

CT-DOG

Coiled Tubing Diameter and Ovality Gauge



CT-DOG

One Company Unlimited Solutions



CTES

CT-DOG

Coiled Tubing (CT) Diameter and Ovality Gauge

CT Diameter and Ovality Measured in Real Time

Introduction

To help lower the risk of costly tubing failures, NOV CTES has developed the CT-DOG; a real-time measuring device for detecting tubing dimensional imperfections such as necked or ballooned sections and dents.

CT-DOG is designed to notify and alarm the user of potential tubing problems by monitoring real-time diameter changes and ovality during coiled tubing operations.

CT-DOG can be used as a stand-alone inspection device or it can be used with the Cerberus™ coiled tubing modeling software and Orion™ data acquisition system to create a fully integrated, real-time coiled tubing monitoring system.

Using CT-DOG provides the following benefits:

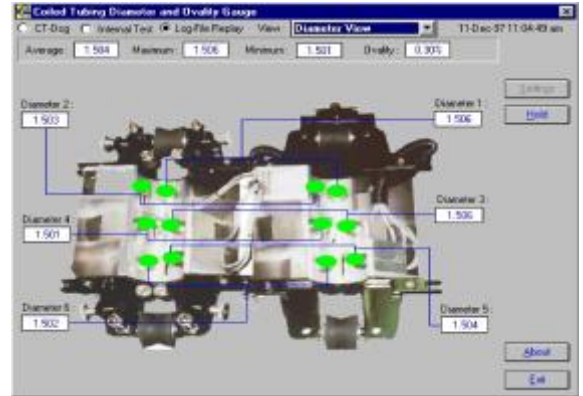
- Reduces risk of tubing failure
- Real-time measurements
- Detects ballooning and surface damage
- Fast, reliable and economical
- Complete data access
- User-defined alarms
- Easy to use
- Oilfield rugged

Operator Interface and Signal Processing Module

- Stand-alone electronic box provides audible and visual alarms and a RS232 port for connection to a data acquisition system or laptop PC
- Compares calculated values against user-defined limits and trigger alarms
- Ovality and diameter flaws can be referenced to depth or time
- Keypad user interface allows for user-defined limits
- LCD display exhibits calculated values when used as a stand-alone system



Operator Interface and Signal Processing Module Controls and Indicators



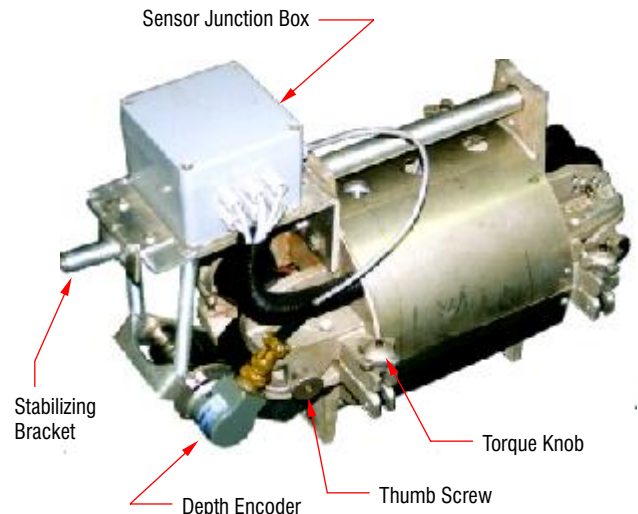
CT Monitoring Software Display

CT Monitoring Software

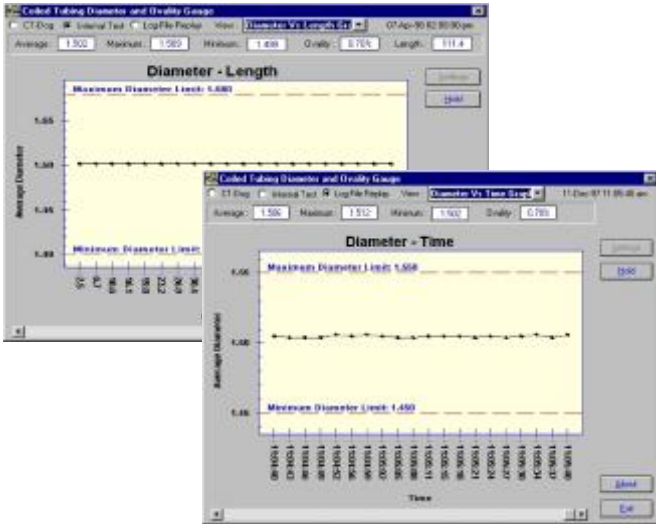
- Minimum OD
- Maximum OD
- Average OD
- Ovality percentage
- Individual and paired sensor diameters
- Alarm flags

Measuring Head

- Change sizes and calibrate in 15 minutes
- Split-case design for easy access, installation and cleaning
- Calibration tubes provided with CT-DOG
- Temperature compensated software; recalibration unnecessary when temperatures change drastically
- Durable, rugged construction
- Weighs only 53 lbs



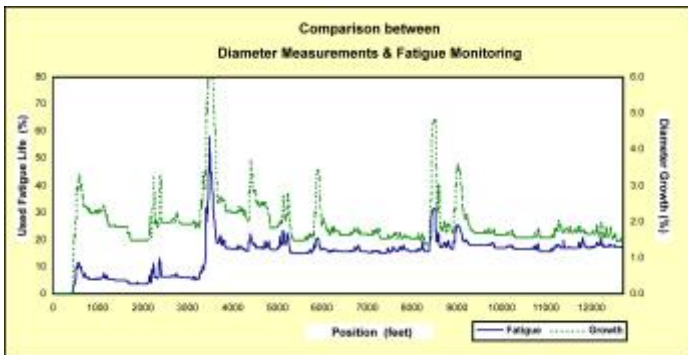
Measuring Head Controls and Indicators



- View diameter along length of coiled tubing
- View diameter versus time
- User defined limits
- Produces ASCII text file



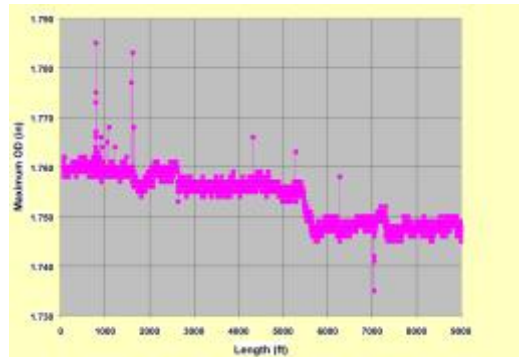
- View raw data for testing, calibration or analysis purposes
- Save raw data for event review
- View sensor counts



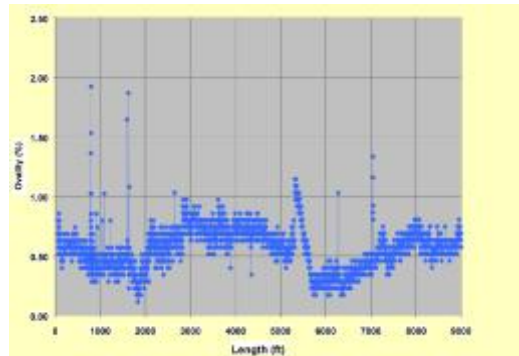
- Record CT-DOG data with the Orion Data Acquisition System for use with Cerberus software

CT-DOG Features

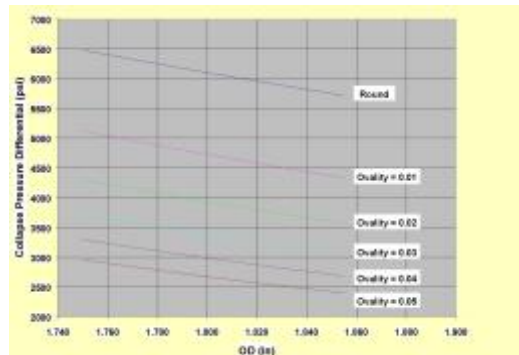
- Measures diameter 1¼" - 2⅞"
- Diameters measured on 6 radials
- 100% tubing coverage at speed of 100 ft/m or less with ±0.005 in. accuracy
- User-defined alarms for diameter and ovality when limits exceeded
- Computes minimum and maximum diameter and ovality
- Measurements transmitted to data acquisition system via RS232
- Field calibration for specific coiled tubing size
- Installation at any time during operations
- Bi-directional measurements
- Keypad user interface
- Cost effective



1.75" CT String - Maximum OD



1.75" CT String - Ovality



Collapse Pressure with Ovality and Ballooning

See SPE paper 46040 for detailed information.

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