Comments on Marine Advisors'
Examination of Tsunami
Potential at San Onofre (September 1965)

Although the conclusions in the report go somewhat beyond the limits to which we would be willing to agree, a good case is made that the proposed protection height (about 30 feet above MLLW) is adequate.

Much of the discussion deals with tsunamis from distant origin and this portion is not particularly controversial as we agree that the above protection limit is certainly sufficient for tsunamis of this category.

The only serious controversy concerns the possibility of a major locally-generated tsunami. The two significant considerations here are the local seismicity and the evidence of the 1812 tsunami run-up. We believe we have developed additional evidence with respect to the latter that strengthens the presentation by Marine Advisors.

The Coast and Geodetic Survey has evaluated by photogrammetric methods the elevation of the plain at Santa Barbara one-half mile in from the coast, and found elevations in this region of about 15 feet above chart datum (see attached map). Without such methods, one is tempted to interpolate between zero at the

coast and the fifty foot contour one mile inward, arriving at about 25 or 30 feet, the figures in Louderback's notes. It is possible that this is how he arrived at the figures, using Trask's "The sea on its return flowed inland little more than a half mile, etc." Although topographic maps confirm Louderback's "Gaviota Canyon, the only canyon in vicinity where a wave not over 50 feet could go up a mile," the extreme point of penetration up a stream is not comparable to extreme run-up in a land area and should not be so equated.

Relative to sources for generating local tsunamis it is agreed that those along the northern coast of California would unlikely produce waves greater than a few feet at San Onofre. However, those sources close to San Onofre, for example the 1812 earthquakes, should be further examined with respect to their magnitude. Using available intensity data, estimating the felt area and comparing these with other west coast earthquakes (San Francisco 1906, Kern County 1952, Frenchman's Station, Nevada 1954) the magnitude is given as 7 1/4 - 7 3/4 for the largest of the 1812 earthquakes. Assuming the predominate focal mechanism is strike slip for these earthquakes, which has less potential for generating tsunamis than dip slip motion, and using Iida's table which was derived from Japanese earthquakes of dip slip character, it is estimated the wave heights

at San Onofre would be less than 30 feet. Therefore, the twenty-eight foot protection level being provided is adequate for a locally generated tsunami.

While endorsing the overall conclusions as to the adequacy of protection at San Onofre, we wish to stress that we would not necessarily agree with those conclusions in the report that might lead to the assumption that a similar site, with significantly lower tsunami protection, could be considered acceptable.

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