

# Utilities Department – Highlights for 2013

## Production Division

### Burdick Station:

- GT2 generator breaker was repaired with the assistance of Phelps Control personnel.
- Transformer testing on all units at Burdick Station was completed.
- The water injection stop valves on GT2 and GT3 were rebuilt.
- Black start testing/training was done at Burdick Station.
- Batteries were replaced on Steam Units #1, 2, and 3, and GT-2 and 3. This included bringing the Unit #1 & 2 battery room up to code.
- The Mobile Generating Station (MGS) was moved and tested at Substation “E”.
- All existing original plant drawings for all units were scanned and are now available on the local network.
- NOx correlation testing on GT2 and GT3 was completed to meet EPA reporting requirements needed for the next five years.

### Platte Generating Station:

- Testing was completed to determine new operational turndown (the minimum megawatt output of 40 MW gross).
- Repaired “B” mill due to a cracked bearing retaining ring.
- Repaired “D” mill after a pressure excursion occurred in the mill.
- Removal of temporary turbine valve screens after installation of low NOx burners in 2012.
- Adjustment and calibration of turbine control valves.
- Chimney was inspected and safety rail and swing gates were installed.
- Boiler and precipitator inspection were completed.
- Turbine insulation blankets were repaired.
- Railroad loop around Platte Generating Station was repaired.
- The main setup transformers were tested.
- The air permit for the Air Quality Control System was submitted and went through public comment and was approved by NDEQ.
- A roller on “D” mill was replaced.
- Wind damage occurred on the cooling tower during a late winter storm, emergency repairs were completed in May.
- The leaking feedwater flow meter drain valve was repaired.
- A replacement Utility Technician was hired after Mike Semm retired.
- Painting of conveyor structures and secondary containment berms was completed.
- The replacement of feedwater heater #5 was completed during the fall outage, this heater weighs 35,000 lbs.
- Test burn of coal from the Belle Ayre Mine was successful, and will provide coal for Platte Generating Station for 2014.
- On UNL Engineering Day, PGS gave tours to 160 potential future Engineers.
- The construction of the Air Quality Control System started in August, foundations were poured and structural steel was erected. This project is being done to meet the requirements for MATS (Mercury Air Toxics Standards).

- A new vibration monitoring system was installed at PGS when the existing system was no longer supported by the manufacturer.
- Local dust collection systems were installed on the conveyors to mitigate airborne dust from coal.

### Water System

- Monitoring wells were installed along South Locust to insure contaminants are not entering the Wellfield.
- Rogers Reservoir #1 and #2 were cleaned and inspected.
- The Uranium Removal System at the Wellfield was modified to change the first vessels from an up flow to a down flow configuration, to reduce the frequency of back flushing operations.
- Water Remediation Technology (WRT) installed new media used to remove Uranium from the water system.

### Environmental

The following reports were completed and submitted to NDEQ and EPA for air emissions:

- Semi-annual Certification of Compliance
- Annual Deviation Report
- Air Emissions Inventory
- Annual Green House Gas (GHG) Reporting

Completed training on new requirements for the first quarter EDR submission to EPA.

When Colorado received a flooding event in the Platte River Basin, large amounts of water were expected in the Platte River which was dry at the time. Burdick prepared for the flood on the Platte River, but thankfully, water only filled the channels and did not flood the surrounding areas. See pictures below (before & after).





## **Water Department**

- This year the Water Department began deployment of radio modules for the A.M.I. Pilot Project in Merrick County. Over 100 radios were installed, wired, and programmed in two days by Water Department employees and Landis + Gyr technicians. The Water Department finished installing the remaining radios, and programming was completed by Water and Line Department employees. The A.M.I. system is now returning meter readings at 100%.
- The Water Department was also very busy working with contractors this year. There were numerous taps made ranging in size from  $\frac{3}{4}$ " to 12", and there were 122 fire hydrant meter assemblies set out and picked up that contractors use for temporary water.
- Two hundred feet of 12" diameter water main was installed for the new Clark Street crossing of the Union Pacific Railroad tracks and a storm sewer conflict at Highway 34 and DeAnn Road.
- Two 6" and one 12" line stops were completed.
- Thirty one water mains were repaired.
- Seven fire hydrants and 11 line valves were replaced by the Water Department in addition to normal system maintenance (operating line valves and fire hydrants, flushing dead ends, taking water quality samples, repairing or replacing water meters and performing utility locates for Digger's Hotline).

## **Transmission – Phelps Control Center**

- All Substation transformers were electrically tested. This requires each transformer to be removed from service and disconnected in order to properly isolate the unit for testing. Testing occurs every seven to ten years.
- The primary two-way radio repeater used by the Utilities Department was relocated from Phelps Control Center to the roof of Centennial towers. Due to the FCC Narrow Banding Mandate that was recently put into place, a lack of adequate reception in all areas of the service territory was noticed. By relocating the repeater to a centralized and higher location, better reception was accomplished. A backup repeater remains at Phelps Control Center.
- A Request for Proposal was sent out for architectural services to design a new warehouse directly north of Phelps Control Center and design a remodeling plan for Phelps Control Center. Proposals were received and a contract was awarded to Webb Architects to perform this work. Construction of the new warehouse is expected to be completed in 2014. Remodeling of Phelps Control Center is anticipated to take place in 2015.
- New security cameras were installed at all substations. The new cameras provide better resolution and allow for remote control to better monitor specific locations within a substation. Better motion detection is anticipated during 2014.
- Specifications were completed for a new substation to be located on the northwest corner of the Platte Generating Station property. Bids were received and a contract was awarded to IES Commercial. Construction began in November with a completion by late 2014.
- The AMI pilot project was started with the main data collector installed at Phelps Control Center. Work continues in order to get familiar with the system and utilize the data that is available. In addition to meter data, access to field devices is available for better monitoring and control of the system.
- Annual testing of substation transformer oil provides information as to the internal condition of the transformer. One particular 43 year old transformer began showing signs of pending failure. That transformer was removed from service. A spare transformer has been put in its place with an anticipated return to service during the spring of 2014.
- 2013 was the first full year of involvement with the Southwest Power Pool Energy Imbalance Services Market. This market allows the sale of excess power when the market price is higher than the production cost and the purchase of power when the market price is lower than the production cost. So far it has allowed a significant increase in power sales throughout the year.
- A Request for Proposal was developed and sent out for the development of an Electric System Master Plan. This is an in depth look at the electric system and how it is poised for the next twenty years. A contract was awarded to Black & Veatch. This project will begin in 2014.

## **Underground Division**

Planned rebuilds were integrated with new construction throughout the year. As new commercial and residential areas are developed, oftentimes they are located in, or in close proximity, to older sections of the system planned for rebuild. The combining of the two ends up meeting both the needs of new customers along with maintenance needs as the system ages. With this combination, 53 transformers, 24 high voltage terminals, 69 cable runs with 207+ terminations were replaced. Some notable projects in this classification were:

- ✓ Walmart Subdivision – 3644 W. 13<sup>th</sup> Street
- ✓ Grand Island Clinic – 2444 W. Faidley
- ✓ Thompson Company – 3636 W. Stolley park Road
- ✓ West Park Plaza (Melody Lane) – West Highway 30
- ✓ Chief Main Building Plant – 2391 S. North Road
- ✓ Wasmer Detention Cell Project – 2<sup>nd</sup> & Logan
- ✓ Healthplex – 2909 West Highway 30
- ✓ CVS Pharmacy – 1710 West 2<sup>nd</sup> Street
- ✓ Stix – 811 West 4<sup>th</sup> Street

New or additional customer services required the installation of 56 transformers, 16 high voltage terminals, 67 cable runs and 251+ terminations. Some of these were:

- ✓ Sterling Estates – East Norseman Avenue
- ✓ Roe Buick – 3444 W. Stolley Park Road
- ✓ Bosselman's 3700 East Highway 34
- ✓ Lockwood School – 750 Lockwood Road
- ✓ Verizon Tower – 1922 West 3<sup>rd</sup> Street
- ✓ Panda Express – 960 Allen Drive
- ✓ Vontz Paving – 3751 East Highway 34
- ✓ Ummel Residence – 567 S. Shady Bend Road
- ✓ Goodwill Warehouse – 1140 S. Lincoln Street
- ✓ JBS – 555 S. Stuhr Road
- ✓ Rainy Day Farm – 2690 S. Gunbarrel
- ✓ Oseka Residence – 3524 Farmstead

## **Utilities Engineering Division**

The Utilities Engineering Division provides civil engineering services for electrical and water infrastructure projects for the City. Project upgrades and new construction resulted in over 49,000 linear feet of new water lines, and 30,000 linear feet of new power lines being installed throughout the service area to meet the needs of our citizens.

The Division performed construction testing and inspection on two Water Main Districts, three City Water Main Projects, Eight projects by private developers, and 15 commercial projects. A total of 271 CADD files for electrical infrastructure records were drafted, edited, or revised. Additionally, 13 contracts and requests for proposals were prepared. The Division also prepared 44 easements for Utility Department projects. Major work completed in 2013 included:

- Water Main Project 2011-W-4 was located in eastern Hall County and western Merrick County. The private wells in the area were impacted by a plume of contamination that affected an area between Gunbarrel Road on the west, Beck Road in Merrick County on the east, Capital Avenue on the north, and Ft. Kearney Road on the south. City water mains and service lines were extended to mitigate this hazard. A total of 4,140 linear feet of 16" ductile iron main, 21,869 linear feet of 12" ductile iron mains, and 5,830 linear feet of 8" ductile iron mains were installed to provide City water service to 165 residential properties.
- Construction, inspection and testing were completed on Project 2013-W-1. The work replaced the water line in Clark Street under the Union Pacific Railroad. The original line was installed in 1917. The new construction installed a 12" ductile-iron water main inside a 24" diameter outer steel casing.
- Water Main Project 2013-W-2 within Sycamore Street, from Highway 30 (1<sup>st</sup> Street) to Ashton Avenue was completed. The project installed an 8" diameter ductile-iron water main and new water service connections to adjacent residential properties. The work replaced the original 4" cast-iron water main that was approximately 100 years old.
- Water Main Districts 464 and 465 were installed at the request of area property owners to provide municipal water service within the Wildwood Subdivision. Both districts were installed under one contract, and placed a 16" diameter water main in Antelope Drive, a 12" main in Wildwood Drive, and 8" mains in Elk and Cougar Drives to serve the commercial development.
- Conducted training for HR, the Fire Department, Regional Planning, Community Development, Information Technology, Parks, Police, and Hall County personnel on how to update and edit City/County GIS data, web-site software, and social media applications.
- New aerial photos were flown and incorporated into the City's master GIS database. The joint City/County project provided high resolution orthophotographic and oblique images for Grand Island and all of Hall County.
- A field check and inventory of the electrical distribution system, and City street lighting network were completed. This involved over 411 miles of overhead power lines, 4,077 transformer banks, and 130 lighting circuits.
- The division purchased new software for asset management of the electrical system data. The software replaces a variety of in-house developed database applications used to maintain the Utilities Department's infrastructure and operational records. The application provides an integrated mapping solution, with analysis tools, reporting options, and a browser-based interface.
- Completed 118 fire flow tests across the City. These are conducted every three years to verify system capacity and performance.

## **Overhead Division**

- In 2013, the Overhead Division was tasked with maintaining and upgrading the overhead distribution lines which entailed 10,345 linear feet of single phase line and 7,100 linear feet of 3-phase line being rebuilt. These upgrades eliminated old primary lines and secondary service wires to provide a safer and more reliable service to utility customers, and to keep the interruption indices (SAIDI) and (SAIFI) well below national averages.

- The division's continuous efforts to keep vegetation clear of power lines were also a contributing factor for minor outages during 2013. This was accomplished with the department's own tree trimming crew, and the use of two contractors clearing 10 sections of lines and removing 156 trees this past year.
- Line Crews installed or replaced 313 transformers. This has improved system reliability and power quality for utility customers as loads continue to increase.
- During 2013, the Overhead Division assisted other departments with installation of poles for Emergency Management, installation of new fiber and poles for the IT Department, and assisted Public Works with snow removal and maintenance of traffic signals.
- An automated meter infrastructure pilot project was implemented in 2013. This consisted of installing 345 electric meters and 154 water meters that can be read remotely. Three capacitor controllers were also installed, and a set of faulted circuit indicators that can control and receive real-time information. These will help to improve power quality and customer service.
- Line Crews completed the installation of 7,500 linear feet of double circuit primary to serve new feeders at the new Substation "J" on Wildwood Drive.