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**Measurement of Submerged Oil/Gas Leaks using ROV Video** FRANKLIN SHAFFER, USDOE National Energy Technology Laboratory, GIORGIO DE VERA, KENNETH LEE, ÖMER SAVAS, U.C. Berkeley Mechanical Engineering Dept — Drilling for oil or gas in the Gulf of Mexico is increasing rapidly at depths up to three miles. The National Commission on the Deepwater Horizon Oil Leak concluded that inaccurate estimates of the leak rate from the Deepwater Horizon caused an inadequate response and attempts to cap the leak to fail. The first response to a submerged oil/gas leak will be to send a Remotely Operated Vehicle (ROV) down to view the leak. During the response to the Deepwater Horizon crisis, the authors Savas and Shaffer were members of the Flow Rate Technical Group's Plume Team who used ROV video to develop the FRTG's first official estimates of the oil leak rate. Savas and Shaffer developed an approach using the larger, faster jet features (e.g., turbulent eddies, vortices, entrained particles) in the near-field developing zone to measure discharge rates. The authors have since used the Berkeley Tow Tank to test this approach on submerged dye-colored water jets and compressed air jets. Image Correlation Velocimetry has been applied to measure the velocity of visible features. Results from tests in the Berkeley Tow Tank and submerged oil jets in the OHMSETT facility will be presented.

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