

Zorro HVAC Mechanical Inspection

August 22 -24, 2012

On Wednesday, August 22, 2012 I arrived at Zorro Ranch to inspect the condition of the HVAC system to review preventative maintenance and repairs made by JB Henderson and to evaluate the BMS Inet 2000 control system. The following is a list of systems and equipment that were checked and recommendations for upgrades.

1. **Marley Cooling Tower:** Found corrosion on air intake metal enclosures, water sump and sump housing with elevated levels of corrosion all surfaces need to be re coated, the fill membrane which is the original to the towers installation needs to be replaced due to excessive mineral deposits. The tower spray header and spray nozzle should be repaired to assure proper water flow on fill membrane. I will contact JB Henderson to provide a proposal for this work.
2. **Pool Pack Unit:** The pool pack unit from the original installation was undersized for the pool room area, due to electrical restrictions this unit was the largest single phased unit available at the time. This unit has had to overwork to keep the humidity in the pool area in range due to insufficient air flow from the unit to the overhead air grills and floor air diffusers. The way pool pack is designed to work it washes two of the largest wall spaces on both sides of the pool with a curtain of dry dehumidified air and also pool water is piped into the unit for heat removal and to help preheat the pool water. The pool water was never piped and connected to the pool pack unit. In the past few months the pool pack has experienced many mechanical and electrical problems due to many power dips, power outages, and the inadequate original design. Manolito and Wendy have had JB Henderson replace the system compressor, main electrical circuits, and refrigeration expansion valves to keep the current unit operational. On my visit I have found additional operational issues with the pool pack – no discharge air from the unit is entering above the pool area. A very poor flow of air is coming out of the floor grills below the french doors, I found a very poor suction pressure on the return air side of the unit which I removed the air filters to increase the air flow across the unit until we find a more suitable filter material. The reheat coil which is on the discharge side of the unit which has very limited access and is very dirty and clogged this is restricting the air flow into the pool room, no exhaust air duct or exhaust cycle was ever installed to the unit to help provide with air changes to the room. So after all the money spent this year just to keep the undersized pool pack in operation and all of the additional work that still needs to be addressed, I feel this unit will never do the proper job of keeping the pool room properly dry when the Jacuzzi spa is in operation. When the spa is not running the unit just gets by. I recommend JB Henderson propose a new larger unit that is now available and address the air flow issues in the pool room area. I will have them provide a proposal for the unit replacement.
3. **HVAC Building Management Control System (Inet 2000)** – This control system has been very dependable and has operated since the house opened under very harsh conditions with power outages, power dips, and electrical storms. In the past 12 years we have only done one upgrade to the system software. Before

and during Mr. Epstein's last visit to the ranch we have had two main control panels fail and need replacement. This has also caused various programming issues that have thrown the room set points and heat pump operational parameters out of range which is causing the overall house to feel unbalanced in all rooms. The current systems technology is 12 years old, back in May I provided a proposal to upgrade the entire control system. This new system will give the property better protection with critical alarm with dial out features to ranch personnel, [REDACTED], and myself when critical equipment fails. I recommend the proposed upgrade to the control system that was sent out to ECI on May 18th, 2012 for the replacement of the existing Inet 2000 with the new Delta control system for \$48,730.56. This upgrade is very important to the remote operation of the property from New York and LSJ. I will go back to providing daily offsite monitoring to Zorro Ranch from New York to assure the system is operating properly.

4. **Heat Pump Units with Reheat System:** All units have been operating since house has opened and they all have been properly maintained. We will start seeing compressor and electrical problems due to many years of power outages and dips. We will address these problems as they occur.
5. **Main Electrical Distribution and Motor Control Panels:** After years of power outages, power dips and electrical storms I recommend to have a qualified electrician come in and do preventative maintenance on all main panels, tighten all connections and do an infrared test. I will have JB Henderson provide a proposal for this work.
6. **Main HVAC Pump Room:** This pump room provides water for cooling and heating to heat pumps and reheats hot water to all room zones. The main control panel for the operation of all the pumps needs service. All relays hand off auto and computer interface relays need to be checked for operational issues. I will have JB Henderson provide a proposal for this work.
7. **Fire Safety System:** All smoke detectors need to be tested and cleaned by a proper fire system company. I will try to schedule with [REDACTED] for my next visit to Zorro in October.
8. **Preventative Maintenance Contract:** As you are aware JB Henderson is a mechanical contractor looking over the needs of the ranch mechanical systems. I sat in on a meeting with them on Thursday, August 23rd, 2012. This company is one of the better mechanical and construction contractors in New Mexico. I feel due to Brice Gordon nor I being on the property on a daily basis we need to rely on JB Henderson for preventative maintenance and emergency repairs. To keep in good standings with this company all outstanding invoices need to be addressed.