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Exceptional service in the national interest

Sandia National Laboratories

Sandia National Laboratories (SNL), Department 5433, Remote Arming and Firing Systems (A&F Systems)

The TC894 Timed Fireset family was built to provide high reliability, precision time-delayed firing of Exploding Bridge Wire (EBW) detonators used in Underground Nuclear Testing and related, non-nuclear programs of national importance (e.g. emergency response programs, conventional effects tests, qualification of USAF launch facilities, seismic mapping, demilitarization of ordnance, etc.). The TC894 is just one component that would make up a complete firing system.

The TC894s function is to: convert low voltage power and store it in the appropriate form (Arm), start a precision timer upon receiving a start signal from the system (Trigger), and output the stored firing energy to the connected detonators at the completion of the programed time period (Delay & Fire). Integral monitors are used to assure the TC894 is at the appropriate state during the sequence.

These high-precision arming and firing components were produced using internal and DOE reliability requirements, adapted from the DOE Quality Control criteria for Weapons Components and commensurate with the unique Field Test applications. Configuration management of the designs, production, testing and product acceptance was guided by the complex wide Engineering Assurance "EA" system, similar to a weapon-grade component.

SNL A&F Systems engineers and technicians installed and operated these systems at the Test Sites (NNSS, NTS, etc.). Support covered system testing through shot execution. SNL A&F Systems support such as this traces its lineage back to Los Alamos National Lab's Z-division.

SNL A&F Systems retains the remaining stock of these specialty components and similar components used to build complete systems as well as the expertise and design knowledge for future builds of similar components.

U.S. DEPARTMENT OF ENERGY NNSA National Nuclear Security Administration

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