

CERTIFICATION BOARD FOR INSPECTION PERSONNEL

Guidelines for Certification Magnetic Testing

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GUIDELINES FOR CERTIFICATION - MAGNETIC TESTING

FOREWORD

This Guideline for Certification - Magnetic Testing (GCMT), in conjunction with the Guidelines for Certification – General Requirements (PRO-CER-18), defines the requirements for the issue of Discipline Recognition to NDT personnel performing Magnetic Testing in New Zealand.

Certification and re-certification in accordance with PRO-CER-18 and this GCMT confirm the qualifications, training, and examined competence of Magnetic Testing personnel.

This GCMT must be read in conjunction with the Guidelines for Certification – General Requirements (PRO-CER-18).

This GCMT is prepared in accordance with ISO 9712, Qualification and Certification of NDT Personnel.

The qualifications described by this GCMT have been prepared for registration at level 6, on the NZQA framework.

1.0 SCOPE AND GENERAL

1.1 Scope

This Guidelines for Certification - Magnetic Testing (GCMT) defines the principles, training, experience and examination for the issue of a Discipline Recognition to Magnetic Testing personnel.

1.2 Application

Discipline Recognition granted under this GCMT applies to Magnetic Testing;

- During manufacturing of industrial equipment, and during the pre and in-service periods of industrial equipment.
- For all product sectors as described in ISO 9712, Annex A, Clause A2.

1.3 Definitions

ISO 9712	Non-destructive testing - Qualification and certification of NDT personnel
AS 1171	Non-destructive testing – Magnetic Particle testing of Ferro-Magnetic products components and structures
ASTM E1444	Standard Practice for Magnetic Particle Testing
CBIP	Certification Board for Inspection Personnel
Certified	An individual is certified for the purpose of this GCMT when they hold a Discipline Recognition for Magnetic testing.

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

1.4 Discipline Recognition

Discipline Recognitions, which may be granted under this GCMT, and their scope, are:

1.4.1 MT1 Magnetic Testing Level 1, covering;

A person certified to Level 1 shall have demonstrated competence to carry out magnetic testing according to magnetic testing method instructions and under the supervision of Level 2 or Level 3 certified personnel who also hold a CBIP Certificate of Competence. Within the scope defined on the Discipline Recognition, Level 1 personnel may, if they hold a CBIP Competence Certificate and are authorized by their employer, perform the following in accordance with Magnetic testing method instructions;

- Set up NDT equipment.
- Perform the test.
- Record and classify the results of the tests.
- Report the results.

A person certified to Level 1 may not work directly from general procedures or standards such as AS 1171 or ASTM E1444, as these require some interpretation. The Level 1 shall work under the supervision of, and be guided by, a Level 2 or 3 person.

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

1.4.2 MT2 Magnetic Testing Level 2, covering;

A person certified to Level 2 shall have demonstrated competence to perform magnetic testing according to established procedures. Within the scope of competence defined on the Discipline Recognition (Testing method / Sector), Level 2 personnel may, if they hold a CBIP Competence Certificate and are authorised by their employer,;

- Select the NDT technique for the test method to be used.
- Work directly from magnetic testing standards and specifications such as AS 1171, and ASTM E1444
- Define the limitations of application of the testing method.
- Translate relevant NDT codes, standards, specifications and procedures into NDT instructions adapted to the actual working conditions.
- Set up and verify equipment settings.
- Perform and supervise relevant method / sector tests.
- Interpret and evaluate results according to the applicable codes, standards, specifications or procedures.
- Prepare and write magnetic testing instructions
- Supervise, guide and train Level 1 personnel
- Report the results of magnetic testing

1.4.3 Magnetic Testing Level 3 (MT3)

A person certified to Level 3 shall have demonstrated competence to perform magnetic inspections at Level 2. Additionally they shall demonstrate competence to:

- Evaluate and interpret results in terms of existing standards, codes, and specifications;
- Have sufficient practical knowledge of applicable materials, fabrication, process, and product technology to select NDT methods, establish NDT techniques, and assist in establishing acceptance criteria where none are otherwise available;
- Have a general familiarity with other NDT methods.

Level 3 personnel may be authorised by their employer to:

- Assume full responsibility for a test facility or examination centre and staff;
- Establish, review for editorial and technical correctness, and validate NDT instructions and procedures;
- Interpret standards, codes, specifications, and procedures;
- Designate the particular test methods, procedures, and NDT instructions to be used;
- Carry out and supervise all tasks at all levels;
- Provide guidance for NDT personnel at all levels.

1.5 Sectors

Sectors are defined by ISO 9712 Annex A, and as modified by this Guideline for Certification, covering Magnetic Testing at various stages of types of engineering industry including:

- Manufacturing
- Pre-Service
- Post and In-Service
- Fabrication

The products covered include:

- Welding
- Castings
- Forgings
- Wrought products

NDT METHOD	LEVEL	Product Sector				Industry Sector		
		WELDS	CASTINGS	WROUGHT	FORGINGS	MANUFACTURING TESTING	PRE & IN-SERVICE TESTING	FABRICATION
MAGNETIC TESTING	1	X	X	X	X		X	
MAGNETIC TESTING	2	X	X	X	X		X	
MAGNETIC TESTING	3	X	X	X	X		X	

2.0 TRAINING

2.1 Training Evidence

The Guidelines for Certification – General Requirements (PRO-CER-18), specify the requirements for the necessary evidence of training.

2.2 Formal Training

2.2.1 Magnetic Testing Level 1 (MT1)

Applicants for examination for Magnetic Testing Level 1 (MT1) shall have attended a theory course in magnetic testing. The course shall total at least 16 hours.

Training hours are based upon candidates possessing prior knowledge of materials and processes. If this is not the case, additional training may be required by CBIP.

- Training hours include both practical and theory courses.

2.2.2 Magnetic Testing Level 2 (MT2)

Applicants for examination for Magnetic Testing Level 2 (MT2) shall have attended a level two theory course or courses in Magnetic testing. The course(s) shall total at least 40 hours, inclusive of any Level 1 training.

Training hours are based upon candidates possessing prior knowledge of materials and processes. If this is not the case, additional training may be required by CBIP.

Training hours include both practical and theory courses.

2.2.3 Magnetic Testing Level 3

CBIP does not allow direct access to Level 3, therefore applicants are required to satisfy the training requirements for Level 2 (Clause 2.2.2). In addition documented evidence of additional training of 32 hours is required, which shall include aspects of the following:

Other NDT methods
Procedure writing
Code and standard interpretation
Metallurgy
Fabrication and welding
Quality manual writing

2.2.4 Magnetic Testing – All Levels

A reduction of up to 50% (outlined above) in the total required number of hours may be accepted by CBIP for candidates who have graduated from technical college or university, or have completed at least two years of engineering or science study at college or university.

For candidates seeking certification in either PT or VT at the same time as MT, or who already hold Discipline Recognition and a CBIP Competence Certificate in PT or VT, the training hours may be reduced proportional to the number of hours that the syllabus duplicates the other.

The maximum reduction in total training hours is fifty percent (50%).

Any reduction in training hours requires acceptance by CBIP.

3.0 DISCIPLINE RECOGNITION

3.1 Experience

Experience in months will be based on a nominal forty-hour week, provided the candidate is working full time in the Magnetic Testing method.

3.1.1 Experience Pre-requisite for Examination

A minimum of Five (5) percent of the experience hours required for certification shall be completed prior to examination.

CBIP may accept reductions in experience hours prior to examination.

3.1.2 Magnetic Testing Level 1 (MT1)

Applicants for Level 1 shall have at least one months (or 160 hours) experience in the Magnetic Testing 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 who also holds a CBIP Competence Certificate.

3.1.3 Magnetic Testing Level 2 (MT2)

Applicants for Level 2 shall have at least three months (or 480 hours) experience in the Magnetic Testing method at Level 1. If qualifying directly to Level 2, the experience shall be 640 hours (four months in total), not including any organised theory or practical training courses. For the experience to be valid it should be gained under the control of a Level 2 or 3 certified person who also holds a CBIP Competence Certificate.

If the candidate is not working full time in Magnetic Testing, then only hours doing Magnetic Testing, preparation, reporting and associated work may be logged.

3.1.4 Magnetic Testing Level 3

Applicants for Level 3 shall have at least twelve months (or 1,920 hours) experience in the Magnetic Testing method at Level 2.

Level 3 responsibilities require knowledge beyond the technical scope of any specific NDT method. This broad knowledge may be acquired through a variety of combinations of education, training and experience, relevant to:

- MT procedure writing
- Code and standard interpretation
- Training Level 1 and 2 personnel
- Running an magnetic testing facility
- Writing MT quality systems
- Designing and operating MT calibration systems
- Appraisal of or designing new MT test equipment

3.1.5 Possible reductions in experience

Applicants may apply to CBIP for a reduction of up to 50% of the specified hours for experience in 3.1.1 and 3.1.2.

Reductions may be allowed for time spent on training courses (weighted by a factor of 5). Such courses shall consider practical solutions to testing problems and shall involve testing of known defects in specimens or actual fabrications.

Credit is allowed for work experience gained in other NDT methods, covered by ISO 9712, with the reduction for total experience for Magnetic Testing as follows:

- MT plus one other method: 25%
- MT plus two other methods: 33%
- MT plus three other method: 50%

The candidate shall show that he/she has at least fifty (50) percent of the experience time required for Discipline Recognition in each of the other methods.

CBIP must approve individual applications for reduction in experience time.

Note: The minimum experience hours shall be at least:

- MT 1 - 80 hours
- MT 2 - 240 hours (if MT1 held)
- 320 hours (if MT1 not held)

3.2 Changing Sectors

CBIP will consider applications for sector changes (See ISO 9712 Annex A);

A certified Level 1 or 2 person changing sectors, or adding another sector in the same NDT method, shall be required to take only the new sector specific and practical examinations for that method.

A certified Level 3 person changing sectors or adding another sector for the same NDT method is exempt from the need to retake the basic examination and the Level 3 Part D of the main method examination

Application for sector changes shall be made in writing.

4.0 EXAMINATION REQUIREMENTS

4.1 Initial Discipline Recognition

A Discipline Recognition for both MT1 (Level 1) and MT2 (Level 2) requires three examinations consisting of two written examinations and a practical examination. The written exam papers shall comprise a general paper and a specific paper.

4.2 Recertification

Recertification shall be by way of a practical examination as per the Level 2 practical examination in Magnetic Testing.

4.3 Significant Interruption

Where significant interruption has occurred, a recertification examination is required.

Refer to Guidelines for Certification – General Requirements (PRO-CER-18), Section 3 for a definition of Significant Interruption.

4.4 Examination References

References for open book examinations are listed on the CBIP website at www.cbip.co.nz.

4.5 Magnetic Testing Level 1

MT1 (Level 1): General Paper (Written)

- 40 multi choice questions covering the general theory of Magnetic Testing.
- 90 minutes duration in a closed book format.
- Refer to appendix B for exam topics and sample questions

MT1 (Level 1): Specific Paper (Written)

- 20 multi choice and 10 short answer questions covering specific applications of the Magnetic Testing method.

- The questions may involve simple calculations and questions on standards, specifications and procedures. Some basic knowledge of testing equipment is also required, including Prods, yokes or bench units.
- Permitted reference material AS 1171, ISO 9712 and this GCMT
- 2.5 Hour duration,
- Refer to appendix B for exam topics and sample questions

MT1 (Level 1): Practical examination

- The practical examination shall comprise of inspection and reporting on at least 3 samples. The examination shall be carried out in accordance with a detailed written instruction supplied by the examiner and should comply with AS 1171.
- An examination observer will be present and will allocate marks (15% of the total) in accordance with a check sheet supplied by CBIP.
- Written examination reports, including defect indications and datum, will be required to be presented to the examiner at the end of the examination.
- A report pro-forma will be supplied to the candidate.
- Time allowed will be 3 hours.
- Refer to Appendix C for scope of practical examination

4.6 Magnetic Testing Level 2

MT2 (Level 2): General Paper (Written)

- 40 multi choice questions at level 2 covering the general theory of Magnetic testing.
- 90 minutes duration in a closed book format.
- Refer to appendix B for exam topics and sample questions

MT2 (Level 2): Specific Paper (Written)

- 20 multi choice and 10 short answer questions covering specific applications of the Magnetic Testing method. The questions may involve calculations and questions on standards, specifications and procedures. Knowledge of inspection equipment, such as prods, yokes and bench units and use is also required.
- Permitted reference material AS 1171, ISO 9712 and this GCMT.
- 2.5 Hour duration,
- Refer to appendix B for exam topics and sample questions.

MT2 (Level 2): Practical examination

- The practical examination shall consist of two (2) parts. Time allowed for both parts will be 4 hours, 3 hours for the practical samples plus one hour for the written work instruction.

Practical Test

- The practical test shall consist of an inspection and reporting on at least 3 samples in the relevant product sectors (See ISO 9712 Annex A). The examination shall be carried out in accordance with a Standard Practice or General Procedure such as AS 1171. This will require the Level 2 candidate to interpret the document and determine the inspection procedure.
- Permitted reference material – AS 1171 and/or the candidates Company_Magnetic Testing procedure_
- Written examination reports, including defect indications, datum and interpretation, 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.

Written Instruction (Procedure)

- The second part shall consist of producing a written instruction for the inspection of a specific part nominated by CBIP. The instruction shall be such that it complies with the requirements of AS 1171 or ASTM E1444 and can be used by a Level 1 with no interpretation required.
- Permitted reference material – AS 1171 and ASTM E1444.
- Refer to Appendix C for scope of practical examination

4.7 Practical Re-examination

Applicants who do not obtain the required pass mark of 70% in the practical examination, are only required to re-sit the failed sections.

The re-examination may take place one month after the first attempt, and no longer than two years after the original examination. The re-examination time may be less than one month if evidence of further training acceptable to the certification body is provided.

5.0 EXAMINATION REQUIREMENTS LEVEL 3

MT3 requires successful completion of one practical and two theory examinations.

MT3 (Level 3): Basic Paper (Written)

- 100 multi choice questions covering basic knowledge, as per the table below

Part	Subject	Number of questions
A	Technical knowledge in materials science and process technology.	25
B	Knowledge of the certification body’s qualification and certification system based on this International Standard. This may be an open book examination.	10
C	General knowledge of at least four methods as required	15 for each NDT

	for Level 2 and chosen by the candidate from the methods given in Clause 1. These four methods shall include at least one volumetric method (MT or PT).	method. 60 in total
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MT3 (Level 3): Main Paper (Written)

- 100 multi choice questions covering MT knowledge, as per the table below

Part	Subject	Number of questions
D	Level 3 knowledge relating to MT	30
E	Application of MT, including the applicable codes, standards, specifications and procedures. This may be an open book examination in relation to codes, standards, specifications and procedures	20
F	Drafting of one or more MT procedures. The applicable codes, standards, specifications and other procedures shall be available to the candidate. For a candidate who has already drafted a MT procedure in a successfully passed Level 3 examination, the certification body may replace the drafting of a procedure with the critical analysis of an existing MT procedure containing errors and/or omissions.	–

MT3 (Level 3): Practical examination

- The practical examination shall be as per the Level 2, with the exemption of the Level 1 written instruction

5.1 Recertification Level 3

Recertification shall be by way of a practical examination, as per the Level 2, with the exemption of the Level 1 written instruction.

Plus either:

- Written examination 20 questions on the application of MT, which demonstrates an understanding of current NDT techniques, standards codes or specifications, and applied technology and, at the option of the certification body, five additional questions on the requirements of the certification scheme.

Or:

- Meeting the requirements for a structured credit system, as given in 5.2.

5.2 Level 3 Credit System

Credits are gained over a five year period prior to recertification, as per the table below. Note that there are a maximum number of points that can be gained in both a single year and over the five years.

A minimum of 70 points are required for a recertification.

A maximum of 25 points can be earned in a single year.

Item	Activity	Points accorded for each item (or function)	Maximum points per year per item	Maximum points per 5 year period per item
1	Membership of an NDT society, attendance at seminars, symposia, conferences and/or courses covering NDT and related sciences and technologies	1	3	8 ^a
2.1	Attendance at international and national standardization committees	1	3	8 ^a
2.2	Convenorship of standardization committees	1	3	8 ^{ab}
3.1	Attendance at sessions of other NDT committees	1	3	8 ^a
3.2	Convenorship of sessions of other NDT committees	1	3	8 ^{ab}
4.1	Attendance at sessions of NDT related working groups	1	5	15 ^a
4.2	Convenorship of NDT related working groups	1	5	15 ^{ab}
5.1	NDT related technical/scientific contributions or publications	3	6	20 ^{cd}
5.2	NDT related research work published	3	6	15 ^{cd}
5.3	NDT research activity	3	6	15 ^{cd}
6	NDT technical instructor (per 2 h) and/or NDT examiner (per examination)	1	10	30 ^d
7	Professional activity	—	—	—
7.1	within a NDT facility, NDT training centre or NDT examination facility or for Engineering of NDT (see Annex E) (for each full year)	10	10	40 ^d
7.2	Dealing with disputes referring to clients	1	5	15 ^d
7.3	Development of NDT applications	1	5	15 ^d
^a Maximum points for items 1 to 4: 20. ^b Points to be given for both convenorship and attendance. ^c If there is more than one author, the lead author shall define points for the other authors. ^d Maximum points for each of items 5 and 6: 30, and 7: 50.				

APPENDIX A – General Knowledge Requirements

MAGNETIC TESTING

Knowledge requirements (General)

MAGNETIC TESTING	MT1	MT2
Introduction to basic magnetic testing concepts	X	X
History of magnetic testing	X	X
Capabilities and Limitations	X	X
Advantages over Magnetic	X	X
MAGNETISM	X	X
Theory of Magnetism	X	X
Magnetic domains	X	X
Magnetic lines of force	X	X
Magnetic poles	X	X
Bar and horseshoe magnets	X	X
Magnetic flux and flux density	X	X
MAGNETIC MATERIALS		
Relative Permeability		X
Dia, Para and Ferro – magnetic materials	X	X
Hysteresis B/H curve	X	X
Magnetising force vs Flux density		X
Saturation, Coercive force and Residual Magnetism	X	X
Retentivity	X	X
Magnetic Soft and Hard materials		X
Curie point	X	X
Stainless steels		X
MAGNETIC FIELDS		
Magnetic field in and around a non magnetic conductor	X	X
Magnetic field in and around a magnetic conductor	X	X
Magnetic field in and around a coil	X	X
Field strength	X	X
Field strength measurement	X	X
Gauss, Tesla, Weber	X	X
Oersted, kA/M	X	X
MAGNETISING CURRENT		
AC	X	X
PEAK and RMS		X
DC, HWDC, FWDC	X	X
Skin Effect	X	X
Ampere, Voltage and Resistance	X	X
Surface vs subsurface inspection	X	X

MAGNETIC FIELD PRODUCTION		
Threader bars and central conductors	X	X
Coils, fill factor and field distribution	X	X
Cable wraps	X	X
Magnetic Flow		X
Magnetic Induction		X
Magnetic yokes and prods	X	X
Permanent magnets	X	X
Portable and stationary Power sources		X
MAGNETIC FIELD DIRECTION		
Circular fields	X	X
Longitudinal fields	X	X
Multi directional fields	X	X
Field direction vs defect direction	X	X
MAGNETIC MEDIA		
Particle size, shape and permeability		X
Fluorescent and Visible particles	X	X
Wet and Dry	X	X
Concentration limits	X	X
Carrier fluids		X
MT INDICATIONS		
Leakage fields	X	X
True and False indications	X	X
Relevant and Non relevant	X	X
Magnetic writing	X	X
Surface and sub surface	X	X
Basic manufacturing defect indications	X	X
In service defect indications	X	X
MT PROCEDURES		
Written Instructions	X	X
Pre cleaning	X	X
Basic Circular and Longitudinal current formula	X	X
Prod and yoke leg spacing	X	X
Head and coil shot and shot timing	X	X
Residual and continuous	X	X
Interpretation and evaluation	X	X
Field verification using IQI's (Pie gage and Castrol strips)	X	X
Surface (AC) vs subsurface (HWDC)	X	X
Post cleaning	X	X

DEMAGNETISATION		
AC/DC and Circular/Longitudinal demagnetisation	X	X
Curie point	X	X
Residual magnetism limits	X	X
Field indicators	X	X
Measurement units	X	X
Reasons for demagnetising	X	X
EQUIPMENT		
Prods, Yokes and Stationary Bench units	X	X
Portable units and Power supplies		X
Coils Cables and threader bars	X	X
Flat and Spiral coils		X
White and black (UV) lighting including ambient light	X	X
Equipment checks	X	X
Light measurement	X	X
Ketos ring	X	X
BASIC MATERIALS		
Basic Metallurgy		X
Types of Materials – Carbon, Stainless Steel, Aluminium	X	X
Welding Processes – Common methods, terminology and defects	X	X
Manufacturing processes including basic defects	X	X

MAGNETIC TESTING

Knowledge Requirements - Specific

Basic Specific requirements		
Iron and steel manufacturing process		X
Annealing and Teering		X
Common manufacturing defects (Casting, Forging and Grinding)	X	X
Basic inspection of common automotive parts such as crankshafts, con rods and steering parts	X	X
MT inspection of common welded parts such as Plate, Pipe and Nozzles, including welding terms and typical defects	X	X
MT procedures involving inspection of manufactured parts for casting and forging defects	X	X
Procedures involving inspection of parts for “in service” defects	X	X
MT procedures involving Stationary bench units and portable yokes and Prods	X	X
Interpretation and evaluation techniques	X	X
Circular and Longitudinal current formula	X	X

EQUIPMENT		
Use of Bench, Yokes and Prods	X	X
Equipment checks, calibration, wet bath and particle checks, water break tests and lighting checks		X

Use of MT accessory equipment – KETOS rings, KDS panels, extenders and shunts.	X	X
IQI's, Pie gages and Flux indicators eg Castrol (ELY) strips	X	X
Hall effect probes		X
Field indicators	X	X
		X
CODES and STANDARDS		X
This Standard of Proficiency and code of ethics, ISO 9712	X	X
AS 1171	X	X
ASTM E 1444		X

APPENDIX B – SAMPLE EXAMINATION QUESTIONS

MT1 Magnetic Testing Level 1 General Paper

(40 Multi Choice)

- 1 Which of the following best describes the correct sequence when carrying out a wet Magnetic Particle Residual inspection using a bench unit?
 - A. Apply current, apply particles, remove particles, remove current
 - B. Apply particles, remove particles, apply current, remove current
 - C. Apply current, remove current, apply particles, remove particles
 - D. Apply current, remove particles, apply particles, remove current

- 2 "Magnetic particle" is a Non Destructive examination method used for:
 - A. Locating surface discontinuities.
 - B. Locating near surface discontinuities.
 - C. Both A and B.
 - D. Material separation

MT1 Magnetic Testing Level 1 Specific Paper

(20 Multi Choice and 10 short answer)

- 1 The legs of a portable magnetic yoke are required to be in close contact with the test object when inspecting butt welds:
 - A. To avoid overheating
 - B. To prevent arcing
 - C. To avoid damage to the yoke legs
 - D. To ensure good magnetic coupling between the legs and the test piece

- 2 Clamping a bolt between the heads of a Magnetic Particle horizontal bench unit and passing a current through this bolt will:
 - A. Produce a longitudinal magnetic field in the bolt
 - B. Produce a circular magnetic field in the bolt
 - C. Demagnetise the bolt
 - D. Passing a current through a bolt is not recommended as an inspection procedure

- 3 List the minimum information you would expect to find on a level 1 **written instruction sheet** for the Magnetic Particle inspection of a bolt

MT2 Magnetic Testing Level 2 General Paper

(40 Multi Choice)

- 1 The two axis on a Hysteresis curve are:
 - A. Magnetising force and Permeability
 - B. Magnetising force and Flux density
 - C. Permeability and Residual magnetism
 - D. Flux and Saturation

- 2 Fluorescent materials used in magnetic particle inspection have a peak response to radiate energy, of a wavelength of approximately:
 - A. 550 nm
 - B. 365 nm
 - C. 20 Lux
 - D. 200 Ft Candles

MT2 Magnetic Testing Level 2 Specific Paper

(20 Multi Choice and 10 short answer)

- 1 Which of the following casting flaws is not likely to be detected by the magnetic particle test?
 - A. Micro shrinkage
 - B. Hot tear
 - C. Stress crack
 - D. Cold shut

- 2 A generally accepted practice for ensuring that your DC wet MT bench unit is operating correctly on a daily basis is to:
 - A. Test the suspension fluid for correct concentration
 - B. Use a steel test ring such as a KETOS ring
 - C. Process known defect standards
 - D. Either B or C

- 3 The written procedure you are working to requires the use of a magnetic particle horizontal bench unit and specifies a circular amperage value of 1500 AC amps Peak. Your bench unit delivers AC current and the meter reads RMS. Discuss the difference between Peak and RMS values and state the current value you would select for this inspection

APPENDIX C

MT1 and MT2 Practical examinations

The marks allocated for the Level 1 and 2 Practical examinations will be in accordance with a set of pre-defined criteria. The following gives general information on how the marks are allocated at each level.

MT1

Correct use of the equipment

Correct interpretation of the written instruction

Performance of the inspection

Finding all mandatory indications

Defect datum

Reporting

Note: A candidate failing to report a defect specified on the master report as “mandatory” shall be awarded zero marks in the Recording and Reporting part of the practical examination.

MT2

Selection and correct use of the equipment

Equipment control and checks

Correct interpretation of standard / Code

Performance of the inspection

Finding all mandatory indications

Defect datum

Reporting

Writing Level 1 Instruction 15%

Note: A candidate failing to report a defect specified on the master report as “mandatory” shall be awarded zero marks in the Recording and Reporting part of the practical examination.