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Digital technology works for Western

Intelligent System Integrated Substation—the name alone sounds like a futuristic, alien place on which the “Star Trek” crew might land their spacecraft. But ISIS doesn’t have anything to do with Capt. Kirk or Mr. Spock and is not taking place in the future; it’s taking place now within Western.

Basically, ISIS is a state-of-the-art way to place into the field a new computerized information and control system for electrical substations. According to **John Work**, CSO’s lead project engineer, ISIS converts all information related to substations to digital information.

“ISIS is the backbone to get the information from the field,” Work said. “Our customers have embraced digital technology and, in response, we are looking at new systems.”

ISIS is composed of Intelligent Electronic Devices or IEDs, Work explained. To make full use of these devices, they are strung together in a network to send information to where it’s needed. Currently ISIS programs are being used at the Fort Thompson, Denison, Flanagan, Shasta (under construction), Estes, Lovel, Yellowtail (under construction), Eastside and Newport substations, Work noted.

“Previously we used auxiliary equipment to perform control functions,” Work said. “This system eliminates pieces of equipment, saves money, reduces the size of control boards, cuts wiring time and should even shorten testing time.” The newest versions will also be able to send better information, such as fault locations, directly to operations staff.

Four other CSO engineers are also working on the ISIS project: **Roy Gearhart, Jane Park, Dave Fox** and **Randy Diede**.

Work is also enthusiastic about the developing “predictive maintenance” digital computer program that, hand-in-hand

with ISIS, will monitor and analyze data and predict when equipment will need maintenance. “It will allow us to service equipment only when needed and will predict some problems before they become critical,” he said.

For instance, Work explained, when a gas breaker is losing pressure, predictive maintenance could determine whether the cause is a slow leak that could be fixed later or a fast leak which needs immediate attention. This is only one of the many parameters the system can monitor.

Western’s predictive maintenance program, which is being developed in coordination with the Colorado School of Mines, EPRI and the National Science

Foundation, will have a prototype ready for Western’s use in early 1999, Work said, adding that he encourages appropriate employees throughout Western to take advantage of training opportunities in the regions or at the CSO to learn more about this new digital technology.

Currently, the ISIS group is writing instruction manuals, preparing visual materials and starting a users group for video conferencing that will provide additional information regarding these technologies.

“To be competitive and efficient, we must have more information that’s real-time or nearly real-time to make good decisions,” Work said. “With ISIS and predictive maintenance systems, we are providing tools to increase availability and reliability of Western’s transmission system. Maintenance offices won’t have to send people out to check equipment as often since predictive maintenance will check many functions by itself and even predict when service is needed. By providing our linemen and maintenance personnel this kind of tool, they could locate problems and get equipment back into service faster, and in a less costly way, than we do now.”

