

TABLE A

BEARING NO. 1	BEARING NO. 2
YE003A	YE006A
YE003D	YE006D
Y003A	Y006A
Y003D	Y006D
Y-3A	Y-6A
Y-3D	Y-6D
ACI 21-110A	ACI 21-110A

NOTES

- DELETED.
 - JOGGING CONTROL.
 - FOR PRESSURE TRANSMITTER PIPING INSTRUCTIONS AND FLUSHING REQUIREMENTS, SEE G.E. DWG. NO. 27240312 (M-855-00152).
 - VIBRATION DETECTOR NOT USED FOR OPERATION BUT IS USED FOR TESTING.
 - TURBINE TRIP OPENS HV030 DRAIN VALVE ONLY. HV034 THRU HV037 ARE MANUALLY CONTROLLED.
 - FOR EROSION/CORROSION CONCERNS, CARBON STEEL PIPING ON THIS PAID MAY HAVE SECTIONS OF 2 1/4 CR-1 MOLY LOW-ALLOY STEEL AND/OR STAINLESS STEEL PIPING (OR VICE VERSA). FOR DETAILS, SEE ISOMETRIC S.
 - INSTRUMENT CONNECTION IN PLACE FOR TURBINE PERFORMANCE TESTING.
 - NEW HP TURBINE ROTOR HAS 3 STAGES, THEY ARE NUMBERED 1, 2, 3, 5a, 4, 5, 5b, 6 & 7. EXTRACTION POINTS REMAIN AT 3rd STAGE AND 5th STAGE.
 - GE DETECTOR NO. ASSET NUMBER ASSIGNED
 - THE FOLLOWING AC SYSTEM COMPONENTS ARE SHOWN ON M-12AC01:
 - ACF22001A
 - ACF22001B
 - ACF22002A
 - ACF22002B
 - ACF22003A
 - ACF22003B
 - ACH50003
 - ACH50003
 - ACH50004
 - ACH50004
 - ACH50005
 - ACH50005
 - ACH50006
 - ACH50006
 - ACH50007
 - ACH50007
 - ACH50008
 - ACH50008
 - ACH50009
 - ACH50009
 - ACH50010
 - ACH50010
 - ACH50011
 - ACH50011
 - ACH50012
 - ACH50012
 - ACH50013
 - ACH50013
 - ACH50014
 - ACH50014
 - ACH50015
 - ACH50015
 - ACH50016
 - ACH50016
 - ACH50017
 - ACH50017
 - ACH50018
 - ACH50018
 - ACH50019
 - ACH50019
 - ACH50020
 - ACH50020
 - ACH50021
 - ACH50021
 - ACH50022
 - ACH50022
 - ACH50023
 - ACH50023
 - ACH50024
 - ACH50024
 - ACH50025
 - ACH50025
 - ACH50026
 - ACH50026
 - ACH50027
 - ACH50027
 - ACH50028
 - ACH50028
 - ACH50029
 - ACH50029
 - ACH50030
 - ACH50030
 - ACH50031
 - ACH50031
 - ACH50032
 - ACH50032
 - ACH50033
 - ACH50033
 - ACH50034
 - ACH50034
 - ACH50035
 - ACH50035
 - ACH50036
 - ACH50036
 - ACH50037
 - ACH50037
 - ACH50038
 - ACH50038
 - ACH50039
 - ACH50039
 - ACH50040
 - ACH50040
 - ACH50041
 - ACH50041
 - ACH50042
 - ACH50042
 - ACH50043
 - ACH50043
 - ACH50044
 - ACH50044
 - ACH50045
 - ACH50045
 - ACH50046
 - ACH50046
 - ACH50047
 - ACH50047
 - ACH50048
 - ACH50048
 - ACH50049
 - ACH50049
 - ACH50050
 - ACH50050
 - ACH50051
 - ACH50051
 - ACH50052
 - ACH50052
 - ACH50053
 - ACH50053
 - ACH50054
 - ACH50054
 - ACH50055
 - ACH50055
 - ACH50056
 - ACH50056
 - ACH50057
 - ACH50057
 - ACH50058
 - ACH50058
 - ACH50059
 - ACH50059
 - ACH50060
 - ACH50060
 - ACH50061
 - ACH50061
 - ACH50062
 - ACH50062
 - ACH50063
 - ACH50063
 - ACH50064
 - ACH50064
 - ACH50065
 - ACH50065
 - ACH50066
 - ACH50066
 - ACH50067
 - ACH50067
 - ACH50068
 - ACH50068
 - ACH50069
 - ACH50069
 - ACH50070
 - ACH50070
 - ACH50071
 - ACH50071
 - ACH50072
 - ACH50072
 - ACH50073
 - ACH50073
 - ACH50074
 - ACH50074
 - ACH50075
 - ACH50075
 - ACH50076
 - ACH50076
 - ACH50077
 - ACH50077
 - ACH50078
 - ACH50078
 - ACH50079
 - ACH50079
 - ACH50080
 - ACH50080
 - ACH50081
 - ACH50081
 - ACH50082
 - ACH50082
 - ACH50083
 - ACH50083
 - ACH50084
 - ACH50084
 - ACH50085
 - ACH50085
 - ACH50086
 - ACH50086
 - ACH50087
 - ACH50087
 - ACH50088
 - ACH50088
 - ACH50089
 - ACH50089
 - ACH50090
 - ACH50090
 - ACH50091
 - ACH50091
 - ACH50092
 - ACH50092
 - ACH50093
 - ACH50093
 - ACH50094
 - ACH50094
 - ACH50095
 - ACH50095
 - ACH50096
 - ACH50096
 - ACH50097
 - ACH50097
 - ACH50098
 - ACH50098
 - ACH50099
 - ACH50099
 - ACH50100
 - ACH50100
- (S) SUPPLIED BY WESTINGHOUSE
 (*) SUPPLIED BY G.E.

USAR FIG. 10.2-1-01

ESSENTIAL DRAWING

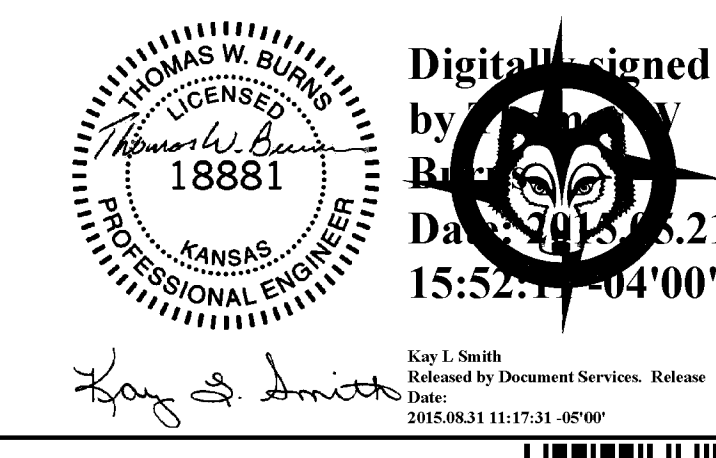
REVISED	INCORPORATED	CHANGE
○	CHG. DOC.	012135
○	ISSUED	PKG. NO.

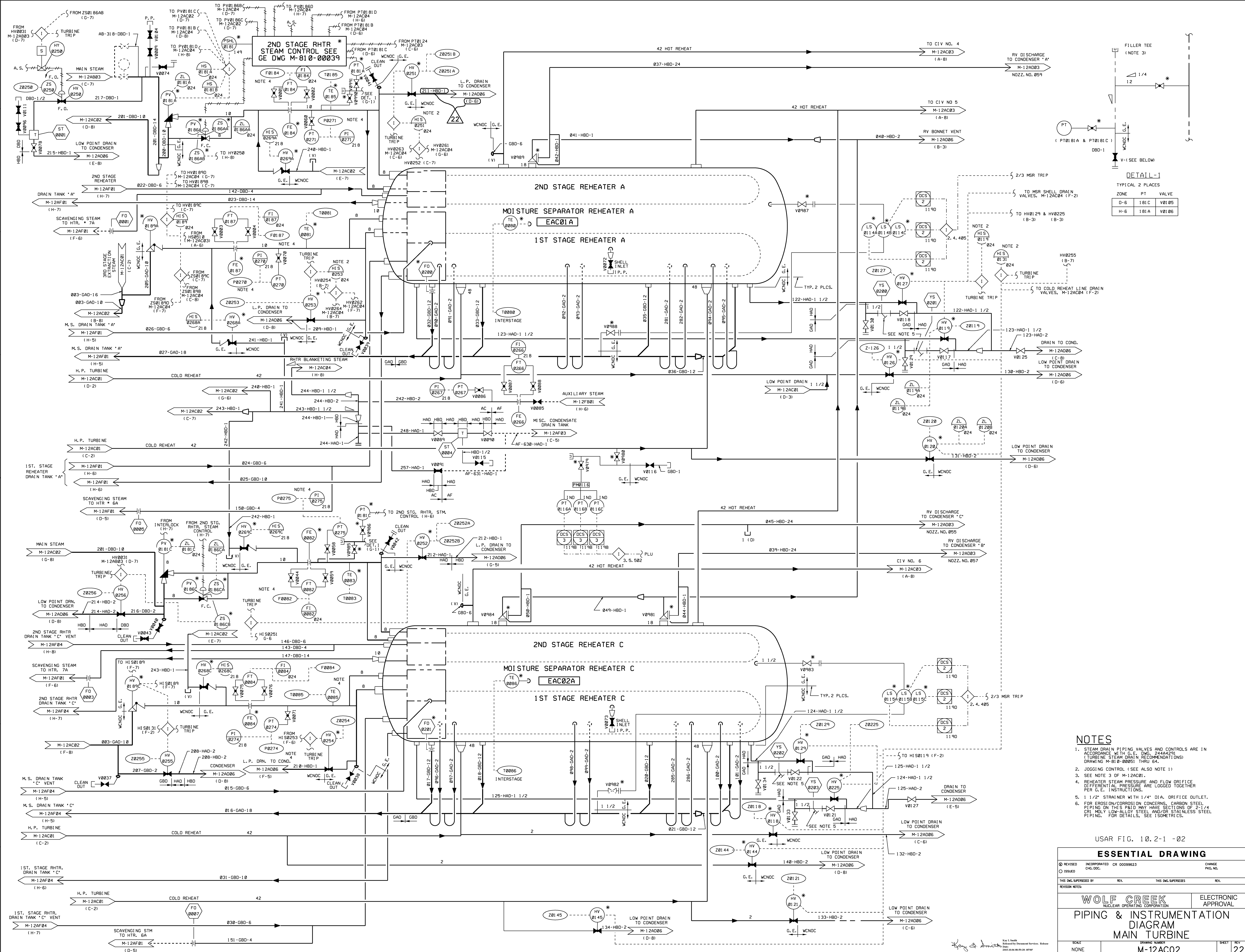
THIS DWG. SUPERSEDES	REV.	THIS DWG. SUPERSEDES	REV.

WOLF CREEK
NUCLEAR OPERATING CORPORATION
ELECTRONIC APPROVAL

PIPING & INSTRUMENTATION DIAGRAM
MAIN TURBINE

SCALE: NONE
DRAWING NUMBER: M-12AC01
SHEET: 30





DETAIL-1
TYPICAL 2 PLACES

ZONE	PT	VALVE
D-6	181C	V0185
H-6	181A	V0186

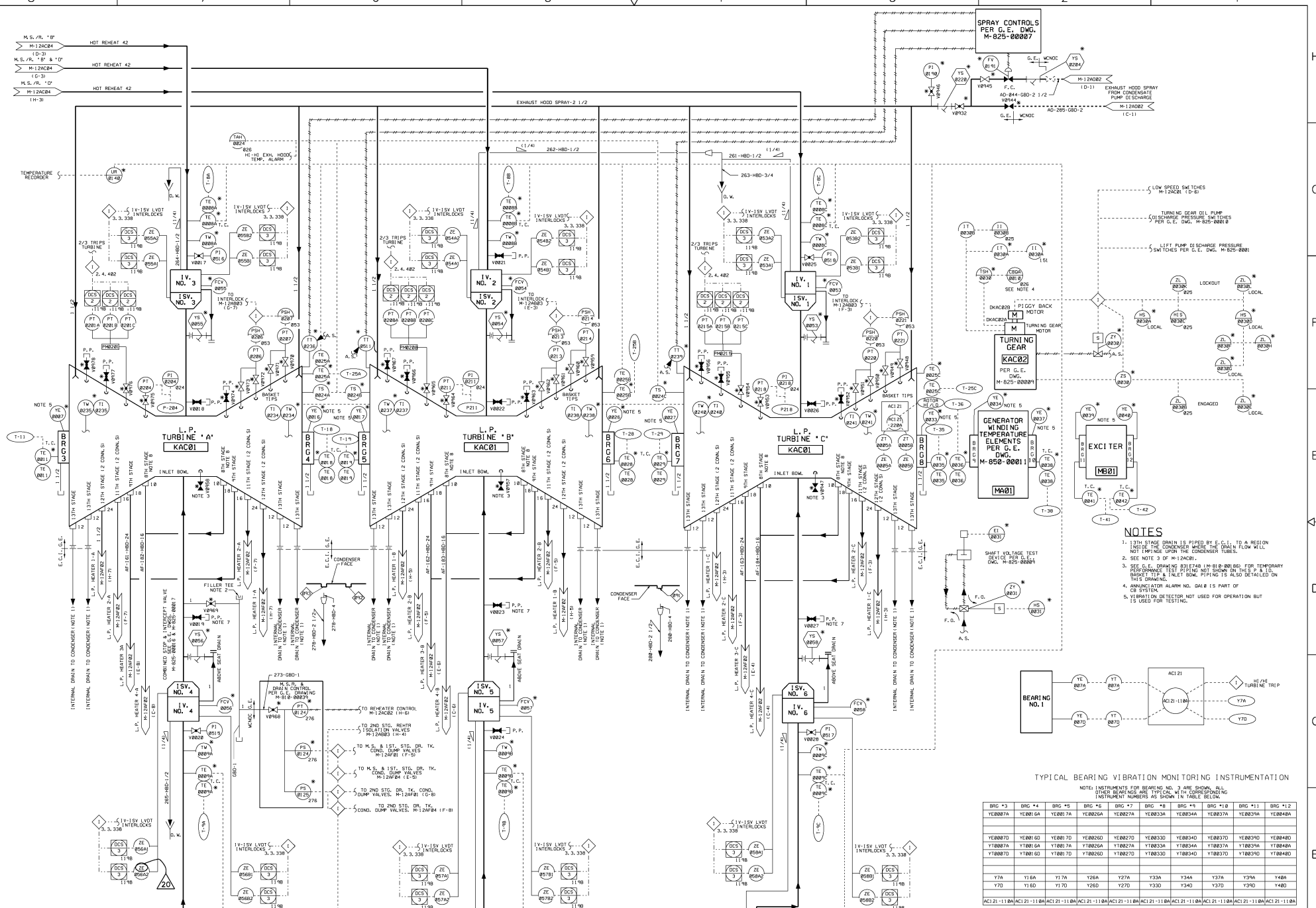
- NOTES**
1. STEAM DRAIN PIPING VALVES AND CONTROLS ARE IN ACCORDANCE WITH G.E. DMC 244A4291 (TURBINE STEAM DRAIN RECOMMENDATIONS) DRAWING M-810-00051 THRU 64.
 2. JOGGING CONTROL (SEE ALSO NOTE 1)
 3. SEE NOTE 3 OF M-12AC01.
 4. REHEATER STEAM PRESSURE AND FLOW DRIFTE DIFFERENTIAL PRESSURE ARE LOGGED TOGETHER PER G.E. INSTRUCTIONS.
 5. 1 1/2" STRAINER WITH 1/4" DIA. DRIFTE OUTLET.
 6. FOR EROSION/CORROSION CONCERNS, CARBON STEEL PIPING ON THIS PAID MAY HAVE SECTIONS OF 2-1/4" CR1 MOLY LOW-ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS, SEE ISOMETRICS.

USAR FIG. 10.2-1-02

ESSENTIAL DRAWING

REVISION	INCORPORATED	OR 00099623	CHANGE
ISSUED	CHG. DOC.		PGS. NO.
THIS ENG. SUPERSEDES BY	REV.	THIS ENG. SUPERSEDES	REV.
WOLF CREEK NUCLEAR OPERATING CORPORATION		ELECTRONIC APPROVAL	
PIPING & INSTRUMENTATION DIAGRAM MAIN TURBINE			
SCALE	DRAWING NUMBER	SHEET	REV.
NONE	M-12AC02	22	00

3414 E. 92E



- NOTES**
- 13TH STAGE CONDENSER IS PIPED BY E.C.I. TO A REGION 200' SW/NE OF THE CONDENSER TUBES.
 - SEE NOTE 3 OF M-12AC01.
 - SEE C.E. DRAWING 831748 (M-810-8018) FOR TEMPORARY PERFORMANCE TEST PIPING NOT SHOWN ON THIS P & ID. BASKET TIP & INLET BOWL PIPING IS ALSO DETAILED ON THIS DRAWING.
 - CONDENSATOR ALARM NO. 048 IS PART OF CB SYSTEM.
 - VIBRATION DETECTOR NOT USED FOR OPERATION BUT IS USED FOR TESTING.

TYPICAL BEARING VIBRATION MONITORING INSTRUMENTATION

NOTE: INSTRUMENTS FOR BEARING NO. 3 ARE SHOWN. ALL OTHER BEARING TYPES ARE TYPICAL WITH CORRESPONDING INSTRUMENT NUMBERS AS SHOWN IN TABLE BELOW.

BRG #1	BRG #4	BRG #5	BRG #6	BRG #7	BRG #8	BRG #9	BRG #10	BRG #11	BRG #12
YEB007A	YEB017A	YEB027A	YEB037A	YEB047A	YEB057A	YEB067A	YEB077A	YEB087A	YEB097A
YEB007B	YEB017B	YEB027B	YEB037B	YEB047B	YEB057B	YEB067B	YEB077B	YEB087B	YEB097B
Y7A	Y16A	Y17A	Y26A	Y27A	Y33A	Y34A	Y37A	Y39A	Y48A
Y7D	Y16D	Y17D	Y26D	Y27D	Y33D	Y34D	Y37D	Y39D	Y48D

ACI 21-11 BA ACI 21-11 BA ACI 21-11 BA ACI 21-11 BA ACI 21-11 BA ACI 21-11 BA ACI 21-11 BA ACI 21-11 BA ACI 21-11 BA ACI 21-11 BA

USAR FIC, 10, 2-1-03

NOTES CONT.

- FOR EROSION/CORROSION CONCERNS, CARBON STEEL PIPING ON THIS P & ID MAY HAVE SETTING OF 1/2" (4.0) MIN. LOW ALLOY STEEL AND/OR STAINLESS STEEL PIPING, FOR DETAILS, SEE ISOMETRICS.
- INSTRUMENT CONNECTION MAY BE INSTALLED FOR TURBINE PERFORMANCE TESTING.
- NEW HP TURBINE ROTOR INCREASED NUMBER OF STAGES FROM 2 TO 9. THE NEW HP ROTOR STAGES ARE NUMBERED 1, 2, 3, 4, 5, 6A, 6, & 7. THEREFORE, THE LP TURBINE STAGES REMAIN NUMBERED THE SAME.

ESSENTIAL DRAWING

REVISION	DATE	BY	CHKD	APP'D
01	08/02/03

WOLF CREEK ELECTRONIC APPROVAL

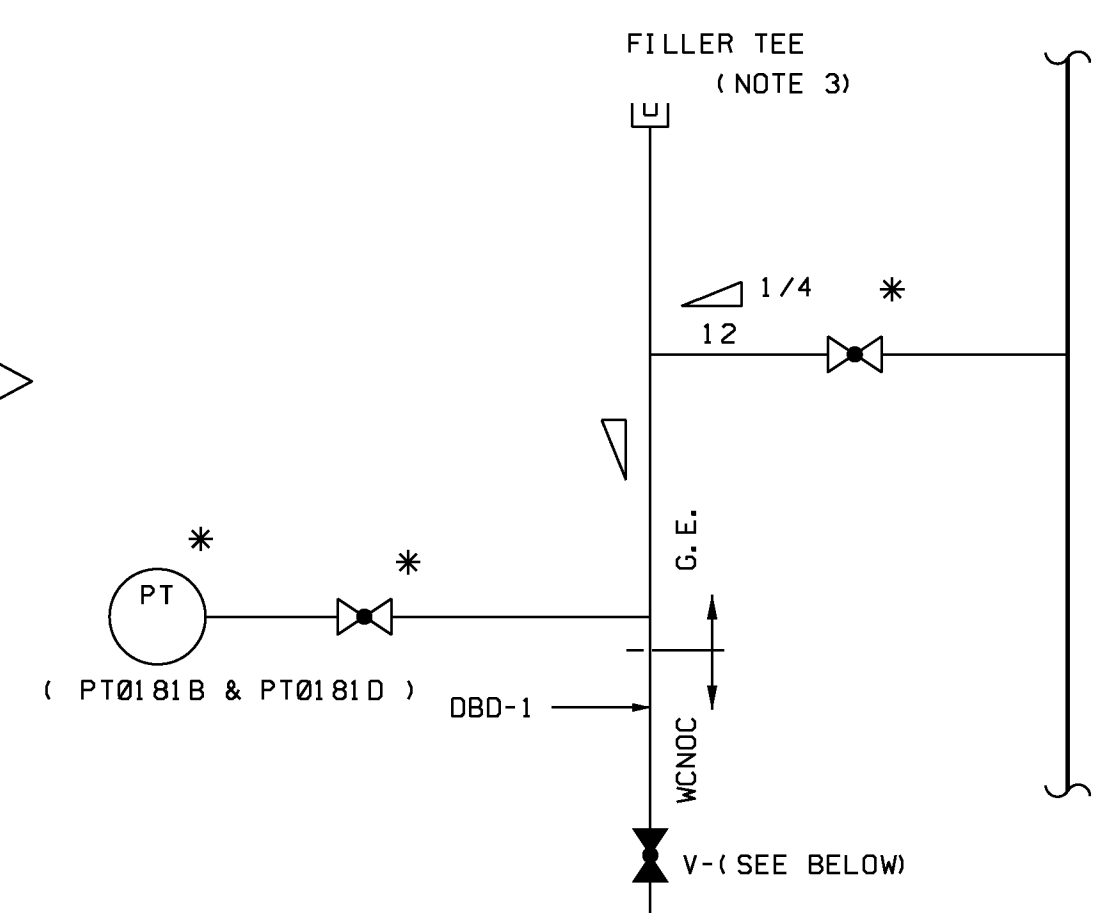
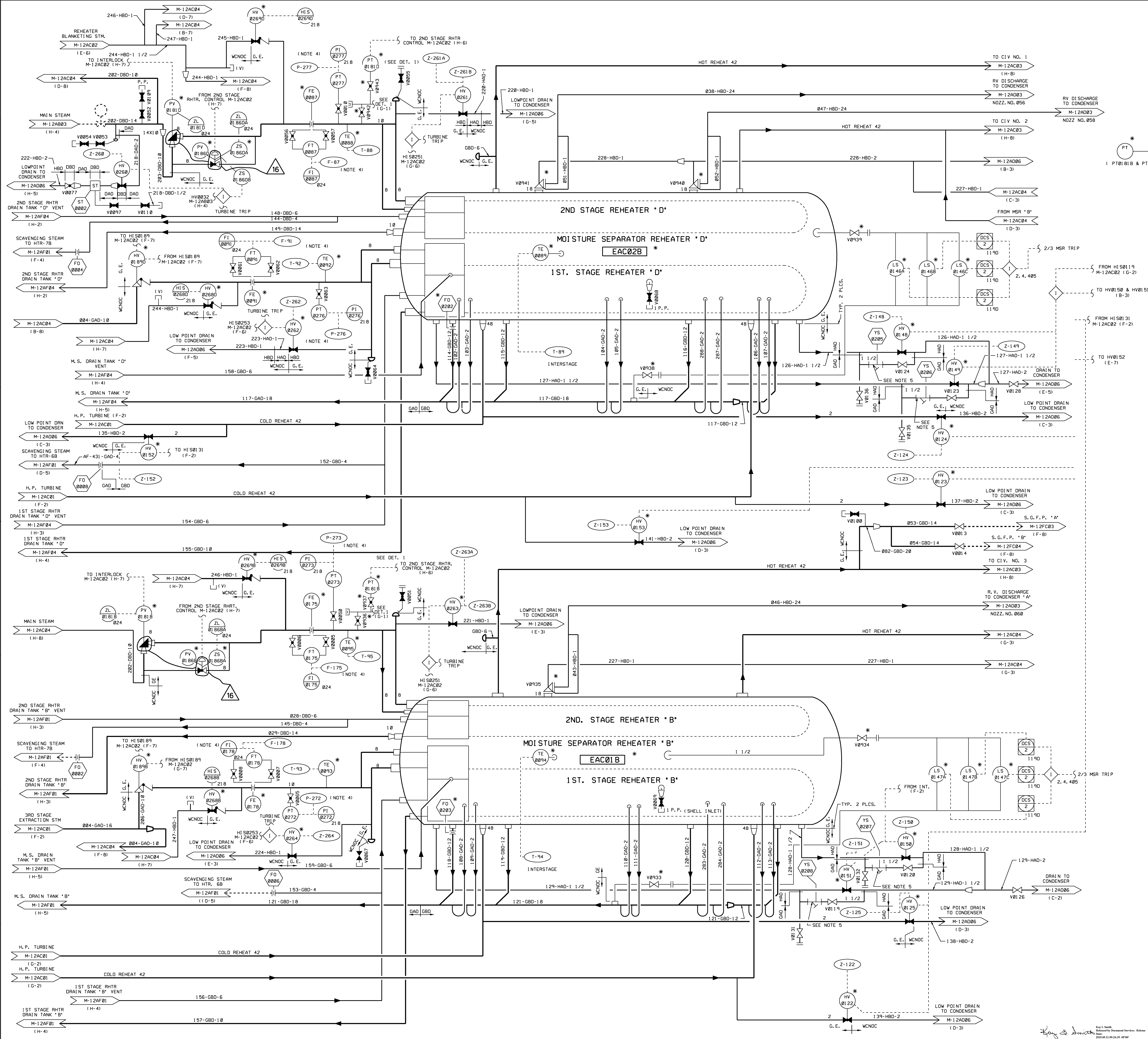
PIPING & INSTRUMENTATION DIAGRAM

MAIN TURBINE

SCALE: NONE

DATE: M-12AC03

SHEET NO: 20



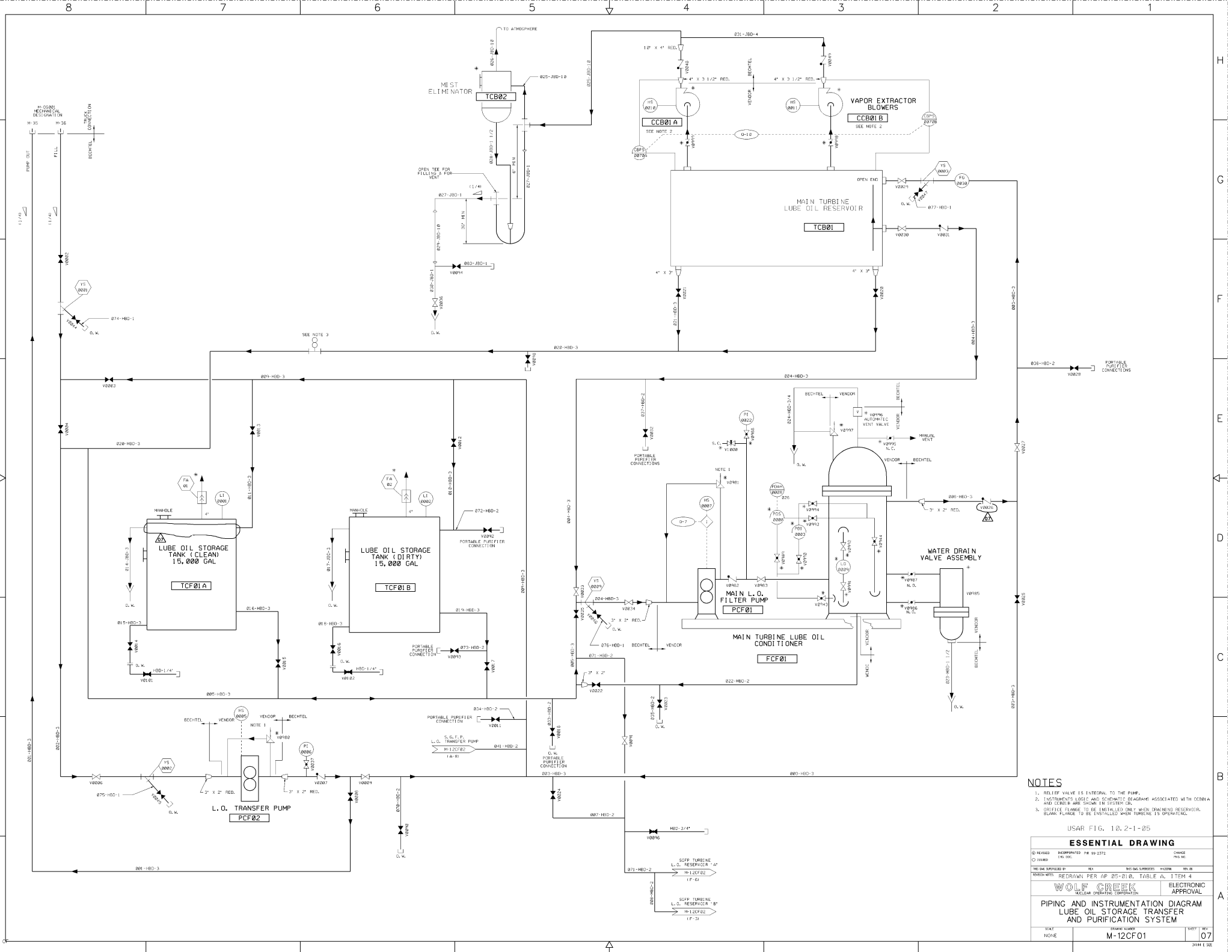
ZONE	PT	VALVE
(G-6)	I81B	V0187
(H-6)	I81D	V0188

- NOTES:**
- STEAM DRAIN PIPING, VALVES AND CONTROLS ARE IN ACCORDANCE WITH G.E. DWG. 2444291 (TURBINE STEAM DRAIN RECOMMENDATIONS) DRAWING M-810-00051 THRU 064.
 - JOGGING CONTROL (SEE ALSO NOTE 1)
 - SEE NOTE 3 OF M-12AC01.
 - SEE NOTE 4 OF M-12AC02.
 - 1 1/2 STRAINER WITH 1/4 DIA. ORIFICE OUTLET
 - FOR EROSION/CORROSION CONCERNS CARBON STEEL PIPING ON THIS PAID MAY HAVE SECTIONS OF 2-1/4 CRI MOLY. LOW-ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAIL, SEE ISOMETRICS.

USAR FIG. 10.2-1 -04

ESSENTIAL DRAWING			
REVISED	INCORPORATED	WP-M-12AC04-015-A-1	CHANGE 14487
ISSUED	CHG. DOC.		FIG. NO.
THIS ENG. SUPERSEDES		REV.	THIS ENG. SUPERSEDES
REVISION NUMBER		REV.	REV.
		ELECTRONIC APPROVAL	
		PIPING & INSTRUMENTATION DIAGRAM MAIN TURBINE	
SCALE	DRAWING NUMBER		SHEET
NONE	M-12AC04		16



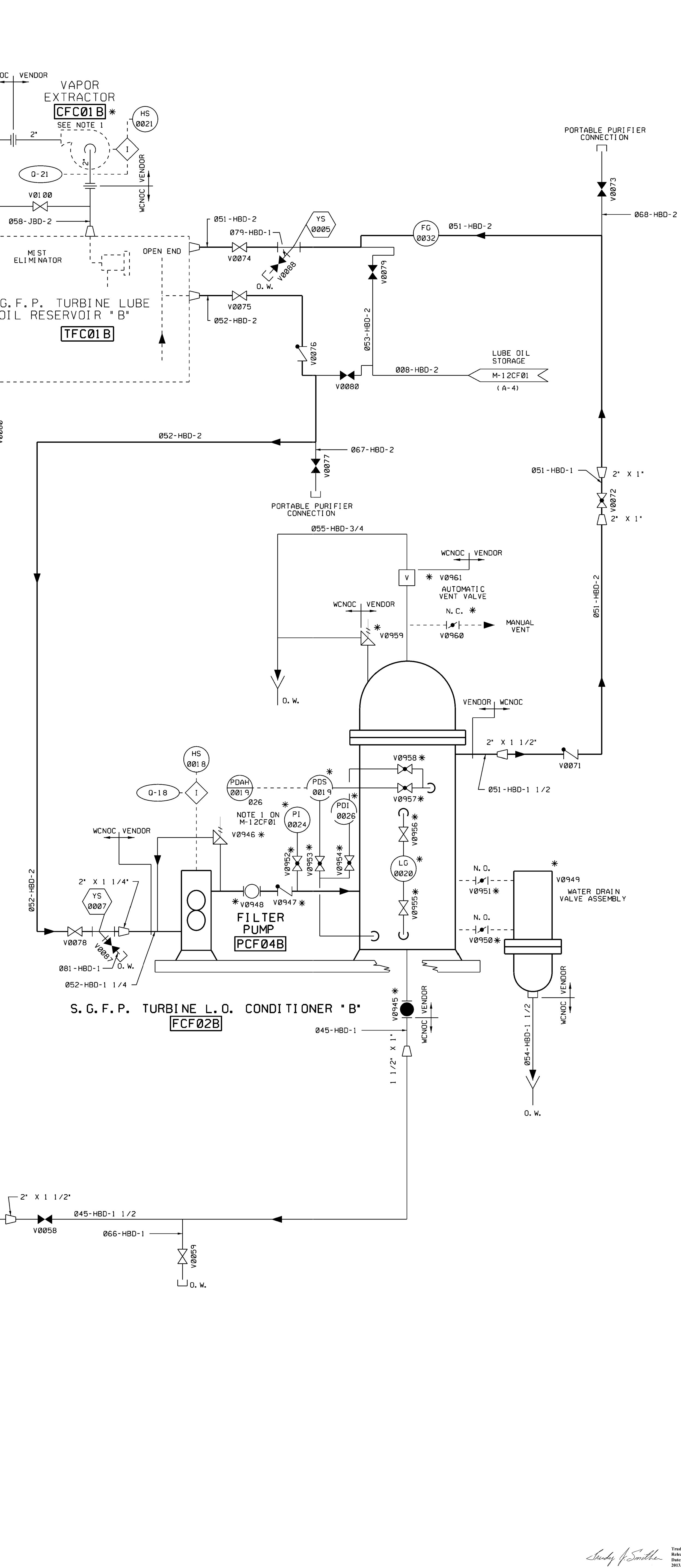
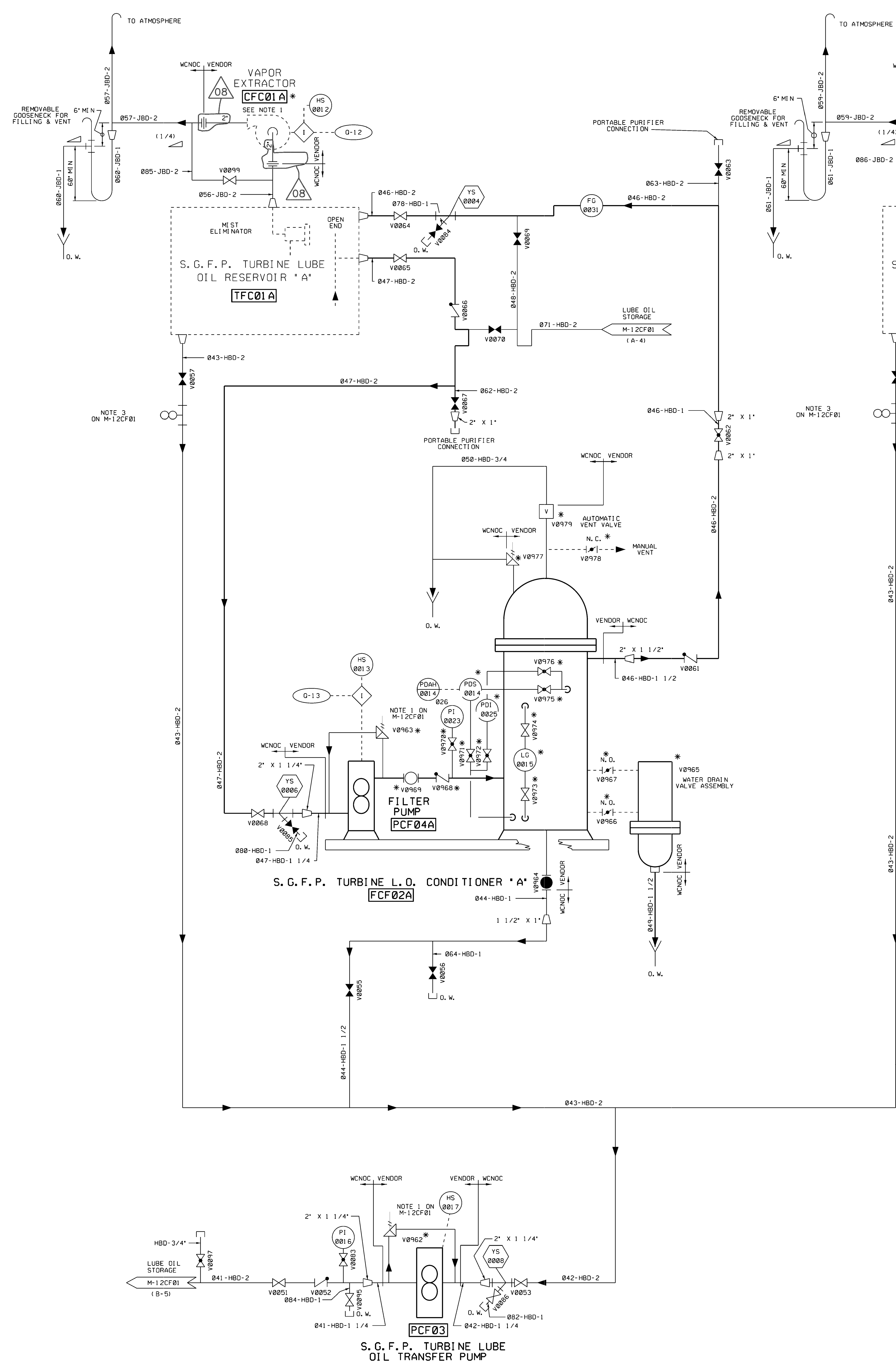


NOTES

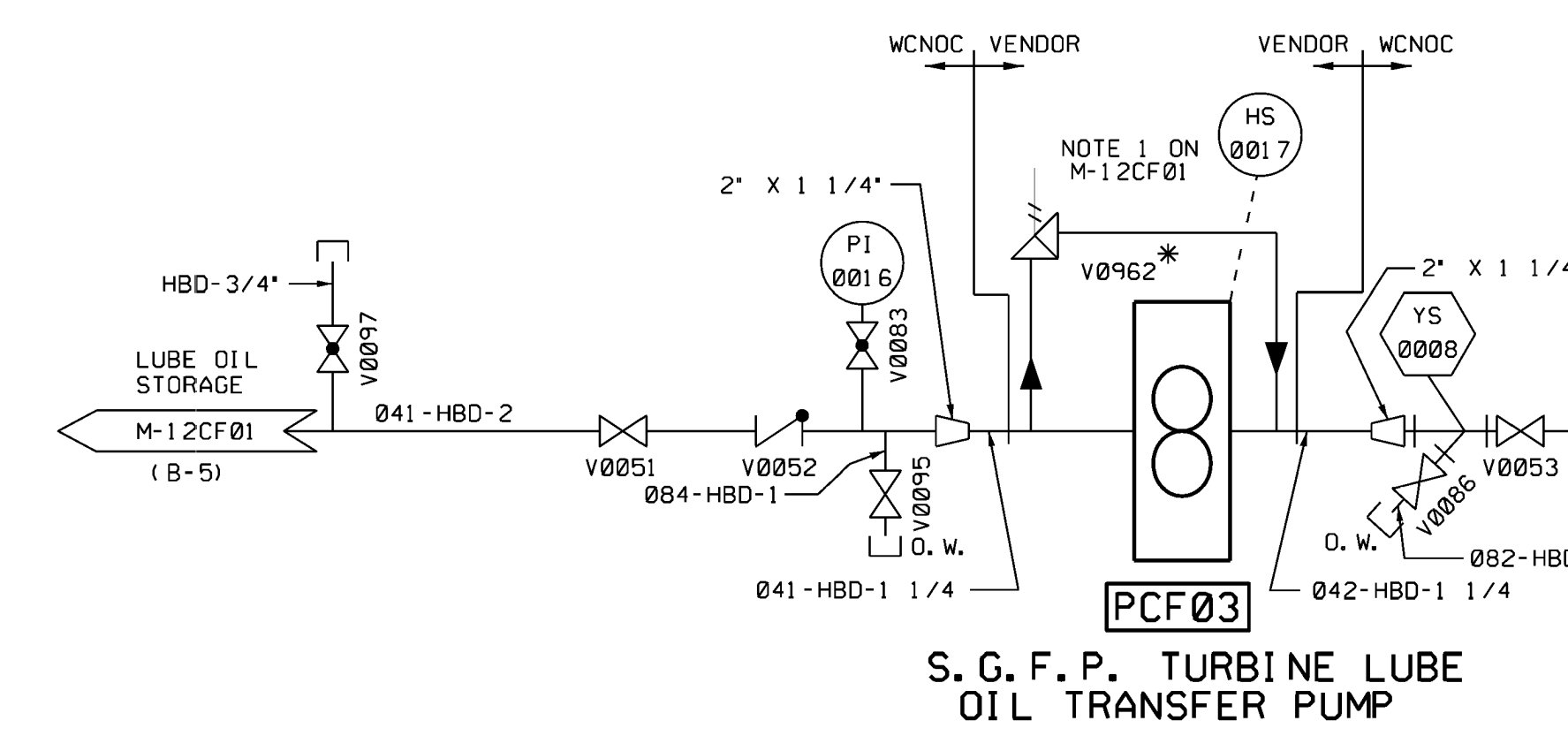
1. RELIEF VALVE IS INTEGRAL TO THE PUMP.
2. INSTRUMENTS LOGIC AND SCHEMATIC DIAGRAMS ASSOCIATED WITH DEBORA AND CERBERUS ARE SHOWN IN SYSTEM 01.
3. ORIFICE FLANGE TO BE INSTALLED ONLY WHEN DRAINING RESERVOIR. BLANK FLANGE TO BE INSTALLED WHEN TURBINE IS OPERATING.

USAR FIG. 10.2-1-05

ESSENTIAL DRAWING			
REVISED	NOVEMBER 92	PA 99-2372	REVISED
BY	WJG	PKS	PKS
REVISION NUMBER	BY	DATE	DESCRIPTION
1	WJG	NOV 92	REDRAWN PER AF 05-010, TABLE A, ITEM 4
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
PIPING AND INSTRUMENTATION DIAGRAM			
LUBE OIL STORAGE TRANSFER			
AND PURIFICATION SYSTEM			
SCALE	UNIFORM	PROJECT NUMBER	07
NONE		M-12CF01	3044 E 308



NOTES
 1. INSTRUMENTS LOGIC AND SCHEMATIC DIAGRAMS ASSOCIATED WITH FCF01A AND FCF01B ARE SHOWN IN SYSTEM FC.

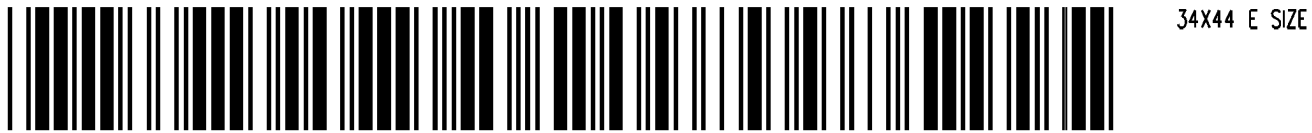


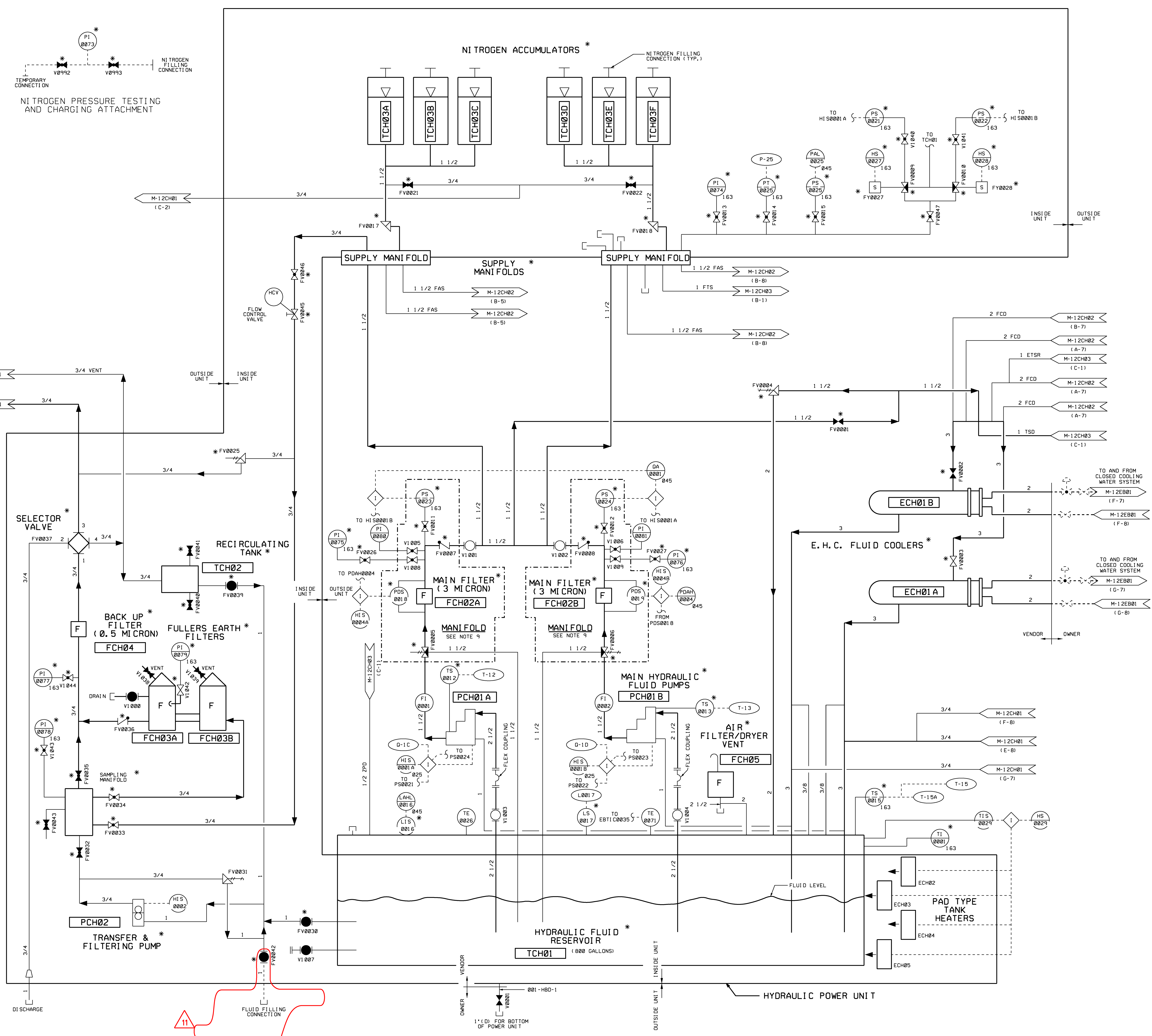
USAR FIG. 10.2-1-06

ESSENTIAL DRAWING

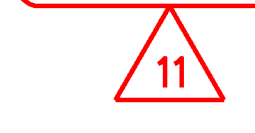
REVISION	INCORPORATED	WIP-M-12CF02-006-A-1	CHANGE	014047
ISSUED	CHG. DOC.		PKG. NO.	
THIS DWG. SUPERSEDES BY		REV.	THIS DWG. SUPERSEDES	
REVISION NOTES: FULLY INCORPORATED ON				
WOLF CREEK NUCLEAR OPERATING CORPORATION			ELECTRONIC APPROVAL	
PIPING & INSTRUMENTATION DIAGRAM LUBE OIL STORAGE TRANSFER AND PURIFICATION SYSTEM				
SCALE	DRAWING NUMBER	SHEET	REV	
NONE	M-12CF02	08		

Study of Smith





- NOTES**
- M-12CH01 INFORMATION FROM GE DRAWING (VND. PRNT. NUMBER M-825-00012 AND S-825-0CH01)
 - M-12CH02 INFORMATION FROM GE DRAWING (VND. PRNT. NUMBER M-825-00024)
 - FOR DETAILED DRAWING SEE M-825-00009 AND S-825-0CH02
 - FOR DETAILED DRAWING SEE M-825-00014 AND S-825-0CH03
 - FOR DETAILED DRAWING SEE M-825-00015 AND S-825-0CH04
 - FOR DETAILED DRAWING SEE M-825-00016 AND S-825-0CH05
 - FOR DETAILED DRAWING SEE M-825-00017 AND S-825-0CH06
 - THE CH SYSTEM (A T-G SUPPORT SYSTEM AS DEPICTED ON M-12CH01 AND M-12CH02 IS THE DESIGN OF GENERAL ELECTRIC. FOR ID INFORMATION WAS TAKEN FROM THE G.E. DRAWING REFERENCED IN NOTES 1 & 2, AS WELL AS G.E. INSTRUCTION MANUAL M-800-00229, BOOK 11.
 - FOR DETAILED DRAWING OF VERTICAL PUMP MOTOR MANIFOLD UPGRADE SEE DWG. M-003A-00002 (HYDRA-POWER SYSTEM DWG. CSI 551).
 - DELETED.



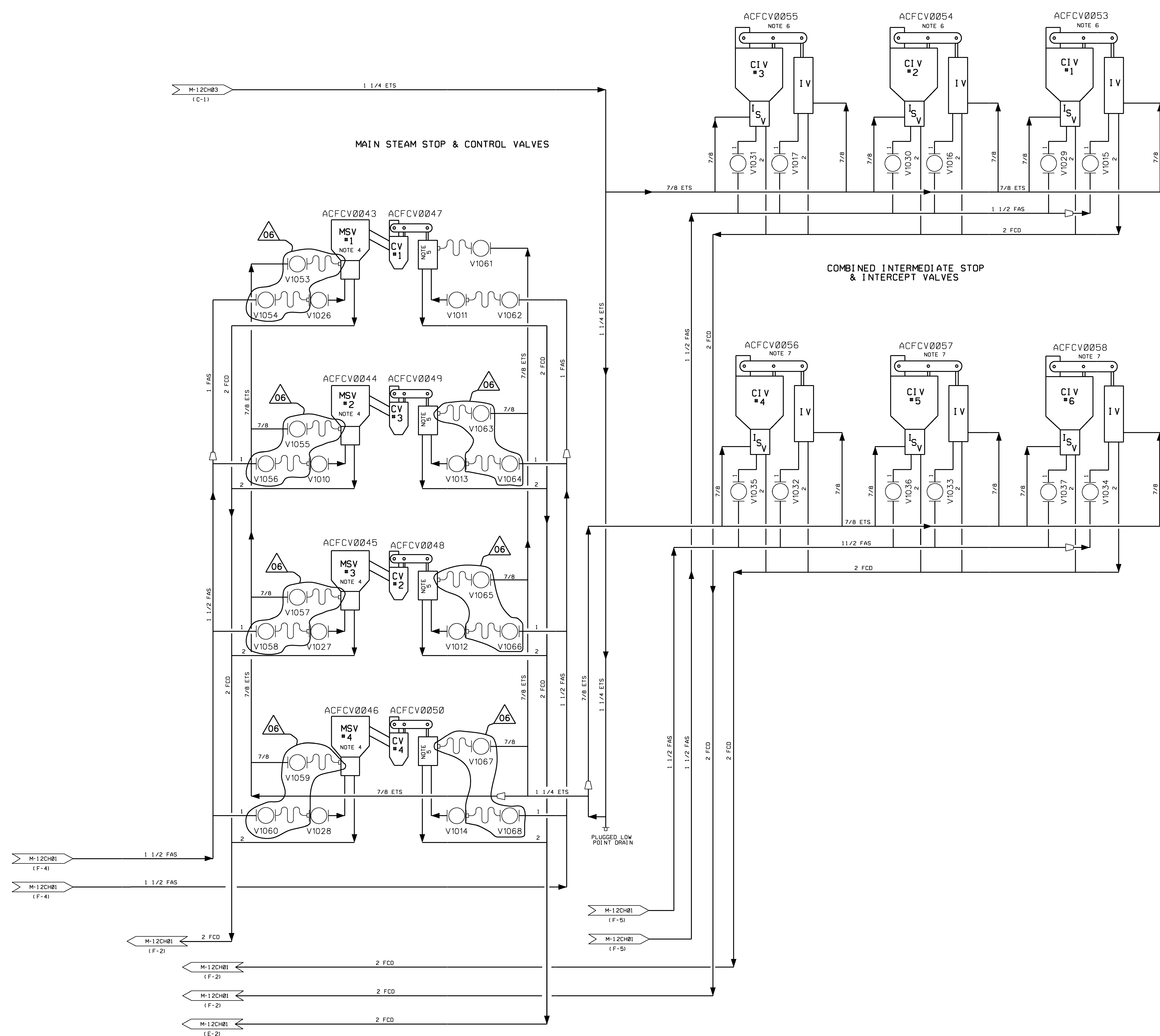
USAR FIG. 10.2-1-7

ESSENTIAL DRAWING			
REVISION	INCORPORATED	CHANGE	REV.
ISSUED	CHG. DEC.	PKG. NDL	
THIS DWG. SUPERSEDES		REV.	
REVISION NOTES: REVISED TO REMOVE TCC SYS CH-121;			
		ELECTRONIC APPROVAL	
PIPING & INSTRUMENTATION DIAG. MAIN TURBINE CONTROL OIL SYSTEM			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12CH01	11	11

Sada Hamada
Linda B. Knechtel
 Released by Document Services, Babcock
 Date: 2017/01/28 01:29:14 -05'00'

NOTES

1. FOR NOTES SEE DRAWING M-12CH01.



LEGEND

- ETS FLUID EMERGENCY TRIP SUPPLY
- FAS FLUID ACTUATOR SUPPLY
- FCD FLUID TO COOLER DRAIN
- FTS FLUID TRIP SYSTEM SUPPLY
- TSO TRIP SYSTEM DRAIN
- ZPD ZERO PRESSURE DRAIN
- MSV MAIN STOP VALVE
- CV CONTROL VALVE
- CIV COMBINED INTERMEDIATE VALVE
- IIV INTERCEPT VALVE
- ISV INTERMEDIATE STOP VALVE
- ETSR EMERGENCY TRIP SYSTEM RETURN

USAR FIG. 10.2-1-8

ESSENTIAL DRAWING

REVISED	INCORPORATED	WIP-M-12CH02-004-A-1	CHANGE 014723
ISSUED	DWG. DOC.		FIG. NO.

THIS DNG. SUPERSEDED BY _____ REV. _____ THIS DNG. SUPERSEDES _____ REV. _____

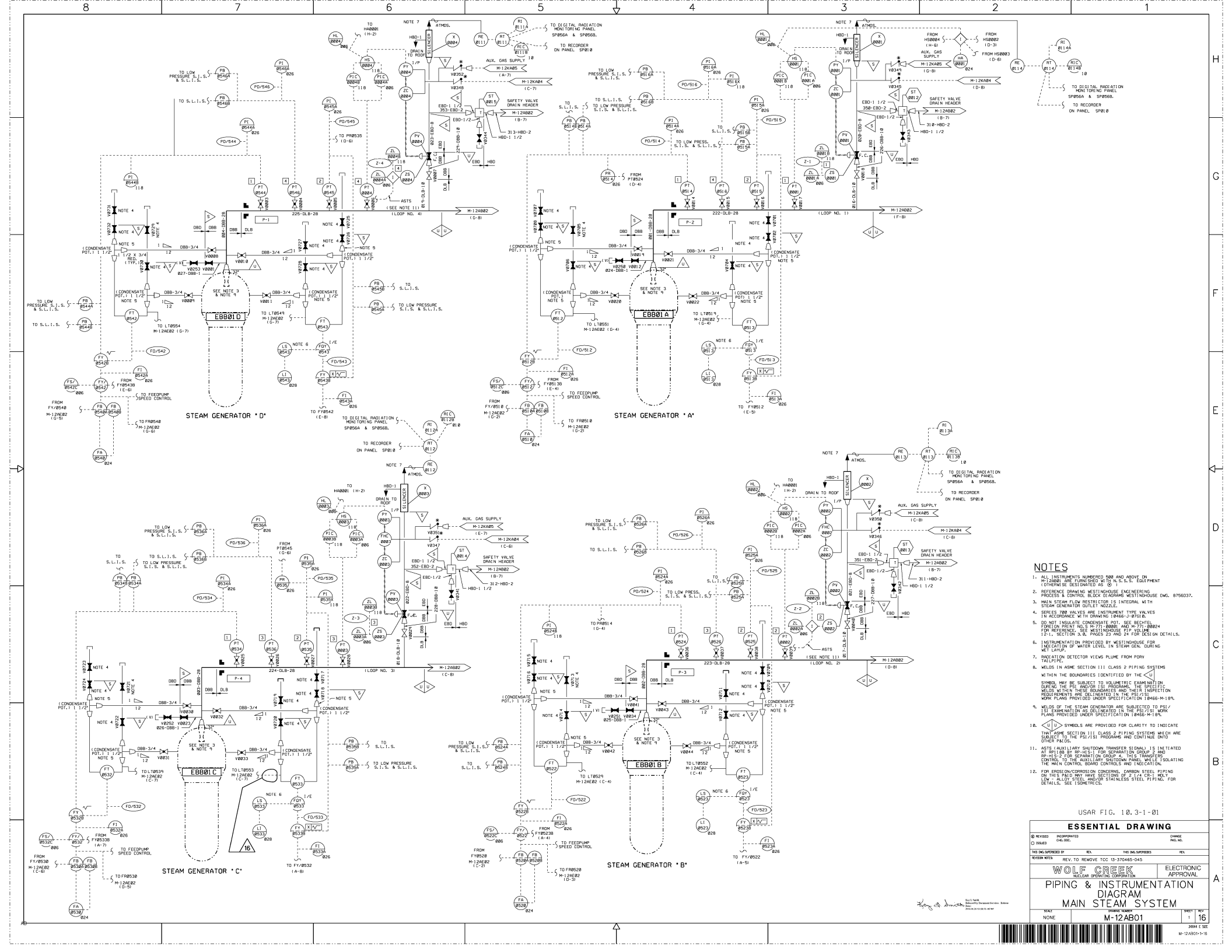
REVISION NOTES:

WOLF CREEK		ELECTRONIC
NUCLEAR OPERATING CORPORATION		APPROVAL

PIPING & INSTRUMENTATION DIAG.
MAIN TURBINE CONTROL
OIL SYSTEM

SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12CH02	06	

34444 E SIZE



- NOTES**
1. ALL INSTRUMENTS NUMBERED 500 AND ABOVE ON M-12AB01 ARE FURNISHED WITH N.S.S.S. EQUIPMENT (OWNER'S DESIGN) OR G-1.
 2. REFERENCE DRAWING WESTINGHOUSE ENGINEERING PROCESS & CONTROL BLOCK DIAGRAM WESTINGHOUSE DWG. 8756537.
 3. MAIN STEAM FLOW RESTRICTOR IS INTEGRAL WITH STEAM GENERATOR OUTLET NOZZLE.
 4. SERIES 700 VALVES ARE INSTRUMENT TYPE VALVES IN ACCORDANCE WITH DRAWING 12466-3-0701B.
 5. DO NOT INSULATE CONDENSATE POT. SEE BECHTEL INSTRUMENTATION NO. 5 FOR INSTRUMENTATION DETAILS FOR REFERENCE. SEE WESTINGHOUSE PIP VOLUME FOR REFERENCE. SEE WESTINGHOUSE PIP VOLUME FOR REFERENCE. SEE WESTINGHOUSE PIP VOLUME FOR REFERENCE. SEE WESTINGHOUSE PIP VOLUME FOR REFERENCE. SEE WESTINGHOUSE PIP VOLUME FOR REFERENCE.
 6. INSTRUMENTATION PROVIDED BY WESTINGHOUSE FOR INDICATION OF WATER LEVEL IN STEAM GEN. DURING M-1 STARTUP.
 7. RADIATION DETECTOR VIEWS PLUME FROM PORV TAILPIPE.
 8. WELDS IN ASME SECTION III CLASS 2 PIPING SYSTEMS WITHIN THE BOUNDARIES IDENTIFIED BY THE ARE SUBJECT TO THE PRE-INSPECTION AND CONTINUE DWTG OTHER PARTS.
 9. WELDS OF THE STEAM GENERATOR ARE SUBJECT TO PSI/TSI EXAMINATION AS SPECIFIED IN THE PSI/TSI WORK PLANS PROVIDED UNDER SPECIFICATION 18466-M-189.
 10. INSTRUMENTATION IS PROVIDED FOR CLARITY TO INDICATE THAT ASME SECTION III CLASS 2 PIPING SYSTEMS WHICH ARE SUBJECT TO THE PRE-INSPECTION AND CONTINUE DWTG OTHER PARTS.
 11. ASME AUXILIARY SHUTDOWN TRANSFER SIGNALS ARE INITIATED AT SP-108 BY RP-01-1 FOR SEPARATION, DRUM-2 AND STEAM GENERATOR SHUTDOWN AND ARE TRANSMITTED TO THE AUXILIARY SHUTDOWN PANEL WHILE ISOLATING THE MAIN CONTROL BOARD CONTROLS AND INDICATION.
 12. FOR EROSION/CORROSION CONCERN, CARBON STEEL PIPING ON THIS DRAWING IS IDENTIFIED BY THE CARBON STEEL LOW ALLOY STEEL AND/OR STAINLESS STEEL PIPING FOR DETAILS. SEE 120670101.

USAR FIG. 10.3-1-01

ESSENTIAL DRAWING

REVISION NO.	DATE	BY	CHKD
1	10/13/85	WOL/C	WOL/C

WOLF CREEK ELECTRONIC APPROVAL

PIPING & INSTRUMENTATION DIAGRAM

MAIN STEAM SYSTEM

NO. 1

M-12AB01

1

16



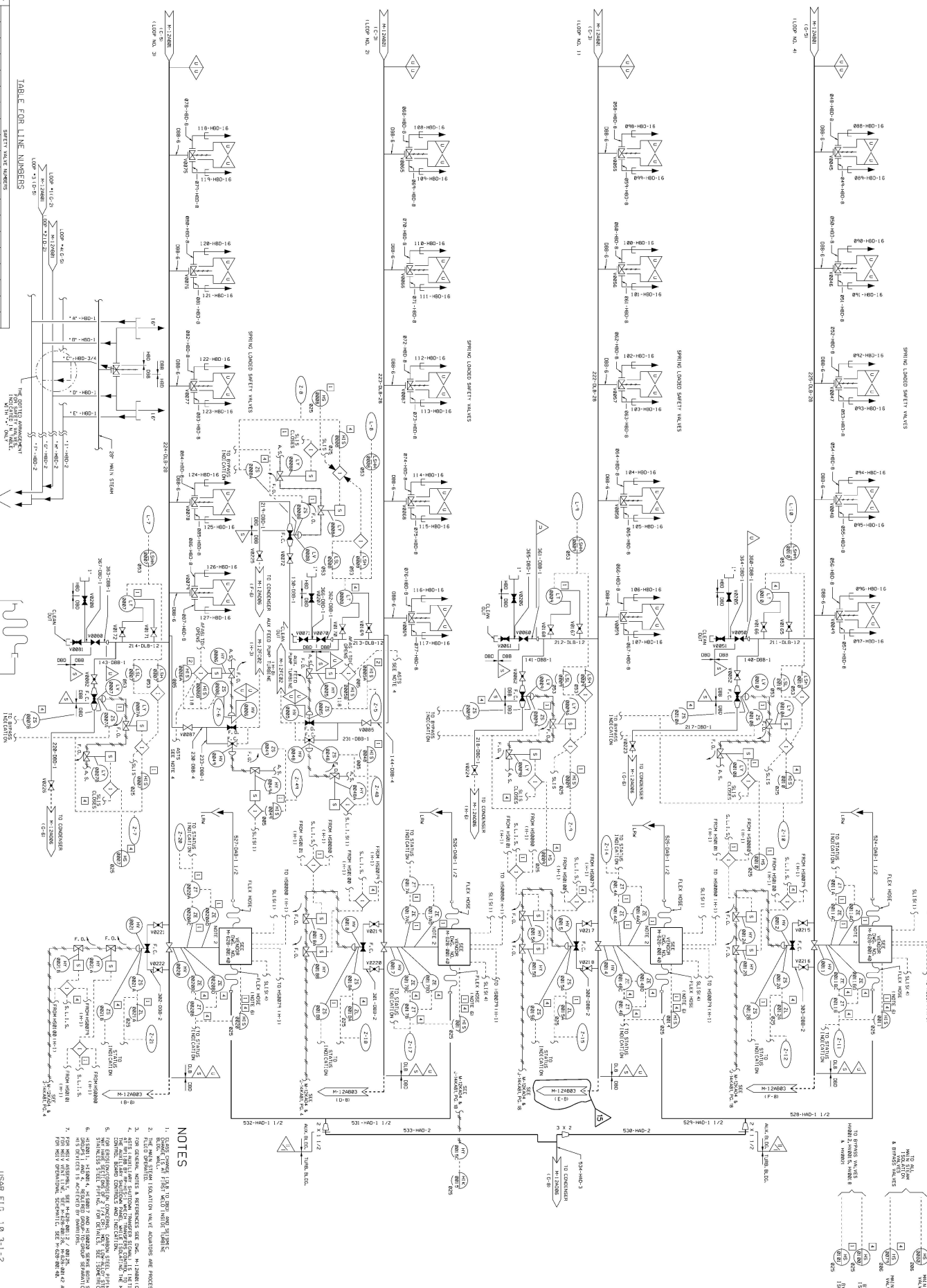
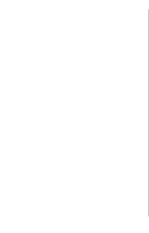


TABLE E FOR LINE NUMBERS

LINE NO.	DESCRIPTION	VALVE NO.	DESCRIPTION	VALVE NO.	DESCRIPTION	VALVE NO.	DESCRIPTION	VALVE NO.	DESCRIPTION
1
2
3
4
5
6
7
8

TYPICAL SAFETY VALVE ARRANGEMENT



NOTES

1. DANGER: HIGH PRESSURE STEAM.
2. FOR OPERATIONAL INFORMATION, REFER TO THE PROCESS FLOW DIAGRAM.
3. FOR GENERAL NOTES & REFERENCES, SEE SHEET M-12A-10.
4. ALL INSTRUMENTATION IS TO BE INSTALLED AND TESTED IN ACCORDANCE WITH THE INSTRUMENTATION SPECIFICATIONS.
5. ALL INSTRUMENTATION IS TO BE INSTALLED AND TESTED IN ACCORDANCE WITH THE INSTRUMENTATION SPECIFICATIONS.
6. ALL INSTRUMENTATION IS TO BE INSTALLED AND TESTED IN ACCORDANCE WITH THE INSTRUMENTATION SPECIFICATIONS.
7. REFER TO SHEETS M-12A-11, M-12A-12, M-12A-13, M-12A-14, M-12A-15, M-12A-16, M-12A-17, M-12A-18, M-12A-19, M-12A-20, M-12A-21, M-12A-22, M-12A-23, M-12A-24, M-12A-25, M-12A-26, M-12A-27, M-12A-28, M-12A-29, M-12A-30, M-12A-31, M-12A-32, M-12A-33, M-12A-34, M-12A-35, M-12A-36, M-12A-37, M-12A-38, M-12A-39, M-12A-40, M-12A-41, M-12A-42, M-12A-43, M-12A-44, M-12A-45, M-12A-46, M-12A-47, M-12A-48, M-12A-49, M-12A-50, M-12A-51, M-12A-52, M-12A-53, M-12A-54, M-12A-55, M-12A-56, M-12A-57, M-12A-58, M-12A-59, M-12A-60, M-12A-61, M-12A-62, M-12A-63, M-12A-64, M-12A-65, M-12A-66, M-12A-67, M-12A-68, M-12A-69, M-12A-70, M-12A-71, M-12A-72, M-12A-73, M-12A-74, M-12A-75, M-12A-76, M-12A-77, M-12A-78, M-12A-79, M-12A-80, M-12A-81, M-12A-82, M-12A-83, M-12A-84, M-12A-85, M-12A-86, M-12A-87, M-12A-88, M-12A-89, M-12A-90, M-12A-91, M-12A-92, M-12A-93, M-12A-94, M-12A-95, M-12A-96, M-12A-97, M-12A-98, M-12A-99, M-12A-100.

ESSENTIAL DRAWING

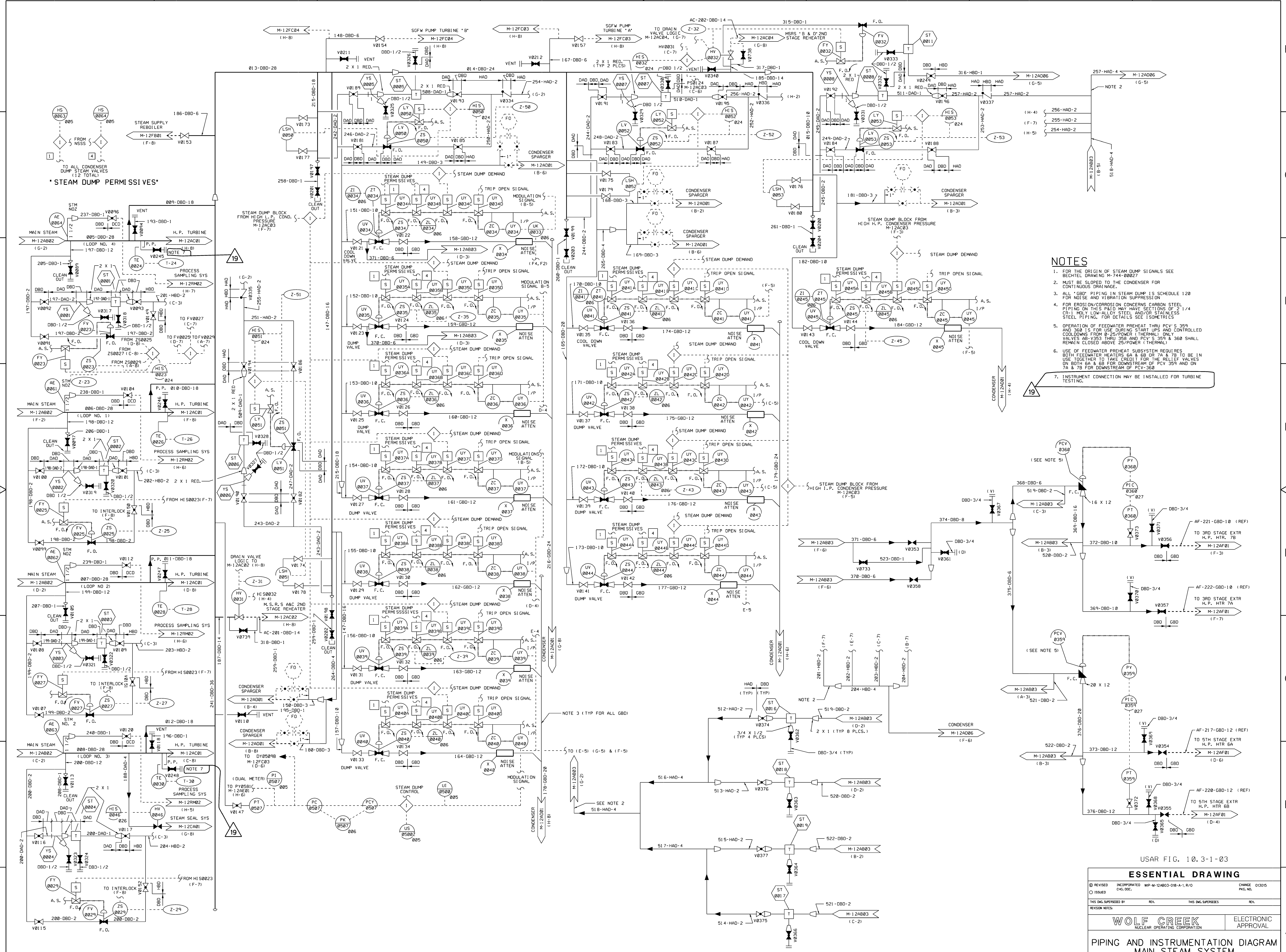
WOLFE ORREK ELECTRONIC APPROVAL

DATE: M-12A-802

SCALE: AS SHOWN

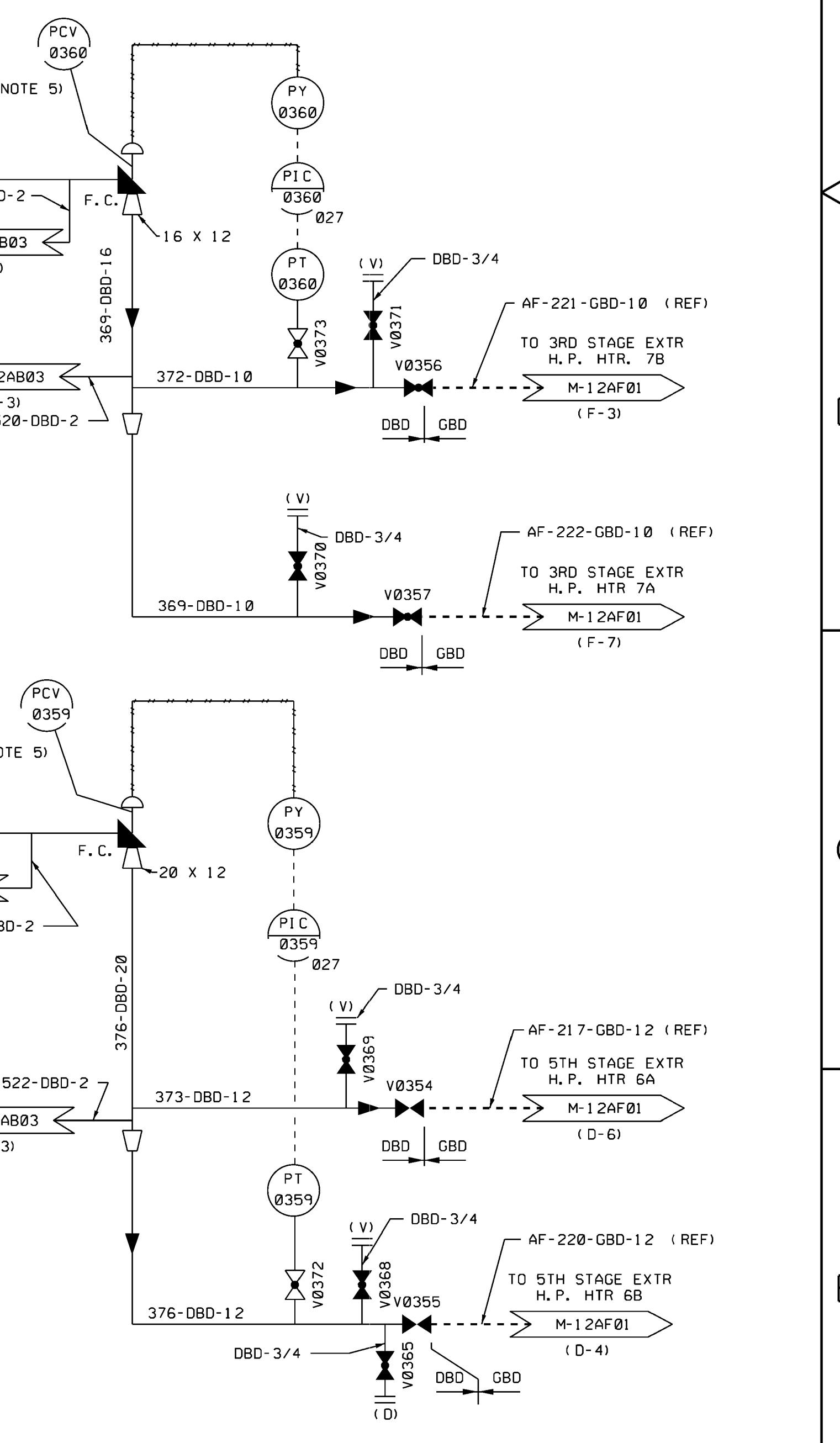
PROJECT: M-12A-802

SHEET: 15



NOTES

1. FOR THE ORIGIN OF STEAM DUMP SIGNALS SEE BECKETL DRAWING M-744-00027
2. MUST BE SLOPED TO THE CONDENSER FOR CONTINUOUS DRAINAGE.
3. ALL 'GBD' PIPING IN STEAM DUMP IS SCHEDULE 120 FOR NOISE AND VIBRATION SUPPRESSION
4. FOR EROSION/CORROSION CONCERNS CARBON STEEL PIPING ON THIS PAID MAY HAVE SECTIONS OF 1/4 CR-1 MOLY LOW-ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS SEE ISOMETRICS
5. OPERATION OF FEEDWATER PREHEAT THRU PCV'S 359 AND 368 IS FOR USE DURING START UPS AND CONTROLLED COOLDOWNS FROM 0-25% POWER (THERMAL). ONLY VALVES AB-935 THRU 366 AND PCV'S 351 & 360 SHALL REMAIN CLOSED ABOVE 25% POWER (THERMAL)
6. USE OF FEEDWATER PREHEAT SUBSYSTEM REQUIRES BOTH FEEDWATER HEATERS 6A & 6B OR 7A & 7B TO BE IN USE TOGETHER TO TAKE CREDIT FOR THE RELIEF VALVES ON BOTH 6A & 6B FOR DOWNSTREAM OF PCV 359 AND ON 7A & 7B FOR DOWNSTREAM OF PCV-368
7. INSTRUMENT CONNECTION MAY BE INSTALLED FOR TURBINE TESTING.



USAR FIG. 10.3-1-03

ESSENTIAL DRAWING

REVISIONS:

01	REVISED	INCORPORATED	WIP-M-12AB03-08-A-1, R/0	CHANGE 013015
02	ISSUED	CHG. DOC.		PKG. NO.

THIS Dwg. SUPERSEDES: REV. THIS Dwg. SUPERSEDES: REV.

REVISION NOTES:

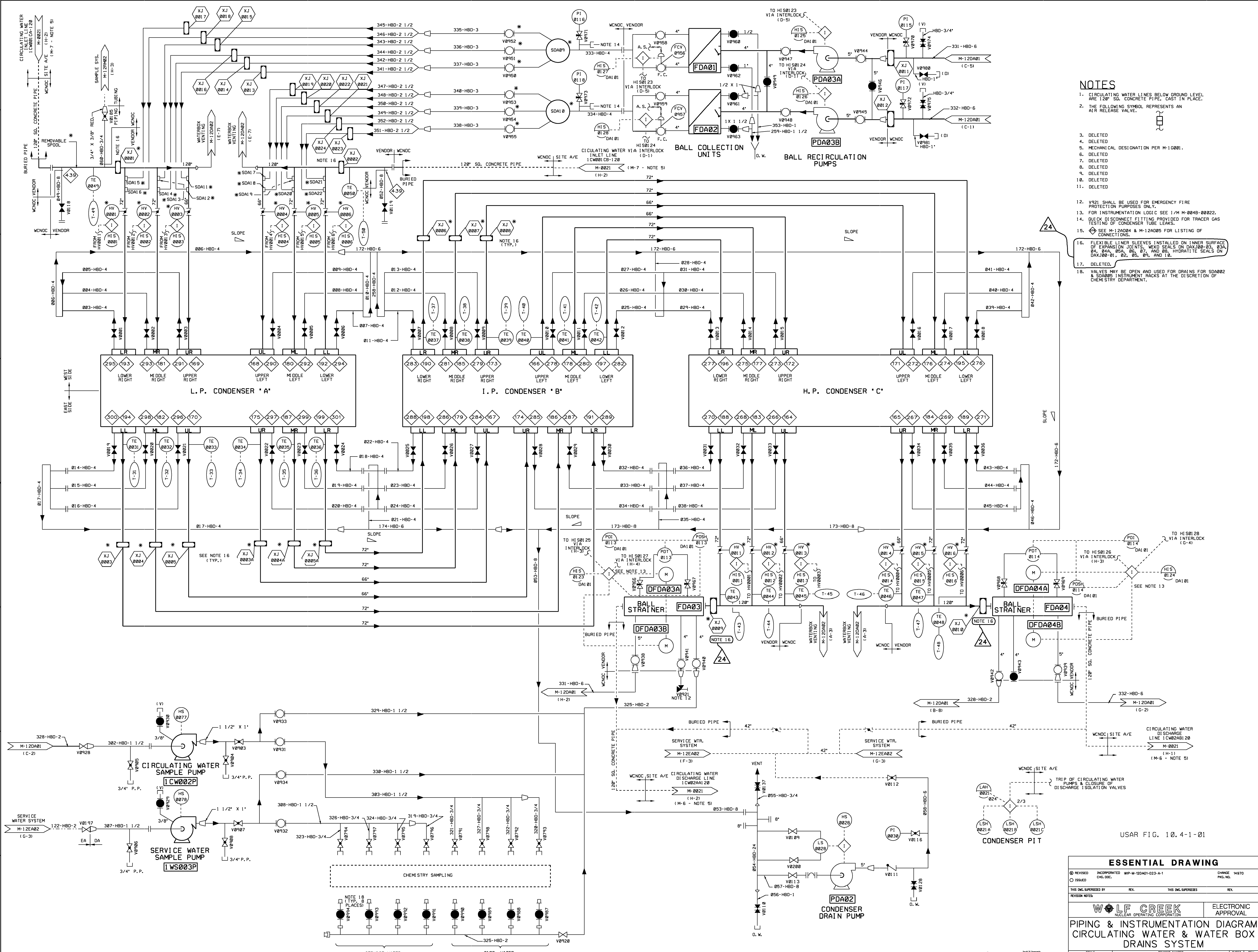
WOLF CREEK
NUCLEAR OPERATING CORPORATION

ELECTRONIC APPROVAL

PIPING AND INSTRUMENTATION DIAGRAM
MAIN STEAM SYSTEM

SCALE: NONE DRAWING NUMBER: M-12AB03 SHEET: 19

3444 E. SIDE



- NOTES**
1. CIRCULATING WATER LINES BELOW GROUND LEVEL ARE 120" SQ. CONCRETE PIPE, CAST IN PLACE.
 2. THE FOLLOWING SYMBOL REPRESENTS AN AIR RELEASE VALVE.
 3. DELETED
 4. DELETED
 5. MECHANICAL DESIGNATION PER M-120A01.
 6. DELETED
 7. DELETED
 8. DELETED
 9. DELETED
 10. DELETED
 11. DELETED
 12. V921 SHALL BE USED FOR EMERGENCY FIRE PROTECTION PURPOSES ONLY.
 13. FOR INSTRUMENTATION LOGIC SEE I/M M-004B-000222.
 14. QUICK DISCONTINUATION FITTING PROVIDED FOR TRACER GAS TESTING OF CONDENSER TUBE LEAKS.
 15. SEE M-120A04 & M-120A05 FOR LISTING OF CONNECTIONS.
 16. FLEXIBLE LINER SLEEVES INSTALLED ON INNER SURFACE OF EXPANSION JOINTS. WELD SEALS ON DAX100-03, 03A, 04, 04A, 05A, 05, 07, AND 08. HYDRATITE SEALS ON DAX100-01, 02, 05, 05A, AND 10.
 17. DELETED
 18. VALVES MAY BE OPEN AND USED FOR DRAINS FOR SDA002 & SDA005 INSTRUMENT RACKS AT THE DISCRETION OF CHEMISTRY DEPARTMENT.

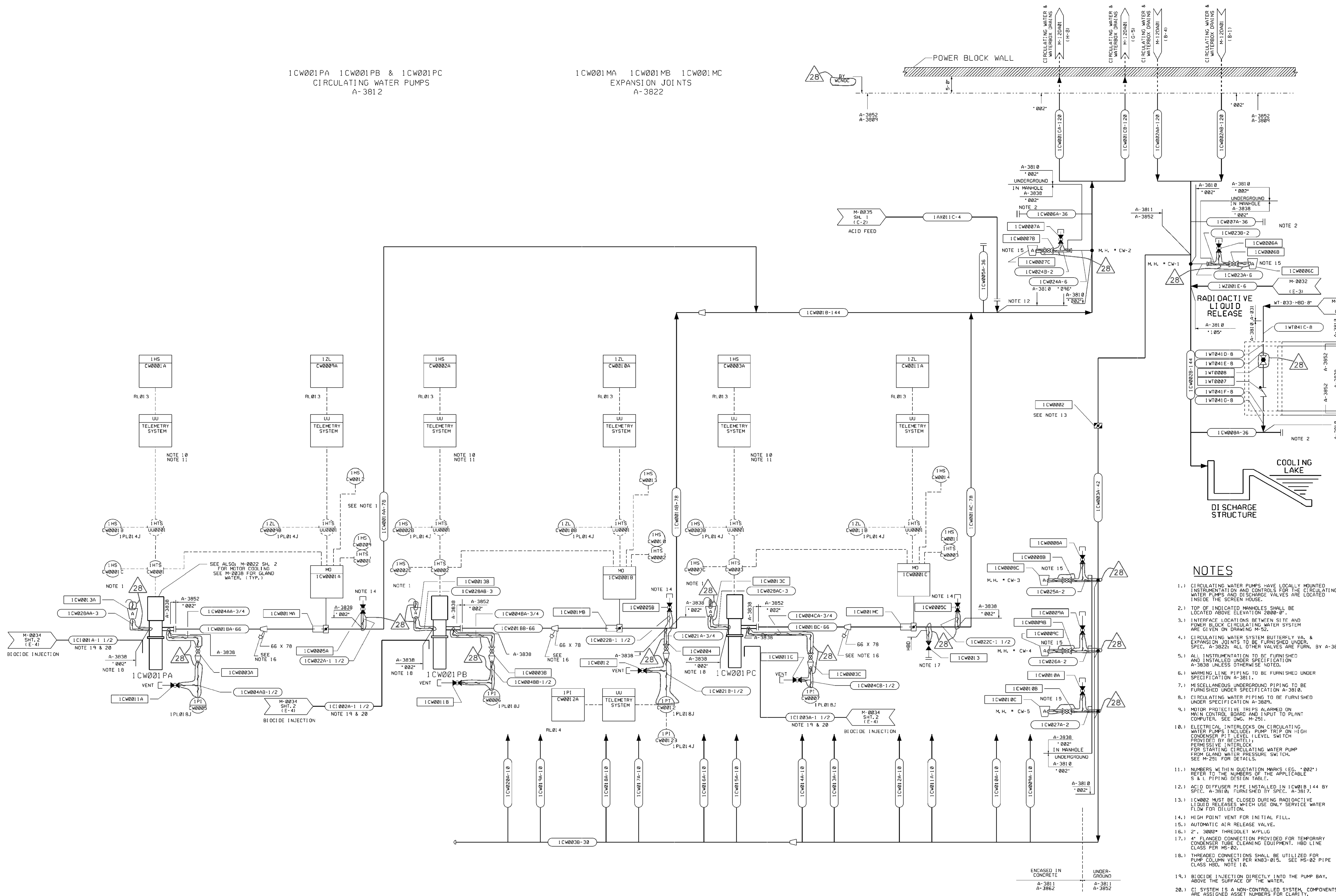
USAR FIG. 10.4-1-01

ESSENTIAL DRAWING

REVISED	INCORPORATED	WIP-M-120A01-023-A-1	CHANGE 14970
ISSUED	ENG. DOC.		FIG. NO.
THIS ENG. SUPERSEDES		REV.	THIS ENG. SUPERSEDES
REVISION NOTES			
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
PIPING & INSTRUMENTATION DIAGRAM			
CIRCULATING WATER & WATER BOX DRAINS SYSTEM			
SCALE	DRAWING NUMBER	SHEET	REV.
NONE	M-120A01	1	24
		3444 E. SIDE	

1CW001PA 1CW001PB & 1CW001PC
CIRCULATING WATER PUMPS
A-3812

1CW001MA 1CW001MB 1CW001MC
EXPANSION JOINTS
A-3822

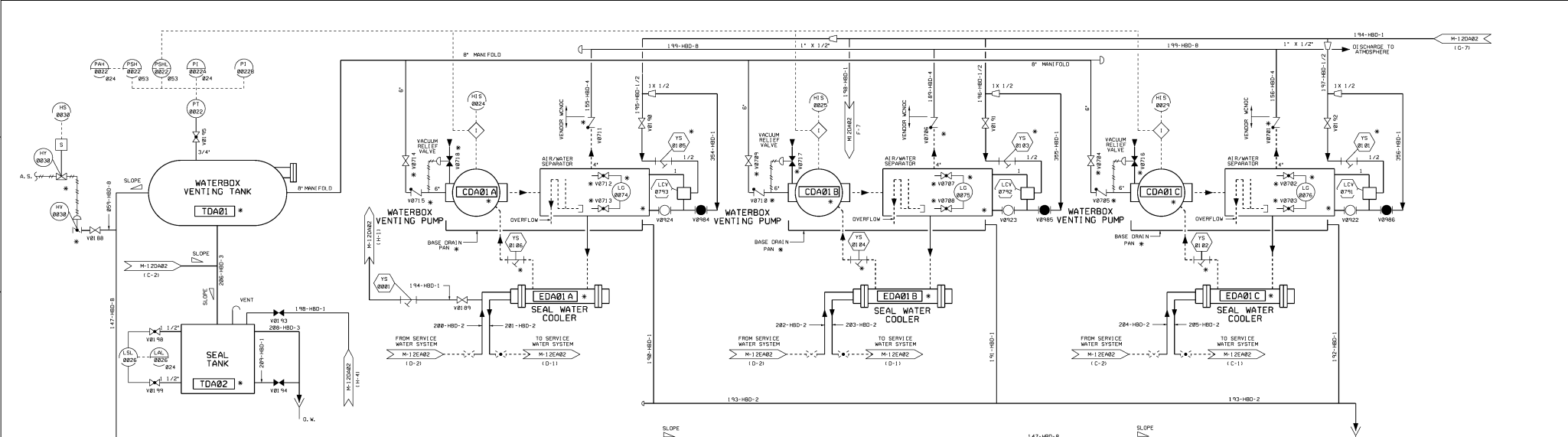


- NOTES**
- 1.) CIRCULATING WATER PUMPS HAVE LOCALLY MOUNTED INSTRUMENTATION AND CONTROLS FOR THE CIRCULATING WATER PUMPS AND DISCHARGE VALVES ARE LOCATED INSIDE THE SCREEN HOUSE.
 - 2.) TOP OF INDICATED MANHOLES SHALL BE LOCATED ABOVE ELEVATION 2000'-0".
 - 3.) INTERFACE LOCATIONS BETWEEN SITE AND POWER BLOCK CIRCULATING WATER SYSTEM ARE GIVEN ON DRAWING M-002.
 - 4.) CIRCULATING WATER SYSTEM BUTTERFLY VALVE & EXPANSION JOINTS TO BE FURNISHED UNDER SPEC. A-3822; ALL OTHER VALVES ARE FURN. BY A-3815.
 - 5.) ALL INSTRUMENTATION TO BE FURNISHED AND INSTALLED UNDER SPECIFICATION A-3838 UNLESS OTHERWISE NOTED.
 - 6.) WARNING LINE PIPING TO BE FURNISHED UNDER SPECIFICATION A-3811.
 - 7.) MISCELLANEOUS UNDERGROUND PIPING TO BE FURNISHED UNDER SPECIFICATION A-3810.
 - 8.) CIRCULATING WATER PIPING TO BE FURNISHED UNDER SPECIFICATION A-3809.
 - 9.) MOTOR PROTECTIVE TRIPS ALARMED ON MAIN CONTROL BOARD AND INPUT TO PLANT COMPUTER. SEE DWG. M-251.
 - 10.) ELECTRICAL INTERLOCKS ON CIRCULATING WATER PUMPS INCLUDE: PUMP TRIP ON HIGH CONDENSER P1 LEVEL (LEVEL SWITCH PROVIDED BY BECHTEL); PERMISSIVE INTERLOCK FOR STARTING CIRCULATING WATER PUMP FROM GROUND WATER PRESSURE SWITCH. SEE M-251 FOR DETAILS.
 - 11.) NUMBERS WITHIN DUTATION MARKS (E.G. "002") REFER TO THE NUMBER OF THE APPLICABLE S & A PIPING DESIGN TABLE.
 - 12.) ACID DIFFUSER PIPE INSTALLED IN 1CW01B 144 BY SPEC. A-3810; FURNISHED BY SPEC. A-3817.
 - 13.) 1CW002 MUST BE CLOSED DURING RADIOACTIVE LIQUID RELEASES WHICH USE ONLY SERVICE WATER FLOW FOR DILUTION.
 - 14.) HIGH POINT VENT FOR INITIAL FILL.
 - 15.) AUTOMATIC AIR RELEASE VALVE.
 - 16.) 2" - 3000# THROTTLE W/PLUG.
 - 17.) 4" FLANGED CONNECTION PROVIDED FOR TEMPORARY CONDENSER TUBE CLEANING EQUIPMENT. HBD LINE CLASS PER MS-02.
 - 18.) THREADED CONNECTIONS SHALL BE UTILIZED FOR PUMP COLUMN VENT PER KN03-015. SEE MS-02 PIPE CLASS HBD, NOTE 10.
 - 19.) BIOCIDIC INJECTION DIRECTLY INTO THE PUMP BAY, ABOVE THE SURFACE OF THE WATER.
 - 20.) CI SYSTEM IS A NON-CONTROLLED SYSTEM. COMPONENTS ARE ASSIGNED ASSET NUMBERS FOR CLARITY.

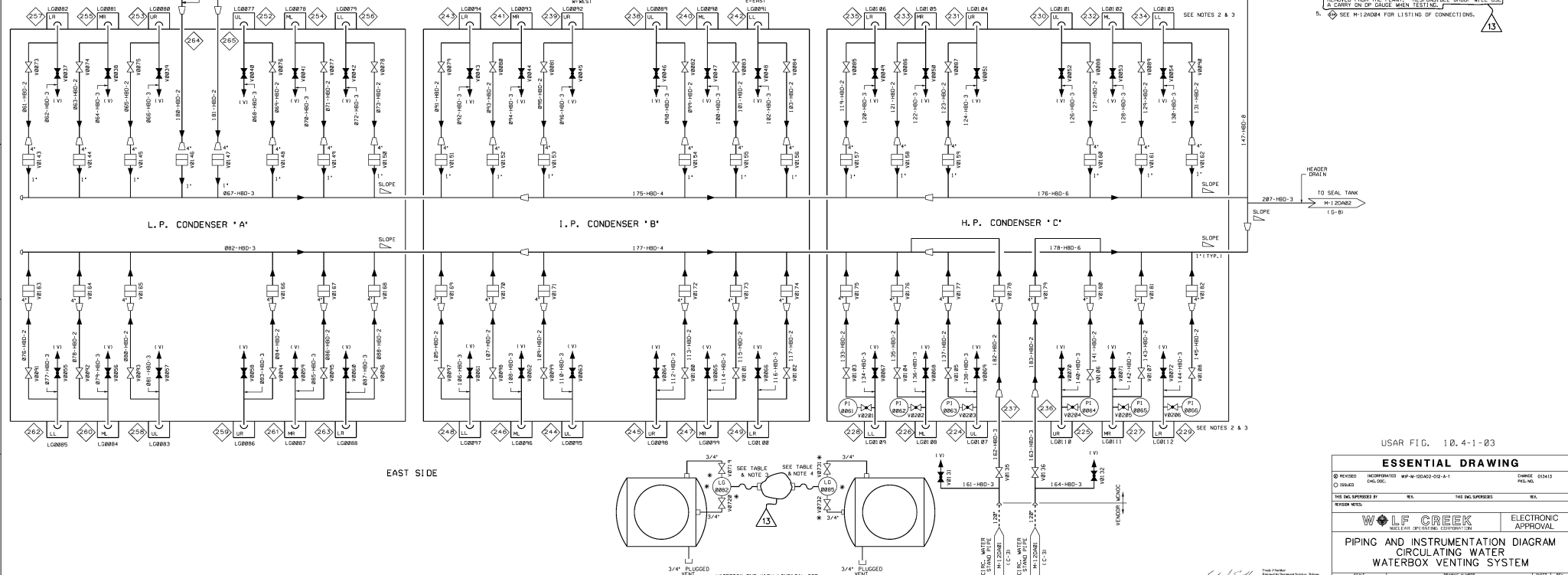
USAR FIG. 10.4-1-02

ESSENTIAL DRAWING			
REVISED	INCORPORATED	NO. C4-363224-07	DWG. NO.
ISSUED	ENG. DCC.	CR-03061771	PKG. NO.
THIS Dwg. SUPERSEDES		REV.	THIS Dwg. SUPERSEDES
REVISION NOTE: REV. TO CHANGE VLV. SYMBOL FOR W/0008 & CHANGE BECHTEL CALLOUT TO WCNOC (AREA H-4). ALSO INCORP. CR-03061771.		REV.	THIS Dwg. SUPERSEDES
		ELECTRONIC APPROVAL	
P&ID CIRCULATING WATER SYSTEM (CW)			
SCALE	GRAPHIC NUMBER	SHEET	REV.
NONE	M-0021	1	28

Scale 1" = 10'-0"
 3000# THROTTLE W/PLUG
 4" FLANGED CONNECTION PROVIDED FOR TEMPORARY CONDENSER TUBE CLEANING EQUIPMENT. HBD LINE CLASS PER MS-02.
 THREADED CONNECTIONS SHALL BE UTILIZED FOR PUMP COLUMN VENT PER KN03-015. SEE MS-02 PIPE CLASS HBD, NOTE 10.



CONDENSER	WATERBOX DESIGNATOR	VALVE NO.	LEVEL INSTR. NO. (LGI)	DIFF. PRESS. INDICATOR	WATERBOX DESIGNATOR	VALVE NO.	LEVEL INSTR. NO. (LGI)
L.P. CONDENSER 'A'	LR (W)	V8719, V8720	LGB862	NOTE 4	LL (E)	V8731, V8732	LGB895
	MR (W)	V8721, V8722	LGB863	NOTE 4	ML (E)	V8733, V8734	LGB894
	UR (W)	V8723, V8724	LGB864	NOTE 4	UL (E)	V8735, V8736	LGB893
	UL (W)	V8725, V8726	LGB867	NOTE 4	UR (E)	V8737, V8738	LGB896
I.P. CONDENSER 'B'	LR (W)	V8727, V8728	LGB876	NOTE 4	MR (E)	V8739, V8740	LGB897
	ML (W)	V8729, V8730	LGB879	NOTE 4	LL (E)	V8741, V8742	LGB898
	UR (W)	V8731, V8732	LGB880	NOTE 4	ML (E)	V8743, V8744	LGB899
	UL (W)	V8733, V8734	LGB883	NOTE 4	LR (E)	V8745, V8746	LGB900
H.P. CONDENSER 'C'	LR (W)	V8767, V8768	LGB106	NOTE 4	LL (E)	V8779, V8780	LGB109
	MR (W)	V8769, V8770	LGB105	NOTE 4	ML (E)	V8781, V8782	LGB108
	UR (W)	V8771, V8772	LGB104	NOTE 4	UL (E)	V8783, V8784	LGB107
	UL (W)	V8773, V8774	LGB101	NOTE 4	LR (E)	V8785, V8786	LGB110
L.P. CONDENSER 'A'	ML (W)	V8775, V8776	LGB102	NOTE 4	MR (E)	V8787, V8788	LGB111
	LL (W)	V8777, V8778	LGB103	NOTE 4	LR (E)	V8789, V8790	LGB112
	UR (W)	V8781, V8782	LGB108	NOTE 4	ML (E)	V8791, V8792	LGB105
	UL (W)	V8783, V8784	LGB107	NOTE 4	LL (E)	V8793, V8794	LGB104
I.P. CONDENSER 'B'	LR (W)	V8743, V8744	LGB894	NOTE 4	LL (E)	V8755, V8756	LGB897
	MR (W)	V8745, V8746	LGB893	NOTE 4	ML (E)	V8757, V8758	LGB896
	UR (W)	V8747, V8748	LGB892	NOTE 4	UL (E)	V8759, V8760	LGB895
	UL (W)	V8749, V8750	LGB895	NOTE 4	LR (E)	V8761, V8762	LGB898
H.P. CONDENSER 'C'	ML (W)	V8751, V8752	LGB898	NOTE 4	MR (E)	V8763, V8764	LGB899
	LL (W)	V8753, V8754	LGB891	NOTE 4	LR (E)	V8765, V8766	LGB900
	UR (W)	V8767, V8768	LGB106	NOTE 4	ML (E)	V8779, V8780	LGB109
	UL (W)	V8769, V8770	LGB105	NOTE 4	UL (E)	V8783, V8784	LGB107
L.P. CONDENSER 'A'	UR (W)	V8771, V8772	LGB104	NOTE 4	LR (E)	V8785, V8786	LGB110
	ML (W)	V8773, V8774	LGB103	NOTE 4	ML (E)	V8787, V8788	LGB111
	LL (W)	V8775, V8776	LGB102	NOTE 4	LR (E)	V8789, V8790	LGB112
	UR (W)	V8781, V8782	LGB108	NOTE 4	ML (E)	V8791, V8792	LGB105
I.P. CONDENSER 'B'	UL (W)	V8783, V8784	LGB107	NOTE 4	LL (E)	V8793, V8794	LGB104
	LR (W)	V8785, V8786	LGB106	NOTE 4	ML (E)	V8795, V8796	LGB105
	MR (W)	V8787, V8788	LGB105	NOTE 4	UL (E)	V8797, V8798	LGB106
	UR (W)	V8789, V8790	LGB104	NOTE 4	LR (E)	V8791, V8792	LGB103
H.P. CONDENSER 'C'	ML (W)	V8791, V8792	LGB105	NOTE 4	MR (E)	V8793, V8794	LGB106
	LL (W)	V8793, V8794	LGB104	NOTE 4	LR (E)	V8795, V8796	LGB103
	UR (W)	V8797, V8798	LGB106	NOTE 4	ML (E)	V8799, V8800	LGB105
	UL (W)	V8799, V8800	LGB105	NOTE 4	UL (E)	V8801, V8802	LGB106



- NOTES**
- FOR GENERAL NOTES SEE M-12DAB
 - WATERBOXES DESIGNATED AS FOLLOWS:
 LR - LOWER RIGHT
 MR - MIDDLE RIGHT
 UR - UPPER RIGHT
 LL - LOWER LEFT
 ML - MIDDLE LEFT
 UL - UPPER LEFT
 - ALL SE VIEWS FACING WATERBOX END OF CONDENSER SHELL.
 - WATERBOX LEVEL CLASS INSTRUMENTATION NUMBER IS GIVEN IN PARENTHESES NEXT TO EACH WATERBOX SYMBOL. CONNECTIONS ARE AS SHOWN FOR "TYPICAL", ZONE AA.
 - SEAL WATER COOLERS ARE PROVIDED FOR EACH WATERBOX. CONNECTIONS ARE AS SHOWN FOR "TYPICAL", ZONE AA.
 - SEE M-12DAB FOR LISTING OF CONNECTIONS.

USAR FIG. 10.4-1-23

ESSENTIAL DRAWING

REVISED INCORPORATED WP-4-22042-012-A-1 CHANGE 03415 P&ID-NL

THIS DRAWING BY: NLS HAS INC. APPROVES: NLS

DESIGNED BY: NLS

WOLF CREEK ELECTRONIC APPROVAL

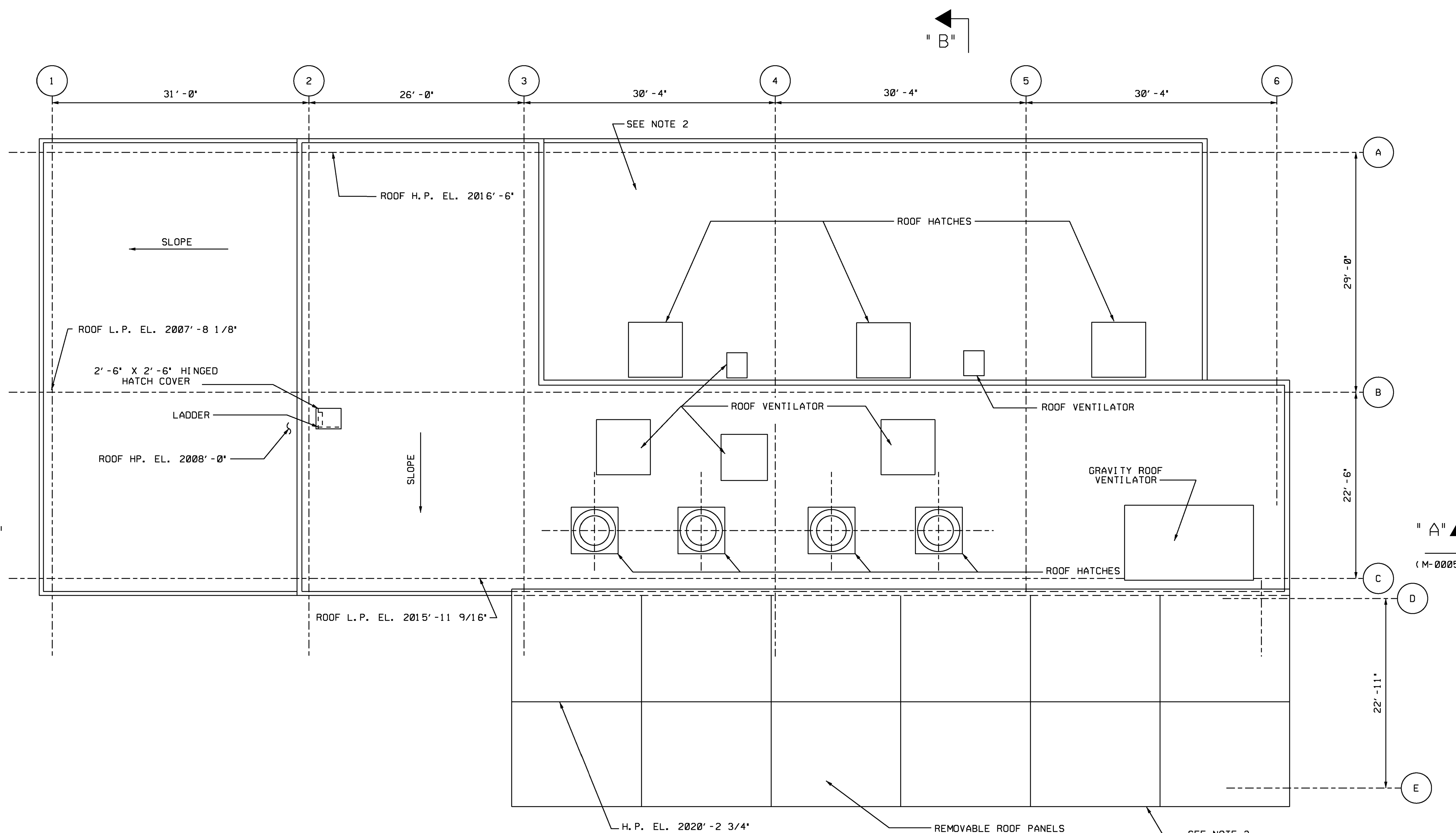
PIPING AND INSTRUMENTATION DIAGRAM
CIRCULATING WATER
WATERBOX VENTING SYSTEM

SCALE: NONE

NO. M-12DAB2

SHEET 1 OF 13

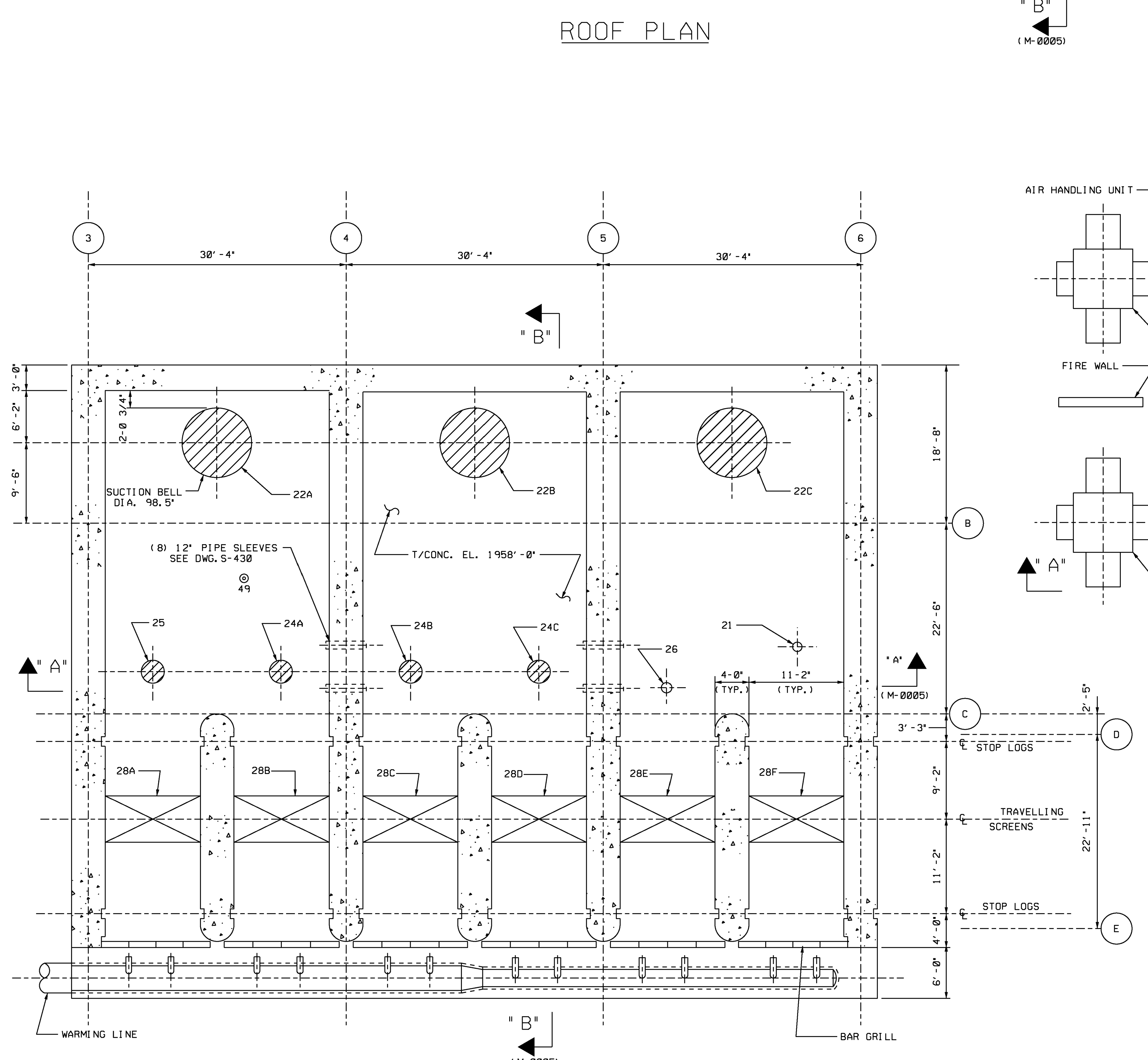
M-12DAB2-13



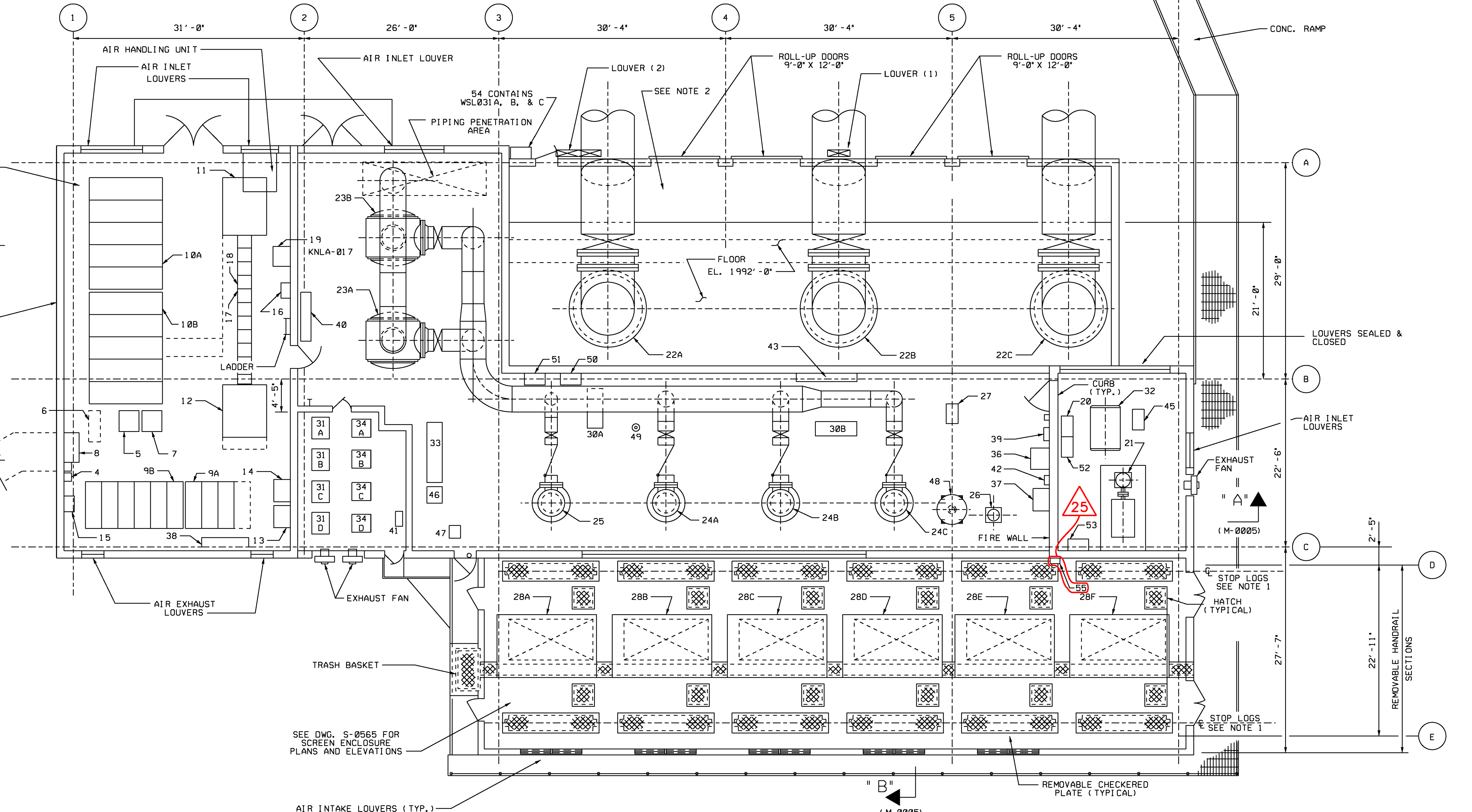
ROOF PLAN

ITEM	EQUIPMENT NUMBERS	EQUIPMENT NAME	
1	ISL007E	13.8KV/4.16KV AUXILIARY TRANSFORMER	D-5
2	ISL006E	13.8KV/4.16KV AUXILIARY TRANSFORMER	C-5
3	DELETED		
4		TEST CABINET	C-5
5	IPL001J	SUPERVISORY CABINET	C-5
6		GRD TEST DEX STORAGE SPACE	C-5
7	IPL014J	C.W. S14, STANDBY CONTROL PANEL	C-5
8		PULL BOX TO M.H.	C-5
9A	ISL010E	4160V SWITCHGEAR	C-4
9B	ISL009E		C-5
10A	ISL004E	13.8KV SWITCHGEAR	D-5
10B	ISL003E		
11	ISL015E	480V TRANSFORMER & SWITCHGEAR	D-4
12	ISL014E	480V TRANSFORMER & SWITCHGEAR	D-4
13	ISL035E		
14		4KV POWER FD PULLBOX TO MOTORS	C-4
15		480V AUXILIARY FD CONTROL PULLBOX	C-4
16		DC DISTRIBUTION CABINET	C-5
17		LIGHTING CABINET	D-4
18	ISL021E	480V MCC	D-4
19	ISL022E	480V MCC	D-4
20		13.8KV POWER FEED PLBX TO EAST SIDE MTRS	D-4
21	IPL006J	DIESEL DRIVEN FIRE PUMP CONTROLLER	C-2
22	IFP001PB	DIESEL DRIVEN FIRE PUMP	C-2
22A	ICW001PA	CIRCULATING WATER PUMP	D-3
22B	ICW001PB		D-3
22C	ICW001PC		D-2
23A	IWS001FA	SERVICE WATER STRAINER	D-4
23B	IWS001FB		
24A	IWS001PA	SERVICE WATER PUMP	C-3
24B	IWS001PB		C-3
24C	IWS001PC		C-2
25	IWS002P	LOW FLOW & START-UP SERVICE WATER PUMP	C-3

ITEM	EQUIPMENT NUMBERS	EQUIPMENT NAME	
26	IFP001PA	MOTOR DRIVEN FIRE PUMP	C-2
27	IFP002P	JOCKEY FIRE PUMP	D-2
28A	ISW001FA	TRAVELLING SCREEN	C-3
28B	ISW001FB		C-3
28C	ISW001FC		C-3
28D	ISW001FD		C-2
28E	ISW001FE		C-2
28F	ISW001FF	C-2	
29			
30A	ISZ002CA	INSTRUMENT AIR COMPRESSOR	D-3
30B	ISZ002CB		C-3
31A	ICL0015A	CHLORINATOR	C-4
31B	ICL0015B		C-4
31C	ICL0015C		C-4
31D	ICL0015D		C-4
32	ID0002T	849 GAL. DIESEL OIL DAY TANK	C-2
33	IPL0008J	TRAVELLING SCREEN CONTROL PANEL	C-4
34A	ICL001AA	EVAPORATOR	C-4
34B	ICL001AB		C-4
34C	ICL001AC		C-4
34D	ICL001AD		C-4
35			
36	IPL013J	MOTOR DRIVEN FIRE PUMP CONTROLLER	C-2
37	IPL021J	CWSP PUMP ROOM HVAC PANEL	C-2
38	IPL020J	CWSP ELECTRICAL ROOM HVAC PANEL	C-4
39	IPL007J	JOCKEY FIRE PUMP CONTROLLER	C-2
40	IPL009J	SERVICE WATER STRAINER CONTROL PANEL	D-4
41	IPL017J	CHLORINATION CONTROL PANEL	C-4
42	IPL045J	MOTOR DRIVEN FIRE PUMP AUXILIARY CABINET	C-2
43	IPL018J	CW LOCAL INSTRUMENT PANEL	D-2
44			
45	IPL005J	DIESEL FIRE PUMP INSTRUMENT PANEL	C-2
46	IPL004J	CWSP SERVICE AIR COMPRESSOR PANEL	C-4
47	ISZ002D	SERVICE AIR REFRIGERANT DRYER	C-4
48	IFP003T	SURGE PRESSURE SUPPRESSION TANK	C-2
49	IFP003P	BACKUP JOCKEY FIRE PUMP (SUBMERSIBLE)	C-3
50	IFP182J	BACKUP JOCKEY FIRE PUMP CONTROLLER	C-3
51	FP001	BACKUP JOCKEY FIRE PUMP TRANSFER SWITCH	D-4
52	FP002	DIESEL FIRE PUMP CONTROLLER POWER TRANSFER SWITCH	C-2
53	FP003	DIESEL FIRE PUMP ENGINE BLOCK HEATER POWER TRANSFER SWITCH	C-2
54	FP004	ALTERNATE POWER RECEPTACLES	E-4
55	IPL060J	MOTOR DRIVEN FIRE PUMP LOCAL CONTROL STATION	C-2



PLAN @ EL. 1958' - 0"



PLAN @ EL. 1992' - 0"

- NOTES**
- NO MORE THAN ONE TRAVELLING SCREEN BAY SHALL BE DEWATERED AT ONE TIME. PARTIAL OR COMPLETE DEWATERING OF THE SCREENHOUSE SUMP IS ABSOLUTELY PROHIBITED.
 - THIS SECTION IS NOT PART OF CIRCULATING WATER SCREENHOUSE. IT IS IDENTIFIED AS CIRCULATING WATER PUMP ENCLOSURE. (Z019A)
 - THIS SECTION IS NOT PART OF CIRCULATING WATER SCREENHOUSE. IT IS IDENTIFIED AS CIRCULATING WATER TRAVELLING SCREEN ENCLOSURE. (Z019B)

ESSENTIAL DRAWING

REVISED INCORPORATED WIP-M-0004-024-A-1 CHANGE 01484
 ISSUED CIG. DEC. PKG. NO.

THIS DWG. SUPERSEDES: REV. THIS DWG. SUPERSEDES: REV.

REVISION NOTES

WOLF CREEK
 NUCLEAR OPERATING CORPORATION

ELECTRONIC APPROVAL

CIRCULATING WATER SCREENHOUSE PLANS

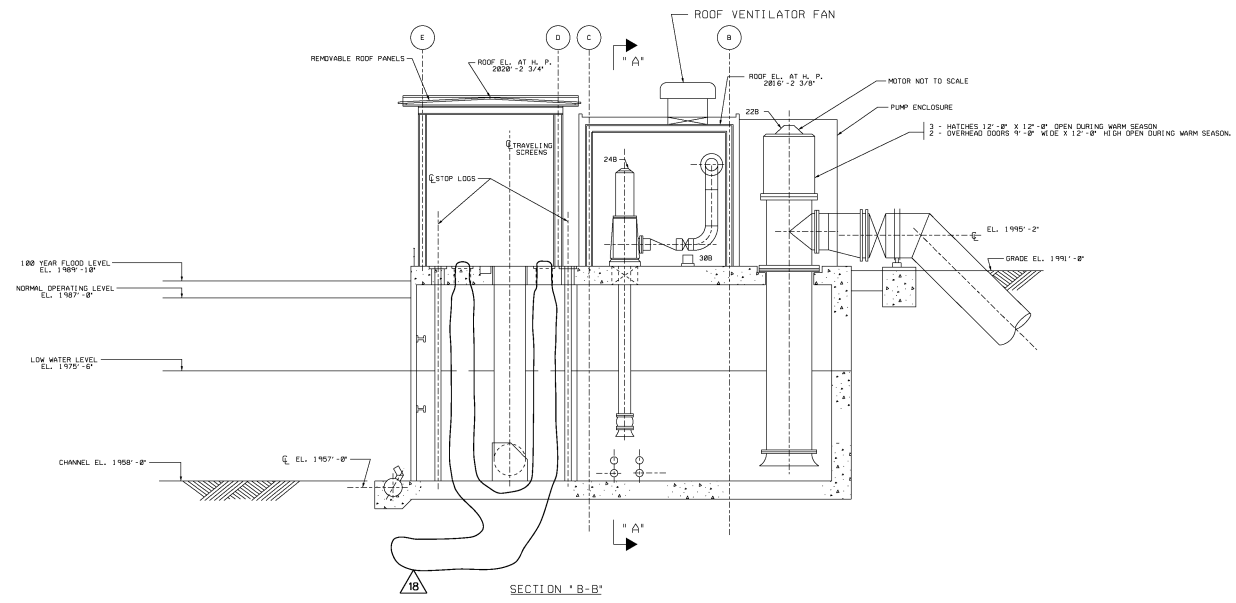
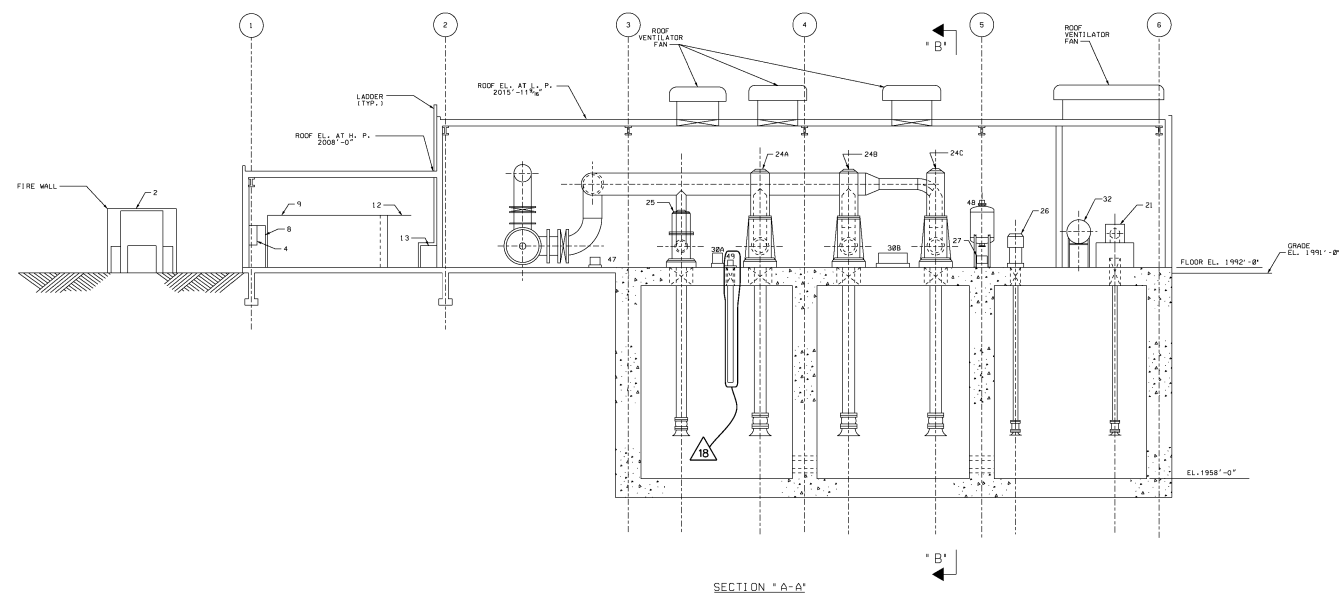
SCALE: 1/8" = 1'-0"

DRAWING NUMBER: M-0004

SHEET: 25

3444 E SIDE

NOTES:
 1. FOR EQUIPMENT NUMBER DESIGNATIONS SEE DRAWING M-0004.



USAR FIG. 12.4-1-05

ESSENTIAL DRAWING

REVISION	INCORPORATED	DATE	BY
1	2005-07-11	010223	
2	2005-07-11	022249	

THIS DRAWING IS THE PROPERTY OF WOLF CREEK. NO REPRODUCTION OR TRANSMISSION IS PERMITTED WITHOUT THE WRITTEN CONSENT OF WOLF CREEK.

WOLF CREEK
 NUCLEAR OPERATING CORPORATION

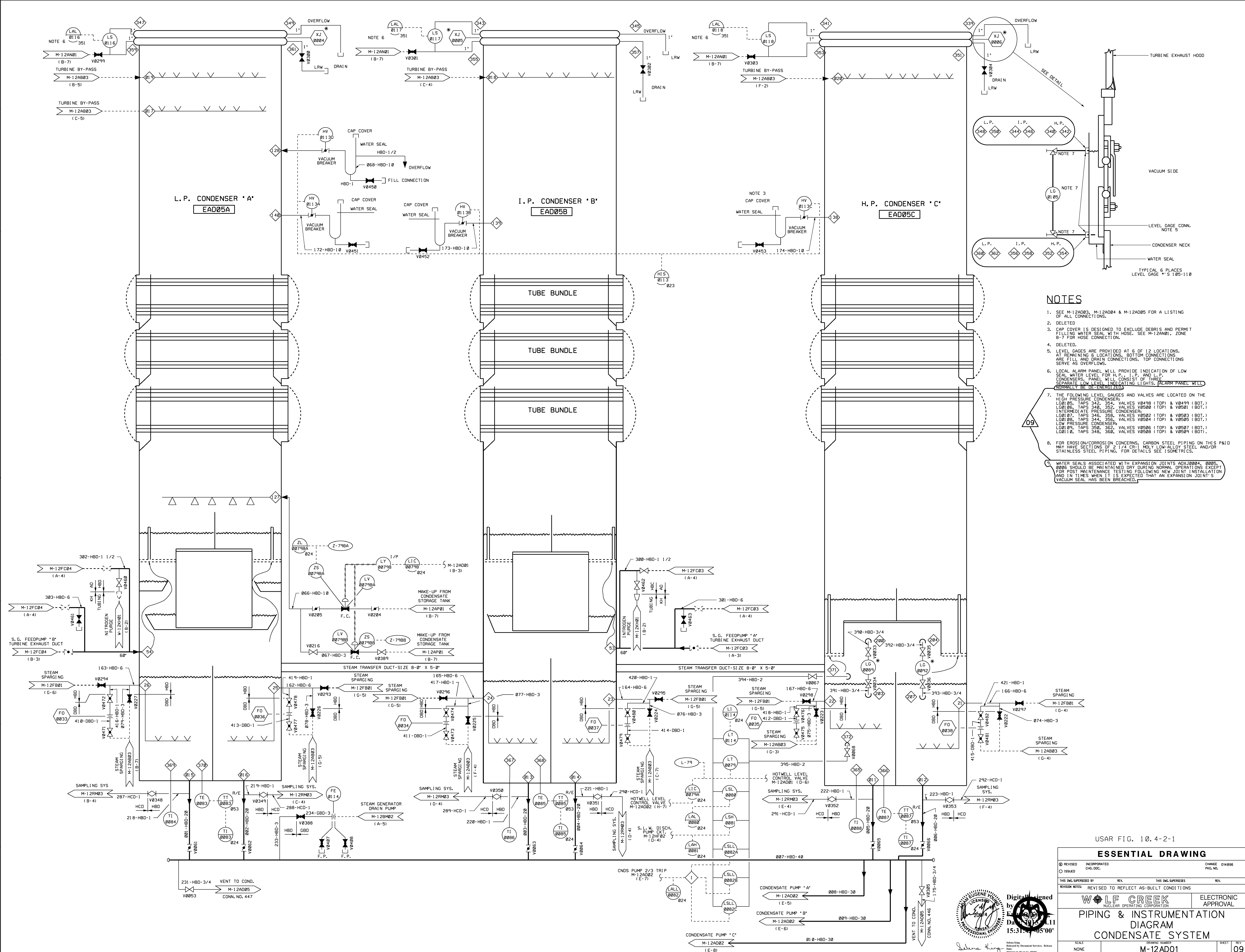
ELECTRONIC APPROVAL

CIRCULATING WATER SCREENHOUSE - SECTIONS

Scale: 1/8" = 1'-0"

SCALE	DRAWING NUMBER	SHEET NO.
1/8" = 1'-0"	M-0005	18
		3044 1 SE



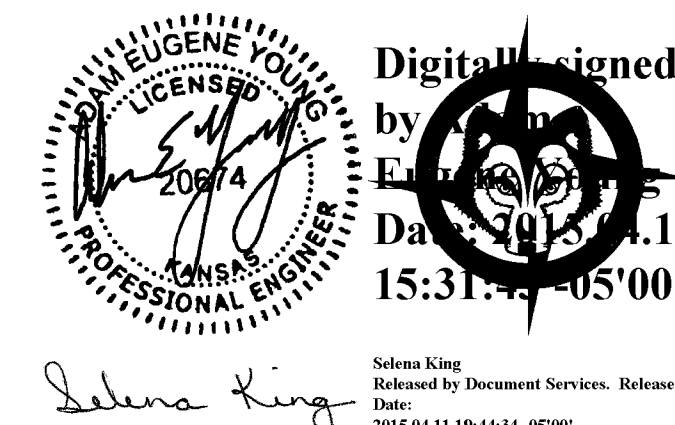


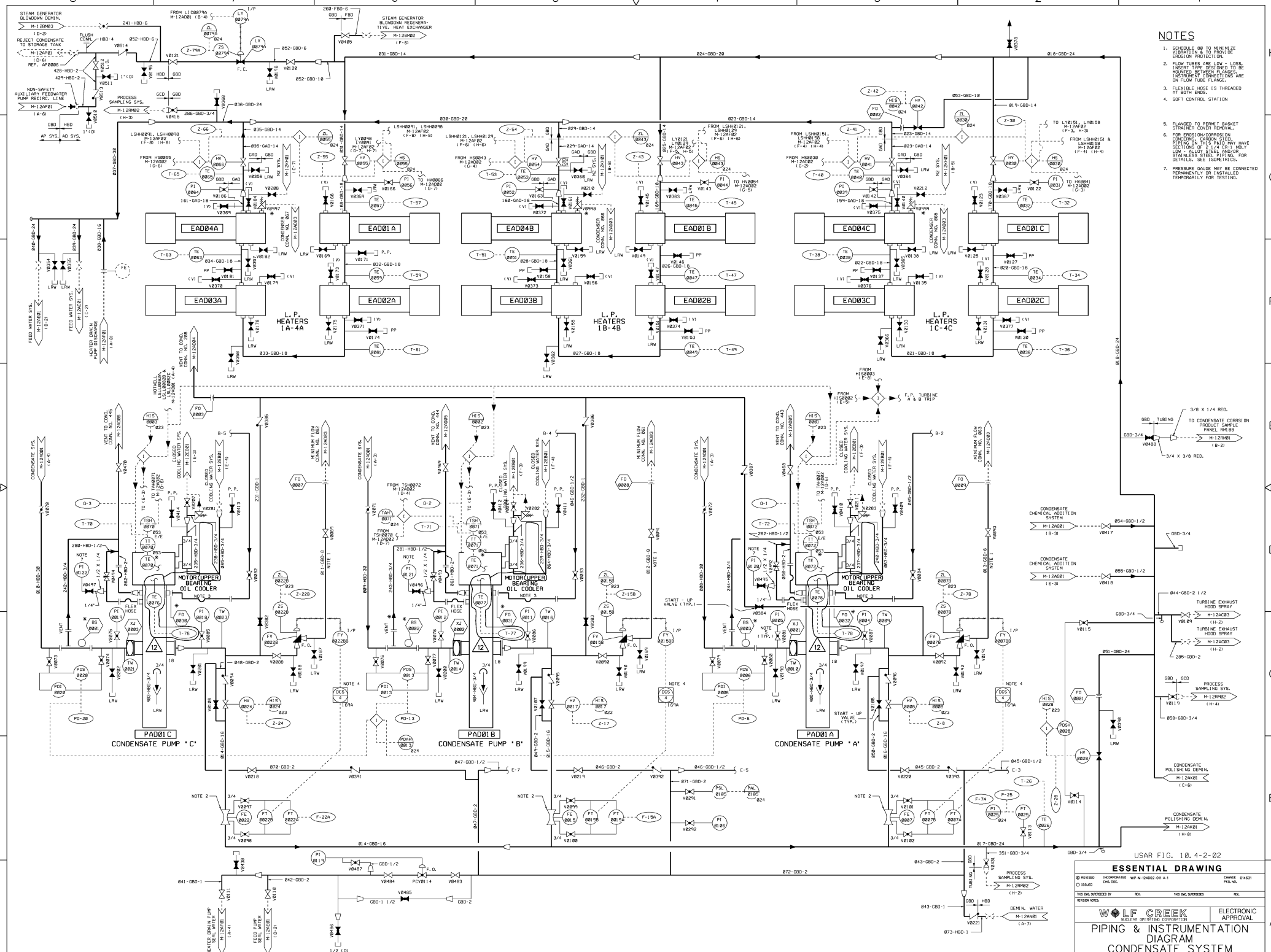
- NOTES**
- SEE M-12AD03, M-12AD04 & M-12AD05 FOR A LISTING OF ALL CONNECTIONS.
 - DELETED
 - CAP COVER IS DESIGNED TO EXCLUDE DEBRIS AND PERMIT FILLING WATER SEAL WITH HOSE. SEE M-12AN01, ZONE B-7 FOR HOSE CONNECTION.
 - DELETED.
 - LEVEL GAGES ARE PROVIDED AT 6 OF 12 LOCATIONS. AT REMAINING 6 LOCATIONS, 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. (ALARM PANEL WILL NORMALLY BE DE-ENERGIZED)
 - THE FOLLOWING LEVEL GAUGES AND VALVES ARE LOCATED ON THE HI PRESSURE CONDENSER: LG0105, TAPS 342, 354, VALVES V0498 (TOP) & V0499 (BOT.); INTERMEDIATE PRESSURE CONDENSER: LG0107, TAPS 345, 358, VALVES V0502 (TOP) & V0503 (BOT.); LOW PRESSURE CONDENSER: LG0109, TAPS 344, 356, VALVES V0504 (TOP) & V0505 (BOT.); LG0110, TAPS 350, 362, VALVES V0506 (TOP) & V0507 (BOT.); LG0111, TAPS 348, 360, VALVES V0508 (TOP) & V0509 (BOT.).
 - FOR EROSION/CORROSION CONCERNS, CARBON STEEL PIPING ON THIS P&ID MAY HAVE SECTIONS OF 2 1/4 CR-1 MOLY LOW-ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS SEE ISOMETRICS.
 - WATER SEALS ASSOCIATED WITH EXPANSION JOINTS ADXJ0004, 0005, 0006 SHOULD BE MAINTAINED DRY DURING NORMAL OPERATIONS EXCEPT FOR POST MAINTENANCE TESTING FOLLOWING NEW JOINT INSTALLATION AND IN TIMES WHEN IT IS EXPECTED THAT AN EXPANSION JOINT'S VACUUM SEAL HAS BEEN BROKEN.

USAR FIG. 10.4-2-1

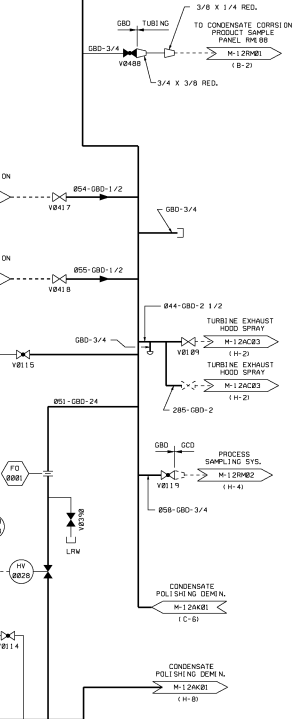
ESSENTIAL DRAWING

REVISED	INCORPORATED	CHANGE 014896
ISSUED	CHG. DOC.	FIG. NO.
THIS ENG. SUPERSEDES		
REVISED TO REFLECT AS-BUILT CONDITIONS	REV.	REV.
WOLF CREEK NUCLEAR OPERATING CORPORATION		
ELECTRONIC APPROVAL		
PIPING & INSTRUMENTATION DIAGRAM CONDENSATE SYSTEM		
SCALE	DRAWING NUMBER	SHEET
NONE	M-12AD01	09





- NOTES**
- SCHEDULE OR TO MINIMIZE VIBRATION & TO PROVIDE EROSION PROTECTION.
 - FLOW TUBES ARE LOW LOSS, SMOOTH TYPE DESIGNED TO BE MOUNTED BETWEEN FLANGES. INSTRUMENT CONNECTIONS ARE ON FLOW TUBE FLANGE.
 - FLEXIBLE HOSE IS THREADED AT BOTH ENDS & IS THREADED AT SOFT CONTROL STATION.
 - FLANGED TO PERMIT BASKET STRAINER COVER REMOVAL.
 - FOR EROSION/ CORROSION PROTECTION, THE FOLLOWING PIPING ON 1/2" & 3/4" NODD L/W ALLYD STEEL AND/OR STAINLESS STEEL PIPING, FOR DETAILS, SEE ISOMETRICS.
 - PRESSURE CHANGE MAY BE CONNECTED TEMPORARILY OR INSTALLED TEMPORARILY FOR TESTING.



USAR FIG. 10.4-2-02

ESSENTIAL DRAWING

REVISION INCORPORATED M-129M2-011-1
 DATE 04/04/02
 THIS DRAWING IS THE PROPERTY OF WOLFCREEK AND IS NOT TO BE REPRODUCED OR COPIED WITHOUT THE WRITTEN PERMISSION OF WOLFCREEK

WOLFCREEK
 PIPING & INSTRUMENTATION
 DIAGRAM
 CONDENSATE SYSTEM

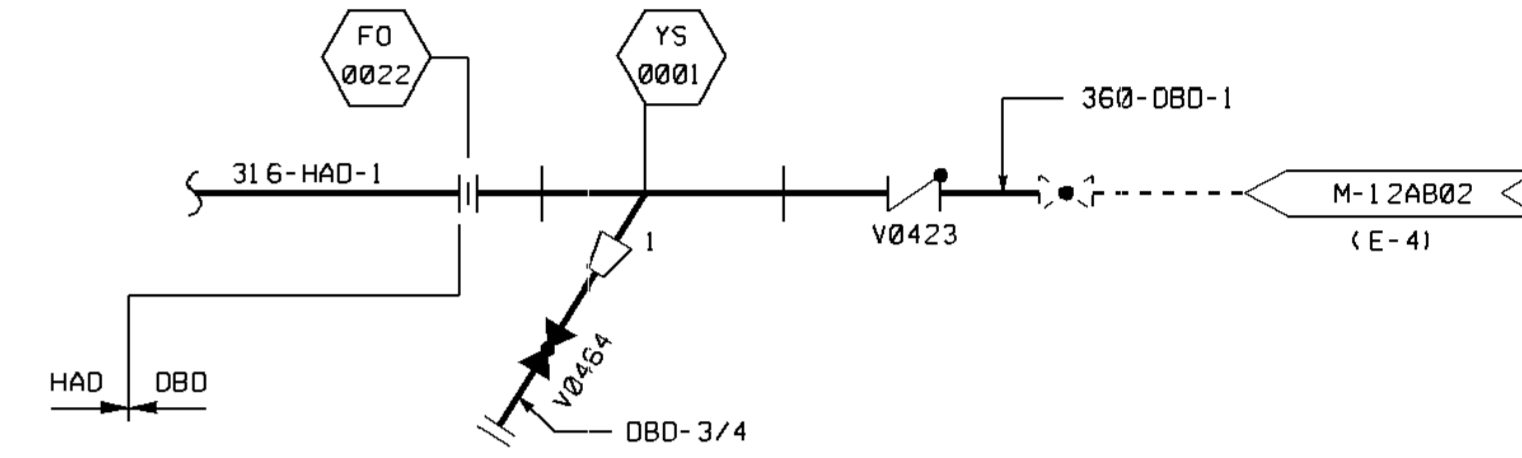
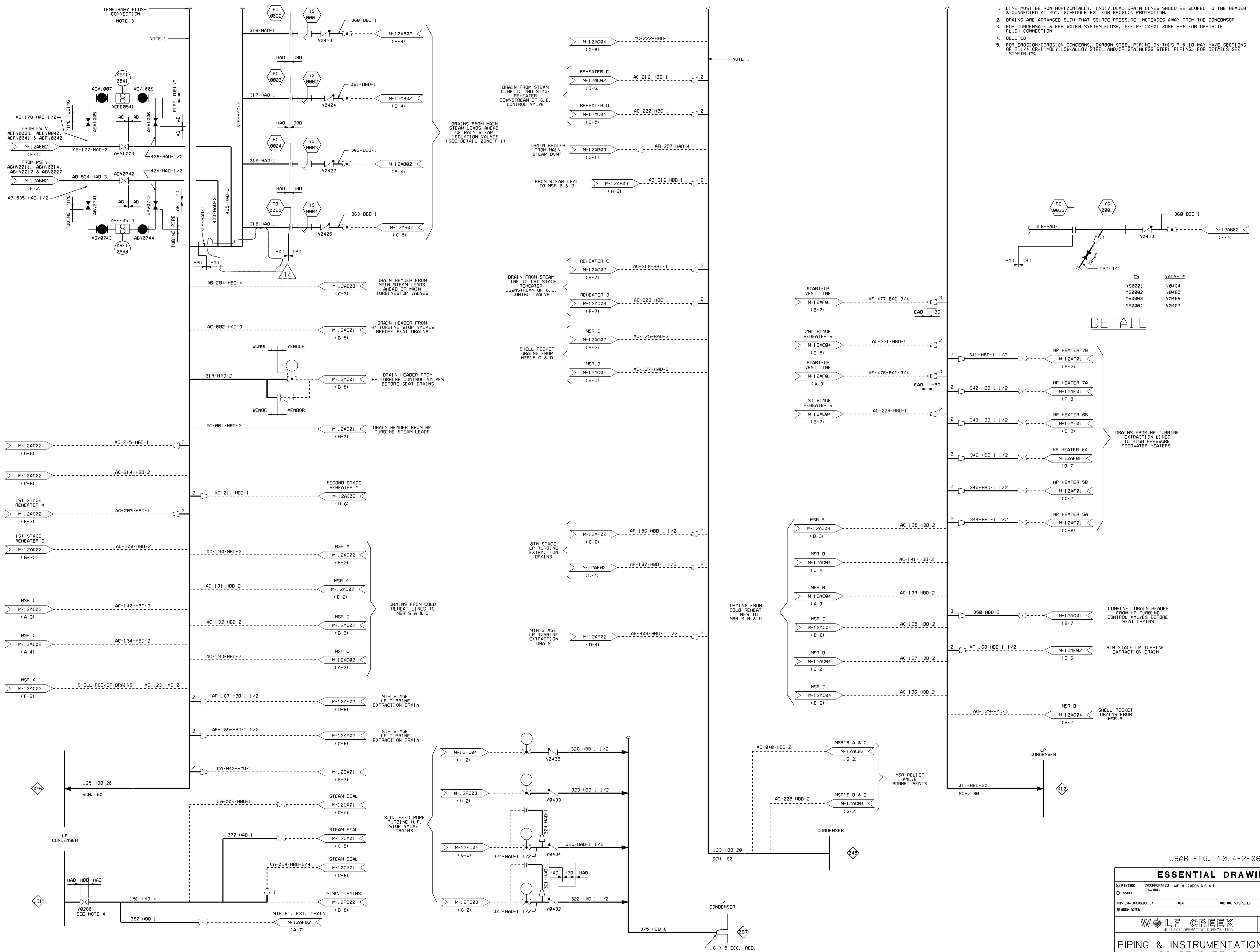
SCALE: NONE
 SHEET: M-12AD02
 TOTAL SHEETS: 12

NOTES

1. LINE MUST BE RUN HORIZONTALLY. INDIVIDUAL DRAIN LINES SHOULD BE SLOPED TO THE HEADER & CONNECTED AT 45° SCHEDULE 80 FOR EROSION PROTECTION.
2. DRAINS ARE ARRANGED SUCH THAT SOURCE PRESSURE INCREASES AWAY FROM THE CONDENSOR FLUSH CONNECTION.
3. FOR CONDENSATE & FEEDWATER SYSTEM FLUSH, SEE M-12AE01 ZONE B-6 FOR OPPOSITE FLUSH CONNECTION.
4. DELETED
5. FOR EROSION/CORROSION CONCERNS, CARBON-STEEL PIPING ON THIS P & I MAY HAVE SECTIONS OF 2 1/4 CR-1 MOLY LOW-ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS SEE ISOMETRICS.

TEMPORARY FLUSH CONNECTION
NOTE 3

NOTE 1



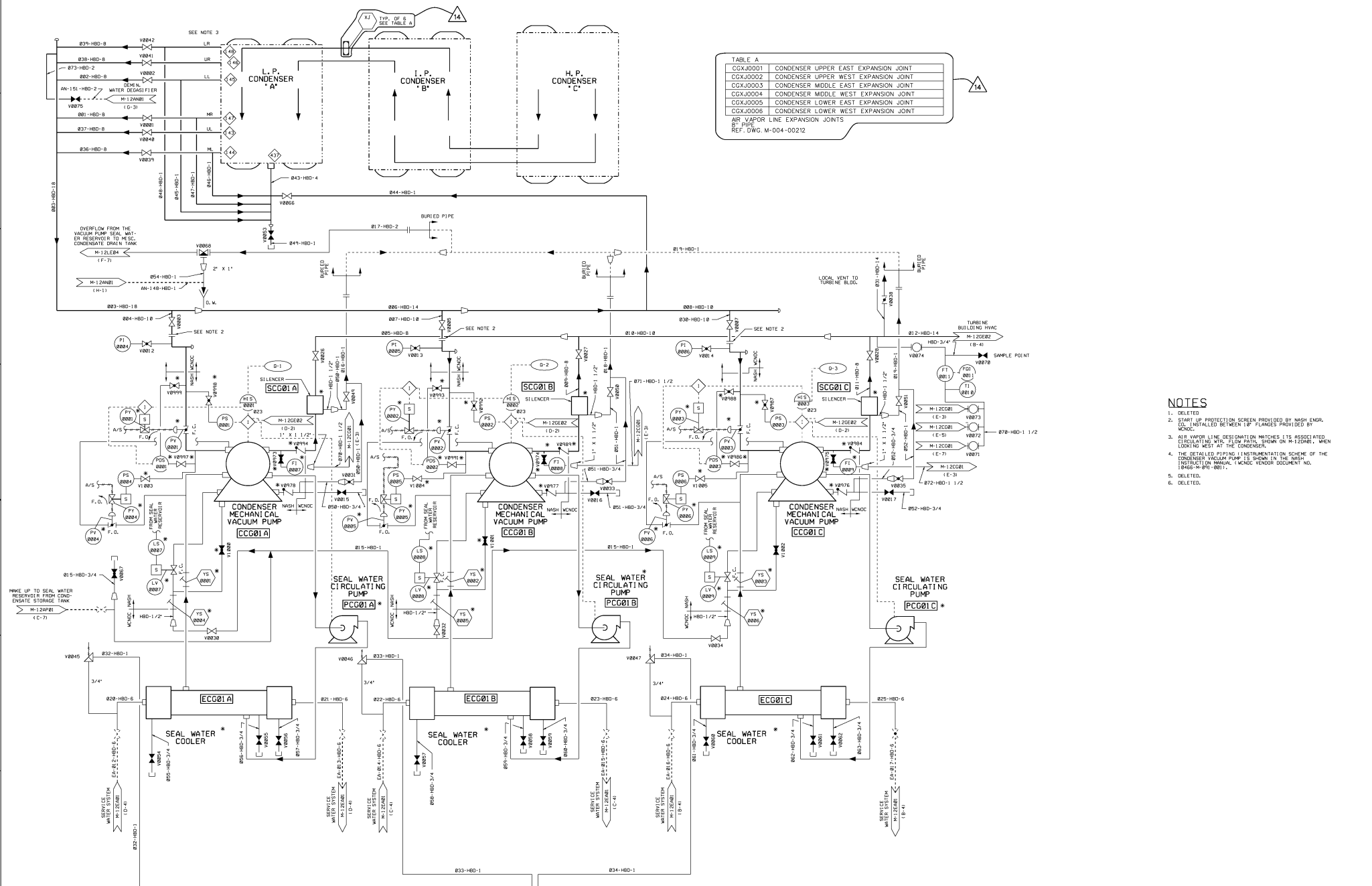
DETAIL

VALVE	VALVE #
YS	YS001
YS	YS002
YS	YS003
YS	YS004
VALVE #	V0464
VALVE #	V0465
VALVE #	V0466
VALVE #	V0467

USAR FIG. 10.4-2-06

ESSENTIAL DRAWING			
REVISION	INCORPORATED	WP-M-12AD06-016-A-1	CHANGE 013855
ISSUED	CHG. DOC.		PGL. NO.
THIS DWG SUPERSEDES		REV.	THIS DWG SUPERSEDES
REVISION NOTES			
WOLF CREEK		ELECTRONIC APPROVAL	
PIPING & INSTRUMENTATION DIAGRAM			
CONDENSATE SYSTEM			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12AD06	17	17

TABLE A	
CGXJ0001	CONDENSER UPPER EAST EXPANSION JOINT
CGXJ0002	CONDENSER UPPER WEST EXPANSION JOINT
CGXJ0003	CONDENSER MIDDLE EAST EXPANSION JOINT
CGXJ0004	CONDENSER MIDDLE WEST EXPANSION JOINT
CGXJ0005	CONDENSER LOWER EAST EXPANSION JOINT
CGXJ0006	CONDENSER LOWER WEST EXPANSION JOINT
AIR VAPOR LINE EXPANSION JOINTS	
REF. DWG. M-004-00212	



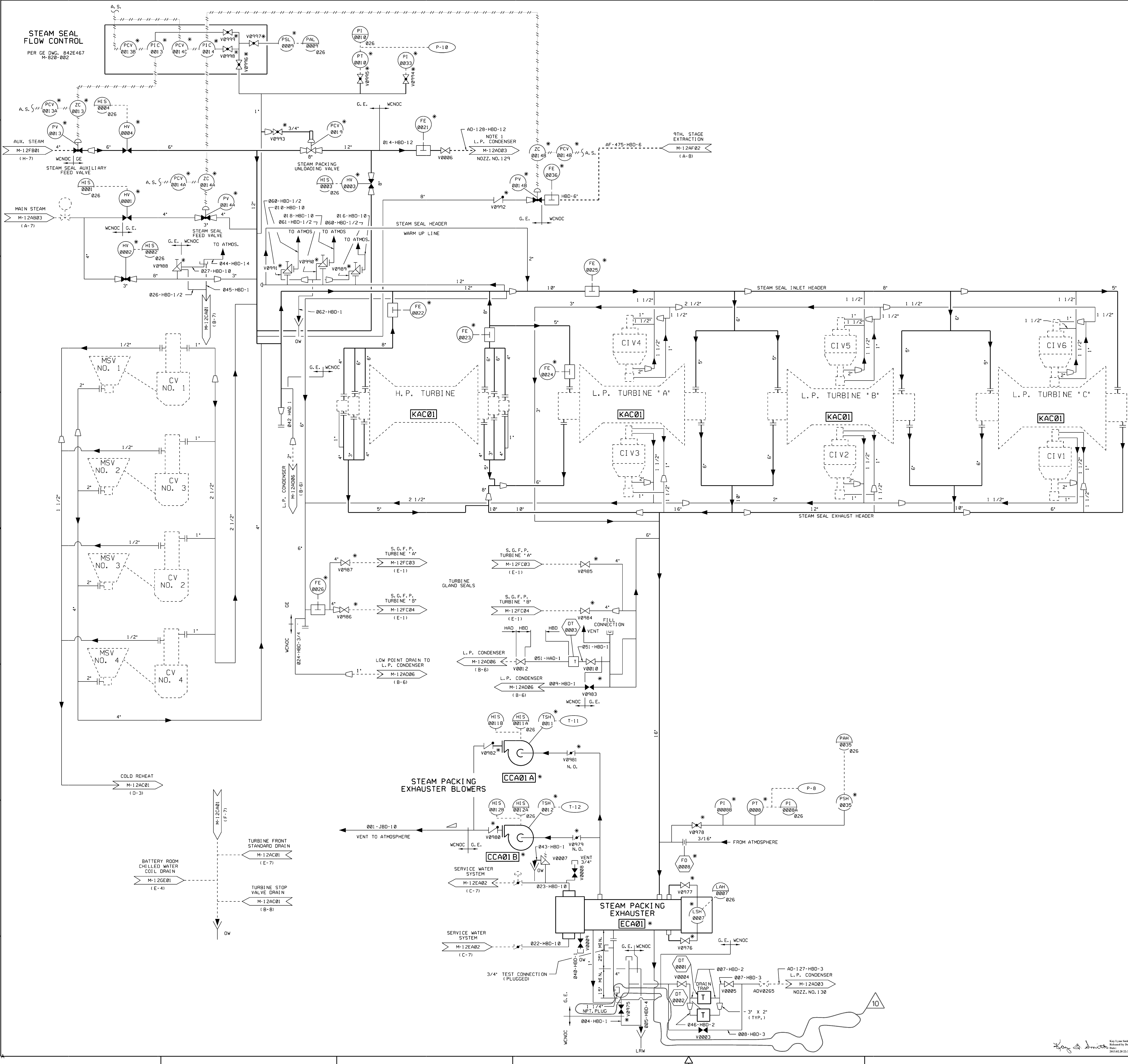
NOTES

1. DELETED
2. SHIP OF PROTECTION SCREEN PROVIDED BY MWH ENGR. CO. INSTALLED BETWEEN 1/F FLANGES PROVIDED BY
3. AIR VAPOR LINE DESIGNATION MATCHES ITS ASSOCIATED CIRCULATING WTR. FLOW PATH, SHOWN ON M-12C001, WHEN LOOKING WEST AT THE CONDENSER.
4. THE DETAILED PIPING & INSTRUMENTATION SCHEME OF THE CONDENSER VACUUM PUMP IS SHOWN ON THE HIGH-INSTRUCTION MANUAL (MWH VENDOR DOCUMENT NO. 0840-M-071-0001).
5. DELETED.
6. DELETED.

USAR FIG. 10.4-3-00

ESSENTIAL DRAWING			
REVISED	INCORPORATED	CR 00084458	CHANG
DATE	DESCRIPTION		FILE NO.
THIS IS APPROVED BY:		REV.	NO. INC. APPROVES
DESIGN NOTES			
WOLF CREEK <small>WOLF CREEK SPECIALTY CONTRACTORS</small>		ELECTRONIC APPROVAL	
		PIPING AND INSTRUMENTATION DIAGRAM CONDENSER AIR REMOVAL	
SCALE	PROJECT NUMBER	DATE	NO.
NONE	M-12C001	11/11/11	14





- NOTES**
1. SLOPE CONTINUOUSLY TO CONDENSER.
 2. SEE ALSO G.E. DWG. 842E467 (M-820-00002), AND 881E868 (M-820-00056).
 3. FOR EROSION/CORROSION CONCERNS, CARBON STEEL PIPING ON THIS PAID MAY HAVE SECTIONS OF 2 1/4 CR-1 MELY LOW ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS, SEE ISOMETRICS.

USAR FIG. 10.4-4-00

ESSENTIAL DRAWING

© REVISED INCORPORATED WIP-M-12CA01-009-A-1 CHANGE 012598
 ISSUED CHG. DOC. PKG. NO.

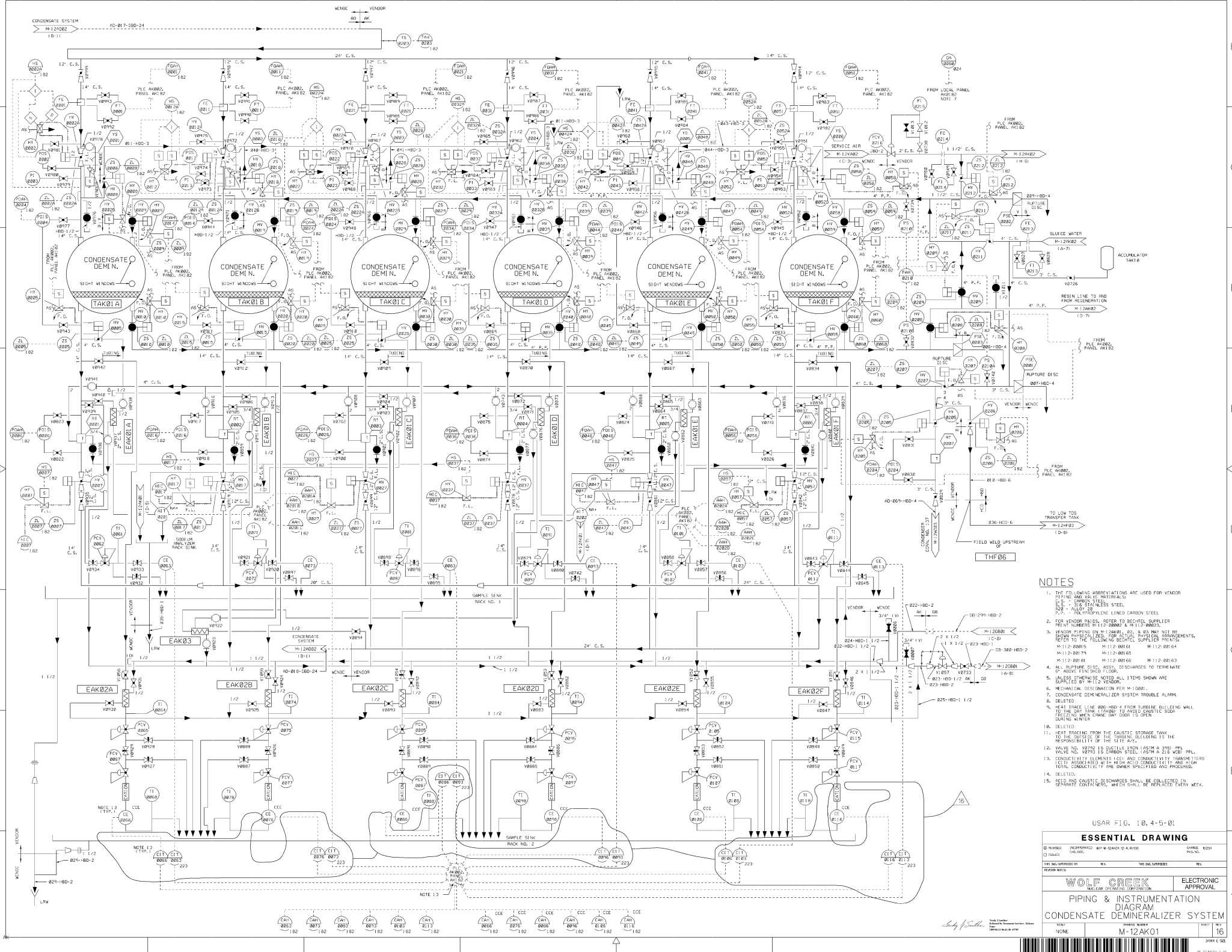
THIS DWG. SUPERSEDES BY REV. THIS DWG. SUPERSEDES REV.

WOLF CREEK NUCLEAR OPERATING CORPORATION ELECTRONIC APPROVAL
PIPING & INSTRUMENTATION DIAGRAM
STEAM SEAL SYSTEM

SCALE NONE DRAWING NUMBER M-12CA01 SHEET REV 10
 NONE

2011 Issue Book
 Released by Document Services, WolfCreek.com
 2013.02.28 22:31:04 0499P





- NOTES**
1. THE TAG NUMBERS ASSOCIATIONS ARE USED FOR VENDOR PIPING AND VALVE MATERIALS:
S.S. = 316 STAINLESS STEEL
C.S. = CARBON STEEL
P.P. = POLYPROPYLENE LINED CARBON STEEL
 2. FOR TUBOR PIPING, REFER TO SPECIAL SUPPLIER PRINT NUMBERS M-112-08082 & M-112-08025.
 3. VENDOR PIPING TAGS FOR P.P. & C.S. MAY NOT BE REFER TO THE FOLLOWING SPECIAL SUPPLIER PRINTS:
M-112-08015 M-112-08016 M-112-08164
M-112-08179 M-112-08018 M-112-08019
M-112-08018 M-112-08019
 4. ALL RUPTURE DISCS, ASSY. DISCHARGES TO TERMINATE BY ACTIVE FINISHED FLOOR.
 5. INSTRUMENTS NOTED ALL ITEMS SHOW ARE SUPPLIED BY M-112 VENDOR.
 6. WEATHER DISPOSITION PER M-112001.
 7. CONDENSATE DEMINERALIZER SYSTEM TROUBLE ALARM.
 8. DELETED.
 9. HEAT TRACE LINE 805-HED-4 FROM CURSIVE BUILDING SHALL BE THE ONLY TRACE TO AVOID CAUSTIC SODIUM BEING RELEASED UNDER WINTER.
 10. DELETED.
 11. HEAT TRACING FROM THE CAUSTIC STORAGE TANK TO THE CONDENSATE DEMINERALIZER IS THE RESPONSIBILITY OF THE SITE A/E.
 12. VALVE NO. V8755 IS CASTLE IRON (CISM) PER VENDOR NO. V8755 IS CARBON STEEL (CISM A 218 V8755).
 13. CONDUCTIVITY ELEMENTS (CCE) AND CONDUCTIVITY TRANSMITTERS (CT) ASSOCIATED WITH HIGH ACID CONDUCTIVITY AND HIGH TOTAL CONDUCTIVITY ARE ORDER SPECIFIED AND PROVIDED.
 14. DELETED.
 15. AED AND CAUSTIC DISCHARGES SHALL BE COLLECTED IN SEPARATE CONTAINERS, WHICH SHALL BE REPLENISHED EVERY WEEK.

USAR FIG. 10.4-5-01

ESSENTIAL DRAWING

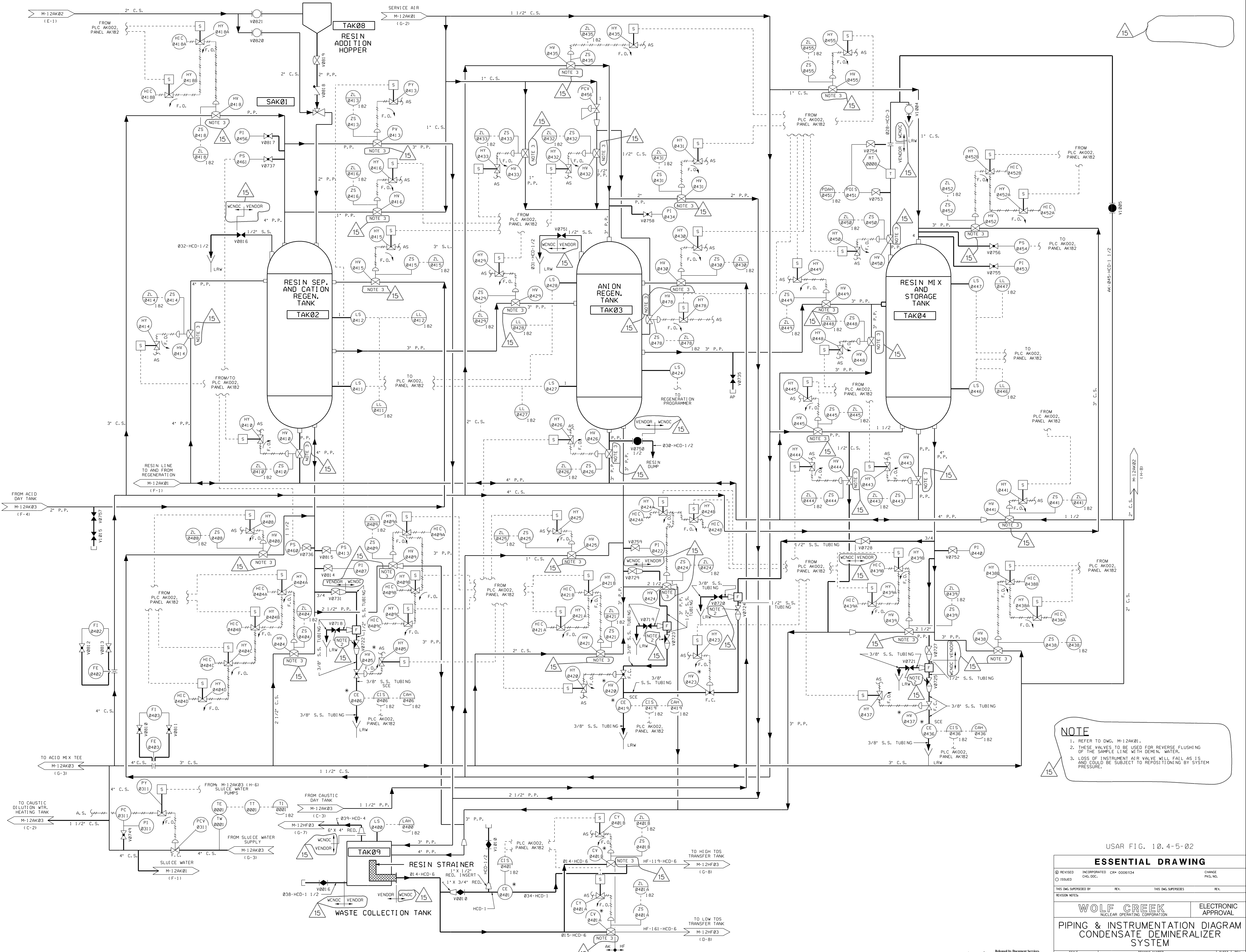
DESIGNED	INVESTIGATED	APP'D BY	DATE	SCALE	OTHER
10/06/02	10/06/02	10/06/02	10/06/02	AS SHOWN	10/06/02
REVISION	NO.	DESCRIPTION	DATE	BY	APP'D

WOLF CREEK ELECTRONIC APPROVAL

PIPING & INSTRUMENTATION DIAGRAM

CONDENSATE DEMINERALIZER SYSTEM

DATE: NONE PROJECT NO: M-12A01 SHEET NO: 16



NOTE

1. REFER TO DWG. M-12AK01.
2. THESE VALVES TO BE USED FOR REVERSE FLUSHING OF THE SAMPLE LINE WITH DEMIN. WATER.
3. LOSS OF INSTRUMENT AIR VALVE WILL FAIL AS IS AND COULD BE SUBJECT TO REPOSITIONING BY SYSTEM PRESSURE.

USAR FIG. 10.4-5-02

ESSENTIAL DRAWING

REVISION	INCORPORATED	CHG. NO.	DATE	BY	CHK. NO.	DATE	BY

THIS DWG. SUPERSEDES BY REV. THIS DWG. SUPERSEDES REV.

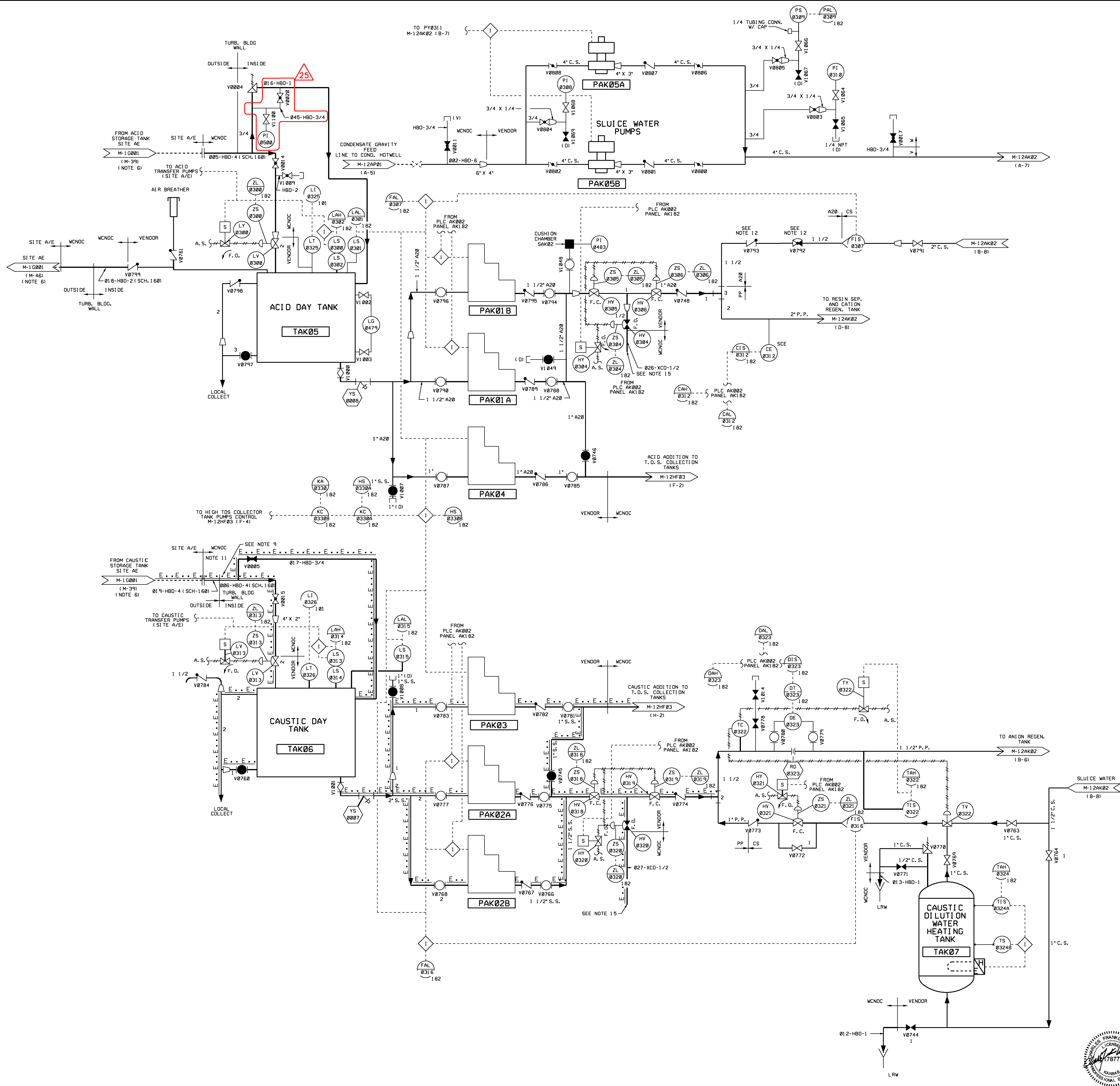
WOLF CREEK
NUCLEAR OPERATING CORPORATION

ELECTRONIC APPROVAL

PIPING & INSTRUMENTATION DIAGRAM
CONDENSATE DEMINERALIZER
SYSTEM

SCALE: NONE DRAWING NUMBER: M-12AK02 SHEET: 15





NOTE
1. REFER TO DWG. M-12AK01.

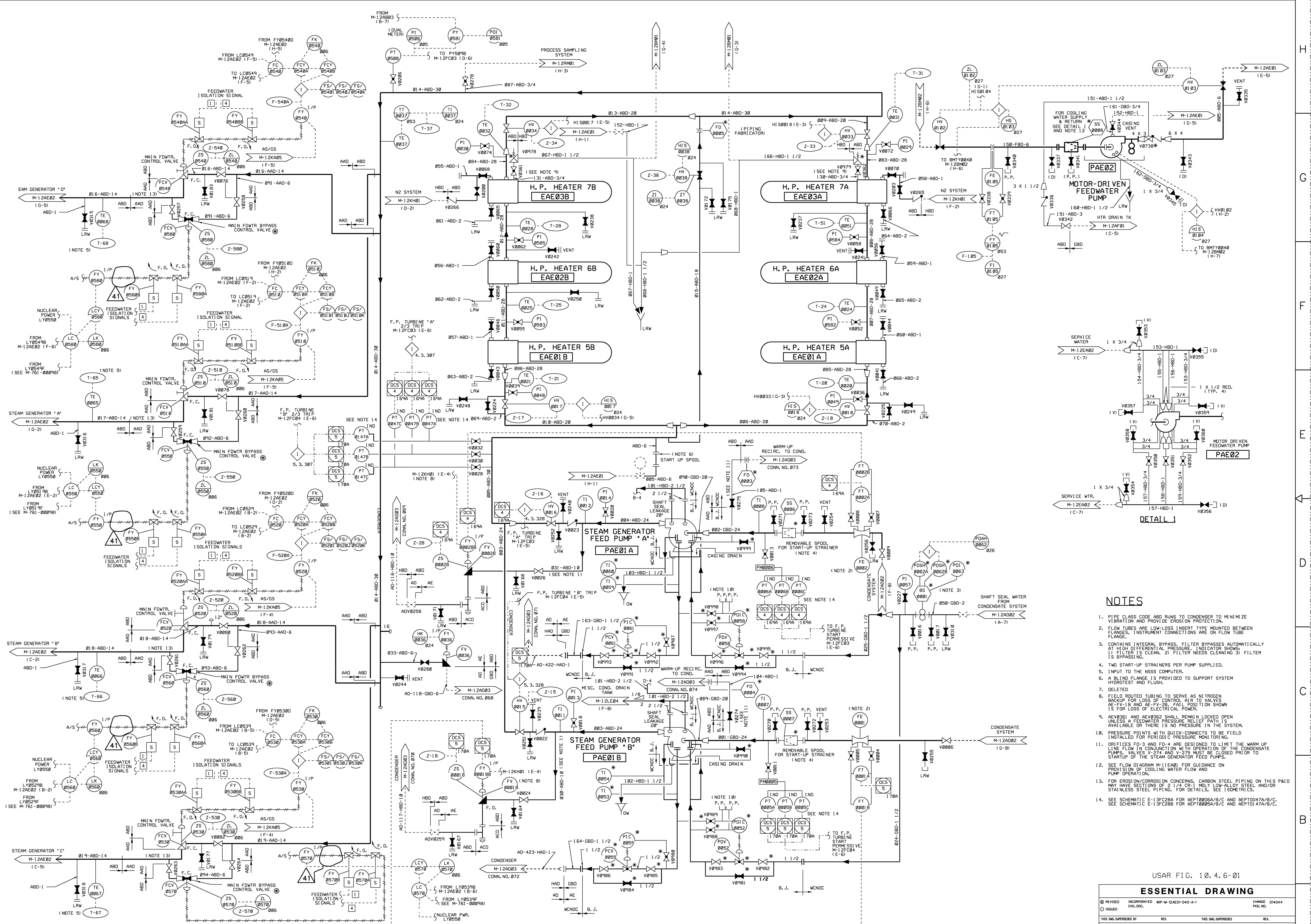
USAR FIG. 10.4-5-03

ESSENTIAL DRAWING

REVISION	INCORPORATED	CHANGE	015285
ISSUED	CNG. DEC.	FIG. NO.	
THIS DNG. SUPERSEDES		REV.	
REVISION NOTES: AS-BUILT INFORMATION			
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
PIPING & INSTRUMENTATION DIAGRAM			
CONDENSATE DEMINERALIZER SYSTEM			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12AK03	25	

Digitally signed by Charles F. Wells
DN: cn=US, o=Kansas, ou=Kansas Secretary of State, cn=Charles F. Wells
Date: 2017.09.14 09:52:24 -05'00'
Franklin University
Kansas Professional Engineer
10411
201709.14 09:52:24 -05'00'

H
G
F
E
D
C
B
A



- NOTES**
- PIPE CLASS CODE ABD RUNS TO CONDENSER TO MINIMIZE VIBRATION AND PROVIDE EROSION PROTECTION.
 - FLOW TUBES ARE LOW-LOSS INSERT TYPE MOUNTED BETWEEN FLANGES. INSTRUMENT CONNECTIONS ARE ON FLOW TUBE FLANGE.
 - CONTAINS INTEGRAL BYPASS. FILTER BYPASSES AUTOMATICALLY AT HIGH DIFFERENTIAL PRESSURE. INDICATOR SHOWS: 1) FILTER IS CLEAN, 2) FILTER NEEDS CLEANING 3) FILTER IS BYPASSING.
 - TWO START-UP STRAINERS PER PUMP SUPPLIED.
 - INPUT TO THE NSSS COMPUTER.
 - A BLIND FLANGE IS PROVIDED TO SUPPORT SYSTEM HYDROTEST AND FLUSH.
 - DELETED.
 - FIELD ROUTED TUBING TO SERVE AS NITROGEN BACKUP FOR LOSS OF CONTROL AIR TO VALVES AE-FY-18 AND AE-FY-28. FAIL POSITION SHOWN IS FOR LOSS OF ELECTRICAL POWER.
 - AEV0361 AND AEV0362 SHALL REMAIN LOCKED OPEN UNLESS A FEEDWATER PRESSURE RELIEF PATH IS AVAILABLE OR THERE IS NO PRESSURE IN THE SYSTEM.
 - PRESSURE POINTS WITH QUICK-CONNECTS TO BE FIELD INSTALLED FOR PERIODIC PRESSURE MONITORING.
 - ORIFICES FD-3 AND FD-4 ARE DESIGNED TO LIMIT THE WARM UP LINE FLOW IN CONJUNCTION WITH OPERATION OF THE CONDENSATE PUMP. VALVES V-274 AND V-275 MUST BE CLOSED PRIOR TO STARTUP OF THE STEAM GENERATOR FEED PUMPS.
 - SEE FLOW DIAGRAM M-11E01 FOR GUIDANCE ON PROVISION OF COOLING WATER FLOW AND PUMP OPERATION.
 - FOR EROSION/CORROSION CONCERNS, CARBON STEEL PIPING ON THIS P&ID MAY HAVE SECTIONS OF 2 1/4 CR-1 MOLY LOW-ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS, SEE ISOMETRICS.
 - SEE SCHEMATIC E-1-3FC28A FOR AEP1806A/B/C AND AEP2047A/B/C. SEE SCHEMATIC E-1-3FC28B FOR AEP1806A/B/C AND AEP20147A/B/C.

USAR FIG. 10.4.6-01

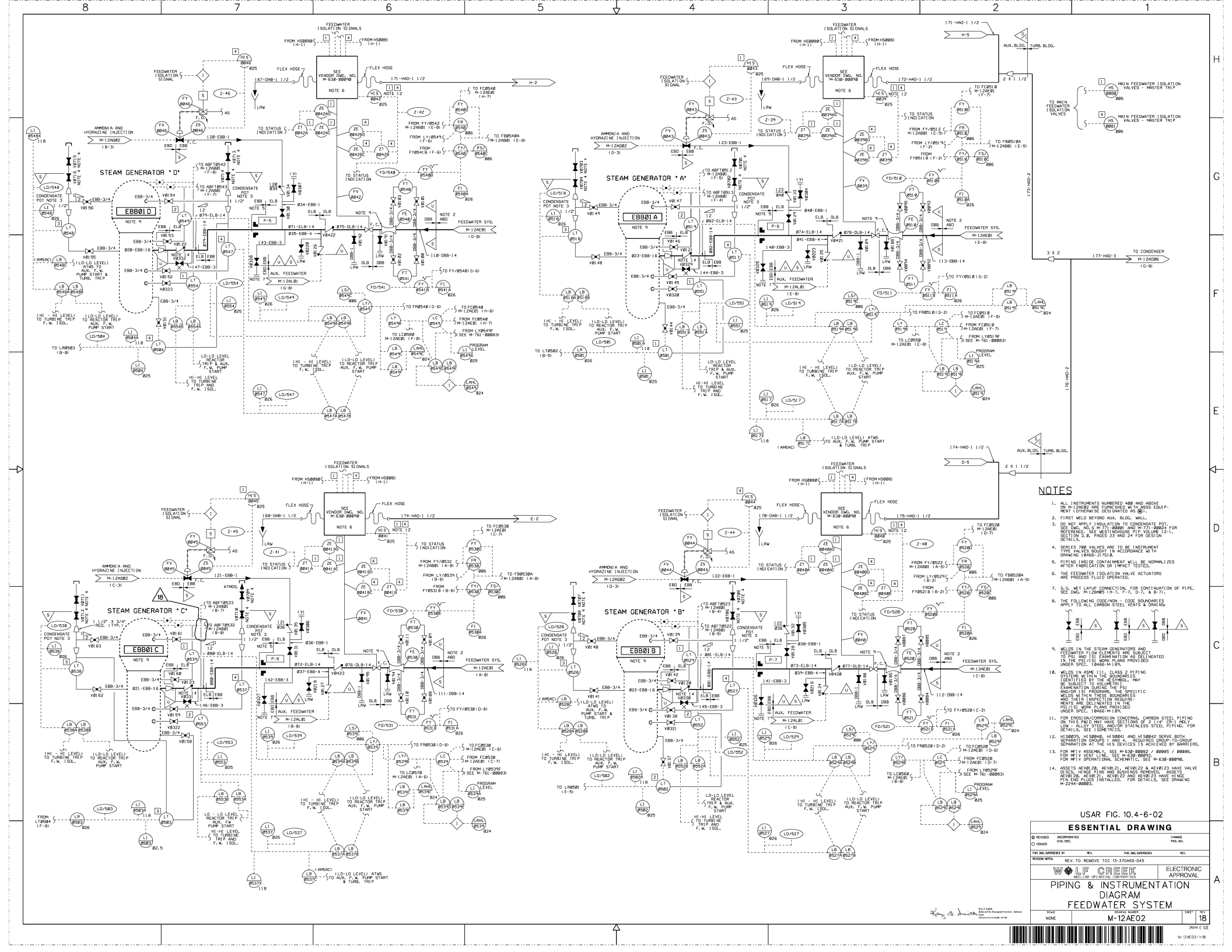
ESSENTIAL DRAWING

REVISIONS: REVISED INCORPORATED WP-M-12AE01-040-A-1 CHANGE 014044
 ISSUED CHG. DOC. PRG. NO.

THIS ENG. SUPERSEDES BY REV. THIS ENG. SUPERSEDES REV.

WOLF CREEK NUCLEAR OPERATING CORPORATION		ELECTRONIC APPROVAL	
PIPING & INSTRUMENTATION DIAGRAM FEEDWATER SYSTEM			
SCALE NONE	DRAWING NUMBER M-12AE01	SHEET NO. 41	REV. 41

34X44 E SIZE
M-12AE01-11-41



NOTES

1. ALL INSTRUMENTS NUMBERED 400 AND ABOVE ON M-12A002 ARE PURCHASED WITH ASSS EQUIPMENT EXCEPT AS NOTED.
2. FIRST WELD BEYOND AUX. BLDG. WALL.
3. DO NOT APPLY ISOLATION TO CONDENSATE POT. SEE VENDOR M-630-00070 AND M-630-00076 FOR DETAILS. SEE M-12A002 FOR VOLUME 12-1, SECTION 3.8, PAGES 23 AND 24 FOR DESIGN DETAILS.
4. SERIES 700 VALVES ARE TO BE INSTRUMENT TYPE VALVES BOUGHT IN ACCORDANCE WITH DRAWING 10466-31701B.
5. PIPING INSIDE CONTAINMENT WILL BE NORMALIZED AFTER FABRICATION OF IMPACT TESTS.
6. THE FEEDWATER ISOLATION VALVE ACTUATORS ARE PROCESS FLUID OPERATED.
7. S.G. NET LAYOUT CONNECTION, FOR CONTINUATION OF PIPE, SEE MG. M-12A005 (F-7), F-7, D-7, & B-7).
8. THE FOLLOWING CODE/AN. CODE BOUNDARIES APPLY TO ALL CARBON STEEL PIPING & DRUMS:
 - EBB
 - ELB
 - ELC
 - ELD
 - ELF
 - ELG
 - ELH
 - ELI
 - ELJ
 - ELK
 - ELL
 - ELM
 - ELN
 - ELO
 - ELP
 - ELQ
 - ELR
 - ELS
 - ELT
 - ELU
 - ELV
 - ELW
 - ELX
 - ELY
 - ELZ
9. WELDS IN THE STEAM GENERATORS AND FEEDWATER FLOW ELEMENTS AND SUBJECT TO P&ID AND ISI EXAMINATION AS DETERMINED IN THE P&ID AND ISI EXAMINATION REPORT UNDER SPEC. 10466-M-1B.
10. WELDS IN AREA 111, CLASS 2 PIPING SYSTEMS WITHIN THE BOUNDARIES IDENTIFIED BY THE SYMBOLS, SHALL BE SUBJECT TO VOLUME TRIP (REACTOR TRIP) EXAMINATION UNDER SPEC. 10466-M-1B. WELDS WITHIN THESE BOUNDARIES ARE NOT SUBJECT TO VOLUME TRIP EXAMINATION UNDER SPEC. 10466-M-1B.
11. FOR ERGONOMY/COMBUSTION CONCERNS, CARBON STEEL PIPING ON THIS P&ID MAY HAVE SECTIONS OF 2" X 3/4" AND 2" X 1/2" OF STEEL PIPE AND 2" X 1/2" OF STEEL PIPE PROVIDED FOR DETAILS, SEE 1306THICS.
12. WELDS IN AREAS H-5000A, H-5000A1, AND H-5000A2 SERVE BOTH SEPARATION GROUP 1 AND SEPARATION GROUP 2 GROUP SEPARATION AT THE H-5 LEVEL IS ACHIEVED BY BARRIERS. FOR MEV OPERATIONAL SCHEMATIC, SEE M-630-00006.
13. FOR MEV ASSEMBLY, SEE M-630-00002 / 00005 / 00006. FOR MEV VENT LINE, SEE M-630-00006. FOR MEV OPERATIONAL SCHEMATIC, SEE M-630-00006.
14. ASSETS AFBV02, AFBV01, AFBV02 & AFBV03 HAVE VALVE DISCS, H-5000A AND H-5000A2, H-5000A1 AND H-5000A2. P&ID PLANT AND PLANT INSTALLED. FOR DETAILS, SEE DRAWING M-2240-00003.

USAR FIG. 10.4-6-02

ESSENTIAL DRAWING

REVISED	INCORPORATED	CHANGED
ISSUED	DWG. DOC.	FILE NO.
DESIGNED BY	REV. TO REMOVE TCC 13-370463-045	DATE
DRW. NO.	REV. TO REMOVE TCC 13-370463-045	DATE

WFL GROUP ELECTRONIC APPROVAL

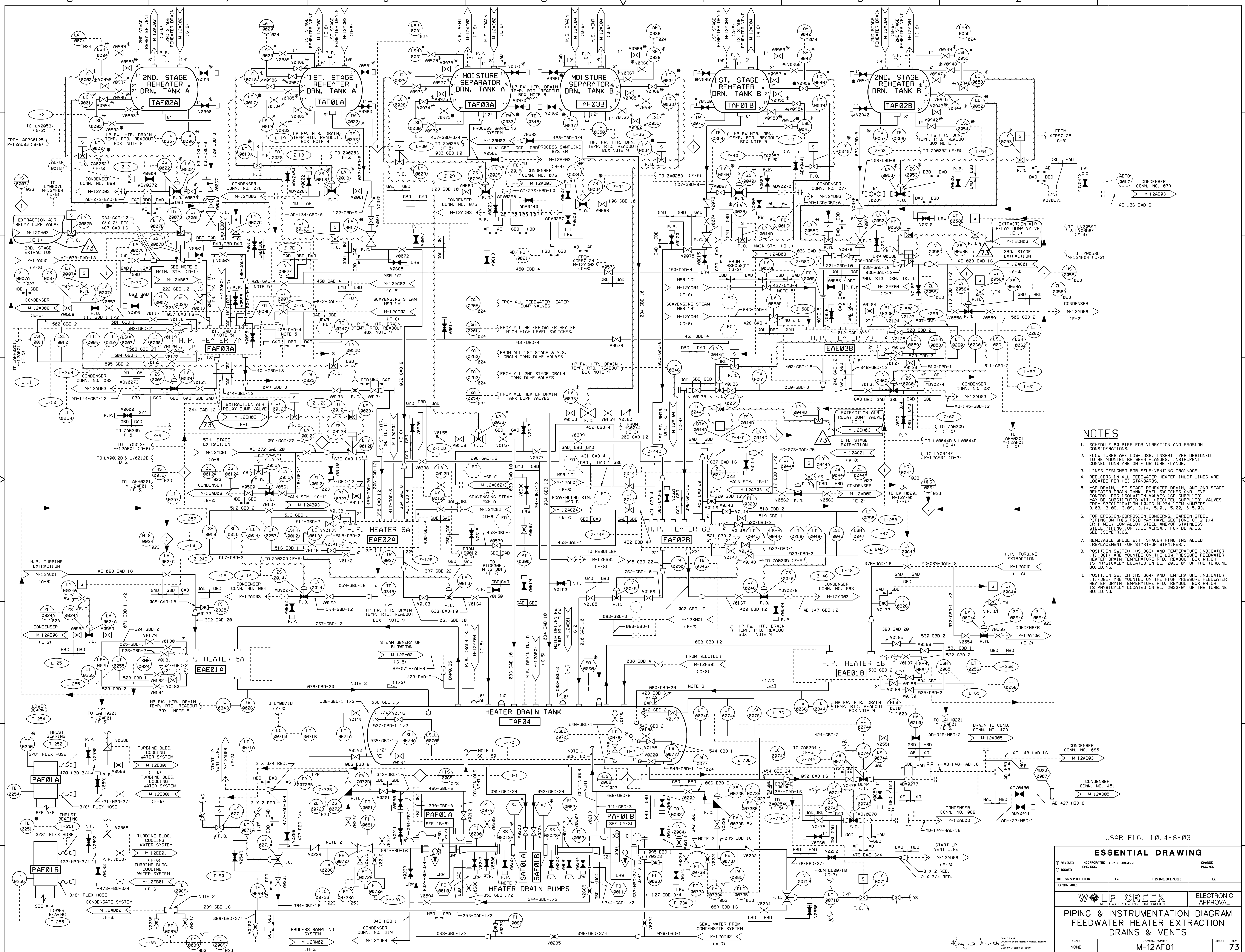
PIPING & INSTRUMENTATION DIAGRAM

FEEDWATER SYSTEM

SCALE: NONE

DATE: M-12A02

SHEET: 18



- NOTES**
- SCHEDULE 80 PIPE FOR VIBRATION AND EROSION CONSIDERATIONS.
 - FLOW TUBES ARE LOW-LOSS, INSERT TYPE DESIGNED TO BE MOUNTED BETWEEN FLANGES. INSTRUMENT CONNECTIONS ARE ON FLOW TUBE FLANGE.
 - PIPES DESIGNED FOR SELF-VENTING DRAINAGE.
 - REDUCERS IN ALL FEEDWATER HEATER INLET LINES ARE LOCATED PER NEI STANDARDS.
 - MSR DRAIN, 1ST STAGE REHEATER DRAIN, AND 2ND STAGE REHEATER DRAIN TANK LEVEL SWITCHES AND LEVEL CONTROLLERS ISOLATION VALVES (IF SUPPLIED) MAY BE SUBSTITUTED WITH (BECHTEL SUPPLIED) VALVES FROM SPECIFICATION 10466-N-234 ITEM NUMBERS 3.02, 3.06, 3.09, 3.14, 5.01, 5.02, & 5.03.
 - FOR EROSION/CORROSION CONCERNS, CARBON-STEEL PIPING ON THIS P&ID MAY HAVE SECTIONS OF 2 1/4 CR-1 MILD LOW-ALLOY STEEL AND/OR STAINLESS STEEL PIPING (OR VICE VERSA). FOR DETAILS, SEE ISOMETRICS.
 - REMOVABLE SPOOL WITH SPACER RING INSTALLED (REPLACEMENT FOR START-UP STRAINER).
 - POSITION SWITCH (HS-363) AND TEMPERATURE INDICATOR (TI-361) ARE MOUNTED ON THE LOW PRESSURE FEEDWATER HEATER DRAIN TEMPERATURE RTD. READOUT BOX WHICH IS PHYSICALLY LOCATED ON EL. 2833'-0" OF THE TURBINE BUILDING.
 - POSITION SWITCH (HS-364) AND TEMPERATURE INDICATOR (TI-362) ARE MOUNTED ON THE HIGH PRESSURE FEEDWATER HEATER DRAIN TEMPERATURE RTD. READOUT BOX WHICH IS PHYSICALLY LOCATED ON EL. 2833'-0" OF THE TURBINE BUILDING.

USAR FIG. 10.4-6-03

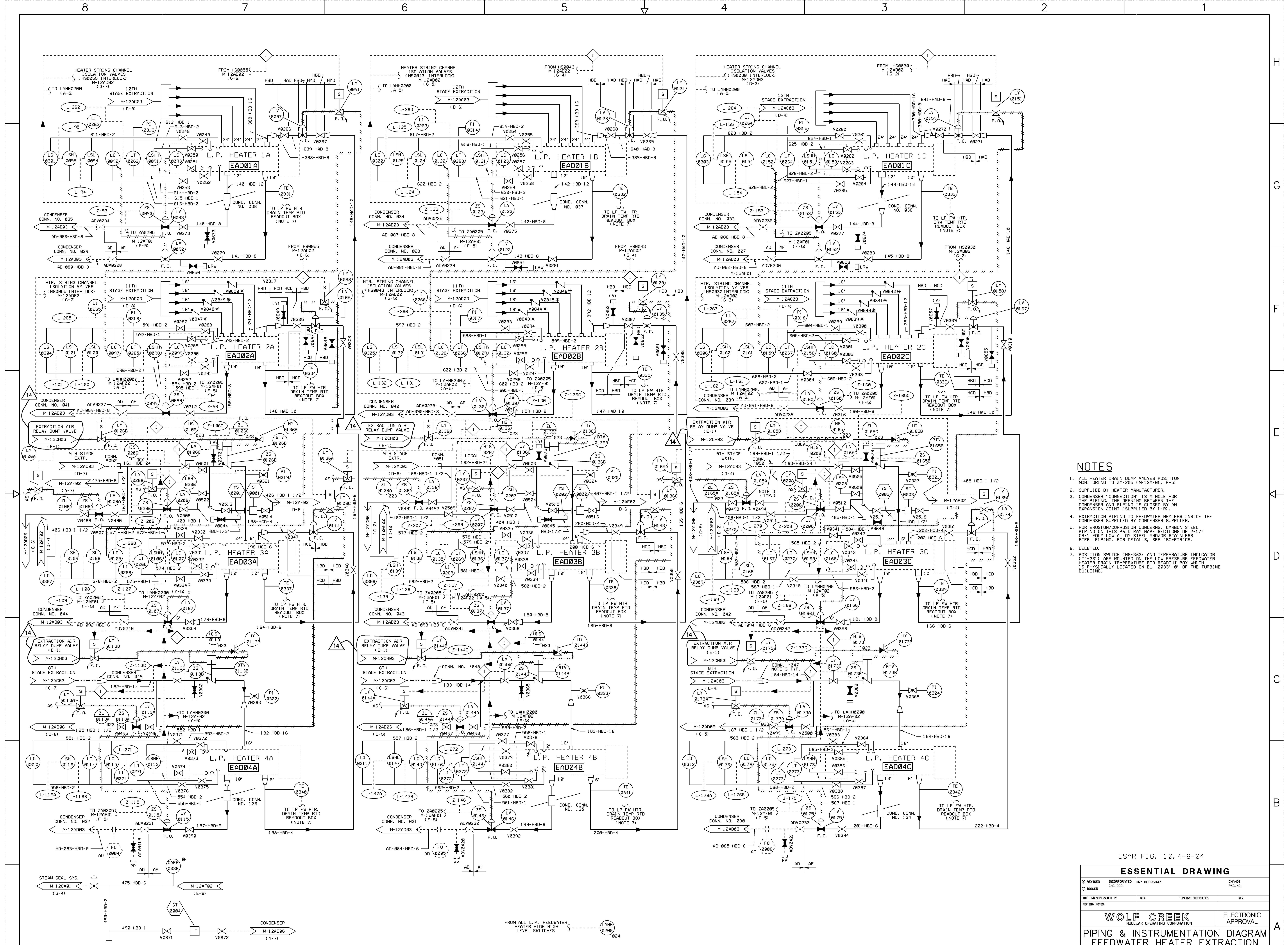
ESSENTIAL DRAWING

REVISED	INCORPORATED	CR# 0006499	CHANGE
ISSUED	CHK. DOC.		PKG. NO.
THIS DWG. SUPERSEDES	REV.	THIS DWG. SUPERSEDES	REV.

WOLF CREEK
NUCLEAR OPERATING CORPORATION

PIPING & INSTRUMENTATION DIAGRAM
FEEDWATER HEATER EXTRACTION
DRAINS & VENTS

SCALE: NONE
DRAWING NUMBER: M-12AF01
SHEET: 73



NOTES

1. ALL HEATER DRAIN DUMP VALVES POSITION MONITORING TO ZS-285 (M-12AF01, F-5)
2. SUPPLIED BY HEATER MANUFACTURER.
3. CONDENSER CONNECTION IS A HOLE FOR THE PIPING, THE OPENING BETWEEN THE CONDENSER AND PIPING IS CLOSED BY AN EXPANSION JOINT (SUPPLIED BY I-R).
4. EXTRACTION PIPING TO FEEDWATER HEATERS INSIDE THE CONDENSER SUPPLIED BY CONDENSER SUPPLIER.
5. FOR EROSION/CORROSION CONCERNS, CARBON STEEL PIPING ON THIS P&ID MAY HAVE SECTIONS OF 2 1/4 CR-1 MOLY LOW ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS, SEE ISOMETRICS.
6. DELETED.
7. POSITION SWITCH (HS-363) AND TEMPERATURE INDICATOR (TI-361) ARE MOUNTED ON THE LOW PRESSURE FEEDWATER HEATER DRAIN TEMPERATURE READOUT BOX WHICH IS PHYSICALLY LOCATED ON EL. 2033'-0" OF THE TURBINE BUILDING.

USAR FIG. 10.4-6-04

ESSENTIAL DRAWING

REVISION	INCORPORATED	CR# 00096043	CHANGE
ISSUED	ENG. DOC.		FIG. NO.

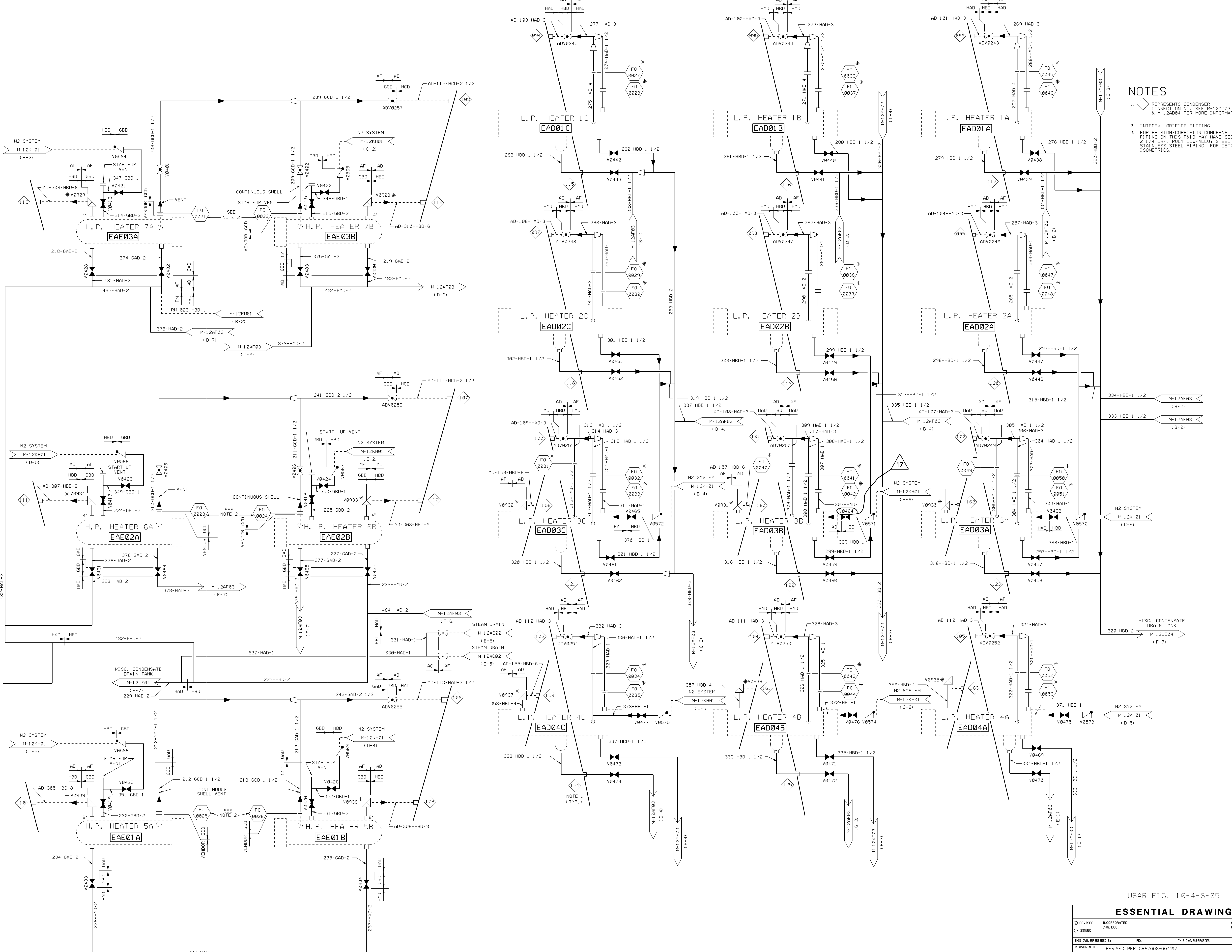
THIS ENG. SUPERSEDES	REV.	THIS ENG. SUPERSEDES	REV.
----------------------	------	----------------------	------

WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			

PIPING & INSTRUMENTATION DIAGRAM FEEDWATER HEATER EXTRACTION DRAINS & VENTS

SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12AF02	14	1

3444 E 32

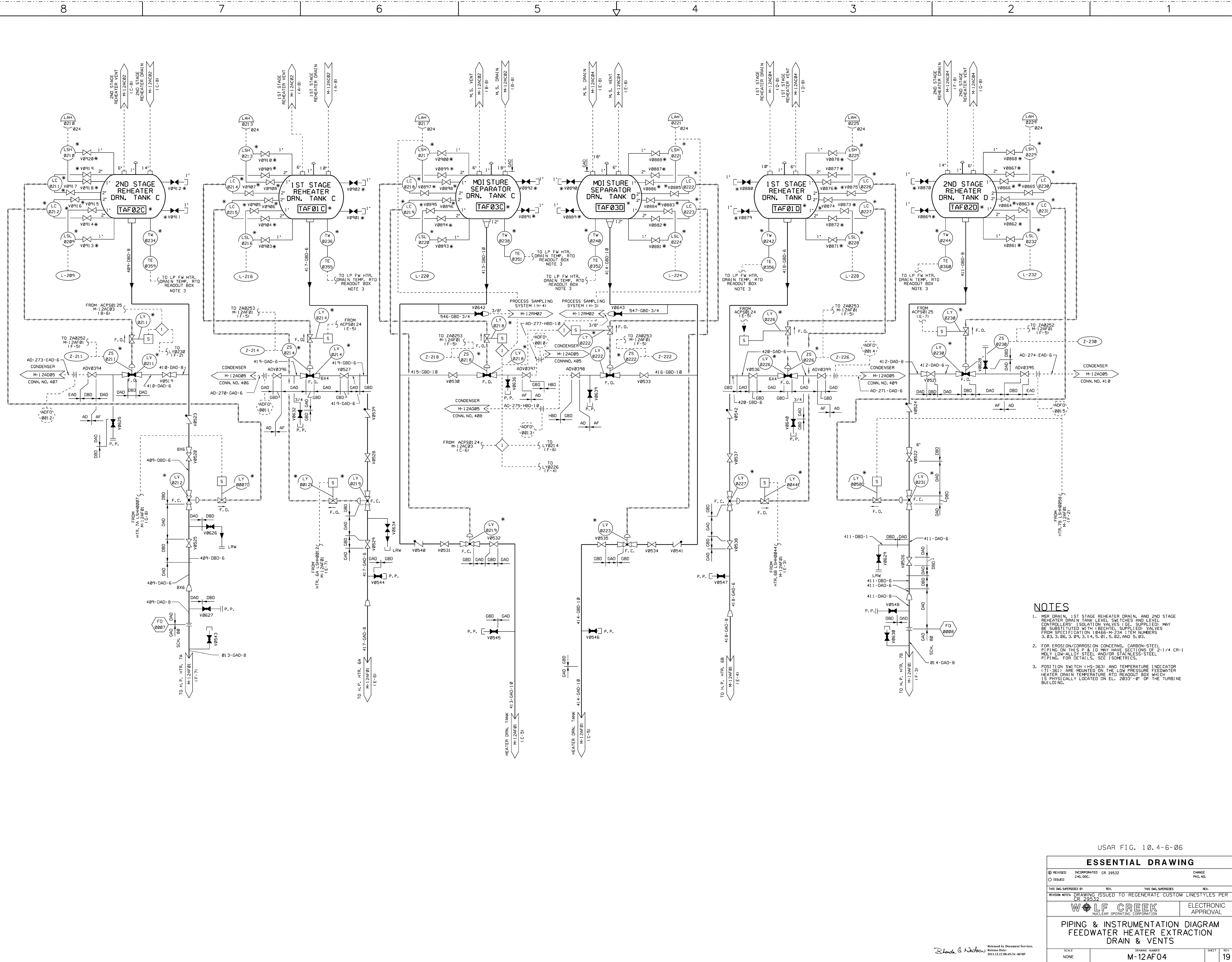


- NOTES**
- ◇ REPRESENTS CONDENSER CONNECTION NO. SEE M-12AD03 & M-12AD04 FOR MORE INFORMATION.
 - INTEGRAL ORIFICE FITTING.
 - FOR EROSION/CORROSION CONCERNS CARBON STEEL PIPING ON THIS P&ID MAY HAVE SECTIONS OF 2 1/4 CR-1 MOLY LOW-ALLOY STEEL HAD OR STAINLESS STEEL PIPING. FOR DETAILS, SEE ISOMETRIC.

USAR FIG. 10-4-6-05

ESSENTIAL DRAWING

REVISION	ISSUED	INCORPORATED	CHANGE	DATE	PKG. NO.
THIS Dwg. SUPERSEDES	REV.	THIS Dwg. SUPERSEDES	REV.		
REVISION NOTES	REVISED PER	CR-2008-004197			
WOLF CREEK NUCLEAR OPERATING CORPORATION			ELECTRONIC APPROVAL		
PIPING & INSTRUMENTATION DIAGRAM FEEDWATER HEATER EXTRACTION DRAINS & VENTS					
SCALE	NONE	DRAWING NUMBER	M-12AF03	SHEET	REV 17



- NOTES**
1. MDR DRAIN, 1ST STAGE REHEATER DRAIN, AND 2ND STAGE REHEATER DRAIN TANK LEVEL SWITCHES AND LEVEL CONTROLLERS' ISOLATION VALVES (GE, SUPPLIED) MAY BE SUBSTITUTED WITH BECHTEL-SUPPLIED VALVES FROM SPECIFICATION 10466-M-234 ITEM NUMBERS 3, 03, 3, 06, 3, 09, 3, 14, 5, 01, 5, 02, AND 5, 03.
 2. FOR EROSION/CORROSION CONCERNS, CARBON-STEEL PIPING ON THIS P & ID MAY HAVE SECTIONS OF 2-1/4 CR-1 MILDLY LOW-ALLOY STEEL AND/OR STAINLESS-STEEL PIPING. FOR DETAILS, SEE 10507015.
 3. POSITION ON SWITCH 1HS-363 AND TEMPERATURE INDICATOR (TI-361) ARE MOUNTED ON THE LOW PRESSURE FEEDWATER HEATER DRAIN TEMPERATURE RTD READOUT BOX WHICH IS PHYSICALLY LOCKED ON EL. 2053'-0" OF THE TURBINE BUILDING.

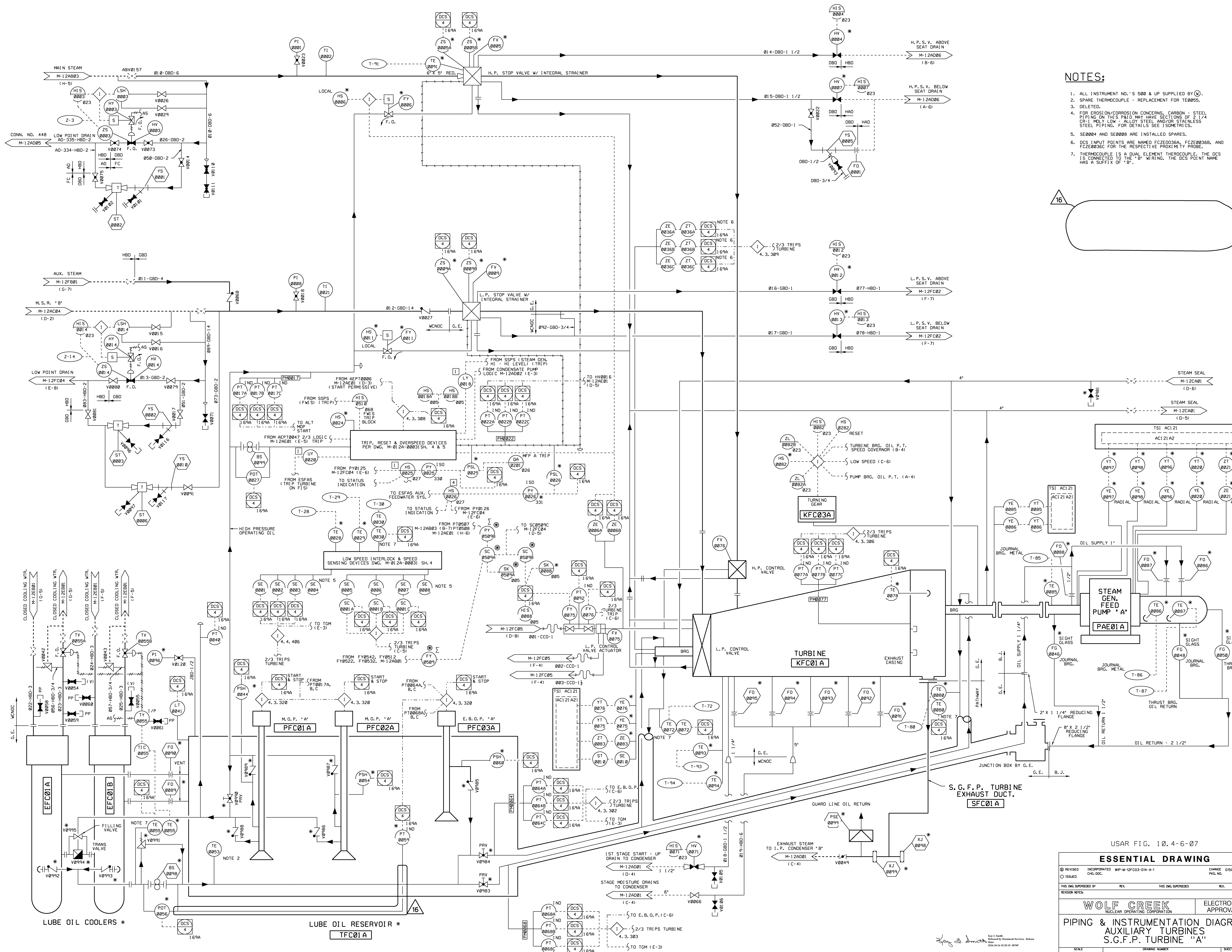
USAR FIG. 10.4-6-06

ESSENTIAL DRAWING

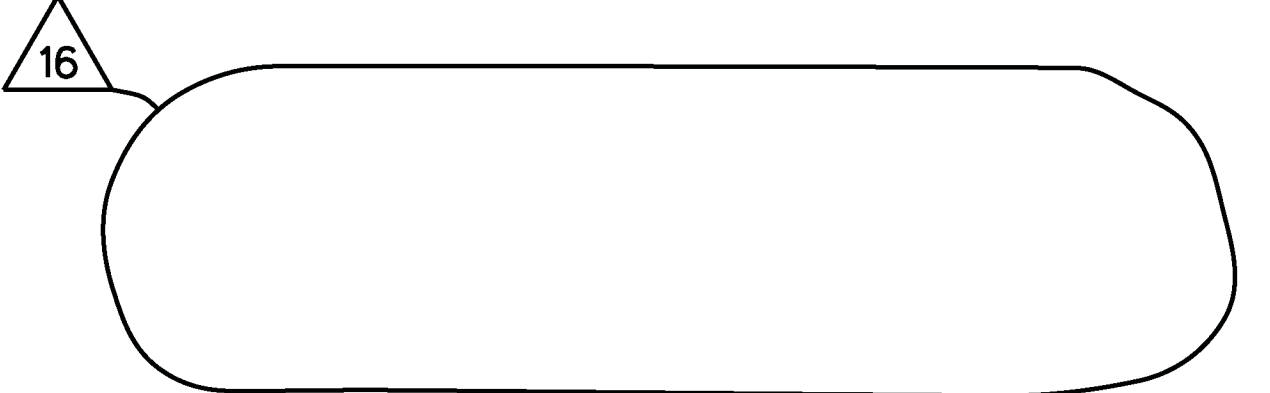
REVISION	INCORPORATED	CR 29532	CHANGE	PKG. NO.
ISSUED	CHG. DOC.			
THIS DWG SUPERSEDES		REV.	THIS DWG SUPERSEDES	
REVISION NOTES		ISSUED	REGENERATE CUSTOM LINESYLES PER CR 29532	
		ELECTRONIC APPROVAL		
PIPING & INSTRUMENTATION DIAGRAM FEEDWATER HEATER EXTRACTION DRAIN & VENTS				
SCALE	DRAWING NUMBER	SHEET	REV	
NONE	M-12AF04	19		

Blanch & Weston
Released by Document Services
Release Date: 2011.12.12 08:48:34 -0600



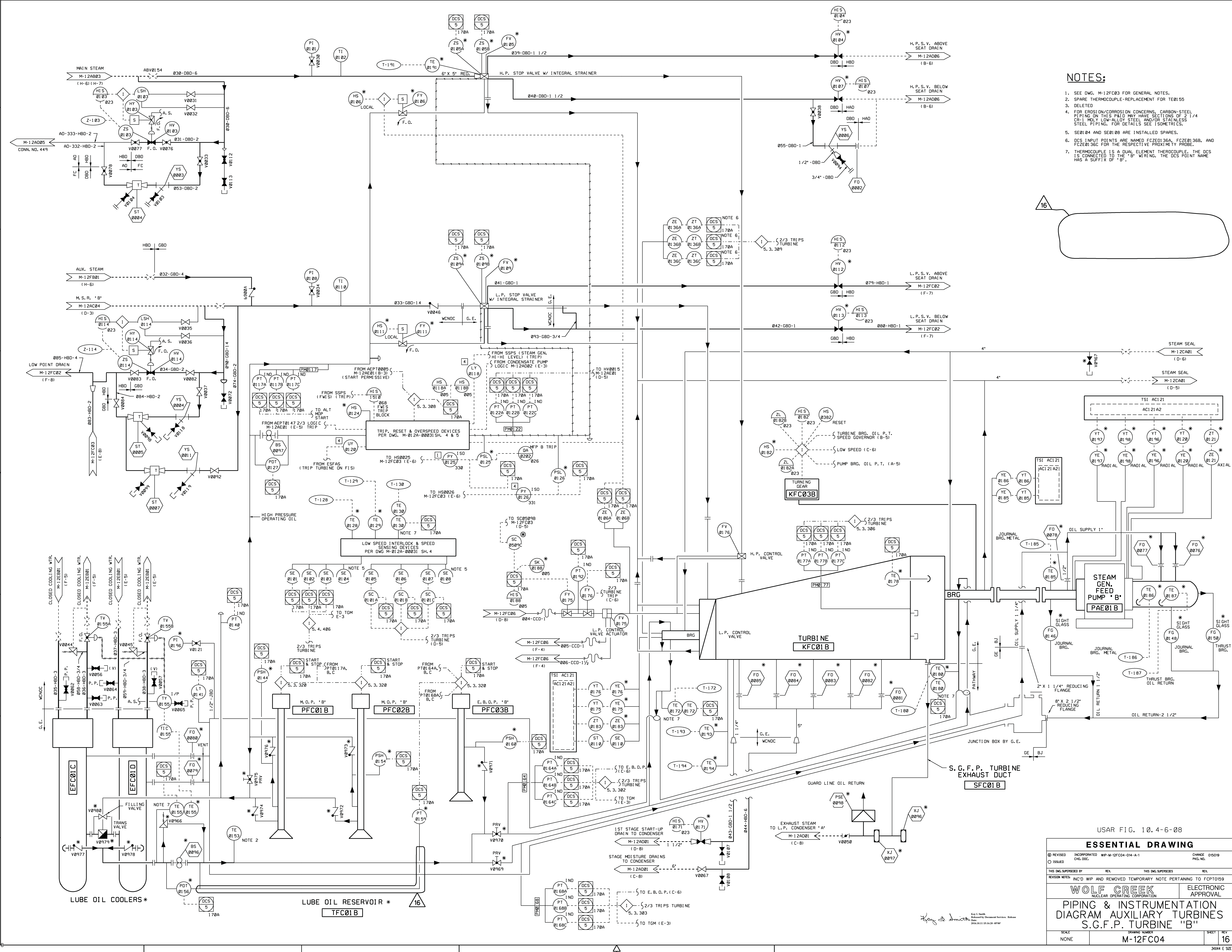


- NOTES:**
1. ALL INSTRUMENT NO.'S 500 & UP SUPPLIED BY [Symbol].
 2. SPARE THERMOCOUPLE - REPLACEMENT FOR TE0055.
 3. DELETED.
 4. FOR EROSION/CORROSION CONCERNS, CARBON - STEEL PIPING ON THIS P&ID MAY HAVE SECTIONS OF 2 1/4 CR-1 MOLY LOW - ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS SEE ISOMETRICS.
 5. SE0004 AND SE0008 ARE INSTALLED ISOMETRICS.
 6. DCS INPUT POINTS ARE NAMED FCZE0036A, FCZE0036B, AND FCZE0036C FOR THE RESPECTIVE PROXIMITY PROBES.
 7. THERMOCOUPLE IS A DUAL ELEMENT THERMOCOUPLE, THE DCS IS CONNECTED TO THE 'B' WIRING. THE DCS POINT NAME HAS A SUFFIX OF 'B'.



USAR FIG. 10.4-6-07

ESSENTIAL DRAWING			
REVISED	INCORPORATED	WIP-M-12FC03-014-A-1	CHANGE 015019
ISSUED	CHG. DEC.		PKG. NO.
THIS Dwg. SUPERSEDES		REV.	THIS Dwg. SUPERSEDES
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
PIPING & INSTRUMENTATION DIAGRAM			
AUXILIARY TURBINES			
S.G.F.P. TURBINE "A"			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12FC03	16	



- NOTES:**
- SEE DWG. M-12FC03 FOR GENERAL NOTES.
 - SPARE THERMOCOUPLE-REPLACEMENT FOR TE0155
 - DELETED
 - FOR EROSION/CORROSION CONCERNS, CARBON-STEEL PIPING ON THIS PAID MAY HAVE SECTIONS OF 2 1/4 CR-1 MOLY LOW-ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS SEE ISOMETRICS.
 - SE0104 AND SE0108 ARE INSTALLED SPARES.
 - DCS INPUT POINTS ARE NAMED FCZE0136A, FCZE0136B, AND FCZE0136C FOR THE RESPECTIVE PROXIMITY PROBES.
 - THERMOCOUPLE IS A DUAL ELEMENT THERMOCOUPLE. THE DCS IS CONNECTED TO THE "B" WIRING. THE DCS POINT NAME HAS A SUFFIX OF "B".



USAR FIG. 10.4-6-08

ESSENTIAL DRAWING

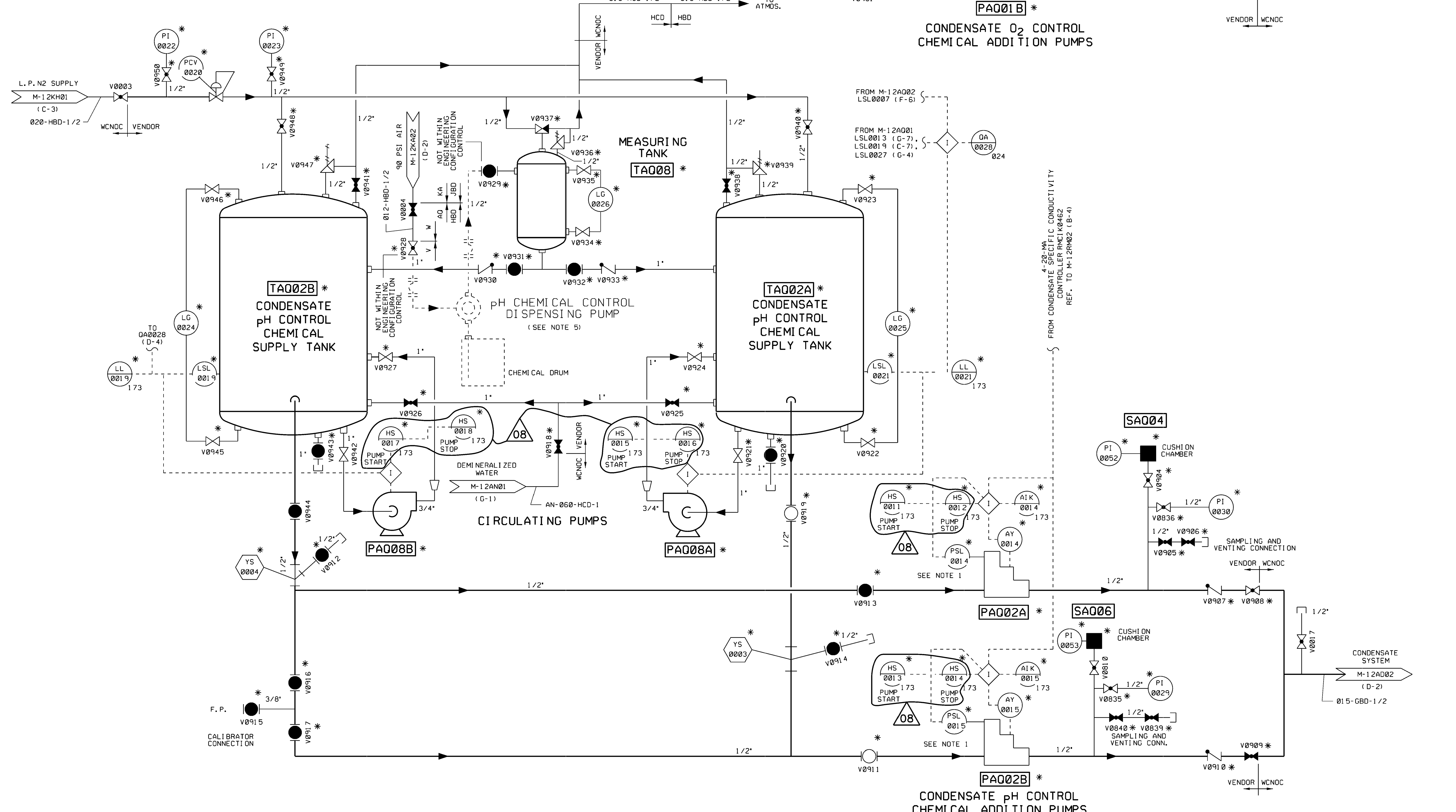
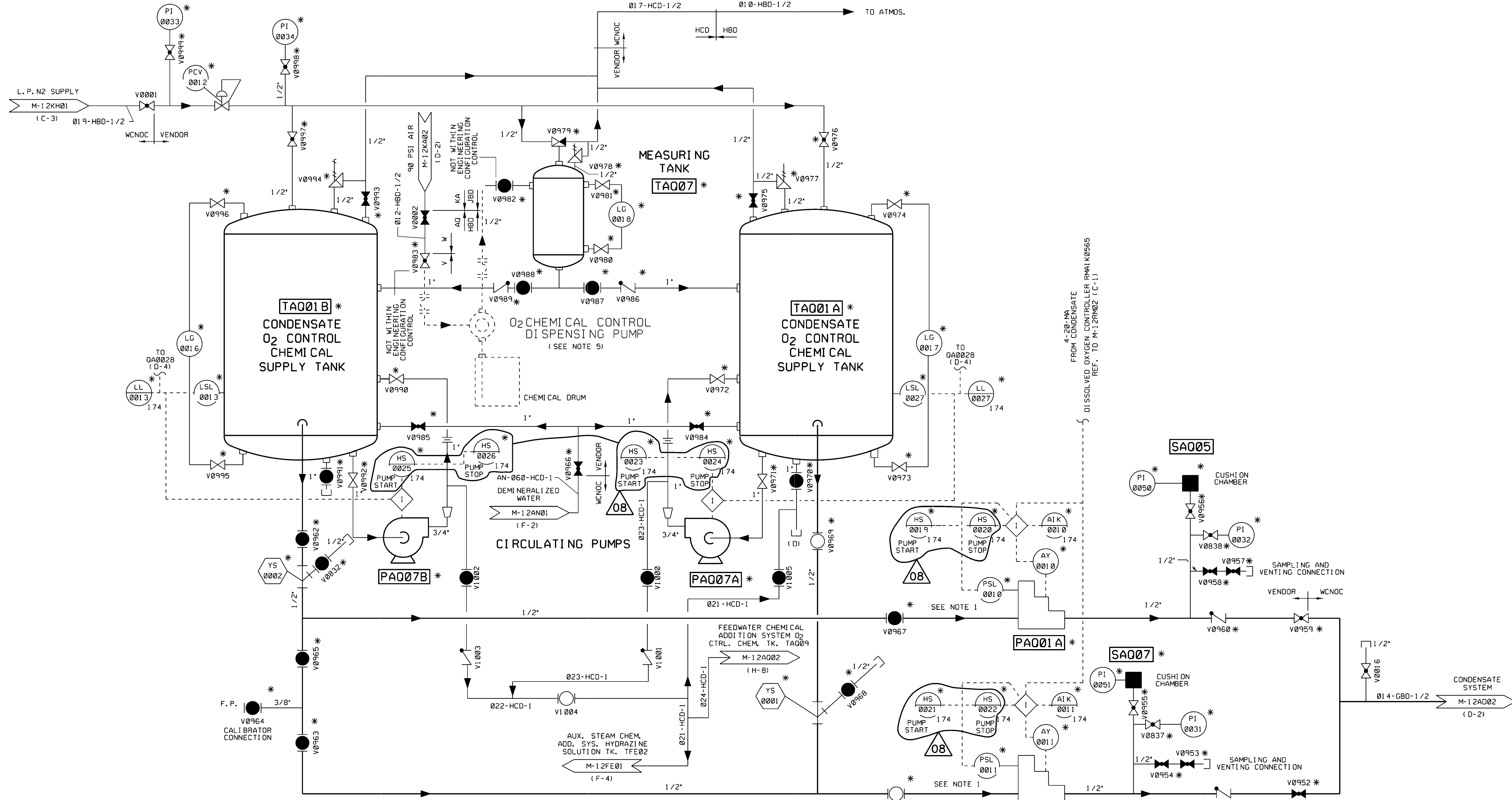
REVISIONS: INC'D WIP AND REMOVED TEMPORARY NOTE PERTAINING TO FCPT0159
 INCORPORATED WP-M-12FC04-014-A-1
 CHG. DOC. CHANGE 015019
 ISSUED CNG. DOC. FIG. NO.

THIS DWG. SUPERSEDES: REV. THIS DWG. SUPERSEDES: REV.
 INC'D WIP AND REMOVED TEMPORARY NOTE PERTAINING TO FCPT0159

WOLF CREEK ELECTRONIC APPROVAL
 NUCLEAR OPERATING CORPORATION

PIPING & INSTRUMENTATION
DIAGRAM AUXILIARY TURBINES
S.G.F.P. TURBINE "B"

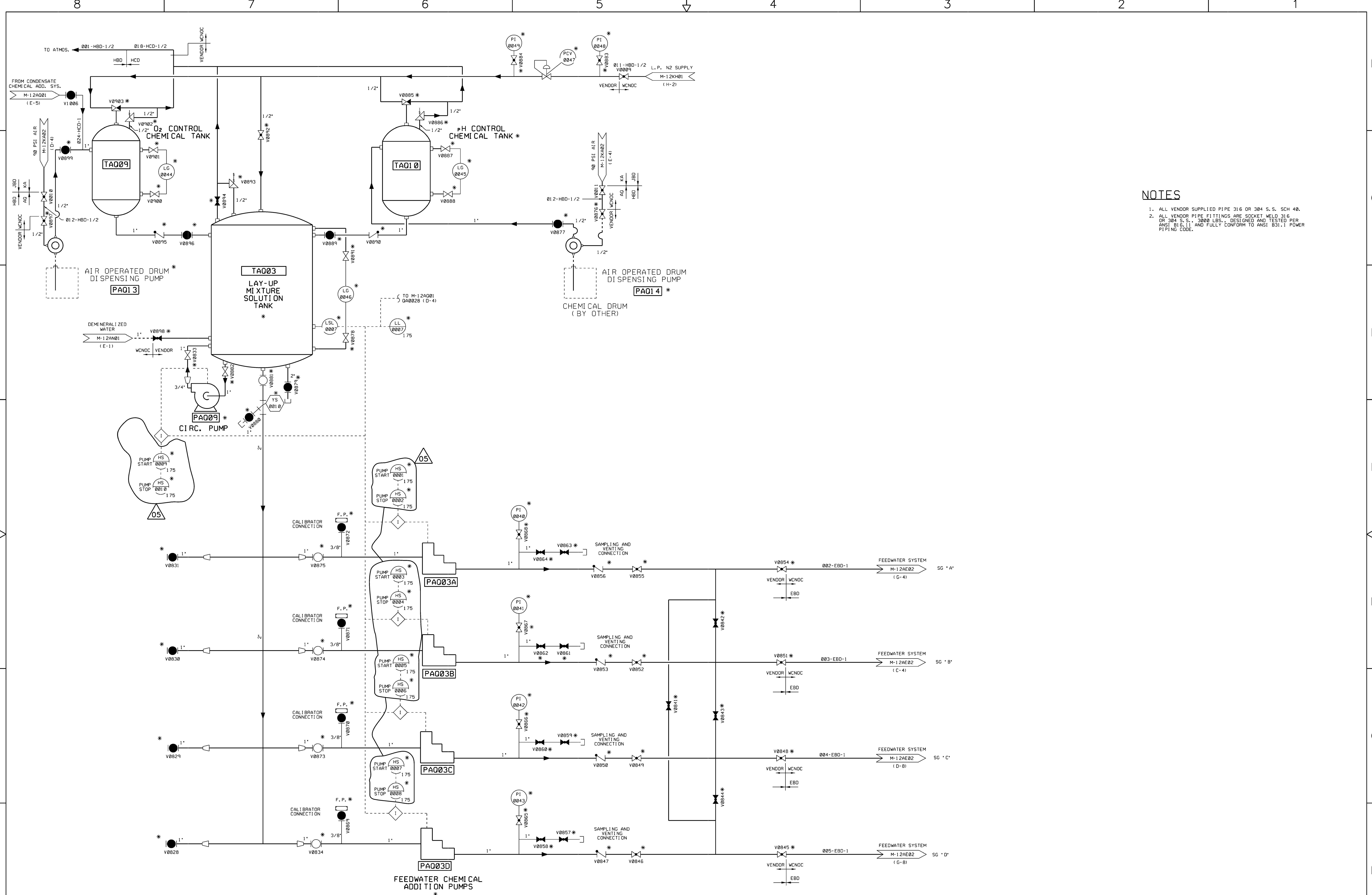
SCALE: NONE DRAWING NUMBER: M-12FC04 SHEET: REV: 16
 34444 E. 52



- 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 B31.1 AND FULLY CONFORM TO ANSI B31.1 POWER PIPING CODE.
 4. DELETED.
 5. DISPENSING PUMP SHOULD BE AIR OPERATED OR EXPLOSION PROOF.

USAR FIG. 10.4-7-01

ESSENTIAL DRAWING			
REVISED	INCORPORATED	CR 25401	CHANGE
ISSUED	CHK. DOC.		PKG. NO.
THIS Dwg. SUPERSEDES		REV.	THIS Dwg. SUPERSEDES
THIS Dwg. SUPERSEDES		REV.	THIS Dwg. SUPERSEDES
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
PIPING & INSTRUMENTATION DIAGRAM			
CONDENSATE CHEMICAL ADDITION SYSTEM			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12AQ01	08	
M-12AQ01-1-08			34444 E. SHE



- NOTES**
1. ALL VENDOR SUPPLIED PIPE 316 OR 304 S.S. SCH 40.
 2. ALL VENDOR PIPE FITTINGS ARE SOCKET WELD 316 OR 304 S.S., 3000 LBS., DESIGNED AND TESTED PER ANSI B31.1 AND FULLY CONFORM TO ANSI B31.1 POWER PIPING CODE.

USAR FIG. 10.4-7 - 02

ESSENTIAL DRAWING

① REVISED	INCORPORATED	CR 25401	CHANGE
○ ISSUED	CHG. DOC.		PKG. NO.
THIS DWG. SUPERSEDED BY		REV.	THIS DWG. SUPERSEDES
REVISION NOTES		REV.	REV.

WOLF CREEK
NUCLEAR OPERATING CORPORATION

ELECTRONIC
APPROVAL

**PIPING AND INSTRUMENTATION DIAGRAM
FEEDWATER CHEMICAL
ADDITION SYSTEM**

SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12AQ02	05	

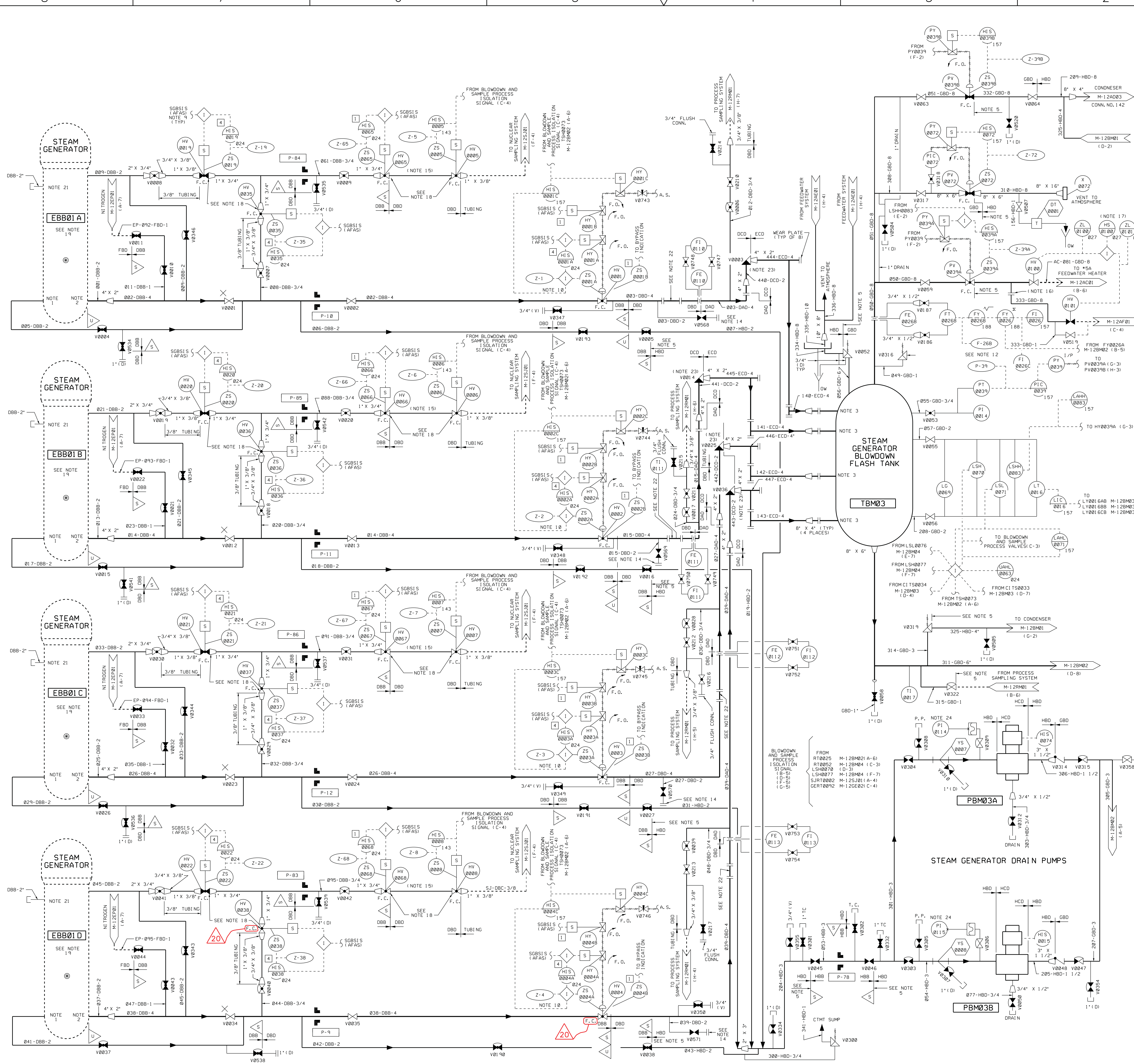


Study of Smith

Printed From: M-12AQ02-1-05
Revised by: [Name]
Date: 08/14/02

M-12AQ02-1-05

14X4 E SIZE



- NOTES**
- STEAM GENERATOR TUBE SHEET DRAIN.
 - STEAM GENERATOR BLOWDOWN LINE.
 - NOZZLES TO ENTER TANGENTIALLY.
 - PORTIONS OF THIS SYSTEM THAT CONTAIN RADIOACTIVE FLUIDS AND ARE IDENTIFIED BY QUALITY CLASSIFICATION "D" SHALL MEET THE AUGMENTING REQUIREMENTS AS GIVEN IN TABLE 3 OF THE SAR.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE IS PIPING THAT IS NOT SPECIAL-SCOPE QUALITY CLASSIFICATION GROUP "D" (AUGMENTED).
 - THE PORTION OF THIS SYSTEM THAT IS LISTED INCLUDES LINES EXEMPTING FROM THE STEAM GENERATORS WHICH SERVE AS AN EXTENSION OF THE CONTAINMENT PRESSURE BOUNDARY.
 - BLOWDOWN PIPING UPSTREAM OF THE BLOWDOWN FLASH TANK SHALL BE SCH 16B.
 - OVERFLOW LOOP SEAL TO EXTEND 12" BELOW TANK CONNECTION AND TO TOP OF TANK WITH SIPHON BREAKER ON TOP OF LOOP SEAL.
 - SGBSIS (AFAS) IS THE STEAM GENERATOR BLOWDOWN AND SAMPLE ISOLATION SIGNAL. THIS SIGNAL IS COMPOSED OF MOTOR DRIVEN AND TURBINE DRIVEN AUXILIARY FEEDWATER PUMP ACTUATION SIGNALS WITH THE SAFETY INJECTION SIGNAL.
 - THREE LIMIT SWITCHES TO BE PROVIDED. TWO SWITCHES INDICATING CLOSED POSITIONS (SEPARATION GROUP 1) AND ONE SWITCH INDICATING OPEN POSITION (SEPARATION GROUP 4).
 - DELETED.
 - P-39 IS UTILIZED TO COMPENSATE F-26B FOR DENISITY. F-26A AND F-26B ARE ADDED TO GIVE TOTAL BLOWDOWN FLOW.
 - DELETED.
 - STEAM GENERATOR WET LAYOUT CONN. FOR CONTINUATION OF PIPE. SEE DWG. M-12B005 (H-4, F-4, D-4, & C-4).
 - VALVES ARE CONNECTED BY A 1" SOCKET WELD COUPLING.
 - A BLIND FLANGE IS PROVIDED TO SUPPORT SYSTEM HYDROTEST.
 - ALL STEAM GENERATOR BLOWDOWN FLASH TANK STEAM TO FEEDWATER HEATERS 5B & 5B FOR FEEDWATER HEATING DURING START-UP.
 - THE VALVES CALLED OUT BY THIS NOTE ARE PURCHASED UNDER SPECIFICATION J-683A AND ARE STAINLESS STEEL. VALVE CLASS CCB.
 - WELDS TO THE STEAM GENERATOR ARE SUBJECT TO PSI/ISI EXAMINATION AS DELINEATED IN THE PSI/ISI WORK PLANS PROVIDED UNDER SPECIFICATION 10466-M-189.
 - WELDS IN ASME SECTION III CLASS 2 PIPING SYSTEMS WITHIN THE BOUNDARIES IDENTIFIED BY THE "I" SYMBOL ARE SUBJECT TO VOLUME TRIC 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 10466-M-189.
 - CLOSURE ARRANGEMENT SHOWN IS FOR STEAM GENERATOR WET LAYOUT TAP. WET LAYOUT TAPS ARE NOT IN USE ON SNUFFS.
 - FLANGED SPOOL PIECE PROVIDED FOR FUTURE VORTEX METER.
 - VALVES IDENTIFIED BY THIS NOTE ARE 1 1/2" VALVES WELDED TO 2" XXS PIPE.
 - EQUIPMENT SPECIFIED AND PROCURED BY WCHD.
 - FOR EROSION/CORROSION CONCERNS, CARBON STEEL PIPING ON THIS P&ID MAY HAVE SECTIONS OF 2 1/4 CR-1 MOLY LOW-ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS, SEE ISOMETRICS.

USAR FIG. 10.4-B-1

ESSENTIAL DRAWING

REVISION	INCORPORATED OR	CHG. DOC.	CHANGE
ISSUED	OR	REVISED	PAGE NO.

THIS DWG. SUPERSEDES BY: _____ REV. _____ THIS DWG. SUPERSEDES: _____ REV. _____

REVISION NOTES:

WOLF CREEK
NUCLEAR OPERATING CORPORATION

ELECTRONIC APPROVAL

PIPING AND INSTRUMENTATION DIAGRAM
STEAM GENERATOR BLOWDOWN SYS.

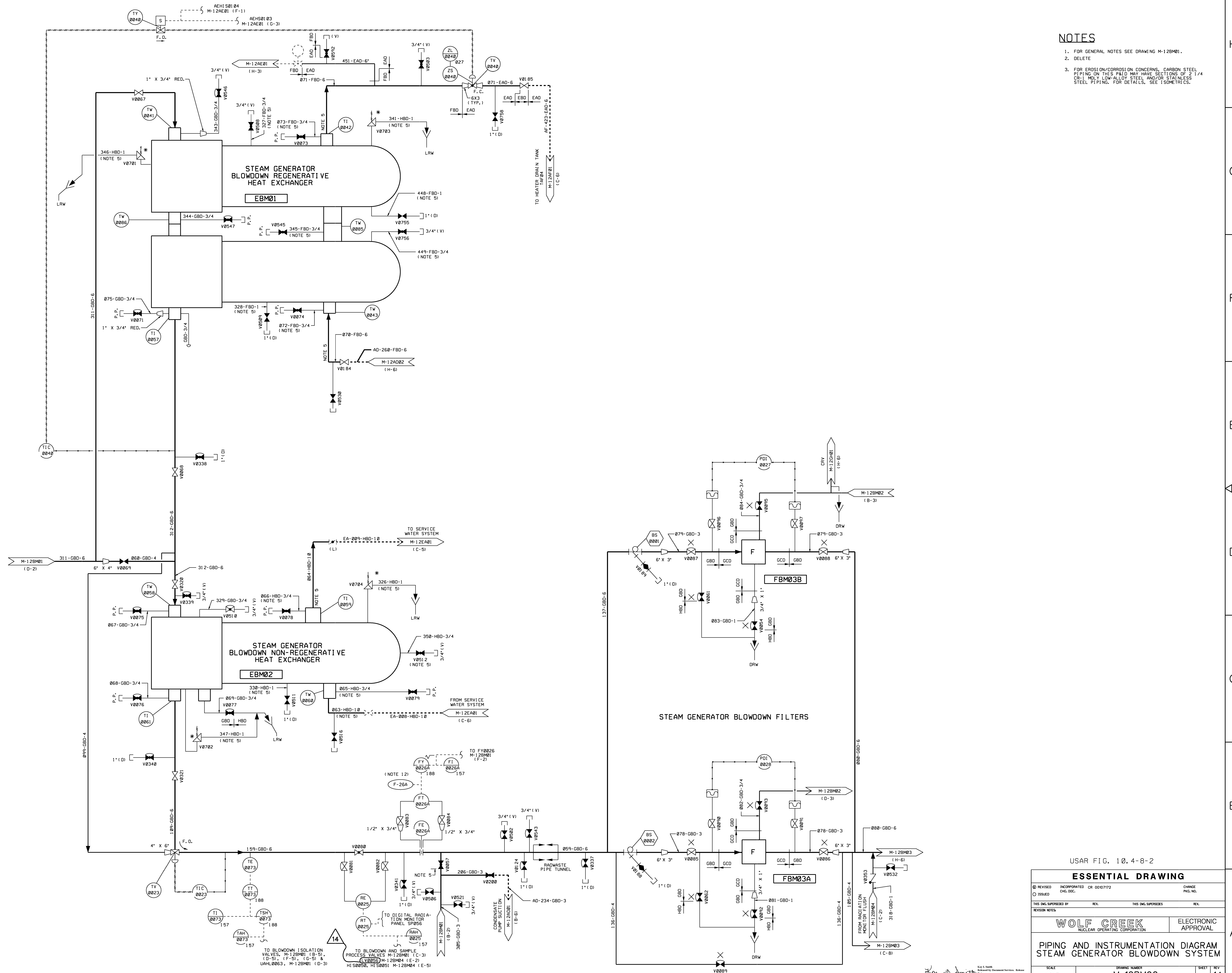
SCALE: NONE DRAWING NUMBER: M-12B001 SHEET NO. 20

H
G
F
E
D
C
B
A

8
7
6
5
4
3
2
1

NOTES

1. FOR GENERAL NOTES SEE DRAWING M-12BM01.
2. DELETE
3. FOR EROSION/CORROSION CONCERNS, CARBON STEEL PIPING ON THIS PAID MAY HAVE SECTIONS OF 2 1/4 CR-1 MOLY LOW-ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS, SEE ISOMETRICS.



USAR FIG. 10.4-8-2

ESSENTIAL DRAWING

REVISION	INCORPORATED	CR 00107172	CHANGE
ISSUED	CHG. DOC.		PKG. NO.
THIS ENG. SUPERSEDES		REV.	THIS ENG. SUPERSEDES
REVISION NOTES		REV.	REV.

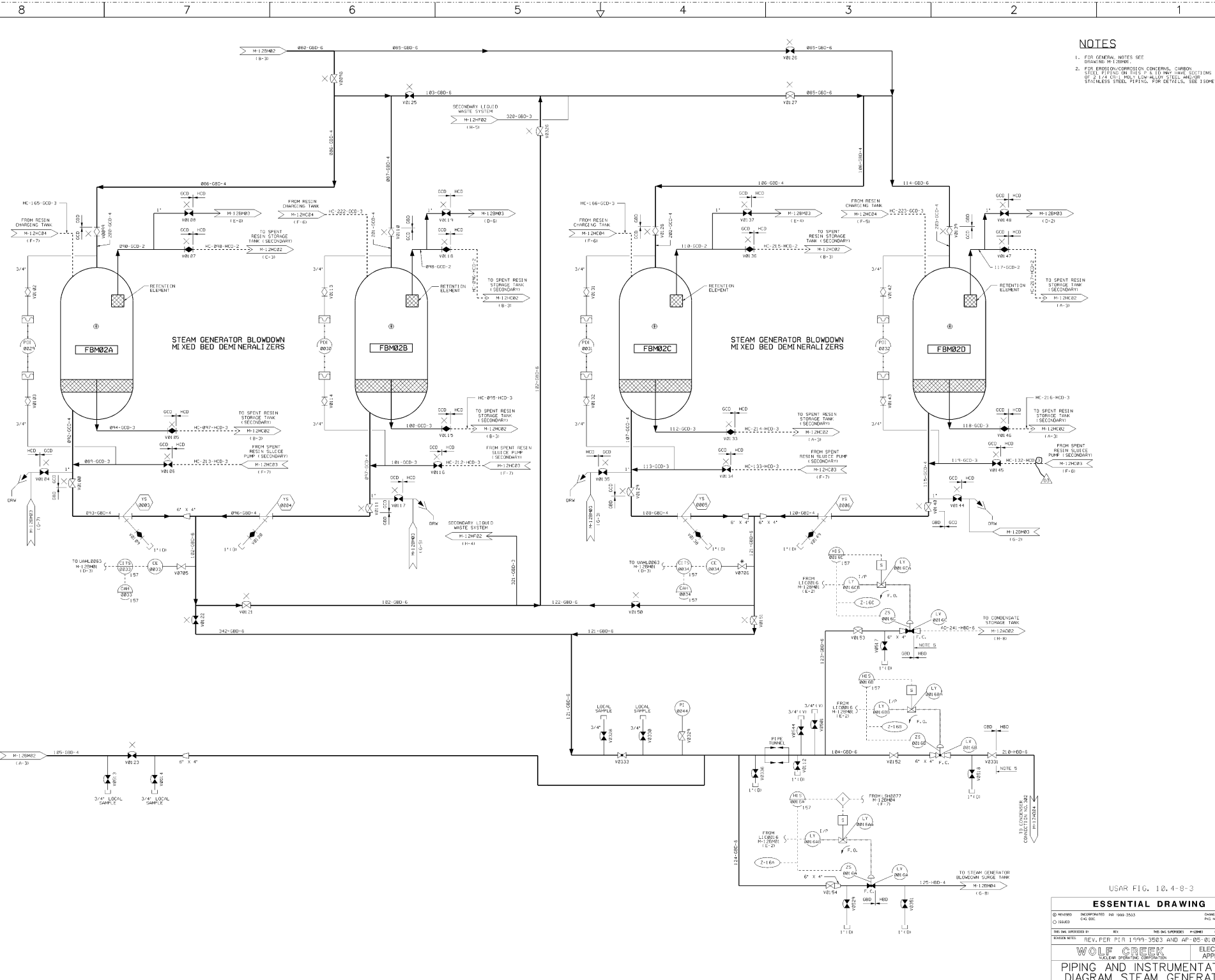
WOLF CREEK
NUCLEAR OPERATING CORPORATION

ELECTRONIC APPROVAL

**PIPING AND INSTRUMENTATION DIAGRAM
STEAM GENERATOR BLOWDOWN SYSTEM**

SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12BM02	14	14

3444 E. SHE

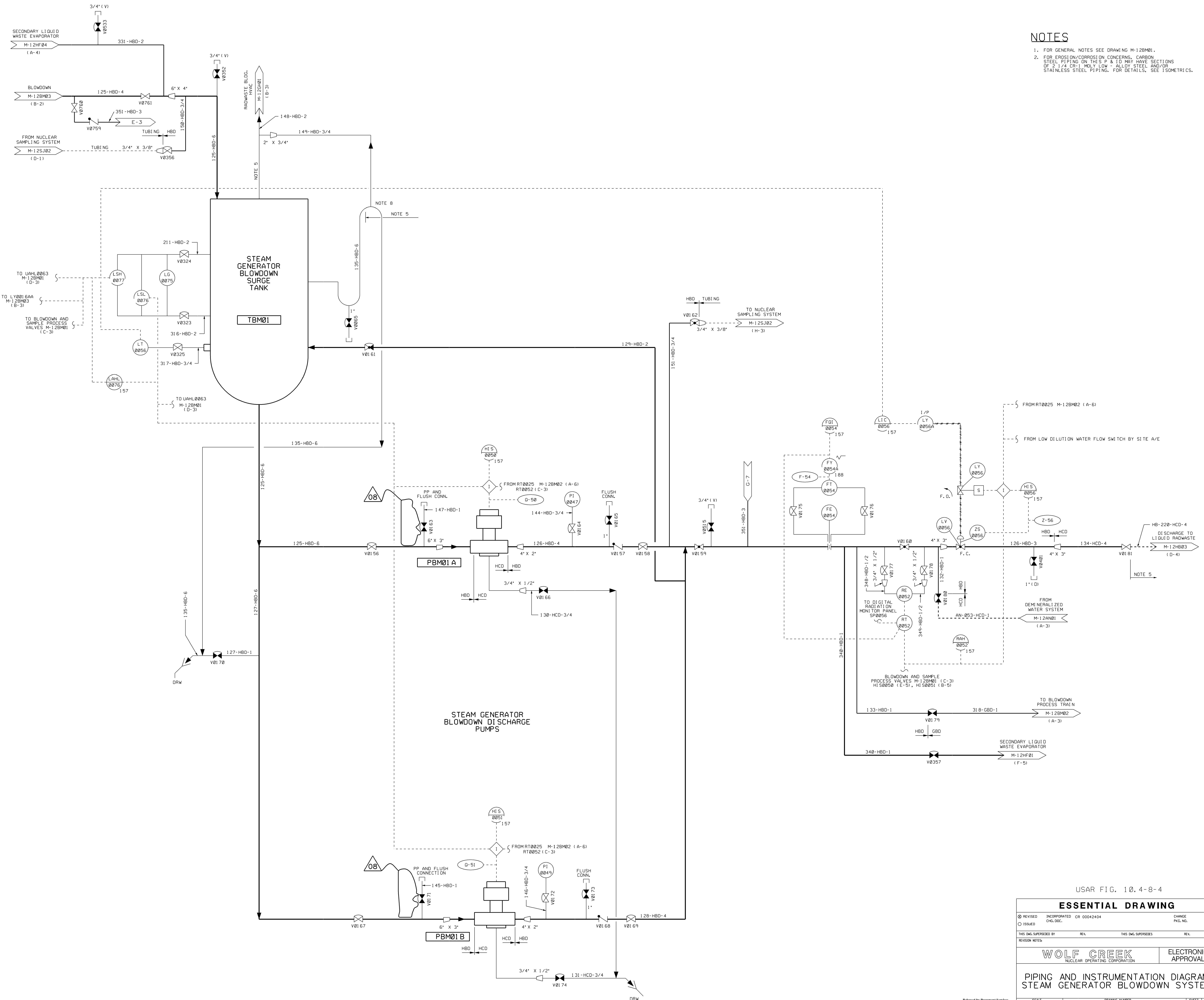


- NOTES**
1. FOR GENERAL NOTES SET DRAWING M-12BM01.
 2. FOR EROSION/Corrosion CONCERNS, CARBON STEEL PIPING ON THIS P&ID MAY HAVE SECTIONS OF 2" L.P. OR 1" POLY LOW ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS, SEE ISOMETRICS.

USAR FIG. 10, 4-8-3

ESSENTIAL DRAWING			
DESIGNED BY	INTEGRATED BY	DATE	PROJECT
REVISED BY	REV. PER	NO. OF SUPPLIES	NO. OF
WOLF CREEK SYSTEMS PROJECTS CORPORATION ELECTRONIC APPROVAL			
PIPING AND INSTRUMENTATION DIAGRAM STEAM GENERATOR BLOWDOWN SYSTEM			
SCALE	DRAWING NO.	SHEET NO.	TOTAL SHEETS
NONE	M-12BM03	03	03

NOTES
 1. FOR GENERAL NOTES SEE DRAWING M-12BM01.
 2. FOR EROSION/CORROSION CONCERNS, CARBON STEEL PIPING ON THIS P & ID MAY HAVE SECTIONS OF 2 1/4 CR-1 MILY LOW-ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS, SEE ISOMETRICS.

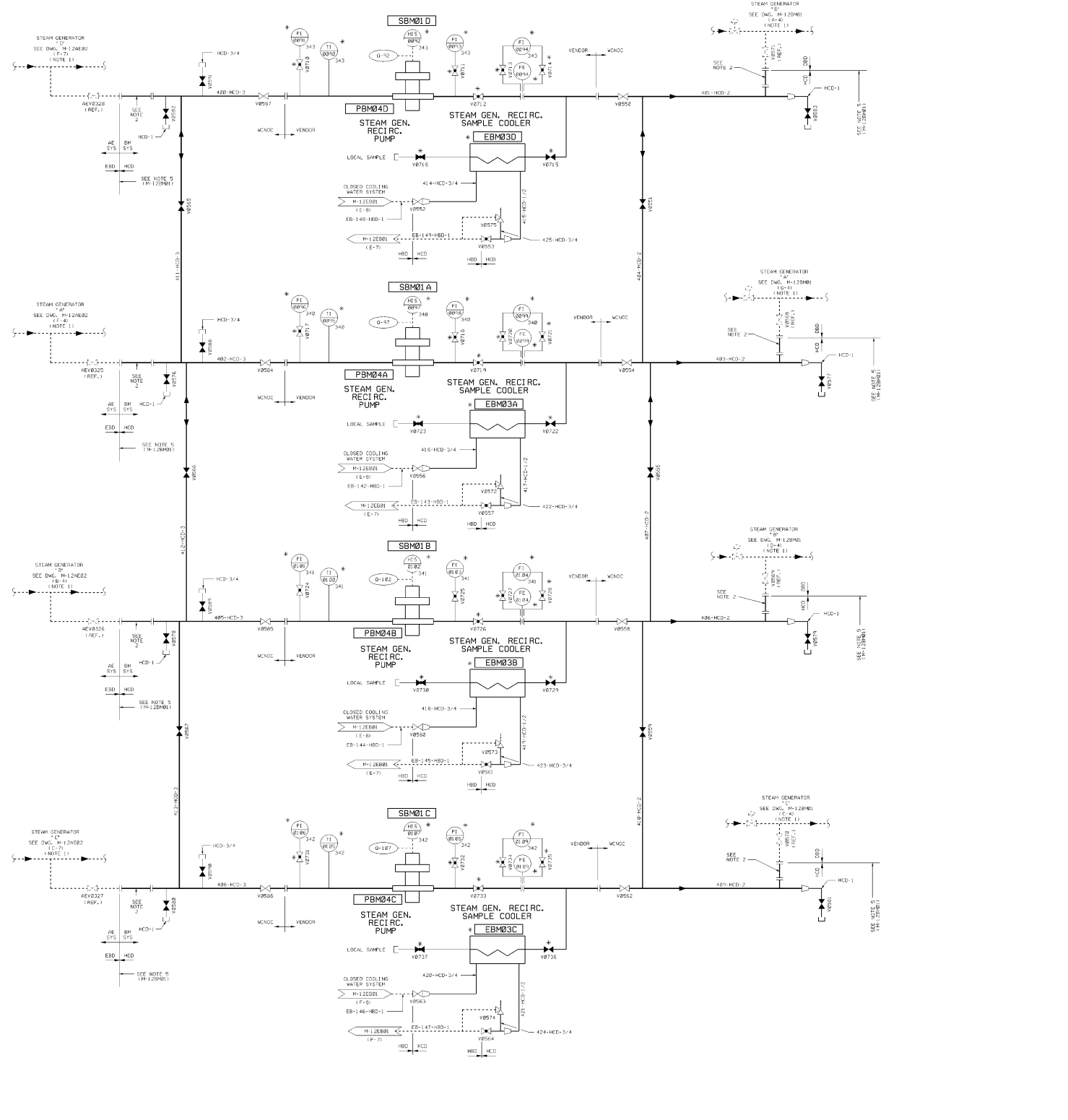


USAR FIG. 10.4-8-4

ESSENTIAL DRAWING			
REVISED	INCORPORATED	OR 00042404	CHANGE
ISSUED	CHG. DOC.		PKG. NO.
THIS ENG. SUPERSEDES		REV.	THIS ENG. SUPERSEDES
REVISION NOTES:			
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION		NUCLEAR OPERATING CORPORATION	
PIPING AND INSTRUMENTATION DIAGRAM			
STEAM GENERATOR BLOWDOWN SYSTEM			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12BM04	08	08

Black & Veatch
 Released by Document Services
 2011.11.14 07:54:29 -0500

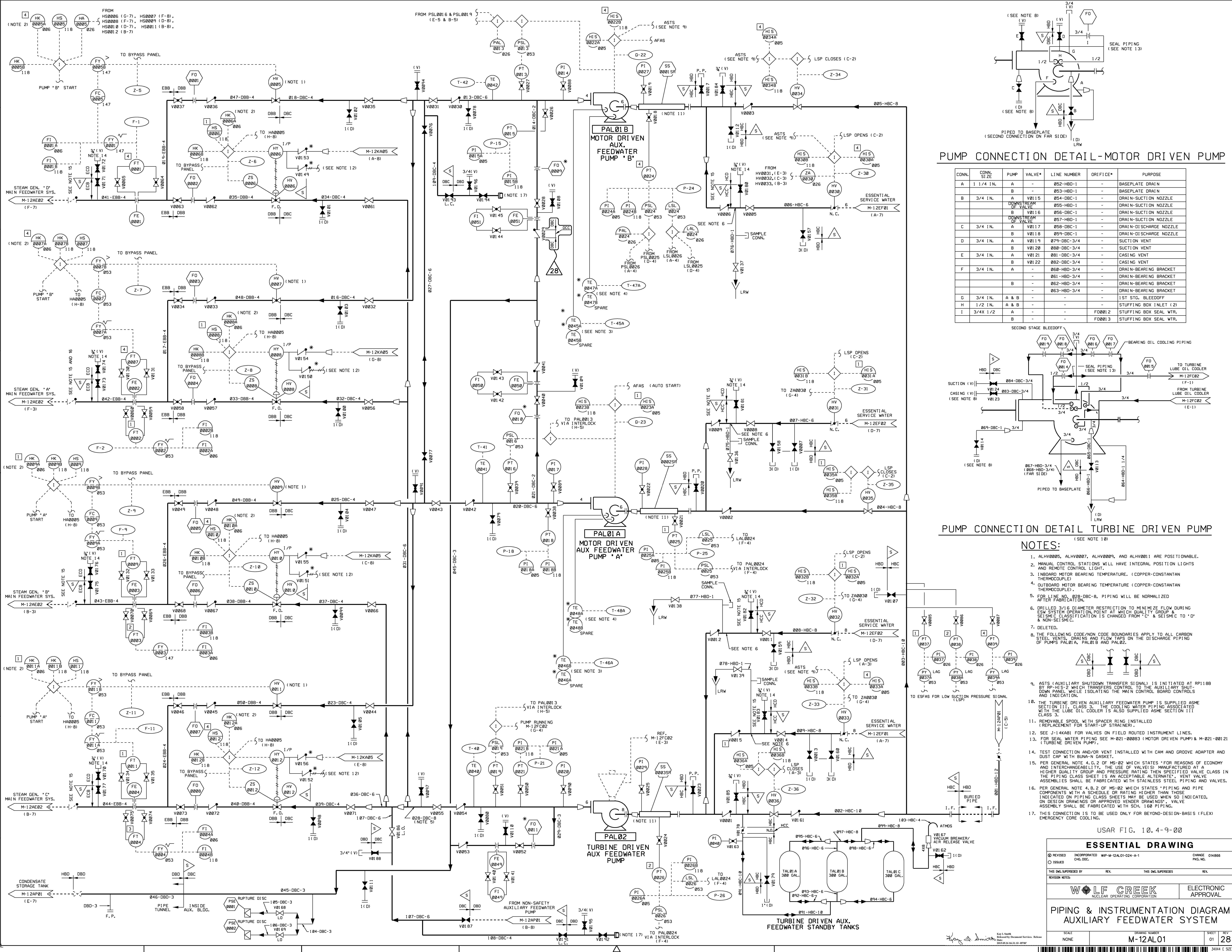




- NOTES**
1. SYSTEM INTERFACES ABOVE SHOW NORMAL FLOW DIRECTION. REVERSE FLOW INDICATED BY FLOW IS IN THE OPPOSITE DIRECTION.
 2. REMOVABLE SPECIAL TO BE IN PLACE ONLY DURING STEAM GENERATOR AND BLIND PLUGS DURING NORMAL OPERATION.
 3. FOR EROSION/Corrosion CONCERN, CARBON STEEL PIPING ON THIS FIELD MAY HAVE SECTIONS OF 2" & 4" O.D. 1/2" LOW ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS, SEE ISM-128M05.

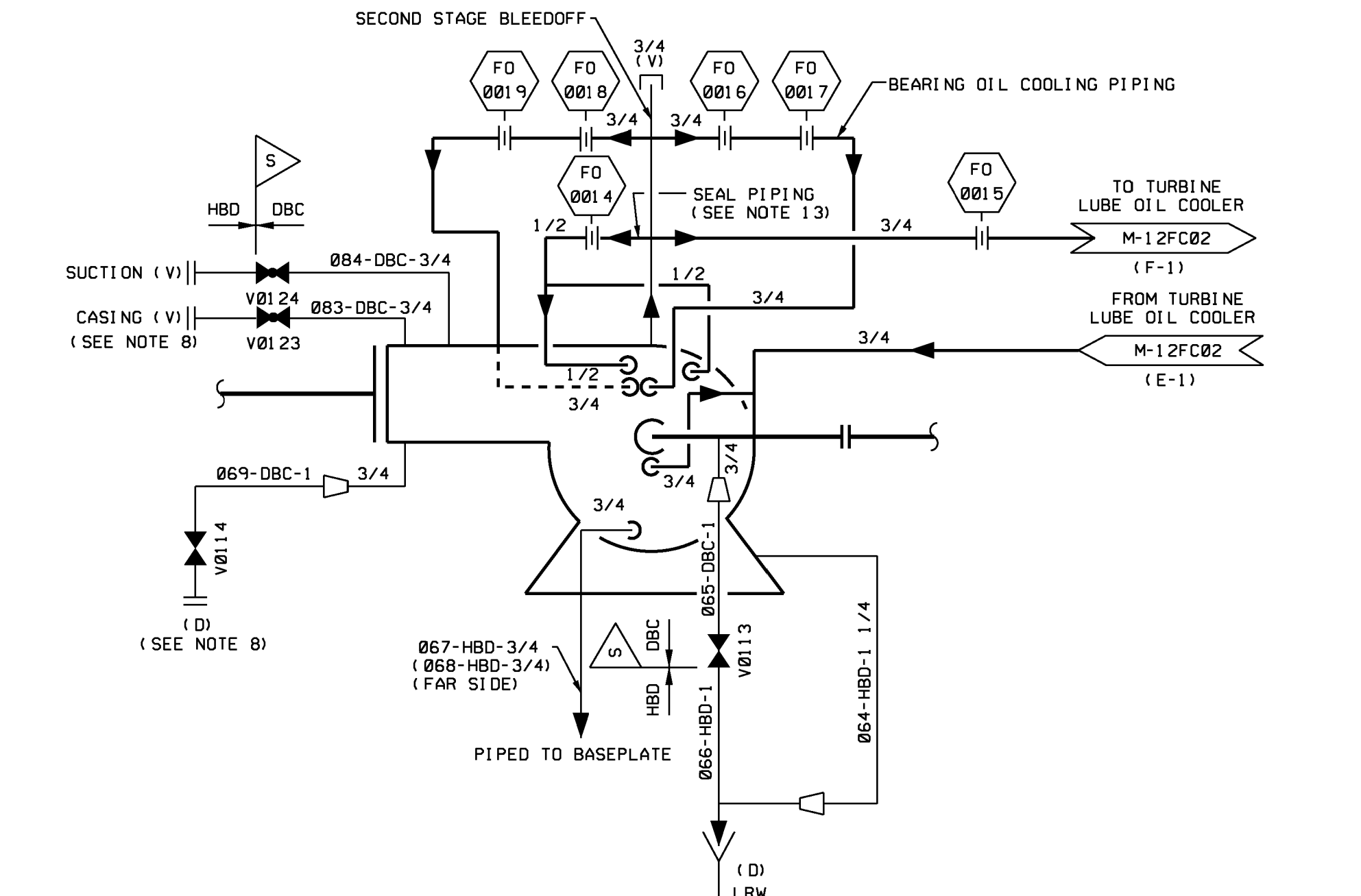
USAR FIG. 10, 4-8-5

ESSENTIAL DRAWING			
REVISION	DESCRIPTION	DATE	BY
WOLF CREEK CLEAR CHANNEL CORPORATION		ELECTRONIC APPROVAL	
PIPING & INSTRUMENTATION DIAGRAM STEAM GENERATOR BLOWDOWN SYSTEM			
SCALE	DRAWN	CHECKED	DATE
NONE	M-12BM05		05



PUMP CONNECTION DETAIL-L-MOTOR DRIVEN PUMP

CONN.	CONN. SIZE	PUMP	VALVE*	LINE NUMBER	ORIFICE*	PURPOSE
A	1 1/4 IN.	A	-	052-HBD-1	-	BASEPLATE DRAIN
B	3/4 IN.	A	V0115	054-HBD-1	-	BASEPLATE DRAIN
				055-HBD-1	-	DRAIN-SUCTION NOZZLE
				056-HBD-1	-	DRAIN-SUCTION NOZZLE
				057-HBD-1	-	DRAIN-SUCTION NOZZLE
C	3/4 IN.	A	V0117	058-HBD-1	-	DRAIN-DI-SUCTION NOZZLE
D	3/4 IN.	A	V0118	059-HBD-1	-	DRAIN-DI-SUCTION NOZZLE
				079-HBD-3/4	-	SUCTION VENT
				088-HBD-3/4	-	SUCTION VENT
E	3/4 IN.	A	V0121	081-HBD-3/4	-	CASING VENT
F	3/4 IN.	A	V0122	082-HBD-3/4	-	DRAIN-BEARING BRACKET
				061-HBD-3/4	-	DRAIN-BEARING BRACKET
				062-HBD-3/4	-	DRAIN-BEARING BRACKET
				063-HBD-3/4	-	DRAIN-BEARING BRACKET
G	3/4 IN.	A & B	-	-	-	1ST STG. BLEEDOFF
H	1/2 IN.	A & B	-	-	-	STUFFING BOX INLET (2)
I	3/4 X 1/2	A	-	-	-	STUFFING BOX SEAL WTR.
				-	-	STUFFING BOX SEAL WTR.



PUMP CONNECTION DETAIL TURBINE DRIVEN PUMP

NOTES:

- ALHV0005, ALHV0007, ALHV0009, and ALHV0011 ARE POSITIONABLE.
- MANUAL CONTROL STARTUPS WILL HAVE INTEGRAL POSITION LIGHTS AND REMOTE CONTROL LIGHT.
- INBOARD MOTOR BEARING TEMPERATURE (COPPER-CONSTANTAN THERMOCOUPLE)
- OUTBOARD MOTOR BEARING TEMPERATURE (COPPER-CONSTANTAN THERMOCOUPLE)
- FOR LINE NO. 028-DBC-6, PIPING WILL BE NORMALIZED AFTER FABRICATION.
- DRILLED 3/16" DIAMETER RESTRICTION TO MINIMIZE FLOW DURING SEISMIC SYSTEM OPERATION, POINT AT WHICH QUALITY GROUP 8 SEISMIC CLASSIFICATION IS CHANGED FROM 'C' & SEISMIC TO 'D' & NON-SEISMIC.
- DELETED.
- THE FOLLOWING CODE/NOV CODE BOUNDARIES APPLY TO ALL CARBON STEEL VENTS, DRAINS AND FLOW TAPS ON THE DISCHARGE PIPING OF PUMPS PAL01A, PAL01B AND PAL02.
- ASTS (AUXILIARY SHUTDOWN TRANSFER SIGNAL) IS INITIATED BY RP1188 BY RP-HIS-2 WHICH TRANSFERS CONTROL TO THE AUXILIARY SHUTDOWN PANEL WHILE ISOLATING THE MAIN CONTROL BOARD CONTROLS AND INDICATION.
- THE TURBINE DRIVEN AUXILIARY FEEDWATER PUMP IS SUPPLIED ASME SECTION III, CLASS 3, THE COOLING WATER PI IS ASSOCIATED WITH THE LUBE OIL COOLER IS ALSO SUPPLIED ASME SECTION III CLASS 3.
- REMOVABLE SPOOL WITH SPACER RING INSTALLED (REPLACEMENT FOR START-UP STRAINER).
- SEE J-14K81 FOR VALVES ON FIELD ROUTED INSTRUMENT LINES.
- FOR SEAL WATER PIPING SEE M-021-00083 (MOTOR DRIVEN PUMP) & M-021-00121 (TURBINE DRIVEN PUMP).
- TEST CONNECTION AND/OR VENT INSTALLED WITH CAM AND GROOVE ADAPTER AND DUST CAP WITH BULK-N GASKET.
- PER GENERAL NOTE 4, G. 2 OF MS-02 WHICH STATES "FOR REASONS OF ECONOMY AND INTERCHANGEABILITY, THE USE OF VALVES MANUFACTURED AT A HIGHER QUALITY GROUP AND PRESSURE RATING THAN SPECIFIED VALVE CLASS IN THE PIPING CLASS SHEET IS AN ACCEPTABLE ALTERNATE". VENT VALVE ASSEMBLIES SHALL BE FABRICATED WITH STAINLESS STEEL PIPING AND VALVES.
- PER GENERAL NOTE 4, B. 2 OF MS-02 WHICH STATES "PIPING AND PIPE COMPONENTS WITH A SCHEDULE OR RATING HIGHER THAN THOSE INDICATED ON PIPING CLASS SHEETS MAY BE USED WHEN SO INDICATED. ON DESIGN DRAWINGS OR APPROVED VENDOR DRAWINGS, VALVE ASSEMBLY SHALL BE FABRICATED WITH SCH. 160 PIPING.
- THIS CONNECTION IS TO BE USED ONLY FOR BEYOND-DESIGN-BASIS (FLEX) EMERGENCY CORE COOLING.

USAR FIG. 10.4-9-00

ESSENTIAL DRAWING

REVISED	INCORPORATED	WP-M-12AL01-024-A-1	CHANGE 014866
ISSUED	CHG. DOC.		PKG. NO.
THIS Dwg. SUPERSEDES		REV.	REV.
REVISION NUMBER			



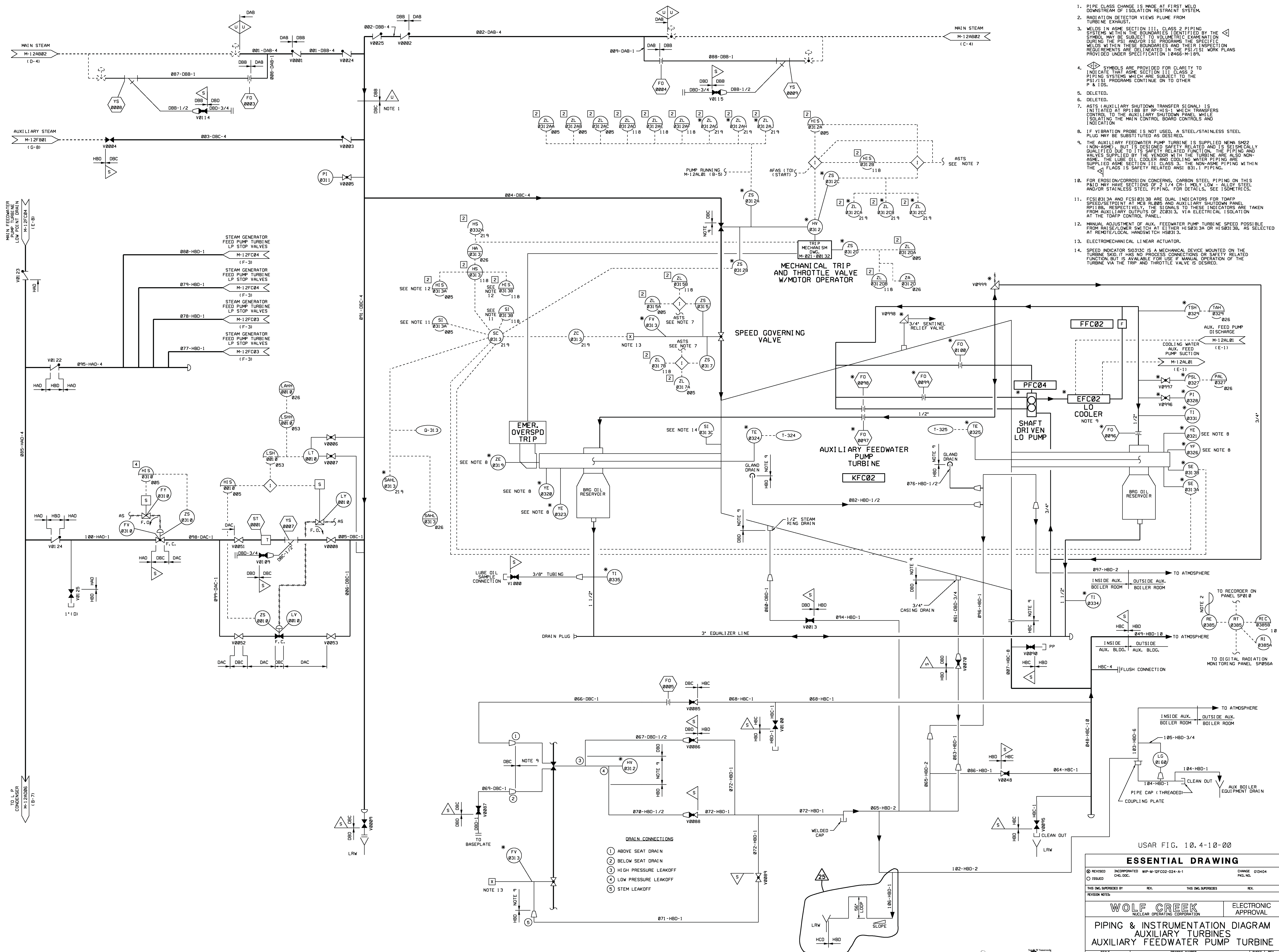
**PIPING & INSTRUMENTATION DIAGRAM
AUXILIARY FEEDWATER SYSTEM**

SCALE	DRAWING NUMBER	SHEET	REV.
NONE	M-12AL01	01	28



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 19466-M-19.
- SYMBOLS ARE PROVIDED FOR CLARITY TO INDICATE THAT ASME SECTION III CLASS 2 PIPING SYSTEMS WHICH ARE SUBJECT TO THE PSI/ISI PROGRAMS CONTINUE ON TO OTHER P & IS.
- DELETED.
- DELETED.
- ASTS (AUXILIARY SHUTDOWN TRANSFER SIGNAL) IS INITIATED AT RP118B BY RP-HIS-1 WHICH TRANSFERS CONTROL TO THE AUXILIARY SHUTDOWN PANEL WHICH ISOLATES THE MAIN CONTROL BOARD CONTROLS AND INDICATION.
- IF VIBRATION PROBE IS NOT USED, A STEEL/STAINLESS STEEL PLUG MAY BE SUBSTITUTED AS DESIRED.
- THE AUXILIARY FEEDWATER TURBINE IS SUPPLIED NEMA SM22 (NON-ASME) BUT IS DESIGNED SAFETY RELATED AND IS SEISMICALLY QUALIFIED DUE TO ITS SAFETY RELATED FUNCTION. THE PIPING AND VALVES SUPPLIED BY THE VENDOR WITH THE TURBINE ARE ALSO NON-ASME. THE LUBE OIL COOLER AND COOLING WATER PIPING ARE SUPPLIED ASME SECTION III CLASS 3. THE NON-ASME PIPING WITHIN THE PLADS IS SAFETY RELATED ANSI B31.1 PIPING.
- FOR EROSION/CORROSION CONCERNS, CARBON STEEL PIPING ON THIS PAID MAY HAVE SECTIONS OF 2 1/4 CR-1 MOLY LOW ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS, SEE ISOMETRICS.
- FC3133A AND FC3133B ARE DUAL INDICATORS FOR TDAPF SPEED/SETPOINT AT M-12FC02 AND AUXILIARY SHUTDOWN PANEL RP118B, RESPECTIVELY. THE SIGNALS TO THESE INDICATORS ARE TAKEN FROM AUXILIARY OUTPUTS OF ZC313, VIA ELECTRICAL ISOLATION AT THE TDAPF CONTROL PANEL.
- MANUAL ADJUSTMENT OF AUX. FEEDWATER PUMP TURBINE SPEED POSSIBLE FROM RAISE/LOWER SWITCH AT EITHER HI 0313A OR HI 0313B, AS SELECTED AT REMOTE/LOCAL HANDSWITCH HS0313.
- ELECTROMECHANICAL LINEAR ACTUATOR.
- SPEED INDICATOR SIO313C IS A MECHANICAL DEVICE MOUNTED ON THE TURBINE SKID. IT HAS NO PROTECT CONNECTIONS OR SAFETY RELATED FUNCTION, BUT IS AVAILABLE FOR USE IF MANUAL OPERATION OF THE TURBINE TRIP AND THROTTLE VALVE IS DESIRED.



USAR FIG. 10.4-10-00

ESSENTIAL DRAWING

REVISIONS: INCORPORATED WP-M-12FC02-024-A-1 CHANGE 013404
 CHG. DOC. PKG. NO.
 ISSUED

THIS Dwg. SUPERSEDES BY REV. THIS Dwg. SUPERSEDES REV.

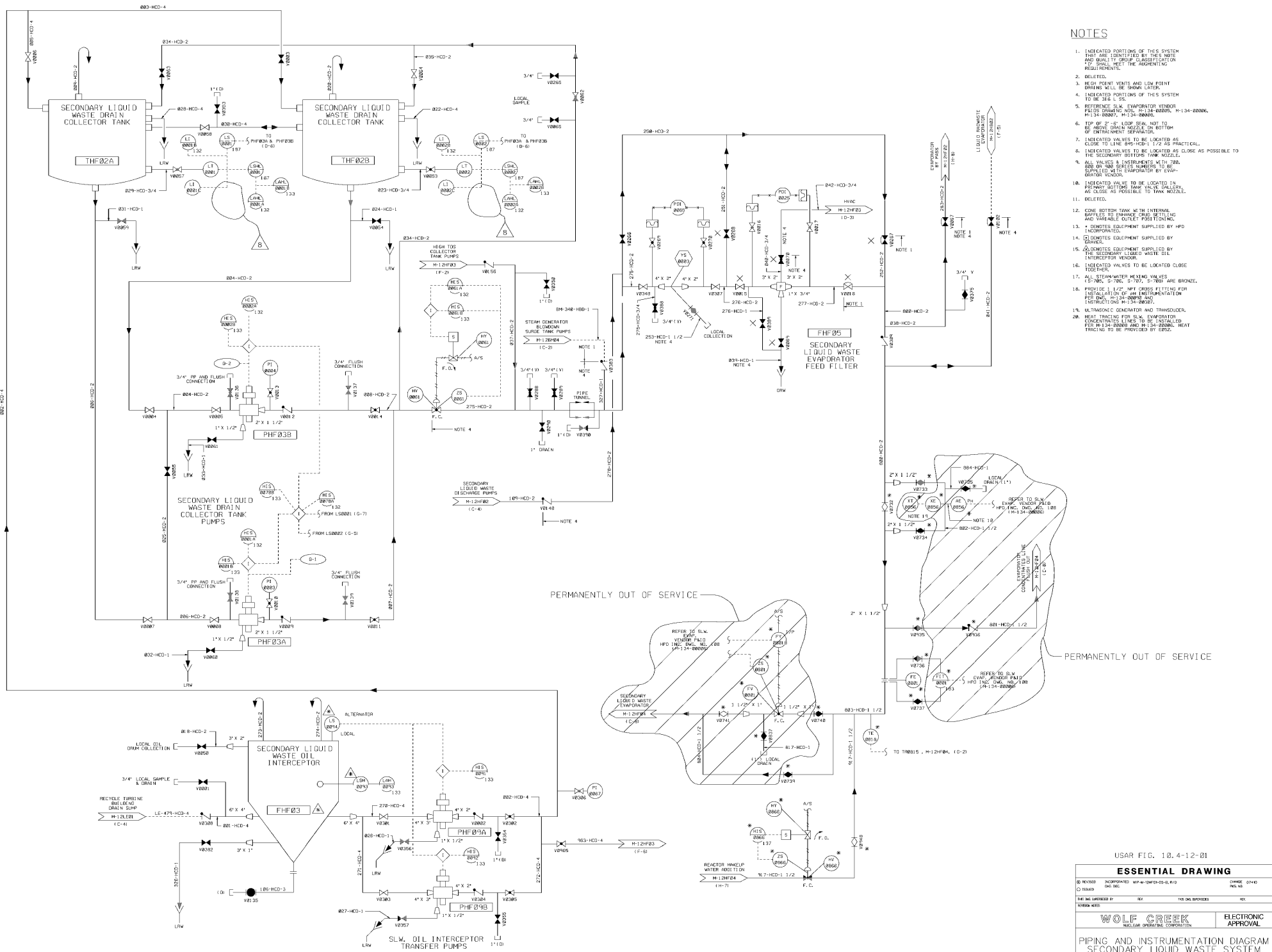
REVISION NOTES:

WOLF CREEK
 NUCLEAR OPERATING CORPORATION

ELECTRONIC APPROVAL

PIPING & INSTRUMENTATION DIAGRAM
 AUXILIARY TURBINES
 AUXILIARY FEEDWATER PUMP TURBINE

SCALE: NONE DRAWING NUMBER: M-12FC02 SHEET: 25
 34X44 E. SIZE



- NOTES**
1. INDICATED PORTIONS OF THIS SYSTEM ARE IDENTIFIED BY THIS NOTE AND QUALITY GROUP CLASSIFICATION SHALL MEET THE APPROPRIATE REQUIREMENTS.
 2. DELETED.
 3. HIGH POINT VENTS AND LOW POINT DRAINS WILL BE SHOWN LATER.
 4. INDICATED PORTIONS OF THIS SYSTEM TO BE 3/8" L.S.
 5. REFERENCE SLK EVAPORATOR VENDOR PIDS DRAWING NOS. M-134-00008, M-134-00009, M-134-00007, M-134-00006.
 6. TOP OF 2" x 1/2" LOOP SEAL NOT TO BE ABOVE DRAIN NOZZLE ON BOTTOM OF ENTRAINMENT SEPARATOR.
 7. INDICATED VALVES TO BE LOCATED AS CLOSE TO LINE M-12HF01 1/2" AS PRACTICAL.
 8. INDICATED VALVES TO BE LOCATED AS CLOSE AS POSSIBLE TO THE SECONDARY LIQUID WASTE OIL INTERCEPTOR VENDOR.
 9. ALL VALVES & INSTRUMENTS WITH TAGS, ORS OR TAG SERIES NUMBERS TO BE SUPPLIED WITH EVAPORATOR BY EVAPORATOR VENDOR.
 10. INDICATED VALVE TO BE LOCATED IN PREVENT BOTTOMING TANK VALVE GALLERY AS CLOSE AS POSSIBLE TO TANK NOZZLE.
 11. DELETED.
 12. CODE BOTTOM TANK WITH INTERNAL Baffles TO ENHANCE OIL SETTLING AND VARIABLE OILLET FREEDOM.
 13. * DENOTES EQUIPMENT SUPPLIED BY HPD INCORPORATED.
 14. * DENOTES EQUIPMENT SUPPLIED BY CLOMATES EQUIPMENT SUPPLY.
 15. * DENOTES EQUIPMENT SUPPLIED BY THE SECONDARY LIQUID WASTE OIL INTERCEPTOR VENDOR.
 16. INDICATED VALVES TO BE LOCATED CLOSE TOGETHER.
 17. ALL STEAM/WATER HEATING VALVES (F-200, F-206, F-207, F-208) ARE BRONZE.
 18. PROVIDE 1 1/2" NPT GROSS THREAD FOR INSTALLATION OF AN INSTRUMENTATION FEED THROUGH VALVE AND INSTRUMENTS M-134-00007.
 19. ULTRASONIC GENERATOR AND TRANSDUCER.
 20. HEAT TRACING FOR SLK EVAPORATOR CONDENSATES LINES TO BE INSTALLED PER M-134-00008 AND M-134-00009. HEAT TRACING TO BE PROVIDED BY SHOP.

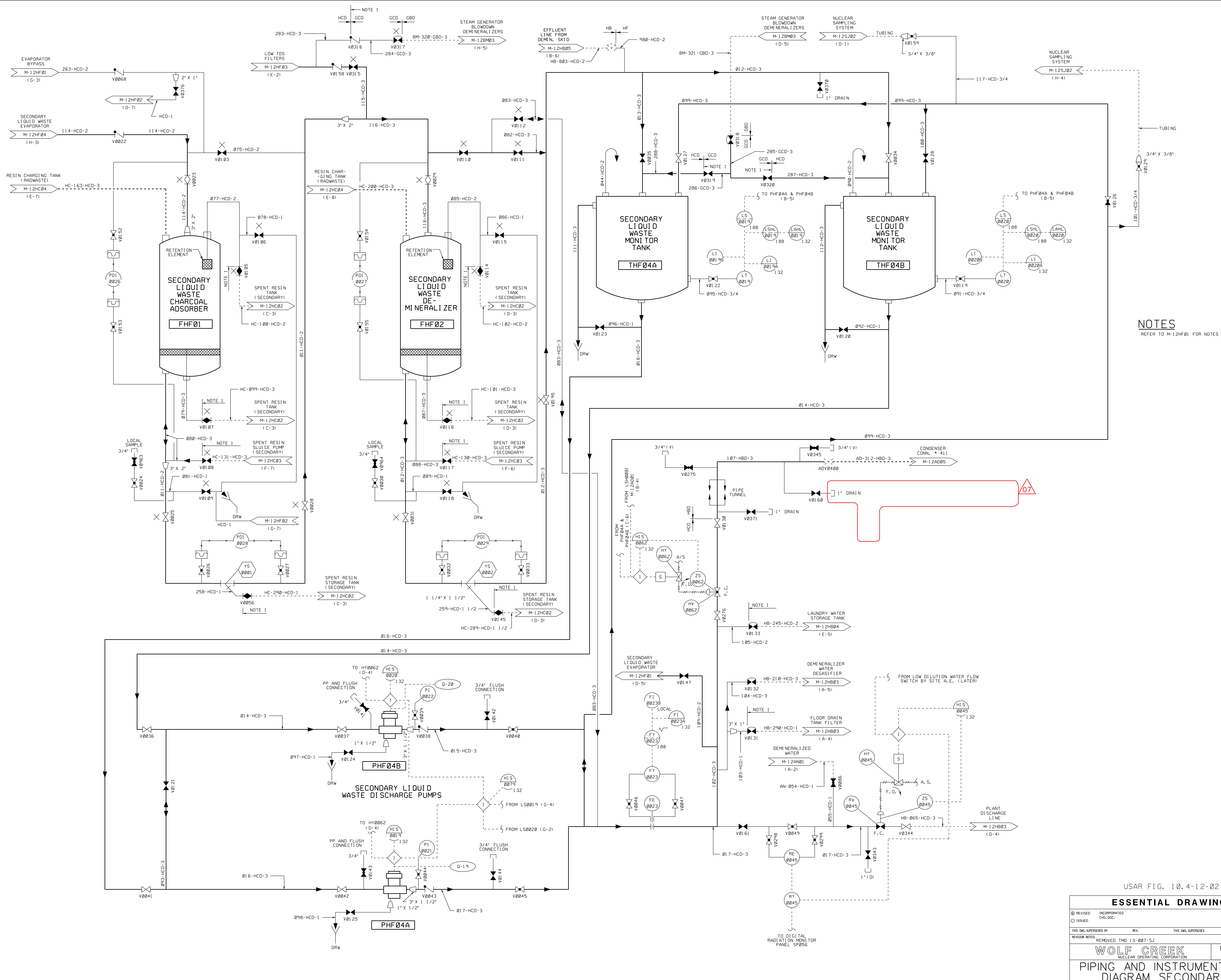
PERMANENTLY OUT OF SERVICE

PERMANENTLY OUT OF SERVICE

USAR FIG. 10.4-12-01

ESSENTIAL DRAWING			
REVISION	INCORPORATED WPA M-12HF01-03-01, R10	DATE	07/40
ISSUED	DATE	DATE	DATE
DESIGNED BY	REV	TYPE	DATE
WOLF CREEK		ELECTRONIC APPROVAL	
PIPING AND INSTRUMENTATION DIAGRAM SECONDARY LIQUID WASTE SYSTEM			
SCALE	DRAWING NUMBER	SHEET	OF
NONE	M-12HF01	08	08

Released by Document Services Release Date: 04/09/02



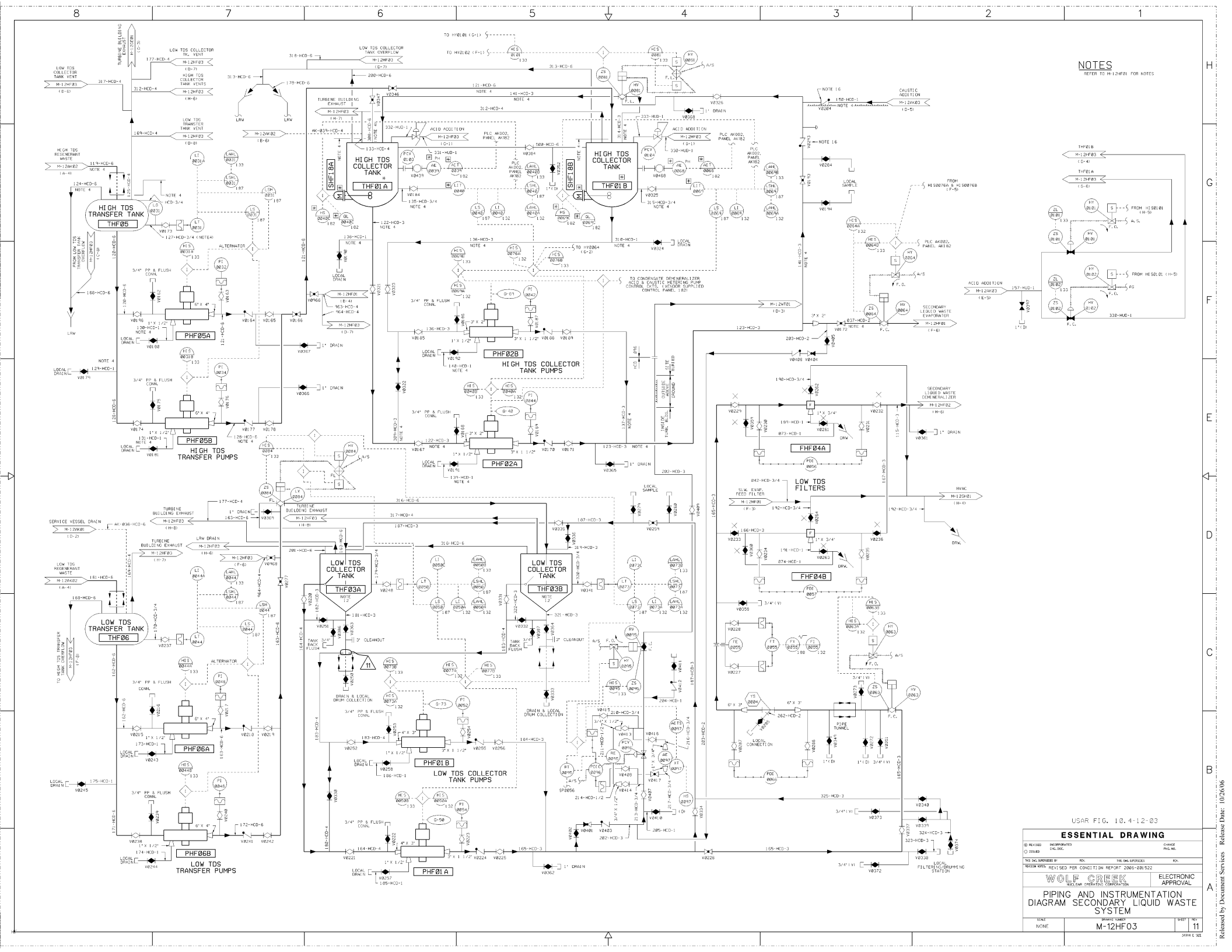
NOTES
REFER TO M-12HF01 FOR NOTES

USAR FIG. 10.4-12-02

ESSENTIAL DRAWING

REVISION	INCORPORATED	CHANGE
ISSUED	CHG. DOC.	PKG. NO.
THIS DWG. SUPERSEDES BY	REV.	THIS DWG. SUPERSEDES
REVISION NOTES:	REMOVED TMD 13-007-5J	
WOLF CREEK NUCLEAR OPERATING CORPORATION		ELECTRONIC APPROVAL
PIPING AND INSTRUMENTATION DIAGRAM SECONDARY LIQUID WASTE SYSTEM		
SCALE	DRAWING NUMBER	SHEET
NONE	M-12HF02	07



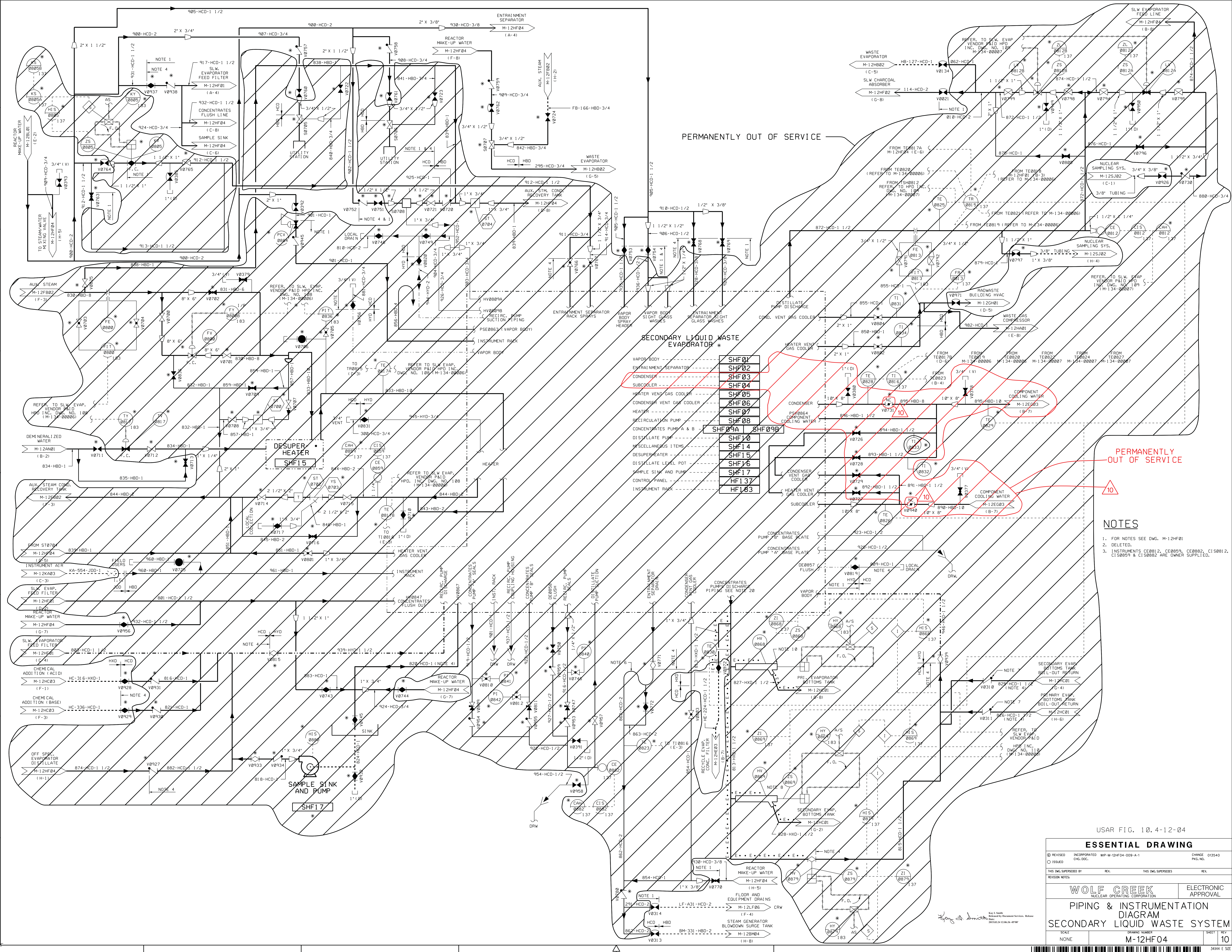


NOTES
REFER TO M-12HF01 FOR NOTES

USAR FIG. 10.4-12-03

ESSENTIAL DRAWING			
REVISION	DESCRIPTION	DATE	BY
01	ISSUED FOR CONSTRUCTION	08/11/03	WOLF CREEK
02	INCORPORATED CHANGES	09/11/03	WOLF CREEK
03	REVISED FOR CONSTRUCTION	10/11/03	WOLF CREEK
WOLF CREEK NUCLEAR OPERATIONS		ELECTRONIC APPROVAL DATE: 10/11/03	
PIPING AND INSTRUMENTATION DIAGRAM SECONDARY LIQUID WASTE SYSTEM			
TITLE	PROJECT NUMBER	DATE	REV.
NONE	M-12HF03	10/11/03	11

Released by Document Services - Release Date: 10/26/06



PERMANENTLY OUT OF SERVICE

PERMANENTLY OUT OF SERVICE

- SHF01
- SHF02
- SHF03
- SHF04
- SHF05
- SHF06
- SHF07
- SHF08
- SHF09A
- SHF09B
- SHF10
- SHF14
- SHF15
- SHF16
- SHF17
- HF137

NOTES

1. FOR NOTES SEE DWG. M-12HF01
2. DELETED.
3. INSTRUMENTS CE8812, CE8859, CE8882, CI5812, CI5859 & CI5882 ARE OWNER SUPPLIED.

USAR FIG. 10.4-12-04

ESSENTIAL DRAWING

REVISED	INCORPORATED	WP-M-12HF04-009-A-1	CHANGE 015540
ISSUED	CHG. DOC.		PKG. NO.

THIS DWG. SUPERSEDES	REV.	THIS DWG. SUPERSEDES	REV.
----------------------	------	----------------------	------

WOLF CREEK
NUCLEAR OPERATING CORPORATION

ELECTRONIC APPROVAL
PIPING & INSTRUMENTATION DIAGRAM
SECONDARY LIQUID WASTE SYSTEM

SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12HF04	10	10

