



CERTIFICATION BOARD FOR INSPECTION PERSONNEL

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**Standard of Proficiency
for the Qualification and Certification
of
Ultrasonic Inspection Personnel**

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New Zealand**

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STANDARD OF PROFICIENCY FOR THE QUALIFICATION AND CERTIFICATION OF ULTRASONIC INSPECTION PERSONNEL

Foreword

This Standard of Proficiency details the requirements for the qualification and certification of NDT personnel performing Ultrasonic Inspection (UT) in New Zealand. The following requirements are designed to comply with ISO 9712 (qualification and certification of NDT personnel).

Certification under this standard will be the responsibility of the Certification Body for Inspection Personnel (CBIP) and will provide industry with evidence of the technical ability and general competence of personnel performing inspections.

1 SCOPE AND GENERAL

1.1 Scope

This Standard of Proficiency establishes a system for qualification and certification by a recognised Certification Body for personnel who perform Ultrasonic inspection in New Zealand.

1.2 Objectives

The objective of this Standard of Proficiency is to establish the general competency, including theoretical and practical knowledge, for personnel performing Ultrasonic inspections.

1.3 Certification Levels

Five levels of certification are currently defined by this standard, they are:

- UT1a** Ultrasonic thickness testing Level 1
- UT2a** Ultrasonic thickness testing Level 2
- UT1b** Ultrasonic weld testing Level 1
- UT2b** Ultrasonic weld testing Level 2 for butt welds in plate and pipe
- UT2c** Ultrasonic weld testing Level 2 for all categories of weld including butt welds in plate and pipe, tee butt welds and nozzle welds.

In all cases above Level 1 and Level 2 are as defined by ISO 9712 Section 6.

1.3.1 UT1a and UT1b

An individual certified to Level 1 shall have demonstrated competence to carry out Ultrasonic Inspections in accordance with written instructions. They may not work directly from general procedures or standards such as AS 2207, BS EN 1417 or ASME V as these require some interpretation. The level 1 shall work under the supervision, and be guided by a level 2 or 3 certified individual who shall either issue a written work instruction or be present on the job site directly supervising the level 1. Level 1 personnel may be authorised by their employer to perform the following

- Set up NDT equipment;
- Perform specific Ultrasonic Inspections;
- Report the results.

Level 1 certified personnel shall not be responsible for the choice of test method or technique to be used, nor for the interpretation of test results.

1.3.2 UT2a, UT2b, UT2c

An individual certified to Level 2 shall have demonstrated competence to perform Ultrasonic Inspections according to established procedures. Level 2 personnel may be authorized by their employer to perform the following

- Work directly from UT standards and specifications such as AS 2207, BS EN 1417 or ASME V
- Set up and verify equipment settings,
- Perform Ultrasonic Inspections,
- Interpret and evaluate results according to applicable codes, standards, specifications or procedures,
- Prepare and write UT instructions
- Supervise, guide and train level 1 personnel
- Report the results of Ultrasonic tests.

1.4 Definitions

Except as modified below, all definitions used in ISO 9712 shall apply to this document

Certification Body – Certification Board for Inspection Personnel (CBIP).

2 PRE-EXAMINATION REQUIREMENTS

2.1 Physical and Vision

Prior to being accepted for examination the candidate shall provide evidence of the following

- Current eyesight test (within 12 months) proving that near vision, either corrected or uncorrected, satisfies the requirements of the latest edition of ISO 9712
- English to a level of TOEFL 500

Note – It is expected that each candidate shall be able to perform the required practical tests and differentiate between colours used in the procedure. Any Medical or Physical disability, including vision colour deficiencies, that may prevent the candidate from performing the required tests should be discussed with the certification body prior to application

2.2 Formal Training

Applicants for examination shall have completed formal training to the required syllabus and for the required number of hours as specified below

2.2.1 Ultrasonic Thickness testing Level 1 (UT1a)

Applicants for examination for Ultrasonic Thickness testing Level 1 (UT1a) shall:

- Have attended a theory course in Ultrasonic inspection acceptable to the Certification Body. The course shall total at least 24 hours.

2.2.2 Ultrasonic Weld testing Level 1 (UT1b)

Applicants for examination for Ultrasonic Weld testing Level 1 (UT1b) shall:

- Have attended a theory course in Ultrasonic inspection acceptable to the Certification Body. The course shall total at least 40 hours.
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2.2.3 Ultrasonic Thickness testing Level 2 (UT2a)

Applicants for examination for Ultrasonic Thickness testing Level 2 (UT2a) shall:

- Have attended a theory course or courses in Ultrasonic inspection acceptable to the Certification Body. The course(s) shall total at least 40 hours, including courses attended for Level 1 training.

2.2.4 Ultrasonic Weld testing Level 2 (UT2b or UT2c)

Applicants for examination for Ultrasonic Weld testing Level 2 (UT2b) shall:

- Have attended a theory course or courses in Ultrasonic inspection acceptable to the Certification Body. The course(s) shall total at least 80 hours for UT2b and 120hrs for UT2c, including courses attended for level 1 training.

2.3 Submission of Evidence

Candidates shall submit to the Certification Body documented evidence of completion of the required training relevant to the examination.

3 EXAMINATION PROCEDURES

3.1 Application

Application for each examination shall be accompanied by a completed application form and documented evidence supporting pre-examination requirements. An application form can be found at the end of this standard or downloaded from the CBIP website. No application will be considered until receipt of an accurately completed application form, examination fee, eye test certificate and qualifying training course attendance.

3.2 Closing Date

All applications and supporting documentation must be received at least 6 weeks prior to any advertised examination dates, or as otherwise specified by the Certification Body via its website.

3.3 Examination Format

Qualification for all levels and categories as listed above shall be by way of a three part examination consisting of two written examinations and a practical examination. The written exam papers shall comprise a general paper and a specific paper. The exams shall be carried out at a place nominated by CBIP.

3.4 UT1a

3.4.1 UT1a Thickness testing (Level 1) General Paper (Written)

- 40 multi choice questions covering the general theory of Ultrasonic Thickness Testing.
- 90 Minutes duration in a closed book format.
- Refer to appendix for exam topics and sample questions
- Pass mark of 70% required

3.4.2 UT1a Thickness testing (Level 1): Specific Paper (Written)

- 20 multi choice and 10 short answer questions covering specific applications of the Ultrasonic Thickness Testing method. The questions may involve simple calculations, and questions on standards, specifications and procedures. Some basic knowledge of inspection equipment, such as thickness gauges and flaw detectors is also required.
- Permitted reference material AS 2452.3
- 2 Hour duration,
- Refer to appendix for exam topics and sample questions
- Pass mark of 70% required

3.4.3 UT1a Thickness testing (Level 1) Practical examination

The practical examination shall comprise of inspection and reporting on at least 4 samples. The examination shall be carried out in accordance with a detailed written instruction supplied by the examiner and shall comply with AS 2452.3. An examination observer will be present and will allocate marks (15%) in accordance with a check sheet supplied by the Certification Body. Written examination reports, including thickness measurements and datum, will be required to be presented to the examiner at the end of the test. A report pro-forma will be supplied to the candidate. Time allowed will be 2 hours.

Pass mark of 70% required

3.5 UT1b

3.5.1 UT1b Ultrasonic weld testing (Level 1) General Paper (Written)

- 40 multi choice questions covering the general theory of Ultrasonic Testing.
- 90 minutes duration in a closed book format.
- Refer to appendix for exam topics and sample questions
- Pass mark of 70% required

3.5.2 UT1b Ultrasonic weld testing (Level 1): Specific Paper (Written)

- 20 multi choice and 10 short answer questions covering the specific application of the Ultrasonic Testing method to weld examination. The questions may involve simple calculations, and questions on standards, specifications and procedures. Some basic knowledge of inspection equipment, such as flaw detectors is also required.
- Permitted reference material AS 2207, AS 2083
- 2 Hour duration,
- Refer to appendix for exam topics and sample questions
- Pass mark of 70% required

3.5.3 UT1b Ultrasonic weld testing (Level 1) Practical examination

The practical examination shall comprise of inspection and reporting on at least 2 welded samples, and may include butt welds in plate or pipe and tee butt welds. The examination shall be carried out in accordance with a detailed written instruction supplied by the examiner and shall comply with AS 2207. An examination observer will be present and will allocate marks (15%) in accordance with a check sheet supplied by the Certification Body. Written examination reports, including discontinuity indications and datum, will be required to be presented to the examiner at the end of the test. A report pro-forma will be supplied to the candidate.

Pass mark of 70% required

3.6 UT2a

3.6.1 UT2a Thickness and lamination testing (Level 2) General Paper (Written)

- 40 multi choice questions covering the general theory of Ultrasonic Thickness Testing.
- 90 minutes duration in a closed book format.
- Refer to appendix for exam topics and sample questions
- Pass mark of 70% required

3.6.2 UT2a Thickness and lamination testing (Level 2): Specific Paper (Written)

- 20 multi choice and 10 short answer questions covering specific applications of the Ultrasonic Thickness Testing method, including lamination testing to AS 1710 and similar standards. The questions may involve calculations, and questions on standards, specifications and procedures. Knowledge of inspection equipment, such as thickness gauges, flaw detectors, transducers and how they are calibrated and used is also required.
In addition, at level 2, knowledge of this proficiency Standard, ISO 9712 and the Certification Body's Code of Ethics is required. Due to this, the specific paper may contain questions relating to these documents
- Permitted reference material AS 2452.3, AS 1710
- 2 Hour duration,
- Refer to appendix for exam topics and sample questions
- Pass mark of 70% required

3.6.3 UT2a Thickness and lamination testing (Level 2) Practical examination

The practical examination shall consist of two (2) parts

1) Practical Test

The practical examination shall comprise of inspection and reporting on at least 4 samples. The examination shall be carried out in accordance AS 2452.3. An examination observer will be present and will allocate marks (15%) in accordance with a check sheet supplied by the Certification Body. Written examination reports, including thickness measurements and datum, will be required to be presented to the examiner at the end of the test. No pro-forma worksheet will be supplied, but candidates may use their own company report sheets.

2) Written Instruction (Procedure)

The second part shall consist of producing a written Instruction for the inspection of a specific item nominated by the Certification Body. The instruction shall be

such that it complies with the requirements of AS 2452.3 and can be used by a level 1 with no interpretation required

Time allowed will be 2.5 hours including the written Instruction.

Pass mark of 70% required

3.7 UT2b ULTRASONIC WELD TESTING (Plate and pipe)

3.7.1 UT2b Ultrasonic weld testing (plate and pipe),Level 2: General Paper (Written)

- 40 multi choice questions covering the general theory of Ultrasonic Weld Testing.
- 90 Minutes duration in a closed book format.
- Refer to appendix for exam topics and sample questions
- Pass mark of 70% required

3.7.2 UT2b Ultrasonic weld testing (plate and pipe),Level 2: Specific Paper (Written)

- 20 multi choice and 10 short answer questions covering the specific application of the Ultrasonic Testing method to weld examination.
- The questions may involve calculations, and questions on standards, specifications and procedures. Knowledge of inspection equipment, such as thickness gauges, flaw detectors, transducers and how they are calibrated and used is also required.
In addition, at level 2, knowledge of this proficiency Standard, ISO 9712 and the Certification Body's Code of Ethics is required. Due to this, the specific paper may contain questions relating to these documents
- Permitted reference material AS 2207. AS 2083
- 2 Hour duration,
- Refer to appendix for exam topics and sample questions
- Pass mark of 70% required

3.7.3 UT2b Ultrasonic weld testing (plate and pipe),Level 2: Practical examination

The practical examination shall consist of two (2) parts

1) Practical Test

The practical examination shall comprise of inspection and reporting on at least 2 samples. The examination shall be carried out in accordance AS 2207. An examination observer will be present and will allocate marks (15%) in accordance with a check sheet supplied by the Certification Body. Written examination reports, including defect indications and datum, will be required to be presented to the examiner at the end of the test. No pro-forma worksheet will be supplied, but candidates may use their own company report sheets.

2) Written Instruction (Procedure)

The second part shall consist of producing a written Instruction for the inspection of a specific welded joint nominated by the Certification Body. The instruction shall be such that it complies with the requirements of AS 2207 and can be used by a level 1 with no interpretation required

Time allowed will be 4 hours including the written Instruction.

Pass mark of 70% required

3.8 UT2c ULTRASONIC WELD TESTING (All joints)

3.8.1 UT2c Ultrasonic weld testing (all joints),Level 2: General Paper (Written)

- 40 multi choice questions covering the general theory of Ultrasonic Weld Testing.
- 90 Minutes duration in a closed book format.
- Refer to appendix for exam topics and sample questions
- Pass mark of 70% required

3.8.2 UT2c Ultrasonic weld testing (all joints),Level 2: Specific Paper (Written)

- 20 multi choice and 10 short answer questions covering the specific application of the Ultrasonic Testing method to weld examination.
- The questions may involve calculations, and questions on standards, specifications and procedures. Knowledge of inspection equipment, such as thickness gauges, flaw detectors, transducers and how they are calibrated and used is also required.
In addition, at level 2, knowledge of this proficiency Standard, ISO 9712 and the Certification Body's Code of Ethics is required. Due to this, the specific paper may contain questions relating to these documents
- Permitted reference material AS 2207. AS 2083
- 2 Hour duration,
- Refer to appendix for exam topics and sample questions
- Pass mark of 70% required

3.8.3 UT2c Ultrasonic weld testing (all joints),Level 2: Practical examination

The practical examination shall consist of two (2) parts

1) Practical Test

The practical examination shall comprise of inspection and reporting on at least 2 samples, except that if the candidate does not already hold certification at level UT2b, 3 samples will be required. The examination shall be carried out in

accordance AS 2207. An examination observer will be present and will allocate marks (15%) in accordance with a check sheet supplied by the Certification Body. Written examination reports, including defect indications and datum, will be required to be presented to the examiner at the end of the test. No pro-forma worksheet will be supplied, but candidates may use their own company report sheets.

2) Written Instruction (Procedure)

The second part shall consist of producing a written Instruction for the inspection of a specific welded joint nominated by the Certification Body. The instruction shall be such that it complies with the requirements of AS 2207 and can be used by a level 1 with no interpretation required

Time allowed will be 4 hours (2 samples) or 5.5 hrs (3 samples) including the written Instruction.

Pass mark of 70% required

3.9 Date and Venue:

Examination dates and venues will be at the discretion of the Certification Body and posted on the website in a timely manner

3.10 Examination Materials

All examination materials, including papers and test pieces, shall be controlled and remain the property of the Certification Body.

3.11 Fees:

The Certification Body shall set the examination fees for the certificate sought. All fees must be paid upon application.

3.12 Examination results:

All candidates whether successful or unsuccessful should, except in exceptional circumstances, be notified of the result in writing within six weeks of the date of the examinations.

3.13 Successful Candidates

Successful candidates who pass all examinations at level 1 or level 2 may apply to the Certification Body for certification as per section 4 below..

3.14 Unsuccessful Candidates (Not yet competent)

Candidates failing any one of the required examinations may apply to resit that exam within a period of two (2) years from the date of the failed examination. This can only be carried out up to a maximum of two (2) times. Applications for re sitting examinations shall be accompanied by evidence of additional training and experience

Candidates failing the re-examination on the second attempt will be required to take all examinations in accordance with the established procedure for new candidates.

4 CERTIFICATION

4.1 Application

Application for certification shall be accompanied by a completed application form and documented evidence supporting completion of the following experience requirements. An application form can be found at the end of this standard or downloaded from the CBIP website. No application will be considered until receipt of an accurately completed application form, successful examination results, and documented evidence of the required industrial experience.

4.2 Experience

Experience in months will be based on a nominal 40 hour week, provided the candidate is working full time in the Ultrasonic method.

(Candidates may be accepted for examination without the required experience, however the examination results only remain valid for a period of 24 months from the date of passing the final examination. During this time the required experience may be obtained and documented evidence (confirmed by the employer) submitted to the Certification Body. An application for certification will then be considered by CBIP).

4.2.1 Ultrasonic Level 1a (UT1a)

Applicants for level 1a shall:

- Have at least 2 months experience in the Ultrasonic Inspection method not including any organised theory or practical training courses. For the experience to be valid it should be gained under the direct supervision of a Level 2 or 3 certified person.

4.2.2 Ultrasonic Level 1b (UT1b)

Applicants for level 1b shall:

- Have at least 3 months experience in the Ultrasonic Inspection method not including any organised theory or practical training courses. For the experience to be valid it should be gained under the direct supervision of a Level 2 or 3 certified person.

4.2.3 Ultrasonic Level 2a (UT2a)

Applicants for level 2a shall:

- Have at least 6 months experience in the Ultrasonic Inspection method not including any organised theory or practical training courses. For the experience to be valid it should be gained under the direct supervision of a Level 2 or 3 certified person.

4.2.4 Ultrasonic Level 2b (UT2b)

Applicants for level 2b shall:

- Have at least 12 months experience in the Ultrasonic Inspection method not including any organised theory or practical training courses. For the experience to be valid it should be gained under the direct supervision of a Level 2 or 3 certified person.

4.2.5 Ultrasonic Level 2c (UT2c)

Applicants for level 2c shall:

- Have at least 12 months experience in the Ultrasonic Inspection method not including any organised theory or practical training courses. For the experience to be valid it should be gained under the direct supervision of a Level 2 or 3 certified person.

4.3 Submission of Evidence

Candidates shall submit to the Certification Body, documented evidence of experience that is relevant to the certification being sought.

At least 50% of the submitted evidence detailing the number of hours shall be by way of Timesheets, Logbooks or Workbooks (or equivalent). CBIP reserves the right to reject any evidence that does not have enough (or appropriate) supporting documentation.

4.4 Exemptions

Exemptions may be given on application to the Certification Body for UT Levels 1 and 2 for qualifications obtained in other national qualification schemes which are accredited to ISO 9712. Any certificate issue by the Certification Body shall only be valid for the remaining period of the original (overseas) certificate, and the Certification Body will charge a fee for any such issue. The CBIP certificate will only be issued for levels and categories where the examination and

certification requirements of the original certificate clearly meet or exceed the requirements for the CBIP level or category.

In some cases, qualification requirements may be reduced where the candidate's presented qualifications are acceptable in part only, provided the evidence has been reviewed and found to be acceptable by the Certification Body.

The Certification Body may use a panel, made up of members of its choosing, to assess any request for examination exemptions.

Final certification and issue of certificates remains the sole responsibility of the Certification Body

4.5 Issue of Certificates

The Certification Body shall issue certificates to successful candidates.

The certificate shall contain at least:

- Level of certification.
- Identity of the issuing Certification Body.
- Identity and signature of the person to whom the certificate applies.
- Date of issue and the expiry date.
- Title and unique number of the certificate.
- Signature and name of the person authorising the certificate.

The certificate shall remain the property of the Certification Body.

4.6 Certification Period

Certification will be valid for a period of five years from the date on the certificate, unless withdrawn by the certification body.

4.7 Renewal of Certification (5 year)

Prior to the completion of the first five (5) year period of validity, certification may be renewed by the certification body for a further five (5) years, provided the certificate holder supplies the following documented evidence:

- Current (within 12 months) Eyesight test conforming to the Pre Examination requirements of this standard
- Continued satisfactory work activity, relevant to the certification, without an interruption of 12 months or more.
Acceptable forms of supporting evidence should be by Logbook, Work Records/Reports and Employer statements.

If the criterion for renewal cannot be met, the individual shall follow the same rules as for recertification

4.8 Recertification (10 year)

Prior to completion of each second five (5) year period of validity, or at least every ten years, the certified individual shall be recertified by the Certification Body for a further five (5) years, provided the individual meets the criterion for renewal and meets the following:.

- Successfully complete a practical examination similar to that required for initial certification

Renewal and Recertification shall be the responsibility of the certificate holder

Personnel seeking certification renewal / recertification shall apply at least 30 days before the expiry date given on their Certificate. Include a general written summary of work history and employment covering the five year certification period relevant to the certification

Where a person does not seek renewal or re-certification, their certification will automatically lapse or be withdrawn.

4.9 Non-Renewal

Where an applicant fails to be granted renewal or recertification, the Certification Body shall advise the applicant in writing, giving appropriate reasons.

The candidate's certification shall lapse at the expiry date, after which any future application for certification will be treated as a new application. Alternatively, the candidate may elect within one month to:

- Submit further evidence to the Certification Body and/or
- Re-sit the appropriate examination or examinations (only one resit will be permitted).

Alternatively the applicant may make a formal submission to the Certification Body for resolution in accordance with the Certification Body's appeals procedure

4.10 Withdrawal or Suspension of Certificates

4.10.1 Withdrawal:

The Certification Body may withdraw a certificate where an authenticated complaint of the person's proficiency and/or competence has been received and substantiated. The Certification Body may also withdraw a certificate where an authenticated complaint of a breach of the CBIP Code of Ethics has been received and substantiated. When the Certification Body substantiates a complaint the certificate shall not be renewed without further examination(s). Following a request by the Certification Body the certificate holder shall surrender and return his/her Certificate to the Certification Body.

4.10.2 Suspension:

If there is any break, or interruption of the certified individual exceeding 24 months from practical work in the category qualified, the certification shall be suspended until the Certification Body is satisfied by submission of written evidence that the applicant is competent for re-certification.

4.11 Complaints and Appeals

Appeals against withdrawn or suspended certificates may be made to the CBIP Board in accordance with the Certificate Body's appeals procedure. CBIP maintains a documented procedure for the resolution of complaints and appeals. All complaints and appeals shall be conducted in accordance with this procedure.

4.12 Code of Ethics

A certified individual shall be familiar with and recognise that precepts of personal integrity are fundamental, and shall meet the Code of Ethics of the Certification Body at all times. All applicants shall, as part of their application, sign a document stating that they have read, understood and agree to abide by the CBIP Code of Ethics.

4.13 Register of Certificate Holders

The Certification Body maintains a register of persons holding current certification that is available for public viewing via the CBIP website.

APPENDIX A

ULTRASONIC INSPECTION

Knowledge requirements

Item	G / S	L1 TH	L1 P+ P	L1 All	L2 TH	L2 P+ P	L2 All
1 The Behaviour and Properties of Ultrasonic Waves							
1.1 Wave propagation, waveforms, compressions and shear waves, surface waves, plate waves, frequency, sound beam velocities.	G	x	x	x	x	x	x
1.2 Typical acoustic velocities in common materials.	G	x	x	x	x	x	x
1.3 Reflection and refraction, Snells Law, critical angles, attenuation, acoustic impedance, mode conversion.	G	x	x	x	x	x	x
1.4 Beamspread, dead zone, near zone, far zone.	G	x	x	x	x	x	x
1.5 Calculations based on the above phenomena and associated formulae.	G	x	x	x	x	x	x
1.6 Variables affecting test results	G	x	x	x	x	x	x
2 The Production of Ultrasonic Waves							
2.1 Piezoelectric effect, piezoelectric materials natural and synthetic, crystal planes, efficiency and crystal thickness.	G	x	x	x	x	x	x
2.2 Damping and resolution	G	x	x	x	x	x	x
2.3 Compression wave probes, single and twin crystal probes, focussed probes and their construction and characteristics.	G	x	x	x	x	x	x
2.4 Shear wave probes, single and twin crystal, their construction and characteristics.	G		x	x	x	x	x
2.5 Special probes – flat and contoured, fixed and adjustable	G	x	x	x	x	x	x
2.5 Couplants.	G	x	x	x	x	x	x
Ultrasonic Equipment							
3 The flaw detector, block diagrams and component circuits, functions of the controls and equipment performance characteristics.	G	x	x	x	x	x	x
3.1 Gain control and the decibel system.	G	x	x	x	x	x	x
3.2 Linearity and suppression							
3.3 Sweep, delay and timebase controls	G	x	x	x	x	x	x
3.3 A and B scan, recording devices	G	x	x	x	x	x	x
4 Testing methods							
4.1 Contact testing	G	x	x	x	x	x	x
	G	x	x	x	x	x	x
	G	x	x	x	x	x	x
Calibration of Equipment and Probes							
4 Calibration and reference blocks.	G	x	x	x	x	x	x

4.1 Flaw detector performance, linearity of time base, linearity of gain.	G	x	x	x	x	x	x
4.2 Methods of determining probe index, beam angle, beam profiles, dominant frequency, pulse length, dead zone, near zone, signal to noise ratio, overall system gain, beam squint, resolving power.	G		x	x	x	x	x
4.3 DAC curve preparation, reflector sizes for various codes	S		x	x			
4.4 Calibration methods and requirements to AS 2452.3, AS 2083 / 2207, AS 1710, ASME V Article 5, BS EN 1714	S		x	x	x	x	x
4.5							
Weld Testing							
5 Specification requirements AS 2207, BSEN 1714, ASME V.	S					x	x
5.1 Surface condition and methods for determining attenuation and transfer losses.	S		x	x		x	x
5.2 Factors influencing probe selection and frequency selection.	S					x	x
5.3 Setting sensitivity for scanning and evaluation AS 2207, BSEN 1714, ASME V.	S		x	x		x	x
5.4 Scan patterns and coverage, plate and pipe welds	S					x	x
5.5 Scan patterns and coverage, tee and nozzle welds	S						x
6.5 Procedures for the location, evaluation and sizing of discontinuities.	S		x	x		x	x
5.6 Identification of discontinuities.	S		x	x		x	x
5.7 Reporting.	S		x	x		x	x
5.8							
Thickness testing							
6 Specification requirements AS 2452.3	S	x	x	x	x	x	x
6.1 Factors influencing probe selection and frequency selection.	S	x	x	x	x	x	x
6.2 Laminations, corrosion types and characteristics	S	x	x	x	x	x	x
6.3 Calibration, pulse echo and multi echo modes	S	x	x	x	x	x	x
6.4 Reporting	S	x	x	x	x	x	x
6.5							
Materials and Welding Technology							
7 Production of steel and fabrication processes. Common defects associated with the processing methods.	S	x	x	x	x	x	x
7.1 Welding processes and techniques, heat treatment, joint preparation and types of flaws associated with these welding processes.	S		x	x	x	x	x
7.2 In service defects, fatigue, stress corrosion.	S	x	x	x	x	x	x
7.3							

Appendix B

ULTRASONIC SAMPLE EXAMINATION QUESTIONS

Application form for Ultrasonic UT level 1 and UT Level 2.

Application form to be inserted here

Appendix E

CERTIFICATION BOARD FOR INSPECTION PERSONNEL

CODE OF ETHICS

AIM

To safeguard the public's health and well being and to maintain high standards of skills, practices and integrity in the profession of inspection and non destructive testing, the following requirements shall be binding on ANY person holding a current certificate of proficiency issued by CBIP.

INTEGRITY

CBIP certified persons are obliged to act with integrity in the pursuance of their occupation for each client, customer or employer and shall be honest and impartial.

RESPONSIBILITY TO THE PUBLIC

CBIP Certified persons shall in the pursuance of their occupational duties:

- (i) Undertake and perform inspections only when qualified by training, capability and experience.
- (ii) Be objective and factual in any verbal, written report, statement or testimony of any work performed.
- (iii) Sign only for work carried out by them or for work that they have personal knowledge of through direct technical control or have verified the authenticity of the work signed for.
- (iv) Neither associate with nor knowingly participate in a fraudulent or dishonest venture.

SOLICITATION AND INDUCEMENTS

CBIP certified person shall not in the pursuance of their employment:

- (i) Pay, Offer or Accept, directly or indirectly, any bribe or commission for professional employment except for the commission required by licensed employment agencies or duties performed.
- (ii) Falsify, exaggerate or permit misrepresentation of their academic and professional qualification.
- (iii) Function as an independent consultant in technical matters outside the capability of their CBIP certification.

CBIP certified persons shall perform and carry out inspections in a proper manner as required by contract, customer order, code of practice, standard or specification unless any deviation is noted in any written report, statement or testimony of the work performed.

PUBLIC STATEMENTS

CBIP Certified persons shall issue no statements, criticisms or arguments on inspection or non-destructive testing matters unless it is founded upon sound information of the facts in issue, upon a background of technical competence in the subject matter and upon honest conviction of the accuracy and propriety of the statements, criticism or argument.

CONFLICT OF INTEREST

CBIP Certified persons shall:

- (i) Conscientiously avoid conflict of interest with the employer or client, but when unavoidable shall forthwith disclose the circumstances to the employer or client.
- (ii) Promptly inform the employer or client of any business associations interests or circumstances which could influence their judgement or the quality of services to the employer or client.
- (iii) Not accept payment, compensation, financial or otherwise from more than one party for services on the same project or from services pertaining to the same project or from services pertaining to the same project unless the circumstances are fully disclosed and agreed to, by all interested parties or their agents.

UNAUTHORISED PRACTICE

Any violation of this code shall be deemed to be an unauthorised practice and upon proper complaint, investigation and findings of the complaints committee, subject to appeal by the CBIP Board, sanctions may be applied to the individual(s) in violation.

END