

Abstract Submitted  
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**Favorable Pressure Gradient Effects on an Inclined Jet in Crossflow**<sup>1</sup> CLAYTON PELZER, RALPH VOLINO, RONALD WARZOHA, U. S. Naval Academy — Mixing of inclined jets in crossflow is of fundamental interest and significant for engineering applications including film cooling in gas-turbine engines. The effect of a pressure gradient on these jets is not fully understood. This study considers how a favorable pressure gradient affects the rate of spreading of a jet and its mixing with the main flow, utilizing heated jets injected into a boundary layer in a wind tunnel. The test section includes a flat test wall with jets inclined at 35 degrees to the surface and an adjustable opposite wall that is positioned to achieve the desired pressure gradients. A thermal camera is used to measure temperatures along the test wall, and hot-wire and cold-wire anemometry are used to measure velocity and temperature fields in the flow. These measurements will be used to determine cooling effectiveness on the surface and how the pressure gradient affects the jet mixing with the crossflow.

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