

Daniel Poniatowski

Aerospace Engineering, IT, 2008

Mentor: Dr. Ellen Longmire, AEM

Vortex Impact on a Sand Bed

The purpose of this study is to determine the flow field created by the collision of a vortex ring with a bed of particles. The nature of vortex ring generation and collision with solid surface is well known. However, studies in this area do not address the effect a vortex ring has on a particle bed. By utilizing flow visualization on a small scale model, inferences can be made about large scale behavior. Flow visualization methods to be used include a smoke generator and small glass particles. The flow field visualization is captured and recorded with a digital video camera. This type of flow has practical applications. It occurs when the vortex ring generated by a landing helicopter interacts with particles on the ground; this blinds the pilot and is especially prevalent in desert environments.



Poster Number: Session: