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## Researchers seek method for earthquake control

Man is on the road to controlling earthquakes.

TAMU scientists may predict earthquakes and even lessen their destructive force as the result of research at the Center for Tectonophysics.

A group is making experimental high-pressure studies of the causes of movements along faults.

Drs. Mel Friedman, John Logan and Mr. Jack Magourik received a grant this week of \$42,000 from the U.S. Department of the Interior to continue this work.

"It's known that a number of warning events take place up to three years prior to a major earthquake," Friedman said. "These include changes in the way seismic waves travel through the area of eventual faulting and changes in the electrical resistance of the rock."

"These effects are caused when the rock mass begins to fracture prior to the major fault displacement that produces the earthquake," he said. "The fracturing causes a volume increase and an associated change in the degree of water saturation and pressure in the rock."

"The volume increase is known to occur prior to the faulting or previously solid rock," Friedman said. "But, it's not known, and it's our job to determine, if it occurs when earthquakes originate along previously broken rock."

Most earthquakes occur along faults with a history of movement like the San Andreas fault in California.

"The volume increase occurs as a result of minute fracturing in rocks stressed almost to their breaking point," he said.

According to their model of events, the rocks along a fault contract before an earthquake, reducing the fluid pressure in the rock. This contraction has the effect of

strengthening the rock and temporarily delaying the quake. However, water from the surrounding regions can seep in and trigger the earthquake.

"Another area of the research includes developing ways to produce and therefore to control earthquakes," Friedman said. "One method under study involves causing many small earthquakes to eliminate major, catastrophic ones."

"It is proposed that wells could be drilled and water injected into the fault zone, which would lubricate it, causing small displacements and prohibiting the major ones," he said. "Likewise, water can be pumped out to stop movement along the fault. This way earthquakes could be turned on and off."

## Wainerdi named head of resource center

The new center for energy and Mineral Resources at TAMU will be directed by Dr. Richard E. Wainerdi.

TAMU's board of directors authorized establishment of the center to coordinate and expand the university's research, teaching and public service programs regarding better utilization of existing energy and mineral supplies.

"The center will be the focal point for our work with state agencies involved in energy-related activities, particularly the Governor's Energy Advisory Council," Dr. Jack Williams, TAMU President, said.

"Additionally, the center will seek federal projects which coincide with the university's strengths in the energy and mineral field and complement our primary goal of meeting the needs of Texas."

Wainerdi will serve as director of the new center as part of his overall responsibilities as associate vice president for academic affairs.

"Dr. Wainerdi's diverse background and proven record of providing direction for major programs make him an ideal and obvious choice for this key position," said Dr. John C. Calhoun, Jr., vice president for academic affairs.

A member of the TAMU faculty since 1957, Wainerdi came to the university to develop nuclear-science programs. He initiated work on both the Nuclear Science Center and the Cyclotron Institute. He founded the university's Activation Analysis Research Laboratory which has gained worldwide recognition in use of nuclear techniques to determine chemical composition. In conjunction with his teaching and research activities he has served as associate dean of engineering and associate director of the Texas Engineering Experiment Station.

Wainerdi was appointed assistant vice president for academic affairs in 1971 and promoted to associate vice president last year. He also is professor of chemical engineering.

One of his major areas of responsibility in recent years has been coordination of TAMU's medical-related activities.

In assuming directorship of the new center, Dr. Wainerdi will provide guidance for a far-reaching program expected to involve personnel throughout the university. TAMU already has more than 20 energy-related projects in progress.

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