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AN INTEGRATED DECISION-MAKING PROCESS IN EMERGENCY CONDITIONS DUE TO GEOHAZARDS – A STUDY CASE

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ABSTRACT

CENIT has implemented in its Rights of Way (ROW), an early warning system associated with rainfall monitoring, through which it develops the management of ROW patrol and establishes the necessary action plans to maintain the integrity of the pipelines. At the end of July 2021, a condition of excess rainfall was identified that triggered the inspection of the ROW as a priority in a section of a hydrocarbon transport system owned by the company. On August 2, 2021, because of an exceptional rainfall, several landslides were activated on a regional scale; one of them interacted with a 170 m section of the pipeline causing loss of containment in a system that pumps 120 KBBL per day. This landslide is about 3.5 millions of cubic meters.

The inspection and monitoring actions previously developed, as well as the activities carried out during and after the instability process are shown in this article, This includes, among others, a) the use of photointerpretation of images taken with a drone to identify the dimensions of the unstable mass and ground displacements, b) data of an inclinometers as part of a monitoring program in site, c) environmental and social restrictions in the area that do not allow build a by-pass, d), an alarm scheme for the operation based on the monitoring of triggers agents such as rain and earthquakes, considering a fault mass new conditions.

An innovative temporal solution through flexible pipelines is also presented. Due to landslide wide (300 m), depth (around 30 m) and length (500 m) a possible by-pass should be built as a best option in the acumulation zone of the landslide, that is, on the toe of the hill involved in the landslide

This paper allows to demonstrate the relevance of an articulated management strategy and decision-making process in emergency condition to safely restore the operation in record time.