# PERFORMANCE REPORT

*ZERO SPILL SYSTEMS*

Samarkanda Av. #306, Col. Tabasco 2000,
Villahermosa, Tabasco C.P. 86030

## "99.99% RECOVERY OF INVERT EMULSION FLUID VOLUME FROM TUBING-TO-SURFACE TRIP USING KATCH KAN SECONDARY CONTAINMENT SYSTEM - WITH A COST SAVINGS OF 93% IN REUSED/RECOVERED DRILLING FLUID".

## CURRENT SITUATION

KATCH KAN Low Pro Zero Spill equipment (ecological tray), was installed with the following benefits:

- Eliminate drilling fluid spills during drilling operations.
- Eliminate costs for transportation and final disposal of spilled fluid
- Eliminate the environmental impact of fluid spills.
- Eliminate costs for additional oil-base drilling fluid volume generation during operations.

*Illustration 1: Katch Kan Ecological Tray second phase*

For 77 days, the rig operated properly, collecting fluids from the drill floor, recovering it and returning it to working tanks or dams.

*Illustration 2: Katch Kan Ecological Circular Tray Installed in Ixachi 89*

During the following 36 days, a circular zero spill equipment was changed to a rectangular zero spill equipment serial number 126x118-36-01, and continued to perform well in the collection of fluids:

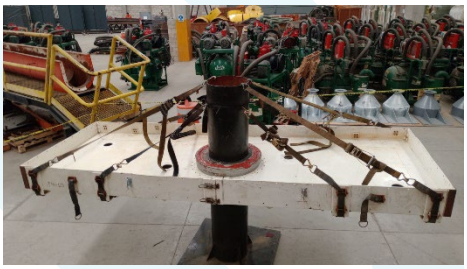

Illustration 3: Katch Kan - Ecological Rectangular Tray installed in Ixachi 89

## PROBLEMS

In drilling operations, there are continuous problems with fluid spills into the back well due to the use of locally manufactured trays to contain fluids emanating from the drilling floor. This has caused lost volumes in the back well during tubing trips, defined as Volume Lost in Trips. This results in an additional cost due to the volume contaminated in the back well with waste water that must be sent for treatment and final disposal.

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## SOLUTION

1.- CASE STUDY:

A Zero Spill System, KATCH KAN Low Pro, was installed in the Ixachi-78 well. During operations, data on the Control Fluid recovered during the trip of the drill pipe from a depth of 6707 meters to 3547 meters was collected. This amounted to a total of 3160 meters of drill pipe withdrawn from the well. A count and review of the recovered volume of Oil Base Drilling Fluid (Diesel) were also performed.

The following data were considered and reviewed during the operation:

- The volume of control fluid released from the drillstring.
- The volume of control fluid released on the rig's drill floor and substructure.
- The volume of control fluid pumped to fill the well.

**SUMIMSA's personnel, certified in KATCH KAN systems, was a fundamental part of the proper installation of the equipment:**

VERIFICATION OF THE PROCESS

A measurement of the volume recovered in the working dams was carried out, along with a visual inspection in the area of the preventers for evaluation. No spills outside the Zero Spill System (Ecological Tray) were detected. The total volume of fluid used to fill the well during the 3160-meter interval was also verified on the rig.

These activities were conducted without the presence of LA GOME personnel, due to their absence during these days there was authorization of the ITP in location. The activities were performed with the participation of the Katch Kan crew at the well.

## RESULTS

The following results were obtained:

| Measured Fluid Volume recovered in dams (M3) | Volume of fluid pumped to fill the well (M3) | Difference between Volumes (M3) | % Volume of Fluid recovered |
|---|---|---|---|
| 16.011 | 16.012 | -0.001 | 99.99% |

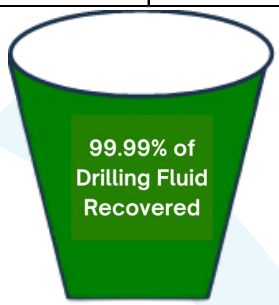


Figure 4: Reverse Emulsion Fluid Recovery: (%)

NOTE 1: Average Cost of Diesel Base Inverse Emulsion Fluid (cubic meter): $1,450.00 USD

NOTE 2: Average cost of transportation and final disposal of Diesel Base Inverse Emulsion Fluid (cubic meter): $163.00 USD

1. **Total Cost of Oil based Mud in Working Dams: $23,215.37 USD.**
2. **Total cost of transportation and treatment of Oil Base Mud not sent to treatment: +11%**
3. **Total cost for SUMIMSA services (1 installation + 1 de-installation): -18%**

## TOTAL SAVINGS: 93% of total cost of Oil Base Mud recovered in working dams

The results obtained lead to the following conclusions:

1. KATCH KAN's Zero Spill System is an environmentally safe containment for the services it was designed for.
2. Significantly improves worker safety,
3. This system is very reliable for recovering fluids and helps to avoid contamination from spills.
4. Great savings are obtained in the recovery of drilling fluids and cleaning costs, avoiding the generation of additional control fluid to continue with the work.

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