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Synopsis of Research & Findings – For General Release

Title: Nature of expertise in control of continuous processes

Objective: Identify what makes an expert in order to enhance imparting expertise to process personnel.

Method: Cognitive task analysis was applied to oil refineries positions (crude unit and cat cracker console operators) and one pipeline position (product pipeline controller). “Experts” were identified and their actions compared to the characteristics of expertise.

Summary: While each position was shown to exhibit a majority of the characteristics of expertise, not all of the characteristics were the same for each. Expert profiles were created for each position, supplemented by real-life experiences provided by the operators. Because this was a pilot effort, there are many opportunities for further research (i.e., expanding in depth beyond the small sample set of Crude, FCC and Pipeline controllers used, or in breadth to cover other operating positions). Nevertheless, relevant findings and recommendations are made that begin the process of transferring this expertise beyond the experts, including the improvement of systems (e.g., process control, selection and training, procedures, etc.) such that individual differences are minimized.