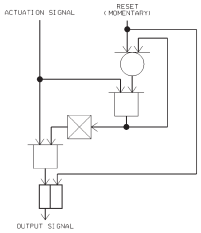
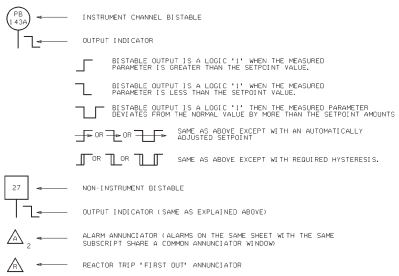
LOGIC SYMBOLS

SYMBOL	LOGIC FUNCTION	DESCRIPTION
	OR	A DEVICE WHICH PRODUCES AN OUTPUT WHEN ANY ONE INPUT (OR MORE) EXISTS.
	NOT	A DEVICE WHICH PRODUCES AN OUTPUT ONLY WHEN THE INPUT DOES NOT EXIST.
	AND	A DEVICE WHICH PRODUCES AN OUTPUT ONLY WHEN EVERY INPUT EXISTS.
	COINCIDENCE (2 OUT OF 3 SHOWN)	A DEVICE WHICH PRODUCES AN OUTPUT WHEN THE PRESCRIBED NUMBER (OR MORE) OF INPUTS EXIST (EXAMPLE 2 INPUTS MUST EXIST FOR AN OUTPUT).
	ADJUSTABLE TIME DELAY	A DEVICE WHICH PRODUCES AN OUTPUT FOLLOWING A DEFINITE INTENTIONAL TIME DELAY AFTER RECEIVING AN INPUT.
	OFF RETURN MEMORY	A DEVICE WHICH RETAINS THE CONDITION OF OUTPUT CORRESPONDING TO THE LAST ENERGIZED INPUT, EXCEPT UPON INTERRUPTION OF POWER IT RETURNS TO THE OFF CONDITION.
	RETENTIVE MEMORY	A DEVICE WHICH RETAINS THE CONDITION OF OUTPUT CORRESPONDING TO THE LAST ENERGIZED INPUT (REGARDLESS OF POWER INTERRUPTION) -- UPON INTERRUPTION OF POWER, CONDITION STATUS IS MAINTAINED (NO RESET OCCURS) AND THE SAME OUTPUT SIGNAL IS RE-ESTABLISHED WHEN POWER IS RESTORED.
	RETENTIVE MEMORY WITH ACTUATION BLOCK	A DEVICE HAVING RETENTIVE MEMORY AND ACTUATION SIGNAL BLOCK LOGIC FUNCTIONS AS INDICATED BY THE DIAGRAM BELOW.



	ANALOG GATE	A DEVICE WHICH PERMITS AN ANALOG SIGNAL TO PASS IN AN ISOLATED CIRCUIT IF THE CONTROL LOGIC INPUT EXISTS.

ADDITIONAL SYMBOLS



DEVICE FUNCTION LETTERS AND NUMBERS

FB	FLOW CHANNEL
LB	LEVEL CHANNEL
NC	NUCLEAR CHANNEL
PB	PRESSURE CHANNEL
RC	RADIATION CHANNEL
SB	SPEED CHANNEL
TB	TEMPERATURE CHANNEL
ZB	POSITION CHANNEL
20	ELECTRIC OPERATED VALVE
27	UNDERVOLTAGE RELAY
33	POSITION SWITCH
52	AC CIRCUIT BREAKER
63	PRESSURE SWITCH
71	LEVEL SWITCH
80	FLOW SWITCH
81	UNDERFREQUENCY RELAY

GENERAL NOTES (FOR ALL SHEETS)

1. ON ALL LOGIC CIRCUITS THE INDICATED ACTUATION OF A SYSTEM OR DEVICE OCCUR WHEN A LOGIC "1" SIGNAL IS PRESENT EXCEPT WHERE INDICATED OTHERWISE. ALL BISTABLES ARE "DE-ENERGIZED TO ACTUATE" SUCH THAT A LOGIC 1 SIGNAL IS DEFINED TO BE PRESENT WHEN THE BISTABLE OUTPUT VOLTAGE IS OFF.
2. EXCEPT WHERE INDICATED OTHERWISE, THE FOLLOWING IS TRUE: ALL LOGIC CIRCUITS ARE REDUNDANT, THAT IS, EVERY LOGIC CIRCUIT SHOWN HAS A DUPLICATE LOCATED IN A SEPARATE CABINET. ALL BISTABLES, CIRCUIT BREAKERS, ANNUNCIATORS, COMPUTER INPUTS, AND INDICATOR LAMPS ARE NOT REDUNDANT. MANUAL CONTROLS DO NOT HAVE REDUNDANT ACTUATORS, BUT DO HAVE REDUNDANT CONTACTS WHERE LOGIC IS REDUNDANT. ALL INDICATOR LAMPS, ANNUNCIATORS, AND COMPUTER INPUTS ARE CONNECTED TO BOTH TRAINS (WHERE LOGIC IS REDUNDANT) SO THAT A SIGNAL IN EITHER TRAIN WILL ACTUATE.
3. WHEREVER A PROCESS SIGNAL IS USED FOR CONTROL AND IS DERIVED FROM A PROTECTION CHANNEL, ISOLATION MUST BE PROVIDED.
4. THIS SET OF DRAWINGS ILLUSTRATES THE FUNTIONAL REQUIREMENTS OF THE REACTOR CONTROL AND PROTECTION SYSTEM, INCLUDING ENGINEERED SAFEGUARDS. THESE DRAWINGS DO NOT REPRESENT ACTUAL HARDWARE IMPLEMENTATION. FOR HARDWARE IMPLEMENTATION, REFER TO THE FOLLOWING LIST:

FUNCTIONAL DIAGRAM	BLOCK OR WIRING DIAGRAM
REACTOR PROTECTION SYSTEM (SHEETS 1 TO 8 AND 15 TO 16)	DRAWING NUMBERS: 5655048, 5655050, 565051, 5756037, 1189E15, 271C135, 7243058, 1884H07
REACTOR CONTROL SYSTEM SHEETS 9 TO 14 AND 17 TO 18)	DRAWING NUMBERS: 5655052, 271C135, 8756037

5. FOR THIS SET OF DRAWINGS ALL SWITCHES, PUSHBUTTONS, ANNUNCIATORS, AND INDICATORS (EXCEPT FOR THE N.E.S. PROCESS SYSTEMS INDICATORS, CONTROLLERS, AND MANUAL-AUTO STATIONS) WHICH ARE MOUNTED ON THE MAIN CONTROL BOARD ARE SUPPLIED BY OTHERS. IN ADDITION TO THE ABOVE, SCOPE BY OTHERS IS ALSO INDICATED DIRECTLY ON SHEETS WITHIN THIS SET.

INDEX

TITLE	SH. NO.	SUBS
INDEX AND SYMBOLS	1	1 2 3 4 5 6
REACTOR TRIP SIGNALS	2	1 2 3 3 3 4
NUCLEAR INSTR. AND MANUAL TRIP SIGNALS	3	1 1 1 1 2 2
NUCLEAR INSTR. PERMESSIVES AND BLOCKS	4	1 1 2 2 3 3
PRIMARY COOLANT SYSTEM TRIP SIGNALS	5	1 2 3 3 3 3
PRESSURIZER TRIP SIGNALS	6	1 1 2 3 3 3
STEAM GENERATOR TRIP SIGNALS	7	1 1 2 2 3 3
SAFEGUARDS ACTUATION SIGNALS	8	1 2 3 3 3 3
ROD CONTROLS & ROD BLOCKS	9	1 2 3 3 3 4
STEAM DUMP CONTROL	10	1 2 3 3 3 3
PRESSURIZER PRESSURE & LEVEL CONTROL	11	1 2 3 4 4 4
PRESSURIZER HEATER CONTROL	12	1 2 2 2 2 2
FEEDWATER CONTROL & ISOLATION	13	1 2 3 3 4 4
FEEDWATER CONTROL & ISOLATION	14	1 2 3 3 3 3
AUXILIARY FEEDWATER PUMPS STARTUP	15	1 2 3 3 4 4
TURBINE TRIPS, RUNBACKS & OTHER SIGNALS	16	1 2 3 3 3 3
PRESSURIZER PRESSURE RELIEF SYS. (TRAIN A)	17	- - - 1 1 1
PRESSURIZER PRESSURE RELIEF SYS. (TRAIN B)	18	- - - 1 1 1

ESSENTIAL DRAWING

REVISION	INCORPORATED	CHANGE NO.	THIS DWG SUPERSEDES	M-744-00018	REV. NO.
			THIS DWG SUPERSEDED BY		REV.

REVISION NOTES: ELECTRONICALLY CONVERTED PER AP 05-018

REV 1

WOLF CREEK NUCLEAR OPERATING CORPORATION — ELECTRONIC APPROVAL

USAR FIG. 7.2-1-01

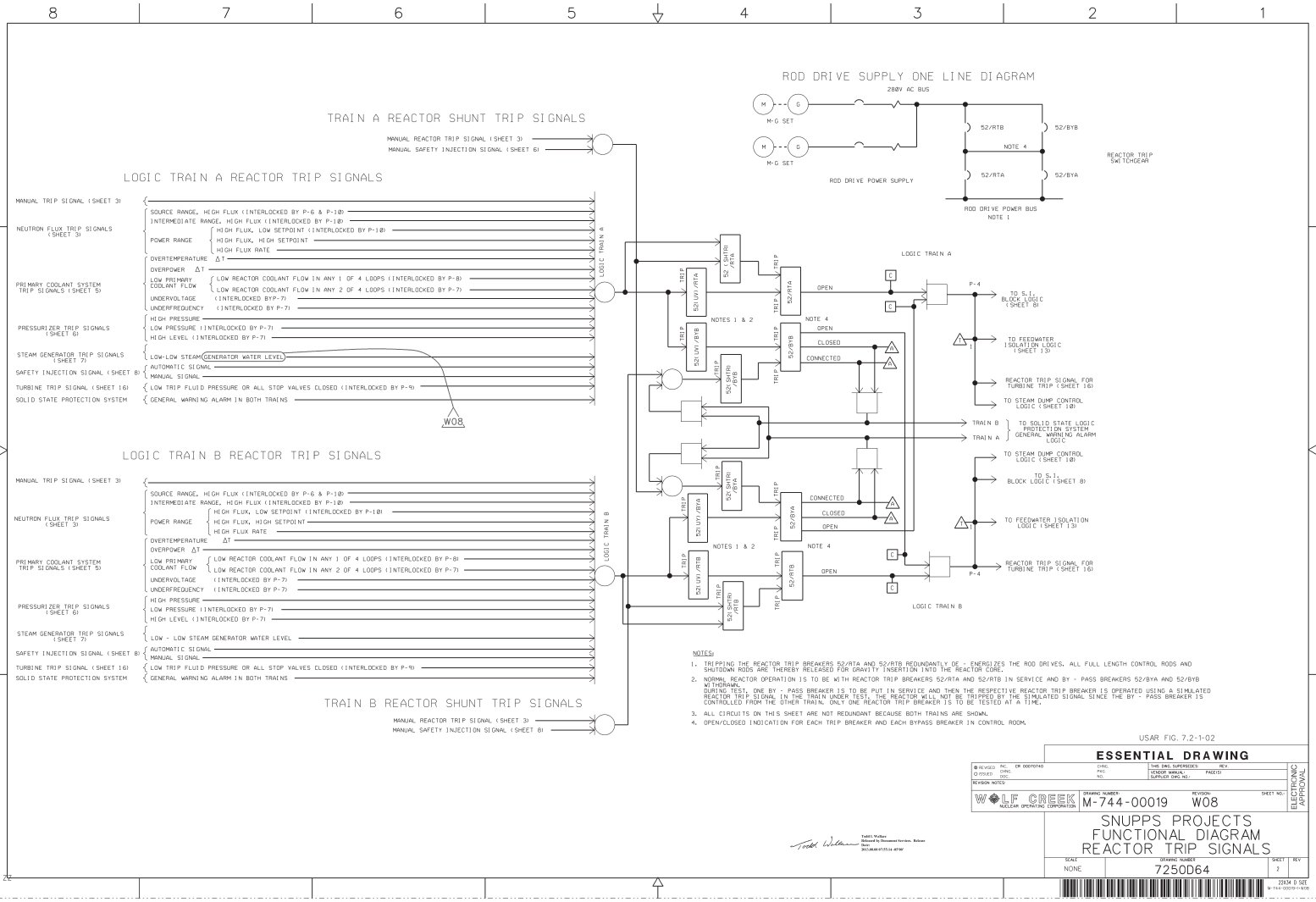
M-744-00018 W06

SNUPPS PROJECTS FUNCTIONAL DIAGRAM INDEX AND SYMBOLS

SCALE	DRAWING NUMBER	SHEET	REV
NONE	7250D64	1	

22X34 D SIZE

Released by Document Services Release Date: 12/04/02



USAR FIG. 7.2-1-02

ESSENTIAL DRAWING

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CYRSED CHRC	MEC	VENDOR MANUAL	PAGE(S)
DOC.	NO.	SUPPLIER DWG.NO./	
REVISION NOTES:			

ELECTRONIC APPROVAL

WOLF CREEK NUCLEAR OPERATING CORPORATION

DRAWING NUMBER: M-744-00019 REVISION: W08 SHEET NO.:

Todd L. Wallace
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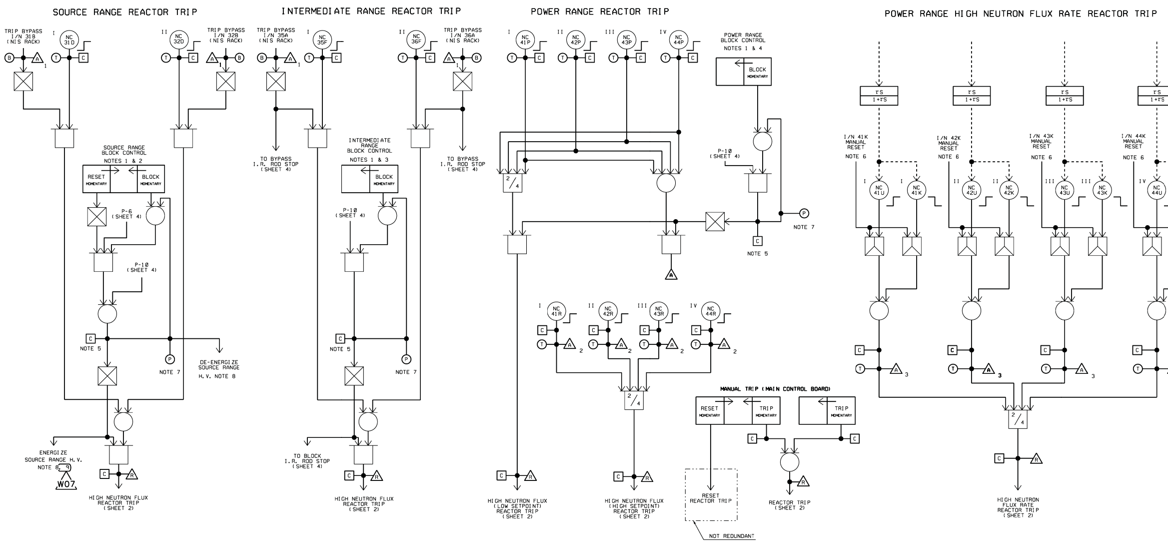
20130618 075514 -05'00'

SNUPPS PROJECTS FUNCTIONAL DIAGRAM REACTOR TRIP SIGNALS

SCALE	DRAWING NUMBER	SHEET	REV
NONE	7250D64	2	

22X34 D SIZE
M-744-00019-W08



NOTES

1. THE REDUNDANT MANUAL BLOCK CONTROLS CONSIST OF TWO CONTROLS ON THE CONTROL BOARD FOR EACH RANGE. ONE FOR EACH TRAIN.
2. I/N 33A IS IN LOGIC TRAIN A.
   I/N 33B IS IN LOGIC TRAIN B.
3. I/N 38A IS IN LOGIC TRAIN A.
   I/N 38B IS IN LOGIC TRAIN B.
4. I/N 47A IS IN LOGIC TRAIN A.
   I/N 47B IS IN LOGIC TRAIN B.
5. TWO COMPUTER INPUTS ARE CONNECTED TO THIS CIRCUIT. INDIVIDUAL FOR EACH TRAIN.
6. MANUAL RESET CONTROLS CONSIST OF FOUR MOMENTARY CONTROLS IN THE CONTROL ROOM. ONE CONTROL FOR EACH INSTRUMENT CHANNEL.
7. TWO PERMISSIVE STATUS LIGHTS ARE CONNECTED TO THIS CIRCUIT. INDIVIDUAL FOR EACH TRAIN.
8. EACH SOURCE RANGE FLUX DETECTOR IS ENERGIZED AND DE-ENERGIZED BY LOGIC OUTPUT FROM A SINGLE TRAIN. THE TWO SOURCE RANGE FLUX DETECTORS (N-31 AND N-32) ARE ON SEPARATE TRAINS.
9. IF THE SOURCE RANGE DETECTOR'S MANUAL HV ON/OFF SWITCH IS IN THE 'NORMAL' POSITION, THEN THE DETECTOR WILL ENERGIZE AUTOMATICALLY BY LOGIC OUTPUT FROM A SINGLE TRAIN. IF THE SOURCE RANGE DETECTOR'S MANUAL HV ON/OFF SWITCH IS IN THE 'OFF' POSITION, THEN OPERATOR ACTION TO PLACE THE SWITCH TO THE 'NORMAL' POSITION WILL BE REQUIRED BEFORE THE LOGIC OUTPUT AUTOMATICALLY ENERGIZES THE DETECTOR.

W07

GREGORY S. KINN LICENSED 19877 KANSAS PROFESSIONAL ENGINEER

Digitally signed by Gregory S. Kinn Date: 2018.04.28 08:11:55 -05'00'

Laura A. Schultz

USAR FIG. 7.2-1-03

ESSENTIAL DRAWING

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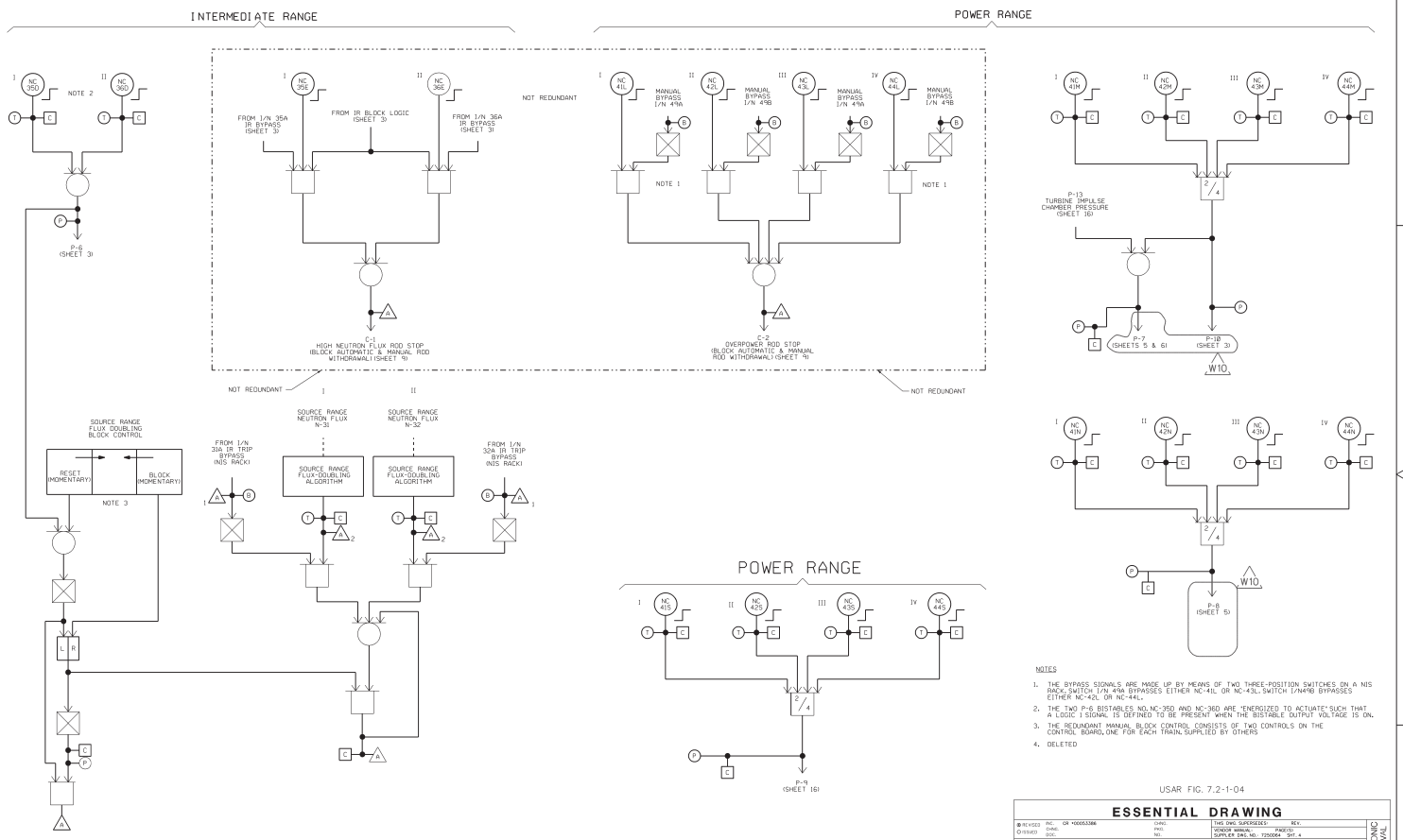
REVISION NOTES:				
WOLF CREEK NUCLEAR OPERATING CORPORATION	DRAWING NUMBER: M-744-00020	REVISION: W07	SHEET NO.: 1	

SNUPPS PROJECTS
FUNCTIONAL DIAGRAM
NUCLEAR INSTR. & MANUAL TRIP SIGNALS

SCALE	DRAWING NUMBER	SHEET	REV
NONE	7250D64	3	

34X44 E SIZE



NOTES

1. THE BYPASS SIGNALS ARE MADE UP BY MEANS OF TWO THREE-POSITION SWITCHES ON A NIS RACK. SWITCH 1/N 49A BYPASSES EITHER NC-41L OR NC-43L. SWITCH 1/N49B BYPASSES EITHER NC-42L OR NC-44L.
2. THE TWO P-6 BISTABLES NO. NC-35D AND NC-36D ARE "ENERGIZED TO ACTUATE" SUCH THAT A LOGIC 1 SIGNAL IS DEFINED TO BE PRESENT WHEN THE BISTABLE OUTPUT VOLTAGE IS ON.
3. THE REDUNDANT MANUAL BLOCK CONTROL CONSISTS OF TWO CONTROLS ON THE CONTROL BOARD, ONE FOR EACH TRAIN, SUPPLIED BY OTHERS
4. DELETED

USAR FIG. 7.2-1-04

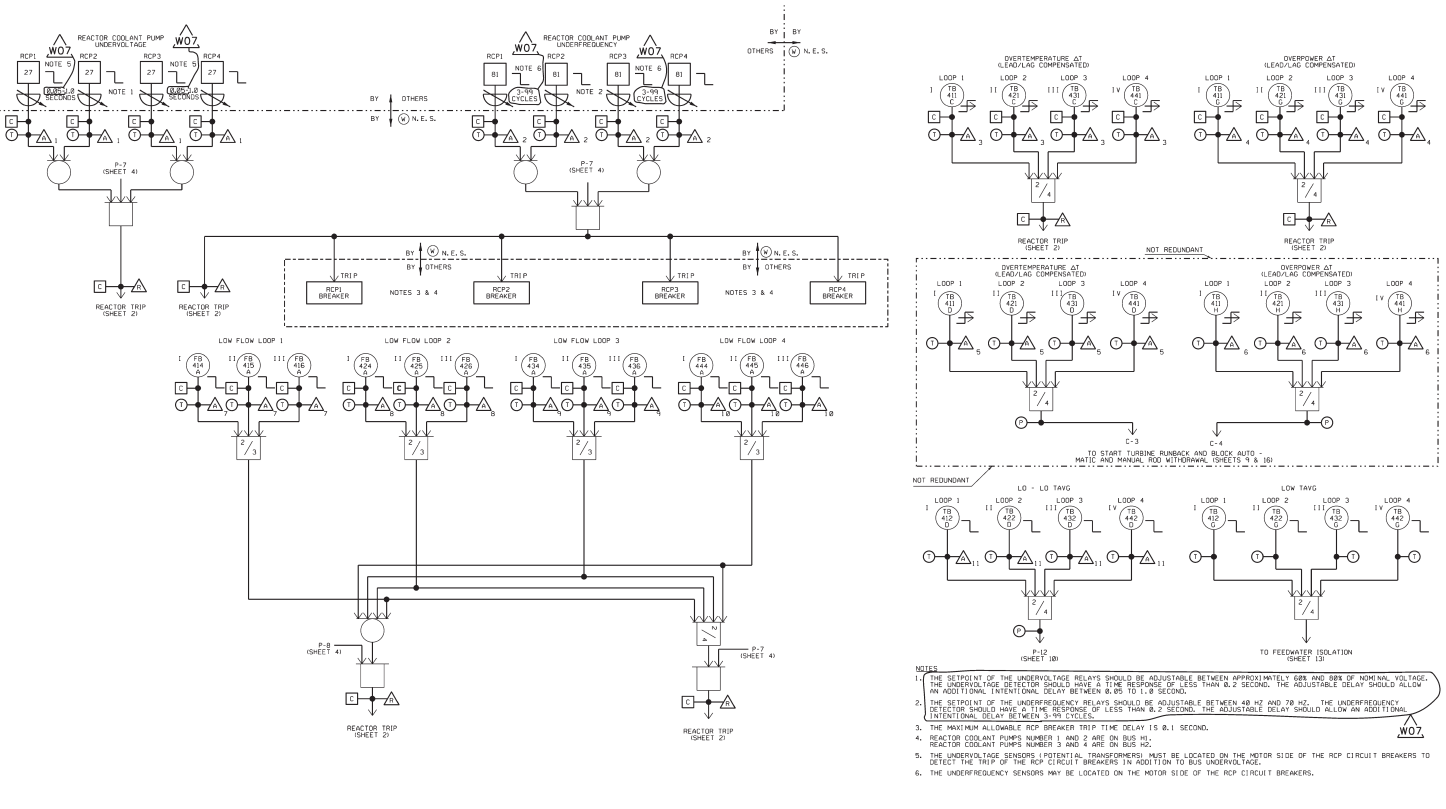
ESSENTIAL DRAWING

REVISED / ISSUED	INC. / DANE. / DOC.	CR 1000053386	ORIG. / REVS. / NO.
THIS DWG SUPERSEDES:	REV:		
VENDOR MANUAL / SUPPLIER DWG. NO. 7250D64	PAGE(S): SHT. 4		
REVISION NOTES:	DC4 08/21/2013		
WOLF CREEK NUCLEAR OPERATING CORPORATION	DRAWING NUMBER: M-744-00021	REVISION: W10	SHEET NO.:
ELECTRONIC APPROVAL			

SNUPPS PROJECTS FUNCTIONAL DIAGRAM NUCLEAR INSTR. PERMISSIVES & BLOCKS

SCALE	DRAWING NUMBER	SHEET	REV
NONE	7250D64	4	

22X34 D SIZE
M-744-00021-1-W10



NOTES

1. THE SETPOINT OF THE UNDERVOLTAGE RELAYS SHOULD BE ADJUSTABLE BETWEEN APPROXIMATELY 60% AND 80% OF NOMINAL VOLTAGE. THE UNDERVOLTAGE DETECTOR SHOULD HAVE A TIME RESPONSE OF LESS THAN 0.2 SECOND. THE ADJUSTABLE DELAY SHOULD ALLOW AN ADDITIONAL INTENTIONAL DELAY BETWEEN 0.95 TO 1.0 SECOND.
2. THE SETPOINT OF THE UNDERFREQUENCY RELAYS SHOULD BE ADJUSTABLE BETWEEN 48 HZ AND 70 HZ. THE UNDERFREQUENCY DETECTOR SHOULD HAVE A TIME RESPONSE OF LESS THAN 0.2 SECOND. THE ADJUSTABLE DELAY SHOULD ALLOW AN ADDITIONAL INTENTIONAL DELAY BETWEEN 3-99 CYCLES. W07
3. THE MAXIMUM ALLOWABLE RCP BREAKER TRIP TIME DELAY IS 0.1 SECOND.
4. REACTOR COOLANT PUMPS NUMBER 1 AND 2 ARE ON BUS H1. REACTOR COOLANT PUMPS NUMBER 3 AND 4 ARE ON BUS H2.
5. THE UNDERVOLTAGE SENSORS (POTENTIAL TRANSFORMERS) MUST BE LOCATED ON THE MOTOR SIDE OF THE RCP CIRCUIT BREAKERS TO DETECT THE TRIP OF THE RCP CIRCUIT BREAKERS IN ADDITION TO BUS UNDERVOLTAGE.
6. THE UNDERFREQUENCY SENSORS MAY BE LOCATED ON THE MOTOR SIDE OF THE RCP CIRCUIT BREAKERS.

BRIAN C. WILLIAMS LICENSED 10069 KANSAS PROFESSIONAL ENGINEER

Digitally signed by Brian C Williams
Date: 2011.11.21 11:45:52 -06'00'

Trudy J Seidler
Released by Document Services, Kokomo
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2011.11.21 11:45:09 -06'00'

USAR FIG. 7.2-1-05

ESSENTIAL DRAWING

⊕ REVISED ○ ISSUED	PIC: CHNG DOC:	CHNG: 013109 PKG: NO:	THIS DWG. SUPERSEDES: REV. VENDOR MANUAL: PAGE(S) SUPPLIER DWG. NO.: 7250D64

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WOLF CREEK NUCLEAR OPERATING CORPORATION

DRAWING NUMBER: M-744-00022 REVISION: W07 SHEET NO.

ELECTRONIC APPROVAL

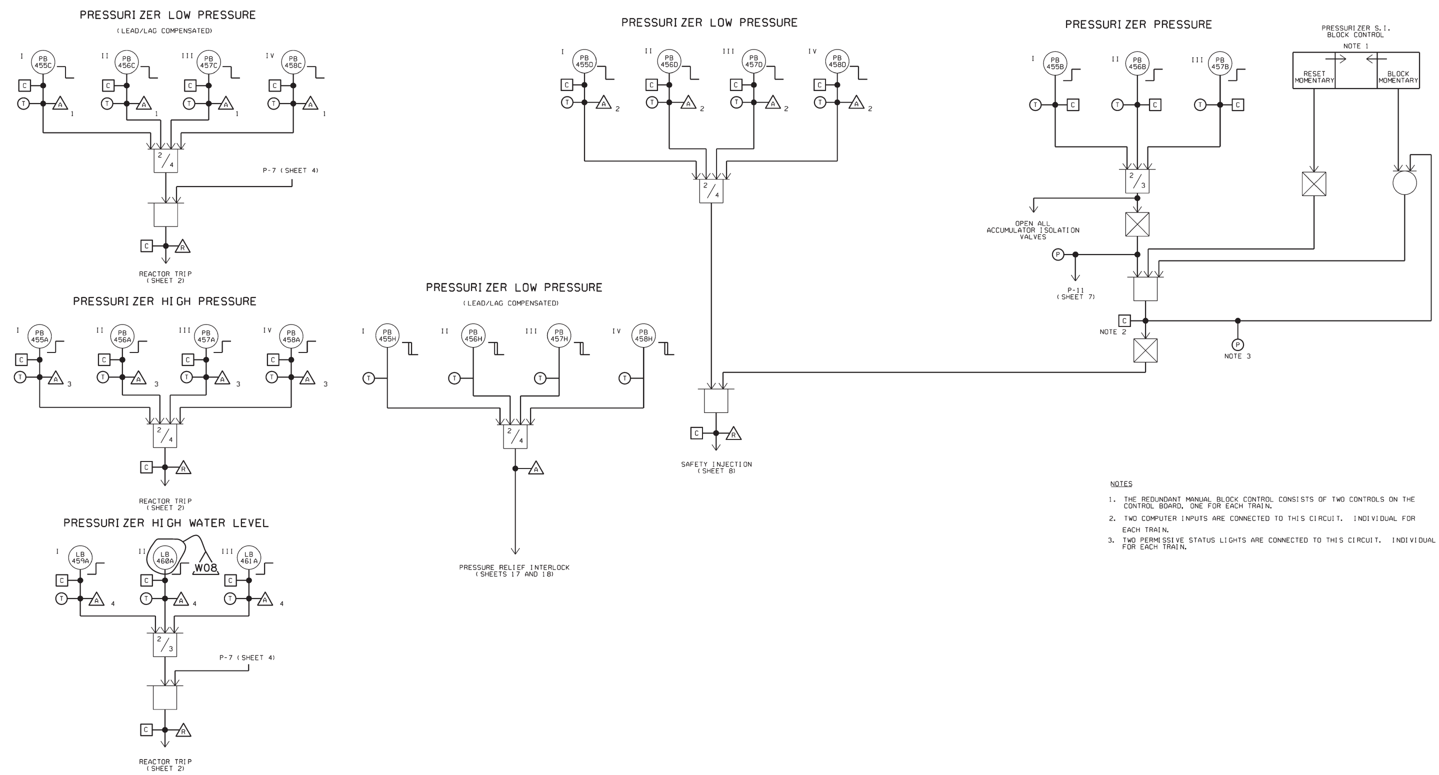
SNUPPS PROJECTS
FUNCTIONAL DIAGRAM
PRIMARY COOLANT SYSTEM TRIP SIGNALS

SCALE	DRAWING NUMBER	SHEET	REV.
NONE	7250D64	5	

M-744-00022-1-W07

22KM D SIZE

ZZ


PRESSURIZER LOW PRESSURE
(LEAD/LAG COMPENSATED)
PB 455C
PB 456C
PB 457C
PB 458C
P-7 (SHEET 4)
REACTOR TRIP (SHEET 2)
PRESSURIZER HIGH PRESSURE
PB 455A
PB 456A
PB 457A
PB 458A
REACTOR TRIP (SHEET 2)
PRESSURIZER HIGH WATER LEVEL
LB 459A
LB 460A
LB 461A
W08
P-7 (SHEET 4)
REACTOR TRIP (SHEET 2)
PRESSURIZER LOW PRESSURE
PB 455D
PB 456D
PB 457D
PB 458D
SAFETY INJECTION (SHEET 8)
PRESSURIZER LOW PRESSURE
(LEAD/LAG COMPENSATED)
PB 455H
PB 456H
PB 457H
PB 458H
PRESSURE RELIEF INTERLOCK (SHEETS 17 AND 18)
PRESSURIZER PRESSURE
PB 455B
PB 456B
PB 457B
PRESSURIZER S.I. BLOCK CONTROL
NOTE 1
RESET MOMENTARY
BLOCK MOMENTARY
OPEN ALL ACCUMULATOR ISOLATION VALVES
P-11 (SHEET 7)
NOTE 2
NOTE 3

NOTES

1. THE REDUNDANT MANUAL BLOCK CONTROL CONSISTS OF TWO CONTROLS ON THE CONTROL BOARD, ONE FOR EACH TRAIN.
2. TWO COMPUTER INPUTS ARE CONNECTED TO THIS CIRCUIT. INDIVIDUAL FOR EACH TRAIN.
3. TWO PERMISSIVE STATUS LIGHTS ARE CONNECTED TO THIS CIRCUIT. INDIVIDUAL FOR EACH TRAIN.

USAR FIG. 7.2-1-06

ESSENTIAL DRAWING

⊗ REVISED INC. CR 00036720 CHNG. PKG. NO.
○ ISSUED CHNG. DOC.
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VENDOR MANUAL: PAGE(S)
SUPPLIER DWG. NO.:
REVISION NOTES:

Trudy J Smither
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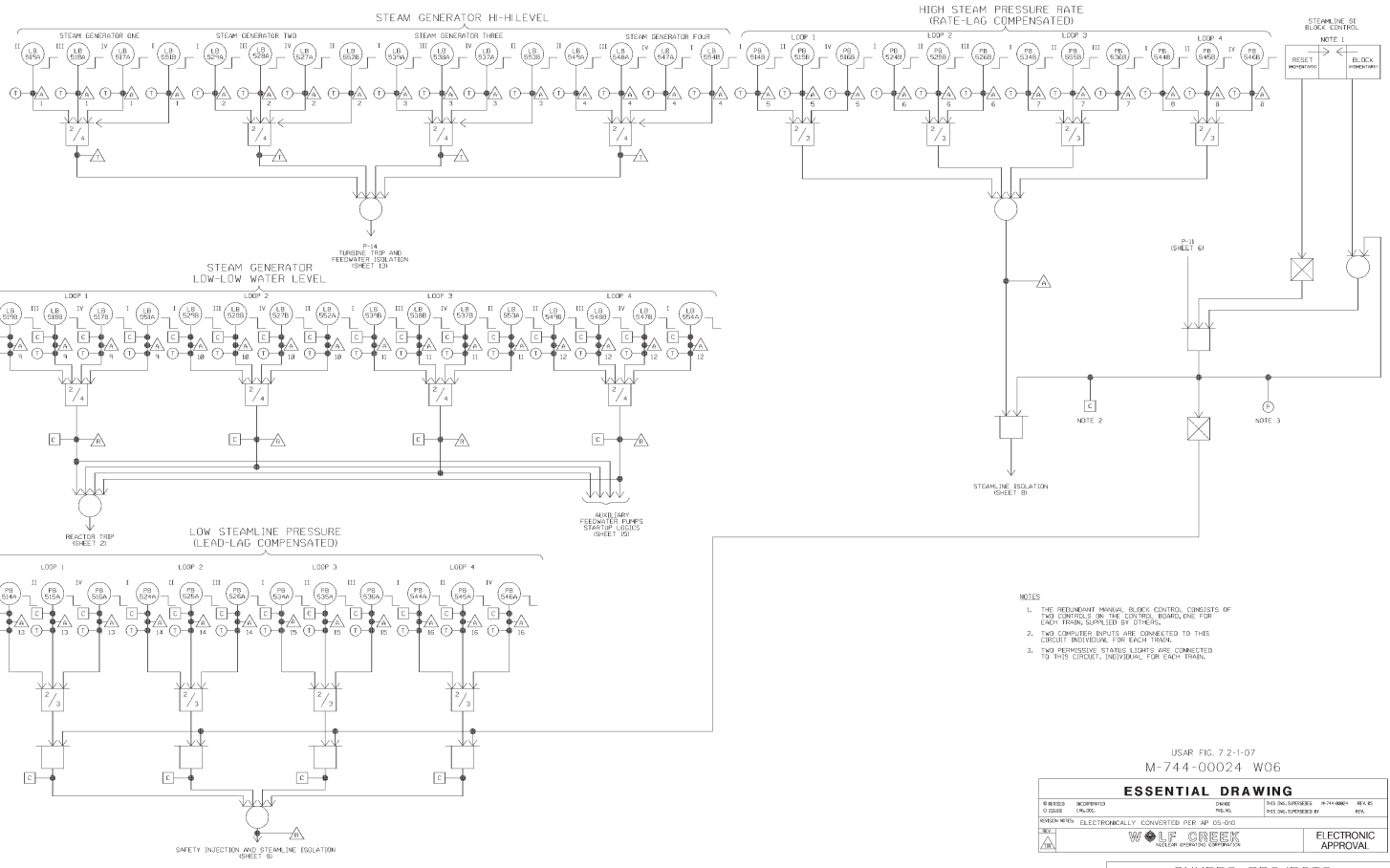
WOLF CREEK NUCLEAR OPERATING CORPORATION
DRAWING NUMBER: M-744-00023 REVISION: W08 SHEET NO.:
ELECTRONIC APPROVAL

SNUPPS PROJECTS
FUNCTIONAL DIAGRAM
PRESSURIZER TRIP SIGNALS

SCALE	DRAWING NUMBER	SHEET	REV
NONE	7250D64	6	

22X34 D SIZE
M-744-00023-1-W08



NOTES

1. THE REDUNDANT MANUAL BLOCK CONTROL CONSISTS OF TWO CONTROLS ON THE CONTROL BOARD, ONE FOR EACH TRAIN, SUPPLIED BY OTHERS.
2. TWO COMPUTER INPUTS ARE CONNECTED TO THIS CIRCUIT INDIVIDUAL FOR EACH TRAIN.
3. TWO PERMISSIVE STATUS LIGHTS ARE CONNECTED TO THIS CIRCUIT, INDIVIDUAL FOR EACH TRAIN.

USAR FIG. 7.2-1-07

M-744-00024 W06

ESSENTIAL DRAWING

⊕ REVISED	INCORPORATED		CHANGE	THIS DWG SUPERSEDES	M-744-00024 REV. 05
○ ISSUED	DWG./SPEC.		PKG. NO.	THIS DWG SUPERSEDED BY	REV.

REVISION NOTES: ELECTRONICALLY CONVERTED PER AP. 05-010

DES. / DR.

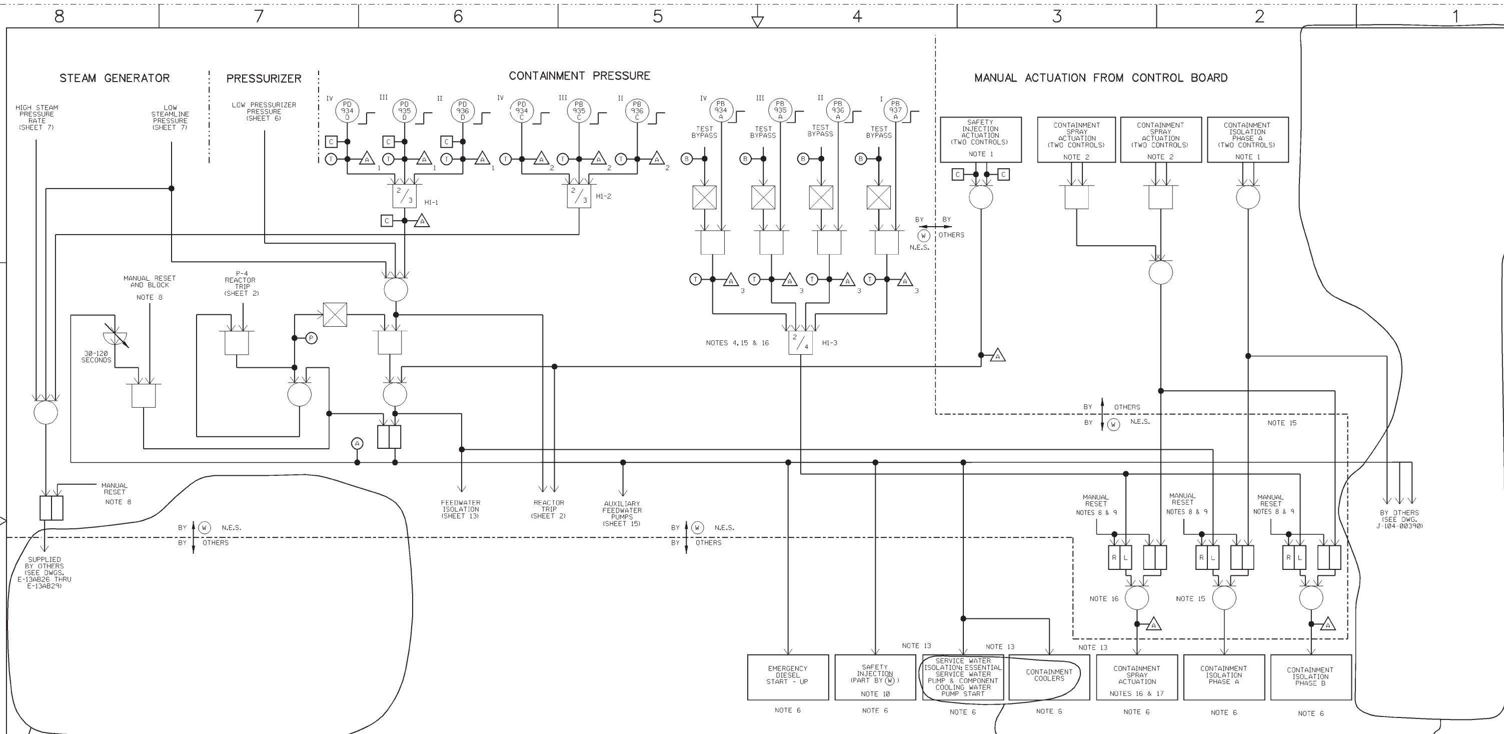
WOLF CREEK NUCLEAR OPERATING CORPORATION

ELECTRONIC APPROVAL

SNUPPS PROJECTS
FUNCTIONAL DIAGRAM
STEAM GENERATOR TRIP SIGNALS

SCALE	DRAWING NUMBER	SHEET	REV
NONE	7250D64	7	

22X34 D SIZE


STEAM GENERATOR
PRESSURIZER
CONTAINMENT PRESSURE
MANUAL ACTUATION FROM CONTROL BOARD
HIGH STEAM PRESSURE RATE (SHEET 7)
LOW STEAMLINE PRESSURE (SHEET 7)
LOW PRESSURIZER PRESSURE (SHEET 6)
MANUAL RESET AND BLOCK
NOTE 8
P-4 REACTOR TRIP (SHEET 2)
30-120 SECONDS
TEST BYPASS
NOTES 4,15 & 16
SAFETY INJECTION ACTUATION (TWO CONTROLS)
NOTE 1
CONTAINMENT SPRAY ACTUATION (TWO CONTROLS)
NOTE 2
CONTAINMENT ISOLATION PHASE A (TWO CONTROLS)
FEEDWATER ISOLATION (SHEET 13)
REACTOR TRIP (SHEET 2)
AUXILIARY FEEDWATER PUMPS (SHEET 15)
SUPPLIED BY OTHERS (SEE DWGS. E-13AB26 THRU E-13AB29)
BY OTHERS (SEE DWG. J-104-00390)
NOTE 15
MANUAL RESET NOTES 8 & 9
NOTE 16
NOTE 13
EMERGENCY DIESEL START - UP
SAFETY INJECTION (PART BY (W))
NOTE 10
SERVICE WATER ISOLATION; ESSENTIAL SERVICE WATER PUMP & COMPONENT COOLING WATER PUMP START
CONTAINMENT COOLERS
CONTAINMENT SPRAY ACTUATION
NOTES 16 & 17
CONTAINMENT ISOLATION PHASE A
CONTAINMENT ISOLATION PHASE B
NOTE 6
W07

NOTES

1. TWO MOMENTARY CONTROLS ON THE CONTROL BOARD. OPERATING EITHER CONTROL WILL ACTUATE.
2. THE MANUAL SPRAY ACTUATION CONSISTS OF FOUR MOMENTARY CONTROLS. ACTUATION WILL OCCUR ONLY IF TWO ASSOCIATED CONTROLS ARE OPERATED SIMULTANEOUSLY.
3. DELETED.
4. CONTAINMENT PRESSURE BISTABLES FOR SPRAY ACTUATION ARE ENERGIZE TO ACTUATE (OTHER BISTABLES ARE DE-ENERGIZE TO ACTUATE).
5. DELETED.
6. COMPONENTS ARE ALL INDIVIDUALLY SEALED IN (LATCHED), SO THAT LOSS OF THE ACTUATION SIGNAL WILL NOT CAUSE THESE COMPONENTS TO RETURN TO THE CONDITION HELD PRIOR TO THE ADVENT OF THE ACTUATION SIGNAL.
7. DELETED.
8. THE REDUNDANT MANUAL RESET CONSISTS OF TWO MOMENTARY CONTROLS ON THE CONTROL BOARD. ONE FOR EACH TRAIN.
9. SUPPLIED BY OTHERS.
10. SAFETY INJECTION SEQUENCE REQUIREMENTS (IF SEQUENCING IS NECESSARY) ARE SPECIFIED BY (W) NUCLEAR ENERGY SYSTEMS.
11. DELETED.
12. DELETED.
13. THE ACTUATION MAY BE DELAYED AND SEQUENCED IF THE EMERGENCY DIESEL POWER CAPABILITY IS LESS THAN THE TOTAL LOAD WITH ALL SYSTEMS STARTING. THE TIME DELAY(S), IF USED, MAY NOT EXCEED THE MAXIMUM STARTING TIME REQUIREMENTS FOR EACH SYSTEM.
14. DELETED.
15. SOME ENGINEERED SAFEGUARDS FUNCTIONS ARE NOT WITHIN THE FUNCTIONAL DESIGN SCOPE OF (W) NUCLEAR ENERGY SYSTEMS BUT ONLY SHOWN ON THIS SHEET AS THE FUNCTIONS ARE BUILT IN THE (W) SUPPLIED EQUIPMENT.
16. THE 2 OUT OF 4 COINCIDENCE, MEMORY, AND "OR" LOGIC ARE DUPLICATED WITHIN EACH TRAIN. SEPARATE OUTPUT RELAYS ARE ALSO PROVIDED IN EACH TRAIN. TO MINIMIZE FALSE CONTAINMENT SPRAY ONE OUTPUT RELAY SHOULD START THE PUMPS WHILE ANOTHER SHOULD OPEN THE SYSTEM VALVES.
17. THE CONTAINMENT SPRAY SYSTEM IS INDEPENDENT OF THE SAFETY INJECTION SYSTEM. THE SEQUENCE INTERLOCK IS SUCH THAT SPRAY WILL START WITHIN THE REQUIRED TIME INDEPENDENT OF THE SAFETY INJECTION SIGNAL STATUS.

USAR FIG. 7.2-1-08

ESSENTIAL DRAWING

⊗ REVISED / ○ ISSUED	INC. CHNG. DOC.	CHNG. PKG. NO. 10395	THIS DWG. SUPERSEDES: REV. / VENDOR MANUAL: PAGE(S) / SUPPLIER DWG. NO.: 7250D64

REVISION NOTES:

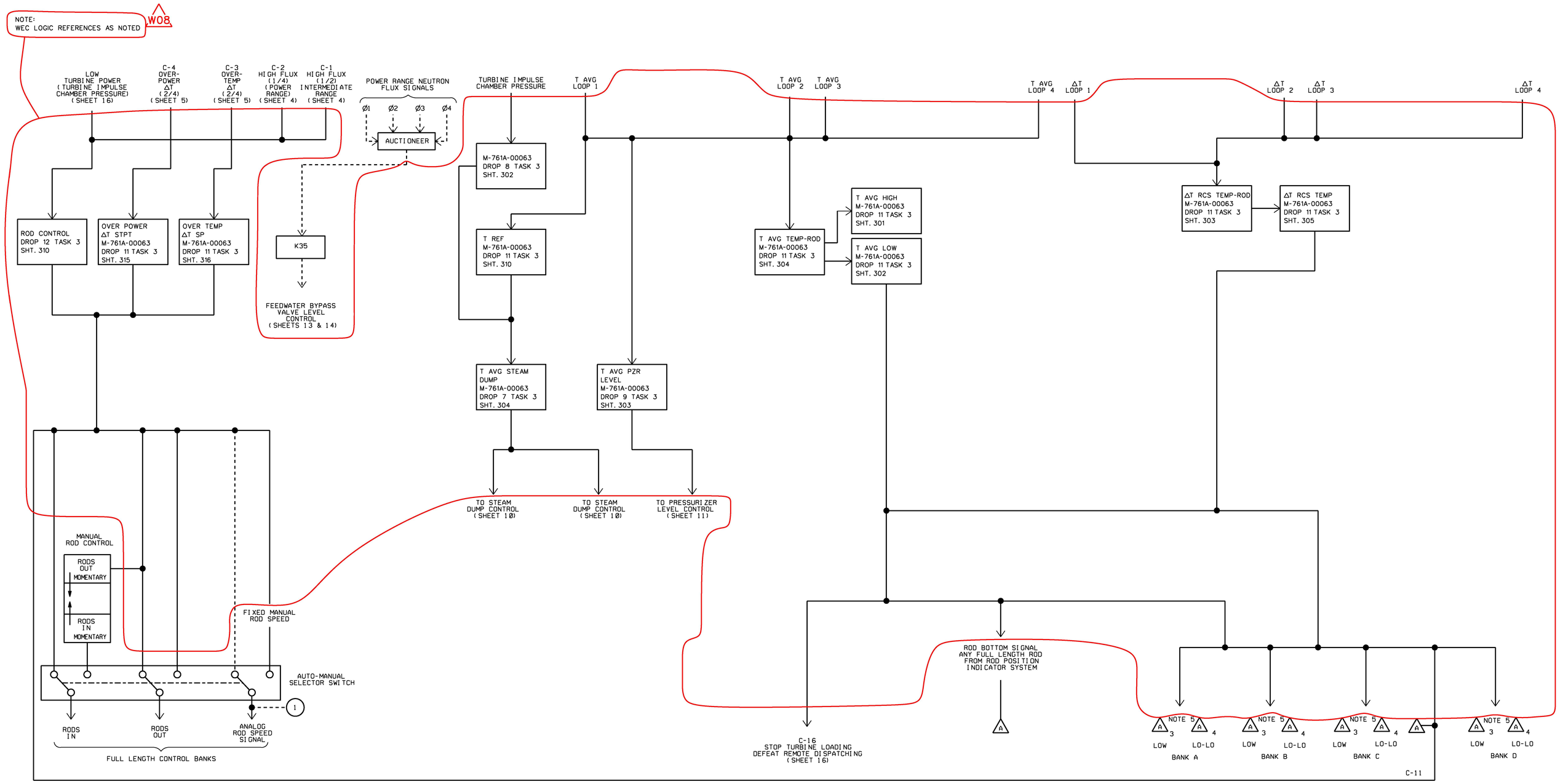
WOLF CREEK NUCLEAR OPERATING CORPORATION — DRAWING NUMBER: M-744-00025 — REVISION: W07 — SHEET NO.: — ELECTRONIC APPROVAL

SNUPPS PROJECTS
FUNCTIONAL DIAGRAM
SAFEGUARDS ACTUATION SIGNALS

SCALE	DRAWING NUMBER	SHEET	REV
NONE	7250D64	8	

22X34 D SIZE

Released by Document Services Release Date: 12/16/02



NOTES

1. ALL CIRCUITS ON THIS SHEET ARE NOT REDUNDANT.
2. KOT MAY VARY INVERSELY PROPORTIONAL TO LOAD WITH A FIXED LIMIT OR MAY VARY IN TWO VARY IN TWO DISCRETE STEPS WITH BREAK POINTS AT 30 TO 50% AND 60 TO 80% TURBINE LOAD.
3. THE SUMMER OUTPUTS HAVE FIXED MANUALLY ADJUSTABLE UPPER LIMITS.
4. THE ROD DIRECTION BISTABLES NO. SB-412A AND SB-412B ARE 'ENERGIZED TO ACTUATE'.
5. ALARM 1, ALARM 2, ALARM 3, AND ALARM 4 MUST HAVE REFLASH CAPABILITY.

REFERENCE
M-761A-00063
W08

USAR FIG. 7.2-1-09

ESSENTIAL DRAWING

● REVISED ○ ISSUED	INC. CHNG. DOC. WIP-M-744-00026-W07-A-1	CHNG. PKG. NO. D13324	THIS DWG. SUPERSEDES: REV. / VENDOR MANUAL: PAGE(S) / SUPPLIER DWG. NO.:
REVISION NOTES:			ELECTRONIC APPROVAL
WOLF CREEK NUCLEAR OPERATING CORPORATION	DRAWING NUMBER: M-744-00026	REVISION: W08	SHEET NO.: 1

SNUPPS PROJECTS FUNCTIONAL DIAGRAM ROD CONTROLS & ROD BLOCKS

SCALE	DRAWING NUMBER	SHEET	REV
NONE	7250D64	9	

DC7 05/11/2021

34X44 E SIZE

NOTE:
WEC LOGIC REFERENCES AS NOTED

W08

REDUNDANT

STEAM DUMP INTERLOCK SELECTOR SWITCH
NOTE 3

OFF RESET | ON | BYPASS INTERLOCK
TAVG BYPASS | MOMENTARY

P-12 LO - LO T AVG (SHEET 5)

BY Ⓜ OTHERS N.E.S.

CONDENSER AVAILABLE SIGNALS

CONDENSER PRESSURE SWITCHES

SHELL 1: 63 63
SHELL 2: 63 63
SHELL 3: 63 63

BY Ⓜ OTHERS N.E.S.

TURBINE IMPULSE CHAMBER PRESSURE

P-4 REACTOR TRIP (SHEET 2)
TRAIN A TRAIN B

TURBINE IMPULSE CHAMBER PRESSURE
NOTE 4

AUCTIONEERED TAVG (SHEET 9)

STEAM DUMP CONTROL MODE SELECTOR SWITCH

STEAM HEADER PRESSURE

$\frac{\tau_1 S}{\tau_1 S+1}$

NOTE 5

PB 506C

T AVG
M-761A-00063
DROP 7 TASK 3
SHT. 304

STEAM DUMP
M-761A-00063
DROP 8 TASK 5
SHT. 506

DUMP VALVES CONTROL
M-761A-00063
DROP 7 TASK 3
SHT. 312

DUMP VALVES
M-761A-00063
DROP 7 TASK 3
SHT. 306

C-9A (P) C-9B (P) C-9C (P) C-7 (P)

A1 A1 A1

BY Ⓜ N.E.S.
BY OTHERS

BY Ⓜ N.E.S.
BY OTHERS

BY Ⓜ N.E.S.
BY OTHERS

BLOCK STM. DUMP TO 3 COOLDOWN CONDENSER DUMP VALVES ABUV0034, ABUV0045, & ABUV0041
NOTE 1

BLOCK STM. DUMP TO ALL CONDENSER DUMP VALVES EXCEPT THE 3 COOLDOWN DUMP VALVES
NOTE 1

BLOCK STM. DUMP TO CONDENSER VALVES ABUV0034 ABUV0035 ABUV0036 ABUV0037 ABUV0038 ABUV0039 ABUV0040

BLOCK STM. DUMP TO CONDENSER VALVES ABUV0041 ABUV0042 ABUV0043 ABUV0044

BLOCK STM. DUMP TO CONDENSER VALVE ABUV0045

TRIP OPEN 1/2 CONDENSER DUMP VALVES ABUV0034 ABUV0035 ABUV0036 ABUV0037 ABUV0038 ABUV0039
NOTE 6

TRIP OPEN 1/2 CONDENSER DUMP VALVES ABUV0040 ABUV0041 ABUV0042 ABUV0043 ABUV0044 ABUV0045

REDUNDANT

W08

MODULATE THE DUMP VALVES ACCORDING TO THE FOLLOWING SEQUENCE:

STEAM DUMP DEMAND	VALVES MODULATED OPEN OR CLOSED (ZERO TO FULL OPEN)
25 - 50% 50 - 75% 75 - 100%	ABUV0037, ABUV0038 & ABUV0043 ABUV0039, ABUV0040 & ABUV0042 ABUV0035, ABUV0036 & ABUV0044

MODULATE THE COOLDOWN DUMP VALVES ACCORDING TO THE FOLLOWING SEQUENCE:

STEAM DUMP DEMAND	VALVES MODULATED OPEN OR CLOSED (ZERO TO FULL OPEN)
0-25%	ABUV0034, ABUV0045, & ABUV0041

BY Ⓜ OTHERS N.E.S.

STEAM LINE PRESSURE

LOOP 1 LOOP 2 NOTE 7 LOOP 3 LOOP 4

STEAM GENERATOR PRESSURE CONTROLLER $K_{12}\left(1+\frac{1}{\tau_{1S}S}\right)$

MODULATE THE LOOP 1 ATMOSPHERIC RELIEF VALVE ABPV0001
MODULATE THE LOOP 2 ATMOSPHERIC RELIEF VALVE ABPV0002
MODULATE THE LOOP 3 ATMOSPHERIC RELIEF VALVE ABPV0003
MODULATE THE LOOP 4 ATMOSPHERIC RELIEF VALVE ABPV0004

BY Ⓜ OTHERS N.E.S.

NOTES

1. STEAM DUMP IS BLOCKED BY BLOCKING AIR TO THE DUMP VALVES AND VENTING THE DIAPHRAGMS. THE REDUNDANT LOGIC OUTPUT OPERATES TWO SOLENOID VENT VALVES IN SERIES TO REDUNDANTLY INTERLOCK THE AIR LINE BETWEEN EACH VALVE DIAPHRAGM AND ITS ASSOCIATED POSITIONER. THE NON - REDUNDANT LOGIC OUTPUT OPERATES ONE SOLENOID VENT VALVE TO INTERLOCK THE AIR LINE BETWEEN EACH VALVE DIAPHRAGM AND ITS ASSOCIATED POSITIONER. THE SOLENOID VALVES ARE DE-ENERGIZE TO VENT CAUSING THE MAIN DUMP VALVE TO CLOSE IN FIVE SECONDS. EITHER OF THE TWO REDUNDANT BLOCK SIGNALS OR THE NON - REDUNDANT BLOCK SIGNAL WILL BLOCK STEAM DUMP INDEPENDENT OF THE OTHERS.
2. CIRCUITRY ON THIS SHEET IS NOT REDUNDANT EXCEPT WHERE INDICATED REDUNDANT.
3. SELECTOR SWITCH WITH THE FOLLOWING THREE POSITIONS:
   ON - STEAM DUMP IS PERMITTED.
   BYPASS - T AVG INTERLOCK IS BYPASSED FOR LO-LO T AVG. SPRING RETURN TO ON POSITION
   OFF - STEAM DUMP IS NOT PERMITTED AND RESET T AVG BYPASS
   THE REDUNDANT INTERLOCK SELECTOR SWITCH CONSISTS OF TWO CONTROLS ON THE CONTROL BOARD, ONE FOR EACH TRAIN.
4. THE TWO ANALOG SIGNAL INPUTS COMING FROM TURBINE PRESSURE MUST COME FROM DIFFERENT PRESSURE TAPS TO MEET THE SINGLE FAILURE CRITERION.
5. ALL TEMPERATURE BISTABLES ON THIS SHEET AND THE TURBINE IMPULSE CHAMBER PRESSURE BISTABLE NO. PB-506C ARE 'ENERGIZE TO ACTUATE'.
6. LIGHTS SHOULD BE PROVIDED IN THE CONTROL ROOM FOR EACH DUMP VALVE TO INDICATE WHEN THE VALVE IS FULLY CLOSED OR FULLY OPEN.
7. THE STEAMLINE PRESSURE SIGNAL ORIGIN MUST BE DIFFERENT FROM THAT WHICH IS USED FOR THE STEAMLINE PRESSURE PROTECTION SIGNALS SHOWN ON SHEET 7 TO MEET THE SINGLE FAILURE CRITERION.

USAR FIG. 7.2-1-10

ESSENTIAL DRAWING

◉ REVISED ○ ISSUED	INC.: WIP-M-744-00027-W07-B-1 CHNG.: DOC.:	CHNG. 013324 PKG.: NO.:	THIS DWG. SUPERSEDES: REV. VENDOR MANUAL: PAGE(S) SUPPLIER DWG. NO.:
REVISION NOTES:			

WOLF CREEK NUCLEAR OPERATING CORPORATION

DRAWING NUMBER: M-744-00027 | REVISION: W08 | SHEET NO.: 1

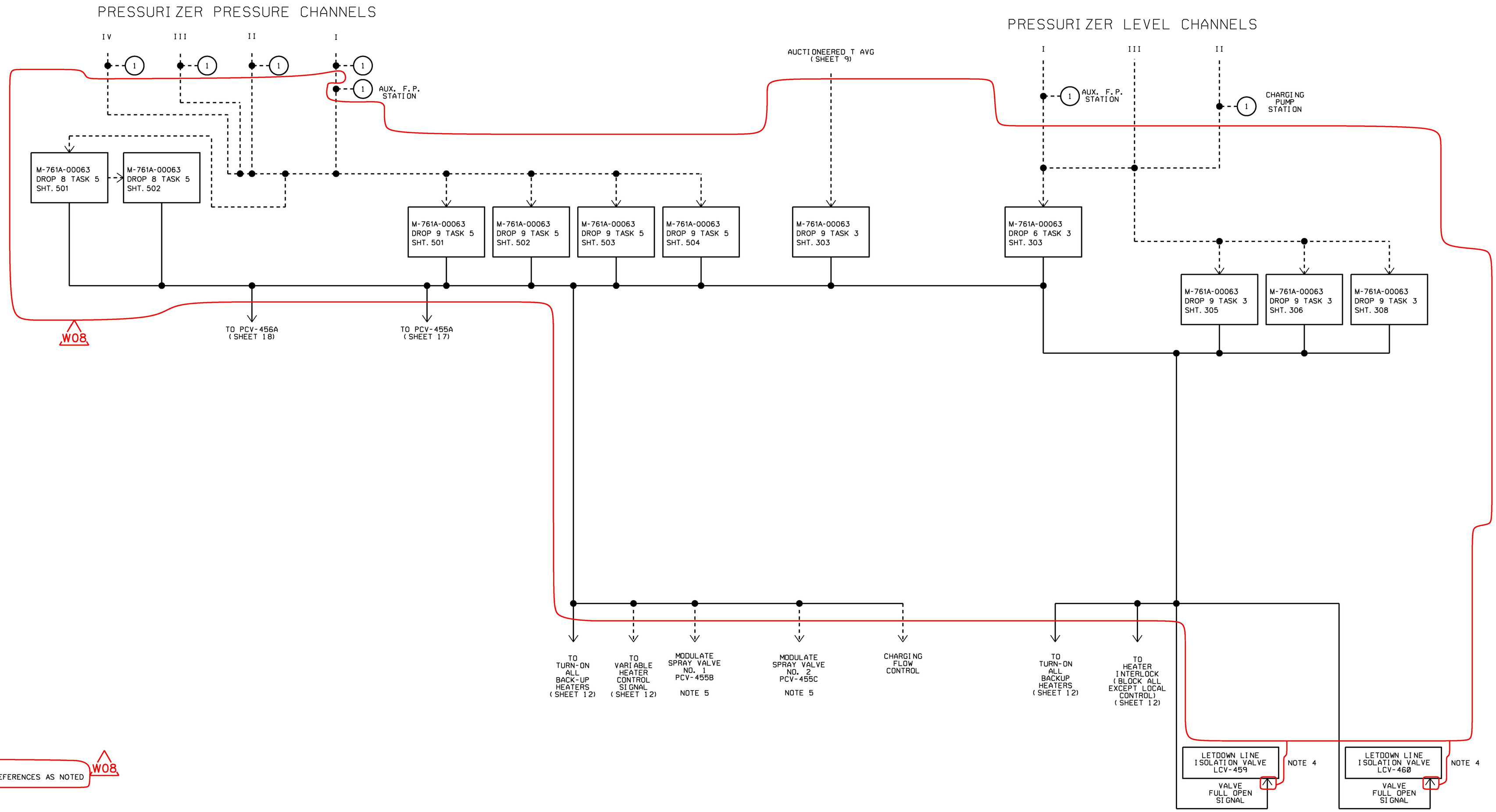
ELECTRONIC APPROVAL

SNUPPS PROJECTS FUNCTIONAL DIAGRAM STEAM DUMP CONTROL

SCALE	DRAWING NUMBER	SHEET	REV
NONE	7250D64	10	

DC7 05/11/2021

34X44 E SIZE



NOTE:
WEC LOGIC REFERENCES AS NOTED W08

NOTES

1. ALL CIRCUITS ON THIS SHEET ARE NOT REDUNDANT.
2. LOCAL CONTROL OVERRIDES ALL OTHER SIGNALS. LOCAL OVERRIDE ACTUATES ALARM IN CONTROL ROOM.
3. PRESSURE BISTABLES NO. PB-455E, PB-455G, PB-456E AND LEVEL BISTABLES NO. LB-459C, LB-459E, & LB-460D ARE ENERGIZE TO ACTUATE.
4. OPEN/SHUT INDICATION IN CONTROL ROOM.
5. A LIGHT SHOULD BE PROVIDED IN THE CONTROL ROOM FOR EACH SPRAY VALVE TO INDICATE WHEN THE VALVE IS NOT FULLY CLOSED.
6. DEENEEBDPOSITION NORMALLY SELECTED.
7. ADJUSTABLE SETPOINT WITHIN CONTROLLER.
8. ALARM 1 AND ALARM 2 MUST HAVE REFLASH CAPABILITY.

USAR FIG. 7.2-1-11

ESSENTIAL DRAWING

REVISED INC. WIP-M-744-00028-W07-A-1 CHNG. 013324
ISSUED CHNG. DOC. PKG. NO.
THIS DWG. SUPERSEDES: REV.
VENDOR MANUAL: PAGE(S)
SUPPLIER DWG. NO.: 7250D64
REVISION NOTES:

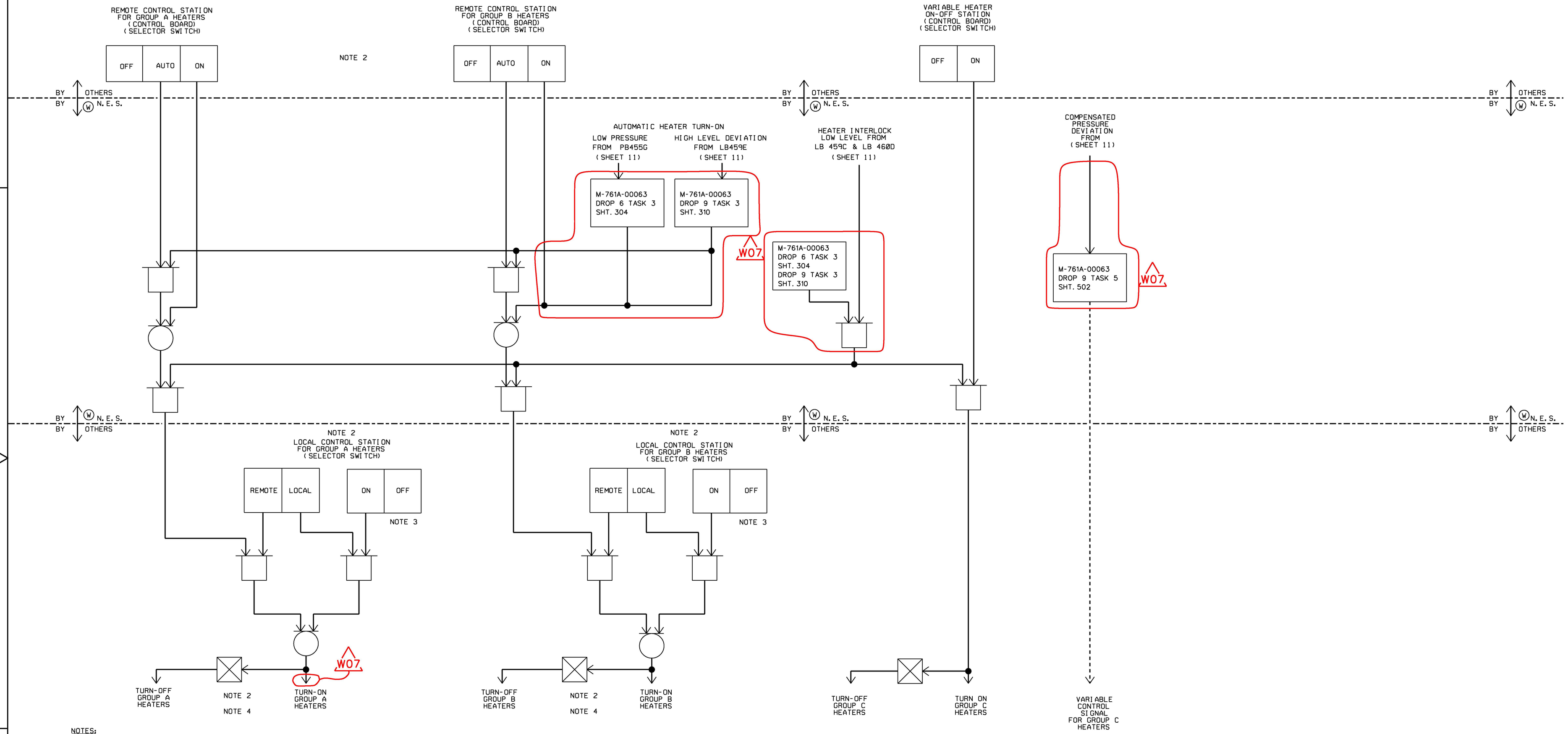
WOLF CREEK NUCLEAR OPERATING CORPORATION
DRAWING NUMBER: M-744-00028
REVISION: W08
SHEET NO.: 1
ELECTRONIC APPROVAL

SNUPPS PROJECTS
FUNCTIONAL DIAGRAM
PRESSURIZER PRESSURE & LEVEL CONTROL

SCALE: NONE
DRAWING NUMBER: 7250D64
SHEET: 11
REV:

DC7 05/11/2021

22X34 D SIZE



NOTES:

1. ALL CIRCUITS ON THIS SHEET ARE NOT REDUNDANT.
2. GROUP A AND GROUP B HEATERS MUST BE ON SEPARATE VITAL POWER SUPPLIES WITH THE LOCAL CONTROL SEPARATED SO THAT ANY SINGLE FAILURE DOES NOT DEFEAT BOTH.
3. PRECAUTIONS SHOULD BE TAKEN TO AVOID MANUAL HEATER OPERATION, WHICH WOULD CAUSE HEATER DAMAGE. IF THE WATER LEVEL UNCOVERS THE HEATERS.
4. BACK-UP HEATER STATUS INDICATION IN CONTROL ROOM.

W07

NOTE:
WEC LOGIC REFERENCES AS NOTED

W07

USAR FIG. 7.2-1-12

ESSENTIAL DRAWING

⊗ REVISED / ○ ISSUED	INC. WIP-M-744-00029-W06-A-1	CHNG. 013324	THIS DWG. SUPERSEDES:	REV.
	CHNG.	PKG.	VENDOR MANUAL:	PAGE(S)
	DOC.	NO.	SUPPLIER DWG. NO.: 7250D64, SHT. 12	

REVISION NOTES: INCLUDES ADMINISTRATIVE CORRECTIONS PER AP 05-010 PAR. 6.10.

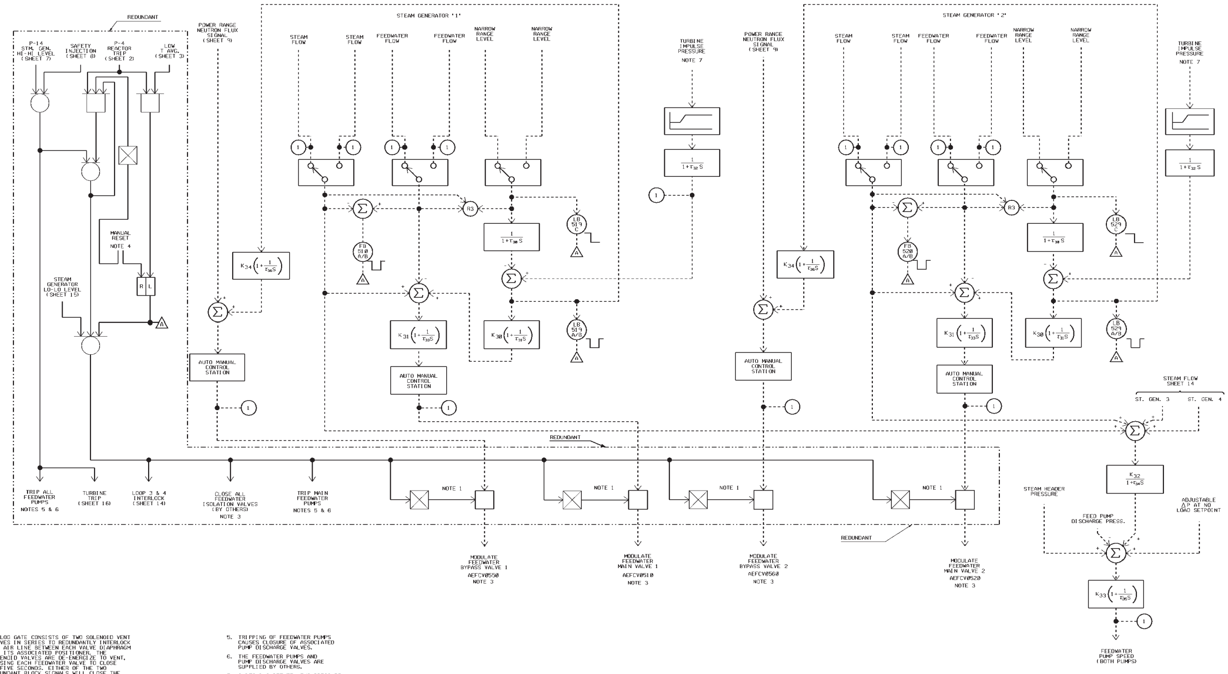
WOLF CREEK NUCLEAR OPERATING CORPORATION | DRAWING NUMBER: M-744-00029 | REVISION: W07 | SHEET NO.: 1 | ELECTRONIC APPROVAL

DC7 05/11/2021

SNUPPS PROJECTS FUNCTIONAL DIAGRAM PRESSURIZER HEATER CONTROL

SCALE	DRAWING NUMBER	SHEET	REV
NONE	7250D64	12	

22X34 D SIZE


REDUNDANT
P-14 STM. GEN. HI-HI LEVEL (SHEET 7)
SAFETY INJECTION (SHEET 8)
P-4 REACTOR TRIP (SHEET 2)
LOW T AVG. (SHEET 3)
MANUAL RESET NOTE 4
STEAM GENERATOR LO-LO LEVEL (SHEET 15)
POWER RANGE NEUTRON FLUX SIGNAL (SHEET 9)
STEAM GENERATOR "1"
STEAM GENERATOR "2"
STEAM FLOW
FEEDWATER FLOW
NARROW RANGE LEVEL
TURBINE IMPULSE PRESSURE NOTE 7
AUTO MANUAL CONTROL STATION
TRIP ALL FEEDWATER PUMPS NOTES 5 & 6
TURBINE TRIP (SHEET 16)
LOOP 3 & 4 INTERLOCK (SHEET 14)
CLOSE ALL FEEDWATER ISOLATION VALVES (BY OTHERS) NOTE 3
TRIP MAIN FEEDWATER PUMPS NOTES 5 & 6
NOTE 1
MODULATE FEEDWATER BYPASS VALVE 1 AEFCV0550 NOTE 3
MODULATE FEEDWATER MAIN VALVE 1 AEFCV0510 NOTE 3
MODULATE FEEDWATER BYPASS VALVE 2 AEFCV0560 NOTE 3
MODULATE FEEDWATER MAIN VALVE 2 AEFCV0520 NOTE 3
STEAM FLOW SHEET 14
ST. GEN. 3
ST. GEN. 4
STEAM HEADER PRESSURE
FEED PUMP DISCHARGE PRESS.
ADJUSTABLE ΔP AT NO LOAD SETPOINT
FEEDWATER PUMP SPEED (BOTH PUMPS)

NOTES

1. ANALOG GATE CONSISTS OF TWO SOLENOID VENT VALVES IN SERIES TO REDUNDANTLY INTERLOCK THE AIR LINE BETWEEN EACH VALVE DIAPHRAGM AND ITS ASSOCIATED POSITIONER. THE SOLENOID VALVES ARE DE-ENERGIZE TO VENT, CAUSING EACH FEEDWATER VALVE TO CLOSE IN FIVE SECONDS. EITHER OF THE TWO REDUNDANT BLOCK SIGNALS WILL CLOSE THE ASSOCIATED VALVES INDEPENDENT OF THE OTHER SIGNAL(S).
2. ALL CIRCUITS ON THIS SHEET ARE NOT REDUNDANT, EXCEPT WHERE INDICATED REDUNDANT.
3. OPEN/SHUT INDICATION FOR EACH FEEDWATER VALVE IN CONTROL ROOM.
4. THE REDUNDANT MANUAL RESET CONSISTS OF TWO MOMENTARY CONTROLS ON THE CONTROL BOARD, ONE FOR EACH TRAIN.
5. TRIPPING OF FEEDWATER PUMPS CAUSES CLOSURE OF ASSOCIATED PUMP DISCHARGE VALVES.
6. THE FEEDWATER PUMPS AND PUMP DISCHARGE VALVES ARE SUPPLIED BY OTHERS.
7. SWITCHING BETWEEN TWO PRESSURE SIGNALS IS PROVIDED ON THE CONTROL BOARD.

USAR FIG. 7.2-1-13

M-744-00030 W08

ESSENTIAL DRAWING

⊕ REVISED / ○ ISSUED	INCORPORATED CHG. DOC.	CHANGE PKG. NO.	THIS DWG. SUPERSEDES M-744-00030 REV. W07 / THIS DWG. SUPERSEDED BY REV.

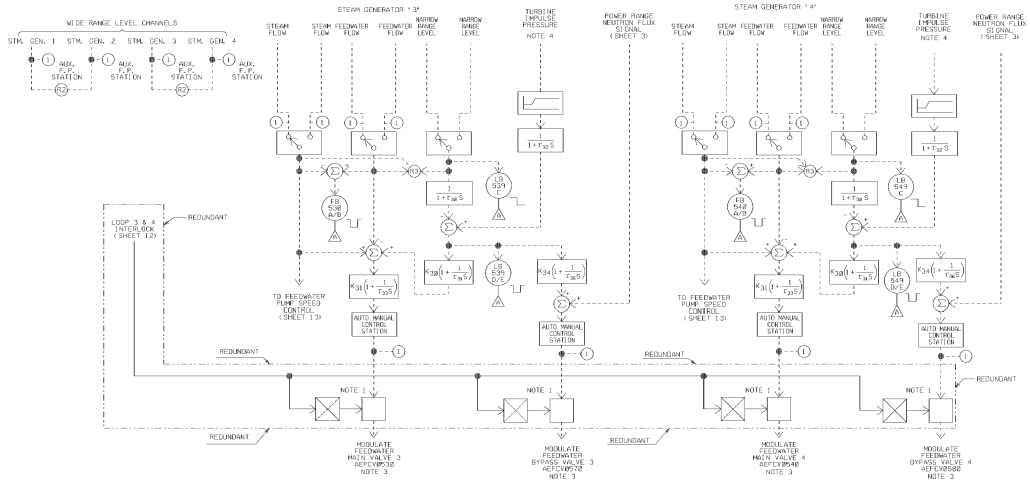
REVISION NOTES: ELECTRONICALLY CONVERTED PER AP 05-010

REV 3W — WOLF CREEK NUCLEAR OPERATING CORPORATION — ELECTRONIC APPROVAL

SNUPPS PROJECTS
FUNCTIONAL DIAGRAM
FEEDWATER CONTROL & ISOLATION

SCALE	DRAWING NUMBER	SHEET	REV
NONE	7250D64	13	

34X44 E SIZE



NOTES

1. ANALOG GATE CONSISTS OF TWO SOLENOID VENT VALVES IN SERIES TO REDUNDANTLY INTERLOCK THE AIR LINE BETWEEN EACH VALVE DIAPHRAGM AND ITS ASSOCIATED POSITIONER. THE SOLENOID VALVES ARE DC - ENERGIZED TO VENT, CAUSING EACH FEEDWATER VALVE TO CLOSE. WITHIN SECONDS, EITHER OF THE TWO REDUNDANT BLOCK SIGNALS WILL CLOSE THE ASSOCIATED VALVES INDEPENDENT OF THE OTHER SIGNAL (5).
2. ALL CIRCUITS ON THIS SHEET ARE NOT REDUNDANT, EXCEPT WHERE INDICATED "REDUNDANT".
3. OPEN/SHUT INDICATION FOR EACH FEEDWATER VALVE IN CONTROL ROOM.
4. SWITCHING BETWEEN TWO PRESSURE SIGNALS IS PROVIDED ON THE CONTROL BOARD.

USAR FIG. 7.2-1-14

M-744-00031 W06

ESSENTIAL DRAWING

◉ REVISED ○ ISSUED	INCORPORATED CNG. DOC.	CHANGE PKG.NO.	THIS DWG.SUPERCEDES / THIS DWG.SUPERSEDED BY — REV.

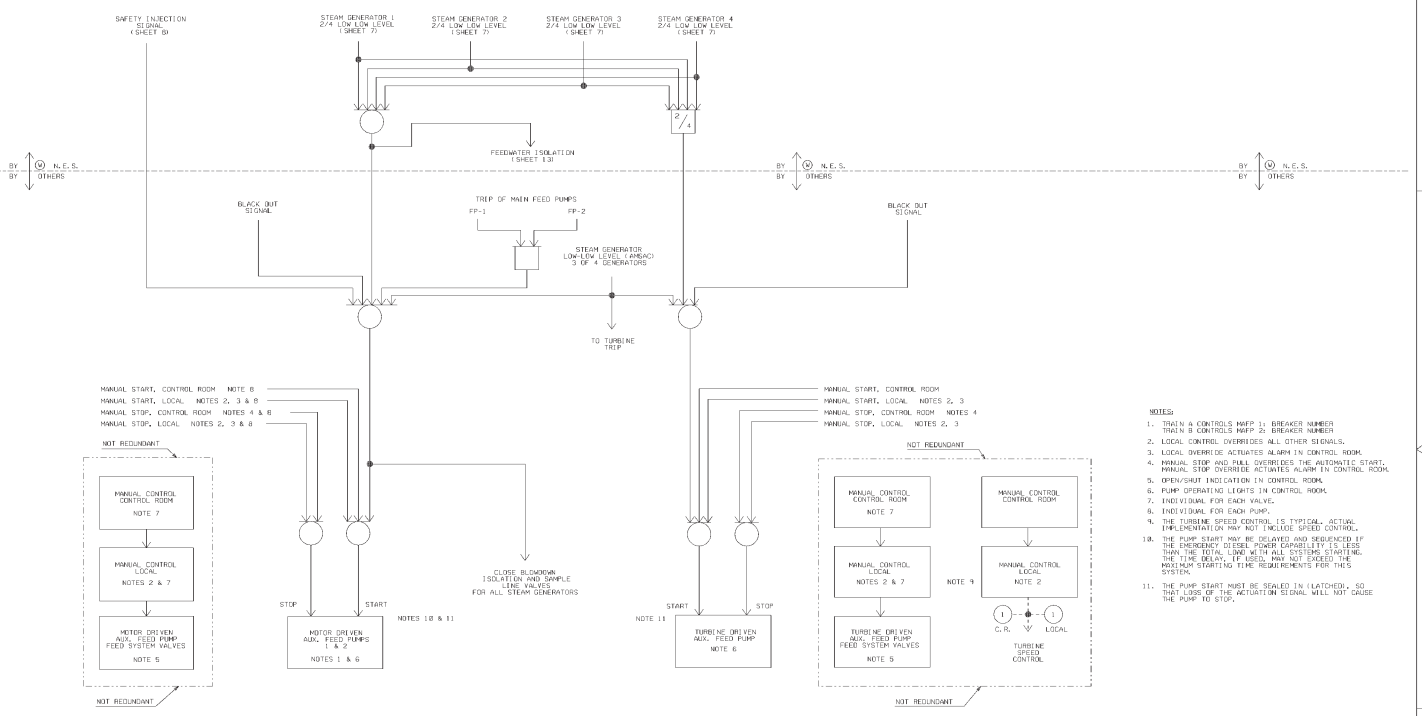
REVISION NOTES: ELECTRONICALLY CONVERTED PER AP 05-018

CNCT		
1	WOLF CREEK NUCLEAR OPERATING CORPORATION	ELECTRONIC APPROVAL

SNUPPS PROJECTS
FUNCTIONAL DIAGRAM
FEEDWATER CONTROL & ISOLATION

SCALE	DRAWING NUMBER	SHEET	REV
NONE	7250D64	14	

22X34 1 SIZE



NOTES:

1. TRAIN A CONTROLS MAFP 1; BREAKER NUMBER
   TRAIN B CONTROLS MAFP 2; BREAKER NUMBER
2. LOCAL CONTROL OVERRIDES ALL OTHER SIGNALS.
3. LOCAL OVERRIDE ACTUATES ALARM IN CONTROL ROOM.
4. MANUAL STOP AND PULL OVERRIDES THE AUTOMATIC START. MANUAL STOP OVERRIDE ACTUATES ALARM IN CONTROL ROOM.
5. OPEN/SHUT INDICATION IN CONTROL ROOM.
6. PUMP OPERATING LIGHTS IN CONTROL ROOM.
7. INDIVIDUAL FOR EACH VALVE.
8. INDIVIDUAL FOR EACH PUMP.
9. THE TURBINE SPEED CONTROL IS TYPICAL. ACTUAL IMPLEMENTATION MAY NOT INCLUDE SPEED CONTROL.
10. THE PUMP START MAY BE DELAYED AND SEQUENCED IF THE EMERGENCY DIESEL POWER CAPABILITY IS LESS THAN THE TOTAL LOAD WITH ALL SYSTEMS STARTING. THE TIME DELAY, IF USED, MAY NOT EXCEED THE MAXIMUM STARTING TIME REQUIREMENTS FOR THIS SYSTEM.
11. THE PUMP START MUST BE SEALED IN (LATCHED), SO THAT LOSS OF THE ACTUATION SIGNAL WILL NOT CAUSE THE PUMP TO STOP.

USAR FIG. 7.2-1-15

M-744-00032 W07

ESSENTIAL DRAWING

REVISED / ISSUED	INCORPORATED / CHG.NO.	CHANGE / MOD.	THIS DWG SUPERSEDES M-744-00032 REV. WAS / THIS DWG SUPERSEDED BY REV.
REVISION NOTES:	ELECTRONICALLY CONVERTED PER AP 25-018		

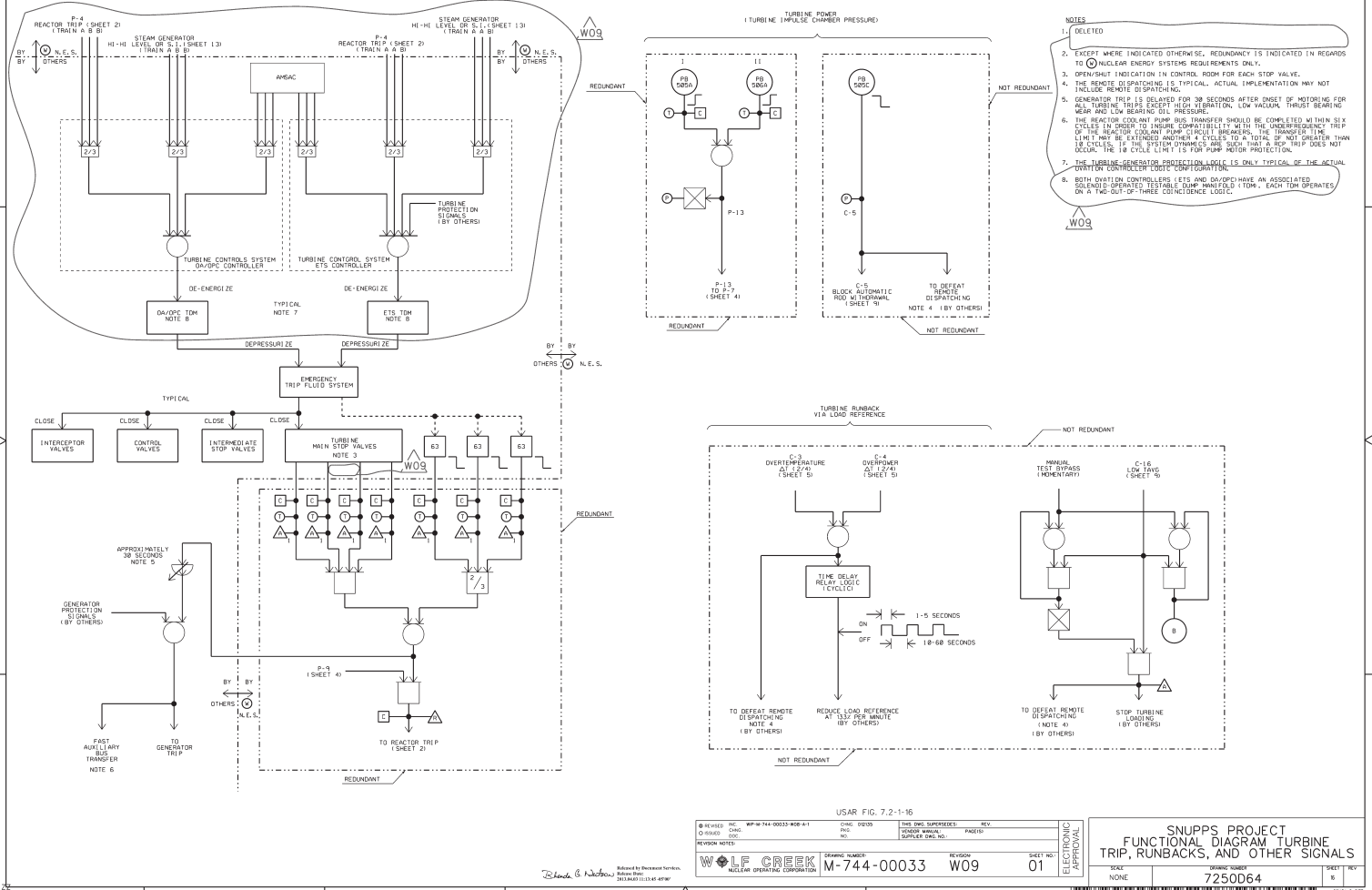
WOLF CREEK NUCLEAR OPERATING CORPORATION

ELECTRONIC APPROVAL

SNUPPS PROJECTS
FUNCTIONAL DIAGRAM
AUXILIARY FEEDWATER PUMPS STARTUP

SCALE	DRAWING NUMBER	SHEET	REV
NONE	7250D64	15	

22X34 D SIZE



USAR FIG. 7.2-1-16

REVISED / ISSUED	ENG. CHG. DOC.	WP-M-744-00033-W08-A-1	CHG. NO. 01035 / ENG. NO.	THIS DWG. SUPERSEDES: REV. / VENDOR MANUAL: PAGE(S): / SUPPLIER DWG. NO.:
REVISION NOTES:				

WOLF CREEK NUCLEAR OPERATING CORPORATION

DRAWING NUMBER: M-744-00033 | REVISION: W09 | SHEET NO.: 01

ELECTRONIC APPROVAL

Released by Document Services, Release Date: 08/18/2011 11:33:45 -05'00'

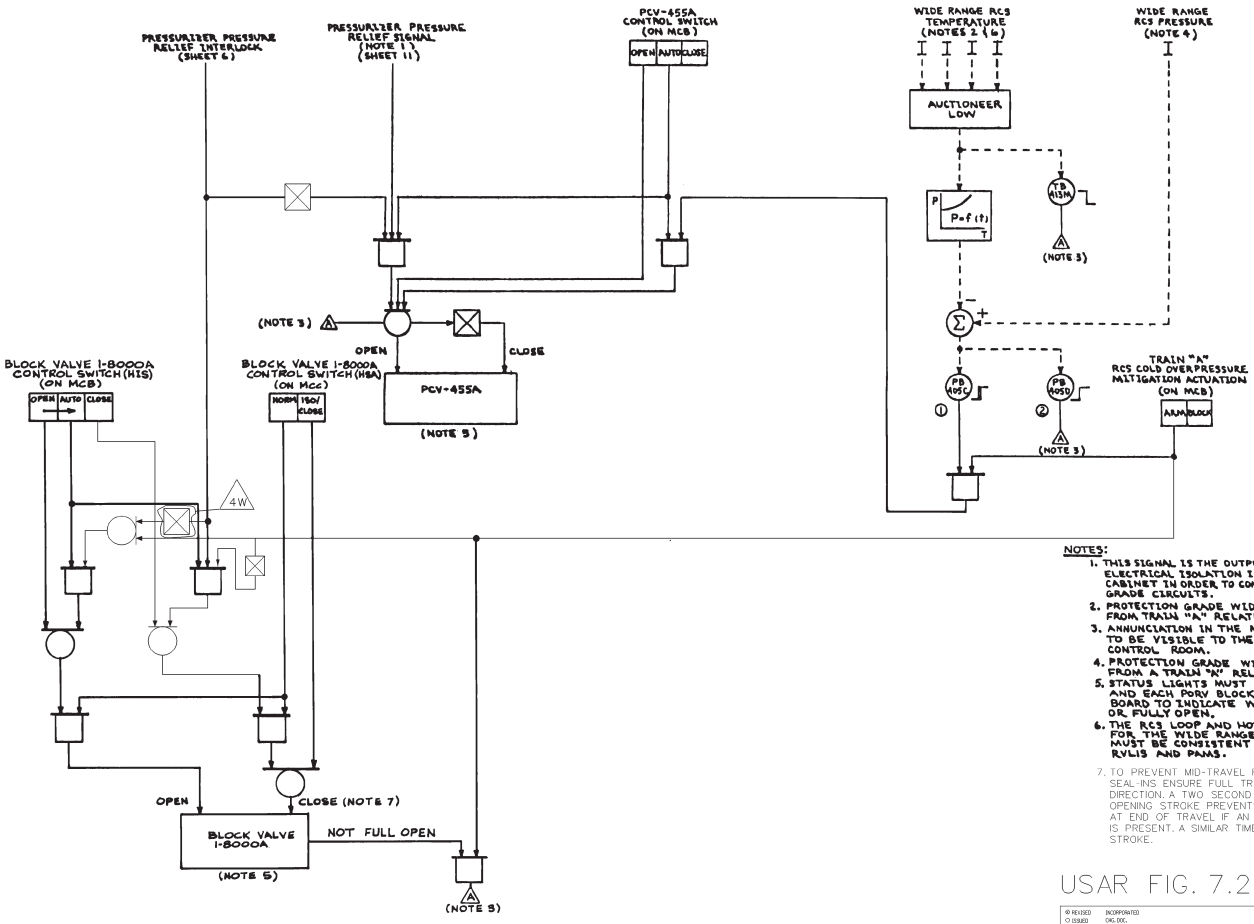
SNUPPS PROJECT
FUNCTIONAL DIAGRAM TURBINE TRIP, RUNBACKS, AND OTHER SIGNALS

SCALE	DRAWING NUMBER	SHEET	REV
NONE	7250D64	16	

22X34 D SIZE

M-744-00033-01-W09

22



NOTES:

1. THIS SIGNAL IS THE OUTPUT FROM BISTABLE PB-455E. ELECTRICAL ISOLATION IS REQUIRED IN THE TRAIN "A" SSPS CABINET IN ORDER TO CONNECT THIS SIGNAL TO THE SAFETY GRADE CIRCUITS.
2. PROTECTION GRADE WIDE RANGE RCS TEMPERATURE SIGNALS FROM TRAIN "A" RELATED PROTECTION SETS.
3. ANNUNCIATION IN THE MAIN CONTROL ROOM IS REQUIRED TO BE VISIBLE TO THE OPERATOR AT THE MAIN CONTROL ROOM.
4. PROTECTION GRADE WIDE RANGE RCS PRESSURE SIGNAL FROM A TRAIN "A" RELATED PROTECTION SET.
5. STATUS LIGHTS MUST BE PROVIDED FOR EACH PORV AND EACH PORV BLOCK VALVE AT THE MAIN CONTROL BOARD TO INDICATE WHEN THE VALVE IS FULLY CLOSED OR FULLY OPEN.
6. THE RCS LOOP AND HOT LEG OR COLD LEG ASSIGNMENTS FOR THE WIDE RANGE RCS TEMPERATURE SIGNALS MUST BE CONSISTENT WITH THE REQUIREMENTS FOR RVLIS AND PAMS.
7. TO PREVENT MID-TRAVEL REVERSAL OF THE MOTOR, SEAL-INS ENSURE FULL TRAVEL OF THE VALVE IN EACH DIRECTION. A TWO SECOND TIME DELAY AFTER THE OPENING STROKE PREVENTS IMMEDIATE REVERSAL AT END OF TRAVEL IF AN AUTOMATIC CLOSING SIGNAL IS PRESENT. A SIMILAR TIME DELAY IS ON THE CLOSING STROKE.

USAR FIG. 7.2-1-17 & 7.6-4-1

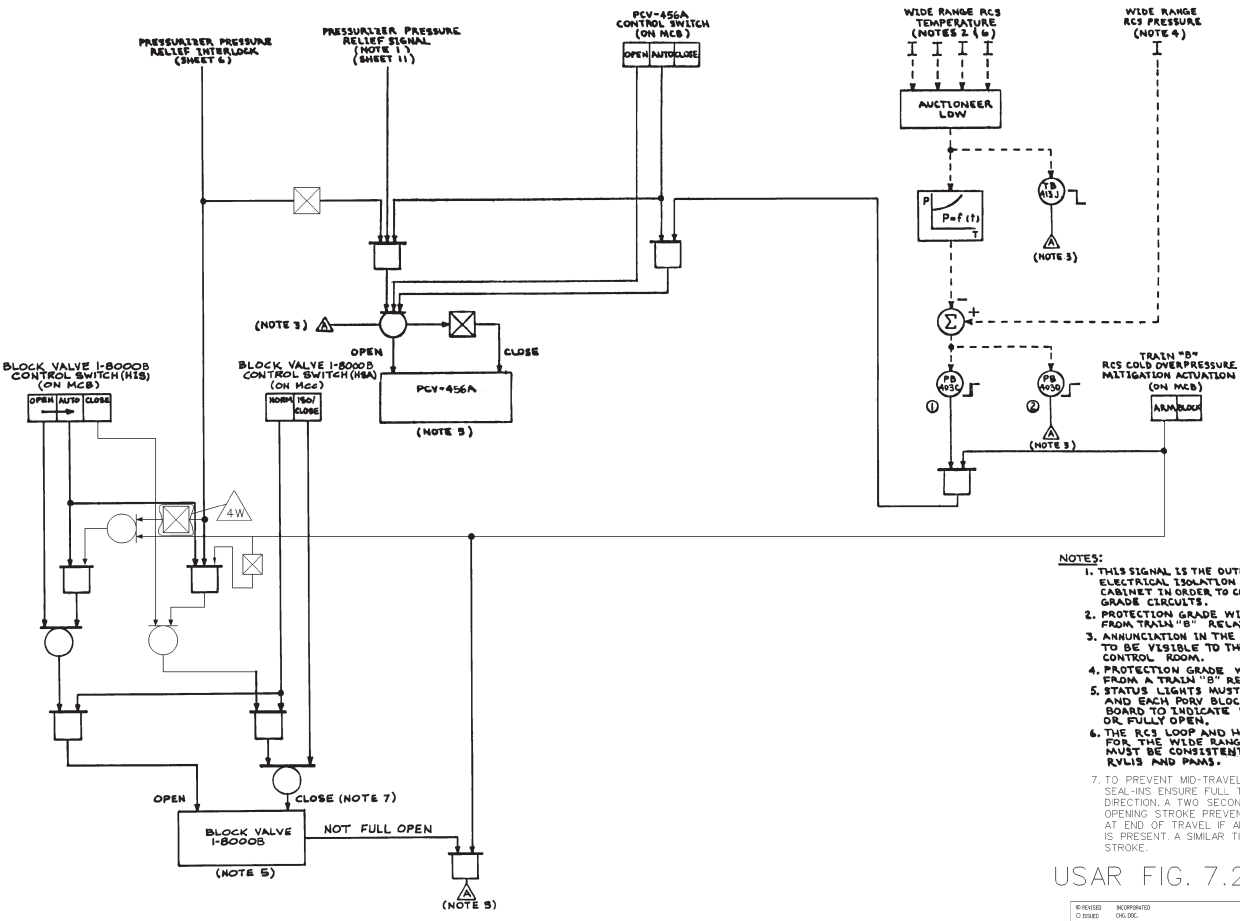
⊗ REVISED ○ ISSUED	INCORPORATED CHG. DOC.	CHANGE 07185 PKG. NO.	THIS DWG. SUPERSEDES THIS DWG. SUPERSEDED BY

REVISION NOTES:

REV.		
4W	WOLF CREEK NUCLEAR OPERATING CORPORATION	ELECTRONIC APPROVAL

M-744-00039-W06

DRN G. LASSER		Westinghouse Electric Corporation	
CHK		NUCLEAR ENERGY SYSTEMS PITTSBURGH PA U.S.A.	
GGS ENGR		TITLE SNUPPS PROJECTS FUNCTIONAL DIAGRAM PRESSURIZER PRESSURE RELIEF SYSTEM (TRAIN A)	
MFG ENGR			
QUALITY ENGR			
APP		SCALE	7250064
APP		DIMENSIONS IN INCHES	SHEET 17
DATE ISSUED	4-9-81	DO NOT SCALE	SUB 1



NOTES:

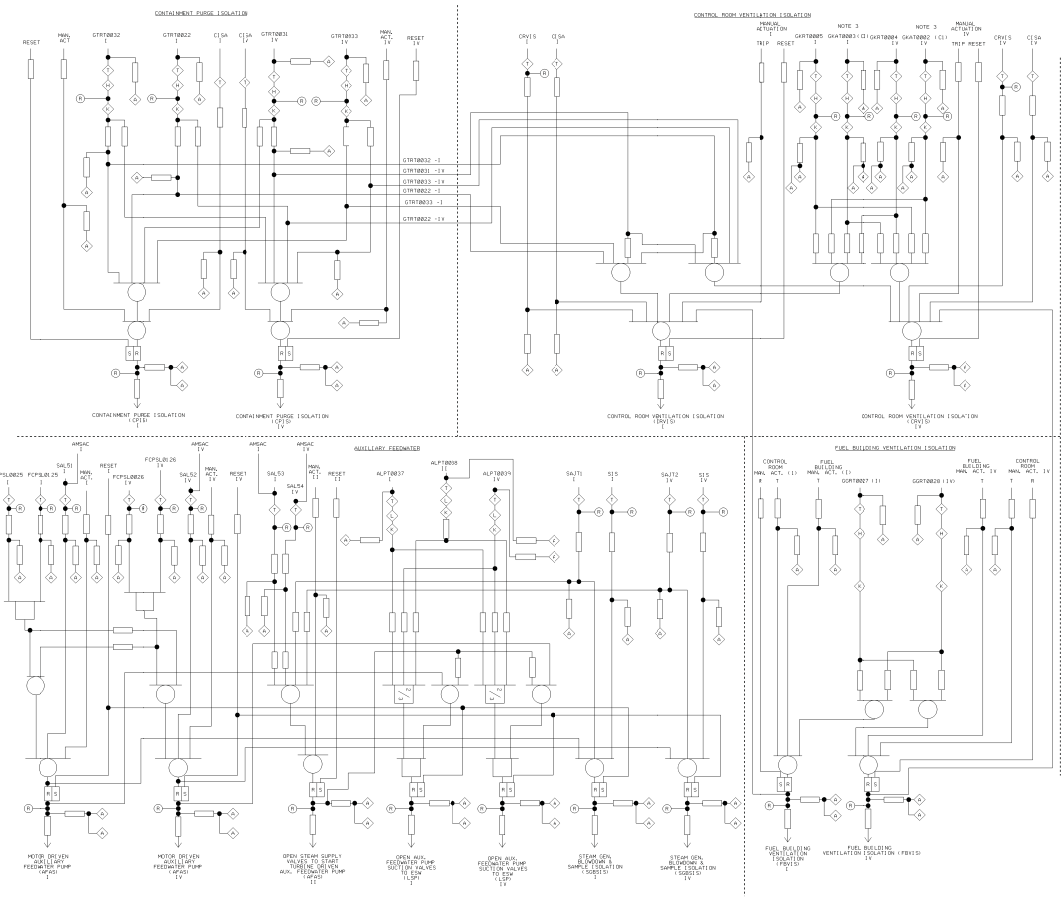
1. THIS SIGNAL IS THE OUTPUT FROM BISTABLE PB-456E. ELECTRICAL ISOLATION IS REQUIRED IN THE TRAIN "B" 35P3 CABINET IN ORDER TO CONNECT THIS SIGNAL TO THE SAFETY GRADE CIRCUITS.
2. PROTECTION GRADE WIDE RANGE RCS TEMPERATURE SIGNALS FROM TRAIN "B" RELATED PROTECTION SETS.
3. ANNUNCIATION IN THE MAIN CONTROL ROOM IS REQUIRED TO BE VISIBLE TO THE OPERATOR AT THE MAIN CONTROL ROOM.
4. PROTECTION GRADE WIDE RANGE RCS PRESSURE SIGNAL FROM A TRAIN "B" RELATED PROTECTION SET.
5. STATUS LIGHTS MUST BE PROVIDED FOR EACH PORV AND EACH PORV BLOCK VALVE AT THE MAIN CONTROL BOARD TO INDICATE WHEN THE VALVE IS FULLY CLOSED OR FULLY OPEN.
6. THE RCS LOOP AND HOT LEG OR COLD LEG ASSIGNMENTS FOR THE WIDE RANGE RCS TEMPERATURE SIGNALS MUST BE CONSISTENT WITH THE REQUIREMENTS FOR RVLIS AND PAMS.
7. TO PREVENT MID-TRAVEL REVERSAL OF THE MOTOR, SEAL-INS ENSURE FULL TRAVEL OF THE VALVE IN EACH DIRECTION. A TWO SECOND TIME DELAY AFTER THE OPENING STROKE PREVENTS IMMEDIATE REVERSAL AT END OF TRAVEL IF AN AUTOMATIC CLOSING SIGNAL IS PRESENT. A SIMILAR TIME DELAY IS ON THE CLOSING STROKE.

USAR FIG. 7.2-1-18 & 7.6-4-2

☐ REVISED ☐ ISSUED	INCORPORATED CHG. DOC.	CHANGE 07195 PKG. NO.	THIS DWG. SUPERSEDES THIS DWG. SUPERSEDED BY	REV. REV.
REVISION NOTES:				
REV. 4W	WOLF CREEK NUCLEAR OPERATING CORPORATION			ELECTRONIC APPROVAL

M-744-00040-W06

DRN G. LASSER		Westinghouse Electric Corporation NUCLEAR ENERGY SYSTEMS PITTSBURGH PA U.S.A.	
DES ENG		"PM" SNUPPS PROJECTS FUNCTIONAL DIAGRAM PRESSURIZER PRESSURE RELIEF SYSTEM (TRAIN B)	
APP ENG		SCALE	7250D64 REV. 09
APP		DIMENSIONS IN INCHES	SHEET 16
APP MGR	7-9-81	DO NOT SCALE	SUB 1



NOTES

1. KEY TO SYMBOLS:
   - R — RED LAMP
   - A — AMBER LAMP
   - T — TEST INPUT
   - A — ANNUNCIATOR/COMPUTER OUTPUT
   - H — HIGH TO TRIP BISTABLE
   - L — LOW TO TRIP BISTABLE
   - SIGNAL ISOLATION
   - AND LOGIC
   - OR LOGIC
   - 2/3 — TWO OUT OF THREE LOGIC
   - R S — R/S MEMORY WITH OVERRIDING RESET
   - INVERSION
   - BYPASS KEYLOCK SWITCH (IN / OUT)
   - ONE PER CHANNEL
   - TYP. EACH ANALOG INPUT VARIABLE
2. AMSAC INPUT SIGNALS ARE PROVIDED BY OWNER.
3. GSAT-2/3 CHLORINE TRANSMITTERS ARE SPARED IN PLACE.

USAR FIG. 7.3-1-02

ESSENTIAL DRAWING

ELECTRONIC APPROVAL

WOLF CREEK NUCLEAR OPERATING CORPORATION

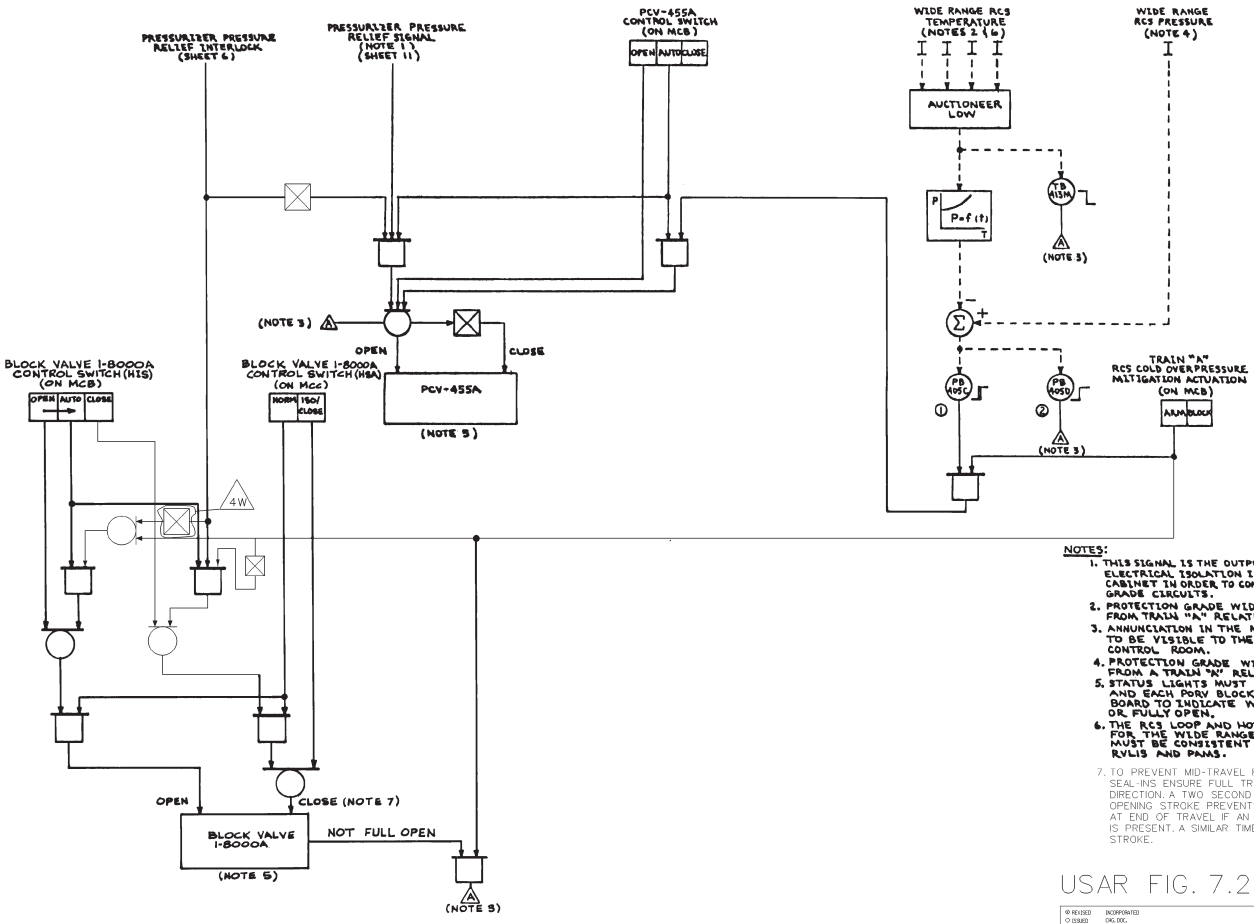
DRAWING NUMBER J-104-00390 REVISION W08 SHEET NO.

LOGIC BLOCK DIAGRAM ESFAS

SCALE NONE

DRAWING NUMBER KP1909W SHEET 1 REV

34X44 C SIZE



NOTES:

1. THIS SIGNAL IS THE OUTPUT FROM BISTABLE PB-455E. ELECTRICAL ISOLATION IS REQUIRED IN THE TRAIN "A" SSPS CABINET IN ORDER TO CONNECT THIS SIGNAL TO THE SAFETY GRADE CIRCUITS.
2. PROTECTION GRADE WIDE RANGE RCS TEMPERATURE SIGNALS FROM TRAIN "A" RELATED PROTECTION SETS.
3. ANNUNCIATION IN THE MAIN CONTROL ROOM IS REQUIRED TO BE VISIBLE TO THE OPERATOR AT THE MAIN CONTROL ROOM.
4. PROTECTION GRADE WIDE RANGE RCS PRESSURE SIGNAL FROM A TRAIN "A" RELATED PROTECTION SET.
5. STATUS LIGHTS MUST BE PROVIDED FOR EACH PORV AND EACH PORV BLOCK VALVE AT THE MAIN CONTROL BOARD TO INDICATE WHEN THE VALVE IS FULLY CLOSED OR FULLY OPEN.
6. THE RCS LOOP AND HOT LEG OR COLD LEG ASSIGNMENTS FOR THE WIDE RANGE RCS TEMPERATURE SIGNALS MUST BE CONSISTENT WITH THE REQUIREMENTS FOR RVLIS AND PAMS.
7. TO PREVENT MID-TRAVEL REVERSAL OF THE MOTOR, SEAL-INS ENSURE FULL TRAVEL OF THE VALVE IN EACH DIRECTION. A TWO SECOND TIME DELAY AFTER THE OPENING STROKE PREVENTS IMMEDIATE REVERSAL AT END OF TRAVEL IF AN AUTOMATIC CLOSING SIGNAL IS PRESENT. A SIMILAR TIME DELAY IS ON THE CLOSING STROKE.

USAR FIG. 7.2-1-17 & 7.6-4-1

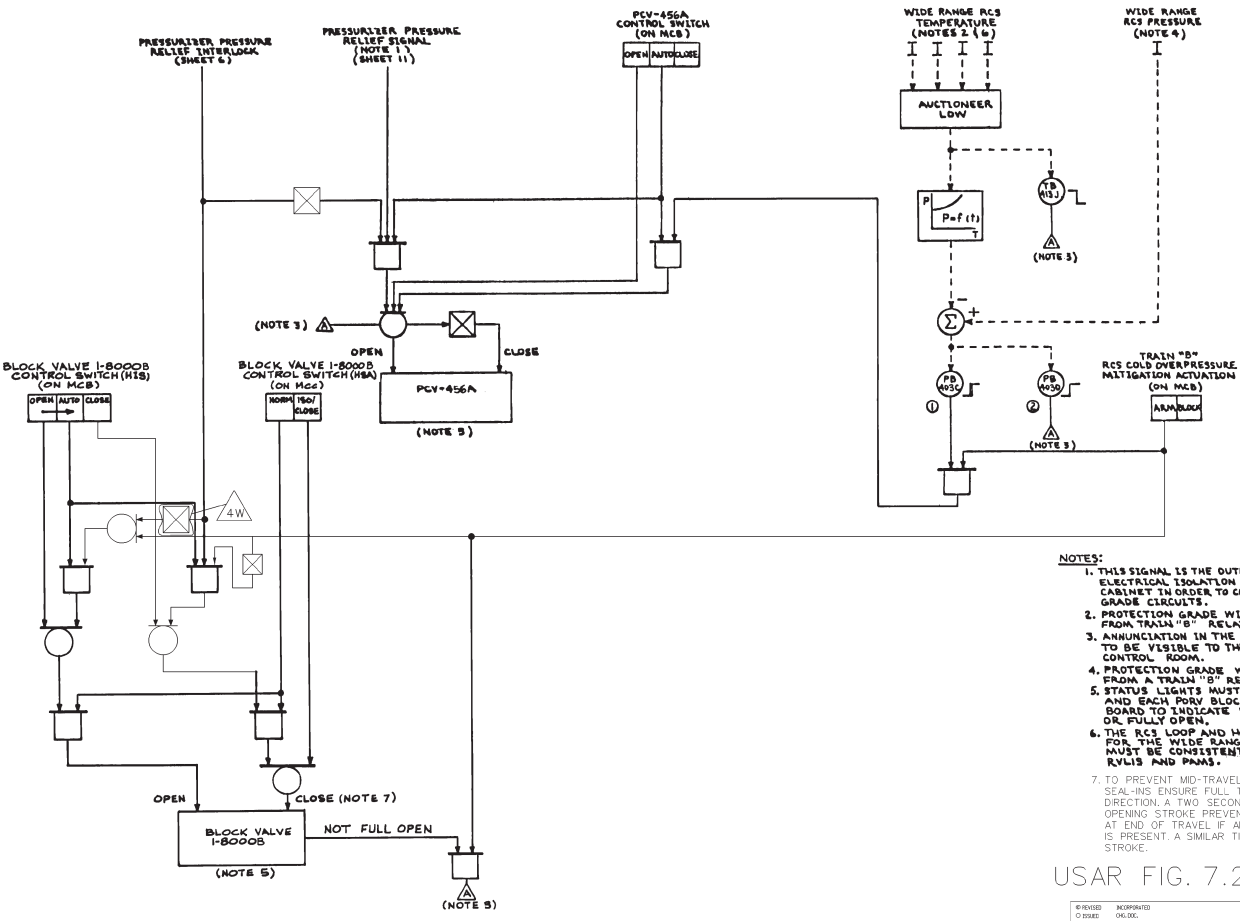
⊗ REVISED ○ ISSUED	INCORPORATED CHG. DOC.	CHANGE 07185 PKG. NO.	THIS DWG. SUPERSEDES THIS DWG. SUPERSEDED BY

REVISION NOTES:

REV.		
4W	WOLF CREEK NUCLEAR OPERATING CORPORATION	ELECTRONIC APPROVAL

M-744-00039-W06

DRN G. LASSER		Westinghouse Electric Corporation	
CHK		NUCLEAR ENERGY SYSTEMS PITTSBURGH PA U.S.A.	
GGS ENGR		TITLE SNUPPS PROJECTS FUNCTIONAL DIAGRAM PRESSURIZER PRESSURE RELIEF SYSTEM (TRAIN A)	
MFG ENGR			
QUALITY ENGR			
APP		SCALE	7250064
APP		DIMENSIONS IN INCHES	SHEET 17
DATE ISSUED	4-9-81	DO NOT SCALE	SUB 1



NOTES:

1. THIS SIGNAL IS THE OUTPUT FROM BISTABLE PB-456E. ELECTRICAL ISOLATION IS REQUIRED IN THE TRAIN "B" 35P3 CABINET IN ORDER TO CONNECT THIS SIGNAL TO THE SAFETY GRADE CIRCUITS.
2. PROTECTION GRADE WIDE RANGE RCS TEMPERATURE SIGNALS FROM TRAIN "B" RELATED PROTECTION SETS.
3. ANNUNCIATION IN THE MAIN CONTROL ROOM IS REQUIRED TO BE VISIBLE TO THE OPERATOR AT THE MAIN CONTROL ROOM.
4. PROTECTION GRADE WIDE RANGE RCS PRESSURE SIGNAL FROM A TRAIN "B" RELATED PROTECTION SET.
5. STATUS LIGHTS MUST BE PROVIDED FOR EACH PORV AND EACH PORV BLOCK VALVE AT THE MAIN CONTROL BOARD TO INDICATE WHEN THE VALVE IS FULLY CLOSED OR FULLY OPEN.
6. THE RCS LOOP AND HOT LEG OR COLD LEG ASSIGNMENTS FOR THE WIDE RANGE RCS TEMPERATURE SIGNALS MUST BE CONSISTENT WITH THE REQUIREMENTS FOR RVLIS AND PAMS.
7. TO PREVENT MID-TRAVEL REVERSAL OF THE MOTOR, SEAL-INS ENSURE FULL TRAVEL OF THE VALVE IN EACH DIRECTION. A TWO SECOND TIME DELAY AFTER THE OPENING STROKE PREVENTS IMMEDIATE REVERSAL AT END OF TRAVEL IF AN AUTOMATIC CLOSING SIGNAL IS PRESENT. A SIMILAR TIME DELAY IS ON THE CLOSING STROKE.

USAR FIG. 7.2-1-18 & 7.6-4-2

☐ REVISED ☐ ISSUED	INCORPORATED CHG. DOC.	CHANGE 07195 PKG. NO.	THIS DWG. SUPERSEDES THIS DWG. SUPERSEDED BY	REV. REV.
REVISION NOTES:				
REV. 4W	WOLF CREEK NUCLEAR OPERATING CORPORATION			ELECTRONIC APPROVAL

M-744-00040-W06

DRN G. LASSER		Westinghouse Electric Corporation NUCLEAR ENERGY SYSTEMS PITTSBURGH PA U.S.A.	
DES ENG		"PM" SNUPPS PROJECTS FUNCTIONAL DIAGRAM PRESSURIZER PRESSURE RELIEF SYSTEM (TRAIN B)	
APP ENG		SCALE	7250D64 REV. 09
APP		DIMENSIONS IN INCHES	SHEET 16
APP MGR	7-9-81	DO NOT SCALE	SUB 1