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Mixing of a Finite Dense Fluid Release Around a Downstream Cube. ROMANA AKHTER, NIGEL KAYE, Clemson University — Results are presented from experiments examining the flow of an instantaneous release of dense fluid upstream of a cubic obstacle. This is the same geometry as the Thorney Island Phase II Trials 26-29. Experiments were run in a water channel with salt water used to create the density difference. The flow of dense fluid into the building wake was visualized using Light Induced Fluorescence (LIF). The volume and buoyancy of the release were varied as well as the ambient velocity and distance from the building at which the dense fluid was released. A range of flow phenomena were observed and will be discussed. We observe that the presence of an obstacle has a significant impact on the dense gas dispersion. In some cases, the fluid initially flowed around and over the obstacle and the building wake remained initially free of the dense fluid. However, later the dense fluid was drawn into the wake from the downstream end, struck the downstream face of the obstacle and rose up it. Results are presented including the time taken for the dense fluid to reach the downstream building face and the height to which it rises up the face as a function of the release Richardson number, non-dimensional release volume, and non-dimensional release distance.

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