MWCC’s Containment System

The Marine Well Containment Company (MWCC) Containment System is designed to be flexible, adaptable and ready to be mobilized upon incident notification. MWCC is responsible for the maintenance, deployment and operation of the system during a response to a deepwater well control incident in the U.S. Gulf of Mexico.

MWCC’s system has the capacity to contain up to 100,000 barrels of liquid per day and up to 200 million standard cubic feet (mmscfd) per day of gas. MWCC maintains the Containment System in a ready state and tests the equipment on a regular basis.

About the System

MWCC is ready to respond to a well control incident in the deepwater U.S. Gulf at depths up to 10,000 feet. The Containment System includes two Modular Capture Vessels (MCVs); three capping stacks (the centerpiece of the system); Subsea Umbilical, Risers and Flowlines (SURF) equipment; and additional support equipment that will be deployed to assist the Responsible Party (RP) in the case of an incident.

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Shore Bases

To meet the equipment storage, maintenance and deployment capabilities needed for MWCC’s Containment System, the company completed two shore base locations in early 2014. The MCV Shore Base, located at Kiewit Offshore Services (KOS) in Ingleside, Texas, near Corpus Christi, is where MWCC houses processing equipment for its MCVs as well as its capping stacks and associated ancillary equipment. At the SURF Shore Base in Theodore, Alabama, near Mobile, MWCC houses the company’s SURF equipment, which is used to flow fluid from the capping stack to the MCV. MWCC utilizes the facilities and services of Technip USA as well as Core Industries to store, maintain and test the equipment.

Modular Capture Vessels

The Containment System includes two MCVs, which are modified Aframax tankers outfitted with modular processing equipment designed to capture, process, store and offload liquids from a damaged well. Each MCV can process up to 50,000 barrels of liquid per day with 700,000 barrels of liquid storage capacity and can offload the liquids to shuttle tankers, which safely take the liquids to shore for further processing.

Containment Scenarios

Once a site assessment of the deepwater well control incident is completed, the RP and MWCC determine the containment approach, specific equipment and configuration needed to contain the well. This includes one of two containment approaches – cap only or cap and flow. In a cap only scenario, the capping stack is attached to the well and through the closure of four valves, shuts off the flow of fluids from the well. In a cap and flow scenario, the capping stack redirects the flow of fluids through flexible pipes and risers to MWCC’s MCVs for processing. The selection of the appropriate capping stack and subsea equipment will be based on the containment scenario, temperature, pressure and proximity to other wells and risers.

Subsea Components

MWCC’s Containment System includes three capping stacks: the Subsea Containment Assembly (SCA), 15k psi Capping Stack (single ram), and the 10k psi Capping Stack (dual ram). Each varies in size and capabilities and will be utilized depending on specific factors of the incident. The SCA and 15k psi Capping Stack can be used in both cap only and cap and flow scenarios.

In addition to the capping stack, several subsystems will enable the process of containing the well. Specific factors of the well control incident will determine which subsystems will be used in a given scenario.

- **Subsea Accumulator Units** – operates the capping stack rams
- **Free Standing Risers (FSR)** – connects subsea equipment to the topside equipment via the Riser Turret Module (RTM)
- **Hydrate Inhibition System (HIS)** – if needed, prevents hydrate formation within subsea equipment
- **Manifold, Flexible Flowlines and Pipeline End Termination (PLET)** – routes fluid from the capping stack to FSR
- **Top Hats** – captures leaking fluid that is vented from the incident well
- **Subsea Dispersant Injection System (SDIS)** – deployed first along with an initial supply of dispersant to ensure the safety of responders
- **Subsea Autonomous Dispersant Injection (SADI)** – automatically injects dispersant if vessels must leave the incident site due to weather or other factors
- **Umbilical and Umbilical Termination Assembly (UTA)** – controls the SCA as well as provides real-time data about the well

MWCC’s SCA can be disassembled into two subassemblies, which provides flexibility in handling, transportation and installation if deployed.