

P Pressure psia
 T Temperature °F
 H Enthalpy Btu/lb
 M Massflow lb/h
 TS Saturation temperature °F

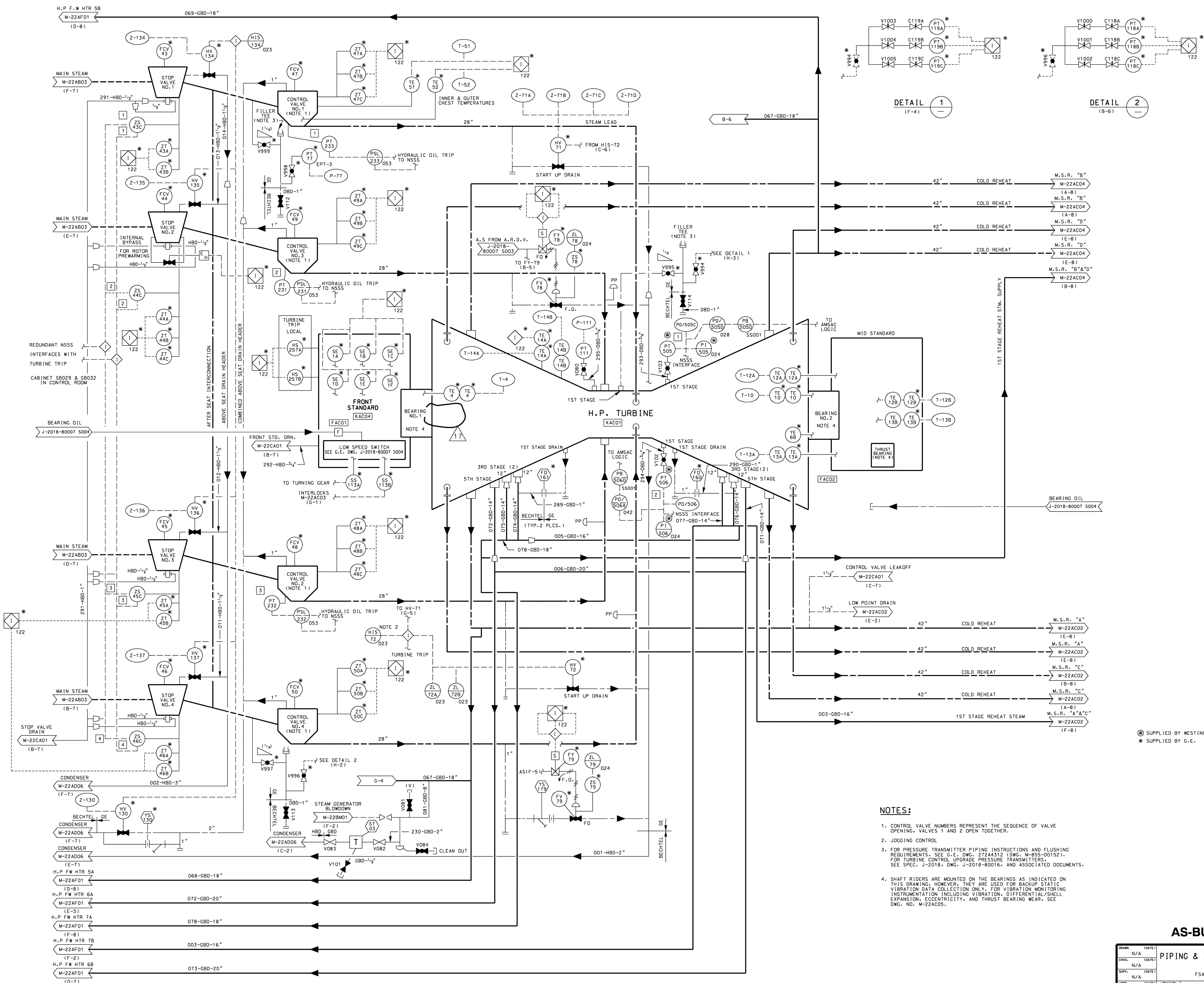
Generator_Output 1284130 KW
 Reactor_Thermal_Output 3579.0 MJ/s
 Heat_Rate 9510.0 Btu/kWh

NOTES:
 1. DATA TAKEN FROM ALSTOM HEAT BALANCE
 75V1741-110a DATED JULY 28, 2004. REFER
 TO CALLAWAY DRAWING M-2000-00001.

REV. OL-15
 5/06

CALLAWAY PLANT
 FIGURE 10.1-2
 TURBINE CYCLE HEAT BALANCE
 100 PERCENT
 OF MANUFACTURER'S GUARANTEED
 RATING

Figure 10.1-3 Deleted



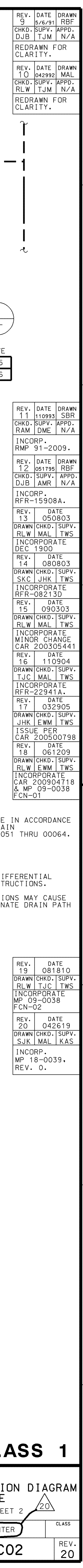
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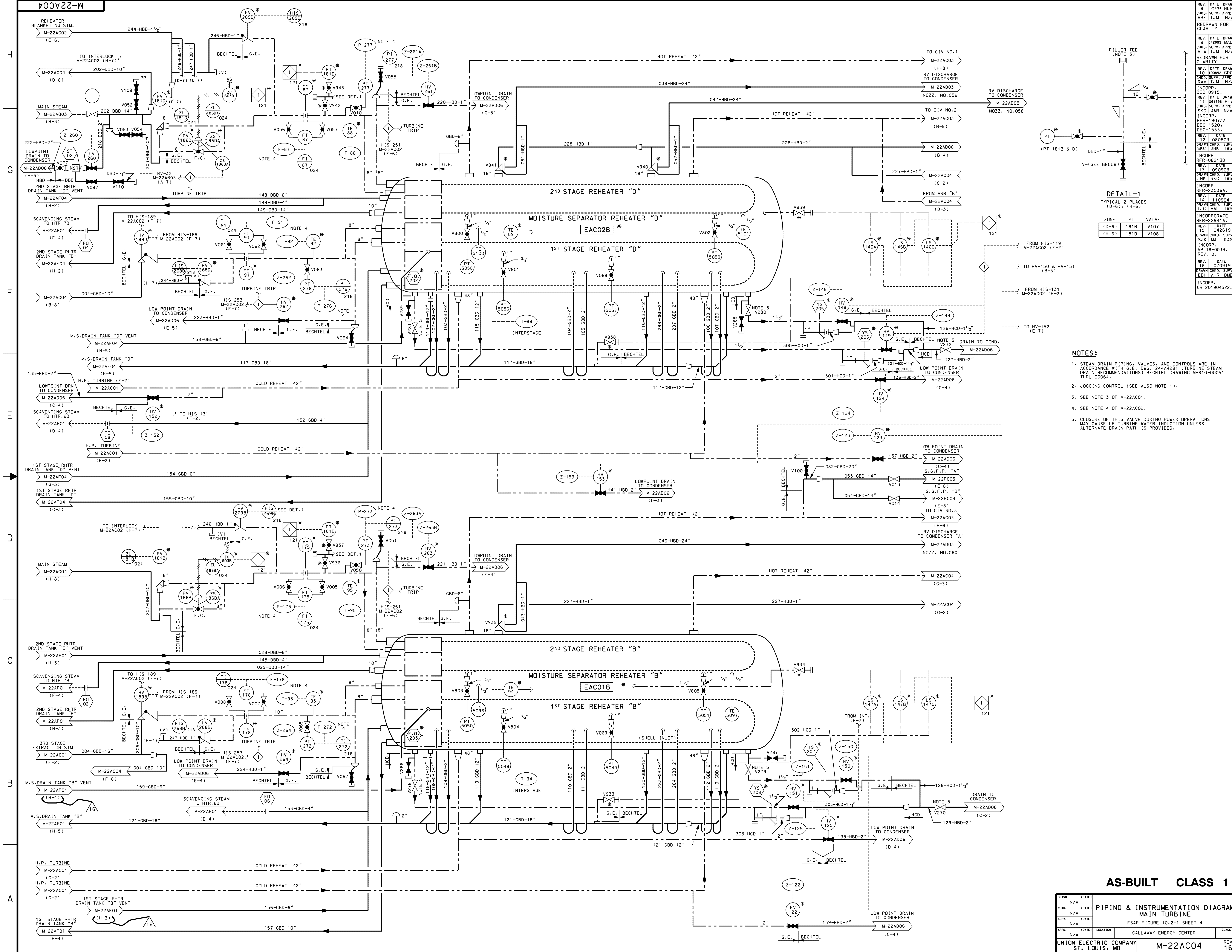
1. CONTROL VALVE NUMBERS REPRESENT THE SEQUENCE OF VALVE OPENING, VALVES 1 AND 2 OPEN TOGETHER.
2. JOGGING CONTROL
3. FOR PRESSURE TRANSMITTER PIPING INSTRUCTIONS AND FLUSHING INSTRUCTIONS, SEE: G.E. DWG. 272A4312 (DWC. M-85-0001) FOR TURBINE CONTROL UPGRADE PRESSURE TRANSMITTERS. SEE SPEC. J-2018, Dwg. J-2018-80016, AND ASSOCIATED DOCUMENTS.
4. SHAFT DRIVERS ARE MOUNTED ON THE BEARINGS AS INDICATED ON THIS DRAWING, HOWEVER, THEY ARE USED FOR BACKUP STATIC VIBRATION DATA. VIBRATION MONITORING INSTRUMENTATION INCLUDING VIBRATION, DIFFERENTIAL/SHELL ELECTRICITY, AND THRUST BEARING WEAR, SEE DWG. NO. M-22A005.

⊗ SUPPLIED BY WESTINGHOUSE
* SUPPLIED BY G.E.

AS-BUILT CLASS 1

DRAWN (DATE)		PIPING & INSTRUMENTATION DIAGRAM MAIN TURBINE FSAR FIGURE 10.2-1 SHEET 1		
N/A				
CHD. (DATE)				
N/A				
SUPV. (DATE)				
N/A				
APPRO. (DATE)		LOCATION	CALLAWAY ENERGY CENTER	CLASS
N/A				
UNION ELECTRIC COMPANY ST. LOUIS, MO		M-22AC01		REV.





DETAIL-1
TYPICAL 2 PLACES
(D-6), (H-6)

ZONE	PT	VALVE
(D-6)	181B	V107
(H-6)	181D	V108

- NOTES:
1. STEAM DRAIN PIPING, VALVES, AND CONTROLS ARE IN ACCORDANCE WITH G.E. DWG. 24444291 (TURBINE STEAM DRAIN RECOMMENDATIONS) BECHTEL DRAWING M-810-00051 THRU 00064.
 2. JOGGING CONTROL (SEE ALSO NOTE 1).
 3. SEE NOTE 3 OF M-22AC01.
 4. SEE NOTE 4 OF M-22AC02.
 5. CLOSURE OF THIS VALVE DURING POWER OPERATIONS MAY CAUSE LP TURBINE WATER INDUCTION UNLESS ALTERNATE DRAIN PATH IS PROVIDED.

AS-BUILT CLASS 1

PIPING & INSTRUMENTATION DIAGRAM
MAIN TURBINE

FSAR FIGURE 10.2-1 SHEET 4

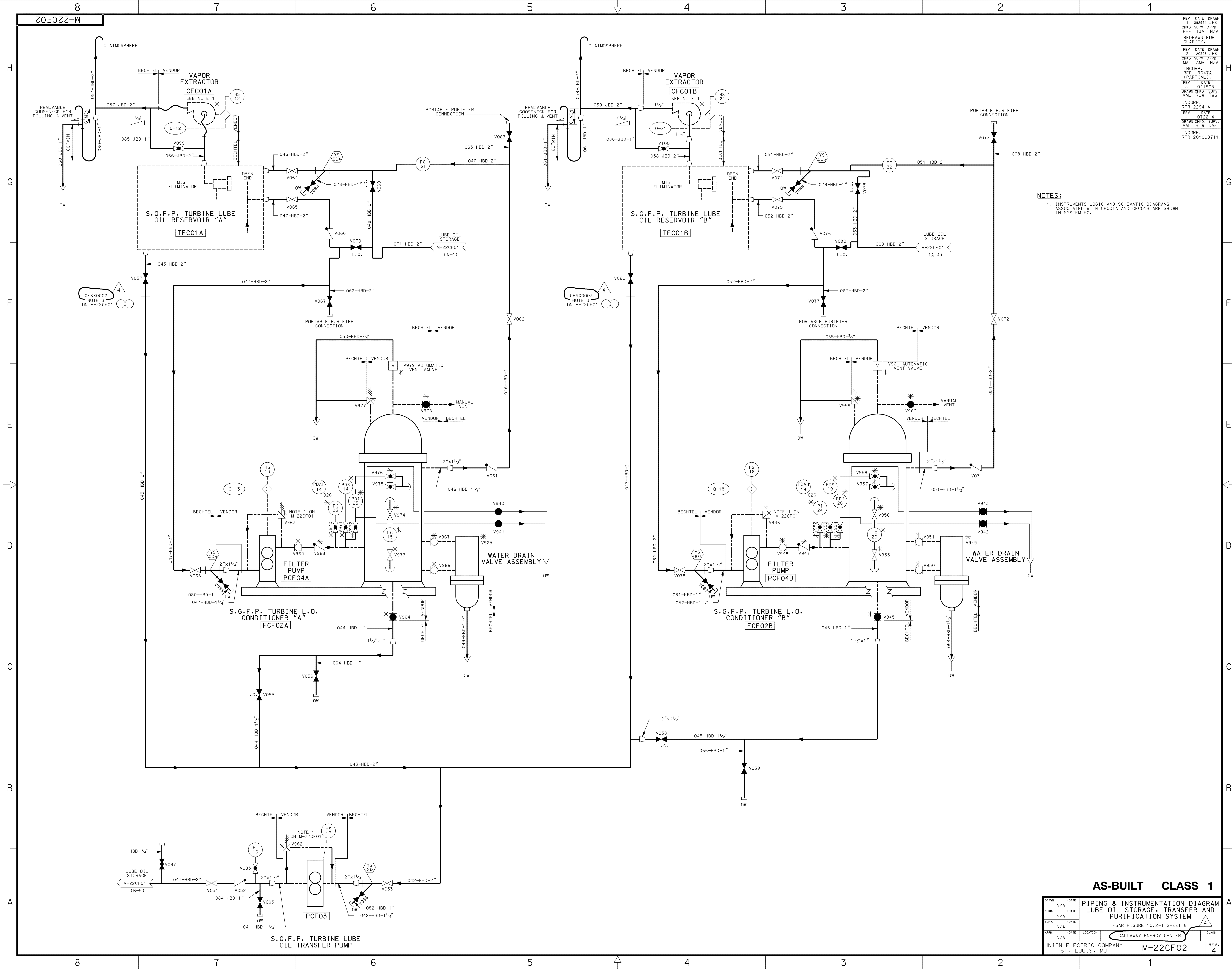
CALLAWAY ENERGY CENTER

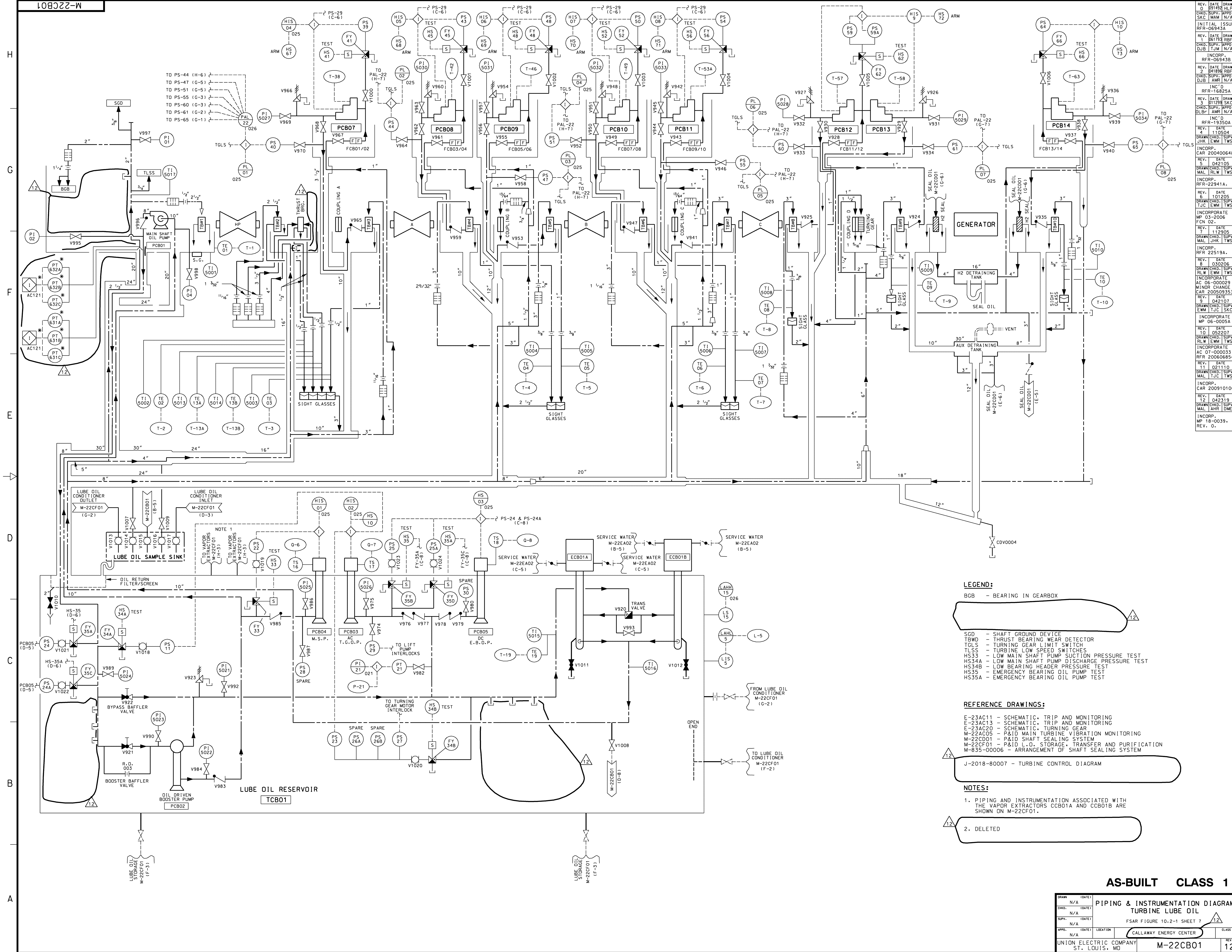
UNION ELECTRIC COMPANY
ST. LOUIS, MO

M-22AC04

REV. 16

ISSAN	(DATE)	PIPING AND INSTRUMENTATION DIAGRAM LUBE OIL STORAGE, TRANSFER AND PURIFICATION SYSTEM FSAR FIGURE 10.2-1 SHEET 5		
N/A	(DATE)			
CHKD.	(DATE)			
N/A	(DATE)			
SUPV.	(DATE)	CALLAWAY ENERGY CENTER		
N/A	(DATE)			
APPRO.	(DATE)	LOCATION		CLASS
N/A	(DATE)			
UNION ELECTRIC COMPANY ST. LOUIS, MO			M-22CF01	R 1





LEGEND:

BGB - BEARING IN GEARBOX

SGD - SHAFT GROUND DEVICE
TBWD - THRUST BEARING WEAR DETECTOR
TGLS - TURNING GEAR LIMIT SWITCH
TLSS - TURBINE LOW SPEED SWITCHES
HS33A - LOW MAIN SHAFT PUMP SUCTION PRESSURE TEST
HS34A - LOW MAIN SHAFT PUMP DISCHARGE PRESSURE TEST
HS34B - LOW BEARING HEADER PRESSURE TEST
HS35 - EMERGENCY BEARING OIL PUMP TEST
HS35A - EMERGENCY BEARING OIL PUMP TEST

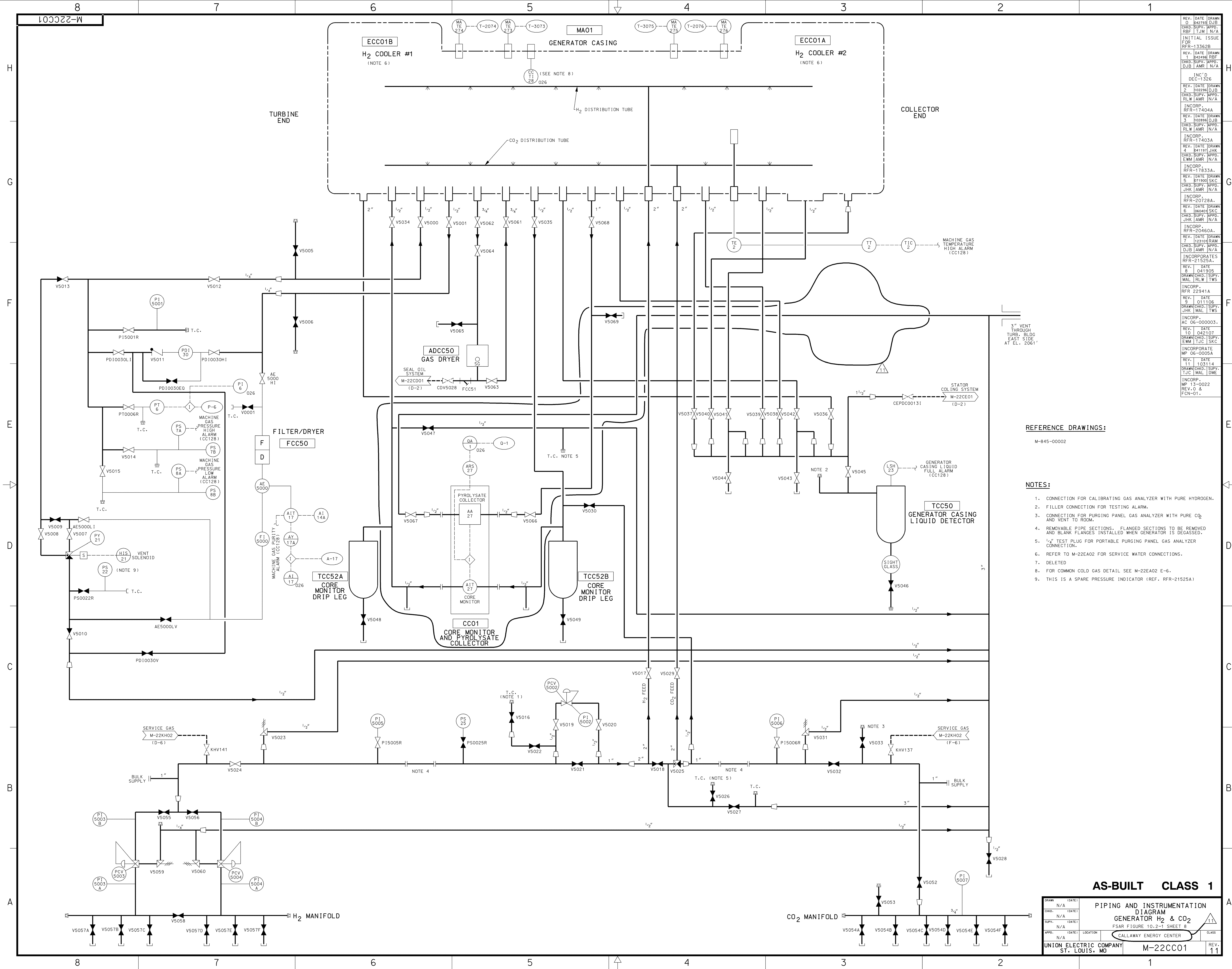
REFERENCE DRAWINGS:

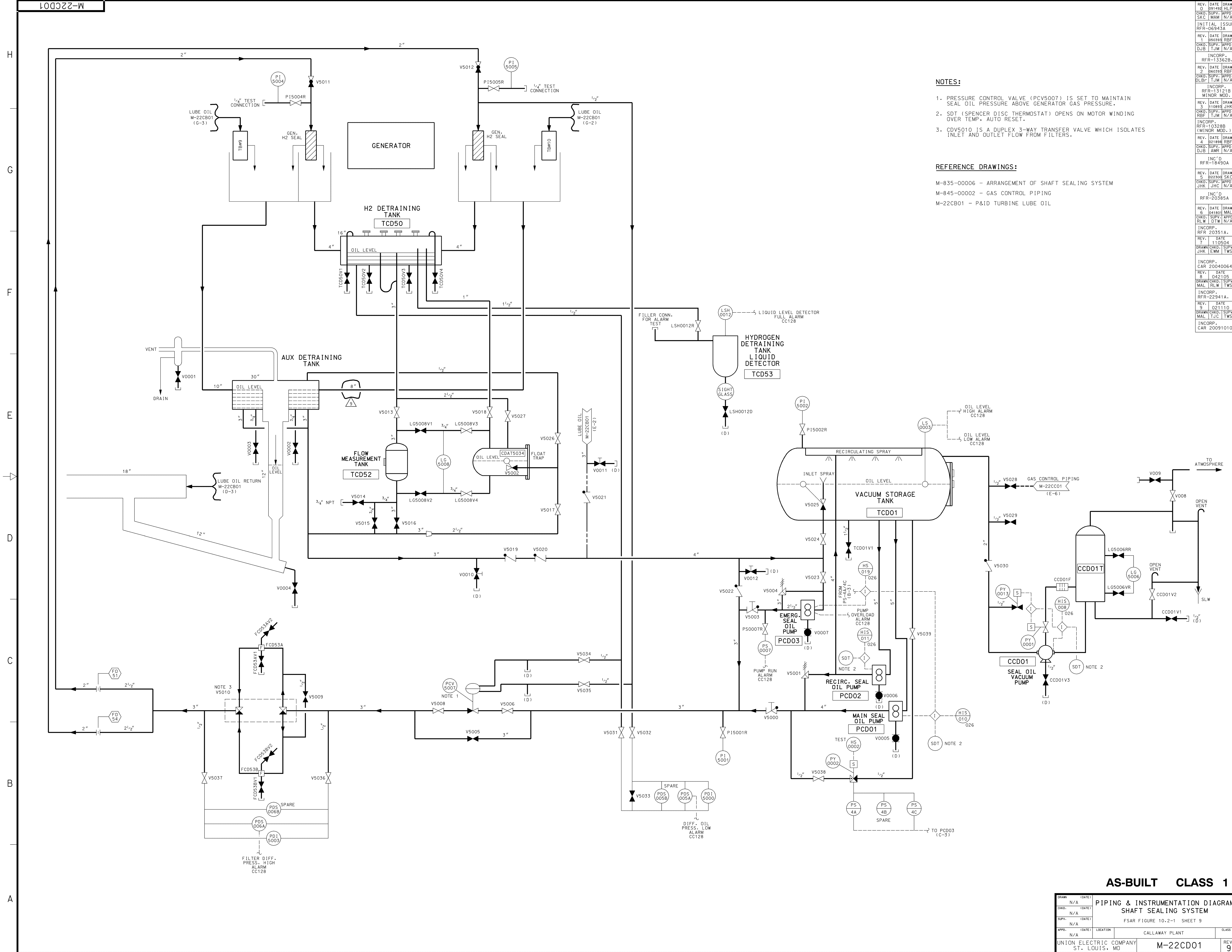
E-23AC11 - SCHEMATIC, TRIP AND MONITORING
E-23AC13 - SCHEMATIC, TRIP AND MONITORING
E-23AC20 - SCHEMATIC, TURNING GEAR
M-22AC05 - P&ID MAIN TURBINE VIBRATION MONITORING
M-22CD01 - P&ID SHAFT SEALING SYSTEM
M-22CF01 - P&ID L.O. STORAGE, TRANSFER AND PURIFICATION
M-635-00006 - ARRANGEMENT OF SHAFT SEALING SYSTEM

NOTES:

1. PIPING AND INSTRUMENTATION ASSOCIATED WITH THE VAPOR EXTRACTORS CCB01A AND CCB01B ARE SHOWN ON M-22CF01.

2. DELETED





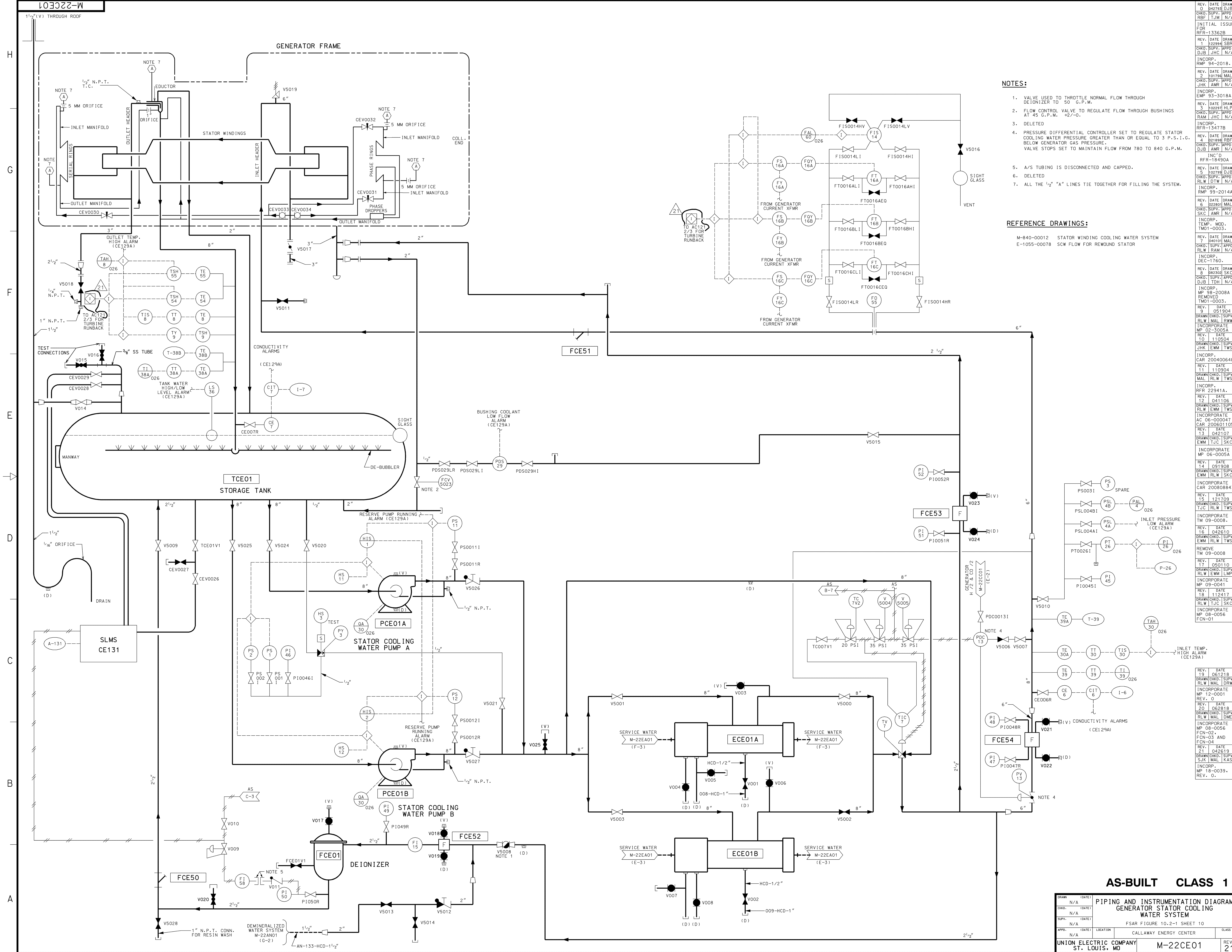
- NOTES:**
1. PRESSURE CONTROL VALVE (PCV5007) IS SET TO MAINTAIN SEAL OIL PRESSURE ABOVE GENERATOR GAS PRESSURE.
 2. SDT (SPENCER DISC THERMOSTAT) OPENS ON MOTOR WINDING OVER TEMP, AUTO RESET.
 3. CDV5010 IS A DUPLEX 3-WAY TRANSFER VALVE WHICH ISOLATES INLET AND OUTLET FLOW FROM FILTERS.

REFERENCE DRAWINGS:

M-835-00006 - ARRANGEMENT OF SHAFT SEALING SYSTEM
M-845-00002 - GAS CONTROL PIPING
M-22CB01 - P&ID TURBINE LUBE OIL

REV.	DATE	DRAWN	CHKD.	SUPV.	APPR.	SKC	MAM	N/A
1	091492	HLP						
2	060393	RBF						
3	050393	RBF						
4	021898	RBF						
5	021110	RBF						
6	042105	RBF						
7	021110	RBF						
8	021110	RBF						
9	021110	RBF						
10	021110	RBF						
11	021110	RBF						
12	021110	RBF						
13	021110	RBF						
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99	021110	RBF						
100	021110	RBF						

AS-BUILT CLASS 1									
DRAWING: PIPING & INSTRUMENTATION DIAGRAM									
SHEET: 9									
FSAR FIGURE 10.2-1									
CALLAWAY PLANT									
UNION ELECTRIC COMPANY									
ST. LOUIS, MO									
M-22CD01									
REV. 9									



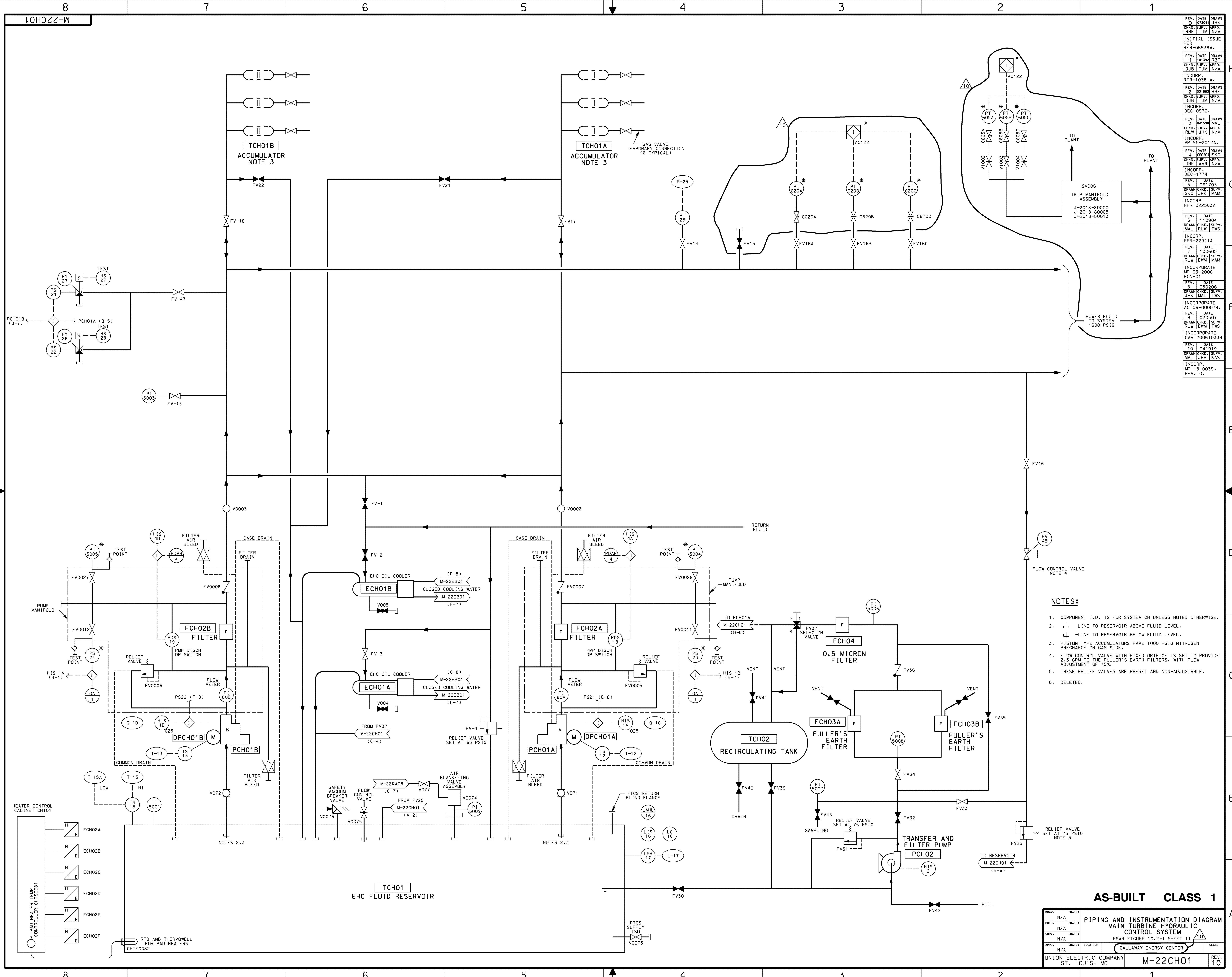
- NOTES:**
1. VALVE USED TO THROTTLE NORMAL FLOW THROUGH DEIONIZER TO 50 G.P.M.
 2. FLOW CONTROL VALVE TO REGULATE FLOW THROUGH BUSHINGS AT 45 G.P.M. $\pm 2/0$.
 3. DELETED
 4. PRESSURE DIFFERENTIAL CONTROLLER SET TO REGULATE STATOR COOLING WATER PRESSURE GREATER THAN OR EQUAL TO 3 P.S.I.G. BELOW GENERATOR GAS PRESSURE. VALVE STOPS SET TO MAINTAIN FLOW FROM 780 TO 840 G.P.M.
 5. A/S TUBING IS DISCONNECTED AND CAPPED.
 6. DELETED
 7. ALL THE 1/2" "A" LINES TIE TOGETHER FOR FILLING THE SYSTEM.

REFERENCE DRAWINGS:

M-840-00012 STATOR WINDING COOLING WATER SYSTEM
E-1055-00078 SCW FLOW FOR REWOUND STATOR

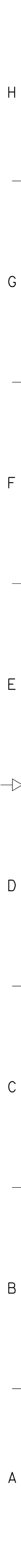
AS-BUILT CLASS 1

DATE	10/22/2010	REV.	1
CHKD.	N/A	DATE	10/22/2010
SUPV.	N/A	DATE	10/22/2010
APPD.	N/A	LOCATION	CALLAWAY ENERGY CENTER
UNION ELECTRIC COMPANY	ST. LOUIS, MO	M-22CE01	REV. 21



- NOTES:**
1. COMPONENT I.D. IS FOR SYSTEM CH UNLESS NOTED OTHERWISE.
 2. -LINE TO RESERVOIR ABOVE FLUID LEVEL.
 -LINE TO RESERVOIR BELOW FLUID LEVEL.
 3. PISTON TYPE ACCUMULATORS HAVE 1000 PSIG NITROGEN PRECHARGE ON GAS SIDE.
 4. FLOW CONTROL VALVE WITH FIXED ORIFICE IS SET TO PROVIDE 2.5 GPM TO THE FULLER'S EARTH FILTERS. WITH FLOW ADJUSTMENT OF 35%.
 5. THESE RELIEF VALVES ARE PRESET AND NON-ADJUSTABLE.
 6. DELETED.

AS-BUILT CLASS 1	
DRAWN (DATE) N/A	
CHKD. (DATE) N/A	
SUPV. (DATE) N/A	
APPD. (DATE) N/A	
LOCATION	
UNION ELECTRIC COMPANY ST. LOUIS, MO	
PUMPING AND INSTRUMENTATION DIAGRAM MAIN TURBINE HYDRAULIC CONTROL SYSTEM FSAR FIGURE 10.2-1 SHEET 11	
CALLAWAY ENERGY CENTER	
M-22CH01	
REV. 10	

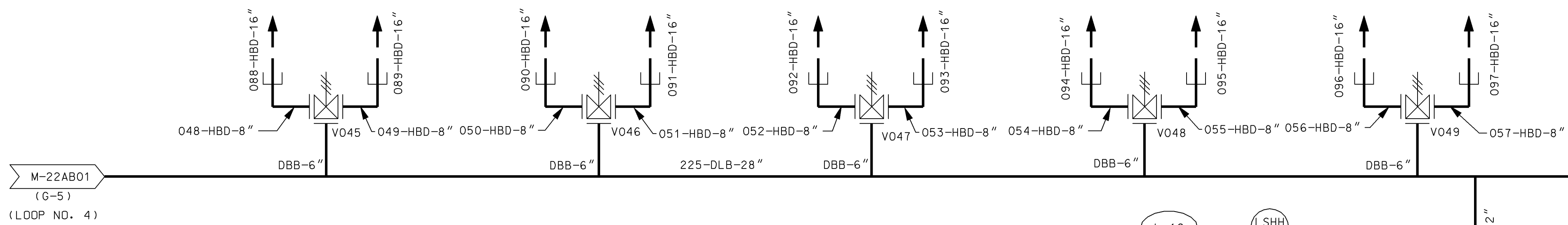


A B C

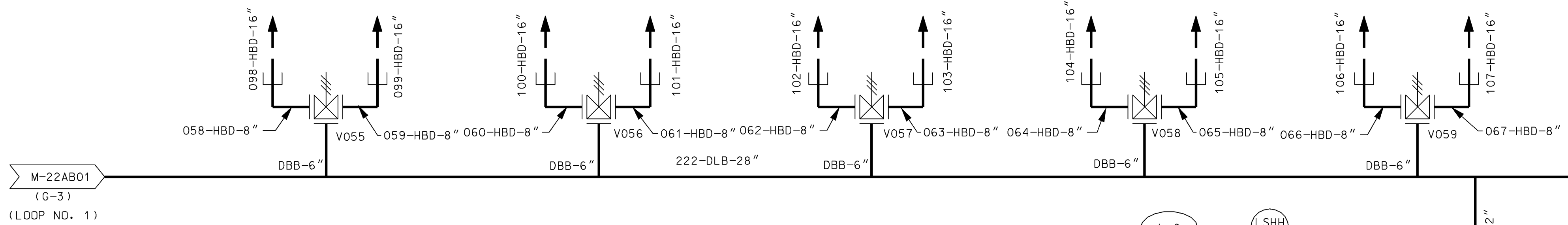
A B

A

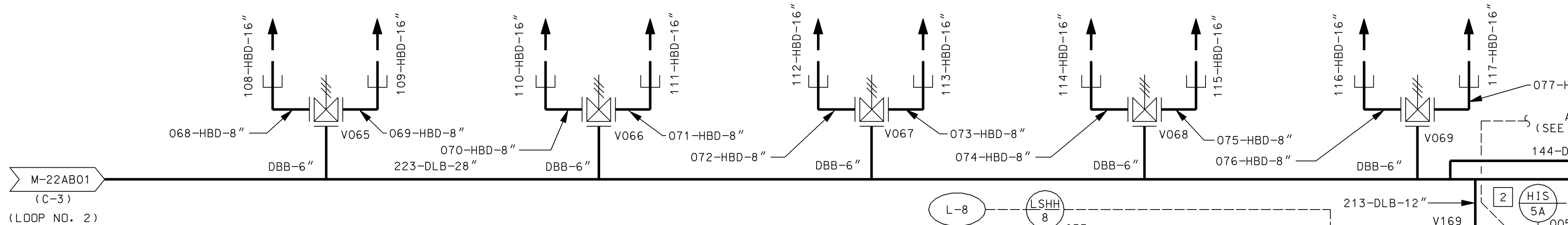
SPRING LOADED SAFETY VALVES



SPRING LOADED SAFETY VALVES



SPRING LOADED SAFETY VALVES



SPRING LOADED SAFETY VALVES

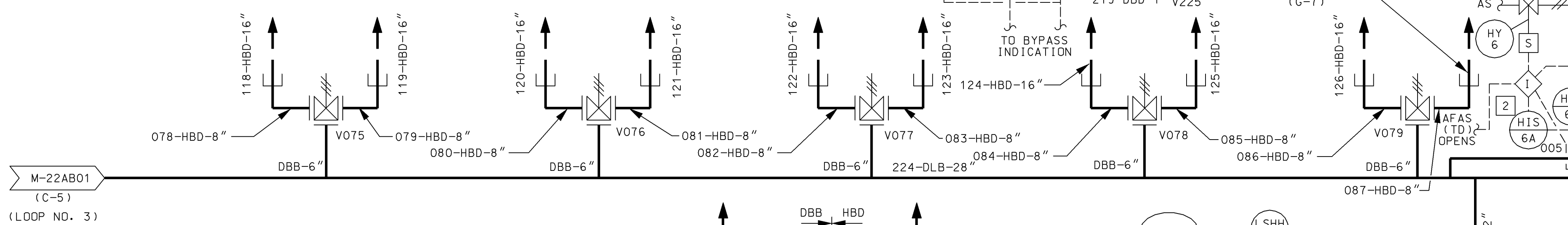
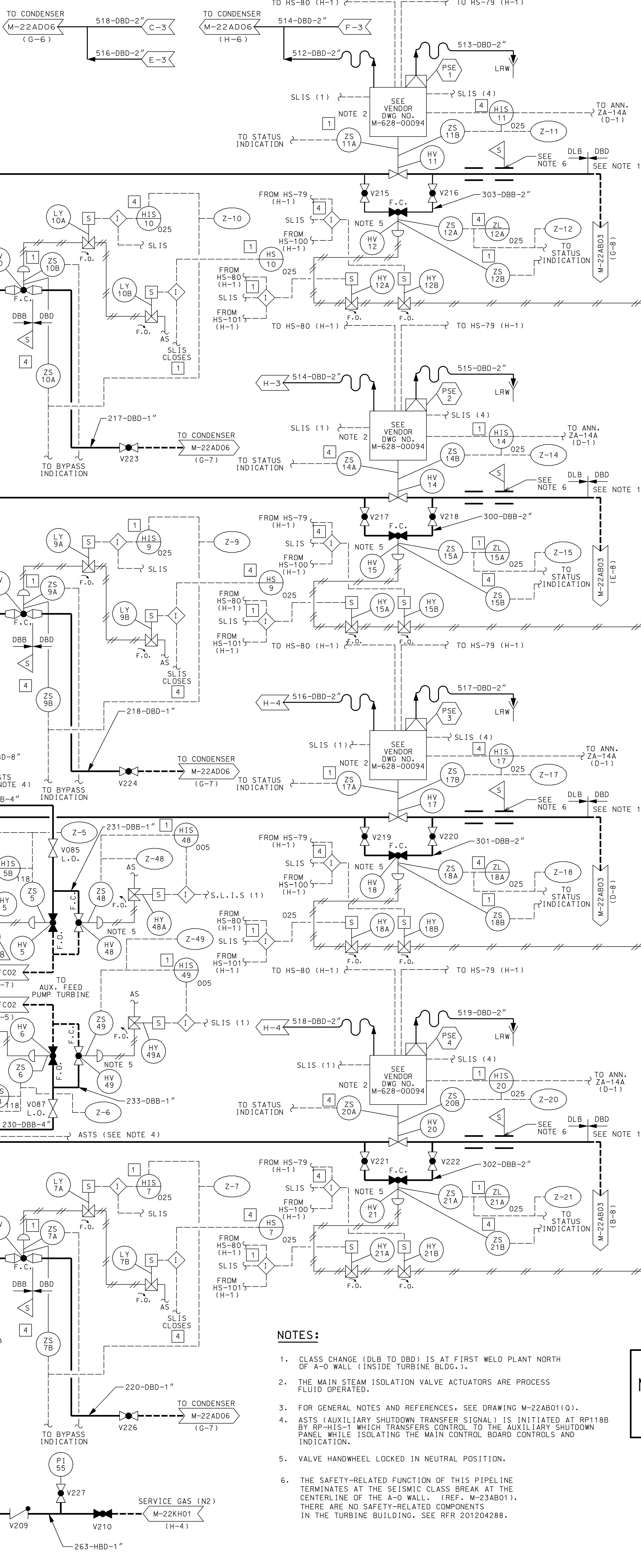


TABLE FOR LINE NUMBERS

DESCRIPTION	SAFETY VALVE NUMBERS															
	V045	V046	V047	V048	V049	V055	V056	V057	V058	V059	V065	V067	V068	V069	V075	V076
"A"	483	488	493	498	503	456	461	466	471	476	429	434	439	444	449	402
"B"	484	489	494	499	504	457	462	467	472	477	430	435	440	445	450	403
"C"	485	490	495	500	505	458	463	468	473	478	431	436	441	446	451	404
"D"	486	491	496	501	506	459	464	469	474	479	432	437	442	447	452	405
"E"	487	492	497	502	507	460	465	470	475	480	433	438	443	448	453	406
"F"	481	481	481	481	481	454	454	454	454	454	427	427	427	427	427	400
"G"	323	323	323	323	323	310	310	310	310	310	321	321	321	321	312	312
"H"	313	313	313	313	313	322	322	322	322	322	311	311	311	311	320	320
"I"	482	482	482	482	482	455	455	455	455	455	428	428	428	428	401	401

TYPICAL FOR EACH SAFETY VALVE ARRANGEMENT

FOR NITROGEN BLANKETING OF STEAM GENERATORS



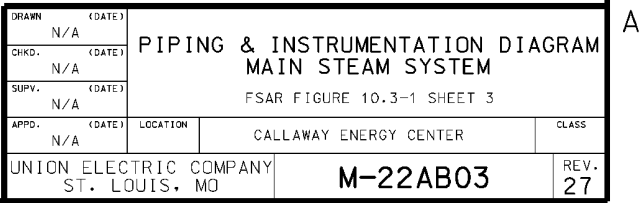
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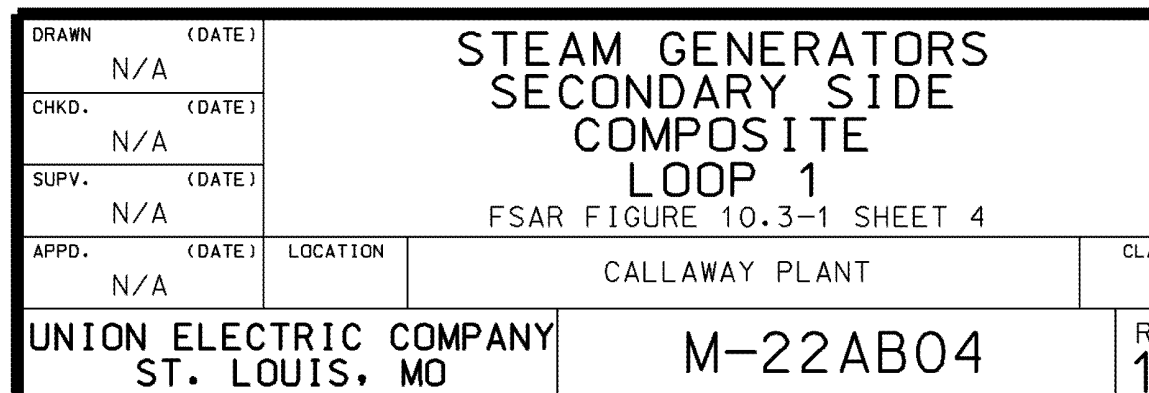
- 1. CLASS CHANGE (DLB TO DBD) IS AT FIRST WELD PLANT NORTH OF A-O WALL (INSIDE TURBINE BLDG.).
- 2. THE MAIN STEAM ISOLATION VALVE ACTUATORS ARE PROCESS FLUID OPERATED.
- 3. FOR GENERAL NOTES AND REFERENCES, SEE DRAWING M-22AB01(0).
- 4. ASTS (AUXILIARY SHUTDOWN TRANSFER SIGNAL) IS INITIATED AT RP118B BY RP-HIS-1 WHICH TRANSFERS CONTROL TO THE AUXILIARY SHUTDOWN PANEL WHILE ISOLATING THE MAIN CONTROL BOARD CONTROLS AND INDICATION.
- 5. VALVE HANDWHEEL LOCKED IN NEUTRAL POSITION.
- 6. THE SAFETY-RELATED FUNCTION OF THIS PIPELINE TERMINATES AT THE SEISMIC CLASS BREAK A AT THE CENTERLINE OF THE A-O WALL. (REF. M-23AB01). THERE ARE NO SAFETY-RELATED COMPONENTS IN THE TURBINE BUILDING. SEE RFR 201204288.

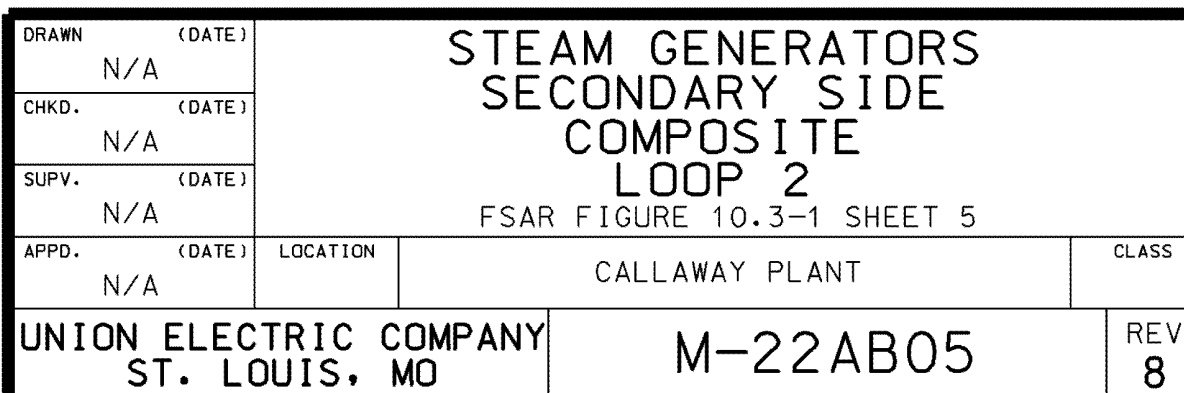
ANY REVISION TO THIS DWG. MAY REQUIRE A REVISION TO M-22AB04, M-22AB05, M-22AB06 AND/OR M-22AB07

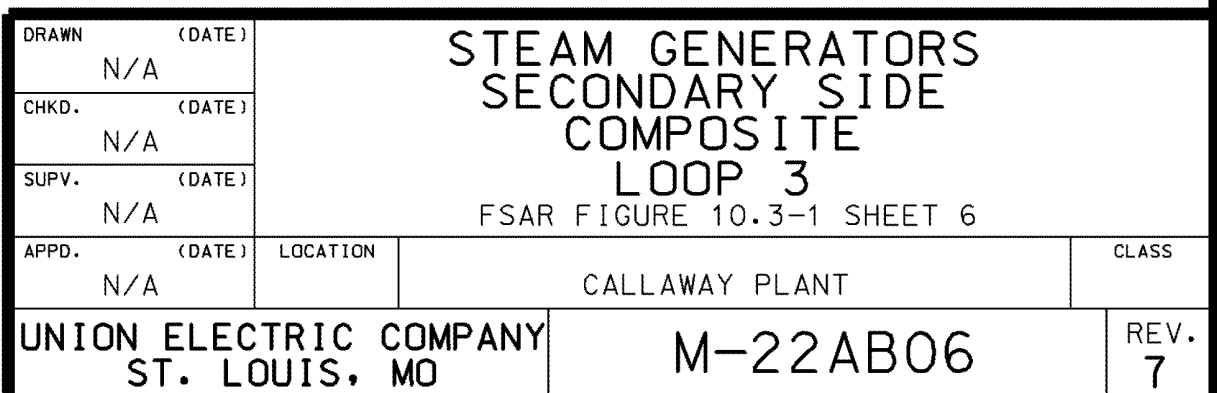
AS-BUILT CLASS 1

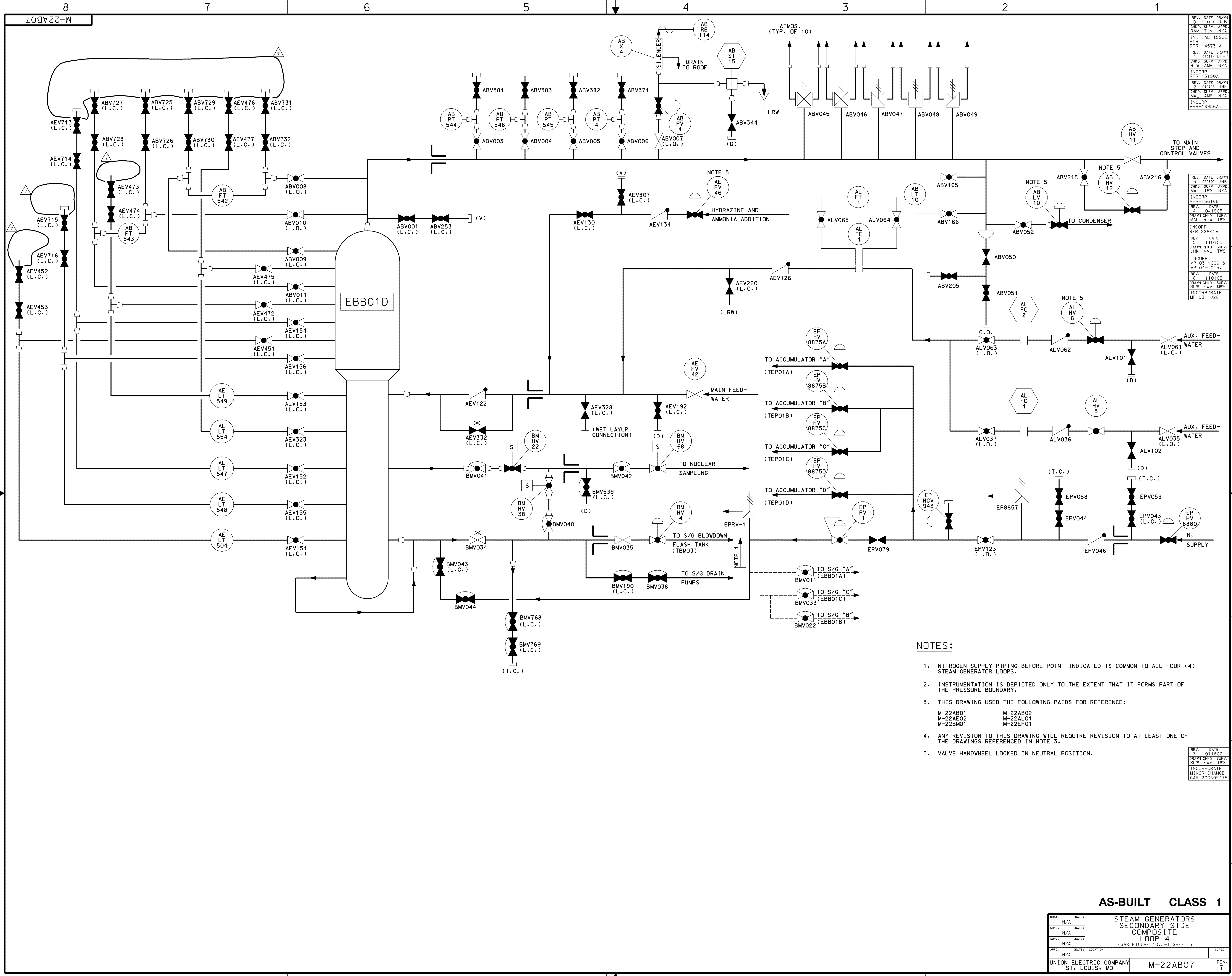
DRAWN	(DATE)	PIPING AND INSTRUMENTATION DIAGRAM MAIN STEAM SYSTEM FSAR FIGURE 10.3-1 SHEET 2			
N/A					
CHKD.	(DATE)				
N/A					
SUPV.	(DATE)				
N/A					
APPRO.	(DATE)	LOCATION			CLASS
N/A		CALLAWAY ENERGY CENTER			
UNION ELECTRIC COMPANY		M-22AB02 (Q)			REV 18
ST. LOUIS, MO					

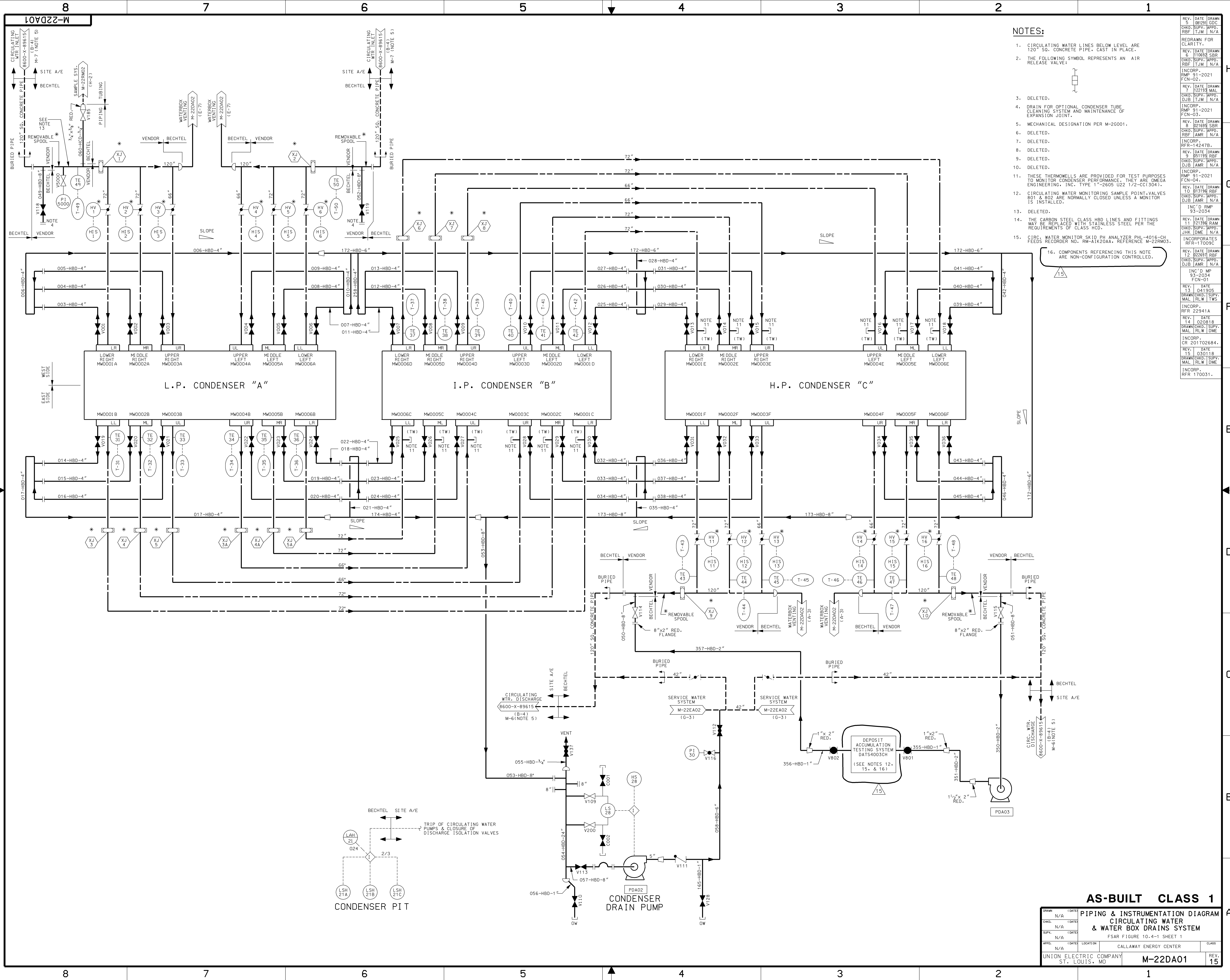




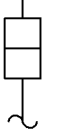








NOTES:

- CIRCULATING WATER LINES BELOW LEVEL ARE 120" SO. CONCRETE PIPE, CAST IN PLACE.
- THE FOLLOWING SYMBOL REPRESENTS AN AIR RELEASE VALVE:

- DELETED.
- DRAIN FOR OPTIONAL CONDENSER TUBE CLEANING SYSTEM AND MAINTENANCE OF EXPANSION JOINT.
- MECHANICAL DESIGNATION PER M-20001.
- DELETED.
- DELETED.
- DELETED.
- DELETED.
- DELETED.
- THESE THERMOWELLS ARE PROVIDED FOR TEST PURPOSES TO MONITOR CONDENSER PERFORMANCE. THEY ARE OMEGA ENGINEERING, INC. TYPE 1"-2605 U22 1/2-CC304.
- CIRCULATING WATER MONITORING SAMPLE POINT VALVES 801 & 802 ARE NORMALLY CLOSED UNLESS A MONITOR IS INSTALLED.
- DELETED.
- THE CARBON STEEL CLASS HBD LINES AND FITTINGS MAY BE REPLACED WITH STAINLESS STEEL PER THE REQUIREMENTS OF CLASS HCD.
- CIRC. WATER MONITOR SKID PH ANALYZER PHL-4016-CH FEEDS RECORDER NO. RM-AIK20AA, REFERENCE M-22RM03.
- COMPONENTS REFERENCING THIS NOTE ARE NON-CONFIGURATION CONTROLLED.

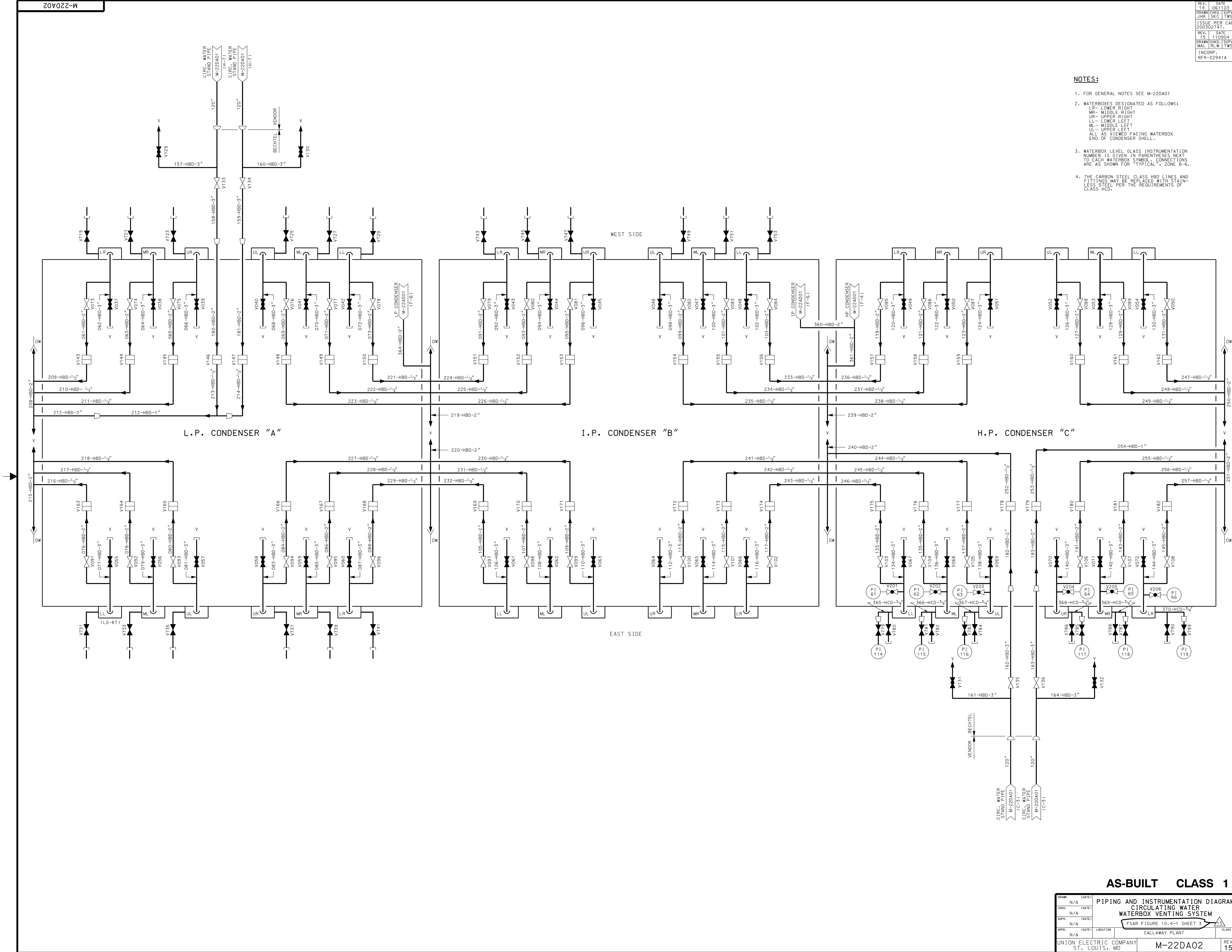
AS-BUILT CLASS 1

PIPING & INSTRUMENTATION DIAGRAM
CIRCULATING WATER
& WATER BOX DRAINS SYSTEM

FSAR FIGURE 10.4-1 SHEET 1

DRAWN	DATE	LOCATION	CLASS
N/A			
CHKD.	DATE		
N/A			
SUPV.	DATE		
N/A			
APPD.	DATE		
N/A			
UNION ELECTRIC COMPANY ST. LOUIS, MO			
M-22DA01			
REV. 15			

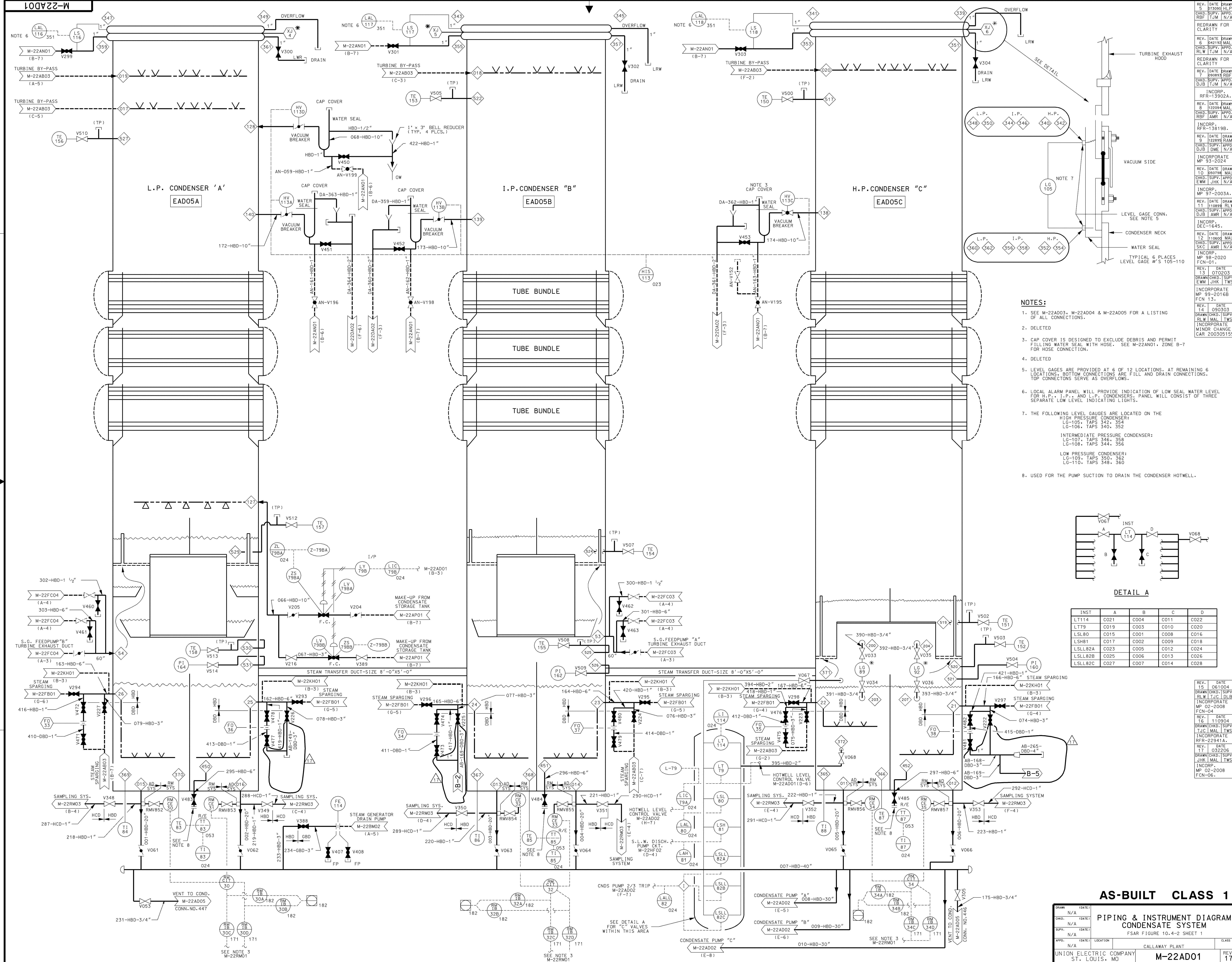
Figure 10.4-1 (Sheet 2) Deleted



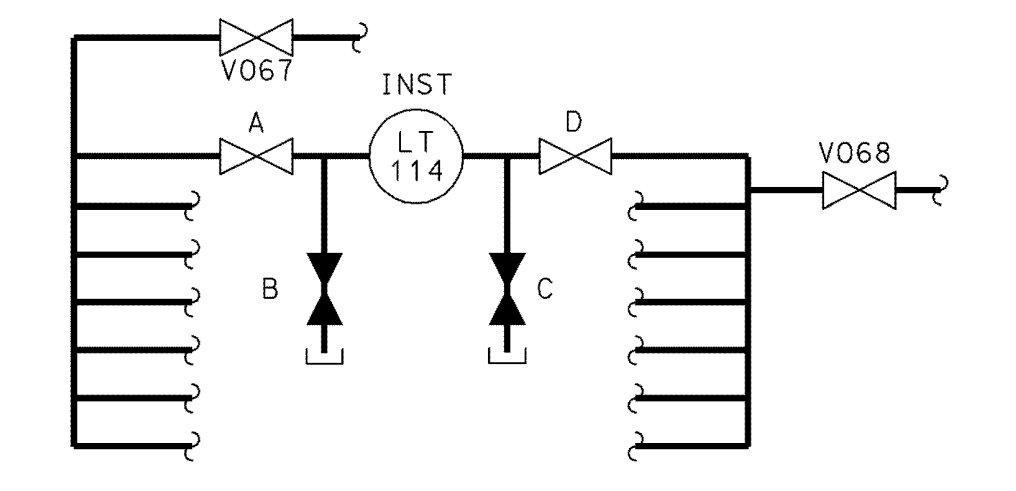
- NOTES:**
- FOR GENERAL NOTES SEE M-22DA01
 - WATERBOXES DESIGNATED AS FOLLOWS:
LR - LOWER RIGHT
MR - MIDDLE RIGHT
UR - UPPER RIGHT
LL - LOWER LEFT
ML - MIDDLE LEFT
UL - UPPER LEFT
ALL AS VIEWED FACING WATERBOX
END OF CONDENSER SHELL.
 - WATERBOX LEVEL GLASS INSTRUMENTATION
NUMBER IS GIVEN IN PARENTHESES NEXT
TO EACH WATERBOX SYMBOL. CONNECTIONS
ARE AS SHOWN FOR "TYPICAL" - ZONE B-6.
 - THE CARBON STEEL CLASS HBD LINES AND
FITTINGS MAY BE REPLACED WITH STAIN-
LESS STEEL PER THE REQUIREMENTS OF
CLASS HCD.

AS-BUILT CLASS 1

DRWN	N/A	DATE		PIPING AND INSTRUMENTATION DIAGRAM CIRCULATING WATER WATERBOX VENTING SYSTEM		CLASS
CHD	N/A	DATE				
SUPV	N/A	DATE				
APPD	N/A	DATE				
LOC	N/A	LOCATION	CALLAWAY PLANT			
UNION ELECTRIC COMPANY ST. LOUIS, MO				M-22DA02	REV.	15



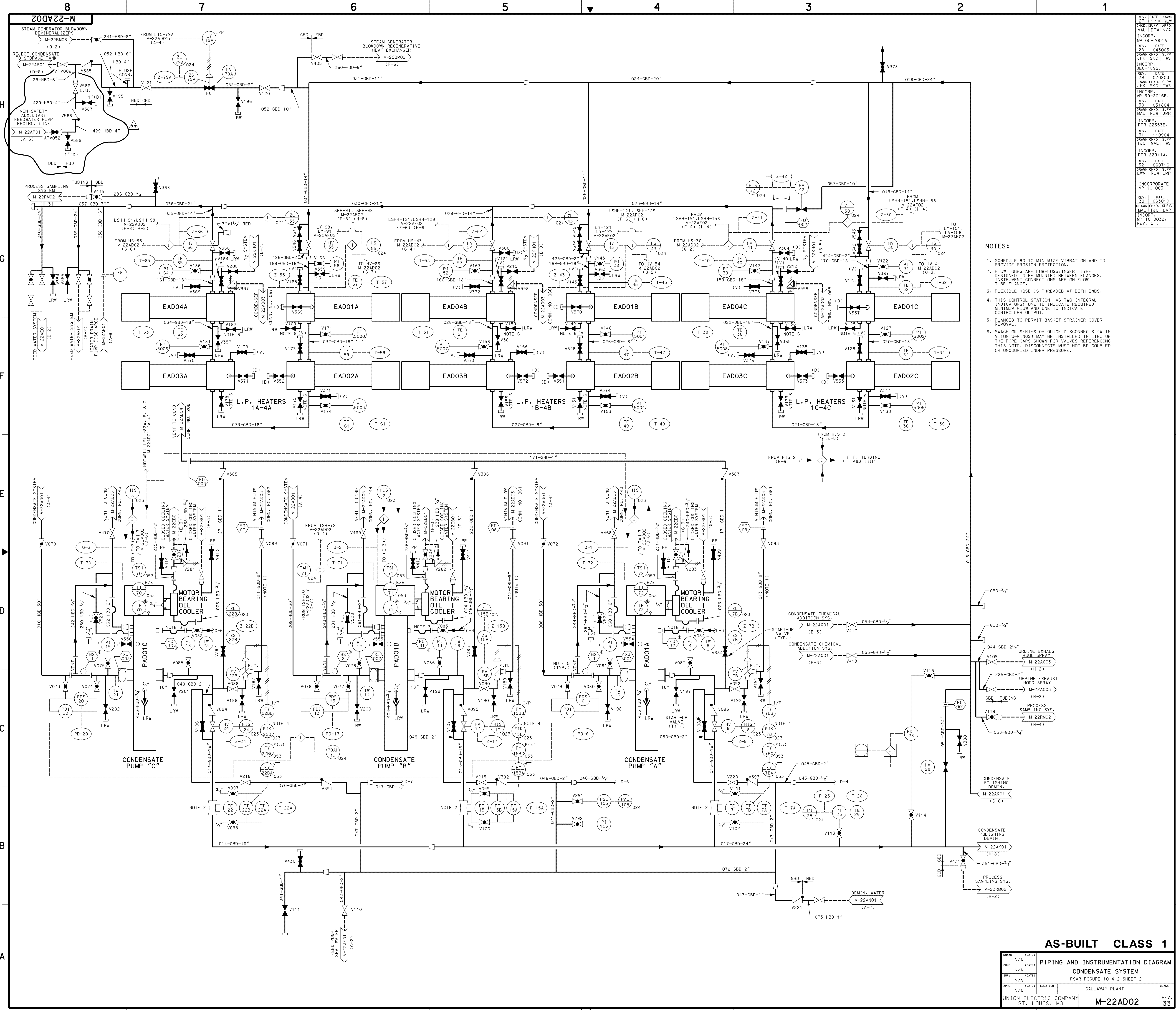
- NOTES:**
- SEE M-22AD03, M-22AD04 & M-22AD05 FOR A LISTING OF ALL CONNECTIONS.
 - DELETED
 - CAP COVER IS DESIGNED TO EXCLUDE DEBRIS AND PERMIT FILLING WATER SEAL WITH HOSE. SEE M-22AN01, ZONE B-7 FOR HOSE CONNECTION.
 - DELETED
 - LEVEL GAGES ARE PROVIDED AT 6 OF 12 LOCATIONS. AT REMAINING 6 LOCATIONS, BOTTOM CONNECTIONS ARE FILL AND DRAIN CONNECTIONS. TOP CONNECTIONS SERVE AS OVERFLOWS.
 - LOCAL ALARM PANEL WILL PROVIDE INDICATION OF LOW SEAL WATER LEVEL FOR H.P., I.P., AND L.P. CONDENSERS. PANEL WILL CONSIST OF THREE SEPARATE LOW LEVEL INDICATING LIGHTS.
 - THE FOLLOWING LEVEL GAUGES ARE LOCATED ON THE:
HIGH PRESSURE CONDENSER:
LG-105, TAPS 342, 354
LG-106, TAPS 340, 352
INTERMEDIATE PRESSURE CONDENSER:
LG-107, TAPS 346, 358
LG-108, TAPS 344, 356
LOW PRESSURE CONDENSER:
LG-109, TAPS 350, 362
LG-110, TAPS 348, 360
 - USED FOR THE PUMP SUCTION TO DRAIN THE CONDENSER HOTWELL.



INST	A	B	C	D
LT114	C021	C004	C011	C022
LT115	C019	C003	C010	C020
LSL80	C015	C001	C008	C016
LSL81	C017	C002	C009	C018
LSL82A	C023	C005	C012	C024
LSL82B	C025	C006	C013	C026
LSL82C	C027	C007	C014	C028

AS-BUILT CLASS 1

CHD.	DATE	REV.	DATE
N/A	06/10/04	15	06/10/04
N/A	02/20/08	16	11/09/04
N/A	02/20/08	17	02/20/08
N/A	02/20/08	18	02/20/08
N/A	02/20/08	19	02/20/08
N/A	02/20/08	20	02/20/08
N/A	02/20/08	21	02/20/08
N/A	02/20/08	22	02/20/08
N/A	02/20/08	23	02/20/08
N/A	02/20/08	24	02/20/08
N/A	02/20/08	25	02/20/08
N/A	02/20/08	26	02/20/08
N/A	02/20/08	27	02/20/08
N/A	02/20/08	28	02/20/08
N/A	02/20/08	29	02/20/08
N/A	02/20/08	30	02/20/08
N/A	02/20/08	31	02/20/08
N/A	02/20/08	32	02/20/08
N/A	02/20/08	33	02/20/08
N/A	02/20/08	34	02/20/08
N/A	02/20/08	35	02/20/08
N/A	02/20/08	36	02/20/08
N/A	02/20/08	37	02/20/08
N/A	02/20/08	38	02/20/08
N/A	02/20/08	39	02/20/08
N/A	02/20/08	40	02/20/08
N/A	02/20/08	41	02/20/08
N/A	02/20/08	42	02/20/08
N/A	02/20/08	43	02/20/08
N/A	02/20/08	44	02/20/08
N/A	02/20/08	45	02/20/08
N/A	02/20/08	46	02/20/08
N/A	02/20/08	47	02/20/08
N/A	02/20/08	48	02/20/08
N/A	02/20/08	49	02/20/08
N/A	02/20/08	50	02/20/08
N/A	02/20/08	51	02/20/08
N/A	02/20/08	52	02/20/08
N/A	02/20/08	53	02/20/08
N/A	02/20/08	54	02/20/08
N/A	02/20/08	55	02/20/08
N/A	02/20/08	56	02/20/08
N/A	02/20/08	57	02/20/08
N/A	02/20/08	58	02/20/08
N/A	02/20/08	59	02/20/08
N/A	02/20/08	60	02/20/08
N/A	02/20/08	61	02/20/08
N/A	02/20/08	62	02/20/08
N/A	02/20/08	63	02/20/08
N/A	02/20/08	64	02/20/08
N/A	02/20/08	65	02/20/08
N/A	02/20/08	66	02/20/08
N/A	02/20/08	67	02/20/08
N/A	02/20/08	68	02/20/08
N/A	02/20/08	69	02/20/08
N/A	02/20/08	70	02/20/08
N/A	02/20/08	71	02/20/08
N/A	02/20/08	72	02/20/08
N/A	02/20/08	73	02/20/08
N/A	02/20/08	74	02/20/08
N/A	02/20/08	75	02/20/08
N/A	02/20/08	76	02/20/08
N/A	02/20/08	77	02/20/08
N/A	02/20/08	78	02/20/08
N/A	02/20/08	79	02/20/08
N/A	02/20/08	80	02/20/08
N/A	02/20/08	81	02/20/08
N/A	02/20/08	82	02/20/08
N/A	02/20/08	83	02/20/08
N/A	02/20/08	84	02/20/08
N/A	02/20/08	85	02/20/08
N/A	02/20/08	86	02/20/08
N/A	02/20/08	87	02/20/08
N/A	02/20/08	88	02/20/08
N/A	02/20/08	89	02/20/08
N/A	02/20/08	90	02/20/08
N/A	02/20/08	91	02/20/08
N/A	02/20/08	92	02/20/08
N/A	02/20/08	93	02/20/08
N/A	02/20/08	94	02/20/08
N/A	02/20/08	95	02/20/08
N/A	02/20/08	96	02/20/08
N/A	02/20/08	97	02/20/08
N/A	02/20/08	98	02/20/08
N/A	02/20/08	99	02/20/08
N/A	02/20/08	100	02/20/08



- NOTES:**
- 1. SCHEDULE 80 TO MINIMIZE VIBRATION AND TO PROVIDE EROSION PROTECTION.
 - 2. FLOW TUBES ARE LOW-LOSS, INSERT TYPE. INSTRUMENT CONNECTIONS ARE ON FLOW TUBE FLANGE.
 - 3. FLEXIBLE HOSE IS THREADED AT BOTH ENDS.
 - 4. THIS CONTROL STATION HAS TWO INTEGRAL INDICATORS: ONE TO INDICATE REQUIRED MINIMUM FLOW AND ONE TO INDICATE CONTROLLER OUTPUT.
 - 5. FLANGED TO PERMIT BASKET STRAINER COVER REMOVAL.
 - 6. SWAGelok SERIES OR QUICK DISCONNECTS (WITH VITON O-RINGS) MAY BE INSTALLED IN LIEU OF THE PIPE CAPS SHOWN FOR VALVES REFERRING THIS NOTE. DISCONNECTS MUST NOT BE COUPLED OR UNCOUPLED UNDER PRESSURE.

AS-BUILT CLASS 1

DATE	10/20/02	CLASS	1
REV.	001	DATE	10/20/02
REV.	002	DATE	10/20/02
REV.	003	DATE	10/20/02
REV.	004	DATE	10/20/02
REV.	005	DATE	10/20/02
REV.	006	DATE	10/20/02
REV.	007	DATE	10/20/02
REV.	008	DATE	10/20/02
REV.	009	DATE	10/20/02
REV.	010	DATE	10/20/02
REV.	011	DATE	10/20/02
REV.	012	DATE	10/20/02
REV.	013	DATE	10/20/02
REV.	014	DATE	10/20/02
REV.	015	DATE	10/20/02
REV.	016	DATE	10/20/02
REV.	017	DATE	10/20/02
REV.	018	DATE	10/20/02
REV.	019	DATE	10/20/02
REV.	020	DATE	10/20/02
REV.	021	DATE	10/20/02
REV.	022	DATE	10/20/02
REV.	023	DATE	10/20/02
REV.	024	DATE	10/20/02
REV.	025	DATE	10/20/02
REV.	026	DATE	10/20/02
REV.	027	DATE	10/20/02
REV.	028	DATE	10/20/02
REV.	029	DATE	10/20/02
REV.	030	DATE	10/20/02
REV.	031	DATE	10/20/02
REV.	032	DATE	10/20/02
REV.	033	DATE	10/20/02
REV.	034	DATE	10/20/02
REV.	035	DATE	10/20/02
REV.	036	DATE	10/20/02
REV.	037	DATE	10/20/02
REV.	038	DATE	10/20/02
REV.	039	DATE	10/20/02
REV.	040	DATE	10/20/02
REV.	041	DATE	10/20/02
REV.	042	DATE	10/20/02
REV.	043	DATE	10/20/02
REV.	044	DATE	10/20/02
REV.	045	DATE	10/20/02
REV.	046	DATE	10/20/02
REV.	047	DATE	10/20/02
REV.	048	DATE	10/20/02
REV.	049	DATE	10/20/02
REV.	050	DATE	10/20/02
REV.	051	DATE	10/20/02
REV.	052	DATE	10/20/02
REV.	053	DATE	10/20/02
REV.	054	DATE	10/20/02
REV.	055	DATE	10/20/02
REV.	056	DATE	10/20/02
REV.	057	DATE	10/20/02
REV.	058	DATE	10/20/02
REV.	059	DATE	10/20/02
REV.	060	DATE	10/20/02
REV.	061	DATE	10/20/02
REV.	062	DATE	10/20/02
REV.	063	DATE	10/20/02
REV.	064	DATE	10/20/02
REV.	065	DATE	10/20/02
REV.	066	DATE	10/20/02
REV.	067	DATE	10/20/02
REV.	068	DATE	10/20/02
REV.	069	DATE	10/20/02
REV.	070	DATE	10/20/02
REV.	071	DATE	10/20/02
REV.	072	DATE	10/20/02
REV.	073	DATE	10/20/02
REV.	074	DATE	10/20/02
REV.	075	DATE	10/20/02
REV.	076	DATE	10/20/02
REV.	077	DATE	10/20/02
REV.	078	DATE	10/20/02
REV.	079	DATE	10/20/02
REV.	080	DATE	10/20/02
REV.	081	DATE	10/20/02
REV.	082	DATE	10/20/02
REV.	083	DATE	10/20/02
REV.	084	DATE	10/20/02
REV.	085	DATE	10/20/02
REV.	086	DATE	10/20/02
REV.	087	DATE	10/20/02
REV.	088	DATE	10/20/02
REV.	089	DATE	10/20/02
REV.	090	DATE	10/20/02
REV.	091	DATE	10/20/02
REV.	092	DATE	10/20/02
REV.	093	DATE	10/20/02
REV.	094	DATE	10/20/02
REV.	095	DATE	10/20/02
REV.	096	DATE	10/20/02
REV.	097	DATE	10/20/02
REV.	098	DATE	10/20/02
REV.	099	DATE	10/20/02
REV.	100	DATE	10/20/02

CONDENSER CONNECTION NUMBER			CONDENSER LOCATION			LINE NUMBER	LINE CLASS	LINE SIZE	CONNECTIN SIZE	CONDENSER ISOLATION VALVE NUMBER	SERVICE	DRAWING INTERFACE NUMBER	INTERFACE DRAWING ZONE	REMARKS
C	B	A	HP	IP	LP									
001					X		HBD	120"	120"		CIRC. WATER INLET (STANDPIPE)	DA01	G-6	
002					X		HBD	120"	120"		CIRC. WATER INLET (STANDPIPE)	DA01	G-8	
004	X						HBD	120"	120"		CIRC. WATER OUTLET (STANDPIPE)	DA01	D-2	
005	X						HBD	120"	120"		CIRC. WATER OUTLET (STANDPIPE)	DA01	D-4	
011	X					005	HBD	20"	20"	ADV-065	CONDENSATE OUTLET	AD01	B-3	
012	X					006	HBD	20"	20"	ADV-066	CONDENSATE OUTLET	AD01	B-3	
013		X				003	HBD	20"	20"	ADV-063	CONDENSATE OUTLET	AD01	B-5	
014		X				004	HBD	20"	20"	ADV-064	CONDENSATE OUTLET	AD01	B-5	
015			X			001	HBD	20"	20"	ADV-061	CONDENSATE OUTLET	AD01	B-7	
016			X			002	HBD	20"	20"	ADV-062	CONDENSATE OUTLET	AD01	B-7	
017				X			GBD	24"	24"		TURBINE BYPASS (4 VALVES)	AD01	H-8	SCH.120(NOTE 3)
018		X					GBD	24"	24"		TURBINE BYPASS (4 VALVES)	AD01	H-6	SCH.120(NOTE 3)
019			X				GBD	20"	20"		TURBINE BYPASS (3 VALVES)	AD01	H-8	SCH.120(NOTE 3)
020	X						GBD	12"	12"		TURBINE BYPASS (1 VALVE)	AD01	H-4	SCH.120(NOTE 3)
021	X					166	HBD	6"	6"	ADV-222/297	LOW LOAD CONDENSATE HEATING SYSTEM SPARGER	AD01	B-2	
022	X					167	HBD	6"	6"	ADV-223/298	LOW LOAD CONDENSATE HEATING SYSTEM SPARGER	AD01	B-4	
023		X				164	HBD	6"	6"	ADV-224/295	LOW LOAD CONDENSATE HEATING SYSTEM SPARGER	AD01	B-4	
024		X				165	HBD	6"	6"	ADV-225/296	LOW LOAD CONDENSATE HEATING SYSTEM SPARGER	AD01	B-6	
025			X			162	HBD	6"	6"	ADV-226/293	LOW LOAD CONDENSATE HEATING SYSTEM SPARGER	AD01	C-7	
026			X			163	HBD	6"	6"	ADV-227/294	LOW LOAD CONDENSATE HEATING SYSTEM SPARGER	AD01	C-8	
027	X					082	HBD	8"	12"	ADV-230	HTR 1C SHELL NORMAL OUTLET	AF02	G-3	12"x8" REDUCER AT CONDENSER
028		X				081	HBD	8"	12"	ADV-229	HTR 1B SHELL NORMAL OUTLET	AF02	G-5	
029			X			080	HBD	8"	12"	ADV-228	HTR 1A SHELL NORMAL OUTLET	AF02	G-8	
030	X					085	HBD	6"	6"	ADV-233	HTR 4C SHELL DUMP	AF02	B-3	
031		X				084	HBD	6"	6"	ADV-232	HTR 4B SHELL DUMP	AF02	B-5	
032			X			083	HBD	6"	6"	ADV-231	HTR 4A SHELL DUMP	AF02	B-8	
033	X					088	HBD	8"	12"	ADV-236	HTR 1C SHELL DUMP	AF02	G-3	
034		X				087	HBD	8"	12"	ADV-235	HTR 1B SHELL DUMP	AF02	G-5	
035			X			086	HBD	8"	12"	ADV-234	HTR 1A SHELL DUMP	AF02	G-8	
036	X					AF-144	HBD	12"	12"		HTR 1C SHELL DUMP	AF02	G-3	LINES PASS THRU COND. SHELLS
037		X				AF-142	HBD	12"	12"		HTR 1B SHELL DUMP	AF02	G-5	
038			X			AF-140	HBD	12"	12"		HTR 1A SHELL DUMP	AF02	G-7	
039	X					091	HBD	8"	10"	ADV-239	HTR 2C SHELL DUMP	AF02	E-3	10"x8" REDUCER AT CONDENSER
040		X				090	HBD	8"	10"	ADV-238	HTR 2B SHELL DUMP	AF02	E-5	
041			X			089	HBD	8"	10"	ADV-237	HTR 2A SHELL DUMP	AF02	E-8	
042	X					094	HBD	6"	8"	ADV-242	HTR 3C SHELL DUMP	AF02	C-3	8"x6" REDUCER AT CONDENSER
043		X				093	HBD	6"	8"	ADV-241	HTR 3B SHELL DUMP	AF02	C-5	
044			X			092	HBD	6"	8"	ADV-240	HTR 3A SHELL DUMP	AF02	C-8	
045	X					123	HBD	20"	20"	NONE	MISC. DRAIN HEADER	AD06	A-4	SCH.80 NOTE 3
046		X				125	HBD	20"	20"	NONE	MISC. DRAIN HEADER	AD06	C-8	SCH.80 NOTE 3
047	X						HBD	14"	16"		NINTH STG. TURBINE EXTRACTION	AF02	C-4	
048		X					HBD	14"	16"		NINTH STG. TURBINE EXTRACTION	AF02	C-6	
049			X				HBD	14"	16"		NINTH STG. TURBINE EXTRACTION	AF02	C-8	
050	X						HBD	24"	24"		12TH STG. TURBINE EXTRACTION	AF02	E-4	LINES PASS THRU COND. SHELLS
051		X					HBD	24"	24"		12TH STG. TURBINE EXTRACTION	AF02	E-6	
052			X				HBD	24"	24"		12TH STG. TURBINE EXTRACTION	AF02	E-8	
053		X					HBD	60"	60"	FCV-049	S.G.F.P. EXHAUST, FROM KFC01A	FC03	A-3	
054			X				HBD	60"	60"	FCV-050	S.G.F.P. EXHAUST, FROM KFC01B	FC04	A-3	
055	X					AC-045	HBD	24"	24"		M.S.R. R.V. DISCHARGE	AC02	D-2	
056	X					AC-038	HBD	24"	24"		M.S.R. R.V. DISCHARGE	AC04	H-2	
057		X				AC-039	HBD	24"	24"		M.S.R. R.V. DISCHARGE	AC02	D-2	
058		X				AC-047	HBD	24"	24"		M.S.R. R.V. DISCHARGE	AC04	H-2	
059			X			AC-037	HBD	24"	24"		M.S.R. R.V. DISCHARGE	AC02	H-2	
060			X			AC-046	HBD	24"	24"		M.S.R. R.V. DISCHARGE	AC04	D-2	
061	X					012	HBD	8"	10"	ADV-091	CONDENSATE PUMP "B" MIN. FLOW	AD02	E-5	10"x8" RED. AT COND. NOZZLE AND NOTE 3
062		X				011	HBD	8"	10"	ADV-089	CONDENSATE PUMP "C" MIN. FLOW	AD02	E-7	SCH. 100 NOTE 3
063			X			013	HBD	8"	10"	ADV-093	CONDENSATE PUMP "A" MIN. FLOW	AD02	E-3	SCH. 100 NOTE 3
064	X							2"						PLUGGED
065	X					131	HBD	1"	1"		L.P. HTR. NO. 4C CHANNEL R.V.	AD02	G-3	
066		X				130	HBD	1"	1"		L.P. HTR. NO. 4B CHANNEL R.V.	AD02	G-5	
067			X			129	HBD	1"	1"		L.P. HTR. NO. 4A CHANNEL R.V.	AD02	G-6	
068		X				118	GCD	6"	20"	AEFV-36	FEEDWATER RECIRC.	AE01	C-5	SCH. 80 NOTE 3
069	X					116	HBD	10"	10"	ADV-258	S.G.F.P. "A" MIN. FLOW	AE01	D-6	SCH. 100 NOTE 3
070		X				117	HBD	10"	10"	ADV-259	S.G.F.P. "B" MIN. FLOW	AE01	B-6	SCH. 100 NOTE 3
071		X				122	HBD	1 1/2"	1"		S.G.F.P. "A" SEAL DRAIN	AE01	C-5	1 1/2"x1" REDUCER AT CONDENSER NOZZLE
072			X			121	HBD	1 1/2"	1"		S.G.F.P. "B" SEAL DRAIN	AE01	A-5	
073		X				AE-107	HBD	1"	1"	AEV-277	S.G.F.P. "A" WARM-UP RECIRC.	AE01	E-3	
074			X			AE-106	HBD	1"	1"	AEV-276	S.G.F.P. "B" WARM-UP RECIRC.	AE01	C-4	
075		X				132	HBD	10"	16"	ADV-267	M.S. DRAIN TANK "B" DUMP	AF01	G-5	VALVE AT CONDENSER
076		X				276	HBD	10"	16"	ADV-268	M.S. DRAIN TANK "A" DUMP	AF01	G-5	
077		X				135	GBD	6"	8"	ADV-270	1ST STG.RHT.DRAIN TANK "B" DUMP	AF01	G-3	
078		X				134	GBD	6"	8"	ADV-269	1ST STG.RHT.DRAIN TANK "A" DUMP	AF01	G-7	
079		X				136	EBD	6"	10"	ADV-271	2ND STG.RHT.DRAIN TANK "B" DUMP	AF01	G-2	
080			X			272	EBD	6"	10"	ADV-272	2ND STG.RHT.DRAIN TANK "A" DUMP	AF01	G-8	12"x10" REDUCER & COND. NOZZLE

CONDENSER CONNECTION NUMBER	CONDENSER LOCATION			LINE NUMBER	LINE CLASS	LINE SIZE	CONNECTIN SIZE	CONDENSER ISOLATION VALVE NUMBER	SERVICE	DRAWING INTERFACE NUMBER	INTERFACE DRAWING ZONE	REMARKS
	C	B	A									
	HP	TP	LP									
081			X	145	GBD	12"	12"	ADV-274	H.P. HTR. NO. 7B SHELL DUMP	AF01	E-3	
082			X	144	GBD	12"	12"	ADV-273	H.P. HTR. NO. 7A SHELL DUMP	AF01	E-8	
083			X	147	GBD	12"	16"	ADV-276	H.P. HTR. NO. 6B SHELL DUMP	AF01	D-3	
084			X	146	GBD	16"	16"	ADV-275	H.P. HTR. NO. 6A SHELL DUMP	AF01	D-7	
085		X		148	HBD	16"	16"	ADV-277	HTR. DRAIN TANK "A" DUMP	AF01	B-3	
086			X	149	HBD	16"	16"	ADV-278	HTR. DRAIN TANK "B" DUMP	AF01	B-3	
087			X	375	HBD	8"	16"		MISC. DRAIN HEADER	AD06	A-5	
094	X			103	HBD	3"	3"	ADV-245	HEATER NO. 1C VENT	AF03	H-5	
095		X		102	HBD	3"	3"	ADV-244	HEATER NO. 1B VENT	AF03	H-4	
096			X	101	HBD	3"	3"	ADV-243	HEATER NO. 1A VENT	AF03	H-3	
097	X			106	HBD	3"	3"	ADV-248	HEATER NO. 2C VENT	AF03	F-5	
098		X		105	HBD	3"	3"	ADV-247	HEATER NO. 2B VENT	AF03	F-4	
099			X	104	HBD	3"	3"	ADV-246	HEATER NO. 2A VENT	AF03	F-3	
100	X			109	HBD	3"	3"	ADV-251	HEATER NO. 3C VENT	AF03	E-5	
101		X		108	HBD	3"	3"	ADV-250	HEATER NO. 3B VENT	AF03	E-4	
102			X	107	HBD	3"	3"	ADV-249	HEATER NO. 3A VENT	AF03	E-3	
103	X			112	HBD	3"	3"	ADV-254	HEATER NO. 4C VENT	AF03	C-5	
104		X		111	HBD	3"	3"	ADV-253	HEATER NO. 4B VENT	AF03	C-4	
105			X	110	HBD	3"	3"	ADV-252	HEATER NO. 4A VENT	AF03	C-3	
106			X	113	HBD	2 1/2"	2 1/2"	ADV-255	H.P.HTR.NO. 5A & 5B VENT	AF03	C-6	VALVE IS CLASS GBD
107		X		114	HCD	2 1/2"	2 1/2"	ADV-256	H.P.HTR.NO. 6A & 6B VENT	AF03	E-6	VALVE IS CLASS GCD
108			X	115	HCD	2 1/2"	2 1/2"	ADV-257	H.P.HTR.NO. 7A & 7B VENT	AF03	H-6	VALVE IS CLASS GCD
109			X	306	HBD	8"	8"		H.P. HTR. NO. 5B RV	AF03	B-6	
110			X	305	HBD	8"	8"		H.P. HTR. NO. 5A RV	AF03	B-8	
111			X	307	HBD	6"	6"		H.P. HTR. NO. 6A RV	AF03	D-8	
112			X	308	HBD	6"	6"		H.P. HTR. NO. 6B RV	AF03	D-6	
113			X	309	HBD	6"	6"		H.P. HTR. NO. 7A RV	AF03	G-8	
114			X	310	HBD	6"	6"		H.P. HTR. NO. 7B RV	AF03	G-6	
115	X			AF-283	HBD	1 1/2"	1 1/2"		L.P. HTR. NO. 1C DRAIN	AF03	G-5	
116		X		281	HBD	1 1/2"	1 1/2"		L.P. HTR. NO. 1B DRAIN	AF03	G-4	
117			X	279	HBD	1 1/2"	1 1/2"		L.P. HTR. NO. 1A DRAIN	AF03	G-2	
118	X			302	HBD	1 1/2"	1 1/2"		L.P. HTR. NO. 2C DRAIN	AF03	F-5	
119			X	300	HBD	1 1/2"	1 1/2"		L.P. HTR. NO. 2B DRAIN	AF03	F-4	
120			X	298	HBD	1 1/2"	1 1/2"		L.P. HTR. NO. 2A DRAIN	AF03	F-2	
121	X			320	HBD	1 1/2"	1 1/2"		L.P. HTR. NO. 3C DRAIN	AF03	D-5	LINES PASS THRU CONDENSER SHELLS
122		X		318	HBD	1 1/2"	1 1/2"		L.P. HTR. NO. 3B DRAIN	AF03	D-4	
123			X	316	HBD	1 1/2"	1 1/2"		L.P. HTR. NO. 3A DRAIN	AF03	D-2	
124	X			338	HBD	1 1/2"	1 1/2"		L.P. HTR. NO. 4C DRAIN	AF03	B-5	
125		X		336	HBD	1 1/2"	1 1/2"		L.P. HTR. NO. 4B DRAIN	AF03	B-4	
126		X	X	334	HBD	1 1/2"	1 1/2"		L.P. HTR. NO. 4A DRAIN	AF03	B-2	
127			X	066	HBD	10"	10"	ADV-216/205	CONDENSATE MAKE-UP TO HOTWELL	AD01	D-7	
128		X		068	HBD	10"	10"	ADHV-113D	VACUUM BREAKER	AD01	F-7	MOTOR OPER. VALVE
129		X		128	HBD	12"	12"	CAV-006	STEAM PACKING UNLOADING VALVE	CA01	G-6	
130		X		127	HBD	3"	3"	ADV-265	STM. PACKING EXHAUSTER DRAIN	CA01	A-4	
131			X	151	HBD	4"	4"	ADV-280	MISC. DRAIN HEADER	AD06	A-8	
132			X	152	HBD	4"	4"	ADV-406	MISC.COND.DRAIN TANK (TUBE BUNDLE)	LE04	D-7	
133			X	056	HBD	4"	4"	ADV-266	REBOILER DRAIN TANK	FB01	C-8	
134	X			201	HBD	6"	6"		L.P.HTR.NO.4C SHELL DUMP	AF02	B-3	
135		X		199	HBD	6"	6"		L.P.HTR.NO.4B SHELL DUMP	AF02	B-5	LINES PASS THRU SHELL
136			X	197	HBD	6"	6"		L.P.HTR.NO.4A SHELL DUMP	AF02	B-7	
137	X			069	HBD	4"	4"		DEMINERALIZER FLUSH LINE	AK01	D-2	
138	X			174	HBD	10"	10"	ADHV-113C	VACUUM BREAKER	AD01	F-3	
139			X	173	HBD	10"	10"	ADVUM-113B	VACUUM BREAKER	AD01	F-6	MOTOR OPERATED VALVES
140			X	172	HBD	10"	10"	ADHV-113A	VACUUM BREAKER	AD01	F-7	
141	X						14"					CAPPED
142			X		HBD	4"	4"		STEAM GEN. BLOWDOWN SYSTEM	BM01	H-2	
143		X			HBD	8"	8"		AIR VAPOR TAKEOFF FOR L.P. UPPER SOUTH TUBE BUNDLE	CG01	G-7	
144		X			HBD	8"	8"		AIR VAPOR TAKEOFF FOR L.P. MIDDLE SOUTH TUBE BUNDLE	CG01	G-7	
145		X			HBD	8"	8"		AIR VAPOR TAKEOFF FOR L.P. LOWER SOUTH TUBE BUNDLE	CG01	G-7	
146		X			HBD	8"	8"		AIR VAPOR TAKEOFF FOR L.P. UPPER NORTH TUBE BUNDLE	CG01	G-7	
147		X			HBD	8"	8"		AIR VAPOR TAKEOFF FOR L.P. MIDDLE NORTH TUBE BUNDLE	CG01	G-7	
148		X			HBD	8"	8"		AIR VAPOR TAKEOFF FOR L.P. LOWER NORTH TUBE BUNDLE	CG01	G-7	
158	X			158	HBD	6"	6"		L.P. HTR. NO. 3C R.V.	AF03	D-5	
159	X			155	HBD	6"	6"		L.P. HTR. NO. 4C R.V.	AF03	C-5	
160		X		157	HBD	6"	6"		L.P. HTR. NO. 3B R.V.	AF03	D-4	

CONDENSER CONNECTION NUMBER				CONDENSER LOCATION			LINE NUMBER	LINE CLASS	LINE SIZE	CONNECT IN SIZE	CONDENSER ISOLATION VALVE NUMBER	SERVICE	DRAWING INTERFACE NUMBER	INTERFACE DRAWING ZONE	REMARKS
HP	C	B	A	LP											
161		X			154	HBD	6"	6"		L.P. HTR. NO. 4B R.V.	AF03	C-4			
162			X		156	HBD	6"	6"		L.P. HTR. NO. 3A R.V.	AF03	D-3			
163			X		153	HBD	6"	6"		L.P. HTR. NO. 4A R.V.	AF03	C-3			
164	X						66"	66"		UPPER CIRC. WTR. CONN.	DA01	E-4			
165	X						66"	66"		UPPER CIRC. WTR. CONN.	DA01	E-3			
166		X					66"	66"		UPPER CIRC. WTR. CONN.	DA01	F-5			
167		X					66"	66"		UPPER CIRC. WTR. CONN.	DA01	E-5			
168			X				66"	66"		UPPER CIRC. WTR. CONN.	DA01	F-7			
169			X				66"	66"		UPPER CIRC. WTR. CONN.	DA01	F-7			
170			X				66"	66"		UPPER CIRC. WTR. CONN.	DA01	E-7			
171	X						66"	66"		UPPER CIRC. WTR. CONN.	DA01	F-3			
172	X						66"	66"		UPPER CIRC. WTR. CONN.	DA01	F-4			
173		X					66"	66"		UPPER CIRC. WTR. CONN.	DA01	F-5			
174		X					66"	66"		UPPER CIRC. WTR. CONN.	DA01	E-5			
175			X				66"	66"		UPPER CIRC. WTR. CONN.	DA01	E-7			
176	X						72"	72"		MIDDLE CIRC. WTR. CONN.	DA01	F-3			
177	X						72"	72"		MIDDLE CIRC. WTR. CONN.	DA01	F-4			
178		X					72"	72"		MIDDLE CIRC. WTR. CONN.	DA01	F-5			
179		X					72"	72"		MIDDLE CIRC. WTR. CONN.	DA01	E-6			
180			X				72"	72"		MIDDLE CIRC. WTR. CONN.	DA01	F-7			
181			X				72"	72"		MIDDLE CIRC. WTR. CONN.	DA01	F-7			
182			X				72"	72"		MIDDLE CIRC. WTR. CONN.	DA01	E-7			
183	X						72"	72"		MIDDLE CIRC. WTR. CONN.	DA01	E-4			
184	X						72"	72"		MIDDLE CIRC. WTR. CONN.	DA01	E-3			
185		X					72"	72"		MIDDLE CIRC. WTR. CONN.	DA01	F-6			
186		X					72"	72"		MIDDLE CIRC. WTR. CONN.	DA01	E-5			
187			X				72"	72"		MIDDLE CIRC. WTR. CONN.	DA01	E-7			
188	X						72"	72"		LOWER CIRC. WTR. CONN.	DA01	E-4			
189	X						72"	72"		LOWER CIRC. WTR. CONN.	DA01	E-2			
190		X					72"	72"		LOWER CIRC. WTR. CONN.	DA01	F-6			
191		X					72"	72"		LOWER CIRC. WTR. CONN.	DA01	E-5			
192			X				72"	72"		LOWER CIRC. WTR. CONN.	DA01	F-7			
193			X				72"	72"		LOWER CIRC. WTR. CONN.	DA01	F-8			
194			X				72"	72"		LOWER CIRC. WTR. CONN.	DA01	E-8			
195	X						72"	72"		LOWER CIRC. WTR. CONN.	DA01	F-2			
196	X						72"	72"		LOWER CIRC. WTR. CONN.	DA01	F-4			
197		X					72"	72"		LOWER CIRC. WTR. CONN.	DA01	F-5			
198		X					72"	72"		LOWER CIRC. WTR. CONN.	DA01	E-6			
199			X				72"	72"		LOWER CIRC. WTR. CONN.	DA01	E-6			
200	X						1"		ADV-033	HOTWELL GAUGE GLASS	AD01	C-3			
201	X						1"							PLUGGED	
202	X						1"								
203	X						1"		ADV-034	HOTWELL GAUGE GLASS	AD01	C-3			
204	X						1"		ADV-035	HOTWELL GAUGE GLASS	AD01	C-3			
205	X						1"							PLUGGED	
206	X						1"								
207	X						1"		ADV-036	HOTWELL GAUGE GLASS	AD01	B-3			
208		X			171	HBD	1"	1"	ADV-382/383/384	CONDENSATE PUMP DISCHARGE VENT	AD02	G-3			
209		X					1"							PLUGGED	
210		X					1"								
211		X			294	HBD	1"	1"	RMV-028	SAMPLE PUMP DISCHARGE	RM03	B-4			
212		X			293	HBD	1"	1"	RMV-177/233	SAMPLE PUMP VENT	RM03	G-3			
213		X					1"							PLUGGED	
214		X					1"								
215		X					1"								
216			X				1"								
217			X				1"								
218			X				1"								
219			X		AF-345	HBD	1"	1"	AFV-594	HTR. DRAIN PUMP SEAL WATER RETURN	AF01	A-6		PLUGGED	
220			X				1"							PLUGGED	
221			X				1"								
222			X				1"								
223			X				1"								
224	X					HBD	3"	3"		WTR. BOX VENTS	DA02	C-2			
225	X					HBD	3"	3"		WTR. BOX VENTS	DA02	C-2			
226	X					HBD	3"	3"		WTR. BOX VENTS	DA02	C-2			
227	X					HBD	3"	3"		WTR. BOX VENTS	DA02	C-1			
228	X					HBD	3"	3"		WTR. BOX VENTS	DA02	C-3			
229	X					HBD	3"	3"		WTR. BOX VENTS	DA02	C-1			
230	X					HBD	3"	3"		WTR. BOX VENTS	DA02	F-2			
231	X					HBD	3"	3"		WTR. BOX VENTS	DA02	F-2			
232	X					HBD	3"	3"		WTR. BOX VENTS	DA02	F-2			
233	X					HBD	3"	3"		WTR. BOX VENTS	DA02	F-2			
234	X					HBD	3"	3"		WTR. BOX VENTS	DA02	F-1			
235	X					HBD	3"	3"		WTR. BOX VENTS	DA02	F-3			
236	X					HBD	3"	3"		WTR. BOX VENTS	DA02	C-2			
237	X					HBD	3"	3"		WTR. BOX VENTS	DA02	C-2			
238		X				HBD	3"	3"		WTR. BOX VENTS	DA02	F-4			
239		X				HBD	3"	3"		WTR. BOX VENTS	DA02	F-5			
240		X				HBD	3"	3"		WTR. BOX VENTS	DA02	F-4			

	CONDENSER CONNECTION NUMBER	CONDENSER LOCATION			LINE NUMBER	LINE CLASS	LINE SIZE	CONNECTIN SIZE	CONDENSER ISOLATION VALVE NUMBER	SERVICE	DRAWING INTERFACE NUMBER	INTERFACE DRAWING ZONE	REMARKS
		C	B	A									
		HP	IP	LP									
	241		X			HBD	3"	3"		WTR. BOX VENTS	DA02	F-5	
	242		X			HBD	3"	3"		WTR. BOX VENTS	DA02	F-4	
	243		X			HBD	3"	3"		WTR. BOX VENTS	DA02	F-5	
	244		X			HBD	3"	3"		WTR. BOX VENTS	DA02	C-5	
	245		X			HBD	3"	3"		WTR. BOX VENTS	DA02	C-4	
	246		X			HBD	3"	3"		WTR. BOX VENTS	DA02	C-5	
	247		X			HBD	3"	3"		WTR. BOX VENTS	DA02	C-4	
	248		X			HBD	3"	3"		WTR. BOX VENTS	DA02	C-5	
	249		X			HBD	3"	3"		WTR. BOX VENTS	DA02	C-4	
	252			X		HBD	3"	3"		WTR. BOX VENTS	DA02	F-7	
	253			X		HBD	3"	3"		WTR. BOX VENTS	DA02	F-7	
	254			X		HBD	3"	3"		WTR. BOX VENTS	DA02	F-7	
	255			X		HBD	3"	3"		WTR. BOX VENTS	DA02	F-7	
	256			X		HBD	3"	3"		WTR. BOX VENTS	DA02	F-6	
	257			X		HBD	3"	3"		WTR. BOX VENTS	DA02	F-8	
	258			X		HBD	3"	3"		WTR. BOX VENTS	DA02	C-7	
	259			X		HBD	3"	3"		WTR. BOX VENTS	DA02	C-7	
	260			X		HBD	3"	3"		WTR. BOX VENTS	DA02	C-7	
	261			X		HBD	3"	3"		WTR. BOX VENTS	DA02	C-7	
	262			X		HBD	3"	3"		WTR. BOX VENTS	DA02	C-8	
	263			X		HBD	3"	3"		WTR. BOX VENTS	DA02	C-6	
	264			X		HBD	3"	3"		WTR. BOX VENTS	DA02	G-7	
	265			X		HBD	3"	3"		WTR. BOX VENTS	DA02	G-7	
	266	X				HBD	4"	4"		WTR. BOX DRAINS	DA01	E-4	
	267	X				HBD		4"		WTR. BOX DRAINS	DA01	E-3	
	268	X				HBD		4"		WTR. BOX DRAINS	DA01	E-4	
	269	X				HBD		4"		WTR. BOX DRAINS	DA01	E-3	
	270	X				HBD		4"		WTR. BOX DRAINS	DA01	E-4	
	271	X				HBD		4"		WTR. BOX DRAINS	DA01	E-3	
	272	X				HBD		4"		WTR. BOX DRAINS	DA01	F-3	
	273	X				HBD		4"		WTR. BOX DRAINS	DA01	F-4	
	274	X				HBD		4"		WTR. BOX DRAINS	DA01	F-3	
	275	X				HBD		4"		WTR. BOX DRAINS	DA01	F-4	
	276	X				HBD		4"		WTR. BOX DRAINS	DA01	F-3	
	277	X				HBD		4"		WTR. BOX DRAINS	DA01	F-4	
	278		X			HBD		4"		WTR. BOX DRAINS	DA01	F-5	
	279		X			HBD		4"		WTR. BOX DRAINS	DA01	F-5	
	280		X			HBD		4"		WTR. BOX DRAINS	DA01	F-5	
	281		X			HBD		4"		WTR. BOX DRAINS	DA01	F-6	
	282		X			HBD		4"		WTR. BOX DRAINS	DA01	F-5	
	283		X			HBD		4"		WTR. BOX DRAINS	DA01	F-6	
	284		X			HBD		4"		WTR. BOX DRAINS	DA01	E-5	
	285		X			HBD		4"		WTR. BOX DRAINS	DA01	E-5	
	286		X			HBD		4"		WTR. BOX DRAINS	DA01	E-5	
	287		X			HBD		4"		WTR. BOX DRAINS	DA01	E-5	
	288		X			HBD		4"		WTR. BOX DRAINS	DA01	E-6	
	289		X			HBD		4"		WTR. BOX DRAINS	DA01	E-5	
	290			X		HBD		4"		WTR. BOX DRAINS	DA01	F-7	
	291			X		HBD		4"		WTR. BOX DRAINS	DA01	F-7	
	292			X		HBD		4"		WTR. BOX DRAINS	DA01	F-7	
	293			X		HBD		4"		WTR. BOX DRAINS	DA01	F-8	
	294			X		HBD		4"		WTR. BOX DRAINS	DA01	F-7	
	295			X		HBD		4"		WTR. BOX DRAINS	DA01	F-8	
	296			X		HBD		4"		WTR. BOX DRAINS	DA01	E-7	
	297			X		HBD		4"		WTR. BOX DRAINS	DA01	E-7	
	298			X		HBD		4"		WTR. BOX DRAINS	DA01	E-8	
	299			X		HBD		4"		WTR. BOX DRAINS	DA01	E-7	
	300			X		HBD		4"		WTR. BOX DRAINS	DA01	E-8	
	301			X		HBD		4"		WTR. BOX DRAINS	DA01	E-7	
	302			X		HBD		6"		STEAM GEN. BLOWDOWN SYSTEM	BM03	C-2	
	303	X				HBD		3"		CONDUCTIVITY TAP			PLUGGED
	304	X				HBD		3"		CONDUCTIVITY TAP			
	305	X				HBD		3"		CONDUCTIVITY TAP			
	306	X				HBD		3"		CONDUCTIVITY TAP			
	307	X				HBD		3"		CONDUCTIVITY TAP			
	308	X				HBD		3"		CONDUCTIVITY TAP			
	309	X				HBD		3"		CONDUCTIVITY TAP			
	310	X				HBD		3"		CONDUCTIVITY TAP			
	311	X				HBD		3"		CONDUCTIVITY TAP			
	312	X				HBD		3"		CONDUCTIVITY TAP			
	313	X				HBD		3"		CONDUCTIVITY TAP			
	314	X				HBD		3"		CONDUCTIVITY TAP			
	315		X			HBD		3"		CONDUCTIVITY TAP			
	316		X			HBD		3"		CONDUCTIVITY TAP			
	317		X			HBD		3"		CONDUCTIVITY TAP			
	318		X			HBD		3"		CONDUCTIVITY TAP			
	319		X			HBD		3"		CONDUCTIVITY TAP			
	320		X			HBD		3"		CONDUCTIVITY TAP			

[illegible]

REV.	DATE		
5.	11/29/93	JHK	
CHKD.	SUPV.	APPD.	
RFB	TJM	N/A	
INCPORP			
RMP 92-2016.			
REV.	DATE		
6.	10/23/96	JHK	
CHKD.	SUPV.	APPD.	
MAL	AMR	N/A	
INCPORP			
RMP 95-2011.			
REV.	DATE		
7.	06/10/04		
DRAWN	CHKD.	SUPV.	
RLW	TJC	DLB	
INCPORP			
MP 02-0008			
FCN-04			
REV.	DATE		
8.	11/09/04		
DRAWN	CHKD.	SUPV.	
TJC	MAL	TWS	
INCPORP			
RFR-22941A.			
REV.	DATE		
9.	10/29/08		
DRAWN	CHKD.	SUPV.	
EWL	WLM	LMR	
INCPORP			
MP 07-0033			
FCN 01			

AS-BUILT		CLASS 1		FLN DT	
DRWN	N/A	(DATE)			
ENGRD.	N/A	(DATE)			
SUPPV.	N/A	(DATE)			
APPRD.	N/A	(DATE)	LOCATION	CALLAWAY PLANT	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO			M-22AD05		REV. 9

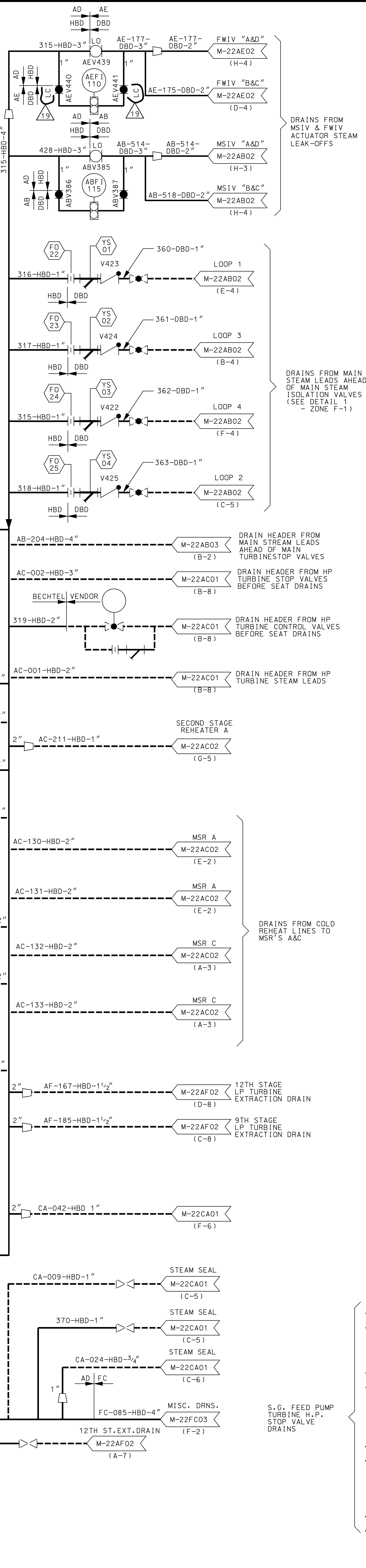
TEMPORARY
FLUSH
CONNECTION
(NOTE 3)

NOTE 1

M-22AC02 (G-8) AC-215-HBD-1" 2"
M-22AC02 (C-8) AC-214-HBD-2"
1ST STAGE REHEATER A (F-7) AC-209-HBD-1" 2"
1ST STAGE REHEATER C (B-7) AC-208-HBD-2"
MSR C M-22AC02 (A-3) AC-140-HBD-2"
MSR C M-22AC02 (A-4) AC-134-HBD-2"
MSR A M-22AC02 (E-2) AC-123-HBD-2"
SHELL POCKET DRAINS

LP
CONDENSER

V280
NOTE 4



DRAIN FROM STEAM
LINE TO 2ND STAGE
REHEATER
DOWNSTREAM OF G.E.
CONTROL VALVE

DRAIN FROM MAIN
STEAM LEADS AHEAD
OF MAIN STEAM
TURBINE STOP VALVES
BEFORE SEAT DRAINS
(SEE DETAIL 1
- ZONE F-1)

DRAIN FROM STEAM
LINE TO 1ST STAGE
REHEATER
DOWNSTREAM OF G.E.
CONTROL VALVE

SHELL POCKET
DRAINS FROM
MSR'S C&D

9TH STAGE
L.P. TURBINE
EXTRACTION
DRAINS

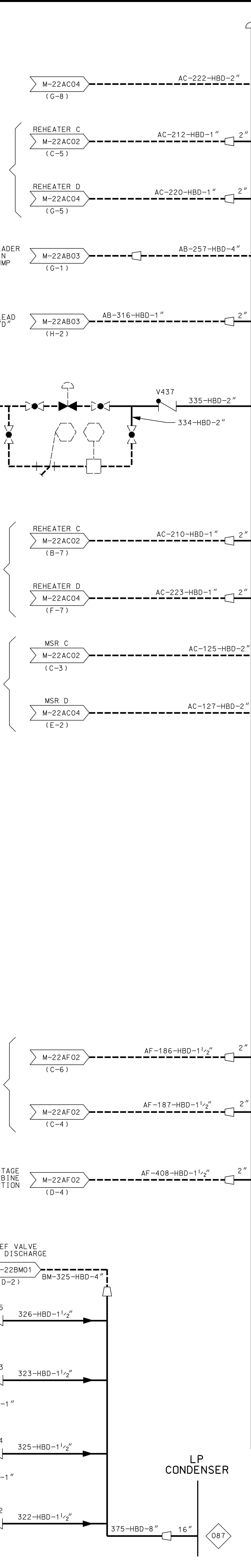
12TH STAGE
L.P. TURBINE
EXTRACTION
DRAIN

RELIEF VALVE
BMV319 DISCHARGE

STEAM SEAL
M-22CA01 (C-5)

STEAM SEAL
M-22CA01 (C-5)

STEAM SEAL
M-22CA01 (C-6)



DRAINS FROM
COLD REHEAT
LINES TO
MSR'S B&D

2ND STAGE
REHEATER B
M-22AC04 (D-5) AC-221-HBD-1" 2"
1ST STAGE
REHEATER B
M-22AC04 (B-7) AC-224-HBD-1" 2"

MSR B M-22AC04 (B-3) AC-138-HBD-2"
MSR D M-22AC04 (D-4) AC-141-HBD-2"
MSR B M-22AC04 (A-3) AC-139-HBD-2"
MSR D M-22AC04 (E-8) AC-135-HBD-2"
MSR D M-22AC04 (E-2) AC-137-HBD-2"
MSR D M-22AC04 (E-2) AC-136-HBD-2"

AC-040-HBD-2" MSR'S A & C M-22AC02 (G-2)
AC-228-HBD-2" MSR'S B & D M-22AC04 (G-2)

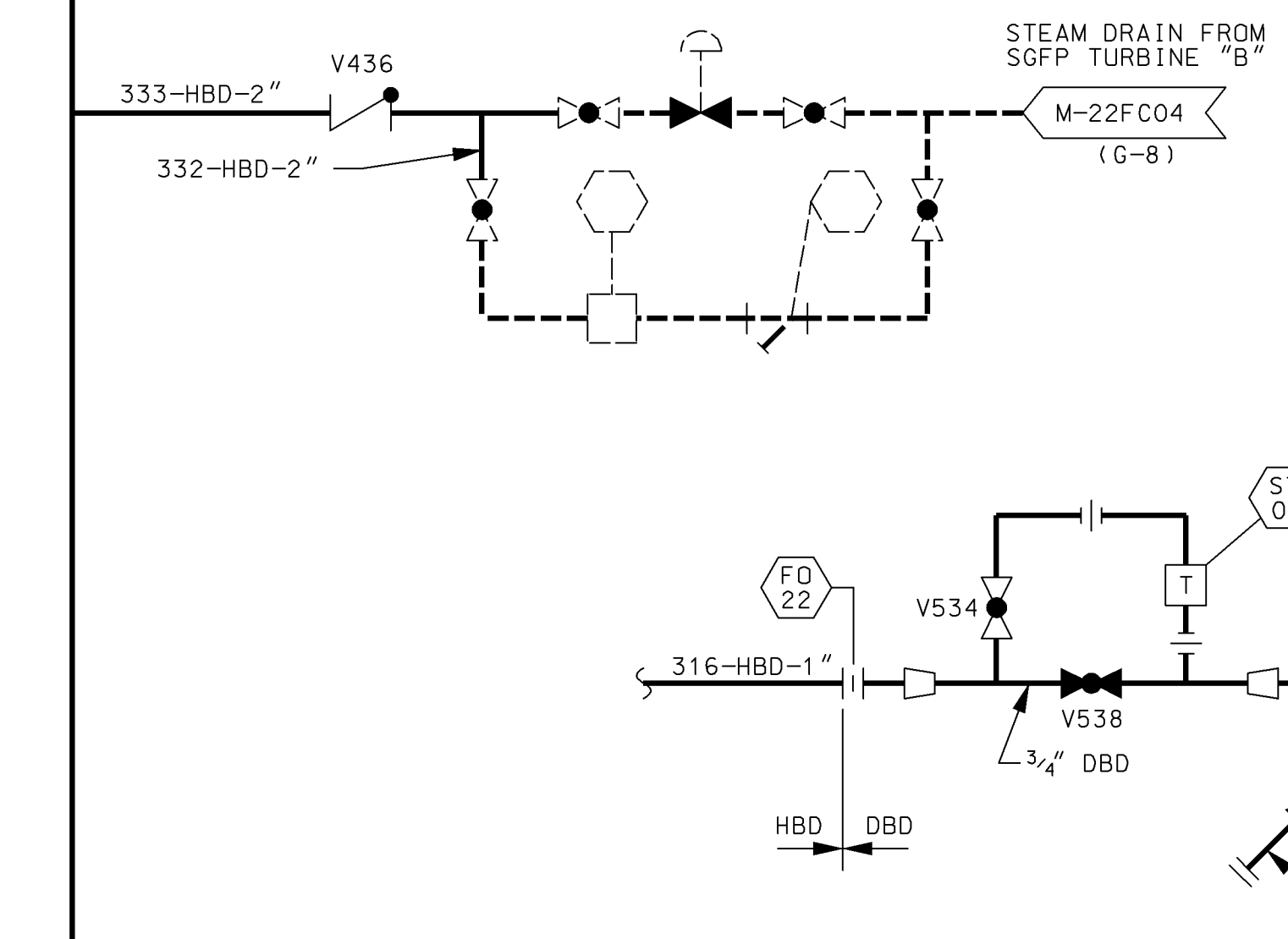
HP
CONDENSER

SCH. 80

LP
CONDENSER

O87

NOTE 1



YS01	V464	V534	V538	ST01	AB-V224	LOOP 1
YS02	V465	V536	V539	ST03	AB-V226	LOOP 3
YS04	V467	V535	V540	ST02	AB-V225	LOOP 2
YS03	V466	V537	V541	ST04	AB-V223	LOOP 4

DETAIL 1

DRAINS FROM H.P. TURBINE
EXTRACTION LINES
TO HIGH PRESSURE
FEEDWATER HEATERS

- NOTES:
1. LINE MUST BE RUN HORIZONTALLY. INDIVIDUAL DRAIN LINES SHOULD BE SLOPED TO THE HEADER AND CONNECTED AT 45° - SCHEDULE 80 FOR EROSION PROTECTION.
 2. DRAINS ARE ARRANGED SUCH THAT SOURCE PRESSURE INCREASES AWAY FROM THE CONDENSER.
 3. FOR CONDENSATE AND FEEDWATER SYSTEM FLUSH, SEE M-22AE01 ZONE B-6 FOR OPPOSITE FLUSH CONNECTION.
 4. KFC02 STEAM SUPPLY CONDENSATE DRAIN, ADV0280 LOCKED OPEN TO ENSURE DRAIN PATH AVAILABLE.

AS-BUILT CLASS 1

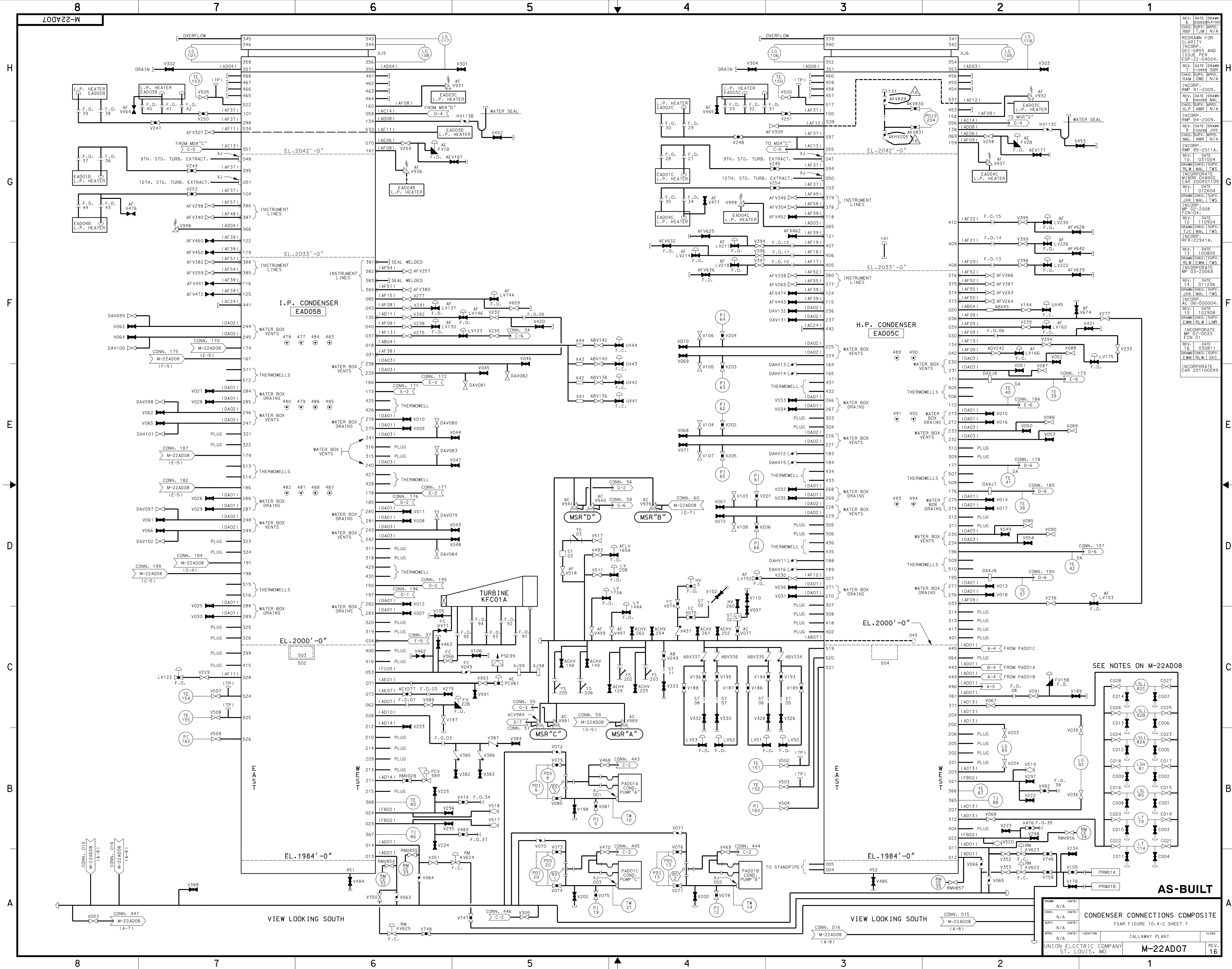
PIPING & INSTRUMENTATION DIAGRAM
CONDENSATE SYSTEM
FSAR FIGURE 10.4-2 SHEET 6

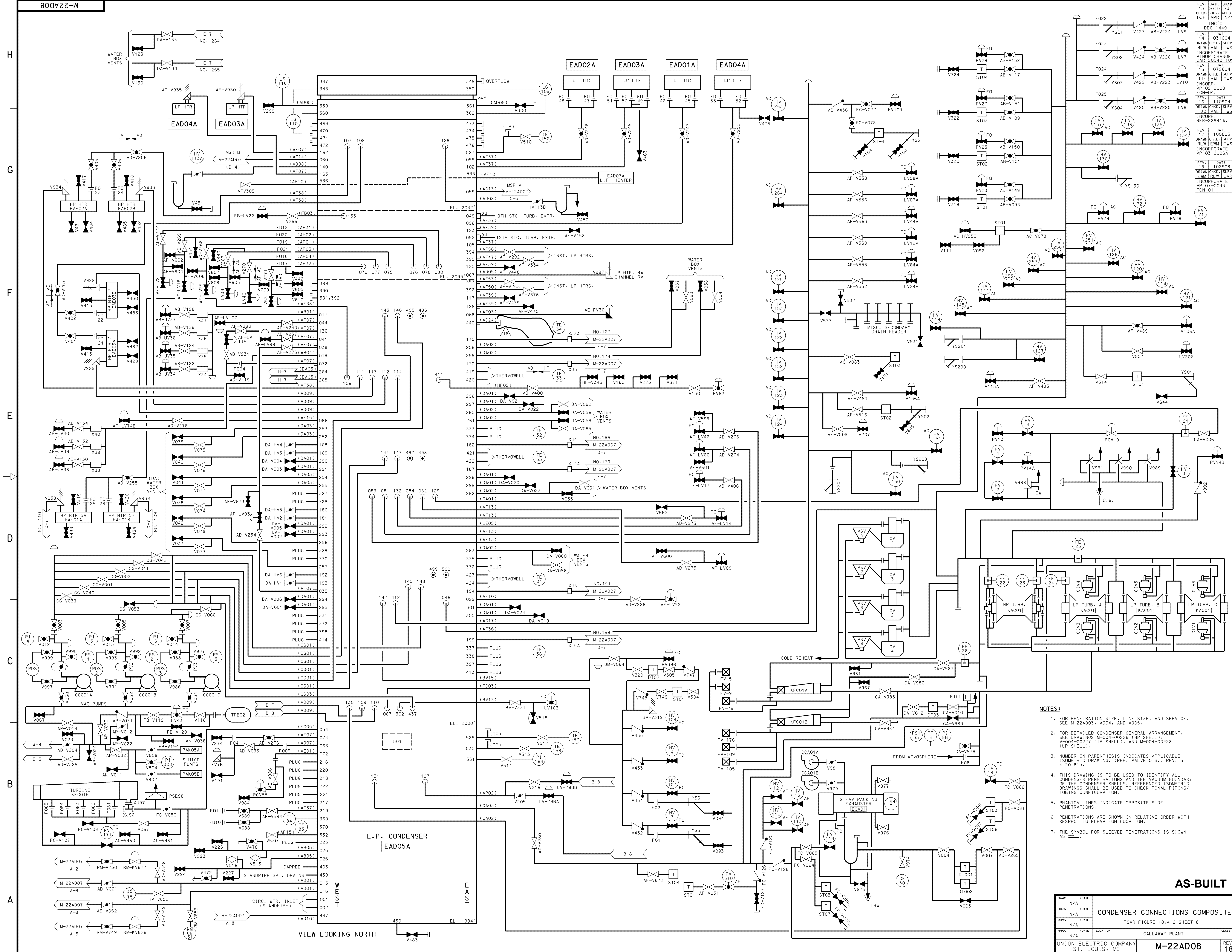
UNION ELECTRIC COMPANY
ST. LOUIS, MO

M-22AD06

REV. 19

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DATE	04/09/01	DLB
CHKD.	SUPV. APPR.	SJC JHC N/A
DATE	04/11/95	HLP
CHKD.	SUPV. APPR.	SJC JHC N/A
DATE	09/03/03	RFR
CHKD.	SUPV. APPR.	RFR TWS N/A
DATE	05/17/04	RFR
CHKD.	SUPV. APPR.	RFR TWS N/A
DATE	05/22/04	RFR
CHKD.	SUPV. APPR.	RFR TWS N/A
DATE	11/09/04	RFR
CHKD.	SUPV. APPR.	RFR TWS N/A
DATE	10/08/05	RFR
CHKD.	SUPV. APPR.	RFR TWS N/A
DATE	02/08/06	RFR
CHKD.	SUPV. APPR.	RFR TWS N/A
DATE	06/00/04	RFR
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DATE	06/27/17	RFR
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DATE	02/16/04	RFR
CHKD.	SUPV. APPR.	RFR TWS N/A





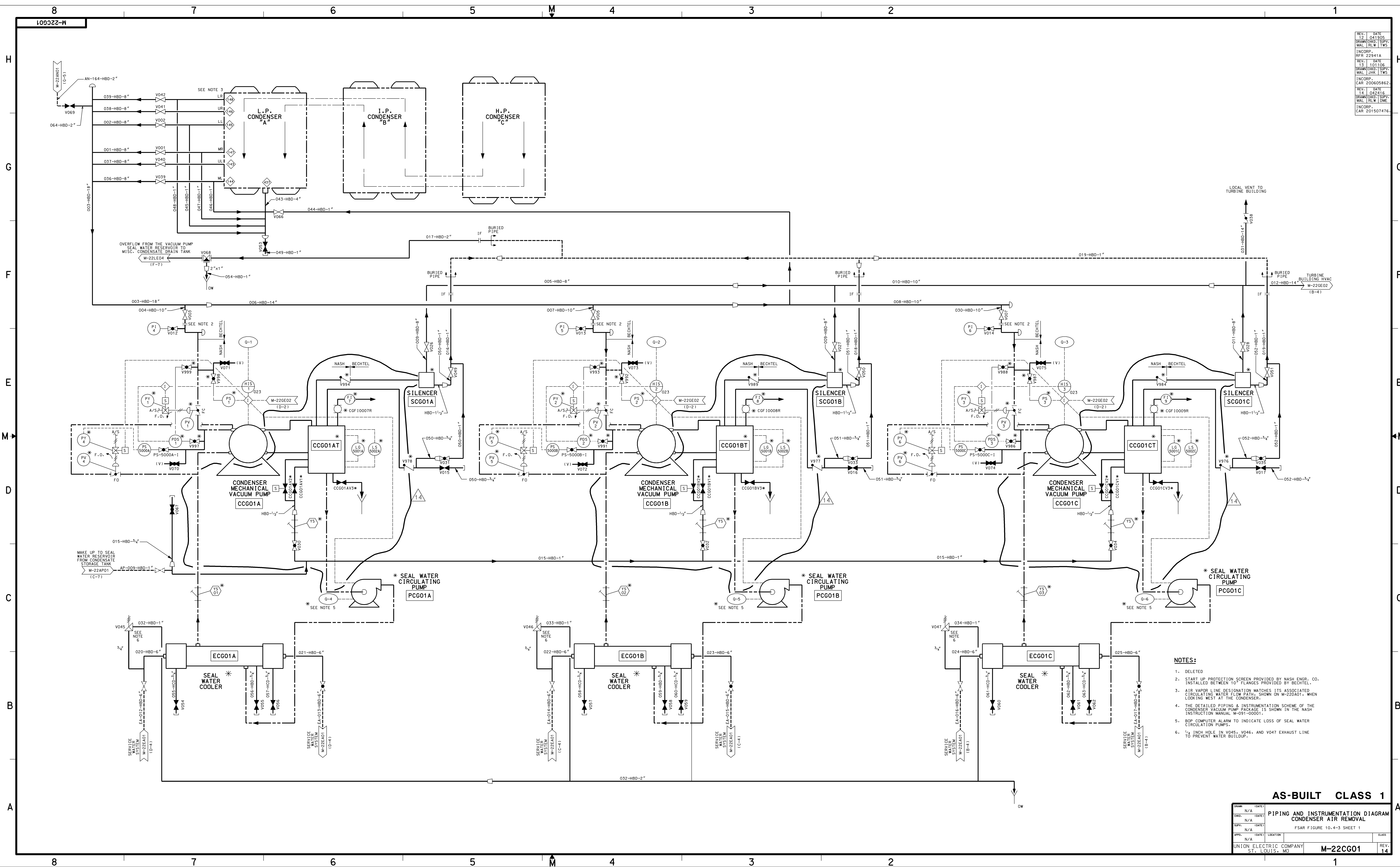
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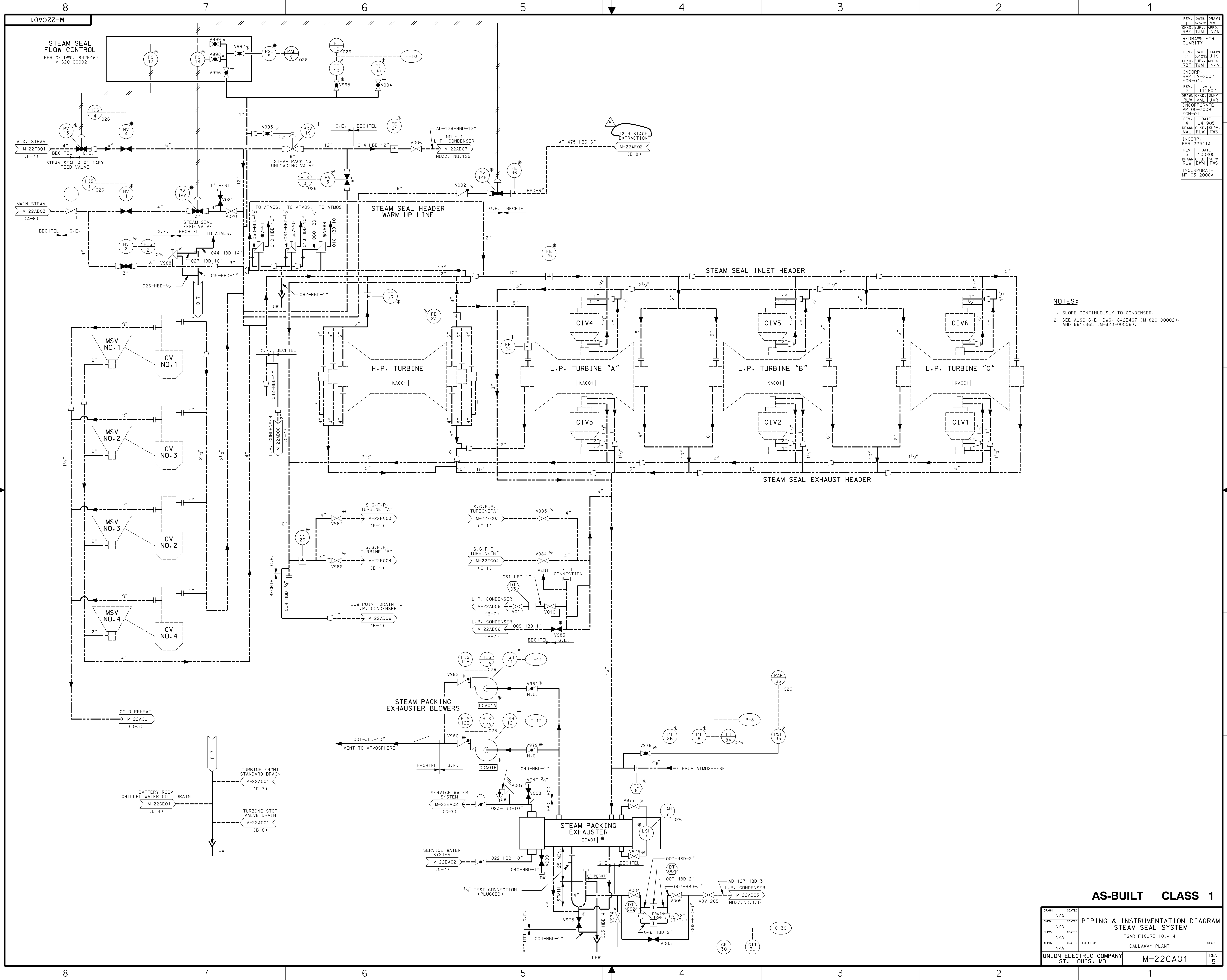
- FOR PENETRATION SIZE, LINE SIZE, AND SERVICE, SEE M-22AD03, AD04, AND AD05.
- FOR DETAILED CONNECTIONS GENERAL ARRANGEMENT, SEE DRAWINGS M-004-00226 (HP SHELL), M-004-00227 (IP SHELL), AND M-004-00228 (LP SHELL).
- NUMBER IN PARENTHESIS INDICATES APPLICABLE ISOMETRIC DRAWING. (REF. VALVE QTS., REV. 5 4-20-81).
- THIS DRAWING IS TO BE USED TO IDENTIFY ALL CONDENSER PENETRATIONS AND THE VACUUM BOUNDARY OF THE CONDENSER SHELLS. REFERENCED ISOMETRIC DRAWINGS SHALL BE USED TO CHECK FINAL PIPING/TUBING CONFIGURATION.
- PHANTOM LINES INDICATE OPPOSITE SIDE PENETRATIONS.
- PENETRATIONS ARE SHOWN IN RELATIVE ORDER WITH RESPECT TO ELEVATION LOCATION.
- THE SYMBOL FOR SLEEVED PENETRATIONS IS SHOWN AS

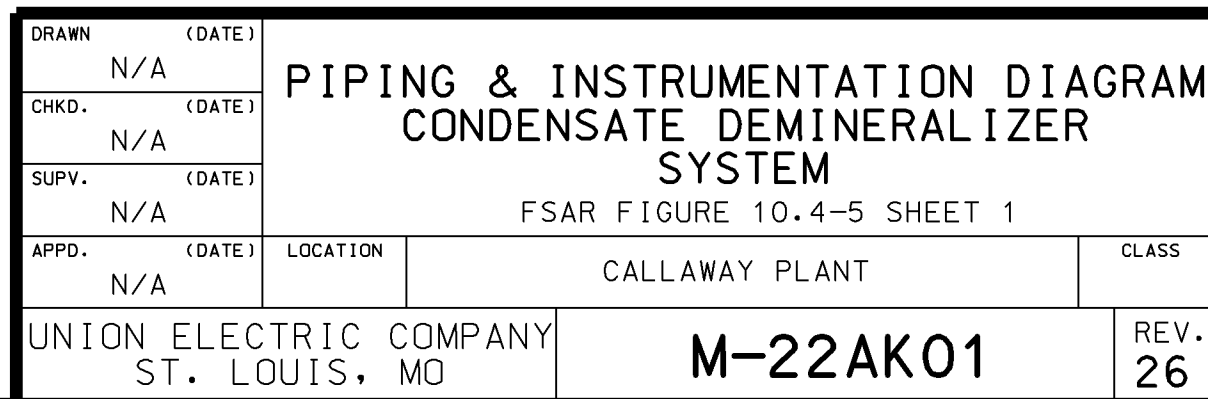
AS-BUILT

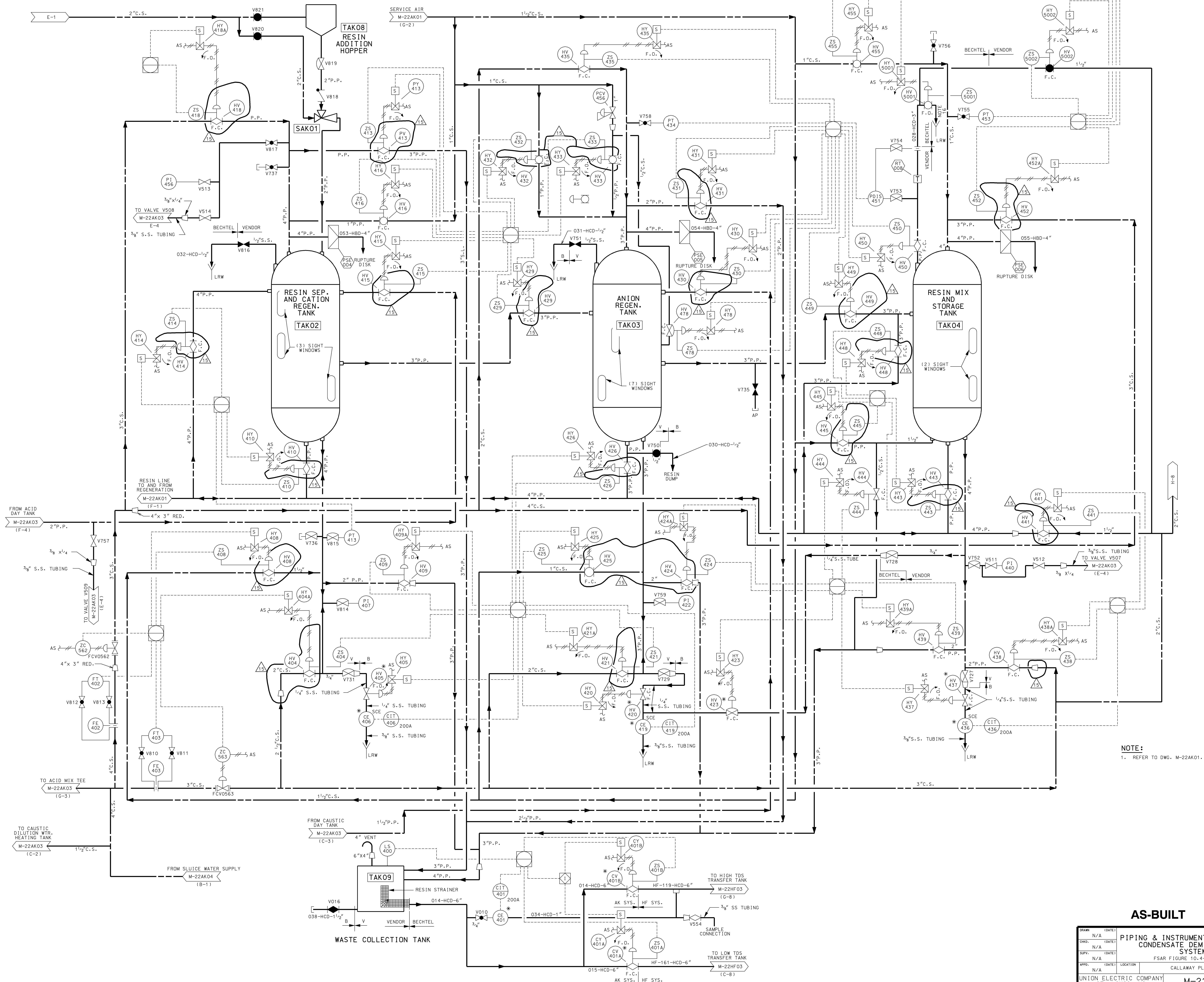
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CHGD	N/A	(DATE)	
SUPV	N/A	(DATE)	
APPD	N/A	(DATE)	
UNION ELECTRIC COMPANY	ST. LOUIS, MO	CALLAWAY PLANT	CL455

CONDENSER CONNECTIONS COMPOSITE	
FSAR FIGURE 10.4-2 SHEET 8	
M-22AD08	
REV.	18









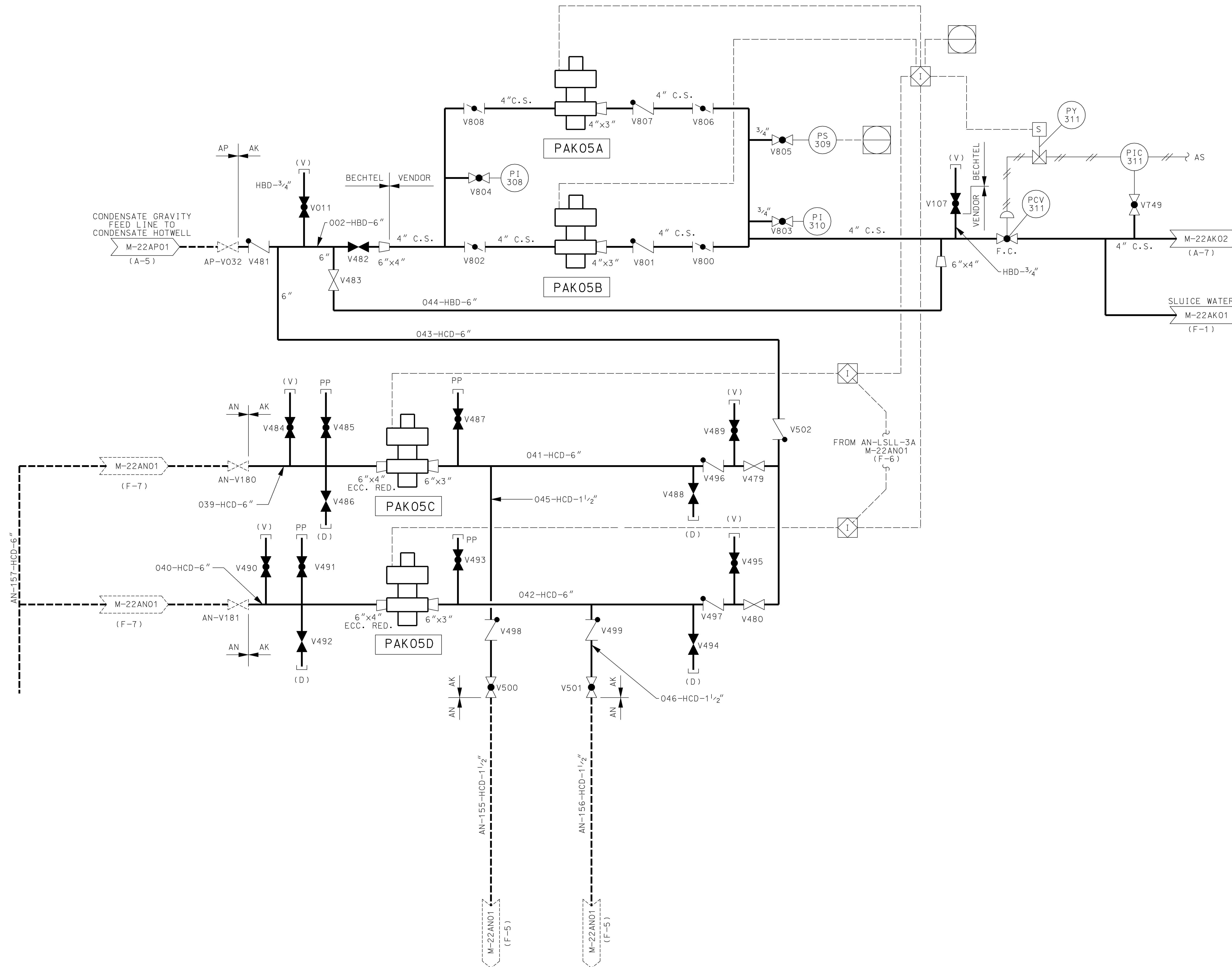
NOTE:
1. REFER TO DWG. M-22AK01.

AS-BUILT CLASS 1

PIPING & INSTRUMENTATION DIAGRAM CONDENSATE DEMINERALIZER SYSTEM

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DRAWN	(DATE)																		
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CHKD.	(DATE)																		
N/A																			
SUPV.	(DATE)																		
N/A																			
APPRO.	(DATE)																		
N/A																			
LOCATION	CALLAWAY PLANT																		
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22AK02	REV.	15																


REV.	DATE	DRAWN
5	8/5/91	DJB
CHKD.	SUPP.	APPD.
RHB	TJW	N/A
REDRAWN FOR CLARITY		
REV.	DATE	DRAWN
6	01/11/96	RBF
CHKD.	SUPP.	APPD.
JHB	AMR	N/A
INC'D RFR-16416A		
REV.	DATE	
7	06/11/03	
DRAWN	CHKD.	SUPP.
RHB	SKC	TWS
ISSUE PER CAR 00303755.		
REV.	DATE	
8	07/20/23	
DRAWN	CHKD.	SUPP.
RHB	JHK	TWS
NCORP		
MP 99-2016B		
REV.	DATE	
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TJC	JHK	TWS
INCORPORATE		
RFR-22941A.		

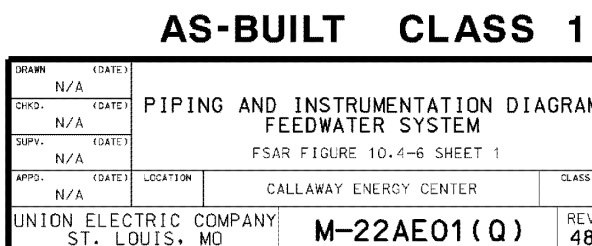


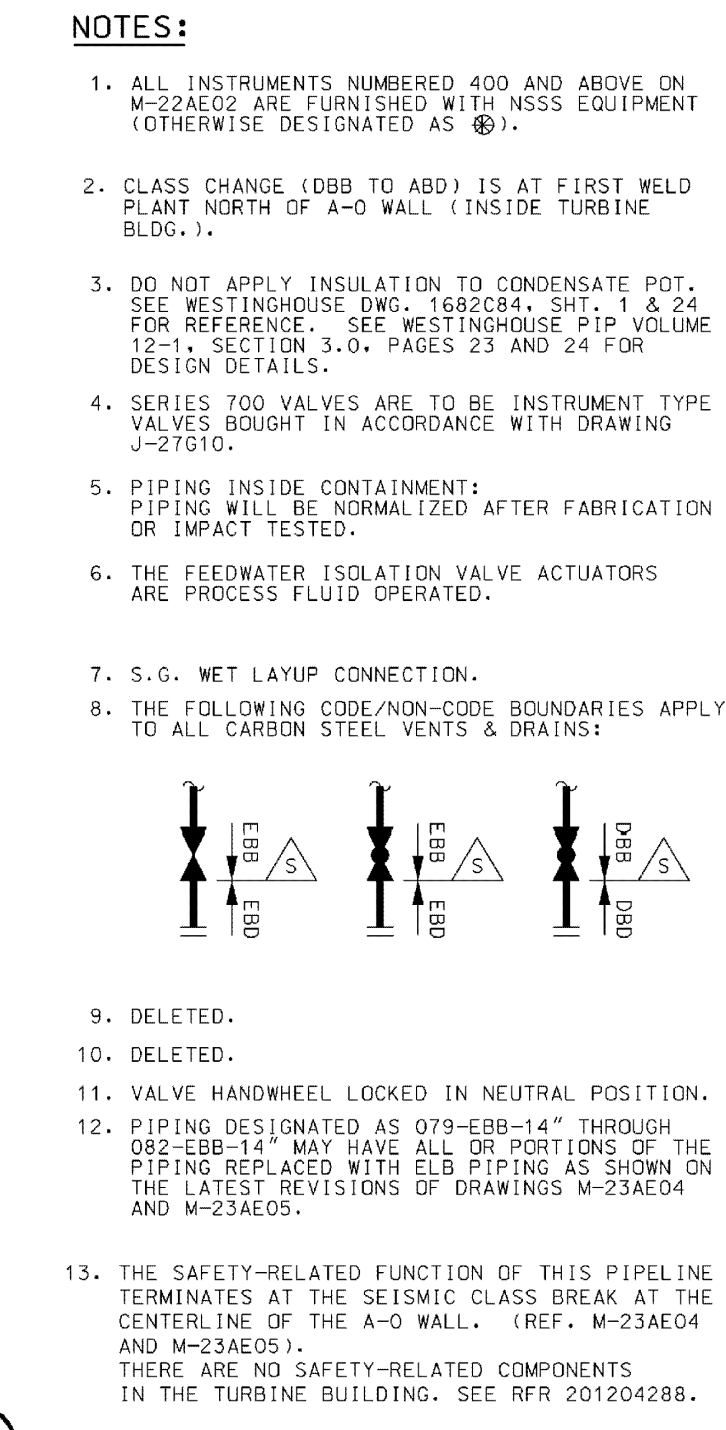
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M-220102
M-220103
M-220104

AS-BUILT CLASS 1

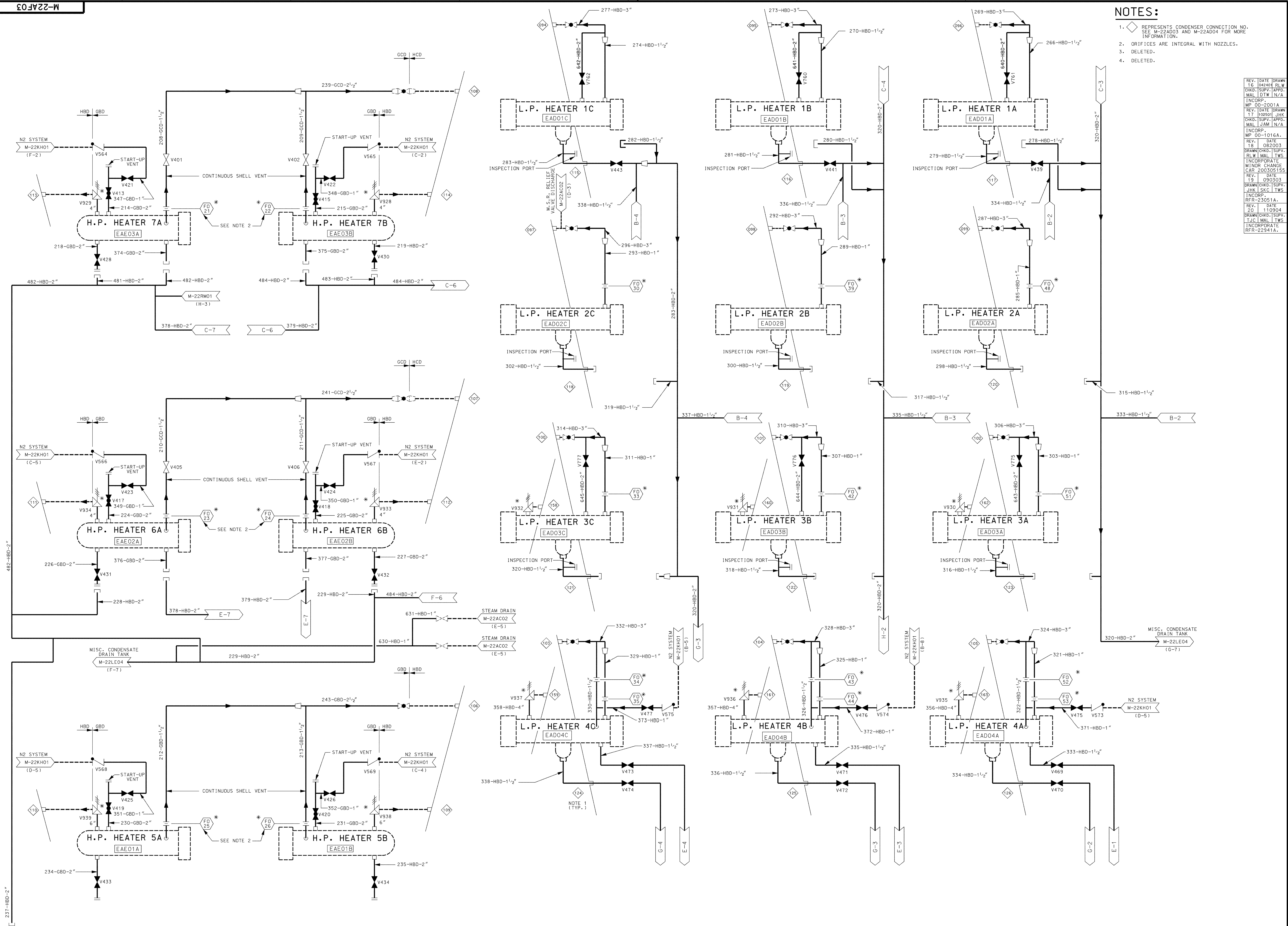
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APPD.	(DATE)				
N/A		LOCATION	CALLAWAY PLANT		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO			M-22AKO4		REV. 9






N/A		PIPING AND INSTRUMENTATION DIAGRAM FEEDWATER SYSTEM FSAR FIGURE 10.4-6 SHEET 2		CLASS
CHKD.	(DATE)			
SUPV.	(DATE)			
DATE	(DATE)			
LOCATION	N/A	CALLAWAY ENERGY CENTER		
UNION ELECTRIC COMPANY ST. LOUIS, MO		M-22AE02(Q)		REV. 32






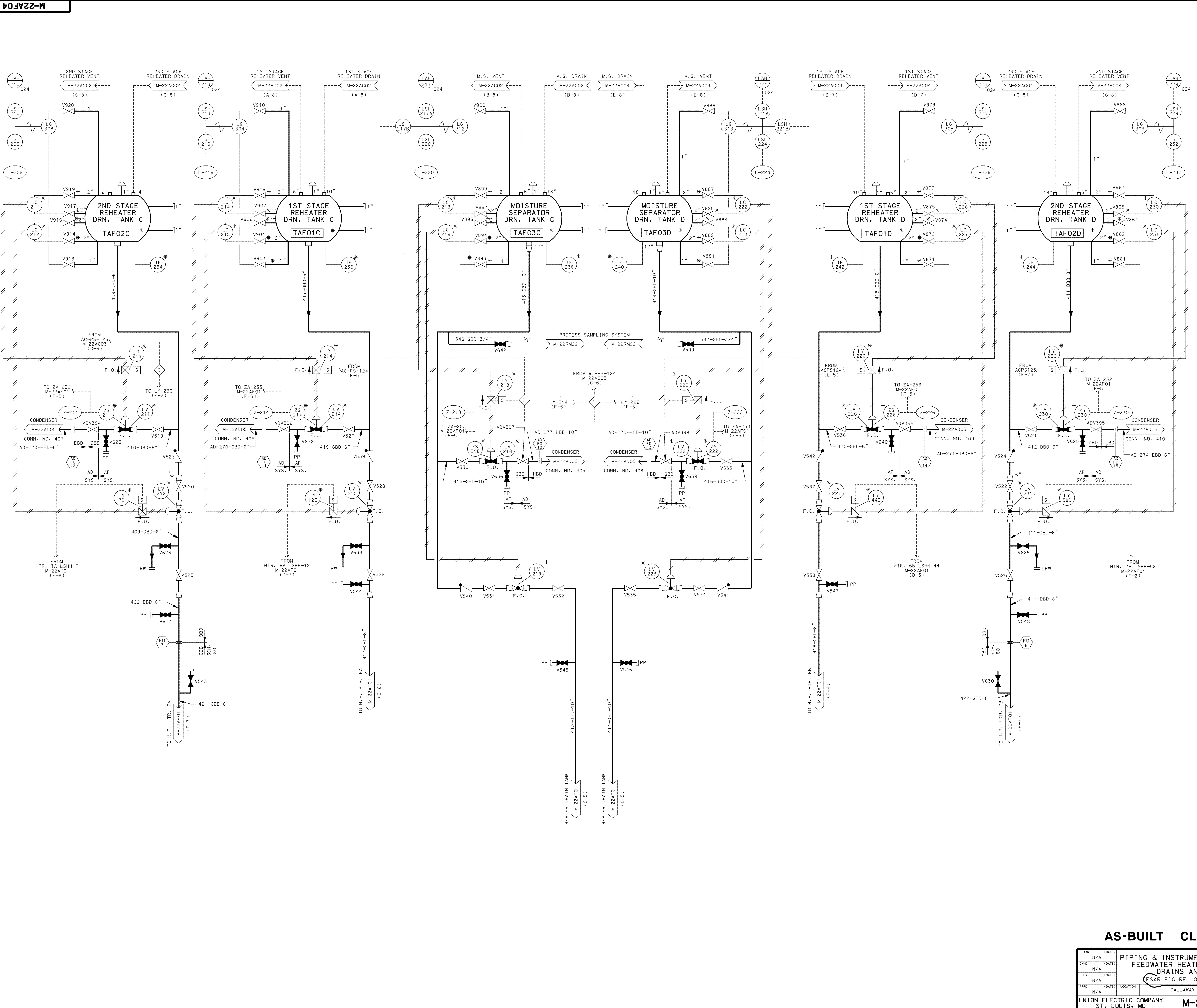
NOTES:

1.  REPRESENTS CONDENSER CONNECTION NO. SEE M-22AD03 AND M-22AD04 FOR MORE INFORMATION.
2. ORIFICES ARE INTEGRAL WITH NOZZLES.
3. DELETED.
4. DELETED.

REV.	DATE		
16	042401	RLW	
CHKD.	SUPV.	APPD.	
MAL	DWT	N/A	
INCORP.			
MP 00-2001A			
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INCORPORATE			
RFR-22941A.			

AS-BUILT CLASS 1

DRWN	(DATE)	PIPING AND INSTRUMENTATION DIAGRAM FEEDWATER HEATER EXTRACTION DRAINS AND VENTS FSAR FIGURE 10.4-6 SHEET 5				
N/A						
CHKD.	(DATE)					
N/A						
SUPV.	(DATE)					
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APPD.	(DATE)	LOCATION	CALLAWAY PLANT			CLASS
N/A						
UNION ELECTRIC COMPANY ST. LOUIS, MO			M-22AF03			REV. 20



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3	11/09/93	RBF						
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20	11/09/04	RBF						

AS-BUILT CLASS 1

REV.	DATE	DRAWN	CHKD.	SUPV.	APPR.	RFB	TJM	N/A
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3	11/09/93	RBF						
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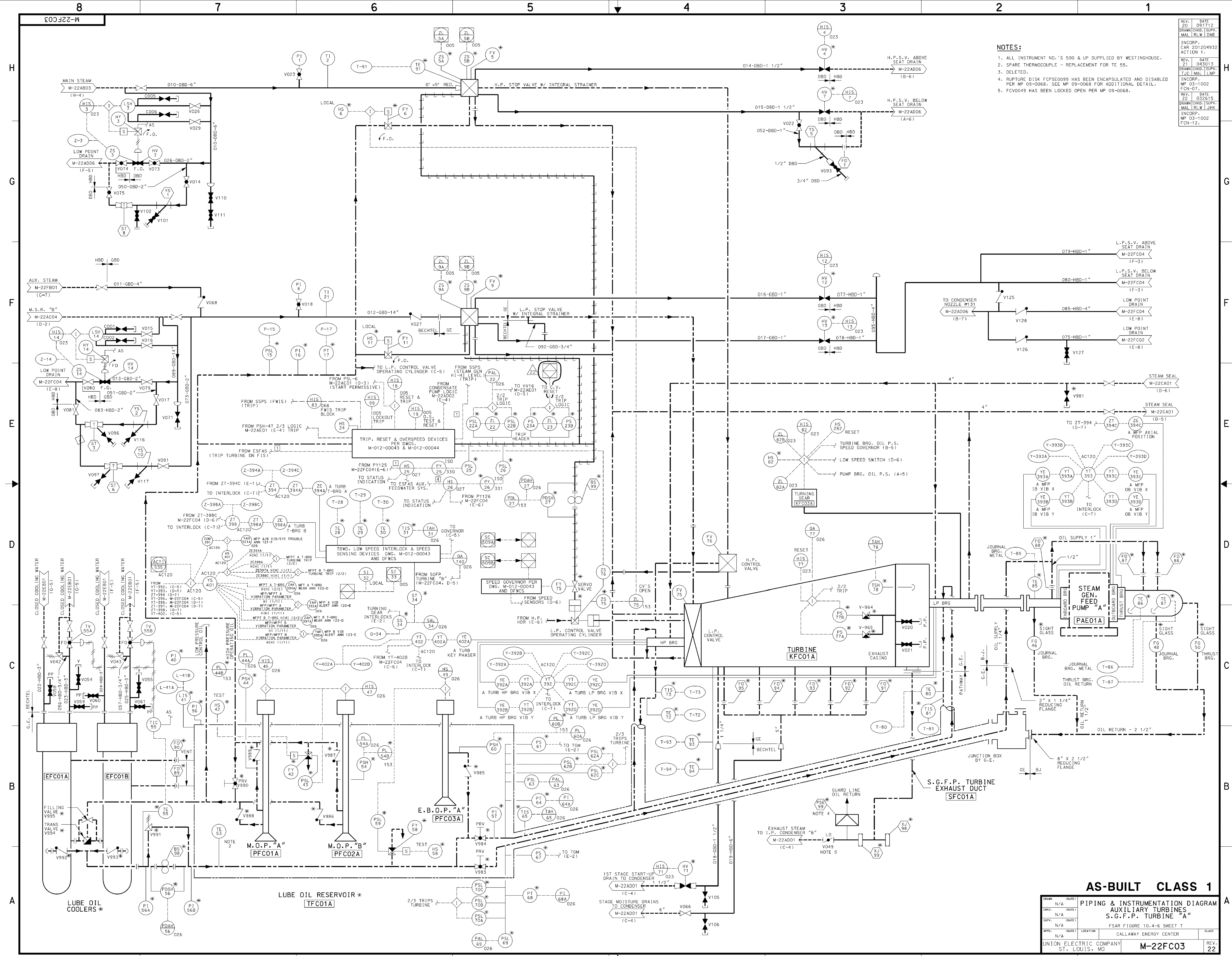
UNION ELECTRIC COMPANY
ST. LOUIS, MO

PIPING & INSTRUMENTATION DIAGRAM
FEEDWATER HEATER EXTRACTION
DRAINS AND VENTS
FSAR FIGURE 10.4-6 SHEET 6

CALLAWAY PLANT

M-22AF04

REV. 10

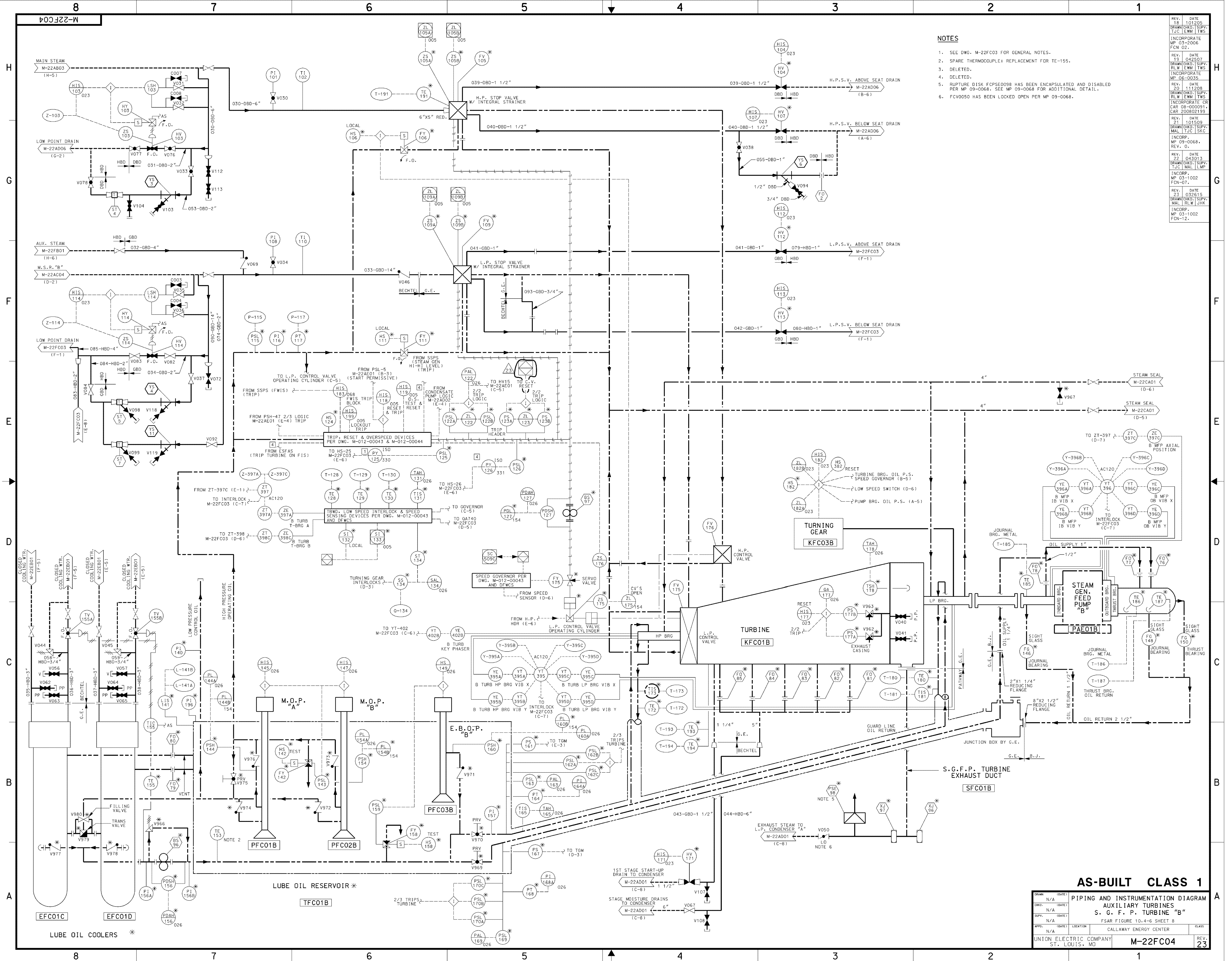


- NOTES:
1. ALL INSTRUMENT NO.'S 500 & UP SUPPLIED BY WESTINGHOUSE.
 2. SPARE THERMOCOUPLE - REPLACEMENT FOR TE 55.
 3. DELETED.
 4. RUPTURE DISK FCPSE0099 HAS BEEN ENCAPSULATED AND DISABLED PER MP 09-0068. SEE MP 09-0068 FOR ADDITIONAL DETAIL.
 5. FCV0049 HAS BEEN LOCKED OPEN PER MP 09-0068.

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22	032615			
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AS-BUILT CLASS 1

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INCORP.	RFR 22341A		
REV.	DATE	DRAWN	BY
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4	042619		
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REV.	0.		

H

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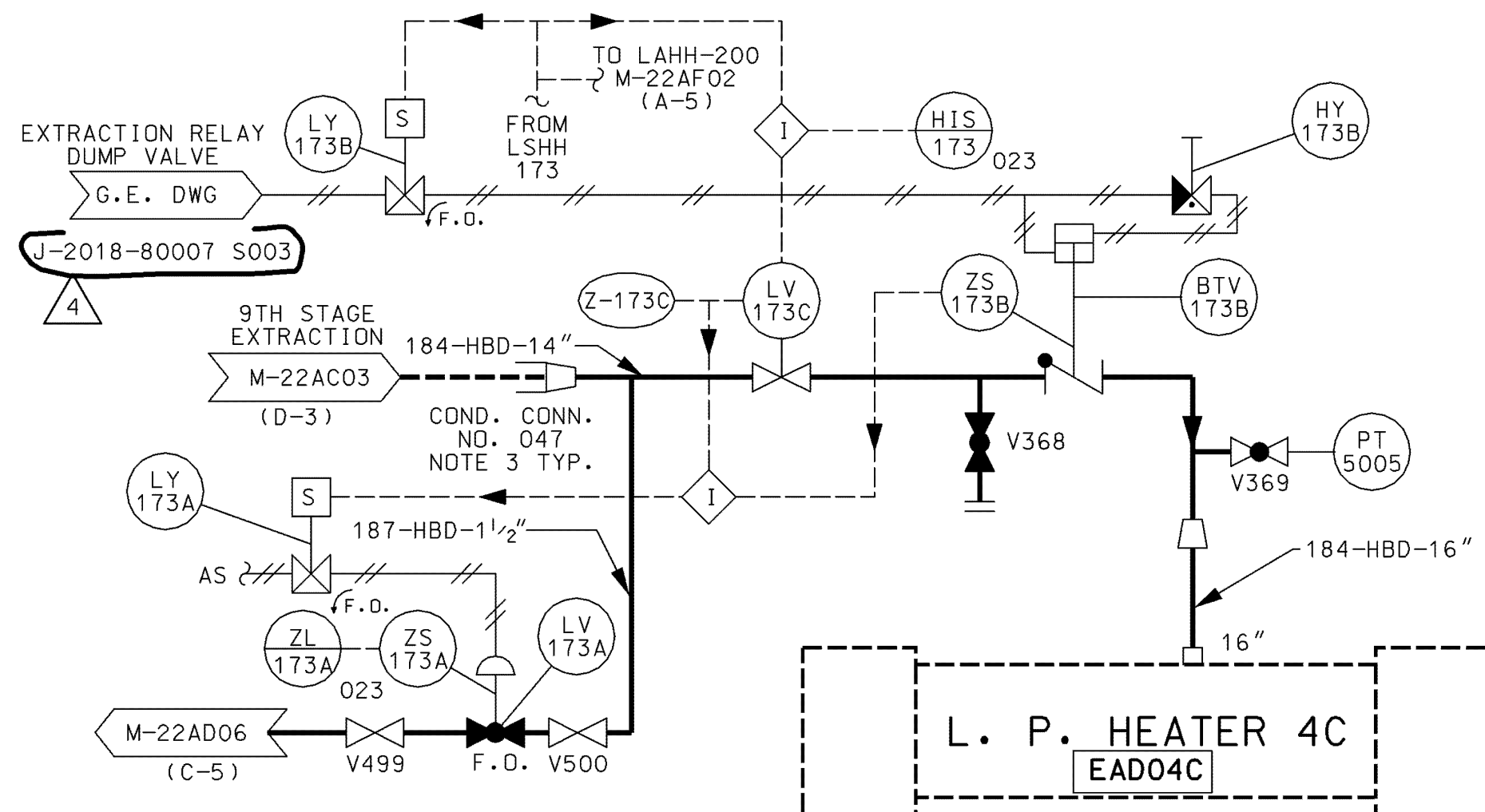
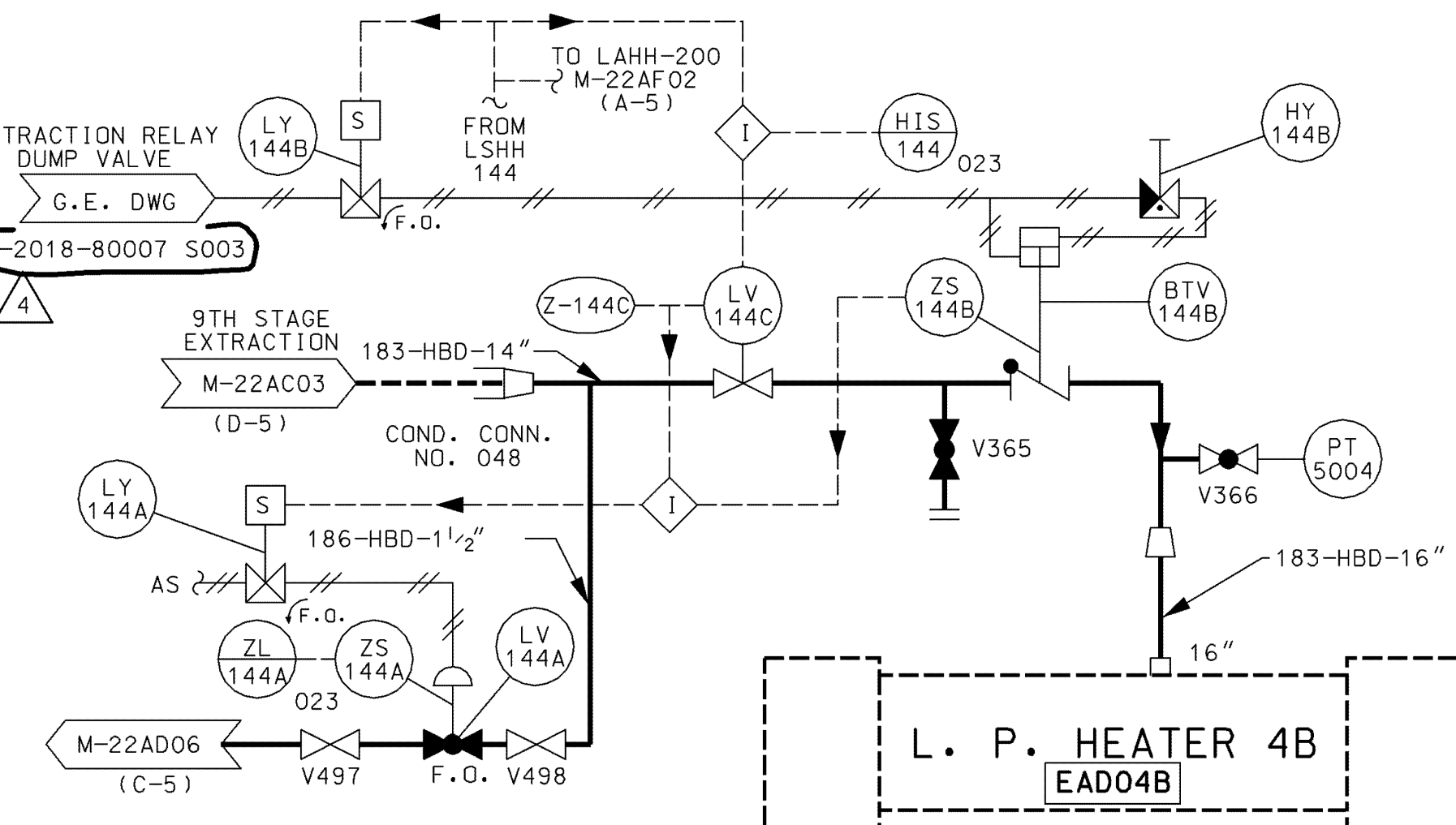
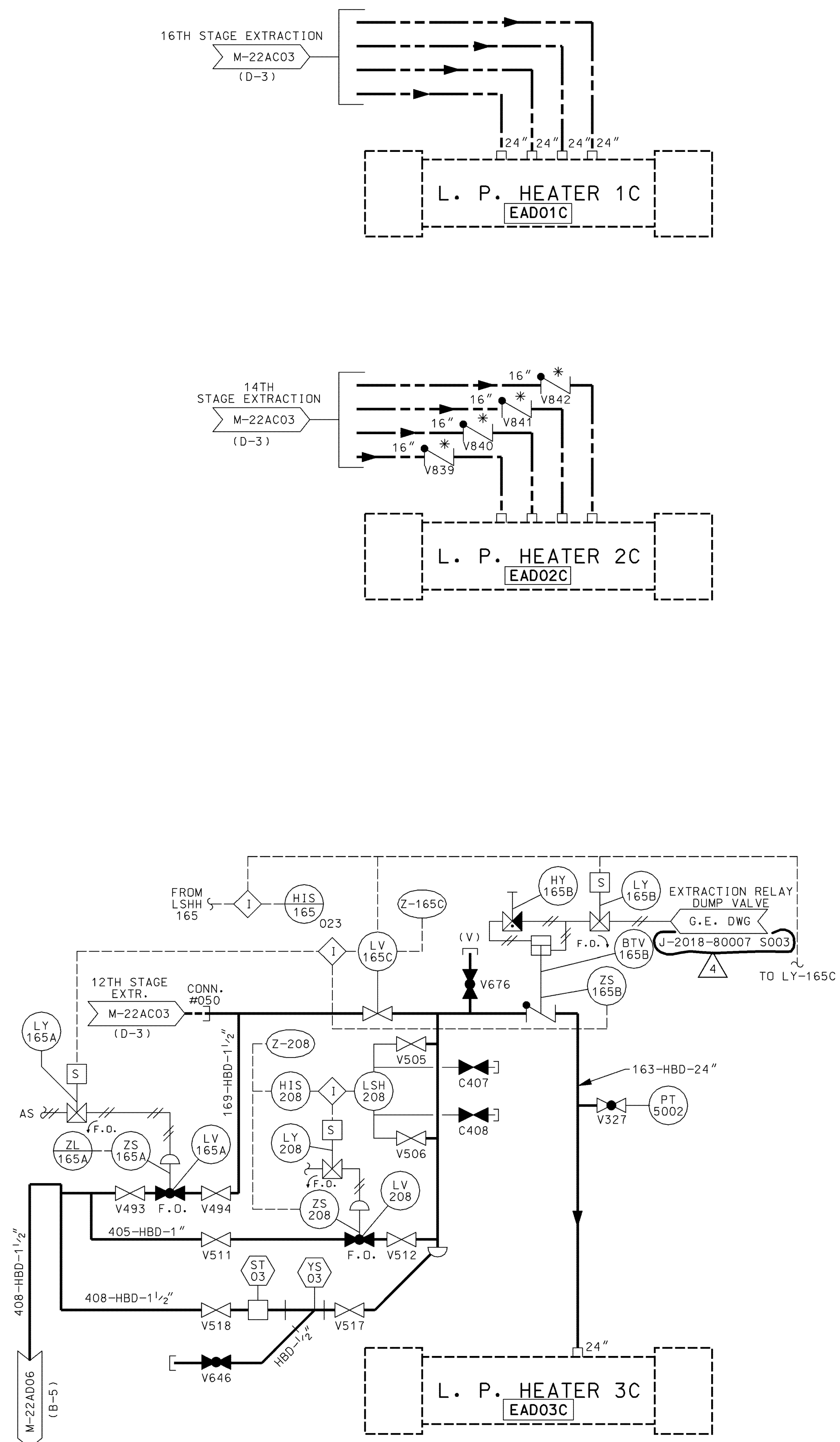
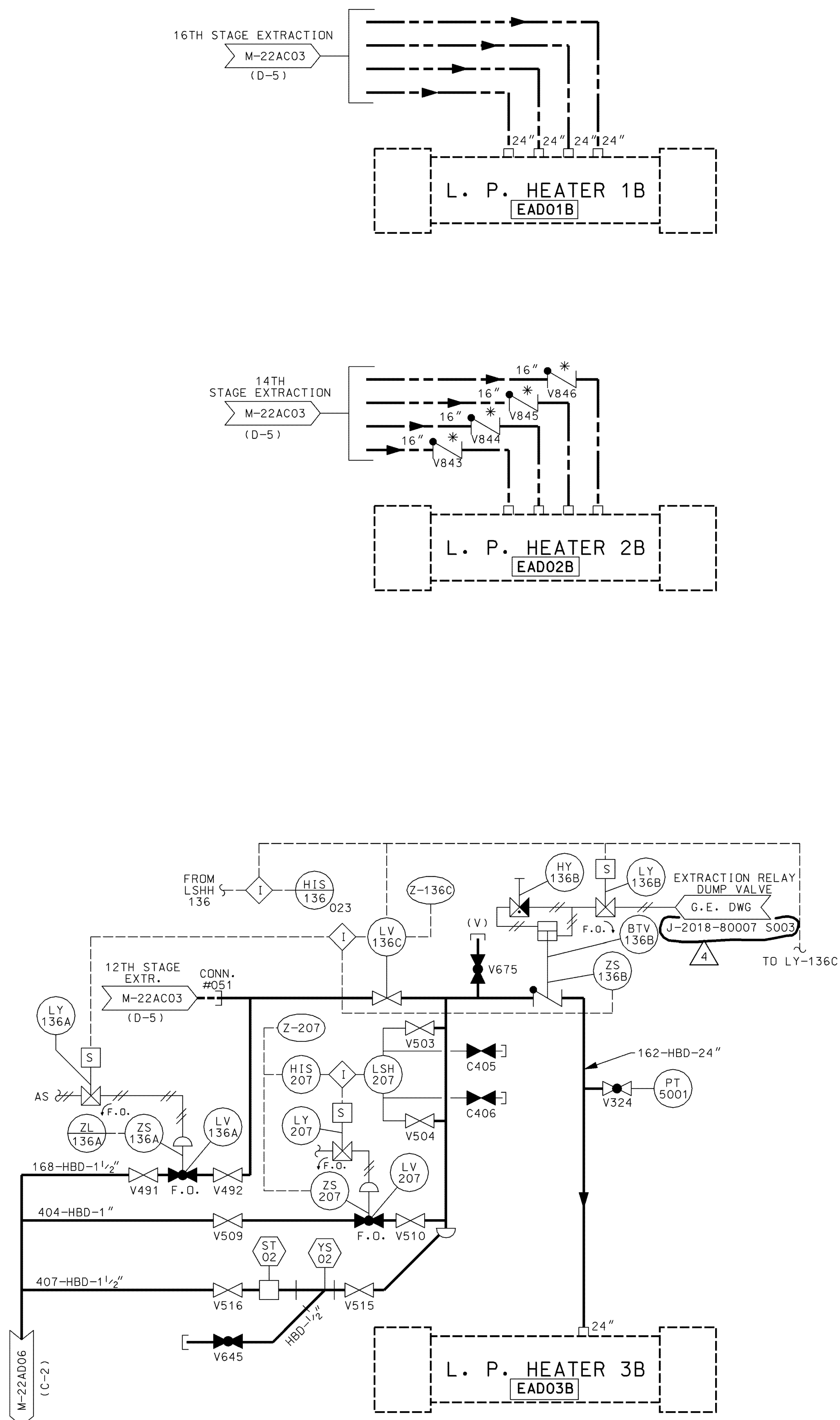
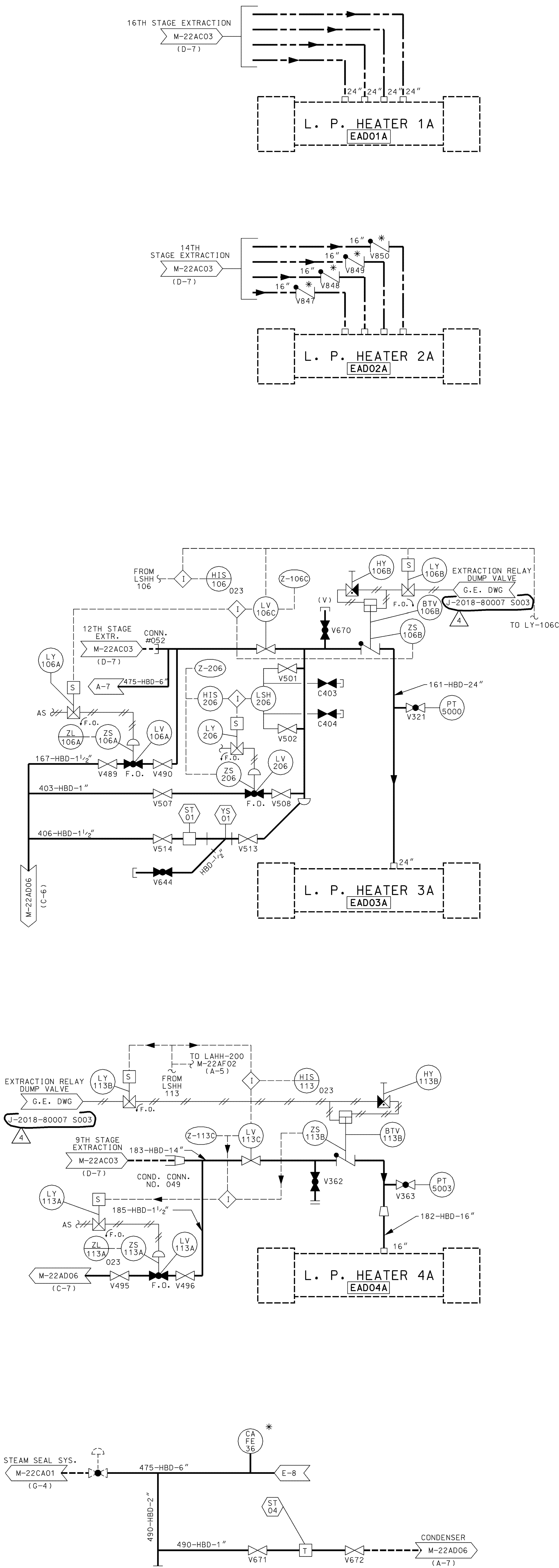
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A

AS-BUILT CLASS 1

DRAWN	N/A	DATE		PIPING & INSTRUMENTATION DIAGRAM	
CHKD.	N/A	DATE		FEEDWATER HEATER EXTRACTION	
SUPV.	N/A	DATE		DRAINS & VENTS	
APPR.	N/A	DATE		FSAR FIGURE 10.4-6 SHEET 10	
LOCATION	CALLAWAY ENERGY CENTER	CLASS			
UNION ELECTRIC COMPANY	ST. LOUIS, MO	M-22AF02A	REV.	4	

M-22AF02A



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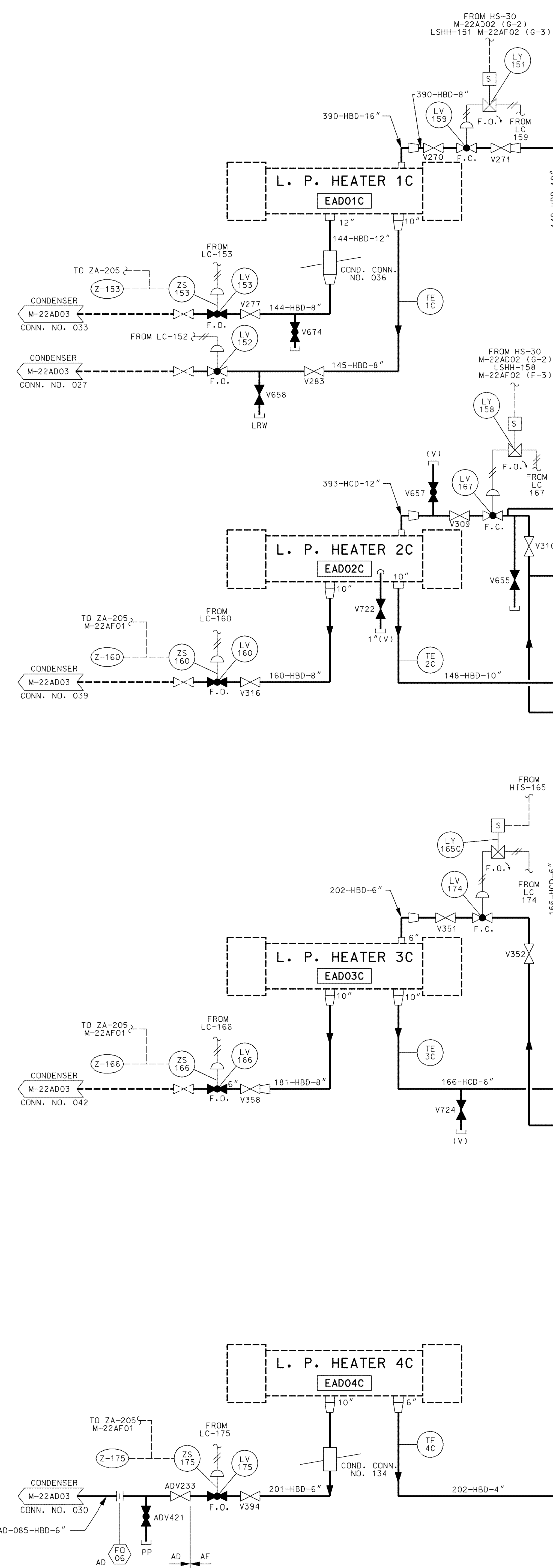
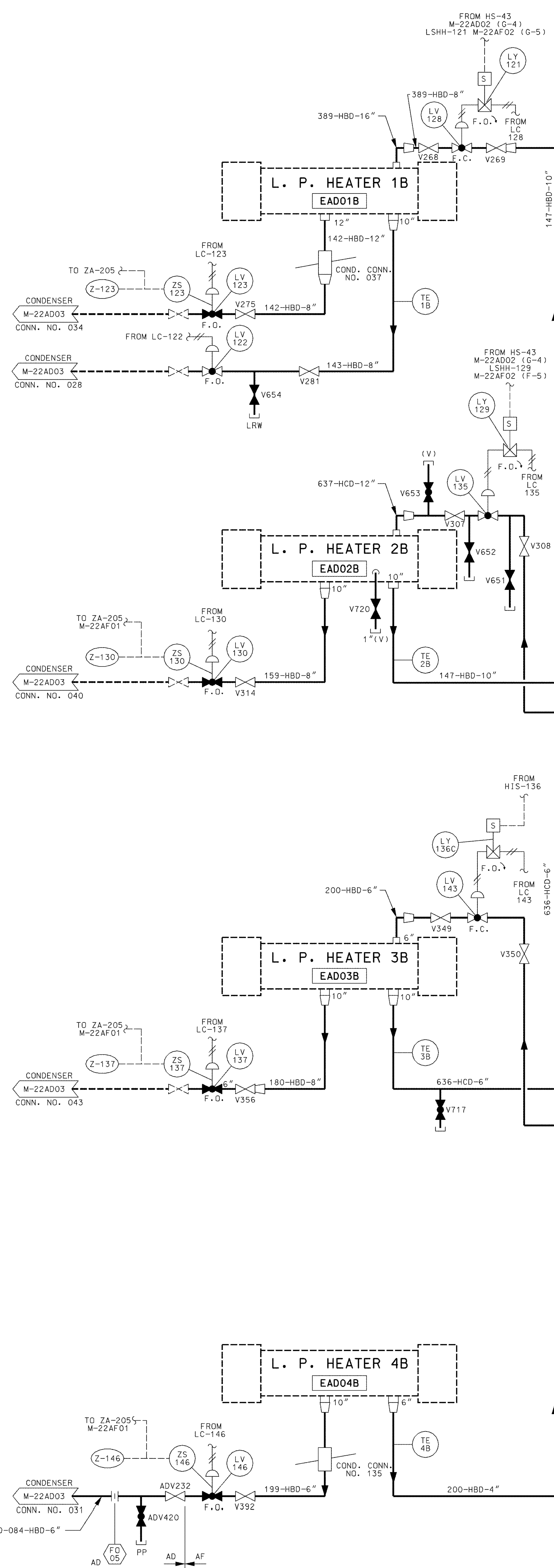
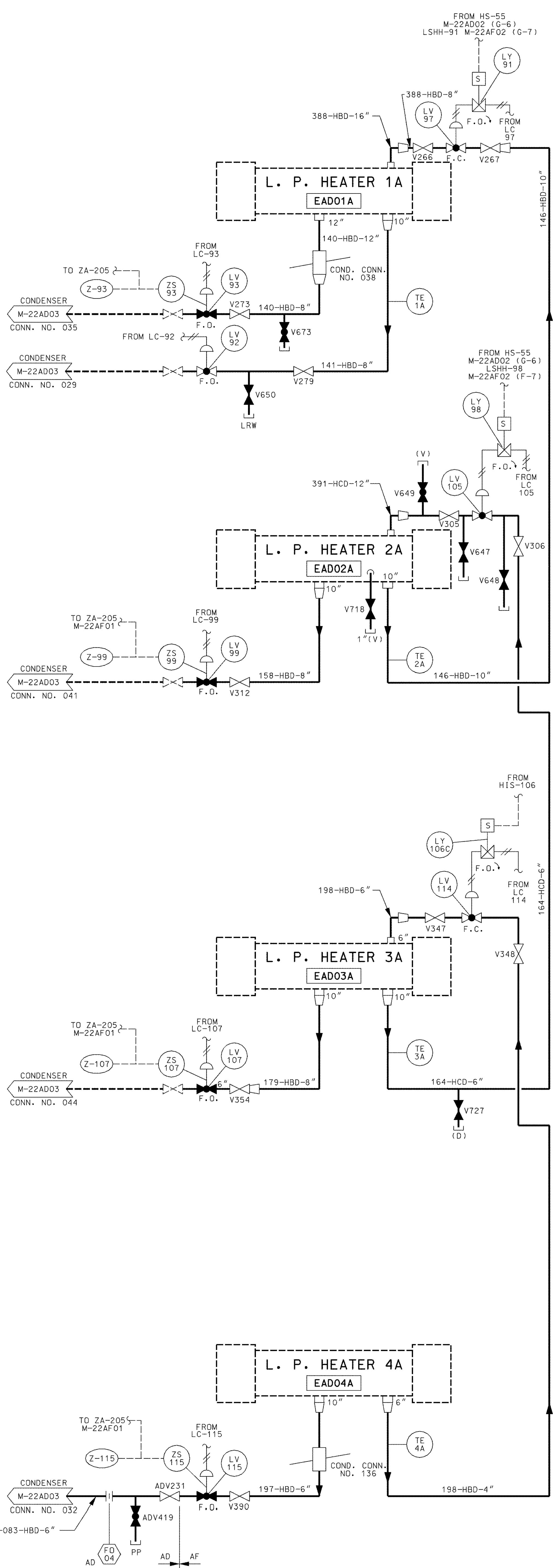
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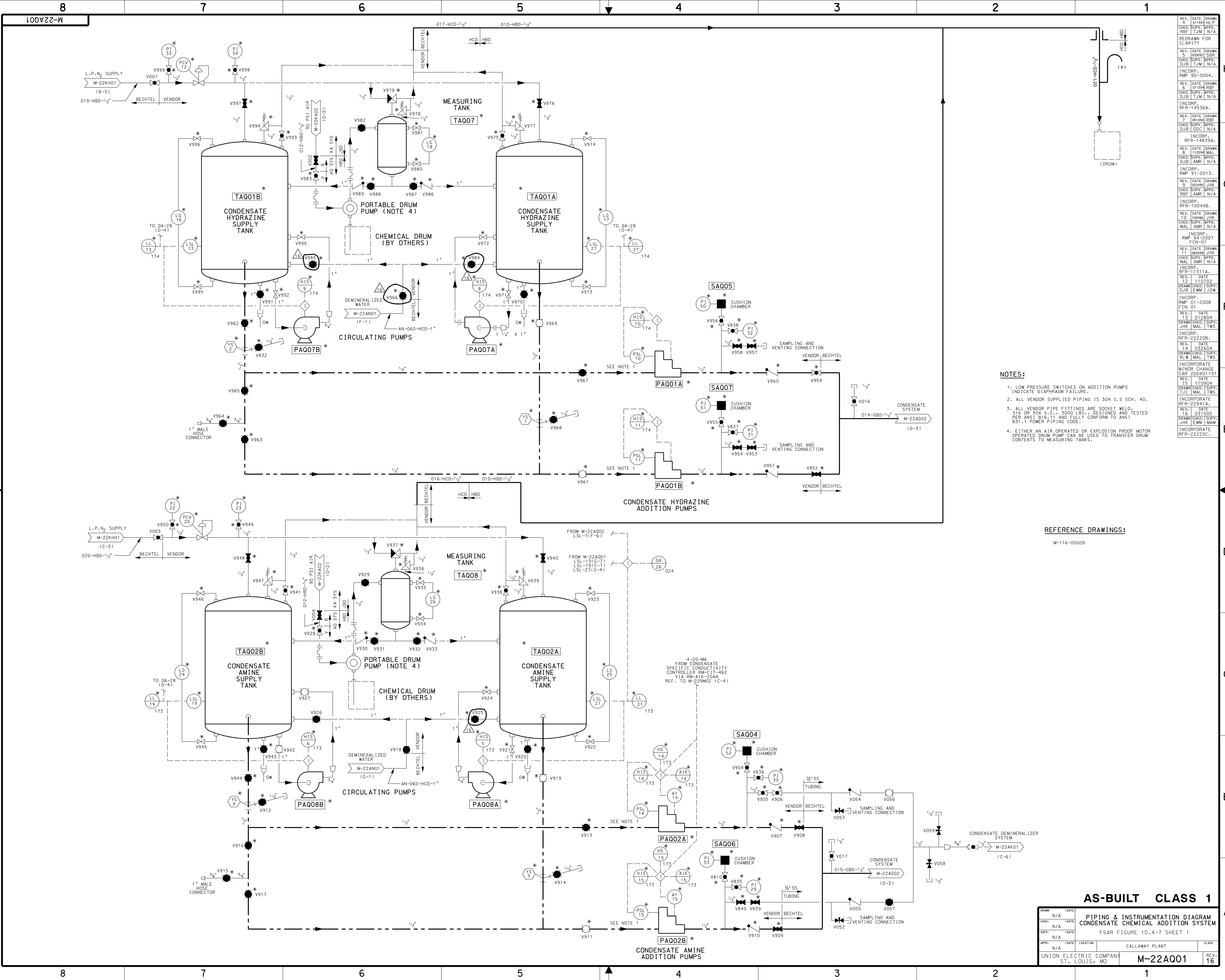
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RFR-18815A.
REV. DATE
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MAL RLW TWS
INCORP.
RFR 22941A

M-22AF02B



AS-BUILT CLASS 1

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CHKD.	N/A	(DATE)	FEEDWATER HEATER EXTRACTION
SUPV.	N/A	(DATE)	DRAINS & VENTS
APPD.	N/A	(DATE)	FSAR FIGURE 10.4-6 SHEET 1
LOCATION	CALLAWAY PLANT	CLASS	
UNION ELECTRIC COMPANY	M-22AF02B	REV.	4
ST. LOUIS, MO			



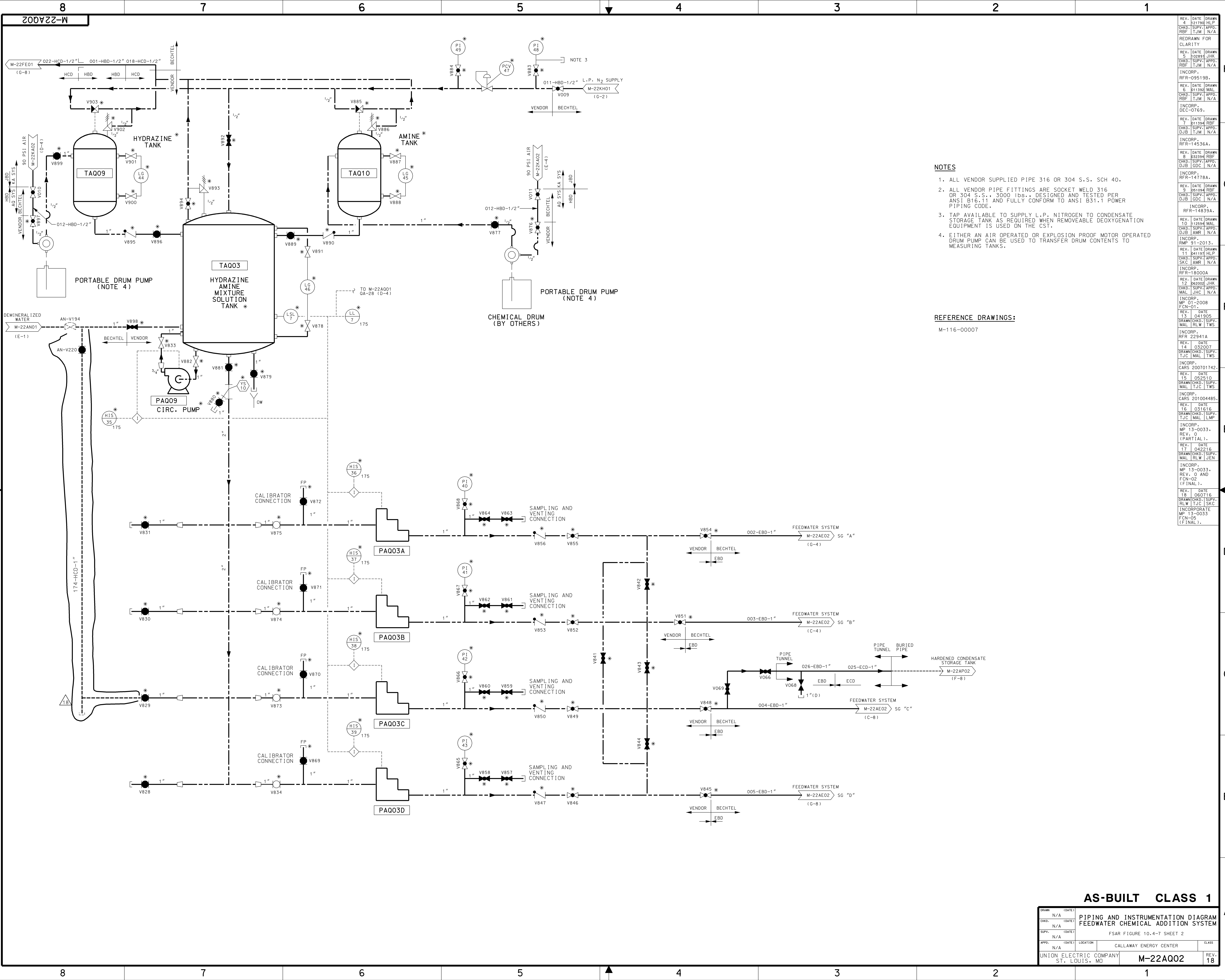
- NOTES:
1. LOW PRESSURE SWITCHES ON ADDITION PUMPS INDICATE DIAPHRAGM FAILURE.
 2. ALL VENDOR SUPPLIED PIPING IS 304 S.S SCH. 40.
 3. ALL VENDOR PIPE FITTINGS ARE SOCKET WELD, 316 OR 304 S.S., 3000 LBS., DESIGNED AND TESTED PER ANSI B16.11 AND FULLY CONFORM TO ANSI B31.1 POWER PIPING CODE.
 4. EITHER AN AIR OPERATED OR EXPLOSION PROOF MOTOR OPERATED DRUM PUMP CAN BE USED TO TRANSFER DRUM CONTENTS TO MEASURING TANKS.

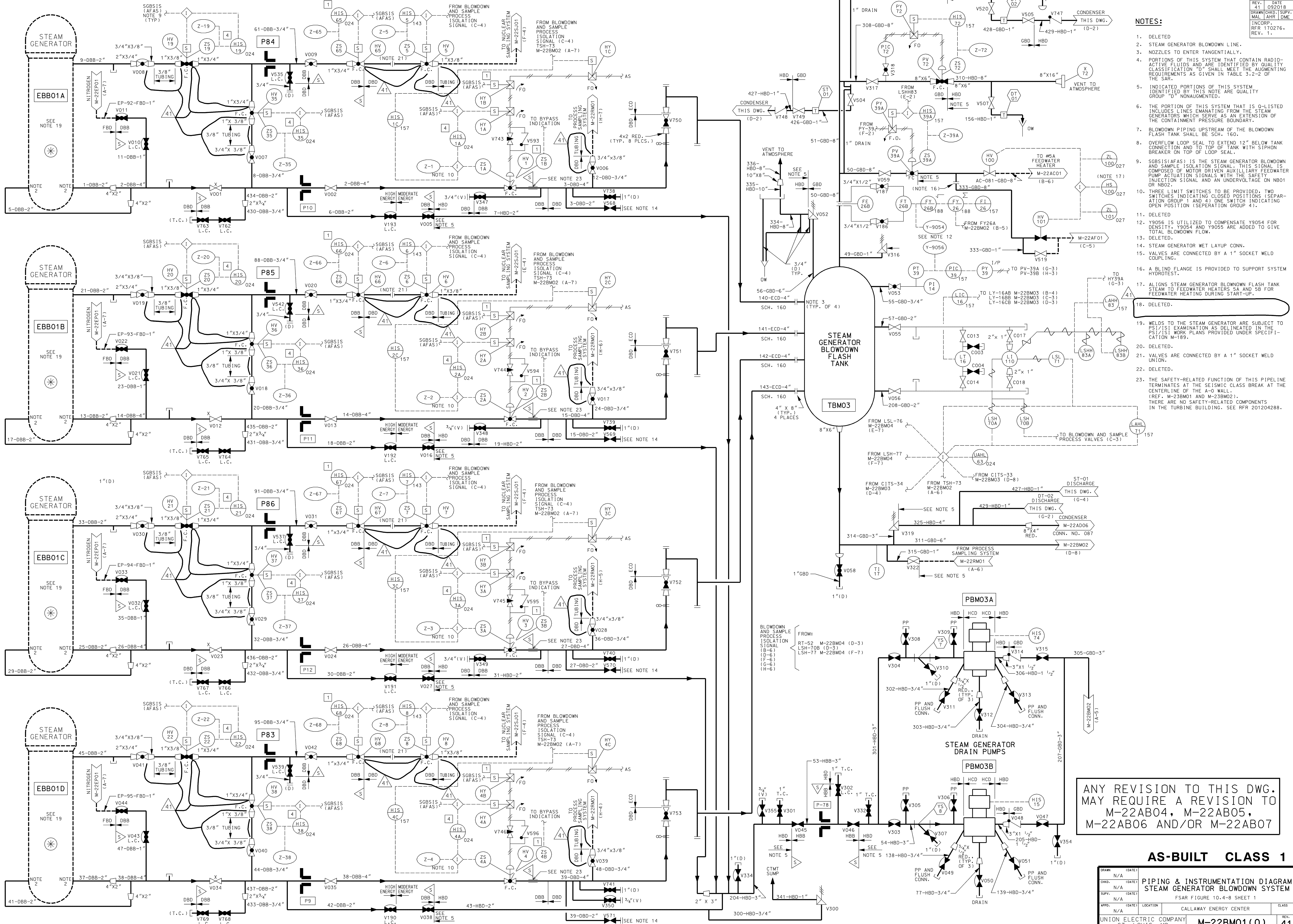
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UNION ELECTRIC COMPANY ST. LOUIS, MO			REV. 16

M-22AQ01		CLASS	
CALLAWAY PLANT		REV.	16

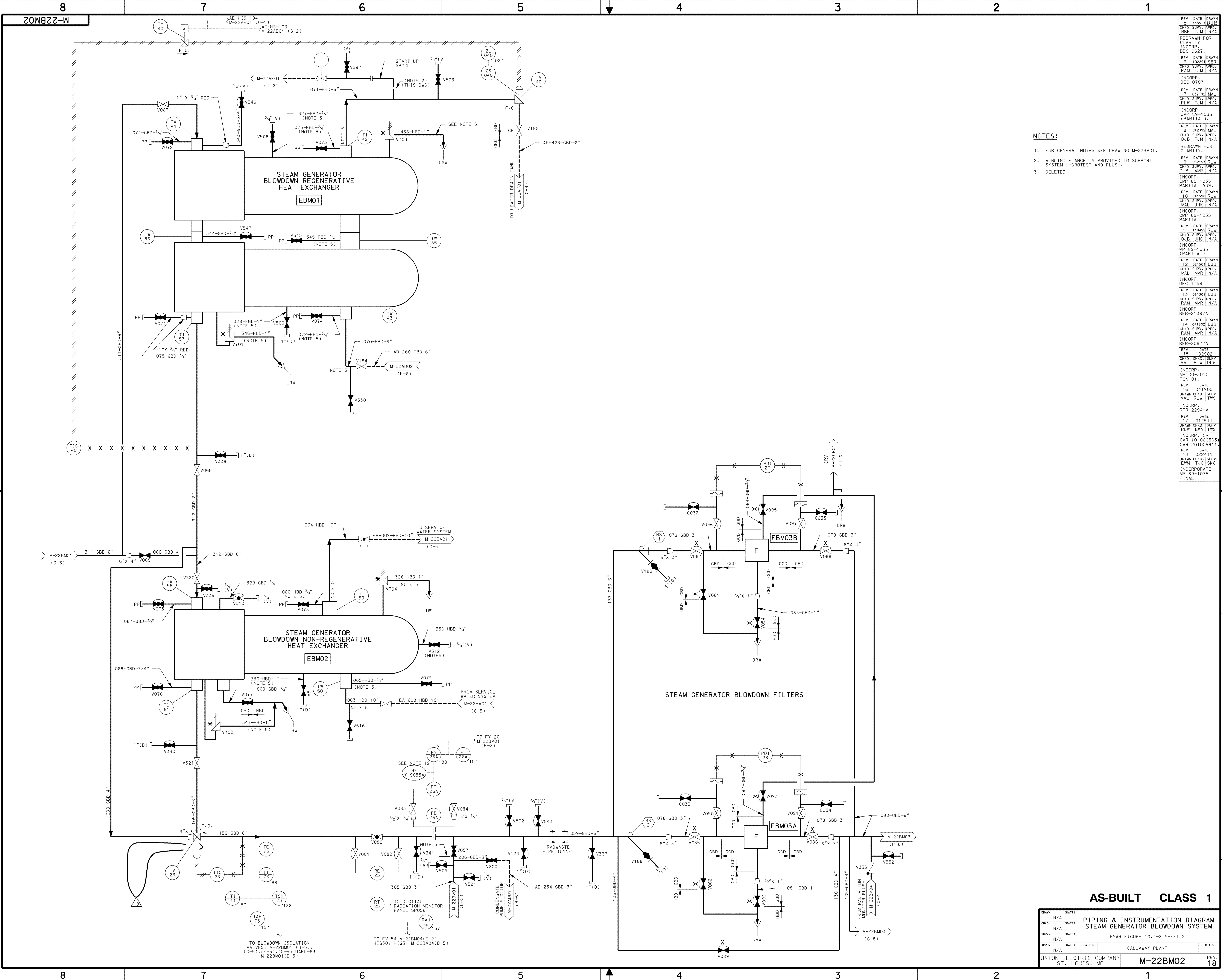
CONDENSATE CHEMICAL ADDITION SYSTEM
FSAR FIGURE 10.4-7 SHEET 1





NOTES:

1. DELETED
2. STEAM GENERATOR BLOWDOWN LINE.
3. NOZZLES TO ENTER TANGENTIALLY.
4. PORTIONS OF THIS SYSTEM THAT CONTAIN RADIO-ACTIVE FLUIDS AND ARE IDENTIFIED BY QUALITY CLASSIFICATION "D" SHALL MEET THE AUGMENTING REQUIREMENTS AS GIVEN IN TABLE 3.2-2 OF THE SAR.
5. INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "D" NONAUGMENTED.
6. THE PORTION OF THIS SYSTEM THAT IS 0-LISTED INCLUDES LINES EMANATING FROM THE STEAM GENERATORS WHICH SERVE AS AN EXTENSION OF THE CONTAINMENT PRESSURE BOUNDARY.
7. BLOWDOWN PIPING UPSTREAM OF THE BLOWDOWN FLASH TANK SHALL BE SCH. 160.
8. OVERFLOW LOOP SEAL TO EXTEND 12" BELOW TANK CONNECTION AND TO TOP OF TANK WITH SIPHON BREAKER ON TOP OF LOOP SEAL.
9. SGBSIS(AFAS) IS THE STEAM GENERATOR BLOWDOWN AND SAMPLE ISOLATION SIGNAL. THIS SIGNAL IS COMPOSED OF MOTOR DRIVEN AUXILIARY FEEDWATER PUMP ACTUATION SIGNALS WITH THE SAFETY INJECTION SIGNAL AND AN UNDERVOLTAGE ON NB01 OR NB02.
10. THREE LIMIT SWITCHES TO BE PROVIDED. TWO SWITCHES INDICATING CLOSED POSITIONS (SEPARATION GROUP 1 AND 4) ONE SWITCH INDICATING OPEN POSITION (SEPARATION GROUP 4).
11. DELETED
12. Y9056 IS UTILIZED TO COMPENSATE Y9054 FOR DENSITY. Y9054 AND Y9055 ARE ADDED TO GIVE TOTAL BLOWDOWN FLOW.
13. DELETED.
14. STEAM GENERATOR WET LAYUP CONN.
15. VALVES ARE CONNECTED BY A 1" SOCKET WELD COUPLING.
16. A BLIND FLANGE IS PROVIDED TO SUPPORT SYSTEM HYDROTEST.
17. ALIGNS STEAM GENERATOR BLOWDOWN FLASH TANK STEAM TO FEEDWATER HEATERS 5A AND 5B FOR FEEDWATER HEATING DURING START-UP.
18. DELETED.
19. WELDS TO THE STEAM GENERATOR ARE SUBJECT TO PS/ISI EXAMINATION AS DELINEATED IN THE PS/ISI WORK PLANS PROVIDED UNDER SPECIFICATION M-189.
20. DELETED.
21. VALVES ARE CONNECTED BY A 1" SOCKET WELD UNION.
22. DELETED.
23. THE SAFETY-RELATED FUNCTION OF THIS PIPELINE TERMINATES AT THE SEISMIC CLASS BREAK AT THE CENTERLINE OF THE A-O WALL. (REF. M-23BM01 AND M-23BM02). THERE ARE NO SAFETY-RELATED COMPONENTS IN THE TURBINE BUILDING. SEE RFR 201204288.



NOTES:

- 1. FOR GENERAL NOTES SEE DRAWING M-22BM01.
- 2. A BLIND FLANGE IS PROVIDED TO SUPPORT SYSTEM HYDROTEST AND FLUSH.
- 3. DELETED

AS-BUILT CLASS 1

DRAWING INFORMATION

DRAWN	N/A	(DATE)	
CHKD.	N/A	(DATE)	
SUPV.	N/A	(DATE)	
APPR.	N/A	(DATE)	
LOC.	CALLAWAY PLANT		
CLASS			

PROJECT INFORMATION

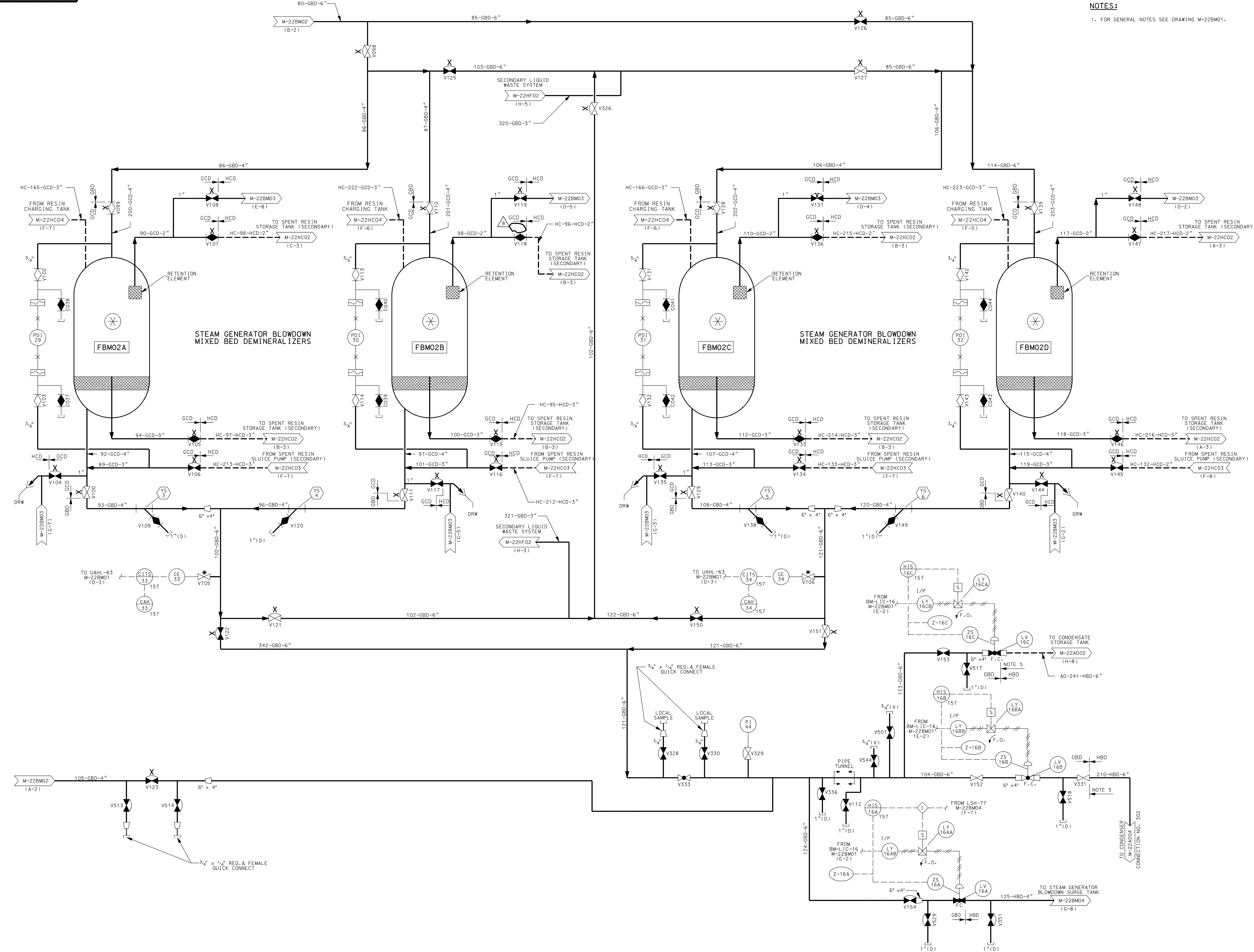
PROJECT	FSAR FIGURE 10.4-8 SHEET 2
COMPANY	UNION ELECTRIC COMPANY
LOCATION	ST. LOUIS, MO
CLASS	

DRAWING IDENTIFICATION

DRAWING	M-22BM02
REV.	18

NOTES:
1. FOR GENERAL NOTES SEE DRAWING M-22BM01.

REV.	DATE	DRAWN	CHKD.	SUPV.	APPR.	DATE	DRAWN	CHKD.	SUPV.	APPR.
1	092791	RBF								
INCORPORATED DEC-577 REDRAWN FOR CLARITY										
2	100291	DJB								
INCORP. MP 89-1035										
3	061505									
DRAWN (CHKD.) SUPV. MAL. RLW. TWS										
4	061506									
INCORP. RFR 22941A										
5	061506									
DRAWN (CHKD.) SUPV. JHK. MAL. TWS										
6	0600084									
INCORP. AC 06-00084 (RFR 200503798).										
7	030917									
DRAWN (CHKD.) SUPV. CHS. RLW. LME										
8	07-0174									
INCORPORATE MP 07-0174.										



AS-BUILT CLASS 1

DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
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DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
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DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE

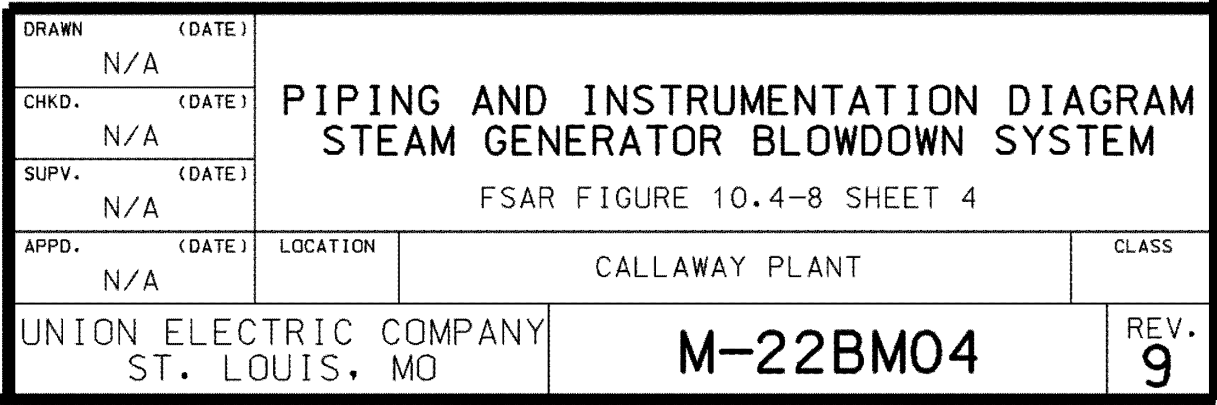
FSAR FIGURE 10.4-8 SHEET 3

CALLAWAY PLANT

UNION ELECTRIC COMPANY
ST. LOUIS, MO

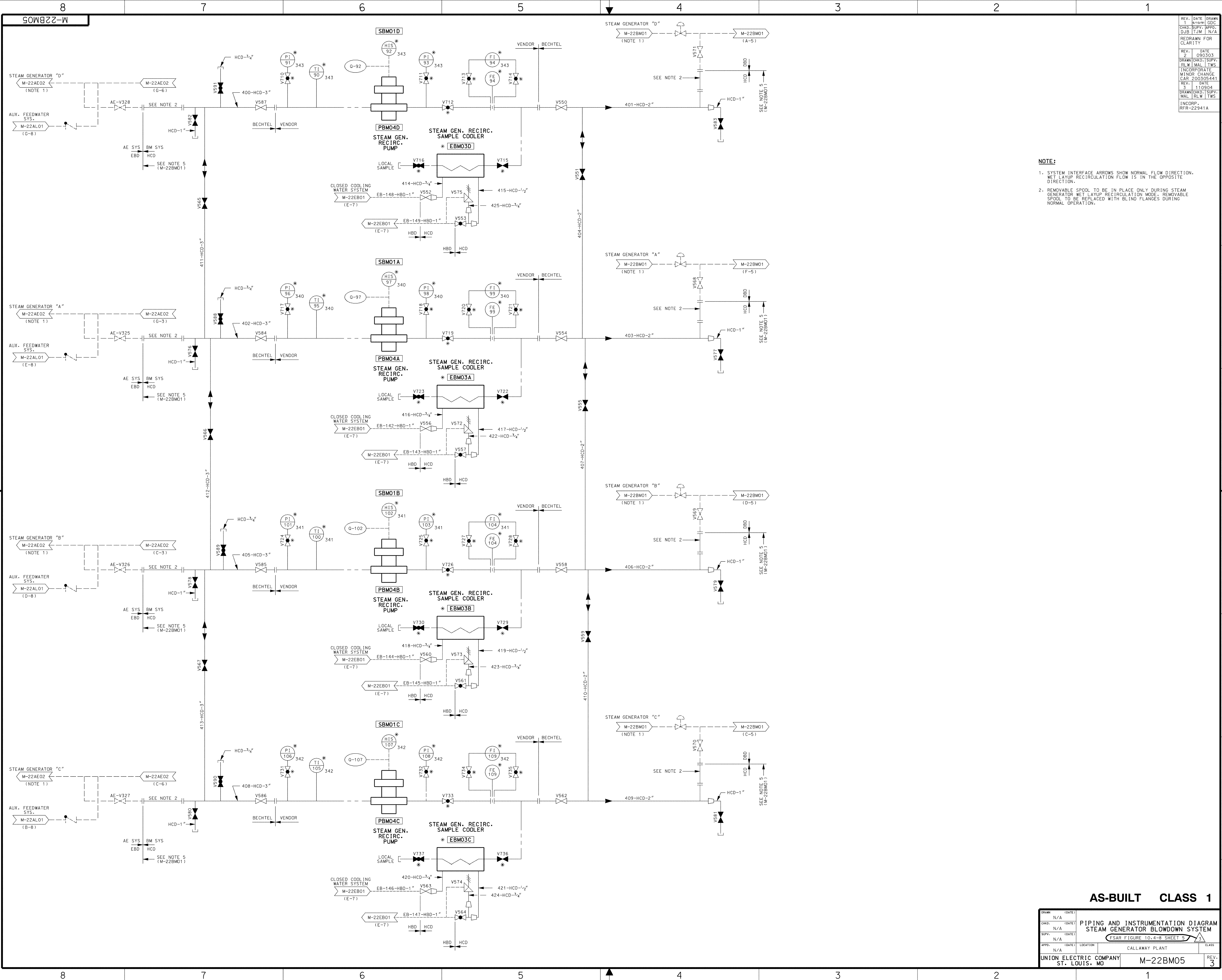
M-22BM03

REV. 8



1. FOR GENERAL NOTES SEE DRAWING M-22BM01

REV.	DATE	DRWN	CHKD.	SUPV.	APPD.	TJMC	N/A
2.	5/6/91						
REDOGRAPH FOR CLARITY							
REV.	DATE	DRWN	CHKD.	SUPV.	APPD.	TJMC	N/A
3.	021992	JHK					
MINOR MOD.							
91-8662.							
REV.	DATE	DRWN	CHKD.	SUPV.	APPD.	TJMC	N/A
1.	05	082003					
INCORP.							
REV.	DATE	DRWN	CHKD.	SUPV.	APPD.	TJMC	N/A
1.	05	082003					
MINOR CHANGE							
CAR	200305155						
REV.	DATE	DRWN	CHKD.	SUPV.	APPD.	TJMC	N/A
1.	05	13004					
INCORP.							
RFR-22941A							
REV.	DATE	DRWN	CHKD.	SUPV.	APPD.	TJMC	N/A
7.	021405						
ISSUE PER							
CAR	200409284.						
REV.	DATE	DRWN	CHKD.	SUPV.	APPD.	TJMC	N/A
8.	091997						
INCORP.							
REV.	DATE	DRWN	CHKD.	SUPV.	APPD.	TJMC	N/A
1.	060911						
INCORPORATE							
CAR	89-1035						



NOTE:

1. SYSTEM INTERFACE ARROWS SHOW NORMAL FLOW DIRECTION. WET LAYOUT RECIRCULATION FLOW IS IN THE OPPOSITE DIRECTION.

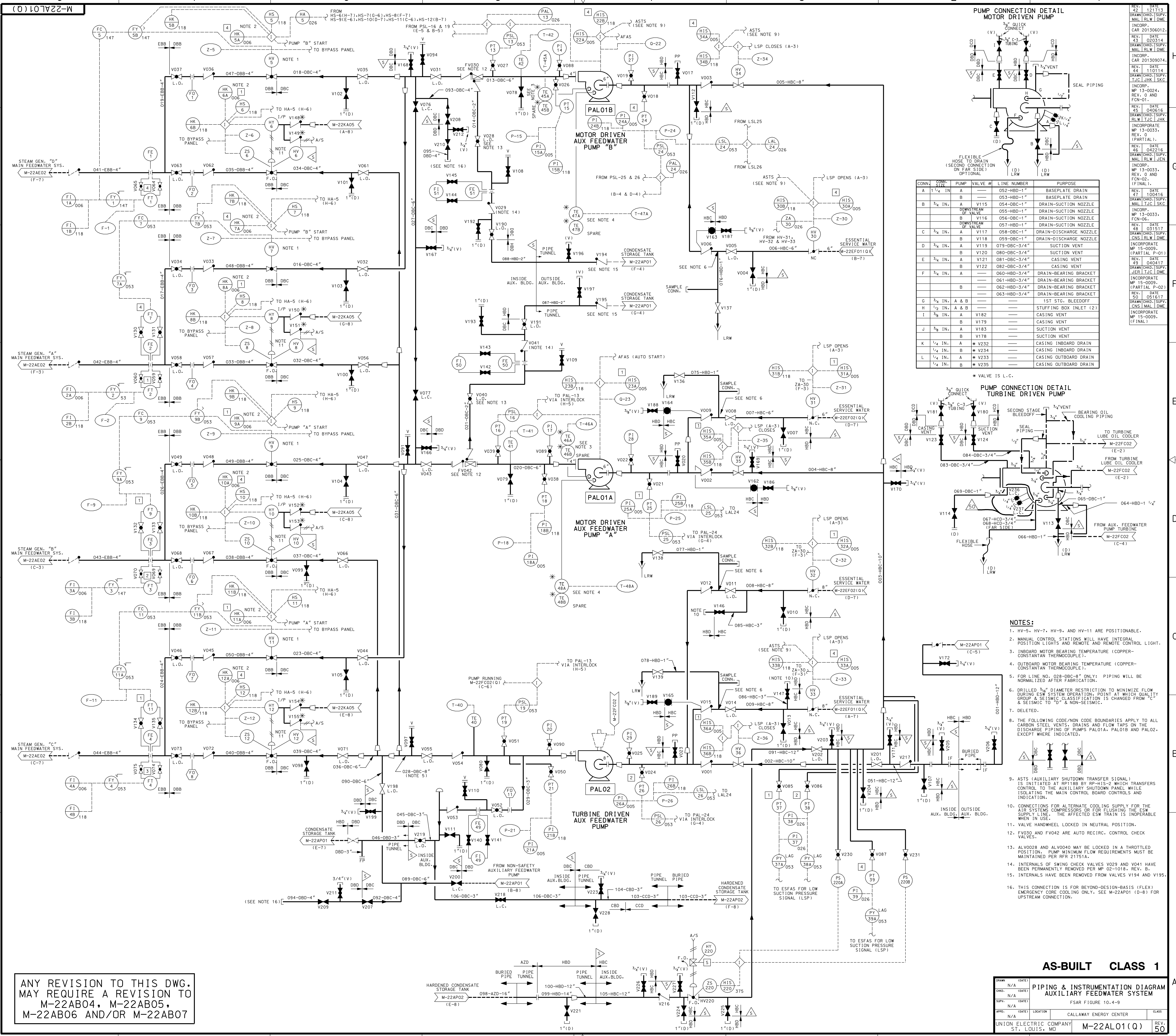
2. REMOVABLE SPOOL TO BE IN PLACE ONLY DURING STEAM GENERATOR WET LAYOUT RECIRCULATION MODE. REMOVABLE SPOOL TO BE REPLACED WITH BLIND FLANGES DURING NORMAL OPERATION.

AS-BUILT CLASS 1

DRAWN	N/A	(DATE)	
CHKD.	N/A	(DATE)	
SUPV.	N/A	(DATE)	
APPR.	N/A	(DATE)	
UNION ELECTRIC COMPANY	ST. LOUIS, MO	CALLAWAY PLANT	CLASS
M-22BM05			

PIPING AND INSTRUMENTATION DIAGRAM
STEAM GENERATOR BLOWDOWN SYSTEM
FSAR FIGURE 10.4-8 SHEET 5

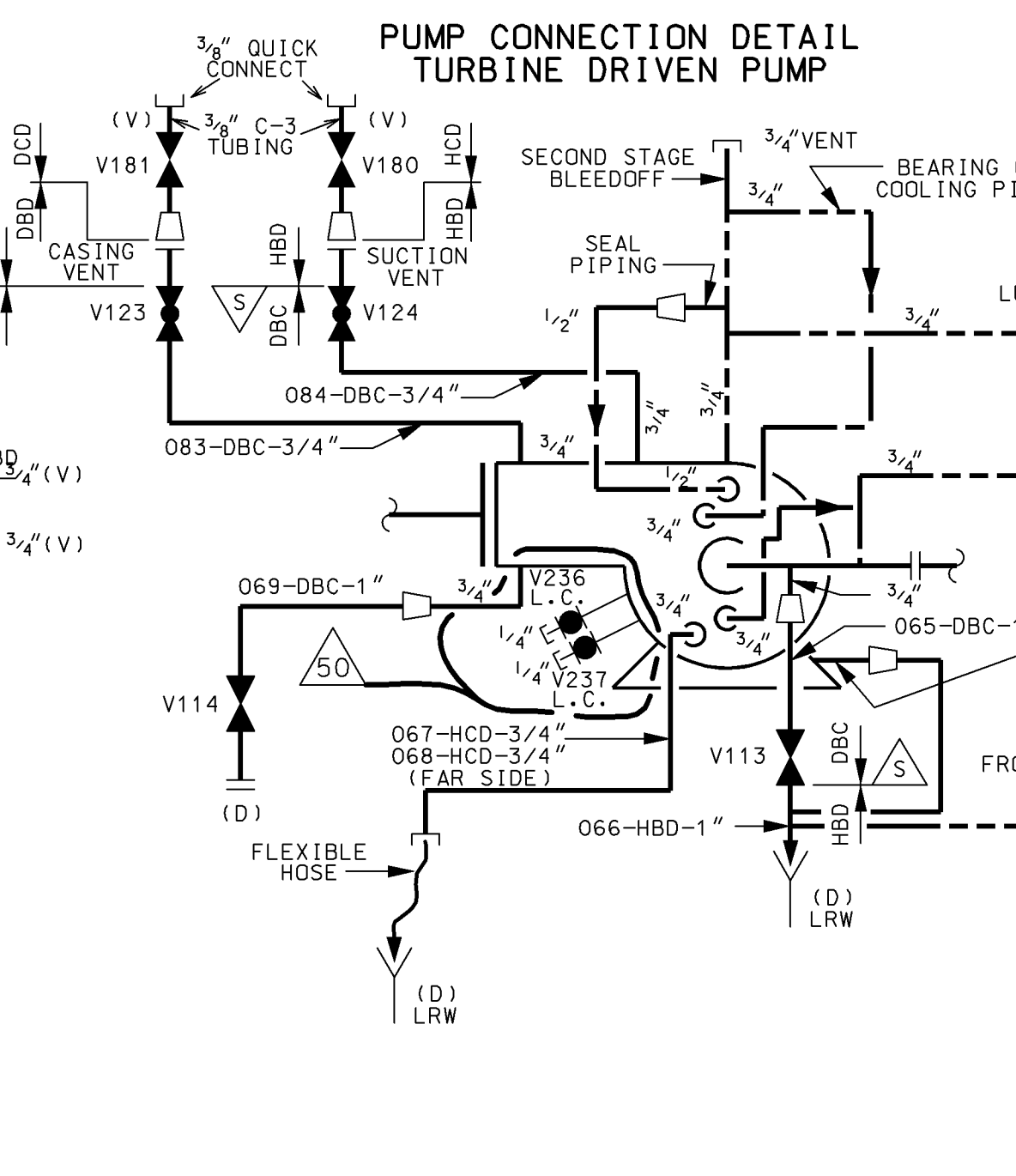
REV. 3



PUMP CONNECTION DETAIL MOTOR DRIVEN PUMP

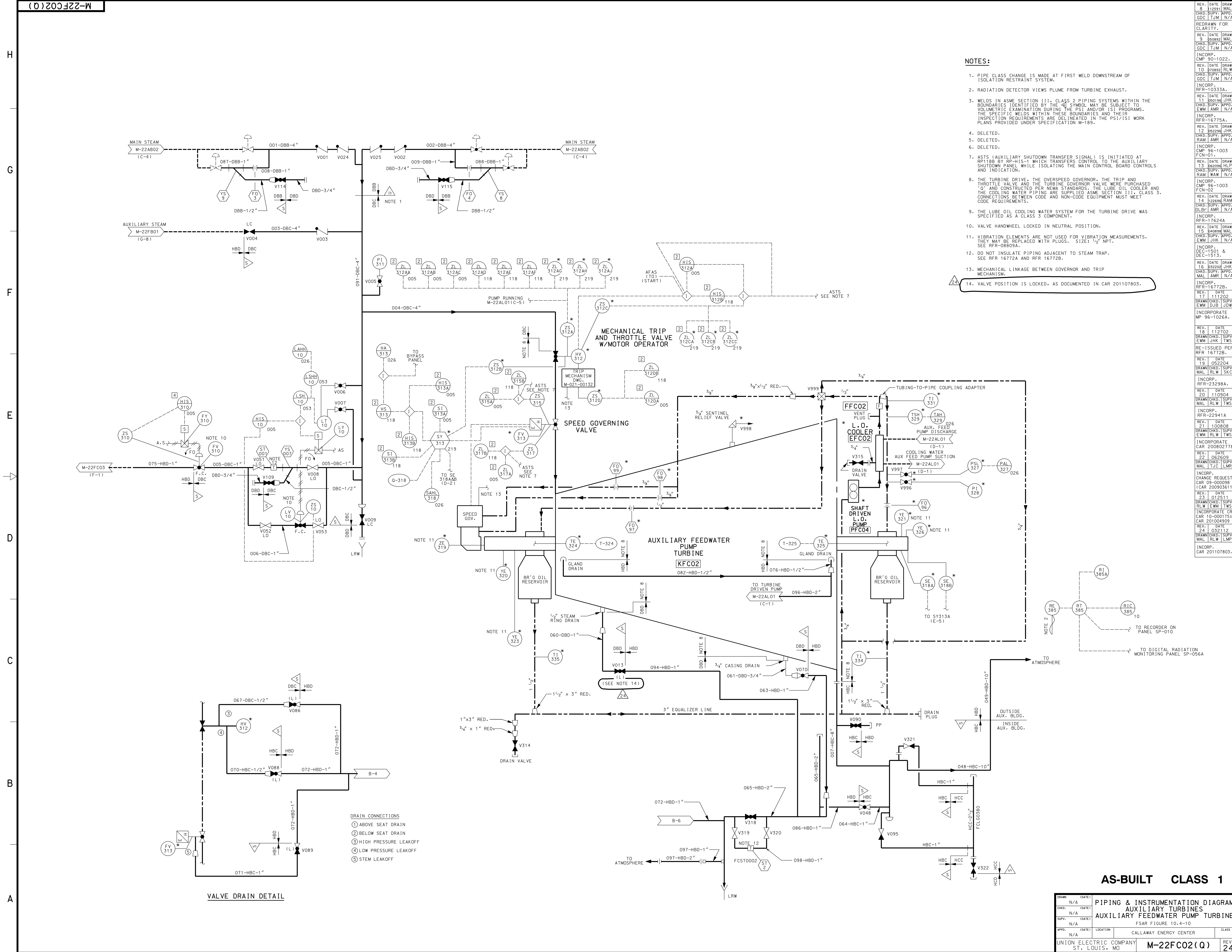
CONN.	CONN. #	PUMP	VALVE #	LINE NUMBER	PURPOSE
A	1 1/4 IN.	A	—	052-HBD-1"	BASEPLATE DRAIN
B	3/4 IN.	A	V115	054-DBC-1"	DRAIN-SUCTION NOZZLE
C	3/4 IN.	A	V116	055-HBD-1"	DRAIN-SUCTION NOZZLE
D	3/4 IN.	A	V117	056-DBC-1"	DRAIN-SUCTION NOZZLE
E	3/4 IN.	A	V118	057-HBD-1"	DRAIN-SUCTION NOZZLE
F	3/4 IN.	A	V119	058-DBC-1"	DRAIN-SUCTION NOZZLE
G	3/4 IN.	A	V120	059-HBD-1"	DRAIN-SUCTION NOZZLE
H	3/4 IN.	A	V121	060-DBC-1"	DRAIN-SUCTION NOZZLE
I	3/4 IN.	A	V122	061-HBD-1"	DRAIN-SUCTION NOZZLE
J	3/4 IN.	A	V123	062-DBC-1"	DRAIN-SUCTION NOZZLE
K	3/4 IN.	A	V124	063-HBD-1"	DRAIN-SUCTION NOZZLE
L	3/4 IN.	A	V125	064-DBC-1"	DRAIN-SUCTION NOZZLE

* VALVE IS L.C.



- NOTES:**
- HV-5, HV-7, HV-9, and HV-11 ARE POSITIONABLE.
 - MANUAL CONTROL STATIONS WILL HAVE INTEGRAL POSITION LIGHTS AND REMOTE AND REMOTE CONTROL LIGHT.
 - INBOARD MOTOR BEARING TEMPERATURE (COPPER-CONSTANTAN THERMOCOUPLE).
 - OUTBOARD MOTOR BEARING TEMPERATURE (COPPER-CONSTANTAN THERMOCOUPLE).
 - FOR LINE NO. 028-HBD-3" ONLY: PIPING WILL BE NORMALIZED AFTER FABRICATION.
 - DRILLED 3/4" DIAMETER RESTRICTION TO MINIMIZE FLOW DURING ESW SYSTEM OPERATION. POINT AT WHICH QUALITY GROUP & SEISMIC CLASSIFICATION IS CHANGED FROM "C" & SEISMIC TO "D" & NON-SEISMIC.
 - DELETED.
 - THE FOLLOWING CODE/NON CODE BOUNDARIES APPLY TO ALL CARBON STEEL VENTS, DRAINS AND FLOW TAPS ON THE DISCHARGE PIPING OF PUMPS PALO1A, PALO1B AND PALO2, EXCEPT WHERE INDICATED.
 - ASTS (AUXILIARY SHUTDOWN TRANSFER SIGNAL) IS INITIATED AT RH1189 BY RH-HIS-2 WHICH TRANSFERS CONTROL TO THE AUXILIARY SHUTDOWN PANEL WHILE ISOLATING THE MAIN CONTROL BOARD CONTROLS AND INDICATION.
 - CONNECTIONS FOR ALTERNATE COOLING SUPPLY FOR THE AIR SYSTEMS COMPRESSORS OR FOR FLUSHING THE ESW SUPPLY LINE. THE AFFECTED ESW TRAIN IS INOPERABLE WHEN IN USE.
 - VALVE HANDWHEEL LOCKED IN NEUTRAL POSITION.
 - FV030 AND FV042 ARE AUTO RECIRC. CONTROL CHECK VALVES.
 - ALV028 AND ALV040 MAY BE LOCKED IN A THROTTLED POSITION. PUMP MINIMUM FLOW REQUIREMENTS MUST BE MAINTAINED PER RFR 21751A.
 - INTERALS OF SWING CHECK VALVES V029 AND V041 HAVE BEEN PERMANENTLY REMOVED PER MP 02-1018, REV. B.
 - INTERALS HAVE BEEN REMOVED FROM VALVES V194 AND V195.
 - THIS CONNECTION IS FOR BEYOND-DESIGN-BASIS (FLEX) EMERGENCY CORE COOLING ONLY. SEE M-22AP01 (D-8) FOR UPSTREAM CONNECTION.

ANY REVISION TO THIS DWG. MAY REQUIRE A REVISION TO M-22AB04, M-22AB05, M-22AB06 AND/OR M-22AB07



- NOTES:**
- PIPE CLASS CHANGE IS MADE AT FIRST WELD DOWNSTREAM OF ISOLATION RESTRAINT SYSTEM.
 - RADIATION DETECTOR VIEWS PLUME FROM TURBINE EXHAUST.
 - WELDS IN ASME SECTION III, CLASS 2 PIPING SYSTEMS WITHIN THE BOUNDARIES IDENTIFIED BY THE SYMBOL MAY BE SUBJECT TO VOLUMETRIC EXAMINATION DURING THE PSI AND/OR ISI PROGRAMS. THE SPECIFIC WELDS WITHIN THESE BOUNDARIES AND THEIR INSPECTION REQUIREMENTS ARE DELINEATED IN THE PSI/ISI WORK PLANS PROVIDED UNDER SPECIFICATION M-189.
 - DELETED.
 - DELETED.
 - DELETED.
 - ASTS (AUXILIARY SHUTDOWN TRANSFER SIGNAL) IS INITIATED AT RP118B BY RP-HIS-1 WHICH TRANSFERS CONTROL TO THE AUXILIARY SHUTDOWN PANEL WHILE ISOLATING THE MAIN CONTROL BOARD CONTROLS AND INDICATION.
 - THE TURBINE DRIVE, THE OVERSPEED GOVERNOR, THE TRIP AND THROTTLE VALVE AND THE TURBINE GOVERNOR VALVE WERE PURCHASED 'Q' AND CONSTRUCTED PER NEMA STANDARDS. THE LUBE OIL COOLER AND THE COOLING WATER PIPING ARE SUPPLIED ASME SECTION III, CLASS 3. CONNECTIONS BETWEEN CODE AND NON-CODE EQUIPMENT MUST MEET CODE REQUIREMENTS.
 - THE LUBE OIL COOLING WATER SYSTEM FOR THE TURBINE DRIVE WAS SPECIFIED AS A CLASS 3 COMPONENT.
 - VALVE HANDWHEEL LOCKED IN NEUTRAL POSITION.
 - VIBRATION ELEMENTS ARE NOT USED FOR VIBRATION MEASUREMENTS. THEY MAY BE REPLACED WITH PLUGS. SIZE: 1/2" NPT. SEE RFR-080904.
 - DO NOT INSULATE PIPING ADJACENT TO STEAM TRAP. SEE RFR 16772A AND RFR 16772B.
 - MECHANICAL LINKAGE BETWEEN GOVERNOR AND TRIP MECHANISM.
 - VALVE POSITION IS LOCKED, AS DOCUMENTED IN CAR 201107803.

VALVE DRAIN DETAIL

- DRAIN CONNECTIONS**
- ① ABOVE SEAT DRAIN
 - ② BELOW SEAT DRAIN
 - ③ HIGH PRESSURE LEAKOFF
 - ④ LOW PRESSURE LEAKOFF
 - ⑤ STEM LEAKOFF

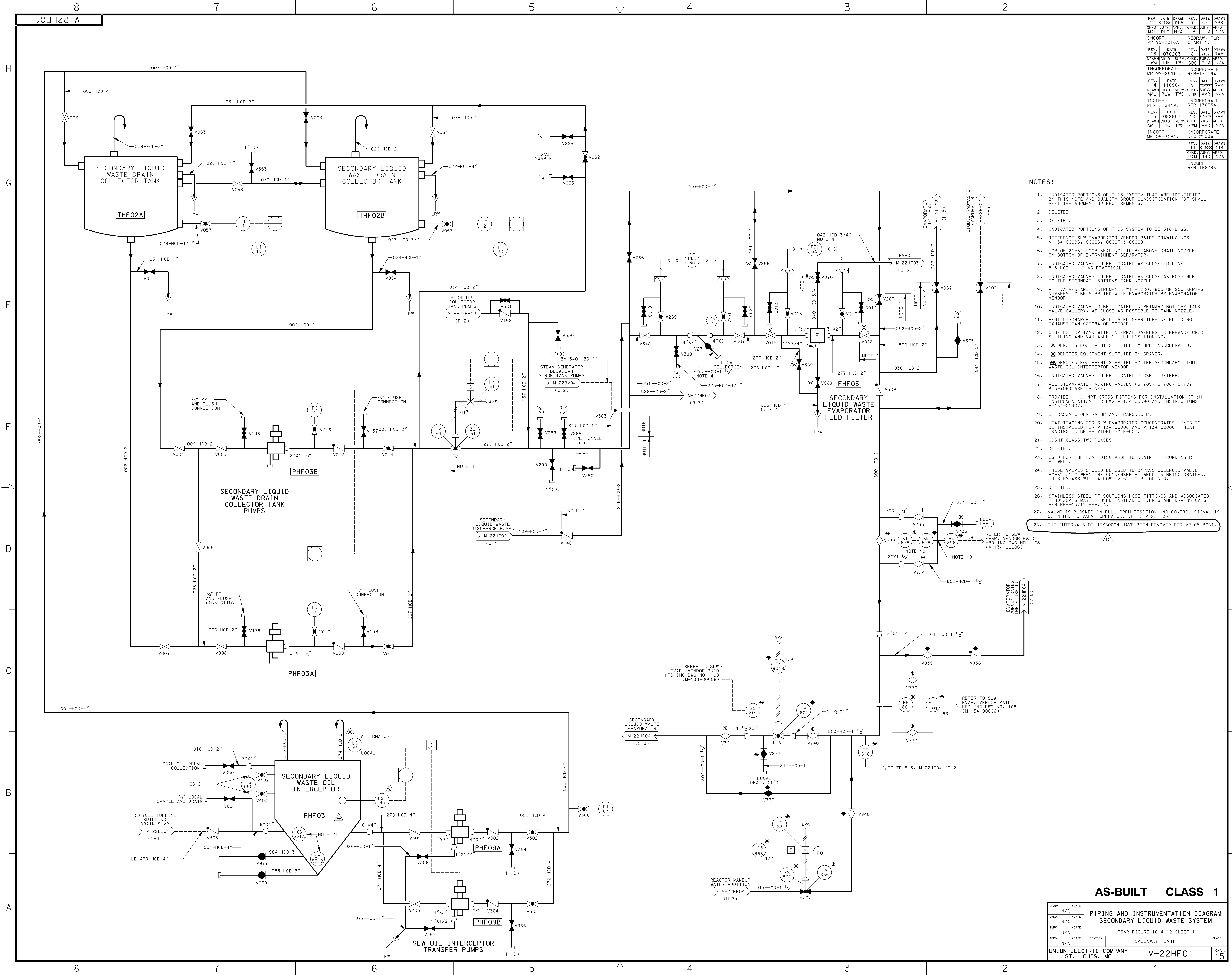
AS-BUILT CLASS 1

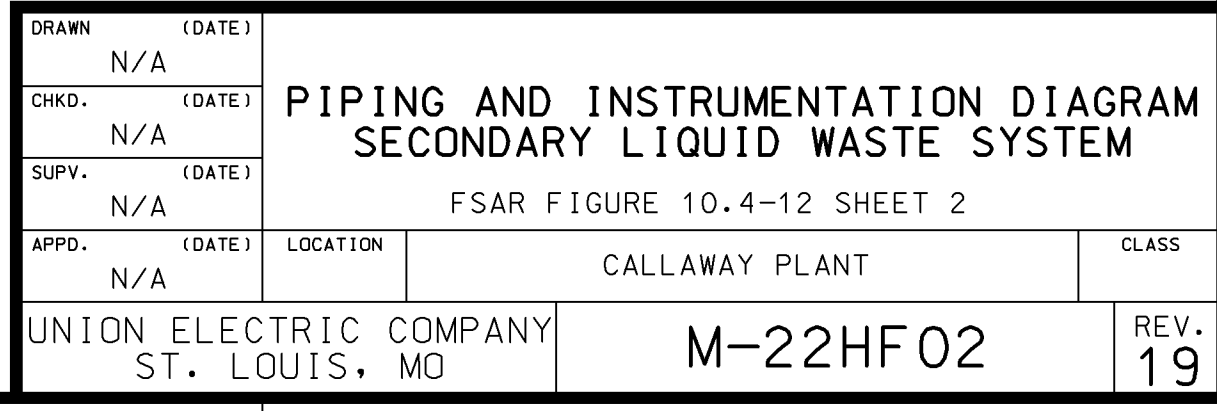
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CHD	N/A	DATE		AUXILIARY TURBINES			
SUPV	N/A	DATE		AUXILIARY FEEDWATER PUMP TURBINE			
APPR	N/A	DATE		FSAR FIGURE 10.4-10			
APPR	N/A	DATE		LOCATION	CALLAWAY ENERGY CENTER	CLASS	
UNION ELECTRIC COMPANY ST. LOUIS, MO				M-22FC02(Q)		REV.	24

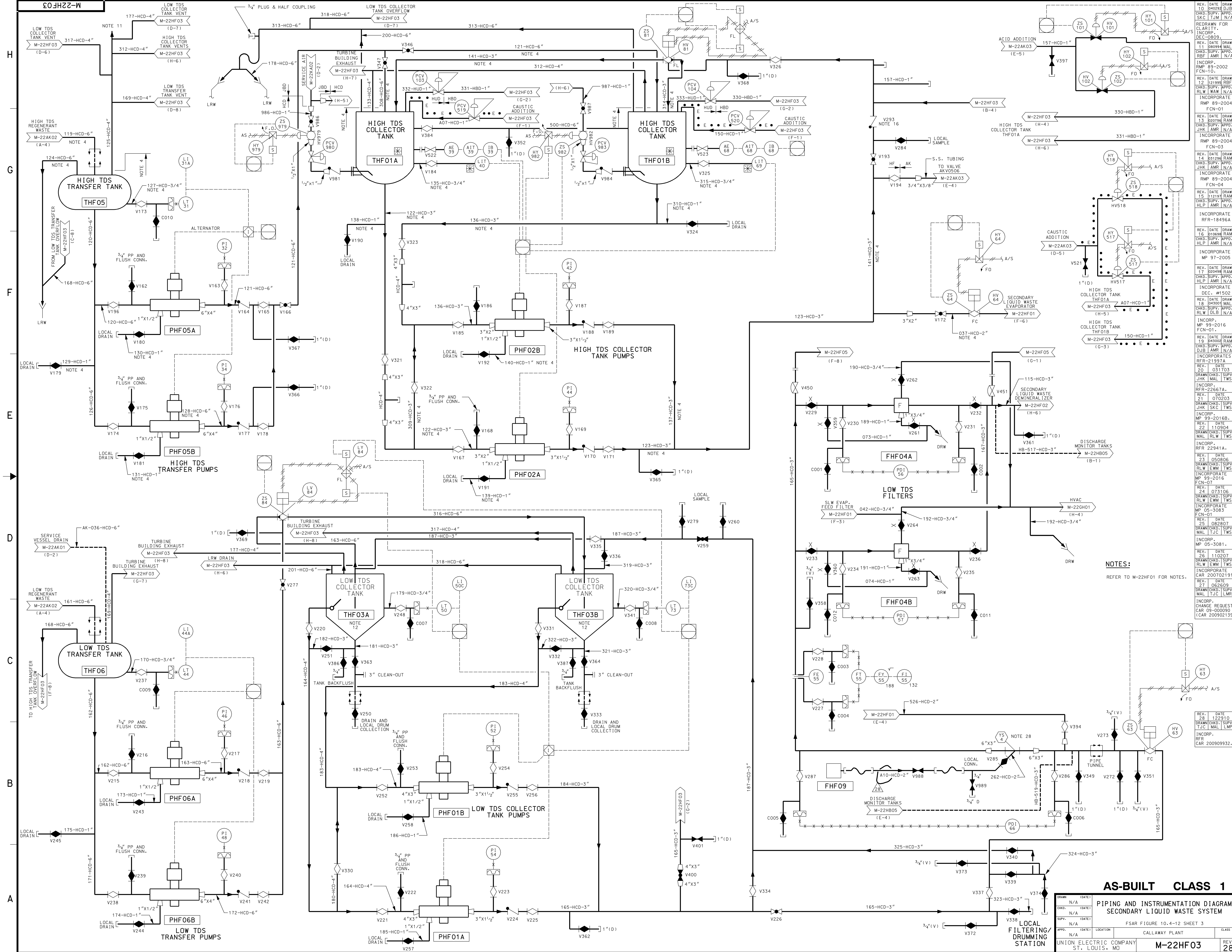
CALLAWAY - SP

FIGURE 10.4-11 is deleted

Rev. OL-10
11/98







NOTES:
REFER TO M-22HF01 FOR NOTES.

AS-BUILT CLASS 1

PIPING AND INSTRUMENTATION DIAGRAM
SECONDARY LIQUID WASTE SYSTEM

DRWN: N/A

DATE: (DATE)

CHKD: N/A

DATE: (DATE)

SUPV: N/A

DATE: (DATE)

APPV: N/A

DATE: (DATE)

LOCATION: CALLAWAY PLANT

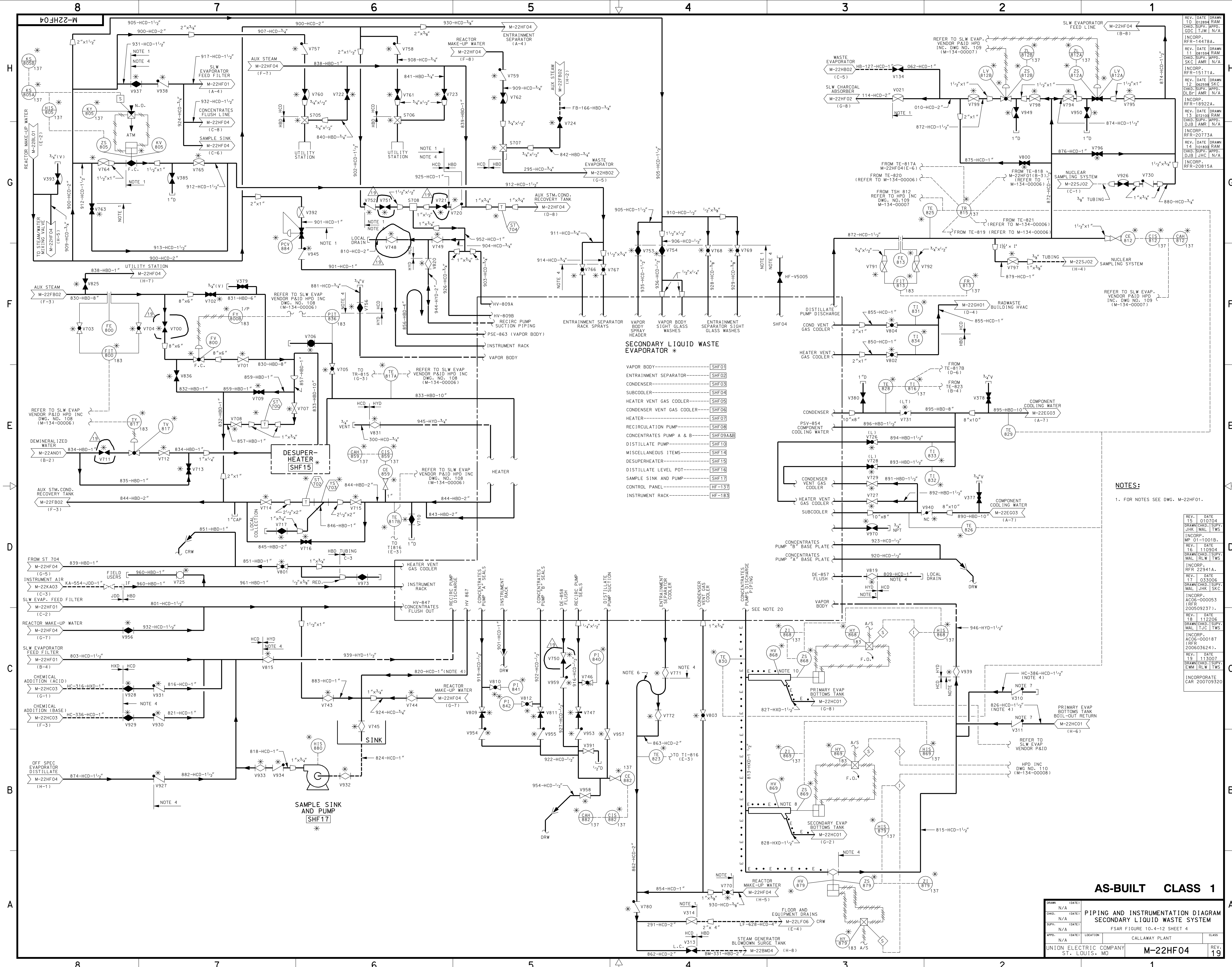
CLASS: M-22HF03

REV: 28

REV. DATE DRAWN 0 040324 DJB
CHKD: SUPV. APPV. SKC TJM N/A
REDRAWN FOR CLARITY
INCORP. DEC-0809
REV. DATE DRAWN 11 080994 MAL
CHKD: SUPV. APPV. RBF AMR N/A
INCORP. RMP 89-2002 FCN-01
REV. DATE DRAWN 12 121998 RBF
CHKD: SUPV. APPV. RLW WAM N/A
INCORP. RMP 89-2004 FCN-01
REV. DATE DRAWN 13 020796 RAM
CHKD: SUPV. APPV. JHK AMR N/A
INCORP. RMP 89-2004 FCN-03
REV. DATE DRAWN 14 040300 MAL
CHKD: SUPV. APPV. HLP AMR N/A
INCORP. RFR-18496A
REV. DATE DRAWN 16 010898 RAM
CHKD: SUPV. APPV. HLP AMR N/A
INCORP. MP 97-2005
REV. DATE DRAWN 17 020498 RAM
CHKD: SUPV. APPV. JHK MAL TWS
INCORP. DEC. #1502
REV. DATE DRAWN 18 040300 MAL
CHKD: SUPV. APPV. JHK MAL TWS
INCORP. MP 99-2016 FCN-01
REV. DATE DRAWN 19 040300 RAM
CHKD: SUPV. APPV. DJB AMR N/A
INCORP. RFR-21397A
REV. DATE DRAWN 20 031703
CHKD: SUPV. APPV. JHK MAL TWS
INCORP. MP 99-2016 FCN-01
REV. DATE DRAWN 21 070203
CHKD: SUPV. APPV. JHK SKC TWS
INCORP. RFR 22941A
REV. DATE DRAWN 23 050806
CHKD: SUPV. APPV. RLW LEM TWS
INCORP. MP 99-2016 FCN-01
REV. DATE DRAWN 24 031006
CHKD: SUPV. APPV. RLW LEM TWS
INCORP. MP 05-3083
REV. DATE DRAWN 25 082807
CHKD: SUPV. APPV. MAL TJC LMR
INCORP. MP 05-3081
REV. DATE DRAWN 26 110207
CHKD: SUPV. APPV. MAL TJC LMR
INCORP. CAR 200702191
REV. DATE DRAWN 27 062609
CHKD: SUPV. APPV. MAL TJC LMR
INCORP. CHANGE REQUEST CAR 09-000090
REV. DATE DRAWN 28 122910
CHKD: SUPV. APPV. TJC MAL LMP
INCORP. RFR CAR 200909932

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REV.	DATE	BY	CHKD.	DATE	BY	CHKD.
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AS-BUILT CLASS 1			
NO.	DATE	BY	CHKD.
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15	03/06/04	JHK	15

