

Electricity Industry Participation Code Audit Report

For

AccuCal

Class A Approved Test House

Prepared by Steve Woods – Veritek Limited

Date of Audit: 23/02/23

Date Audit Report Complete: 28/02/23

Date Audit Report Due: 23/03/23

Executive Summary

Accucal is a Class A Approved Test House and this audit was performed at their request, to encompass the Electricity Industry Participation Code (Code) requirement for an audit, in accordance with clause 2 of schedule 10.3.

The Authority has stipulated in the “Test House register and next audit date table”, published on their website, that the next audit is due by 23 March 2023, in accordance with clause 1(4)(c) of schedule 10.3.

The audit was carried out at Accucal’s premises in Hamilton on February 23rd, 2023.

The audit identified three non-compliances in relation to two issues. Resourcing constraints have led to late notification of certification records to MEPs and measuring transformer certification reports do not yet contain the burden range, as required by the Code from 1st February 2021.

One recommendation is made, which is to develop a register of type test reports detailing checks conducted, whether compliance is achieved, the date checks were conducted and who conducted them.

The date of the next audit is determined by the Electricity Authority and is dependent on the level of compliance during this audit. The table below provides some guidance on this matter and recommends a next audit frequency of 24 months. I recommend the next audit is conducted in 36 months, to reflect that plans are being made to address the non-compliances.

The matters found are shown in the tables below:

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Advise MEP of records	3.9	14 Of Schedule 10.4	60 of 83 records sent late to an MEP in January 2023.	Moderate	Low	2	Identified
Measuring Transformer Certification	5.67	3 of Schedule 10.8	Burden range not included in measuring transformer certification records.	Moderate	Low	2	Cleared
Measuring Transformers in service burden range	5.68	2(1)(E) Of Schedule 10.8	Burden range not included in measuring transformer certification records.	Moderate	Low	2	Cleared
Future Risk Rating						6	
Indicative Audit Frequency						24 months	

Future risk rating	1-3	4-6	7-8	9-17	18-26	27+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Remedial Action
Data storage device certification	4.12	5 of schedule 10.8	Develop a register of type test reports detailing checks conducted, whether compliance is achieved, the date checks were conducted and who conducted them.	Identified

Persons Involved in This Audit

Auditor:

Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

Accucal personnel assisting in this audit were:

Name	Title
Russell Mann	Technical Manager
Stacey Gray	Quality Manager

Contents

Executive Summary	2
Table of Non-Compliance	2
Table of Recommendations	3
Persons Involved in This Audit	3
Contents	4
1. Administrative	9
1.1 Exemptions from Obligations to Comply with Code (Section 11 of Electricity Industry Act 2010)	9
1.2 Scope of Audit	9
1.3 Previous Audit Results	11
Table of Non-Compliance	11
Table of Recommendations	11
2. ATH Requirements	12
2.1 Use of Contractors (Clause 10.3 of Part 10)	12
2.2 Provision of Accurate Information (Clause 10.6 of Part 10)	12
2.3 Dispute Resolution (Clause 10.50(1) to (3) of Part 10)	13
2.4 ATH Approval (Clause 10.40 of Part 10)	13
2.5 ATH Requirements (Clause 10.41 of Part 10)	14
2.6 Quality Management Systems (Clauses 3(1) & 4(1) of Schedule 10.3)	15
2.7 Organisation and Management (Clause 15 of Schedule 10.4)	17
2.8 Document Processes and Procedures (Clause 16 Of Schedule 10.4)	17
2.9 Quality Standard Required for Field Work (Clause 17 Of Schedule 10.4)	18
2.10 Material Change Requirements (Clause 16A.11)	18
2.11 Audit Required for ATH Approval (Clause 16A.12 and 16A.13)	19
2.12 Accommodation & Environment (Clause 1 of Schedule 10.4)	19
2.13 Compensation Factors (Clause 8 of Schedule 10.4)	19
2.14 Metering Component Stickers (Clause 8(3) of Schedule 10.8)	20
2.15 Interference with Metering Installations (Clause 10.12)	20
3. Metering records and reports	21
3.1 Physical Location of Metering Installations (Clause 10.35 of Part 10)	21
3.2 Metering Installation Type (Clause 8(2) of Schedule 10.7)	21
3.3 Record Metering Installation Category (Clause 8(4) Of Schedule 10.7)	22
3.4 Calibration Test Points (Clause 7(7) Of Schedule 10.4)	22
3.5 Services Access Interface (Clause 10 of Schedule 10.4)	22
3.6 Certification & Calibration Reports (Clause 11(1) of Schedule 10.4)	23
3.7 ATH Record Keeping Requirements (Clause 12 of Schedule 10.4)	23
3.8 Retention of Records (Clause 13 of Schedule 10.4)	24

3.9	Advise MEP of Records, Certificates or Reports for a Metering Installation (Clause 14 Of Schedule 10.4)	24
3.10	Certification at a Lower Category (Clause 6(4) Of Schedule 10.7)	25
3.11	Meter Requirements (Clause 26(3) & (4) of Schedule 10.7)	26
3.12	Meter Certification Expiry Date (Clause 27(5) of Schedule 10.7)	26
3.13	Measuring Transformer Requirements (Clause 28(3) of Schedule 10.7)	27
3.14	Determine Maximum Interrogation Cycle (Clause 36(3) & (4) Of Schedule 10.7)	27
4.	Calibration and certification of metering components	29
4.1	Accommodation and Environment (Clause 1(D)-(E) Of Schedule 10.4)	29
4.2	Use of Measurement Standards (Clause 1(F) Of Schedule 10.4)	29
4.3	Test Equipment (Clause 2 of Schedule 10.4)	30
4.4	Calibration of Reference & Working Standards (Clause 3(1)(a), (b)(i) and (6) of Schedule 10.4)	30
4.5	Calibration Interval (Clause 3(2) of Schedule 10.4)	30
4.6	Calibration of Reference Standards (Clause 3(1)(B)(ii), (2), (3)(C), (4) And (5) Of Schedule 10.4)	31
4.7	33kv or above calibrated by an Approved Calibration Laboratory (Clause 3(3)(B) Of Schedule 10.4)	32
4.8	Metering Component Testing System (Clause 4 of Schedule 10.4)	32
4.9	Calibration Errors (Clause 5 of Schedule 10.4)	33
4.10	Measurement Traceability (Clause 6 of Schedule 10.4)	33
4.11	Calibration Methods (Clause 7(6) of Schedule 10.4)	33
4.12	Data Storage Device Certification (Clause 5 of Schedule 10.8)	34
4.13	Metering Component Stickers (Clause 8(1) of Schedule 10.8)	36
4.14	Metering Component Stickers (Clause 8(2) of Schedule 10.8)	36
4.15	Sealing and Monitoring of Seals (Clause 9 of Schedule 10.4 & Clause 47(7) of Schedule 10.7)	37
5.	Calibration and certification of Metering Installations	38
5.1	ATH Must Not Certify Metering Installations under Certain Circumstances (Clause 8(1) Of Schedule 10.7)	38
5.2	Determination of Metering Categories (Clause 5 of Schedule 10.7 & Clause 10.11)	38
5.3	Requirement for Metering Installation Design Report (Clause 2(4) Of Schedule 10.7)	38
5.4	ATH Design Report Obligations (Clause 3 of Schedule 10.7)	39
5.5	Certification as a Lower Category (Clause 6(1) of Schedule 10.7)	39
5.6	Use of Current Transformer Rating Lower Than Supply Capacity (Clause 6(2)(a) of Schedule 10.7)	40
5.7	Determining Metering Installation Category at a Lower Category Using Current Transformer Rating (Clause 6(2)(b) & (d) of Schedule 10.7)	41
5.8	Suitability of Determination of a Metering Installation Category at a Lower Category Using Current Transformer Rating (Clause 6(3) Of Schedule 10.7)	42
5.9	Use of Metering Installation Certification Methods (Clause 7(1) Of Schedule 10.7)	43
5.10	Certification of a Metering Installation Using Statistical Sampling or Comparative Recertification (Clause 7(2) Of Schedule 10.7)	44
5.11	Metering Installation Certification Requirements (Clause 8(3) Of Schedule 10.7)	44

5.12	Certification Tests (Clause 9(1) of Schedule 10.7)	44
5.13	Raw Meter Data Test for All Metering Installations (Clause 9(1A) Of Schedule 10.7)	47
5.14	Alternate Raw Meter Data Test for Category 1 And 2 Metering Installations (Clause 9(1)(C) Of Schedule 10.7)	47
5.15	Raw Meter Data Output Test (Clause 9(2) And 9(3) Of Schedule 10.7)	48
5.16	Test Results (Clause 10(1) & (2) of Schedule 10.7)	48
5.17	Selected Component Certification (Clause 11(2) of Schedule 10.7)	48
5.18	Selected Component - Circumstances Where Method May Be Used (Clause 11(3) Of Schedule 10.7)	49
5.19	Comparative Recertification – Circumstances Where Method May be Used (Clause 12(2) of Schedule 10.7)	49
5.20	Comparative Recertification Tests (Clause 12(3) And 12(5)(A) Of Schedule 10.7)	50
5.21	Fully Calibrated – Circumstances Where Method May be Used (Clause 13(3) of Schedule 10.7)	50
5.22	Fully Calibrated - Certify Each Metering Component (Clause 13(4) Of Schedule 10.7)	51
5.23	Fully Calibrated - Additional Metering Installation Certification Report Requirements (Clause 13(5) & (6) Of Schedule 10.7)	51
5.24	Fully Calibrated – Use Meter Class Accuracy (Clause 13(7) Of Schedule 10.7)	52
5.25	Insufficient Load (Clause 14 of Schedule 10.7)	52
5.26	Statistical Sampling (Clause 16 of Schedule 10.7)	53
5.27	Statistical Sampling - Certification Method (Clause 7(3) Of Schedule 10.7)	53
5.28	Certification Validity Periods (Clause 17 of Schedule 10.7)	54
5.29	Metering Installation Accuracy (Clause 21 of Schedule 10.7)	54
5.30	Error Calculation (Clause 22 of Schedule 10.7)	55
5.31	Compensation Factors (Clause 24(1)(b) of Schedule 10.7)	55
5.32	Record Metering Installation Compensation Factor (Clause 24(2) Of Schedule 10.7)	56
5.33	Installation of Metering Components (Clause 25 of Schedule 10.7)	56
5.34	Determine Metering Installation Certification Expiry Date (Clause 27(1) & (2) Of Schedule 10.7)	57
5.35	Electromechanical Meter Certification Shelf Life (Clause 27(4) Of Schedule 10.7)	57
5.36	Measuring Transformers Must Be Certified (Clause 28(2) Of Schedule 10.7)	58
5.37	Measuring Transformers Used in a Certified Metering Installation (Clause 28(4) Of Schedule 10.7)	58
5.38	Measuring Transformer Certification Expiry Date (Clause 29 of Schedule 10.7)	59
5.39	Other Equipment Connected to Measuring Transformers (Clause 30 of Schedule 10.7)	59
5.40	Burden & Compensation (Clause 31 of Schedule 10.7)	60
5.41	Alternative Certification (Clause 32(1) of Schedule 10.7)	61
5.42	Installations Incorporating Control Devices (Clause 33(2) of Schedule 10.7)	61
5.43	Control Device Reliability (Clause 34(1) & (3) to (5) of Schedule 10.7)	62
5.44	Data Storage Devices (Clauses 36(2) of Schedule 10.7)	62
5.45	Data storage device requirements (Clause 38(1) and (2) of Schedule 10.7 and clause 5(1) of Schedule 10.8)	63
5.46	Location of Metering Installation Certification Stickers (Clause 41(1) of Schedule 10.7)	64

5.47	Alternate Location of Metering Installation Certification Sticker (Clause 41(4) Of Schedule 10.7)	64
5.48	Contents of Metering Installation Certification Sticker (Clause 41(2) Of Schedule 10.7)	64
5.49	Combining certification stickers (Clause 41(5) – Clause 41(8) of Schedule 10.7)	65
5.50	Enclosures (Clause 42 of Schedule 10.7)	65
5.51	Metering Component Certification (Clause 43(1) of Schedule 10.7)	66
5.52	Sealing Requirements (Clause 47(2) (3) (4) and (5) Of Schedule 10.7)	66
5.53	Seals for Metering Component Enclosures (Clause 47(6) Of Schedule 10.7)	67
5.54	Requirements for Sealing System (Clause 47(7) Of Schedule 10.7)	67
5.55	Removal or Breakage of Seals (Clause 48(6) of Schedule 10.7)	67
5.56	Wiring (Clause 6 of Schedule 10.8)	68
5.57	Fuses and Circuit Breakers (Clause 7 of Schedule 10.8)	68
5.58	Calibration of Metering Components Where Relevant (Clause 7(1) Of Schedule 10.4)	69
5.59	Requirement for Calibration of Metering Components (Clause 7(2) Of Schedule 10.4)	69
5.60	Metering Component Calibration Method (Clause 7(3) Of Schedule 10.4)	70
5.61	Metering Component Calibration Test Points (Clause 7(4) Of Schedule 10.4)	70
5.62	Determine Metering Component Error and Record (Clause 7(5) Of Schedule 10.4)	70
5.63	Class B ATH Calibrating Metering Components (Clause 2(3) Of Schedule 10.3)	71
5.64	Meter Certification (Clause 1 of Schedule 10.8)	71
5.65	Meter Requirements When Meter Is Relocated (Clause 26(2) Of Schedule 10.7 and Clause 43(2) Of Schedule 10.7)	72
5.66	Measuring Transformer Error Testing (Clause 2(1)(A) & (B) Of Schedule 10.8)	72
5.67	Measuring Transformer Certification (Clause 3 of Schedule 10.8)	73
5.68	Measuring Transformers in service burden range (Clause 2(1)(E) Of Schedule 10.8)	74
5.69	Measuring Transformer - Epoxy Insulated (Clause 2(2) Of Schedule 10.8)	75
5.70	Control Device Certification (Clause 4 of Schedule 10.8)	76
5.71	Data Storage Devices (Clause 36(2) Of Schedule 10.7)	76
5.72	On-site Calibration and Certification (Clause 9(1) of Schedule 10.8)	77
5.73	On Site Metering Component Calibration (Clause 9(2) Of Schedule 10.8)	77
5.74	On site metering component calibration records (Clause 9(3) of Schedule 10.8)	77
5.75	Data Storage Device Certification Expiry Date (Clause 37 of Schedule 10.7)	78
5.76	All Functions and Activities Must Be Completed (Clause 10.42(2))	78
6.	Inspection of metering installations	79
6.1	General Inspection Requirements (Clause 44 (1) (a) to (e) of Schedule 10.7)	79
6.2	Raw Meter Data Test (Clause 44(1)(F) Of Schedule 10.7)	79
6.3	Prepare Inspection Report (Clause 44(2) Of Schedule 10.7)	80
6.4	Provide Inspection Report To MEP (Clause 44(3) Of Schedule 10.7)	80
6.5	Inspections for Category 2 & Above Installations (Clause 46(2) of Schedule 10.7)	80
7.	Process for handling faulty metering installations	82
7.1	Investigation of Faulty Metering Installations (Clause 10.43(3) of Part 10)	82

7.2	Testing of Faulty Metering Installations (Clause 10.44 of Part 10)	82
7.3	Statement of Situation (Clause 10.46(1) of Part 10)	82
7.4	Correction of Defects (Clause 10.47 of Part 10)	83
8.	Conclusions	84
9.	Accucal Response	85

1. ADMINISTRATIVE

1.1 Exemptions from Obligations to Comply with Code (Section 11 of Electricity Industry Act 2010)

Code related audit information

Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit observation

I checked the Authority's website for any relevant exemptions.

Audit commentary

There are no exemptions in place relevant to the Accucal ATH.

1.2 Scope of Audit

Accucal is a Class A ATH and this audit was performed at their request, to encompass the Electricity Industry Participation Code requirement for an audit, in accordance with clause 2 of schedule 10.3.

The audit was conducted in accordance with the ATH Audit Guidelines V1.3 produced by the Electricity Authority.

Accucal has a laboratory located in Hamilton and also performs field installation, certification and inspection activities of Category 1 to Category 5 metering installations.

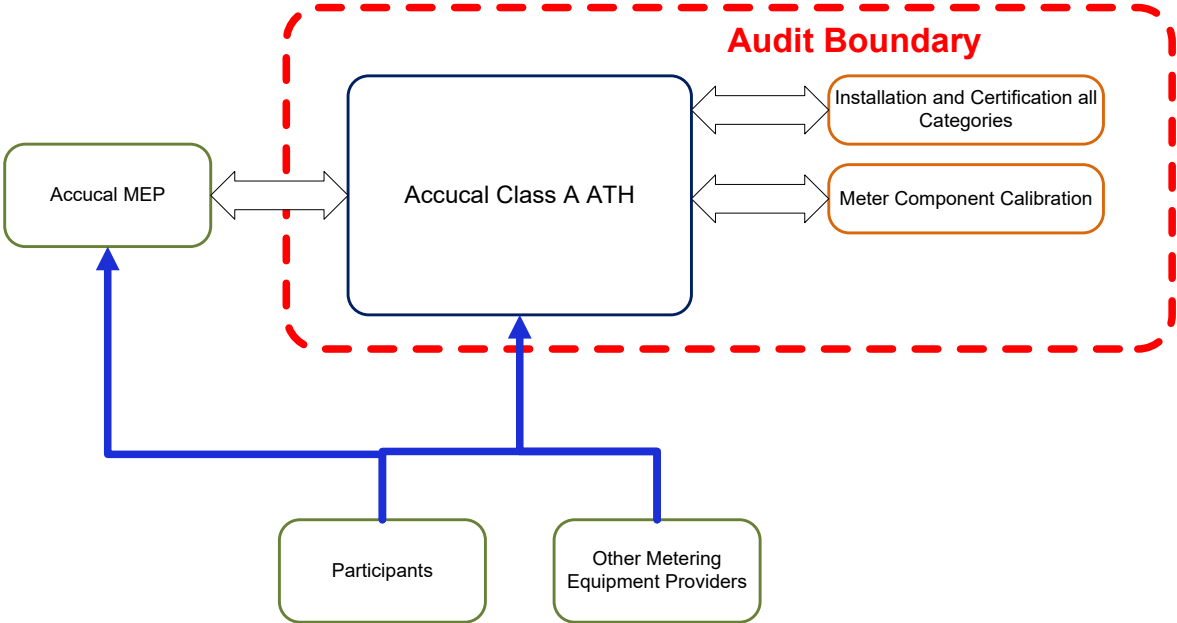
Accucal wishes its ATH approval to include the following functions of Clause 3(2) of Schedule 10.3:

Class A Approval:

- (a) calibration of—
 - (i) working standards:
 - (ii) metering components (other than a calibration referred to in paragraph (c)):
 - (iii) metering installations:
- (b) issuing calibration reports:
- (c) calibration of metering components on site:
- (d) installation and modification of metering installations:
- (e) installation and modification of metering components:
- (f) certification of all categories of metering installations under this Code, and issuing of certification reports:
- (g) testing of metering installations under clause 10.44 and production of statements of situation under clause 10.46:
- (h) inspection of metering installations.

Accucal also requires approval to certify metering components. I note that neither the Class B or Class A functions listed in Clauses 3(2) and 4(2) of Schedule 10.3 include certification of metering components. The Authority confirmed on 23 December 2021 that if an ATH is approved to certify a metering installation, then they are also approved to certify metering components.

The boundaries of this audit are shown below for greater clarity.



1.3 Previous Audit Results

The last audit was conducted in April 2020 by Brett Piskulic of Veritek. Compliance was found with all clauses. The three recommendations made were cleared at the time of the audit.

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
			Nil	

Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Status
Data storage device certification	4.12	5 of schedule 10.8	Record reference to Type Test report in the data storage device certification report.	Cleared
Use of Metering Installation Certification Methods	5.9	7(1) Of Schedule 10.7	Add the certification method to the metering installation certification reports when the fully calibrated method is used.	Cleared
Meter Certification	5.63	Clause 1 of Schedule 10.8	Record reference to Type Test report in the meter certification report.	Cleared

2. ATH REQUIREMENTS

2.1 Use of Contractors (Clause 10.3 of Part 10)

Code related audit information

A participant may perform its obligations and exercise its rights under this Part by using a contractor. A participant who uses a contractor to perform the participant's obligation under this Part remains responsible and liable for, and is not released from, the obligation, or any other obligation under this Part.

Audit observation

Accucal does not use any contractors to perform its obligations under this part.

Audit commentary

Accucal does not use any contractors to perform its obligations under this part.

Audit outcome

Not applicable

2.2 Provision of Accurate Information (Clause 10.6 of Part 10)

Code related audit information

A participant must take all practicable steps to ensure that information that it provides under this Part is:

- *complete and accurate*
- *not misleading or deceptive*
- *not likely to mislead or deceive.*

If a participant, having provided information under this Part, becomes aware that the participant has not complied with these requirements, the participant must, except if clause 10.43 applies, as soon as practicable provide such further information, or corrected information, as is necessary to ensure that the participant complies.

Audit observation

I checked compliance with this clause at the end of the audit to determine whether compliance had been achieved.

Audit commentary

I did not find any information that was not complete and accurate, or likely to mislead or deceive.

Audit outcome

Compliant

2.3 Dispute Resolution (Clause 10.50(1) to (3) of Part 10)

Code related audit information

Participants must in good faith use best endeavours to resolve any disputes related to Part 10 of the Code. Disputes that are unable to be resolved may be referred to the Authority for determination. Complaints that are not resolved by the parties or the Authority may be referred to the Rulings Panel by the Authority or participant.

Audit observation

I checked whether any disputes had been dealt with by Accucal during the audit period.

Audit commentary

Accucal has not needed to resolve any disputes in accordance with these clauses.

Audit outcome

Compliant

2.4 ATH Approval (Clause 10.40 of Part 10)

Code related audit information

A person wishing to be approved as an ATH, or an ATH wishing to renew its approval, must apply to the Authority:

- *at least two months before the intended effective date of the approval or renewal*
- *in writing*
- *in the prescribed form*
- *in accordance with Schedule 10.3.*

A person making an application must satisfy the Authority (providing, where appropriate, suitable evidence) that the person:

- *has the facilities and procedures to reliably meet, for the requested term of the approval, the minimum requirements of this Code for the class or classes of ATH for which it is seeking approval,*
- *has had an audit under Part 16A,*
- *is a fit and proper person for approval.*

Audit observation

I checked the most recent application for re-certification.

Audit commentary

Accucal has appropriate approval and appropriate facilities and procedures to meet the minimum requirements of the Code.

Audit outcome

Compliant

2.5 ATH Requirements (Clause 10.41 of Part 10)

Code related audit information

An ATH must, when carrying out activities under this Part:

- *only carry out activities for which it has been approved by the Authority,*
- *exercise a degree of skill, diligence, prudence, foresight, and economic management, taking into account the technological complexity of the metering components and metering installations being tested:*
 - *determined by reference to good industry practice,*
 - *that would reasonably be expected from a skilled and experienced ATH engaged in the management and operation of an approved ATH,*
- *comply with all applicable safety, employment, environmental, and other enactments,*
- *exercise any discretion given to it under this Part by:*
 - *taking into account the relevant circumstances of the particular instance*
 - *acting professionally*
- *recording the manner in which it carried out its activities and its reasons for carrying the activities out in that manner.*

Audit observation

I checked policy and process documentation to confirm compliance with these clauses.

Audit commentary

Accucal has only conducted activities that fall within the scope of their approval. I have concluded from this audit that Accucal has met the requirements of this clause. I checked compliance with other enactments, specifically with regard to electrical safety. Accucal completes a hazard identification sheet for each job and a Work Method Statement and Job Task Analysis form is completed for some sites as required by the customer. The hazard identification sheet is semi-automated and steps the technician through the required fields. Once a "PIN" is entered, the signature and date/time is added. The completed compliance check sheets include an Electrical Safety Certificate which confirms that the prescribed electrical work completed meets the requirements of regulation 74A of the Electricity Safety Regulations. I checked the PPE policy and confirmed it was appropriate for the work conducted.

Audit outcome

Compliant

2.6 Quality Management Systems (Clauses 3(1) & 4(1) of Schedule 10.3)

Code related audit information

An ATH must establish, document, implement, maintain, and comply with a quality management system which records its processes and procedures to ensure compliance with this Part.

An applicant applying for approval or renewal of approval, as a class A ATH must, as part of its application, confirm that it holds and complies with AS/NZS ISO 17025 accreditation, for at least the requested term of the approval.

An applicant applying for approval, or renewal of approval, as a class B ATH must, as part of its application to the Authority, confirm that it holds and complies with AS/NZS ISO 9001:2008 or AS/NZS ISO 9001:2016 certification for at least the requested term of the approval.

Audit observation

I obtained and reviewed the most recent ISO report to confirm the scopes were appropriate and that certification was in place.

Audit commentary

Accucal provided a copy of their most recent ISO 17025:2017 audit report, completed on April 21st, 2022, by IANZ.

The scope of the ISO 17025 certification is appropriate and is noted as:

Field of Operations: Metrology and Calibration Laboratory

Subfield: Energy Meters; Metering Transformers

The laboratory had appointed the following Key Technical Personnel with the scopes of responsibility as per the classes of tests indicated below:

Russell Mann 5.85, 5.89

Andrew Thomason 5.85, 5.89

The audit report contained one corrective action request and seven recommendations.

The matters raised are shown in the table below.

Issue	Description	Status
Corrective Action Management reviews	<p>The laboratory undertakes management review meetings on an annual basis but for 2021 this was replaced by two staff meetings. These meetings covered some of the requirements of ISO 17025 but did not review the following inputs:</p> <ul style="list-style-type: none"> • Outcome of recent internal audits • Changes in the volume and type of work or in the range of laboratory activities • Customer and personnel feedback • Complaints • Effectiveness of implemented improvements. • Outcomes of the assurance of the validity of results <p>The laboratory is requested to conduct a meeting to review these inputs. Please advise what actions are undertaken and provide supporting evidence including a copy of the meeting minutes/report</p>	Cleared
Recommendation	Assessments of staff competency were due in February 2022 but had not been performed. These assessments should be performed.	Complete
Recommendation	External calibration records of the MTE K2006 were kept in the calibration register but there was no indication of the calibration status on the instrument itself. It is strongly recommended that a calibration sticker is added to reference standard.	Complete
Recommendation	The calibration certificate CAL-2021-405 included an ambient temperature measurement to three decimal places. This was based on an average reading and did not reflect the accuracy of the measurement. Ambient temperature measurements should be recorded on the calibration certificate with decimal places that reflect the accuracy of the reading.	In progress
Recommendation	Raw calibration results, pdf copies of certificates and an extensive electronic data backup system allowed for some protection of the calibration results. The laboratory should review how data from the calculation spreadsheets can be protected further such as making read only copies once data is finalised and protecting cells that contain formulas.	Complete for “Red Phase”, in progress for other results
Recommendation	Recommendations from 2021 had not been reviewed and only partially completed. The laboratory should review and process all the recommendations.	In progress
Recommendation	The laboratory had previously engaged with customers to obtain feedback but did not have an active plan to continue obtaining feedback. It is strongly recommended that the laboratory reviews how customer feedback is sought.	Under consideration
Recommendation	The internal audit conducted in January 2021 (Audit number 21) included several non-compliances identified that required actions but had not been assigned to a CAR or a person. It is strongly recommended that all the actions from the internal audit are assigned to a staff member.	In progress

Audit outcome

Compliant

2.7 Organisation and Management (Clause 15 of Schedule 10.4)

Code related audit information

An ATH must ensure that it has managerial staff who, unless otherwise permitted in the relevant approval, all have the authority and resources needed to discharge their duties; and the responsibilities, authority, and functional relationships of all its personnel are fully and accurately specified and recorded in the ATH's records.

An ATH must appoint a technical manager (however named) with overall responsibility for technical operations, who must have appropriate engineering qualifications and experience in the operation of an approved ATH; and a quality manager (however named), with responsibility for the quality management certification and the implementation of the quality management system.

Audit observation

I checked records in the quality manual to confirm compliance.

Audit commentary

Russell Mann holds the position of Technical Manager, and the Quality Manager position is shared between Stacey Gray, for quality system issues, and Andrew Thomassen for technical issues.

Accucal has training and competency records for all personnel. The records track the competency of staff against a wide range of tasks. This was checked during the audit, and I confirm that the records are up to date.

Audit outcome

Compliant

2.8 Document Processes and Procedures (Clause 16 Of Schedule 10.4)

Code related audit information

An ATH must establish, document, implement, maintain, and comply with a quality management system which records its processes and procedures.

Audit observation

I checked the Class A quality documentation, and I reviewed the relevant ISO report.

Audit commentary

The quality management system meets the requirements of the Code.

Audit outcome

Compliant

2.9 Quality Standard Required for Field Work (Clause 17 Of Schedule 10.4)

Code related audit information

If a class A ATH arranges for another person to carry out field work, it must ensure that person is certified to the relevant AS/NZS ISO9001:2008 or AS/NZS ISO9001:2016 standard at all times while the person carries out the work.

Audit observation

Accucal has not required other parties to carry out field work.

Audit commentary

Accucal has not required other parties to carry out field work.

Audit outcome

Not applicable

2.10 Material Change Requirements (Clause 16A.11)

Code related audit information

If the ATH intends to make a material change to any of its facilities, processes, procedures, or the scope of the ATH's ISO accreditation is reduced, the ATH must arrange for an additional audit at least five business days before the change or reduction in scope take place.

Audit observation

I checked whether Accucal had conducted any material changes.

Audit commentary

Accucal has moved their laboratory to new premises and the most recent ISO report records the following in relation to the move:

The laboratory had recently moved to a new premises following an extensive verification of the environmental conditions and equipment to ensure that it was capable of meeting requirements. The new laboratory had been well designed in a windowless space with a double door system to ensure that there were no major temperature fluctuations, and the laboratory area was kept clean. The air conditioning unit was positioned away from the calibration bench and equipment exhaust fans vented away to maintain a stable air temperature for devices under calibration. Laboratory temperature was being logged continuously with further work planned to measure temperature at specific points along the calibration bench.

This was not considered a material change.

Audit outcome

Not applicable

2.11 Audit Required for ATH Approval (Clause 16A.12 and 16A.13)

Code related audit information

The ATH must provide an audit report to the Authority by the due date. If there are areas where compliance is not achieved, the ATH must also submit a compliance plan which specifies the actions that the ATH intends to address, any issues identified in the audit report and the time frames to complete those actions.

Audit observation

Accucal is currently undergoing an audit and the report will be provided with a compliance plan.

Audit commentary

Accucal is currently undergoing an audit and the report will be provided with a compliance plan.

Audit outcome

Compliant

2.12 Accommodation & Environment (Clause 1 of Schedule 10.4)

Code related audit information

An ATH must maintain a list of personnel who are authorised to access and use its laboratory and storage facilities and restrict access to its laboratory and storage facilities to:

(i) the personnel specified

(ii) the Authority

(iii) an auditor conducting an audit

(iv) any other person who is, at all times, directly supervised by a member of personnel specified.

Audit observation

I checked records in the quality manual to confirm compliance.

Audit commentary

Accucal's laboratory is now located at new premises, not at Russell Mann's premises. Accucal has a list of approved personnel in their quality manual.

Audit outcome

Compliant

2.13 Compensation Factors (Clause 8 of Schedule 10.4)

Code related audit information

If an ATH is approved to certify metering installations, the ATH must have a documented process for the determination of compensation factors.

Audit observation

I checked the documentation in relation to compensation factors and I checked 26 certification reports.

Audit commentary

The documentation achieves compliance with the Code and checks of the certification reports confirmed accuracy.

Audit outcome

Compliant

2.14 Metering Component Stickers (Clause 8(3) of Schedule 10.8)

Code related audit information

An ATH must ensure that a certification sticker is:

- made of weather-proof material*
- permanently attached*
- filled out using permanent markings.*

Audit observation

I checked Accucals component stickers to confirm compliance.

Audit commentary

All component stickers are compliant with this clause.

Audit outcome

Compliant

2.15 Interference with Metering Installations (Clause 10.12)

Code related audit information

An ATH may not directly or indirectly interfere with a metering installation unless it is also the MEP or has been advised to do so by the existing or gaining MEP for the installation.

Audit observation

I audited this clause by exception.

Audit commentary

I did not identify any interference by Accucal during the audit.

Audit outcome

Compliant

3. METERING RECORDS AND REPORTS

3.1 Physical Location of Metering Installations (Clause 10.35 of Part 10)

Code related audit information

If it is not practical in the circumstances to locate the metering installation at the point of connection, the reconciliation participant must calculate the quantity of electricity conveyed through the point of connection using a loss compensation process approved by the certifying ATH.

If this occurs the ATH must record the calculation, measurements, and assumptions in the installation certification report.

Audit observation

I checked whether Accucal had certified any installations with loss compensation.

Audit commentary

Accucal sometimes certifies metering installations that are not located at the point of connection when certifying generation stations. I viewed an example of the calculations completed to determine the loss compensation factor. Details of the loss factor calculation are recorded in the design report. The loss factors are programmed into the meter by Accucal, and the load check confirms the accuracy.

Audit outcome

Compliant

3.2 Metering Installation Type (Clause 8(2) of Schedule 10.7)

Code related audit information

The metering installation certification report must specify whether the installation is half hour, non-half hour or half hour and non-half hour metering.

The metering installation certification report must also record each services access interface and the conditions under which each services access interface may be used.

Audit observation

I checked 26 certification reports to confirm compliance.

Audit commentary

Accucal's standard metering installation certification reports contain the relevant fields. The services access interface and NHH/HHR field was correctly populated for all 26 installations.

Accucal only certifies HHR metering installations read by Reconciliation Participants, therefore there is only one services access interface and maximum interrogation cycle. The services access interface is correctly recorded as "Meter Data Logger".

Audit outcome

Compliant

3.3 Record Metering Installation Category (Clause 8(4) Of Schedule 10.7)

Code related audit information

An ATH must record the category of the metering installation in the metering installation certification report.

Audit observation

I checked 26 certification reports to confirm compliance.

Audit commentary

The metering category was correctly recorded in all 26 reports checked.

Audit outcome

Compliant

3.4 Calibration Test Points (Clause 7(7) Of Schedule 10.4)

Code related audit information

An ATH may select a test point other than those specified in the relevant standard listed in Table 5 of Schedule 10.1, or at a lower burden than specified in the standard, but must, if it does this, document its reasons for the selection of these test points in the calibration report.

Audit observation

I checked with Accucal whether any different test points had been used.

Audit commentary

Accucal has used different test points when the expected load of an installation will be outside the range of the specified test points. I checked an example where lower test points were used for extended range CT calibration. The reasons for the selection of the test points were recorded in the design and calibration reports.

Audit outcome

Compliant

3.5 Services Access Interface (Clause 10 of Schedule 10.4)

Code related audit information

An ATH must, when preparing a metering installation certification report, determine, and record in the certification report, the services access interfaces and the conditions under which each services access interface may be used. The services access interface means the point, at which access may be gained to the services available from a metering installation, that is:

- *recorded in the certification report by the certifying ATH for the metering installation,*
- *where information received from the metering installation can be made available to another person*
- *where signals for services such as remote control of load (but not ripple control) can be injected.*

Audit observation

I checked 26 certification reports to confirm compliance.

Audit commentary

Accucal's metering installation certification reports contain the relevant fields and the services access interface was correctly recorded for all 26 metering installations checked.

Audit outcome

Compliant

3.6 Certification & Calibration Reports (Clause 11(1) of Schedule 10.4)

Code related audit information

An ATH must, for each metering installation that it certifies, produce a certification report in accordance with Schedule 10.7. An ATH must, for each metering component:

- *that it calibrates, produce a calibration report in accordance with Schedule 10.8*
- *that it certifies, produce a certification report in accordance with Schedule 10.8.*

Audit observation

I requested a sample of 26 certification records to confirm compliance.

Audit commentary

Certification reports were produced for all 26 installations. The certification and calibration reports contain all the required information.

Audit outcome

Compliant

3.7 ATH Record Keeping Requirements (Clause 12 of Schedule 10.4)

Code related audit information

The ATH must document and maintain its record keeping system for certificates, reports, and any other records. The records can be stored in any media, such as hard copy or electronically. The records should be stored in a manner that prevents deterioration or damage and that retrieval of a record cannot result in change or damage to the record. Electronic storage should be backed up.

The ATH must securely store all records, certificates, and reports and ensure that each metering installation is:

- *uniquely identified*
- *sufficiently detailed to verify the tests carried out including test conditions, the test equipment used and the personnel carrying out the tests.*

Audit observation

I checked the certification records for 26 metering installations along with the storage practices.

Audit commentary

All records were available, and records are stored indefinitely.

Audit outcome

Compliant

3.8 Retention of Records (Clause 13 of Schedule 10.4)

Code related audit information

The ATH must keep all records, certificates, and calibration reports for all components and installations certified for at least 48 months after the date of decommissioning.

Audit observation

I checked the certification records for 26 metering installations along with the storage practices.

Audit commentary

All records were available, and records are stored indefinitely.

Audit outcome

Compliant

3.9 Advise MEP of Records, Certificates or Reports for a Metering Installation (Clause 14 Of Schedule 10.4)

Code related audit information

The ATH must provide the MEP responsible for the metering installation with the record, certificate, or report for the metering installation within five business days of certification. The ATH must ensure the MEP receives the record. This can be either as an electronic copy or any other agreed format.

Audit observation

I checked the report from January 2023 for timeliness of record delivery to Vector Metering, Accucal’s largest client.

Audit commentary

Certification records are loaded directly into the MEP’s system.

23 of 83 records (28%) were provided within five business days and 60 records were provided later than five business days. The average business days was 11.5.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.9 With: Clause 14 Of Schedule 10.4 From: 01-Jan-23 To: 31-Jan-23	60 of 83 records sent late to an MEP in January 2023. Potential impact: Medium Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2

Audit risk rating	Rationale for audit risk rating		
Low	<p>The controls are recorded as moderate because Accucal has plans to address their resourcing level to ensure records are provided on time.</p> <p>The impact on settlement and participants is minor; therefore, the audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
AccuCal is working towards increasing resources to allow processing reports within the prescribed timeframes but also comment that some of the 'late' records have been due to incorrect entry by the MEP of livening/certification dates on installations on dead boards when there was a delay before livening and subsequent certification reporting.		By end of 2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Additional staff to be employed and trained as KTP's		By end of 2023	

3.10 Certification at a Lower Category (Clause 6(4) Of Schedule 10.7)

Code related audit information

If the ATH makes a determination to certify a metering installation at a lower category under clause 6 of Schedule 10.7, the certification report must include all information required to demonstrate compliance.

Audit observation

I checked the process for certification as a lower category and the certification records for two metering installations certified at a lower category.

Audit commentary

The two certification records were for metering installations which were nominally category 3 and had been certified as category 2. Details of the certifications are included in the table below:

ICP	CT Ratio	Nominal Category	Certified Category	Protection rating	Comments
0333200012LCC6B	600/5	3	2	800A	<p>The certification report confirms certification is based on maximum demand and monitoring is required by the MEP.</p> <p>Information supporting the decision to certify as a lower category is recorded in the certification report and there is an additional file containing maximum demand for the previous 12 months.</p>

1002172017LCF3D	1600/5	4	3	Unknown	The certification report confirms certification is based on maximum demand and monitoring is required by the MEP. Information supporting the decision to certify as a lower category is recorded in the certification report and there is an additional file containing maximum demand for the previous 12 months.
-----------------	--------	---	---	---------	---

Audit outcome

Compliant

3.11 Meter Requirements (Clause 26(3) & (4) of Schedule 10.7)

Code related audit information

The ATH needs to document the following in the metering records:

- *the meter manufacturer's required recommendations for regular maintenance*
- *any maintenance that has been carried out on the meter, such as battery monitoring and replacement.*

An ATH must record in the metering installation certification report, the maximum interrogation cycle for the metering installation before it certifies a metering installation incorporating a meter.

Audit observation

I checked process documentation, conducted a walk-through of the process and checked 26 certification records.

Audit commentary

I checked 26 certification reports, and I confirm the maximum interrogation cycle was recorded in all cases.

The only maintenance requirements are battery monitoring which is conducted by the Reconciliation Participant.

Audit outcome

Compliant

3.12 Meter Certification Expiry Date (Clause 27(5) of Schedule 10.7)

Code related audit information

The ATH must record the certification expiry date for each meter in a metering installation in the metering installation certification report and the meter certification report.

Audit observation

I checked 26 certification records to confirm compliance.

Audit commentary

Accucal complies with the point above and records the meter certification expiry date in the installation certification report. All certification records checked contained meter certification expiry dates.

Audit outcome

Compliant

3.13 Measuring Transformer Requirements (Clause 28(3) of Schedule 10.7)

Code related audit information

The ATH needs to document the following in the metering records:

- the manufacturer's recommendations for any regular maintenance required for the measuring transformer*
- any maintenance that has been carried out on the measuring transformer.*

Audit observation

I checked whether any measuring transformers required maintenance.

Audit commentary

The ATH must, before it certifies a metering installation incorporating a measuring transformer, document in the metering records any regular maintenance required for the measuring transformer in accordance with the manufacturer's recommendations and any maintenance that has been carried out on the measuring transformer. Accucal has not dealt directly with any measuring transformers that require maintenance. Some measuring transformers are part of switchgear, and the metering component owner will conduct maintenance. The maintenance requirements are part of the design report which becomes part of the metering certification records.

Audit outcome

Compliant

3.14 Determine Maximum Interrogation Cycle (Clause 36(3) & (4) Of Schedule 10.7)

Code related audit information

An ATH must record the maximum interrogation cycle for each services access interface for the metering installation. The maximum interrogation cycle for a metering installation is the shortest of the following periods:

- the period of inherent data loss protection for the metering installation*
- the period of memory availability given the data storage device configuration*
- the period in which the accumulated drift of a data storage device clock is expected to exceed the maximum time error set out in Table 1 of clause 2 of Schedule 15.2 for the category of the metering installation.*

Audit observation

I checked 26 certification reports to confirm the maximum interrogation cycle is recorded.

Audit commentary

I checked 26 certification reports, and I confirm the maximum interrogation cycle was recorded in all cases.

Audit outcome

Compliant

4. CALIBRATION AND CERTIFICATION OF METERING COMPONENTS

4.1 Accommodation and Environment (Clause 1(D)-(E) Of Schedule 10.4)

Code related audit information

The ATH must ensure that the environment in which its activities are undertaken is monitored, appropriate for the tests being carried out and unlikely to affect the required accuracy.

Audit observation

I checked the IANZ report which confirmed the test laboratory environment was appropriate.

Audit commentary

Accucal controls their laboratory environment to $20.5^{\circ}\text{C} \pm 2^{\circ}\text{C}$. Temperature is logged with a temperature logger and the results are checked by IANZ during the annual audits.

Accucal has moved their laboratory to new premises and the most recent ISO report records the following in relation to the move:

The laboratory had recently moved to a new premises following an extensive verification of the environmental conditions and equipment to ensure that it was capable of meeting requirements. The new laboratory had been well designed in a windowless space with a double door system to ensure that there were no major temperature fluctuations, and the laboratory area was kept clean. The air conditioning unit was positioned away from the calibration bench and equipment exhaust fans vented away to maintain a stable air temperature for devices under calibration. Laboratory temperature was being logged continuously with further work planned to measure temperature at specific points along the calibration bench.

Audit outcome

Compliant

4.2 Use of Measurement Standards (Clause 1(F) Of Schedule 10.4)

Code related audit information

The ATH must comply with the specific requirements of the applicable standard listed in Table 5 of Schedule 10.1.

Audit observation

I checked the standards being used and some test points to confirm compliance.

Audit commentary

Accucal uses the correct standards.

Audit outcome

Compliant

4.3 Test Equipment (Clause 2 of Schedule 10.4)

Code related audit information

An ATH must, at all times, ensure that it has access to all items of equipment required for the performance of the calibrations and tests it is approved to undertake under this Part; and each item of equipment it uses is maintained in accordance with the manufacturer's recommendations and this Code. A class B ATH must have and maintain procedures for the purchase of test equipment and associated consumables.

Audit observation

I checked records in the test equipment maintenance and calibration database to confirm compliance.

Audit commentary

I viewed the test equipment maintenance and calibration database during the audit, and this meets the requirements of this clause.

Audit outcome

Compliant

4.4 Calibration of Reference & Working Standards (Clause 3(1)(a), (b)(i) and (6) of Schedule 10.4)

Code related audit information

An ATH must ensure that any reference standard is calibrated by an approved calibration laboratory and that any working standard is calibrated by an approved calibration laboratory or class A ATH. The calibration reports for the calibrated standards must be held by the ATH and indicate that the standard is within the manufacturer's accuracy specifications.

Audit observation

I checked the calibration records for all of Accucal's reference and working standards to confirm they had current calibration certificates.

Audit commentary

The calibration agent for each standard is recorded in Accucal's test equipment maintenance and calibration database. Calibration reports are stored and accessible in the database.

Audit outcome

Compliant

4.5 Calibration Interval (Clause 3(2) of Schedule 10.4)

Code related audit information

Each reference standard or working standard must be calibrated within the applicable calibration interval set out in Table 1 of Schedule 10.4.

Audit observation

I checked the calibration records for all of Accucal's reference and working standards to confirm they had current calibration certificates.

Audit commentary

The Accucal database records the last and next calibration date for each working and reference standard used by Accucal as detailed in the table below:

(IDENTIFICATION, DESCRIPTION, MAKE, MODEL, RANGE IF APPLICABLE)									
Name of Equipment	Asset No (permanently marked on equipment)	Equipment Type	Manufacturer	Model Number	Serial Number	Status (In use/Not in use)	Date of Last Calibration	Next calibration Due Date	Owner
Standard CT - 5A Sec	ACL-4	CT	Smith Hobson	17496	G416393	In Use	23-Jul-20	23-Jul-25	Reference
Standard CT - 1A Sec	ACL-5	CT	Transformer & Coil Winding Systems Ltd.	AT83	010281-1	In Use	7-Apr-22	7-Apr-23	Working Std
CT/VT Comparato	ACL-16	CT/VT Comparato	Tettec	2767 YB	148497	In Use	7-Sep-20	7-Sep-25	Reference
6.6/11/22/3 3KV VT	ACL-17	Std VT	Hansom Transform ers	VT	24172	In Use	24-Jul-20	24-Jul-25	Reference
STD VT TWS	ACL-24	Std VT	TWS	SBU79A	80747/1-1	Not in use this year	10-Mar-21		Working Std
220kV VT	ACL-25	Std VT	Hansom Transform ers	VT 220	24892	In Use	23-Mar-21	23-Mar-26	Reference
PRS400.3 - 1	ACL-26	Portable reference Std	EMH	PRS400.3	37273	In Use	13-Apr-22	13-Apr-23	Working Std
Std VT Ritz	ACL-27	Std VT	Ritz	GZ12BRS	10/1142501 13326	In Use	24-Apr-22	24-Apr-23	Working Std
K2006.3	ACL-30	Comparator	EMH	K2006.3	40277		1-Dec-22	1-Dec-24	Reference
Std CT - 5A Sec - BETC 1	ACL-33	CT	British Electric Transform er Co. Ltd.		103973/A	In Use	14-Mar-22	14-Mar-23	Working Std - ChCh
Std CT - 5A Sec - BETC 2	ACL-34	CT	British Electric Transform er Co. Ltd.		103972/A	Not in use this year	8-Mar-21		Working Std
PRS400.3 - 2	ACL-46	Portable reference Std	EMH	PRS400.3	49585	In Use	4-Apr-22	4-Apr-23	Working Std
STD VT Ritz No. 2	ACL-47	Std VT	Ritz	GX12RS	14/1210850 134558	In Use	4-Apr-22	4-Apr-23	Working Std
RedPhase CT Test Set	ACL-48	CT Test Set	RedPhase	S90G-V2	7173	In Use	30-Apr-22	30-Apr-23	Working / Reference Std
6.6/11/22/3 3KV VT	ACL-54	Std VT	Hansom Transform ers	VT	23238	In Use	1-Jul-22	1-Jul-23	Working Std
RedPhase CT Test Set	ACL-56	CT Test Set	RedPhase	S90G-V2	7370	In Use	8-Apr-22	8-Apr-23	Working / Reference Std
RedPhase CT Test Set	ACL-76	CT Test Set	RedPhase	S90G-V2	7070	In Use	8-Apr-22	8-Apr-23	Working / Reference Std
RedPhase CT Test Set	ACL-77	CT Test Set	RedPhase	S90G-V2	7678	In Use	8-Apr-22	8-Apr-23	Working / Reference Std
PRS600.3 - 1	ACL-79	Portable reference Std	EMH	PRS600.3	92844	In Use	15-Feb-22	15-Feb-23	Working Std

Audit outcome

Compliant

4.6 Calibration of Reference Standards (Clause 3(1)(B)(li), (2), (3)(C), (4) And (5) Of Schedule 10.4)

Code related audit information

Class A ATHs must ensure that in calibration of reference standards, any uncertainties are sufficiently small so that the overall uncertainty in the measurements used to test a metering installation does not exceed one third of the maximum permitted error set out in Table 1 of Schedule 10.1 for the category of metering installation that the reference standard will be used to calibrate.

If a reference standard is used in conditions that deviate from those in the calibration report, the class A ATH must calculate and apply adjustments using its own processes and procedures so that the reference standard achieves the reference conditions.

If a reference standard is used in conditions that deviate from those in the calibration report, the class A ATH must calculate and apply adjustments using its own processes and procedures so that the reference standard achieves the reference conditions.

Audit observation

Accucal has reference standards which are mainly used in the laboratory for calibration of working standards. I checked the procedures for use of the reference standards to confirm compliance.

Audit commentary

The 220kV VT reference standard is sometimes used for calibrations completed in the field. Accucal demonstrated that the error and uncertainty calculation procedure will ensure that allowance is made for the deviation from reference conditions.

Audit outcome

Compliant

4.7 33kv or above calibrated by an Approved Calibration Laboratory (Clause 3(3)(B) Of Schedule 10.4)

Code related audit information

Class A ATHs must ensure that a working standard on a system operating at a voltage of 33kV or above has been calibrated by an approved calibration laboratory.

Audit observation

I checked if Accucal uses a working standard on a system operating at a voltage of 33kV or above.

Audit commentary

The 220kV VT reference standard is sometimes used for calibrations completed in the field. The calibration records confirmed that the standard is calibrated by an approved laboratory.

Audit outcome

Compliant

4.8 Metering Component Testing System (Clause 4 of Schedule 10.4)

Code related audit information

An ATH may use a complete calibrated metering component testing system (a test bench) as an alternative to a separately calibrated working standard only if the ATH:

- *calibrates the test bench as if it was a working standard*
- *carries out a testing system accuracy test, using approved reference standards before completing the calibration report.*

Audit observation

Accucal does not have a test bench.

Audit commentary

Accucal does not have a test bench.

Audit outcome

Not applicable

4.9 Calibration Errors (Clause 5 of Schedule 10.4)

Code related audit information

A Standard cannot be used if the ATH believes it has a calibration error. If an error is found, then all ATH's that have used the standard must be notified. All metering installations certified using the standard must be treated as defective in accordance with Clause 10.43.

Audit observation

I checked Accucal understands this requirement through interview. I checked whether this situation had occurred.

Audit commentary

Accucal understands the requirements of this clause. There are no examples of standards with calibration errors.

Audit outcome

Compliant

4.10 Measurement Traceability (Clause 6 of Schedule 10.4)

Code related audit information

An ATH must document, maintain, and comply with a system that ensures, whenever it undertakes a calibration test or measurement, the ATH can replicate the test or measurement in every respect and the results of the measurements are traceable.

Audit observation

I checked this by reviewing the IANZ audit report.

Audit commentary

The IANZ report confirms compliance.

Audit outcome

Compliant

4.11 Calibration Methods (Clause 7(6) of Schedule 10.4)

Code related audit information

An ATH must only use components that have been certified by an ATH or calibration laboratory.

A Class B ATH must follow 17025 calibration methods for components.

The test points must be those listed in the relevant IEC standard.

An ATH must ensure that uncertainty of measurement does not exceed one third of the error listed in the relevant IEC standard listed in Table 5.

If a CT is to be used in a Metering Installation is certified using the selected component method, then it must be tested for errors at 5% to 120% of rated current.

An ATH must have documented instructions for calibration that match the IEC standard.

Audit observation

I checked a sample of calibration and certification reports to confirm compliance with this clause.

Audit commentary

All components are calibrated and certified. Calibration is conducted by the Class A ATH. Uncertainty of measurement does not exceed one third of the error listed in the standard. CT test points are compliant.

Audit outcome

Compliant

4.12 Data Storage Device Certification (Clause 5 of Schedule 10.8)

Code related audit information

All data storage devices must be certified before they can be used in a metering installation. The ATH must ensure that the data storage devices in a metering installation have been type tested by an approved test laboratory, that the results for data storage devices are appropriate for that model and version and have a calibration report.

Audit observation

I checked the certification records for 26 metering installations and the associated type test reports to confirm compliance.

Audit commentary

Accucal certifies data storage devices in accordance with these clauses. The certification report is combined with the metering installation certification report and contains the required details.

In the previous audit it was recommended that Accucal record a reference to the data storage device type test report in the data storage certification report. This recommendation was adopted.

The clauses for type testing and data storage device certification require the ATH to determine a number of factors, including:

- whether the type testing is appropriate for the model and version of meter,
- that a type test report is produced that:
 - confirms the meter's technical characteristics, and
 - confirms the range of environmental conditions within which the meter has been proven accurate and reliable, and
 - confirms that the meter performs the functions for which it was designed, and
 - confirms that the meter complies with the requirements of this Part, and
 - records the tests undertaken by the approved test laboratory and the reasons why the ATH considers that they are appropriate,

- that each data storage device is installed so that onsite interrogation is possible without the need to interfere with seals, and
- that each data storage device has a dedicated power supply unless the data storage device is integrated with another metering component,
- that that each data storage device in the metering installation:
 - is compatible with each other metering component of the metering installation, and
 - is suitable for the electrical and environmental site conditions in which it is installed, and
 - has been certified under Schedule 10.8, and
 - has appropriate electrical separation between all of its outputs and inputs, and all of its outputs and inputs are rated for purpose, and
 - has no outputs that will interfere with the operation of the metering installation, and
 - records periods of data identifiable or deducible by both date and time on interrogation.

It's clear that the mere availability of a type test report is insufficient to achieve compliance. There are a number of specific items that the ATH is required to check and confirm. I therefore recommend that Accucal develops a register for type test reports to confirm that the items above have been checked and confirmed. Each record should have the date the checks were performed and details of who conducted the checks.

Recommendation	Description	Audited party comment	Remedial action
Type test reports	Develop a register of type test reports detailing checks conducted, whether compliance is achieved, the date checks were conducted and who conducted them.	We can see the value in the recommended register of Type Test Reports and will work on developing this, thank-you for the suggestion.	Identified

Clause 38(2)(b) of schedule 10.7 requires confirmation in the metering installation certification report that each data storage device in the metering installation:

- has memory capacity and functionality that is suitable for the proposed functions of the data storage device specified in the design report for the metering installation, and
- has availability of memory for a period that is suitable for the proposed functions as set out in the design report for the metering installation, and for a minimum continuous period of 15 days.

Compliance with this clause is discussed in **section 5.45**.

Audit outcome

Compliant

4.13 Metering Component Stickers (Clause 8(1) of Schedule 10.8)

Code related audit information

An ATH must confirm certification by attaching a metering component certification sticker to the metering component or, if not practicable, provide the sticker with the metering component.

If an ATH certifies the metering component on the same day it certifies the metering installation that the metering component is installed in, the ATH may combine the certification stickers and attach it to the metering installation in accordance with clause 41 of Schedule 10.7.

Audit observation

I checked Accucal's component stickers to confirm compliance.

Audit commentary

I checked the templates for Accucal's stickers. The stickers are printed in the field by the technicians at the time of certification. All component stickers are compliant with this clause.

Audit outcome

Compliant

4.14 Metering Component Stickers (Clause 8(2) of Schedule 10.8)

Code related audit information

A metering component certification sticker must show:

- the name of the metering component owner (if available)*
- if the metering component is a meter or a measuring transformer:
 - a) the name of the ATH or the approved calibration laboratory who calibrated the metering component*
 - b) the name of the ATH who certified the metering component*
 - c) the date on which the metering component was certified*
 - d) the initials or other unique identifier of the person who carried out the certification of the metering component.**

Audit observation

I checked Accucal's component stickers to confirm compliance.

Audit commentary

I checked the templates for Accucal's stickers. The stickers are printed in the field by the technicians at the time of certification. All component stickers are compliant with this clause.

Audit outcome

Compliant

4.15 Sealing and Monitoring of Seals (Clause 9 of Schedule 10.4 & Clause 47(7) of Schedule 10.7)

Code related audit information

An ATH is required to have a documented system for applying seals to a metering installation to ensure that each metering component in the metering installation that could be expected to affect the accuracy or reliability of the metering installation is sealed. The system of sealing will ensure monitoring of the integrity of the metering installation and that unauthorised access to the metering installation will be identifiable so that the MEP can be notified.

The sealing system will identify:

- the ATH who affixed the seal*
- the person (or the sealing tool) who applied the seal*
- when the seal was applied.*

Audit observation

I checked the quality documentation and a sample of 26 certification records to confirm compliance.

Audit commentary

Accucal uses individually numbered seals. A master seals register is maintained of all seals that have been applied and all seals that have been removed during recertification and inspections. This was checked for accuracy during the audit by comparing seal numbers from certified installations to those contained in the register.

Audit outcome

Compliant

5. CALIBRATION AND CERTIFICATION OF METERING INSTALLATIONS

5.1 ATH Must Not Certify Metering Installations under Certain Circumstances (Clause 8(1) Of Schedule 10.7)

Code related audit information

The ATH must not certify a metering installation if the installation does not comply with Part 10.

Audit observation

I checked a sample of 26 certification records to confirm compliance.

Audit commentary

There were no metering installations certified that did not comply with Part 10.

Audit outcome

Compliant

5.2 Determination of Metering Categories (Clause 5 of Schedule 10.7 & Clause 10.11)

Code related audit information

An ATH is required to determine the category of the metering installation in accordance with Table 1 of Schedule 10.1 before it certifies a metering installation.

Audit observation

I checked certification records for 26 metering installations to confirm compliance.

Audit commentary

All 26 certification reports had the metering category recorded correctly.

Audit outcome

Compliant

5.3 Requirement for Metering Installation Design Report (Clause 2(4) Of Schedule 10.7)

Code related audit information

The ATH must receive a design report from the MEP before installing or modifying a metering installation or a component in a metering installation.

Audit observation

I checked the current suite of design reports and the certification records for 26 metering installations.

Audit commentary

Accucal provides design reports for the MEPs. The design report reference was recorded on all of the certification reports checked.

Audit outcome

Compliant

5.4 ATH Design Report Obligations (Clause 3 of Schedule 10.7)

Code related audit information

Before certifying a metering installation, the ATH must check the design report to confirm the metering installation will function as designed and that the metering installation will comply with Part 10.

The certifying ATH must update the design report with any changes and provide it to the MEP responsible for the installation within 10 days of installation certification.

Audit observation

I checked the current suite of design reports and the certification records for 26 metering installations.

Audit commentary

The design reports contain all of the required information, including configuration schemes and schematic drawings. There were no examples of changes to design reports. The design report was recorded in all 26 certification records.

Audit outcome

Compliant

5.5 Certification as a Lower Category (Clause 6(1) of Schedule 10.7)

Code related audit information

An ATH may determine that the metering category of a current transformer installation is lower than would otherwise be the case and certify the installation at that lower category only if:

- a protection device, like a fuse or a circuit breaker, is installed so that it limits the maximum current;*
- or*
- the MEP provides evidence from historical data that the maximum current will be lower than the current setting of the protection device for the category that metering installation is currently certified at; or*
- the components in the metering installation will use less than 0.5 GWh in any 12-month period; or*
- the MEP provides evidence from historical data that the installation will use less than 0.5 GWh in any 12-month period.*

Audit observation

I checked the process for certification as a lower category and the certification records for two metering installations certified at a lower category.

Audit commentary

The two certification records were for metering installations which were nominally category 3 and had been certified as category 2. Details of the certifications are included in the table below:

ICP	CT Ratio	Nominal Category	Certified Category	Protection rating	Comments
0333200012LCC6B	600/5	3	2	800A	The certification report confirms certification is based on maximum demand and monitoring is required by the MEP. Information supporting the decision to certify as a lower category is recorded in the certification report and there is an additional file containing maximum demand for the previous 12 months.
1002172017LCF3D	1600/5	4	3	Unknown	The certification report confirms certification is based on maximum demand and monitoring is required by the MEP. Information supporting the decision to certify as a lower category is recorded in the certification report and there is an additional file containing maximum demand for the previous 12 months.

Audit outcome

Compliant

5.6 Use of Current Transformer Rating Lower Than Supply Capacity (Clause 6(2)(a) of Schedule 10.7)

Code related audit information

If the ATH determines the category of a current transformer metering installation is lower than would otherwise be the case and a current limiting device is used, the ATH must:

- confirm the suitability and operational condition of the protection device
- record the rating and setting of the protection device in the metering records
- seal the protection device
- apply, if practicable, a warning tag or label to the seal.

Audit observation

I checked the process for certification as a lower category and the certification records for two metering installations certified at a lower category.

Audit commentary

The two certification records were for metering installations which were nominally category 3 and had been certified as category 2. Details of the certifications are included in the table below.

Neither certification was based on the protection rating.

ICP	CT Ratio	Nominal Category	Certified Category	Protection rating	Comments
0333200012LCC6B	600/5	3	2	800A	The certification report confirms certification is based on maximum demand and monitoring is required by the MEP. Information supporting the decision to certify as a lower category is recorded in the certification report and there is an additional file containing maximum demand for the previous 12 months.
1002172017LCF3D	1600/5	4	3	Unknown	The certification report confirms certification is based on maximum demand and monitoring is required by the MEP. Information supporting the decision to certify as a lower category is recorded in the certification report and there is an additional file containing maximum demand for the previous 12 months.

Audit outcome

Compliant

5.7 Determining Metering Installation Category at a Lower Category Using Current Transformer Rating (Clause 6(2)(b) & (d) of Schedule 10.7)

Code related audit information

The ATH may determine the metering installation category according to the metering installation's expected maximum current, if:

- there has been a request to do so from the MEP,*
- the MEP provides evidence from historical data that the maximum current will be lower than the current setting of the protection device for the category that metering installation is currently certified;*
- and*
- the ATH considers it is appropriate to do so in the circumstances.*

The MEP must obtain the maximum current that flows through the installation each month from the participant interrogating the installation. From this data the ATH can calculate the maximum current from the raw meter data by either calculation from the kVA by trading period if available or from a maximum current indicator if fitted. If the MEP does not receive the monthly report from the participant interrogating the installation or if the current exceeds the maximum calculated rating of the installation, the certification of the installation is automatically cancelled.

Audit observation

I checked the process for certification as a lower category and the certification records for two metering installations certified at a lower category.

Audit commentary

The two certification records were for metering installations which were nominally category 3 and had been certified as category 2. Details of the certifications are included in the table below:

ICP	CT Ratio	Nominal Category	Certified Category	Protection rating	Comments
0333200012LCC6B	600/5	3	2	800A	The certification report confirms certification is based on maximum demand and monitoring is required by the MEP. Information supporting the decision to certify as a lower category is recorded in the certification report and there is an additional file containing maximum demand for the previous 12 months.
1002172017LCF3D	1600/5	4	3	Unknown	The certification report confirms certification is based on maximum demand and monitoring is required by the MEP. Information supporting the decision to certify as a lower category is recorded in the certification report and there is an additional file containing maximum demand for the previous 12 months.

Audit outcome

Compliant

5.8 Suitability of Determination of a Metering Installation Category at a Lower Category Using Current Transformer Rating (Clause 6(3) Of Schedule 10.7)

Code related audit information

Before the ATH determines a metering installation to be a lower category, the ATH must first visit the site of the metering installation to ensure it is suitable for the metering installation to be determined to be a lower category.

Audit observation

I checked the process for certification as a lower category and the certification records for two metering installations certified at a lower category.

Audit commentary

The two certification records were for metering installations which were nominally category 3 and had been certified as category 2. Details of the certifications are included in the table below:

ICP	CT Ratio	Nominal Category	Certified Category	Protection rating	Comments
0333200012LCC6B	600/5	3	2	800A	The certification report confirms certification is based on maximum demand and monitoring is required by the MEP. Information supporting the decision to certify as a lower category is recorded in the certification report and there is an additional file containing maximum demand for the previous 12 months.
1002172017LCF3D	1600/5	4	3	Unknown	The certification report confirms certification is based on maximum demand and monitoring is required by the MEP. Information supporting the decision to certify as a lower category is recorded in the certification report and there is an additional file containing maximum demand for the previous 12 months.

Audit outcome

Compliant

5.9 Use of Metering Installation Certification Methods (Clause 7(1) Of Schedule 10.7)

Code related audit information

When certifying a metering installation, the ATH must use either of the following methods:
a) the selected component certification method if the metering installation is category 1, 2, or 3; or
b) the fully calibrated certification method.

Audit observation

I checked certification records for 26 metering installations to confirm compliance.

Audit commentary

Accucal uses the selected component, comparative recertification and fully calibrated methods of certification.

The correct certification method has been used in all 26 examples checked and the method is recorded appropriately.

Audit outcome

Compliant

5.10 Certification of a Metering Installation Using Statistical Sampling or Comparative Recertification (Clause 7(2) Of Schedule 10.7)

Code related audit information

In addition to the selected component and fully calibrated methods, the ATH may also recertify an installation using:

- a) an approved statistical sampling process for category 1 metering installations; or*
- b) the approved comparative recertification method for a category 2 metering installation*

Audit observation

I checked certification records for five metering installations to confirm compliance.

Audit commentary

Accucal uses the comparative method of certification for recertification of Category 2 metering installations. I checked five examples, and they were all compliant.

Accucal has not conducted statistical sampling recertification.

Audit outcome

Compliant

5.11 Metering Installation Certification Requirements (Clause 8(3) Of Schedule 10.7)

Code related audit information

An ATH may only certify a metering installation as category 3 or higher if the metering installation incorporates a half hour meter.

Audit observation

I checked the certification records for 18 installations certified at Category 3 and above.

Audit commentary

All 18 installations certified had half hour meters.

Audit outcome

Compliant

5.12 Certification Tests (Clause 9(1) of Schedule 10.7)

Code related audit information

An ATH, when required to carry out tests specified in Tables 3 or 4 of Schedule 10.1, must comply with the provisions of clause 9(1) of Schedule 10.7 for the following tests:

- a prevailing load test*
- an installation or component configuration test*

- a raw meter data output test.

A prevailing load test is defined in the Code as a test that is carried out by comparing the output of the metering installation against a working standard connected to the metering installation. For a category 2 or higher metering installation, the prevailing load check must be done against a calibrated instrument (working standard). For a category 1 metering installation industry, best practice has defined a prevailing load test as a measurement of disk revolutions or pulses compared with time and current measurements. The revolutions or pulses are compared against a table or chart to validate the accuracy of the measurement. The prevailing load check is more than simply confirming that the meter operates but is only intended to identify a “gross error” like a phase missing or reversed or a significant metering error.

If the ATH carries out an installation or component configuration test on a metering installation or a metering component, it must ensure that the test equipment configuration is the same as the metering installation or component configuration recorded in the design report.

To carry out a raw meter data output test for a category 1 metering installation or category 2 metering installation, the ATH must apply a load on each phase that is:

- *greater than 5% of the meter’s maximum rated current for category 1 installations,*
- *10 amps on each phase for category 2 metering installations.*

In addition, the ATH must use either the working standard referred to in subclause (1)(a) or an ammeter in good working order with an accuracy range of +/-5% to measure the load applied to the metering installation and recording the resulting increment of the meter register value over a measured period of time or recording the resulting accumulation of pulses from the load over a measured period of time.

The ATH must also ensure that the change in the meter register that occurs under subclause (ii)(A) or (ii)(B) is at least “1” in the least significant digit, or one mark if the least significant digit does not have numerical markings.

If the meter is a Ferraris disc meter, the ATH must undertake two raw meter data output tests in which the second test must have a load applied to the meter that is at least double the load applied in the first test.

To carry out a raw meter data output test for a half-hour installation, the ATH must either compare the output from a working standard to the raw meter data from the metering installation for a minimum of 1 trading period, or if the raw meter data is to be used for the purposes of Part 15, confirm that the MEP’s back-office processes include a comparison of:

- *the increment of the accumulating meter registers, and*
- *the sum of the half-hour metering raw meter data for the same period.*

Audit observation

I checked process documentation and 26 certification reports to confirm compliance.

Audit commentary

This clause was changed from 1st February 2021 introducing minimum load requirements for ATHs when conducting raw meter data tests. The minimum load required on each phase is:

- greater than 5% of the meter's maximum rated current for category 1 installations, or
- 10 amps on each phase for category 2 metering installations.

When conducting a raw meter data test the code change also requires the ATH to record either:

- the resulting increment of the meter register value over a measured period of time, or
- the resulting accumulation of pulses from the load over a measured period of time.

Prior to this change there was no specified minimum load requirement, and the ATH was not required to record the increment of the meter register value or the resulting accumulation of pulses. All of the records checked were for certifications that took place after 1st February 2021.

The metering installation certification reports included details of the load at the time of the test, the resulting accumulation of pulses and time taken. The minimum load requirements were met for all 26 installations.

The ATH must also ensure that the change in the meter register that occurs when conducting a raw meter data test is at least "1" in the least significant digit, or one mark if the least significant digit does not have numerical markings. Accucal records the meter register advance in the metering installation certification report. My checks confirmed that the meter had advanced by at least "1" in the least significant digit.

The design report reference is included in certification records, and this serves the purpose of confirming the configuration scheme.

- Prevailing load tests must be conducted on a metering installation or metering component by using a working standard connected to the metering installation. Accucal has conducted prevailing load tests in accordance with this clause using a working standard.
- Installation or component configuration tests must ensure that the actual configuration scheme is the same as the scheme for the metering installation or metering component recorded in the design report. The configuration scheme is recorded on the design report.
- Raw meter data output tests for a category 1 metering installations or category 2 metering installations, must be conducted by applying a measured increase in load and measuring the increment of the sum of the meter registers, or the accumulation of pulses resulting from the increase in load. Load tests are conducted for a full trading period for all metering installations, which achieves compliance with this requirement.
- Raw meter data output tests for an HHR metering installation which are category 1 or category 2 must be conducted by either:
 - comparing the output from a working standard to the raw meter data from the metering installation for a minimum of one trading period, or
 - confirming that the metering equipment provider's back office processes include a comparison of the difference in the increment of the meter registers to the half-hour metering raw meter data, if the raw meter data is to be used for the purposes of Part 15.

Accucal conducts full HHR load tests for a full trading period for all Category 1 and Category 2 HHR installations.

- Raw meter data output tests for category 3 or higher HHR metering installations must compare the output of a working standard to the raw meter data from the metering installation for a minimum of one trading period. Load tests are conducted for a full trading period for all Category 3 or higher metering installations.
- Raw meter data output tests for NHH Category 2 metering installations must compare the output of a working standard to the increment of the sum of the meter registers. This test is conducted for all NHH Category 2 metering installations.

Audit outcome

Compliant

5.13 Raw Meter Data Test for All Metering Installations (Clause 9(1A) Of Schedule 10.7)

Code related audit information

If the ATH performs a raw meter data output test under sub-clause (1)(c) or sub-clause (1)(d), for a metering installation that will be certified for remote meter reading, the ATH must:

- a) obtain the raw meter data from the back-office system where the raw meter data is held; or*
- b) ensure that the metering equipment provider responsible for the metering installation has a process to validate a meter reading taken at the time of the metering installation certification with a meter reading from the metering equipment provider's back office system.*

Audit observation

I checked process documentation and 26 certification reports to confirm compliance.

Audit commentary

Accucal obtains data from the back office system as part of the certification process.

Audit outcome

Compliant

5.14 Alternate Raw Meter Data Test for Category 1 And 2 Metering Installations (Clause 9(1)(C) Of Schedule 10.7)

Code related audit information

A raw meter data output test is carried out for a category 1 metering installation or category 2 metering installation by comparing a known load change against the increment of the sum of the meter registers.

Audit observation

Refer to **sections 5.12** and **5.13**.

Audit commentary

Refer to **sections 5.12** and **5.13**.

Audit outcome

Compliant

5.15 Raw Meter Data Output Test (Clause 9(2) And 9(3) Of Schedule 10.7)

Code related audit information

If the ATH performs a raw meter data output test that requires a comparison between two quantities, the ATH must not certify the metering installation unless the test demonstrates that the difference between the two quantities is within the applicable accuracy tolerances set out in Table 1 of Schedule 10.1.

Audit observation

I checked process documentation and records for 26 metering installations to confirm compliance.

Audit commentary

There were no examples of inaccurate or failed test results.

Audit outcome

Compliant

5.16 Test Results (Clause 10(1) & (2) of Schedule 10.7)

Code related audit information

An ATH must not certify a metering installation if the results of tests on the metering installation or any of its metering components find that:

- a metering component did not pass all the tests*
- the metering installation did not meet the requirements for certification.*

Within five business days of reviewing the tests, the ATH must advise the relevant MEP why it did not certify the metering installation.

Audit observation

I checked process documentation and records for 26 metering installations to confirm compliance.

Audit commentary

There were no examples of metering components failing tests.

Audit outcome

Compliant

5.17 Selected Component Certification (Clause 11(2) of Schedule 10.7)

Code related audit information

An ATH may only use the selected component certification method to certify a metering installation which complies with the categories and component specifications set out in Table 1 of Schedule 10.1.

Audit observation

I checked process documentation and records for five metering installations to confirm compliance.

Audit commentary

The process documentation is clear, and all five selected component certification reports were compliant.

Audit outcome

Compliant

5.18 Selected Component - Circumstances Where Method May Be Used (Clause 11(3) Of Schedule 10.7)

Code related audit information

An ATH must only use the selected component certification method to certify the metering installation if:

- the required tests in Table 3 of Schedule 10.1 are carried out*
- each data storage device, meter, and measuring transformer has been calibrated and certified*
- each data storage device is certified in accordance with clause 5 of Schedule 10.8*
- the ATH provides a certification report for the metering installation.*

Audit observation

I checked process documentation and records for five metering installations to confirm compliance.

Audit commentary

The process documentation is clear and in all five examples the required tests were completed, all metering components were calibrated and certified, and a metering installation certification report was provided.

Audit outcome

Compliant

5.19 Comparative Recertification – Circumstances Where Method May be Used (Clause 12(2) of Schedule 10.7)

Code related audit information

An ATH may only use the comparative recertification method to recertify a category 2 metering installation if:

- the certification of the current transformers in the metering installation expire before the meter certification expiry date*
- each data storage device and/or meter has been calibrated and certified.*

Audit observation

I checked process documentation and records for five metering installations to confirm compliance.

Audit commentary

The process documentation is clear, and the certification reports contained confirmation that the meter was replaced by another certified meter.

Audit outcome

Compliant

5.20 Comparative Recertification Tests (Clause 12(3) And 12(5)(A) Of Schedule 10.7)

Code related audit information

An ATH must, when recertifying the category 2 metering installation using the comparative recertification metering installation certification method, ensure that:

- the metering installation has passed the tests set out in Table 3 of Schedule 10.1 using a working standard*
- the accuracy of the current measurement sensor (current transformer or high accuracy Rogowski coil) enables the metering installation to meet the specified accuracy requirements of Table 1 of Schedule 10.1*
- the overall metering installation accuracy meets the requirements of Table 1 of Schedule 10.1 and*
- the ATH provides a certification report for the metering installation.*

Audit observation

I checked process documentation and records for five metering installations to confirm compliance.

Audit commentary

The certification reports confirmed that appropriate testing was conducted and that the total accuracy was within the requirements of table 1. A certification report was provided for each metering installation.

Audit outcome

Compliant

5.21 Fully Calibrated – Circumstances Where Method May be Used (Clause 13(3) of Schedule 10.7)

Code related audit information

An ATH must use the fully calibrated certification method to certify the metering installation:

- by carrying out the tests set out in Table 4 of Schedule 10.1*
- if each of the components (the data storage device, meter, and measuring transformer) has been calibrated and certified.*

Audit observation

I checked process documentation and records for 15 metering installations to confirm compliance.

Audit commentary

The process documentation is clear and in all 15 examples the required tests were completed, all metering components were calibrated and certified, and a metering installation certification report was provided.

Audit outcome

Compliant

5.22 Fully Calibrated - Certify Each Metering Component (Clause 13(4) Of Schedule 10.7)

Code related audit information

Each individual metering component in the metering installation must have a current certification report that confirms that the metering component complies with the requirements of its accuracy class; and includes the certification date of the metering component.

Audit observation

I checked the certification records for five metering installations to confirm compliance.

Audit commentary

All metering components were certified, and the component certification reports contained all of the required information.

Audit outcome

Compliant

5.23 Fully Calibrated - Additional Metering Installation Certification Report Requirements (Clause 13(5) & (6) Of Schedule 10.7)

Code related audit information

The ATH must provide a certification report for the metering installation. The certification report must include confirmation that:

- the ATH has checked the design report of the metering installation to confirm the metering installation functions in accordance with the report*
- the overall metering installation accuracy meets the requirements of Table 1 of Schedule 10.1*
- the accuracy of the metering installation remains within the maximum permitted error for the relevant metering installation*
- each metering component in the metering installation is used only in a permitted combination as set out in table 1 of Schedule 10.1.*

Audit observation

I checked process documentation and records for five metering installations to confirm compliance.

Audit commentary

The process documentation is clear, and a metering installation certification report was provided for all five examples. The certification reports included the following points:

- confirmation of the design report check, and
- confirmation that the installation error is within the maximum permitted error.

Audit outcome

Compliant

5.24 Fully Calibrated – Use Meter Class Accuracy (Clause 13(7) Of Schedule 10.7)

Code related audit information

An ATH must, before it certifies a metering installation, ensure that the ATH uses the meter class accuracy, and not the actual accuracy, to calculate whether the actual error is within the maximum permitted error.

Audit observation

I checked process documentation and records for five metering installations to confirm compliance.

Audit commentary

The meter class accuracy is used, not measured accuracy.

Audit outcome

Compliant

5.25 Insufficient Load (Clause 14 of Schedule 10.7)

Code related audit information

Every metering installation requires a test to ensure that the installation is correctly recording the energy used at the installation. The tests required are defined in Tables 3 and 4 of Schedule 10.1. The checks range from a minimum check that the meter registers increments, through to a full raw meter data output check against a working standard and a check against the back-office data for a half hour installation.

If the ATH decides to certify half hour metering installation that has insufficient load to complete a prevailing load check, the ATH must ensure that:

- it performs an additional integrity check of the metering installation wiring, and records the results of this check in the certification report*
- it records in the certification report that the metering installation is certified under clause 14 of Schedule 10.7.*

Once load is present and following a request from the MEP, the ATH must carry out prevailing load tests. If the tests demonstrate that the metering installation performs within the maximum permitted error, the certifying ATH must:

- update the metering installation certification report, within five business days of completing the tests, to include the results of the tests carried out*
- leave the original metering installation certification expiry date unchanged.*

Audit observation

I checked process documentation, and records for two metering installations to confirm compliance.

Audit commentary

The metering installation certification reports confirmed that a comprehensive set of tests were completed and recorded that met the requirement to perform additional integrity tests. The

certification reports clearly identified that the metering installation is certified under clause 14 of Schedule 10.7.

Audit outcome

Compliant

5.26 Statistical Sampling (Clause 16 of Schedule 10.7)

Code related audit information

A group of meters can be sampled by the ATH and the results of the sample group can be extended to a larger group of the same meters. This is a process of certification by statistical sampling. The ATH must select a sample using a statistical sampling process that is:

- *detailed in AS/NZS1284 (or approved and published by the Authority)*
- *recertify the group by recertifying each metering installation in the sample using the fully calibrated certification method*
- *advise the MEP as soon as reasonably practicable whether the sample passes or fails the recertification requirements.*

If the ATH carries out a statistical sampling process when recertifying a group of category 1 metering installations on behalf of an MEP, it must document and record:

- *the process it follows for selecting samples*
- *any assumptions about those samples*
- *the metering installations in the sample*
- *the metering installations in the recertified group.*

An ATH that recertifies a group of metering installations using a statistical sampling process does not need to apply a certification sticker to the remainder of the metering installations in the family or group that was sample tested.

Audit observation

Accucal has not been requested to recertify any groups of metering installations using the statistical sampling method.

Audit commentary

Accucal has not been requested to recertify any groups of metering installations using the statistical sampling method.

Audit outcome

Not applicable

5.27 Statistical Sampling - Certification Method (Clause 7(3) Of Schedule 10.7)

Code related audit information

If the ATH uses statistical sampling, it must use either the selected component method or the fully calibrated method, as applicable, to certify each metering installation in the sample.

Audit observation

Accucal has not been requested to recertify any groups of metering installations using the statistical sampling method.

Audit commentary

Accucal has not been requested to recertify any groups of metering installations using the statistical sampling method.

Audit outcome

Not applicable

5.28 Certification Validity Periods (Clause 17 of Schedule 10.7)

Code related audit information

A metering installation certification expiry date is the earliest of:

- a) the date of commissioning plus the maximum certification validity period for the relevant category of metering installation, as set out in Table 1 of Schedule 10.1; or*
- b) the earliest metering component certification expiry date; or*
- c) a date determined by the ATH if the ATH believes that the circumstances and condition of the components in a metering installation warrant deviation from Table 1 of Schedule 10.1.*

The expiry date for a metering installation in a group recertified using a statistical sampling process, is the earliest expiry date of the metering installations in the sample.

Audit observation

I checked 26 metering installation certification records to confirm compliance.

Audit commentary

The commissioning date and expiry date was recorded correctly in the metering installation certification reports.

Audit outcome

Compliant

5.29 Metering Installation Accuracy (Clause 21 of Schedule 10.7)

Code related audit information

An ATH must, before it certifies a metering installation, ensure that the metering installation does not exceed the relevant maximum permitted error after the application of any external compensation factors.

Audit observation

I checked process documentation and records for 26 metering installations to confirm compliance.

Audit commentary

The process documentation stipulates the maximum permitted errors for certification. The certification records confirmed this was being applied correctly.

Audit outcome

Compliant

5.30 Error Calculation (Clause 22 of Schedule 10.7)

Code related audit information

If a metering installation is certified using the comparative recertification or fully calibrated methods, the ATH must calculate and record the percentage of overall error of the metering installation. The ATH must calculate this using appropriate mathematical methods that include:

- all sources of measurement error including test instrument errors, reference standard variations when used in conditions that deviate from those in the calibration report, variations in repeated observations, the instrument resolution or discrimination threshold and any assumptions incorporated in the measurement method and procedure*
- the error calculation must include the uncertainty in the measurement at a 95% level of confidence using JCGM 100:2008*
- the error and its calculation must be recorded in the certification report.*

The ATH must not certify the metering installation if the uncertainty is greater than the maximum permitted site uncertainty or the combined error that includes the measured error and the uncertainty, is greater than the maximum permitted installation error.

Audit observation

I checked 10 metering installation certification records and discussed the process for error calculation.

Audit commentary

Accucal has a process for determining error and uncertainty. The issue of temperature variation is accounted for by using the meter class which allows for a sufficient range of temperature variation. Load is considered by using errors over a wide range of load.

Audit outcome

Compliant

5.31 Compensation Factors (Clause 24(1)(b) of Schedule 10.7)

Code related audit information

Before it certifies a metering installation that requires a compensation factor to adjust raw meter data, the ATH must:

- advise the MEP of the compensation factor*
- ensure that the compensation factor that will be applied to raw meter data external to the metering installation is applied as follows:*
 - a) for ratio compensation, on a category 1 metering installation or higher category of metering installation; or*
 - b) for error compensation, on a metering installation that quantifies electricity conveyed through a point of connection to the grid; or*
 - c) for loss compensation, only on a category 3 or higher metering installation.*

Audit observation

I checked 26 metering installation certification records, and process documentation.

Audit commentary

Accucal has a documented process for the management of compensation factors. The testing procedures provide confirmation of the VT and CT ratios. The metering installation certification report includes a "meter register multiplier" field in which the ratio compensation factor is recorded.

As recorded in **section 3.1**, Accucal sometimes certifies metering installations that are not located at the point of connection when certifying generation stations. Details of the loss factor calculation are recorded in the design report. The loss factors are programmed into the meter by Accucal and the load check confirms the accuracy.

Audit outcome

Compliant

5.32 Record Metering Installation Compensation Factor (Clause 24(2) Of Schedule 10.7)

Code related audit information

If a compensation factor is applied to a metering installation, the ATH must record in the certification report, the methodology, assumptions, measurements, calculation and details of each compensation factor that is included within the internal configuration of the metering installation and each compensation factor that must be applied to the raw meter data.

Audit observation

I checked 26 metering installation certification records, and process documentation.

Audit commentary

Accucal has a documented process for the management of compensation factors. The testing procedures provide confirmation of the VT and CT ratios. The metering installation certification report includes a “meter register multiplier” field in which the ratio compensation factor is recorded.

As recorded in **section 3.1**, Accucal sometimes certifies metering installations that are not located at the point of connection when certifying generation stations. Details of the loss factor calculation are recorded in the design report. The loss factors are programmed into the meter by Accucal and the load check confirms the accuracy.

Audit outcome

Compliant

5.33 Installation of Metering Components (Clause 25 of Schedule 10.7)

Code related audit information

Before it certifies a metering installation, the ATH must ensure that the installation of the metering components was carried out by an ATH. However, a suitably qualified person such as a switchboard manufacturer may install the measuring transformers and any required associated burden, the test facilities, potential fuses and switchboard wiring.

Before it certifies a metering installation, the ATH must ensure that each metering component is installed in accordance with the installation design report.

Audit observation

I checked process documentation and conducted a walk-through of the process.

Audit commentary

Accucal has a process to ensure compliance with this clause; the normal certification checks that take place on site ensure compliance. There were no specific examples to examine during the audit.

Audit outcome

Compliant

5.34 Determine Metering Installation Certification Expiry Date (Clause 27(1) & (2) Of Schedule 10.7)

Code related audit information

The ATH needs to determine the meter certification expiry date for each meter in a metering installation. The meter certification expiry date must be the earliest end date of the following periods, calculated from the date of commissioning of the metering installation:

- a) the maximum metering installation certification validity period for the relevant category of metering installation; or*
- b) the maximum meter certification validity period set out in Table 2 of Schedule 10.1 for the relevant class of meter for the metering installation; or*
- c) the certification period specified in the meter certification report.*

Audit observation

I checked 26 certification records to confirm compliance.

Audit commentary

All meter and metering installation certification expiry dates were correct.

Audit outcome

Compliant

5.35 Electromechanical Meter Certification Shelf Life (Clause 27(4) Of Schedule 10.7)

Code related audit information

If an electromechanical meter is not installed in a metering installation within 24 months of the date of the meter's certification report, the meter must be recertified before it is installed.

Audit observation

I checked 26 certification records to confirm compliance.

Audit commentary

None of the installations had electromechanical meters. Accucal understands the requirements of this clause.

Audit outcome

Compliant

5.36 Measuring Transformers Must Be Certified (Clause 28(2) Of Schedule 10.7)

Code related audit information

All measuring transformers must be certified before they can be used in a metering installation. If a measuring transformer has previously been used in another metering installation, the ATH must ensure that the measuring transformer has been recalibrated since it was removed from the previous metering installation. This must be undertaken either by an approved calibration laboratory or an ATH.

Audit observation

I checked 26 certification records to confirm compliance.

Audit commentary

All of the installations had certified measuring transformers. Accucal has a clear understanding of this requirement.

Audit outcome

Compliant

5.37 Measuring Transformers Used in a Certified Metering Installation (Clause 28(4) Of Schedule 10.7)

Code related audit information

To certify any metering installation incorporating measuring transformers, the ATH must ensure that:

- the installation has certified measuring transformers*
- the installation has a test facility which has provision for isolation, installed as physically close to the meter as practical in the circumstances*
- the test facility is fitted with a transparent cover*
- the installation has securely mounted measuring transformers which are, if practicable, in a sealed enclosure*
- the maximum permitted error is calculated in accordance with clause 22 for the fully calibrated certification method or the comparative recertification method*
- any voltage supplies from a voltage transformer to a meter or that other equipment in the metering installation is protected by appropriately rated fuses or circuit breakers dedicated to the supply. All fuses and circuit breakers must be suitably sealed or located in sealed enclosures,*
- the measuring transformer's secondary circuit is earthed and that it is earthed at no more than one point*
- the total in-service burden (magnitude and phase angle, where appropriate), complies with clause 31.*

Audit observation

I checked 26 certification records to confirm compliance.

Audit commentary

Accucal has process documentation to ensure compliance with all of the points above. I checked the records for 26 metering installations and found that measuring transformer installation and sealing practices were all compliant.

The burden test results are recorded on the certification reports and the process ensures that installations are not certified if the burden exceeds the measuring transformer's rated burden.

Audit outcome

Compliant

5.38 Measuring Transformer Certification Expiry Date (Clause 29 of Schedule 10.7)

Code related audit information

The ATH needs to determine the measuring transformer certification expiry date for each measuring transformer in a metering installation. The measuring transformer certification expiry must be within the validity period specified in the measuring transformer certification report.

Audit observation

I checked 26 certification records to confirm compliance.

Audit commentary

The metering installation certification report contains a field for measuring transformer expiry dates. The expiry dates were calculated and recorded correctly in the records I checked.

Audit outcome

Compliant

5.39 Other Equipment Connected to Measuring Transformers (Clause 30 of Schedule 10.7)

Code related audit information

If the ATH certifies a metering installation incorporating a measuring transformer used by another metering installation, it must ensure that where voltage transformers are connected to more than one meter:

- *the meters are included in the metering installation being certified*
- *appropriate fuses or circuit breakers are provided to protect the metering circuit from short circuits or overloads affecting the other meter.*

While it is desirable that only metering equipment is connected to measuring transformers in a metering installation if, in some circumstances, the MEP connects other equipment to measuring transformers, the ATH must ensure that:

- *the accuracy of the metering installation remains within the maximum permitted error for the relevant metering installation category*
- *the metering installation certification report confirms that the accuracy of the metering installation remains within the maximum permitted error for the relevant metering installation*
- *any wiring between the equipment and any part of the metering installation is continuous*
- *the equipment is labelled appropriately, including with any de-energisation restrictions*
- *the connection details of the other equipment are recorded in the metering installation design report*
- *there are appropriate fuses or circuit breakers provided to protect the voltage transformer and metering circuit from short circuits or overloads affecting the other equipment.*

Audit observation

I checked whether the situation arises where other equipment is connected to measuring transformers.

Audit commentary

Some installations certified by Accucal have other equipment connected to the same VT. The most common scenario is where the VT is also used for protection equipment. The design report and certification records include all relevant details and calculations in relation to non-metering equipment connected. The certification report contains a field which records if any other equipment is connected to the CTs or VTs.

Audit outcome

Compliant

5.40 Burden & Compensation (Clause 31 of Schedule 10.7)

Code related audit information

An ATH may certify a metering installation for a POC to the grid that includes error compensation factors as an alternative to the use of burden resistors only if the ATH is satisfied the error compensation factors will provide a more accurate result than the use of burden resistors.

An ATH may change the burden on a voltage transformer, without obtaining the approval of the MEP, if the ATH confirms in the certification report that the difference between the new burden and the burden at the time of the most recent metering installation certification is:

a) less than or equal to 1/30th of the VA rating of the voltage transformer, if the voltage transformer is rated at less than 30 VA; or

b) no greater than 1 VA, if the voltage transformer is rated at equal to or greater than 30 VA.

Before it certifies a metering installation incorporating a measuring transformer:

- ensure that the in-service burden does not exceed the upper limit of the range specified for the measuring transformer, if specified in the design report for the metering installation.*
- ensure that the in-service burden on the measuring transformer is within the range specified in the certification report by installing burdening resistors, if necessary,*
- confirm that a class A ATH has confirmed by calibration that the accuracy of the measuring transformer will not be adversely affected by the in-service burden being less than the lowest burden test point specified in the standard, if the primary voltage of the measuring transformer is greater than 1kV,*
- confirm that the measuring transformer's manufacturer has confirmed that the accuracy of the measuring transformer will not be adversely affected by the in-service burden being less than the lowest burden test point specified in the standard.*

Audit observation

I checked processes and the records for 26 metering installations to confirm compliance.

Audit commentary

Accucal calibrates the measuring transformers at the in-service burden when conducting certification using the fully calibrated method.

For comparative and selected component certification the burden is measured, and appropriate additional burden is added if required. The certification report template has a prompt to ensure this is done. The burden was appropriate for all certification reports checked.

Audit outcome

Compliant

5.41 Alternative Certification (Clause 32(1) of Schedule 10.7)

Code related audit information

If the ATH cannot comply with the requirements for certifying a measuring transformer solely due to the inability to obtain physical access to test the measuring transformers, it can certify the metering installation for a period not exceeding 24 months only if:

- *the measuring transformer has not previously been certified due to failure to obtain access*
- *the ATH is satisfied that the metering installation will comply with the applicable accuracy requirements*
- *the ATH has advised the MEP that the metering installation has been certified by this method*
- *the MEP has advised the registry of the certification.*

Audit observation

I checked the certification records for five installations certified using the alternative certification method.

Audit commentary

In all five examples checked, alternative certification has been applied due to the inability to obtain a suitable shutdown.

I checked the certification report for this installation and confirmed that it contained the required information.

Audit outcome

Compliant

5.42 Installations Incorporating Control Devices (Clause 33(2) of Schedule 10.7)

Code related audit information

Before the ATH can certify a metering installation incorporating a control device that must be certified, it must ensure:

- *that the certification expiry date for each control device is the same as the metering installation certification expiry date and record that date in the installation certification report*
- *that the control device complies with the applicable standards listed in Table 5 of Schedule 10.1*
- *the control device is fit for purpose*
- *if the metering installation contains a control device that has previously been used in another metering installation, that the control device is still fit for service.*
- *that the control device is:*
 - a) *likely to receive control signals*
 - b) *correctly connected*
 - c) *correctly programmed.*

Audit observation

Accucal has not certified any metering installations incorporating control devices.

Audit commentary

Accucal has not certified any metering installations incorporating control devices.

Audit outcome

Not applicable

5.43 Control Device Reliability (Clause 34(1) & (3) to (5) of Schedule 10.7)

Code related audit information

In order to ensure control device accuracy or the completeness of reconciliation information, the ATH must determine the likelihood of the control device not receiving control signals before it certifies a metering installation incorporating a control device.

If the ATH believes the likelihood of the control device not receiving control signals would affect the accuracy or completeness of the information for consumption reconciliation, the ATH may certify the remainder of the metering components and the installation, excluding the control device. The ATH must advise the MEP within three business days of its decision. The MEP is then responsible for advising both the reconciliation participant for the POC for the metering installation and the control signal provider of the ATH's determination.

Audit observation

Accucal has not certified any metering installations incorporating control devices.

Audit commentary

Accucal has not certified any metering installations incorporating control devices.

Audit outcome

Not applicable

5.44 Data Storage Devices (Clauses 36(2) of Schedule 10.7)

Code related audit information

If a data storage device has previously been used in another metering installation, the ATH must ensure that the data storage device has been recalibrated since it was removed from the previous metering installation by an approved calibration laboratory, an approved test laboratory, or an ATH.

Audit observation

I checked processes and the records for 26 metering installations to confirm compliance.

Audit commentary

All data storage devices are recertified prior to be reinstalled.

Audit outcome

Compliant

5.45 Data storage device requirements (Clause 38(1) and (2) of Schedule 10.7 and clause 5(1) of Schedule 10.8)

Code related audit information

An ATH must ensure that each data storage device in the metering installation:

- is installed so that on-site interrogation is possible without the need to interfere with seals*
- has a dedicated power supply unless the data storage device is integrated with another metering component*
- is compatible with each other metering component of the metering installation*
- is suitable for the electrical and environmental site conditions in which it is installed*
- has all of its outputs and inputs appropriately electrically isolated and rated for purpose*
- has no outputs that will interfere with the operation of the metering installation*
- records periods of data identifiable or deducible by both date and time on interrogation*
- has memory capacity and functionality that is suitable for the proposed functions of the data storage device specified in the design report for the metering installation*
- has availability of memory for a period that is suitable for the proposed functions as set out in the design report for the metering installation, and at least for a minimum continuous period of 15 days.*

The data storage device must have an event log which records the following:

- a) loss of power supply*
- b) critical internal alarms*
- c) meter phase failure if integral to the meter*
- d) software configuration changes*
- e) a record of time changes.*

Audit observation

I checked the availability of type test reports, and processes for determining environmental suitability.

Audit commentary

The points above, apart from point “d” are documented in the type test report, which is checked as part of the certification process for the data storage device.

Accucal has appropriate instructions for the identification and recording of unsuitable environments.

I checked 26 data storage device certification records and confirm that all of the information mentioned above is included.

Audit outcome

Compliant

5.46 Location of Metering Installation Certification Stickers (Clause 41(1) of Schedule 10.7)

Code related audit information

An ATH must confirm the metering installation certification by attaching a metering installation certification sticker as close as possible to the meter, while maintaining reasonable visibility of the certification sticker and the meter.

When attaching a metering installation certification sticker, the ATH must remove or obscure any invalid or expired certification stickers.

Audit observation

I checked Accucal's practices for the management of certification stickers.

Audit commentary

The certification stickers contain the appropriate detail and the processes for application are compliant.

Audit outcome

Compliant

5.47 Alternate Location of Metering Installation Certification Sticker (Clause 41(4) Of Schedule 10.7)

Code related audit information

If attaching a certification sticker is not practicable, the ATH must devise and use an alternative means of documenting the information and keep any metering component certification sticker with the documented information.

Audit observation

I checked with Accucal whether this scenario had arisen.

Audit commentary

This scenario has not arisen and is unlikely to arise.

Audit outcome

Not applicable

5.48 Contents of Metering Installation Certification Sticker (Clause 41(2) Of Schedule 10.7)

Code related audit information

The metering installation certification sticker must show:

- the name of the ATH who certified the metering installation*
- the certification date of the installation*
- the metering installation category*
- the ICP*
- the certification number for the metering installation.*

Audit observation

I checked the content of certification stickers to confirm compliance.

Audit commentary

I checked the templates for Accucal's stickers. The stickers are printed in the field by the technicians at the time of certification. The stickers contain all the information required by this clause.

Audit outcome

Compliant

5.49 Combining certification stickers (Clause 41(5) – Clause 41(8) of Schedule 10.7)

Code related audit information

If an ATH certifies a metering component on the same day that the ATH certifies the metering installation, the ATH may combine the metering installation certification sticker with the metering component certification sticker.

If the certification sticker is combined, the ATH must:

- *ensure that the combined sticker shows all the information required by subclause (2) and clause 8(2) of Schedule 10.8,*
- *meet the requirements of subclauses (1), (3) and (4), as if the combined sticker were a metering installation certification sticker.*

The combined sticker is immediately invalid if:

- *the metering installation certification expiry date changes; or*
- *a metering component to which the combined certification sticker relates is removed from the metering installation.*

Audit observation

Accucal has not used a combined metering installation and component sticker.

Audit commentary

Accucal has not used a combined metering installation and component sticker.

Audit outcome

Compliant

5.50 Enclosures (Clause 42 of Schedule 10.7)

Code related audit information

An ATH must, before it certifies a metering installation, ensure that, if a metering component in the metering installation is housed in a separate enclosure from the meter enclosure, the enclosure is appropriate to the environment in which it is located and has a warning label attached stating that the enclosure houses a metering component.

Audit observation

I checked the content of certification stickers and application processes to confirm compliance.

Audit commentary

Although this clause only refers to enclosures other than the metering enclosure, I have considered this clause to apply to metering enclosures as well.

Accucal ensures that all enclosures were appropriate for the environment, and the Accucal certification sticker has an appropriate warning.

Audit outcome

Compliant

5.51 Metering Component Certification (Clause 43(1) of Schedule 10.7)

Code related audit information

Before certifying an installation, the ATH must ensure that each component has been certified by an ATH and has been stored appropriately since component certification.

Audit observation

I checked the processes for storage of components, and the records for 26 metering installations to confirm compliance.

Audit commentary

Accucal has appropriate arrangements for storage and transportation.

Audit outcome

Compliant

5.52 Sealing Requirements (Clause 47(2) (3) (4) and (5) Of Schedule 10.7)

Code related audit information

Before an ATH certifies a metering installation, or leaves it unattended, the ATH must ensure that each metering component that could reasonably be expected to affect the accuracy or reliability of the metering installation is sealed.

The metering components which must be sealed include:

- each part and connection of a data storage device in, or attached to, the metering installation except for a port for on-site reading that is not capable of carrying out any other function

- the main switch cover, if the main switch:

a) is on the supply side of the metering installation

b) has provision for sealing.

Audit observation

I checked process documentation, design reports and the records for 26 metering installations to confirm compliance.

Audit commentary

The process documentation, design reports and the records for 26 metering installations confirm compliance.

Audit outcome

Compliant

5.53 Seals for Metering Component Enclosures (Clause 47(6) Of Schedule 10.7)

Code related audit information

When applying a seal to a metering component in an enclosure, the ATH must attach a warning label in a prominent position inside the enclosure.

Audit observation

I checked process documentation, design reports and the records for 26 metering installations to confirm compliance.

Audit commentary

The process documentation, design reports and the records for 26 metering installations confirm compliance. The warning label is installed in a prominent position.

Audit outcome

Compliant

5.54 Requirements for Sealing System (Clause 47(7) Of Schedule 10.7)

Code related audit information

An ATH must use a sealing system that enables identification of:

- *the ATH who affixed the seal*
- *the person (or the sealing tool) who applied the seal*
- *when the seal was applied.*

Audit observation

I checked process documentation, design reports and the records for 26 metering installations to confirm compliance.

Audit commentary

Accucal uses individually numbered seals. A master seals register is maintained of all seals that have been applied and all seals that have been removed during recertification and inspections.

The certification reports from 26 metering installations confirm that seals had been applied as required.

Audit outcome

Compliant

5.55 Removal or Breakage of Seals (Clause 48(6) of Schedule 10.7)

Code related audit information

When the ATH investigates an unauthorised removal or breakage, it must assess the accuracy and continued integrity of the metering installation. If the ATH considers the accuracy and continued integrity is unaffected, it must replace the removed or broken seals.

If the accuracy and continued integrity is affected, the ATH must replace the removed or broken seal and advise the MEP that the metering installation is potentially inaccurate, defective, or not fit for purpose.

Audit observation

I checked the process documentation and reporting form for compliance.

Audit commentary

Accucal has appropriate instructions in relation to this requirement, and there is the ability to record this information on the commissioning record for the installation.

Audit outcome

Compliant

5.56 Wiring (Clause 6 of Schedule 10.8)

Code related audit information

An ATH must, before it certifies a metering installation, ensure that all wiring in the metering installation is suitable for the environment in which the metering installation is located, fit for purpose, securely fastened, and compliant with all applicable requirements and enactments.

The ATH must ensure that the wiring between metering components in the metering installation:

- is run as directly as practicable
- is appropriately sized and protected
- does not, to the extent practicable, include intermediate joints for any measuring transformer circuits
- includes conductors that are clearly and permanently identified, by the use of any one or more of the following:

a) colour coding

b) marker ferrules

c) conductor numbering.

If it is not practicable to exclude intermediate joints for any measuring transformer circuits, the ATH must ensure that the intermediate joints are sealed or in a sealed enclosure.

Audit observation

I checked process documentation, design reports and the records for 26 metering installations to confirm compliance.

Audit commentary

The process documentation, design reports and the records for 26 metering installations confirm compliance.

Audit outcome

Compliant

5.57 Fuses and Circuit Breakers (Clause 7 of Schedule 10.8)

Code related audit information

An ATH must, before it certifies a metering installation, ensure that all fuses and circuit breakers that are part of the metering installation are appropriately rated for the electrical duty and discrimination required, clearly labelled and sealed or located in sealed enclosures.

Audit observation

I checked process documentation, design reports and the records for 26 metering installations to confirm compliance.

Audit commentary

The checks demonstrated compliance with this requirement.

Audit outcome

Compliant

5.58 Calibration of Metering Components Where Relevant (Clause 7(1) Of Schedule 10.4)

Code related audit information

Before the ATH certifies a metering installation or metering component, it must ensure that the metering components have been calibrated by an approved calibration laboratory or an ATH with appropriate approval under Schedule 10.3.

Audit observation

I checked process documentation, design reports and 26 certification reports to confirm compliance.

Audit commentary

All certified components have been calibrated appropriately.

Audit outcome

Compliant

5.59 Requirement for Calibration of Metering Components (Clause 7(2) Of Schedule 10.4)

Code related audit information

Before the ATH certifies a metering component it must ensure that the component is calibrated or adjusted under the physical and electrical conditions specified in Table 5 of schedule 10.1 and the conditions permit the calculation of uncertainties at the reference conditions.

Audit observation

I checked process documentation, design reports and 26 certification reports to confirm compliance.

Audit commentary

All certified components have been calibrated appropriately.

Audit outcome

Compliant

5.60 Metering Component Calibration Method (Clause 7(3) Of Schedule 10.4)

Code related audit information

A class B ATH must follow the relevant requirements of ISO17025 for calibration of components and only use methodologies that have been verified in their most recent audit.

Audit observation

Accucal does not operate a Class B ATH.

Audit commentary

Accucal does not operate a Class B ATH.

Audit outcome

Not applicable

5.61 Metering Component Calibration Test Points (Clause 7(4) Of Schedule 10.4)

Code related audit information

If the ATH calibrates a component, it must ensure that the test points that it uses are either:

- no less than the test points in Table 5 of Schedule 10.1 or*
- sufficient to calculate the metering installation error as defined in clause 22 of Schedule 10.7.*

Audit observation

I checked the test points used by Accucal.

Audit commentary

Accucal uses the test points stipulated in the relevant standards. As recorded in **section 3.4** additional test points are used when the expected load of an installation will be outside the range of the specified test points.

Audit outcome

Compliant

5.62 Determine Metering Component Error and Record (Clause 7(5) Of Schedule 10.4)

Code related audit information

An ATH must, when calibrating a metering component:

- if necessary, adjust and document the error compensation*
- ensure that any adjustment carried out is appropriate to achieve an error as close as practicable to zero*
- ensure that the uncertainty of measurement during the calibration of the metering component does not exceed one third of the maximum permitted error in the relevant standard listed in Table 5 of Schedule 10.1.*

If the metering component is intended for a metering installation which will be certified using the selected component certification method, the ATH must ensure that the ATH records the errors of a current transformer from 5 % to 120 % of rated primary current.

Audit observation

I checked Accucal's IANZ report to confirm compliance.

Audit commentary

The IANZ report confirms compliance with these points.

Audit outcome

Compliant

5.63 Class B ATH Calibrating Metering Components (Clause 2(3) Of Schedule 10.3)

Code related audit information

If a class B ATH wishes to calibrate components (such as class 0.5 meters, class 1 meters, class 2 meters, class 0.5 current transformers, and class 1.0 current transformers) this must be carried out under the relevant provisions and methodologies of ISO 17025. The final audit report must include a list of all relevant requirements of ISO 17025 for calibrating these metering components and all relevant methodologies audited.

Audit observation

Accucal does not operate a Class B ATH.

Audit commentary

Accucal does not operate a Class B ATH.

Audit outcome

Not applicable

5.64 Meter Certification (Clause 1 of Schedule 10.8)

Code related audit information

All meters must be certified before they can be used in a metering installation. The ATH must ensure that the meters in a metering installation have been type tested by an approved test laboratory, that the results for the meter are appropriate for that meter model and version and have a calibration report.

Audit observation

I checked the certification records for 26 metering installations to confirm compliance.

Audit commentary

Accucal certifies meters in accordance with this clause. The certification reports include reference to the calibration report for the meters.

I recommend in **section 4.12** that a register of type test reports, including all items checked, is developed and kept up to date.

In the previous audit it was recommended that Accucal record a reference to the meter type test report in the data storage certification report. This recommendation was adopted.

Audit outcome

Compliant

5.65 Meter Requirements When Meter Is Relocated (Clause 26(2) Of Schedule 10.7 and Clause 43(2) Of Schedule 10.7)

Code related audit information

If a meter has previously been used in another metering installation, the ATH must ensure that the meter has been recalibrated since it was removed from the previous metering installation by an approved calibration laboratory or an ATH unless it is less than 12 months since the meter was commissioned in the previous installation.

Audit observation

I checked the process documentation in relation to this clause.

Audit commentary

There were no examples of meters being moved within a month of being installed. The Accucal process ensures that all meters are calibrated before being installed.

Audit outcome

Compliant

5.66 Measuring Transformer Error Testing (Clause 2(1)(A) & (B) Of Schedule 10.8)

Code related audit information

Before certifying a measuring transformer, an ATH must test the measuring transformer's errors at a range of primary values at their rated burdens. If the measuring transformer is a multi-tap current transformer, an ATH must carry out the calibration tests and only certify the transformer for the ratios that have been calibrated.

Audit observation

I checked the certification records for 26 metering installations to confirm compliance.

Audit commentary

Accucal calibrates and certifies measuring transformers in the field and ensures that the connected ratios used are calibrated.

Audit outcome

Compliant

5.67 Measuring Transformer Certification (Clause 3 of Schedule 10.8)

Code related audit information

Before it certifies a measuring transformer, the ATH must ensure that:

- *the measuring transformer has a current calibration report issued by an approved calibration laboratory or an ATH approved to carry out calibration*
- *the measuring transformer calibration report:*
 - *confirms that the measuring transformer complies with the standards listed in Table 5 of Schedule 10.1*
 - *records any tests the ATH has performed to confirm compliance*
 - *confirms that the measuring transformer has passed the tests*
 - *records any recommendations made by the ATH on error compensation*
 - *includes any manufacturer's calibration test reports.*

The ATH is required to produce a measuring transformer certification report that includes:

- *the date on which it certified the measuring transformer*
- *the certification validity period for the measuring transformer, which must be no more than 120 months*
- *whether the certification was based on batch test certificates*
- *if the certification was based on batch test certificates, confirmation that the manufacturer's batch testing facility is, in the ATH's opinion, of an acceptable standard*
- *the range that the in-service burden must be within*

The ATH must provide confirmation that the ATH has inspected the manufacturer's test certificates, and carried out any additional tests it considers necessary, to satisfy itself that the measuring transformer meets the accuracy requirements.

Audit observation

I checked the certification records for 26 metering installations to confirm compliance.

Audit commentary

This clause was changed from 1st February 2021 to require the ATH to record the burden range of the measuring transformers in the transformer certification report. Accucal's certification reports do not yet contain a field for burden range. There were four metering installation certification reports where burden range should have been recorded but was not. All other points were recorded correctly.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 5.67 With: Clause 3 of Schedule 10.8 From: 01-Feb-21 To: 26-Feb-23	Burden range not included in measuring transformer certification records. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as moderate because there is only one item of information not included in certification records. The potential impact is that incorrect burden is applied, however Accucal has strong controls to ensure burden is correct, therefore the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
We have added burden range fields to our transformer certification records as of 28 th Feb 2023. These are in both our Component Calibration/Certification Reports and in Installation Certification Reports where these are transformer certification reports for transformers calibrated by others.		28 th Feb 2023	Cleared
Preventative actions taken to ensure no further issues will occur		Completion date	
The main reason we hadn't done this prior to now was the uncertainty around how to apply this to HV installations. This is clear for LV CT installations but very unclear for fully calibrated installations, particularly HV. We will be raising this with the EA Compliance team via the ATH Forum.		To be worked on in 2023 ATH Forum submissions	

5.68 Measuring Transformers in service burden range (Clause 2(1)(E) Of Schedule 10.8)

Code related audit information

Before certifying a measuring transformer, the ATH must determine the range that the in-service burden must be within to ensure the measuring transformer remains accurate, by using one or more of the following:

- *the measuring transformer's nameplate rating*
- *the calibration report for the measuring transformer*
- *the manufacturer's documentation for the measuring transformer*
- *the standard set out in Table 5 of Schedule 10.1 the measuring transformer was manufactured to.*

Audit observation

I checked 26 certification records to confirm compliance.

Audit commentary

This clause was changed from 1st February 2021 to require the ATH to record the burden range of the measuring transformers in the transformer certification report. Accucal’s certification reports do not yet contain a field for burden range. There were four metering installation certification reports where burden range should have been recorded but was not.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 5.68 With: Clause 2(1)(E) Of Schedule 10.8 From: 01-Feb-21 To: 26-Feb-23	Burden range not included in measuring transformer certification records. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as moderate because there is only one item of information not included in certification records. The potential impact is that incorrect burden is applied, however Accucal has strong controls to ensure burden is correct, therefore the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
We have added burden range fields to our transformer certification records as of 28 th Feb 2023. These are in both our Component Calibration/Certification Reports and in Installation Certification Reports where these are transformer certification reports for transformers calibrated by others.		28 th Feb 2023	Cleared
Preventative actions taken to ensure no further issues will occur		Completion date	
The main reason we hadn’t done this prior to now was the uncertainty around how to apply this to HV installations. This is clear for LV CT installations but very unclear for fully calibrated installations, particularly HV. We will be raising this with the EA Compliance team via the ATH Forum.		To be worked on in 2023 ATH Forum submissions	

5.69 Measuring Transformer - Epoxy Insulated (Clause 2(2) Of Schedule 10.8)

Code related audit information

Before it certifies an epoxy insulated current transformer, the ATH must ensure that the certification tests allow for, and the metering installation certification report shows, the current transformer’s age, temperature, and batch.

Audit observation

I checked if Accucal certifies any epoxy encased measuring transformers.

Audit commentary

No examples were identified. The Accucal procedures include checks of the physical condition of all current transformers which are sufficient to meet the requirements of this clause.

Audit outcome

Compliant

5.70 Control Device Certification (Clause 4 of Schedule 10.8)

Code related audit information

Before it certifies a new control device, the ATH must produce a certification report that:

- *confirms that the control device complies with the applicable standards listed in Table 5 of Schedule 10.1*
- *includes the details and results of any test that the ATH has carried out to confirm compliance under paragraph (a)*
- *confirms that the control device has passed such tests.*

Before it certifies an existing installed control device, the ATH must produce a certification report that confirms:

- *that the control device is fit for purpose*
- *the control device certification validity period that the ATH considers appropriate, which must be no more than 180 months.*

Audit observation

Accucal has not certified any metering installations incorporating control devices.

Audit commentary

Accucal has not certified any metering installations incorporating control devices.

Audit outcome

Not applicable

5.71 Data Storage Devices (Clause 36(2) Of Schedule 10.7)

Code related audit information

If a data storage device has previously been used in another metering installation, the ATH must ensure that the data storage device has been recalibrated since it was removed from the previous metering installation by an approved calibration laboratory, an approved test laboratory, or an ATH.

Audit observation

I checked the process documentation in relation to this clause.

Audit commentary

There were no examples of data storage devices being moved within a month of being installed. The Accucal process ensures that all meters are calibrated before being installed.

Audit outcome

Compliant

5.72 On-site Calibration and Certification (Clause 9(1) of Schedule 10.8)

Code related audit information

An ATH may only calibrate a metering component on site in the metering component's normal environment by measuring the influence of all on-site variables and including their estimated effects in the uncertainty calculation. An ATH must ensure that:

- the effects of any departures from the reference conditions can accurately and reliably be calculated*
- the metering installation, in which the metering component is incorporated, is within the applicable accuracy tolerances set out in Table 1 of Schedule 10.1 after taking into account all known influences including temperature and temperature co-efficient measurements.*

Audit observation

Metering components are calibrated and certified in the field for fully calibrated installations. I checked the IANZ report for any exceptions to this clause.

Audit commentary

The IANZ report confirmed compliance.

Audit outcome

Compliant

5.73 On Site Metering Component Calibration (Clause 9(2) Of Schedule 10.8)

Code related audit information

If the ATH calibrates a metering component on site using manual methods, computers, or automated equipment for the capture, processing, manipulation, recording, reporting, storage, or retrieval of calibration data, it must ensure that its computer software:

- is documented in the ATH's procedures*
- can manipulate the variables that affect the performance of the metering component in a manner that will produce results that would correctly indicate the level of compliance of the metering component with this Code.*

Audit observation

Metering components are calibrated and certified in the field for fully calibrated installations. I checked the IANZ report for any exceptions to this clause.

Audit commentary

The IANZ report confirmed compliance.

Audit outcome

Compliant

5.74 On site metering component calibration records (Clause 9(3) of Schedule 10.8)

Code related audit information

An ATH that certifies a metering component on site must include confirmation in the metering component certification report that:

- it has calculated the uncertainty of measurement taking into account all environmental factors for both the metering component being calibrated and the working standards*

- the calculation of the uncertainty comprises all uncertainties in the chain of calibration
- the ATH has used a calibration procedure to calibrate the metering component that was included in the ATH's most recent audit and is appropriate for on-site calibration.

Audit observation

Metering components are calibrated and certified in the field for fully calibrated installations. I checked the IANZ report for any exceptions to this clause.

Audit commentary

The IANZ report confirmed compliance.

Audit outcome

Compliant

5.75 Data Storage Device Certification Expiry Date (Clause 37 of Schedule 10.7)

Code related audit information

Before certifying a meter installation which incorporates a data storage device, the ATH must determine the expiry date of the data storage device. The ATH must record the expiry date in the certification report for the metering installation and the certification report for the data storage device.

Audit observation

I checked the records for 26 metering installations to confirm compliance.

Audit commentary

Accucal is correctly applying certification in accordance with this clause.

Audit outcome

Compliant

5.76 All Functions and Activities Must Be Completed (Clause 10.42(2))

Code related audit information

Where Part 10 requires the ATH to complete a function or activity before a metering installation is certified, the ATH must complete that function or activity as part of the process for certifying the metering installation.

Audit observation

I checked the records for 26 metering installations to confirm compliance.

Audit commentary

There was no evidence of incomplete functions.

Audit outcome

Compliant

6. INSPECTION OF METERING INSTALLATIONS

6.1 General Inspection Requirements (Clause 44 (1) (a) to (e) of Schedule 10.7)

Code related audit information

When carrying out an inspection of a metering installation, the ATH must:

- check and confirm that the data storage device in the metering installation operates as required*
- check and confirm that the expected remaining lifetime of each battery in the metering installation will be reasonably likely to meet or exceed the metering installation certification expiry date*
- ensure that no modifications have been made to the metering installation without the change having been documented and certification requirements satisfied*
- visually inspect all seals, enclosures, metering components, and wiring of the metering installation for evidence of damage, deterioration, or tampering*
- ensure that the metering installation and its metering components carry appropriate certification stickers.*

Audit observation

I checked the inspection reports for five inspections completed during the audit period to confirm compliance.

Audit commentary

All of the other points above were checked on-site and recorded in the inspection reports.

Audit outcome

Compliant

6.2 Raw Meter Data Test (Clause 44(1)(F) Of Schedule 10.7)

Code related audit information

When carrying out an inspection of a category 1 metering installation, the ATH must also check and confirm there is no difference between the volume of electricity recorded by the master accumulation register of a data storage device, and the sum of the meter registers.

Audit observation

Accucal has not conducted any Category 1 inspections during the audit period.

Audit commentary

Accucal has not conducted any Category 1 inspections during the audit period.

Audit outcome

Not applicable

6.3 Prepare Inspection Report (Clause 44(2) Of Schedule 10.7)

Code related audit information

An ATH must prepare an inspection report for each inspection of a metering installation that it carries out, which includes the following:

- details of the checks carried out, the results, and the installation certification expiry date*
- the serial numbers of all components in the metering installation*
- any non-compliances and the action taken to remedy the non-compliance*
- the name of the inspector and the date on the inspection.*

Audit observation

I checked the inspection reports for five inspections completed during the audit period to confirm compliance.

Audit commentary

All five inspection reports contained the relevant information including the name of the inspector and date of inspection.

Audit outcome

Compliant

6.4 Provide Inspection Report To MEP (Clause 44(3) Of Schedule 10.7)

Code related audit information

The ATH must, within 10 business days of carrying out the inspection, provide the inspection report to the MEP.

Audit observation

I checked the timeframes for sending inspection reports to MEPs.

Audit commentary

For two of the five inspection reports checked Accucal was also the MEP, therefore they have the records as soon as the inspection is complete. The other three were provided within 10 business days.

Compliance is achieved.

Audit outcome

Compliant

6.5 Inspections for Category 2 & Above Installations (Clause 46(2) of Schedule 10.7)

Code related audit information

When carrying out an inspection of a category 2 or higher metering installation, the ATH must also conduct the following additional checks:

- a visual inspection of each metering component in the metering installation for damage, tampering, or defect*
- if the current transformer can be safely accessed, check the position of the current transformer tap to ensure it is still appropriate for the expected maximum current for the metering installation*
- check for the presence of appropriate voltages at the metering installation*

- *check the voltage circuit alarms and fault indicators.*

Audit observation

I checked five examples of completed inspection reports to confirm compliance.

Audit commentary

The process and all five examples contained details of the above checks.

Audit outcome

Compliant

7. PROCESS FOR HANDLING FAULTY METERING INSTALLATIONS

7.1 Investigation of Faulty Metering Installations (Clause 10.43(3) of Part 10)

Code related audit information

As a participant, the ATH must inform the MEP if it believes a metering installation is faulty, inaccurate, defective, or not fit for purpose.

Audit observation

I checked the results of the inspection process for two examples of faulty metering installations.

Audit commentary

In both cases the MEP had requested Accucal to investigate a fault at the metering installation. Accucal reported its findings back to the MEP after visiting the installation and determining the details of the fault in both cases.

Audit outcome

Compliant

7.2 Testing of Faulty Metering Installations (Clause 10.44 of Part 10)

Code related audit information

When advised by an MEP that a metering installation is faulty, inaccurate, defective, or not fit for purpose, the ATH must test the metering installation as soon as practical and provide a statement of situation.

Audit observation

I checked the results of the inspection process for two examples of faulty metering installations.

Audit commentary

In both cases, appropriate testing and reporting was conducted immediately. The metering installation fault forms included details of the testing completed and contain sufficient information to report to relevant parties and meet the requirements for a statement of situation.

Audit outcome

Compliant

7.3 Statement of Situation (Clause 10.46(1) of Part 10)

Code related audit information

The ATH must include the following in the statement of situation:

- the details and results of the tests carried out*
- a conclusion, with reasons, as to whether or not the metering installation is faulty*
- an assessment of the risk to the completeness and accuracy of the raw meter data*
- the remedial action proposed or undertaken*
- any correction factors to apply to raw meter data to ensure that the volume information is accurate*
- the period over which the correction factor must be applied to the raw meter data.*

Audit observation

I checked the results of the inspection process for two examples of faulty metering installations.

Audit commentary

In both cases, appropriate testing and reporting was conducted immediately. The metering installation fault forms included details of the testing completed and contain sufficient information to report to relevant parties and meet the requirements for a statement of situation.

Audit outcome

Compliant

7.4 Correction of Defects (Clause 10.47 of Part 10)

Code related audit information

When taking action to remedy an inaccuracy or defect within a metering installation, the ATH must ensure that records of any modifications that are carried out to the metering installation are kept for each metering component of the metering installation in the metering records and in a manner reasonable in the circumstances to ensure that further investigation can be carried out.

Audit observation

I checked the results of the inspection process for two examples of faulty metering installations.

Audit commentary

In both cases the metering installation fault forms included details of the actions taken on site to correct the defects.

Audit outcome

Compliant

8. Conclusions

The audit identified three non-compliances in relation to two issues. Resourcing constraints have led to late notification of certification records to MEPs and measuring transformer certification reports do not yet contain the burden range, as required by the Code from 1st February 2021.

One recommendation is made, which is to develop a register of type test reports detailing checks conducted, whether compliance is achieved, the date checks were conducted and who conducted them.

The date of the next audit is determined by the Electricity Authority and is dependent on the level of compliance during this audit. The table below provides some guidance on this matter and recommends a next audit frequency of 24 months. I recommend the next audit is conducted in 36 months, to reflect that plans are being made to address the non-compliances.

9. Accucal Response

AccuCal is working towards increasing resources to allow processing reports within the prescribed timeframes but also comment that some of the 'late' records have been due to incorrect entry of livening/certification dates on installations on dead boards when there was a delay before livening and subsequent certification reporting.

We have added the 'Burden Range' fields to our certification reports but point out that significant work is required in this area with respect to HV installations and overall error requirements for fully calibrated installations. We intend to raise this with the EA via the ATH Forum that has recently been formed.

We can see the value in the recommended register of Type Test Reports and will work on developing this, thank-you for the suggestion.

We hope that by including the Burden Range fields from this date forward, on the proviso that the EA will work with us on how this should apply for HV installations, will assist in the auditors recommendation of a 36 month period for the next audit.