

PITTSBURGH ANGB, PA UTILITY SYSTEM DESCRIPTIONS

General: The 171st ARW installation is located at the Pittsburgh International Airport (PIAP) approximately 16 miles northwest of downtown Pittsburgh in western Pennsylvania. The 171st ARW occupies 179 acres and contains approximately 51 buildings and structures. This land is leased from the Allegheny County Department of Aviation.

System Descriptions: The electric, natural gas, and water distribution systems and the wastewater collection system are being considered for privatization. The utility system information provided here is an estimate only and is subject to change.

Electric: CMS Marketing Service and Trading provides the electrical commodity to the 171st Air Refueling Wing (ARW), Pennsylvania Air National Guard (PA ANG), Pittsburgh IAP, through two lines owned and maintained by Duquesne Light Company. Duquesne Light's lines terminate at the Base substation (Facility 101). A three-phase, 1500 kilovolt-ampere (kVA) transformer owned by the power company steps down the voltage to 4160 Volts (V) primary distribution for the Base. Electrical power for the entire Base is metered at the substation. Government ownership starts at the substation demand-side (secondary) with the switchgear. From the substation, the system feeds the Base with two separate circuits, one supplying the area west of the airfield, and the other supplying areas south and east of the airfield. Base drawings show approximately 13,130 linear feet of underground secondary conductors, 4530 LF of primary underground conductors, approximately 3,840 LF of overhead secondary conductors, and 5740 LF of primary overhead cables. The system also includes the following:

- Fifty transformers ranging from 10kVA to 500 kVA.
- Sixty-seven utility poles of various heights.
- 22 airfield light stanchions
- Three double throw vacuum switches

There is no Supervisory Control and Data Acquisition (SCADA) system for remote operation or monitoring of the electrical system. However, Duquesne Light Company has the capability to remotely read the electric meter at the substation through a modem. In addition, there are only three facilities of forty-four that have meters.

The existing system is primarily underground, with above ground lines in a few areas. The system varies in age from 7 to 50 years. The underground cable was installed in polyvinyl chloride (PVC) conduit with concrete casing in 1992. Most of the overhead cable is original, installed in the early 1950s. Transformers and associated equipment range in age from approximately 25 years for pole mounted, and approximately 5 years for those on pads.

All of the underground cables and ducts, and most of the overhead cables are in good condition. Transformers are generally in good condition, and all of the polychlorinated biphenyl (PCB) contaminated electrical equipment has been replaced. Manholes and power poles are in good condition, although the manholes are considered confined spaces for maintenance entry and two poles have minor problems with structural loads. The Base has systemic problems with 3-phase equipment motors (such as for air conditioning compressors) burning up due to single phasing characteristics when power is intermittently lost, or when restoring Base power after outages. The Base is studying the installation of a 3-phase loss relay system to rectify the problem. There are no known code violations or discrepancies. LLi Technologies and Sergeant Electric maintain the 171st ARW electrical utilities through service contracts.

Natural Gas: CMS Marketing Services and Trading supplies natural gas to the 171st ARW through a 6-inch coated and wrapped steel feeder pipe owned by the Peoples Natural Gas Company. Pressure is reduced from 40 psi to 10 psi at the metering station on Cliff Mine Road and then distributed to Base facilities through piping ranging from 0.5 to 4 inches. Pipe materials are a combination of black iron and polyethylene. The Cliff Mine Road metering station is the only entry point for natural gas, and other than the building regulators, this is the only point where pressure is reduced. There are no meters at the facilities on the Base, only regulators with shut-off valves. Peoples Natural Gas owns all natural gas lines, meters, and regulators to the point of pressure reduction; the 171st ARW assumes ownership of the gas lines on the “low-side” of the reducing station. Base drawings show approximately 9,400 linear feet of gas mains on-Base. Approximately 1,610 LF of steel piping was replaced in 1990 and the remaining 7800 LF was installed in 1955. There are no valves on the distribution system, other than those at the buildings. The portions of the system with black iron pipe are approximately 45 years old; the polyethylene pipe is less than 10 years old. The 171st ARW has no personnel or equipment on-base to repair breaks or leaks in the polyethylene pipe, and therefore maintains the natural gas system by service contract on an as required basis.

Potable Water: Water is supplied to the 171st ARW from the Moon Township Municipal Authority (MTMA) via a 10-inch ductile iron main that runs beneath runway 32-14 and the approaches to runways 28L and 28C. The base does not own or maintain this 10-inch water line. The base owns the supply line and distribution mains. A single meter located near the base of the elevated water storage tank located at the 911th Airlift Wing, (AW) Air Reserve Station, Pittsburgh IAP, meters the main feed from MTMA. MTMA owns and reads this meter. Findlay Township provides a backup water source, which enters the base at the main gate and is metered in a pit near at the main gate just inside the installation property. Findlay Township owns and reads this meter. After metering, the water enters the base distribution system, which is a combination of several loops, and a number of long dead-end branches. There are no water meters installed at the facilities. The average pressure supplied to the base is 90 psi. The base has a 150,000 gallon storage tank, which is used for fire protection only. The 171st ARW provides no additional water treatment, and the base has no active potable wells.

Including the supply lines to the base, water mains are comprised of approximately 19,419 linear feet of pipe, most of which is 8-inch asbestos cement that is nearly 50 years old. The system's dead ends do not appear to create any maintenance problems; the system balance is good, the dead ends all provide a means for flushing, and the Base reports no sediment or brown water problems. The system's age, however, presents several serious problems. System repairs are difficult because of the high percentage of mains located under the airfield-parking ramp and other pavements, and the proximity of the mains to buildings and other obstacles. The supply line running under the ramp breaks, on average, once each winter. The system's 55 valves are properly located for isolation purposes, but maintenance personnel estimate that only 15 of them work properly. In addition, no contracts were awarded during FY 1999 to correct this condition. There are 28 fire hydrants and associated 4.5-inch valves located on the base. Hydrant-testing results reveal insufficient flow for adequate fire protection. Since the mains appear to be adequately sized to meet the Base's requirements, this is likely due to the constricting effect of mineral deposits on interior pipe walls. This assessment is based on the number of water line breaks to the system and the condition of the piping replaced or repaired. There are no known code violations.

The foregoing problems could be corrected by replacing the Base's 6 and 8-inch mains with new 8-inch mains, and changing the supply source to eliminate the main running under the ramp area. The Base has already identified two alternative recommendations to the current supply sources. These alternatives recommend switching to Findlay Township as the primary source (assuming

they have adequate capacity) and extending a main east of the Base to connect to MTMA's distribution system near Beaver Grade Road. This assessment was made during 1999, therefore some of these problems may have been rectified.

The Base has facility backflow preventer units installed, however, these backflow units are not part of this contract. There are no large backflow preventers on the distribution system.

The 171st ARW maintains the water distribution system by service contract with local plumbing contractor(s).

Sanitary Wastewater: Wastewater generated by the 171st ARW flows off-base through an 8-inch sewer main in the southeast corner of the base, discharged into Moon Township Municipal Authority's (MTMA) 18-inch sanitary sewer line and treated at MTMA's sewage treatment facility. Base ownership ends at MTMA's 18-inch line. Sewage is not metered prior to entering the MTMA sanitary sewer system; instead the Base is billed for sewage treatment fees based upon 100 percent of its potable water consumption.

Industrial wastes are treated through oil/water separators, which subsequently discharge directly to the sanitary sewer system. The oil water separators are not part of this contract. The Base system meets all known regulatory requirements, and the discharge is compatible with MTMA's requirements.

The 171st ARW wastewater collection system consists primarily of 7,626 feet of gravity-flow pipe. The collection system includes laterals, oil/water separators, underground holding tanks, and collector mains. The Base has one lift station with an ejector pump, which serves only Building 316. It is new as a result of that new construction. The lift station is only operated when there is a UTA weekend and occasionally thereafter during the year. Service laterals are typically 3 to 6-inches in diameter, and mains range from 6 to 8-inches. Most of the system consists of the original vitrified clay pipe installed in the 1950s.

The 171st ARW has 31 manholes. Many of these manholes require maintenance as result of age. The major problems are wall repairs, ring repairs, and re-grouting. Three manholes require rising, 1 requires lowering to facilitate waste flow, and the other 27 require maintenance and repair as specified above.

The 171st ARW maintains the wastewater collection system by service contract with a local plumbing contractor.

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