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Spallation Neutron Source

Central Utilities Building (CUB) Compressed Air System Controls Functional System Design (FSD)

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A U. S. Department of Energy Multi-Laboratory Project

SPALLATION NEUTRON SOURCE

Argonne National Laboratory • Brookhaven National Laboratory • Lawrence Berkeley National Laboratory • Los Alamos National Laboratory • Oak Ridge National Laboratory

**Central Utilities Building Compressed Air System Description
TD8025 Rev 0, January 14, 2003**

Operating Philosophy

Purpose:

The purpose of the compressed air system operation is to:

- a) Provide an operator indication of the air pressure and humidity being provided to the Conventional Facilities systems.
- b) Provide an operator indication of the operation state and status of the two CUB air compressors.

Assumptions:

None

Operator Controls and Operating Modes

None

OPERATOR INTERFACE DEFINITIONS

Local Hardware/Manual Operator Controls

- 1) Condenser water supply pressure gauges isolation valves (*HV4142, HV4146*)
- 2) Condenser water return pressure gauges isolation valves (*HV4144, HV4148*)
- 3) Condenser water supply pressures (*PI4141, PI4143*)
- 4) Condenser water return pressures (*PI4142, PI4144*)
- 5) Condenser water supply temperatures (*TI4141, TI4143*)
- 6) Condenser water return temperatures (*TI4142, TI4144*)
- 7) Condenser water supply low flow indicators (*FSL4141, FSL4142*)
- 8) Wet air receiver pressure gauge isolation valve (*HV6015*)
- 9) Wet air receiver pressure (*PI6001*)
- 10) Coalescing pre filter 1 differential pressure gauge isolation valves (*HV6053, HV6054*)
- 11) Coalescing pre filter 1 differential pressure (*PDI6003*)
- 12) Coalescing pre filter 1 drain valve (*HV6020*)
- 13) Coalescing pre filter 2 differential pressure gauge isolation valves (*HV6040, HV6041*)
- 14) Coalescing pre filter 2 differential pressure (*PDI6002*)
- 15) Coalescing pre filter 2 drain valve (*HV6018*)
- 16) After filter 1 differential pressure gauge isolation valves (*HV6058, HV6059*)
- 17) After filter 1 differential pressure (*PDI6004*)
- 18) After filter 2 differential pressure gauge isolation valves (*HV6045, HV6046*)
- 19) After filter 2 differential pressure (*PDI6005*)
- 20) Final filter 1 differential pressure gauge isolation valves (*HV6061, HV6068*)
- 21) Final filter 1 differential pressure (*PDI6006*)

- 22) Final filter 2 differential pressure gauge isolation valves (*HV6048, HV6031*)
- 23) Final filter 2 differential pressure (*PDI6007*)
- 24) Compressed air system pressure isolation valve (*HV6081*)
- 25) Compressed air system pressure (*PI6008*)
- 26) Compressed air system drop leg isolation valve (*HV6084*)

Software HMI/EPICS Digital Operator Controls

None

Software HMI/EPICS Digital Displays

- 1) Air compressor 1 on/off state
- 2) Air compressor 2 on/off state

Software HMI/EPICS Analog Operator Controls

None

Software HMI/EPICS Analog Displays

- 1) Compressed air system pressure (*PT6000*)
- 2) Compressed air system humidity (*MT6000*)

Alarms

- 1) Air compressor 1 failure
- 2) Air compressor 2 failure
- 3) Compressed air system pressure exceeds high or low limits
- 4) Compressed air system humidity exceeds high or low limits

Control Logic Description

None

