

Central Compression Project

The central compression project is intended to boost the pressure from 22 producing wells in the Bush Dome reservoir to 250 lbs. pressure, as feed gas to the K-100 CHEU Main compressor. Historically this project has been discussed in Gas Storage Meeting as early as 2007. This project was started about six years ago (2010). The Central Compressor was commissioned Thursday March 12, 2015. Today the compressor is operational, has been running in recycle mode, and final operational procedures (integration, start-ups and shut-downs) are being learned by the crew. Demand for crude helium waned in 2015 and the compressor has not been needed to boost production. The demand is being projected to increase this fall so final integration of the compressor is under way. The following is a time line after construction was completed:

December 31, 2014 - The project completion date has been reached. Construction and installation of the compressor has been achieved. Problems with the electrical system related to the soft start are going to take the project past the original end date. The BLM is completing the HAZOP and Process Hazard Analysis record, the startup procedure and the Management of Change documentation to permit full integration of the new compressor into the K-100 CHEU equipment.

January 22, 2015 – MSD (Main System Distribution) / MVMCC (Medium Voltage Motor Control Center) had problems and were trying to find anticipated corrective action completion so a response can be made to BLM's inquiry. The electric service from Xcel has been determined to be "Delta" configuration however the 2500 horsepower booster gas compressor motor is strictly a "WYE". Xcel Energy verified that in fact they had a WYE configuration. We have sent the information from earlier today to GE - the motor vendor. They have asked for the following info: 1. Starting voltage and voltage ramp and 2) the resistance between lines T1-T2; T2-T3, T3-T1.

January 23, 2015 - Xcel Energy swapped a couple of our connections at the substation dip pole to correct a rotation problem.

January 27, 2015 – RT Electric subcontractor along with their high-voltage subcontractor, equipment manufacturer representative will be on site testing their equipment. Testing reveals soft-start output only Phase A and Phase C and nothing for Phase B.

January 30, 2015 - During the process for commissioning of the central compressor, the contractor encountered problems with start-up of the 2500 HP motor. Testing was done on the motor, and it was discovered that the Motor Control Center related to the soft start was defective. The electrical components will be delivered /installed on Monday, February 2, 2015, and the motor briefly energized for rotation and to validate operations. The contractor is checking with

the compressor manufacturer to see when their technicians can be mobilized to complete commissioning, and provide operator training on the compressor.

January 28, 2015 - Reliable believes the biggest delay as of right now is pin pointing the time of repairs. Reliable will provide this information in a formal letter once all aspects of this fix become available. Once again, Reliable apologizes for this unforeseen malfunction. There is a 3-week scheduling notification to get UEC back on location; therefore, it is our goal to get them scheduled this week.

February 2, 2015 - The Schneider-Electric Sq. D rep, RT Electric, and Reliable will be back on site at 11:00 AM to perform the replacement of defective parts in the soft start equipment and operational verification testing.

February 6, 2015 - Yvonne Solar- Sr. Project Manager/Schneider Electric-Square D, OEM supplier of all Square D equipment on site. Todd Scott-CED Las Cruces – Vendor of Square D gear. Paul Caskey - Schneider Electric – Paul will coordinate the technicians assigned from field services group.

February 10, 2015 - The GE tech believes the issue must be with the motor soft-start controls and we should receive the motor test data from GE thru UE Compression hopefully tomorrow.

February 12, 2015 - We continue on track with Friday's continuing efforts and have asked RT Electric / Schneider-Electric Square D to provide a test plan on their forthcoming actions for us to monitor until resolved.

February 17, 2015 – The contractor (Reliable Contracting Group) for the central compression had several subcontractors on location Friday, February 13, 2015. The electrical equipment was put through a full check and it was discovered that the wiring in the soft start portion of the motor control center had been incorrectly wired at the factory. This was corrected on location, and the 2500 HP electric motor was turned over several times without any faults.

February 23 – 27, 2015 - UE compression on site to commission the compressor.

February 23, 2015 a subcontractor (UE Compression) will be on location to finish commissioning the compressor, followed by training, and start-up of the compressor. The BLM is expecting to start the compressor on Thursday, February 26, 2015. The BLM will attempt to simultaneously produce into the plant and into the central compression. After performing necessary tests on the central compressor, the compressed gas from the central compression will route to the existing compressor (K-100). There is a potential for the plant to go down during these operations.

February 24, 2015 - Contractor discovered dowel pins on the electrical motor were loose. The contractor hydraulically tightened the loose pins and confirmed the motor was operational. These

issues were repaired however they did delay integration of the K-100 and New Compressor. An oil leak and also a coolant leak were found during the 24 hour recycle run. The commissioning punch list is still being addressed by the contractors. Employee training will be provided during this week.

February 27, 2015 – The contractors have provided employee training for operating the new compressor. A programmer was on site this week to reverse the suction control valve routines and program corrections for the Guardian Control Center. Contractor made arrangements to make repairs for the leaks next week.

March 5, 2015 – BLM continues to work with contractors to make preparations for the 24 hour commissioning run. The plan is to keep the compressor operating after the test and observe performance. Official commissioning date is expected to be March 12, 2015. Although the risk is low, the BLM will announce the potential for a plant outage during this process.

March 9-13, 2015 - UE Compression back on site to continue training.

March time frame - BLM ran the compressor for approximately two 24 hour time periods.

April 20, 2015 – lightning event – suppression system exploded. Duke Electric cleaned the buss bars and insulated the buss bars, which had not previously been insulated. A new disconnect box was installed and connected.

June 16, 2015 – second lightning event – disconnect box exploded.

June 26-29, 2016 – Multiple e-mails regarding the investigation after the explosion of the disconnect box. Electrical Engineers recommended it to be re-installed.

July 20-21, 2015 – letter to contractor with question regarding compressor wiring.

July 25, 2015 – letter from contractor with response to question regarding incoming wiring.

July 28-29, 2016 – response reviewed and next steps determined. Electrical engineers favor keeping the surge protection.

August 3-4, 2016 – determining where the surge protection might be necessary.

September 1-2, 2015 – Brent Gage, Barry Stoll and Nick Brazzle had e-mail traffic regarding cost of the buss bars. Barry to gather information and Nick as contracting officer will also approach Reliable for pricing information and the question about Consolidated Electrical Distributors (CED).

September 9, 2015 – e-mail discussion between Chuck Svoboda and Brent regarding actual need for replacement. Chuck would need more information. Brent requested pictures.

September 24, 2015 – Brent requested Barry Stoll to obtain some good close-up pictures.

October 20-21, 2015 – e-mail traffic between Chuck Svoboda and Brent with conclusion that Schneider Electric (Square D) is the only source.

October 28, 2015 – Brent e-mailed Phil (contractor) with the details about the buss bars.

November 23, 2015 – Brent and Chuck Svoboda had an e-mail discussion regarding secondary market buss bars.

December 4, 2015 – A Private Company was unable to find the Square D information through their person that does business with them. This was a failure, as they did not have proper data.

December 18, 2015 – e-mail question by Robert Jolley to Todd (contractor) regarding the buss bars. Additional e-mail traffic from December 18, 2015 – January 4, 2016 regarding efforts to obtain answers.

January 6-7, 2016 – e-mail traffic between Todd and Brent with comment that Square D will have to come out and investigate.

January 13, 2016 – Brent contacted Todd regarding costs for buss bar replacement.

January 27 – February 2, 2016 – e-mail traffic between Todd Scott and Charles Mitchell regarding quotation for buss bars. Charles noted need for SAM.gov registration. Feb 1 – Todd indicated that corporate handled SAM.gov registration. Feb 2 – e-mail discussion regarding no action until authorized by procurement.

February 18, 2016 – Brent prepared purchase requisition for the buss bar purchase.

February 24, 2016 – several e-mails between Kristen Ruiz-Jiminez and Brent regarding the buss bar purchase. Kristen reported that none of the vendors replied. Brent provided Schneider Electric contact.

March 3, 2016 – received e-mail from Darlene Arnold with Schneider Electric that buss bars will be shipped March 28, 2016 and Austin will bring them to the site on March 31, 2016.

March 28, 2016 – e-mail from Brent requesting verification of buss bar installation on March 31, 2016.

March 29, 2016 – Brent sent e-mail to Austin Fairman, Technical Field person, with Schneider Electric to verify installation of buss bars on March 31, 2016.

March 30, 2016 – e-mail from Brent indicating that Austin will be at Cliffside at 8:00 AM, March 31, 2016.

March 31, 2016 – Brent reported in an e-mail that Austin brought along some additional wiring and associated parts in case wire had to be replaced between the buss bars and the main breaker.

April 12, 2016 – Brent e-mailed Kristen regarding installing new termination ends on the wires to the buss bars.

April 15, 2016 - Power returned to the Central Compressor

April 25, 2016 – Initial meeting to go over the process to get the compressor ready to start up

May 2, 2016 – Went through the meeting notes and work that had been done to the compressor. A determination was made by the HAZOP team the compressor was ready for startup. Signatures obtained and start-up of the Central compressor estimated start date Wednesday, May 4, 2016.

May 3, 2016 – Mark Musick (Safety Engineer) finalized the HAZOP on Compressor Start-Up Procedures and issued report.

May 4, 2016 – Restarted the compressor, started first attempt. Upon loading the compressor it shut down. No leaks but the suction valve and recycle vales only open 5%. Corrective action taken. Restart planned for May 5.

May 5, 2016 – Compressor start up 9:00 AM ran to 5:30 PM, noted leaking gasket. Compressor shut down for maintenance repair to gasket.