Training & Technical Assessments in Russia

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Bridges NDT

Introduction

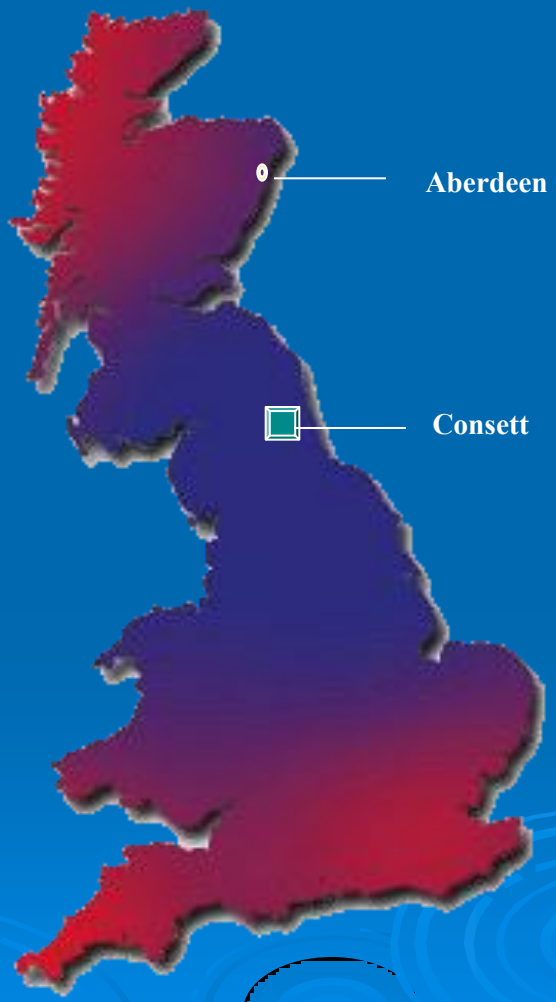
- Bridges NDT are a small company based in the Northeast of England. The company provides:
- Third Party Inspection
- Training and examination certification to SNT TC 1A requirements
- NDT Technical Assessment and Auditing to ISO 17025 & ISO 17020

History

- During 2007 part of my role was lecturing at a PCN test centre in Aberdeen
- October 2007 was asked to visit Siberia on behalf of the test centre to supply NDT training to Russian NDT inspectors specifically on Drill String inspection
- The training was specified by the customer who was a Major Global Directional Drilling Company
- December 2012 flew from Aberdeen to Noyabrsk & carried out 10 days training of operators.

Introduction

- **Aberdeen (UK Oil Capital)**
- **Bridges NDT (Consett)**



History

- The training given was to the requirements of American Society of NDT document SNT TC 1A .
- The NDT Methods:
- Magnetic Particle Inspection
- Liquid Penetrant Inspection
- All operators examined were to Rostechnadzor level 2 certified in the NDT Method

History

- Invited back February 2008 to carry out training of operators for a Global manufacturer of Drill pipe duration 2-3 weeks per year.

- Returned every year since for the manufacturer to carrying out SNT TC 1A training and annual operator technical assessment.

In-service Derrick

Inspection items

- **BASIC BHA COMPONENTS**

Hevi -Wate Drillpipe (HWDP)

Spiral - Wate Drill Collar

Stabilizer

Substitute

Inspection Standards

- The main inspection standards used for inspection of Drill Strings are:
- DRILL STEM INSPECTION, Standard DS-1 Category 1 - 5 Inspection
- ANSI/API RP7G-2 Recommended Practice for Drill Stem Element Inspection

Inspection Standards

- Process Comparison

Drill Pipe Inspection	DS-1 Category					API RP7G
	1	2	3	4	5	
Tube Body						
Visual Tube						Not Addressed
OD Gauging						Table only
UT Wall Thickness checks						
Electromagnetic Scanning						Not Addressed
MPI/Slip Area						
UT Slip Area						
Tool Joint						
Visual connection						Optional requirement
Fluorescent MPI of connection						
Thread profiling w/gauge						Not Identified
OD/ID Gauging						OD only
Seal width/Condition						Condition only
Shoulder width						Table only
Bevel Diameter						Not Addressed
Seal Flatness						
Counter-bore depth						
Counter-bore Diameter						
Pin stretch						Option on request
Box Swell						
Tong Space						

Inspection Standards

- DS1: ■ Standards for Inspection- Accepting & Rejecting used drill Pipes
- ■ Drill Stem Inspection covering wide range of components
- ■ specific Procedures & Methodology
- ■ Flexible options
- ■ Training & Qualifications
- ■ Calibration mandatory requirement
- ■ Quality Control measures outlined for equipment & processes

Inspection Standards

- API RP 7G:
- ■ Recommendations only
- ■ Drill Stem Design & operating limits
- ■ Non specific
- ■ Limited options

Inspection Standards

These Specifications are in addition to the current API Standards,

A.P.I. Specification 5D - Specification for Drill Pipe:

API Specification 7 – Specification for Rotary Drill Stem Elements:

A.P.I. Recommended Practice 5A5 (API RP 5A5):

A.P.I. Recommended Practice 7G (API RP 7G):

Inspection Standards

- Magnetic Particle Flaw Detection ASME SE 709
- Penetrant Flaw Detection ASME SE165
- Ultrasonic Inspection ASME V Article 4

Drill Pipe Inspection

- Inspection of new and used drill pipe is essential to detecting defects that originate either in manufacturing or drilling

- Most failures of drill pipe result from some form of metal fatigue. A fatigue is one which originates as a result of repeated or fluctuating stresses having maximum values less than the tensile strength of the material

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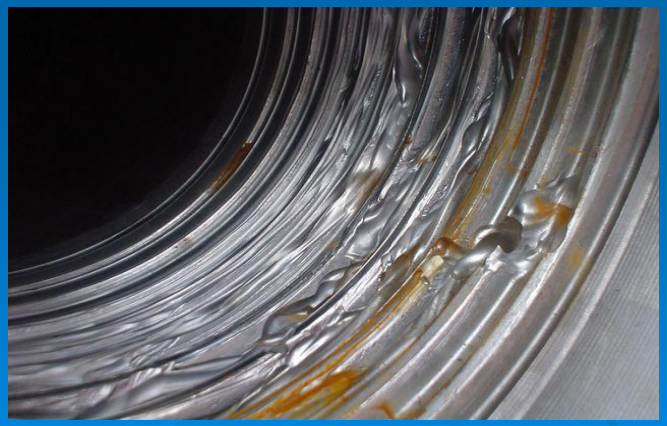
Drill Pipe Inspection

- How quickly a fatigue crack will form and propagate to failure depends on many variables. The four major
- drivers are:
- (a) Mean tensile stress: Higher mean stress shortens fatigue life, other things equal.
- (b) Cyclic stress excursions about the mean stress: Larger stress excursions shorten fatigue life, other things
- equal.
- (c) Corrosiveness of the mud system: More corrosive environments shorten fatigue life, other things equal.
- (d) Fracture toughness of the material: Tougher material will have a longer fatigue life

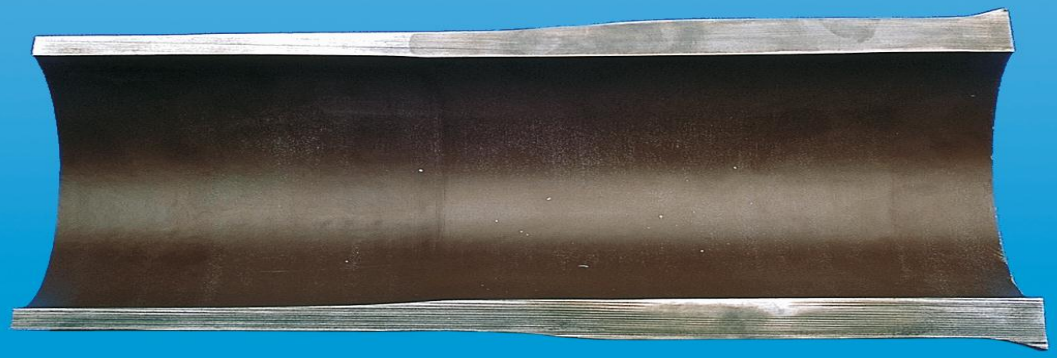
Typical Defects

Wash



Typical Defects

Cross-section of MIU (Minimum Internal Upset) between drillpipe and connection



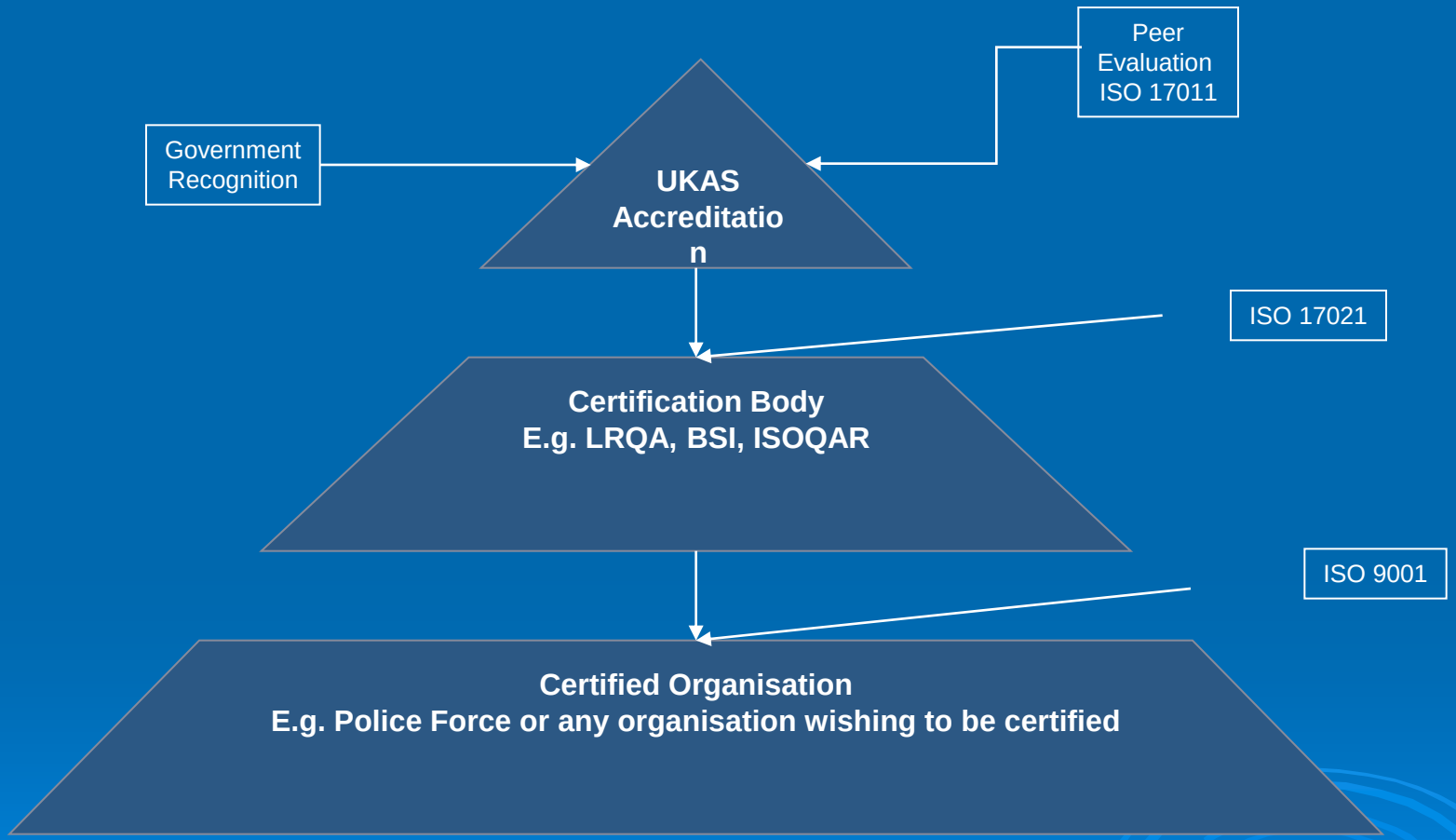
History of ILAC

- ILAC - the International Laboratory Accreditation Cooperation - is an international cooperation of laboratory and inspection accreditation bodies formed more than 30 years ago to help remove technical barriers to trade.

History of ILAC

- Laboratory accreditation is a means of determining the technical competence of laboratories
- to perform specific types of testing, measurement and calibration.
- It also provides formal
- recognition to competent laboratories, thus providing a ready means for customers to identify and select reliable testing, measurement and calibration services able to meet their needs.

UKAS and Certification



ISO/IEC 17025:2005

General requirements for the competence of testing and calibration laboratories

Scope of ISO/IEC 17025:

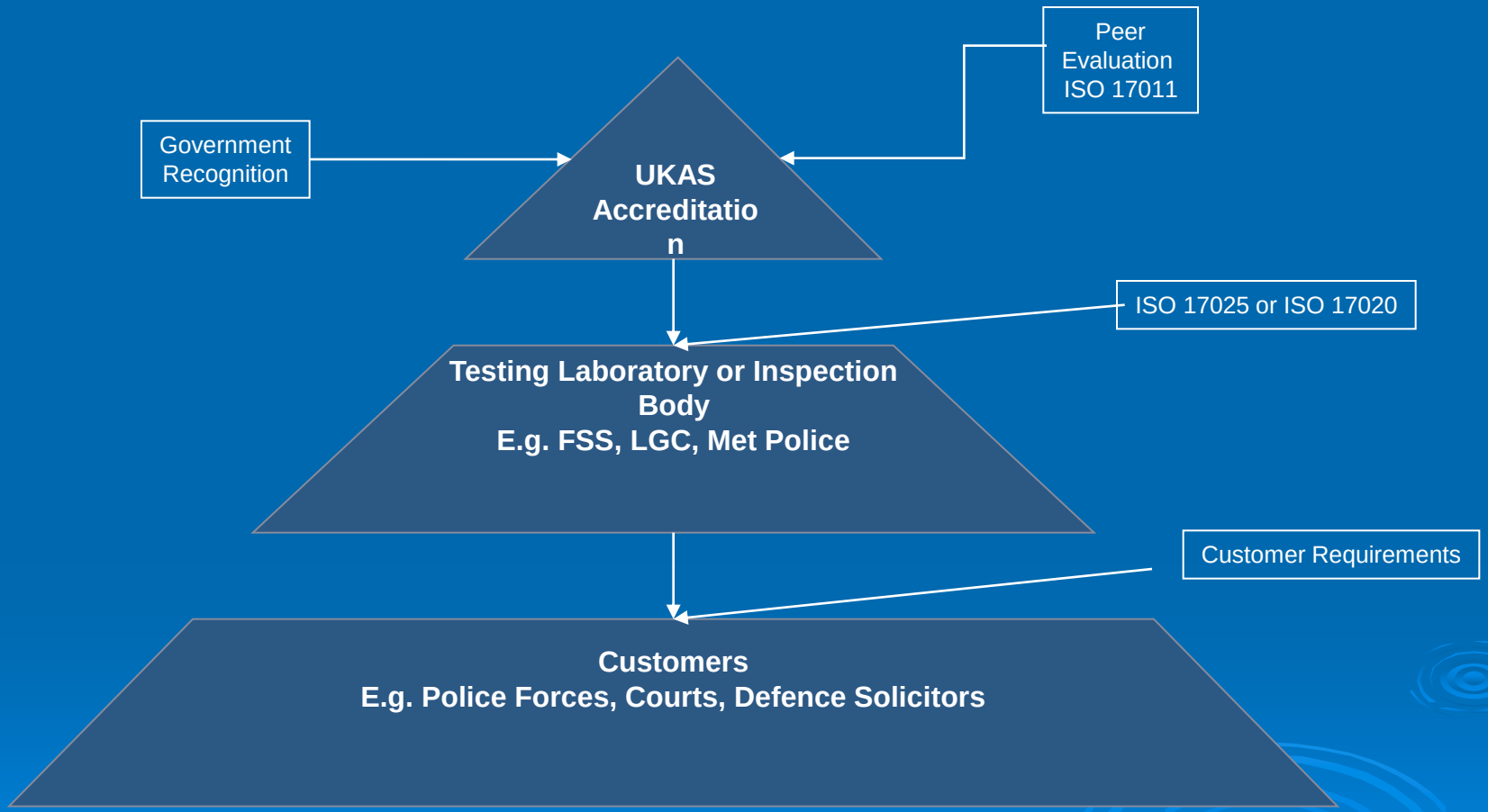
"…demonstrate that they (laboratories) operate a quality system, are technically competent, and are able to generate technically valid results"

"specifies the general requirements for the competence to carry out tests and/or calibrations including sampling"

ISO/IEC 17025:2005

- **UKAS assess and accredit directly against ISO/IEC 17025**
- **Two main sections – Management Requirements and Technical requirements**
- **Used in relation to a variety of types of testing and calibration (flexible in its application)**
- **ILAC EA 4/15 Guidance for NDT**

UKAS and Accreditation



ISO/IEC 17025 vs ISO 9001

Fundamental difference:

ISO/IEC 17025 covers several technical competence requirements that are not covered in ISO 9001:2000

“Certification against ISO 9001 does not in itself demonstrate the competence of the laboratory to produce technically valid data and results.”

Use of Standards in NDT

- **ISO17025 - Laboratory based activities**
- **ISO17020 – Inspection Bodies**
- **ISO 17024- provide certification of persons**

Use of Standards in NDT

- **ISO17025 – No Accredited Russian companies**
- **ISO17020 – 2 Accredited Inspection Bodies**
- **ISO 17024- 1 Russian companies providing certification of persons**

Guidance Documents

- **ISO17025 – EA 4/15 Guidance for the Accreditation for Non-Destructive Testing**

- **ISO17020 – EA 4/15 Guidance for the Accreditation for Non-Destructive Testing**

Technical Assessment of Accredited Inspection Bodies to ISO 17020 Russia

- June 2012 the first UKAS Pre-assessments took place in Russia for ISO 17020 accreditation
- September 2012 The first ISO 17020 (1998) UKAS technical assessment was carried out Moscow, Novatrosk and St Petersburg regions.
- June 2013 transitional ISO 17020 (2012) assessments were carried out around Russia and both accredited companies have know gained 2012 status.

The Future

- Russia to Establish National Accreditation System under EU Standard
- The uniform national accreditation system proposed by Russia's Ministry of Economic Development and Trade (MERD) was approved by the cabinet last week, the Kommersant reports
- During the cabinet meeting, Prime Minister Vladimir Putin noted that the new system will allow Russia to generate a network of independent test centres "with flawless professional reputation" which "can guarantee the safety and protection of consumers."

- Thank you