SEAWOLF

(SEDIMENT EROSION ACTUATED BY WAVE OSCILLATION AND LINEAR FLOW)

TECHNOLOGY READINESS LEVEL: 8

THE SEAWOLF TECHNOLOGY HAS BEEN PROVEN TO WORK IN FINAL FORM UNDER EXPECTED CONDITIONS.

US PATENT # 6,679,105

TECHNOLOGY SUMMARY

SEAWOLF (Sediment Erosion Actuated by Wave Oscillations and Linear Flow) is a method and apparatus for measuring erosion rates of sediments and high shear stresses in wave dominated environments. Accurate prediction of erosion rates is complicated by a lack of understanding regarding cohesive sediment interactions. A need exists for an apparatus that can accurately and directly measure the individual contributors to the total erosion rate of sediments from suspended and bedload erosion processes both in the lab and field.

Sandia National Laboratories has designed, constructed and tested a high shear stress flume that can superimpose a complex wave action with a unidirectional current upon a sediment surface. It allows effective shear stresses to be determined from erosion tests with in situ sediment samples, making SEAWOLF a useful tool for predictive modeling in coastal areas with wave dominated environments.

POTENTIAL APPLICATIONS

- Offshore Wind Energy
- Wave Energy Conversion Anchors and Foundations
- Coastal Sediment Analysis
- Dredge Disposal Characterization

TECHNOLOGICAL BENEFITS

- Unidirectional Flow up to 1.1 m/s (36 GPM) in test section
- Oscillating Flow with period of 5 to 30 seconds and velocities of –1.9 m/s to 1.9 m/s (flowrates of –60 GPM to 60 GPM) driven by large pistons
- Flow Capabilities include purely oscillating flow as well as pulsating flow with and without reversal

TECHNOLOGY INQUIRY?

For more information or licensing opportunities contact us at

ip@sandia.gov

Refer to SD # 7031

or visit

https://ip.sandia.gov

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