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Collapse and Burst Test Methods for Sand Screens

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Abstract

This paper will review the test methods advocated in the draft of the ISO Sand Control Screens (SCS) that is scheduled to go to ballot in 2009.

In early 2004, a task group was formed to develop the initial ISO SCS standard that covers the use of conventional screens in oil/gas wells. A key part of the draft is two test methods developed to determine the performance rating for the collapse or burst resistance of a conventional sand screen assembly. Included in the draft are definitions of product design families, and the scaling methods that can be used.

While the draft was being formed, the service companies have conducted periodic collapse or burst tests to provide performance ratings on specific products. Many of these tests were conducted using the methods outlined in the draft. The test methods are valid approaches to simulate a collapse or burst load that can be applied to a sand screen during well development or production. This paper will present test results of over sixty collapses and burst tests, and will summarize lessons learned about the test methods.

Many applications for oil/gas wells may require high collapse or burst ratings for the screens. Even in seemingly low pressure applications, completion problems many require higher collapse or burst resistance than anticipated, and the screen must not fail or the well could be lost. The ISO SCS draft establishes test methods for conventional sand screens that will provide the operators with reliable ratings for collapse and burst resistance.

Introduction

In early 2004, a task group was formed by the International Standards Organization (ISO) to investigate and develop a new ISO standard for wire wrap screens. The initial task group members were from the major service companies. At the first meeting, it was decided to expand the scope to include other conventional well screens in the standard. Prepacked screens and Metal Mesh, also called “Premium screens”, were included in the standard. Other screen technologies, such as Expandable Screens or special designs that have additional functions, such as Shunt Screens or inflow control devices, are not included in the standard.

In August 2004, representatives from Houston based major operators were added to the task group.

During 2005 and 2006, the task group began to develop the new standard. The work included evaluating and developing the scope, definitions, functional, technical, and the supplier requirements for the SCS standard. The task group developed three grades of design validation, see **Table 1**.