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VLA ELECTRONICS MEMO NO. 238

Vertex Room A/C Receiver Temperature Controller Modification

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This Memo describes the modifications to the VLA vertex room air conditioner compressor and B-Rack. This modification will prevent the fusible plug on the refrigerant receiver from melting and causing the refrigerant (R22) to escape into the atmosphere. If the compressor discharge flow temperature reaches 88 degrees Celsius (190F), a receiver over temperature control (ROC) will turn off the compressor, preventing the fusible plug from melting. Also a monitor point will be added in order to monitor the temperature of the receiver near the fusible plug.

The ROC is a Ranco electronic temperature controller P/N ETC-111100-000 and is installed into the elevation platform HVAC control box just to the right of the vertex room air conditioner compressor. The temperature probe is run from the ROC through a conduit and is attached to the Refrigerant Receiver. The ROC is powered by 240 VAC , which is supplied in the box. The SPDT output relay of the ROC supplies 240 VAC threw the normally closed connector to the compressor. When the temperature reaches above 88 degrees Celsius the ROC output relay opens thus shutting off the compressor. Once the temp drops to 71 degrees the relay closes, starting the compressor. Refer to NRAO dwg. D9590004.

The analog output of the ROC that monitors the temperature is connected to a pair of Belden 22 awg wires and run through a conduit up to the low-voltage HVAC control box in the vertex room. From there it is butt-spliced with another pair of Belden wires (19'), which is then run over to the B-rack J1 connector and then to the T2. Refer To NRAO dwg. D13030W08.

The T2 is modified by replacing the 3F header on the interface logic board with a header that has a jumper from pin 1 to pin 14 and a jumper from pin 5 to pin 10. The 4F chip (LH0042 OP Amp) needs to be removed. Refer to NRAO dwg. D13440L1.

The analog temperature voltage can be monitored on Dataset 2, MUX 41. 0 volts=-30 degrees F and 10 volts=220 degrees F. This monitor will provide a means to determine if the system refrigerant charge is getting low, thus preventing a system failure.