

99-HQ-GR-0060

DEEP BOREHOLE TENSOR STRAIN MONITORING, NORTHERN CALIFORNIA

FINAL TECHNICAL REPORT

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TECHNICAL ABSTRACT

Data from five borehole tensor strain instruments situated along the San Andreas Fault in Northern California and the Hayward Fault in San Francisco Bay have been maintained and provide both archive quality data, and automatically processed near-real time data for use by the geophysical research community. Long term changes of strain rate have continued to present at San Juan Bautista since the October 1998 slow earthquake sequence. Four further episodic strain/creep events have been observed there during 1999 and 2000. At Parkfield a series of strain/creep episodes have been observed, including propagating events with propagation rates of approximately 1 km per day. Long term changes in strain rate at Chabot have been observed in 1997 and 1999. The other Hayward fault instrument at Garin suffered major downhole damage by 1998 and was decommissioned completely in 1999. Data from the Gladwin Tensor Strainmeters has been instrumental in the ongoing proposals for a Plate Boundary Observatory, and significant effort in our project is now centred on assisting this process.

Non-Technical Summary

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seismology, geodesy, borehole geophysics

Data from five borehole tensor strain instruments situated along the San Andreas Fault in California have been maintained and provide both archive quality data, and automatically processed near-real time data for use by the geophysical research community. Long term changes of strain rate during 1998/99 have been observed at two instrument sites, San Juan Bautista and Chabot. Episodic strain with associated creep events have occurred at both San Juan Bautista and at the Parkfield sites. Data from the Gladwin Tensor Strainmeters has been instrumental in the ongoing proposals for a Plate Boundary Observatory, and significant effort in our project is now centred on assisting this process.