TDS TRANSFER TANKS AND AREA
590-HCD-6"
076-HCD-4"
075-HCD-4"
SECONDARY LIQUID WASTE DR. COLLECTION TANK PUMPS
CLEANOUT (TYP.)
073-HCD-6"
063-HCD-6"
104-HCD-6"
526-HCD-6"
LRW
RESIN ADDITION HOPPER AREA
684-HCD-4"
RESIN MIX AND STORAGE AREA
683-HCD-4"
LOW TDS COLLECTION TANK PUMP AND AREA
LOW TDS TANK
063-HCD-6"
117-HCD-4"
599-HCD-4"
DEMINERALIZER AREA
595-HCD-4"
PIPE TRENCH
594-HCD-4"
DEMINERALIZER AND AREA
593-HCD-4"
592-HCD-4"
FUME HOOD AND AREA
688-HCD-4"
687-HCD-4"
686-HCD-4"
SAMPLE LAB AREA
591-HCD-4"
MISC. DRAIN HUB
694-HCD-4"
TURBINE BUILDING SAMPLE LAB AREA
755-HCD-4"
693-HCD-6"
713-HCD-4"
685-HCD-4"
712-HCD-4"
640-HCD-6"
WASTE COLLECTION TANK
682-HCD-4"
HIGH TDS COLLECTION TANK AREA
680-HCD-4"
ANION REGEN. TANK
679-HCD-4"
678-HCD-4"
CATION AND SEPERATION TANK AND AREA
681-HCD-6"
LOW TDS TANK
596-HCD-4"
HIGH TDS COLLECTION TANK PUMPS
597-HCD-4"
DEMINERALIZER AND AREA
641-HCD-4"
SODIUM ANALYZER RACK
638-HCD-4"
REGEN. INSTRUMENT RACK AREA
639-HCD-4"
108-HCD-4"
606-HCD-4"
DEMINERALIZER AND AREA
603-HCD-4"
CONTROL PANEL AREA
607-HCD-4"
CONDUCTIVITY RACKS
104-HCD-6"
TDS TANK AREA
510-HCD-4"
602-HCD-4"
677-HCD-4"
SLUICE WATER PUMPS
HOT WATER TANK AND AREA
600-HCD-6"
CAUSTIC AND ACID DAY TANKS AREA
640-HCD-6"
062-HCD-6"
079-HCD-6"
069-HCD-4"
OIL INTERCEPTOR AREA
070-HCD-4"
MISC. DRAIN HUB
065-HCD-4"
MISC. DRAIN HUB
064-HCD-4"
CORRIDOR
SECONDARY LIQUID WASTE DISPOSAL SYSTEM M-22HF01 (A-8)
TURBINE BLDG OILY WASTE SYSTEM M-22LE03 (B-4)
FV 66
FC
FO
V068
HIS 66
A/S
ZS 66
023
479-HCD-4"
177-HCD-4"
454-HND-6"
HCD
HND
FV 67
HIS 67
ZS 67
PCV 48
SERVICE AIR M-22KA02 (E-1)
VENDOR BECHTEL
170-HCD-3"
PCV 47
SERVICE AIR M-22KA02 (E-4)
BECHTEL VENDOR
TO LAH-15 M-22LE01 (A-4)
174-HCD-6"
173-HCD-4"
172-HCD-3"
171-HCD-3"
V065
V064
V067
V066
Q-6
Q-7
HS 6
LS 8
HS 7
LY 6
LY 7
V703
V704
LSH 9A
PLE05B
PLE05A
COND. PIT SUMP (SOUTH) (LRW)
FROM LSH-44 M-22LE03 (B-7)
FROM LSH-9 M-22LE01 (B-5)
FROM LSH-40 M-22LE03 (B-5)
FL. EL. 1982'-0"
175-HCD-3"
176-HCD-3"
V008
V010
V007
V009
Q-12
Q-13
HS 12
LS 14
HS 13
LY 12
LY 13
V701
V702
LAH 15
LSH 15A
PLE02B
PLE02A
COND. PIT SUMP (NORTH) (LRW)

REV.	DATE	DRAWN
8	091796	JHK
CHKD.	SUPV.	APPD.
EWM	AMR	N/A

INCORP. RFR-10506B.

REV.	DATE
9	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A

NOTES:

1. FLOOR DRAINS 006-HCD-4" AND 007-HCD-4" ARE COVERED.
2. 8"X4" REDUCER INSTALLED PER DETAIL 2 ON M-23FB09.
3. FLOOR DRAINS 591-HCD-4", 685-HCD-4", 686-HCD-4", 687-HCD-4", 693-HCD-6", 694-HCD-4", 712-HCD-4", 713-HCD-4", AND 755-HCD-4" MAY HAVE TEMPORARY PLUGS OR COVERS INSTALLED (REFERENCE RFR-10506B).

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM TURB. BLDG. AND AUX. FEEDWATER PUMP ROOMS OILY WASTE SYSTEM		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A	FSAR FIGURE 9.3-5 SHEET 4		
APPD. (DATE) N/A	LOCATION CALLAWAY PLANT		CLASS 1
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22LE01		REV. 9

M-22LE02 (Q)

REV.	DATE	DRAWN
3	042192	GDC
CHKD.	SUPV.	APPD.
RAM	TJM	N/A

REDRAWN FOR CLARITY AND INCORP. DEC-0838

REV.	DATE
4	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A

REV.	DATE
5	100608
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE CR CAR 08-000255, CAR 200808285

REV.	DATE
6	052512
DRAWN	CHKD.	SUPV.
MAL	RLW	LMP

INCORP. CAR 201203482.

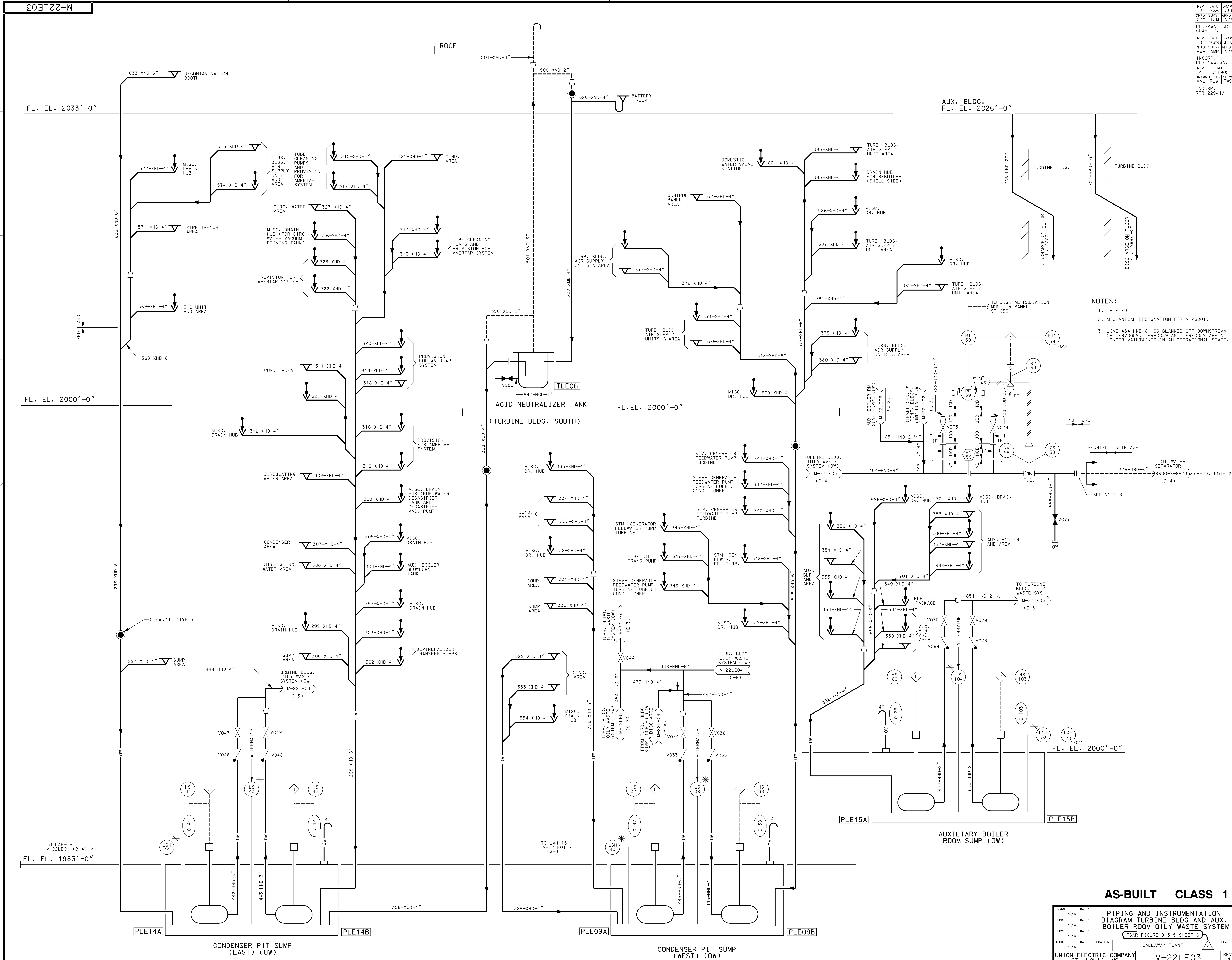
AIR DRYERS
195-XHD-4"
188-XHD-4" INTERCOOLER HEAT EXCHANGER
189-XHD-4" INTERCOOLER HEAT EXCHANGER AREA
186-XHD-4" EXPANSION TANK
184-XHD-4" FUEL OIL DAY TANK AREA
182-XHD-6" MISC. DRAIN HUB
183-XHD-4" AIR FILTER
179-XHD-4" EXHAUST SILENCER AREA
180-XHD-4" MISC. DRAIN HUB
194-XHD-4" DIESEL GENERATOR FLOOR AREA
192-XHD-4" DIESEL GENERATOR
STARTING AIR TANKS & AIR COMPRESSORS
191-XHD-4"
193-XHD-4" DIESEL GENERATOR BLDG. TRENCH
180-XHD-4"
OW
DIESEL GENERATOR FLOOR AREA
190-XHD-4"
544-XHD-4" DIESEL GENERATOR
180-XHD-6"
185-XHD-6" AIR INTAKE SILENCER AREA
187-XHD-4" JACKET WATER COOLER
AIR FILTER
181-XHD-4"
OW
196-XHD-4" MISC. DRAIN HUB
207-XHD-4" MISC. DRAIN HUB
206-XHD-4" DIESEL GENERATOR FLOOR AREA
205-XHD-4" AIR DRYERS
203-XHD-4" DIESEL GENERATOR
204-XHD-4" DIESEL GENERATOR BLDG. TRENCH
196-XHD-4"
DIESEL GENERATOR FLOOR AREA
201-XHD-4"
200-XHD-4" DIESEL GENERATOR
212-XHD-4" JACKET WATER COOLER
198-XHD-4" AIR FILTER
196-XHD-6"
197-XHD-4" EXHAUST SILENCER AREA
OW
STARTING AIR TANKS & AIR COMPRESSORS
202-XHD-4"
208-XHD-4" INTERCOOLER HEAT EXCHANGER
543-XHD-4" INTERCOOLER HEAT EXCHANGER AREA
213-XHD-4" EXPANSION TANK
211-XHD-4" FUEL OIL DAY TANK AREA
208-XHD-6"
210-XHD-6" MISC. DRAIN HUB
INTAKE AIR SILENCER AREA
199-XHD-6"
209-XHD-4" AIR FILTER
180-XHD-6"
182-XHD-6"
OW
OW
ROOF
266-XND-4"
662-XND-4"
663-XND-4"
664-XND-4"
665-XND-4"
CONTROL ROOM
FOYER
666-XND-3"
271-XND-6"
241-XND-6"
481-XND-6"
260-XND-6"
UPPER CABLE SPREADING ROOM
FL. EL. 2061'-6"
265-XND-4" COMPUTER ROOM
V720
267-XND-4" COMPUTER ROOM AREA
256-XND-4" CONTAINMENT MINI PURGE AIR SUPPLY UNIT
634-XND-4" MAIN STEAM ENCLOSURE BLDG. AIR SUPPLY UNIT
257-XND-4" CONTAINMENT PURGE AIR SUPPLY UNIT
258-XND-4" AUX. BLDG. AIR SUPPLY UNIT
359-XND-4" CONTROL BLDG. AIR SUPPLY UNIT
AUX. BLDG. EL. 2047'-6"
SWITCHBOARD RM. NO. 2
234-XND-4"
SWITCHBOARD RM. NO. 4
233-XND-4"
NON-VITAL A/C SWITCHBOARD & TRANSFER RM.
487-XND-4"
CORRIDOR
432-XND-4"
V718
V719
V717
COMPUTER ROOM A/C UNIT AREA
268-XND-4"
220-XND-4"
COMPUTER ROOM A/C UNIT
270-XND-4"
269-XND-4"
COMM. CORR. SUPPLY UNIT & AREA
221-XND-4"
336-XND-4"
FL. EL. 2061'-6"
CLASS IE ELECT EQUIP A/C UNIT AREA
237-XND-4"
CLASS IE ELECT EQUIP A/C UNIT
255-XND-4"
EMER. SHOWER AND EYE WASH
250-XND-6"
249-XND-2 1/2"
CORRIDOR
248-XND-4"
252-XND-4"
662-XND-6"
265-XND-4"
V721
263-XND-4" COMPUTER ROOM
264-XND-4"
218-XND-4"
COMPUTER ROOM AREA
262-XND-6"
239-XND-6"
497-XND-6"
498-XND-6"
LOWER CABLE SPREADING ROOM
FL. EL. 2047'-6"
FL. EL. 2032'-0"
CONTROL RM PRESSURIZATION SYS. FILTER UNITS AREA
254-XND-4"
486-XND-4"
PLANT HOT WATER HEATING EQUIP
215-XND-4"
217-XHD-4"
266-XND-8"
261-XND-4" CORRIDOR
223-XND-8"
CLASS IE ELECT EQUIP A/C UNIT AND AREA
275-XND-4"
488-XND-4"
SWITCHBOARD RM. NO. 3
246-XND-4"
SWITCHBOARD RM. NO. 1
247-XND-4"
CORRIDOR
235-XND-4"
NON-VITAL A/C SWGR & TRANS. RM.
245-XND-4"
V715
V716
V714
262-XND-8"
242-XND-4" COMMUNICATION CORRIDOR
222-XND-4" CHILLED WATER EXPANSION TANK
512-XND-8"
ACCESS CONTROL A/C UNIT
287-XHD-4"
FL. EL. 2016'-0"
224-XND-4"
229-XND-4"
ESF SWITCHGEAR ROOMS
228-XND-4"
V710
V711
225-XND-4"
V712
226-XND-4"
227-XND-4"
V713
ESF SWITCHGEAR ROOMS
244-XND-6"
243-XND-6"
540-XND-4" CENTRAL CHILLED WATER PACKAGE AREA
539-XND-4" CORRIDOR
538-XND-4"
325-XND-4"
CENTRAL CHILLED WATER PUMP & AREA
537-XND-4"
536-XND-4"
CENTRAL CHILLED WATER PACKAGE
CORRIDOR
531-XHD-4"
CORRIDOR
532-XHD-4"
214-XHD-4"
219-XHD-4"
DOMESTIC HOT WATER PKG. & AREA
ROOF
FL. EL. 2061'-6"
FL. EL. 2032'-0"
AUX. BLDG. EL. 2047'-6"
751-XCD-4"
754-XCD-4"
COMM. CORRIDOR BATTERY ROOM NO.1
753-XCD-4"
754-XCD-4"
AW
XJ 02
XJ 03
XJ 04
281-XCD-3"
493-XCD-2 1/2"
XJ 01
490-XCD-4"
491-XCD-2"
492-XCD-2"
281-XCD-2"
240-XCD-4" BATTERY ROOM NO.2
277-XCD-4" BATTERY ROOM NO.4
282-XCD-4" BATTERY ROOM NO.3
BATTERY ROOM NO.1
284-XCD-4"
283-XCD-4"
284-XCD-4"
295-XCD-4"
750-XCD-4"
404-XCD-2 1/2"
FL. EL. 2016'-0"
276-XCD-4"
695-HCD-1"
V087
(D)
TLE04 ACID NEUTRALIZER TANK
FL. EL. 2000'-0"
TURBINE BLDG. OILY WASTE SYSTEM
M-22LE03 (E-3)
293-HND-4"
293-HND-3"
285-XCD-4"
533-XCD-4"
CENTRAL CHILLED WATER PUMP AND AREA
FL. EL. 1984'-0"
535-XCD-4"
274-XHD-4" PIPE CHASE
272-XHD-4" MISC. DRAIN HUB
273-XHD-4" PIPE CHASE
FL. EL. 1974'-0"
294-HND-2 1/2"
OW
OW
V071
V043
DIESEL BLDG.
CONTROL BLDG.
V085
V016
656-HND-2 1/2"
482-HND-2"
V072
TRUCK CONNECTION
658-HND-2 1/2"
480-HND-2"
V015
TRUCK CONNECTION
541-XND-4"
531-XHD-4"
OW
XND
XHD
MISC. DRAIN HUB
530-XHD-4"
216-XHD-4"
541-XND-4"
PIPE CHASE
529-XHD-4"
528-XHD-4"
212-XHD-8"
6
HS 19
HS 97
Q-97
LI 105 024
LIT 105
LS 19
LAH 20 024
LSH 20
LE 105
4"
OV
Q-19
1
V012
ALTERNATOR
V081
V011
V080
288-HND-2"
655-HND-2"
Q-21
HS 21
HS 99
Q-99
LAH 22 024
LSH 22
LS 21
LIT 106
LI 106 024
LE 106
4
V014
V083
V013
V082
288-HND-2"
657-HND-2"
HS 23
Q-23
LS 23
V018
V017
HS 24
Q-24
LAH 26 024
LSH 26
LS 25
V020
V019
292-HND-2 1/2"
291-HND-2 1/2"
274-XHD-4"
182-XHD-6"
180-XHD-6"
FL. EL. 2000'-0"
PLE06A
PLE06B
DIESEL GENERATORS BUILDING SUMP (OW)
PLE06C
PLE06D
DIESEL GENERATORS BUILDING SUMP (OW)
PLE07B
PLE07A
CONTROL BUILDING OILY WASTE SUMP (OW)

NOTES:

1. DRAWING Q-LIST PERTAINS TO LEVEL INDICATORS LI-105 AND LI-106.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM CONTROL AND DIESEL GEN. BLDG. OILY WASTE SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.3-5 SHEET 5		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION: CALLAWAY ENERGY CENTER		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22LE02 (Q)		REV. 6


M-22LE03
ROOF
501-XMD-4"
500-XMD-2"
626-XMD-4"
BATTERY ROOM
633-XHD-6"
DECONTAMINATION BOOTH
FL. EL. 2033'-0"
AUX. BLDG. FL. EL. 2026'-0"
706-HBD-20"
707-HBD-20"
TURBINE BLDG.
DISCHARGE ON FLOOR EL. 2000'-0"
573-XHD-4"
572-XHD-4"
MISC. DRAIN HUB
574-XHD-4"
TURB. BLDG. AIR SUPPLY UNIT AND AREA
TUBE CLEANING PUMPS AND PROVISION FOR AMERTAP SYSTEM
315-XHD-4"
317-XHD-4"
321-XHD-4"
COND. AREA
571-XHD-4"
PIPE TRENCH AREA
569-XHD-4"
EHC UNIT AND AREA
568-XHD-6"
CIRC. WATER AREA
327-XHD-4"
MISC. DRAIN HUB (FOR CIRC. WATER VACUUM PRIMING TANK)
326-XHD-4"
323-XHD-4"
PROVISION FOR AMERTAP SYSTEM
322-XHD-4"
314-XHD-4"
313-XHD-4"
TUBE CLEANING PUMPS AND PROVISION FOR AMERTAP SYSTEM
501-XMD-3"
500-XMD-4"
358-XCD-2"
TLE06
ACID NEUTRALIZER TANK
(TURBINE BLDG. SOUTH)
697-HCD-1"
V089
FL. EL. 2000'-0"
FL.EL. 2000'-0"
320-XHD-4"
319-XHD-4"
318-XHD-4"
311-XHD-4"
527-XHD-4"
312-XHD-4"
316-XHD-4"
310-XHD-4"
309-XHD-4"
308-XHD-4"
MISC. DRAIN HUB (FOR WATER DEGASIFIER TANK AND DEGASIFIER VAC. PUMP)
305-XHD-4"
307-XHD-4"
CONDENSER AREA
306-XHD-4"
CIRCULATING WATER AREA
304-XHD-4"
AUX. BOILER BLOWDOWN TANK
357-XHD-4"
299-XHD-4"
303-XHD-4"
300-XHD-4"
302-XHD-4"
DEMINERALIZER TRANSFER PUMPS
SUMP AREA
296-XHD-6"
298-XHD-6"
297-XHD-4"
CLEANOUT (TYP.)
444-HND-4"
TURBINE BLDG. OILY WASTE SYSTEM (OW) M-22LE04 (C-5)
V047
V046
V049
V048
ALTERNATOR
HS 41
LS 43
HS 42
Q-41
Q-42
LSH 44
TO LAH-15 M-22LE01 (B-4)
FL. EL. 1983'-0"
442-HND-3"
443-HND-3"
358-XCD-4"
PLE14A
PLE14B
CONDENSER PIT SUMP (EAST) (OW)
335-XHD-4"
334-XHD-4"
333-XHD-4"
332-XHD-4"
331-XHD-4"
330-XHD-4"
328-XHD-6"
329-XHD-4"
553-XHD-4"
554-XHD-4"
329-XHD-4"
PLE09A
PLE09B
CONDENSER PIT SUMP (WEST) (OW)
HS 37
LS 39
HS 38
Q-37
Q-38
LSH 40
TO LAH-15 M-22LE01 (A-3)
V044
V034
V033
V036
V035
448-HND-6"
473-HND-4"
447-HND-4"
454-HND-6"
445-HND-3"
446-HND-3"
DOMESTIC WATER VALVE STATION
661-XHD-4"
374-XHD-4"
CONTROL PANEL AREA
373-XHD-4"
372-XHD-4"
371-XHD-4"
370-XHD-4"
518-XHD-6"
369-XHD-4"
385-XHD-4"
383-XHD-4"
DRAIN HUB FOR REBOILER (SHELL SIDE)
586-XHD-4"
587-XHD-4"
381-XHD-4"
382-XHD-4"
379-XHD-4"
380-XHD-4"
378-XHD-6"
341-XHD-4"
342-XHD-4"
340-XHD-4"
345-XHD-4"
347-XHD-4"
348-XHD-4"
346-XHD-4"
339-XHD-4"
STM. GENERATOR FEEDWATER PUMP TURBINE
STEAM GENERATOR FEEDWATER PUMP TURBINE LUBE OIL CONDITIONER
LUBE OIL TRANS PUMP
TO DIGITAL RADIATION MONITOR PANEL SP 056
RT 59
HIS 59
RE 59
RY 59
RV 59
ZS 59
FO 59
V073
V074
V077
651-HND-2 1/2"
454-HND-6"
376-JRD-6"
TO OIL WATER SEPARATOR 8600-X-89735 (M-29, NOTE 2)
SEE NOTE 3
BECHTEL SITE A/E
559-HND-2"
698-XHD-4"
701-XHD-4"
353-XHD-4"
700-XHD-4"
352-XHD-4"
699-XHD-4"
AUX. BOILER AND AREA
356-XHD-4"
351-XHD-4"
355-XHD-4"
354-XHD-4"
349-XHD-4"
344-XHD-4"
350-XHD-4"
FUEL OIL PACKAGE
356-XHD-6"
TO TURBINE BLDG. OILY WASTE SYS. M-22LE03 (E-3)
V070
V079
V069
V078
HS 69
LS 104
HS 103
Q-69
Q-103
LSH 70
LAH 70
452-HND-2"
650-HND-2"
PLE15A
PLE15B
AUXILIARY BOILER ROOM SUMP (OW)

NOTES:

1. DELETED
2. MECHANICAL DESIGNATION PER M-2G001.
3. LINE 454-HND-6" IS BLANKED OFF DOWNSTREAM OF LERV0059. LERV0059 AND LERE0059 ARE NO LONGER MAINTAINED IN AN OPERATIONAL STATE.

REV.	DATE	DRAWN	CHKD.	SUPV.	APPD.	DESCRIPTION
2	042292	DJB	GDC	TJM	N/A	REDRAWN FOR CLARITY.
3	080795	JHK	EWM	AMR	N/A	INCORP. RFR-16675A.
4	041905	MAL	RLW	TWS		INCORP. RFR 22941A

AS-BUILT CLASS 1

PIPING AND INSTRUMENTATION DIAGRAM–TURBINE BLDG AND AUX. BOILER ROOM OILY WASTE SYSTEM

FSAR FIGURE 9.3-5 SHEET 6

CALLAWAY PLANT

UNION ELECTRIC COMPANY ST. LOUIS, MO

M-22LE03 REV. 4

REV.	DATE	DRAWN
4	041592	HLP
CHKD.	SUPV.	APPD.
GDC	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
5	042198	RLW
CHKD.	SUPV.	APPD.
MAL	JHK	N/A

INCORP. RMP 93-2035

REV.	DATE
6	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

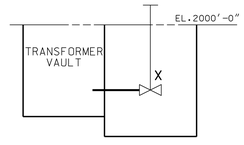
INCORP. RFR 22941A

REV.	DATE
7	070507
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. CAR200706018.

TRANSFORMER VAULT	LINE NO.	VALVE NO.
STATION SERVICE	718-HBD-6"	V094
ESF	719-HBD-6"	V095
START-UP	720-HBD-6"	V096
MAIN & AUX.	721-HBD-6"	V097

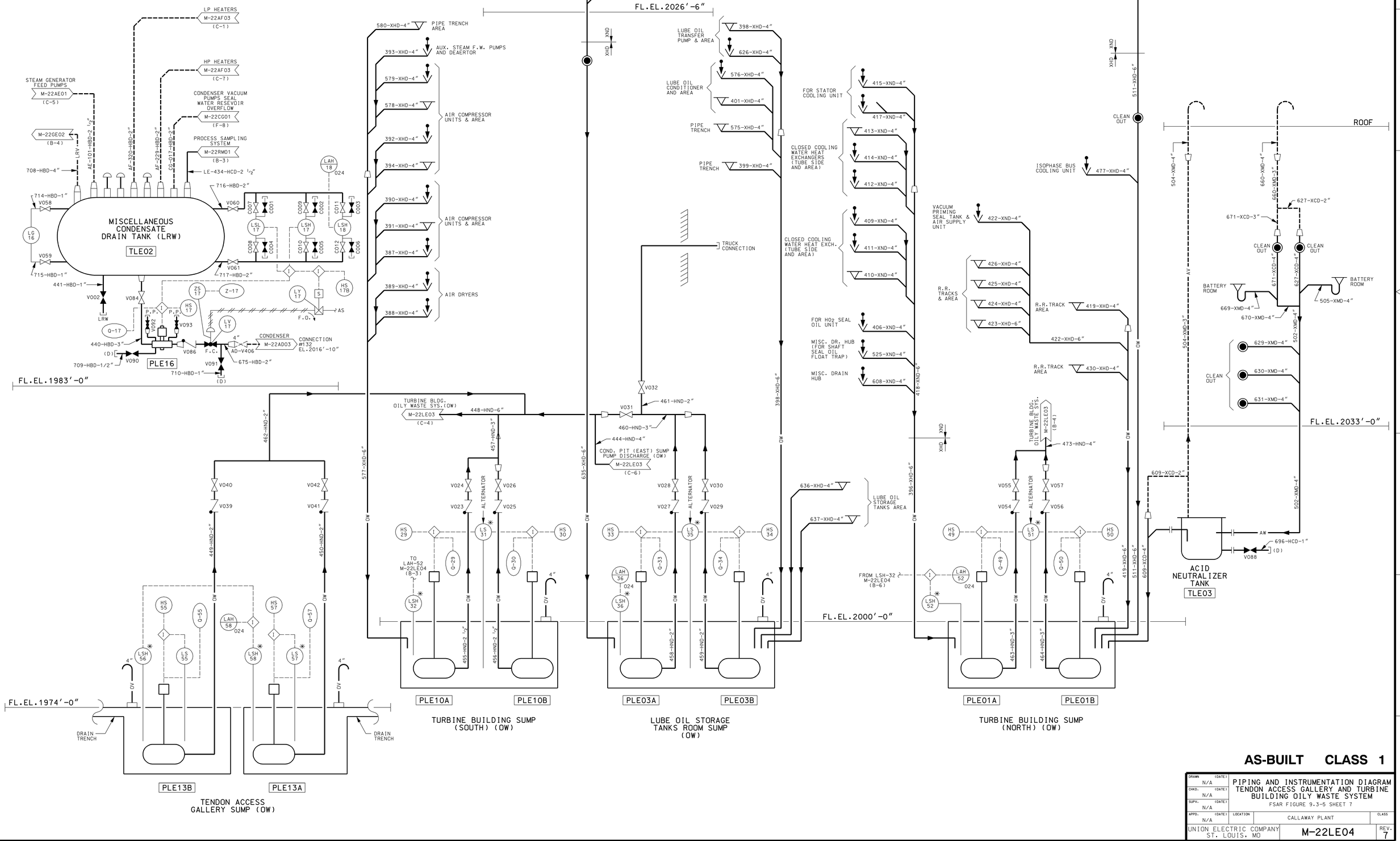
YARD TRANSFORMER VAULT DRAIN VALVES



YARD TRANSFORMER VAULT DRAIN VALVE (TYPICAL)

NOTES:

1. PIPING ASSOCIATED WITH THE MISCELLANEOUS CONDENSATE DRAIN TANK WILL BE DETAILED ON THE FOLLOWING SYSTEM ISOMETRICS.
   AD
   AF
   AE
   CG
2. LINE LE-434-HCD-2 1/2" WILL BE DETAILED ON THE LE ORTHOGRAGHICS.



AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM TENDON ACCESS GALLERY AND TURBINE BUILDING OILY WASTE SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.3-5 SHEET 7		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22LE04		REV. 7

M-22LF01

REV.	DATE	DRAWN
1	042192	RBF
CHKD.	SUPV.	APPD.
GDC	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
2	102994	MAL
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. CMP 92-1010.

REV.	DATE	DRAWN
3	102599	RLW
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INCORP. MP89-1035 (PARTIAL)

REV.	DATE	DRAWN
4	072001	JHK
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. RFR-21046A.

REV.	DATE	DRAWN
5	091101	JHK
CHKD.	SUPV.	
MAL	AMR	N/A

INCORP. RFR-20965B.

REV.	DATE
6	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A

AUX BLDG FLOOR & EQUIP DRAINS M-22LF02 (A-8)
123-HCD-4" PIPE CHASE
116-HCD-4"
124-HCD-4"
PIPE CHASE
AUX BLDG FLOOR & EQUIP DRAINS M-22LF03 (G-3)
118-HCD-4"
117-HCD-4"
AUX BLDG FLOOR & EQUIP DRAINS M-22LF03 (G-3)
120-HCD-4"
PIPE CHASE
034-HCD-6"

AUX BLDG FLOOR & EQUIP DRAINS M-22LF02 (A-7)
126-HCD-4"
PIPE CHASE
133-HCD-4"
125-HCD-4"

AUX BLDG FLOOR & EQUIP DRAINS M-22LF02 (A-6)
005-HCD-4"

AUX BLDG FLOOR & EQUIP DRAINS M-22LF02 (A-6)
010-HCD-6"
127-HCD-4" PIPE CHASE
PIPE CHASE
130-HCD-4"
129-HCD-4"
CORRIDOR
011-HCD-4"
263-HCD-4" MISC DRAIN HUB
012-HCD-4"
014-HCD-4" BORIC ACID TANK ROOM
CORRIDOR
009-HCD-4"
MISC DRAIN HUB
393-HCD-4"
013-HCD-4" CORRIDOR
008-HCD-6"
NORMAL CHARGING PUMP ROOM
016-HCD-4"
007-HCD-6"
015-HCD-4"
017-HCD-4" NORMAL CHARGING PUMP
NORMAL CHARGING PUMP ROOM & ROOM COOLER
019-HCD-4"
018-HCD-4"
006-HCD-8"

LAH 116 024 ——→ FROM AUX BLDG. FUEL BLDG. RAD WASTE BLDG. CONTROL BLDG. RADWASTE TUNNEL. NON-RADIOACTIVE PIPE TUNNEL. SOLIDIFICATION AREA & HOT MACHINE SHOP SUMPS

AUX BLDG FLOOR & EQUIP DRAINS M-22LF02 (A-5)

AUX BLDG FLOOR & EQUIP DRAINS M-22LF02 (A-4)
A10-KND-4"
DISCHARGE ON FLOOR EL 1974'-0"
PIPE CHASE
134-HCD-4"
CORRIDOR
024-HCD-4"
PIPING LOW POINT DRAIN
025-HCD-4"
020-HCD-4" CORRIDOR
281-HCD-4" MISC DRAIN HUB
021-HCD-6"

AUX BLDG FLOOR & EQUIP DRAINS M-22LF02 (A-4)
PIPE CHASE
128-HCD-4"
CORRIDOR
029-HCD-4" BORON INJ TANK ROOM LOW POINT DRAIN
027-HCD-4"
028-HCD-4" BORON INJECTION TANK ROOM
131-HCD-2½" STEAM GEN DRAIN PUMP & VALVE STEM LEAKOFF
026-HCD-4" CORRIDOR
023-HCD-4" CORRIDOR
022-HCD-4"
030-HCD-4" BORIC ACID TANK ROOM

AUX BLDG FLOOR & EQUIP DRAINS M-22LF02 (A-3)
031-HCD-6"
MISC. DRAIN HUB
264-HCD-4"
033-HCD-4"
CORRIDOR
032-HCD-4"
003-HCD-4"

DRW
002-HCD-6"

FL EL 1988'-0"
FL EL 1974'-0"

FL EL 1988'- 0"
FL EL 1974'-0"

NOTES:

1. THE AUXILIARY BUILDING AND RHR PUMP ROOM SEISMIC CATEGORY I LEVEL INDICATORS WILL BE INSTALLED ON A SEPARATE TRIANGULAR COVER PROVIDED BY BECHTEL. SPACE FOR THIS COVER WILL BE MADE BY HAVING A TRIANGULAR CUT OF SAME SIZE ON ORIGINAL SUMP COVER PLATE. TRIANGULAR COVER WILL BE CATEGORY I.
2. DRAWING Q-LIST PERTAINS TO LEVEL INDICATORS L-102. L-103. AND L-104 ONLY.
3. ▽ CAPPED EQUIP DRAIN.
4. ▽ PLUGGED FLOOR DRAIN.
5. DRAINS SHOWN FOR VALVE STEM LEAKOFFS ARE THE RECOMMENDED DRAINS. CONSTRUCTOR MAY REROUTE VALVE STEM LEAKOFFS TO ANY OTHER CONVENIENT DRAIN(S) PROVIDED CRW AND DRW DRAINS ARE SEGREGATED FROM EACH OTHER.
6. RECIRCULATION ORIFICES (DRILLED HOLE) ARE TO EXTEND PUMP LIFE DURING SHUT-OFF CONDITIONS ON SIS.
7. FLOOR DRAIN MAY HAVE DRAIN RIG/TREE INSTALLED DURING NORMAL PLANT OPERATION (SEE RFR-20965B).

FLOOR DRAIN TANK M-22LF03 (C-4)
108-HCD-6"
CORRIDOR EL 1967'-0"
038-HCD-4"
035-HCD-8"

AUX BLDG FLOOR & EQUIP DRAINS M-22LF03 (C-3)
DRW
LI 103 023
L-103
SEE NOTES 1 & 2
LIT 103
ALTERNATOR
V002
V004
V001
V003
LE 103B
LE 103A
HS 1
LS 3
HS 2
LE 104A
LE 104B
Q-1
Q-2
LSH 4
TO LAH-116 (H-6)
179-HCD-4"
180-HCD-4"
PLF02B
PLF02A
5/16" Ø ORIFICE HOLE (SEE NOTE 6)
TOP OF SUMP EL 1967'-0"

LI 104 023
L-104
SEE NOTES 1 & 4
LIT 104
DRW
AUX BLDG EXHAUST SYSTEM M-22GL01 (A-7)

797-HCD-2½"
CONT BLDG FLOOR & EQUIP DRAIN SUMP DISCHARGE M-22LF08 (C-3)
V072
178-HCD-4"
177-HCD-2½"
V070
001-HCD-8"
004-HCD-4"
CORRIDOR
V006
V008
V005
V007
ALTERNATOR
LI 102 023
L-102
SEE NOTES 1 & 2
LIT 102
HIS 5 023
Q-5
LS 7
HIS 6 023
Q-6
LE 102A
LE 102B
LSH 8
LAH 8 024
AUX BLDG EXHAUST SYSTEM M-22GL01 (B-8)
DRW
175-HCD-2"
176-HCD-2"
PLF01B
PLF01A
1/4" Ø ORIFICE HOLE (SEE NOTE 6)
TOP OF SUMP EL 1967'-0"

CTMT SPRAY PUMP ROOM EL 1967'-0"
074-HCD-4"
CTMT SPRAY PUMP EL 1967'-0"
073-HCD-4"
CTMT SPRAY PUMP ROOM COOLER EL 1967'-0"
SAFETY INJECTION PUMP ROOM EL 1974'-0"
083-HCD-4"
075-HCD-4"
RHR PUMP ROOM EL 1967'-0" (NOTE 7)
076-HCD-4"
RHR PUMP EL 1967'-0"
077-HCD-4"
070-HCD-6"
072-HCD-4"

CENTRIFUGAL CHARGING PUMP ROOM EL 1974'-0"
078-HCD-4"
084-HCD-4"
086-HCD-4"
CENTRIFUGAL CHARGING PUMP ROOM COOLER EL 1974'-0"
CENTRIFUGAL CHARGING PUMP ROOM EL 1974'-0"
085-HCD-4"
CENTRIFUGAL CHARGING PUMP EL 1974'-0"
082-HCD-4"
SAFETY INJECTION PUMP ROOM & ROOM COOLER EL 1974'-0"
080-HCD-4"
081-HCD-4"
SAFETY INJECTION PUMP EL 1974'-0"
071-HCD-4"
RHR PUMP ROOM COOLER EL 1967'-0"

FL EL 1974'-0"

AUXILIARY BUILDING SUMPS AND PUMPS (DRW)

RHR PUMP ROOM SUMPS AND PUMPS (DRW)

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM AUXILIARY BUILDING FLOOR & EQUIPMENT DRAIN SYSTEM		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A	FSAR FIGURE 9.3-5 SHEET 8		
APPD. (DATE) N/A	LOCATION	CLASS	
	CALLAWAY PLANT	5	
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22LF01 (Q)	REV. 6	

M-22LF02

REV.	DATE	DRAWN
2	012892	RLW
CHKD. GDC	SUPV. TJM	APPD. N/A
REDRAWN FOR CLARITY.		
REV. 3	DATE 091101	DRAWN JHK
CHKD. MAL	SUPV. AMR	APPD. N/A
INCORP. RFR-20965B.		
REV. 4	DATE 041905	
DRAWN MAL	CHKD. RLW	SUPV. TWS
INCORP. RFR 22941A		

FL. EL. 2047′-6″ / FL. EL. 2026′-0″

FL. EL. 2026′-0″ / FL. EL. 2000′-0″

FL. EL. 2000′-0″

359-HCD-4″ CORRIDOR

104-HCD-4″ CORRIDOR

211-HCD-4″ COMPONENT COOLING WATER HEAT EXCH. (TUBE SIDE)

208-HCD-4″ COMPONENT COOLING WATER HEAT EXCH. ROOM

209-HCD-4″ FAN COIL UNIT

ELECT. EQUIP. ROOM COOLER & AREA: 349-HCD-4″, 357-HCD-4″

CONTROL BLDG. SUPPLY AIR UNIT AREA: 356-HCD-4″

CONTROL ROOM A/C UNIT AREA: 354-HCD-4″

CONTROL ROOM A/C UNIT & AREA: 010-HCD-4″, 360-HCD-4″

CONTROL ROOM A/C UNIT & AREA: 351-HCD-4″, 352-HCD-4″, 353-HCD-4″

CONTROL ROOM A/C UNIT AREA: 350-HCD-4″

349-HCD-6″

DRW

ELECTRICAL EQUIPMENT ROOM: 225-HCD-4″ V710, 224-HCD-4″ ROOM COOLER V711, 386-HCD-4″

ELECTRICAL EQUIPMENT ROOM: 255-HCD-4″, 223-HCD-4″

V712

CORRIDOR 220-HCD-4″

CORRIDOR 221-HCD-4″

CORRIDOR 222-HCD-4″

CORRIDOR 214-HCD-4″

RHR HEAT EXCH. RM. & VALVE COMPT. (NOTE 1): 215-HCD-4″, 216-HCD-4″

370-HCD-1¼″ EW EYEWASH

218-HCD-4″ AUX. BLDG. SAMPLING ROOM

217-HCD-4″ BORON METER VALVE COMPT.

256-HCD-2½″ SAMPLING ROOM SAMPLE STATION

010-HCD-6″

213-HCD-4″

126-HCD-4″, 261-HCD-4″ SEAL WATER HEAT EXCHANGER ROOM AND VALVE COMPARTMENT

005-HCD-4″ CORRIDOR

034-HCD-6″

AUX. BLDG. FLOOR & EQUIP. DRAINS M-22LF01 (H-8)

AUX. BLDG. FLOOR & EQUIP. DRAINS M-22LF01 (H-7)

AUX. BLDG. FLOOR & EQUIP. DRAINS M-22LF01 (H-6)

AUX. BLDG. FLOOR & EQUIP. DRAINS M-22LF01 (H-6)

CONTAINMENT MINI-PURGE SUPPLY UNIT AREA: 021-HCD-4″

MISC. DRAIN HUB: 366-HCD-4″

361-HCD-4″ EQUIPMENT HATCH AREA

347-HCD-4″ AUX. BLDG. AIR SUPPLY UNIT AREA

348-HCD-4″ MISC. DRAIN HUB

ELECTRICAL PENETRATION ROOM COOLER: 241-HCD-2½″

ELECTRICAL PENETRATION ROOM: 243-HCD-4″, 365-HCD-4″

V713

DRW

PIPING PENETRATION ROOM: 236-HCD-4″, 239-HCD-4″

240-HCD-4″ PIPING PENETRATION ROOM

CORRIDOR 238-HCD-4″

PIPING PENETRATION ROOM LOW POINT DRAIN: 237-HCD-4″

VOLUME CONTROL TANK & VALVE COMPARTMENT: 235-HCD-4″

015-HCD-4″

021-HCD-6″

AUX. BLDG. FLOOR & EQUIP. DRAINS M-22LF01 (H-5)

AUX. BLDG. FLOOR & EQUIP. DRAINS M-22LF01 (H-4)

EQUIP. HATCH AREA

031-HCD-4″

ACCESS CONTROL EXHAUST FILTER ADSORBER UNIT AREA: 332-HCD-4″, 338-HCD-4″

345-HCD-4″ MISC. DRAIN HUB

340-HCD-4″ CONTAINMENT PURGE SUPPLY UNIT AREA

CORRIDOR 251-HCD-4″

CCW HEAT EXCHANGER AND AREA: 253-HCD-4″, 283-HCD-4″

CORRIDOR 252-HCD-4″

CORRIDOR 257-HCD-4″

BORIC ACID BATCHING TANK ROOM: 250-HCD-4″, 373-HCD-1¼″ EW, 285-HCD-4″

256-HCD-4″ CORRIDOR

CORRIDOR: 248-HCD-4″, 249-HCD-4″

A10-XND-4″ ELECT. CHASE

031-HCD-6″

CORRIDOR 247-HCD-4″

AUX. BLDG. FLOOR & EQUIP. DRAINS M-22LF01 (H-4)

AUX. BLDG. FLOOR & EQUIP. DRAINS M-22LF01 (H-3)

FL. EL. 2047′-6″ / FL. EL. 2026′-0″

FL. EL. 2026′-0″ / FL. EL. 2000′-0″

FL. EL. 2000′-0″

NOTES:

1. ONE OF TWO FLOOR DRAINS MAY HAVE DRAIN RIG/TREE INSTALLED DURING NORMAL PLANT OPERATION (SEE RFR-20965B).

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM AUXILIARY BUILDING FLOOR AND EQUIPMENT DRAIN SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.3-5 SHEET 5 4		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CLASS	
UNION ELECTRIC COMPANY ST. LOUIS, MO	CALLAWAY PLANT	M-22LF02	REV. 4

M-22LF03 (Q)

REV.	DATE	DRAWN
1	040792	GDC
CHKD.	SUPV.	APPD.
RAM	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
2	021693	JHK
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. CMP 89-1035 (PARTIAL).

REV.	DATE	DRAWN
3	041195	HLP
CHKD.	SUPV.	APPD.
SKC	JHC	N/A

INCORP. CMP 89-1035 (PARTIAL).

REV.	DATE	DRAWN
4	091100	JHK
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. RFR-20965B.

REV.	DATE
5	111102
DRAWN	CHKD.	SUPV.
RLW	MAL	DLB

INCORPORATE MP 89-1035 (PARTIAL)

REV.	DATE
6	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A

REV.	DATE
7	082007
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE MP 89-1035A

PIPE CHASE
112-HCD-4"
111-HCD-4"
110-HCD-4"
109-HCD-4"
AUX. BLDG. FLOOR AND EQUIP. DRAINS M-22LF04 (A-7)
DRW
DISCHARGE ON FLOOR EL. 1974'-0"
106-HCD-6"
CORRIDOR 107-HCD-4"
CORRIDOR 037-HCD-4"
036-HCD-6"
A12-XND-4" ELECT. CHASE
AUX. BLDG. FLOOR AND EQUIP. DRAINS M-22LF04 (A-7)
113-HCD-4" PIPE CHASE
AUX. BLDG. FLOOR AND EQUIP. DRAINS M-22LF04 (A-6)
M-22LF04 (A-4)
324-HCD-4"
V090
324-HCD-1/2"
V089
DRW
PIPE CHASE
105-HCD-4"
LETDOWN HT. EXCH. VLV. COMPT. 057-HCD-4"
CORRIDOR
DRW
056-HCD-4"
LETDOWN HT. EXCH. VLV. COMPT.
LETDOWN HT. EXCH. ROOM 049-HCD-4"
054-HCD-4"
LETDOWN CHILLER HT. EXCH. ROOM
MODERATING HT. EXCH. ROOM
LETDOWN REHEAT HT. EXCH. ROOM 068-HCD-4"
HT. EXCH. VLV. COMPTS. 067-HCD-4"
059-HCD-4"
066-HCD-4"
MISC. DRAIN HUB 394-HCD-4"
CORRIDOR 053-HCD-4"
CORRIDOR
062-HCD-4"
CHILLER
391-MISC. DRAIN HUB 391-HCD-4"
065-HCD-6"
061-HCD-4"
HT. EXCH. VLV. COMPT. 060-HCD-4"
058-HCD-6"
AUX. BLDG. FLOOR AND EQUIP. DRAINS M-22LF04 (A-3)
PIPE CHASE 115-HCD-4"
DRW
052-HCD-6"
048-HCD-6"
050-HCD-4"
REACTOR MAKE-UP WATER PUMPS
051-HCD-4"
280-MISC. DRAIN HUB 280-HCD-4"
CORRIDOR 047-HCD-4"
035-HCD-8"
AUX. BLDG. FLOOR AND EQUIP. DRAINS M-22LF04 (A-4)
PIPE CHASE
PIPE CHASE 119-HCD-4"
DRW
118-HCD-4"
AUX. BLDG. FLOOR AND EQUIP. DRAINS M-22LF01 (G-8)
PIPE CHASE 121-HCD-4"
DRW
120-HCD-4"
AUX. BLDG. FLOOR AND EQUIP. DRAINS M-22LF01 (G-8)
PIPE CHASE
DRW
042-HCD-4"
040-HCD-6"
CORRIDOR 039-HCD-4"
AUX. BLDG. FLOOR AND EQUIP. DRAINS M-22LF01 (B-8)
CORRIDOR 041-HCD-4"
FAN COIL UNIT 046-HCD-4"
114-HCD-6"
CORRIDOR 045-HCD-4"
CORRIDOR 043-HCD-4"
MISC. DRAIN HUB 392-HCD-4"
CORRIDOR 044-HCD-4"
DRW

FL. EL. 1988'-0"
FL. EL. 1974'-0"

FL. EL. 1988'-0"
FL. EL. 1974'-0"

4 HIS 105 023 Z-105 HV 105 CLOSES ON SIS
1 HIS 106 023 Z-106 HV 106
FLOOR DRAIN TANK M-22LF07 (H-7)
181-HCD-6" FL HCD HCC S
132-HCC-6" FL HCC HCD S
108-HCD-6"
CONTROL BLDG. FLOOR AND EQUIPMENT DRAIN SUMP, RHR PUMP ROOM SUMP AND AUX. BLDG. SUMP DISCHARGE M-22LF01 (C-8)
122-HCD-1"
V080
V071
DRW
364-HCD-2 1/2"
CENTRIFUGAL CHARGING PUMP ROOM EL.1974'-0"
CENTRIFUGAL CHARGING PUMP ROOM COOLER EL.1974'-0" 103-HCD-4"
CENTRIFUGAL CHARGING PUMP EL.1974'-0" 102-HCD-4"
101-HCD-4"
CENTRIFUGAL CHARGING PUMP ROOM EL.1974'-0"
SAFETY INJECTION PUMP ROOM COOLER EL.1974'-0"
SAFETY INJECTION PUMP ROOM EL.1974'-0" 099-HCD-4"
SAFETY INJECTION PUMP EL.1974'-0" 098-HCD-4"
097-HCD-4"
SAFETY INJECTION PUMP ROOM EL.1974'-0" 100-HCD-4"
095-HCD-4"
DRW
CTMT. SPRAY PUMP ROOM EL.1967'-0"
CTMT. SPRAY PUMP EL.1967'-0" 091-HCD-4"
CTMT. SPRAY PUMP ROOM COOLER EL.1967'-0" 090-HCD-4"
094-HCD-4"
RHR PUMP AND ROOM EL.1967'-0" 093-HCD-4"
092-HCD-4" (NOTE 4)
089-HCD-4"
RHR PUMP ROOM COOLER EL.1967'-0" 088-HCD-4"
DRW
087-HCD-6"
AUX. BLDG. EXH. SYSTEM M-22GL02 (B-2)
DRV
Q-19
HIS 19 023
V010
V012
ALTERNATOR
LS 21
HIS 20 023
Q-20
LAH 22 024
LSH 22
LIT 101 023
L-101 (SEE NOTES 1 & 2)
LIT 101
LE 101B
LE 101A
TOP OF SUMP EL. 1967'-0"
V009
V011
362-HCD-2"
363-HCD-2"
PLF01D
PLF01C
RHR PUMP ROOM SUMP AND PUMPS (DRW)
1/4" ORIFICE HOLE (SEE NOTE 3)

FL.EL. 1974'-0"
FL.EL. 1974'-0"

NOTES:

1. THE RHR PUMP ROOM SEISMIC CATEGORY 1 LEVEL INDICATORS WILL BE INSTALLED ON A SEPARATE TRIANGULAR COVER PROVIDED BY BECHTEL. SPACE FOR THIS COVER WILL BE MADE BY HAVING A TRIANGULAR CUT OF SAME SIZE ON ORIGINAL SUMP COVER PLATE. COVER WILL BE CATEGORY 1.
2. DRAWING Q-LIST PERTAINS TO LEVEL INDICATOR L-101 AND VALVES HV105 AND HV106 ONLY.
3. RECIRCULATION ORIFICES (DRILLED HOLES) ARE TO EXTEND PUMP LIFE DURING SHUT-OFF CONDITION ON SIS.
4. FLOOR DRAIN MAY HAVE DRAIN RIG/TREE INSTALLED DURING NORMAL PLANT OPERATION (SEE RFR-20965B).

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM AUXILIARY BUILDING FLOOR AND EQUIPMENT DRAIN SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.3-5 SHEET 10		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CLASS	
UNION ELECTRIC COMPANY ST. LOUIS, MO	CALLAWAY PLANT	M-22LF03 (Q)	REV. 7

M-22LF04

REV.	DATE	DRAWN
2	032492	DLBr
CHKD.	SUPV.	APPD.
GDC	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
3	032598	DJB
CHKD.	SUPV.	APPD.
RLW	JHK	N/A

INCORP. CMP 96-1012A

REV.	DATE	DRAWN
4	061798	DJB
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. CMP 96-1012A FCN 21

REV.	DATE	DRAWN
5	091101	JHK
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. RFR-20965B.

REV.	DATE
6	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A

CORRIDOR
106-HCD-4"
335-HCD-4"
333-HCD-4"
334-HCD-4"
COMPONENT COOLING WATER SURGE TANKS & AREA
336-HCD-4"
337-HCD-4"
COMPONENT COOLING CHEMICAL ADDITION TANK
106-HCD-6"
FL. EL.2047'-6"
FL. EL.2026'-0"

CHEMICAL STORAGE & HVAC EQUIP.RM.
139-HCD-4"
CORRIDOR
140-HCD-4"
141-HCD-4"
142-HCD-4"
CORRIDOR
371-HCD-4"
372-HCD-4"
DECONTAMINATOIN TANKS EXHAUST SCRUBBERS AND AREA
FL. EL.2026'-0"
FL. EL.2000'-0"

CTMT. MINI PURGE FILTER ABSORBER UNIT AREA
341-HCD-4"
052-HCD-4"
CTMT. MINI PURGE FILTER ABSORBER UNIT AREA
342-HCD-4"
343-HCD-4"
CORRIDOR
ELECTRICAL PENETRATION ROOM & COOLER
344-HCD-2½"
169-HCD-4"
V-714
ELECT. PENETRATION ROOM
168-HCD-4"
V-715
052-HCD-4"
DRW

AUX. BLDG. EXHAUST FILTER ABSORBER UNIT AREA
339-HCD-4"
CTMT. MINI PURGE FILTER ABSORBER UNIT AREA
B86-HCD-4"
B87-HCD-4"
RAM STORAGE BUILDING
B85-HCD-4"
FL. EL. 2047'-6"
FL. EL. 2026'-0"
114-HCD-4"
197-HCD-4"
CORRIDOR
196-HCD-4"
COMPONENT COOLING WATER HEAT EXCH. ROOM COOLER
200-HCD-4"
CCW HEAT EXCH. ROOM
210-HCD-4"
387-HCD-4"
FAN COIL UNIT
388-HCD-4"
COMPONENT COOLING WATER HEAT EXCHANGER RM.
198-HCD-4"
CHEMICAL STORAGE & HVAC EQUIP. ROOM
COMPONENT COOLING WATER HEAT EXCH. & AREA
201-HCD-4"
212-HCD-4"
203-HCD-4"
CCW HT. EXCH.
COMPONENT COOLING WATER HEAT EXCH. AREA
202-HCD-4"
195-HCD-4"
CORRIDOR
395-HCD-4"
CORRIDOR
194-HCD-6"
FL. EL. 2026'-0"
FL. EL. 2000'-0"

PIPING PENETRATION ROOM
164-HCD-4"
PIPING PENETRATION ROOM LOWPOINT DRAIN
165-HCD-4"
PIPING PENETRATION ROOM
166-HCD-4"
163-HCD-4"
PIPING PENETRATION ROOM
DRW

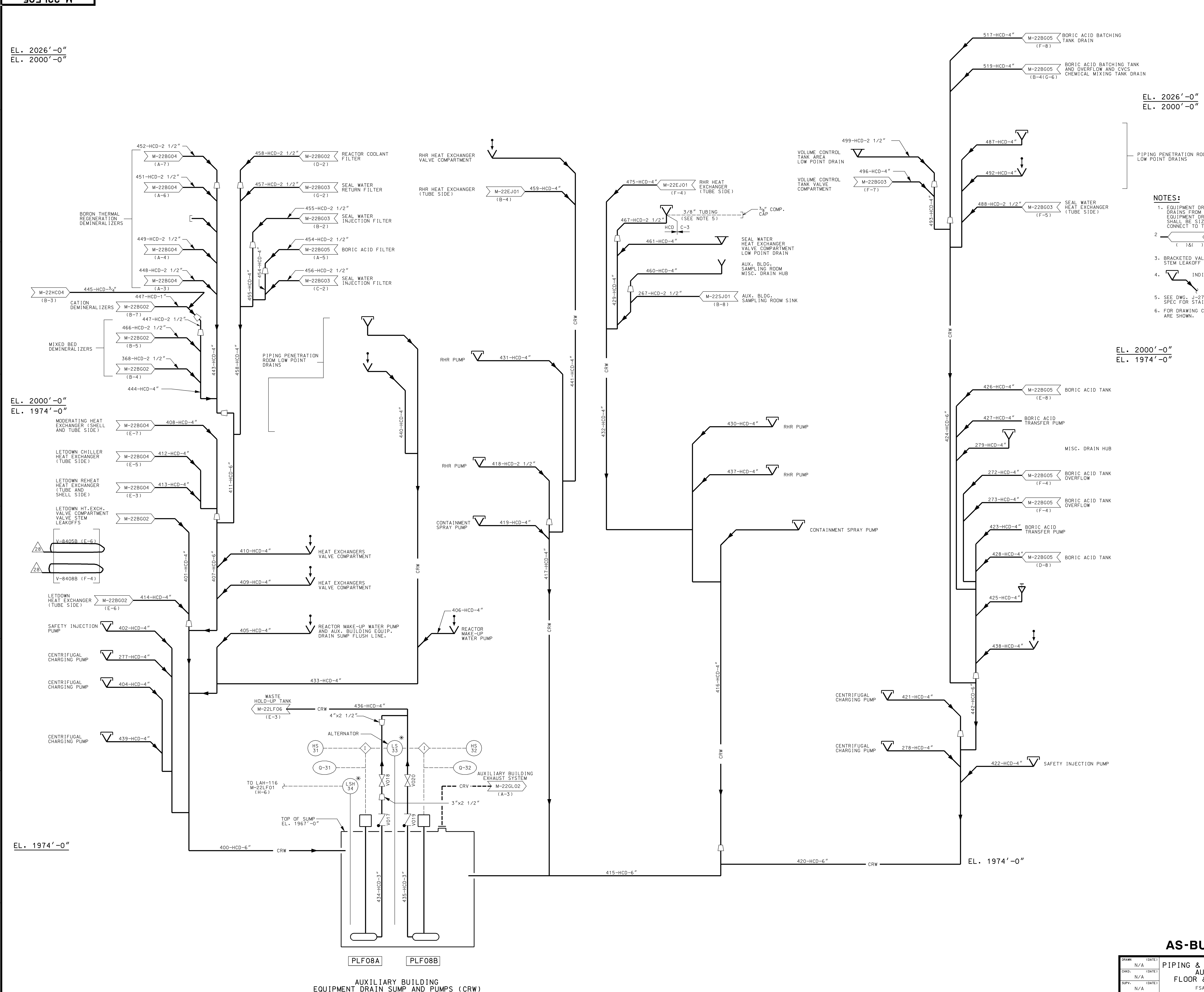
BORON THERMAL REGENERATION DEMINERALIZERS & VLV. COMPT.
153-HCD-4"
156-HCD-4"
151-HCD-4"
155-HCD-4"
154-HCD-4"
CATION DEMINERALIZER
162-HCD-4"
MIXED BED DEMINERALIZERS
161-HCD-4"
159-HCD-4"
BORON THERMAL REGENERATION DEMINERALIZER
160-HCD-4"
106-HCD-6"
DRW
CORRIDOR FILTER & DEMIN. AREA
157-HCD-4"
DRW
CORRIDOR
138-HCD-4"
135-HCD-4"
CORRIDOR
137-HCD-4"
GROUND FLOOR FAN COOL UNIT
136-HCD-4"
CORRIDOR
FL. EL.2000'-0"
AUX. BLDG. FLOOR AND EQUIP. DRAINS
M-22LF03 (H-7)
A11-XND-4"
ELECT. CHASE
DRW
AUX. BLDG. FLOOR AND EQUIP. DRAINS
M-22LF03 (H-7)
158-HCD-4"
MIXED BED & BORON THERMAL REGENERATION DEMIN. VLV. COMPT.
152-HCD-4"
REACTOR COOLANT, SEAL WATER RETURN & SEAL WATER INJ. VLV. COMPT.
149-HCD-4"
CATION & MIXED BED DEMIN. VLV. COMPT.
282-HCD-4"
SEAL WATER INJ. & BORIC ACID FILTERS VLV. COMPT.
150-HCD-4"
CORRIDOR FILTER & DEMIN. AREA
065-HCD-6"
AUX. BLDG. FLOOR AND EQUIP. DRAINS
M-22LF03 (H-7)
BORON THERMAL REGENERATION DEMIN. VALVES
324-HCD-4"
325-HCD-4"
331-HCD-4"
CATION DEMIN. VAULT
367-HCD-4"
330-HCD-4"
MIXED BED DEMIN. VAULTS
329-HCD-4"
328-HCD-4"
327-HCD-4"
BORON THERMAL REGENERATION DEMIN. VAULTS
326-HCD-4"
DRW
AUX. BLDG. FLOOR AND EQUIP. DRAINS
M-22LF03 (H-6)
AUX. BLDG. FLOOR AND EQUIP. DRAINS
M-22LF03 (H-5)
DRW
CORRIDOR
192-HCD-4"
193-HCD-4"
BORIC ACID FILTER ROOM
CORRIDOR
188-HCD-4"
REACTOR COOLANT FILTER ROOM
191-HCD-4"
SEAL WATER FILTER ROOM
190-HCD-4"
369-HCD-4"
189-HCD-4"
SEAL WATER INJECTION FILTER ROOMS
187-HCD-4"
379-HCD-4"
284-HCD-6"
174-HCD-4"
RHR HEAT EXCH. RM. & VLV. COMPT. (NOTE 1)
186-HCD-4"
185-HCD-4"
CORRIDOR
184-HCD-4"
114-HCD-6"
DRW
AUX. BLDG. FLOOR AND EQUIP. DRAINS
M-22LF03 (H-4)
FL. EL. 2000'-0"

NOTES:

1. ONE OF TWO FLOOR DRAINS MAY HAVE DRAIN RIG/TREE INSTALLED DURING NORMAL PLANT OPERATION (SEE RFR-20965B).

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM AUXILIARY BUILDING FLOOR AND EQUIPMENT DRAIN SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.3-5 SHEET 11 (6)		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22LF04		REV. 6



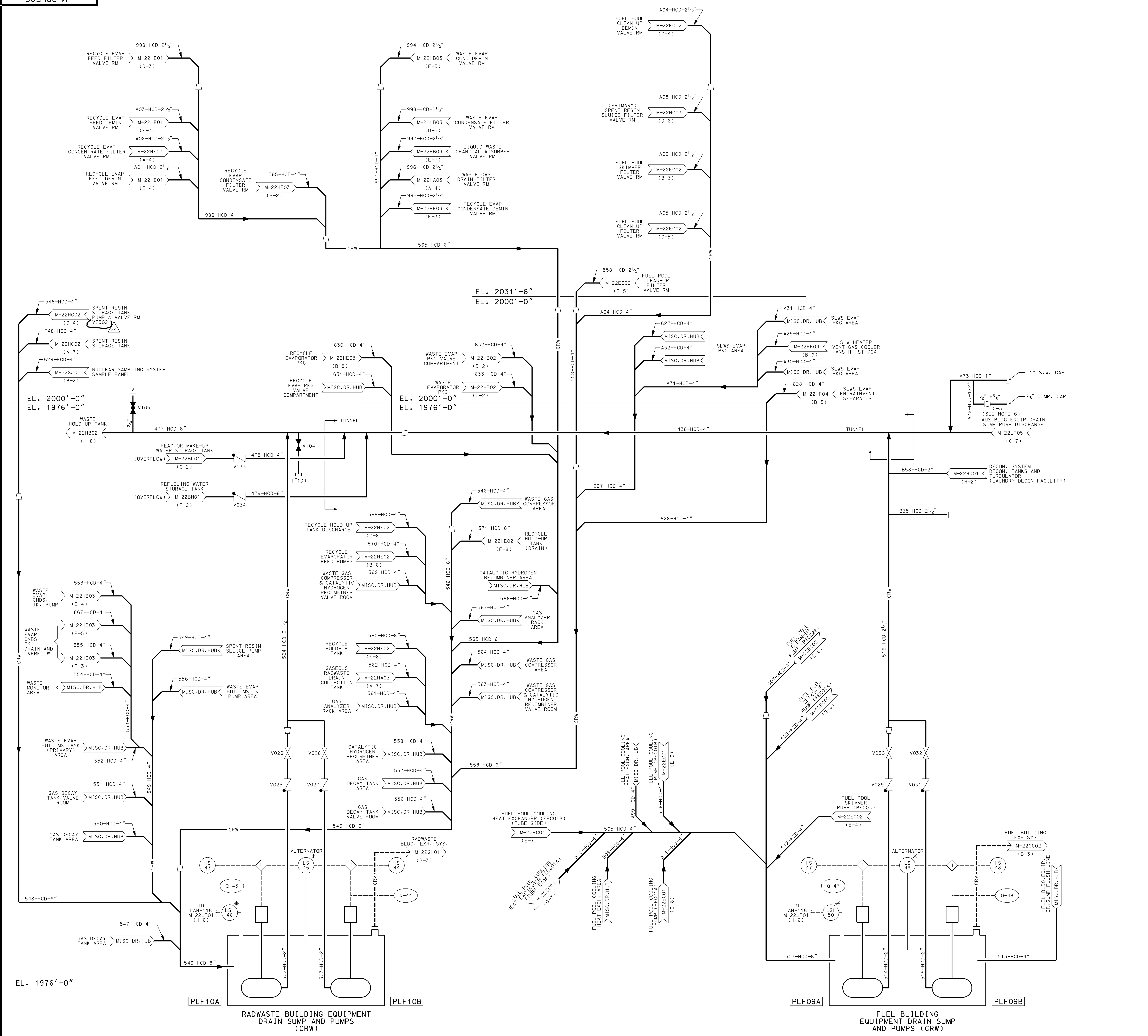
NOTES:

1. EQUIPMENT DRAIN HUBS SHALL RECEIVE DIRECT DRAINS FROM THE PROCESS SERVICE INDICATED. EQUIPMENT DRAIN LINES AND VALVE STEM LEAKOFFS SHALL BE SIZED AND ARRANGED AS NECESSARY TO CONNECT TO THE DRAIN HUBS INDICATED.
2. ( )&( ) INDICATES MULTI-DRAIN CONNECTION FROM LINES INDICATED ON SAME PROCESS P&ID SHEET.
3. BRACKETED VALVE NUMBERS INDICATES MULTI-VALVE STEM LEAKOFF CONNECTIONS TO HUB.
4. INDICATES CAPPED EQUIPMENT DRAIN.
5. SEE DWG. J-27G10 FOR INSTRUMNENT PIPING CLASS SPEC FOR STAINLESS STEEL TUBING.
6. FOR DRAWING CLARIFICATION, NOT ALL REDUCERS ARE SHOWN.

REV.	DATE	DRAWN	CHKD.	SUPV.	APPD.	DESCRIPTION
13	102599	RLW	DJB	AMR	N/A	INCORP. CMP 89-1035 (PARTIAL)
14	110499	RLW	DJB	JHC	N/A	INCORP. CMP 89-1035 (PARTIAL)
15	010801	JHK	MAL	AMR	N/A	INCORP. RFR-21032A.
16	080502	SKC	DJB	TWS	N/A	INCORP. MP 01-1002A
17	101002	RLW	EWM	TWS	N/A	INCORP. DEC-1833
18	020503	RLW	EWM	TDH		INCORPORATE MP 89-1035A (PARTIAL)
19	051304	RLW	MAL	RWW		INCORPORATE MP 89-1035A (PARTIAL)
20	110904	MAL	RLW	TWS		INCORP. RFR 22941A.
21	112106	JHK	MAL	TWS		INCORP. AC 06-000181 (RFR-200503134)
22	041407	TJC	MAL	JHK		INCORPORATE MP 89-1035A (PARTIAL)
23	052108	RLW	EWM	TWS		INCORPORATE MP 89-1035A (PARTIAL)
24	101910	TJC	MAL	SKC		INCORP. CAR 201006799.
25	030811	RLW	EWM	SKC		INCORP. CR CAR 11-000050; CAR 201101611
26	040711	RLW	EWM	TWS		INCORPORATE MP 89-1035A (PARTIAL P39)
27	080211	RLW	EWM	LMP		INCORPORATE MP 89-1035A (PARTIAL P41)
28	020312	RLW	TJC	TWS		INCORPORATE MP 89-1035 (PARTIALS P43 & P44)

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM AUXILIARY BUILDING FLOOR & EQUIP. DRAIN SYSTEM FSAR FIGURE 9.3-5 SHEET 12
CHKD. (DATE) N/A	
SUPV. (DATE) N/A	
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT — CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22LF05 — REV. 28



NOTES:

1. THE PROCESS SYSTEM DRAIN LINE ISOMETRIC SHALL BEAR THE LINE NUMBER OF THE DRAIN HUB TO WHICH THEY ARE CONNECTED. REFER TO PROCESS SYSTEM ISOMETRICS FOR EQUIPMENT DRAIN LINE ROUTING AND CONFIGURATION.
2. ( )&( ) INDICATES MULTI-DRAIN CONNECTIONS FROM LINES INDICATED ON THE SAME PROCESS P&ID SHEET.
3. DELETED (24)
4. CRW MISCELLANEOUS DRAIN HUBS TO BE CAPPED WITH A STAINLESS STEEL BODY AND PLUG ASSEMBLY, CO-1 AS SHOWN IN DETAIL 5 OF M-27LF02.
5. FOR GENERAL NOTES SEE DRAWING M-22LF01(Q).
6. SEE DWG. J-27G10 FOR INSTRUMENT PIPING CLASS SPEC. FOR STAINLESS STEEL TUBING.

REV.	DATE	DRAWN	CHKD.	SUPV.	APPD.	DESCRIPTION
3	042992	HLP	GDC	TJM	N/A	REDRAWN FOR CLARITY AND INCORP. DEC-0842.
4	110692	SBR	RLW	TJM	N/A	INCORP. CMP 89-1035A (PARTIAL)
5	021693	JHK	RLW	TJM	N/A	INCORP. CMP 89-1035 (PARTIAL)
6	071994	MAL	HLP	AMR	N/A	INCORP. CMP 89-1035 (PARTIAL)
7	101895	RLW	DLBr	AMR	N/A	INCORP. CMP 89-1035 (PARTIAL)
8	091597	RLW	DLBr	AMR	N/A	INCORP. CMP 89-1035 (PARTIAL)
9	120700	MAL	SKC	AMR	N/A	INCORP. DEC-1754.
10	080502	SKC	DJB	TWS	N/A	INCORP. MP 01-1002A (PARTIAL)
11	111002	EWM	DJB	JDW		INCORPORATE MP 01-1002A.
12	071904	RLW	MAL	SKC		INCORPORATE MP 89-1035A (PARTIAL)
13	110904	MAL	RLW	TWS		INCORP. RFR 22941A.
14	111004	RLW	MAL	TWS		INCORPORATE MP 89-1035A (PARTIAL)
15	080106	RLW	EWM	TWS		INCORPORATE MP 89-1035A (PARTIAL)
16	080806	TJC	MAL	SKC		INCORPORATE CARS 200605615.
17	082106	RLW	EWM	SKC		INCORPORATE MP 89-1035A (PARTIAL)
18	080607	MAL	TJC	SKC		INCORP. MP 89-1035A (PARTIAL).
19	082007	RLW	EWM	TWS		INCORP. MP 89-1035A (PARTIAL).
20	082307	RLW	EWM	TWS		INCORP. MP 89-1035A (PARTIAL).
21	121807	RLW	EWM	TWS		INCORPORATE MP 89-1035A (PARTIAL).
22	022411	EWM	TJC	SKC		INCORPORATE MP 89-1035A (PARTIAL).
23	080211	RLW	EWM	LMP		INCORPORATE MP 89-1035A & FCN-04 (FINAL).
24	091511	RLW	EWM	TWS		INCORPORATE CR CAR 11-000181; CAR 201106209.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM RADWASTE AND FUEL BUILDINGS FLOOR AND EQUIPMENT DRAIN SYSTEM
CHKD. (DATE) N/A	FSAR FIGURE 9.3-5 SHEET 13
SUPV. (DATE) N/A	
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT — CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22LF06 — REV. 24

M-22LF07

REV.	DATE	DRAWN
2	042992	RAM
CHKD.	SUPV.	APPD.
GDC	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
3	032598	JHK
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP MP 97-1006 FCN-18.

REV.	DATE
4	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A

REV.	DATE
5	010306
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE MP 89-1035 FCN-03

CONTROL BLDG. FLOOR AND EQUIPMENT DRAIN SUMP AND AUXILIARY BLDG. SUMPS M-22LF03 (C-5)

CTMT. BLDG. SUMPS M-22LF09 (F-2)

FUEL BLDG. SUMP M-22LF08 (E-7)

PIPE TUNNEL SUMPS M-22LF10 (C-8)

FLOOR DRAIN TANK M-22HB02 (G-8)

SOLIDIFICATION AREA SUMP PUMPS M-22HC01 (D-8)

HC-345-HCD-2

181-HCD-6" 182-HCD-6" 183-HCD-8" 520-HCD-3" TUNNEL 521-HCD-2½" 385-HCD-2"

LAUNDRY & HOT SHOWER TANK & AREA 954-HCD-4" 964-HCD-4" 960-HCD-4" CORRIDOR 991-HCD-4" CHILLER AND PROCESS TANKS 989-HCD-4" CHILLER TANK AREA

CORRIDOR 959-HCD-4" REVERSE OSMOSIS UNIT 990-HCD-4"

LAUNDRY WATER STORAGE TANK & AREA 958-HCD-4" 956-HCD-4" 957-HCD-4" CORRIDOR 955-HCD-4" LAUNDRY & HOT SHOWER CHARCOAL ADSORBER 992-HCD-4" MISC EQUIP DRAIN

592-HCD-4" 963-HCD-4" 962-HCD-4" CORRIDOR 961-HCD-4" WASTE MONITOR TANK AREA WASTE MONITOR TANK & PUMP

954-HCD-6"

RADWASTE BLDG. EXHAUST FILTER ADSORBER UNIT AND AREA 652-HCD-4" 984-HCD-4"

MISC EQUIP DRAIN 653-HCD-4"

RADWASTE BLDG. EXHAUST FILTER ADSORBER UNIT AREA 983-HCD-4" 982-HCD-4"

CORRIDOR 921-HCD-4" 922-HCD-4" WASTE EVAP. COND. DEMIN.

DEMIN. VALVE COMPT. 923-HCD-4" 924-HCD-4" LIQUID WASTE CHARCOAL ADSORBER DEMIN.

RECYCLE EVAP. COND. DEMIN. 925-HCD-4" 926-HCD-4" DEMIN. VALVE COMPT. 921-HCD-4"

RECYCLE EVAP. FEED DEMIN. 605-HCD-4" 917-HCD-4" MISC. DRAIN HUB 981-HCD-4" CORRIDOR 919-HCD-4" CORRIDOR 920-HCD-4" RECYCLE EVAP. FEED DEMIN. & DEMIN. OVERFLOW

640-HCD-4" 642-HCD-4" PIPE CHASE

604-HCD-4" MISC EQUIP DRAIN 651-HCD-4" CORRIDOR

596-HCD-4" CORRIDOR 602-HCD-6" ESEW-2 598-HCD-4" 599-HCD-4" CORRIDOR 597-HCD-4" CORRIDOR 297-HCD-4" FAN COIL UNIT

609-HCD-4" RECYCLE EVAP. PACK. VLV. RM. 610-HCD-4" MISC EQUIP DRAIN 611-HCD-4" CORRIDOR 606-HCD-4" WASTE EVAP. PACK. VLV. RM. 608-HCD-4" WASTE EVAP PACK ROOM 607-HCD-4" WASTE EVAP. PACK. VLV. RM.

WASTE EVAP. PACK. & AREA 397-HCD-4" 637-HCD-4"

RECYCLE EVAP. PACK. AREA 576-HCD-4"

RECYCLE EVAP. PACK. & ROOM 634-HCD-4" 635-HCD-4"

RECYCLE EVAP. PACK. VLV. COMPT. 636-HCD-4"

WASTE EVAP. CNDS. TANK PUMP & AREA 286-HCD-4" 874-HCD-4"

WASTE MONITOR TANK PUMP 871-HCD-4"

525-HCD-4" WASTE MONITOR TANK 870-HCD-4" WASTE EVAP. CNDS. TANK

526-HCD-4" WASTE MONITOR TANK ROOM

527-HCD-4" 528-HCD-4" WASTE EVAP. BOTTOMS TANK & AREA

500-HCD-4" WASTE MONITOR TANK

FLOOR DRAIN TANK & AREA 530-HCD-4" 532-HCD-4"

MISC EQUIP DRAIN 531-HCD-6"

530-HCD-6"

FLOOR DRAIN TANK PUMP 529-HCD-4"

533-HCD-4" CORRIDOR

523-HCD-4" PUMP ROOM

872-HCD-4" SPENT RESIN SLUICE PUMP

524-HCD-4" WASTE EVAP. BOTTOMS TANK PUMP

579-HCD-4" MISC EQUIP DRAIN 586-HCD-4" CORRIDOR

583-HCD-4" SLWS MONITOR TANK 585-HCD-4" MISC STORAGE AREA

ESEW 731-HCD-1¼" 584-HCD-4" 730-HCD-6" 584-HCD-6" ESEW-1

592-HCD-6" 579-HCD-6" 583-HCD-6" DRW

582-HCD-4" CORRIDOR DS 581-HCD-4" 580-HCD-4" 729-HCD-4" SLWS MONITOR TANKS & AREA

484-HCD-4" SLWS MONITOR TANK ROOM 595-HCD-4" 594-HCD-4" SLWS DISCHARGE PUMPS 593-HCD-4" MISC EQUIP DRAIN 723-HCD-4" SLWS MONITOR TANK ROOM

567-HCD-4" CORRIDOR 590-HCD-4" 591-HCD-4" CONTROL ROOM 589-HCD-4" CONTROL ROOM FAN COIL UNIT 588-HCD-4" CORRIDOR

484-HCD-6" 286-HCD-8" DRW

491-HCD-4" 498-HCD-4" 497-HCD-4" FLOOR DRAIN TANK & AREA

494-HCD-4" 495-HCD-4" FLOOR DRAIN TANK PUMP & AREA

486-HCD-4" 490-HCD-4" 489-HCD-4" FLOOR DRAIN TANK PUMPS & AREA FLOOR DRAIN TANK PUMPS

485-HCD-4" CORRIDOR DRW

286-HCD-6"

CATALYTIC HYDROGEN RECOMBINER ROOM 309-HCD-4"

374-HCD-4" 322-HCD-4" 321-HCD-4" CATALYTIC HYDROGEN RECOMBINER VALVE ROOM

311-HCD-4" ESEW ESEW-1 310-HCD-4" 862-HCD-1¼"

290-HCD-4" WASTE GAS COMPR. AREA 878-HCD-4" CORRIDOR 304-HCD-4" RECYCLE EVAP. FEED PUMP ROOM

309-HCD-6" 391-HCD-6"

CORRIDOR 298-HCD-4" PIPE CHASE 301-HCD-4" CATALYTIC HYDROGEN RECOMBINER ROOM 861-HCD-4" GASEOUS RADWASTE DRAIN COLLECTION TANK AREA 303-HCD-4" GAS DECAY TANK DR PUMP 302-HCD-4"

297-HCD-6"

308-HCD-4" CORRIDOR 290-HCD-6" 305-HCD-4" WASTE GAS COMPRESSOR ROOM 307-HCD-4" 306-HCD-4" WASTE GAS COMPRESSOR VALVE ROOM

CORRIDOR 300-HCD-4" 299-HCD-4" FAN COIL UNIT

462-HCD-4" 463-HCD-4" GAS DECAY TANKS & AREA

GAS DECAY TANK ROOM 291-HCD-4"

GAS DECAY TANK VALVE ROOM 294-HCD-4" 293-HCD-4"

CORRIDOR 292-HCD-4"

295-HCD-4" 296-HCD-4" GAS DECAY TANK AREA

290-HCD-8"

399-HCD-4" MISC EQUIP DRAIN

398-HCD-8" DRW

287-HCD-4" 875-HCD-4" 288-HCD-4" AUX. STEAM CNDS. RECOVERY TANK TRANSFER PUMPS & AREA

286-HCD-10"

ESEW 868-HCD-1¼" 482-HCD-4" ESEW-1 483-HCD-6" 482-HCD-6" DRW

MISC EQUIP DRAIN 472-HCD-4" 473-HCD-4" GAS DECAY TANKS & AREA 481-HCD-4"

474-HCD-4" GAS DECAY TANKS VALVE ROOM 476-HCD-4"

466-HCD-4" 471-HCD-4" WASTE HOLD-UP TANK & AREA

470-HCD-4" MISC EQUIP DRAIN

468-HCD-4" 869-HCD-4" 469-HCD-4" WASTE EVAP. FEED PUMP & AREA

465-HCD-4" CORRIDOR

464-HCD-6" S.G. BLDG SURGE TANK

286-HCD-8"

V036 V038 ALTERNATOR V035 V037

HS 59 I LS 61 I HS 60

Q-59 Q-60

TO LAH-116 M-22LF01 (H-6) LSH 62

RADWASTE BLDG EXHAUST SYSTEM DRV M-22GH01 (C-3)

600-HCD-3" 601-HCD-3"

PLF04A PLF04B

RADWASTE BLDG SUMP AND PUMPS (DRW)

CORRIDOR 398-HCD-4" 947-HCD-4" CORRIDOR 951-HCD-4"

FILTER VLV COMPT 945-HCD-4"

STEM GEN BLDN FILTER 944-HCD-4"

953-HCD-6" ESEW 943-HCD-1¼" 952-HCD-4" ESEW-1

951-HCD-6"

FILTER VALVE COMPARTMENT 918-HCD-4" 750-HCD-4" RECYCLE EVAP FEED FILTER ROOM

RECYCLE EVAP COND FILTER ROOM 754-HCD-4" 753-HCD-4" RECYCLE EVAP CONCENTRATE FILTER ROOM

WASTE GAS DRAIN FILTER ROOM 755-HCD-4" 915-HCD-4" FILTER VALVE COMPARTMENT 751-HCD-4"

STEM GEN BLDN FILTER 946-HCD-4"

757-HCD-4" WASTE EVAP. COND FILTER ROOM

FILTER VALVE COMPARTMENT 903-HCD-4" 904-HCD-4" WASTE MONITOR TANK FILTER ROOM

WASTE MONITOR TANK FILTER 905-HCD-4" 906-HCD-4" WASTE EVAP. FEED FILTER ROOM

FILTER VALVE COMPARTMENT 909-HCD-4" 907-HCD-4" WASTE EVAP. FEED FILTER

FLOOR DRAIN TANK FILTER 910-HCD-4" 908-HCD-4" FLOOR DRAIN TANK FILTER ROOM

CORRIDOR 913-HCD-4" 911-HCD-4" FUEL POOL CLEAN-UP FILTER ROOM

FILTER VALVE COMPARTMENT A13-HCD-4" 912-HCD-4" FUEL POOL CLEAN-UP FILTER ROOM

FUEL POOL SKIMMER FILTER ROOM 914-HCD-4" 751-HCD-6" A07-HCD-4" SECONDARY SPENT RESIN SLUICE FILTER

SECONDARY SPENT RESIN SLUICE FILTER ROOM 916-HCD-4" 916-HCD-6" DRW

STEM GEN BLDN FILTER 942-HCD-4"

LOW TDS FILTER ROOM 938-HCD-4" 936-HCD-4"

398-HCD-6" DRW

950-HCD-4" LAUNDRY & HOT SHOWER TANK FILTER

949-HCD-4" LAUNDRY & HOT SHOWER TANK FILTER ROOM

948-HCD-4" STEAM GEN BLDN FILTER ROOM

941-HCD-4" SECONDARY LIQUID WASTE EVAP FEED FILTER ROOM

940-HCD-4" SECONDARY LIQUID WASTE EVAP FEED FILTER

939-HCD-4" FUEL POOL CLEAN-UP DEMIN

A15-HCD-4" FILTER VLV COMPT

993-HCD-4" LOW TDS FILTER

937-HCD-4" DEMIN VLV COMPT

987-HCD-4" CORRIDOR

985-HCD-4" LOW TDS FILTER

935-HCD-4" SLWS DEMIN

A14-HCD-4" DEMIN VLV COMPT

986-HCD-4" FILTER VLV COMPT

DRW

934-HCD-4" (PRIMARY) SPENT RESIN SLUICE FILTER ROOM

WASTE MONITOR TK DEMIN 927-HCD-4" 928-HCD-4" S G BLDN MIXED BED DEMIN

S G BLDN MIXED BED DEMIN 929-HCD-4" 930-HCD-4" DEMIN VLV COMPT 931-HCD-4" 932-HCD-4" S G BLDN MIXED BED DEMIN

DEMIN VLV COMPT 933-HCD-4" SLWS CHARCOAL ADSORBER DEMIN 649-HCD-4"

647-HCD-4" CORRIDOR 650-HCD-4" PIPE CHASE

PIPE CHASE 654-HCD-4" 656-HCD-4" 655-HCD-4" 648-HCD-4" PIPE CHASE

DISCHARGE MONITOR TANKS LQ-PT DRAIN B82-HCD-6" V716

647-HCD-6" BURIED PIPE IF V717 B83-HCD-6" DISCHARGE MONITOR TANKS SUMP

SLWS EVAPORATOR AREA 24-HCD-4" A20-HCD-4" A25-HCD-4" A23-HCD-4" A21-HCD-4" SLWS EVAPORATOR AREA

572-HCD-4" A28-HCD-4" A26-HCD-4" SLWS EVAPORATOR AREA

SAMPLE LAB 575-HCD-4"

ESEW 737-HCD-1¼" ESEW-1 626-HCD-4" 736-HCD-4" 626-HCD-6" 575-HCD-6"

SLWS EVAP AREA 574-HCD-4" A33-HCD-4"

A27-HCD-4" SUBCOOLER AND COND AREA EL 2010'-6" 578-HCD-4" 577-HCD-4" SLWS EVAPORATOR AREA

CONTROL ROOM FAN COIL UNIT 624-HCD-4" 620-HCD-4" CONTROL ROOM 895-HCD-4" CORRIDOR 623-HCD-4" 622-HCD-4" SPENT RESIN STORAGE TK PUMP AND VLV ROOM

EVAPORATOR BOTTOMS TK & AREA 638-HCD-4" 625-HCD-4" 621-HCD-4" SPENT RESIN STORAGE TK AREA

638-HCD-6" 573-HCD-4" CORRIDOR

SPENT RESIN STORAGE TANK 615-HCD-4" 616-HCD-4" DECANT TANK

SAMPLE PANEL 614-HCD-4" 618-HCD-4" DECANT TANK AREA

SAMPLE LAB 613-HCD-4" 612-HCD-4" SAMPLE LAB

573-HCD-6"

572-HCD-4" 398-HCD-8" DRW

CHEMICAL DRAIN TANK PUMP 540-HCD-4" 544-HCD-4" CHEMICAL DRAIN TANK & AREA 545-HCD-4"

RECYCLE HOLD-UP TK AREA 535-HCD-4" 543-HCD-4" S G BLDN SURGE TK PUMPS AREA 537-HCD-4" 542-HCD-4" ENTRANCE TO RADIOACTIVE PIPE TUNNEL 538-HCD-4" 539-HCD-4" 866-HCD-4" 860-HCD-4" 865-HCD-4" RADIOACTIVE PIPE TUNNEL VALVE COMPARTMENT

MISC EQUIP DRAINS 377-HCD-4" 864-HCD-4" 378-HCD-4" 863-HCD-4" V092

LOAD CENTER AREA 536-HCD-4" 541-HCD-4" S G BLDN SURGE TK PUMPS

535-HCD-6" 540-HCD-4" DRW

873-HCD-4"

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM RADWASTE BUILDING FLOOR & EQUIPMENT DRAIN SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.3-5 SHEET 14		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22LF07		REV. 5

M-22LF08 (Q)

REV.	DATE	DRAWN
1	041692	RAM
CHKD.	SUPV.	APPD.
GDC	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
2	071692	GDC
CHKD.	SUPV.	APPD.
RAM	TJM	N/A

INCORP. DEC-0884.

REV.	DATE	DRAWN
3	021693	SBR
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. CMP 89-1035 PARTIAL 16

REV.	DATE	DRAWN
4	113000	MAL
CHKD.	SUPV.	APPD.
SK	JHK	N/A

INCORP. MP 00-1007A.

REV.	DATE	DRAWN
5	072500	JHK
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. RFR-20499A.

REV.	DATE
6	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A

REV.	DATE
7	082007
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE MP 89-1035A

REV.	DATE
8	072308
DRAWN	CHKD.	SUPV.
MAL	TJC	JHK

INCORP. CHANGE REQUEST MP 07-0066 FCN-05.

REV.	DATE
9	032012
DRAWN	CHKD.	SUPV.
MAL	RLW	JHK

INCORP. MP 12-0006, REV. 0.

MISC DRAIN HUB B52-HCD-4"
CASK HATCH AREA SOUTH 659-HCD-4"
CASK LIFTING RIG LAYDOWN AREA 660-HCD-4"
MISC DRAIN HUB B51-HCD-4"
CASK HEAD LAYDOWN AREA 661-HCD-4"
FUEL BLDG. SUPPLY AIR UNIT A96-HCD-4"
FUEL BLDG. SUPPLY AIR UNIT AREA A97-HCD-4"
FUEL POOL COOLING PUMP B45-HCD-4"
FUEL POOL CLEAN-UP PUMP AREA 704-HCD-4"
FUEL POOL HEAT EXCHANGER AREA 708-HCD-4", 705-HCD-4"
CASK WASH DOWN PIT 709-HCD-6", A91-HCD-6"
MISC DRAIN HUB A90-HCD-4"
FUEL POOL COOLING HEAT EXCHANGER A92-HCD-4"
FUEL POOL COOLING HEAT EXCHANGER AREA A89-HCD-4"
FUEL POOL HEAT EXCHANGER AREA B01-HCD-4"
A93-HCD-4" FUEL BLDG. SUPPLY AIR UNIT
MISC DRAIN HUB B36-HCD-4"
UPPER CRUSH CONE LAYDOWN AREA 668-HCD-4"
MISC DRAIN HUB A98-HCD-4"
668-HCD-4"
B44-HCD-4" FUEL POOL COOLING PUMP
PERSONNEL BARRIER LAYDOWN AREA 670-HCD-4"
R.R. TRACK AREA 711-HCD-4"
A95-HCD-6" MISC DRAIN HUB
A94-HCD-4" FUEL POOL COOLING HEAT EXCHANGER
R.R. TRACK AREA B02-HCD-4"
R.R. TRACK AREA A76-HCD-4"
A76-HCD-8"
B36-HCD-6"
A77-HCD-6"
A77-HCD-4"
A78-HCD-8"
A77-HCD-2"
B53-HCD-4" SPENT FUEL POOL AREA
691-HCD-4"
666-HCD-2" EAST BRIDGE CRANE RAIL TRENCH
FUEL BUILDING SUPPLY AIR UNIT A88-HCD-4"
SUPPLY AIR UNIT AREA A86-HCD-4"
MISC DRAIN HUB B42-HCD-4"
LOAD CENTER AREA A83-HCD-4"
710-HCD-4"
669-HCD-4"
R.R. TRACK AREA
MISC DRAIN HUB A75-HCD-4"
A79-HCD-4"
DRAIN COVERED REF. RFR-20499A
671-HCD-4"
SPENT FUEL POOL LEAK DETECTION COLLECTION STAND PIPE AREA
B41-HCD-4" FUEL BUILDING SUPPLY AIR UNIT
B56-HCD-4" SUPPLY AIR UNIT AREA
A87-HCD-4" SUPPLY AIR UNIT AREA
A85-HCD-4" MISC DRAIN HUB
CORRIDOR NEW FUEL STORAGE AREA A81-HCD-4"
B41-HCD-6"
A81-HCD-6"
A80-HCD-6"
NEW FUEL STORAGE AREA A82-HCD-4"
A82-HCD-6"
EL. 2026'-0"
FLOOR DRAIN TANK M-22LF07 (H-6) 520-HCD-3"
DRW
V044 V046 V043 V045
ALTERNATOR
HS 68 LS 70 HS 69
Q-68 Q-69
TO-LAH-116 M-22LF01 (H-6)
LSH 71
FUEL BLDG NORMAL EXHAUST SYS M-22GG01 (F-4)
DRV
EL. 2000'-0"
709-HCD-6" A93-HCD-6"
674-HCD-2½" 675-HCD-2½"
A75-HCD-8"
A80-HCD-6"
PLF03B PLF03A
FUEL BUILDING SUMP AND PUMPS (DRW)

SPENT FUEL POOL AREA EAST 664-HCD-2", 692-HCD-4"
664-HCD-4"
676-HCD-4", 679-HCD-4" SPENT FUEL POOL AREA EAST
FUEL BUILDING EXHAUST FILTER ADSORBER 680-HCD-4", 682-HCD-4"
FUEL BUILDING EXHAUST FILTER ADSORBER UNIT AREA 684-HCD-4", 685-HCD-4"
SPENT FUEL POOL AREA EAST 663-HCD-4"
FUEL EXHAUST FILTER ADSORBER UNIT 686-HCD-4"
FUEL BUILDING EXHAUST ADSORBER UNIT AREA 683-HCD-4"
FUEL EXHAUST FILTER ADSORBER UNIT 687-HCD-4"
EXHAUST FILTER AREA B55-HCD-4"
CASK LIFTING BEAM STORAGE AREA 688-HCD-4"
FUEL TRANSFER MECH. LAYDOWN AREA 693-HCD-4"
FUEL TRANSFER MECH. LAYDOWN AREA 695-HCD-4"
MISC DRAIN HUB A80-HCD-4"
WEST BRIDGE CRANE RAIL TRENCH 690-HCD-2"
NEW FUEL SHIPPING CONTAINER AREA 854-HCD-4"
676-HCD-6"
695-HCD-6"
EL. 2026'-0"
A84-HCD-4" LOAD CENTER AREA
B43-HCD-4" MISC DRAIN HUB
724-HCD-3"
DRW
390-HCD-4" MEN'S LOCKER ROOM
721-HCD-4" HALL
715-HCD-4"
LAUNDRY/RESPRO-DECON AREA
718-HCD-4" DECON SINK AREA
ALARA BRIEF ROOM
717-HCD-4" CORRIDOR
728-HCD-4" HP INSTRUMENT AND TOOL STORAGE ROOM
859-HCD-4" MISC DRAIN HUB
785-HCD-4"
PIPE CHASE AREA 787-HCD-4"
786-HCD-4"
ACCESS CONTROL EXHAUST SYS. M-22GK04 (B-7) DRV
RHR PUMP ROOM SUMP DISCHARGE M-22LF01 (C-5) 797-HCD-2½"
LI 124 LI 125 LIT 124 LIT 125 LE 124 LE 125
V048 V050 V047 V049
ALTERNATOR
HS 72 LS 74 HS 73
Q-72 Q-73
LSH 75 TO LAH-116 M-22LF01 (H-6)
795-HCD-2" 796-HCD-2"
775-HCD-6"
PLF06B PLF06A
¼" ORIFICE HOLE (SEE NOTE 2)
CONTROL BUILDING FLOOR AND EQUIPMENT DRAIN SUMP AND PUMPS (DRW)

776-HCD-4"
734-HCD-4"
735-HCD-4"
736-HCD-4"
CONTROL ROOM PRESSURIZATION SYSTEM FILTER UNITS
PIPE CHASE 794-HCD-4"
PIPE CHASE (SEE NOTE 3) 791-HCD-4"
9
MISC DRAIN HUB 793-HCD-4"
PIPE CHASE 792-HCD-4"
784-HCD-6"
782-HCD-6"
783-HCD-4"
PIPE CHASE
MISC DRAIN HUB 403-HCD-4"
PIPE CHASE 781-HCD-4"
780-HCD-4"
271-HCD-4"
375-HCD-1¼" EW EYEWASH
376-HCD-1½" SK
741-HCD-2½"
743-HCD-4"
268-HCD-4"
HOT LAB
744-HCD-4"
745-HCD-4"
742-HCD-2½" SK
HOT LAB
790-HCD-4" DETERGENT DRAIN TANK OVERFLOW
789-HCD-4"
788-HCD-4"
DETERGENT DRAIN TANK PUMPS AND AREA
739-HCD-6" DECONTAMINATION BOOTH
779-HCD-4" PIPING LOW POINT DRAIN
778-HCD-4" PIPE CHASE
777-HCD-6"

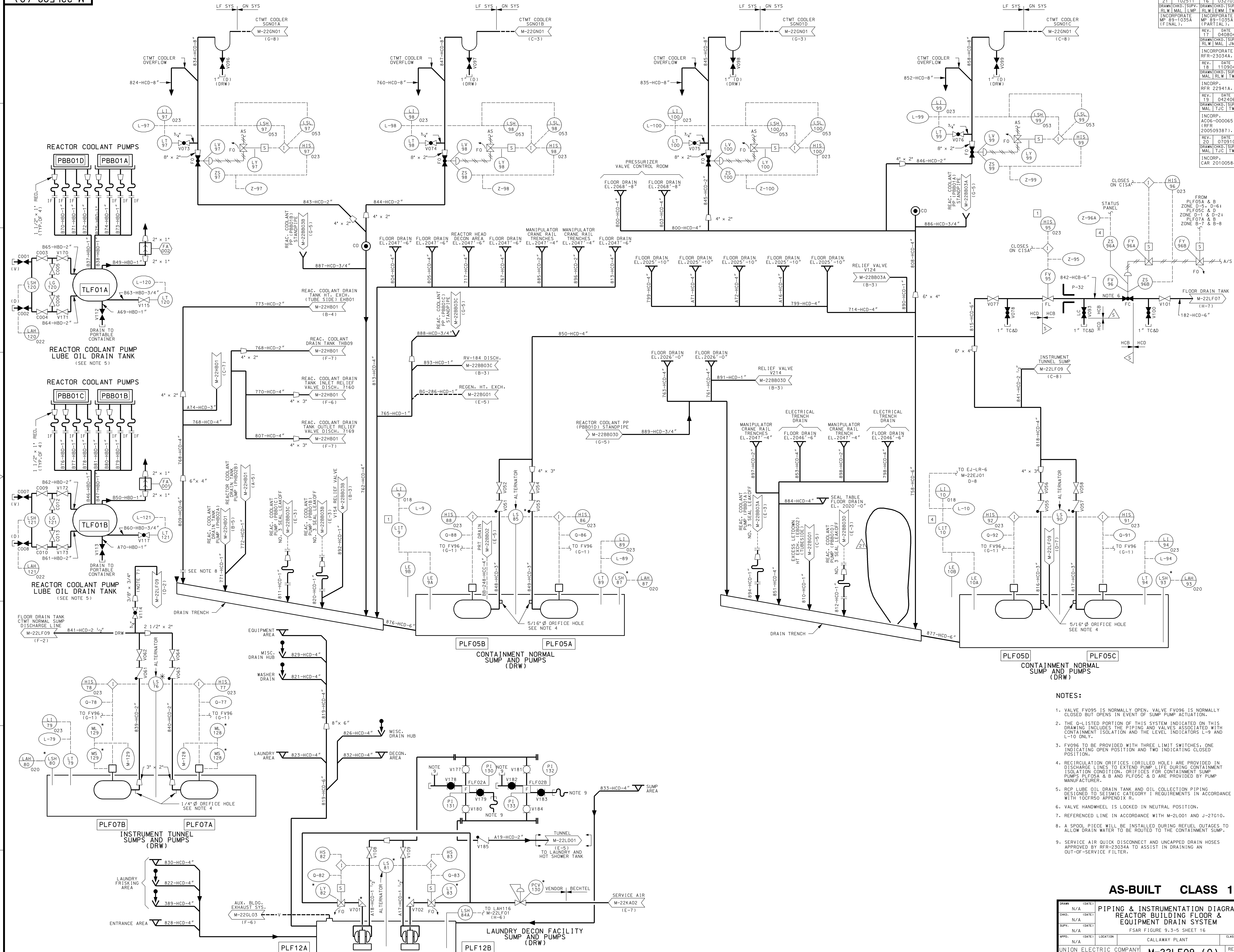
A48-XND-4" A49-XND-4" ELEC. CHASES EL. 2073'-6"
A50-XND-4" A51-XND-4" ELEC. CHASES EL. 2047'-6"
A52-XND-4" A53-XND-4" ELEC. CHASES EL. 2032'-0"
A55-XND-4" A54-XND-4" ELEC. CHASES EL. 2016'-0"
A57-XND-4" A56-XND-4" ELEC. CHASES EL. 2000'-0"
A58-XND-4" ELEC. CHASES EL. 1984'-0"
A48-XND-6" DISCHARGE TO FLOOR EL. 1974'-0"
A59-XND-4" A62-XND-4" A61-XND-4"
A59-XND-6" DISCHARGE TO FLOOR EL. 1974'-0"
A64-XND-4" A63-XND-4"
A65-XND-4" A66-XND-4"
A67-XND-4"
DRW
EL. 1974'-0"
CONTROL BUILDING ELECTRICAL CHASE DRAINS

NOTES:
1. DRAWING Q-LIST PERTAINS TO LI-124, LI-125, LIT-124, LIT-125, LE-124, AND LE-125
2. RECIRCULATION ORIFICES (DRILLED HOLES) ARE TO EXTEND PUMP LIFE DURING SHUT-OFF CONDITIONS ON SIS.
9 3. RFR 201109935 (MP 12-0006) ADDED GROUNDWATER SEEPAGE PROTECTION SYSTEM BELOW ES823 LOCATIONS.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM CONTROL AND FUEL BLDGS. FLOOR AND EQUIPMENT DRAIN SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.3-5 SHEET 15		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CALLAWAY ENERGY CENTER	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22LF08 (Q)		REV. 9

REV.	DATE	DRAWN	CHKD.	SUPV.	DESCRIPTION
21	102511	RLW	MAL	LMP	INCORPORATE MP 89-1035A (FINAL).
16	032703	RLW	EWM	TWS	INCORPORATE MP 89-1035A (PARTIAL).
17	040804	RLW	MAL	JMR	INCORPORATE RFR-23034A.
18	110904	MAL	RLW	TWS	INCORP. RFR 22941A.
19	042406	MAL	TJC	TWS	INCORP. AC06-000065 (RFR 200509387).
20	070910	MAL	TJC	TWS	INCORP. CAR 201005840.



NOTES:

1. VALVE FV095 IS NORMALLY OPEN. VALVE FV096 IS NORMALLY CLOSED BUT OPENS IN EVENT OF SUMP PUMP ACTUATION.
2. THE Q-LISTED PORTION OF THIS SYSTEM INDICATED ON THIS DRAWING INCLUDES THE PIPING AND VALVES ASSOCIATED WITH CONTAINMENT ISOLATION AND THE LEVEL INDICATORS L-9 AND L-10 ONLY.
3. FV096 TO BE PROVIDED WITH THREE LIMIT SWITCHES, ONE INDICATING OPEN POSITION AND TWO INDICATING CLOSED POSITION.
4. RECIRCULATION ORIFICES (DRILLED HOLE) ARE PROVIDED IN DISCHARGE LINES TO EXTEND PUMP LIFE DURING CONTAINMENT ISOLATION CONDITION. ORIFICES FOR CONTAINMENT SUMP PUMPS PLF05A & B AND PLF05C & D ARE PROVIDED BY PUMP MANUFACTURER.
5. RCP LUBE OIL DRAIN TANK AND OIL COLLECTION PIPING DESIGNED TO SEISMIC CATEGORY I REQUIREMENTS IN ACCORDANCE WITH 10CFR50 APPENDIX R.
6. VALVE HANDWHEEL IS LOCKED IN NEUTRAL POSITION.
7. REFERENCED LINE IN ACCORDANCE WITH M-2L001 AND J-27G10.
8. A SPOOL PIECE WILL BE INSTALLED DURING REFUEL OUTAGES TO ALLOW DRAIN WATER TO BE ROUTED TO THE CONTAINMENT SUMP.
9. SERVICE AIR QUICK DISCONNECT AND UNCAPPED DRAIN HOSES APPROVED BY RFR-23034A TO ASSIST IN DRAINING AN OUT-OF-SERVICE FILTER.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM REACTOR BUILDING FLOOR & EQUIPMENT DRAIN SYSTEM
CHKD. (DATE) N/A	FSAR FIGURE 9.3-5 SHEET 16
SUPV. (DATE) N/A	
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT — CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22LF09 (Q) — REV. 21

M-22LF10

NOTES:

1. DELETED
2. THE LEAK CHASE CHANNELS IN THE FLOOR ARE NOT DESIGNED TO BE GASTIGHT. PRESSURE TESTING OF THE FLOOR MUST NOT BE DONE.

REV.	DATE	DRAWN
3	052692	HLP
CHKD.	SUPV.	APPD.
GDC	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
4	011996	JHK
CHKD.	SUPV.	APPD.
EWM	AMR	N/A

INCORP. RFR-16405A.

REV.	DATE	DRAWN
5	082799	MAL
CHKD.	SUPV.	APPD.
SKC	AMR	N/A

INCORP. TEMP. MOD 99-0002.

REV.	DATE	DRAWN
6	091599	EWM
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

REMOVE TEMP. MOD 99-0002.

REV.	DATE
7	110603
DRAWN	CHKD.	SUPV.
JHK	MAL	TWS

INCORP. MP 01-1001A.

REV.	DATE
8	010704
DRAWN	CHKD.	SUPV.
JHK	MAL	TWS

INCORP. MP 01-1001B.

REV.	DATE
9	110904
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A.

REV.	DATE
10	121404
DRAWN	CHKD.	SUPV.
JHK	EWM	TWS

INCORP. MP 01-1001 FCN-13.

REV.	DATE
11	082307
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE MP 89-1035A

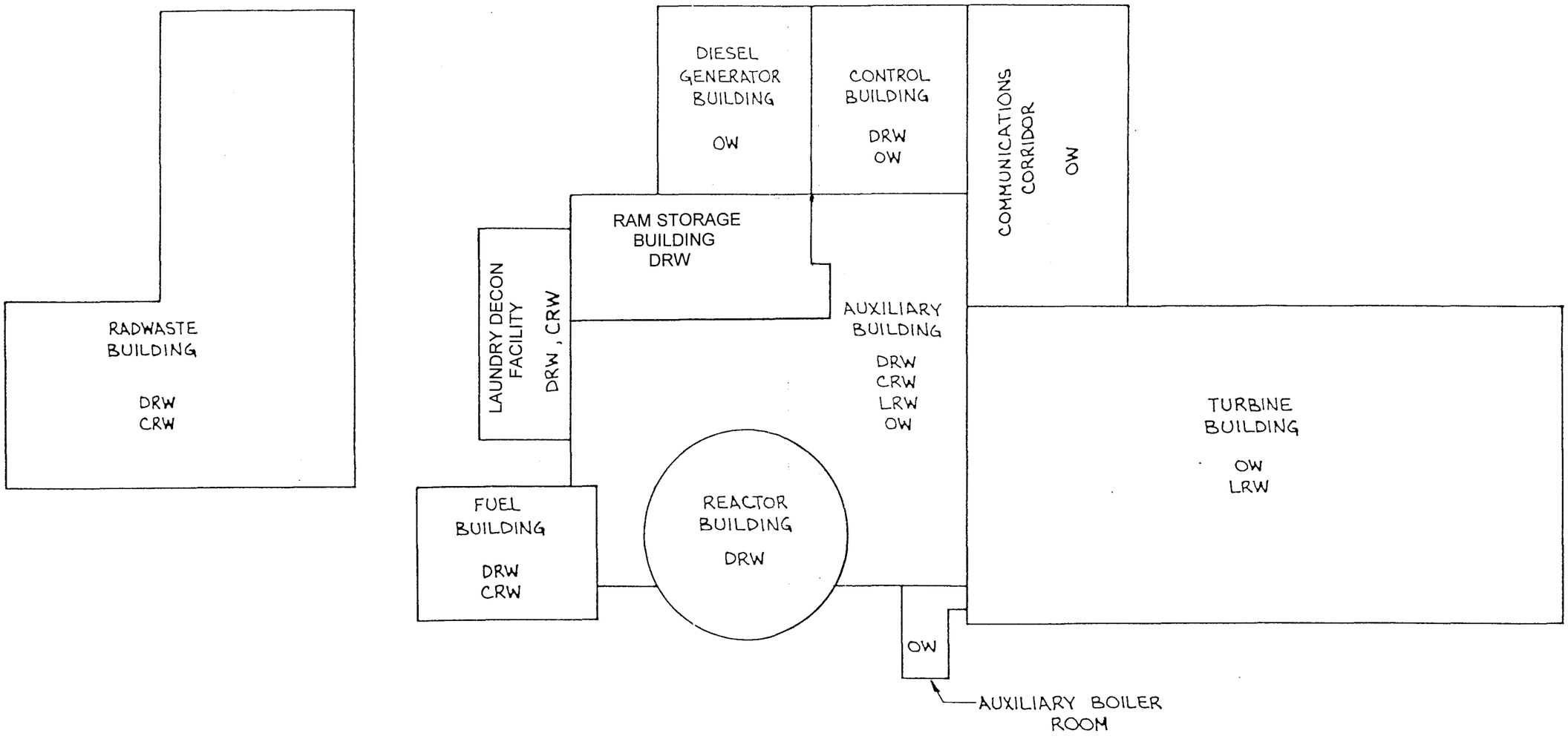
SOLIDIFICATION AREA SUMP AND PUMPS (DRW)

RADWASTE TUNNEL SUMPS AND PUMPS (DRW)

RADWASTE BUILDING DEMINERALIZER VAULTS FLOOR DRAIN SYSTEMS

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM RADWASTE BUILDING & TUNNEL FLOOR AND EQUIPMENT DRAIN SYSTEM		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A	FSAR FIGURE 9.3-5 SHEET 17		
APPD. (DATE) N/A	LOCATION	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22LF10		REV. 11

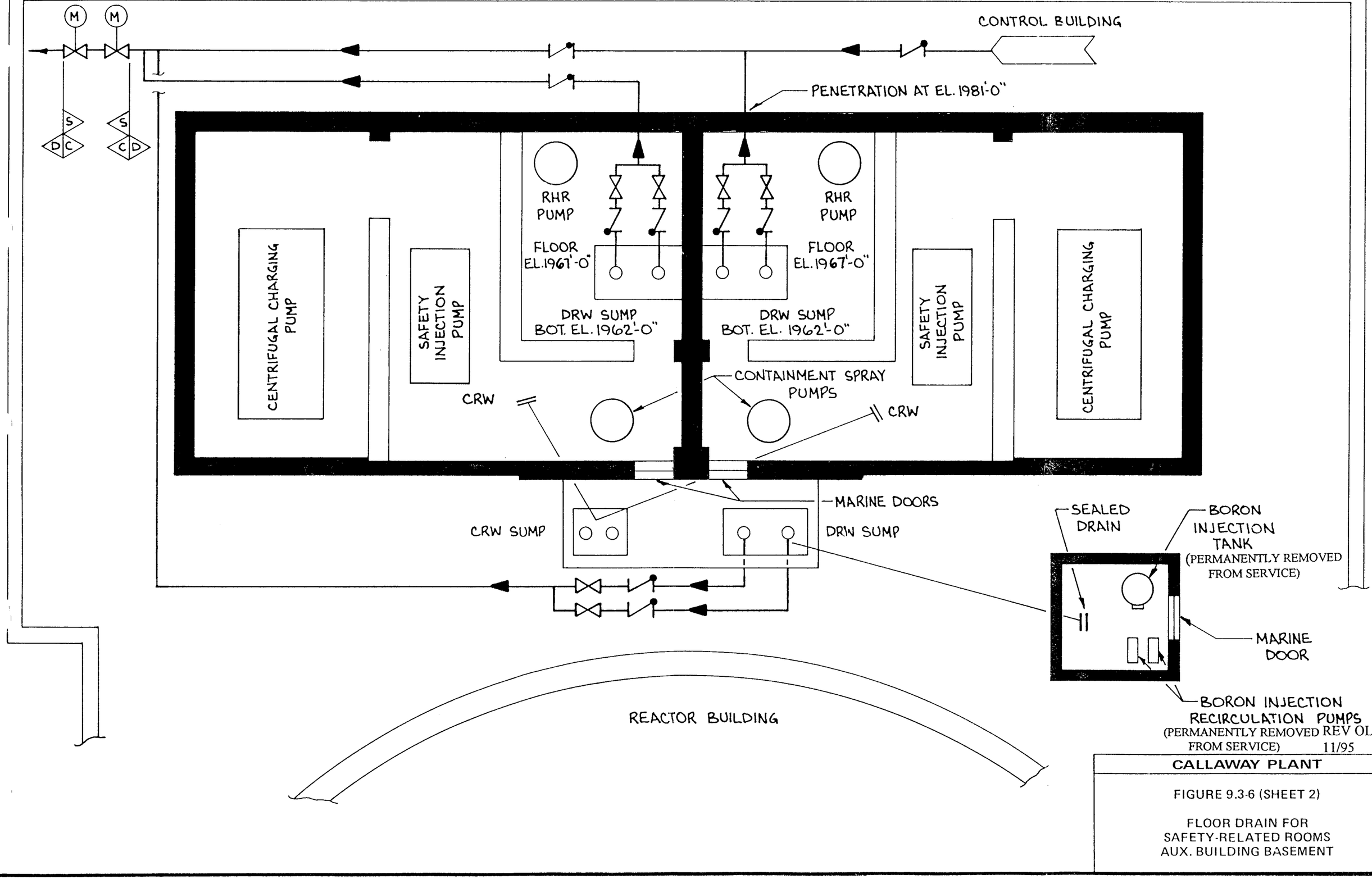


REV OL-11
5/00

CALLAWAY PLANT

FIGURE 9.3-6 (SHEET 1)

MAJOR DRAINAGE AREAS

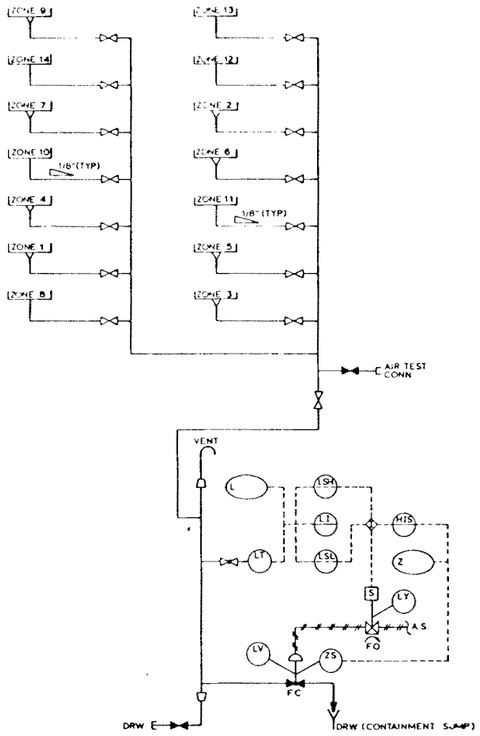


REV OL-8
11/95

CALLAWAY PLANT

FIGURE 9.3-6 (SHEET 2)

FLOOR DRAIN FOR
SAFETY-RELATED ROOMS
AUX. BUILDING BASEMENT

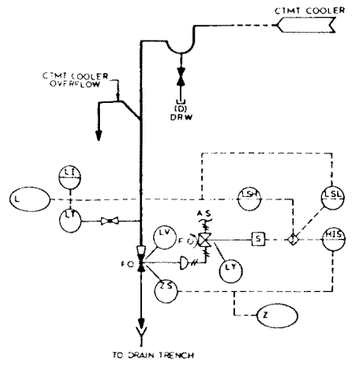


REFUELING POOL LEAK DETECTION SYSTEM

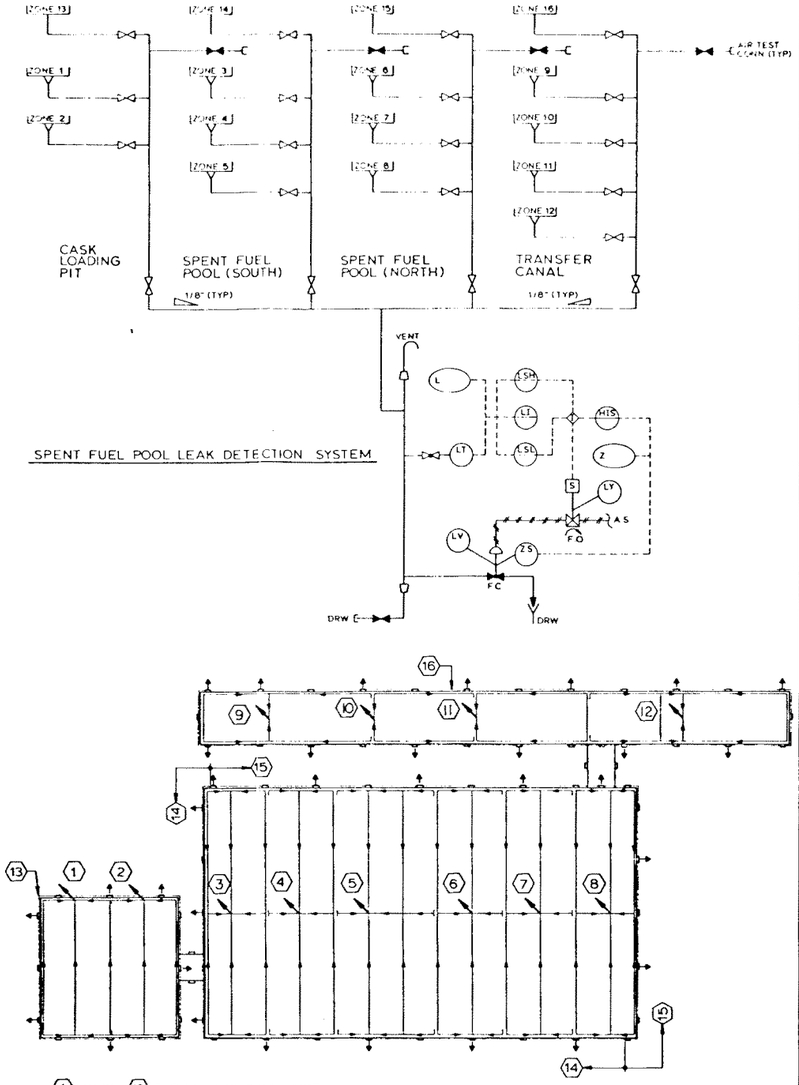
NOTE:

FLOOR LEAK CHASE ZONE

WALL LEAK CHASE ZONE

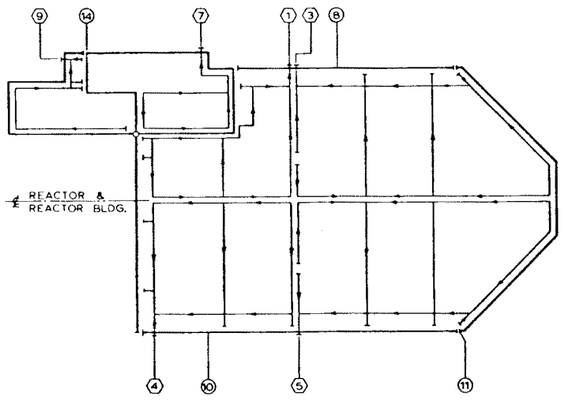


LEAK DETECTION STANDPIPE FOR CONTAINMENT COOLER
(TYP OF 4 COOLERS)

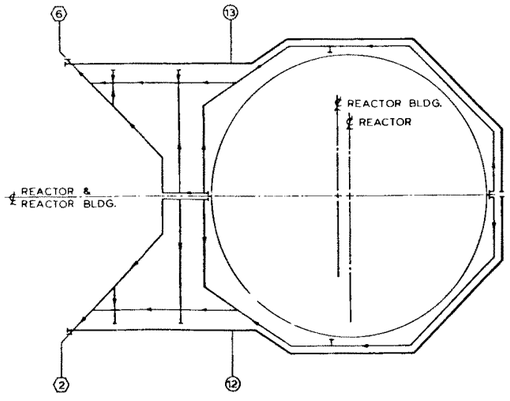


SPENT FUEL POOL LEAK DETECTION SYSTEM

PLAN OF LEAK CHASE ZONES



LEAK CHASE AND COLLECTION TRENCH PLAN



LEAK CHASE AND COLLECTION TRENCH PLAN

REFUELING POOL LEAK CHASE ZONE CONFIGURATION

SPENT FUEL POOL LEAK CHASE ZONE CONFIGURATION

NOTE:

COLLECTOR TRENCH

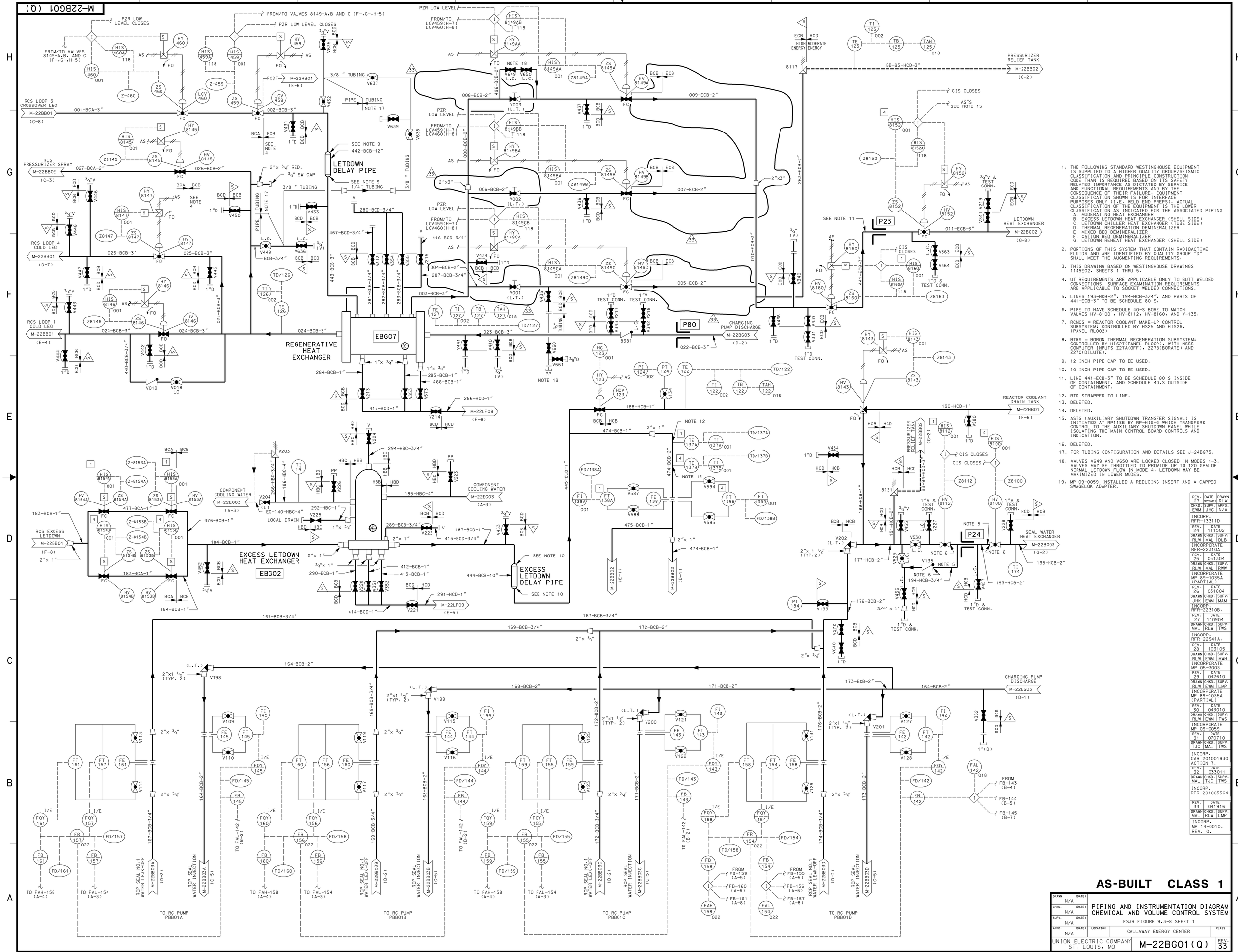
LEAK CHASE

Rev. OL-0
6/86

CALLAWAY PLANT

FIGURE 9.3-7
FUEL POOL AND CONTAINMENT COOLER LEAK DETECTION SYSTEMS
(C-OL2931-7)
(C-OL6111)

M-22BG01 (Q)



1. THE FOLLOWING STANDARD WESTINGHOUSE EQUIPMENT IS SUPPLIED TO A HIGHER QUALITY GROUP/SEISMIC CLASSIFICATION AND PRINCIPLE CONSTRUCTION CODE THAN IS REQUIRED BASED ON ITS SAFETY RELATED IMPORTANCE AS DICTATED BY SERVICE AND FUNCTIONAL REQUIREMENTS AND BY THE CONSEQUENCE OF THEIR FAILURE. EQUIPMENT CLASSIFICATION SHOWN IS FOR INTERFACE PURPOSES ONLY (I.E. WELD END PREPS). ACTUAL CLASSIFICATION OF THE EQUIPMENT IS THE LOWER CLASSIFICATION AS INDICATED FOR THE ASSOCIATED PIPING
   A. MODERATING HEAT EXCHANGER
   B. EXCESS LETDOWN HEAT EXCHANGER (SHELL SIDE)
   C. LETDOWN CHILLER HEAT EXCHANGER (TUBE SIBE)
   D. THERMAL REGENERATION DEMINERALIZER
   E. MIXED BED DEMINERALIZER
   F. CATION BED DEMINERALIZER
   G. LETDOWN REHEAT HEAT EXCHANGER (SHELL SIDE)
2. PORTIONS OF THIS SYSTEM THAT CONTAIN RADIOACTIVE FLUIDS AND ARE IDENTIFIED BY QUALITY GROUP "D" SHALL MEET THE AUGMENTING REQUIREMENTS.
3. THIS DRAWING BASED ON WESTINGHOUSE DRAWINGS 1145E02. SHEETS 1 THRU 5.
4. UT REQUIREMENTS ARE APPLICABLE ONLY TO BUTT WELDED CONNECTIONS. SURFACE EXAMINATION REQUIREMENTS ARE APPLICABLE TO SOCKET WELDED CONNECTIONS.
5. LINES 193-HCB-2", 194-HCB-3/4", AND PARTS OF 441-ECB-3" TO BE SCHEDULE 80 S.
6. PIPE TO HAVE SCHEDULE 40-S BORE TO MATCH VALVES HV-8100 , HV-8112, HV-8160, AND V-135.
7. RCMCS = REACTOR COOLANT MAKE-UP CONTROL SUBSYSTEM: CONTROLLED BY HS25 AND HIS26. (PANEL RL002)
8. BTRS = BORON THERMAL REGENERATION SUBSYSTEM: CONTROLLED BY HIS27(PANEL RL002). WITH NSSS COMPUTER INPUTS Z27A(OFF). Z27B(BORATE) AND Z27C(DILUTE).
9. 12 INCH PIPE CAP TO BE USED.
10. 10 INCH PIPE CAP TO BE USED.
11. LINE 441-ECB-3" TO BE SCHEDULE 80 S INSIDE OF CONTAINMENT. AND SCHEDULE 40.S OUTSIDE OF CONTAINMENT.
12. RTD STRAPPED TO LINE.
13. DELETED.
14. DELETED.
15. ASTS (AUXILIARY SHUTDOWN TRANSFER SIGNAL) IS INITIATED AT RP118B BY RP-HIS-2 WHICH TRANSFERS CONTROL TO THE AUXILIARY SHUTDOWN PANEL WHILE ISOLATING THE MAIN CONTROL BOARD CONTROLS AND INDICATION.
16. DELETED.
17. FOR TUBING CONFIGURATION AND DETAILS SEE J-24BG75.
18. VALVES V649 AND V650 ARE LOCKED CLOSED IN MODES 1-3. VALVES MAY BE THROTTLED TO PROVIDE UP TO 120 GPM OF NORMAL LETDOWN FLOW IN MODE 4. LETDOWN MAY BE MAXIMIZED IN LOWER MODES.
19. MP 09-0059 INSTALLED A REDUCING INSERT AND A CAPPED SWAGELOK ADAPTER.

REV.	DATE	DRAWN
23	022601	RLW
CHKD.	SUPV.	APPD.
EWM	JHC	N/A

INCORP. RFR-13311D

REV.	DATE
24	111502
DRAWN	CHKD.	SUPV.
RLW	MAL	LDLB

INCORPORATE RFR-22310A

REV.	DATE
25	051304
DRAWN	CHKD.	SUPV.
RLW	MAL	RWW

INCORPORATE MP 89-1035A (PARTIAL)

REV.	DATE
26	051804
DRAWN	CHKD.	SUPV.
JHK	EWM	MAM

INCORP. RFR-22310B.

REV.	DATE
27	110904
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR-22941A.

REV.	DATE
28	103105
DRAWN	CHKD.	SUPV.
RLW	EWM	MWH

INCORPORATE MP 05-3003

REV.	DATE
29	042610
DRAWN	CHKD.	SUPV.
RLW	EWM	LMP

INCORPORATE MP 89-1035A (PARTIAL)

REV.	DATE
30	043010
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE MP 09-0059

REV.	DATE
31	070710
DRAWN	CHKD.	SUPV.
TJC	MAL	TWS

INCORP. CAR 201001930 ACTION 7.

REV.	DATE
32	033011
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. RFR 201005564

REV.	DATE
33	041916
DRAWN	CHKD.	SUPV.
MAL	RLW	LMP

INCORP. MP 14-0010. REV. 0.

AS-BUILT CLASS 1

DRAWN	(DATE)	PIPING AND INSTRUMENTATION DIAGRAM CHEMICAL AND VOLUME CONTROL SYSTEM	
N/A			
CHKD.	(DATE)		
N/A			
SUPV.	(DATE)	FSAR FIGURE 9.3-8 SHEET 1	
N/A			
APPD.	(DATE)	LOCATION	CLASS
N/A		CALLAWAY ENERGY CENTER	
UNION ELECTRIC COMPANY ST. LOUIS, MO		M-22BG01(Q)	REV. 33

M-22BG02(Q)

LETDOWN HEAT EXCHANGER
EBG01

CATION BED DEMINERALIZER
FBG01
NOTE 8

MIXED BED DEMINERALIZER
FBG03A

MIXED BED DEMINERALIZER
FBG03B

REACTOR COOLANT FILTER
FBG06

BORON CONCENTRATION MEASUREMENT SYSTEM
SBG07

NOTES:

1. THE FOLLOWING STANDARD WESTINGHOUSE EQUIPMENT IS SUPPLIED TO A HIGHER QUALITY GROUP/SEISMIC CLASSIFICATION AND PRINCIPLE CONSTRUCTION CODE THAN IS REQUIRED BASED ON ITS SAFETY RELATED IMPORTANCE AS DICTATED BY SERVICE AND FUNCTIONAL REQUIREMENTS AND BY THE CONSEQUENCE OF THEIR FAILURE. EQUIPMENT CLASSIFICATION SHOWN IS FOR INTERFACE PURPOSE ONLY (i.e. WELD END PREPS). ACTUAL CLASSIFICATION OF THE EQUIPMENT IS THE LOWER CLASSIFICATION AS INDICATED FOR THE ASSOCIATED PIPING.
   A. MODERATING HEAT EXCHANGER
   B. EXCESS LETDOWN HEAT EXCHANGER (SHELL SIDE)
   C. LETDOWN CHILLER HEAT EXCHANGER (TUBE SIDE)
   D. THERMAL REGENERATION DEMINERALIZERS
   E. MIXED BED DEMINERALIZERS
   F. CATION BED DEMINERALIZERS
   G. LETDOWN REHEAT HEAT EXCHANGER (SHELL SIDE)
2. PORTIONS OF THIS SYSTEM THAT CONTAIN RADIOACTIVE FLUIDS AND ARE IDENTIFIED BY QUALITY GROUP CLASSIFICATION "D" SHALL MEET THE AUGMENTING REQUIREMENTS.
3. THIS DRAWING BASED ON WESTINGHOUSE DRAWINGS 1145E02 SHTS.1 THRU 5.
4. REFER TO NOTES 7 AND 8 ON M-22BG01.
5. PROCESSOR MEASURES NEUTRON FLUX, COMPENSATES FOR TEMPERATURE AND GIVES READ-OUT IN BORON CONCENTRATION.
6. DELETED
7. SEE WESTINGHOUSE DRAWING 6081D97 SHT.2.
8. FBG01 IS NOT AVAILABLE FOR USE DUE TO A FAILED RETENTION ELEMENT. CATION RESIN IS IN BTRS DEMIN. FBG02B.
9. FOR VALVES MARKED WITH AN 'X' ON THIS DRAWING, EXTENSION STEM IS OPTIONAL.

REV.	DATE	DRAWN
10	041295	RLW
CHKD.	SUPV.	APPD.
DLBr	AMR	N/A

INCORP. CMP 89-1035 (PARTIAL)

REV.	DATE	DRAWN
11	042095	RLW
CHKD.	SUPV.	APPD.
DLBr	AMR	N/A

INCORP. CMP 89-1035 (PARTIAL)

REV.	DATE	DRAWN
12	082895	RLW
CHKD.	SUPV.	APPD.
DLBr	AMR	N/A

INCORP. RFR-16267A.

REV.	DATE	DRAWN
13	102695	RLW
CHKD.	SUPV.	APPD.
DLBr	AMR	N/A

INCORP. RFR-16070A.

REV.	DATE	DRAWN
14	022498	RLW
CHKD.	SUPV.	APPD.
DLBr	AMR	N/A

INCORP. CMP 96-1019A.

REV.	DATE	DRAWN
15	041498	RLW
CHKD.	SUPV.	APPD.
MAL	JHK	N/A

INCORP. RMP 93-2028

REV.	DATE	DRAWN
16	020199	DJB
CHKD.	SUPV.	APPD.
RAM	AMR	N/A

INCORP. RFR-19267A

REV.	DATE	DRAWN
17	102599	RLW
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INCORP. MP 89-1035 (PARTIAL)

REV.	DATE	DRAWN
18	110499	RLW
CHKD.	SUPV.	APPD.
DJB	JHC	N/A

INCORP. MP 89-1035 (PARTIAL)

REV.	DATE
19	020403
DRAWN	CHKD.	SUPV.
RLW	EWM	TDH

INCORP. MP 89-1035 (PARTIAL)

REV.	DATE
20	032603
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE DEC-1872.

REV.	DATE
21	042503
DRAWN	CHKD.	SUPV.
RLW	MAL	TWS

INCORPORATE MP 01-2004 FCN-01

REV.	DATE
22	101603
DRAWN	CHKD.	SUPV.
RLW	MAL	TWS

INCORPORATE MP 00-1014A

REV.	DATE
23	081104
DRAWN	CHKD.	SUPV.
RLW	MAL	SKC

INCORPORATE MP 01-2004 FCN-05

REV.	DATE
24	110904
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR-22941A

REV.	DATE
25	112106
DRAWN	CHKD.	SUPV.
JHK	MAL	TWS

INCORP. AC 06-000181 (RFR-20050313A)

REV.	DATE
26	052108
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE MP 89-1035 (PARTIAL)

REV.	DATE
27	070710
DRAWN	CHKD.	SUPV.
TJC	MAL	TWS

INCORP. CAR 20100193O ACTION 7.

REV.	DATE
28	040711
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE MP 89-1035 (PARTIAL P39)

REV.	DATE
29	020312
DRAWN	CHKD.	SUPV.
RLW	TJC	TWS

INCORPORATE MP 89-1035 (PARTIALS P43 & P44)

AS-BUILT CLASS 1

DRAWN (DATE) N/A			
CHKD. (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM CHEMICAL AND VOLUME CONTROL SYSTEM		
SUPV. (DATE) N/A	FSAR FIGURE 9.3-8 SHEET 2		
APPD. (DATE) N/A	LOCATION	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22BG02(Q)		REV. 29

M-22BG03 (Q)

REV.	DATE
52	103105
DRAWN	CHKD. SUPV.
RLW	EWM MWH
INCORPORATE MP 05-3003	
REV.	DATE
53	051010
DRAWN	CHKD. SUPV.
RLW	EWM LMP
INCORPORATE CR RIE 10-000012; RFR 201003007	
REV.	DATE
54	070710
DRAWN	CHKD. SUPV.
TJC	MAL TWS
INCORP. CAR 201001930 ACTION 7.	
REV.	DATE
55	053112
DRAWN	CHKD. SUPV.
MAL	RLW LMP
INCORP. MP 12-0013, REV. 0.	
REV.	DATE
56	032916
DRAWN	CHKD. SUPV.
MAL	RLW DME
INCORP. RFR 201201192.	

VOLUME CONTROL TANK
TBG05

NORMAL CHARGING PUMP
PBG04

CENTRIFUGAL CHARGING PUMP
PBG05A

CENTRIFUGAL CHARGING PUMP
PBG05B

SEAL WATER HEAT EXCHANGER
EBG03

SEAL WATER RETURN FILTER
FBG05

SEAL WATER INJECTION FILTERS
FBG04A
FBG04B

LOCAL SAMPLE VESSEL

REACTOR COOLANT FILTER
M-22BG02 (E-2)

BORIC ACID BLENDING TEE
M-22BG05 (E-2)

WASTE GAS DECAY TANK
M-22HA03 (G-2)

VOLUME CONTROL TANK
M-22BG03 (E-8)

AUXILIARY BUILDING HVAC
M-22BG02 (F-3)

REACTOR COOLANT PUMP SEAL WATER RETURN AND INJECTION
M-22BG01 (D-2)

LETDOWN REHEAT HEAT EXCHANGER RELIEF
M-22BG04 (E-3)

NUCLEAR SAMPLING SYSTEM EFFLUENT
M-22SJ01 (C-8)

BORON CONCENTRATION MEASURING SYSTEM
M-22BG02 (D-2)

SEAL WATER HEAT EXCHANGER RELIEF
M-22BG03 (H-4)

LETDOWN LINE RELIEF VALVE
M-22BG02 (G-3)

CHEMICAL MIXING TANK
M-22BG05 (D-2)

BORIC ACID PUMP AND REACTOR MAKE-UP WATER PUMP
M-22BG05 (B-2)

BORIC ACID PUMP
M-22BG05 (A-3)

REFUELING WATER STORAGE TANK
M-22BN01 (A-6)

BORON RECYCLE HOLD-UP TANK
M-22HE01 (A-7)

RHR HEAT EXCHANGER DISCHARGE
M-22EJ01 (H-2)

SAFETY INJECTION PUMP SUCTION
M-22EM01 (F-8)

REFUELING WATER STORAGE TANK
M-22BN01 (E-2)

BORON RECYCLE HOLD-UP TANK
M-22HE01 (C-7)

WASTE GAS COMPRESSOR
M-22HA01 (B-8)

COMPONENT COOLING WATER
M-22EG03 (E-6)

COMPONENT COOLING WATER
M-22EG03 (F-5)

N.C. PUMP
M-22BB03 (E-5)

BORON INJECTION PATH
M-22EM02 (B-8)

BORON INJECTION PATH
M-22EM02 (A-8)

FROM PS1092 (M-22HA03 LOC. H-4)
LOW PRESSURE, WASTE GAS COMPRESSOR

FROM H_2--H_2 RECOMBINER ANALYZERS 1&2

BORON CONTROLS (RCMCS)

TO FAHL-391 (D-6)

FROM EM-FIS-917C (M-22EM02.C-8)

FROM EM-FIS-917D (M-22EM02.A-8)

FROM FS-391B (D-5)

FROM PBG04

FROM PBG05A

TO CCWP PEG01A & PEG01C M-22EG01 (G-4) & (F-4)

TO CCWP PEG01B M-22EG01(Q) (D-4)

TO CCWP PEG01B & PEG01D M-22EG01 (C-4) & (D-4)

TO ESW PUMP B M-U2EF01(Q) (E-6)

TO QA-31(B-5)

TO HV-8109 AUTO-OPEN INTLK (E-6)

TO PAH-140 (LOC. B-2)

FROM PIS-140 (LOC. D-3)

FROM PDIS-134 M-22BG02 (LOC. D-2)

TO LCV-112A (M-22BG02-LOC. F-2). CONTROL RCS LETDOWN FLOW WHEN DIVERTED TO HOLD UP TANK

TO LCV-112A (M-22BG02, LOC.F-2). LETDOWN FLOW TO HOLD-UP TK.

START REFUELING WATER SEQUENCE [LCV-112C (LOC.E-6) LCV-112E (M-22BN01, LOC.E-F-3) VIA INTERLOCKS]

START REFUELING SEQUENCE [LCV-112B (LOC.E-7) LCV-112D (M-22BN01 LOC.A-5) VIA INTERLOCKS]

START/STOP AUTO MAKE-UP, RCMCS (NOTE 12)

LOCAL SAMPLE 3/4"x1/4" RED & FEMALE QUICK CONNECT

3/4"x 1/4" RED. & FEMALE QUICK CONNECT

CHARGING FLOW SETPOINT FROM LCY-459 M-22BB02 (A-7)

FLOW CONTROL SIGNAL FY-124 (E-4)

LUBE OIL PIPING FOR PUMPS PBG05A & PBG05B
N.T.S.

NORMAL CHARGING PUMP (PBG04) DETAILS

NOTES:

1. THE (A) AND (B) DESIGNATORS APPLY TO PBG05A AND PBG05B RESPECTIVELY.

NOTES:

1. THE FOLLOWING STANDARD WESTINGHOUSE EQUIPMENT IS SUPPLIED TO A HIGHER QUALITY GROUP/SEISMIC CLASSIFICATION AND PRINCIPAL CONSTRUCTION CODE THAN IS REQUIRED BASED ON ITS SAFETY RELATED IMPORTANCE AS DICTATED BY SERVICE AND FUNCTIONAL REQUIREMENTS AND BY THE CONSEQUENCE OF THEIR FAILURE. EQUIPMENT CLASSIFICATION SHOWN IS FOR INTERFACE PURPOSES ONLY (I.e., WELD END PREPS). ACTUAL CLASSIFICATION OF THE EQUIPMENT IS THE LOWER CLASSIFICATION. AS INDICATED FOR THE ASSOCIATED PIPING.
   - A) MODERATING HEAT EXCHANGER
   - B) EXCESS LETDOWN HEAT EXCHANGER (SHELL SIDE)
   - C) LETDOWN CHILLER HEAT EXCHANGER (TUBE SIDE)
   - D) THERMAL REGENERATION DEMINERALIZERS
   - E) MIXED BED DEMINERALIZERS
   - F) CATION BED DEMINERALIZERS
   - G) LETDOWN REHEAT HEAT EXCHANGER (SHELL SIDE)
2. EXCEPT AS NOTED BY NOTE 6, PORTIONS OF THIS SYSTEM THAT CONTAIN RADIOACTIVE FLUIDS AND ARE IDENTIFIED BY QUALITY GROUP CLASSIFICATION "D" SHALL MEET THE AUGMENTING REQUIREMENTS.
3. THIS DRAWING BASED ON WESTINGHOUSE DRAWINGS 1145E02, SHEETS 1 THRU 5.
4. DELETED
5. REFER TO NOTES 7 AND 8 ON M-22BG01.
6. INDICATED PORTION OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "D" NON-AUGMENTED.
7. DELETED
8. DELETED.
9. PRESSURE CONTROLLER IS VALVE MOUNTED.
10. REFERENCE INSTRUCTION MANUAL M-1149-00001.
11. REFERENCE INSTRUCTION MANUAL M-721-00093 (SEE H-1)
12. SEE WESTINGHOUSE DRAWING 8756D37, SHEET 28
13. DELETED
14. WELDS IN ASME SECTION III, CLASS 2 HIGH ENERGY PIPING CONTAINMENT PENETRATION AREA OF NOMINAL PIPE SIZE GREATER THAN ONE INCH, MAY BE SUBJECT TO VOLUMETRIC EXAMINATION DURING THE PSI AND/OR ISI PROGRAMS. THE BOUNDARIES OF THESE PIPING SYSTEMS EXTEND THROUGH THE ISOLATION RESTRAINT SYSTEM INSIDE AND OUTSIDE OF CONTAINMENT WHICH PROTECTS THE CONTAINMENT PENETRATION. THE SPECIFIC WELDS AND THEIR INSPECTION REQUIREMENTS ARE DELINEATED IN THE PSI/ISI WORK PLANS PROVIDED UNDER SPECIFICATION M-189.
15. DELETED.
16. DELETED
17. HS-14 BELONGS TO THE NB SYSTEM.
18. THIS POINT DEFINES THE "Q" BOUNDARY. BEYOND THIS POINT HCD PIPING IS ANALYZED CONSIDERING A SINGLE DEGREE OF FREEDOM.
19. VALVES BGV5000 AND BGV5001 ARE 1/2" VALVES.
20. PUMP STOPS ON SI: CAN BE RESTARTED FROM HIS3 BEFORE RESETTING SI.
21. FOR VALVES MARKED WITH AN 'X' ON THIS DRAWING, EXTENSION STEM IS OPTIONAL.

AS-BUILT CLASS 1

DRAWN N/A (DATE)	PIPING AND INSTRUMENTATION DIAGRAM CHEMICAL AND VOLUME CONTROL SYSTEM		
CHKD. N/A (DATE)	FSAR FIGURE 9.3-8 SHEET 3		
SUPV. N/A (DATE)			
APPD. N/A (DATE)	LOCATION: CALLAWAY ENERGY CENTER	CLASS	
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22BG03(Q)	REV. 56	

M-22BG04 (Q)

REV.	DATE	DRAWN
14	110499	RLW
CHKD.	SUPV.	APPD.
DJB	JHC	N/A

INCORP. MP 89-1035 (PARTIAL)

REV.	DATE	DRAWN
15	032300	RAM
CHKD.	SUPV.	APPD.
DJB	JHC	N/A

INCORPORATES RFR-20359C

REV.	DATE	DRAWN
16	091302	RLW
CHKD.	SUPV.	APPD.
EWM	TWS	N/A

INCORP. MP 99-1020A

REV.	DATE
17	020403
DRAWN	CHKD.	SUPV.
RLW	EWM	TDH

INCORPORATE MP 89-1035

REV.	DATE
18	062303
DRAWN	CHKD.	SUPV.
RLW	MAL	TWS

INCORPORATE MINOR CHANGE CAR 200202093

REV.	DATE
19	072804
DRAWN	CHKD.	SUPV.
RLW	MAL	TDH

INCORPORATE RFR-22878A

REV.	DATE
20	110904
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR-22941A

REV.	DATE
21	110810
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORP. CR CAR 10-000232 CAR 201007483

AS-BUILT CLASS 1

NOTES:

1. THE FOLLOWING STANDARD WESTINGHOUSE EQUIPMENT IS SUPPLIED TO A HIGHER QUALITY GROUP/SEISMIC CLASSIFICATION AND PRINCIPLE CONSTRUCTION CODE THAN IS REQUIRED BASED ON ITS SAFETY RELATED IMPORTANCE AS DICTATED BY SERVICE AND FUNCTIONAL REQUIREMENTS AND BY THE CONSEQUENCE OF THEIR FAILURE. EQUIPMENT CLASSIFICATION SHOWN IS FOR INTERFACE PURPOSES ONLY (IE WELD END PREPS). ACTUAL CLASSIFICATION OF THE EQUIPMENT IS THE LOWER CLASSIFICATION AS INDICATED FOR THE ASSOCIATED PIPING.
   A. MODERATING HEAT EXCHANGER
   B. EXCESS LETDOWN HEAT EXCH. (SHELL)
   C. LETDOWN CHILLER HEAT EXCH. (TUBE)
   D. THERMAL REGENERATION DEMINERALIZER
   E. MIXED BED DEMINERALIZERS
   F. CATION BED DEMINERALIZER
   G. LETDOWN REHEAT HEAT EXCHANGER (SHELL)
2. PORTIONS OF THIS SYSTEM THAT CONTAIN RADIOACTIVE FLUIDS AND ARE IDENTIFIED BY QUALITY GROUP "D" SHALL MEET THE AUGMENTING REQUIREMENTS.
3. THIS DRAWING IS BASED ON WESTINGHOUSE DRAWINGS 1145E02 SHEETS 1 THRU 5.
4. THIS VALVE SUPPLIED LOOSE. WITH CHILLER UNIT PACKAGE. REFERENCE DRAWING 763D590.
5. REFER TO NOTES 7&8 ON M-22BG01.
6. INDICATED PORTIONS OF THIS SYSTEM, IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "D" NON-AUGMENTED.
7. REFERENCE DRAWING NUMBER 650J413.
8. DELETED.
9. DELETED.
10. DELETED.
11. WHEN BTRS IS IN THE GIVEN MODE, AS INDICATED BY BG-HIS-27, THE VALVES LISTED BELOW WILL BE IN THE FOLLOWING POSITIONS, ASSUMING PROPER VALVE OPERATION OCCURS:

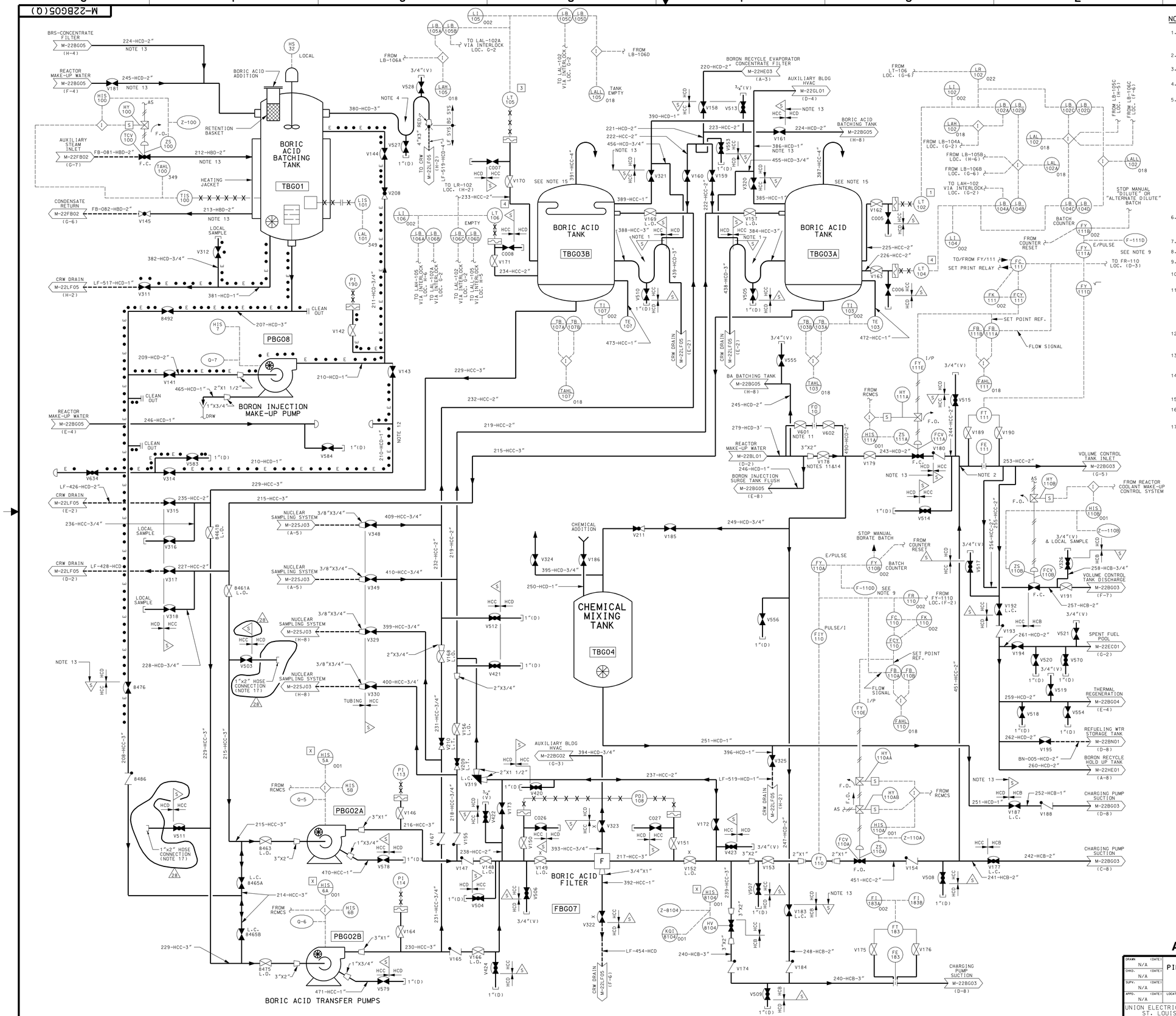
VALVE	"OFF"	"DILUTE"	"BORATE"
BG-UV-7002A	CL	OP	CL
BG-UV-7002B	CL	OP	CL
BG-UV-7022	CL	OP	CL
BG-UV-7040	OP	CL	OP
BG-UV-7041	OP	CL	OP
BG-UV-7045	CL	OP	CL
BG-UV-7046	CL	CL	OP
BG-UV-7056	CL	OP	CL
BG-UV-7057	OP	CL	OP

(OP INDICATES OPEN. CL INDICATES CLOSED)

12. RETIRED PORTIONS OF SYSTEM CAN BE FOUND ON DRAWING M-23BG08.
13. THE VALVE POSITIONS SHOWN ARE FOR DRY LAYUP OF THE SERVICE WATER TO CVCS CHILLER UNIT SUPPLY AND RETURN PIPING.
14. FOR VALVES MARKED WITH AN 'X' ON THIS DRAWING, EXTENSION STEM IS OPTIONAL.
15. DELETED.

DRAWN	(DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM CHEMICAL AND VOLUME CONTROL SYSTEM FSAR FIGURE 9.3-8 SHEET 4	
CHKD.	(DATE) N/A		
SUPV.	(DATE) N/A		
APPD.	(DATE) N/A	LOCATION CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO		M-22BG04 (Q)	REV. 21

BORON THERMAL REGENERATION DEMINERALIZERS (5)



NOTES:

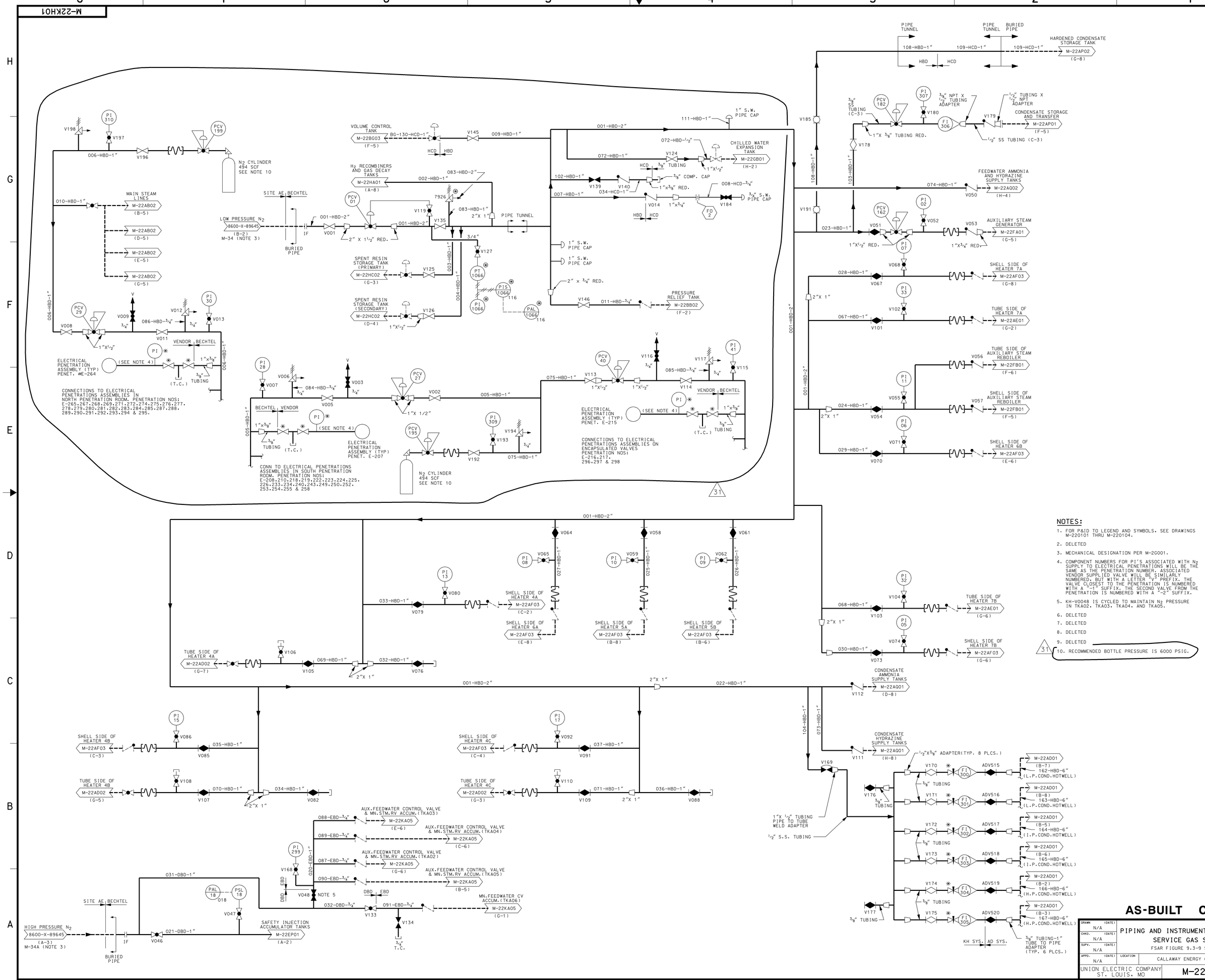
1. LOWER LOOP TO EXTEND 12" BELOW NOZZLE. UPPER LOOP TO EXTEND 6" BELOW DIAPHRAGM FLANGE. SIPHON BREAK LOCATED AT TOP OF PIPE.
2. CONNECT PIPING TO BORIC ACID BLENDING TEE AS SHOWN.
3. THIS DRAWING BASED ON WESTINGHOUSE DRAWINGS 1145E02 SHEETS 1 THROUGH 5.
4. LOOP SEAL TO EXTEND 12" ABOVE AND BELOW TANK NOZZLE.
5. THE FOLLOWING STANDARD WESTINGHOUSE EQUIPMENT IS SUPPLIED TO A HIGHER QUALITY GROUP/SEISMIC CLASSIFICATION AND PRINCIPLE CONSTRUCTION CODE THAN IS REQUIRED BASED ON ITS SAFETY RELATED IMPORTANCE AS DICTATED BY SERVICE AND FUNCTIONAL REQUIREMENTS AND BY THE CONSEQUENCE OF THEIR FAILURE. EQUIPMENT CLASSIFICATION SHOWN IS FOR INTERFACE PURPOSES ONLY (I.E. WELD END PREPS). ACTUAL CLASSIFICATION OF THE EQUIPMENT IS THE LOWER CLASSIFICATION, AS INDICATED FOR THE ASSOCIATED PIPING.
   - A. MODERATING HEAT EXCHANGER
   - B. EXCESS LETDOWN HEAT EXCHANGER (SHELL SIDE)
   - C. LETDOWN CHILLER HEAT EXCHANGER (TUBE SIDE)
   - D. THERMAL REGENERATION DEMINERALIZERS
   - E. MIXED BED DEMINERALIZERS
   - F. CATION BED DEMINERALIZER
   - G. LETDOWN REHEAT HEAT EXCHANGER (SHELL SIDE)
6. PORTIONS OF THIS SYSTEM THAT CONTAIN RADIOACTIVE FLUIDS AND ARE IDENTIFIED BY QUALITY GROUP CLASSIFICATION "D" SHALL MEET THE AUGMENTING REQUIREMENTS.
7. DELETED.
8. DELETED.
9. NSSS COMPUTER INPUT.
10. REFER TO NOTES 7 AND 8 ON DRAWING M-22BG01.
11. VALVES V601 AND V178 TO BE SECURED IN THE CLOSED POSITION PRIOR TO DRAINING THE RCS FROM THE FILLED AND VENTED CONDITION IN COLD SHUTDOWN. THESE VALVES SHALL BE SECURED IN THE CLOSED POSITION THROUGHOUT THIS REDUCED INVENTORY CONDITION IN MODE 5 AND THROUGHOUT MODE 6.
12. VALVES V143, V182 AND V314 TO BE LOCATED CLOSE TO EACH OTHER AND TO TEE OFF LINE 246 WITH 210.
13. INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE GROUP "D" NON-AUGMENTED.
14. VALVE V178 TO BE LOCKED CLOSED PRIOR TO ENTERING MODE 5 (COLD SHUTDOWN) TO LIMIT THE RMW FLOWRATE TO 150 GPM THROUGH THE BYPASS LINE FOR THE DILUTION ACCIDENT.
15. USE OF DIAPHRAGM IN TANK IS OPTIONAL.
16. FOR VALVES MARKED WITH AN 'X' ON THIS DRAWING, EXTENSION STEM IS OPTIONAL.
17. THESE CONNECTIONS ARE FOR BEYOND-DESIGN-BASIS (FLEX) REACTOR COOLING SYSTEM MAKE-UP. TEMPORARY HOSE IS CONNECTED TO THESE CONNECTIONS TO PROVIDE A SUCTION SOURCE TO A TEMPORARY HIGH PRESSURE FLEX INJECTION PUMP.
SEE M-22EM02 (H-7) FOR PUMP DISCHARGE.

REV.	DATE	DRAWN	CHKD.	SUPV.	
21	062303	RLW	MAL	TWS	INCORPORATE MINOR CHANGE CAR 200202093
22	110904	MAL	RLW	TWS	INCORP. RFR-22941A
23	112106	JHK	MAL	TWS	INCORP. AC 06-000181 (RFR-200503134)
24	061708	RLW	EWM	TWS	INCORPORATE CN CAR 08-000125; CAR 200802536.
25	012511	RLW	EWM	TWS	INCORPORATE CN CAR 10-000304; CAR 201009753.
26	073014	MAL	RLW	DME	INCORP. MP 13-0023, REV. 0 (PARTIAL).
27	080414	MAL	TJC	DME	INCORP. MP 13-0023, REV. 0 (FINAL).
28	111914	MAL	RLW	LMP	INCORP. MP 13-0023, FCN-01.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM CHEMICAL AND VOLUME CONTROL SYSTEM FSAR FIGURE 9.3-8 SHEET 5
CHKD. (DATE) N/A	
SUPV. (DATE) N/A	
APPD. (DATE) N/A	LOCATION: CALLAWAY ENERGY CENTER — CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22BG05(Q) — REV. 28

M-22KH01



NOTES:

1. FOR P&ID TO LEGEND AND SYMBOLS. SEE DRAWINGS M-220101 THRU M-220104.
2. DELETED
3. MECHANICAL DESIGNATION PER M-2G001.
4. COMPONENT NUMBERS FOR PI'S ASSOCIATED WITH N_2 SUPPLY TO ELECTRICAL PENETRATIONS WILL BE THE SAME AS THE PENETRATION NUMBER. ASSOCIATED VENDOR SUPPLIED VALVE WILL BE SIMILARLY NUMBERED, BUT WITH A LETTER "V" PREFIX. THE VALVE CLOSEST TO THE PENETRATION IS NUMBERED WITH A "-1" SUFFIX. THE SECOND VALVE FROM THE PENETRATION IS NUMBERED WITH A "-2" SUFFIX.
5. KH-V0048 IS CYCLED TO MAINTAIN N_2 PRESSURE IN TKA02, TKA03, TKA04, AND TKA05.
6. DELETED
7. DELETED
8. DELETED
9. DELETED

3 1 10. RECOMMENDED BOTTLE PRESSURE IS 6000 PSIG.

REV.	DATE	DRAWN
15	031892	HLP
CHKD.	SUPV.	APPD.
SKC	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
16	012693	HLP
CHKD.	SUPV.	APPD.
SKC	TJM	N/A

INCORP. RFR-10702A

REV.	DATE	DRAWN
17	040495	HLP
CHKD.	SUPV.	APPD.
SKC	AMR	N/A

INCORP. CMP 92-1053

REV.	DATE	DRAWN
18	121495	HLP
CHKD.	SUPV.	APPD.
SKC	AMR	N/A

INCORP. CMP 93-2019 (PARTIAL)

REV.	DATE	DRAWN
19	020796	DLBr
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. CMP 93-2019 (FINAL)

REV.	DATE	DRAWN
20	041801	RLW
CHKD.	SUPV.	APPD.
MAL	DLB	N/A

INCORP. CMP 97-1010 FCN-06

REV.	DATE	DRAWN
21	011002	JHK
CHKD.	SUPV.	APPD.
MAL	JAM	N/A

INCORP. MP 00-2001 FCN-02.

REV.	DATE	DRAWN
22	080502	SKC
CHKD.	SUPV.	APPD.
DJB	TWS	N/A

INCORP. MP 01-1002A

REV.	DATE
23	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A

REV.	DATE
24	091009
DRAWN	CHKD.	SUPV.
RLW	EWM	LMR

INCORPORATE TM 09-0006

REV.	DATE
25	092809
DRAWN	CHKD.	SUPV.
RLW	TJC	LMP

INCORPORATE TM 09-0006 REV. 1

REV.	DATE
26	101609
DRAWN	CHKD.	SUPV.
RLW	MAL	SKC

REMOVAL OF TM 09-0006

REV.	DATE
27	033010
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. TM 10-0001.

REV.	DATE
28	041910
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

REMOVE TM 10-0001.

REV.	DATE
29	031616
DRAWN	CHKD.	SUPV.
TJC	MAL	LMP

INCORP. MP 13-0033 REV. 0 (PARTIAL).

REV.	DATE
30	042216
DRAWN	CHKD.	SUPV.
MAL	RLW	JEN

INCORP. MP 13-0033 REV. 0 AND FCN-02 (FINAL).

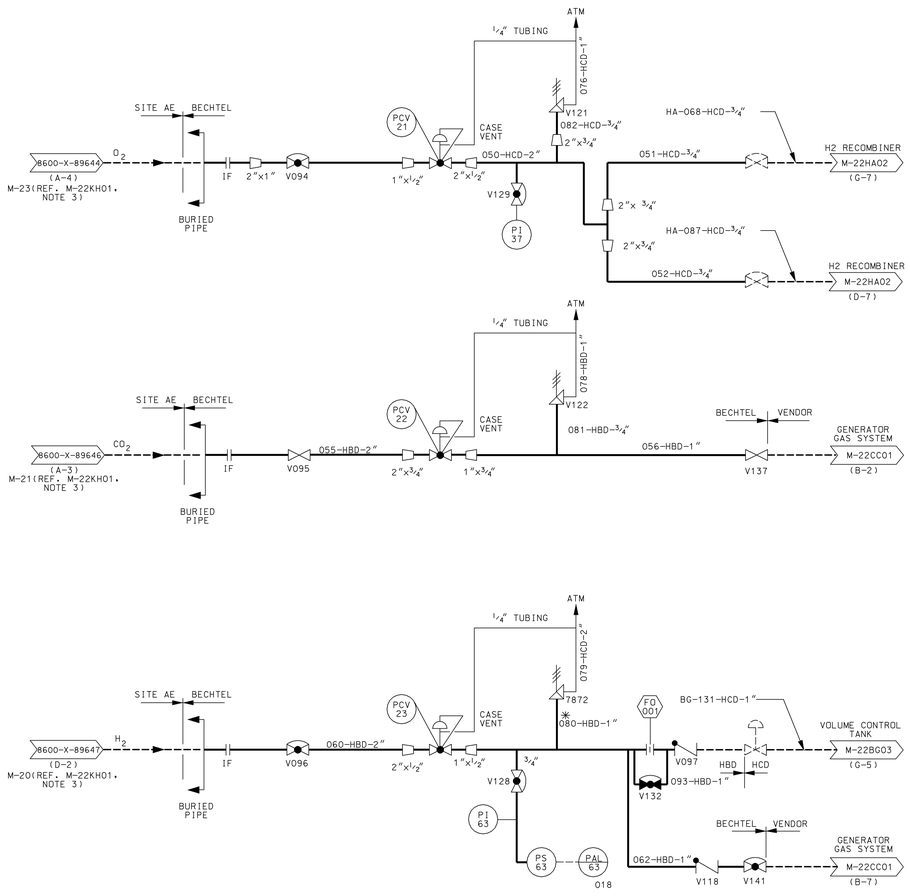
REV.	DATE
31	050216
DRAWN	CHKD.	SUPV.
RLW	MAL	LMP

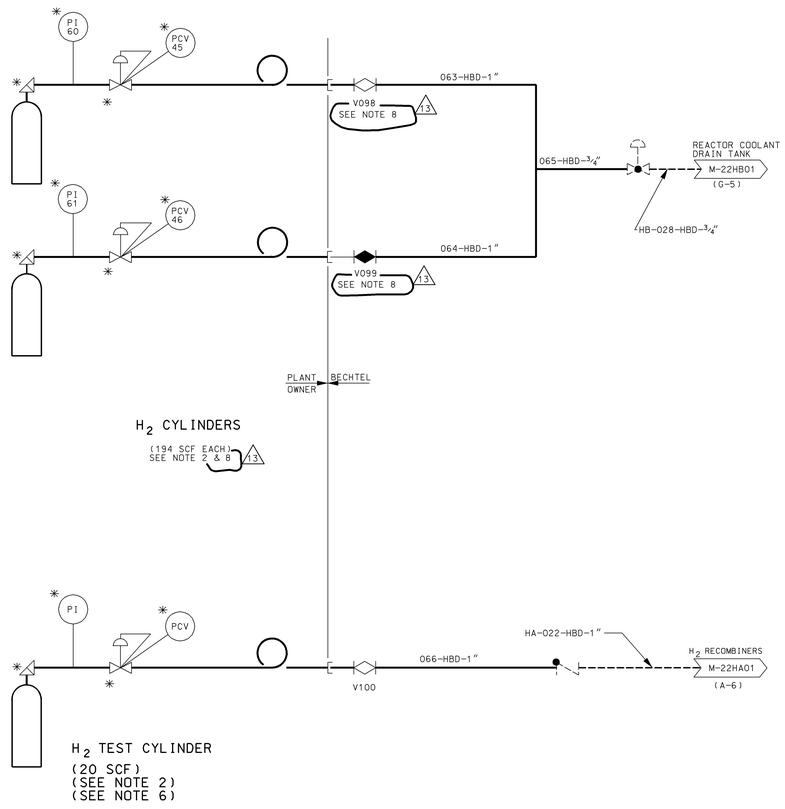
INCORPORATE MP 16-0014 REV. 0

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM SERVICE GAS SYSTEM FSAR FIGURE 9.3-9 SHEET 1		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION CALLAWAY ENERGY CENTER		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KH01		REV. 31

M-22KH02

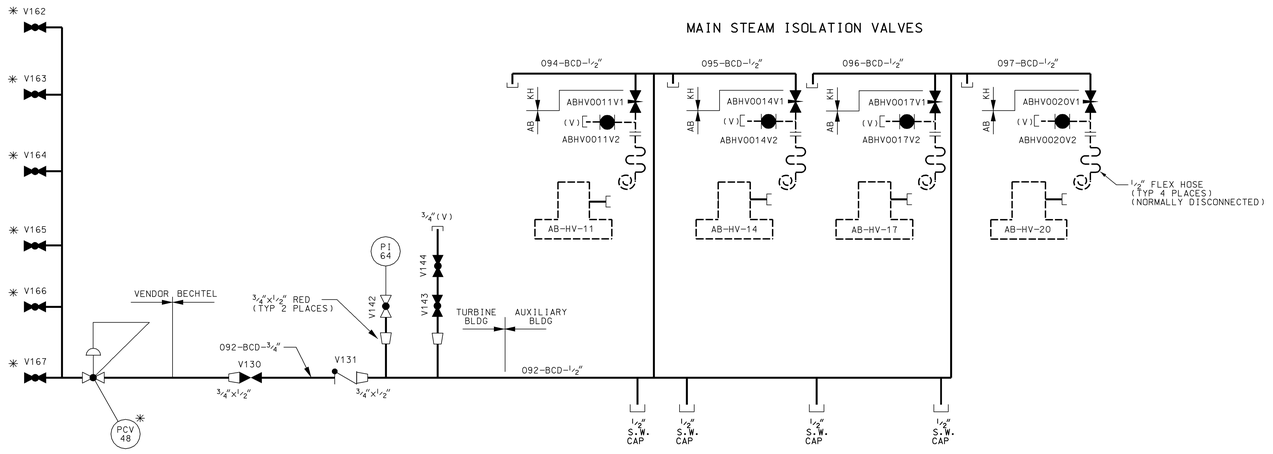




NOTES:

1. FOR NOTES SEE M-22KH01.
2. H_2 CYLINDERS WITH WELDING TYPE PRESSURE REGULATORS SUPPLIED BY PLANT OWNER.
3. RECOMMENDED BOTTLE PRESSURE IS 6000 PSIG.
4. PIPING ASSOCIATED WITH LABORATORY GASES IS FIELD RUN.
5. ⌒ INDICATES FLEXIBLE CONN. BY PLANT OWNER.
6. TEST CYLINDER ONLY INSTALLED FOR H_2 RECOMBINER EQUIPMENT CALIBRATION.
7. N_2 CYLINDERS ARE ONLY CONNECTED WHEN IN USE.
8. HYDROGEN CYLINDERS ARE NOT REQUIRED TO BE CONNECTED TO KHV0098 OR KHV0099. THE USE OF HYDROGEN BOTTLE MAXIMUM OF 388 SCF MAY BE USED INSTEAD OF TWO 194 SCF BOTTLES PROVIDED ONLY ONE BOTTLE IS CONNECTED TO THE SYSTEM AT ONE TIME.

13



REV. 6	DATE 051792	DRAWN EWM
CHKD. HLP	SUPV. TJM	APPD. N/A
REDRAWN FOR CLARITY.		
REV. 7	DATE 050393	DRAWN RBF
CHKD. DJB	SUPV. TJM	APPD. N/A
INCORP. RFR-13362B.		
REV. 8	DATE 042404	
DRAWN RLW	CHKD. MAL	SUPV. RWW
INCORPORATE MP 00-1009A		
REV. 9	DATE 110904	
DRAWN MAL	CHKD. RLW	SUPV. TWS
INCORPORATE RFR-22941A.		
REV. 10	DATE 042007	
DRAWN RLW	CHKD. EWM	SUPV. TWS
INCORPORATE MP 00-1009B		
REV. 11	DATE 123107	
DRAWN MAL	CHKD. TJC	SUPV. LMR
INCORP. CHANGE REQUEST CAR 07-000255 (CAR 200710112)		
REV. 12	DATE 102808	
DRAWN EWM	CHKD. RLW	SUPV. LMR
INCORPORATE CAR 200802871		
REV. 13	DATE 022311	
DRAWN RLW	CHKD. EWM	SUPV. SKC
INCORPORATE CR CAR 10-000331; CAR 201007511.		

AS-BUILT CLASS 1

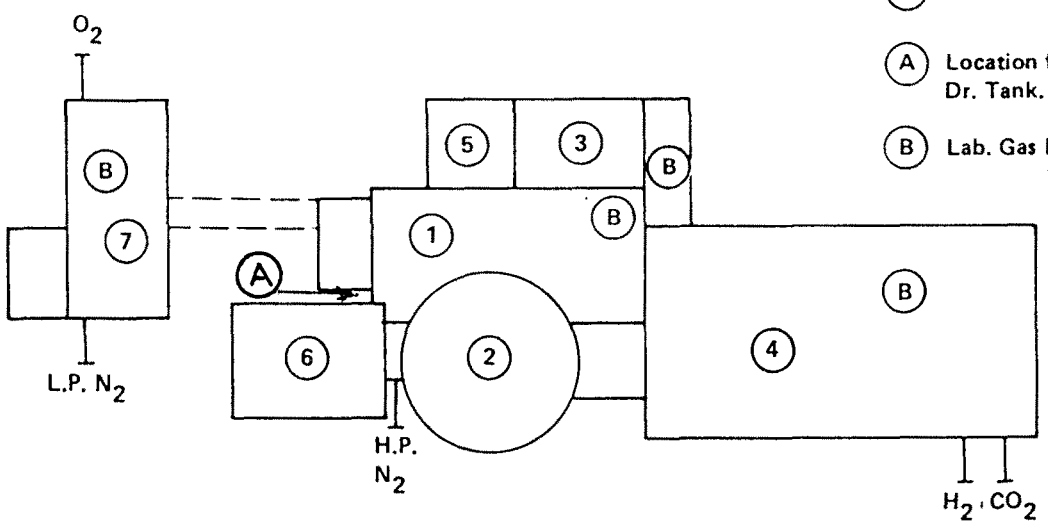
DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM SERVICE GAS SYSTEM		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A	FSAR FIGURE 9.3-9 SHEET 2		
APPD. (DATE) N/A	LOCATION	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KH02		REV. 13

Building

1. Auxiliary
2. Containment
3. Control and Communication
4. Turbine
5. Diesel Generator
6. Fuel
7. Radwaste

A. Location for H_2 Gas Supply to R.C. Dr. Tank. (Outside of Laundry Decon Facility)

B. Lab. Gas Locations



REV OL-11
5/00

CALLAWAY PLANT

FIGURE 9.3-10

GAS SUPPLY
LOCATION/INTERFACE

M-22HE01

NOTES:

1. THE FOLLOWING WESTINGHOUSE STANDARD EQUIPMENT IS SUPPLIED TO A HIGHER QUALITY GROUP/SEISMIC CLASSIFICATION AND PRINCIPAL CONSTRUCTION CODE THAN IS REQUIRED BASED ON IT'S SAFETY RELATED IMPORTANCE AS DICTATED BY SERVICE AND FUNCTIONAL REQUIREMENTS AND BY THE CONSEQUENCE OF THEIR FAILURE.
   A. RECYCLE EVAPORATOR FEED DEMINERALIZER.
   B. DELETED PER RFR-20876B
   C. DELETED PER RFR-20876B
   D. RECYCLE EVAPORATOR.
   E. RHT VENT EDUCTOR.
   F. RECYCLE EVAPORATOR CONDENSATE DEMINERALIZER.
   G. RECYCLE EVAPORATOR CONDENSATE FILTER.
   H. RECYCLE EVAPORATOR CONCENTRATE FILTER.
   J. RECYCLE EVAPORATOR CONCENTRATE PUMP.
2. PORTIONS OF THIS SYSTEM THAT CONTAIN RADIOACTIVE FLUIDS AND ARE IDENTIFIED BY QUALITY GROUP CLASSIFICATION "D" SHALL MEET AUGMENTING REQUIREMENTS.
3. THIS DRAWING BASED ON WESTINGHOUSE DRAWINGS 1145E05 SHT. 1 AND 2.
4. LOCATE RECYCLE EVAPORATOR REAGENT TANK TO ALLOW GRAVITY DRAIN TO RECYCLE EVAPORATOR.
5. THE FOLLOWING EQUIPMENT IS SUPPLIED WITH EVAPORATOR PACKAGE BY VENDOR.
   A. PCV-316
   B. TCV-304
   C. PCV-317
   D. Y-STRAINER: SHE04
   E. FCV-307
   F. BEF-26
   G. BEF-27
   H. SHE03
6. LOWER LOOP TO EXTEND 20 INCHES BELOW OVERFLOW CONNECTION. UPPER LOOP TO EXTEND 6 INCHES BELOW DIAPHRAGM FLANGE. LOCATE SIPHON BREAK ON TOP OF UPPER LOOP.
7. HIGH POINT OF PIPE DOWNSTREAM OF THIS POINT TO BE ONE FOOT BELOW DIAPHRAGM FLANGE.
14. 8. INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE NOT QUALITY GROUP "D" AUGMENTED. AUGMENTED REQUIREMENTS DO NOT APPLY TO INSTRUMENTATION AND SAMPLING PIPING DOWNSTREAM OF THE SYSTEM ROOT OR ISOLATION VALVE.
9. CONTROLS FOR THE RECYCLE EVAPORATOR ARE ON PANEL HE-136.
10. PIPING AND INSTRUMENTATION DIAGRAM FOR THE RECYCLE EVAPORATOR IS SHOWN ON DRAWING 4669D05.
11. REMOVABLE SPOOL PROVIDED FOR START-UP.
12. ONE INCH VACUUM BREAKER LINE TO BE TERMINATED BETWEEN TWELVE AND EIGHTEEN INCHES FROM LOCAL HVAC EXHAUST REGISTER.
13. FLANGES AND SPACER PROVIDED TO FACILITATE REPLACEMENT OF EVAPORATOR CONDENSER RUPTURE DISC.
14. STAINLESS STEEL PT COUPLING HOSE FITTINGS AND ASSOCIATED PLUGS/CAPS MAY BE USED INSTEAD OF VENTS AND DRAINS CAPS PER RFR-13719 REV. A.
15. DELETED
16. N2 CYLINDER TO HAVE HIGH PRESSURE FLEX HOSE AND PRESSURE REGULATOR SET TO LESS THAN 125 PSIG PRIOR TO USE.

REV.	DATE	DRAWN
5	022692	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
6	071593	RAM
CHKD.	SUPV.	APPD.
GDC	TJM	N/A

INCORPORATE RFR-13719A

REV.	DATE	DRAWN
7	062395	RLW
CHKD.	SUPV.	APPD.
DLB#	AMR	N/A

INCORPORATE CMP 89-1035

REV.	DATE	DRAWN
8	041896	DLB#
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. TEMP MOD 96-M007

REV.	DATE	DRAWN
9	041097	HLP
CHKD.	SUPV.	APPD.
SKC	AMR	N/A

INCORP. RFR-17539A

REV.	DATE	DRAWN
10	010901	RAM
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INCORP. RFR-20876A

REV.	DATE	DRAWN
11	060402	RAM
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INCORP. RFR-20876B

REV.	DATE
12	042005
DRAWN	CHKD.	SUPV.
TJC	MAL	TWS

INCORP. RFR 22941A

REV.	DATE
13	123107
DRAWN	CHKD.	SUPV.
MAL	TJC	LMR

INCORP. MP 06-0102.

REV.	DATE
14	082208
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE CR CAR 08-000218: CAR 200804353

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM BORON RECYCLE SYSTEM FSAR FIGURE 9.3-11 SHEET 1		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CLASS	
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22HE01	REV. 14	

M-22HE02

RECYCLE EVAPORATOR FEED DEMINERALIZER M-22HE01 (D-2)
009-HCD-4"
NUCLEAR SAMPLING SYSTEM M-22SJ02 (C-7)
TUBING 3/4"x3/8" V046
075-HCD-3/4"
8554B
010-HCD-4"
104-HCD-1"
V075
8554A
V072
103-HCD-1"
082-HCD-2" NOTE 8
3"x2"
090-HBD-2"
V060
091-HCD-3/4" NOTE 8
V062
V061
LOCAL SAMPLE
3/4"x1/4" REDUCER AND FEMALE QUICK CONNECT
RADWASTE BLDG. HVAC M-22GH01 (B-8)
157-HCD-3"
TO UA01 M-22HE01 (G-8)
PIS 251
V050
PAL 251 114
I
S
PY 251
AS
FO
Z251
HS/ 251 114
FIY 252
FT 252
ZS 251
PCV 251
FC
V053
RHT VENT EDUCTOR SHE01
NOTE 1
080-HBD-1"
HBD
HBC
096-HBD-1"
WASTE GAS COMPRESSORS M-22HA01 (E-7)
095-HBD-1"
WASTE GAS COMPRESSOR "B" M-22HA01 (A-5)
094-HBD-1"
WASTE GAS COMPRESSOR "A" M-22HA01 (G-4)
093-HBD-1"
WASTE GAS COMPRESSORS M-22HA01 (A-3)
V051
V052
092-HBD-3/4"
V193
V063
V194
V064
LOCAL SAMPLE
212-HBD-1"
V195
V191
1 1/2"x1"
T
DT 001
V192
1 1/2"x1"
088-HBD-1"
164-HBD-1"
V059
V135
NOTE 8
1" D
089-HCD-2" NOTE 8
NOTE 8
083-HCD-3/4" NOTE 8
V056
V055
V054
LOCAL SAMPLE
3/4"x1/4" REDUCER AND FEMALE QUICK CONNECT
HCD
HBD
V049
V134
081-HCD-2" NOTE 8
217-HCD-3/4" SCH 40S SCH 80S
V320
V322
N2 CYLINDER CONNECTION NOTE 16
218-HCD-3/4" SCH 40S SCH 80S
V321
V323
N2 CYLINDER CONNECTION NOTE 16
NOTE 12
RECYCLE HOLDUP TANK THE02A TANK NO.1
RECYCLE HOLDUP TANK THE02B TANK NO.2
078-HCD-2"
079-HCD-1"
V048 CH
V058 CH
087-HCD-1"
086-HCD-2"
CO2
P1 324
P1 325
16
V324
V325
LT 261
LIS 261
LAHL 261 114
LI 261
LS 261 114
LT 262
LIS 262 114
LAHL 262 114
LI 262
LS 262 114
037-HCD-4"
210-HCD-1"
211-HCD-1"
NOTE 6
DRAIN M-22LF06 (D-6) (LF-560-HCD)
076-HCD-4"
NOTE 8
V166
V167
1" D
LO 8557A
6"x4"
NOTE 7
RELIEF VALVE DISCHARGE HEADER M-22HE01 (C-3)
034-HCD-6"
077-HCD-2"
1" FLUSH CONN.
V047
V164
V165
V057
TO HS/270B INTERLOCK (E-4)
DRAIN M-22LF06 (D-5) (LF-571-HCD)
084-HCD-4"
LO 8557B
035-HCD-4"
085-HCD-2"
TO HS/270A INTERLOCK (D-6)
DRAIN M-22LF06 (E-6)
LF-568-HCD
098-HCD-2"
V066
012-HCD-3"
8563B
DRAIN M-22LF06 (E-6)
LF-568-HCD
097-HCD-2"
V065
8563A
011-HCD-3"
HS/ 270A 114
HIS 270AB
Q261
FROM LS-262 (E-4)
HS/ 270B 114
HIS 270BB
FROM LS-261 (E-6)
Q262
036-HCD-2"
V028
V071
V070
103-HCD-1"
017-HCD-2"
V014
V015
2"x1"
018-HCD-1"
RECYCLE EVAPORATOR M-22HE03 (E-8)
3/4" V
V180
V013
V012
FI 270
FE 270
V175
V124
V157
1" D
3"x2"
105-HCD-2"
WASTE EVAPORATOR M-22HB02 (E-5)
8550
V158
073-HCD-3"
RECYCLE EVAPORATOR FEED FILTER M-22HE01 (E-2)
3/4" PP & FLUSH CONNECTION
V118
V119
PI 30
011-HCD-3"
8564A
3"x2"
099-HCD-1"
1"x3/4"
PHE01A PUMP NO.1
LF-570-HCD
DRAIN M-22LF06 (D-6)
V067
PI 266A
3/4" FLUSH CONNECTION
V132
V066
2"x1"
V007
014-HCD-2"
V008
V176
1" D
3"x2"
101-HCD-3/4"
V063
3/4"x3/8"
TUBING
HCD
NUCLEAR SAMPLING SYSTEM M-22SJ02 (H-8)
3/4" PP & FLUSH CONNECTION
V120
V121
PI 31
013-HCD-3"
8564B
3"x2"
100-HCD-1"
1"x3/4"
PHE01B PUMP NO.2
LF-570-HCD
DRAIN M-22LF06 (D-6)
V068
PI 267A
3/4" FLUSH CONNECTION
V133
V069
2"x1"
V010
015-HCD-2"
V011
RECYCLE EVAPORATOR FEED PUMPS
102-HCD-2"
3/4" V
V178
3/4" V
V156
RECYCLE EVAPORATOR FEED DEMIN. M-22HE01 (F-8)
8631
8630
102-HCD-3"
V189
1" D
V177
1" D

NOTES:

1. FOR NOTES SEE DRAWING M-22HE01.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM BORON RECYCLE SYSTEM		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A	FSAR FIGURE 9.3-11 SHEET 2		
APPD. (DATE) N/A	LOCATION	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22HE02		REV. 16

REV.	DATE	DRAWN
5	032592	GDC
CHKD.	SUPV.	APPD.
RAM	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
6	042292	RAM
CHKD.	SUPV.	APPD.
GDC	TJM	N/A

INCORP. DEC-0846

REV.	DATE	DRAWN
7	070694	JHK
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. RFR-10557B (MINOR MOD).

REV.	DATE	DRAWN
8	072496	RAM
CHKD.	SUPV.	APPD.
JHK	JHC	N/A

INCORP. CMP 95-1013A PARTIAL

REV.	DATE	DRAWN
9	021397	RAM
CHKD.	SUPV.	APPD.
JHK	JAM	N/A

INCORP. CMP 95-1013A

REV.	DATE	DRAWN
10	101097	RAM
CHKD.	SUPV.	APPD.
HLP	AMR	N/A

INCORP. DEC# 1445

REV.	DATE	DRAWN
11	060402	RAM
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INCORP. RFR-20876B

REV.	DATE
12	010904
DRAWN	CHKD.	SUPV.
TJC	JHK	TWS

INCORP. MP 01-1001B

REV.	DATE
13	110904
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A.

REV.	DATE
14	123107
DRAWN	CHKD.	SUPV.
MAL	TJC	LMR

INCORP. MP 06-0102 FCN-01 (PARTIAL).

REV.	DATE
15	012408
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE MP 06-0102 FCN-01

REV.	DATE
16	100108
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE MP 06-0102 FCN-02

M-22HE03

8 7 6 5 4 3 2 1

H G F E D C B A

REV.	DATE	DRAWN
6	032392	SBR
CHKD. DLBr	SUPV. TJM	APPD. N/A
REDRAWN FOR CLARITY.		
REV. 7	DATE 051297	DRAWN RAM
CHKD. HLP	SUPV. AMR	APPD. N/A
INCORPORATES MP 93-2031		
REV. 8	DATE 112897	DRAWN RAM
CHKD. HLP	SUPV. AMR	APPD. N/A
INCORPORATES DEC# 1491		
REV. 9	DATE 062598	DRAWN SKC
CHKD. DLBr	SUPV. AMR	APPD. N/A
INCORPORATES RFR-18922A		
REV. 10	DATE 010901	DRAWN RAM
CHKD. DJB	SUPV. AMR	APPD. N/A
INCORPORATES RFR-20876A		
REV. 11	DATE 042005	
DRAWN TJC	CHKD. MAL	SUPV. TWS
INCORP. RFR 22841A		
REV. 12	DATE 082307	
DRAWN RLW	CHKD. EWM	SUPV. TWS
INCORPORATE MP 89-1035A		
REV. 13	DATE 113007	
DRAWN RLW	CHKD. RLW	SUPV. TWS
INCORPORATE CAR 200709320		

NOTES:

1. FOR NOTES SEE DRAWING M-22HE01.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM BORON RECYCLE SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.3-11 SHEET 3		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CLASS	
UNION ELECTRIC COMPANY ST. LOUIS, MO	CALLAWAY PLANT	M-22HE03	REV. 13

M-22GK01(Q)

UPPER CABLE SPREADING ROOM UNIT HEATER
EGK02A

UPPER CABLE SPREADING DIV. II
(EL.2073'-6")

UPPER CABLE SPREADING ROOM UNIT HEATER
EGK02B

CONTROL BLDG SOUTH STAIRWELL

CONTROL ROOM FILTRATION SYSTEM FILTER ADSORBER UNIT
FGK01A(Q)

CONTROL RM. A/C UNIT
SGK04A(Q)

CONTROL RM. A/C EQUIP. RM. UNIT HEATER
EGK09

CONTROL RM FILTRATION FAN
CGK03A(Q)

CONTROL RM FILTRATION FAN
CGK03B(Q)

CONTROL RM. FILTRATION SYSTEM FILTER ADSORBER UNIT
FGK01B(Q)

CONTROL RM. A/C UNIT
SGK04B(Q)

CONTROL RM. A/C EQUIP. RM. UNIT HEATER
EGK10

SHIFT SUPER. OFFICE

JAN. CLOSET

EMERG. STO.

ESSENTIAL SERVICE WATER

CRVIS CLOSES

CRVIS-STARTS & OPENS

CRVIS OPENS

SEE NOTE 3

NOTE 4

NOTE 5

(SEE NOTE 2)

(ROOM TEMP.)

CONTROL ROOM (EL.2047'-6")

CONTROL RM A/C UNIT EQUIP. RM. EL.2047'-6"

AUXILIARY BUILD.

COMMUNICATION CORRIDOR (EL. 2061'-6")

CONTROL BUILDING

NOTES:

1. CRVIS-CONTROL ROOM VENTILATION ISOLATION SIGNAL.
2. OPEN CONNECTIONS ARE FOR OWNER SUPPLIED MANOMETER.
3. FIRE HOSE FROM HOSE STATIONS 043 (FOR UNIT FGK01A) AND 038 (FOR UNIT FGK01B) TO CONNECT TO WATER SPRAY SYSTEM INLET. WHEN REQUIRED.
4. CONTACT OUTPUT FROM COMPUTER CONTROLS TIME INDICATOR.
5. ONLY REGISTERS WHOSE POSITIONS ARE IMPORTANT TO CRVIS WILL BE LABELLED

REV.	DATE	DRAWN
5	021092	JHK
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

REDRAWN FOR CLARITY. INCORPR. DEC-0789.

REV.	DATE	DRAWN
6	112492	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORPR. RFR-07701B RFR-10610A

REV.	DATE	DRAWN
7	011393	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORPR. RFR-10708A

REV.	DATE	DRAWN
8	092493	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORPR. RFR-14139A

REV.	DATE	DRAWN
9	072794	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORPR. RFR-10418B

REV.	DATE	DRAWN
10	080895	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORPR. RFR-10418C

REV.	DATE	DRAWN
11	050599	JHK
CHKD.	SUPV.	APPD.
MAL	JHC	N/A

INCORPR. MP 97-2014 FCN-02.

REV.	DATE	DRAWN
12	110701	RAM
CHKD.	SUPV.	APPD.
JHK	AMR	N/A

INCORPORATES MP 99-1021 PARTIAL

REV.	DATE
13	010703
DRAWN	CHKD.	SUPV.
DJB	SKC	TWS

INCORPR. CMP 99-1021A

REV.	DATE
14	042005
DRAWN	CHKD.	SUPV.
TJC	MAL	TWS

INCORPR. RFR 22941A

REV.	DATE
15	101005
DRAWN	CHKD.	SUPV.
RLW	TJC	TWS

INCORPORATE MP 04-1009A

REV.	DATE
16	091807
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORPR. CAR 200707597

REV.	DATE
17	071210
DRAWN	CHKD.	SUPV.
MAL	EWM	TWS

INCORPR. CAR 201005697

REV.	DATE
18	112310
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE CR CAR 10-000265; CAR 201008940

REV.	DATE
19	050812
DRAWN	CHKD.	SUPV.
RLW	TJC	SKC

INCORPORATE MP 10-0043 (PARTIAL)

REV.	DATE
20	103112
DRAWN	CHKD.	SUPV.
MAL	TJC	LMP

INCORP. MP 10-0043, REV. 0 (FINAL).

AS-BUILT CLASS 1

DRAWN (DATE) N/A		PIPING & INSTRUMENTATION DIAGRAM CONTROL BUILDING H.V.A.C. FSAR FIGURE 9.4-1 SHEET 1	
CHKD. (DATE) N/A			
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CALLAWAY ENERGY CENTER	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO		M-22GK01(Q)	REV. 20

M-22GK02(Q)

REV.	DATE	DRAWN
7	021292	JHK
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
8	071392	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. DEC-0840.

REV.	DATE	DRAWN
9	121192	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. DEC-0949.

REV.	DATE	DRAWN
10	011393	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR-10708A

REV.	DATE	DRAWN
11	081193	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR-13924A RFR-13580A

REV.	DATE	DRAWN
12	092493	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR-14139A

REV.	DATE	DRAWN
13	072794	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. RFR-10418B

REV.	DATE	DRAWN
14	091995	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. CMP 94-1012

REV.	DATE	DRAWN
15	101397	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. DEC-1463

REV.	DATE	DRAWN
16	102398	DJB
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. DEC-1558

REV.	DATE
17	042005
DRAWN	CHKD.	SUPV.
TJC	MAL	TWS

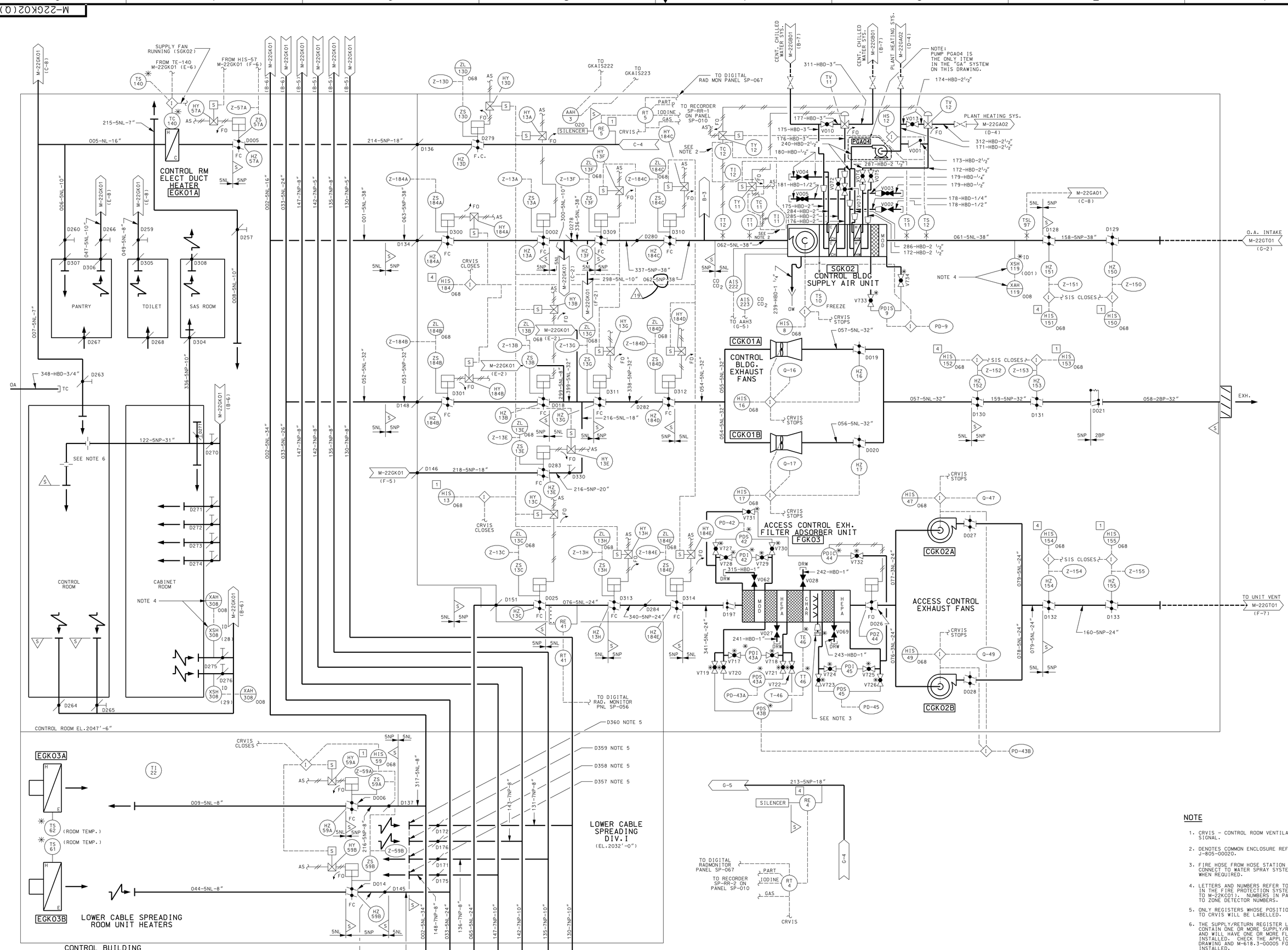
INCORP. RFR 22941A

REV.	DATE
18	081809
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. CHANGE REQUEST CAR 09-000168 (CAR 200902888 ACTION 9).

REV.	DATE
19	100710
DRAWN	CHKD.	SUPV.
TJC	MAL	TWS

INCORP. CAR 201007256.



NOTE

1. CRVIS - CONTROL ROOM VENTILATION ISOLATION SIGNAL.
2. DENOTES COMMON ENCLOSURE REFERENCE J-805-00020.
3. FIRE HOSE FROM HOSE STATION 045 TO CONNECT TO WATER SPRAY SYSTEM INLET, WHEN REQUIRED.
4. LETTERS AND NUMBERS REFER TO DESIGNATIONS IN THE FIRE PROTECTION SYSTEM, "KC" (REFER TO M-22KC01). NUMBERS IN PARENTHESES REFER TO ZONE DETECTOR NUMBERS.
5. ONLY REGISTERS WHOSE POSITIONS ARE IMPORTANT TO CRVIS WILL BE LABELLED.
6. THE SUPPLY/RETURN REGISTER LOCATION MAY CONTAIN ONE OR MORE SUPPLY/RETURN REGISTERS AND WILL HAVE ONE OR MORE FLOW ORIFICES INSTALLED. CHECK THE APPLICABLE M-2HXXXX DRAWING AND M-618.3-00005 FOR ACTUAL NUMBER INSTALLED.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM CONTROL BUILDING H.V.A.C. FSAR FIGURE 9.4-1 SHEET 2		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GK02(Q)		REV. 19

M-22GK03

REV.	DATE	DRAWN
9	021492	HLP
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
10	112492	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR-10610A

REV.	DATE	DRAWN
11	011393	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR-10708A

REV.	DATE	DRAWN
12	092493	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR-14139A

REV.	DATE	DRAWN
13	102093	MAL
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. CMP 90-1035 (PARTIAL).

REV.	DATE	DRAWN
14	103093	JHK
CHKD.	SUPV.	APPD.
GDC	TJM	N/A

INCORP. CMP 90-1035 FCN-05.

REV.	DATE	DRAWN
15	051996	DLBF
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP CMP 91-1060B

REV.	DATE	DRAWN
16	122397	DJB
CHKD.	SUPV.	APPD.
RLW	PSH	N/A

INCORP. RFR-18514A

REV.	DATE	DRAWN
17	120501	DJB
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. CMP 99-1021A (PARTIAL)

REV.	DATE	DRAWN
18	121801	DJB
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. CMP 99-1021A

REV.	DATE
19	042005
DRAWN	CHKD.	SUPV.
TJC	MAL	TWS

INCORP. RFR 22941A

REV.	DATE
20	070808
DRAWN	CHKD.	SUPV.
EWM	RLW	TWS

INCORPORATE MP 08-0021 PARTIAL

REV.	DATE
21	071108
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE MP 08-0021 FINAL

REV.	DATE
22	050812
DRAWN	CHKD.	SUPV.
RLW	TJC	SKC

INCORPORATE MP 10-0043 FCN-02 (PARTIAL)

REV.	DATE
23	103112
DRAWN	CHKD.	SUPV.
MAL	TJC	LMP

INCORP. MP 10-0043 REV. 0 & FCN-02 (FINAL).

CRVIS STARTS & OPENS

CRVIS CLOSES

CRVIS STARTS

HALON RELEASE STOPS M-22GK04 (G-2)

HALON RELEASE STOPS M-22GK04 (G-5)

FROM TIS-137 M-22GK04 (G-3)

FROM TIS-130 M-22GK04 (G-7)

FROM HZ-83C M-22GK04

FROM HZ-75C M-22GK04

HIS-98 (G-6)

CGK04B (Q) CONTROL RM. PRESSURIZATION FAN

CGK04A (Q) CONTROL RM. PRESSURIZATION FAN

CONTROL RM. PRESS. SYS. FILTER ADSORBER UNITS

MECH. EQUIP. RM. BOOSTER COIL EGK04A

MECH EQUIP. RM BOOSTER COIL EGK04B

ACCESS CONTROL A/C SYSTEM BOOSTER COIL EGK08

ACCESS CONTROL FAN COIL UNIT SGK03

CLASS 1E ELEC. EQUIP. A/C UNIT SGK05B (Q)

CLASS 1E ELEC. EQUIP. A/C UNIT SGK05A (Q)

NON-VITAL AC SWGR.

NON-VITAL AC SWGR

SWGR. ROOM #4

SWGR. ROOM #2

SWGR. ROOM #1

SWGR. ROOM #3

BATTERY ROOM #4

BATTERY ROOM #2

BATTERY ROOM #1

BATTERY ROOM #3

ESSENTIAL SERVICE WATER M-22EF01 (G-6)

ESSENTIAL SERVICE WATER M-22EF01 (G-7)

CENTRAL CHILLED W. M-22GB01 (E-6)

ELECTRICAL & MECHANICAL EQUIPMENT ROOM (EL.2016'-0")

NOTES:

1. CRVIS-CONTROL ROOM VENTILATION ISOLATION SIGNAL.
2. DENOTES COMMON ENCLOSURE REFERENCE J-805-00020.
3. OPEN CONNECTIONS ARE FOR OWNER SUPPLIED MANOMETER.
4. FIRE HOSE FROM HOSE STATION 019 (FOR UNIT FGK02A) AND HOSE STATION 018 (FOR UNIT FGK02B) TO CONNECT TO WATER SPRAY SYSTEM INLET. WHEN REQUIRED.
5. INSTRUMENT LOOPS GKM-0076 AND GKM-0084 ARE INSTALLED BUT NOT USED.
6. CONTACT OUTPUT FROM COMPUTER CONTROLS TIME INDICATOR.
7. ONLY REGISTERS WHOSE POSITIONS ARE IMPORTANT TO CRVIS WILL BE LABELLED.
8. THIS SUPPLY/RETURN REGISTER LOCATION MAY CONTAIN ONE OR MORE SUPPLY/RETURN REGISTERS AND WILL HAVE ONE OR MORE FLOW ORIFICES INSTALLED. CHECK THE APPLICABLE M-2HXXXX DRAWING AND M-618.3-00005 FOR ACTUAL NUMBER INSTALLED.
9. DAMPERS D296 AND D297 ARE DISABLED IN THE CLOSED POSITION

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM CONTROL BUILDING H.V.A.C.	
CHKD. (DATE) N/A	FSAR FIGURE 9.4-1 SHEET 3	
SUPV. (DATE) N/A		
APPD. (DATE) N/A	LOCATION: CALLAWAY ENERGY CENTER	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GK03	REV. 23

M-22GK04 (Q)

REV.	DATE	DRAWN
18	071108	RLW
12	030104	RLW
19	033010	JHK
13	070501	AMR
14	082201	DJB
15	121001	DJB
16	120302	DJB
17	042005	TJC

DRAWN	CHKD.	SUPV.	APPD.
RLW	EWM	TWS	N/A
MAL	TJC	TWS	AMR
RAM			AMR
RAM			JHC
DJB	EWM	TWS	
TJC	MAL	TWS	

INCORP. MP 08-0021
INCORP. CMP 00-1007 FCN-10
INCORP. MP 08-0021 FCN-02 AND FCN-04.
INCORP. MP 00-1007 FCN-15.
INCORP. RFR 20134A
INCORP. RFR-20134B RFR-21458A
INCORP. RFR 22941A
INCORP. DEC 1844

NOTES:

1. CRVIS-CONTROL ROOM VENTILATION ISOLATION SIGNAL.
2. SMOKE INDICATION SIGNAL IS GENERATED BY FIRE AND SMOKE DETECTION SYSTEM.
3. ONLY REGISTERS WHOSE POSITIONS ARE IMPORTANT TO CRVIS WILL BE LABELLED.

ESF SWGR. ROOM UNIT HEATER EGK05B

ESF SWGR ROOM UNIT HEATER EGK05A

CHASE & TANK AREA UNIT HEATERS EGK07A EGK07B

CHASE & TANK AREA UNIT HEATER EGK07C

ACCESS CONTROL SUPPLY SYSTEM BOOSTER COILS EGK11

EGK12

COUNTING ROOM COOLING COIL EGK13

COUNTING ROOM BACKUP COOLING COIL EGK14

COUNTING ROOM PRE-FILTER UNIT FGK06

COUNTING ROOM FILTER UNIT FGK04

COUNTING ROOM FAN COIL UNIT SGK06

COUNTING ROOM BACKUP COOLING COIL CONDENSING UNIT FGK05 SGK09

COUNTING ROOM MAIN FAN COIL UNIT SGK10 SGK11 SGK12

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM CONTROL BUILDING HVAC		
CHKD. (DATE) N/A	FSAR FIGURE 9.4-1 SHEET 4		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION CALLAWAY PLANT		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GK04(Q)		REV. 19

M-22GG01 (Q)

SPENT FUEL POOL AREA

EMERGENCY EXHAUST FILTER ADSORBER ROOM

UPPER LEVEL UNIT HEATER EGG011A

UPPER LEVEL UNIT HEATER EGG011B

UPPER LEVEL UNIT HEATER EGG011C

UPPER LEVEL UNIT HEATER EGG011D

UPPER LEVEL UNIT HEATER EGG02D

UPPER LEVEL UNIT HEATER EGG02C

TO ESFAS MAN INITIATION OF FBVIS

EMERGENCY EXH. FAN CGG02A (Q)

EMERGENCY EXH. FAN CGG02B (Q)

EMERGENCY EXH. HEATING COIL EGG10A (Q)

EMERGENCY EXH. HEATING COIL EGG10B (Q)

EMERGENCY FILTER-ADSORBER UNIT FGG02A (Q)

EMERGENCY FILTER-ADSORBER UNIT FGG02B (Q)

FUEL BLDG. AUX. BLDG.

NOTES:

1. DUCTWORK DIMENSIONS ARE EQUIVALENT ROUND.
2. FIRE HOSE FROM HOSE STATION 053 (FOR UNIT FGG02A) AND HOSE STATION 052 (FOR UNIT FGG02B) TO CONNECT TO WATER SPRAY SYSTEM INLET. WHEN REQUIRED.
3. INSTRUMENT LOOP GGM-0054 & GGM-0055 ARE INSTALLED BUT NOT USED.
4. CONTACT OUTPUT FROM COMPUTER CONTROLS TIME INDICATOR.

REV.	DATE	DRAWN
6	9/11/91	HLP
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

REDRAWN FOR CLARITY AND INCORP., DEC-T04

REV.	DATE	DRAWN
7	12139‡	GDC
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

INCORP., RFR-09604A

REV.	DATE	DRAWN
8	050393	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP., DEC 1005

REV.	DATE	DRAWN
9	072294	DLB‡
CHKD.	SUPV.	APPD.
SKC	AMR	N/A

INCORP., CMP 90-1004

REV.	DATE
10	011503
DRAWN	CHKD.	SUPV.
DJB	SKC	TWS

INCORP., CMP 97-1040A (PARTIAL)

REV.	DATE
11	012903
DRAWN	CHKD.	SUPV.
DJB	SKC	SLA

INCORP., CMP 97-1040A

REV.	DATE
12	110904
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP., RFR-22941A

REV.	DATE
13	062110
DRAWN	CHKD.	SUPV.
TJC	MAL	LMP

INCORP., CAR 201002687 & CAR 201002624.

REV.	DATE
14	062612
DRAWN	CHKD.	SUPV.
MAL	RLW	JHK

INCORP., MP 10-0043 (PARTIAL).

REV.	DATE
15	120412
DRAWN	CHKD.	SUPV.
MAL	RLW	DMC

INCORP., MP 10-0043, REV. 0, (FINAL)

REV.	DATE
16	121813
DRAWN	CHKD.	SUPV.
MAL	RLW	DMC

INCORP., CAR 201305636.

AS-BUILT CLASS 1

DRAWN	N/A (DATE)	PIPING AND INSTRUMENTATION DIAGRAM FUEL BUILDING HVAC	
CHKD.	N/A (DATE)		
SUPV.	N/A (DATE)	FSAR FIGURE 9.4-2 SHEET 1	
APPD.	N/A (DATE)	LOCATION: CALLAWAY ENERGY CENTER	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO		M-22GG01(Q)	REV. 16

M-22GG02(Q)

REV.	DATE	DRAWN
7	111891	MAL
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
8	050393	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. DEC 1005

REV.	DATE	DRAWN
9	040198	DJB
CHKD.	SUPV.	APPD.
RLW	JHK	N/A

INCORP. RFR-18501A

REV.	DATE
10	042005
DRAWN	CHKD.	SUPV.
TJC	MAL	TWS

INCORP. RFA 22941A

REV.	DATE
11	090905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. MP 98-1027A.

REV.	DATE
12	081809
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. CHANGE REQUEST CAR 09-000168 (CAR 200902888 ACTION 9).

REV.	DATE
13	062110
DRAWN	CHKD.	SUPV.
TJC	MAL	LMP

INCORP. CAR 2010002687.

FUEL BLDG. HVAC EQUIPMENT ROOM

FUEL BLDG. SUPPLY AIR UNIT SGG01A

FUEL BLDG. SUPPLY AIR UNIT SGG01B

HEATING COIL UNIT SGG03

SECONDARY LOOP PUMP PGA05

NOTE: PUMP PGA05 IS THE ONLY ITEM IN THE "GA" SYSTEM ON THIS DRAWING.

FUEL HANDLING AREA COOLING COIL EGG09

ELECTRICAL EQUIPMENT ROOM

EAST WALL UNIT HEATER EGG05

CASK SHIPPING AND RECEIVING AREA

WEST WALL UNIT HEATER EGG06

SOUTH WALL UNIT HEATER EGG04

SPENT FUEL POOL COOLING PUMP ROOM B

SPENT FUEL POOL PUMP ROOM COOLER SGG04B (Q)

SPENT FUEL POOL COOLING PUMP ROOM A

SPENT FUEL POOL PUMP ROOM COOLER SGG04A (Q)

NOTES:

1. FOR GENERAL NTOES AND REFERENCES, SEE DRAWING M-22GG01.
2. DENOTES COMMON ENCLOSURE, REFERENCE J-805-00020.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM FUEL BUILDING HVAC FSAR FIGURE 9.4-2 SHEET 2		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GG02(Q)		REV. 13

M-22GF01(Q)

AUXILIARY BUILDING
EL. 2047'-6"

PLANT HEATING M-22GA02 (B-3)
PLANT HEATING M-22GA02 (A-3)
NOTE 2
FROM TT-3B (B-4)
FROM TT-3C (A-4)
NOTE: PUMP PGA09 IS THE ONLY ITEM IN THE "GA" SYSTEM ON THIS DRAWING.
SECONDARY LOOP PUMP PGA09
SIS STOPS
SIS CLOSES
MAIN STEAM ENCLOSURE BLDG. SUPPLY AIR UNIT SGF01
MAIN STEAM ENCLOSURE BLDG. EXHAUST FANS
CGF03A
CGF03B
MAIN STEAM TUNNEL
AUX. FEEDWATER PIPE CHASE
EL. 2013'-6"
VESTIBULE
AUX. FEEDWATER PUMP (TURBINE DRIVEN) ROOM
AUXILIARY FEEDWATER PUMP ROOM COOLER SGF02A Q
AUXILIARY FEEDWATER PUMP ROOM COOLER SGF02B Q
AUX. FEEDWATER PUMP (MOTOR DRIVEN) RM. "A"
AUX. FEEDWATER PUMP (MOTOR DRIVEN) RM. "B"
FEEDWATER PUMP VALVE COMPARTMENT (TYP. OF 4)
BLOW-OFF PANEL
(SEE NOTE 3)
MAIN STEAM ENCLOSURE BUILDING
EL. 2026'-0"
EL. 2000'-0"
EL. 1989'-0"
EL. 1974'-0"

NON-RADIOACTIVE TUNNEL
RADIOACTIVE TUNNEL
ACCESS TUNNEL
RADWASTE BLDG. HVAC M-22GH02 (B-3)
AUX. BLDG. HVAC M-22GL03 (C-6)
CTMT PURGE HVAC M-22GT01 (F-2)
TO UNIT VENT M-22GT01 (F-7)
RADWASTE BLDG. HVAC M-22GH02 (A-3)
AUX. BLDG. HVAC M-22GL03 (C-6)
RADWASTE BUILDING
AUXILIARY BUILDING
12" Ø EMBEDDED SLV. (TYP. 3 PLCS)
SUMP PUMP VENT M-22LF10 (B-5)
UNIT HEATER EGF06A
UNIT HEATER EGF06B
TUNNEL TEMP. T-161

TENDON GALLERY TRANSFER FAN CGF01B
TENDON GALLERY TRANSFER FAN CGF02
TENDON GALLERY DUCT HEATER EGF03
TENDON GALLERY UNIT HEATER EGF01
TENDON GALLERY TRANSFER FAN CGF01A
TENDON ACCESS GALLERY
AUX. BLDG HVAC M-22GL01 (A-3)
AUX. BLDG HVAC M-22GL01 (A-6)

NOTES:
1. DUCTWORK SIZES ARE INDICATED AS EQUIVALENT ROUND.
2. VENDOR SUPPLIED PANEL. FOR DETAILS SEE J-805-00024.
3. BLOW-OFF PANEL IS PROVIDED TO RELIEVE PRESSURE FROM THE AUX. FEEDWATER PUMP (TURBINE DRIVEN) ROOM FOLLOWING STEAM LINE BREAK TO THE TURBINE BUILDING.

REV.	DATE	DRAWN
7	052998	DJB
CHKD. SUPV.	APPD.	
RLW	AMR	N/A

INCORP. RFR-18205A

REV.	DATE
8	050704
DRAWN	CHKD. SUPV.	DLB
RLW	MAL	

INCORPORATE MP 00-1035 FCN-22

REV.	DATE
9	110904
DRAWN	CHKD. SUPV.
MAL	RLW	TWS

INCORPORATE RFR-22941A

REV.	DATE
10	101005
DRAWN	CHKD. SUPV.
RLW	TJC	TWS

INCORPORATE MP 04-1009 FCN-01

REV.	DATE
11	042007
DRAWN	CHKD. SUPV.
RLW	EWM	TWS

INCORPORATE MP 05-3014A

REV.	DATE
12	102808
DRAWN	CHKD. SUPV.
RLW	EWM	LMR

INCORPORATE MP 07-0067

REV.	DATE
13	081809
DRAWN	CHKD. SUPV.
MAL	TJC	TWS

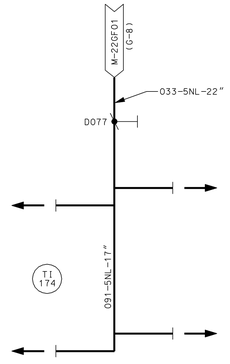
INCORP. CHANGE REQUEST CAR 05-000168 (CAR 200902888 ACTION 9).

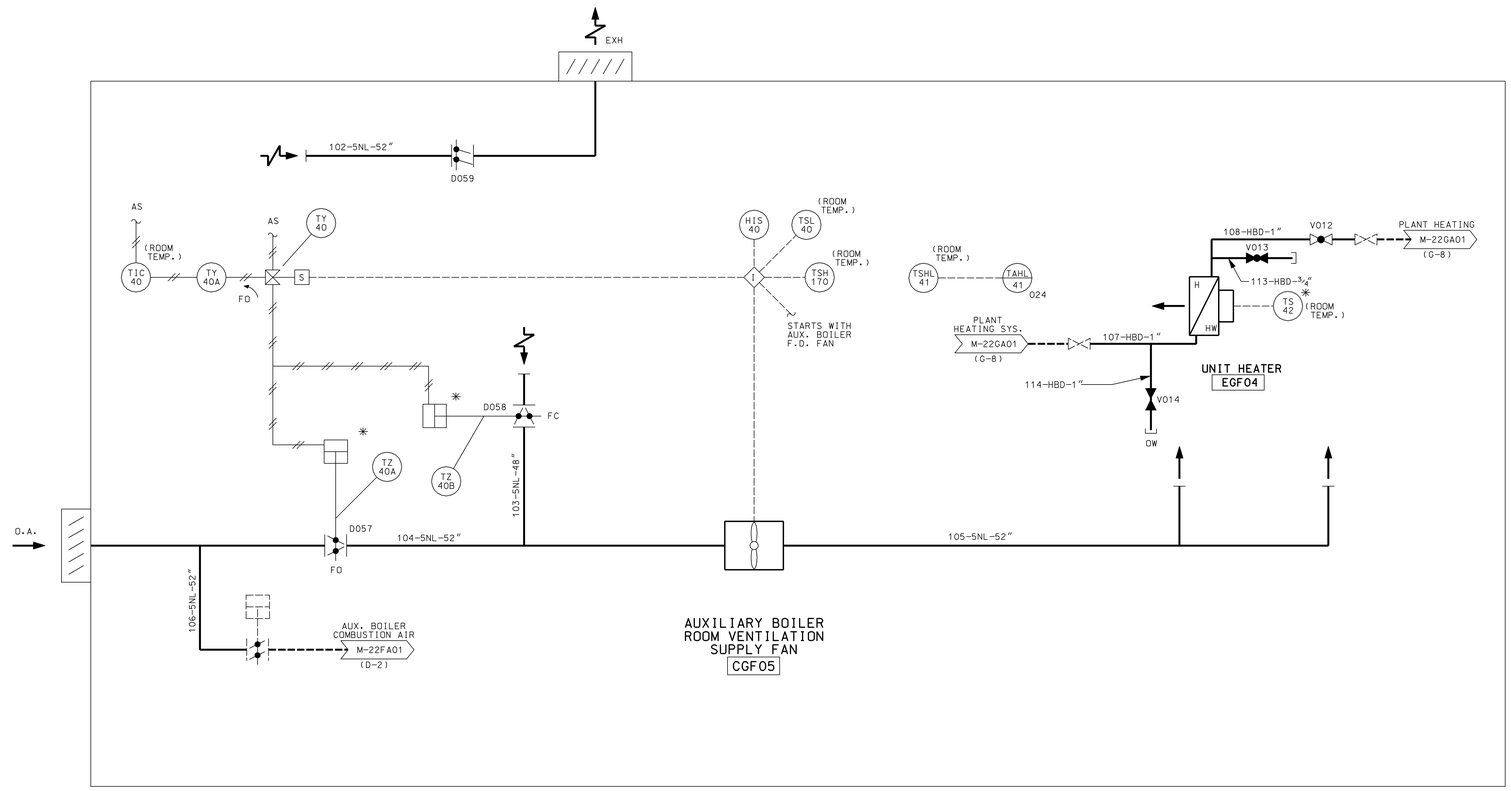
AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM MISCELLANEOUS BUILDINGS HVAC FSAR FIGURE 9.4-3 SHEET 1		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GF01(Q)		REV. 13

M-22GF02

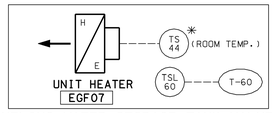
REV.	DATE	DRAWN
2	093091	MAL
CHKD. DJB	SUPV. TJM	APPD. N/A
REDRAWN FOR CLARITY.		
REV. 3	DATE 012500	DRAWN DJB
CHKD. RLW	SUPV. AMR	APPD. N/A
INCORP. RFR-19131A		
REV. 4	DATE 042005	
DRAWN TJC	CHKD. MAL	SUPV. TWS
INCORP. RFR 22941A		



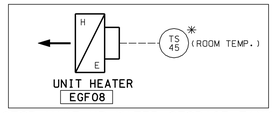


AUXILIARY BOILER ROOM VENTILATION SUPPLY FAN
CGF05

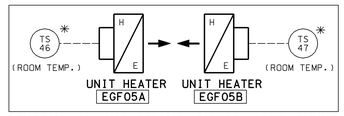
AUXILIARY BOILER ROOM



REFUELING WATER STORAGE TANK VALVE HOUSE



REACTOR MAKE-UP WATER STORAGE TANK VALVE HOUSE



CONDENSATE AND DEMIN. WATER PIPE TUNNEL

NOTES:

1. DUCTWORK SIZES ARE INDICATED AS EQUIVALENT ROUND.

CLASS 1 AS-BUILT

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM MISCELLANEOUS BUILDINGS HVAC FSAR FIGURE 9.4-3 SHEET 2		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GF02		REV. 4

M-22GL01(Q)

OPERATING FLOOR HVAC EQUIPMENT ROOM UNIT HEATER
EGL06C

COMPONENT COOLING WATER PUMP ROOM COOLER
SGL11A (Q)

CMPNT. COOLING WATER PUMP ROOM FAN COOLING UNIT
SGL17A

ELECTRICAL EQUIPMENT ROOM FAN COIL UNIT
SGL02

AUXILIARY BUILDING SUPPLY AIR UNIT
SGL01

MG SET RM. FAN COIL UNIT
SGL20

MG SET ROOM

NOTES:

1. DUCTWORK SIZES ARE INDICATED AS EQUIVALENT ROUND.
2. LINE DENOTES UNIT ENCLOSURE REF. J-805-00020.
3. DURING UNIT OUTAGE OF SGL20, D213 TO BE OPENED AND SPLITTER DAMPER D222 PULLED OUT TO END OF PAINTED/ETCHED SECTION ON ROD. THIS BALANCES THE SYSTEM FOR 1700 CFM IN DUCT 351-5NL-18" AND 890 CFM IN DUCT 352-5NL-20".
4. DURING UNIT OUTAGE OF SGL02, D215 TO BE OPENED AND D220 AND D221 ARE TO BE CLOSED. THIS BALANCES THE SYSTEM TO HAVE 3000 CFM IN DUCT 354-5NL-15" AND 7000 CFM IN DUCT 359-5NL-23".

OPERATING FLOOR

INTER. FLOOR

GROUND FLOOR

BASEMENT FLOOR

M G SET ROOM (SEE ZONE H-1 FOR BACKUP UNIT)

BORIC ACID BATCHING TANK AREA

INTER. FL. CORR. UNIT HEATER
EGL05B

AUX. SHUTDOWN PANEL RM.

CORRIDOR

COMPONENT COOLING ROOM

AUX. BUILDING SAMPLING ROOM

VALVE ROOM

BORON METER & RC ACTIVITY MONITOR ROOM

SEAL WATER HEAT EXCHANGER ROOM

VOLUME CONTROL TANK

PENETRATION RM. COOLER
SGL15A (Q)

PIPE PENETRATION ROOM

PIPE CHASE UNIT HEATERS
EGL13C
EGL13D

PIPE CHASE

BORIC ACID STORAGE TANK AREA UNIT HEATER
EGL11A

BORIC ACID STORAGE TANK AREA UNIT HEATER
EGL11B

BORIC ACID TK. RM. NO. 1

BORIC ACID TK. RM. NO. 2

BORON INJECTION TANK & PUMP RM

RHR PUMP RM. COOLER
SGL10A (Q) [1]

RHR PUMP ROOM NO. 2

CTMT SPRAY PUMP RM. COOLER
SGL13A (Q) [1]

CTMT SPRAY PUMP ROOM NO. 2

SAFETY INJECTION PUMP RM. COOLER
SGL09A (Q) [1]

SAFETY INJECTION PUMP ROOM NO. 2

CENTRIFUGAL CHARGING PUMP RM. COOLER
SGL12A (Q) [1]

CENTRIFUGAL CHARGING PUMP ROOM NO. 2

NORMAL CHARGING PUMP ROOM FAN-COIL UNIT
SGL07

NORMAL CHARGING PUMP ROOM

BSMT. CORRIDOR UNIT HEATER
EGL01B

REV.	DATE	DRAWN
19	081594	DJB
CHKD.	SUPV.	APPD.
RLW	AMR	N/A
INCORP. RFR-15156A		
REV.	DATE	DRAWN
20	102194	JHK
CHKD.	SUPV.	APPD.
RLW	AMR	N/A
INCORP. CMP 92-1010.		
REV.	DATE	DRAWN
21	121494	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A
INCORP. RFR-15414A.		
REV.	DATE	DRAWN
22	072891	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A
INCORP. DEC 1442		
REV.	DATE	DRAWN
23	110591	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A
INCORP. RFR-18368A		
REV.	DATE	DRAWN
24	040198	DJB
CHKD.	SUPV.	APPD.
RLW	JHK	N/A
INCORP. RFR-18501A		
REV.	DATE	DRAWN
25	042801	EWM
CHKD.	SUPV.	APPD.
DJB	DTM	N/A
INCORP. MP 00-1035A (PARTIAL)		
REV.	DATE	
26	010903	
DRAWN	CHKD.	SUPV.
DJB	SKC	TWS
INCORP. CMP 97-1026A		
REV.	DATE	
27	082003	
DRAWN	CHKD.	SUPV.
RLW	MAL	TWS
INCORPORATE MP 00-1035 PARTIAL		
REV.	DATE	
28	050704	
DRAWN	CHKD.	SUPV.
RLW	MAL	DLB
INCORPORATE MP 00-1035 FCN-24		
REV.	DATE	
29	110904	
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS
INCORPORATE RFR-22941A		
REV.	DATE	
30	101005	
DRAWN	CHKD.	SUPV.
RLW	TJC	TWS
INCORPORATE MP 04-1009 FCN-01		
REV.	DATE	
31	042007	
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS
INCORPORATE MP 05-3014A		
REV.	DATE	
32	061307	
DRAWN	CHKD.	SUPV.
EWM	RLW	TWS
INCORPORATE MP 04-1009 FCN-04		
REV.	DATE	
33	081809	
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS
INCORP. CHANGE REQUEST CAR 09-000168 (CAR 200902888 ACTION 9).		
REV.	DATE	
34	050914	
DRAWN	CHKD.	SUPV.
MAL	RLW	DME
INCORP. CAR 201305910. ACTION 1.		

AS-BUILT CLASS 1

DRAWN	(DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM AUXILIARY BUILDING HVAC	
CHKD.	(DATE) N/A	FSAR FIGURE 9.4-3 SHEET 3	
SUPV.	(DATE) N/A		
APPD.	(DATE) N/A	LOCATION: CALLAWAY ENERGY CENTER	CLASS: 3A
UNION ELECTRIC COMPANY ST. LOUIS, MO		M-22GL01(Q)	REV. 34

M-22GL02(Q)

PERSONNEL ACCESS AREA UNIT HEATERS

CTMT. HYD. CONT. SYS.

TO AUX. BLDG. FUME HOOD BOOSTER FAN, CGL05 M-22GL01(G) (E-7)

OPERATING FLOOR HVAC EQUIPMENT ROOM UNIT HEATERS

COMPONENT COOLING WATER PUMP FAN COIL UNIT SGL17B

COMPONENT COOLING WATER PUMP ROOM COOLER SGL11B (Q)

COMPONENT COOLING ROOM

AUX./FUEL BLDG. NORMAL EXH. FILTER ADSORBER UNIT FGL02

AUX./FUEL BLDG. NORMAL EXHAUST FANS

OPERATING FLOOR

RESIN CHARGING TANK LOADING AREA

CORRIDOR

INTER-FLOOR

INTER. FLOOR CORRIDOR UNIT HEATER EGL05A

RHR HEAT EXCH.

GROUND FLOOR FAN COIL UNIT SGL05

LOAD CENTER AREA

FILTER COMPARTMENT (TYP. OF 5)

VALVE COMPARTMENT (TYP. OF 5)

PASSAGEWAY

DEMINERALIZER COMPARTMENT (TYP. OF 8)

GROUND FLOOR

CORRIDOR

PIPE CHASE UNIT HEATERS

PIPE CHASE

LETDOWN CHILLER HEAT EXCHANGER

LETDOWN RHT. HT. EXCHANGER

MOD. HT. EXCH.

VALVE ROOM

LETDOWN HEAT EXCHANGER

BASEMENT CORRIDOR FAN COIL UNIT SGL16

CENTRIFUGAL CHARGING PUMP ROOM COOLER SGL12B (Q)

CENTRAL CHARGING PUMP ROOM NO. 1

SAFETY INJECTION PUMP ROOM COOLER SGL09B (Q)

SAFETY INJECTION PUMP ROOM NO. 1

CONTAINMENT SPRAY PUMP ROOM COOLER SGL13B (Q)

CONTAINMENT SPRAY PUMP ROOM NO. 1

RHR PUMP ROOM COOLER SGL10B (Q)

RHR PUMP ROOM NO. 1

BASEMENT FLOOR

NOTES:

1. FIRE HOSE FROM HOSE STATION 033 TO CONNECT TO WATER SPRAY SYSTEM INLET. WHEN REQUIRED.
2. FIRE DAMPERS GLD0317 AND GLD0318 LEFT CLOSED.

REV.	DATE	DRAWN
14	031192	SBR
CHKD.	SUPV.	APPD.
DJB	JHC	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
15	092493	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR-14139A

REV.	DATE	DRAWN
16	093096	DJB
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. RMP 93-2033

REV.	DATE	DRAWN
17	122297	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. DEC 1479

REV.	DATE	DRAWN
18	032698	DJB
CHKD.	SUPV.	APPD.
RLW	JHK	N/A

INCORP. RFR-18123A

REV.	DATE	DRAWN
19	040298	MAL
CHKD.	SUPV.	APPD.
EWM	JHK	N/A

INCORP. MP 97-1006A.

REV.	DATE	DRAWN
20	030599	DJB
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. DEC 1588

REV.	DATE	DRAWN
21	063000	JHK
CHKD.	SUPV.	APPD.
MAL	JHC	N/A

INCORP. MP 97-1006 FCN-13.

REV.	DATE	DRAWN
22	041701	EWM
CHKD.	SUPV.	APPD.
DJB	DTW	N/A

INCORP. MP 00-1035 FCN-05.

REV.	DATE
23	110702
DRAWN	CHKD.	SUPV.
DJB	EWM	JDW

INCORP. CMP 00-1035 FCN 15

REV.	DATE
24	042005
DRAWN	CHKD.	SUPV.
TJC	MAL	TWS

INCORP. RFR 22941A

REV.	DATE
25	102005
DRAWN	CHKD.	SUPV.
MAL	JHK	SKC

INCORP. MP 04-1009 FCN-01.

REV.	DATE
26	041407
DRAWN	CHKD.	SUPV.
EWM	TJC	TWS

INCORPORATE MP 05-3014 PARTIAL

REV.	DATE
27	042007
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE MP 05-3014A

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM AUXILIARY BUILDING HVAC FSAR FIGURE 9.4-3 SHEET 4		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION CALLAWAY PLANT		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GL02(Q)		REV. 27

M-22GL03(Q)

SGL22
RAM STORAGE BUILDING FAN COIL UNIT "B"

SGL21
RAM STORAGE BUILDING FAN COIL UNIT "A"

CGL06
RAM STORAGE BUILDING EXHAUST FAN

EGL15A
RAM STORAGE BUILDING UNIT HEATER "A"

EGL15B
RAM STORAGE BUILDING UNIT HEATER "B"

LAUNDRY/DECON. FAN COIL UNIT
SGL04

LAUNDRY/DECON. UNIT HEATER
EGL04A

LAUNDRY/DECON. UNIT HEATER
EGL04B

LAUNDRY/DECON. UNIT HEATER
EGL03

LAUNDRY/DECON. UNIT HEATER
EGL02

PENETRATION RM. COOLER
SGL15B (Q)

ACCESS TUNNEL TRANSFER FAN
CGL02

BSMT. CORRIDOR UNIT HEATER
EGL01A

FGL05 — EXHAUST FAN CGL09

FGL04 — EXHAUST FAN CGL08

FGL03 — DRYER EXHAUST FAN CGL07

DRYERS: SHD07A, SHD07B, SHD07C

NOTES:

1. PERMANENTLY REMOVED FROM SERVICE EQUIPMENT EGL14A, EGL14B, D189 & D190 MAY BE FOUND ON M-2H1361.
2. THIS COMPONENT WILL REMAIN INSTALLED TO MAINTAIN SEISMIC AND STRUCTURAL INTEGRITY. THE ISOLATION FUNCTION IS MAINTAINED BY THE BLANK FLANGE INSTALLED ON THE SAFETY-RELATED SIDE OF THE AUXILIARY BUILDING PER MP 09-0058.

AS-BUILT CLASS 1

DRAWN	(DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM AUXILIARY BUILDING AND RAM STORAGE BUILDING HVAC	
CHKD.	(DATE) N/A	FSAR FIGURE 9.4-3 SHEET 5	24
SUPV.	(DATE) N/A		
APPD.	(DATE) N/A	LOCATION: CALLAWAY ENERGY CENTER	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO		M-22GL03(Q)	REV. 24

REV.	DATE	DRAWN
7	12591	JHK
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
8	072396	DJB
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. RMP 89-2002 FCN-01

REV.	DATE	DRAWN
9	020698	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. CMP 96-1012A (PARTIAL)

REV.	DATE	DRAWN
10	032798	DJB
CHKD.	SUPV.	APPD.
RLW	JHK	N/A

INCORP. CMP 96-1012A

REV.	DATE	DRAWN
11	040198	MAL
CHKD.	SUPV.	APPD.
EWM	JHK	N/A

INCORP. MP 97-1006A FCN 07 & 12.

REV.	DATE	DRAWN
12	040298	DJB
CHKD.	SUPV.	APPD.
RLW	JHK	N/A

REINCORP. CMP 97-1006A
INCORP. CMP 96-1012A

REV.	DATE	DRAWN
13	040698	MAL
CHKD.	SUPV.	APPD.
RLW	JHK	N/A

INCORP. MP 97-1006 FCN-14.

REV.	DATE	DRAWN
14	040998	MAL
CHKD.	SUPV.	APPD.
RLW	JHK	N/A

INCORP. MP 97-1006 FCN-15.

REV.	DATE	DRAWN
15	042799	DJB
CHKD.	SUPV.	APPD.
RLW	JHC	N/A

INCORP. RFR-19611A

REV.	DATE
16	042005
DRAWN	CHKD. SUPV.
TJC	MAL TWS

INCORP. RFR 22941A

REV.	DATE
17	053007
DRAWN	CHKD. SUPV.
RLW	EWM TWS

INCORPORATE MP 97-1006 FCN-31

REV.	DATE
18	102808
DRAWN	CHKD. SUPV.
RLW	EWM LMR

INCORPORATE MP 07-0067

REV.	DATE
19	020910
DRAWN	CHKD. SUPV.
RLW	EWM TWS

INCORPORATE MP 09-0058 FCN-01 (PARTIAL)

REV.	DATE
20	021010
DRAWN	CHKD. SUPV.
RLW	TJC TWS

INCORPORATE MP 09-0058 FCN-01 (PARTIAL)

REV.	DATE
21	031710
DRAWN	CHKD. SUPV.
RLW	EWM LMP

INCORPORATE MP 09-0058 FCN-01

REV.	DATE
22	042710
DRAWN	CHKD. SUPV.
MAL	TJC LMP

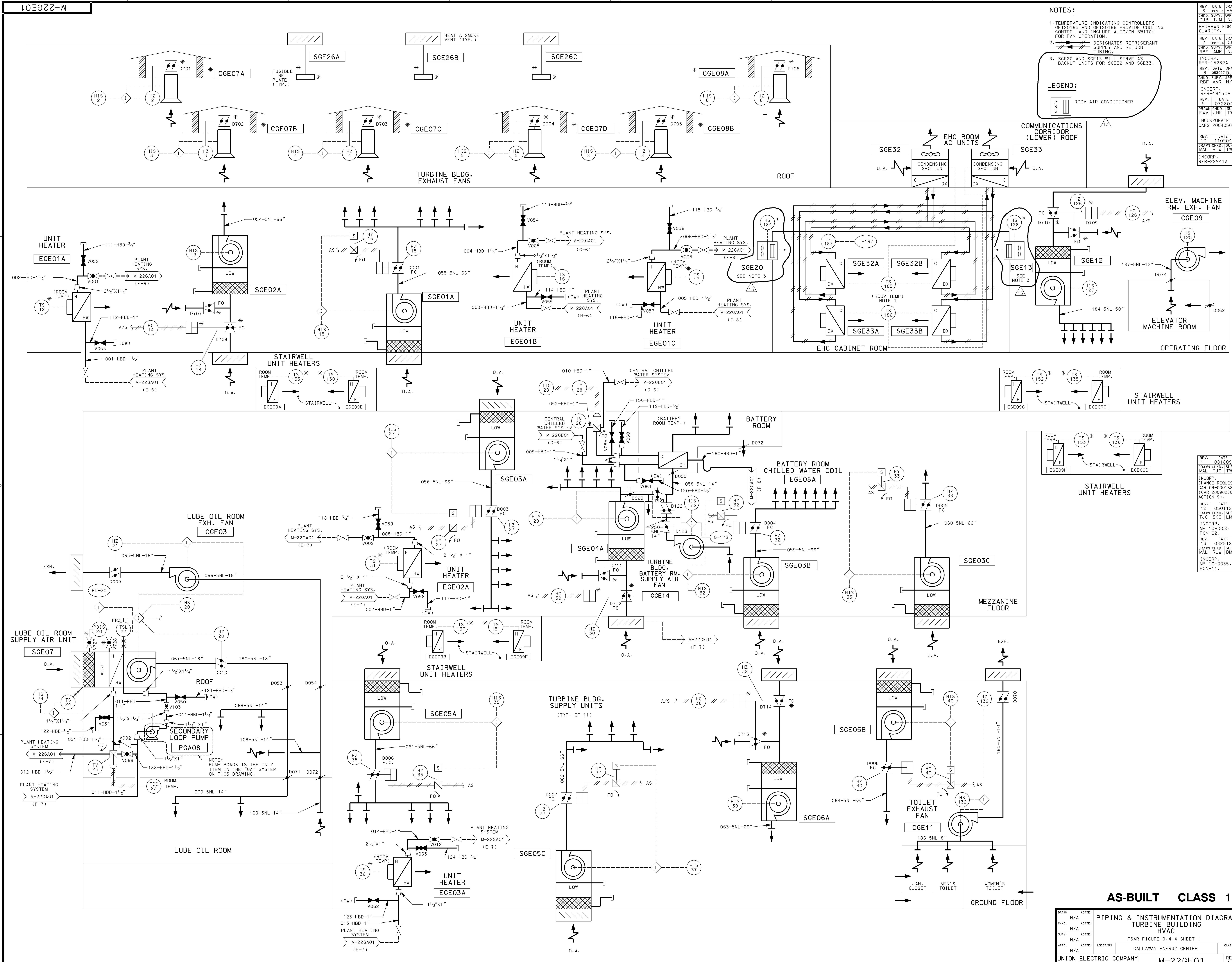
INCORP. CAR 201002986.

REV.	DATE
23	100410
DRAWN	CHKD. SUPV.
RLW	TJC TWS

INCORPORATE MP 09-0058 FCN-01 (PARTIAL)

REV.	DATE
24	120715
DRAWN	CHKD. SUPV.
MAL	RLW DME

INCORP. CAR 201500050.



NOTES:

1. TEMPERATURE INDICATING CONTROLLERS GETS0185 AND GETS0186 PROVIDE COOLING CONTROL AND INCLUDE AUTO/ON SWITCH FOR FAN OPERATION.
2. DESIGNATES REFRIGERANT SUPPLY AND RETURN TUBING.
3. SGE20 AND SGE13 WILL SERVE AS BACKUP UNITS FOR SGE32 AND SGE33.

LEGEND:

ROOM AIR CONDITIONER

REV.	DATE	DRAWN	CHKD.	SUPV.	APPD.	DESCRIPTION
6	093091	MAL	DJB	TJM	N/A	REDRAWN FOR CLARITY.
7	092294	DJB	RBF	AMR	N/A	INCORP. RFR-15232A
8	053097	DJB	RBF	AMR	N/A	INCORP. RFR-18150A
9	072804	EWM	JHK	TWS		INCORPORATE CARS 200405094
10	110904	MAL	RLW	TWS		INCORP. RFR-22941A
11	081809	MAL	TJC	TWS		INCORP. CHANGE REQUEST CAR 09-000168 (CAR 200902888 ACTION 9).
12	050112	TJC	SKC	LMP		INCORP. MP 10-0035 FCN-02.
13	082812	MAL	RLW	DME		INCORP. MP 10-0035. FCN-11.

AS-BUILT CLASS 1

DRAWN N/A	PIPING & INSTRUMENTATION DIAGRAM TURBINE BUILDING HVAC
CHKD. N/A	FSAR FIGURE 9.4-4 SHEET 1
SUPV. N/A	
APPD. N/A	LOCATION: CALLAWAY ENERGY CENTER
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GE01 REV. 13

M-22GE02(Q)

HEAT AND SMOKE VENT (TYP.)
SGE26D
SGE26E
SGE26F
SGE26G
SGE26H
SGE26I
SGE26J
FUSIBLE LINK PLATE (TYP.)

CGE07E
CGE07F
CGE07G
CGE07H
TURBINE BUILDING EXHAUST FANS
ROOF

TOILET EXH. FAN
CGE10
WOMENS TOILET
MENS TOILET
SGE02B
SGE01B
UNIT HEATER
EGE01D
FGE01
CONDENSER AIR REMOVAL FILTRATION SYSTEM
OPERATING FLOOR

SGE03D
SGE04B
SGE03E
CGE15
TURBINE BUILDING BATTERY ROOM SUPPLY AIR FAN
BATTERY ROOM CHILLED WATER COIL
EGE08B
UNIT HEATER
EGE02B
MEZZANINE FLOOR

UNIT HEATER
EGE03D
EGE10A
EGE11A
EGE11B
EGE10C
EGE03C
EGE10B
SGE06B
SGE08
EGE03B
TURBINE BUILDING SUPPLY UNIT (TYP. OF 7)
GROUND FLOOR
TURBINE BUILDING

CGE01B
CGE01A
AUXILIARY BUILDING

SGE15
PROCESS SAMPLING LAB CONDENSING UNIT
SGE14
PROCESS SAMPLING LAB AIR HANDLING UNIT
CGE12
SAMPLE LAB FUME HOOD EXH. FAN
PROCESS SAMPLING LAB

NOTES:

1. REFRIGERANT PIPING, VALVES, FITTINGS AND OTHER SPECIALITIES FOR THE PROCESS SAMPLING LAB. HVAC SYSTEM TO BE SPECIFIED, FURNISHED AND INSTALLED BY THE CONSTRUCTOR.
2. FIRE HOSE FROM HOSE STATION 050 TO CONNECT TO WATER SPRAY SYSTEM INLET.

REV.	DATE	DRAWN
5	012992	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
6	062592	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

EMP 90-3022

REV.	DATE	DRAWN
7	010494	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. DEC-1117

REV.	DATE	DRAWN
8	052294	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. RFR 15232A

REV.	DATE	DRAWN
9	031095	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. RFR-15628A

REV.	DATE	DRAWN
10	092096	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. RFR-17303A

REV.	DATE	DRAWN
11	090399	RLW
CHKD.	SUPV.	APPD.
EWM	AMR	N/A

INCORP. MP 95-2020A

REV.	DATE	DRAWN
12	041802	DJB
CHKD.	SUPV.	APPD.
RAM	AMR	N/A

INCORP. RFR-20872A

REV.	DATE
13	040803
DRAWN	CHKD.	SUPV.
EWM	RLW	TWS

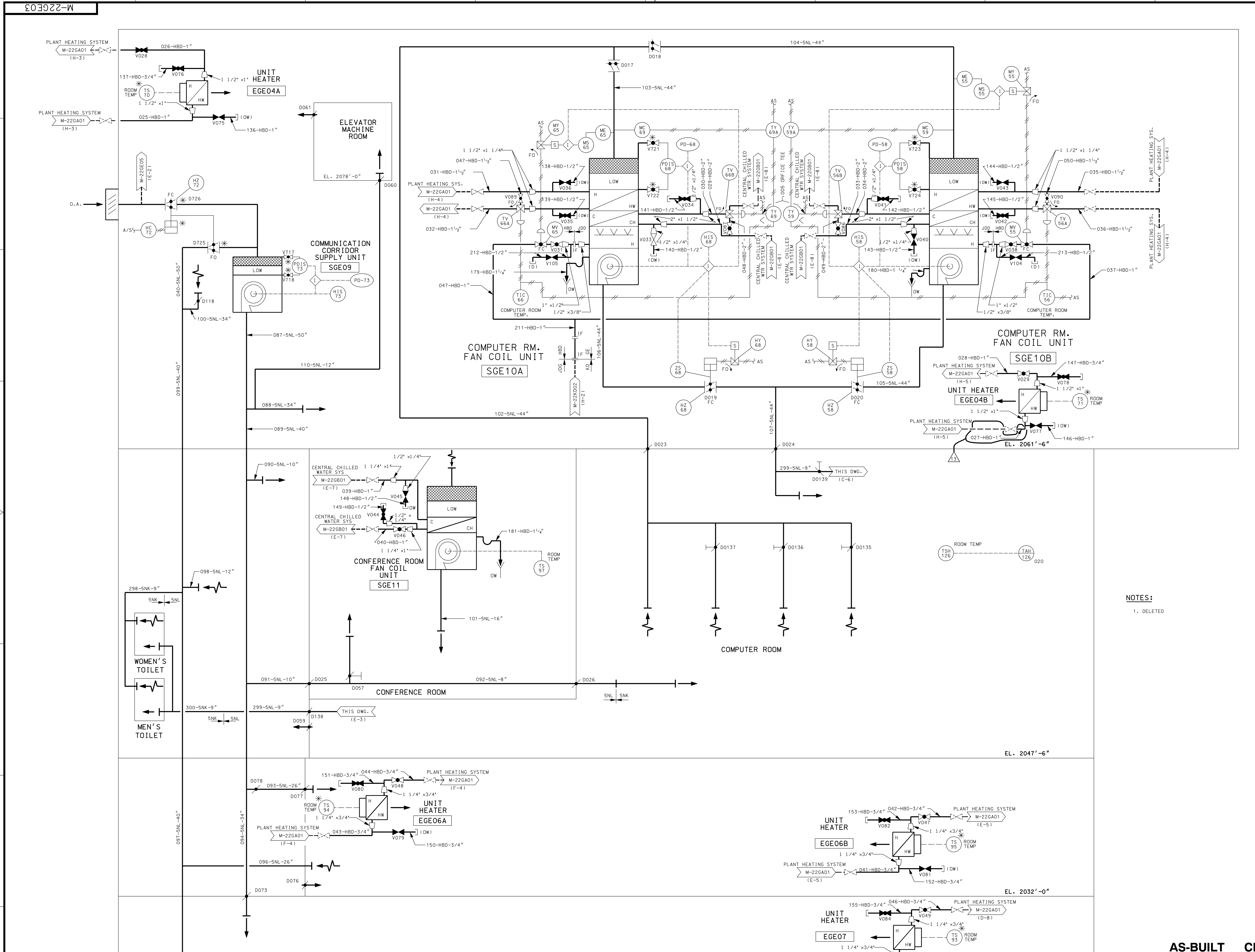
INCORPORATE MP 02-3002A.

REV.	DATE
14	042005
DRAWN	CHKD.	SUPV.
TJC	MAL	TWS

INCORP. RFR 22941A

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM TURBINE BULDING HVAC		
CHKD. (DATE) N/A	FSAR FIGURE 9.4-4 SHEET 2	14	
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT	CLASS	
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GE02(Q)	REV. 14	



REV.	DATE	DRAWN	CHKD.	SUPV.	APPD.	DESCRIPTION
5	021292	RBF	DLBr	TJM	N/A	REDRAWN FOR CLARITY. INC'D RMP 90-2010
6	101394	DJB	RBF	AMR	N/A	INCORP. RFR-15315A
7	080495	DJB	RBF	AMR	N/A	INCORP. RFR-16783A
8	012095	JHK	MAL	AMR	N/A	INCORP. MP 97-2015 FCN-01.
9	042099	JHK	MAL	JHC	N/A	INCORP. MP 97-2014A (PARTIAL).
10	072999	JHK	MAL	AMR	N/A	INCORP. MP 97-2014A.
11	042005	TJC	MAL	TWS		INCORP. RFR 22941A
12	101607	EWM	RLW	TWS		INCORPORATE RFR 21518A
13	121207	TJC	MAL	TWS		INCORP. CAR 200709673.

AS-BUILT CLASS 1

PIPING AND INSTRUMENTATION
TURBINE BUILDING
HVAC

FSAR FIGURE 9.4-4 SHEET 3

DRAWN N/A · CHKD. N/A · SUPV. N/A · APPD. N/A

LOCATION: CALLAWAY PLANT

UNION ELECTRIC COMPANY
ST. LOUIS, MO

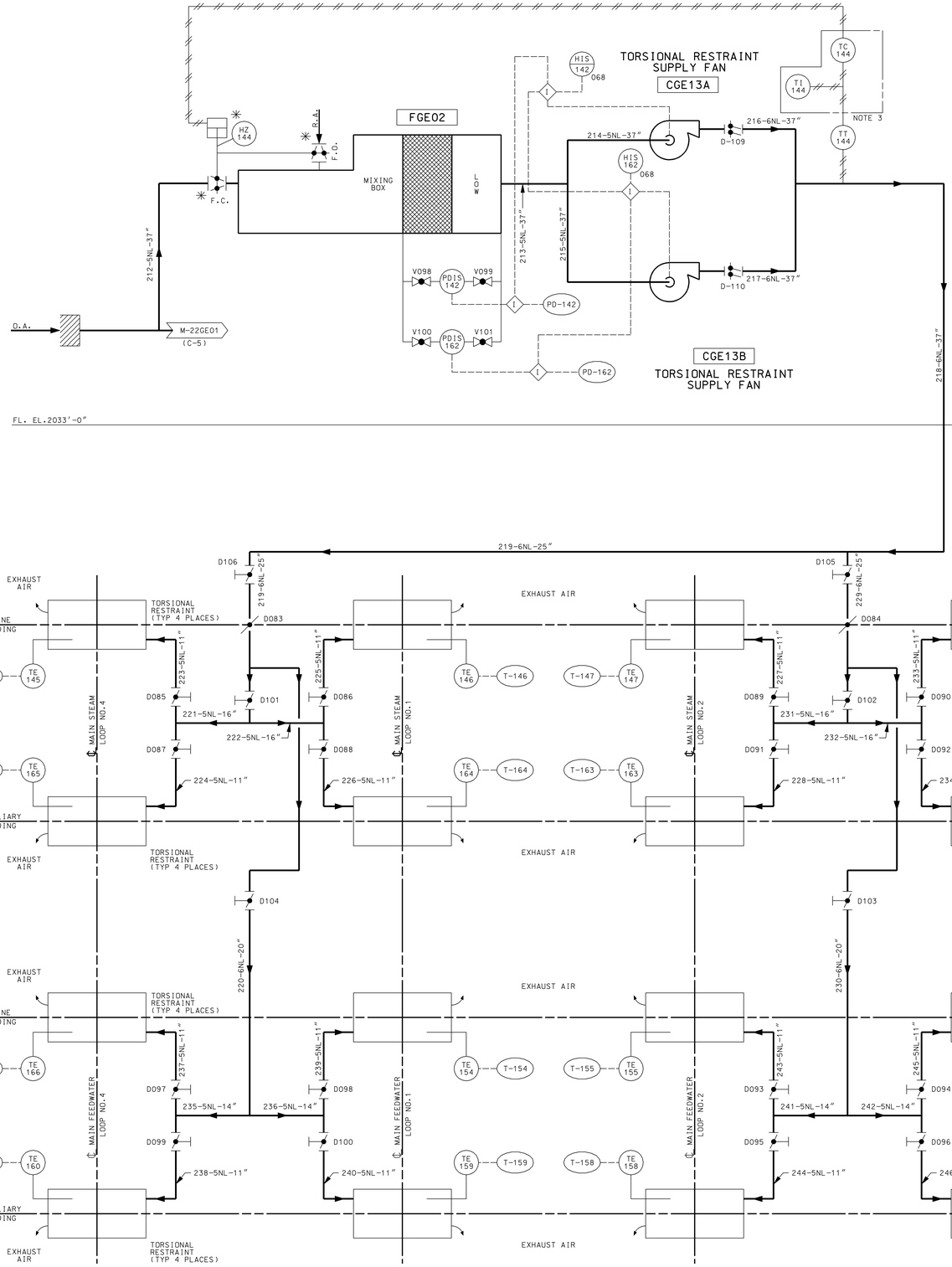
M-22GE03 REV. 13

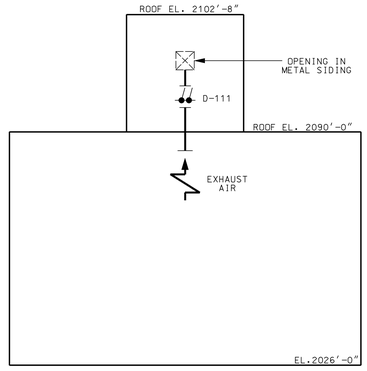
M-22GE04

REV.	DATE	DRAWN
1	12099	JHK
CHKD. DJB	SUPV. TJM	APPD. N/A
REDRAWN FOR CLARITY.		
REV. 2	DATE 042005	
DRAWN TJC	CHKD. MAL	SUPV. TWS
INCORP. RFR 22941A		

NOTE:

1. ALL TE'S ARE MONITORING CONCRETE TEMPERATURE.
2. DUCTWORK SIZES ARE INDICATED AS EQUIVALENT ROUND.
3. DENOTES COMMON ENCLOSURE REFERENCE J-805-00020.





AUXILIARY BLDG (AREA 5)

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM TURBINE BUILDING HVAC	
CHKD. (DATE) N/A		
SUPV. (DATE) N/A	FSAR FIGURE 9.4-4 SHEET 4 (2)	
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GE04	REV. 2

M-22GE05

REV.	DATE	DRAWN
5	11189	JHK
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
6	101394	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. RFR-15315A

REV.	DATE
7	042005
DRAWN	CHKD.	SUPV.
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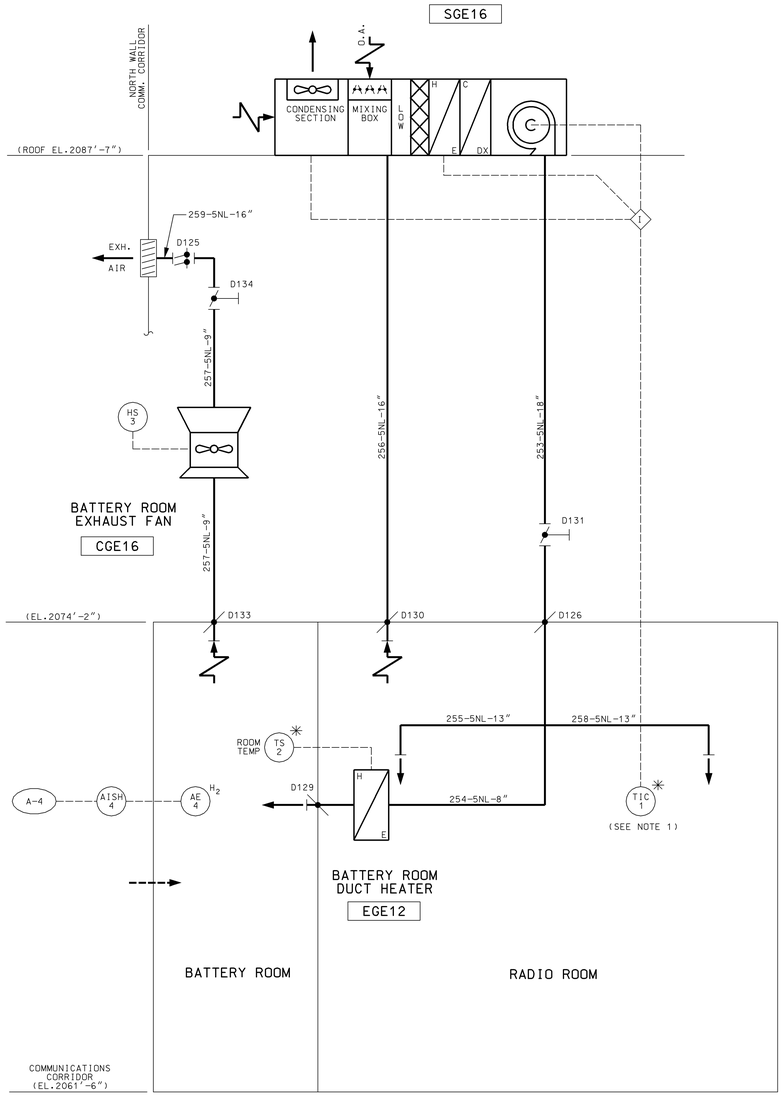
TJC	MAL	TWS

INCORP. RFR 22941A

RADIO RM/BATTERY RM HVAC UNIT

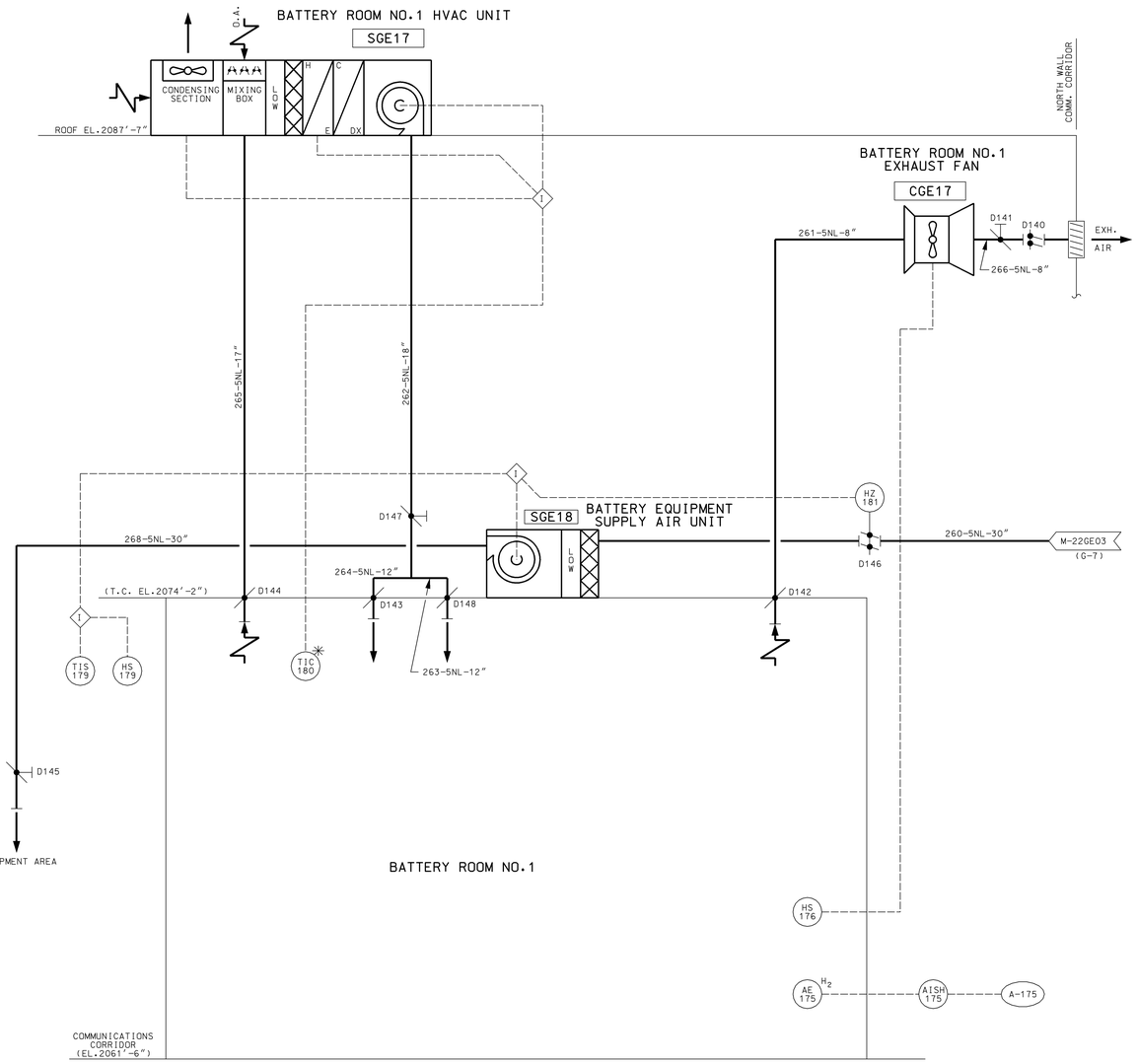
SGE16



RADIO ROOM/BATTERY ROOM

BATTERY ROOM NO.1 HVAC UNIT

SGE17



COMMUNICATIONS CORRIDOR
BATTERY ROOM NO. 1

NOTES:

1. TEMPERATURE INDICATING CONTROLLER TIC-1 PROVIDES HEATING & COOLING CONTROL AND INCLUDES AUTO/ON SWITCH FOR FAN OPERATION.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM TURBINE BUILDING HVAC	
CHKD. (DATE) N/A	FSAR FIGURE 9.4-4 SHEET 5 (7)	
SUPV. (DATE) N/A		
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GE05	REV. 7

M-22GH01

REV.	DATE	DRAWN
2	082391	MAL
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

REDRAWN FOR CLARITY

REV.	DATE	DRAWN
3	052392	MAL
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. DEC-0792.

REV.	DATE	DRAWN
4	071692	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR-10300A

REV.	DATE	DRAWN
5	112994	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. RFR-15362A

REV.	DATE	DRAWN
6	062995	DJB
CHKD.	SUPV.	APPD.
RBF	DME	N/A

INCORP. RFR-16109A

REV.	DATE	DRAWN
7	032599	JHK
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. MP 97-1006 FCN-18.

REV.	DATE
8	042005
DRAWN	CHKD.	SUPV.
TJC	MAL	TWS

INCORP. RFR 22941A

REV.	DATE
9	081809
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. CHANGE REQUEST CAR 09-000168 (CAR 200902888 ACTION 9).

NOTES:

1. DENOTES COMMON ENCLOSURE. REFERENCE J-805-00020.
2. 10 CFM FLOW ORIFICE INSTALLED IN DUCTWORK LINE OFF SUMP.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM RADWASTE BUILDING HVAC FSAR FIGURE 9.4-5 SHEET 1		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GH01		REV. 9

REV.	DATE	DRAWN
6	111893	MAL
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

REDRAWN FOR CLARITY

REV.	DATE	DRAWN
7	092496	DLBr
CHKD.	SUPV.	APPD.
EWM	AMR	N/A

INCORP. CMP 89-1045B

REV.	DATE	DRAWN
8	091297	RAM
CHKD.	SUPV.	APPD.
HLP	AMR	N/A

INCORP. MP 93-2031

REV.	DATE	DRAWN
9	051700	DJB
CHKD.	SUPV.	APPD.
RAM	AMR	N/A

INCORP. RFR-20001H

REV.	DATE
10	072804
DRAWN	CHKD.	SUPV.
JHK	EWM	TDH

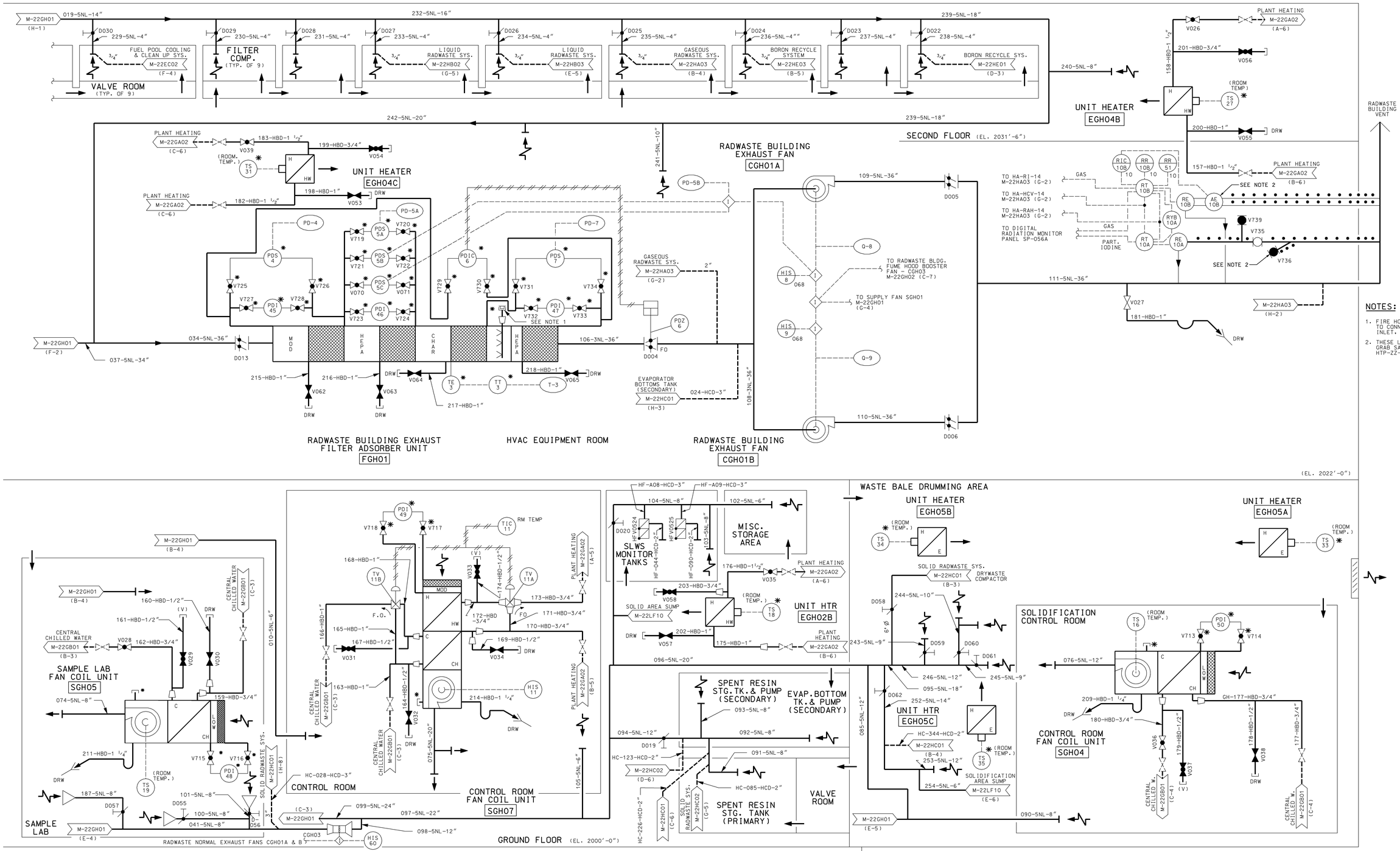
INCORP. MP 01-1001B (PARTIAL).

REV.	DATE
11	081104
DRAWN	CHKD.	SUPV.
JHK	EWM	SKC

INCORP. MP 01-1001B.

REV.	DATE
12	110904
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR-22941A



NOTES:

1. FIRE HOSE FROM HOSE STATION 101 TO CONNECT TO WATER SPRAY SYSTEM INLET, WHEN REQUIRED.
2. THESE LOCATIONS MAY BE USED AS GRAB SAMPLE POINTS SEE HTP-ZZ-03006.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM RADWASTE BUILDING HVAC		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A	FSAR FIGURE 9.4-5 SHEET 2		12
APPD. (DATE) N/A	LOCATION	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GH02		REV. 12

M-22GN01(Q)

8 7 6 5 4 3 2 1

H G F E D C B A

STEAM GENERATOR

HYDROGEN MIXING FAN CGN03B (Q)

HYDROGEN MIXING FAN CGN03C (Q)

STEAM GENERATOR

PRESSURIZER

PRESSURIZER COOLING FAN CGN05

CONTAINMENT COOLER SGN01A (Q)

CONTAINMENT COOLER SGN01D (Q)

CONTAINMENT COOLER SGN01C (Q)

CONTAINMENT COOLER SGN01B (Q)

HYDROGEN MIXING FAN CGN03D (Q)

HYDROGEN MIXING FAN CGN03A (Q)

REACTOR VESSEL

INSTRUMENT TUNNEL

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM (TYP. 4 PLACES)

RC PUMP

ESSENTIAL SERVICE WATER M-22EF02 (G-7)

ESSENTIAL SERVICE WATER M-22EF02 (B-7)

FUSIBLE LINK PLATE

VENDOR BECHTEL

LOW SPEED SIS

NOTE 3

(DRW)

TO MPX-274 (SEE M-651-00063)

TO XSH-219(003) (G-7)

FROM XSH-219(003) (G-7)

FROM XSH-219(001) (G-3)

FROM XSH-219(004) (B-3)

FROM XSH-219(002) (B-7)

TO XSH-219(001) (G-3)

TO XSH-219(002) (G-7)

TO XSH-219(004) (B-7)

(SEE NOTE 2)

NOTES:

1. DUCTWORK SIZE ARE INDICATED AS EQUIVALENT ROUND.
2. LETTERS AND NUMBERS REFER TO DESIGNATIONS IN THE FIRE PROTECTION SYSTEM, KC (REFER TO M-22KC01). NUMBERS IN PARENTHESIS REFER TO ZONE DETECTOR SEQUENCE NUMBERS.
3. REFER TO E-23GP02 FOR GNTE30. 31. 33. 35. 36 & 37.
4. DELETED.
5. DELETED.
6. DELETED.
7. DELETED.

AS-BUILT CLASS 1

DRAWN N/A (DATE)	PIPING & INSTRUMENTATION DIAGRAM CONTAINMENT COOLING SYSTEM		
CHKD. N/A (DATE)			
SUPV. N/A (DATE)	FSAR FIGURE 9.4-6 SHEET 1		
APPD. N/A (DATE)	LOCATION: CALLAWAY ENERGY CENTER		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GN01(Q)		REV. 26

REV.	DATE	DRAWN	CHKD.	SUPV.	APPD.	DESCRIPTION
8	031992	MAL	DJB	TJM	N/A	
						REDRAWN FOR CLARITY.
9	031993	DJB	RBF	TJM	N/A	
						INCORP. DEC-1079
10	110993	MAL	DJB	TJM	N/A	
						INCORP. CMP 92-1035.
11	123994	DJB	RBF	AMR	N/A	
						INCORP. RFR-14607A
12	041195	SKC	HLP	JHC	N/A	
						INCORP. CMP-92-1035 PARTIAL
13	041195	DJB	RBF	AMR	N/A	
						INCORP. CMP 93-1029
14	091595	JHK	EWM	AMR	N/A	
						INCORP. DEC-1284.
15	080996	DJB	RBF	REC	N/A	
						INCORP. TM 96-M014
16	101896	DJB	RLW	AMR	N/A	
						REMOVED TM 96-M014
17	102396	DLB	EWM	AMR	N/A	
						INCORP CMP 95-1035
18	042005	TJC	MAL	TWS		
						INCORP. RFR 22941A
19	042507	RLW	EWM	TWS		
						INCORPORATE MP 05-2001
20	103008	RLW	EWM	LMP		
						INCORPORATE MP 07-0067
21	111008	EWM	RLW	LMP		
						INCORPORATE MP 08-0055
22	042810	RLW	EWM	LMP		
						INCORPORATE MP 08-0055 FCN-01
23	051710	EWM	RLW	LMP		
						INCORPORATE MP 08-0055 FCN-02
24	052411	RLW	EWM	TWS		
						INCORP. CR CAR 11-000056; CAR 20110165
25	102814	RLW	MAL	DME		
						INCORPORATE MP 10-0001 FCN-01
26	102814	MAL	RLW	DME		INCORP. MP 08-0055. FCN-03.

M-22GN02

REV. 2	DATE 031692	DRAWN RBF
CHKD. DJB	SUPV. TJM	APPD. N/A
REDRAWN FOR CLARITY.		
REV. 3	DATE 050393	DRAWN DJB
CHKD. RBF	SUPV. TJM	APPD. N/A
INCORP. DEC 1005		
REV. 4	DATE 041195	DRAWN DJB
CHKD. RBF	SUPV. AMR	APPD. N/A
INCORP. CMP 93-1029		
REV. 5	DATE 042596	DRAWN DJB
CHKD. RBF	SUPV. AMR	APPD. N/A
INCORP. CMP 94-2003		
REV. 6	DATE 042005	
DRAWN TJC	CHKD. MAL	SUPV. TWS
INCORP. RFR 22941A		
REV. 7	DATE 102814	
DRAWN RLW	CHKD. MAL	SUPV. DME
INCORPORATE MP 10-0001 FCN-01		

CAVITY COOLING SYSTEM

CAVITY COOLING FAN CGN02A

CAVITY COOLING FAN CGN02B

PLENUM

CRDM FAN CGN01A

CRDM FAN CGN01B

CRDM FAN CGN01C

CRDM FAN CGN01D

INTEGRATED HEAD ASSEMBLY

REACTOR VESSEL

PRIMARY SHIELD WALL

HEADER

HEADER

TYPICAL AT EACH UNSUPPORTED NOZZLE

TYPICAL AT EACH RV SUPPORT

TYPICAL AT EACH DETECTOR WELL

CAVITY CONCRETE TEMPERATURE (ONE AT EACH RV SUPPORT)

FOR DUCTWORK AND PIPING CLASSIFICATION AND ARRANGEMENT REFER TO DETAIL A BELOW

FOR DUCTWORK AND PIPING CLASSIFICATION AND ARRANGEMENT REFER TO DETAIL A BELOW

ELEVATOR MACHINE RM EXH FAN CGN04

ELEVATOR MACHINE ROOM

169-5NL-10"

NOTE:

1. DUCTWORK SIZE ARE INDICATED AS EQUIVALENT ROUND.
2. THESE DAMPERS ARE USED TO ISOLATE THE PLENUM FOR FAN REMOVAL.

DETAIL A
(PLAN VIEW)

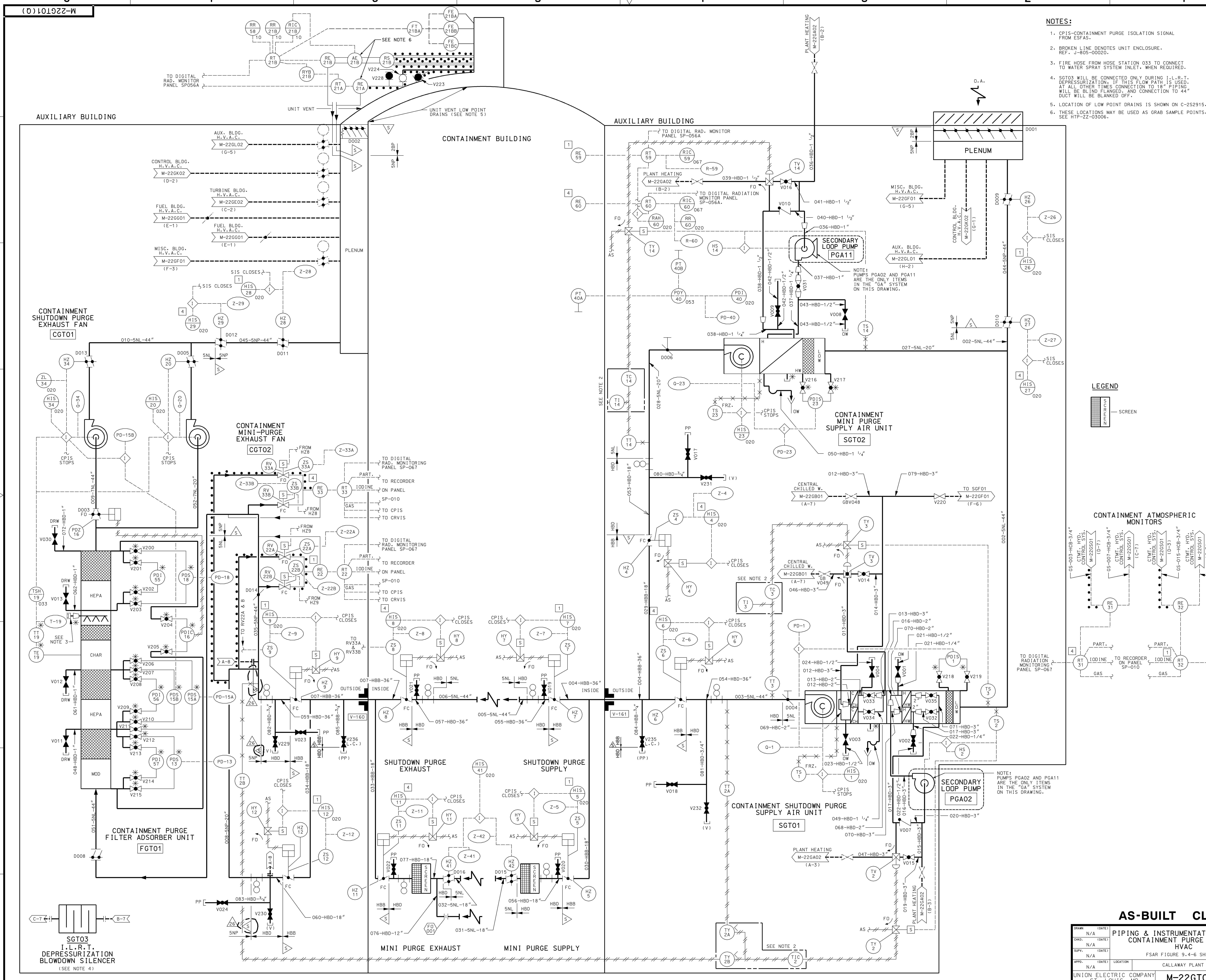
PRIMARY SHEILD WALL

TO CAVITY COOLING FANS

AS-BUILT CLASS 1

DRAWN N/A (DATE)	PIPING & INSTRUMENTATION DIAGRAM CONTAINMENT COOLING SYSTEM		
CHKD. N/A (DATE)	FSAR FIGURE 9.4-6 SHEET 2		7
SUPV. N/A (DATE)			
APPD. N/A (DATE)	LOCATION CALLAWAY ENERGY CENTER		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GN02		REV. 7

Figure 9.4-6 Sheet 3 Deleted



NOTES:

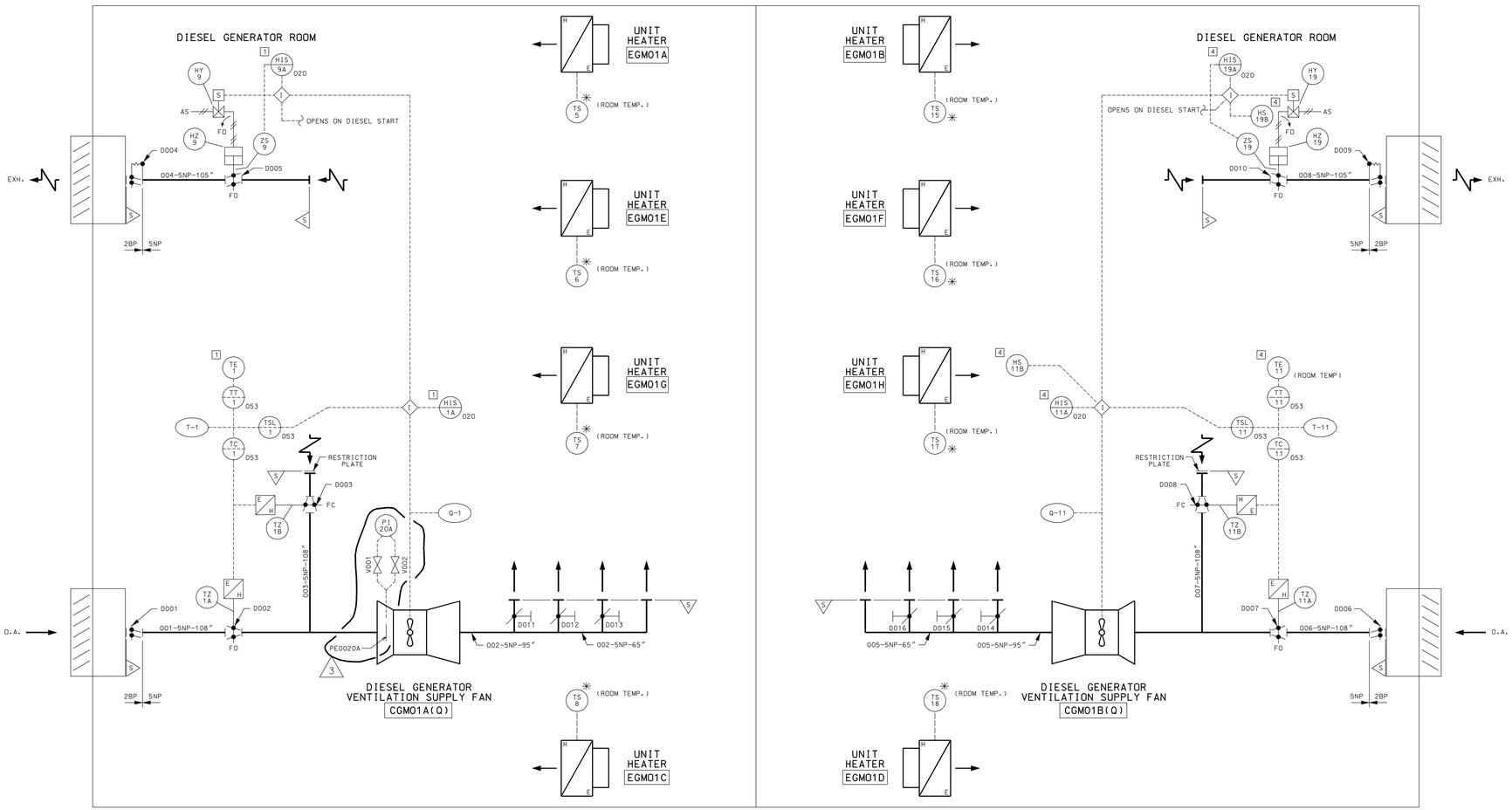
1. CPIS-CONTAINMENT PURGE ISOLATION SIGNAL FROM ESFAS.
2. BROKEN LINE DENOTES UNIT ENCLOSURE. REF. J-805-00020.
3. FIRE HOSE FROM HOSE STATION 033 TO CONNECT TO WATER SPRAY SYSTEM INLET, WHEN REQUIRED.
4. SGT03 WILL BE CONNECTED ONLY DURING I.L.R.T. DEPRESSURIZATION, IF THIS FLOW PATH IS USED. AT ALL OTHER TIMES CONNECTION TO 18″ PIPING WILL BE BLIND FLANGED. AND CONNECTION TO 44″ DUCT WILL BE BLANKED OFF.
5. LOCATION OF LOW POINT DRAINS IS SHOWN ON C-2S2915.
6. THESE LOCATIONS MAY BE USED AS GRAB SAMPLE POINTS, SEE HTP-ZZ-03006.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM CONTAINMENT PURGE SYSTEMS HVAC FSAR FIGURE 9.4-6 SHEET 4
CHKD. (DATE) N/A	
SUPV. (DATE) N/A	
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT — CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GT01(Q) — REV. 26

M-22GM01(Q)

REV.	DATE	DRAWN
1	110991	JHK
CHKD. DJB	SUPV. TJM	APPD. N/A
REDRAWN FOR CLARITY.		
REV. 2	DATE 042005	
DRAWN TJC	CHKD. MAL	SUPV. TWS
INCORP. RFR 22941A		
REV. 3	DATE 042215	
DRAWN RLW	CHKD. TJC	SUPV. DME
INCORPORATE MP 13-0002 FCN-03 AND CR CAR 15-0000758 CAR 201502849		



CLASS 1 AS-BUILT

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM DIESEL GENERATOR BUILDING HVAC		
CHKD. (DATE) N/A	FSAR FIGURE 9.4-7		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION CALLAWAY ENERGY CENTER		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GM01(Q)		REV. 3

Figure 9.4-8 (Sheet 1) Deleted

M-U2GD01(Q)

ESSENTIAL SERVICE WATER
PUMPHOUSE H.V.A.C.

REV.	DATE	DRAWN
8	040292	DLBr
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
9	092493	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. RFR-14139A

REV.	DATE
10	041905
DRAWN	CHKD.	SUPV.
---	---	---
MAL	RLW	TWS

INCORP. RFR 22941A

REV.	DATE
11	100112
DRAWN	CHKD.	SUPV.
---	---	---
MAL	RLW	DME

INCORP. CAR 20120540.

REV.	DATE
12	042616
DRAWN	CHKD.	SUPV.
---	---	---
RLW	MAL	LMP

INCORPORATE MP 13-0001 FCN-03

ESSENTIAL SERVICE WATER PUMP ROOM SUPPLY FAN CGD01A (Q)

ESSENTIAL SERVICE WATER PUMP ROOM SUPPLY FAN CGD01B (Q)

UNIT HEATER EGD01A

UNIT HEATER EGD01B

UNIT HEATER EGD01C

UNIT HEATER EGD01D

UNIT HEATER EGD01E

UNIT HEATER EGD01F

UNIT HEATER EGD01G

UNIT HEATER EGD01H

COOLING TOWER

COOLING TOWER ELECT. RM. SUPPLY FAN CGD02A (Q)

COOLING TOWER ELECT. RM. SUPPLY FAN CGD02B (Q)

UNIT HEATER EGD02A

UNIT HEATER EGD02B

UNIT HEATER EGD02C

UNIT HEATER EGD02D

STARTS WITH COOLING TOWER FAN M-U2EF01 (C-6)

STARTS WITH COOLING TOWER FAN M-U2EF01 (C-3)

ULTIMATE HEAT SINK ELECT. RM. H.V.A.C.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM ESSENTIAL SERVICE WATER PUMPHOUSE & ULTIMATE HEAT SINK ELEC. RM. H.V.A.C. FSAR FIGURE 9.4-8 SHEET 2		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CALLAWAY ENERGY CENTER	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-U2GD01(Q)		REV. 12

M-22GA01

REV.	DATE	DRAWN
3	9/20/91	JHK
CHKD. DJB	SUPV. TJM	APPD. N/A
REDRAWN FOR CLARITY		
REV. 4	DATE 101394	DRAWN DJB
CHKD. RBF	SUPV. AMR	APPD. N/A
INCORP. RFR-15298A		
REV. 5	DATE 021395	DRAWN DJB
CHKD. RBF	SUPV. AMR	APPD. N/A
INCORP. RFR-15544A		
REV. 6	DATE 112295	DRAWN MAL
CHKD. DJB	SUPV. AMR	APPD. N/A
INCORP. DEC-1306.		
REV. 7	DATE 080296	DRAWN DJB
CHKD. RBF	SUPV. AMR	APPD. N/A
INCORP. RMP 95-2015		
REV. 8	DATE 091197	DRAWN DJB
CHKD. RBF	SUPV. AMR	APPD. N/A
INCORP. RFR-17856B		
REV. 9	DATE 042005	
DRAWN TJC	CHKD. MAL	SUPV. TWS
INCORP. RFR 22941A		
REV. 10	DATE 080610	
DRAWN MAL	CHKD. TJC	SUPV. TWS
INCORP. CAR 201002327, ACTION 2.		

EGE01D — EL.2065'-0" — TURBINE BLDG. UNIT HEATER
EGE01B — EL.2065'-0" — TURBINE BLDG. UNIT HEATER
EGF04 — EL.2000'-0" — AUX. BOILER ROOM UNIT HEATER
EGE04B — EL.2061'-6" — COMM. CORRIDOR UNIT HEATER
SGE10A — EL.2061'-6" — COMM. CORRIDOR COMPUTER ROOM FAN COIL UNIT
SGE10B — EL.2061'-6" — COMM. CORRIDOR COMPUTER ROOM FAN COIL UNIT
EGE04A — EL.2061'-6" — COMM. CORRIDOR UNIT HEATER
SGE07 — EL.2033'-0" — LUBE OIL ROOM SUPPLY AIR UNIT
EGE02B — EL.2033'-0" — TURBINE BLDG. UNIT HEATER
EGE03B — EL.2000'-0" — TURBINE BLDG. UNIT HEATER
EGE03C — EL.2000'-0" — TURBINE BLDG. UNIT HEATER
EGE06A — EL.2032'-0" — COMM. CORRIDOR UNIT HEATER
EGE01C — EL.2065'-0" — TURBINE BLDG. UNIT HEATER
EGE02A — EL.2033'-0" — TURBINE BLDG. UNIT HEATER
EGE03A — EL.2000'-0" — TURBINE BLDG. UNIT HEATER
EGE03D — EL.2000'-0" — TURBINE BLDG. UNIT HEATER
EGE01A — EL.2065'-0" — TURBINE BLDG. UNIT HEATER
EGE06B — EL.2032'-0" — COMM. CORRIDOR UNIT HEATER
EGE07 — EL.2000'-0" — COMM. CORRIDOR UNIT HEATER

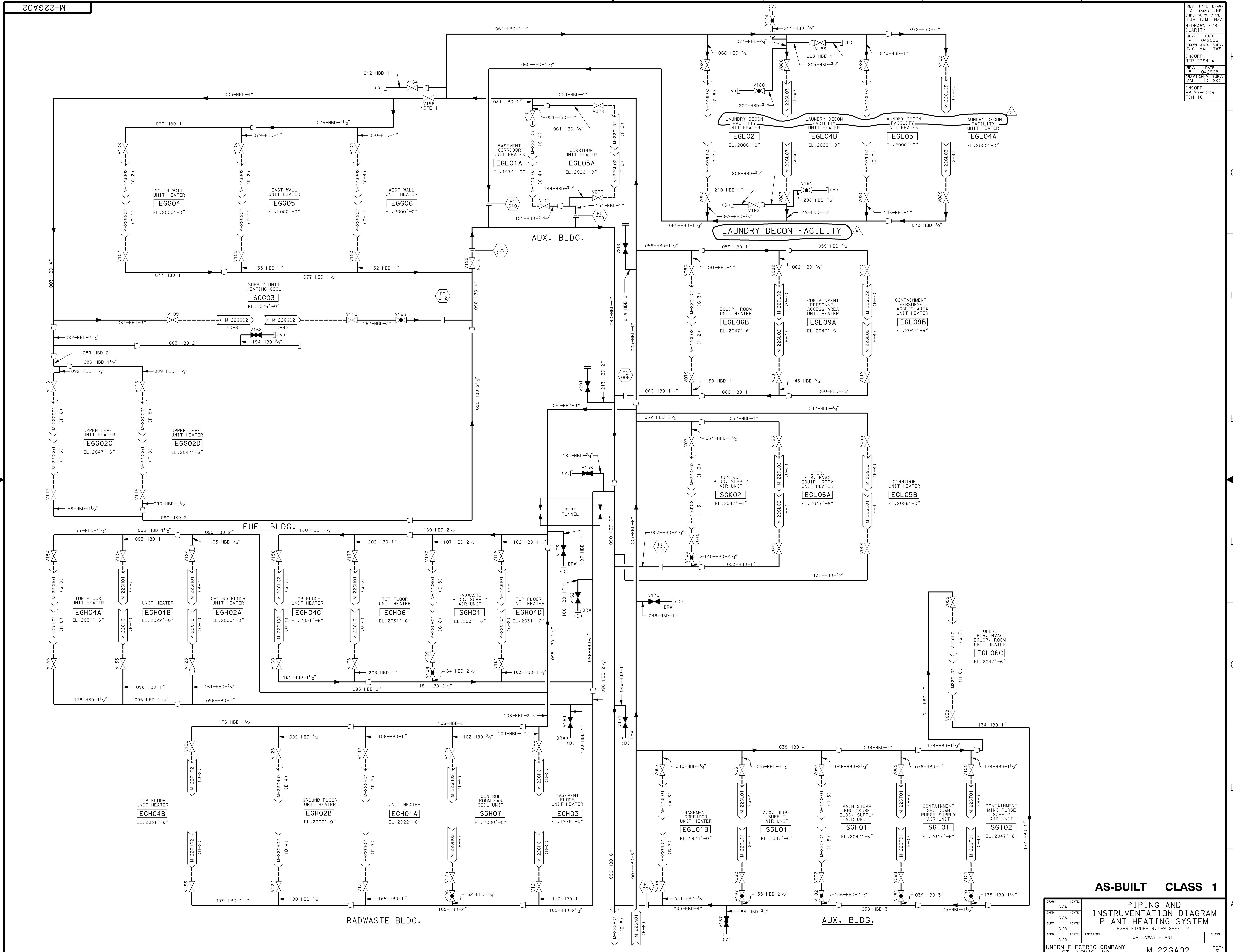
HOT WATER PUMPS — PGA01A, PGA01B*
AIR SEPARATOR TGA02 — VENDOR / BECHTEL
HOT WATER EXPANSION TANK TGA01* — AIR ELIMINATOR FITTING
PLANT HEATING HEAT EXCHANGER EGA01*
HOT WATER SYSTEM

NOTES:

1. HOT WATER PUMPS START WHEN OUTSIDE AIR ENTERING CONTROL BLDG. OR AUXILIARY BLDG. AIR SUPPLY IS BELOW TEMPERATURE SWITCH SET POINT.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM PLANT HEATING SYSTEM FSAR FIGURE 9.4-9 SHEET 1		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CLASS	
UNION ELECTRIC COMPANY ST. LOUIS, MO	CALLAWAY PLANT	M-22GA01	REV. 10


M-22GA02
REV. 3 DATE 8/20/85 DRAWN JHK CHKD. DJB SUPV. TJM APPD. N/A
REDRAWN FOR CLARITY
REV. 4 DATE 042005 DRAWN TJC CHKD. MAL SUPV. TWS
INCORP. RFR 22941A
REV. 5 DATE 042908 DRAWN MAL CHKD. TJC SUPV. SKC
INCORP. MP 97-1006 FCN-16.
LAUNDRY DECON FACILITY
AUX. BLDG.
FUEL BLDG.
RADWASTE BLDG.
PIPE TUNNEL
SOUTH WALL UNIT HEATER EGG04 EL.2000'-0"
EAST WALL UNIT HEATER EGG05 EL.2000'-0"
WEST WALL UNIT HEATER EGG06 EL.2000'-0"
SUPPLY UNIT HEATING COIL SGG03 EL.2026'-0"
BASEMENT CORRIDOR UNIT HEATER EGL01A EL.1974'-0"
CORRIDOR UNIT HEATER EGL05A EL.2026'-0"
LAUNDRY DECON FACILITY UNIT HEATER EGL02 EL.2000'-0"
LAUNDRY DECON FACILITY UNIT HEATER EGL04B EL.2000'-0"
LAUNDRY DECON FACILITY UNIT HEATER EGL03 EL.2000'-0"
LAUNDRY DECON FACILITY UNIT HEATER EGL04A EL.2000'-0"
EQUIP. ROOM UNIT HEATER EGL06B EL.2047'-6"
CONTAINMENT PERSONNEL ACCESS AREA UNIT HEATER EGL09A EL.2047'-6"
CONTAINMENT-PERSONNEL ACCESS AREA UNIT HEATER EGL09B EL.2047'-6"
UPPER LEVEL UNIT HEATER EGG02C EL.2047'-6"
UPPER LEVEL UNIT HEATER EGG02D EL.2047'-6"
CONTROL BLDG. SUPPLY AIR UNIT SGK02 EL.2047'-6"
OPER. FLR. HVAC EQUIP. ROOM UNIT HEATER EGL06A EL.2047'-6"
CORRIDOR UNIT HEATER EGL05B EL.2026'-0"
TOP FLOOR UNIT HEATER EGH04A EL.2031'-6"
UNIT HEATER EGH01B EL.2022'-0"
GROUND FLOOR UNIT HEATER EGH02A EL.2000'-0"
TOP FLOOR UNIT HEATER EGH04C EL.2031'-6"
TOP FLOOR UNIT HEATER EGH06 EL.2031'-6"
RADWASTE BLDG. SUPPLY AIR UNIT SGH01 EL.2031'-6"
TOP FLOOR UNIT HEATER EGH04D EL.2031'-6"
OPER. FLR. HVAC EQUIP. ROOM UNIT HEATER EGL06C EL.2047'-6"
TOP FLOOR UNIT HEATER EGH04B EL.2031'-6"
GROUND FLOOR UNIT HEATER EGH02B EL.2000'-0"
UNIT HEATER EGH01A EL.2022'-0"
CONTROL ROOM FAN COIL UNIT SGH07 EL.2000'-0"
BASEMENT FLOOR UNIT HEATER EGH03 EL.1976'-0"
BASEMENT CORRIDOR UNIT HEATER EGL01B EL.1974'-0"
AUX. BLDG. SUPPLY AIR UNIT SGL01 EL.2047'-6"
MAIN STEAM ENCLOSURE BLDG. SUPPLY AIR UNIT SGF01 EL.2047'-6"
CONTAINMENT SHUTDOWN PURGE SUPPLY AIR UNIT SGT01 EL.2047'-6"
CONTAINMENT MINI-PURGE SUPPLY AIR UNIT SGT02 EL.2047'-6"
AS-BUILT CLASS 1
PIPING AND INSTRUMENTATION DIAGRAM PLANT HEATING SYSTEM
FSAR FIGURE 9.4-9 SHEET 2
CALLAWAY PLANT
UNION ELECTRIC COMPANY ST. LOUIS, MO
M-22GA02
REV. 5

M-22GB01

CENTRAL CHILLER SGB01A

CENTRAL CHILLER SGB01B

FOR CHILLER DETAILS, REFER TO M-609.1-00002 & S-609.1-GB01

PGB01A

PGB01B

CHILLED WATER PUMPS

CHILLED WATER EXPANSION TANK TGB01

AIR SEPARATOR TGB02

COMMUNICATION CORRIDOR

CONTROL BLDG.

TURBINE BLDG.

AUXILIARY BLDG.

FUEL BUILDING

LAUNDRY/DECON FACIL.

RADWASTE BUILDING

SGE10A EL. 2061'-6" COMMUNICATION CORRIDOR COMPUTER ROOM FAN COIL UNIT

SGE10B EL. 2061'-6" COMMUNICATION CORRIDOR COMPUTER ROOM FAN COIL UNIT

SGE11 EL. 2047'-6" CONFERENCE ROOM FAN COIL UNIT

SGK06 EL. 1984'-0" COUNTING ROOM FAN COIL UNIT

EGK13 EL. 1984'-0" COUNTING ROOM SECONDARY COOLING COIL

SGK03 EL. 2016'-0" ACCESS CONTROL FAN COIL UNIT

SGB01B EL. 2026'-0" FUEL BUILDING SUPPLY AIR UNIT

SGB01A EL. 2026'-0" FUEL BUILDING SUPPLY AIR UNIT

EGG09 EL. 2026'-0" FUEL HANDLING AREA CHILLED WATER COIL

SGL04 EL. 2000'-0" LAUNDRY/DECONTAMINATION FACILITY FAN COIL UNIT

SGH01 EL. 2031'-6" RADWASTE BLDG. SUPPLY AIR UNIT

EGE08B EL. 2033'-0" BATTERY ROOM COOLING COIL

GE-RE-92 RADIATION MONITOR

SRM01 OXYGEN & CORROSION MONITOR

EGE08A EL. 2033'-0" BATTERY ROOM COOLING COIL

CKA01C EL. 2000'-0" COMPRESSED AIR SYSTEM COMPRESSOR "C"

SGL17A EL. 2026'-0" COMPONENT COOLING WATER PUMP ROOM FAN COIL UNIT

SGL05 EL. 2000'-0" GROUND FLOOR FAN COIL UNIT

SGH04 EL. 2000'-0" CONTROL ROOM SOLID FAN COIL UNIT

SGH07 EL. 2000'-0" CONTROL ROOM FAN COIL UNIT

SGH05 EL. 2000'-0" SAMPLE LAB FAN COIL UNIT

SGH08 EL. 2000'-0" SLWS EVAP. ROOM FAN COIL UNIT

SGH03A EL. 2000'-0" GROUND FLOOR FAN COIL UNIT

SGH06 EL. 2000'-0" WASTE EVAP. ROOM FAN COIL UNIT

SGH02 EL. 2000'-0" RECYCLE EVAP. ROOM FAN COIL UNIT

SGL02 EL. 2047'-6" ELECTRICAL EQUIP. ROOM FAN COIL UNIT

SGK02 EL. 2047'-6" CONTROL BLDG. SUPPLY AIR UNIT

SGL20 EL. 2026'-0" MG SET ROOM FAN COIL UNIT

SGL01 EL. 2047'-6" AUX. BLDG. SUPPLY AIR UNIT

SGT01 EL. 2047'-6" CTMT. PURGE SUPPLY AIR UNIT

SGL07 EL. 1974'-0" NORMAL CHARGING PUMP ROOM FAN COIL UNIT

SGL21 EL. 2047'-2" RAM STORAGE BUILDING FAN COIL UNIT "A"

SGL22 EL. 2047'-2" RAM STORAGE BUILDING FAN COIL UNIT "B"

SGL17B EL. 2026'-0" COMPONENT COOLING WATER PUMP ROOM FAN COIL UNIT

SGH03B EL. 1976'-0" BASEMENT FLOOR FAN COIL UNIT

SGL16 EL. 1974'-0" BASEMENT CORRIDOR FAN COIL UNIT

NOTES:

1. TEMPORARY RWST COOLING MAY BE SUPPLIED FROM GBV0182 AND RETURN TO GBV0181.
2. FLOW ORIFICE HAS BEEN REPLACED WITH A FULL DIAMETER SPACER PER MP 99-2016A.

AS-BUILT CLASS 1

REV.	DATE	DRAWN
4	012992	RLW
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

REDRAWN FOR CLARITY. INCORP. DEC-791.

REV.	DATE	DRAWN
5	070694	MAL
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. CMP 92-1010 FCN-12.

REV.	DATE	DRAWN
6	020995	RLW
CHKD.	SUPV.	APPD.
DLBr	AMR	N/A

INCORP. RFR-15455A.

REV.	DATE	DRAWN
7	022098	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. RMP 93-2030

REV.	DATE	DRAWN
8	031198	DJB
CHKD.	SUPV.	APPD.
RLW	JHK	N/A

INCORP. CMP 96-1012B

REV.	DATE	DRAWN
9	040298	MAL
CHKD.	SUPV.	APPD.
EWM	JHK	N/A

INCORP. MP 97-1006 FCN-07.

REV.	DATE	DRAWN
10	070898	DLBr
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. MP 96-2008A

REV.	DATE	DRAWN
11	012099	JHK
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. MP 97-2015A.

REV.	DATE	DRAWN
12	041201	EWM
CHKD.	SUPV.	APPD.
DJB	DMS	N/A

INCORP. MP 99-2016A.

REV.	DATE	DRAWN
13	110201	JHK
CHKD.	SUPV.	APPD.
MAL	JAM	N/A

INCORP. MP 00-1016A.

REV.	DATE	DRAWN
14	120501	DJB
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. RFR-19496A

REV.	DATE	DRAWN
15	121001	DJB
CHKD.	SUPV.	APPD.
RAM	JHC	N/A

INCORP. RFR-20255A

REV.	DATE
16	041204
DRAWN	CHKD.	SUPV.
EWM	JHK	TWS

INCORPORATE CARS 200400265

REV.	DATE
17	110904
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR-22941A

REV.	DATE
18	011309
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. CHANGE REQUEST CAR 09-000004 (CAR 200812641)

DRAWN	(DATE)
N/A	
CHKD.	(DATE)
N/A	
SUPV.	(DATE)
N/A	
APPD.	(DATE)
N/A	

PIPING AND INSTRUMENTATION DIAGRAM CENTRAL CHILLED WATER SYSTEM

FSAR FIGURE 9.4-10

LOCATION	CLASS
CALLAWAY PLANT	

UNION ELECTRIC COMPANY ST. LOUIS, MO

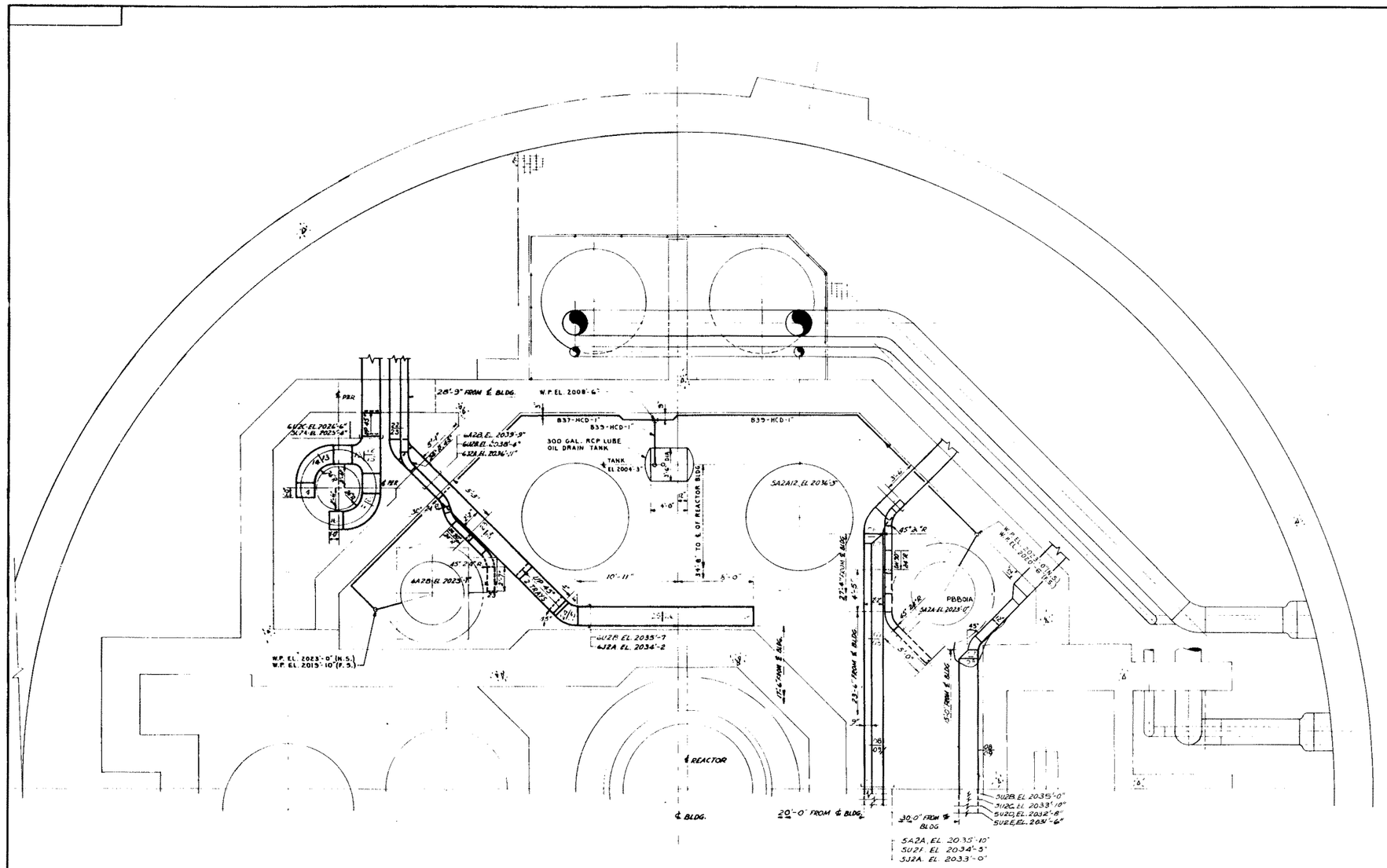
M-22GB01 REV. 18

Figure 9.5-1 has been deleted.

Figure 9.5-2 has been deleted.

Figure 9.5.1-1 has been deleted.

Figure 9.5.1-2 has been deleted.



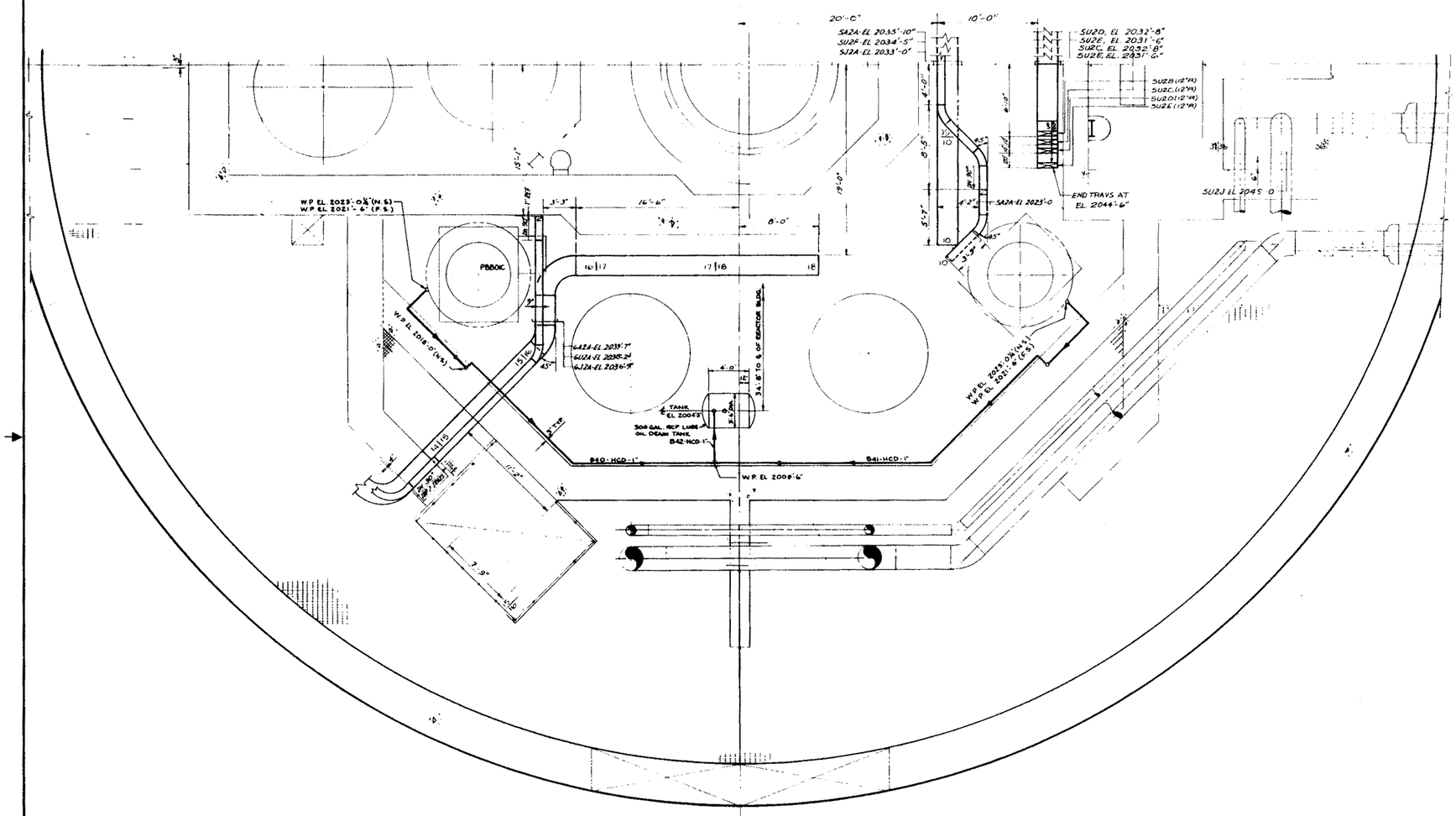
Rev. OL-0
6/86

CALLAWAY PLANT

FIGURE 9.5.1-3

REACTOR COOLANT PUMP LUBE OIL COLLECTION SYSTEM

SHEET 1



Rev. OL-0
6/86

CALLAWAY PLANT

FIGURE 9.5.1-3

REACTOR COOLANT PUMP LUBE OIL COLLECTION SYSTEM

SHEET 2

E-24QE01

REV. 40	DATE 101405		
DRAWN EWM	CHKD. RLW	SUPV. TWS	
INCORPORATE MP 03-1017 FCN 28			
REV. 41	DATE 081308		
DRAWN EWM	CHKD. RLW	SUPV. TWS	
INCORPORATE MP 07-0005			
REV. 42	DATE 041916		
DRAWN MAL	CHKD. RLW	SUPV. DME	
INCORP. MP 03-1002, FCN-13.			

LEGEND

TC-PB= TELEPHONE CABINET-POWER BLOCK
TC-PBCC= COMMUNICATIONS CORRIDOR
RW= RADWASTE BUILDING
FB= FUEL BUILDING
RB= REACTOR BUILDING
AB= AUXILIARY BUILDING
TB= TURBINE BUILDING

EXAMPLE
TC-PBCC-1984′= TEL. CAB. COMMUNICATIONS CORRIDOR 1984′ LEVEL

[W] – FIBER-OPTIC WICK

REFERENCE DRAWINGS

E-2C8900 – COMMUNICATIONS SYSTEMS, NOTES, SYMBOLS AND DETAILS

E-24QE02 – FIBER OPTIC CABLE SCHEMATIC

E-24QE03 – FIBER OPTIC CABLE ROUTING

E-24QE04 – FIBER OPTIC CABLE SCHEMATIC

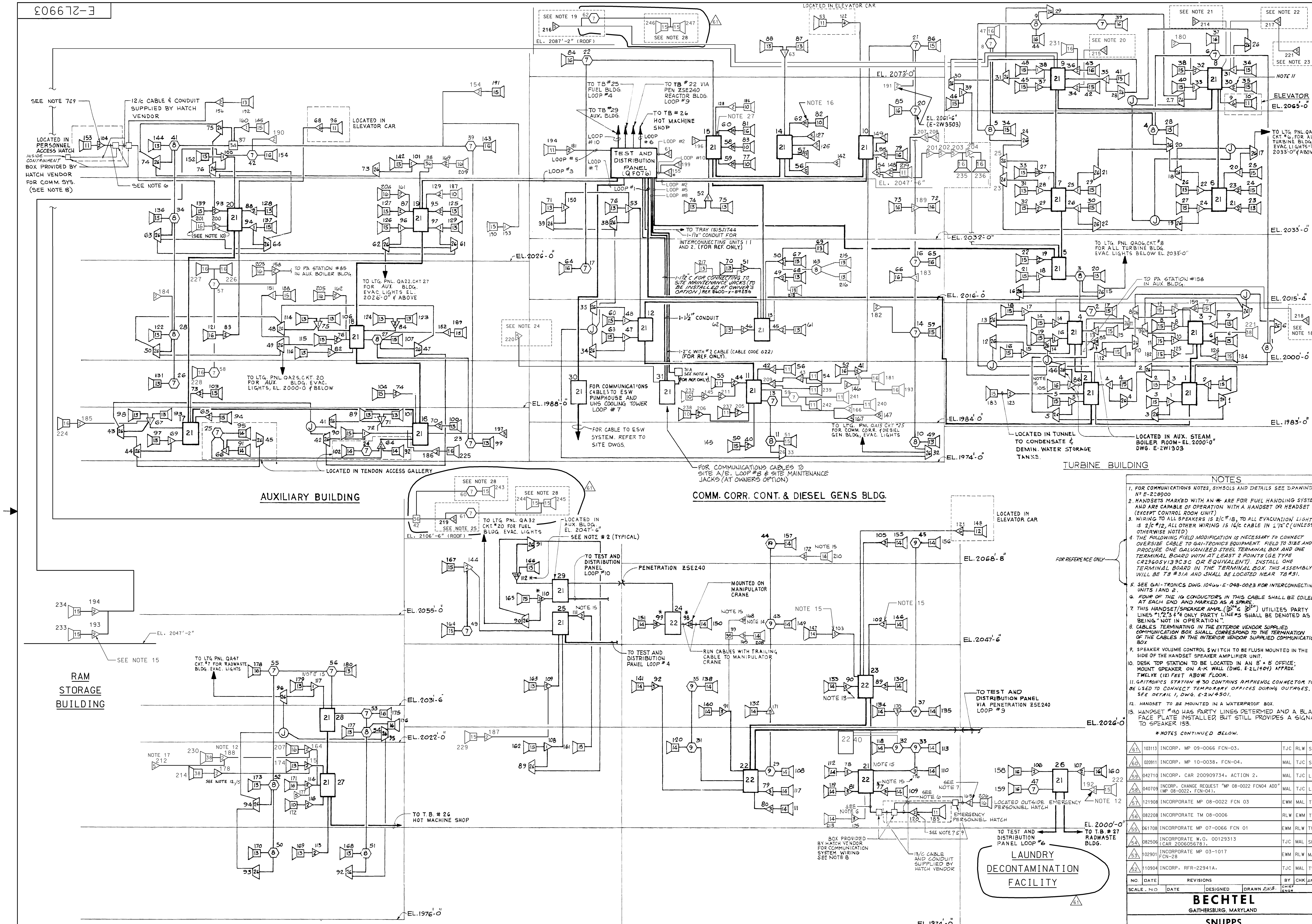
NOTES

1. DELETED
2. TELEPHONE OUTLET LOCATIONS ARE SHOWN ON THE LIGHTING, GROUNDING, AND COMMUNICATIONS DRAWINGS ONLY.
3. CONDUIT TO BE FIELD ROUTED. TELEPHONE CABINETS TO BE LOCATED BY FIELD.
4. TELEPHONE CABINET IS A 30″X24″X12″ NEMA 4 BOX MOUNTED OUTDOORS ON THE PLANT SOUTH WALL OF THE FUEL BUILDING FOR TELEPHONES IN TEMPORARY TRAILERS AND STRUCTURES.
5. PHONE REFERENCING THIS NOTE IS FOR "DOSE ASSESSMENT LINE" (DAL) AND DOES NOT UTILIZE PBX EXCHANGES.
6. JACK INSTALLED FOR TEMPORARY OUTAGE PHONES.
7. PATCH WICK: NO OPEN FIBERS WITHOUT DISABLING A DOWNSTREAM FIBER.
8. RERP LINES-(DAL,EML,(2)PAL),122,123, 124 & 125.
9. INSTALL AN ADDITIONAL 4 PR. #24-CAT. 5E CABLE FOR LAN CONNECTION.

AS-BUILT

DRAWN (DATE) N/A	TELEPHONE SYSTEM RISER DIAGRAM		
CHKD. (DATE) N/A		42	
SUPV. (DATE) N/A	FSAR FIGURE 9.5.2-1		
APPD. (DATE) N/A	LOCATION CALLAWAY ENERGY CENTER	CLASS	
UNION ELECTRIC COMPANY ST. LOUIS, MO	E-24QE01	REV. 42	

OUTSIDE AREA | RAM STORAGE BUILDING | RADWASTE BLDG. | HOT MACHINE SHOP | FUEL BLDG. | REACTOR BLDG. | AUXILIARY BLDG. | COMM. CORR., CONT. & DIESEL GEN'S BLDG. | TURBINE BLDG.



NOTES

1. FOR COMMUNICATIONS NOTES, SYMBOLS AND DETAILS SEE DRAWING Nº E-2C8900
2. HANDSETS MARKED WITH AN * ARE FOR FUEL HANDLING SYSTEM AND ARE CAPABLE OF OPERATION WITH A HANDSET OR HEADSET (EXCEPT CONTROL ROOM UNIT)
3. WIRING TO ALL SPEAKERS IS 2/C #18, TO ALL EVACUATION LIGHTS IS 2/C #12, ALL OTHER WIRING IS 16/C CABLE IN 1 1/2" C (UNLESS OTHERWISE NOTED)
4. THE FOLLOWING FIELD MODIFICATION IS NECESSARY TO CONNECT OVERSIZE CABLE TO GAI-TRONICS EQUIPMENT. FIELD TO SIZE AND PROCURE ONE GALVANIZED STEEL TERMINAL BOX AND ONE TERMINAL BOARD WITH AT LEAST 2 POINTS (GE TYPE CR2960SY139C3C OR EQUIVALENT). INSTALL ONE TERMINAL BOARD IN THE TERMINAL BOX. THIS ASSEMBLY WILL BE TB #31A AND SHALL BE LOCATED NEAR TB #31.
5. SEE GAI-TRONICS DWG. 10466-E-048-0023 FOR INTERCONNECTING UNITS 1 AND 2.

FOR REFERENCE ONLY (notes 4 and 5)

6. FOUR OF THE 16 CONDUCTORS IN THIS CABLE SHALL BE COILED AT EACH END AND MARKED AS A SPARE.
7. THIS HANDSET/SPEAKER AMPL. (104 & 120) UTILIZES PARTY LINES #1, #2, #3 & #4 ONLY PARTY LINE #5 SHALL BE DENOTED AS BEING "NOT IN OPERATION".
8. CABLES TERMINATING IN THE EXTERIOR VENDOR SUPPLIED COMMUNICATION BOX SHALL CORRESPOND TO THE TERMINATION OF THE CABLES IN THE INTERIOR VENDOR SUPPLIED COMMUNICATION BOX
9. SPEAKER VOLUME CONTROL SWITCH TO BE FLUSH MOUNTED IN THE SIDE OF THE HANDSET SPEAKER AMPLIFIER UNIT.
10. DESK TOP STATION TO BE LOCATED IN AN 8' × 8' OFFICE; MOUNT SPEAKER ON A-K WALL (DWG. E-2L1404) APPROX. TWELVE (12) FEET ABOVE FLOOR.
11. GAITRONICS STATION #30 CONTAINS AMPHENOL CONNECTOR TO BE USED TO CONNECT TEMPORARY OFFICES DURING OUTAGES. SEE DETAIL 1, DWG. E-2W4501.
12. HANDSET TO BE MOUNTED IN A WATERPROOF BOX.
13. HANDSET #90 HAS PARTY LINES DETERMED AND A BLANK FACE PLATE INSTALLED, BUT STILL PROVIDES A SIGNAL TO SPEAKER 133.

*NOTES CONTINUED BELOW.

NOTES:
21. LOCATED IN SRP-R2, EL. 2065'-0", COL. ROWS T1-TA.
20. LOCATED IN SRP-R6, EL. 2075'-0".
19. LOCATED IN SRP-R5 ON CONTROL BLDG. ROOF.
18. LOCATED IN THE SECURITY BREAK SHACK.
17. HANDSET QFHST0212 LOCATED IN RADWASTE READY ROOM.
16. HANDSET QFHST0062 HAS PARTY LINE 1 TIED TO THE PAGE CIRCUIT FOR CONTROL ROOM PAGING.
15. GAITRONICS UNIT HAS AN AMPHENOL CONNECTOR FOR TEMPORARY HOOK UP OF AN ADDITIONAL UNIT DURING OUTAGES. SEE DWG. E-2C8900 FOR CONNECTION DETAILS.
14. 168 IS AN AMPLIFIER ONLY. A HANDSET IS INSTALLED ONLY DURING AN OUTAGE.
22. LOCATED IN TURBINE MAINTENANCE MEZANINE OFFICE EL. 2075'-0", COL. ROWS TG-T1.
23. LOCATED IN SRP-R1, EL. 2065'-0", COL. ROWS TG-T1.
24. LOCATED IN SRC-3, EL. 2000'-0".
25. LOCATED IN SRP-R3/4 ON FUEL BUILDING ROOF.
26. DELETED
27. THREE TERMINAL BLOCKS FROM QFTB0015 MOVED INTO CABINET PBXY0001, WHICH IS MOUNTED DIRECTLY BELOW QFTB0015.
28. LOCATED IN TUNNEL ON ROOF. (61)

NO.	DATE	REVISIONS	BY	CHK	APPR
61	103113	INCORP. MP 09-0066 FCN-03.	TJC	RLW	SKC
60	020911	INCORP. MP 10-0038, FCN-04.	MAL	TJC	SKC
59	042710	INCORP. CAR 200909734, ACTION 2.	MAL	TJC	LMP
58	040709	INCORP. CHANGE REQUEST "MP 08-0022 FCN04 ADD" (MP 08-0022, FCN-04).	MAL	TJC	LMR
57	121908	INCORPORATE MP 08-0022 FCN 03	EWM	MAL	TWS
56	082208	INCORPORATE TM 08-0006	RLW	EWM	TWS
55	061708	INCORPORATE MP 07-0066 FCN 01	EWM	RLW	TWS
54	082506	INCORPORATE W.O. 00129313 (CAR 200605678).	TJC	MAL	SKC
53	102901	INCORPORATE MP 03-1017 FCN-28	EWM	RLW	MAM
52	110904	INCORP. RFR-22941A.	TJC	MAL	TWS

SCALE - NO | DATE | DESIGNED | DRAWN D.W.B. | CHIEF ENGR

BECHTEL
GAITHERSBURG, MARYLAND

SNUPPS

PUBLIC ADDRESS SYSTEM RISER DIAGRAM

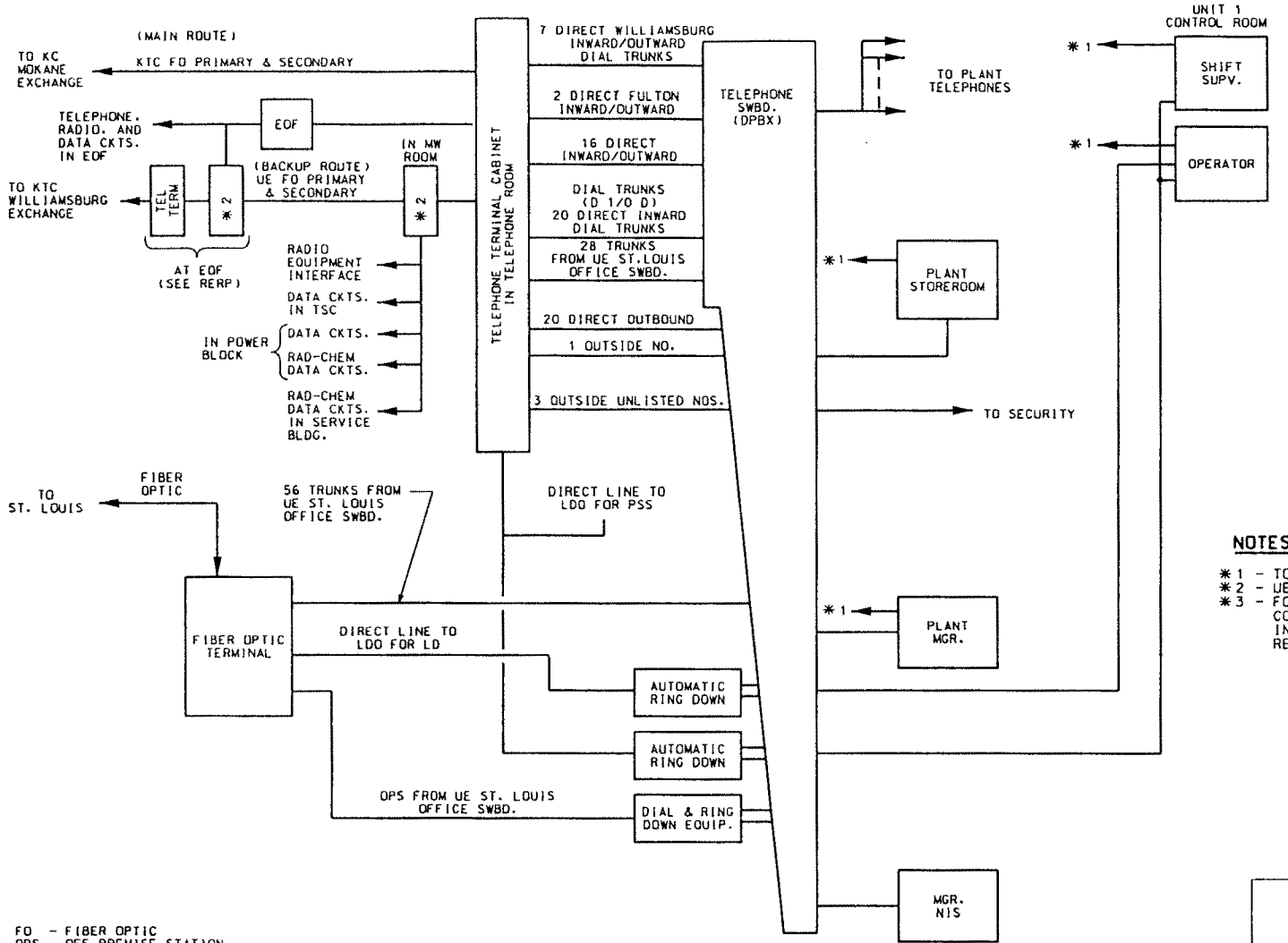
FSAR FIGURE 9.5.2-2

AS-BUILT CLASS 1

JOB NO.	BECHTEL DRAWING NO.	REV
10466	E-2L9903	61

DRAWING APPLICABLE TO UNITS 1 2 3 4 5 6 7 8

SITE A/E RELATED 1 34x44 "E" SIZE



NOTES:

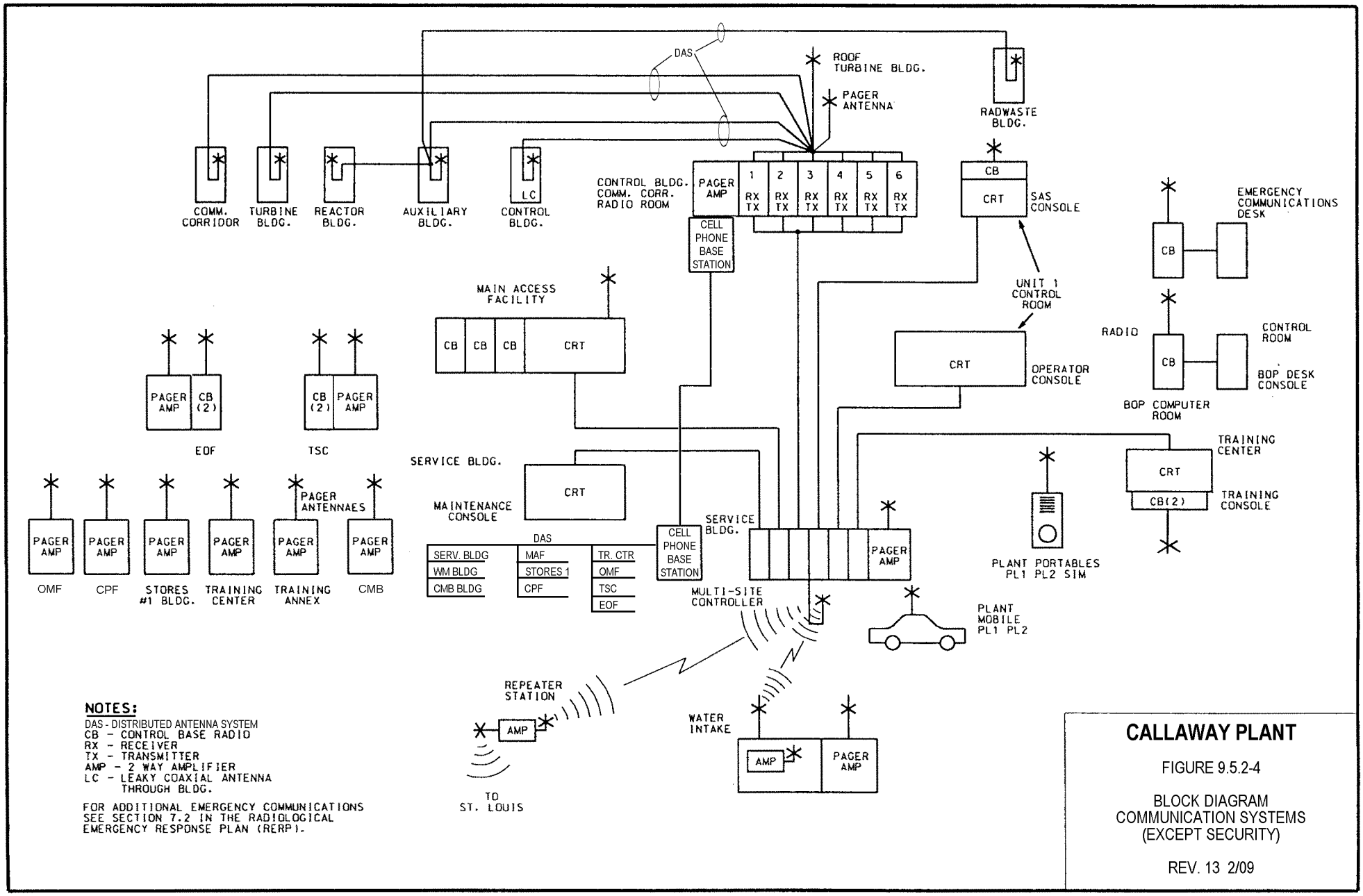
*1 - TO DPBX
*2 - UE FO EQUIPMENT
*3 - FOR ADDITIONAL EMERGENCY COMMUNICATIONS, SEE SECTION 7.2 IN THE RADIOLOGICAL EMERGENCY RESPONSE PLAN (RERP).

FO - FIBER OPTIC
OPS - OFF PREMISE STATION
LD - LOAD DISPATCHER
PSS - POWER SUPPLY SUPERVISOR
LDO - LOAD DISPATCH OFFICE
TSC - TECHNICAL SUPPORT CENTER
EOF - EMERGENCY OPERATIONS FACILITY
KTC - KINGDOM TELEPHONE COMPANY

CALLAWAY PLANT

FIGURE 9.5.2-3
BLOCK DIAGRAM
TELEPHONE SYSTEM
(EXCEPT SECURITY)

REV OL-11 05/00



NOTES:

DAS - DISTRIBUTED ANTENNA SYSTEM
CB - CONTROL BASE RADIO
RX - RECEIVER
TX - TRANSMITTER
AMP - 2 WAY AMPLIFIER
LC - LEAKY COAXIAL ANTENNA THROUGH BLDG.

FOR ADDITIONAL EMERGENCY COMMUNICATIONS SEE SECTION 7.2 IN THE RADIOLOGICAL EMERGENCY RESPONSE PLAN (RERP).

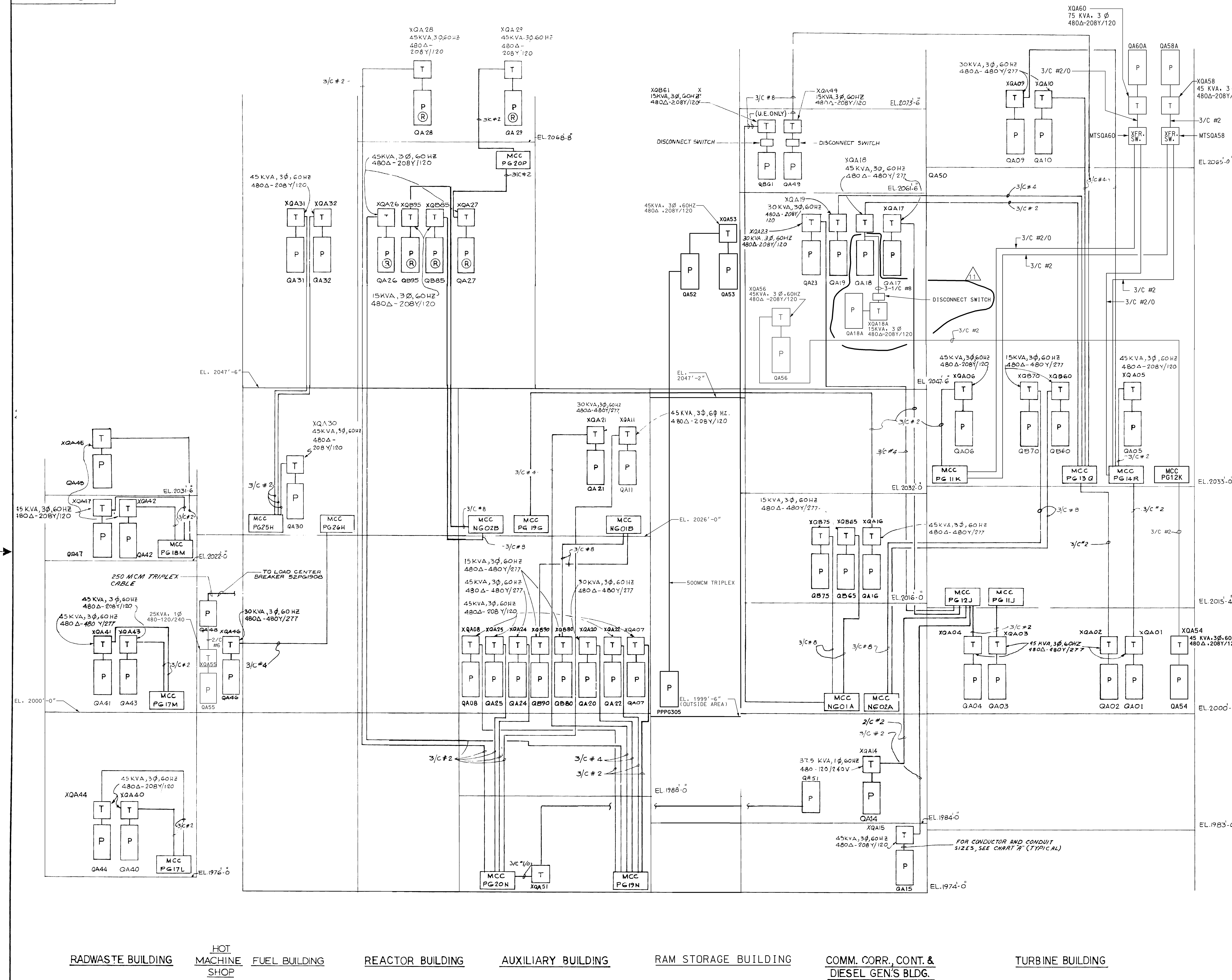
CALLAWAY PLANT

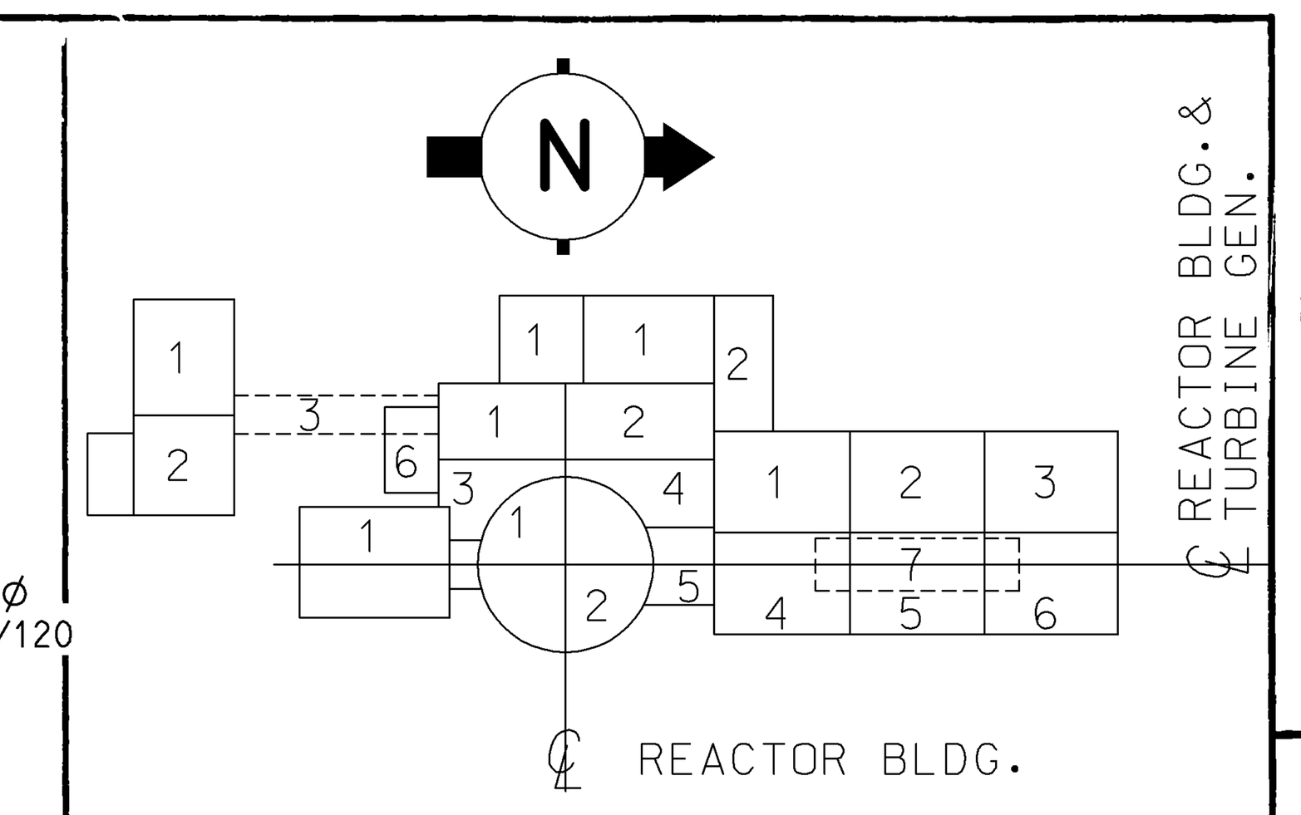
FIGURE 9.5.2-4

BLOCK DIAGRAM
COMMUNICATION SYSTEMS
(EXCEPT SECURITY)

REV. 13 2/09

E-2L9901





KEY PLAN

REFERENCE DRAWINGS

E-2L8900 LIGHTING NOTES SYMBOLS AND DETAILS

PANEL SCHEDULE

NOTES

1. (R) INDICATES RAINTIGHT ENCLOSURE, SEE E-2L9900

TRANSFORMER TO PANEL WIRING INFO.			
TRANSFORMER RATING		CONDUCTOR SIZE (MIN)	CONDUIT SIZE (MIN)
45KVA (3Ø)	480Y/277	4/C #4	1½"
	208Y/120	4/C 2/0	2"
	208Y/120	4-1/C #2/0	3"
30KVA (3Ø)	480Y/277	4/C #6	1"
	208Y/120	4/C #2	1½"
15KVA (3Ø)	480Y/277	4/C #10	¾"
	208Y/120	4/C #6	1"
	208Y/120	4-1/C #2	1½"
37.5KVA (1Ø)	120/240	3/C 4/0	2"
75 KVA (3Ø)	208Y/120	4/C 4/0	3"
	208Y/120	4-1/C 250MCM	3"
25 KVA	120/240	3/C 1/0	2"

CHART A

NO.	DATE	REVISIONS	BY	CHK	DES SUPV	ENGR	PROJ ENGR	APPR
11	092205	INCORPORATE MP 03-1017 FCN 23	EWM	RLW	—			MAM
10	042105	INCORP. RFR-22941A.	MAL	RLW	—			TWS
9	010505	INCORP. MP 03-1017D (REDLINE).	JHK	EWM	—			TWS
8	102704	INCORPORATE MP 03-1017D	EWM	JHK	—			TWS
7	121200	INCORP. MP 00-2010A.	MAL	SKC	—			AMR
6	021198	INCORP. CMP 97-1006A.	JHK	EWM	—			AMR
5	011498	INCORP. CMP 96-1012A	DJB	RBF	---			AMR
4	110597	INCORP. EMP 97-3005A	EWM	JHK	—			AMR
3	1/14/94	INCORP. RMP 93-2014 B	EWM	RAM	—			[illegible]
2	3/24/93	INCORP. RFR-10465 (MINOR MOD.)	MAL	Hp	—			[illegible]
1	11/4/88	INCORP. RFR-02449A	SBR	[illegible]	—	—	—	[illegible]
0	1/28/86	INITIAL ISSUE. REFLECTS TURN-OVER TO UE. INCORP. CMP 85-0094A.	J.G.H.	[illegible] 1-28-86	N/A	N/A	N/A	[illegible]

SCALE N.S. | DATE | DESIGNED JSG | DRAWN JSG | CHIEF ENGR —

BECHTEL
GAITHERSBURG, MARYLAND

SNUPPS

LIGHTING DISTRIBUTION RISER DIAGRAM

FSAR FIGURE 9.5.3-1

UTILITY DRAWING NO. | REV

BECHTEL DRAWING NO. E-2L9901 | REV 11

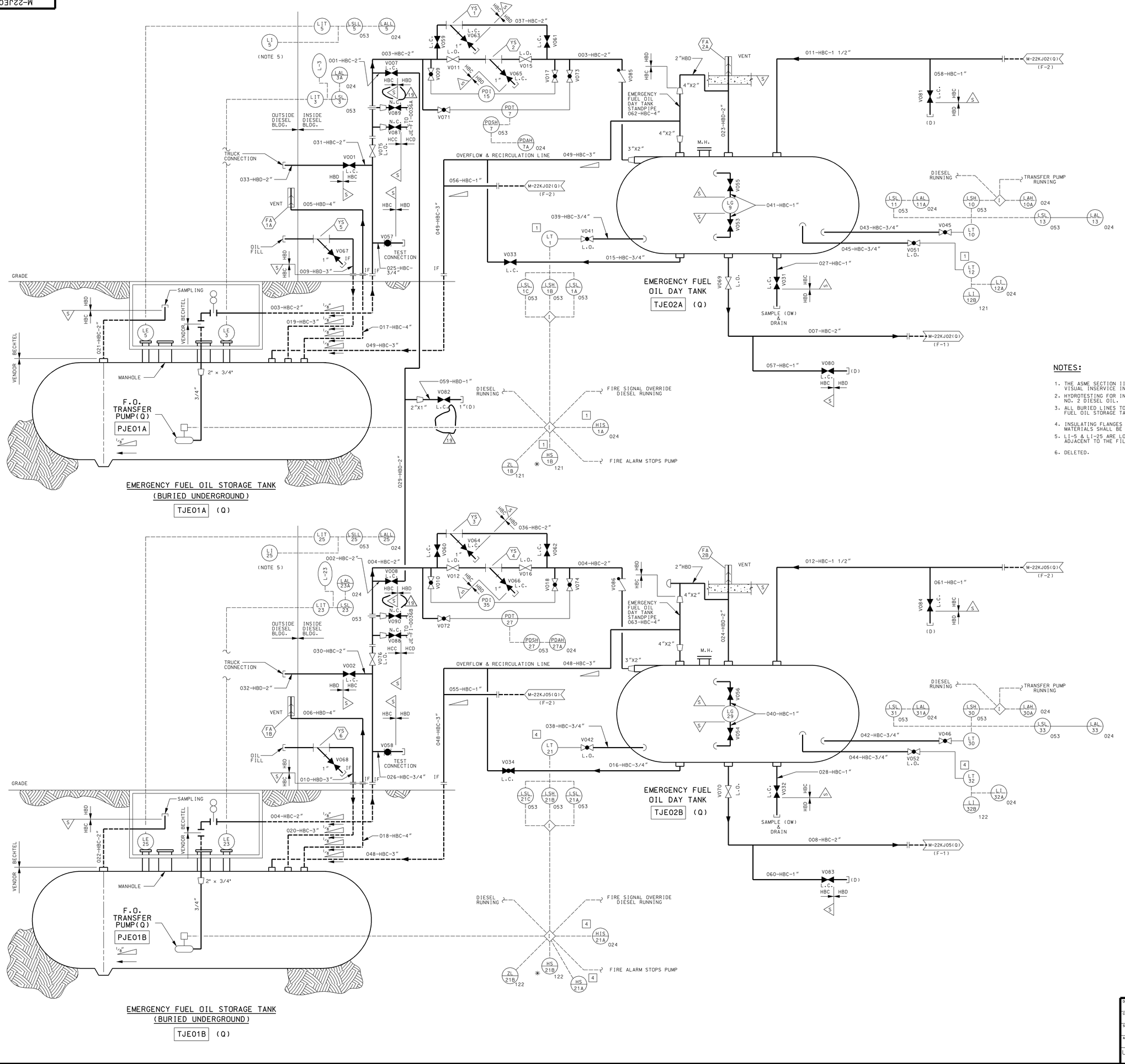
DRAWING APPLICABLE TO UNITS 2

CLASS 1
AS-BUILT

8 7 6 5 4 3 2 1

34x44 "E" SIZE

M-22JE01(Q)



NOTES:

1. THE ASME SECTION III, CLASS 3 COMPONENTS ARE SUBJECT TO VISUAL INSERVICE INSPECTION REQUIREMENTS.
2. HYDROTESTING FOR INSERVICE INSPECTION SHALL BE WITH NO. 2 DIESEL OIL.
3. ALL BURIED LINES TO SLOPE 1/8" PER FOOT TOWARD EMERGENCY FUEL OIL STORAGE TANKS.
4. INSULATING FLANGES ARE PROVIDED FOR CATHODIC PROTECTION. MATERIALS SHALL BE COMPATIBLE WITH NO. 2 DIESEL FUEL OIL.
5. LI-5 & LI-25 ARE LOCATED OUTSIDE THE DIESEL BUILDING ADJACENT TO THE FILL CONNECTION.
6. DELETED.

REV.	DATE	DRAWN
4	101392	DLBr
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. RFR 10379

REV.	DATE	DRAWN
5	052394	RAM
CHKD.	SUPV.	APPD.
HLP	GDC	N/A

INCORP. RFR 14813A

REV.	DATE	DRAWN
6	052694	JHK
CHKD.	SUPV.	APPD.
EWM	GDC	N/A

INCORP. CMP 91-1031A (PARTIAL).

REV.	DATE	DRAWN
7	060894	JHK
CHKD.	SUPV.	APPD.
EWM	GDC	N/A

INCORP. CMP 91-1031A.

REV.	DATE	DRAWN
8	121394	JHK
CHKD.	SUPV.	APPD.
EWM	AMR	N/A

INCORP. RFR-15339A.

REV.	DATE	DRAWN
9	013095	EWM
CHKD.	SUPV.	APPD.
RAM	AMR	N/A

INCORP. CMP 93-1004A PARTIAL

REV.	DATE	DRAWN
10	040495	EWM
CHKD.	SUPV.	APPD.
RAM	AMR	N/A

INCORP. CMP 93-1004A PARTIAL

REV.	DATE	DRAWN
11	050395	EWM
CHKD.	SUPV.	APPD.
RAM	AMR	N/A

INCORP. RFR 10598B, DEC 1266

REV.	DATE	DRAWN
12	051295	EWM
CHKD.	SUPV.	APPD.
RAM	AMR	N/A

INCORP. CMP 93-1004 FCN 04.

REV.	DATE	DRAWN
13	121096	HLP
CHKD.	SUPV.	APPD.
SKC	JHC	N/A

INCORP. CMP 96-1010B

REV.	DATE	DRAWN
14	030397	EWM
CHKD.	SUPV.	APPD.
RAM	AMR	N/A

INCORP. DEC 1408.

REV.	DATE	DRAWN
15	050797	EWM
CHKD.	SUPV.	APPD.
RAM	AMR	N/A

INCORP. RFR 18052A.

REV.	DATE	DRAWN
16	032999	MAL
CHKD.	SUPV.	APPD.
JHK	AMR	N/A

INCORP. DEC-1596.

REV.	DATE	DRAWN
17	080200	EWM
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. DEC-1713.

REV.	DATE
18	042005
DRAWN	CHKD.	SUPV.
TJC	MAL	TWS

INCORP. RFR 22941A

REV.	DATE
19	052910
DRAWN	CHKD.	SUPV.
MAL	TJC	LMP

INCORP. CAR 200910449.

AS-BUILT CLASS 1

DRAWN (DATE) N/A			
CHKD. (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM EMERGENCY FUEL OIL SYSTEM		
SUPV. (DATE) N/A	FSAR FIGURE 9.5.4-1		
APPD. (DATE) N/A	LOCATION		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22JE01(Q)		REV. 19

M-22KJ01(Q)

NOTES:

1. ⋈ REPRESENTS A DUAL PLATE CHECK VALVE.
2. DELETED.
3. DELETED.
4. VENTS & DRAINS REFERENCED TO THIS NOTE TO BE INSTALLED USING 3000# FITTINGS AND SCH. 80 PIPE.

JACKET WATER EXPANSION TANK TKJ01A

DIESEL ENGINE KKJ01A

ENGINE DRIVEN JACKET WATER PUMP PKJ06A

JACKET WATER AUXILIARY PUMP (KEEP WARM PUMP) PKJ01A

JACKET WATER HEATER EKJ01A

JACKET WATER HEAT EXCHANGER EKJ06A

ENGINE DRIVEN INTERCOOLER PUMP PKJ05A

INTERCOOLER HEAT EXCHANGER EKJ03A

GENERATOR OUTBOARD BEARING

INTERCOOLER VENT

FROM MAKEUP WATER SUPPLY M-22AN01 (A-5)

FROM GOVERNOR L.O. OIL COOLER

FROM ESW SYSTEM M-22EF01 (G-6)

TO LUBE OIL COOLER M-22KJ03(Q) (A-4)

TO M-22KJ03(Q) (H-2)

TO HS-60 (D-6)

FROM TE-60A (E-6)

M-22KJ02(Q) (E-1)

M-22KJ02(Q) (D-1)

DIESEL SPEED CONTROL

DIESEL CONTROL

VENDOR BECHTEL

(HIGH JACKET WATER TEMP.)

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM STANDBY DIESEL GENERATOR "A" COOLING WATER SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.5.5-1 SHEET 1		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION CALLAWAY PLANT		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KJ01 (Q)		REV. 24

REV.	DATE	DRAWN
6	051292	HLP
CHKD.	SUPV.	APPD.
SKC	JHC	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
7	071692	DLBr
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. RFR-10313.

REV.	DATE	DRAWN
8	082692	DLBr
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. RFR-09616C (MINOR MOD)

REV.	DATE	DRAWN
9	060793	DLBr
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. RFR-13631A

REV.	DATE	DRAWN
10	100894	DLBr
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. RFR-14604A

REV.	DATE	DRAWN
11	110294	MAL
CHKD.	SUPV.	APPD.
DLBr	AMR	N/A

INCORP. CMP 92-1006.

REV.	DATE	DRAWN
12	090696	DLBr
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP CMP 92-1037 (PART.)

REV.	DATE	DRAWN
13	101796	DLBr
CHKD.	SUPV.	APPD.
EWM	AMR	N/A

INCORP CMP 94-1003

REV.	DATE	DRAWN
14	022097	DLBr
CHKD.	SUPV.	APPD.
RLW	JHC	N/A

INCORP CMP 92-1037

REV.	DATE	DRAWN
15	012397	DLBr
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP CMP 95-1035

REV.	DATE	DRAWN
16	010599	DLBr
CHKD.	SUPV.	APPD.
SKC	AMR	N/A

INCORP DEC-1593

REV.	DATE
17	092403
DRAWN	CHKD.	SUPV.
MAL	EWM	TWS

INCORP. MP 00-1035 FCN-28.

REV.	DATE
18	110904
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A.

REV.	DATE
19	100705
DRAWN	CHKD.	SUPV.
MAL	JHK	SKC

INCORP. MP 01-1023A.

REV.	DATE
20	112006
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. CARS200607875.

REV.	DATE
21	120308
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. MP 07-0067.

REV.	DATE
22	071409
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. CHANGE REQUEST AC 09-000045 (RFR CAR 200900950).

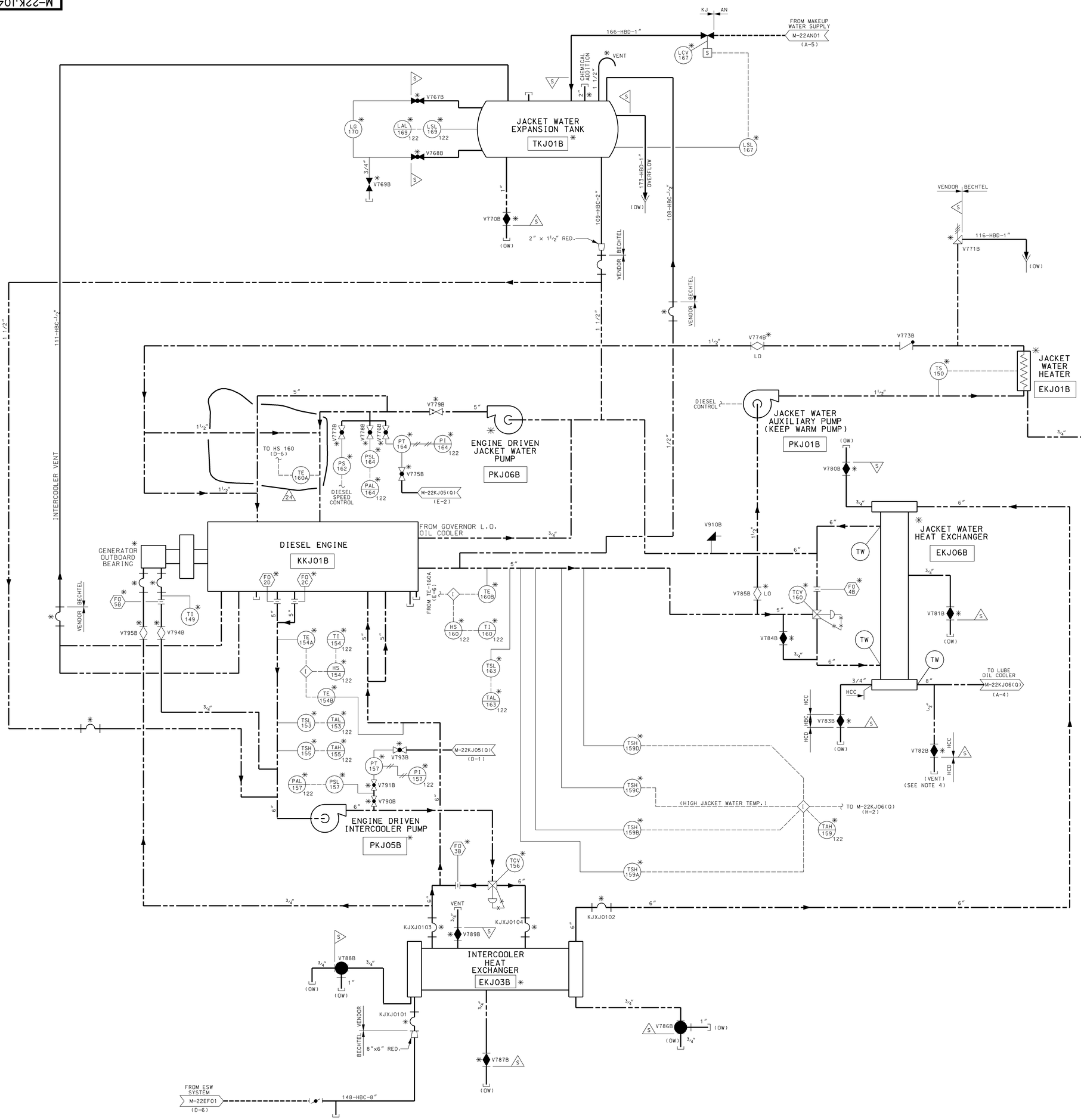
REV.	DATE
23	050710
DRAWN	CHKD.	SUPV.
TJC	MAL	SKC

INCORP. MP 09-0076.

REV.	DATE
24	102511
DRAWN	CHKD.	SUPV.
MAL	RLW	LMP

INCORP. MP 10-0008. FCN-01.

M-22KJ04 (Q)



NOTES:

1. ⋈ REPRESENTS A DUAL PLATE CHECK VALVE.
2. DELETED
3. DELETED.
4. VENTS AND DRAINS REFERENCED TO THIS NOTE TO BE INSTALLED USING 3000# FITTINGS AND SCH. 80 PIPE.

REV.	DATE	DRAWN
6	031292	JHK
CHKD.	SUPV.	APPD.
DLBr	JHC	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
7	082892	DLBr
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. RFR-09616C (MINOR MOD)

REV.	DATE	DRAWN
8	060793	DLBr
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. RFR-13631A

REV.	DATE	DRAWN
9	082394	JHK
CHKD.	SUPV.	APPD.
HLP	WAW	N/A

INCORP. CMP 92-1006 (PARTIAL).

REV.	DATE	DRAWN
10	101394	DLBr
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. RFR-14604A

REV.	DATE	DRAWN
11	112194	MAL
CHKD.	SUPV.	APPD.
DLBr	AMR	N/A

INCORP. CMP 92-1006.

REV.	DATE	DRAWN
12	102396	JHK
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. CMP 94-1003.

REV.	DATE	DRAWN
13	022097	DLBr
CHKD.	SUPV.	APPD.
RLW	JHC	N/A

INCORP. CMP 92-1037 (PART.)

REV.	DATE	DRAWN
14	060497	DLBr
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP CMP 92-1037

REV.	DATE	DRAWN
15	010599	DLBr
CHKD.	SUPV.	APPD.
SKC	AMR	N/A

INCORP CMP 95-1035 & DEC-1593

REV.	DATE
16	052704
DRAWN	CHKD.	SUPV.
MAL	TJC	SKC

INCORP. MP 00-1035 FCN-29.

REV.	DATE
17	110904
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A.

REV.	DATE
18	102405
DRAWN	CHKD.	SUPV.
RLW	EWM	MWH

INCORPORATE MP 01-1023A

REV.	DATE
19	112006
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. CARS200607875.

REV.	DATE
20	071409
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. CHANGE REQUEST AC 09-000045 (RFR CAR 200900950).

REV.	DATE
21	043010
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE MP 09-0076

REV.	DATE
22	092611
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. CAR 201106221.

REV.	DATE
23	110211
DRAWN	CHKD.	SUPV.
RLW	MAL	LMP

INCORPORATE MP 10-0008 FCN-01

REV.	DATE
24	041612
DRAWN	CHKD.	SUPV.
MAL	RLW	LMP

INCORP. CAR 201110876.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM STANDBY DIESEL GENERATOR "B" COOLING WATER SYSTEM		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A	FSAR FIGURE 9.5.5-1 SHEET 2		
APPD. (DATE) N/A	LOCATION: CALLAWAY ENERGY CENTER		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KJ04 (Q)		REV. 24

M-22KJ02

DETAIL "A"

LEGEND:

F F DUPLEX FILTER

NOTE:

1. FOR INTAKE AIR, EXHAUST AIR & BEARING INSTRUMENTATION, SEE DETAIL "A" (F-7).
2. HANDSWITCH LOCATED ON AIR START SKID.
3. PIPING IS SEISMICALLY DESIGNED TO FIRST SUPPORT BEYOND VALVE.
4. EQUIPMENT PERMANENTLY REMOVED FROM SERVICE MAY BY FOUND ON M-23KJ02.
5. INSTRUMENT IS NOT SAFETY RELATED. ASSOCIATED TUBING/SUPPORT DESIGN AS SAFETY RELATED TO MEET 2/1 CRITERIA.

REV.	DATE	DRAWN
7	110590	HLP
CHKD.	SUPV.	APPD.
DLBr	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
8	120590	MAL
CHKD.	SUPV.	APPD.
DLBr	TJM	N/A

INCORP. CMP-89-1016.

REV.	DATE	DRAWN
9	121391	JHH
CHKD.	SUPV.	APPD.
DLBr	TJM	N/A

INCORP. RFR-03131B.

REV.	DATE	DRAWN
10	021193	DLBr
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. RFR-10837A.

REV.	DATE	DRAWN
11	061593	SBR
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. CMP 93-2012

REV.	DATE	DRAWN
12	082793	MAL
CHKD.	SUPV.	APPD.
DLBr	TJM	N/A

INCORP. RFR-13787 (AS-BUILT).

REV.	DATE	DRAWN
13	083094	MAL
CHKD.	SUPV.	APPD.
DLBr	AMR	N/A

INCORP. CMP 90-1041.

REV.	DATE	DRAWN
14	110294	JHH
CHKD.	SUPV.	APPD.
DLBr	AMR	N/A

INCORP. CMP 92-1006.

REV.	DATE	DRAWN
15	112994	DLBr
CHKD.	SUPV.	APPD.
HLP	AMR	N/A

INCORP. RFR-15366A

REV.	DATE	DRAWN
16	042595	DLBr
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. DEC-1249

REV.	DATE	DRAWN
17	032999	DLBr
CHKD.	SUPV.	APPD.
SKC	AMR	N/A

INCORP. DEC-1604

REV.	DATE
18	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A

REV.	DATE
19	091307
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

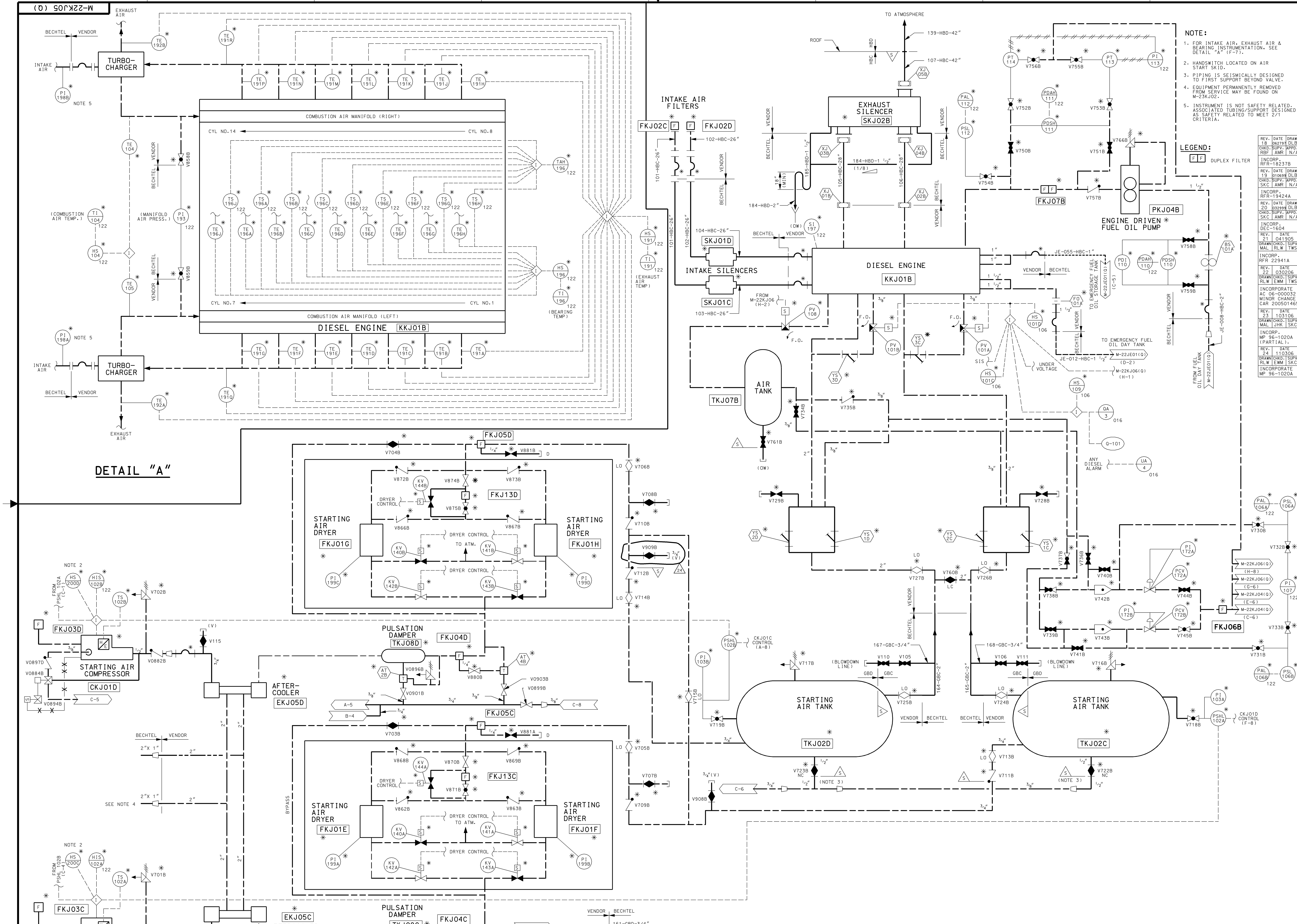
INCORP. MP 96-1020A (PARTIAL).

REV.	DATE
20	110707
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. MP 96-1020A (FINAL).

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM STANDBY DIESEL GENERATOR "A" INTAKE EXHAUST,F.O. & START. AIR SYS	
CHKD. (DATE) N/A	FSAR FIGURE 9.5.6-1 SHEET 1	
SUPV. (DATE) N/A		
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KJ02(Q)	REV. 20



NOTE:

1. FOR INTAKE AIR, EXHAUST AIR & BEARING INSTRUMENTATION, SEE DETAIL "A" (F-7).
2. HANDSWITCH LOCATED ON AIR START SKID.
3. PIPING IS SEISMICALLY DESIGNED TO FIRST SUPPORT BEYOND VALVE.
4. EQUIPMENT PERMANENTLY REMOVED FROM SERVICE MAY BE FOUND ON M-23KJ02.
5. INSTRUMENT IS NOT SAFETY RELATED. ASSOCIATED TUBING/SUPPORT DESIGNED AS SAFETY RELATED TO MEET 2/1 CRITERIA.

LEGEND:

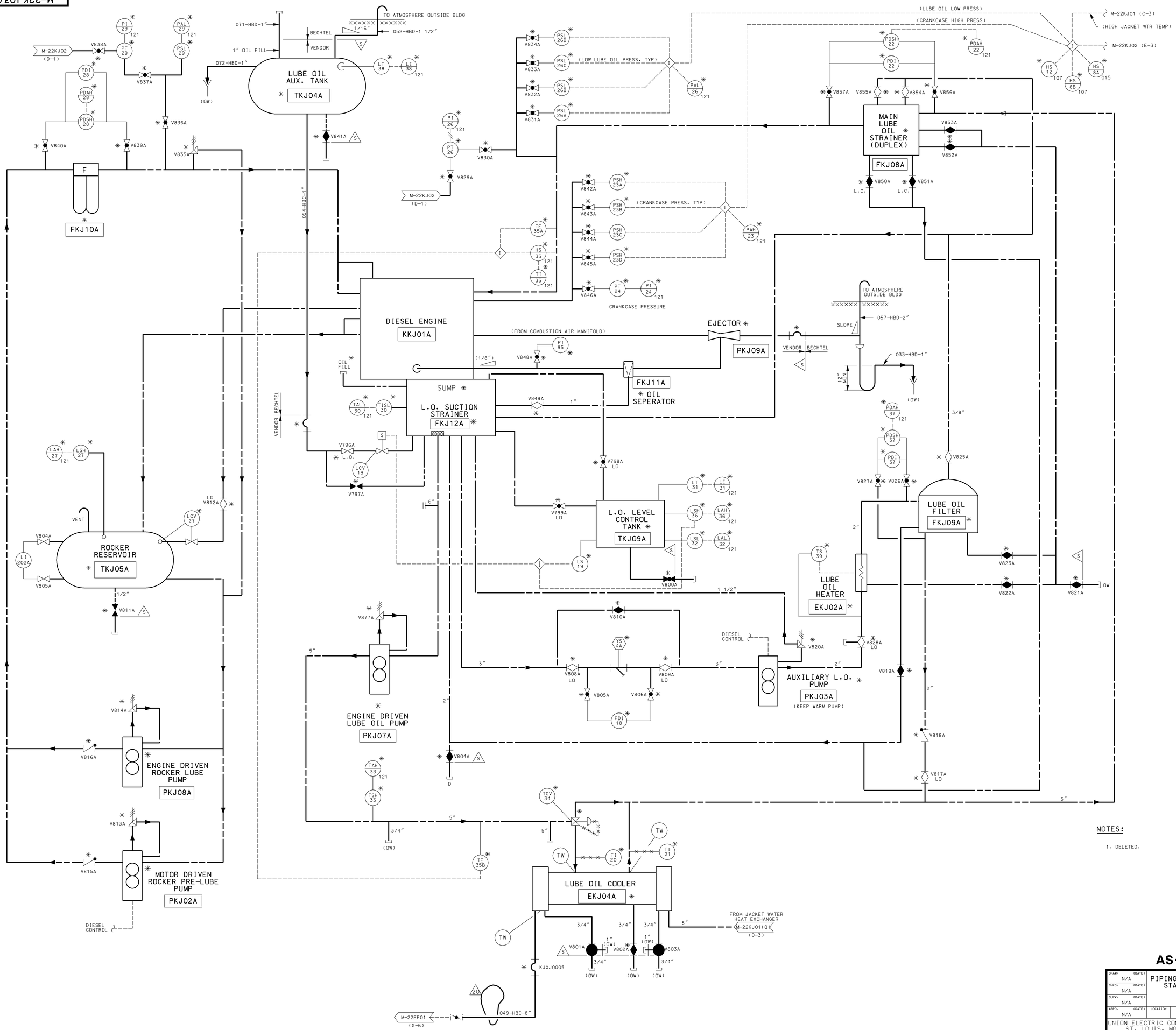
F F DUPLEX FILTER

REV.	DATE	DRAWN	CHKD.	SUPV.	APPD.	DESCRIPTION
18	062797	DLBr	RBF	AMR	N/A	INCORP. RFR-18237B
19	010699	DLBr	SKC	AMR	N/A	INCORP. RFR-19424A
20	032999	DLBr	SKC	AMR	N/A	INCORP. DEC-1604
21	041905	MAL	RLW	TWS		INCORP. RFR 22941A
22	030206	RLW	EWM	TWS		INCORPORATE AC 06-000032 MINOR CHANGE CAR 200501465
23	103106	MAL	JHK	SKC		INCORP. MP 96-1020A (PARTIAL).
24	110306	RLW	EWM	SKC		INCORPORATE MP 96-1020A

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM STANDBY DIESEL GENERATOR "B" INTAKE EXHAUST,F.O. & START. AIR SYS FSAR FIGURE 9.5.6-1 SHEET 2	
CHKD. (DATE) N/A		
SUPV. (DATE) N/A		
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KJ05(Q)	REV. 24

M-22KJ03(Q)



NOTES:

1. DELETED.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM STANDBY DIESEL GENERATOR "A" LUBE OIL SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.5.7-1 SHEET 1		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION CALLAWAY PLANT	CLASS	
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KJ03(Q)	REV. 20	

REV.	DATE	DRAWN
6	031292	DLBr
CHKD.	SUPV.	APPD.
RLW	JHC	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
7	082892	DLBr
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. RFR-09616C (MINOR MOD)

REV.	DATE	DRAWN
8	061693	SBR
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. CMP 93-1007

REV.	DATE	DRAWN
9	101893	JHK
CHKD.	SUPV.	APPD.
DLBr	TLF	N/A

INCORP. CMP 89-1004.

REV.	DATE	DRAWN
10	020794	DLBr
CHKD.	SUPV.	APPD.
HLP	TJM	N/A

INCORP. RFR-14550A & DEC-1131.

REV.	DATE	DRAWN
11	110294	JHK
CHKD.	SUPV.	APPD.
DLBr	AMR	N/A

INCORP. CMP 92-1006.

REV.	DATE	DRAWN
12	121294	DLBr
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. RFR-15521A.

REV.	DATE	DRAWN
13	090696	DLBr
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. CMP 92-1037 (PART.)

REV.	DATE	DRAWN
14	022097	DLBr
CHKD.	SUPV.	APPD.
RLW	JHC	N/A

INCORP. CMP 92-1037

REV.	DATE	DRAWN
15	012397	DLBr
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. CMP 95-1035

REV.	DATE	DRAWN
16	010599	DLBr
CHKD.	SUPV.	APPD.
SKC	AMR	N/A

INCORP. DEC-1593

REV.	DATE
17	071703
DRAWN	CHKD.	SUPV.
MAL	SKC	TWS

INCORP. RFR 22550A (REDLINE).

REV.	DATE
18	110904
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A.

REV.	DATE
19	071409
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. CHANGE REQUEST AC 09-000045 (RFR CAR 200900950).

REV.	DATE
20	050710
DRAWN	CHKD.	SUPV.
TJC	MAL	SKC

INCORP. MP 09-0076.

M-22KJ06 (Q)

LUBE OIL AUX. TANK TKJ04B
LUBE OIL LOW PRESS
CRANKCASE HIGH PRESS
HIGH JACKET WTR TEMP
TO ATMOSPHERE OUTSIDE BLDG
152-HBD-1 1/2"
1" OIL FILL
172-HBD-1"
171-HBD-1"
BECHTEL
VENDOR
(OW)
M-22KJ04 (C-3)
M-22KJ05 (F-3)
M-22KJ05 (D-1)
LOW LUBE OIL PRESS. TYP
CRANKCASE PRESS. TYP
MAIN LUBE OIL STRAINER (DUPLEX) FKJ08B
154-HBC-1"
DIESEL ENGINE KKJ01B
FROM COMBUSTION AIR MANIFOLD
CRANKCASE PRESSURE
EJECTOR
PKJ09B
FKJ10B
FKJ11B
OIL SEPERATOR
SUMP
L.O. SUCTION STRAINER FKJ12B
OIL FILL
VENDOR BECHTEL
157-HBD-2"
133-HBD-1"
12" MIN
3/8"
L.O. LEVEL CONTROL TANK TKJ09B
LUBE OIL FILTER FKJ09B
LUBE OIL HEATER EKJ02B
AUXILIARY L.O. PUMP PKJ03B
DIESEL CONTROL
ENGINE DRIVEN LUBE OIL PUMP PKJ07B
ENGINE DRIVEN ROCKER LUBE PUMP PKJ08B
MOTOR DRIVEN ROCKER PRE-LUBE PUMP PKJ02B
ROCKER RESERVOIR TKJ05B
VENT
LO
LUBE OIL COOLER EKJ04B
FROM JACKET WATER HEAT EXCHANGER
M-22KJ04 (Q)
(D-3)
KJXJ0105
149-HBC-8"
M-22EF01
(G-6)
(SEE NOTE 1)

NOTES:

1. THREADED PIPE PLUG PER RFR 001652.
2. DELETED.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM STANDBY DIESEL GENERATOR "B" LUBE OIL SYSTEM		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A	FSAR FIGURE 9.5.7-1 SHEET 2		
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KJ06 (Q)		REV. 20

REV.	DATE	DRAWN
6	031292	DLBr
CHKD.	SUPV.	APPD.
RLW	JHC	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
7	062892	DLBr
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. RFR-09616C (MINOR MOD)

REV.	DATE	DRAWN
8	102693	SBR
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. CMP 89-1004.

REV.	DATE	DRAWN
9	020494	DLBr
CHKD.	SUPV.	APPD.
HLP	TJM	N/A

INCORP. RFR-14550A & DEC-1131.

REV.	DATE	DRAWN
10	082394	SBR
CHKD.	SUPV.	APPD.
HLP	WAW	N/A

INCORP. CMP 92-1006 (PARTIAL).

REV.	DATE	DRAWN
11	112194	SBR
CHKD.	SUPV.	APPD.
DLBr	AMR	N/A

INCORP. CMP 92-1006.

REV.	DATE	DRAWN
12	121294	DLBr
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. RFR-15521A.

REV.	DATE	DRAWN
13	022097	DLBr
CHKD.	SUPV.	APPD.
RLW	JHC	N/A

INCORP. CMP 92-1037 (PART.)

REV.	DATE	DRAWN
14	062497	DLBr
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP CMP 92-1037

REV.	DATE	DRAWN
15	010599	DLBr
CHKD.	SUPV.	APPD.
SKC	AMR	N/A

INCORP CMP 95-1035 & DEC-1593

REV.	DATE
16	071703
DRAWN	CHKD.	SUPV.
MAL	SKC	TWS

INCORP. RFR 22550A (REDLINE).

REV.	DATE
17	110904
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A.

REV.	DATE
18	071409
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP. CHANGE REQUEST AC 09-000045 (RFR CAR 200900950).

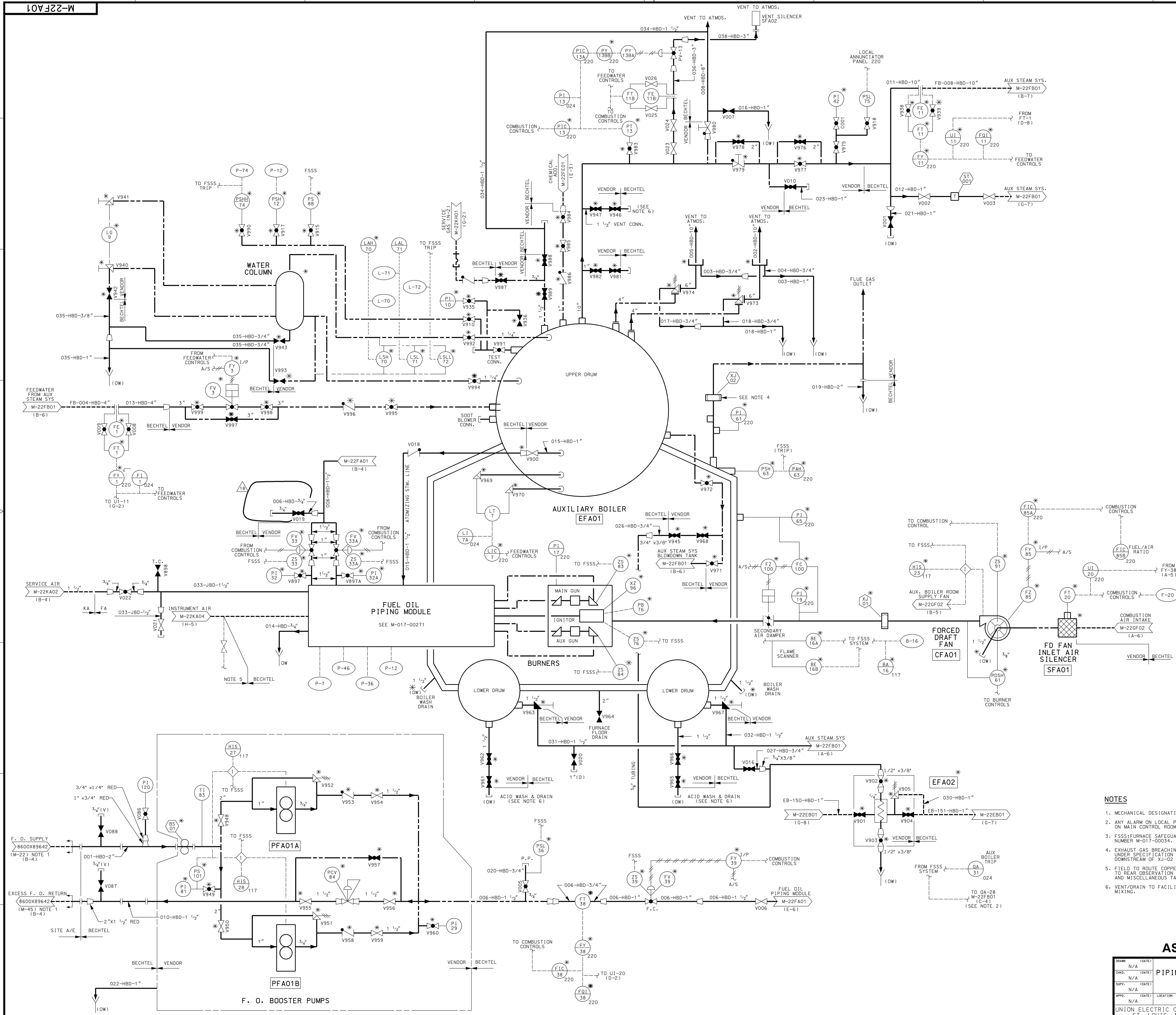
REV.	DATE
19	042910
DRAWN	CHKD.	SUPV.
RLW	EWM	LMP

INCORPORATE CR CAR 10-0000741 CAR 200908854.

REV.	DATE
20	043010
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE MP 09-0076

M-22FA01



NOTES

1. MECHANICAL DESIGNATION PER M-2G001.
2. ANY ALARM ON LOCAL PANELS 117 & 220 ALARMS FA-QA-28 ON MAIN CONTROL ROOM ANNUNCIATOR 024.
3. FSSS:FURNACE SAFEGUARD SUPERVISORY SYSTEM. SEE DRAWING NUMBER M-017-00034.
4. EXHAUST GAS BREACHING UPSTREAM OF XJ-02 IS PURCHASED UNDER SPECIFICATION M-017. EXHAUST GAS BREACHING DOWNSTREAM OF XJ-02 IS PURCHASED UNDER SPECIFICATION C-182.
5. FIELD TO ROUTE COPPER TUBING AND SUPPLY SHUT OFF VALVES TO REAR OBSERVATION PORT, FLAME SCANNERS, FUEL OIL GUNS AND MISCELLANEOUS TAPS AS REQUIRED.
6. VENT/DRAIN TO FACILITATE RECIRCULATING SKID FOR CHEMICAL MIXING.

REV.	DATE	DRAWN	CHKD.	SUPV.	APPD.	DESCRIPTION
7	112591	RLW	GDC	TJM	N/A	REDRAWN FOR CLARITY. INCORP. DEC-0765.
8	042292	MAL	GDC	TJM	N/A	REDRAWN FOR CLARITY.
9	041993	GDC	RAM	TJM	N/A	INCORP. RFR-13389 A
10	042793	GDC	RAM	TJM	N/A	INCORP. RFR-10231 B (MINOR MOD)
11	072893	GDC	RAM	TJM	N/A	INCORP. DEC-1058
12	070894	JHK	EWM	JHC	N/A	INCORP. RMP 94-2006A.
13	110999	JHK	MAL	AMR	N/A	INCORP. MP 98-2016A.
14	103101	JHK	MAL	AMR	N/A	INCORP. RFR-05736B.
15	042005	TJC	MAL	TWS		INCORP. RFR 22941A
16	102205	TJC	MAL	TWS		INCORPORATE MINOR CHANGE CARS 200507115.
17	083010	EWM	RLW	TWS		INCORPORATE CARS 201001223
18	091112	MAL	RLW	DME		INCORP. CAR 201204653.

AS-BUILT CLASS 1

DRAWN N/A	PIPING & INSTRUMENTATION DIAGRAM AUXILIARY BOILER SYSTEM
CHKD. N/A	FSAR FIGURE 9.5.9-1 SHEET 1
SUPV. N/A	
APPD. N/A	LOCATION: CALLAWAY ENERGY CENTER
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22FA01 REV. 18

M-22FB01

REV.	DATE	DRAWN
10	9/23/91	DJB/MAL
CHKD.	SUPV.	APPD.
GDC	TJM	N/A

REDRAWN FOR CLARITY INCORP. EMP 90-3007, DEC-0646, & DEC-0699.

REV.	DATE	DRAWN
11	012693	HLP/GDC
CHKD.	SUPV.	APPD.
SKC	TJM	N/A

INCORP. RFR-10702A & RFR-10803A

REV.	DATE	DRAWN
12	090694	DJB
CHKD.	SUPV.	APPD.
RBF	AMR	N/A

INCORP. DEC 1179

REV.	DATE	DRAWN
13	092994	SBR
CHKD.	SUPV.	APPD.
DJB	DME	N/A

INCORP. CMP 92-1052.

REV.	DATE	DRAWN
14	061500	JHK
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. MP 97-2004A.

REV.	DATE	DRAWN
15	051001	RLW
CHKD.	SUPV.	APPD.
MAL	JAM	N/A

INCORP. MP 00-2003A

REV.	DATE	DRAWN
16	082500	JHK
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. RFR-20539A.

REV.	DATE
17	100704
DRAWN	CHKD.	SUPV.
JHK	EWM	TWS

INCORP. CAR 200406185.

REV.	DATE
18	042005
DRAWN	CHKD.	SUPV.
TJC	MAL	TWS

INCORP. RFR 22941A

REV.	DATE
19	091605
DRAWN	CHKD.	SUPV.
RLW	MAL	TWS

INCORPORATE MINOR CHANGE CAR 200506569, AC 05-000060

REV.	DATE
20	012209
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

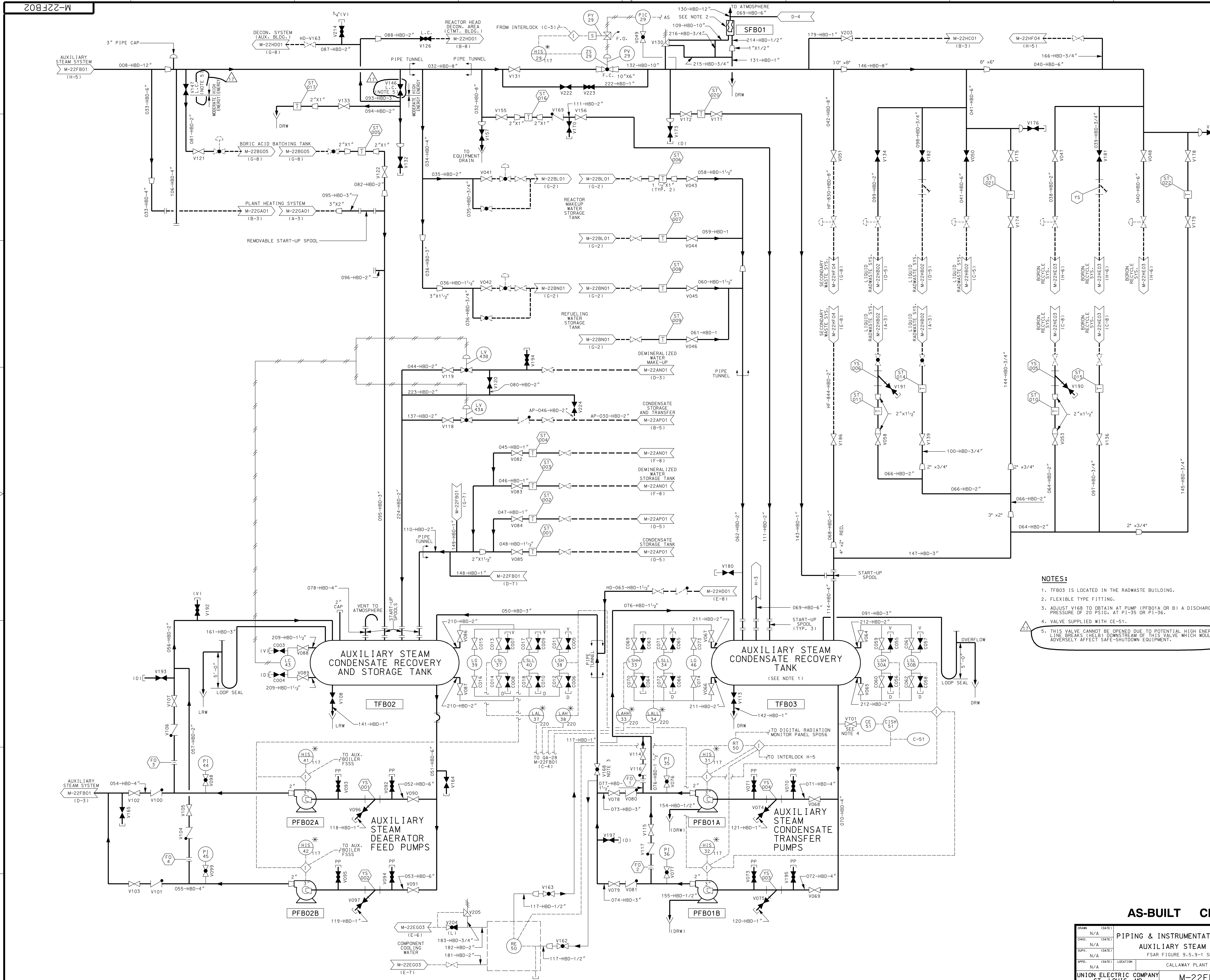
INCORPORATE CR CAR 09-000005, CAR 200807476 ACTION 2

NOTES:

1. PIPE IS SCHEDULE 80 FOR NOISE AND VIBRATION SUPPRESSION.
2. DELETED.
3. ALIGNS MAIN STEAM TO FEEDWATER HEATERS 6A AND 6B THROUGH CONTROL VALVE FB-PV-17A.
4. CONTROLS FINAL FEEDWATER TEMPERATURE DURING START-UP AND SHUTDOWN.
5. AUXILIARY BOILER TEST CONNECTION.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM AUXILIARY STEAM SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.5.9-1 SHEET 2		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22FB01		REV. 20



NOTES:

1. TFB03 IS LOCATED IN THE RADWASTE BUILDING.
2. FLEXIBLE TYPE FITTING.
3. ADJUST V168 TO OBTAIN AT PUMP (PFB01A OR B) A DISCHARGE PRESSURE OF 20 PSIG. AT PI-35 OR PI-36.
4. VALVE SUPPLIED WITH CE-51.
5. (17) THIS VALVE CANNOT BE OPENED DUE TO POTENTIAL HIGH ENERGY LINE BREAKS (HELB) DOWNSTREAM OF THIS VALVE WHICH WOULD ADVERSELY AFFECT SAFE-SHUTDOWN EQUIPMENT.

REV.	DATE	DRAWN	CHKD.	SUPV.	APPD.	DESCRIPTION
2	102891	RLW	GDC	TJM	N/A	REDRAWN FOR CLARITY. INCORP. DEC-710 & DEC-754
3	040293	GDC	RAM	TJM	N/A	INCORP. DEC-987
4	051394	SBR	EWM	GDC	N/A	INCORP. RFR-08907B.
5	082495	DJB	RBF	AMR	N/A	INCORP. RMP 93-2004
6	082797	JHK	EWM	AMR	N/A	INCORP RMP 96-2001A.
7	040298	MAL	EWM	JHK	N/A	INCORP. MP 97-1006A.
8	062598	MAL	JHK	AMR	N/A	INCORP. RFR 18922A.
9	032599	JHK	MAL	AMR	N/A	INCORP. MP 97-1006 FCN-18.
10	061099	JHK	MAL	JHC	N/A	INCORP. DEC-1632.
11	042005	TJC	MAL	TWS		INCORP. RFR 22941A
12	113007	EWM	RLW	TWS		INCORPORATE CAR 200709320
13	011409	RLW	EWM	TWS		INCORPORATE CR CAR 08-000423, CAR 200812022
14	040110	MAL	TJC	TWS		INCORP. MP 10-0019.
15	070710	TJC	MAL	TWS		INCORP. CAR 201001930 ACTION 7.
16	053111	TJC	MAL	TWS		INCORPORATE MP 10-0042.
17	032112	TJC	MAL	LMP		INCORPORATE CAR 201011161 ACTION 35.1.

AS-BUILT CLASS 1

PIPING & INSTRUMENTATION DIAGRAM
AUXILIARY STEAM SYSTEM
FSAR FIGURE 9.5.9-1 SHEET 3

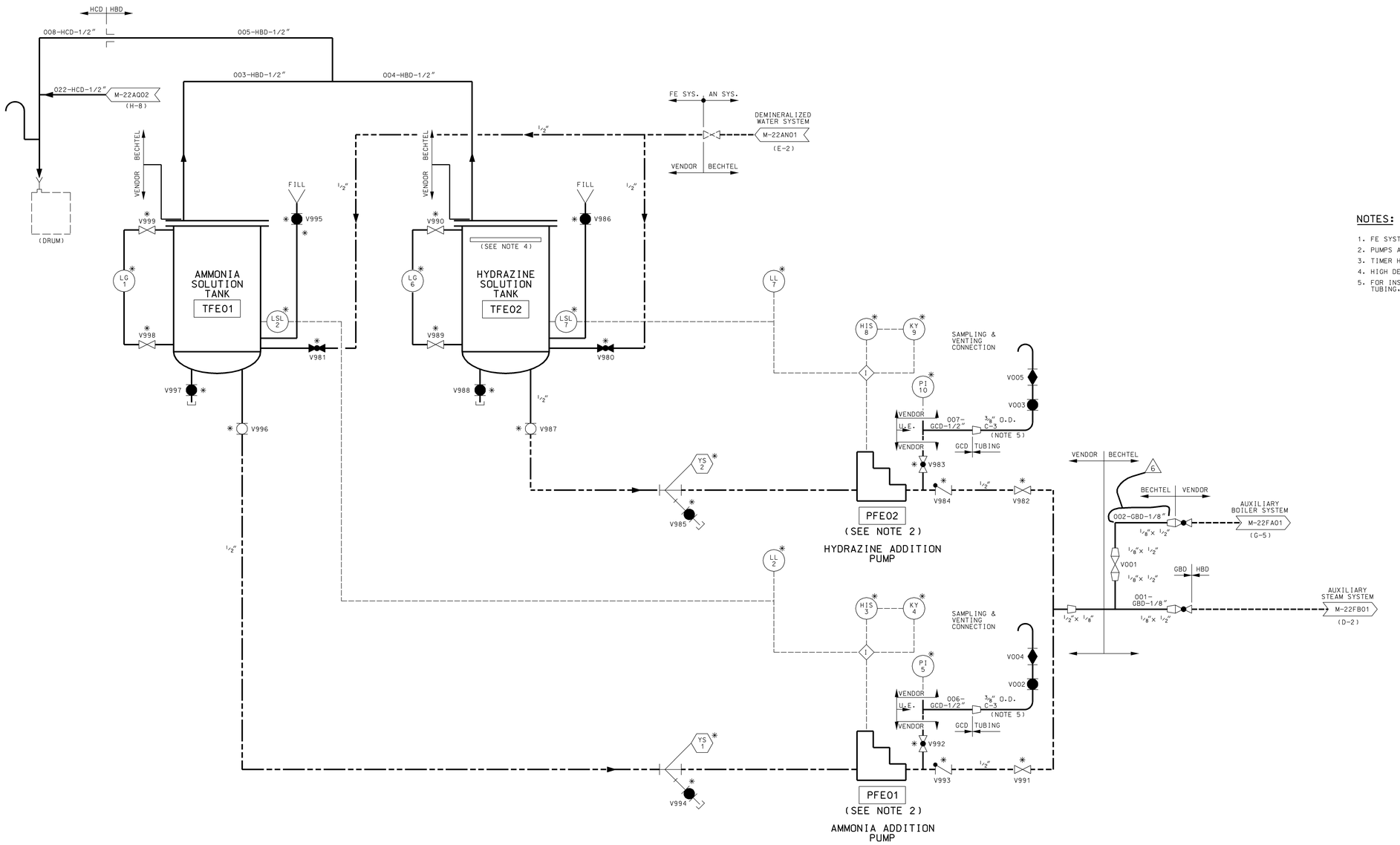
DRAWN N/A | CHKD. N/A | SUPV. N/A | APPD. N/A

LOCATION: CALLAWAY PLANT

UNION ELECTRIC COMPANY
ST. LOUIS, MO

M-22FB02 REV. 17

REV.	DATE	DRAWN
2	071994	SBR
CHKD. GDC	SUPV. TJM	APPD. N/A
REDRAWN FOR CLARITY INCORP. DEC-0687		
REV. 3	DATE 112594	DRAWN MAL
CHKD. DJB	SUPV. AMR	APPD. N/A
INCORP. RMP 91-2013.		
REV. 4	DATE 062002	DRAWN JHK
CHKD. MAL	SUPV. JHC	APPD. N/A
INCORP. MP 01-2008 FCN-01.		
REV. 5	DATE 042005	
DRAWN TJC	CHKD. MAL	SUPV. TWS
INCORP. RFR 22941A		
REV. 6	DATE 021611	
DRAWN MAL	CHKD. TJC	SUPV. SKC
INCORP. CAR 201011221.		



NOTES:

1. FE SYSTEM IS MANUALLY OPERATED.
2. PUMPS ARE EQUIPPED WITH MANUAL STROKE CONTROL.
3. TIMER HAS A RANGE OF 0 TO 24 HOURS.
4. HIGH DENSITY POLYETHYLENE FLOATING COVER SUPPLIED WITH TANK.
5. FOR INSTRUMENT PIPING CLASS SPECIFICATION FOR STAINLESS STEEL TUBING, SEE DWG. J-27G10.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM AUXILIARY STEAM CHEMICAL ADDITION SYSTEM FSAR FIGURE 9.5.9-1 SHEET 4	
CHKD. (DATE) N/A		
SUPV. (DATE) N/A		
APPD. (DATE) N/A	LOCATION CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22FE01	REV. 6

M-22KB01(Q)

REV.	DATE	DRAWN
4	7/19/91	MAL
CHKD.	SUPV.	APPD.
HLP	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE
5	042005
DRAWN	CHKD.	SUPV.
---	---	---
TJC	MAL	TWS

INCORP. RFR 22941A

HOSE STATION #7
S/G EBB01B &
S/G EBB01C
EL. 2073'-7"

017-JDD-1"

2" x1" RED.

V073

017-JDD-2"

HOSE STATION #6
Rx HEAD LAYDOWN &
REFUEL CANAL
EL. 2052'-0"

V063

016-JDD-1"

2" x1" RED.

V068

1"(D)

HOSE STATION #9
PRESSURIZER
TBB03
EL. 2073'-0"

V093

018-JDD-1"

V083

HOSE STATION #8
S/G EBB01A &
S/G EBB01D
EL. 2073'-0"

019-JDD-1"

2" x1" RED.

2" x1" RED.

V084

V094

1"(D)

1"(D)

018-JDD-2"

015-JDD-1"

HOSE STATION #5
SEAL TABLE
EL. 2053'-0"

V053

2" x1" RED.

V107

1"(D)

HOSE STATION #2
S/G EBB01B &
Rx COOLANT PP
PBB01B
EL. 2003'-0"

V023

012-JDD-1"

2" x1" RED.

V028

1"(D)

V500

HOSE STATION #1
S/G EBB01A &
Rx COOLANT PP
PBB01A
EL. 2003'-0"

V013

011-JDD-1"

2" x1" RED.

V014

1"(D)

HOSE STATION #4
S/G EBB01D &
Rx COOLANT PP
PBB01D
EL. 2003'-0"

V043

014-JDD-1"

2" x1" RED.

V044

1"(D)

HOSE STATION #3
S/G EBB01C &
Rx COOLANT PP
PBB01C
EL. 2003'-0"

V033

013-JDD-1"

2" x1" RED.

V038

1"(D)

2" x1" RED.

V106

1"(D)

013-JDD-2"

018-JDD-2"

V101

V100

2" x1" RED.

V103

1"(D)

HCD HCB

HCB HCD

S

S

P-98

V006

IF IF

L.C.

L.C.

003-HCD-2"

IF IF

M-22KB03
(C-3)

V004

V002

V001

V003

002-HCD-2"

001-HCB-2"

V005

V102

1"(D)

AUX.BLDG. REACTOR BLDG.

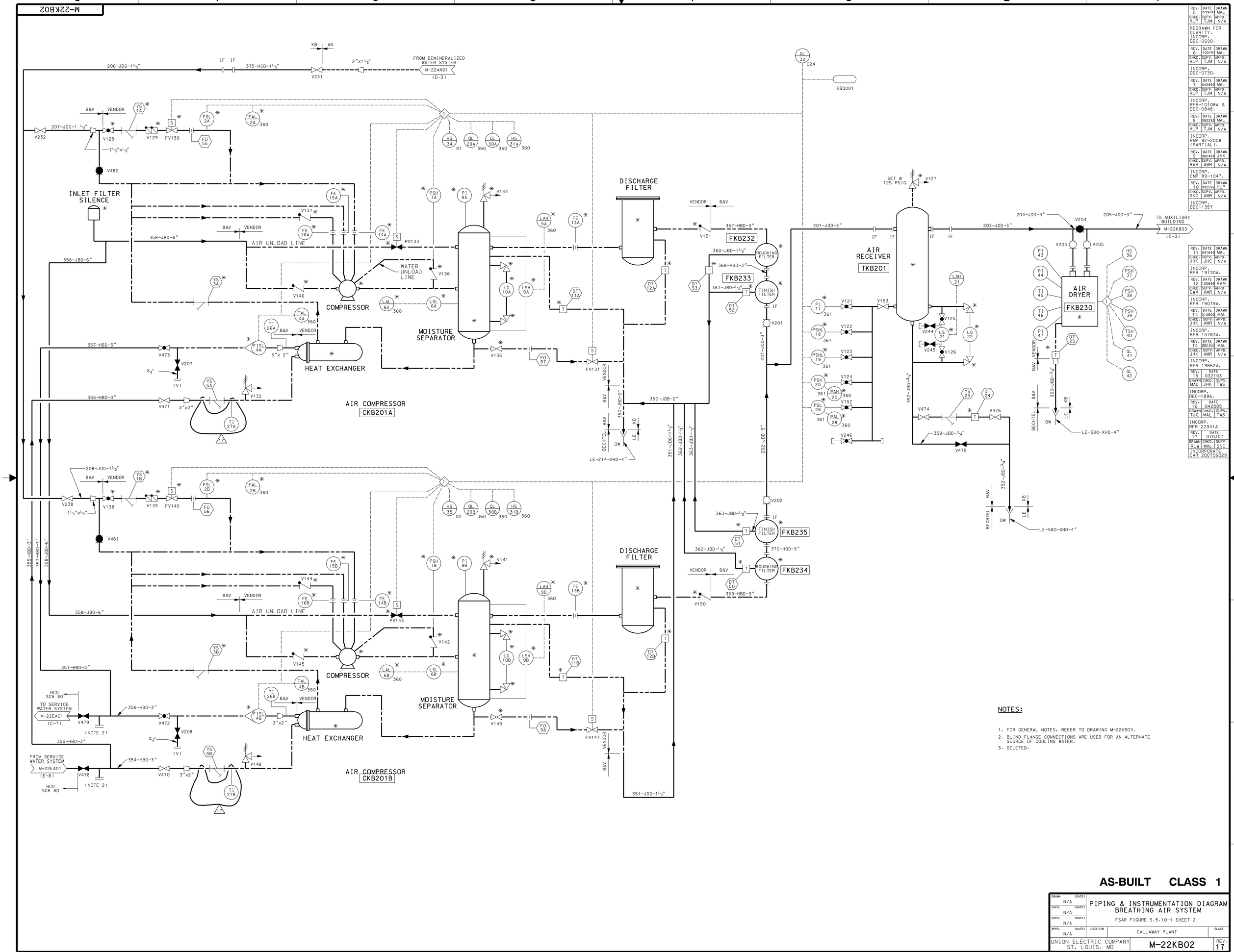
JDD HCD

HCD JDD

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM BREATHING AIR SYSTEM 5		
CHKD. (DATE) N/A	FSAR FIGURE 9.5.10-1 SHEET 1		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KB01(Q)		REV. 5

M-22KB02



REV. 5 | DATE 7/24/91 | DRAWN MAL | CHKD. HLP | SUPV. TJM | APPD. N/A
REDRAWN FOR CLARITY. INCORP. DEC-0690.
REV. 6 | DATE 100791 | DRAWN MAL | CHKD. HLP | SUPV. TJM | APPD. N/A
INCORP. DEC-0730.
REV. 7 | DATE 042992 | DRAWN MAL | CHKD. HLP | SUPV. TJM | APPD. N/A
INCORP. RFR-10108A & DEC-0848.
REV. 8 | DATE 092293 | DRAWN MAL | CHKD. HLP | SUPV. TJM | APPD. N/A
INCORP. RMP 92-2008 (PARTIAL).
REV. 9 | DATE 082494 | DRAWN JHK | CHKD. RAM | SUPV. AMR | APPD. N/A
INCORP. CMP 89-1047.
REV. 10 | DATE 092596 | DRAWN HLP | CHKD. SKC | SUPV. AMR | APPD. N/A
INCORP. DEC-1357
REV. 11 | DATE 041699 | DRAWN MAL | CHKD. JHK | SUPV. JHC | APPD. N/A
INCORP. RFR 19730A.
REV. 12 | DATE 020699 | DRAWN RAM | CHKD. EWM | SUPV. AMR | APPD. N/A
INCORP. RFR 19079A.
REV. 13 | DATE 010500 | DRAWN MAL | CHKD. JHK | SUPV. AMR | APPD. N/A
INCORP. RFR 15783A.
REV. 14 | DATE 082302 | DRAWN MAL | CHKD. JHK | SUPV. AMR | APPD. N/A
INCORP. RFR 19862A.
REV. 15 | DATE 032103 | DRAWN MAL | CHKD. JHK | SUPV. TWS
INCORP. DEC-1886.
REV. 16 | DATE 042005 | DRAWN TJC | CHKD. MAL | SUPV. TWS
INCORP. RFR 22941A
REV. 17 | DATE 070307 | DRAWN RLW | CHKD. MAL | SUPV. SKC
INCORPORATE CAR 200706029

NOTES:

1. FOR GENERAL NOTES, REFER TO DRAWING M-22KB03.
2. BLIND FLANGE CONNECTIONS ARE USED FOR AN ALTERNATE SOURCE OF COOLING WATER.
3. DELETED.

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING & INSTRUMENTATION DIAGRAM BREATHING AIR SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 9.5.10-1 SHEET 2		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT	CLASS	
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KB02	REV. 17	

M-22KB03

FROM TURBINE BLDG. M-22KB02 (G-1)

205-JDD-3"

206-JDD-3" — TO REACTOR BLDG. M-22KB01(Q) (A-6)

3"x2" — V744 — 1" (D)

205-JDD-3"

213-JDD-1½" — 3"x1½" — 1½"x1" — V213 — V313 — 1" (D)
HOSE STATION NO. 13
VOLUME CONTROL TANK VALVE COMPARTMENT AND SEAL WATER HX ROOM & VALVE COMPARTMENT
(EL. 2000'-0")

214-JDD-1½" — 3"x1½" — 1½"x1" — V214 — V314 — 1" (D)
HOSE STATION NO. 14
RHR HX ROOMS AND AUX. BLDG. SAMPLING ROOMS
(EL. 2000'-0")

3"x2½" — 215-JDD-2½" — 2½"x1½" — 1½"x1" — V215 — V315 — 1" (D)
HOSE STATION NO. 15
AUX. BLDG. FILTER & DEMIN. VALVE COMPARTMENTS
(EL. 2000'-0")

2½"x2"

205-JDD-3" — 217-JDD-2"

216-JDD-1½" — 2"x1½" — 1½"x1" — V216 — V316 — 1" (D)
HOSE STATION NO. 16
HOT MACHINE SHOP
(EL. 2000'-0")

2"x1½"

217-JDD-1½" — 1½"x1" — V217
HOSE STATION NO. 17
AUX. BLDG. HVAC FILTER/ABSORBER UNITS
(EL. 2047'-6")

210-JDD-1½" — 3"x2" — 2"x1½" — 1½"x1" — V210 — V310 — 1" (D)
HOSE STATION NO. 10
CENT. CHARGING P.P. SAFETY INJECT. P.P., AND POS. DISPL. P.P. ROOMS
(EL. 1974'-0")

2½"x 3"

3"x2"

211-JDD-2"

211-JDD-1½" — 2"x1½" — 1½"x1" — V211 — V311 — 1" (D)
HOSE STATION NO. 11
CONTAINMENT SPRAY PP., RHR PP. AND CVCS HX ROOMS
(EL. 1974'-0")

211-JDD-2"

2"x1½"

205-JDD-2½"

212-JDD-1½" — 1½"x1" — V212 — V312 — 1" (D)
HOSE STATION NO. 12
LETDOWN HX ROOM AND VALVE COMPARTMENT
(EL. 1974'-0")

373-JDD-1½"

373-JDD-1½" — 1½"x1" — V227 — V228 — 1" (D)
HOSE STATION NO. 27
FUEL BLDG. CASK WASHDOWN PIT
(EL. 2026'-0")

374-JDD-1½"

374-JDD-1½" — 1½"x1" — V229 — V230 — 1" (D)
HOSE STATION NO. 28
FUEL BLDG. TRANSFER CANAL
(EL. 2047'-6")

AUXILIARY BUILDING, FUEL BUILDING AND HOT MACHINE SHOP

RADWASTE BUILDING TUNNEL

2½"x1" — V745 — 1" (D)

205-JDD-2½"

224-JDD-1½" — 2½"x1½" — 1½"x1" — V224 — V324 — 1" (D)
HOSE STATION NO. 24
FILTER AND DEMIN. VALVE ROOMS
(EL. 2031'-6")

225-JDD-1½" — 2½"x1½" — 1½"x1" — V225 — V325 — 1" (D)
HOSE STATION NO. 25
FILTER AND DEMIN. COMPARTMENTS
(EL. 2040'-6")

223-JDD-1½" — 2½"x1½" — 1½"x1" — V223 — V323 — 1" (D)
HOSE STATION NO. 23
FILTER AND DEMIN. COMPARTMENTS AND VALVE ROOMS
(EL. 2031'-6")

226-JDD-1½" — 2½"x1½" — 1½"x1" — V226 — V326 — 1" (D)
HOSE STATION NO. 26
HVAC FILTER/ABSORBER UNITS
(EL. 2022'-0")

220-JDD-1½" — 2½"x1½" — 1½"x1" — V220 — V320 — 1" (D)
HOSE STATION NO. 20
RECYCLE, WASTE & SLWS EVAP. ROOMS AND VALVE GALL., CONCENTRATE PUMP ROOMS, AND INSTRUMENT RACK AREAS
(EL. 2000'-0")

205-JDD-2½"

221-JDD-1½" — 1½"x1" — V221 — V321 — 1" (D)
HOSE STATION NO. 21
SLWS PUMP ROOM, SAMPLE LAB. SPENT RESIN AND EVAP. BOTTOM TANKS AND PUMP ROOMS
(EL. 2000'-0")

2"x1½"

222-JDD-2" — 2½"x2" — 2"x1½" — 1½"x1" — V222 — V322 — 1" (D)
HOSE STATION NO. 22
SRW DECANTING, DRUMMING AND FILTER DROP STATIONS
(EL. 2000'-0")

218-JDD-1½" — 1½"x1" — V218 — V318 — 1" (D)
HOSE STATION NO. 18
RECYCLE HOLD-UP TANK & FEED PUMP ROOMS
WASTE GAS COMP. & H_2 RECOMBINER ROOMS,
GAS DECAY TANK & PUMP ROOMS
(EL. 1976'-0")

2"x1½"

219-JDD-2" — 2½"x2" — 2"x1½" — 1½"x1" — V219 — V319 — 1" (D)
HOSE STATION NO. 19
GAS DECAY TANK VALVE ROOMS, WASTE EVAP. BOTTOM TANK & PUMP ROOMS, CHEM. DRAIN TANK & PUMP ROOMS, WASTE EVAP. FEED PUMP ROOM, FLOOR DRAIN TANK & PUMP ROOM
(EL. 1976'-0")

205-JDD-2½"

RADWASTE BUILDING

REV.	DATE	DRAWN
4	7/29/91	SBR
CHKD. HLP	SUPV. TJM	APPD. N/A

REDRAWN FOR CLARITY INCORP. DEC-0682

REV.	DATE	DRAWN
5	021192	MAL
CHKD. HLP	SUPV. TJM	APPD. N/A

INCORP RMP 91-2004.

REV.	DATE	DRAWN
6	042992	MAL
CHKD. HLP	SUPV. TJM	APPD. N/A

INCORP DEC-0848.

REV.	DATE	DRAWN
7	082192	MAL
CHKD. HLP	SUPV. TJM	APPD. N/A

INCORP. RFR-10264.

REV.	DATE
8	042005
DRAWN TJC	CHKD. MAL	SUPV. TWS

INCORP. RFR 22941A

CLASS 1 AS-BUILT

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM BREATHING AIR SYSTEM 8		
CHKD. (DATE) N/A	FSAR FIGURE 9.5.10-1 SHEET 3		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22KB03		REV. 8

Callaway

Final Safety Analysis Report

Revision OL-22

Chapter 9 drawing

FSAR Figures 9.1A-2

is withheld Per

Regulatory Issue Summary 2015-17