

Nasa Dbn (Pty) Ltd.
 Durban Branch
 3 Pastoll Road
 Sarnia
 Pinetown
 3610
 Tel : +27(0) 31 708 3433
 Cell : +27(0) 83 321 0618
 Email : nish@nondestructive.co.za
 Web : www.nondestructive.co.za



BINDT
 THE BRITISH INSTITUTE OF
 NON-DESTRUCTIVE TESTING



APPROVED TRAINING ORGANISATION

NASA 282 Ultrasonic Wall Thickness Curriculum

Document Number:	Document Title:	Revision:	Issue Dated:	Page No:
Nasa 282	Ultrasonic Wall Thickness Curriculum	0	20-May-2019	1 of 6
Nasa Dbn (Pty) Ltd.		Uncontrolled when printed.		

Revision control sheet:

Rev No:	Date:	Compiled by:	Reviewed by:	Revision Description:
0	20-May-2019	Meyuri Moodley	Nish Kanaye	Implemented into QMS.

Document Number:	Document Title:	Revision:	Issue Dated:	Page No:
Nasa 282	Ultrasonic Wall Thickness Curriculum	0	20-May-2019	2 of 6
Nasa Dbn (Pty) Ltd.		Uncontrolled when printed.		

1.0 Course Duration:

1.1 Level 2 Limited:

a) The minimum training hours administered in Level 2 shall be 24.

2.0 Course Content:

2.1 Theory: The table below shows theory aspects covered:

Chapter Reference:	Level 2:
Chapter 1:	Course Overview Stationery Requirements Student conduct during classroom training End of Course and PCN Examination Breakdown Passing grade End of Course Examination Rules
Chapter 2:	Qualification and Certification
Chapter 3:	History The History of NDT The History of Ultrasonic Testing
Chapter 4:	Basic principles Objectives Advantages and Limitations Vibrations The Acoustic Spectrum Units and Abbreviations Shear (Transverse) Waves Surface (Rayleigh) Waves Lamb (Plate) Waves Velocity of sound Propagation Period: Frequency: Amplitude: Wavelength: Properties of Sound Waves Reflection Acoustic Impedance The Ultrasonic Beam The Dead zone Beam spread Resolution Pulse repetition frequency (P.R.F)

Document Number:	Document Title:	Revision:	Issue Dated:	Page No:
Nasa 282	Ultrasonic Wall Thickness Curriculum	0	20-May-2019	3 of 6
Nasa Dbn (Pty) Ltd.		Uncontrolled when printed.		

	<p>Couplant</p> <p>Understanding Purposes and Properties</p> <p>Purposes of a Couplant</p> <p>Properties of a Couplant</p> <p>Commonly used couplant</p> <p>Attenuation</p> <p>Scatter</p> <p>Absorption</p> <p>Sound generation</p> <p>The Piezo electric effect</p> <p>Piezo electric crystals</p> <p>Piezo electric crystal materials</p> <p>Properties of Piezo electric materials</p> <p>The polarisation of ceramics</p>
Chapter 5:	<p>Sources of Error</p> <p>Velocity Correction</p> <p>Curved Surfaces</p> <p>Coated Surfaces</p> <p>Low Wall Thickness</p> <p>Non Parallel Surfaces</p> <p>Pitting</p> <p>Laminations</p> <p>Rough Surfaces</p> <p>Large Grain Structure on Castings</p> <p>Temperature Difference</p> <p>Echo-Echo Measurements</p> <p>Corrosion and Erosion</p> <p>Non-Relevant Indications</p>
Chapter 6:	<p>Equipment</p> <p>Probes types</p> <p>Probe Selection</p> <p>Immersion transducers</p> <p>Single Crystal zero degree probe</p> <p>Twin Crystal Zero degree probe</p> <p>Pulse Echo Instruments</p> <p>Digital Equipment</p> <p>Pulse-Echo Thickness Gauges</p> <p>Echo-Echo Thickness Gauges</p>
Chapter 7:	<p>Calibration and Calibration Blocks</p> <p>V1 BLOCK (also called A2)</p> <p>V2 BLOCK (also called A4)</p>

Document Number:	Document Title:	Revision:	Issue Dated:	Page No:
Nasa 282	Ultrasonic Wall Thickness Curriculum	0	20-May-2019	4 of 6
Nasa Dbn (Pty) Ltd.		Uncontrolled when printed.		

Chapter 8:	Common Discontinuities Related to Manufacturing Processes
Chapter 9:	Velocity and Acoustic Impedance Data Sheet
Chapter 10:	Formula Sheet
Chapter 11:	<p>Sample Wall Thickness Procedure</p> <ol style="list-style-type: none"> 1. Scope 2. Referenced Documents 3. Personnel 4. Safety 5. Information required prior to testing (Conducting UTM) 6. Test Surface Preparation 7. Equipment Requirements 8. Consumable Requirements 9. Technique 10. Interpretation 11. Evaluation of Results 12. Recording and Reporting 13. Post cleaning

Document Number:	Document Title:	Revision:	Issue Dated:	Page No:
Nasa 282	Ultrasonic Wall Thickness Curriculum	0	20-May-2019	5 of 6
Nasa Dbn (Pty) Ltd.		Uncontrolled when printed.		

2.2 Practical: The table below shows practical aspects covered:

Level 2:
Equipment checks Calibrations Ultrasonic wall thickness testing of various materials and configurations utilizing an ultrasonic thickness gauge.

3.0 Learning outcomes:

3.1 Upon completion of training, students should be able to carry out and understand the following regarding Ultrasonic Wall Thickness testing:

Level 2:
Basic principles General advantages and limitations Discontinuity categories Carry out pre-test checks Set up equipment Carry out tests and report results according to written instructions

4.0 Course Outcome:

4.1 Successful Completion of Training:

Upon successful completion of the course, a successful completion of training certificate at the level attempted will be issued.

Document Number:	Document Title:	Revision:	Issue Dated:	Page No:
Nasa 282	Ultrasonic Wall Thickness Curriculum	0	20-May-2019	6 of 6
Nasa Dbn (Pty) Ltd.		Uncontrolled when printed.		