

Modal Analysis of San Vicente Dam

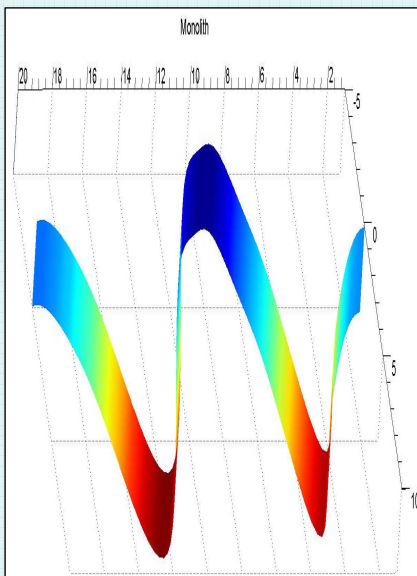
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The San Diego County Water Authority (SDCWA) is directing a \$66 million dam raise project at San Vicente Dam, located north-east of the city of San Diego, California. The existing dam will be raised over 100 ft. to double the reservoir's capacity. The team investigated the dam's dynamic response characteristics. Field investigations consisted of two phases – Phase I based on the ambient test technique, and Phase II based on the forced vibration technique.



Third Response Shape at 10.68 Hz

Frequency response functions were calculated at the crest, outlet tower, gallery, foundation and joints of the dam. The response shape at each resonant frequency was constructed and animated in iDAMS—a MATLAB based analysis tool. The results of the ambient and forced vibration tests are in close agreement.

Mode	Ambie nt	Force d
1	6.59 H z	6.65 H z
2	8.78 H z	9.02 H z
3	11.35 H z	10.68 H z
4	13.30 H z	12.43 H z
5	14.29 H z	14.29 H z