Rocky Flats Information

DOE Public Affairs 966-5993
EG&G Community Relations 966-5751

Deep Seismic Investigation at Rocky Flats

Cleanup activities at Rocky Flats require detailed knowledge of the geology of the surrounding area. As part of the geologic characterization of the Rocky Flats Plant area, deep seismic data will be used to characterize the geology of Rocky Flats and to identify how the Rocky Flats Plant site fits into the geologic framework of the Front Range.

Several geologic investigations have concentrated on the area immediately around the Rocky Flats Plant. There have also been many investigations of the geology of the foothills and the Front Range. Few, if any, of these studies have attempted to tie the geology of the Front Range with the geology of the Rocky Flats area.

The present seismic survey will let geologists look 12,000 feet beneath the earth's surface. Geologists will be able to identify any faults that may be present in the area around the Rocky Flats Plant and determine if any of the faults are currently active. The seismic investigation will make it possible to better understand the history of the rocks and structures beneath Rocky Flats. For example, this information will help us to understand the movement of groundwater below Rocky Flats so we can propose remediation methods that are likely to be the most effective.

Although seismic data are most often associated with oil and gas exploration, this survey will be used solely for the purpose of identifying Front Range structure and faulting and relating it to the geology of Rocky Flats. Neither the Department of Energy nor its contractor, EG&G, will use this survey to explore for oil and gas, minerals, or water. The survey area extends beyond the boundaries of the Rocky Flats Plant site so that a better regional geologic picture may be obtained. This does not imply

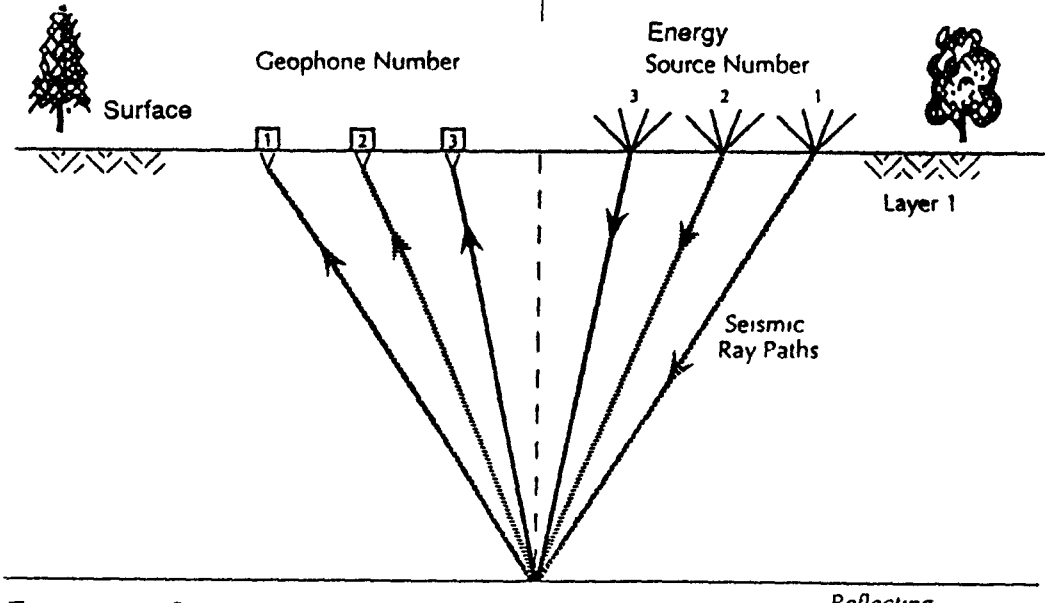

Figure 1. *Seismic Reflection*

that groundwater contamination exists outside the plant site boundaries

The seismic survey will be conducted along a line that will start approximately three miles up Coal Creek Canyon, run across the northern half of the Rocky Flats Plant and finish at the western side of Jefferson County Airport along the north side of Great Western Reservoir It will be about 13 or 14 miles long Surface and other environmental disturbances along the trace of the line will be minimal

The seismic reflection technique being used was developed in the early 1920s Since then, it has been widely used by geologists and geophysicists trying to identify features beneath the earth's surface The technique itself is fairly simple Energy, such as that from detonation of a small dynamite charge or from a vibrating truck, is released on the surface of the ground This energy is released in the form of seismic waves which travel through the earth

The seismic waves are reflected off rock layers and structures beneath the earth's surface and picked up by a receiving device called a geophone (see figure 1) The signal is then transmitted to a recording device and is processed by computer This recording process is very similar to the process that enables us to record movements in the earth caused by an earthquake A reproduction of the information is shown below (see figure 2)

This survey will use two different energy sources A vibrating truck will be used in the areas where the topography is relatively flat, and dynamite will be used in areas where the terrain is more rugged The dynamite source will consist of 10 pound charges set in 50 foot holes drilled 220 feet apart Because of the rugged terrain in Coal Creek Canyon, the western portion of the survey will require dynamite energy sources, and a helicopter will be used to move equipment

Field work for the survey, which will begin in early to mid July, will last about two weeks

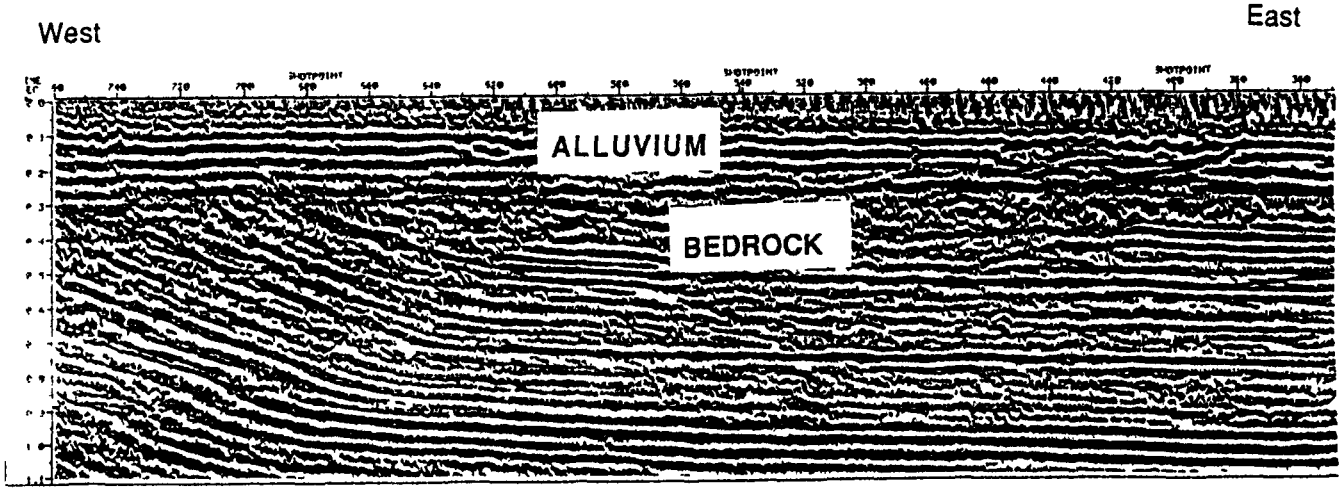

Figure 2 *Actual seismic view of the ground beneath a portion of Rocky Flats Plant site known as the west spray fields The horizonal surface deposits (alluvium) are visible over the sloping bedrock*