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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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MEMORANDUM FOR: Stephan Brocoum, Acting Chief
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FROM: RBM
Richard B. McMullen, Geologist
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For your information
HS

SUBJECT: PRELIMINARY ASSESSMENT OF A RECENT HYPOTHESIS REGARDING THE TECTONICS OF CENTRAL AND SOUTHERN CALIFORNIA

On 6 December, 1984, F. Brady, PG&E, and D. Hamilton, ESA reported on a new hypothesis regarding the tectonics of central and southern California by graduate students at Cal Tech, which had been made public via a press release on 4 December and a paper presented that same day at the San Francisco AGU meeting.

The theory holds that there is a 20 mm/yr deficit between the 55 mm/yr calculated differential motion between the Pacific and North American Plates, and the measured displacement of 35 mm/yr along the San Andreas Fault, which is being accommodated by displacement along the coastal fault systems such as the Hosgri-San Gregorio in central California and the Palo Verde, Newport-Inglewood, and San Clemente fault zones in southern California. They postulated that Southern California west of the San Andreas and south of the Transverse Ranges is being rotated in a counter clockwise motion. The crust north of the Transverse Ranges between the San Andreas fault and the Hosgri-San Gregorio fault zone is interpreted to be a micro-plate between the Pacific and North American Plates. The authors arrived at this conclusion by analyzing existing faults' slip rate data along several traverses extending across the significant structures. No new data was developed in this analysis. The interpretation would require substantial right lateral strike-slip displacement along the coastal faults. Another recent article (Bird and Rosenstock, 1984), also postulates substantial strike-slip displacement along the Transverse Ranges faults and the Hosgri-San Gregorio fault zone.

Geological and seismological data regarding the coastal fault systems were evaluated during both the Diablo Canyon and San Onofre Licensing reviews, and that evidence does not support large scale strike-slip displacement along these faults in central and southern California. A recent hypothesis, which is supported by new data, indicates that a significant sense of motion on these faults in Central California is thrusting rather than strike-slips (Crouch and others, 1984). There is no reason for concern or to take action at this time.

R/94

The seismic licensing condition for Diablo Canyon is an excellent vehicle for assessing this and any other new hypotheses which may be proposed. Southern California Edison is closely following this activity as to its significance to San Onofre.

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