

Abstract Submitted  
for the DFD17 Meeting of  
The American Physical Society

**The harbingers of water entry** NATHAN SPEIRS, Utah State University, JESSE BELDEN, GEORGE BADLISSI, Naval Undersea Warfare Center, ZHAO PAN, Utah State University, SEAN HOLEKAMP, Naval Undersea Warfare Center, TADD TRUSCOTT, Utah State University — The impact dynamics of solid objects on a flat, quiescent pool has been studied for over a century. We investigate sphere impact on a water surface which has been altered by a preceding jet. The jet of water creates a large subsurface cavity prior to impact of the sphere, which follows directly in its path. This method of “free-surface preparation” suppresses cavity formation at sphere impact velocities for which it would otherwise be expected. Additionally, it greatly diminishes the large initial impact force, and alters the forces after impact. We show reduction in the maximum impact force by 50-75% from the quiescent pool cases.

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Date submitted: 31 Jul 2017

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