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UCSB RECEIVES GIFT FROM JAPANESE CORPORATION

The Institute for Crustal Studies (ICS) at the University of California, Santa Barbara has received a gift valued at nearly \$1 million from a Japanese corporation.

The Hollister Earthquake Observatory (HEO), a facility which contains an array of seismographic instruments at different depths below the surface of the earth, was donated to Professor Ralph J. Archuleta and his research group at ICS by Kajima Engineering and Construction Company of Japan.

The donation is a complete earthquake observation instrumentation system, including downhole accelerometers, digital recorders, communications, buildings and other infrastructure. HEO, located about 20 miles northeast of Monterey, Calif., was installed by Kajima in 1991 and has been operated continuously since that time.

"Acquiring HEO is a tremendous opportunity that gives us access to a whole new data set," said Archuleta, acting director of ICS.

"This is great for our research program. It's another opportunity for our graduate students and other researchers to have access to data that we couldn't put our hands on otherwise."

"It doubles our likelihood of getting data on a major earthquake because we now have an array in both the central and southern parts of the state near active faults," he said. UCSB already owns and operates a similar observatory in Garner Valley,

about 20 miles west of Palm Springs, in southern California. There the seismic instruments are located in multiple boreholes drilled as deep as 500 meters (1,640 feet) into the earth.

The vertical array of multiple instruments at different depths allows researchers to better predict ground motion during an earthquake. There are only three such vertical arrays in the U.S., all located in California, one of which, Borrego Valley, is still operated by Kajima. In Japan there are a number of these arrays and more are planned.

The instruments allow researchers to see the variation in amplitude of seismic waves, at different depths. Without such direct measurements, the effects of near surface material on seismic waves must be estimated.

"These observatories are designed to look at ground shaking from magnitude two to magnitude eight earthquakes," said Archuleta. Below ground, seismic waves can be five to six times smaller than they are when they hit the surface of the earth. These arrays are designed to document how this amplification occurs.

The original cost of the equipment installed at HEO was approximately \$750,000, excluding maintenance and operating costs. In addition to this installation, the gift includes a secondary site with an additional borehole instrument and two surface instruments and a communication link with a total value of about \$200,000.

These costs do not include the professional time required to design and develop the observatory.

Maintenance costs of \$15,000 per year for HEO are paid by the U.S. Nuclear Regulatory Commission and the French Commissariat l'Energie Atomique.

According to Archuleta, UCSB was selected by Kajima to receive HEO because of its longstanding commitment to seismic research using borehole data through its 10 years of experience with the Garner Valley Downhole Seismographic Array. Bob Nigbor, president of Agbabian Associates Inc., of Pasadena is the agent for Kajima in the transfer of HEO.

ICS aims to increase understanding of the crust and lithosphere of the earth, both on the continents and under the oceans, utilizing the approaches of many disciplines and the expertise of scientists in academia, government, and industry. Scientists at the Institute participate in the Southern California Earthquake Center, a National

Science Foundation Science and Technology Center bringing together scientists from nine institutions who coordinate research on earthquake hazards and communicate earthquake information to the public.

About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.