

The logo for DHWS, consisting of the letters 'DHWS' in a bold, black, sans-serif font, centered between two horizontal red lines.

**S.C.DOWNHOLE WELLSOLUTIONS SRL**

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J29/1521/11.04.2019

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**CERTIFICARI SI ASIGURARI**

# THIRD PARTY RELATED-CERTIFIED AND AUTHORISED

**INVESTIGATIONS, EVALUATIONS, ANALYZES AND RELATED  
REPORTS TO OIL AND GAS DOWNHOLE INCIDENTS**

## **DRILLING**

Abnormal damage during drilling for oil and gas wells causes costly delays and may also lead to dangerous scenarios. The different incidents will cause changes in different parts of the physical process. The modification of the physical parameters, their analysis and their correlation with the inconvenient conditions lead to the determination of the disturbing factors or the causes leading to the deviations. The estimation of the friction paights and the estimated flows can be used for detecting and the isolation of an incident type, and the isolation of a fault position. It is estimated that samples are subjected to non-Gaussian distributed noise and a specialized statistical statistic detection approach is used that detects and isolates defects by detecting simultaneous changes in estimated parameters and flows. Analyzing the properties of the multivariate diagnosis method and showing how false probability detection and alarm is evaluated and optimized using data-based learning to obtain thresholds for hypothesis testing. The data from a 1400 m horizontal flow loop is used to test the method and a successful diagnosis of

screwwashing (piping leakage, circulation loss, gas inflow, and drilling nozzle connection) is demonstrated. Risk assessment (risk assessment) is determined by its own software (DHWS-1-RA) based on the Monte-Carlo method.

As such, incidents may occur as follows:

### **FORWARD COMPLICATIONS:**

#### **I. THE TECHNICAL NATURE.**

**II. OF HUMAN NATURE** (Note: Since everything involved in the process is designed by the human factor, we will consider the drilling complications caused by the human factor only negligence in service)

#### **TECHNICAL NATURAL COMPLICATIONS**

Artificial

Natural

#### **II. HUMAN NATURE**

The main causes of these complications are due to complacency depending on the use of inappropriate tools or their non-assurance, lack of training or poor training. Most accidents occur at the entrance to the free or on getting out

### **WORKOVER**

Among the many causes that can trigger incidents in this activity are:

- Using inappropriate disposable tools that may make programming difficult.
- Not knowing the correct equipment and construction data of the probe (size, type, mode of operation, lack of equipment sketches, devices introduced into the previous probe, lack of knowledge of the field parameters
- Incorrect measurement of the tubular material inserted into the probe
- Use of improper working fluids that can lead to complications and / or lack of purpose of work.
- A bad workover program

**ALL THESE INVESTIGATIONS, EVALUATIONS, ANALYZES AND REPORTS CONDUCT TO DETERMINATION OF CAUSES, CORRECT EVALUATION OF POSSIBLE DAMAGE AND ADDITIONAL COSTS. THEREFORE CLARIFIED RESPONSIBILITIES**

**ARE LAID DOWN AND RECOMMENDATIONS FOR FUTURE  
ACTIVITY.**