

## Mechanical Cutting Case Histories

**Date:** Sep 2009

**Job Objective:**

The customer had a requirement to cut and pull sections of 5-1/2" 23 lbs/ft tubing in the North Sea. In this instance the cutter was to be deployed on jointed pipe in conjunction with a spear.

**Job Outcome:**

Since 2-7/8" diameter drill pipe was being used for the operation our 2-7/8" Cutter was mobilized complete with two sets of 6" sweep knives.

In total, two cuts were successfully performed. The first attempt was kept running until a sudden drop in weight was witnessed. At this point it was clear that a cut had been made. Once this upper section of tubing was retrieved the second cut was made at a deeper depth. In this instance the weight dropped off after only 4 minutes.

Both cuts were carried out using the same pipe cutter with only the knives being changed out.

**Date:** Feb 2009

**Job Objective:**

A client had a completion with 3 Packers installed; the top 1 of which did not hold pressure after setting. The client wanted the packer removed from their wellbore.

**Job Outcome:**

The packer has a cut release mandrel inside it.

The ID of the mandrel is 3.875" with an OD of 4.415". The total length of the cut release mandrel was 24.625".

A 6" OD Sleeve Stabilizer was used to land off on top of the packer and spaced out the cutter to allow for a possible second cut if required.

The BHA was RIH on 4 1/2" Tubing with a 2 7/8" Welldrill Motor and the newly developed 2 1/8" Welltonic Cutter dressed with 4" Sweep blades with a maximum cut of 4 1/2".

This would allow the mandrel to be cut and not damage/cut the outer mandrel.

At reaching the top of the Packer, Pick Up and Running weights were checked, landed off on the packer and picked up to a neutral weight.

The cutting operation was commenced by pumping water at 0.5 bpm for 15 minutes to dress off the blades.

After this the pump rate was increased slowly by 0.25 bpm every 5 minutes.

Upon reaching 1.5 bpm, a time limit of 10 minutes was set after which pumping was stopped.

The tubing and BHA were pulled OOH, the cutter was checked at surface showing good indications that the mandrel had been cut. 1 blade had a small chip out of the insert. (as shown)



The tubing was then RIH with a Snap Latch to retrieve the Packer. After latching into the Packer and picking up there was an increase of 15k above pick up weight indicating that the Packer was pulled.

The Packer was successfully cut and retrieved to the Customers requirements.

**Date:** Feb 2004

**Job Objective:**

Cut 3-1/2" Tubing using Cut and Pull assembly run on tapered drillpipe workstring at 4,053 meters.

Operation Performed using 2-5/8" Dia Welltonic Hydraulic Tubing Cutter with 2-3/8" Drilex Motor.

**Job Outcome:**

Tubing cut successfully in one trip – job performed exactly as per programme and job design and cut took less than 10 mins pumping at 130 Liters / min.

**Date:** June 2003

**Job Objective:**

To firstly clean out clay and formation deposits from inside 2-7/8" Production Tubing, where a wireline plug had also failed to set in the lower 2.313" nipple profile. Secondly it was required to perform a hydro-mechanical tubing cut as deep in the well as possible in order to facilitate well kill operations and recovery of the production string. It should be noted that the work was performed using 1-1/2" OD coiled tubing and that it was a high-pressure gas producing well (7,500 psi).

**Job Outcome:**

During the cleanout phase of the operation it became apparent that the plug was not set in the lower nipple as the well kicked in and there was 6,500 psi at surface. The cleanout was performed using Zinc Bromide for well control purposes, with a minimum of formation solids entering the production tubing. For the tubing cut centralization and anchoring of the assembly were paramount and the assembly was designed with these critical features in mind. On the first attempt there were no indications of the cut being

made, even though a cut was achieved in less than 3 minutes at surface. On the second attempt however the tubing was cut successfully, albeit in a longer time than expected. This could have been down to debris in the well, and in fact the cut may have been successful at the first attempt with packed debris in the annulus preventing the tubing from being pulled free. The operation was a major success in particularly challenging conditions and met with all the client's objectives.