

Zorro HVAC Mechanical Inspection

November 19th – November 22, 2013

On Tuesday, November 19, 2013 I arrived at Zorro Ranch to inspect the condition of the HVAC system and review the proposed repairs in progress with Trane Corporation and ECI Controls. I also worked in conjunction with Brice Gordon and performed system wide operational checks of all of the heat pump units. The operational checks included heating and cooling compressor cycle operation, primary heating and secondary heating sequencing through ECI control program on the BMS system. Mechanical checks of all heating reheat coils and Belimo of valve actuators (for reheat control valves). Operational checks of all main system loops, cooling towers, heat pump condenser water and reheat hot water boiler, and Muller flat plate heat exchangers HE#1 and HE #2. We also performed purging of air out of all reheat heating coils on all heat pump systems.

The following is a list of work in progress that needed to be addressed reported by Brice Gordon and repaired by Trane and ECI and also operational checks performed by Brice Gordon and I.

1. Florida heat pump units – performed operational control sequencing checks air purging on reheat coils for HP 1 &2, 3, 4, 5, 7a, 7b, 7c, 7d, 8, 9, 10a, 10b, 11, 12a, 12b, 12c, 12d, and 12d1.
2. Worked performed by ECI Controls HP – 3 – Belimo actuator replacement. HP – 4 – Heating coil replacement. HP – 10a – made adjustment to reheat actuator.
3. Work performed by Trane Corporation (Mechanical Repairs). HP – 3- Freon added due to coil freezing up. HP #5 (Exercise Room) Installed new compressor. HP – 7a – Replaced low pressure refrigerant switch and heating coil three way valve and actuator.

The ECI Control technician performed repairs and checked the control system before my arrival. The ECI technician instructed Brice Gordon on Belimo valve actuator replacement. The Belimo valve actuator is a LRB-24SR. This valve operates and modulates 24 hours a day controlling heating and room set points in the entire residence, the majority of these valves are original to the system and will need to be replaced on an as needed basis. Brice will purchase additional Belimo actuators and replace as necessary. The price per actuator unit is \$150.00 for parts only and is recommended that an ECI Control technician check valve operation after replacement.

The Trane mechanical repairs were necessary and solicited by Brice Gordon due to JB Henderson's lack of repairing heat pump units in a timely manner with too many call backs on previous repairs. The Trane technician working on the heat pump units seemed to be better trained and repaired issues in a more efficient manner. I witnessed all repair issues Trane proposed and all work performed to 100% completion.

After all the proposed work performed by ECI and Trane and all of the operational checks by Brice Gordon and myself the HVAC system is now operating and maintaining set points in all rooms. The ECI control system INET 2000, even though in need of an upgrade still performs accurately and is very durable. I would recommend purchasing a main controller board and keep in stock – price about \$2500.00 – \$3000.00 in case of another system failure. I would keep the current system running as long as possible due to its durability. The problem with a newer upgraded system is will it be as reliable as the INET 2000 has been in this very harsh environment with power outages and electrical storms. I also recommend a better mechanical contractor to perform the preventative maintenance with the projected increased mechanical repairs due to the systems age. I will continue to work along with Brice Gordon to monitor and maintain Zorro Ranch's HVAC system to the highest operational standards.

Richard Barnett