

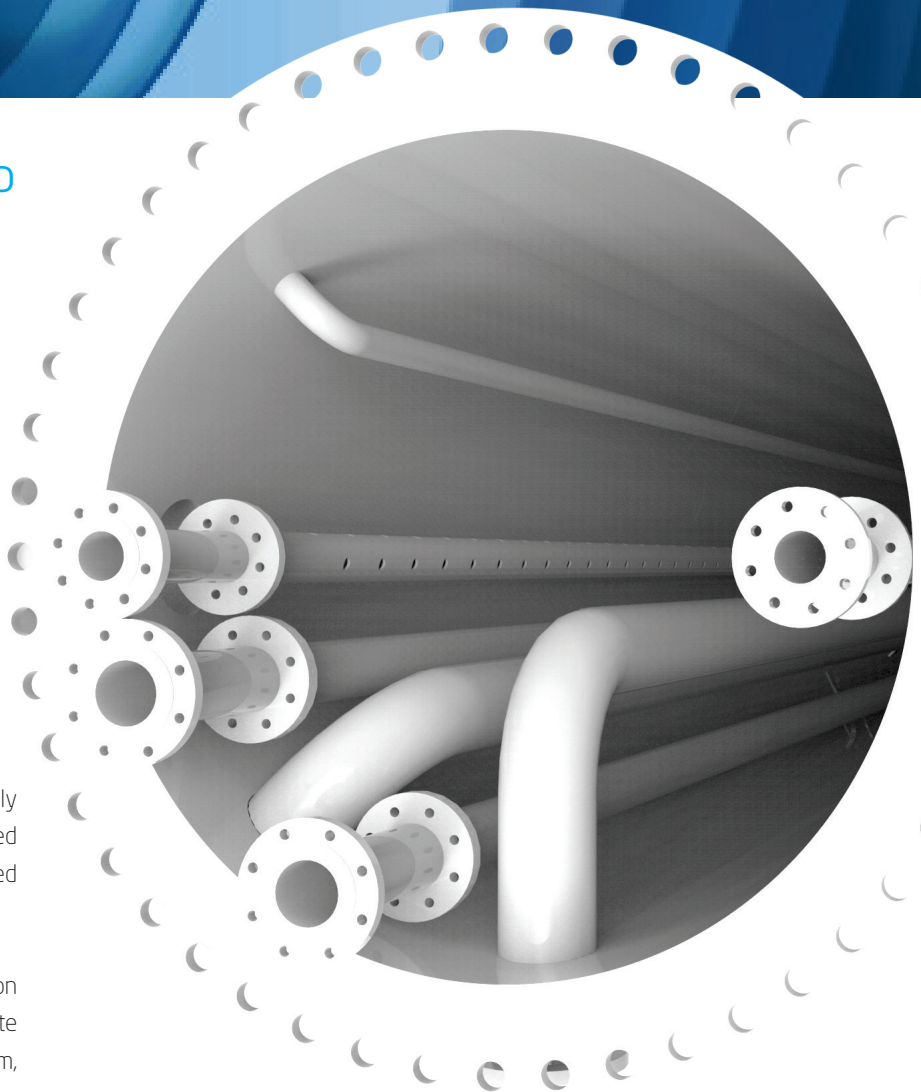
# SUMP CAISSON

## Consolidated Produced Water Handling and Disposal

SUMP CAISSONS HAVE BEEN USED IN THE OIL AND GAS INDUSTRY SINCE THE EARLY 1970's, TO CONTAIN AND TREAT OPEN AND CLOSED DRAIN STREAMS, AND ACCEPT PRODUCED WATER STREAMS ON OFFSHORE PLATFORMS. THE SEGREGATED DRAIN AND PRODUCED WATER STREAMS ARE DIRECTED TO THE CAISSON FOR CONTROLLED TREATMENT AND DISPOSAL.

Separation in the eProcess Sump Caisson typically occurs beneath the water surface in the engineered "plated section" and the treated water is discharged through the bottom of the caisson.

The "plated section" of the eProcess Sump Caisson consists of a series of internal baffles that create a coalescing zone and internal oil collection system, which allows the oil droplets to be separated from the main flow regime and directed to the oil/water interface for removal.



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The most effective offshore treatment systems today segregate the open and closed drains from the produced water stream. The open and closed drain streams are routed directly to the eProcess Sump Caisson for treatment, while the produced water system consisting of eProcess Deoiler hydrocyclones and Dissolved Gas Flotation units are routed separately to the eProcess Sump Caisson for final disposal.

The eProcess Sump Caisson has internal plates / baffles, with oil risers for the most efficient separation performance. The eProcess Sump Caisson is typically designed with a residence time of 10-30 minutes with a removal efficiency ranging from 50-100 micron depending on disposal requirements.



## OPEN DRAINS

This wastewater stream is primarily from two sources, rainfall on the platform deck and wash down water. The contaminants in this wastewater stream include;

- oil;
- drilling mud and drill solids;
- spilled chemicals;
- workover fluids;
- other by-products of production operations.

The oil in this water is likely to be bulk phase oil (crude or product) that has been partially dispersed in water. In the case of wash down water, the stream could contain relatively high concentrations of soap. Both fine solids and soap tend to stabilize oil in water and make it more difficult to separate.

## CLOSED DRAINS

This waste stream is from a pressure source such as blow down of vessel bottoms. Contaminants in the closed drains might include;

- oil-wet solids;
- lubricating oils with heavy metals present;
- dispersed oil droplets.

The waste stream needs treatment and usually directed to the caisson. The eProcess Sump Caisson includes an integrated design to handle the contaminants from closed drains.

## SOLIDS HANDLING

In addition to effectively treating the open and closed drains of an offshore platform, the eProcess Sump Caisson also offers a degree of solids cleaning prior to disposal. As the solids flow down the internal baffles of the eProcess Sump Caisson, the abrasion caused by the closely spaced baffles allows free oil removal from the solids prior to disposal.

## PRODUCED WATER DISPOSAL

Once the produced water stream has been treated effectively in the upstream eProcess system the cleaned water must be disposed. For disposal on offshore platforms, an eProcess Sump Caisson acts to prevent spills in the event of an upset or operational by-passing upstream if required. In this case, the eProcess Sump Caisson provides additional retention time and acts as a final holding vessel before disposal.

Disposal in this case is not considered a treatment step for the produced water stream; therefore all disposal regulations are met with the upstream produced water system.