Introduction

This report summarizes a Resonant Fatigue Test performed on 7” OD, 26.00 ppf, P-110 Casing finished with GB CD (Casing Drilling) Connections. The test was performed to determine fatigue life of this casing/connection combination in a test frame simulation of rotating through a 14º per 100-ft. build section. Testing was performed to destruction on two samples.

The Operator calculated the maximum anticipated rotational life of connections in their application was about 400,000 cycles. This test was performed to demonstrate that the GB CD Connections would provide an operational life exceeding these requirements with a factor of safety.

Sample Description

Two test specimens were prepared for this test. Casing was from Rocky Mountain Steel Mills and GB CD Couplings were pulled from GB Tubulars’ inventory manufactured by Lincoln Manufacturing. Instead of pulling couplings at random, individual pieces were gauged to find parts with thread crest diameters on the high and low sides of the tolerance band.

The sample joint was cut into four pup joints, each with a length of 87±1.5 in. These lengths were designed to yield an assembled test specimen of proper length for easy achievement of the target mean stress and amplitude range (0 psi ±21,364 psi; ~19.4% of nominal P-110 yield strength) in the Stress Engineering Load Frame.

Pin threads were machined at 10-4 Tubulars. Thread crest diameter tolerances were specified to yield connections tending toward “high” and “low” interference.

Make-Break Testing

Make-Break Testing was performed at 10-4 Tubulars using the same equipment typically used for production of casing for Drilling with Casing applications. All assemblies were performed horizontally. For each sample assembly, the mill side was made up to position following normal production