ISN

ASNT Corporate Partner

RE "LION" US!

LION
INSPECTION SERVICES

CASPER WYOMING

OKLAHOMA CITY

WEST TEXAS

HOUSTON TEXAS

VILLA HERMOSA MEXICO

COLOMBIA
FUTURE LOCATION

- API/ DS-1 INSPECTION
- MT, PT, VT, UT, EMI
- 3rd PARTY INSPECTION
- RIG FLOOR TUBING INSPECTION SYSTEMS
- PORTABLE ULTRASONIC HARDNESS TESTER
- EDDY CURRENT
- BRINELL HARDNESS TESTING

PORTABLE BHA & DRILL PIPE INSPECTION UNITS

ON-SITE SHOP INSPECTION STATIONS

- DOWNHOLE TOOL SERVICES
- MUD MOTOR CONSULTING
- MUD MOTOR
- DRILLING JARS
- SHOCK TOOLS

16770 Hedgecroft Dr.
Suite # 710
Houston TX 77060
sales@lionoil.net

LIONINSPECTIONSERVICES.COM

OFFICE 281.741.1347

LION
INSPECTION SERVICES

RE "LION" US!

LION INSPECTION SERVICES

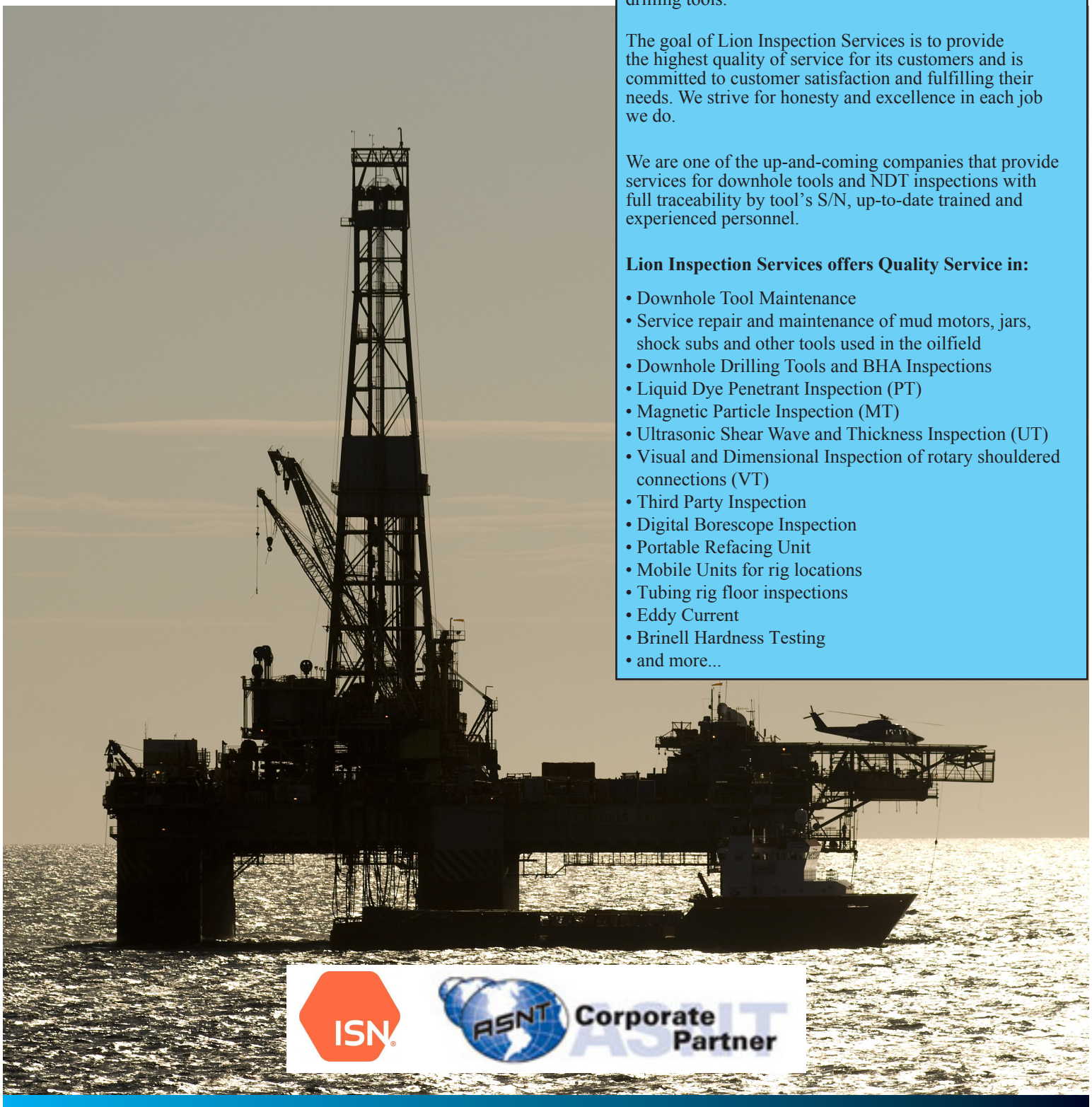
Lion Inspection Services is a company established by M. Sierra with more than 25 years of experience in downhole drilling motors, shock subs, jars and other equipment used in the oilfield. Lion Inspection Services also has experience with Quality Assurance and NDT Inspection. The company was created to assist customers with maintenance, repair and inspection of any downhole drilling tools.

The goal of Lion Inspection Services is to provide the highest quality of service for its customers and is committed to customer satisfaction and fulfilling their needs. We strive for honesty and excellence in each job we do.

We are one of the up-and-coming companies that provide services for downhole tools and NDT inspections with full traceability by tool's S/N, up-to-date trained and experienced personnel.

Lion Inspection Services offers Quality Service in:

- Downhole Tool Maintenance
- Service repair and maintenance of mud motors, jars, shock subs and other tools used in the oilfield
- Downhole Drilling Tools and BHA Inspections
- Liquid Dye Penetrant Inspection (PT)
- Magnetic Particle Inspection (MT)
- Ultrasonic Shear Wave and Thickness Inspection (UT)
- Visual and Dimensional Inspection of rotary shouldered connections (VT)
- Third Party Inspection
- Digital Borescope Inspection
- Portable Refacing Unit
- Mobile Units for rig locations
- Tubing rig floor inspections
- Eddy Current
- Brinell Hardness Testing
- and more...



ISN

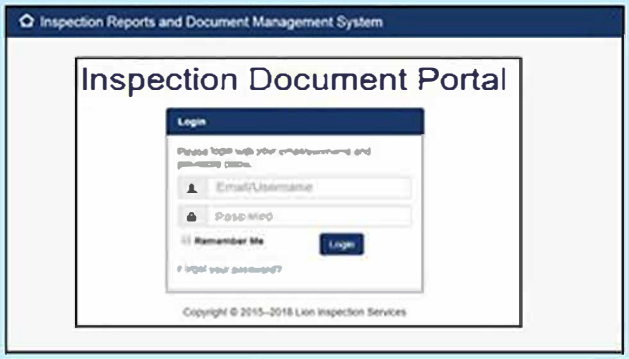
ASNT Corporate Partner

LIONINSPECTIONSERVICES.COM

LION
INSPECTION SERVICES

RE "LION" US!

Customer Inspection Portal: lioninspectionform.com



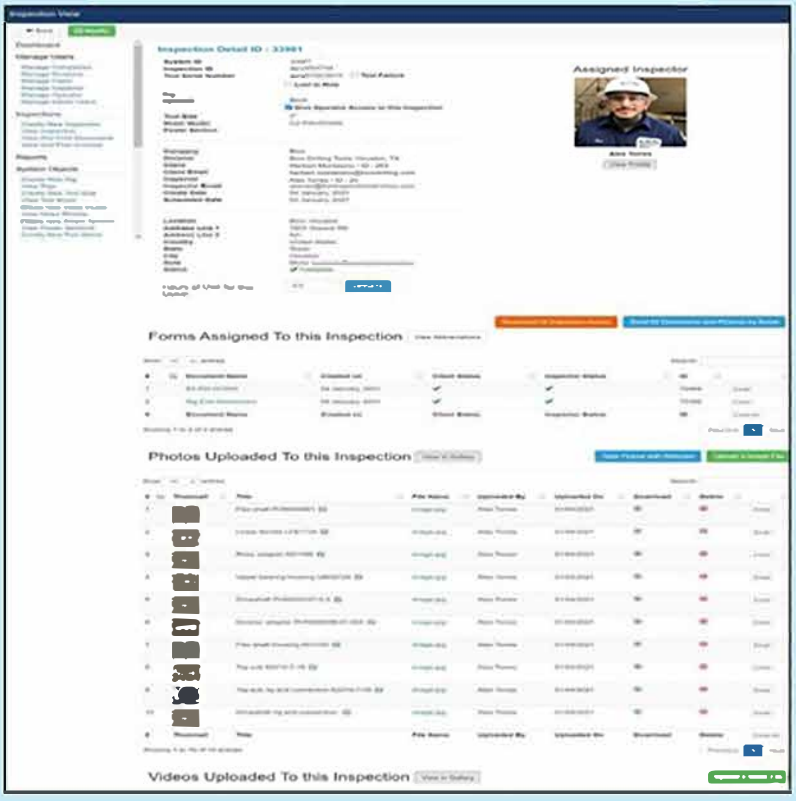
Lion Inspection Services offers both paper and electronic forms to suit our customer's needs.

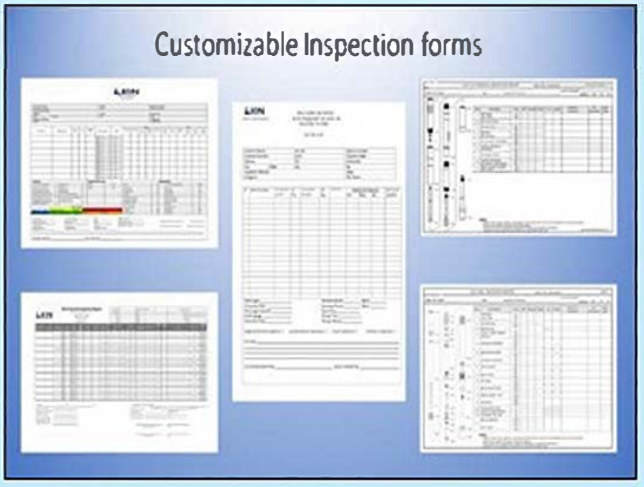
Lion Inspection Services provides a secure inspection report management system.

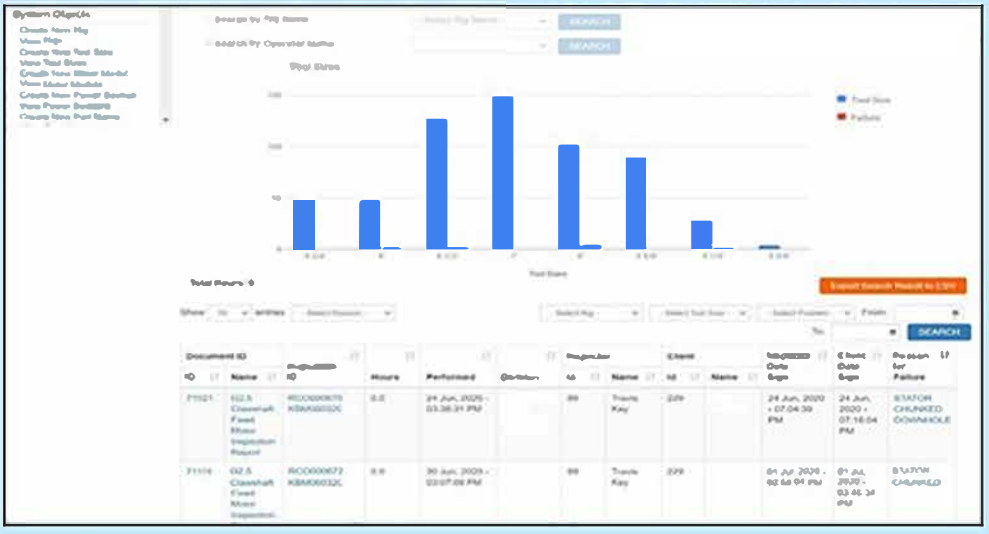
- Client to request a ninspection online
- Inspector reviews and submits fonn for client's signature
- Inspector signs
- Client gets a notice once Inspector signs

Clients are able to print pdf or send proof automatically to others within the organization.

S /N /Description/ Job#/ date/ Damage fields are searchable allowing clients to monitor parts, replacement usage and provides easy access to traceability and history of tools and parts inspected.





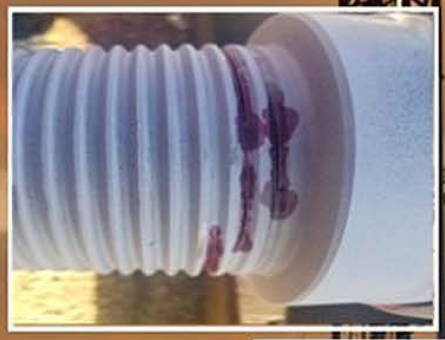


lioninspectionservices.com

LION
INSPECTION SERVICES

RE "LION" US!

Liquid Penetrant Testing(PT)
As an industry applied and economically beneficial system, LP is used to locate surface-breaking defects in ferrous and non-ferrous materials. The penetrant is applied to material, although for ferrous and non ferrous components. PT is applied to detect casting, forging and welding surface defects such as surface porosity, hairline cracks, leaks in new products, and fatigue cracks on components in service.



Ultrasonic Shear Wave and Thickness Inspection (UT)
UT uses high frequency sound energy to detect internal flaws, locate changes in material and make measurements. It is very sensitive to material defects, porosity, ID wash and cracks.It is portable and can be used on many materials.

lioninspectionservices.com

LION INSPECTION SERVICES

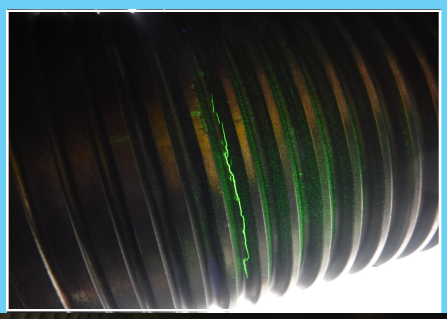
RE "LION" US!

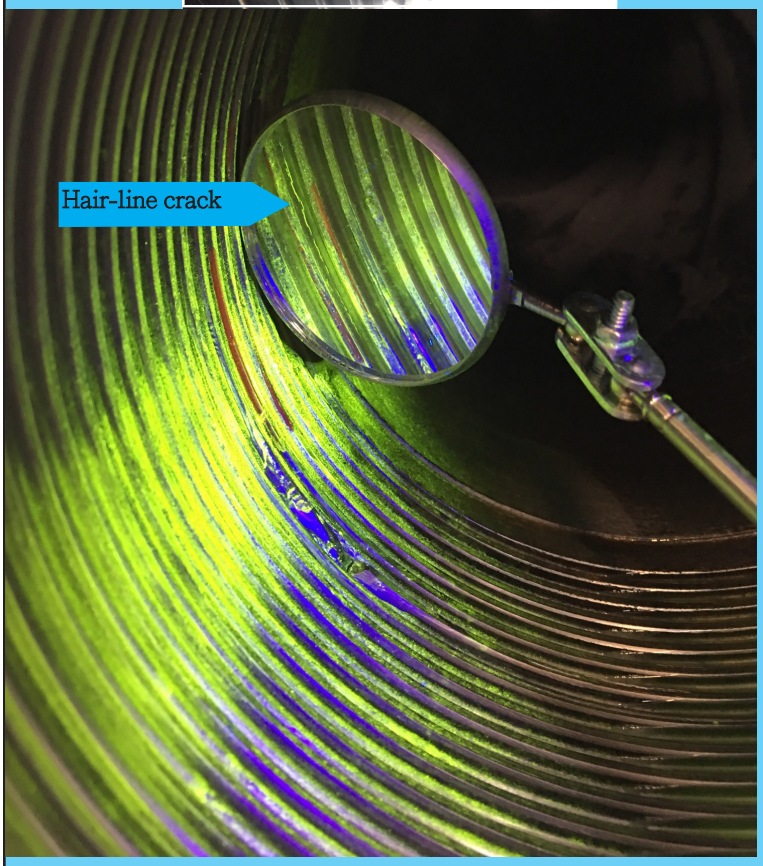
DRY PARTICLE INSPECTION

Magnetic Particle Inspection (MT)

This method is the most common. Cracks on the surface or close to the surface can be detected in the part under inspection. Only ferromagnetic materials can be inspected by this method which uses strong electromagnetic fields in order to find discontinuities in the magnetic flux path.

The process puts a magnetic field into the part. The presence of a surface or subsurface discontinuity in the material allows the magnetic flux to leak, since air cannot support as much magnetic field per unit volume as metals. Ferrous iron particles are then applied to the part. The particles may be dry or in a wet suspension. If an area of flux leakage is present, the particles will be attracted to this area. The particles will build up at the area of leakage and form what is known as an indication. The indication can then be evaluated to determine what it is, what may have caused it, and what action should be taken if needed.





WET MAGNETIC PARTICLE INSPECTION

LION
INSPECTION SERVICES

RE "LION" US!

Downhole Tool Maintenance

Lion Inspection Services provides downhole tool maintenance for the complete range of traditional and custom downhole tools for drilling, fishing, well intervention, re-entry and well completion applications.

Downhole Drilling Tools Inspections

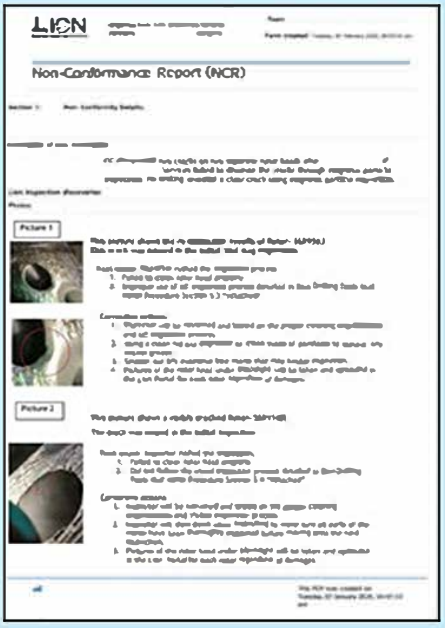
Drilling tools are exposed to extreme conditions including over torque, high tension, corrosion, ID wash, over pull, over load and mechanism failures. Regular inspections and SIN traceability can help prevent failures that can result in higher costs to the daily drilling, potential loss of tools and even having to abandon the oil well.

Service Repair and Jar Maintenance

Lion Inspection Services offers repair and maintenance of mud motors, drilling jars, shock subs, and other tools used in the oilfield. With over 20 years in the industry we know how to keep all equipment at top performance.

Tool Assembly/Disassembly Monitoring and Failure Analysis

Lion can provide 3rd party witness of tool assembly and disassembly and expert failure analysis with detailed reports from our team with over 25 years experience in downhole drilling tools.


LION

Non-Conformance Report (NCR)

Disassembly

Our shop in Midland is ready to disassemble Mud Motors, Drilling Jars, and Shock Tools. Lion also provides disassembly at our customers sites and witness disassembly.

LION INSPECTION SERVICES

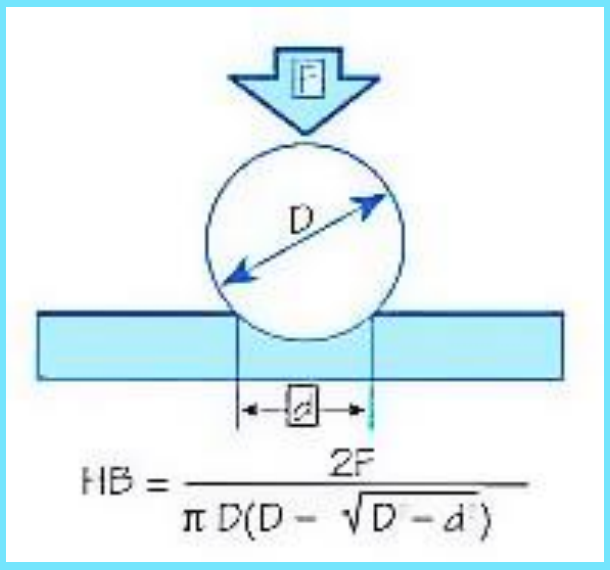
RE "LION" US!

Brinell Hardness Testing

The **Brinell hardness test method** as used to determine Brinell hardness, is defined in ASTM E10. Most commonly it is used to test materials that have a structure that is too coarse or that have a surface that is too rough to be tested using another test method, e.g., castings and forgings. Brinell testing often use a very high test load (3000 kgf) and a 10mm diameter indenter so that the resulting indentation averages out most surface and sub-surface inconsistencies.
The Brinell method applies a predetermined test load (F) to a carbide ball of fixed diameter (D) which is held for a predetermined time period and then removed. The resulting impression is measured with a specially designed **Brinell microscope** or **optical system** across at least two diameters – usually at right angles to each other and these results are averaged (d). Although the calculation below can be used to generate the Brinell number, most often a chart is then used to convert the averaged diameter measurement to a Brinell hardness number.

Test Method Illustration

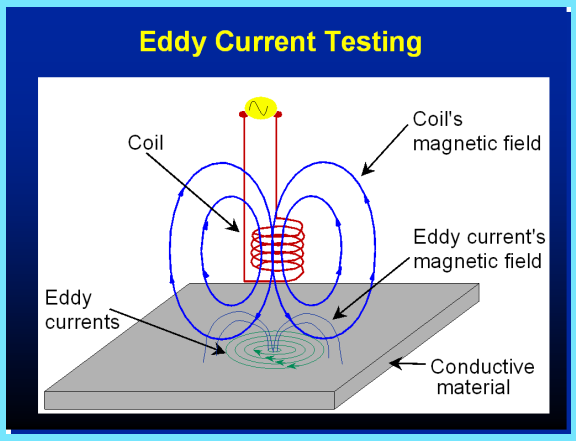
D = Ball diameter
d = impression diameter
F = load
HB = Brinell result



Eddy Current Inspection

A very sensitive method used for the detection of flaws in both ferrous and non-ferrous materials. Eddy Current testing can be used both for **integrity inspection** and for **material sorting**. It is primarily used for crack detection through protective coatings.

The coil with the alternating current is arranged in metal plate, at this time the coil and its vicinity will produce an alternating magnetic field, so that the test piece in a vortex induced alternating current, called the eddy current.



Measuring the magnetic field variation induced by eddy current with a probe coil, can be inferred from the test size and phase change in eddy current. And then get the information about the changes of electrical conductivity, defects, material conditions and other physical quantity or defects. But because the eddy current is the alternating current, which has the skin effect, the detected information can only reflect the condition of the specimen surface or near surface.

LION INSPECTION SERVICES

RE "LION" US!

Computerized Drill Pipe Electromagnetic Inspection

Computerized Electromagnetic Inspection is one of the most thorough methods of detecting cuts, gouges, O.D. wear, pitting, cracks, wall loss, diameter variations, and other defects. A solid-state electronics console with the most advanced hall sensors and solid state electronics heads provides greater accuracy in pipe evaluation, in a shorter amount of time.

Visual Tube Body Inspection
A thorough visual inspection of pipe external surface for possible noticeable damages, such as dents, mashes and corrosion/ pits, shall be performed from upset to upset. Visual inspection includes internal end area of each tube for service induced defects. The tubes are checked for straightness.

Visual Thread Inspection
Thread Protectors are removed and both pin and box ends are thoroughly cleaned and visually evaluated for any obvious defects or mechanical damages, such as dents, corrosion, galled threads, etc. Thread profile gages and lead gages are used to estimate the visible gaps at any of the flanks or thread roots. API Dope is applied to the threads and thread protectors are installed. The dope shall be supplied by the customer.

OD Gauge (Full Length)
Full length mechanical measurement of outside diameter is performed for identification of external wear, dents, mashes, slip area and stress induced diameter variations.

Critical Area Magnetic Particle Inspection (MPI)
Pipe is magnetized with a DC magnetizing coil with variable current to provide active longitudinal magnetization for detection of transverse flaws.

Electromagnetic Inspection (EMI)
Buggy Inspection Unit is used for transverse defect inspection.

Critical Area Ultrasonic Inspection (UT)
Share wave ultrasonic examination for the detection of transverse and three dimensional flaws on the inside and outside of the tube is performed.

Hardness Testing
Portable Hardness Testers are utilized to perform hardness reading different metals and specific part areas.

Wall Thickness Measurements
Ultrasonic Measurement: Ultrasonic wall thickness tests are utilized to determine the minimum and maximum wall thickness at any one area on a tube. A test consists of taking as many circumferential measurements as required to determine the minimum and maximum wall thickness in one area.
Micrometer Measurement: Micrometer measurements are utilized in measuring the wall thickness on the ends of plain end pipe.
Ultrasonic Wall Verification: Ultrasonic wall thickness test to verify that the tube body, in general, satisfies nominal wall thickness requirements.

Tool Joints & Upsets Inspection
Transverse external magnetic particle inspection (excluding threads) is performed to detect external fatigue cracks and pits.

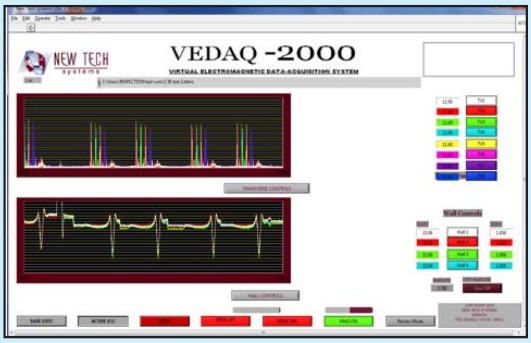
LION INSPECTION SERVICES

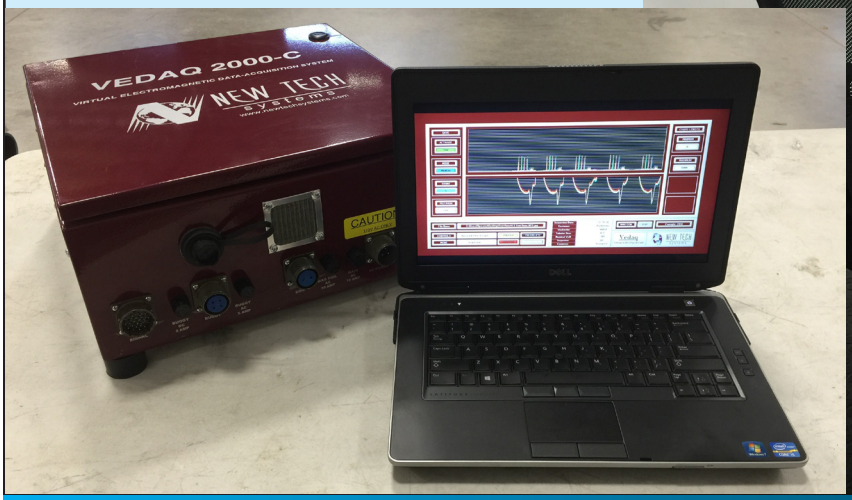
RE "LION" US!

Computerized EMI Drill Pipe Unit

Inspection capacity is 2 3/8" to 6 5/8" O.D. drill pipe. All commands i.e. gain, coil, buggy adjustments are performed with keystrokes on the computer. It is designed to meet or exceed the stringent industry requirements set forth by API and TH Hill DS-1.

Capacity	**2-3/8" to 6-5/8" O.D. tubing and drill pipe**
2 Funtions	**1) Transverse (TV) Flaw Detection (cracks and pits)**
	2) True-Wall Magnetic Wall Thickness Monitoring
Production Rate	**30 to 90 Ft. per minute, all functions**
Inspection Criteria	**The VEDAQ 2000-C™ is designed to meet or exceed stringent industry requirements set forth by API, TH Hill DS-1**
Major Components	**1) Electronics Console with 2 function circuitry**
	2) Detector Shoe (buggy) Heads
	3) High Speed Buggy Drive with variable speed DC motors
	4) Powerful DC Magnetizing Coils
	5) Air Jack Set (standard or Hi-Low models available)
	6) Calibration Standards (optional)
Data	**PC-based Data Acquisition System with Laptop Computer Acquisition (all functions performed on computer with multi-color data display)**
Detected Defects	**3 Dimensional Transverse Flaws AND Wall Thickness Variations 5% wall loss AND 1/16" (1.6mm) through hole on calibration standard**





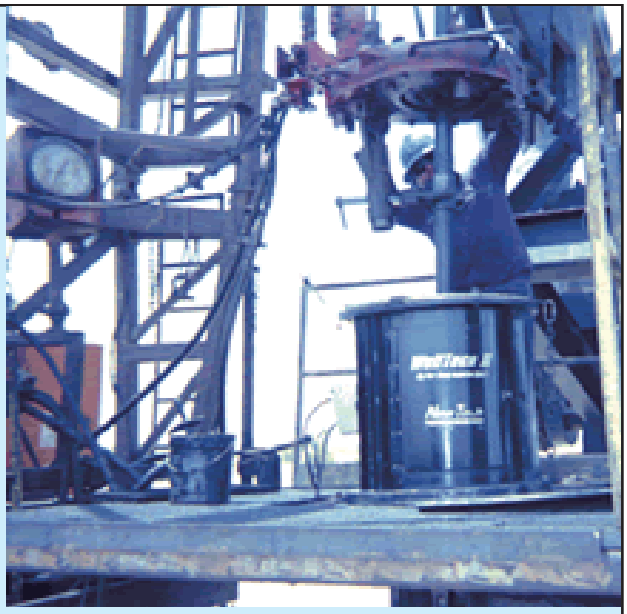
LION
INSPECTION SERVICES

RE "LION" US!

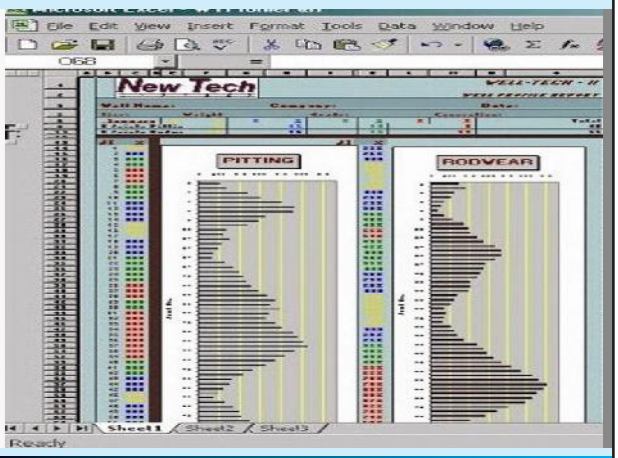
Rig Floor Tubing Inspection System

Computerized PC-based rig floor tubing inspection system is designed to perform a quick and quality inspection of tubing on the well service rig floor as it is being pulled from the well. The electronics system is packaged in a compact and durable container. Settings (gain settings, wall, split and flaw calibration, etc.) are controlled with the ruggedized laptop computer. Inspection for service-induced flaws typical to used tubing (i.e. pitting, cracks, rod wear and wall thinning, etc.) is performed by a solid state Hall Effect detection system that encircles the pipe, located inside a powerful DC magnetizing coil. Pipe can travel through the head bi-directionally, but the inspection process takes place as the pipe is pulled out of the well. Lion Inspection Services utilizes the latest model of the Welltech family by New Tech Systems and DOES NOT USE GAMMA RADIATION.

- **PC Based electronics system with digital "Real Time" data presentation**
- **Industry's largest source capability: 2 3/8" to 4 1/2"**
- **Solid State Wall Monitoring (NO GAMMA RADIATION)**
- **Exclusive with Hall Effects Sensors Solid State 3-Dimensional Flaw Detection**
- **SPLIT-Check Longitudinal Split and Hole Detection**
- **PC-Based Electronics System with digital signal presentation**
- **Cordless Remote Calibration Device**
- **Improved Higher Pulling Speeds**
- **"Well Profile" and Custom Inspection Reports for continuous Well Management**
- **Each system designed and built for Rig Floor application with maximum safety in mind.**



Digital Data Display



Well Profile Report

LIONINSPECTIONSERVICES.COM

LION INSPECTION SERVICES

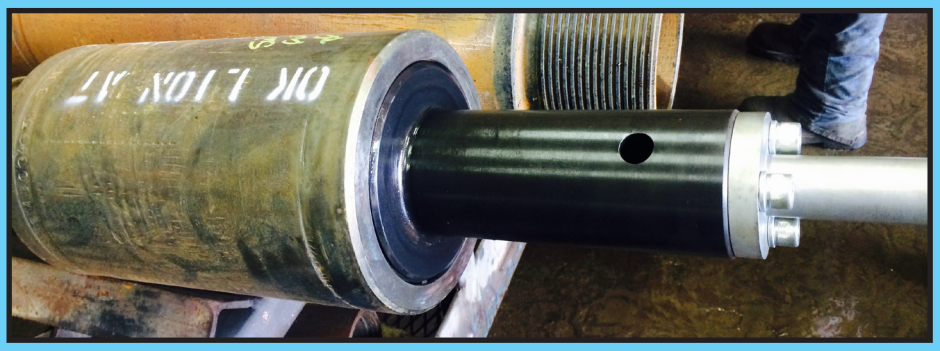
RE "LION" US!

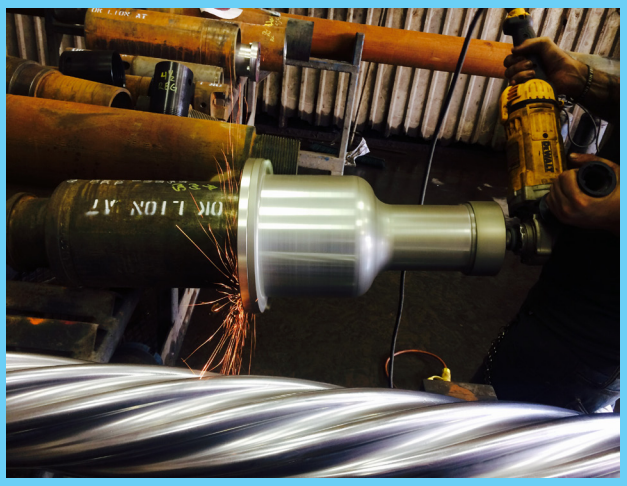
Demagnetization of Ferromagnetic Materials

The permanent magnetism remaining after inspection must be removed by a demagnetization operation before the part is to be returned to service. Parts of operating mechanisms must be demagnetized to prevent magnetized parts from attracting filings, grindings, or chips inadvertently left in the system, or steel particles resulting from operational wear.

Shoulder Refacing

The portable, electric powered shoulder refacing tools are designed to repair minor shoulder connection damage in the field. Drill collar and drillpipe shoulder faces are smoothed with adhesive backed emery paper, leaving a surface that is flat and smooth. Many connection shoulders can be repaired at the rig when such damage would normally require costly machine shop attention.





ISN

ASNT Corporate Partner

re "LION" us!

LION
INSPECTION SERVICES

Long list of satisfied clients

77 APS
AMEGA WEST SERVICES
BASINTEK
BHP BILLITON
BICO DRILLING TOOLS: HOUSTON
BICO DRILLING TOOLS: WEST TEXAS
BICO DRILLING TOOLS: OKLAHOMA
COMPASS DIRECTIONAL
CORPRO
CRESCENT DIRECTIONAL DRILLING: WEST TEXAS
D-TECH
MPACT: OKLAHOMA
MWD SUPPLIES
PRO DIRECTIONAL
SCIENTIFIC DRILLING INTERNATIONAL: HOUSTON
SCIENTIFIC DRILLING INTERNATIONAL: OKLAHOMA CITY
SNIPER DRILLING MOTORS
STABILTEC
TELLEZ MACHINE
TOMAHAWK DOWNHOLE
SAIPEM

16770 Hedgecroft Dr.
Suite # 710
Houston TX 77060
sales@lionoil.net

lioninspectionservices.com

office 281.741.1347