



Upgrading Safety Systems Safety Parameter Display Systems Improve Operator Response in Emergencies

When an abnormal event occurs at a nuclear power plant, safe resolution requires rapid, effective response. Safety parameter display systems give control room operators the information they need during plant emergencies. Specialists at U.S. nuclear power plants developed safety parameter display systems after the 1979 nuclear accident at Three Mile Island, which underscored the need for information to be better displayed in control rooms.



Safety parameter display systems provide critical information on plant conditions to control room personnel during emergencies. (Photo courtesy of Energoatom.)

A safety parameter display system collects and displays critical safety information at a workstation in the control room and other locations in the plant. Information on the status of key conditions, such as reactor core cooling, is displayed in a clear format on a computer screen. The information displayed enables the nuclear plant operators to assess plant conditions rapidly and take corrective actions. The United States is working with specialists in Russia and Ukraine to develop safety parameter display systems for Soviet-designed nuclear power plants. U.S. and host-country experts also are developing symptom-based emergency operating instructions to be used with safety parameter display systems. The system, when used with emergency operating instructions, enables the operators to recognize and correct abnormal conditions rapidly.

Installation of the first display system for a Soviet-designed reactor was completed in July 1997 at Kursk's reactor Unit 2 in Russia. Under contract to Parsons Power Group, Westinghouse Electric Company and Russia's Research and

Development Institute of Power Engineering collaborated on design and production. A system for Chornobyl Unit 3 in Ukraine was installed in 1998.

U.S.-based Burns & Roe Enterprises, Inc., and Science Applications International Corporation are collaborating with ConSyst, a Russian company, on design and production of display systems for VVER-440/230 reactors in Russia. A system was installed in 1998 at Novovoronezh Unit 3 in Russia. A system is also scheduled for installation in Novovoronezh Unit 4.

Burns & Roe and Westinghouse Electric Company are developing safety parameter display systems for the VVER-1000 reactors in Ukraine. Ukraine's State Scientific Engineering Center and Westron, a joint venture of Westinghouse and the Ukrainian company Hartron, provide technical support. Three systems were installed in 1998—at South Ukraine Unit 1, Khmelnytsky Unit 1, and Zaporizhzhya Unit 5. Experts have initiated the design of three additional systems in Ukraine—for South Ukraine Unit 2, Rivne Unit 3, and Zaporizhzhya Unit 3. These will be installed in 1999.