Process Safety Management for Subsea Production System

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Abstract

Subsea oil and gas production systems in the Gulf of Mexico (GoM) pose a unique challenge for process safety management. Subsea production systems are located on the seabed in deep water and not easily accessible for inspection and maintenance. Process safety is critical for deepwater operations. Process safety incidents in the subsea world have unacceptable human, environmental, and financial costs as evident in BP’s Macondo subsea blowout. This paper presents a systemic view of how process safety management is being implemented on subsea system in the Gulf of Mexico. Design and safeguarding philosophy, assurance framework, and lifecycle integrity management function as key building blocks for process safety. This paper also explores opportunities for improvement in current process safety management practices. One key improvement opportunity is to have stronger regulatory oversight on integrity assessment and fitness for service validation of aging subsea system as field life is being extended. This report is based on current field experiences in the Gulf of Mexico.