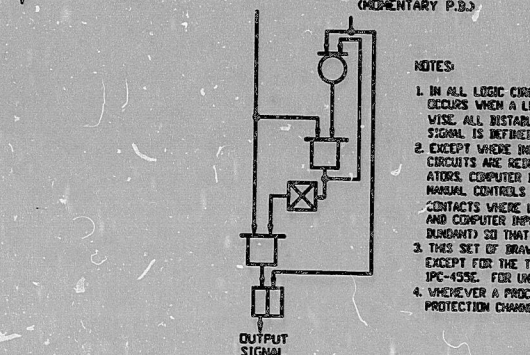


LOGIC SYMBOLS

SYMBOL	LOGIC FUNCTION
	AND A DEVICE WHICH PRODUCES AN OUTPUT ONLY WHEN EVERY INPUT EXISTS.
	NOT A DEVICE WHICH PRODUCES AN OUTPUT ONLY WHEN THE INPUT DOES NOT EXIST.
	OR A DEVICE WHICH PRODUCES AN OUTPUT WHEN ONE INPUT OR MORE EXISTS.
	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 ALSO UPON INTERRUPTION OF POWER.
	ADJUSTABLE TIME DELAY ENERGIZING A DEVICE WHICH PRODUCES AN OUTPUT FOLLOWING DEFINITE INTENTIONAL TIME DELAY AFTER RECEIVING AN INPUT.
	ADJUSTABLE TIME DELAY DE-ENERGIZING A DEVICE WHICH CONTINUES TO PRODUCE AN OUTPUT FOR A DEFINITE INTENTIONAL PERIOD OF TIME AFTER THE INPUT HAS BEEN REMOVED.
	COINCIDENCE A DEVICE WHICH PRODUCES AN OUTPUT WHEN THE PRESCRIBED NUMBER OF INPUTS EXIST (EXAMPLE 2 INPUTS MUST EXIST FOR AN OUTPUT).
	RETENTIVE MEMORY WITH MANUAL RESET A DEVICE HAVING THE LOGICAL FUNCTION AS INDICATED BY THE DIAGRAM BELOW.



ADDITIONAL SYMBOLS

	INSTRUMENT CHANNEL BISTABLE INDICATES THAT THE DEVICE OR INSTRUMENT CHANNEL HAS A BISTABLE LOGIC 1 OUTPUT WHEN: - THE PARAMETER MEASURED IS GREATER THAN A PRESET VALUE. - THE PARAMETER MEASURED IS LESS THAN A PRESET VALUE. - THE PARAMETER MEASURED DEVIATES FROM A PRESET VALUE BY MORE THAN A PRESET AMOUNT. SAME AS ABOVE EXCEPT WITH AN AUTOMATICALLY SET VARIABLE VALUE. SAME AS ABOVE EXCEPT WITH REQUIRED HYSTERESIS BETWEEN TURN ON AND TURN OFF.
	NON-INSTRUMENT BISTABLE OUTPUT INDICATOR SAME AS EXPLAINED ABOVE
	ALARM ANNUCIATOR (ALARMS ON THE SAME SHEET WITH THE SAME SUBSCRIPT) SHAKE A COINCELL ANNUCIATOR VIBRATION.
	REACTOR TRIP "FIRST OUT" ANNUCIATOR
	TURBINE TRIP "FIRST OUT" ANNUCIATOR
	INDICATOR LAMP A ACTUATION STATUS LIGHTS T TRIP STATUS LIGHTS P PERMISSIVE STATUS LIGHTS B BYPASS STATUS LIGHTS C COMPUTER INPUT
	LOGIC INFORMATION TRANSMISSION
	ANALOG INFORMATION TRANSMISSION
	ANALOG DISPLAY 1 ANALOG INDICATOR 2 RECORDER 2 PEN 3 RECORDER 3 PEN R0 RECORDER 0 PEN ANALOG SUMMER
	ANALOG INPUT
	ANALOG GATE
	ANALOG OUTPUT

NOTES

1. IN ALL LOGIC CIRCUITS, THE INDICATED ACTIVATION OF A SYSTEM OR DEVICE OCCURS WHEN A LOGIC 1 SIGNAL IS PRESENT, EXCEPT WHERE INDICATED OTHERWISE. ALL BISTABLES ARE "DE-ENERGIZED TO ACTIVATE" SUCH THAT A LOGIC 1 SIGNAL IS REQUIRED TO BE PRESENT WHEN THE BISTABLE OUTPUT VOLTAGE IS OFF.
2. EXCEPT WHERE INDICATED OTHERWISE, THE FOLLOWING IS TRUE. ALL LOGIC CIRCUITS ARE REDUNDANT. ALL INSTRUMENT CHANNELS, BISTABLES, ANNUNCIATORS, COMPUTER INPUTS, AND INDICATOR LAMPS ARE NOT REDUNDANT. INSTRUMENT CHANNELS DO NOT HAVE REDUNDANT ACTUATORS, BUT TO HAVE REDUNDANT CONTACTS WHERE LOGIC IS REDUNDANT. ALL INDICATOR LAMPS, ANNUNCIATORS, AND COMPUTER INPUTS ARE CONNECTED TO BOTH TRAINS UNLESS LOGIC IS REDUNDANT; SO THAT A SIGNAL IN EITHER TRAIN WILL ACTIVATE.
3. THIS SET OF DRAWINGS IS IDENTICAL FOR UNITS 1 & 2 EXCEPT FOR THE TAG NUMBERS. FOR UNIT 1 TAG NUMBERS ADD A "1" EXAMPLE: 1PC-453E. FOR UNIT 2 TAG NUMBERS ADD A "2" EXAMPLE: 2PC-453E.
4. WHATEVER A PROCESS SIGNAL IS USED FOR CONTROL, AND IS DERIVED FROM A PROTECTION CHANNEL, ISOLATION MUST BE PROVIDED.
5. THIS SET OF DRAWINGS ILLUSTRATES THE FUNCTIONAL REQUIREMENTS OF THE REACTOR CONTROL AND PROTECTION SYSTEMS, 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 25)
REACTOR CONTROL SYSTEM (SHEETS 9 TO 12)
6. FOR BUAL BISTABLES (a. BISTABLE WITH COMMON INPUT CIRCUITRY, BUT WITH 2 SETPOINTS. b. OUTPUTS THE OUTPUT SETPOINT NUMBER (AS TAGGED PHYSICALLY ON THE BISTABLE) IS SHOWN CIRCLED BELOW THE BISTABLE SYMBOL.

EXAMPLE

DEVICE FUNCTION LETTERS AND NUMBERS

FB	FLOW CHANNEL
LC	LEVEL CHANNEL
NC	NUCLEAR CHANNEL
PC	PRESSURE CHANNEL
RB	RADIATION CHANNEL
SC	SPEED CHANNEL
TC	TEMPERATURE CHANNEL
ZB	POSITION CHANNEL
20	ELECTRIC OPERATED VALVE
27	UNDERVOLTAGE RELAY
33	POSITION SWITCH SUFFIX LETTER
ac, bc, cc	LIMIT SWITCH
tc	TORQUE SWITCH

POSITION SWITCH DEVELOPMENTS

52	AC CIRCUIT BREAKER SUFFIX LETTER
a	AUXILIARY CONTACT - OPEN WHEN MAIN CONTACTS ARE OPEN
b	AUXILIARY CONTACT - CLOSED WHEN MAIN CONTACTS ARE OPEN
H-IN	CELL SWITCH - CLOSE WHEN BREAKER IS IN THE CONNECTED POSITION
63	PRESSURE SWITCH
71	LEVEL SWITCH
80	FLOW SWITCH
81	UNDERFREQUENCY RELAY

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NO.	REV.	DATE	BY	CHKD.	DESCRIPTION
1					ISSUED FOR CONSTRUCTION
2					REVISIONS TO LOGIC SYMBOLS
3					REVISIONS TO ADDITIONAL SYMBOLS
4					REVISIONS TO DEVICE FUNCTION LETTERS AND NUMBERS
5					REVISIONS TO NOTES
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WESTINGHOUSE PROPRIETARY DATA

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DATE: 1/16/63
BY: J. J. FARLEY
CHKD: J. J. FARLEY

FUNCTIONAL DIAGRAM INDEX & SYMBOLS

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ANSTEY APERTURE CARD

WESTINGHOUSE PROPRIETARY DATA

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