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The Southeast Louisiana Flood Protection Authority – East (SLFPA-E) is charged with the responsibility of operating and maintaining the newly constructed Hurricane Storm Damage Risk Reduction System (HSDRRS) to protect the Greater New Orleans area from hurricane and tropical storm induced flooding. This system consists of 350 miles of levee/floodwalls, 78 pump stations, outfall canals and pump stations, and major closures structures that protect against storm surge. Recognizing this immense responsibility, SLFPA-E is in the process of developing a risk-based management and maintenance program, similar to that developed by the Dutch, that will result in the identification of risk and hazards associated with operation of major HSDRRS closure structures including: Lake Borgne Surge Barrier and Gates, Seabrook Complex and Gates, Bayou St. John Sector Gate, Bayou Bienvenue Sector Gate, Bayou Dupre Sector Gate, and the Caernarvon Sector Gate. This study identified possible risk of failure or breakdown of structural, mechanical, or electrical systems and included the development of risk reduction measures that will increase the probability of successful operation of the structures when called upon.

To develop this program, SLFPA-E convened a set of risk elicitation workshops with its partners. During the workshops, three different risk analysis methods were utilized to identify and address possible risks of failure including a Hazard and Operability Study (HAZOP), a Failure Modes and Effects Analysis (FMEA), and a Fault Tree Analysis (FTA) for critical mechanical components. These three methods were integrated to increasingly define the risk of failure beginning with the identification and qualitative ranking of risks in the HAZOP to a quantitative evaluation of risk through the development of fault trees.

In order to maximize the value of this process, all stakeholders that have a role in the operation, maintenance, and decision making regarding the complex structures attended the HAZOP and risk elicitation workshop as well as the risk reduction measures workshop. Input from a broad range of stakeholders with a diverse background was key to preparing a baseline risk assessment and ultimately improving the overall operation and maintenance of the HSDRRS under the jurisdiction of SLFPA-E.