



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

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| <b>Name(s)</b><br><b>John M. Greenfield</b>  | <b>Project Number</b><br><b>S0607</b> |
| <b>Project Title</b><br><b>Moving Towards a New Model for the Formation of Sedimentary Features</b>  |                                       |
| <b>Abstract</b><br><b>Objectives/Goals</b><br>Can sedimentary features be formed from a process differing from the normally accepted depositional processes?<br><b>Methods/Materials</b> <ul style="list-style-type: none"><li>- Build a sedimentary tank that simulates a confined depositional basin.</li><li>- Tank is firmly mounted to larger wooden base using bolts and glue.</li><li>- Attach and firmly secure vibration mechanism to larger wooden base.</li><li>- Mix different types of soils (3 used) with water into a slurry.</li><li>- Pour slurry into tank.</li><li>- Vibrate tank assembly for various periods of time.</li><li>- Observe sedimentary features formed.</li><li>- Photograph sedimentary features.</li><li>- Catalogue features and compare with features noted in geology textbooks.</li><li>- Compare formation processes with generally accepted depositional models.</li></ul> <b>Results</b><br>Sedimentary features formed by seismic vibrations include:<br>Parallel Continuous - Semi-Parallel Continuous - Prograding -<br>Mounded (Hummocky) - Vugular - Channels<br><b>Conclusions/Discussion</b><br>My hypothesis that sedimentary features can be formed by a process differing from accepted depositional processes was correct. In every test, one or more sedimentary features commonly thought to be formed by accepted depositional processes were formed by vibration of the homogeneous slurry. One surprise was noted. Parallel and semi-parallel continuous bedding planes were formed immediately after the sediment slurry was poured into the tank. Commonly, these bedding planes are thought to be formed by slow or rapid lateral transport of sediments that lose velocity and are differentially deposited. Generally, these layers are thought to take a large amount of time to form, yet these layers were formed instantaneously from a homogeneous slurry. These initial bedding plane formations were then altered by the vibrations into other various sedimentary features found in the tests. |                                       |
| <b>Summary Statement</b><br>Can sedimentary features be formed through processes that differ from commonly accepted depositional processes?  |                                       |
| <b>Help Received</b><br>Used my father's woodshop to construct the tank assembly.  |                                       |