

# NDT TRAINING

## Basic Issues and Needs in the Houston Area

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# NDT TECHNICIAN

- HAS A VERY IMPORTANT JOB
- MAJOR ENGINEERING DECISIONS ARE MADE BASED ON HIS FINDINGS
- MUST PRODUCE RELIABLE DATA

# BASIS OF DATA

- OVER 100 INTERVIEWS IN DURING 2007-08
- ALL LEVEL IIs
- TECHS IN THE HOUSTON AREA
- EXPERIENCE 1 - 5 YEARS
- MOST INTERVIEWED **FAILED** OUR LEVEL II TEST

# UT II TECHNICIANS

- MAJORITY OF THE TECHNICIANS  
JUST NOTE DIGITAL THICKNESS  
READOUT
- VERY FEW KNOW THE BASICS OF  
ULTRASONIC TESTING

# UT II TECHNICIAN ISSUES

MAJORITY DO NOT UNDERSTAND

- WAVE MODE: L vs S Wave
- HOW TO USE OF A-SCAN FOR THICKNESS MEASUREMENT
- WHAT RANGE TO SELECT
- DUAL vs SINGLE PROBE – WHICH ONE TO USE
- PROBE FREQUENCY

# UT II - OTHER ISSUES

MOST HAVE NO IDEA OF

- ATTENUATION
- CONCEPT OF BEAM SPREAD
- RESOLUTION AND FREQUENCY
- REFRACTION

# SPECIFIC EXAMPLES

- SEVERAL UT TECHNICIANS INTERVIEWED DID NOT KNOW
  - WHAT PROBE DIA THEY HAVE BEEN USING
  - WHAT PROBE FREQUENCY THEY HAVE BEEN USING
  - WHAT WAVE MODE THEY HAVE BEEN USING
  - WHAT BRAND OF INSTRUMENT THEY HAVE BEEN USING

# SPECIFIC EXAMPLES

- SOME TECHNICIANS USED 10 INCH RANGE NO MATTER WHAT THICKNESS WAS BEING MEASURED
- USED A DUAL PROBE NO MATTER WHAT THICKNESS THEY WERE MEASURING
- SOME DID NOT KNOW WHICH AXIS ON THE SCREEN CORRESPONDS TO THICKNESS
- SOME SHEAR WAVE TECHS DID NOT KNOW WHERE THE REFRACTED ANGLE IS MEASURED FROM

# MT II ISSUES

- MOST HAVE NEVER FOUND A CRACK
- SEVERAL DO NOT HAVE UNDERSTANDING OF YOKE ALIGNMENT RELATIVE TO CRACKS
- POOR UNDERSTANDING OF PIE GAUGE AND SHIMS
- ALMOST MINIMAL UNDERSTANDING OF MEASURING VISIBLE LIGHT AND BLACK LIGHT INTENSITY

# MT II ISSUES

- MOST HAVE NO KNOWLEDGE OF LONGITUDINAL OR CIRCULAR MAGNETISM
- MOST HAVE DIFFICULTY FINDING CRACKS WITH DRY POWDER

# PT II ISSUES

- VERY FEW HAVE ANY IDEA OF WATER WASHABLE, POST EMULSIFIED PT
- A LARGE NUMBER HAVE DIFFICULTY EVEN USING THE BASIC SOLVENT REMOVABLE PT METHOD

# VT II ISSUES

- ALMOST NO CONCEPT OF WELDING METHODS
- NO CONCEPT OF WELDING INSPECTION

# ET II ISSUES

- ALMOST NO KNOWLEDGE OF EDDY CURRENT TESTING

# ROOT CAUSE

- TRAINING NOT BEING DONE AS PER SNT-TC-1A
- INSTRUCTORS TAKING SHORT CUTS
- INCOMPETENT TRAINING INSTRUCTORS
- EMPLOYERS COMPROMISING ON QUALITY OF INCOMING TECHNICIANS

# How did we address these issues ?

- We started our own NDT Training Center - *Birring NDE Center*
- Select individuals with Good Mechanical Aptitude
- Provide training in
  - UT-T, Shear Wave, Phased Arrays
  - MT
  - PT
  - VT
  - ET

# TRAINING NEEDS

- UT PRACTICALS ON CORRODED SAMPLES
- UT PRACTICALS ON DIFFERENT MATERIALS
- MUST USE CURRENTLY AVAILABLE EQUIPMENT – NOT ANTIQUES

# TRAINING NEEDS

- UT SHEAR WAVE TRAINING ON SAMPLES WITH EMBEDDED FLAWS
- MT/PT PRACTICALS ON CRACKED SAMPLES
- MT SHOULD COVER DRY POWDER, WET VISIBLE, WFMT
- MT SHOULD COVER ALL MAGNETIZATION METHODS
- PT SHOULD COVER METHODS A, B, C, D, USING TYPE I AND II

# TRAINING NEEDS

- COURSE CONTENT SHOULD BE [AS PER SNT-TC-1A](#)
- NO SHORT CUTS
- PRACTICALS ON REAL-LIFE SAMPLES
- COMPETENT INSTRUCTORS
- EMPLOYERS SHOULD HAVE CONTINUING EDUCATION FOR TECHNICIANS