

7.8 COMMUNICATIONS

7.8.1 DESIGN BASIS

A communication system with multiple redundancy has been provided to ensure availability and ease of operation.

7.8.2 COMMUNICATION SYSTEM DESCRIPTION

The communication system consists of seven subsystems:

- a. Plant Public Address (PA);
- b. Commercial Telephone;
- c. Sound-powered phones for plant use;
- d. Sound-powered phones for emergency use;
- e. Microwave system;
- f. Radio telephone system; and
- g. Nuclear Accident Reporting System (NARS)

7.8.2.1 Public Address System

The primary plant PA system utilizes the site-installed Northern Telecom administrative telephone system. The site is divided into five zones. Each zone can be accessed individually from any telephone on the site. An "ALL CALL" is available on certain site telephones that allows all five zones to be accessed simultaneously. Priority paging is also available on certain telephones that allows any individual zone or "ALL CALL" to be accessed while also overriding any non-priority page in progress. The Control Room has telephones that are able to access all five zones simultaneously and override any non-priority or priority page in progress. The plant emergency alarms are also generated by this equipment. The primary plant PA system is powered by diesel-backed instrument bus feeder 2Y1081 via 1X61 and 1P61.

7.8.2.2 Commercial Telephones

The site administrative telephone system is implemented using Voice Over Internet Protocol (VOIP) through a multitude of network switches throughout the site. Network switches for critical plant areas have back up power from the emergency diesel generators or uninterruptable power supplies (UPS) based on the location. Network switches have redundant network feeds to ensure continued functionality in the event of a single upstream network switch loss.

The Emergency Response Plan phones in the control room have backup satellite network connections in addition to the normal VOIP communications. Emergency Response Plan phones automatically switch to the satellite network in the event of loss of the normal network connections. The satellite network has back up power in the form of a UPS to ensure power reliability and availability.

7.8.2.3 Sound-Powered Phone (Plant Use)

The sound-powered phone system is set up in portions of the plant where unbroken communications are needed for certain operations or maintenance. The system consists of a hard wired network with covered jacks at various stations. Phones, headsets, and handsets with extension cords are taken to these stations for remote operations and control communications.

7.8.2.4 Sound-Powered Phone (Emergency Use)

A backup system, completely redundant and maintaining physical separation from the first provides communications capability between the Control Room and areas of the plant, including the interior of containment in the event of loss of normal communications during a fire.

7.8.2.5 Microwave Communication System

Automatic ringdown phones are located in the Control Room and the 500 kV switchyard and are connected to the microwave system. The signals are sent to the antenna in the 500 kV switchyard and are transmitted via microwave radio propagation to the electric system load dispatcher at the Electric Operations Building in Baltimore.

The microwave system also relays radio telephone communications to radio-based stations and microwave receivers off site. Some of the normal telephone traffic between Calvert Cliffs and Baltimore is handled by the microwave system. There is one microwave channel coming into Calvert Cliffs from the Electric Operations Building, which is used by the load dispatcher to contact all BGE generating stations simultaneously. This "ALL CALL" channel does not carry voice communications away from the plant.

7.8.2.6 Radio Telephone System (Plant Use)

The radio telephone system is a system of base stations and repeaters at the plant and base stations remote from the plant. The microwave communication system links the onsite and remote equipment. A primary radio system capable of plant wide radio communications, including communications within each containment, is installed. Through use of repeaters, outside antennas and an indoor continuous antenna, communications among control consoles, hand-held portables and nearby mobile units is possible.

State and local emergency response agencies are included in communications capabilities.

A single channel 150 MHz system is capable of direct radio contact with the Electric Operations Building. This capability is provided to ensure offsite communications in the unlikely event of a simultaneous commercial telephone line and microwave system failure.

7.8.2.7 Nuclear Accident Reporting System

The Nuclear Accident Reporting System (NARS) provides communications between Calvert Cliffs locations and the offsite emergency facilities. The NARS utilizes Voice Over Internet Protocol and has an Uninterruptible Power Supply to provide backup power. Should the internet become unavailable, NARS will automatically transfer over to a satellite path to maintain communication capability. The NARS capable telephones are located in the Control Room, EOF, and TSC.

7.8.3 RELIABILITY AND TESTING

Systems of the types described above are conventional and have a history of successful operation at existing BGE Plants. Most of these systems are in routine use and this will assure their availability. Those systems not frequently used are to be tested at periodic intervals to assure operability when required.