OPEN COOLING TOWER WATER TREATMENT FLOW DIAGRAM

NOTES TO DESIGNER:
- NEUTRALIZER NOT REQUIRED IF BLOWDOWN TO SANITARY SEWER
- STATIC MIXERS NOT REQUIRED IF BLOWDOWN TO SANITARY SEWER
- INHIBITOR AND NEUTRALIZER PIPE TYPE IS DEPENDENT ON LENGTH OF RUN:
  - 3/8" TUBING FOR LENGTHS LESS THAN 15'
  - Ø3/4" PVC FOR LENGTHS 15' OR MORE
  - 1/2" PVC AND FITTINGS (SCH 80) FOR LENGTHS 15' OR MORE
  - 3/4" TUBING FOR LENGTHS LESS THAN 15'

SEQUENCE OF OPERATIONS:

LEVEL CONTROL:
1. WHEN THE BASIN WATER LEVEL DROPS BELOW THE LOW LEVEL PROBE, A LEVEL RELAY OPENS THE MAKE-UP VALVE AND STARTS THE INHIBITOR INJECTION PUMP.
2. WHEN THE BASIN WATER LEVEL RISES ABOVE THE HIGH LEVEL PROBE, A LEVEL RELAY CLOSES THE MAKE-UP VALVE AND STOPS THE INHIBITOR INJECTION PUMP.
3. WHEN THE BASIN WATER LEVEL RISES ABOVE THE HIGH ALARM LEVEL PROBE, A LEVEL RELAY SIGNALS THE DCS SYSTEM THAT THE BASIN WATER LEVEL IS LOW.
4. WHEN THE BASIN WATER LEVEL DROPS BELOW THE LOW ALARM LEVEL PROBE, A LEVEL RELAY SIGNALS THE DCS SYSTEM THAT THE BASIN WATER LEVEL IS HIGH.

WATER CONDUCTIVITY CONTROL:
1. WHEN THE CONTROLLER SENSES WATER FLOW FROM THE FLOW SWITCH, IT STARTS AUTOMATIC CONDUCTIVITY CONTROL.
2. WHEN THE CONTROLLER SENSES BASIN WATER CONDUCTIVITY BELOW THE SET POINT, IT OPENS THE BLOWDOWN VALVE AND STARTS THE NEUTRALIZER INJECTION PUMP.
3. WHEN THE CONTROLLER SENSES BASIN WATER CONDUCTIVITY ABOVE THE SET POINT, IT CLOSES THE BLOWDOWN VALVE AND STOPS THE NEUTRALIZER INJECTION PUMP.

INJECTION PUMP PRIMING:
1. WHEN THE INHIBITOR INJECTION PUMP PRIMING BUTTON IS DEPRESSED, THE INHIBITOR INJECTION PUMP STARTS AND RUNS FOR 2 MINUTES (ADJUSTABLE). THEN IT STOPS.
2. WHEN THE NEUTRALIZER INJECTION PUMP PRIMING BUTTON IS DEPRESSED, THE NEUTRALIZER INJECTION PUMP STARTS AND RUNS FOR 2 MINUTES (ADJUSTABLE). THEN IT STOPS.

MAKE-UP VALVE TEST:
1. WHEN THE PUSH TO TEST BLOW-DOWN VALVE BUTTON IS DEPRESSED, THE MAKE-UP VALVE OPENS FOR 2 MINUTES (ADJUSTABLE). THEN IT CLOSES.

BLOW-DOWN VALVE TEST:
1. WHEN THE PUSH TO TEST BLOW-DOWN VALVE BUTTON IS DEPRESSED, THE BLOW-DOWN VALVE OPENS FOR 2 MINUTES (ADJUSTABLE). THEN IT CLOSES.

INHIBITOR INJECTION PUMP STARTS AND RUNS FOR 2 MINUTES (ADJUSTABLE). THEN IT STOPS.