



COMMUNICATIONS SYSTEMS GROUP

South Mississippi Electric's (SME) ability to provide safe and reliable electric energy depends on several different departments working together to serve the 11 Member systems. One group that is vital to the success of SME's operations is the communications systems group, which constructs, maintains and monitors the invisible communications highway that connects each SME location and supports communication between SME and the Member systems.

The continually-growing, ever-changing communication highway consists of SME's telephone system, two-way radio system, the microwave tower system and supervisory control and data acquisition (SCADA).

"Our system has grown by leaps and bounds," said Eddie Hill, communications systems supervisor. "Each year we are adding something new to our system. We are currently in the fourth phase of expanding our microwave communications."

As the communication highway has grown, so has the department. The communications systems group is made up of 10 technicians, plus Foreman Scott Courtney, Planner Brad Beech and Hill. The group works within the engineering department, reporting to Richard Ashley, director communications systems. The group works alongside Engineers Scott Speed and Kelly Massa, who design each microwave site and oversee the contractors who build the structures. The new towers are constructed to meet several needs: to enable expansion into new areas, to replace unreliable phone and data circuits or to bridge a communications gap between two points.

Once the structures are built, Speed and Massa turn over responsibility for the towers to the communications systems group. Currently, the group maintains 60 microwave towers located across SME's service territory. That number will grow to 80 by the end of 2014 when the next phases of towers are scheduled for completion. The group oversees everything located at each microwave tower site—the tower structure, the building that houses all of the communication equipment, and ground maintenance. When problems occur, the group identifies the problem, determines the solution and either implements the solution or contracts with a specialist to correct the problem.

The expansion of the system across SME's entire service territory provides potentially important data in several communication areas. All of SME's internal telephone systems are connected through the towers. Several Member systems, like Singing River Electric, have emergency phones that bypass outside servers and connect directly to SME over the towers. SME's towers have also served the Member systems in other ways by providing all business networking capabilities to Coahoma Electric Power Association (EPA) and Delta EPA, as well as supporting automated meter reading data to Twin County EPA and Delta EPA, and connecting Coast EPA's network in the Gulfport office to their headquarters in Kiln. This system has the potential for expansion with the addition of the new towers and radio repeaters, which could be installed on the towers to grow SME's two-way radio system.

Instantaneous communication of data and real-time measuring and monitoring of transmission and generation systems are critical to SME operations.

Because of the advanced technology required to properly operate and maintain these critical systems, the technicians have had to expand their expertise beyond electronics into information technology.

The communications technicians are continually on call to prevent disruption of this communication. Weather often plays a role in the amount of extra work that the technicians are required to perform—lightning strikes can burn antennas or fog may cause signals to fade. Other disruptions may be caused by equipment that has been vandalized or damaged in some other way.

"Usually damage to the system happens at two in the morning and a technician has to be sent out to assess the damages and restore communications," said Hill. SME is establishing a remote office in Greenwood at Delta EPA's office to improve response times to the northern towers. Plans are to hire a foreman and two techs by the end of 2014.

The Control Center relies on the communications systems group to provide SCADA from all SME switching stations. Each switching station is set up with remote terminal units (RTUs), which allow system operators to remotely control the station through actions such as opening or closing switches.

RTUs also send alarms through the microwave system to warn the Control Center of a problem or the potential for a problem. Alarms can be triggered by such things as an open door on a substation, a breaker that has been switched, or a change in temperature inside the equipment room at a substation or microwave tower that could damage or affect the performance of radio equipment. Many alarms that come into the Control Center are considered priority one, representing the greatest threat to transmitting SCADA. The system operators, who are each trained to respond to the various alarms, notify the communications systems group or the on-call technician of the problem.

"The key to maintaining our systems is to minimize data loss," said Hill. "Some problems are detected before any data loss occurs, and our critical locations have an alternate path through which the data can be delivered. That is why we are on standby at all times to make sure the system is operating as it should."

While the group implements redundant equipment and procedures to prevent data loss, a backup system is also maintained at the Field Operations Center and can be operated from that site if necessary.

"The communication opportunities for SMEPA are endless," said Hill. "By expanding our microwave system to our Members along the coast and western Mississippi, the amount of data that can be sent is greatly increased. It is becoming a never-ending communications highway."