

NUCLEAR THREAT RESPONSE SECTION 2008 - 2009 FACT SHEET CREST UPDATES

The Bureau of Nuclear Engineering's Nuclear Threat Response Section (NTRS) operates a near real-time remote network of highly sensitive radiation detectors surrounding New Jersey's nuclear power plants. The Continuous Radiological Environmental Surveillance Telemetry system, or CREST, maintains ten monitoring stations around Artificial Island, site of Salem 1 and 2 and Hope Creek, and sixteen around Oyster Creek. The stations are located to maximize coverage of every available compass sector, from outside the fence line up to several miles away. Six CREST stations also continuously monitor the Independent Spent Fuel Storage Installations at Oyster Creek and Hope Creek, three at each site. Each CREST station includes a GE Reuter-Stokes pressurized ion chamber, or PIC, filled with argon gas. (For further information, see http://www.gepower.com/prod_serv/products/oc/en/reuter_stokes/security_safeguards/rs131.htm) The PIC is able to accurately detect changes in ambient gamma radiation levels, from normally occurring background radiation to what might be encountered during an emergency event at one of the nuclear generating stations.

The Department of Environmental Protection has contracted with Envitech Ltd. to provide a new central computer system for the Air Pollution / Radiation Data Acquisition and Early Warning System, housed at its headquarters in Trenton. The system supports both the Bureau of Nuclear Engineering and the Bureau of Air Monitoring in their ambient radiation and air quality data acquisition, respectively. It is designed with failover capability and multiple redundancies to ensure maximum reliability. The system also has extensive alarm capabilities to notify staff of system failures and above normal environmental conditions, including ambient radiation levels, via text messages and email. As part of the contract, Envitech Ltd. has built a complete backup computer system that is located at a New Jersey State Police facility to protect against catastrophic loss of the primary system. The facility is manned 24/7 and has an alternate electrical source in the event of a power outage.

Another facet of the contract with Envitech Ltd. has allowed the Department to pursue alternate means of data transmission from the CREST field monitoring stations to the central system. Leased telephone lines were historically used for this purpose and have proven extremely expensive and increasingly unreliable. Wireless communications has been chosen as a superior alternative to leased telephone lines. Wireless transmission equipment have been successfully tested and deployed to seven CREST stations to date. At a fraction of the cost, wireless communications are more dependable than deteriorating copper telephone cables with waning support from service providers whose focus has shifted to newer technologies. Additional CREST sites will migrate to wireless communications as resources and equipment are available.

To further increase system reliability, a secondary means of data transmission has been investigated. Dial-up telephone lines will provide an alternate means of communications should wireless service become unavailable. The central computer system will automatically switch to this back-up means of communications if it is not able to retrieve data through the wireless network. The Department is pursuing a project to install a bank of sixteen modems at both the primary and backup computer systems. The State Office of Information Technology is reviewing the project, which will engage Envitech Ltd. to design, build and install the modem banks.

In the spring of 2009, two monitoring stations around Oyster Creek that had been unable to transmit data for an extended period due to failed telephone lines were restored. These two sites were converted to wireless communications and are now successfully transmitting data again. Additionally, PSEG has provided support in relocating the CREST station located near the Artificial Island security checkpoint to a more reliable electrical power source. The electrical line feeding the station has experienced failures that have proved difficult to restore. Consequently, PSEG committed to providing a new location for the monitoring station. They are siting a new telephone pole and installing electrical service, while the Bureau of Nuclear Engineering relocates its equipment to the new pole about 100 yards from the former one.