Introduction to Running Pipe Oil and Gas Wells

OCTG Products Introduction

Handout 03
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OCTG (Oil Country Tubular Goods) is the name commonly applied to identify the pipes used in the oil and gas industry. These pipes can serve different purposes in the wells, such as producing or injecting oil, gas, steam, water. According to their application, they can be classified as casing or tubing. The casing preserves the integrity of the well during its entire life, while the tubing is used either to inject or to produce fluids.

To select the appropriate pipe, that is, the Outside Diameter (OD), the Weight and the Grade for each application, it is important to understand its purpose. If we want to drill a well of 15,000 ft. of depth, we need to drill by sections and after having drilled each section; we must isolate and protect them because the raw sides of the well cannot support themselves. We do this by casing.

Casing also allow us to protect the well stream from outside contaminants, as well as any fresh water reservoirs from the oil or gas that is being produced. Casing can be divided in different steps:

- **Conductor Casing:** is the first casing step. It is needed to circulate the drilling fluid up to the surface without eroding the upper sediments below the rig foundations. Generally this is a very short string, normally consisting of 1 to 3 joints.
- **Surface Casing:** this string prevents the cave-in of unconsolidated sediments near the surface and fundamentally it protects the shallow freshwater sands from contamination. It supports the subsequent casing strings and also provides the primary pressure control, being the support for the blow out preventer (BOP). This is a valve that allows us to control the well in the event of a sudden influx of gas.
- **Intermediate Casing:** It seals off troublesome formations or transition zones which could cause drilling problems, such as weak formations which lead to loss of circulation, sloughing shales, high pressure zones, depleted zones, salt formations which tends to collapse the well, and so on.
- **Production Casing:** is set in the productive interval of the well. The production casing is always set facing the tubing. In such way, it must be designed to withstand all the fluids properties (as pressure, temperature, corrosiveness). This casing protects the environment in the event of a failure or damage on the tubing during the production stage, as well as it allows the production tubing to be replaced or repaired during the entire life cycle of the well.
- **Drilling Liner:** it has the same concept of the intermediate casing. They do not face the drilling.
- **Production Liner:** this is set in front of the productive interval of the well. They face the tubing.
• **Tie Back**: is a string connected from the top of a liner up to the surface of the well. A use of tie backs is when a large and heavy casing string needs to be run from the surface to the bottom of the well, and due to its weight, it cannot be hanged by the rig. In this particular case, such long and heavy casing string is divided in two shorter and lighter strings: a liner at the bottom and a tie back at the upper part, and both of them are run separately.

All pipes must be identified, and the most important international standards for pipe manufacturing are the API 5CT and the ISO 11960, ‘Petroleum and natural gas industries — Steel pipes for use as casing or tubing for wells’. A tube is identified for its outside diameter expressed in inches, its weight expressed in pounds per foot, its steel grade and its connection.

Different Types of Oil Drilling Wells

Identification of a tube according to standard

**9 5/8” 53.5# P110 TSH Blue®**
Casing & Tubing Strings