Australian Government
Department of Industry, Science and Resources

National Measurement Institute

Verifier's recognition kit – subclasses 6.5, 6.6, 6.9 and 18.2

MSMTMVER501 - Verify complex measuring instruments, and MSMTMREF301 - Use and maintain reference standards – for subclasses 6.5, 6.6 and 6.9

MSMTMVER302 Verify simple measuring instruments – for POS systems - subclass 18.2

Version 4 – April 2023

Complete this kit by typing directly into the document.

Applicant's name:	
Subclass/es requested for assessment:	
Observation assessment method requested for subclass 18.2 - POS systems. (select one)	☐ Video calling (VC) ☐ Pre-recorded video/s ☐ Direct observation (applicant choice of site)

Contents

Version changes iii
Introduction 1
Assessment instructions 2
Applicant's details 6
Applicant's work history and training 7
Assessment recording form (assessor) 8
Assessor's feedback form 9
Instructions for all written assessments 10
Written assessment (all subclasses) 10
Written assessment (6.5, 6.6, 6.9 common questions) 20
Written assessment (Subclass 6.5 specific questions) 22
Written assessment (Subclass 6.6 specific questions) 27
Written assessment (Subclass 6.9 specific questions) 30
Written Assessment (18.2 Point of sale systems specific questions) 35
Verification form task 40
Test report questions (subclasses 6.5, 6.6 & 6.9) 41
- Test report question (Subclass 6.5 - Belt-conveyor weighing instruments) 41
- Test report 1 for belt weighers 44
- Test report 2 for control instruments 48
- Test report question (Subclass 6.6 - Automatic rail weighbridges) 52
- Test report 1 for weighbridges 54
- Test report 2 for control instruments 59
- Test report question (Subclass 6.9 - Totalising hopper weighing instruments) 63
- Test report 1 for discontinuous totalising automatic weighing instruments 65
- Test report 2 for control instruments 69

Workplace test reports and documents 72
- For subclasses 6.5, 6.6 and/or 6.9 72
- For subclass 18.2 72

Third party report (experienced verifier) 73
Third party report (non-verifier) 77
Record of assessor's conversation with third party (if required) 79
Record of conversation with the applicant 81
Skills observation report 82

Version changes

Version number	Main changes
V4.0	• Updated details relating to change of department name. • General update of links • All subclass and 18.2 questions updated to latest versions in use • References to skill sets removed. • Instructions relating to test reports and observations significantly modified. • Minor updates to questions. • New test report question for subclass 6.9

Introduction

This kit enables you to demonstrate your competence as a verifier of measuring instruments used for trade against the performance criteria and assessment requirements set out in the nationally recognised units of competency for licence subclasses 6.5, 6.6, 6.9:

- MSMTMREF301 – Use and maintain reference standards.
- MSMTMVER501 – Verify complex measuring instruments.

and, when including subclass 18.2 (POS systems), for the additional unit of competency:

- MSMTMVER302 – Verify simple measuring instruments

On successful completion of assessment, you will receive the appropriate statements of attainment.

Read these instructions carefully in combination with the Recognition kit instructions and Instructions for observation assessments documents. In addition, carefully read the instructions included at the start of each section.
Before you complete and submit your recognition kit, you should:

- read through the whole kit to understand what is required of you
- spend time in the field with an experienced verifier learning about the topics in the following checklist
- complete the checklist below, to self-assess your skills and knowledge.

Please contact the NMI Administrator if you have difficulties in understanding the requirements for compiling/submitting your kit.

Email: NMIadministrator@measurement.gov.au **Tel:** 02 8467 3789

I have adequate skills and knowledge in the following to be able to complete this kit, and perform these tasks in the workplace, without direct assistance:	Yes	No	Not sure
Spoken English communication	☐	☐	☐
Mathematics	☐	☐	☐
English reading skills	☐	☐	☐
Computer skills	☐	☐	☐
The instruments I intend to verify	☐	☐	☐
The techniques used in testing instruments, including planning and preparation	☐	☐	☐
Storing, maintaining and handling reference standards/test equipment	☐	☐	☐
Likely impacts of the environment on the function of instruments and/or the standards/test equipment used to verify them used to verify them	☐	☐	☐
Work health and safety considerations relevant to testing instruments	☐	☐	☐
My organisation's and NMI requirements for recording and reporting details of verifications and other licensing matters	☐	☐	☐
Any adjustments or corrections that may be needed during the verification process	☐	☐	☐
Marking instruments for verification (what to mark and where to place the mark)	☐	☐	☐
Communicating to the owner/user of the instrument and requesting any assistance	☐	☐	☐

If you have checked 'no' or 'unsure' to any of the items in the table above, and are unsure what you need to do to be in a position to answer 'yes', please speak to your supervisor. Check the LLN section of the Participant's handbook if you need to develop your mathematics or English skills (speaking or reading) before you attempt this assessment.

In addition, you should have personally tested instruments, ideally under supervision, using the relevant national instrument test procedures to develop your skills - either in the workplace or in a simulated workplace environment.

Assessment instructions

Completion of the kit

You should complete this kit by typing directly into the document or clicking on checkboxes, where appropriate. If you have any problems with the functionality of the fillable kit, please email the kit to the NMI Administrator, detailing the issues that you are having, specifying which page/question etc.

Submit the whole document along with any additional scanned reports, documents, video/s. DO NOT, print it out and scan it.

The kit comprises a number of components for you to complete/submit, relevant to the subclasses for which you are being assessed, including the following:

- **Your work history.**
- **Written assessments** – complete only the parts relevant to the subclass/es you wish to verify including test report questions, where required.
- **A specific question** that asks you to complete one or more verification forms (Form 6) using the information provided.
- **Test reports**
- **Third party report** – a report/s from the verifier/s who worked with you during your training, or a work colleague (where you have no access to a verifier).

MAKE SURE YOU COMPLETE ALL PARTS OF THE RECOGNITION KIT APPROPRIATE TO THE INSTRUMENT SUBCLASSES YOU WISH TO VERIFY

Skills assessment requirements

You are required to demonstrate that you have the necessary practical and communication skills required when verifying weighing instruments and POS systems. This includes you demonstrating knowledge of, and implementing, safe work practices. Such demonstration can take place in a real or simulated environment. During training within your organisation, you should have practised these skills, ideally under supervision of an experienced verifier/s.

PLEASE READ THE NEXT SECTIONS CAREFULLY, as the requirements for POS systems and complex weighing instruments are different

For complex weighing instruments (subclasses 6.5, 6.6 and 6.9)

You will need to demonstrate your ability to test one instrument for each of the subclasses you are being assessed for. Due to the complexities, cost, locations and access difficulties involved in testing complex weighing instruments, you are not required to complete testing of an instrument, and submit a test report, **before** you submit this kit. However, if you are able to do so, please include a copy of a test report detailing what aspects of the test were completed by you/under your direction, and any assistance you received for any part of the testing.

After you have submitted your kit, NMI will make contact with you to determine the best way for you to demonstrate your practical and communication skills to an NMI skills observer. Depending on your work circumstances and the ability to access equipment/instruments, this may involve one or more of the following:

- A walk through at a site where the arrangements (including those for control instruments) and test procedures are discussed.
- The use of scenarios to demonstrate your knowledge of aspects of the required tests and/or their applicability to other instruments.
- Demonstration of parts of the test procedures.
- In relation to the testing of control instruments (where this forms part of your work), provision of a statement of attainment for instruments of subclass 6.4.
- Provision of a recent test report relating to testing of an instrument of subclass 6.4 (within the last 12 months) or the testing of an instrument that was or could be used as a control instrument (under direct supervision).
- Other tasks as appropriate to your individual workplace circumstances.

For POS systems (subclass 18.2)

You must provide copies of **test reports** relating to POS systems you have tested (ideally) under supervision. The POS systems can be connected to any type of verified measuring instrument. You should have personally completed all the processes required as if you were completing **initial** verification of those POS systems, without assistance. You will need to provide **three (3) test reports in total**. 2 reports will relate to tests you complete in the workplace, prior to finalising your kit. A further report will be created when you test an instrument during your **NMI skills observation**. **In addition**, you must provide any **dockets/labels printed during testing**.

Depending on the circumstances, the observation for POS systems will be completed by one of the following methods:

- Video calling - The assessor will use video calling to complete a direct observation of you, either at your work place or another suitable location (e.g. a trader's site).
- Pre-recorded videos - You will provide a series of videos, showing you completing all the stages required for verification of a POS system, in a real or simulated situation.
- Direct observation (your choice and arrangement of site) - The assessor, or an NMI-appointed skills observer, will observe you completing all the processes required for verification of an instrument, either at your work place or another suitable location (e.g. a trader's site).

Be sure to mark your preferred observation method option for 18.2 on the front of this kit and on the Recognition kit checklist.

- If you choose to complete the observation using video calling, your assessor will contact you to schedule a suitable time and date.
- If you choose to provide videos, and you are unable to email the video files, the NMI Administrator will provide a link where you can upload your videos, after we have received your kit.
- For direct observation at your workplace, or other suitable location of your choice, you will liaise with the assessor or skills observer.

See the Workplace test reports section and the separate **Instructions for observation assessment** for more information.

Third party reports

We would like a report from a person (or persons) who has worked directly with you, and who can comment on your workplace performance over time. Ideally, this person is a verifier who has worked directly with you during your training AND who holds a statement/s of attainment relating to these units of competency and instrument subclass/es. If you do not have access to a verifier during your training but have a workplace supervisor or colleague who works with you, ask them to provide a report. **Note, you may be asked to complete additional observations if you cannot provide a third party report from a verifier.**

Ask the person/s completing the report/s to read the instructions for completing their report before you finalise this kit. **If more than one person can provide evidence to support your assessment, have each of them complete a separate copy of the report for submission.**

- An existing verifier/s should complete the Third party report (experienced verifier) only.
- Any other work colleague, who isn't a verifier, should complete the Third party report (non-verifier).

If you have access to an existing verifier, ensure they observe you testing the instruments for which you will provide workplace test reports for this kit. **They should sign each report you provide**, to confirm that you have correctly followed the relevant, current, national instrument test procedures for **initial verification.**

If you don't have access to anyone in your workplace who can provide either of the above third party reports, please contact the NMI administrator.

IMPORTANT - Submission of the kit and enrolment

Once you have completed all relevant components, complete the separate **Recognition kit checklist** and the checklist on the **Applicant's details form,** to confirm that you are submitting **all** the components required for this assessment. **Add in the date of submission of this kit after the applicant declaration.**

Save this document on your computer, and name the file by adding your name to the file name. For example, if your name is Joe Smith, the file name for your completed kit will be:

RK 6.5, 6.6, 6.9 & 18.2 F V4.0 Joe Smith.

Scan each of the **additional** documents you have completed, and save them by the name of document and the kit e.g. scan and save the verification form 6 as:

RK 6.5, 6.6, 6.9 & 18.2 F V4.0 Form 6 Joe Smith

If submitting videos, name them **RK 6.5, 6.6, 6.9 & 18.2 F V4.0 Video *<instrument subclass>* Joe Smith**

Include a number for each video so your assessor can watch them in order:

e.g. Video 18.2 (1); Video 18.2 (2) etc.

Email the kit and the other scanned documents to nmiadministrator@measurement.gov.au and keep your original kit and documents. Your assessor will ask questions about your kit when they speak to you, so you need to have it available.

The NMI Administrator will advise you how to submit the video/s if you are unable to email them.

Once we have received all parts of your kit, the NMI Administrator will contact you regarding enrolment.

Assessment

Your assessor uses a number of forms to record the results of each part of your assessment. The forms are included at the end of this kit for your information.

Following enrolment, you will be assigned an assessor and an NMI-appointed skills observer (SO) for your observation (where applicable).

If a SO completes your observation, they will contact you to make arrangements. Following observation, they will provide their report to your assessor.

Once your assessor receives your submitted material, and any observation report, they will:

- assess the submitted material
- determine if any further evidence is required
- discuss your workplace skills with the person/s providing any third party report (if necessary)
- contact you to confirm arrangements for any skills observation (if they are completing the observation)
- contact you to arrange a mutually convenient time to call you, if required, to:
    - confirm your understanding
    - discuss the reports/documents/videos you submitted
    - ask any other questions to confirm your competence.
- record your results and provide feedback on the assessment recording form
- return the kit to the NMI Administrator for processing and confirmation of the result of your assessment, by email, and posting out your statement of attainment, when successful.

Applicant's details

Name: **First** **Middle** **Family**

Email address:

Telephone: Work **Mobile**

Name of any third party providing a report:

Third party's telephone number:

Third party's email address:

Company name:

Check the licence subclass/es of instruments you are being assessed for relating to the units of competency:

- **MSMTMREF301 – Use and maintain reference standards.**
- **MSMTMVER501 – Verify complex measuring instruments.**

- ☐ 6.5 – Belt weighers
- ☐ 6.6 – Automatic rail weighbridges
- ☐ 6.9 – Totalising hopper weighers

☐ **Check if you also wish to be assessed for the unit of competency MSMTMVER302 Verify simple measuring instruments for the licence subclass 18.2 (POS systems)**

Checklist to ensure you have included all required components of this kit. Check all that apply:

- ☐ Applicant's work history
- ☐ Third party report/s
- ☐ Written assessment (all subclasses)
- ☐ Written assessment (6.5, 6.6, 6.9 common questions)
- ☐ Written assessment (6.5)
- ☐ Written assessment (6.6)
- ☐ Written assessment (6.9)
- ☐ Written assessment (18.2)

Completed verification form/s for subclasses:

- ☐ 6.5 Belt weighers
- ☐ 6.9 Totalising hopper weighers
- ☐ 6.6 Automatic rail weighbridges
- ☐ 18.2 Point of sale (POS) systems

Completed test report questions for:

- ☐ 6.5 Belt weighers
- ☐ 6.9 Totalising hopper weighers
- ☐ 6.6 Automatic rail weighbridges

Test reports from tests you have completed in the workplace (Check all relevant to the subclasses you wish to be assessed for):

- ☐ 6.5 Belt weighers
- ☐ 6.9 Totalising hopper weighers
- ☐ 6.6 Automatic rail weighbridges
- ☐ 18.2 Point of sale systems **AND** printed documents from POS systems

Applicant declaration: I verify that I personally completed all the work and activities related to, and submitted as part of, this kit without assistance. (Complete this declaration when you submit the kit)

Name: **Date kit submitted:**

Applicant's work history and training

Details of current employment

Organisation:

Postal address:

Date employment started:

Date training related to these subclasses started:

Title of your current position:

Details of previous relevant employment

Organisation:

Postal address:

Period of employment: From: To:

Title of your previous position:

Relevant work experience

Specify the length of time you have been testing each subclass of instrument, the type of instruments you have worked with and the **approximate number** of instruments you have tested (including under supervision, for non-trade purposes, and/or in simulated workplace situations).

Detail any relevant training courses you have attended (name and date) and attach copies of any relevant trade qualifications:

Assessment recording form (assessor)

Assessor to complete this section and sign it.

Applicant:	
Assessor name:	**Date kit received:**
Applicant's ID checked at interview: ☐	

Summary of evidence used to assess the applicant:

☐ Written assessments	☐ Completed verification form task/s
☐ Third party reports	☐ Conversation with applicant
☐ Review of test reports/transaction records	☐ Skills observation/report/review of video/s
☐ Other – specify	

In order to verify complex weighing instruments, applicants must demonstrate competence in both units of competency for the subclass/es requested.

This applicant was assessed as:	**Competent**	**Not yet competent**
MSMTMVER501 – Verify complex measuring instruments.	☐	☐
MSMTMREF301 Use and maintain reference standards	☐	☐

To obtain the separate unit of competency - MSMTMVER302 Verify simple measuring instruments for POS systems, applicants must demonstrate competence in the single unit of competency.

This applicant was assessed as:	**Competent**	**Not yet competent**
MSMTMVER302 Verify simple measuring instruments	☐	☐

Check whether they are satisfactory or not yet satisfactory for each subclass requested:

	Satisfactory	**Not yet satisfactory**
6.5 Belt weighers	☐	☐
6.6 Automatic rail weighbridges	☐	☐
6.9 Totalising hopper weighers	☐	☐
18.2 Point of sale (POS) systems	☐	☐

Assessor's name:		**Date:**	
RTO Manager's signature:		**Date:**	

Assessor's feedback form

Assessor: Please include feedback to the applicant here and sign the form. Particularly where you have assessed the applicant as NYC, ensure you identify which assessment requirements the applicant has not yet demonstrated (e.g. Performance criteria (PC) 2.4 of the unit of competency (UoC) MSMTMREF301 - Use and maintain reference standards was not met as you were unable to correctly validate the reference standard suitability).

Assessor's name: **Date:**

Instructions for all written assessments

You must complete the 'all subclasses questions'

In addition, complete all questions relating to the specific subclasses you wish to verify.

For multiple choice questions, check the correct answer, or answers. If you make a mistake, you can simply uncheck the box/es and check the new correct box/es.

For free text questions, type in the text box provided below each question. Include any calculations you use. The text box shouldn't limit how much you can write, but the size of the box indicates the expected maximum length of your answer.

If you have any problems writing your calculations in the text box, write them on a separate page/document, clearly indicating the question they relate to (e.g. All subclasses Q29), then scan or photograph them and email along with your kit.

Name the added document **RK 6.5, 6.6, 6.9 & 18.2 F V3.0 Calculations Joe Smith**

Written assessment 'all subclasses'

If you are completing more than one recognition kit at the same time, you only need to answer these 'all subclasses' questions once.

1. In your own words, describe:

   a) what a hazard is.

   ☐ Correct ☐ Incorrect

   b) what a risk is.

   ☐ Correct ☐ Incorrect

2. List **four** basic duties you have under the safety legislation in your state or territory, as an employee or worker.

   ☐ Satisfactory ☐ Incomplete ☐ Incorrect

3. List the main workplace health and safety **hazards** that you face when verifying measuring instruments or measures. Your answer should relate to the environments and method/s of verification for instruments/measures for which you are currently being assessed. Write your answer below. **Include at least 5 common hazards (add another 5 per additional kit you are completing at the same time).** In addition, identify the main controls you apply to ensure your safety, and list any specific workplace procedure that applies to the hazard.

	Hazards	Controls	Workplace procedures
1.			
2.			
3.			
4.			
5.			
1.			
2.			
3.			
4.			
5.			
1.			
2.			
3.			
4.			
5.			

☐ Satisfactory ☐ Incomplete ☐ Incorrect

4. Do you know what a SDS and a SWMS are?

   a) Explain what a SDS is:

   ☐ Correct ☐ Incorrect

   b) Give an example of when you would use a SDS:

   ☐ Correct ☐ Incorrect

   c) Explain what a SWMS is:

   ☐ Correct ☐ Incorrect

   d) Give an example of when you would use a SWMS:

   ☐ Correct ☐ Incorrect

5. As part of the licence conditions, a servicing licensee is required to maintain a quality management system. From the following list, select each item that is included in your quality management system manual. Check **all** that apply.

   a) ☐ The requirement for all measuring instruments/measures to be of an approved pattern and comply with their certificate of approval.

   b) ☐ Details of mandatory reverification periods for instruments/measures used for trade.

   c) ☐ References to the national instrument test procedures relevant to the servicing licence.

   d) ☐ Procedures relating to instruments/measures that cannot be verified.

   ☐ Satisfactory ☐ Incomplete ☐ Incorrect

6. Which document, maintained by the servicing licensee, details the required format of the mark that verifiers, working under that servicing licence, must apply to show an instrument/measure has been verified? Choose the single correct answer.

   a) ☐ The National Trade Measurement Regulations 2009.

   b) ☐ The licensee's quality manual.

   c) ☐ The National Instrument Test Procedures.

   d) ☐ The licensee's servicing licence.

   ☐ Correct ☐ Incorrect

7. You have just changed your home address. What are you required to do? Choose the single correct answer.

   a) ☐ Nothing.

   b) ☐ Notify my employer who will notify NMI within 2 months.

   c) ☐ Notify my employer who will notify NMI within 14 days.

   d) ☐ Call my local trade measurement inspector and leave a message.

   ☐ Correct ☐ Incorrect

8. If you verify a measuring instrument/measure, how long do you have to submit notice of the verification to the National Measurement Institute on the approved form? Choose the single correct answer.

a) ☐ 7 days

b) ☐ 14 days

c) ☐ 21 days

d) ☐ 1 month

☐ Correct ☐ Incorrect

9. Select the actions you would take when you test a measuring instrument/measure in use for trade and you determine that you cannot verify it. Check **all** that apply.

a) ☐ Replace the verification mark with one indicating the instrument/measure can no longer be used for trade.

b) ☐ Remove any existing verification mark (where feasible).

c) ☐ Notify the owner within 14 days.

d) ☐ Notify the owner immediately.

e) ☐ Notify NMI within 14 days

f) ☐ Notify NMI immediately.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

10. What could be the consequence if you failed to provide the trader with a notice of non-verification when you have been unable to verify a measuring instrument/measure used for trade? Check **all** that apply.

a) ☐ No consequence provided I told the trader they couldn't use the instrument/measure for trade.

b) ☐ Customers could get incorrect measure.

c) ☐ Nothing, it's the trader's responsibility to check the instrument/measure is correctly marked.

d) ☐ I could be fined.

e) ☐ I could be restricted from verifying instruments/measures.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

11. If you were unsure of the correct way to apply a verification mark to a measuring instrument/measure, or any other requirement relating to the verification process, what would you do? Write your answer below. Include at least **three** points.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

12. How often must a measuring instrument/measure used for trade (excluding weighbridges used for public weighing) be re-verified? Choose the single correct answer.

a) ☐ Every 3 years.

b) ☐ Every 5 years.

c) ☐ Whenever it has been adjusted/repaired or every 2 years.

d) ☐ Whenever an adjustment or repair affects its metrological performance.

☐ Correct ☐ Incorrect

13. Can you verify a measuring instrument/measure where its certificate of approval states 'cancelled in respect of new instruments as from 1 January 2014'? Choose the single correct answer.

a) ☐ No, never.

b) ☐ Yes, always.

c) ☐ Yes, if the instrument/measure was manufactured before 1 January 2014.

d) ☐ Yes, provided the instrument is new.

☐ Correct ☐ Incorrect

14. What markings would you apply to an instrument/measure you verified on 26 March 2023 if your servicing licensee code is DBA and you have the verifier number VR 01278? Choose the single correct answer.

a) ☐ DBA 1278 M3

b) ☐ 1278 C 23

c) ☐ DBA 1278 C3

d) ☐ DBA 1278 M23

e) ☐ 1278 DBA C23

☐ Correct ☐ Incorrect

15. The following questions relate to the connection of auxiliary devices to measuring equipment.

a) Which document specifies the requirements for the installation of auxiliary indicating or printing devices and POS systems installed prior to 1 August 2012? Choose the single correct answer.

i. ☐ S1/0/A

ii. ☐ S1/0B

iii. ☐ Supplementary certificate of approval for the device/system

iv. ☐ Measuring instrument approval

☐ Correct ☐ Incorrect

b) Which document specifies the requirements for the installation of auxiliary indicating or printing devices installed after 1 August 2012, **excluding** POS or Control systems? Choose the single correct answer.

i. ☐ S1/0/A

ii. ☐ S1/0B

iii. ☐ Supplementary certificate of approval for the device/system

iv. ☐ Measuring instrument approval

☐ Correct ☐ Incorrect

c) Which document specifies the requirements for the installation of POS systems installed after 1 August 2012? Choose the single correct answer.

i. ☐ S1/0/A

ii. ☐ S1/0B

iii. ☐ Supplementary certificate of approval for the device/system

iv. ☐ Measuring instrument approval

☐ Correct ☐ Incorrect

d) When verifying an instrument which has an auxiliary device (other than a POS or control system) connected to it, what are the requirements for verification marking? Choose the single correct answer.

i. ☐ Apply a mark to the instrument only

ii. ☐ Apply a mark to the auxiliary device only

iii. ☐ Apply a mark to both the auxiliary device and the instrument

☐ Correct ☐ Incorrect

16. Provide a couple of examples of how a trader's use of an instrument/measure may impact on its performance. (Give **two** examples per instrument type you are being assessed for at this time).

☐ Satisfactory ☐ Incomplete ☐ Incorrect

17. In your organisation, how do you maintain records relating to verification? You should include at least 2 points.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

18. In order to verify instruments/measures, what are the principal legal requirements for the business and the individual completing a verification? Include at least 3 points in your answer.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

19. Who is responsible for determining whether a particular model of instrument can legally be used for trade in Australia?

☐ Correct ☐ Incorrect

20. Where could you find the legal units of measurement for Australia? Choose any that apply.

a) ■ On the NMI internet pages.

b) ■ In the *National Measurement Act 1960*

c) ■ In the *National Measurement Regulations1999*.

d) ■ In the licensee's quality manual

☐ Correct ☐ Incorrect

21. MPEs for instruments/measures may be given in a number of different documents. If the instrument/measure you are to verify was first approved on the 20th January 2020, where would you find the correct MPE to use during testing?

☐ Correct ☐ Incorrect

The questions listed below apply specifically to the knowledge requirements for the unit of competency MSMTMREF301 - Use and maintain reference standards.

22. List the **reference standards/test equipment** you use when verifying measuring instruments or measures. (Include capacity ranges, scale intervals and class/es, where appropriate) The answer you give should relate to **all** instrument subclasses for which you are being assessed. Write your answer below.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

23. How do you protect the integrity of the **reference standards and test equipment** you described in the previous question? Your answer should relate to storage, transportation and handling of reference standards and equipment. Write your answer below. Include **at least four** points.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

24. This question relates to the reference standards/test equipment you use, not the instrument/measure being tested.

What environmental factors could influence the integrity of the **reference standards and test equipment** that you use when verifying instruments/measures? The answer you give should relate to any instrument subclasses for which you are being assessed. Check **all** that apply.

a) ☐ Temperature
b) ☐ Humidity
c) ☐ Electrical interference
d) ☐ Wind/air movement
e) ☐ Rain/water
f) ☐ Gravity
g) ☐ Dust/dirt
h) ☐ Instrument level
i) ☐ Pressure
j) ☐ Vibration
k) ☐ Other (detail):

☐ Satisfactory ☐ Incomplete ☐ Incorrect

25. How do you control those factors when undertaking a verification? The answer you give should relate to the standards/equipment for all subclasses for which you are being assessed. Write your answer below. You should include **at least one** control per item selected above.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

26. You have damaged a reference standard used to verify measuring instruments/measures. What should you do with it? Choose the single correct answer.

a) ☐ Fix the damage
b) ☐ Quarantine it, until it has been repaired, tested and approved for use by the appropriate authority.
c) ☐ Use it until it can be repaired.
d) ☐ Quarantine it and then use it once repaired, if it is repairable.

☐ Correct ☐ Incorrect

27. When using reference standards/test equipment, what signs/symptoms/measurement results might alert you to a possible problem/fault/damage with those standards/test equipment? Provide answers for each of the types of standards or equipment you use when verifying instruments/measures of the subclass/es you are being assessed for. Include **at least two** points per different type of reference standard/test equipment you use.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

28. You have verified and marked a measuring instrument/measure when you notice that a reference standard/test equipment used for the verification is damaged or faulty. What should you do with regards to the verified instrument/measure? Write your answer below. Include **at least two** points.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

29. What does your quality management system require your organisation to do when there is a change to the reference standards/test equipment you use, i.e. when you acquire new standards/test equipment, when your standards/test equipment are re-verified, when you dispose of standards/test equipment that are broken/excess to requirements? Check **all** that apply.

a) ☐ Ensure that new standards/test equipment have the appropriate certification.
b) ☐ Allocate a junior member of staff to clean the new standards/test equipment.
c) ☐ Update the list of reference standards/test equipment.
d) ☐ Supply a copy of the updated list of reference standards/test equipment to NMI within 30 days of the change.
e) ☐ Supply a copy of the updated list of reference standards/test equipment to NMI within 14 days.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

30. What is the principal purpose of a certificate of verification (e.g. a Reg. 13 certificate)? Write your answer below

☐ Satisfactory ☐ Incomplete ☐ Incorrect

31. What procedures does your business need in place for maintenance and calibration of your reference standards/test equipment? Refer to your quality manual. Write your answer below. Include **at least two** points.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

32. Can you identify any limitations of the reference standards/test equipment you use during verification related to the verification or the environment in which they are used? Address this question to all reference standards/test equipment you may use for the subclasses you are currently being assessed for, describing the limitations and how significant they might be.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

33. What are organisations who are authorised to verify reference standards called?

☐ Correct ☐ Incorrect

Written assessment (6.5, 6.6, 6.9 common questions)

Complete this section if you are being assessed for ANY of the subclasses 6.5, 6.6 and 6.9

1. Which of the following is a requirement for a control instrument used to measure the test loads used for dynamic testing of belt-weighers, totalising hopper weighers and automatic rail weighbridges? Check **all** that apply.

   a) ■ Be an automatic weighing instrument
   b) ■ Be a non-automatic weighing instrument
   c) ■ Be pattern approved, or have an approved load cell and indicator that comply with General Certificate of approval No. 6B/0, or have a letter of approval from NMI
   d) ■ Be capable of having standard masses deposited directly or indirectly on the load receptor easily and in total safety
   e) ■ Be verified
   f) ■ Have been tested within 24 hours of use as a control instrument (or 28 days with NMI approval)

   ☐ Satisfactory ☐ Incomplete ☐ Incorrect

2. What do you understand to be the difference between the terms weight and mass? Provide an example to show the difference.

   ☐ Correct ☐ Incorrect

3. You have just been employed by a licensee who holds a licence for instruments of subclasses 6.1, 6.2, 6.3, 6.4 and 6.6. You have obtained a statement of attainment for instrument subclasses 6.3-6.4, but have yet to gain a statement of attainment for subclass 6.6. You have worked on automatic rail weighbridges for 6 years. Your employer asks you to repair and verify an automatic rail weighing instrument at a busy mine site, while his regular verifier is on long service leave. What should you do? Choose the single correct answer.

   a) ■ Repair and verify the instrument.
   b) ■ Repair and verify the instrument using the other verifier's verifier number.
   c) ■ Repair the instrument and leave the site, the site controller will know not to use the instrument until the regular verifier comes back to verify it, because it isn't marked with a verification mark.
   d) ■ Tell your employer that you are not competent to verify the instrument.

   ☐ Correct ☐ Incorrect

4. Consider the Regulation 13 certificate of verification given on the following page, **and** the relevant legislation, and answer the following questions that relate to it.

   a) What maximum permissible uncertainty would apply to the 500 kg standards? Choose the single correct answer.

      i. ■ ± 1 g
      ii. ■ ± 10 000 mg
      iii. ■ ± 53 333 mg
      iv. ■ ± 26 667 mg

      ☐ Correct ☐ Incorrect

   b) What is meant by the phrase ‘deemed equal to the denomination’?

      ☐ Satisfactory ☐ Incomplete ☐ Incorrect

Regulation 13 certificate of verification

Australian Government

National Measurement Institute

Certificate of Verification of a Reference Standard of Measurement in accordance with Regulation 13 of the *National Measurement Regulations 1999* (Cth) in accordance with the *National Measurement Act 1960* (Cth)

Certificate Number RN150860A

Replacement for Certificate Number RN150860 dated 1 April 2015 which has been cancelled.

Description of standard of measurement: Inspectors' Class 3 standard of mass: Set of cast iron rectangular weights, 23 × 1000 kg and 2 × 500 kg, 25 pieces

Permanent distinguishing marks: 1000 kg - NTM 55 to NTM 77, 500 kg - NTM 78 and NTM 79

Date of verification: 31 March 2015

Period of certificate: From date of verification until 31 December 2016

Value(s) of standard of measurement and accuracy of verification: Deemed equal to the denomination, in accordance with Regulations 30 and 31

Signature: G.P. Buckley

Name: Mr Greg Buckley

Date: 30 March 2016

Being a person with powers delegated by the Chief Metrologist acting under section 18D of the *National Measurement Act 1960* (Cth) in respect of regulation 13 of the *National Measurement Regulations 1999* (Cth), I hereby certify that the above standard is verified as a reference standard of measurement in accordance with the regulations.

This document may not be published except in full unless permission for the publication of an approved extract has been obtained in writing from the Chief Metrologist, National Measurement Institute

Test Method: NTM14.1

Signature: G.P. Buckley

Name: Mr Greg Buckley

NMI approved signatory

Date: 30 March 2016

NATA

Accredited for compliance with ISO/IEC 17025.

Accreditation Number 1.

The measurement results presented in this document are traceable to Australian standards.

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Australia

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5. Are pounds and tons legal units of measurement in Australia?

☐ Yes ☐ No

☐ Correct ☐ Incorrect

Written assessment (Subclass 6.5 specific questions)

Complete this section if you are being assessed for belt-weighers

1. Which weighing instrument does the pattern approval number 6/14D/13 relate to? Choose the single correct answer.

   a) ■ Avery ELY Belt Conveyor Weighing Instrument.
   b) ■ Quality Model 233 Self-indicating Counter Machine.
   c) ■ Control Systems Technology Model PFS4 Belt Weigher.
   d) ■ Ultra/Molenschot Model AB Automatic Hopper Weighing Instrument.

   ☐ Correct ☐ Incorrect

2. What is the required accuracy for a control instrument used to verify a belt weigher? Choose the single correct answer.

   a) ■ One third of MPE of the load applied.
   b) ■ Two thirds of max capacity.
   c) ■ Combined uncertainties of the weights used must not be more than one third of the MPE of the load applied.
   d) ■ At least 3 times more accurate than the belt weigher under test.

   ☐ Correct ☐ Incorrect

3. Consider whether the control instrument detailed below would be suitable for use in verifying the belt weigher detailed below. (Provide an explanation to support your answer, including any calculations.)

Control instrument:

Make*	Model*	NMI number *	Capacity or flow rate* (e.g. 60t or 30 l/m)	Verification scale interval
Accurate Systems	AS-DT1	6/14B/26	20 000 kg	10 kg

Belt weigher:

Make*	Model*	NMI number *	Capacity or flow rate* (e.g. 60t or 30 l/m)	Totalisation scale interval
Control Systems Technology	PCS2-3	6/14D/13	1100 t/h	0.01 t

☐ Satisfactory ☐ Incomplete ☐ Incorrect

4. Answer the following questions using these belt weigher specifications. Show any calculations you used with your answer.

- *Maximum flow rate = 800 t/h*
- *Maximum belt speed = 4.8 m/s*
- *Belt length = 200 m*
- *Accuracy class 0.5*
- *Scale interval (e) = 100 kg*

a) What is 2% of the load totalised in 1 hour at the maximum flow rate?

☐ Correct ☐ Incorrect

b) What is the load obtained at maximum flow rate in 1 revolution of the belt?

☐ Correct ☐ Incorrect

c) What is the load corresponding to the required number of scale intervals?

☐ Correct ☐ Incorrect

d) Based on answers a-c above, which of the values is the minimum totalised load of the belt weigher?

☐ Correct ☐ Incorrect

5. Using the information from question 4 above, answer the following questions relating to the zero load test. In each case, choose the single correct answer. There is space to show your calculations after each question.

a) What is the number of whole revolutions required for 3 minutes of operation at maximum speed? Choose the single correct answer.

i. ■ 2 revolutions
ii. ■ 4 revolutions
iii. ■ 5 revolutions
iv. ■ 6 revolutions

☐ Correct ☐ Incorrect

b) What is the number of whole revolutions required for the minimum totalised load to pass over the belt at maximum flow rate? Choose the single correct answer.

i. ■ 7 revolutions
ii. ■ 8 revolutions
iii. ■ 9 revolutions
iv. ■ 10 revolutions

☐ Correct ☐ Incorrect

c) What is the MPE, in terms of mass, for the increase in totalisation indication during the test?Choose the single correct answer.

i. ■ 0.05 t
ii. ■ ± 0.05 t
iii. ■ ± 0.046 t
iv. ■ ± 0.042 t

☐ Correct ☐ Incorrect

d) What is the maximum variation, in terms of mass, for the increase in totalisation indication during the test? Include any calculations used.

☐ Correct ☐ Incorrect

6. What material should be used for verification testing of a belt weigher? Choose the single correct answer.

a) ■ Whatever product is available
b) ■ The product/s marked on the data plate or a product/s with similar characteristics
c) ■ Grain
d) ■ Coal
e) ■ Sand

☐ Correct ☐ Incorrect

Continued on next page

7. You are verifying a belt weigher. What is the MPE for each weighing performance test run detailed in the following table? Insert your answers in terms of percentage and weight in the table below. Show all your calculations in the text box below the table.

Class	Test Load (control instrument)	Load Totalised (belt weigher)	± MPE (%)	± MPE (weight)	Pass/Fail
1	30.26 t	30.42 t			
0.5	25.48 t	25.53 t			
2	40.00 t	40.25 t			

☐ Satisfactory ☐ Incomplete ☐ Incorrect

8. The following differences are determined when completing a repeatability test for the purposes of verifying a belt weigher with an accuracy class of 0.5:

- Pair 1 – 0.02%
- Pair 2 – 0.20%
- Pair 3 – 0.10%.

Does the instrument pass the repeatability test? Provide an explanation to support your answer.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

9. What considerations should be made when making arrangements to verify a belt weigher and who should this be discussed with?

☐ Satisfactory ☐ Incomplete ☐ Incorrect

10. Whilst verifying a belt weigher, the site controller explains to you that the belt weigher is used for weighing sand and dirt. You notice from the data plate that the instrument is approved for grain, not sand and dirt. How would you address this with the user?

☐ Satisfactory ☐ Incomplete ☐ Incorrect

11. Which of the following would trigger the need to re-verify a belt weigher? Check all that apply.

    a. ☐ Replacement of a worn data plate
    b. ☐ Calibration adjustment of instrument
    c. ☐ Replacement of a load cell.
    d. ☐ Replacement of a roller with a like roller
    e. ☐ All of the above

☐ Satisfactory ☐ Incomplete ☐ Incorrect

12. Name 3 of the principal metrological components of a belt weigher. Briefly describe their function.

Component	Function

☐ Satisfactory ☐ Incomplete ☐ Incorrect

Ensure you also complete:

- **the relevant verification form task/s**
- **the relevant test report question/s**
- **instrument testing and provision of test reports**

Written assessment (Subclass 6.6 specific questions)

Complete this section if you are being assessed for automatic rail weighbridges

1. Which weighing instrument does the pattern approval number 6/14H/7 relate to? Choose the single correct answer.

   a) ■ Meridian Engineers Model ME-TRACKWEIGH®-1D In-motion Train Weighing Instrument.

   b) ■ Schenck Process Model MULTIRAIL Train Weighing-in-motion Instrument.

   c) ■ Parsons Hopper Weighing Instrument.

   d) ■ Trakblaze Model LTS10 Train Weighing-in-motion Instrument.

   ☐ Correct ☐ Incorrect

2. Determine if the following reference wagon weights and instrument indications are within MPE. The automatic rail weighbridge being tested has 200 kg scale intervals and is marked class 1 for train weighing and class 2 for wagon weighing, maximum wagon weight 115 t. Determine and record the actual error, the MPE and pass/fail result. Show all your calculations in the text box below the table.

Reference Wagon Weight(t)	Indication (t)	Error (t)	MPE(t)	Pass/Fail
94.4	95.2			
81.0	80.0			
110.6	110.2			
74.8	75.8			
64.0	63.2			
104.2	103.2			
23.0	23.4			
915.4 (12 wagons)	919.6			

☐ Satisfactory ☐ Incomplete ☐ Incorrect

3. You prepare test wagons for testing, loaded with coal, on Monday ready for testing on Wednesday. The wagons are kept in a siding and are covered by tarpaulins. On Tuesday night, there was a brief storm and when you arrive at the site on Wednesday morning, the tarps have blown off 2 of the 15 wagons being used for the test. The rail line and engine have been booked for use for the Wednesday, but won't be available for the rest of the week. What should you do? Choose the single best answer.

a) ■ Check that no water has entered the two wagons, and continue with the test if they are dry.

b) ■ Determine the weight of the 2 wagons before commencing testing.

c) ■ Continue regardless, the wagons are designed to drain water and there would be little impact on the weight of the train.

d) ■ Reschedule the test of the weighbridge to a time when you can determine the weight of all the wagons again.

☐ Correct ☐ Incorrect

4. You notice a client is using a rail weighbridge that operates by weighing individual wagon axles, to measure liquid loads. What would you do? Choose the single correct answer.

a) ■ Nothing provided the instrument is accurate.

b) ■ Remove the mark, as the instrument no longer meets the requirements for verification.

c) ■ Tell the controller of the site that the rail weighbridge is unsuitable for weighing liquid loads and they may be breaching trade measurement legislation.

d) ■ Issue a notice of non-compliance.

☐ Correct ☐ Incorrect

5. Which of these statements regarding the preparation of reference wagons is incorrect? Choose the single correct answer.

a) ■ The reference wagons shall reflect those normally weighed at the weighbridge.

b) ■ Reference wagons must be protected during storage and transportation in order to ensure there is no introduction of errors from environmental factors.

c) ■ They must not be more than 50 scale intervals.

d) ■ If the max and min reference wagon weights vary by more than 10% from that on the data plate, then the data plate must be adjusted to reflect the actual max and min reference wagon weights used to make up the test train.

☐ Correct ☐ Incorrect

6. Which of the following would trigger the need to re-verify an automatic rail weighbridge? Check all that apply.

a) ■ Replacement of a worn data plate

b) ■ Calibration adjustment of instrument

c) ■ Replacement of a weighing transducer.

d) ■ Replacement of the 'live' rails

e) ■ All of the above

☐ Satisfactory ☐ Incomplete ☐ Incorrect

7. Name 3 of the principal metrological components of an automatic rail weighbridge. Briefly describe their function.

Component	Function

☐ Satisfactory ☐ Incomplete ☐ Incorrect

Ensure you also complete:

- **the relevant verification form task/s**
- **the relevant test report question/s**
- **instrument testing and provision of test reports**

Written assessment (Subclass 6.9 specific questions)

Complete this section if you are being assessed for totalising hopper weighing instruments.

1. What is the name, current version number and release date for the national instrument test procedures used to verify totalising hopper weighers? Choose the single correct answer.

   a) ☐ NITP 6.1 to 6.4 First edition, second revision – January 2014.
   b) ☐ NMI R107 Discontinuous Totalising Automatic Weighing Instruments (Totalising Hopper Weighers) First edition, first revision July 2004.
   c) ☐ NITP 0 First edition – February 2015.
   d) ☐ NSC V1 Third edition – February 2004.

   ☐ Correct ☐ Incorrect

2. Which of the following material is required to be used for verification testing of a totalising hopper weigher? Check **all** that apply.

   a) ☐ The product/s marked on the data plate.
   b) ☐ The product the instrument is normally used for weighing.
   c) ☐ A product that is representative of the type of product normally weighed.
   d) ☐ Any product that is available.

   ☐ Correct ☐ Incorrect

3. Which weighing instrument does the pattern approval number 6/14B/25 relate to? Choose the single correct answer.

   a) ☐ Kotzur Model BW 15-4400-I Discontinuous Totalising Automatic Weighing Instrument.
   b) ☐ Accuweigh Model DW21 Discontinuous Totalising Automatic Weighing Instrument.
   c) ☐ Wide Bay Scales Model WBSDTH-200 Discontinuous Totalising Automatic Weighing Instrument.
   d) ☐ Intersystems Model BMW MASTERWEIGH INFINITY-780 Discontinuous Totalising Automatic Weighing Instrument.

   ☐ Correct ☐ Incorrect

4. Which of these statements best defines the term “target discrete load”? Choose the single correct answer.

   a) ☐ A pre-selected value that is equal to the minimum capacity of the instrument.
   b) ☐ A pre-selected value that is the same for all of the discrete load deliveries.
   c) ☐ A pre-selected value that is equal to 10x the minimum capacity of the instrument.
   d) ☐ The largest discrete load that can be weighed automatically.

   ☐ Correct ☐ Incorrect

5. Which of these statements best defines the term “minimum totalised load” (Σ_{min})? Choose the single correct answer.

   a) ☐ The minimum load the DTAWI can weigh without exceeding the MPE.
   b) ☐ The quantity below which the totalisation value is likely to have excessive relative errors.
   c) ☐ The pre-set value of the load in the weigh hopper that causes the flow to stop in each weighing cycle.
   d) ☐ The smallest discrete load that can be weighed automatically.

   ☐ Correct ☐ Incorrect

6. You observe the minimum totalised load (Σ_{min}) is not marked on the instrument. What is the minimum totalised load required for a class 0.2 totalising hopper weigher with the following characteristics? Choose the single correct answer. Show your decision making process, including any calculations, in the text box below.

- *Totalisation scale interval = 10 kg*
- *Discrete load target weight = 8 000 kg*
- *Minimum capacity = 5 000 kg*
- *Maximum capacity = 12 000 kg*

a) ☐ 40 000 kg
b) ☐ 5 000 kg
c) ☐ 10 000 kg
d) ☐ 8 000 kg

☐ Correct ☐ Incorrect

7. You are required to undertake a dynamic test of a totalising hopper weigher approved in certificate of approval number 6/14B/15 (standard pattern). The instrument data plate is marked with a minimum totalised load (Σ_{min}) of 15 000 kg.

   a) List the quantity, in kilograms, of the test material loads required to conduct the **dynamic tests** for this instrument in the table below and the discrete test loads used in each case. Include any calculations in the space below the table.
   b) List the MPE, in kilograms, for each test load

Test load (kg)	Discrete test load (kg)	MPE (kg)

☐ Satisfactory ☐ Incomplete ☐ Incorrect

   c) During verification testing of a class 0.5 totalising hopper weigher, the readings in the table below are observed. Please complete the table below to show the % error for each delivery, to 2 decimal places, and determine if the instrument is within the allowed MPE. Include any calculations in the space below the table.

Control Instrument Indication (t)	Instrument Totalised Indication (t)	Percentage Error	Pass/Fail
15.04	15.01		
59.88	60.03		
15.04	15.00		
59.92	59.99		

☐ Satisfactory ☐ Incomplete ☐ Incorrect

d) You are using the instrument under test (instrument described above) as the control instrument. Maximum capacity of the instrument is 20 t with no additive tare. What is the load required to conduct a control instrument eccentricity test? Choose the single correct answer.

i. ☐ 4.9 t
ii. ☐ 6.67 t
iii. ☐ 2.0 t
iv. ☐ 5.0 t

☐ Correct ☐ Incorrect

e) What is the MPE for this test (in t)?

☐ Correct ☐ Incorrect

8. If at first, the control instrument does not meet the accuracy requirements, what can you do to improve the accuracy of the instrument? Check **all** that apply.

a) ☐ Use changeover masses.
b) ☐ Use the increased resolution function.
c) ☐ Nothing, you need to find another control instrument.
d) ☐ Decrease load size.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

10. During a routine service check, you notice an instrument has a different software version to that detailed in the approval and as installed when last verified. What would you do and why?

☐ Satisfactory ☐ Incomplete ☐ Incorrect

11. Which of the following would trigger the need to re-verify a totalising hopper weigher? Check all that apply.

a) ☐ Replacement of a worn data plate
b) ☐ Calibration adjustment of instrument
c) ☐ Replacement of a load cell.
d) ☐ Replacement of a printer
e) ☐ All of the above

☐ Satisfactory ☐ Incomplete ☐ Incorrect

12. Name 5 of the principal metrological components of a totalising hopper weigher. Briefly describe their function.

Component	Function

☐ Satisfactory ☐ Incomplete ☐ Incorrect

Ensure you also complete:

- **the relevant verification form task/s**
- **the relevant test report question/s**
- **instrument testing and provision of test reports**

Written assessment (18.2 – Point of sale systems specific questions)

Complete this section if you are being assessed for point of sale systems.

1. What is the name, current version number and release date for the national instrument test procedures used to verify point of sale systems? Choose the single correct answer.

   a) ☐ NITP 6.1-6.4 First edition, second revision - January 2014.
   b) ☐ NMI M 7 Pattern Approval Specifications for point of sale systems first edition, first revision – June 2012.
   c) ☐ General Supplementary Certificate of Approval No S1/0B – updated 18 January 2013.
   d) ☐ NITP 0 First edition - February 2015.

   ☐ Correct ☐ Incorrect

2. Refer to the supplementary certificate of approval NMI S577. If you were conducting an initial verification of this POS system, are there any additional checks required to ensure the feature described in the fifth dot point of 'Key Features 1.1' complies with its certificate of approval? Choose the single correct answer.

   a) ☐ Inspect the POS to see that it has a tare button.
   b) ☐ Weigh an object and check the POS system display deducts 3 g from the weight displayed on the weighing instrument.
   c) ☐ Program a pre-set tare value into a PLU; weigh an object and check the POS system display deducts the pre-set amount from the weight displayed on the weighing instrument.
   d) ☐ There are no specific checks required for this feature.

   ☐ Correct ☐ Incorrect

3. In addition to the NITP, what other document/s specify **tests** required when verifying POS systems? Check **all/any** that are applicable.

   a) ☐ NMI M7.
   b) ☐ Supplementary certificate of approval for the POS system.
   c) ☐ Certificate of approval for the connected instrument.
   d) ☐ Servicing licensee's quality manual.
   e) ☐ NMI S1/0B.

   ☐ Satisfactory ☐ Incomplete ☐ Incorrect

4. What documents would you refer to when deciding what equipment and/or items you need to verify a POS system? You should include 2 items in your answer.

   ☐ Satisfactory ☐ Incomplete ☐ Incorrect

5. Name one item of test equipment you would need when verifying POS systems.

   ☐ Correct ☐ Incorrect

6. What are the principal components of a POS system? Your answer should include at least **3** components.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

7. Where would you place a verification mark on the POS system approved as supplementary certificate of approval S632? Choose the single correct answer.

a) ☐ On the weighing instrument to which the POS system is connected.
b) ☐ On the customer's monitor.
c) ☐ On the printing device.
d) ☐ On the POS controller, adjacent to the data plate.
e) ☐ On both of the two components detailed at c and d above.
f) ☐ On all the components at a, b, c and d above adjacent to the data plate.

☐ Correct ☐ Incorrect

8. You have just been employed by a licensee who holds a licence for instruments of licence subclasses 18.2, 6.1, 6.2 and 6.3. You have a statement of attainment for instruments of subclass 6.1 and 6.2 and used to install POS systems about 10 years ago. Your employer asks you to go and install and verify a POS system at a local supermarket to replace a defective system. It is an urgent job and the usual POS system verifier is on leave. What should you do? Choose the single correct answer.

a) ☐ Install and verify the POS system using your verifier number.
b) ☐ Install and verify the POS system using the other verifier's verification number.
c) ☐ Tell your employer that you are not competent to verify the POS system.
d) ☐ Install the POS system and leave without verifying it, the customer will know not to use it until a verification mark has been applied.

☐ Correct ☐ Incorrect

9. Which of the following functions can an approved POS system connected to a weighing instrument do? Check **any/all** that apply.

a) ☐ Calculate the price of a measured item
b) ☐ Modify the measurement indication on the connected measuring instrument
c) ☐ Display a weight that has had a pre-set tare subtracted
d) ☐ Print a total price for a combination of weighed and unweighed items
e) ☐ Control the authorisation of fuel dispensers.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

10. Which of the following is an acceptable indication of the net weight of a measured item? Choose the single correct answer.

    a) ☐ 0.125 kg Nett
    b) ☐ 0.125 kg Nt
    c) ☐ 0.125 kg tare
    d) ☐ 0.125 kg Net

☐ Correct ☐ Incorrect

11. In your own words, describe the steps you would take to establish that a POS system that allows pre-determined measurement data to be entered manually (e.g. NMI S593) complies with its certificate of approval. Write your answer below.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

12. Consider the image of a **customer display** shown below. Describe, as dot points, why this display does not meet the requirements for POS system displays. **Be sure to identify ALL issues.**

Note: The height of the characters is 8 mm and the reading distance is 0.9 m.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

13. Consider the image of the docket shown below. Describe as dot points how this docket shows that it was produced on a non-compliant POS system? **Be sure to identify ALL issues.**

Note: The smallest font height of the docket is 2 mm.

ABC Supermarket
Rattle-by Street
Nimbin, 2480
Tel 02 4599 8799
Tax Invoice
ABN 99 998 786 690
Open 7 days - 6am to 12 Midnight
Your cashier today- Harry
Register 2

Fountain Coffee 250GM*	**3.49**
Pink lady apples	**1.04**
0.297 kg @ $3.50/	
Jane's Melting Moments 200 g*	**4.99**
Desiree potatoes	**3.63**
1.82 kg @ $1.99	
Freddo Chocolate	**1.00**
Subtotal	**$ 14.17**
Rounding	- 0.03
Total	$14.20
EFT	$14.20
* is GST item GST	$0.45
3/2/23 14:03:42	76897

☐ Satisfactory ☐ Incomplete ☐ Incorrect

14. Consider the image of the label shown below. Describe, as dot points, where this label does not meet the legal requirements for labels printed from a POS system? **Be sure to identify ALL issues.** (Ignore information relating to date and storage requirements)

    Note: The smallest font height on the label is 2 mm.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

15. You are asked to install a weighbridge POS system – approval no. NMI S643 – into a small open cabin adjacent to a weighbridge at a site that weighs grain in western New South Wales.

    a) What environmental factors may impact on the POS system? List **at least 3** factors below.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

    b) What recommendations would you make to the client about the proposed installation to minimise the impact of those factors?

☐ Satisfactory ☐ Incomplete ☐ Incorrect

16. During a routine service check of a POS system (NMI S650) at a supermarket, you notice that the format of the printed dockets has changed so that all the printing is now in upper case. Describe what you would do/say to the store manager?

☐ Satisfactory ☐ Incomplete ☐ Incorrect

Verification form task

Download a 'Certificate of verification or notice of non-verification of a measuring instrument' form (Form 6) from the Verifying measuring instruments page of the Industry.gov.au website **for each task.**

DO NOT print the form out.

Complete **all required fields** into the **electronic** form using the information given below, including the appropriate instrument performance code.

If you are completing more than one of the subclasses 6.5, 6.6 or 6.9, you may complete **just one** form 6 relating to one of the subclasses you are completing. If you are being assessed for 18.2 at this time, you should also complete a form 6 with the details given for 18.2 below.

Once you have completed the form/s, scan it/them, named as described in the instructions, and include in your submitted recognition kit.

For subclasses 6.5

- Verification carried out at Seasafe Ltd, Melbourne Port Terminal, 18-20 Enterprise Rd, West Melbourne, VIC 3003, ABN 111122223333
- Verification carried out on the 15/03/23 by Jeff Smith Verifier number VR-00897.
- Licensee is Beltsaweigh Pty Ltd SL-0666, Licensee's Mark is BAW, Licensee's ABN is 111122223333.
- Instrument Verified is a Control Systems Technology Model PFS4 Belt Weigher, approval number NMI 6/14D/13, serial number 123456, maximum flowrate 1400 t/h.
- Instrument was verified following replacement of the idler rollers.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

For subclasses 6.6

- Verification carried out at Grainport, 42 Port Drive, Port of Brisbane, QLD, 4178, ABN 9999888877776666
- Verification carried out on the 6/04/23 by Jessie Smith Verifier number VR-00897.
- Licensee is Railstheweigh Pty Ltd SL-0600, Licensee's Mark is RTW, Licensee's ABN is 111122223333.
- Instrument Verified is a Chronos Richardson Model Railweight CR8200 rail weighbridge, 60 t capacity, approval number NMI 6/10B/47A, serial number 123456.
- Instrument was verified at customer request, annual verification, was within MPE.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

For subclasses 6.9

- Verification carried out at Golden Grain 2544 Countrylane Rd, Farmville WA, 6999, ABN 987654321111
- Verification carried out on the 24/02/23 by John Smith Verifier number VR-00897.
- Licensee is Superweigh Pty Ltd SL-0544, Licensee's Mark is SWC. Licensee's ABN 12345612322.
- Instrument Verified is an Accurate Systems Model AS-DT1 Discontinuous Totalising Automatic Weighing Instrument, max capacity 20 000 kg, approval number NMI 6/14B/26, serial number S456789.
- Instrument was verified following replacement of a faulty load cell.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

For subclass 18.2

(**Only** if you wish to be assessed for the separate unit of competency MSMTMVER302 Verify simple measuring instruments, for POS systems).

- Verification carried out at Golden Grain 2544 Countrylane Rd, Farmville WA, 6999, ABN 987654329876
- Verification carried out on the 3/03/23 by Mohammad Rizwan, verifier number VR-00897.
- Licensee is Superweigh Pty Ltd SL-0544, Licensee's Mark is SWC. Licensee's ABN 12345612322.
- Instrument Verified is a Graincorp Model GrainTransact Site Edition (GTSE) Point of Sale (POS) System, supplementary approval number NMI S693, serial number GTSE10023.
- Instrument was verified following installation of new POS system connected to a discontinuous totalising automatic hopper weigher of maximum capacity 20 000 kg.

☐ Satisfactory ☐ Incomplete ☐ Incorrect

Test report questions (subclasses 6.5, 6.6 & 6.9)

Complete any test report questions specific to the subclass/es of instrument you wish to be assessed for. (None required for 18.2)

Test report question (Subclass 6.5 - Belt-conveyor weighing instruments)

Complete the test report for 6.5 belt weighers, using the information given and that ascertained from the approval document/s. Where any calculations are required to complete any parts of the test report, then complete the calculations so you can fully populate the test report form. **At the bottom of the form state whether the instrument has passed or failed and give reasons for any failure**.

Assume that ALL tests required to be completed for the instrument for INITIAL verification have been carried out and passed, where not otherwise described below, and complete the form appropriately. If you do not currently have a verifier number, use the verifier number VR-09999.

Details:

Verification carried out at Coal Exports, 46-52 Hardwood Drive, Trumptown, QLD 4999 on 14 December 2022

Contact person - Manager Geoff Bates

Instrument owned by Coal Exports Pty Ltd T/A Coal Exports, 1234 Queen St, Brisbane, QLD 4000

Instrument verified – Control Systems Technology Model PFS4-4 belt weigher, approval number NMI 6/14D/13 serial number 783689, Controller number IPC-14-SC, load cell approval number NMI S453, Accuracy class 1 with a maximum flow-rate of 1 100 t/h.

Instrument data:

Visual inspection: All components are as per certificate of approval and the instrument is in good condition, with no adverse findings (No auxiliary device connected). Belt length 459.16 m.

Data plate markings Single data plate permanently attached to the outer cover of the totaliser**:**

Pattern approval mark– belt weigher – NMI 6/14D/13

Pattern approval mark – load cells – NMI S453

Manufacturer's identification or trade mark – CST

Type designation (model number) – PFS4-4

Serial number - 783689

Accuracy class - 1

Maximum flow rate – 1 100 t/h

Minimum flow rate – 220 t/h

Minimum totalised load – 24 t

Totalisation scale interval = 0.01 t

Maximum capacity of weighing unit - 1000 kg

Belt speed – 3 m/s

Weigh length – 3.6 m

Temperature range - -10 °C/40 °C

Products to be weighed – Coal

Determine if the control instrument is suitable

Determine whether the control instrument used is suitable, using the relevant section/s of the test report. Complete all remaining parts of the test report, **even if** you find the control instrument is unsuitable.

Control instrument details:

Twin-deck Class III weighbridge, 2 x 30 t maximum capacity with 0.01 t scale interval (combined capacity 60 t)

Indicator approval NMI S463 Load cell approval NMI S410

NOTE: The vehicle used to transport the test load is a dump truck with a tare weight of approximately 25 t that sits across the 2 weighbridge decks. We are going to use a test load of 50 t carried in 2 draughts.

Assume each deck carries about half the weight of the vehicle.

Test results:

Assume the control instrument is suitable regardless of your findings above, and that it was tested immediately prior to testing of the belt weigher and was within the required MPE (test report for control instrument testing will not be completed for the purposes of this kit, but must be completed when instruments are verified).

Totaliser indicator re-set to zero at start of each run.

Test runs completed:

At maximum feeding flowrate:

Pair Number	Run number	Draught number	Gross	Tare	Indicated totalised load
1	1	1	47.27	22.65	**-**
1	1	2	47.30	22.68	**49.32**
1	2	1	46.73	22.68	**-**
1	2	2	46.46	22.66	**47.94**
2	1	1	46.71	22.66	**-**
2	1	2	46.70	22.65	**48.15**
2	2	1	46.97	22.68	**-**
2	2	2	46.90	22.65	**48.56**

At minimum feeding flowrate:

Pair Number	Run number	Draught number	Gross	Tare	Indicated totalised load
1	1	1	47.56	22.66	-
1	1	2	47.65	22.65	**49.93**
1	2	1	47.50	22.67	-
1	2	2	47.59	22.68	**49.77**
2	1	1	47.32	22.68	-
2	1	2	47.45	22.68	**49.46**
2	2	1	45.88	22.65	-
2	2	2	46.94	22.65	**48.53**

At mid-point feeding flowrate:

Pair Number	Run number	Draught number	Gross	Tare	Indicated totalised load
1	1	1	46.95	22.65	-
1	1	2	46.87	22.67	**48.54**
1	2	1	47.42	22.66	-
1	2	2	47.82	22.66	**47.83**

Zero load test data

Test run 1:

Initial indication 0.00 t

Final indication 0.01 t

Maximum indication 0.07 t

Minimum indication -0.06 t

Test run 2:

Initial indication 0.00 t

Final indication 0.01 t

Maximum indication 0.06 t

Minimum indication -0.05 t

Test report 1 for belt weighers

Test report reference number | Date of test

Type of test (tick one) ☐ Verification ☐ In-service inspection

For in-service inspection record the verification mark

Name of owner/user

Address of owner/user

Name of contact on site

Address where belt weigher is located

Manufacturer's name or mark | Importer's name or mark (if applicable)

Model | Serial number | Certificate/s of approval number

Belt conveyor number (if applicable) | Controller/integrator number (if applicable)

Load cell number (if applicable) | Basework model number (if applicable)

Accuracy class (check correct one) ☐ 0.5 ☐ 1 ☐ 2

Maximum flow rate (Q_{max})		kg/h ☐ or t/h ☐
Minimum flow rate (Q_{min})		kg/h ☐ or t/h ☐
Minimum totalised load (Σ_{min})		kg ☐ or t ☐
Minimum test load (Σ_t)		kg ☐ or t ☐
Maximum capacity (Max)		kg ☐ or t ☐
Totalisation scale interval (d)		
Belt speed/s		m/s
Weigh length		m
Temperature range (if applicable)		
Designation of product/s		

Number of whole belt revolutions required for zero testing

Test report 1 for belt weighers

Does the belt weigher comply with its certificate/s of approval?	
Is the belt weigher used in an appropriate manner?	
Are all mandatory descriptive markings clearly and permanently marked on data plate?	
Is the data plate fixed on the weighing system?	
Is the belt weigher in a suitable operational condition?	
Are there any apparent obstructions to the operation of the belt weigher?	
Is the indicating device accessible during normal operation?	
Is the belt weigher fully assembled?	
Is the belt weigher fixed into the position for its intended use?	
Is the belt weigher adequately protected against any other influence likely to affect its performance?	
For additional indicating devices: do they exactly repeat the information on the primary indication and does any device for price computation and/or ticket/label printing comply with the requirements of the General Supplementary Certificates S1/0/A or S1/0?	

Determining the Value of the Minimum Totalised Load (clause 4.3)

(calculations required for initial verification/certification and when site conditions change)

The minimum totalised load is not less than the greatest value below, namely _____ t or kg

2% of the load totalised in 1 hour at maximum flow rate = 0.02 × Q_{max} = 0.02 × _____	= _____ t or kg
Load obtained at maximum flow rate in one revolution of the belt = Q_{max} × [belt length (m)/speed (m/s)]/3600 = _____ ×[_____ / _____]/3600	= _____ t or kg
Load corresponding to the appropriate number of totalisation scale intervals from Table 1 = number totalisation scale intervals × value of totalisation scale interval = _____ × _____	= _____ t or kg

Determining the Value of the Minimum Test Load and the Test Load (clause 4.4)

(calculations required for initial verification/certification and when site conditions change)

The minimum test load is the greatest value below, namely _____ t or kg

The test load is a nominated value equal to, or greater than, the minimum test load _____ t or kg

2% of the load totalised in 1 hour at maximum flow rate = 0.02 × Q_{max} = 0.02 × _____	= _____ t or kg
Load obtained at maximum flow rate in one revolution of the belt = Q_{max} × [belt length (m)/speed (m/s)]/3600 = _____ × [_____ / _____]/3600 Not applicable when the larger of the values above and below are obtained over a whole number of belt revolutions	= _____ t or kg
Load corresponding to the appropriate number of totalisation scale intervals from Table 1 = number totalisation scale intervals × value of totalisation scale interval = _____ × _____	= _____ t or kg
Load corresponding to three times the MPE of the control instrument = scale interval of the control instrument × 3/percentage MPE from Table 4 = _____ × 3/ _____	= _____ t or kg

Weighing Performance (clause 4.6) and Repeatability (clause 4.7) – Test report 1 for belt weighers

Copy this page for each mode being tested

Test load ☐ Coal ☐ Grain ☐ Other _____ Direction _____ Belt speed _____ m/s

Allowable MPE for weighing performance from Table 4 _____ %

Allowable MPE for repeatability (the absolute MPE for weighing performance) _____ %

	Feeding flow rate (kg/h or t/h)	Test pairs and run number	Control instrument (t or kg)										Belt weigher (t or kg)			Weighing performance		Repeatability	
			Mass of each draught if transfer vehicle used									Mass test load (B)	T_s	T_f	Mass test load ($T_f - T_s$) (A)	Error (A – B)/ B × 100 (%)	Pass/ fail	Difference between relative errors (%)	Pass/ fail
			Draught 1			Draught 2			Draught 3										
			Gross	Tare	Mass	Gross	Tare	Mass	Gross	Tare	Mass								
Q_{max}		1																	
		2																	
		1																	
		2																	
Q_{min}		1																	
		2																	
		1																	
		2																	
$Q_{50\%}$		1																	
		2																	
$Q_{80\%}$		1																	
		2																	
$Q_{60\%}$		1																	
		2																	
$Q_{40\%}$		1																	
		2																	
$Q_{20\%}$		1																	
		2																	

Zero load test (clause 4.5) – Test report 1 for belt weighers

Time (in min) for one revolution of the belt =[belt length(m)/speed(m/s)]/60 = (/)/60 = min

Therefore the number of whole belt revolutions that would occur in a period close to 3 min is whole belt revolutions

The number of whole belt revolutions required to weigh the minimum totalised load at maximum flowrate = [minimum totalised load (t)/maximum flowrate (t/h)]/time per revolution (h) = (/)/ =

Allowable MPE for variation of the indication at zero t or kg
(amount of product that will pass over the belt during test × appropriate percentage from Table 2)

Test number	Number of whole belt revolutions	Duration of test	Initial indication (I_1)	Final indication (I_2)	Difference ($I_2 - I_1$)
1					
2					

Allowable MPE for variation of the totalisation indicator t or kg
(amount of product that will pass over the belt during test × appropriate percentage from Table 3) Note: Only applies when the number of whole belt revolutions is less than or equal to three

Test number	Initial indication (I_1)	Maximum indication (I_{max})	Minimum indication (I_{min})	$I_1 - I_{max}$ (A)	$I_1 - I_{min}$ (B)
1					
2					
Result	☐ **Pass** ☐ **Fail**				

Test results

Zero load test (clause 4.5)	☐ Pass ☐ Fail
Weighing performance (clause 4.6)	☐ Pass ☐ Fail
Repeatability (clause 4.7)	☐ Pass ☐ Fail
Overall result	☐ **Pass** ☐ **Fail**

Inspector's/verifier's name Identification number

Comments

Test report 2 for control instruments

Test rep Calculation to determine if the control instrument is suitable for use and meets the accuracy requirements

Complete:

- section A when the test load is either fed directly onto the belt conveyor, or transferred in a single draught, to or from the control instrument;
- section B when the test load is transferred in multiple draughts to or from the control instrument, which is a single-platform weighbridge;
- section C when the test load is transferred in multiple draughts to or from a control instrument, which is a multi-platform weighbridge;
- section D when the test load is transferred in a single draught to or from a control instrument, which is a multi-platform weighbridge;
- section E when the appropriate calculation in sections A to D has shown that the control instrument is bordering on being suitable and you need to use a more precise calculation; and
- section F when you need to determine suitability using change points.

Table 5. MPEs for loads, m, expressed in verification scale intervals, e

MPEs	Class 3	Class 4
±0.5e	$0 \leq m \leq 500$	$0 \leq m \leq 50$
±1e	$500 < m \leq 2\,000$	$50 < m \leq 200$
±1.5e	$2\,000 < m \leq 10\,000$	$200 < m \leq 1\,000$

Method 1 — Calculations NOT using change points

Section A When the test load is either fed directly onto the belt conveyor, or transferred in a single draught, to or from the control instrument (Σ_t is the minimum test load)

Part 1. Accuracy requirements for the control instrument [(MPE%/100) × Σ_t × ⅓]				
Test load (not less than Σ_t)	Accuracy class of belt weigher	MPE from Table 4	MPE mass value	Accuracy requirement (⅓ MPE of belt weigher)
		±	±	±
Part 2. MPE of the control instrument				
Mass of test load or total load	Verification scale interval (e)	Number of verification scale intervals	MPE from Table 5	MPE mass value
			±	±
Does the control instrument meet the accuracy requirements? Note: MPE of control instrument must be ≤⅓ MPE of belt weigher				

Section B When the test load is transferred in multiple draughts to or from the control instrument, which is a single-platform weighbridge (Σ_t is the minimum test load)

Part 1. Accuracy requirements for the control instrument [(MPE%/100) × Σ_t × ⅓]				
Test load (not less than Σ_t)	Accuracy class of belt weigher	MPE from Table 4	MPE mass value	Accuracy requirement (⅓ MPE of belt weigher)
		±	±	±

Part 2. MPE of the control instrument					
Mass of resultant load for each draught		Verification scale interval (e)	Number of verification scale intervals	MPE from Table 5	MPE mass value for each draught
1				±	±
2				±	±
3				±	±
4				±	±
5				±	±
6				±	±
			Total MPE of the control instrument		±
Does the control instrument meet the accuracy requirements? Note: MPE of control instrument must be ≤⅓ MPE of belt weigher					

Section C When the test load is transferred in multiple draughts to or from a control instrument, which is a multi-platform weighbridge (Σ_t is the minimum test load)

Part 1. Accuracy requirements for the control instrument [(MPE%/100) × Σ_t × ⅓]				
Test load (not less than Σ_t)	Accuracy class of belt weigher	MPE from Table 4	MPE mass value	Accuracy requirement (⅓ MPE of belt weigher)
		±	±	±

Part 2. MPE of the control instrument					
Mass of total load for each draught (dr) and platform (plat)		Verification scale interval (e)	Number of verification scale intervals	MPE from Table 5	MPE mass value for each draught and platform
Dr 1, plat 1				±	±
Dr 1, plat 2				±	±
etc				±	±
Dr 2, plat 1				±	±
Dr 2, plat 2				±	±
etc				±	±
Dr 3, plat 1				±	±
Dr 3, plat 2				±	±
etc				±	±
Dr 4, plat 1				±	±
Dr 4, plat 2				±	±
etc					
			Total MPE of the control instrument		±
Does the control instrument meet the accuracy requirements? Note: MPE of control instrument must be ≤⅓ MPE of belt weigher					

Section D When the test load is transferred in a single draught to or from a control instrument, which is a multi-platform weighbridge (Σ_t is the minimum test load)

Part 1. Accuracy requirements for the control instrument [(MPE%/100) × Σ_t × ⅓]				
Test load (not less than Σ_t)	Accuracy class of belt weigher	MPE from Table 4	MPE mass value	Accuracy requirement (⅓ MPE of belt weigher)
		±	±	±

Part 2. MPE of the control instrument				
Mass of total load for each platform	Verification scale interval (e)	Number of verification scale intervals	MPE from Table 5	MPE mass value for each platform
1			±	±
2			±	±
3			±	±
4			±	±
5			±	±
		Total MPE of the control instrument		±
Does the control instrument meet the accuracy requirements? Note: MPE of control instrument must be ≤⅓ MPE of belt weigher				

Section E When the appropriate calculation in sections A to D has shown that the control instrument is bordering on being suitable and you need to use a more precise calculation (Σ_t is the minimum test load, E_c is the possible error of the control instrument and $\sqrt{N}$ is an adjustment for the probable error of N partial weightings)

Part 1. Accuracy requirements for the control instrument [(MPE%/100) × Σ_t × ⅓]				
Test load (not less than Σ_t)	Accuracy class of belt weigher	MPE from Table 4	MPE mass value	Accuracy requirement (⅓ MPE of belt weigher)
		±	±	±

Part 2.Theoretical accuracy of the control instrument ($\sqrt{N} \times E_c$)	
Number of weighings (N) (one gross, one tare for each load) N = 2 × Σ_t/vehicle capacity = 2 × / =	
Load expressed in verification scale intervals (m) m = vehicle gross load/verification scale interval / =	
Possible error of the control instrument (E_c) for class 3 instruments: if 0 ≤ m ≤ 500 then $E_c = \pm 0.5 \times e$ = ± × = if 500 ≤ m ≤ 2000 then $E_c = \pm 1.0 \times e$ = ± × = if 2 000 ≤ m then $E_c = \pm 1.5 \times e$ = ± × =	±
Theoretical mass value ($\sqrt{N} \times E_c$) = √ × ± =	±
Does the control instrument meet the accuracy requirements? Note: (MPE%/100) × Σ_t × ⅓ ≥ $\sqrt{N} \times E_c$	

Method 2 — Calculation using change points

Section F When you need to determine suitability using change points

Note: When change points are used to determine the suitability of the control instrument then the actual value of each test load shall also be determined using change points.

Test load or partial test load ID	P = I + 0.5e – ΔL			E = P – L			% of L (t or kg)	Maximum error acceptable (⅓)
	I	0.5e	ΔL	P	L(=I)	E		
							±	±
							±	±
							±	±
							±	±
							±	±
Does the control instrument meet the accuracy requirements?							☐ **Yes** ☐ **No**	

Test load value = (I + 0.5e – E) – ΔL

Test load ID	(I + 0.5e – E) – ΔL				Test load value (t or kg)
	I	0.5e	E	ΔL	

Test report question (Subclass 6.6 - Automatic rail weighbridges)

Complete the test reports for automatic rail weighbridges, provided below, using the information provided and that ascertained from the approval document/s. Where any calculations are required to complete any parts of the test report, then complete the calculations so you can fully populate the test report form. In the comments part of the form, state whether the instrument has passed or failed and give reasons for any failure.

Scan the completed forms and include them with your recognition kit.

Assume that ALL tests required to be completed for the instrument for INITIAL verification have been carried out and passed, where not described below, and complete the form appropriately. If you do not currently have a verifier number, use the verifier number VR-09999.

Details:

Verification carried out at Coal Exports, 46-52 Hardwood Drive, Trumptown, QLD 4999 on

12 February 2023.

Contact person - Manager Geoff Bates

Instrument owned by Coal Exports Pty Ltd T/A Coal Exports, 1234 Queen St, Brisbane, QLD 4000

Instrument data:

Visual inspection: All components are as per certificate of approval and the instrument is in good condition, with no adverse findings. Auxiliary indicator present adjacent to the weighbridge.

Data plate markings:

Manufacturer's name – Meridian Engineers

Importer's name or mark – Meridian Engineers

Model designation – TRACK-WEIGH Model 1A

Serial number – 4678

Pattern approval mark – NSC 6/10B/71

Accuracy class

- *Train weighing – 1*
- *Wagon weighing – 2*

Maximum capacity (axle) 25 t

Minimum capacity (axle) 3.75 t

Scale interval d 100 kg

Max wagon weight 100 t

Min wagon weight 15 t

Max operating speed Vmax 6 km/h

Min operating speed Vmin 0.1 km/h

Max no. wagons per train - 52

Determine if the control instrument is suitable

Determine whether the control instrument used is suitable, using the relevant section/s of the test report. Complete all remaining parts of the test report, **even if** you find the control instrument is unsuitable.

Control instrument details:

Static rail weighbridge able to weigh whole wagon maximum capacity 120 t, scale interval 0.05 t, minimum capacity 5 t. Wagon weight minimum capacity 15 t, maximum capacity 110 t. Each wagon has a twin axle at each end. Control instrument tested within 7 days of testing the rail weighbridge.

Determine whether the control instrument is suitable to use without using change points.

Test results:

Assume the control instrument is suitable regardless of your findings above, and that it was tested immediately prior to testing of the automatic rail weighbridge, and was within the required MPE. (A test report for control instrument testing will not be completed for the purposes of this kit, but must be completed when instruments are verified)

Wagon weights - determined using change points.

Reference wagon number	Position in train	Wagon identification number	Known mass of wagon (t)	RUN 1 (t)	RUN 2 (t)	RUN 3 (t)	RUN 4 (t)
1	5	**51064**	**100.00**	100.10	100.20	100.00	100.60
2	6	**51065**	**99.00**	99.10	99.10	99.40	98.60
3	11	**50690**	**100.20**	100.40	100.40	100.60	100.10
4	12	**50691**	**100.60**	100.30	100.50	100.40	100.60
5	17	**50968**	**99.50**	99.50	99.30	99.40	99.40
6	18	**50969**	**100.40**	100.70	100.60	100.60	100.50
7	23	**49976**	**98.60**	98.40	98.10	98.50	98.40
8	24	**49977**	**90.50**	90.30	89.80	90.50	90.30
9	33	**51056**	**97.60**	97.30	97.20	97.60	97.60
10	34	**51057**	**96.50**	96.50	96.40	96.60	96.40
11	39	**51114**	**107.00**	107.10	107.00	107.10	107.20
12	40	**51115**	**98.40**	98.60	98.40	98.60	98.70
13	45	**51426**	**79.80**	79.80	79.70	79.80	79.70
14	46	**51427**	**80.00**	79.80	79.80	79.80	79.80
15	51	**51004**	**77.80**	77.70	77.80	77.80	77.90
Additional comments:				**Run 1** at 5 km/hr	**Run 2** at 3 km/hr	**Run 3** at 0.7 km/hr	**Run 4** at 0.7 km/hr

Test report 1 for weighbridges

Test report reference number | Date of test

Type of test (tick one) ☐ Verification ☐ In-service inspection

For in-service inspection record the verification mark

Name of owner/user

Address of owner/user

Name of contact on site

Address where weighbridge is located

Manufacturer's name or mark

Importer's name or mark (if applicable)

Model | Serial number

Certificate/s of approval number

Accuracy class for wagon weighing (select correct one) ☐ 0.2 ☐ 0.5 ☐ 1 ☐ 2

Accuracy class for train weighing (select correct one) ☐ 0.2 ☐ 0.5 ☐ 1 ☐ 2

Accuracy class, other (if applicable)

Maximum capacity (Max) kg or t | Minimum capacity (Min) kg or t

Scale interval (d) kg or t

Maximum wagon weight kg or t

Minimum wagon weight. kg or t

Maximum operating speed (v_{max}) km/h

Minimum operating speed (v_{min}) km/h

Maximum number of wagons per train (n_{max})

Minimum number of wagons per train (n_{min})

Electric power supply voltage V | Electric power supply frequency Hz

Not to be used for liquid products (if applicable)

Direction of weighing (if applicable)

Scale interval of stationary load (if applicable) kg or t

Supplementary and other markings (if applicable)

Test report 1 for weighbridges

Does the weighbridge comply with its certificate/s of approval?	
Is the weighbridge used in accordance with its certificate/s of approval?	
Are all mandatory descriptive markings clearly and permanently marked on data plate?	
Is the weighbridge in a suitable operational condition?	
Are there any apparent obstructions to the operation of the weighbridge?	
Is the indicating device accessible during normal operation?	
Is the headwork protected against any other influence likely to affect its performance?	
For the rail line in continuous systems — are the approaches and departures: securely fixed to the railway sleepers, surveyed regularly to confirm the vertical deflection is not excessive, and tamped if survey shows vertical deflection to be excessive?	
For the rail line in continuous systems — are the rail sleeper spacings positioned to specifications in relation to the transducers?	
For the rail line in continuous systems — is there at least 20 mm clearance between the transducer rail and ballast?	
For the rail line in non-continuous systems — are the approaches and departures in the same plane as the weighbridge?	
For the rail line in non-continuous systems — are the approaches and departures in the same plane as the weighbridge?	
For the rail line in non-continuous systems — are the rail lines positioned such that there is no excessive space between the live and dead rails?	
Are the rail sleeper spacings positioned to specifications in relation to the transducers?	
Is there at least 20 mm clearance between the transducer rail and ballast?	
For additional indicating devices: do they exactly repeat the information on the primary indication and does any device for price computation and/or ticket/label printing comply with the requirements of the General Supplementary Certificates S1/0/A or S1/0?	

Test report 1 for weighbridges

Weighing performance

Number of reference wagons _____ Number of non-reference wagons _____

Number of locomotives _____ Position of locomotives _____

Number and description of directions

Maximum operating speed _____ km/h Minimum operating speed _____ km/h

Other speeds: _____ km/h _____ km/h _____ km/h _____ km/h

Full load _____ t or kg Empty load _____ t or kg

Other loads _____ t or kg _____ t or kg _____ t or kg _____ t or kg

Allowable MPE for **wagon** weighing _____

(greatest value below, rounded to nearest scale interval) ± _____ t or kg

MPE from Table 2 × reference wagon weight	Reference wagon 1	± _____ t or kg
	2	± _____ t or kg
	3	± _____ t or kg
	4	± _____ t or kg
	5	± _____ t or kg
	6	± _____ t or kg
	7	± _____ t or kg
	8	± _____ t or kg
	9	± _____ t or kg
	10	± _____ t or kg
	11	± _____ t or kg
	12	± _____ t or kg
	13	± _____ t or kg
	14	± _____ t or kg
	15	± _____ t or kg
	16	± _____ t or kg
	17	± _____ t or kg
	18	± _____ t or kg
	19	± _____ t or kg
	20	± _____ t or kg
	Sum of all ref wagons	± _____ t or kg
MPE from Table 2 × 35% of maximum wagon weight marked on the data plate		± _____ t or kg
± one scale interval		± _____ t or kg

Allowable MPE for **train** weighing

(greatest value below, rounded to nearest scale interval) ± _____ t or kg

MPE from Table 2 × sum of all the reference wagon weights	± _____ t or kg
MPE from Table 2 × 35% of maximum wagon weight marked on the data plate × number of reference wagons (but not exceeding ten)	± _____ t or kg
± one scale interval, but not exceeding ten scale intervals	± _____ t or kg

Test report 1 for weighbridges

Copy this page for each mode being tested

Direction _____ Speed _____ km/h

Reference wagon load ☐ empty load ☐ full load ☐ mixed load

Reference wagon	MPE	ID	Position in train	Using the control instrument	Run 1 (t or kg)		Run 2 (t or kg)		Run 3 (t or kg)		Run 4 (t or kg)	
				Weight (t or kg)	Indicated weight	Error	Indicated weight	Error	Indicated weight	Error	Indicated weight	Error
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
15												
16												
17												
18												
19												
20												
Total train weight												

Wagon weighing Allowable MPE (from previous page) ± _____ t or k

Percentage of reference wagons within MPE _____ %

Percentage of reference wagons within twice MPE _____ % (up to 10% acceptable)

Train weighing Allowable MPE (from previous page) ± _____ t or k

Test report 1 for weighbridges

Test results

Weighing performance — wagon weighing (clause 4.4.1)	☐ Pass	☐ Fail
Weighing performance — train weighing (clause 4.4.2)	☐ Pass	☐ Fail
Over-speed test (clause 4.5)	☐ Pass	☐ Fail
Under-speed test (clause 4.6)	☐ Pass	☐ Fail
Roll-back test (clause 4.7)	☐ Pass	☐ Fail
Over-weight test (clause 4.8)	☐ Pass	☐ Fail
Overall result	☐ **Pass**	☐ **Fail**

Inspector's/verifier's name Identification number

Comments

Test report 2 for control instruments

Calculation to determine if the control instrument is suitable for use and meets the accuracy requirements

Proposed reference wagon weights		
Minimum capacity (kg or t)	Intermediate capacities as applicable (kg or t)	Maximum capacity (kg or t)

Method 1 — Calculation NOT using Change Points

Part 1. Accuracy requirements for the control instrument [(MPE%/100) × Σ_t × ⅓]

Ref wagon ID	Mass of reference wagon	Accuracy class for wagon weighing	Absolute MPE from Table 2	MPE of reference wagon	Accuracy requirement (1/3 MPE of reference wagon)
1			±	±	±
2			±	±	±
3			±	±	±

Part 2. MPE of the control instrument

Ref wagon ID	Mass of reference wagon	Verification scale interval (e)	Number of verification scale intervals	MPE from Table 3	MPE value
1				±	±
2				±	±
3				±	±

Does the control instrument meet the accuracy requirements?
Note: MPE of control instrument must be ≤⅓ MPE of reference wagon

Table 3. MPEs for loads, m, expressed in verification scale intervals, e

MPEs	Class 3	Class 4
±0.5e	0 ≤ m ≤ 500	0 ≤ m ≤ 50
±1e	500 < m ≤ 2 000	50 < m ≤ 200
±1.5e	2 00 < m ≤ 10 000	200 < m ≤ 1 000

Method 2 — Calculation using Change Points

Ref wagon ID	P = I + 0.5d – ΔL			E = P – L			% of L (t or kg)	Maximum error acceptable (⅓ or ⅕, circle which applies)
	I	0.5d	ΔL	P	L(=I)	E		
1								
2								
3								
Does the control instrument meet the accuracy requirements?							☐ Yes ☐ No	

Test report 2 for control instruments

Refer to NITP 6.1 to 6.4 for the test procedure

Test report reference number _____ Date of test _____

Type of test (check one) ☐ Verification ☐ In-service inspection

☐ Other (attach **either** a 6B/0 analysis **or** a letter of approval from NMI)

Name of owner/user _____

Address of owner/user _____

Name of contact on premises _____

Address where instrument located _____

Description of instrument _____

Manufacturer/s _____ Model _____ Instrument serial number _____

Certificate/s of approval number (if applicable) _____

Maximum capacity (Max) _____ Minimum capacity (Min) _____

Verification scale interval (e) _____ Accuracy class _____

Does the instrument comply with its certificate/s of approval?	
Is the instrument being used in an appropriate manner?	
Are all mandatory descriptive markings clearly and permanently marked on the data plate?	
Is the data plate fixed on the instrument?	
Is the instrument complete?	
Is the instrument broken?	
Is the instrument clean?	
Is the instrument operational?	
Are there any apparent obstructions to the operation of the instrument?	
Does the operator (and where applicable, the customer) have a clear and unobstructed view of the indicating device and the whole weighing operation?	
Is the instrument adequately protected against abnormal dust, air movement, vibrations, atmospheric conditions and any other influence likely to affect its performance?	
If applicable, does the steelyard, tare bar or proportional weight comply with the mandatory requirements in respect to design and marking?	
Does the weighbridge comply with the relevant Trade Measurement (Weighbridge) Regulations and the *Code of Practice for Weighbridge Installations*?	
For additional indicating devices: do they exactly repeat the information on the primary indication and does any device for price computation and/or ticket/label printing comply with the requirements of General Supplementary Certificate S1/0/A (or General Supplementary Certificates S1/0 and S2/0 for devices initially verified or certified prior to March 1992)?	

Test report 2 for control instruments

Test results

<table>
<tr><td rowspan="6">Repeatability (NITP 6.1 to 6.4, clause 5.1)</td><td>Load</td><td colspan="4"></td></tr>
<tr><td>First reading</td><td colspan="4"></td></tr>
<tr><td>Second reading</td><td colspan="4"></td></tr>
<tr><td>Third reading</td><td colspan="4"></td></tr>
<tr><td>Difference</td><td colspan="4"></td></tr>
<tr><td colspan="5">☐ Pass ☐ Fail</td></tr>
<tr><td rowspan="9">Eccentricity
(NITP 6.1 to 6.4, clause 5.2)</td><td>Number of supports:</td><td colspan="4"></td></tr>
<tr><td>Load used:</td><td colspan="4"></td></tr>
<tr><td>Position 1</td><td></td><td>Position 7</td><td colspan="2"></td></tr>
<tr><td>Position 2</td><td></td><td>Position 8</td><td colspan="2"></td></tr>
<tr><td>Position 3</td><td></td><td>Position 9</td><td colspan="2"></td></tr>
<tr><td>Position 4</td><td></td><td>Position 10</td><td colspan="2"></td></tr>
<tr><td>Position 5</td><td></td><td>Position 11</td><td colspan="2"></td></tr>
<tr><td>Position 6</td><td></td><td>Position 12</td><td colspan="2"></td></tr>
<tr><td colspan="5">☐ Pass ☐ Fail</td></tr>
<tr><td>Zero setting (NITP 6.1 to 6.4, clause 5.3)</td><td colspan="5">☐ Pass ☐ Fail</td></tr>
<tr><td rowspan="11">Weighing performance
not using substitution load
(NITP 6.1 to 6.4, clause 5.4.1)
Note: For weighing performance using substitution load refer to the next page</td><td colspan="2">Loads applied (minimum 5)</td><td>Indication up</td><td colspan="2">Indication down</td></tr>
<tr><td colspan="2"></td><td></td><td colspan="2"></td></tr>
<tr><td colspan="2"></td><td></td><td colspan="2"></td></tr>
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<tr><td colspan="2"></td><td></td><td colspan="2"></td></tr>
<tr><td colspan="2"></td><td></td><td colspan="2"></td></tr>
<tr><td colspan="5">Over-range blanking ☐ Pass ☐ Fail ☐ N/A</td></tr>
<tr><td colspan="5">☐ Pass ☐ Fail ☐ N/A</td></tr>
</table>

Test report 2 for control instruments

Weighing performance using substitution load (NITP 6.1 to 6.4, clause 5.4.2)										
Method used	☐ Method A	☐ Method B								
MPE change points										
Available standard weights										
First substitution load										
Second substitution load										
Third substitution load										
Up	L	Makeup of load	MPE	I	½e	ΔL	E	L_{sub}	L_{sub} (rounded)	Pass/fail/ N/A
Over-range blanking	☐ Pass	☐ Fail	☐ N/A							
Down	L		Makeup of load		MPE		I		Pass/fail	

Discrimination (NITP 6.1 to 6.4, clause 5.5)	☐ Pass ☐ Fail
Sensitivity (NITP 6.1 to 6.4, clause 5.6)	☐ Pass ☐ Fail ☐ N/A
Accuracy of tare setting (NITP 6.1 to 6.4, clause 5.7)	☐ Pass ☐ Fail ☐ N/A
Price computation (NITP 6.1 to 6.4, clause 5.8)	☐ Pass ☐ Fail ☐ N/A
Overall result	☐ **Pass** ☐ **Fail**

Inspector's/verifier's name | Identification number

Comments

Test report question (Subclass 6.9 - Totalising hopper weighing instruments)

Complete the test report for a DTAWI, provided below, using the information provided and that ascertained from the approval document/s. Where any calculations are required to complete any parts of the test report, then complete the calculations so you can fully populate all parts of the test report form. At the bottom of the form state whether the instrument has passed or failed and give reasons for any failure.

Scan the completed form and include it with your recognition kit.

Assume that ALL tests required to be completed for the instrument for INITIAL verification have been carried out and passed, where not described below, and complete the form appropriately.

If you do not currently have a verifier number, use the verifier number VR-09999.

Details:

Verification carried out on 8 March 2023 at Queensland Sugar,

Cairns Bulk Sugar Terminal, Cnr Cook & Draper Streets Portsmith, Cairns 4870.

Contact person – Manager, Alex Fee

Instrument Verified is a DTAWI Model AS-DT1, max capacity 20 000 kg, totalisation scale interval 10 kg, approval number NMI 6/14B/26; (4) Flintec model RC3D-30t-C4 load cells, max. capacity 30 000 kg, NMI S522; Systec model IT6000E digital indicator, NMI S556. Instrument has a single point of discharge.

Data plate markings:

Manufacturer's mark, or name written in full Accurate Systems

Indication of accuracy class 0.5

Pattern approval number NMI 6/14B/26

Model number AS-DT1

Serial number S456789.

Max = 20 000 kg

Min = 6 000 kg

Minimum totalised load Σmin = 10 000 kg

d_t *= 10 kg*

Special temperature limits 0°C to 40°C

Material to be measured: Sugar

Visual inspection:

All components are as per certificate of approval and the instrument is in good condition, with no adverse findings (No auxiliary device connected).

Instruments carry a notice visible to the operator stating TARGET DISCRETE LOAD SHALL BE 16 000 kg to 18 000 kg ONLY.

Determine if the control instrument is suitable

Determine whether the control instrument detailed below would be suitable to use, using the relevant section/s of the test report. Complete all remaining parts of the test report, **even if** you find the control instrument is unsuitable.

Control instrument details:

20 000 kg x 10 kg class III static hopper weigher tested within 3 days of testing of the DTAWI.
Is the control instrument suitable to use without using change points based on the proposed target totalised loads of 70 000 kg? Using target discrete loads of 17 500 kg. *Complete the relevant test report for the control instrument (test report 2 section A) and detail your findings and reasoning as to its suitability below:*

Instrument test results:

Assume the control instrument is suitable regardless of your findings above, and that it was tested immediately prior to testing of the DTAWI, and was within the required MPE. (A test report for control instrument testing will not be completed for the purposes of this kit, but must be completed when instruments are verified).

Material weighing tests

Control instrument weight readings (t) (Using change points):

Draughts	Test 1	Test 2	Test 3
1	17510 kg	17 495 kg	17510 kg
2	17465 kg	17 521 kg	17496 kg
3	17571 kg	17 506 kg	17492 kg
4	17452 kg	17 518 kg	17 524 kg
5			

Totaliser readings (kg):

Position	Test 1	Test 2	Test 3
Indication (kg)	69 980 kg	69 990 kg	70 010 kg

You will need the following tables when completing this report:

Table 2. MPEs for verification and in-service inspection expressed as percentage of weight of totalised load

Accuracy class	Verification	In-service inspection
0.2	±0.10%	±0.2%
0.5	±0.25%	±0.5%
1	±0.50%	±1.0%
2	±1.00%	±2.0%

Table 3. MPEs for class 3 and 4 non-automatic weighing instruments for loads, m, expressed in verification scale intervals, e

MPE	Class 3	Class 4
±0.5e	0 < m ≤ 500	0 < m ≤ 50
±1e	500 < m ≤ 2 000	50 < m ≤ 200
±1.5e	2 000 < m ≤ 10 000	200 < m ≤ 1 000

Test report 1 for discontinuous totalising automatic weighing instruments

Required data

Test report reference number | Date of test

Type of test (tick one) ☐ Verification ☐ In-service inspection

For in-service inspection or reverification, record the verification mark:

Name of owner/user

Address of owner/user

Name of contact person on site

Address where DTAWI is located

Manufacturer(s)

Model

Serial number | Certificate(s) of Approval number

Accuracy class ☐ 0.2 ☐ 0.5 ☐ 1 ☐ 2

Min | *Max*

Σ_{min} | d_t

Target discrete load:

Minimum (Min_T) | Maximum (Max_T)

N_{min} | Maximum (N_{max}

Designation of product(s)

Number of discharge facilities

Nature of the transaction

Hopper number (if applicable)

Controller/integrator number (if applicable)

Load cell number(s) (if applicable)

Basework model number (if applicable)

Temperature range (if applicable)

Test report 1 for discontinuous totalising automatic weighing instruments

Characteristics of the Instrument	Yes/No/N/A
Does the DTAWI comply with its certificate(s) of approval?	
Is the DTAWI being used in an appropriate manner?	
Are all mandatory descriptive markings clearly and permanently marked on data plate?	
Is the data plate fixed to the indicator control panel of the weighing system?	
Is the DTAWI in suitable operational condition?	
Are there any apparent obstructions to the operation of the DTAWI?	
Is the indicating device accessible during normal operation?	
Is the DTAWI fully assembled?	
Is the DTAWI fixed into the position for its intended use?	
Is the DTAWI adequately protected against any other influence likely to affect its performance?	
Is the load receptor, in-feed device and discharge receptacle, as appropriate, designed to ensure that residual material retained after each discharge is negligible?	
For additional indicating devices and point of sale systems: do they comply with the applicable general supplementary certificates S1/0B or S1/0/A (or S1/0 or S2/0) or relevant certificate(s) of approval?	

Test report 1 for discontinuous totalising automatic weighing instruments

Material weighing tests

Determine the test loads using the control instrument.

Use this page to determine total test loads. If changeover points are required.

E is the error determined for the test load. When correcting gross load indications, use the error determined for increasing loads. When correcting tare load indications, use the error determined for decreasing loads.

$L = (I + 0.5d - E) - \Delta L$

Draughts		I	ΔL	E	L	Net load
1	Gross					
	Tare					
2	Gross					
	Tare					
3	Gross					
	Tare					
4	Gross					
	Tare					
5	Gross					
	Tare					
6	Gross					
	Tare					
7	Gross					
	Tare					
8	Gross					
	Tare					
					Total load:	

Comments

Test report 1 for discontinuous totalising automatic weighing instruments

Material weighing tests

Complete this page for the material weighing test. Also complete a copy for each other product and for each alternative discharge facility.

- Tests (a) and (c) are required always.
- Test (b) is required if $N_{max} < 5$.
- Test (d) is required if $N_{min} < 5$.
- Test (e) is required if both tests (b) and (d) are omitted.

Product

Discharge Facility

Test	(a)	(b)	(c)	(d)	(e)
Target discrete load	Max	Max	Min	Min	Typical
Target totalised load	Σ_{min}	5 × Max$_T$	Σ_{min}	5 × Min$_T$	Σ_{min}
Number of loads					
Indicated total at start, Ts					
Indicated total at end, T_F					
$T = T_F - T_S$					
Total load (control instrument), L					
$E = \left(\frac{T - L}{L}\right) \times 100$					
MPE					
Pass/Fail/NA					

Comments

Verifier's name

Identification number

Test report 2 for control instruments

Calculation to determine if the control instrument is suitable for use and meets the accuracy requirements

There are two available calculation methods – not using changeover points (method 1) and using changeover points (method 2).

Table 1. MPEs for class 3 and 4 non-automatic weighing instruments for loads, m, expressed in verification scale intervals, e

MPE	Class 3	Class 4
±0.5e	0 < m ≤ 500	0 < m ≤ 50
±1e	500 < m ≤ 2 000	50 < m ≤ 200
±1.5e	2 000 < m ≤ 10 000	200 < m ≤ 1 000

Method 1 — Calculations NOT using changeover points

Complete:

- Section A to determine if the control instrument is suitable based on the addition of the applicable MPEs for each load weighed on the control instrument;
- Section B when the calculation in section A has shown that the control instrument is bordering on being suitable to determine a theoretical accuracy for the control instrument.

Section A

Part 1. Accuracy requirements for the control instrument $[(\text{MPE}\%/100) \times L \times {}^{1}/_{3}]$				
Test load (L) (not less than Σ_{min})	Accuracy class of DTAWI	MPE from Table 2	MPE mass value	Accuracy requirement (⅓ MPE of the DTAWI)
		±	±	±

Part 2. Total MPE of the control instrument					
Load weighed for each draught to determine the total test load. (Include net and tare weighings where applicable)		Verification scale interval (e)	Load expressed in verification scale intervals (m)	MPE from Table 3	MPE mass value for each draught
1				±	±
2				±	±
3				±	±
4				±	±
5				±	±
6				±	±
7				±	±
8				±	±
				Total MPE of the control instrument	±

Does the control instrument meet the accuracy requirements? (Yes/No) Check if |Total MPE of the control instrument| ≤ $\left\|(\text{MPE}\%/100) \times L \times {}^{1}/_{3}\right\|$	☐ **Yes** ☐ **No**

Test Report 2 for control instruments

Section B

Part 1. Accuracy requirements for the control instrument $[(\text{MPE}\%/100) \times L \times {}^{1}/_{3}]$				
Test load (L) (not less than Σ_{min})	Accuracy class of DTAWI	MPE from Table 2	MPE mass value	Accuracy requirement (⅓ MPE of the DTAWI)
		±	±	±

Part 2.Theoretical accuracy of the control instrument $(\sqrt{N} \times E_C)$	
Number of weighings (N) required using the control instrument to determine the weight of the test load: In the case where a single or net weighing is required for each draught load: N = L/draught load = ... / ..... = In the case where two weighings are required for each load: N = 2 × L/draught load = 2 × ..... / ..... =	
Load expressed in verification scale intervals (m) m = gross load/verification scale interval (e) = ... / ..... =	
MPE for the gross load from Table 3	±
Theoretical maximum error of the control instrument (E_C) This is the MPE mass value for the gross load	±
Theoretical accuracy of the control instrument $(\sqrt{N} \times E_C)$	±
Does the control instrument meet the accuracy requirements? (yes/no) Check if $\lvert\sqrt{N} \times E_C\rvert \leq \lvert(\text{MPE}\%/100) \times L \times {}^{1}/_{3}\rvert$	☐ **Yes** ☐ **No**

Comments

Verifier's name Identification number

Method 2 — Calculations using changeover points

If the control instrument does not meet the accuracy requirements based on Method 1, then use method 2 to determine suitability,

More accurate values for test loads may be achieved by determining the error with a scale interval smaller than the verification scale interval, or via the changeover method. In either case, the maximum increased resolution should be not greater than ten.

Use the method below to determine if the higher resolution achieved with this method enables the accuracy determined in method 1 to now meet the accuracy requirement.

Part 1. Accuracy requirements for the control instrument $[(\text{MPE}\%/100) \times L \times {}^{1}/_{3}]$				
Test load (L) (not less than Σ_{min})	Accuracy class of DTAWI	MPE from Table 2	MPE mass value	Accuracy requirement (⅓ MPE of the DTAWI)
		±	±	±

Part 2. Theoretical accuracy of the control instrument using changeover points.	
Determine the theoretical accuracy of the control instrument as described in Method 1, section B above $(\sqrt{N} \times E_C)$:	±
Determine the effective scale interval (d_E)	
If using the increased resolution, this is the actual scale interval (d):	
If using changeover points, this is the "small" test weights (e.g.: 0.1e):	
Determine the theoretical accuracy of the control instrument $(\sqrt{N} \times E_C) \times ({}^{d}/_{e})$	
Does the control instrument meet the accuracy requirements? (yes/no) Check if $\left\lvert(\sqrt{N} \times E_C) \times ({}^{d}/_{e})\right\rvert \leq \left\lvert(\text{MPE}\%/100) \times L \times {}^{1}/_{3}\right\rvert$	☐ **Yes** ☐ **No**
Part 2b. If using changeover points	
Specify the value of the"small" test weights used to determine the changeover points, Lmin	
Determine the theoretical accuracy of the control instrument $(\sqrt{N} \times E_C) \times ({}^{L_{min}}/_{e})$	
Does the control instrument meet the accuracy requirements? (yes/no) Check if $\left\lvert(\sqrt{N} \times E_C) \times ({}^{L_{min}}/_{e})\right\rvert \leq \left\lvert(\text{MPE}\%/100) \times L \times {}^{1}/_{3}\right\rvert$	☐ **Yes** ☐ **No**

Comments

Verifier's name Identification number

Workplace test reports and documents

In your workplace, you need to develop your skills by testing instruments in accordance with the national instrument test procedures, ideally under the supervision of an experienced, competent verifier. When completing tests, record your results, the details of the instruments tested and any reference weights/test equipment used, in test reports as used in your workplace. Show any calculations you use during the process.

Wherever possible, include reports for testing different types of instruments, and non-compliant instruments, to demonstrate your knowledge of the requirements.

If you have access to an experienced verifier, ask them to sign each test report (and any printed documents) relating to the instrument/s they have observed you testing, to indicate you completed the tests in accordance with the relevant NITP, before scanning the reports for submission.

For subclasses 6.5, 6.6 and/or 6.9

If you have had the opportunity to test an instrument (or instruments) prior to submitting the kit, then submit a maximum of one test report per subclass being assessed. Detail which parts of testing were completed by yourself/under your direction, and any parts that were completed by your supervisor.

For subclass 18.2

You must provide **three (3) test reports** in total, along with any documents/labels printed during the testing of those instruments.

From the pool of reports you have produced, submit a minimum of **two (2) reports**, **with accompanying calculations**, representing your best work and demonstrating your understanding of the test procedures and processes required for **initial verification** of POS systems. **Include copies of any printed documents produced during testing for each POS system.**

Indicate on the report where you would apply the verification mark to each instrument tested.

You must provide a **third test report** from the test you complete when doing your observation/video.

You must include at least one test report and documents from testing a POS system directly, at the site where it is used, even if your organisation mainly tests instruments remotely. **This method of testing should be used for your video.**

Scan the test reports and printed documents and include them with your completed recognition kit, identified as described in the **instructions**.

Scan the test report/s and include it/them with your completed kit, named as described in the instructions.

Once you have completed all your written assessments and test reports, ask the relevant person/s to complete one of the following third party report forms before emailing your whole kit and additional documents/videos to the NMI Administrator.

Third party report (experienced verifier)

Applicant:

Use this report ONLY if you hold the relevant statement/s of attainment for the units of competency and subclass/es being assessed. For example, if you do not have a statement of attainment for 18.2, another verifier who holds the relevant statement of attainment should also complete a copy of this form, referring to that part of the kit.

Persons providing a report must have directly supervised the applicant during training and completion of the simulated verifications for which the applicant is providing test reports. If other verifiers have also supervised the applicant, ask each of them to complete an additional report.

You must complete all pages of this report; in particular, you must include written comments to support your responses in the checklist (other than where N/A). It is essential that you detail your observations of how the applicant ensured safety for self and others and how clearly and effectively the applicant communicated with clients/colleagues. We thank you for your contribution. The applicant's assessor may need to contact you to clarify your responses or to gain additional information.

Are you a verifier or inspector of trade measurement? ☐ **Yes** ☐ **No**

Verifier/inspector number?:

What subclass/es of instrument are indicated on the statement/s of attainment you hold? (e.g. 6.5 & 18.2)

Have you verified instruments of these subclasses within the last 18 months? ☐ **Yes** ☐ **No**

State approximate numbers verified for each subclass:

Describe briefly your level of experience in testing and verifying instruments of the subclasses for which the applicant is being assessed. For example, how long have you been working with these instruments and in what ways (repairs, installation, verification).

During the last 12 months I have personally observed the applicant test the undermentioned instruments/POS systems (including those detailed in the test reports I have signed) without assistance, and in accordance with the National Instrument Test Procedures, paying close attention to detail and accuracy, while correctly selecting, using and handling the appropriate reference standards/test equipment:

	Yes	No	If yes, number of instruments tested
6.5 Continuous totalising automatic weighing instruments (Belt Weighers)	☐	☐	
6.6 Automatic rail weighbridges	☐	☐	
6.9 Discontinuous totalising automatic weighing instruments (Totalising hopper weighers)	☐	☐	
18.2 Point of sale systems	☐	☐	
In addition, the applicant has demonstrated to me on at least two occasions (in a simulated environment) how a verification mark should be made and where it should be applied to instruments of this/these subclass/es	☐	☐	

Third party report (experienced verifier)

You must include written comments to support your responses in the checklist (other than where N/A)

Have you observed the applicant:	Yes	No	Not applicable or not able to comment
• liaise effectively with traders when organising site visits to ensure any assistance/equipment is provided, and to minimise impacts on traders, customers and employees – in accordance with company expectations? **What interactions have you observed?**	☐	☐	☐
• explain verification procedures and outcomes clearly and effectively to traders, including respectfully communicating any inadequacies in the way traders use instruments? **When/where did you observe this?**	☐	☐	☐
• correctly select, and ensure the suitability of, **reference standards/test equipment** for the specific task, as required by the relevant national instrument test procedures? **How did they do this?**	☐	☐	☐
• maintain the integrity of **reference standards/test equipment** during their storage, transport and use to ensure they are suitable for use? **What did you observe?**	☐	☐	☐
• identify, access and correctly interpret and apply certificates of approval and certificates of verification (e.g. Reg 13 or other appropriate certificates of verification of reference standards)? **Give an example of how they did this.**	☐	☐	☐

Third party report (experienced verifier)

You must include written comments to support your responses in the checklist (other than where N/A)

Have you observed the applicant:	Yes	No	Not applicable or not able to comment
• identify, access and correctly interpret and apply relevant test procedures when testing instruments? **When did you observe this?**	☐	☐	☐
• evaluate the impact of the **operating environment** on the performance of the **instrument/standards/test equipment** and make any adjustments to ensure there was no impact? **Provide an example of when and how they did this.**	☐	☐	☐
• identify local hazards and apply appropriate safety precautions as relevant to the hazard/s, in accordance with local legislation and company procedures? Include in your comments: ○ how they ensure safety for self and others when testing instruments ○ examples of compliance with local induction requirements ○ how they establish access to first aid **Include an example of what you observed them do at a site/in the workshop.**	☐	☐	☐
• correctly apply calculations to determine the verification result, as required by the national instrument test procedures?	☐	☐	☐

Third party report (experienced verifier)

You must include written comments to support your responses in the checklist (other than where N/A)

• **Have you observed the applicant:**	**Yes**	**No**	**Not applicable or not able to comment**
• correctly identify and apply the correct maximum permissible errors for each individual test, as determined by national trade measurement legislation and the national instrument test procedures?	☐	☐	☐
• analyse test results to determine whether an instrument could be marked for trade use, in accordance with the national instrument test procedures?	☐	☐	☐
• record, report and maintain test results and findings clearly, accurately, securely and in accordance with company policy? **Provide details of how they did this.**	☐	☐	☐
• correctly assess for compliance any **auxiliary** printing and indicating devices (non-POS) attached to measuring instruments? **Detail the device and the instrument it was attached to.**	☐	☐	☐
• solve routine or unexpected problems and seek advice, when required? **Provide at least one example.**	☐	☐	☐

Detail the approximate date range during which you have observed the applicant as detailed above:	**From:**		**To:**	
The applicant has demonstrated oral and written language skills and numeracy skills to a standard expected for this role in our organisation.	**Yes**	☐	**No**	☐
Name of third party:		**Date:**		
Telephone number of third party:				

Third party report (non-verifier)

(This form is only for use where the applicant has not been supervised/trained by an experienced verifier of instruments relating to this kit)

Applicant:

Use this form if you have worked with the applicant but do NOT hold statements of attainment for the units of competency and subclasses being assessed.

You must complete all pages of this report. In particular, you must include written comments to support your responses in the checklist (other than where N/A), including details of how the applicant ensured safety for self and others and how clearly and effectively the applicant communicated with clients/colleagues. We thank you for your contribution. The applicant's assessor may need to contact you to clarify your responses, or to gain additional information.

Describe briefly your working relationship to the applicant and the types of work activities you have observed the applicant undertake:

Have you observed the applicant:	**Yes**	**No**	**Not applicable or not able to comment**
• liaise effectively with traders when organising site visits to ensure any assistance/equipment is provided, and to minimise impacts on traders, customers and employees – in accordance with company expectations? **What interactions have you observed? Provide at least one example**.	☐	☐	☐
• communicate clearly, effectively and respectfully with clients and colleagues? **Give at least two examples**.	☐	☐	☐

Third party report (non-verifier)

You must include written comments to support your responses in the checklist (other than where N/A)

Have you observed the applicant:	**Yes**	**No**	**Not applicable or not able to comment**
• identify local hazards and apply appropriate safety precautions as relevant to the hazard/s, in accordance with local legislation and company procedures? Include in your comments: ○ how they ensure safety for self and others when testing instruments ○ examples of compliance with local induction requirements ○ how they establish access to first aid **Include an example of what you observed them do at a site.**	☐	☐	☐
• record, report and maintain test results and findings clearly, accurately and securely and in accordance with company policy? **Provide details of how they did this.**	☐	☐	☐
• solve routine or unexpected problems and seek advice, when required? **Provide at least one example**	☐	☐	☐

Detail the approximate date window during which you have observed the applicant as detailed above: **From:** **To:**

The applicant has demonstrated oral and written language skills and numeracy skills to a standard expected for this role in our organisation. **Yes** ☐ **No** ☐

Name of third party: **Date:**

Telephone number of third party:

Record of assessor's conversation with third party (if required)

The assessor will speak to any third party/s where they have not provided sufficient confirmation of the performance of the applicant they have observed. This form will be used to record the outcomes of any conversation between the assessor and a third party.

Name/s of third party/ies	

Assessor's name: **Date:**

Outcome of assessor's review of applicant's test reports/printed documents

Applicant:

As part of your assessment, your assessor will use this form to record the accuracy of your submitted workplace documents.

Assessor: Use the checkboxes to record if the documents have been completed/evaluated satisfactorily.

Instrument subclass	Satisfactory	Unsatisfactory	Not applicable
6.5 Continuous totalising automatic weighing instruments (belt weighers)	☐	☐	☐
6.6 Automatic rail weighbridges	☐	☐	☐
6.9 Discontinuous totalising automatic weighing instruments (totalising hopper weighers)	☐	☐	☐
18.2 Point of sale systems	☐	☐	☐

Please provide comments to support your findings on the submitted documents. Where videos are provided, use the skills observation report form for your comments.

Assessor's name: **Date:**

Record of conversation with the applicant (to be completed by the assessor)

Applicant:

Applicant's ID checked at interview: ☐

As part of your assessment, you will have a conversation with your assessor who may ask questions to clarify your knowledge in the following areas. Your assessor will use this checklist to record your responses.

Assessor: Use the check boxes to record the competency areas where you have asked questions. **You need not ask questions for all areas,** particularly where satisfactory evidence of competence has already been provided. You should include a list of questions asked, with expected answers, checked where correct, and actual responses given when incorrect, in a separate Word document.

	Satisfactory	Unsatisfactory	Not asked/not required
• Preparation, planning and communication with trader	☐	☐	☐
• Using and maintaining reference standards and/or test equipment	☐	☐	☐
• Certificates of approval	☐	☐	☐
• Operating environment	☐	☐	☐
• Work, health and safety including use of SDS/SWMS	☐	☐	☐
• Maximum permissible errors	☐	☐	☐
• Test procedures	☐	☐	☐
• Test points	☐	☐	☐
• Analysis of test results	☐	☐	☐
• Marking instruments and verification documentation	☐	☐	☐
• Auxiliary devices	☐	☐	☐
• Reporting test results	☐	☐	☐
• Inappropriate use of instruments by trader	☐	☐	☐
• Servicing licence documentation and procedures including maintaining confidentiality and security of data	☐	☐	☐

Assessor's name: **Date:**

Skills observation report
to be completed by the assessor or an NMI-appointed skills observer (SO)

If observation not completed by assessor, assessor to check bottom of each page

Name of applicant:

Units of competency being assessed:

Subclass of instrument being observed:

Name of observer: **SO** ☐ **Assessor** ☐

Contact number for skills observer:

Applicant's photo ID viewed by observer ☐ **Type of ID viewed:**

Test report attached ☐

Time at observation site:

As part of your assessment, you will need to demonstrate completing a simulated initial verification of at least one instrument/measure in a real or simulated workplace environment. This is a requirement of the performance evidence you must demonstrate for these units of competency. During the observation, you should complete a test report for each instrument/measure tested and provide a copy of this to the person completing the skills observation. See also the Instructions for observation assessments.

Your assessor, or an NMI-appointed skills observer, will observe you. They will contact you to discuss arrangements for this part of your assessment.

Ensure you have your photo ID available to show your observer.

During the observation, the assessor/observer will use this checklist to record your skills in verifying measuring instruments/measures in accordance with legal requirements. They will also be noting how you:

- interact with businesses and their employees before, during and after completing testing
- assess and manage safety during the task
- store, use and handle any reference standards or equipment used (where applicable)
- consider any real or potential environmental impacts on the instrument/measure under test (and the standards and equipment used in testing) and take any necessary steps to account for any impacts
- identify, access and interpret relevant documentation
- record, analyse and report the findings of testing
- communicate the results of testing and any other factors relevant to the usage of instruments/measures
- identify the location for, and simulate the application of, a verification mark

For subclasses 6.1-6.3 and some simple measures/measuring instruments, you may be invited to complete the observation in the trade measurement office in your local city.

For skills observations for other instrument/measure types, or where you do not live in a major city, we will ask you to arrange a site local to you, where a suitable instrument/measure is available. We will contact you with further instructions.

Skills observation report
to be completed by the assessor or an NMI-appointed skills observer (SO)

If observation not completed by assessor, assessor to check bottom of each page

Observer: Use the check boxes to record your conclusions regarding each of the specific items detailed in the following list, where applicable. You must record additional notes and comments that are relevant to, and support, your conclusions, under each item. Essentially, you should describe what you have observed that supports the finding you have checked (what the applicant did).

NOTE: Items 2, 3, 4, 5, 6 and 9 are not applicable for subclasses 18.1 and 18.2.

(**Use one form per instrument observed)**

I have observed the applicant complete a simulated verification test on the following instrument and simulate applying a verification mark:

Instrument/measure tested:

Reference standards/equipment used:

Date/s observed:

Location:

Did the applicant:	**Yes**	**No**	**Not applicable**
1. liaise and communicate effectively with the trader prior to, during and after testing to ensure verification testing was carried out safely and with minimal disruption to the trader's business?	☐	☐	☐
2. select and validate the suitability of reference standards/equipment for the specific verification task?	☐	☐	☐

Skills observation report
to be completed by the assessor or an NMI-appointed skills observer (SO)

If observation not completed by assessor, assessor to check bottom of each page

Did the applicant:	Yes	No	Not applicable
3. determine whether reference standards/equipment were suitable for use for the verification task/not defective?	☐	☐	☐
4. maintain the integrity of reference standards/equipment during their transport, storage and use?	☐	☐	☐
5. use the reference standards/equipment in the correct manner?	☐	☐	☐
6. evaluate and (where required) adjust the impact of the operating environment on the performance of the standards/equipment?	☐	☐	☐
7. evaluate and (where required) adjust the impact of the operating environment on the performance of the instrument/measure?	☐	☐	☐

Skills observation report
to be completed by the assessor or an NMI-appointed skills observer (SO)

If observation not completed by assessor, assessor to check bottom of each page

Did the applicant:	Yes	No	Not applicable
8. apply appropriate safety precautions and conduct testing safely?	☐	☐	☐
9. identify, access, interpret and apply certificates of verification for reference standards/equipment?	☐	☐	☐
10. identify, access, interpret and apply certificates of approval?	☐	☐	☐
11. identify, access, interpret and apply relevant test procedures?	☐	☐	☐
12. use specified calculations to determine the performance result?	☐	☐	☐

Skills observation report
to be completed by the assessor or an NMI-appointed skills observer (SO)

If observation not completed by assessor, assessor to check bottom of each page

Did the applicant:	Yes	No	Not applicable
13. apply appropriate maximum permissible errors?	☐	☐	☐
14. analyse test results to determine whether the measure could be marked for trade use?	☐	☐	☐
15. report results and findings clearly and accurately?	☐	☐	☐
16. demonstrate how to apply the verification mark correctly?	☐	☐	☐
17. identify and communicate any inadequacies in trader's use of the instrument/measure?	☐	☐	☐

Name of assessor/SO: **Date:**