Electricity Industry Participation Code Audit Report

For

Class B Approved Test House

Prepared by Brett Piskulic – Veritek Limited

Date of Audit: 01/12/20

Date Audit Report Complete: 26/01/21

Date Audit Report Due: 04/02/21

Executive Summary

Wells is a Class B Approved Test House and is required to undergo an audit by 4/02/2021, in accordance with clause 16A.19(b).
The audit was conducted in accordance with the ATH Audit Guidelines V1.3 produced by the Electricity Authority.

The audit report records 19 non-compliances, the main areas are as follows:

- The most recent application for renewal of approval included an interim audit report completed on 25th April 2019. The executive summary of this audit report states, "Wells is a Class B Approved Test House and this audit was performed at their request, to evaluate the resolution of the non-compliance issues identified during the November 2018 audit." As this was not a final audit report obtained under Part 16A Wells did not meet the requirements of this clause.

- Wells has certified 472 metering installations containing data storage devices that have failed type testing. 461 of these metering installations have been certified as HHR when they are not fit for purpose. The total consumption is accurate but the inaccuracy of apportionment between intervals is greater than 2.5% and for low consuming installations can be significantly higher than 2.5%.

- Wells has not confirmed the accuracy of CTs when the in-service burden is lower than the lowest test point recorded in the IEC standard. A process has been developed for installing burden resistors, but this was not used for seven installations checked during the audit.

- ICP 0230120008PN0F0 had an absolute error and uncertainty test result of 2.47%, meaning at least one of the components is operating outside its class.

- Missing or inaccurate information recorded in certification reports.

- Incorrect use of the comparative recertification method.

- Current transformers are certified without calibration being carried out when metering installation certification is conducted using the comparative recertification method.

Four recommendations are made. Three are made regarding improvements to the comparative recertification error and uncertainty calculation process. One relates to the lack of clarity with metering installation certification reports.

The date of the next audit is determined by the Electricity Authority and is dependent on the level of compliance during this audit. The Future Risk Rating table provides some guidance on this matter and recommends a next audit frequency of three months, I agree with this recommendation.

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
Accurate information	2.2	10.6 of Part 10	Services access interface incorrectly recorded for 2 of 44 records. Maximum interrogation cycle not recorded correctly for 3 of 44 records. Certification expiry dates incorrectly calculated for five category 2 metering installations. Audit report not provided with ATH application for approval.	Weak	Medium	6	Identified Disputed Disputed Disputed
ATH Approval	2.4	10.40 of Part 10	Audit report not provided with ATH application for approval.	Weak	Medium	6	Disputed
Metering Installation Type	3.2	8(2) of Schedule 10.7	Services access interface incorrectly recorded for 2 of 44 records.	Moderate	Low	2	Identified
Services Access Interface	3.5	10 of Schedule 10.4	Services access interface incorrectly recorded for 2 of 44 records.	Moderate	Low	2	Identified
Meter Requirements	3.11	26(4) of Schedule 10.7	Maximum interrogation cycle recorded incorrectly for 3 metering installations.	Moderate	Low	2	Disputed

Subject	Section	Clause	Non-compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Maximum interrogation cycle	3.14	36(3) of Schedule 10.7	Maximum interrogation cycle recorded incorrectly for 3 metering installations.	Moderate	Low	2	Disputed
Data Storage Device Certification	4.12	5 of Schedule 10.8	472 data storage devices certified when they do not comply with the Code, as recorded in the type test report.	Weak	Medium	6	Disputed
Compliance with part 10	5.1	8(1) Of Schedule 10.7	7 Category 2 metering installations certified with burden lower than 25% of the rated burden. ICP 0230120008PN0F0 had an absolute error and uncertainty test result of 2.47%, meaning at least one of the components is operating outside its class.	Moderate	Medium	4	Disputed Identified

Subject	Section	Clause	Non-compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Test results	5.16	10(1)&(2) Of Schedule 10.7	7 Category 2 metering installations certified with low burden. 472 data storage devices certified when they don't comply with the Code, as recorded in the type test report. ICP 0230120008PN0F0 had an absolute error and uncertainty test result of 2.47%, meaning at least one of the components is operating outside its class.	Weak	Medium	6	Disputed Disputed Identified
Selected component certification	5.18	11(4) of Schedule 10.7	461 installations certified as HHR despite the data storage devices not being accurate or fit for purpose.	Weak	High	9	Disputed
Comparative Recertification	5.19	12(2) of Schedule 10.7	Incorrect use of comparative recertification method for one installation.	Moderate	Low	2	Identified
Certification Validity Periods	5.28	17 of Schedule 10.7	Certification expiry dates incorrectly calculated for 5 category 2 metering installations.	Moderate	Low	2	Disputed
Determine Metering Installation Certification Expiry Date	5.34	27(1) & (2) Of Schedule 10.7	Certification expiry dates incorrectly calculated for 5 category 2 metering installations.	Moderate	Low	2	Disputed

Subject	Section	Clause	Non-compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Measuring Transformer Certification Expiry Date	5.38	29 of Schedule 10.7	CT Certification expiry dates incorrectly calculated for 5 category 2 metering installations.	Moderate	Low	2	Disputed
Low burden	5.40	31 Of Schedule 10.7	7 installations had low burden and burden resistors were not installed.	Moderate	Low	2	Disputed
Data storage device requirements	5.45	5(1) of Schedule 10.8	472 data storage devices certified when they don't comply with the Code, as recorded in the type test report. 461 installations certified as HHR despite the data storage devices not being accurate or fit for purpose.	Weak	High	9	Disputed
Measuring Transformer Certification	5.66	3 of Schedule 10.8	CTs are certified without calibration being carried out.	None	Low	5	Identified
Measuring transformers in-service burden.	5.67	2(1)(C) Of Schedule 10.8	7 installations had low burden and burden resistors were not installed.	Moderate	Low	2	Disputed
Notification of metering installations inaccurate or not fit for purpose	7.1	10.43(3) of Part 10	MEP not notified that 7 metering installations with low burden are not fit for purpose and therefore have cancelled certification.	Moderate	Medium	4	Disputed
					Future Risk Rating	**75**	
					Indicative Audit Frequency	**3 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
Certification & Calibration Reports	3.6	11(1) of Schedule 10.4	Change the layout of the certification report to include the more relevant items clearly on the front page.	Identified
Category 2 certification tests	5.1	8(1) Of Schedule 10.7	I recommend Wells sets a pass/fail threshold for Category 2 comparative testing which takes into account the class of the metering components.	Identified
Error calculation	5.30	22 of Schedule 10.7	Regarding the comparative recertification error and uncertainty calculation process - review the application of the ambient temperature influence to determine if the adjustment of the overall error figure is necessary.	Investigating
			Regarding the comparative recertification error and uncertainty calculation process - investigate the possibility of using pulses from the meter or determine and add an allowance in the uncertainty calculation for the influence of the reaction time.	Investigating

Persons Involved in This Audit

Auditor:
Brett Piskulic
Veritek Limited
Electricity Authority Approved Auditor

Wells personnel assisting in this audit were:

Name	Title
Graham Wells	Managing Director
Leith Robertson	Engineering Manager

Contents

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.

1.2 Scope of Audit

Wells is a Class B ATH and this audit was performed at their request, to encompass the Electricity Industry Participation Code requirement for an audit, in accordance with clause 16A.19(b).

The Authority has stipulated that the next audit was due by 4 February 2021, in accordance with clause 16A.19(b).

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

Wells wishes its ATH approval to include the following functions of Clauses 3(2) 4(2) of Schedule 10.3:

Class B Approval

(a) calibration of class 0.5 meters, class 1 meters and class 2 meters, and class 0.5 current transformers and class 1.0 current transformers, provided that the calibrations are carried out under their approved quality certification and in accordance with this Part, and included within the ATH audit for approval:
(b) installation and modification of metering installations:
(c) installation and modification of metering components:
(d) calibration of metering components on site:
(e) certification, using the selected component certification method, of:
- (i) category 1 metering installations:
- (ii) category 2 metering installations:
- (iii) category 3 metering installations with a primary voltage of less than 1kV:

(f) certification, using the fully calibrated certification method, of—
- (i) category 1 metering installations:
- (ii) category 2 metering installations:
- (iii) category 3 metering installations with a primary voltage of less than 1kV:

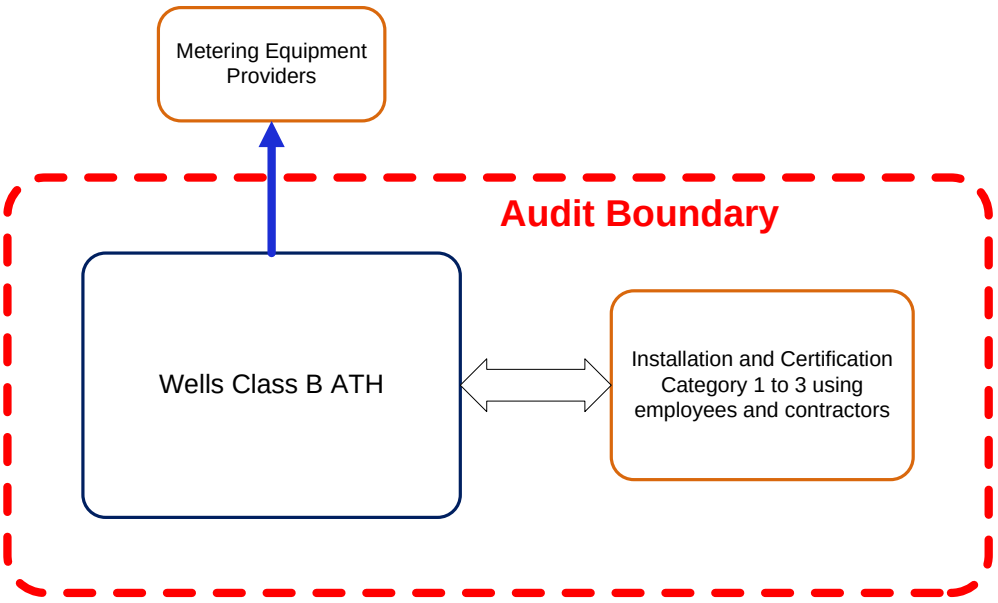
(g) certification, using the comparative recertification method, of category 2 metering installations:
(h) issuing of certification reports in respect of certifications of metering installations under paragraphs (e) to (g):
(i) inspection of:
- (i) category 1 metering installations:
- (ii) category 2 metering installations:

(iii) category 3 metering installations with a primary voltage of less than 1kV.

Wells also requires approval to certify metering components. I note that the Class B functions listed in Clause 4(2) of Schedule 10.3 do not include certification of metering components.

Wells provides Test House services to metering equipment owners in respect of the installation and/or re-certification of Category 1 to Category 3 metering. Wells provides training, and also conducts internal audits to ensure the on-going compliance and competence of employees and contractors.

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



1.3 Previous Audit Results

The last audit was conducted in December 2018 by Steve Woods of Veritek. The audit found 13 non-compliance issues, and six recommendations were made. The current status of these matters is shown in the tables below.

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
Accurate information	2.2	10.6 of Part 10	Maximum interrogation cycle not recorded for 6 of 38 records. Category 2 certification reports do not record error and uncertainty calculations with enough clarity to be able to determine whether the tests have passed or failed.	Still existing Cleared
ATH record keeping	3.7	12(2)(a) of Schedule 10.4	Category 2 comparative certification records not sufficiently detailed to enable verification of all aspects of all tests carries out.	Cleared
Maximum interrogation cycle	3.11	26(4) of Schedule 10.7	Maximum interrogation cycle not recorded for 6 metering installations.	Cleared
Maximum interrogation cycle	3.14	36(3) of Schedule 10.7	Maximum interrogation cycle not recorded for 6 metering installations.	Still existing For lesser number
Compliance with part 10	5.1	8(1) Of Schedule 10.7	11 Category 2 metering installations certified with uncertainties greater than 0.6%. 5 Category 2 metering installations certified with burden lower than 25% of the rated burden.	Cleared Still existing
Raw meter data output test	5.15	9(2) of Schedule 10.7	11 Category 2 metering installations certified with uncertainties greater than 0.6%.	Cleared
Test results	5.16	10(1)&(2) Of Schedule 10.7	11 Category 2 metering installations certified with uncertainties greater than 0.6%.	Cleared
Comparative tests	5.20	12(3) Of Schedule 10.7	11 Category 2 metering installations certified with uncertainties greater than 0.6%.	Cleared

Subject	Section	Clause	Non-compliance	Status
Metering installation accuracy	5.29	21 of Schedule 10.7	11 Category 2 metering installations certified with uncertainties greater than 0.6%.	Cleared
Error calculation	5.30	22 Of Schedule 10.7	Some uncertainty results greater than 0.6%.	Cleared
Test facility	5.37	28(4)(a)(i) of Schedule 10.7	Test facility, meeting the definition of a test facility, not always installed.	Cleared
Low burden	5.40	31 Of Schedule 10.7	5 installations had low burden and burden resistors were not installed.	Still existing
Notification of metering installations inaccurate or not fit for purpose	7.2	10.43(3) of Part 10	MEP not notified that 11 metering installations with measurement uncertainty greater than 0.6% are inaccurate and therefore have certification cancelled. MEP not notified that five metering installations with low burden are not fit for purpose and therefore have cancelled certification.	Cleared Still existing

Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Status
Certification & Calibration Reports	3.6	11(1) of Schedule 10.4	Change the layout of the certification report to include the more relevant items clearly on the front page.	Still existing
ATH record keeping	3.7	12(2)(a) of Schedule 10.4	Change the metering installation certification report to include the “original” burden result and an “after” burden result once burden resistance has been added.	Cleared
Certification method	5.9	7(1) Of Schedule 10.7	Record the certification method in certification reports.	Cleared
Error calculation	5.30	22 of Schedule 10.7	Engage with MSL to develop a robust and enduring measurement uncertainty calculation methodology.	Cleared

Subject	Section	Clause	Recommendation for improvement	Status
Low burden	5.40	31 Of Schedule 10.7	Include checks of burden levels and whether resistors have been added to the photo checking process.	Cleared
Warning sticker	5.49	42 of Schedule 10.7	Develop a CT chamber warning sticker.	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

I checked Wells understands of this requirement by conducting a walk-through of contractor and employee management processes. I checked the audit regime in place to ensure contractors and employees are competent and are following Wells' instructions.

Audit commentary

Wells uses employees and "field service partners" (contractors) to conduct field activities. All technicians are subject to the same training and monitoring program, which includes initial training by a specialised trainer followed by two days of fieldwork with a "buddy". Audits are completed of 5% of all jobs completed in the first four weeks followed by an on-going requirement of 3% and at least one "field observation" per year alongside on-going monitoring of site photos and records. I checked the competency records to ensure they were complete and accurate. The competency matrix is up to date and recognises different levels of competence for different job types.

Audit outcome

Compliant

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

As mentioned in **section 2.1**, the photo checking process also checks the accuracy of recorded details, including meter readings and tariffs. If any discrepancies are identified the record can be sent back to the technician's PDA so they can make the correction to the source data. The checking process occurs on a daily basis and generally meets the requirement to ensure data is corrected "as soon as practicable".

It appears there are some gaps in the checking process. Three issues were identified during the audit but not during the checking process. The issues are as follows:

1. two of 44 certification reports did not have the correct services access interface recorded,
2. three of 44 certification reports did not have the maximum interrogation cycle recorded correctly, and
3. certification expiry dates incorrectly calculated for five category 2 metering installations.

As recorded in **section 2.4**, the most recent application for renewal did not include a final audit report obtained under Part 16A.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.2 With: Clause 10.6 of Part 10 From: 01-Dec-17 To: 17-Nov-18	Services access interface incorrectly recorded for 2 of 44 records. Maximum interrogation cycle not recorded correctly for 3 of 44 records. Certification expiry dates incorrectly calculated for five category 2 metering installations. Audit report not provided with ATH application for approval. Potential impact: Medium Actual impact: Medium Audit history: Once Controls: Weak Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
Medium	I have recorded the controls as weak as the processes have not ensured that an appropriate audit report was provided. As the interim audit report was published on the EA website MEPs would expect it to be correct representation of the Wells ATH's level of compliance. There is likely to be an impact on MEPs where the resolutions identified in the interim audit were not implemented, therefore the audit risk rating is medium.

Actions taken to resolve the issue	Completion date	Remedial action status

1. The SAI for both 1000593239PCB96 & 1000593800PC835 was incorrectly recorded as Remote where the meters installed were legacy meters which can only be read locally & manually. Con-X record Service Access Interface | Remote | Pass | JXH3149 | 20/10/2020 3:55:46 PM Metering Installation Certification Report excerpt Certification Method: Selected Component Installation Type: Residential Certification Type: New Cert Service Access Interface: Remote Maximum Interrogation Period: 90 Con-X record Service Access Interface | Remote | Pass | JXH3149 | 19/10/2020 10:03:52 AM Metering Installation Certification Report excerpt Certification Method: Selected Component Installation Type: Residential Certification Type: New Cert Service Access Interface: Remote Maximum Interrogation Period: 90	25-1-21	Disputed
2. Jobs for ICPs 0006102195WE1BE, 1000593239PCB96 and 1000593800PC835 all used VAMS Design Report "NGC Legacy 2109-001" which gives a Maximum Interrogation Period of 90 Days, so what was recorded was correct. **Metering Installation Design Report** This drawing fulfils the requirements of a metering installation design report as required by the Electricity Industry Participation Code – Part 10 when used as the basis of metering work performed under Wells' Class B Approved Test House Configuration Schemes: N/A Scheme Approving ATL: N/A Maximum Interrogation Cycle: NHH — *90 days* Compensation Factors: Cat-1 Legacy Meter — *Nil* Method of Certification: Cat-1 Legacy Meter — *Selected Component* Service Access Interface: NHH with no comms — *Local Manual Read* Design Approving ATH: *Wells Instrument & Electrical Services Ltd* — Signatory: L. Robertson Signed — Date: 31-1-17		Post audit comment by auditor contained in Appendix 1
3. It was made clear from the MEP's job instructions that these installations were all new, and that the MEP had installed the meter and CTs themselves just prior to requesting us to certify the installations. There was no indication provided that the installations had existing certification, nor were there any metering installation certification stickers and therefore the Installation Certification Expiry Date was correctly recorded as 10 years from the date that our technician visited and certified the installation.If the MEP had		Post audit comment by auditor contained in

submitted incorrect certification details to the registry prior to our visit, then Sched 10.6 Cl 6 **6 Provision of metering records when ATH recertifying metering installation** (1) This clause applies if— (a) a **metering equipment provider** contracts with an **ATH** to **recertify** a **metering installation** for which the **metering equipment provider** is responsible; and (b) the **ATH** did not perform the previous **certification** of the **metering installation**. (2) If this clause applies, the **metering equipment provider** must, no later than 10 **business days** after the effective date of the contract, provide the **ATH** with a copy of all relevant **metering records**. and Cl 10.4 (2) (2) If a **participant** (**participant** A) incorrectly populates the **registry**, causing another **participant** (**participant** B) to breach an obligation under this Code, and **participant** B relies, in good faith, on the incorrect information in the **registry**, **participant** B has not breached its obligation. would apply, making this situation the MEP's responsibility, and not something we could have reasonably foreseen or avoided.		Appendix 1
4. We cannot see what identifies the interim report as not being a "final" report, and therefore saw no reason for it not to be included with our approval renewal application in 2019, particularly since it addressed all but one of the 2018 audit issues. Our 2020 reapproval application included the 2018 audit reports. In addition we provided the report from the audit we commissioned to assess the changes we had made to address issues raised in the 2018 audit, as well as copies of communications relating to CT burdening and how the remaining audit issue would be addressed. With both reports published on the EA website, and the only remaining issue identified in the interim audit report having been addressed with the MEPs concerned and with the EA, we are unclear by it is considered not to be a correct representation of the Wells ATH's level of compliance and where the suggested risk to MEPs is.		Post audit comment by auditor contained in Appendix 1
Preventative actions taken to ensure no further issues will occur	**Completion date**	
1. This will be discussed with the technician concerned, and additional refresher training sent to all technicians 2. No action required 3. We cannot identify any action on our part which could prevent a recurrence 4. To create controls to prevent the submission of an incorrect audit report from happening again (if it indeed is incorrect), we would need a clear definition and indicator of what defines/indicates a "final" audit report, and why our interim audit report was deemed sufficient for the EA to issue re-approval and extend our next audit date further than the 2018 audit had recommended, but is deemed by this audit to have been non-complaint. If neither ourselves or the EA identified the 2019 interim audit report as not being suitable for use in a re-approval application, then we suggest if this is an issue, that the identification of the audit reports requires improvement.	29-1-21	

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 Wells during the audit period.

Audit commentary

Wells 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

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

The most recent application for renewal of approval included an interim audit report completed on 25th April 2019. The executive summary of this audit report states, "*Wells is a Class B Approved Test House and this audit was performed at their request, to evaluate the resolution of the non-compliance issues identified during the November 2018 audit."* As this was not a final audit report obtained under Part 16A Wells did not meet the requirements of this clause.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 10.40 of Part 10 From: 04-Mar-20 To: 01-Dec-20	Audit report not provided with ATH application for approval. Potential impact: Medium Actual impact: Medium Audit history: None Controls: Weak Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
Medium	I have recorded the controls as weak as the processes have not ensured that an appropriate audit report was provided. As the interim audit report was published on the EA website MEPs would expect it to be correct representation of the Wells ATH's level of compliance. There is likely to be an impact on MEPs where the resolutions identified in the interim audit were not implemented, therefore the audit risk rating is medium.

Actions taken to resolve the issue	Completion date	Remedial action status
We cannot see what identifies the interim report as <u>not</u> being a "final" report, and therefore saw no reason for it not to be included with our approval renewal application in 2019, particularly since it addressed all but one of the 2018 audit issues. Our 2020 reapproval application included the 2018 audit reports. In addition we provided the report from the audit we commissioned to assess the changes we had made to address issues raised in the 2018 audit, as well as copies of communications relating to CT burdening and how the remaining audit issue would be addressed. With both reports published on the EA website, and the only remaining issue identified in the interim audit report having been addressed with the MEPs concerned and with the EA, we are unclear by it is considered not to be a correct representation of the Wells ATH's level of compliance and where the suggested risk to MEPs is.	21-1-21	Disputed Post audit comment by auditor contained in Appendix 1
Preventative actions taken to ensure no further issues will occur	**Completion date**	
To create controls to prevent the submission of an incorrect audit report from happening again (if it indeed is incorrect), we would need a clear definition and indicator of what defines/indicates a "final" audit report, and why our interim audit report was deemed sufficient for the EA to issue re-approval and extend our next audit date further than the 2018 audit had recommended, but is deemed by this audit to have been non-complaint. If neither ourselves or the EA identified the 2019 interim audit report as not being suitable for use in a re-approval application, then we suggest if this is an issue, that the identification of the audit reports requires improvement.	21-1-21	

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

Wells has only conducted activities that fall within the scope of their approval. I have concluded from this audit that Wells has met the requirements of this clause.

I checked compliance with other enactments, specifically the electricity regulations with regard to safety practices and I confirm the following critical points are managed in a robust manner:

- access to basic insulation,
- livening practices; specifically polarity testing,
- safety practices with regard to the management of asbestos switchboards - training for this includes an asbestos awareness presentation then a workshop trial followed by supervision on site, and
- general safety practices and the appropriate use and testing of personal protective equipment.

Updates of field procedures are communicated via weekly technical metering reminders. The reminders are sent through Microsoft Teams and require acknowledgement via responses to questions by technicians.

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

Wells has ISO 9001:2008 registration for the Class B Test House. The scope is appropriate and is noted as:

- *Supply and installation of metering equipment*
- *The reading and data collection services for non-half hour electricity meters*
- *The supply of electricity field services including prescribed electrical work*
- *The supply of gas meter and water meter reading services*
- *The design and development of software for field services and task information management systems by E-Merge Data Solutions Limited from the New Plymouth office*
- *The design supply of electrical installation and maintenance services to commercial, industrial and domestic users by Wells Instrument and Electrical (MW) Limited*

Wells provided a copy of their most recent ISO 9001:2015 audit report, dated 20th July 2020, which was conducted by Telarc SAI Limited. No non-conformances were recorded and eight opportunities for improvement were identified.

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

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 test house; and a quality manager (however named), with responsibility for the quality management certification and the implementation of the quality management system. Leith Robertson

is appointed as Technical Manager and is currently covering the vacant position of Quality Manager. Leith has appropriate qualifications and experience in these roles.

An ATH must ensure that all staff who perform or supervise work or activities regulated under this Part are technically competent, experienced, qualified, and trained for the functions they perform. I checked the training and competency assessment processes and I confirm compliance with this clause.

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 B 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

Wells is not approved as a class A ATH.

Audit commentary

Wells is not approved as a class A ATH.

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

Wells has not conducted any material changes.

Audit commentary

Wells has not conducted any material changes.

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

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

Audit commentary

Wells 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

Wells does not operate a laboratory function; their scope is limited to field installation work.

Audit commentary

Wells does not operate a laboratory function; their scope is limited to field installation work.

Audit outcome

Not applicable

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.

Audit commentary

The documentation achieves compliance with the Code.

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 Wells' 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 instructed 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 Wells 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 Wells had certified any installations with loss compensation.

Audit commentary

Wells has not been required to conduct any loss compensation calculations.

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 or non-half hour metering. It must also record where the services access interface is.

Audit observation

I checked 44 certification reports to confirm compliance.

Audit commentary

All reports have a correctly populated field for NHH/HHR. The location of the services access interface was correctly recorded in 42 of the 44 certifications, it was incorrectly recorded as "remote" in the certification reports for ICPs 1000593239PCB96 and 1000593800PC835.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 8(2) of Schedule 10.7 From: 19-Oct-20 To: 01-Dec-20	Services access interface incorrectly recorded for 2 of 44 records. Potential impact: Low Actual impact: None Audit history: None Controls: Moderate Breach risk rating: 2

Audit risk rating	Rationale for audit risk rating
Low	I have recorded the controls as moderate because there is room for improvement. There is no impact because the MEP normally determines the location of the services access interface; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
The SAI for both 1000593239PCB96 & 1000593800PC835 was incorrectly recorded as Remote where the meters installed were legacy meters which can only be read locally & manually. Con-X record Service Access Interface | Remote | Pass | JXH3149 | 20/10/2020 3:55:46 PM Metering Installation Certification Report excerpt Certification Method: Selected Component Installation Type: Residential Certification Type: New Cert Service Access Interface: Remote Maximum Interrogation Period: 90 Con-X record Service Access Interface | Remote | Pass | JXH3149 | 19/10/2020 10:03:52 AM Metering Installation Certification Report excerpt Certification Method: Selected Component Installation Type: Residential Certification Type: New Cert Service Access Interface: Remote Maximum Interrogation Period: 90	25-1-21	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
This will be discussed with the technician concerned, and additional refresher training sent to all technicians	29-1-21	

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 44 certification reports to confirm compliance.

Audit commentary

All reports correctly recorded the metering category.

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 Wells whether any different test points had been used.

Audit commentary

There were no different test points used other than those specified in the standards.

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 location of the services access interface. 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 the design reports and a sample of 44 certification records to confirm compliance.

Audit commentary

The location of the services access interface was correctly recorded in 42 of the 44 certifications, it was incorrectly recorded as "remote" in the certification reports for ICPs 1000593239PCB96 and 1000593800PC835.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.5 With: Clause 10 of Schedule 10.4 From: 19-Oct-20 To: 01-Dec-20	Services access interface incorrectly recorded for 2 of 44 records. Potential impact: Low Actual impact: None Audit history: None Controls: Moderate Breach risk rating: 2

Audit risk rating	Rationale for audit risk rating
Low	I have recorded the controls as moderate because there is room for improvement. There is no impact because the MEP normally determines the location of the services access interface; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
The SAI for both 1000593239PCB96 & 1000593800PC835 was incorrectly recorded as Remote where the meters installed were legacy meters which can only be read locally & manually. Con-X record Service Access Interface | Remote | Pass | JXH3149 | 20/10/2020 3:55:46 PM Metering Installation Certification Report excerpt Certification Method: Selected Component Installation Type: Residential Certification Type: New Cert Service Access Interface: Remote Maximum Interrogation Period: 90 Con-X record Service Access Interface | Remote | Pass | JXH3149 | 19/10/2020 10:03:52 AM Metering Installation Certification Report excerpt Certification Method: Selected Component Installation Type: Residential Certification Type: New Cert Service Access Interface: Remote Maximum Interrogation Period: 90	25-1-21	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
This will be discussed with the technician concerned, and additional refresher training sent to all technicians	29-1-21	

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 44 certification records to confirm compliance.

Audit commentary

I reviewed Wells' records for each MEP where they provide ATH services. Certification reports are produced for all installations; certification reports are produced for all components.

CTs are certified in accordance with the Code.

The certification reports are very difficult for other participants to read and understand. As noted in previous audit reports, I repeat the recommendation that Wells changes the layout of the report to include the more relevant items clearly on the front page, as follows:

- ICP,
- metering installation certification date,
- metering installation certification expiry date,
- metering category,
- certification type (selected component, comparative, fully calibrated, alternative, insufficient load, lower category),
- HHR or NHH,
- compensation factor, and
- electrical connection date (if known and if the ATH is also the agent).

Recommendation	Description	Audited party comment	Remedial action
11(1) of Schedule 10.4	Change the layout of the certification report to include the more relevant items clearly on the front page.	As noted in the previous audit, it is agreed that this would be beneficial, however our Con-X team have advised that there are technical complications in providing this, so it is on the list of things to do when a workable approach can be found	Identified

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 44 metering installations along with the storage practices.

Audit commentary

Certification records are securely stored and uniquely identified.

In the previous audit it was reported that certification reports were not sufficiently clear to be able to determine the error and uncertainty results. Wells has made improvements to the certification reports and the overall installation error and uncertainty is clearly identified. The workflow has been updated to include limits for maximum error and uncertainty to prevent certification occurring if limits are exceeded. The error and uncertainty calculation process is discussed further in **section 5.30**.

In the previous audit it was recommended that the metering installation certification report was changed to include the "original" burden result and an "after" burden result once burden resistance has been added. This change has been implemented with the inclusion in the certification report of corrected and uncorrected burden results.

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 44 metering installations along with the storage practices.

Audit commentary

All records were available, and the content was correct. Records are stored indefinitely. I observed records from 2016 to confirm compliance.

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 processes and KPIs in place to determine compliance.

Audit commentary

The targets in place are to provide 90% of records within one day of certification and 100% within two days. There are some instances where this is not achieved due to follow up activities in relation to

specific sites. The Code actually requires the ATH to send records within five business days of creation of the record, not from the certification date. I have therefore concluded that compliance is achieved with this requirement because the record has not been "created" until all of the information is complete.

Wells confirmed that they are not acting as an agent to any MEPs for the storage of records.

Audit outcome

Compliant

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. There were no specific examples to view.

Audit commentary

Wells has processes to certify as a lower category. Some installations have been certified in accordance with these clauses prior to this audit period and they are all HHR installations, allowing the MEP to monitor the maximum demand. Details of the lower category certification are included in the certification report as required by this clause.

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 44 certification records.

Audit commentary

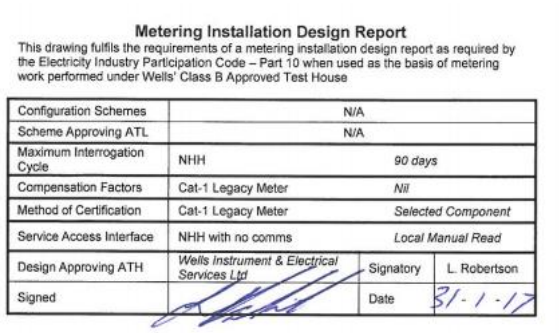
As a Class B ATH, Wells is unlikely to deal with any meters where maintenance is required. All AMI devices installed have battery monitoring conducted as part of the data collection function.

The maximum interrogation cycle is recorded in the certification reports. As recorded in **section 3.14,** non-compliance exists for the maximum interrogation cycle being incorrectly recorded for three metering installations.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.11 With: Clause 26(4) of Schedule 10.7 From: 19-Oct-20 To: 01-Dec-20	Maximum interrogation cycle recorded incorrectly for 3 metering installations. Potential impact: None Actual impact: None Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	I have recorded the controls as moderate because there is room for improvement. There is no impact on MEPs because they are the source of this information anyway; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Jobs for ICPs 0006102195WE1BE, 1000593239PCB96 and 1000593800PC835 all used VAMS Design Report "NGC Legacy 2109-001" which gives a Maximum Interrogation Period of 90 Days, so what was recorded was correct. 	21-1-21	Disputed Post audit comment by auditor contained in Appendix 1

Metering Installation Design Report

This drawing fulfils the requirements of a metering installation design report as required by the Electricity Industry Participation Code – Part 10 when used as the basis of metering work performed under Wells' Class B Approved Test House

Configuration Schemes	N/A		
Scheme Approving ATL	N/A		
Maximum Interrogation Cycle	NHH	90 days	
Compensation Factors	Cat-1 Legacy Meter	Nil	
Method of Certification	Cat-1 Legacy Meter	Selected Component	
Service Access Interface	NHH with no comms	Local Manual Read	
Design Approving ATH	Wells Instrument & Electrical Services Ltd	Signatory	L. Robertson
Signed		Date	31-1-17

Preventative actions taken to ensure no further issues will occur	Completion date	
No action required	21-1-21	

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 44 certification records to confirm compliance.

Audit commentary

Meter certification expiry dates are recorded in the certification reports. As recorded in **sections 5.28 & 5.34**, non-compliance exists for the meter certification expiry date being incorrectly calculated in five metering installations.

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

Wells has not installed any measuring transformers where maintenance is required.

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 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 processes and the records for 44 metering installations to confirm compliance.

Audit commentary

I checked 44 certification reports to confirm the maximum interrogation cycle is recorded. The maximum interrogation cycle was incorrectly recorded as 90 days for three non-AMI installations, ICPs 0006102195WE1BE, 1000593239PCB96 and 1000593800PC835.

Audit outcome

Non-compliant

Non-compliance	Description

Audit Ref: 3.14 With: Clause 36(3) of Schedule 10.7 From: 19-Oct-20 To: 01-Dec-20	Maximum interrogation cycle recorded incorrectly for 3 metering installations. Potential impact: None Actual impact: None Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	I have recorded the controls as moderate because there is room for improvement. There is no impact on MEPs because they are the source of this information anyway; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Jobs for ICPs 0006102195WE1BE, 1000593239PCB96 and 1000593800PC835 all used VAMS Design Report "NGC Legacy 2109-001" which gives a Maximum Interrogation Period of 90 Days, so what was recorded was correct. **Metering Installation Design Report** This drawing fulfils the requirements of a metering installation design report as required by the Electricity Industry Participation Code – Part 10 when used as the basis of metering work performed under Wells' Class B Approved Test House Configuration Schemes: N/A Scheme Approving ATL: N/A Maximum Interrogation Cycle: NHH — 90 days Compensation Factors: Cat-1 Legacy Meter — Nil Method of Certification: Cat-1 Legacy Meter — Selected Component Service Access Interface: NHH with no comms — Local Manual Read Design Approving ATH: Wells Instrument & Electrical Services Ltd — Signatory: L. Robertson Signed — Date: 31-1-17	21-1-21	Disputed Post audit comment by auditor contained in Appendix 1
Preventative actions taken to ensure no further issues will occur	**Completion date**	
No action required	21-1-21	

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

Wells does not operate a laboratory function; their scope is limited to field installation work.

Audit commentary

Wells does not operate a laboratory function; their scope is limited to field installation work.

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 the test points to confirm compliance.

Audit commentary

Wells 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

Wells maintains a register of equipment, including test equipment. I confirmed this was up to date and that all relevant equipment is regularly checked and tested.

Audit commentary

Wells maintains a register of equipment, including test equipment. I confirmed this was up to date and that all relevant equipment is regularly checked and tested.

A class B ATH must have and maintain procedures for the purchase of test equipment and associated consumables. The relevant operating procedure was demonstrated during the audit. The relevant consumables are seals, sealing tools and stickers.

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 and processes for calibration of Wells test equipment.

Audit commentary

Wells has 12 Hioki working standards, including three owned by contractors, used for comparative certification of Category 2 metering installations. All of these standards have current calibration certificates. The Test Equipment Register in SharePoint sends an automated email notification when recalibration is due.

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 and processes for calibration of Wells test equipment.

Audit commentary

Wells has 12 Hioki working standards, including three owned by contractors, used for comparative certification of Category 2 metering installations. All of these standards have current calibration certificates, and the calibrations are completed within the 12-month interval required by this clause.

Audit outcome

Compliant

4.6 Calibration of Reference Standards (Clause 3(1)(B)(Ii), (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

Wells does not have a reference standard.

Audit commentary

Wells does not have a reference standard.

Audit outcome

Not applicable

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

Wells does not use HV working standards.

Audit commentary

Wells does not use HV working standards.

Audit outcome

Not applicable

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

Wells does not conduct calibration of metering components and does not have a test bench.

Audit commentary

Wells does not conduct calibration of metering components and 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 is 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 Wells' understanding of this requirement through interview. I checked whether this situation had occurred.

Audit commentary

Wells 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

Wells conducts comparative certification, which does not fully meet the definition of calibration, therefore Wells has not conducted any calibration activities.

Audit commentary

Wells conducts comparative certification, which does not fully meet the definition of calibration, therefore Wells has not conducted any calibration activities.

Audit outcome

Not applicable

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 whether Wells calibrates components in accordance with this clause.

Audit commentary

Wells does not calibrate components.

Audit outcome

Not applicable

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 44 metering installations to confirm compliance.

Audit commentary

Wells 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. Wells has confirmation from MEPs that type test reports are available and have been checked.

The type test report for the ARC Innovations Generation 2 data storage device contains two points indicating compliance may not be achieved with the Code. The issues are as follows:

The type test report states that the "Data Logger retains all data pertaining to energy and events for a minimum period of the interrogation cycle plus five days". The interrogation cycle is one day; therefore, the type test has only confirmed that data will be retained for six days, but Clause 5(b)(xii) of Schedule 10.7 requires "that the data storage device has data loss protection providing a continued clock and memory operation for a continuous period of at least 15 days when the power supply to the data storage device is lost".

The type test report also has the following statement regarding clock and memory operation when supply is lost:

(9)	Data logger is designed to ensure continued clock and memory operation when power supply is lost		P
	When supply is restored, time and date remain within the site design specification	Remark 1	
	Time variation	1.5 seconds per day	

It is not showing as a "pass" and "Remark 1" states:

REMARKS

Remark 1. To be determined by the approved test house certifying the installation.

Wells has certified 472 (45 during the audit period) ARC Innovations installations since this type test report was produced and it appears the data storage devices do not meet the requirements for certification.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 4.12 With: Clause 5 of Schedule 10.8 From: 01-Jan-12 To: 16-Sep-20	472 data storage devices certified when they do not comply with the Code, as recorded in the type test report. Potential impact: Medium Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are recorded as weak because although type test reports are obtained by Wells, it doesn't appear they are checked in sufficient detail to determine compliance. The impact on settlement is minor because interrogation occurs daily, but when power is lost then restored there is a risk of losing data for a small number of ICPs. The greater impact is on ARC Innovations, because it appears the certification of Generation 2 data storage devices may be invalid.

Actions taken to resolve the issue	Completion date	Remedial action status
The MEP concerned was contacted for comment immediately following this audit, and whilst they acknowledged the alleged breach, it appears that the registry had not been updated with cancellations to the installation certifications, jobs had	21-1-21	Disputed

continued to be issued to us for installations containing ARC devices, and we had not been made aware of the alleged breach. 400 of the 488 installations listed have Gen 1 model data storage devices and we have had on file since January 2012 a Type Test Report for the ESM 2052 (Gen 1) device which showed that model to be compliant with Electricity Industry Participation Code 2010, Schedule 10.1, Code of Practice 10.4. If there has been a subsequent Type Test Report produced for this device, we were not made aware of it by the MEP and we are unclear how we could have known of its existence, and the potential non-compliances identified within it. Of the remaining 88 jobs at installations with Gen 2 model data storage devices, 38 of the jobs did not involve device replacement as they were meter un-bridge's, reseals and the like. Our interpretation of the requirements is that if all indications were that an installation had existing valid certification prior to a meter being bridged, and all we were requested to do was un-bridge a meter, reseal, and recertify the installation (retaining the existing expiry date), and we were confident that the accuracy and continued integrity of the metering installation had not been affected, we are unaware of any requirement to perform additional tests or to check the validity of the existing certifications. Of the remaining 50 jobs with Gen 2 model data storage devices, just 7 were completed as BAU device replacement jobs within the audit period, 1-12-18 until 1-12-20. Until this alleged breach was mentioned during our audit, we were unaware of the Gen 2 model, which from our subsequent research appears that it started to be supplied to us in the first part of 2017, We have no record of a Type Test report having been supplied to us by the MEP as is expected. Even our field supervisor was unclear on the exact difference between the Gen 1 and Gen 2 models. In line with our longstanding arrangement with the MEP that they would only supply us with compliant equipment for like-for-like replacements, where the MEP has ultimate responsibility for ensuring the metering components and the installation in which they are installed is compliant, we had no reason to believe there was any issue with any ARC devices, however we had not been formally made aware of the model change, nor of the non-compliance and alleged breach that resulted from their audit, even 12 months after that audit. Additionally there do not appear to have been any steps taken by the MEP to prevent further similar alleged breaches from occurring.		Post audit comment by auditor contained in Appendix 1
Preventative actions taken to ensure no further issues will occur	**Completion date**	

All jobs involving the recertification of installations containing an ARC device were halted immediately and the MEP made aware of our stance. A copy of the latest Type Test Reports for these two devices have now been obtained from the MEP. If it is in fact a requirement that the validity of all existing device certifications in an installation be verified when recertifying an installation, then we will amend our procedures accordingly, however we do not believe this is a code requirement at this time. If it were to become a requirement, then it will obviously carry a cost to the industry in the additional time spent verifying existing device certifications at every installation recertification. Additionally, we will no longer act in good faith that all MEP supplied devices, even for use as like-for-like replacements, are, or will be compliant.	21-1-21	

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.

Audit observation

I checked Wells' component stickers to confirm compliance.

Audit commentary

All component stickers are compliant with this clause. I checked photos of 44 installations which confirmed they were correctly applied.

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 Wells' component stickers to confirm compliance.

Audit commentary

All component stickers are compliant with this clause. I checked photos of 44 installations which confirmed they were correctly applied.

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 44 certification records to confirm compliance.

Audit commentary

The quality manual contains a section for the management and application of seals.

Individually numbered seals are available for use and there is a process for their application. The most common method is “wire and ferrule” with numbered sealing tools. During the audit it was confirmed that the sealing tool register is up to date. I checked the photos for 44 installations to confirm the correct application of seals. Compliance is confirmed.

When a seal is discovered to be broken or missing, there is a procedure to ensure the meter owner is notified. Wells records any seals they have broken as an ATH.

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

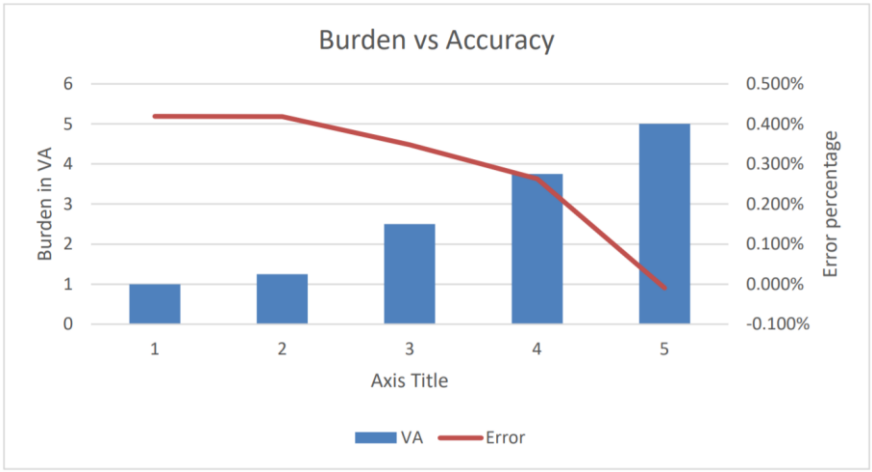
I checked a sample of 44 certification records to confirm compliance.

Audit commentary

There were seven Category 2 installations where the in-service burden was less than the lowest test point (25% of rated burden) and burden resistors were not installed. The Code states:

Before it certifies a measuring transformer where the in-service burden is less than the lowest burden test point specified in a standard set out in Table 5 of Schedule 10.1, the ATH must install burdening resistors to increase the in-service burden to be equal to or greater than the lowest test point of the measuring transformer certification test or confirm from the manufacturer of the instrument transformer that the accuracy will not be adversely affected by the low in-service burden.

The issue of the low burden for CTs has been clarified by the Authority through a memo, which confirms that ATHs are required to take certain actions if the in-service burden is less than the lowest test point used when the CT was calibrated. The actions are to install burden resistors or confirm with a Class A ATH or the manufacturer that the CTs will continue to operate accurately at low burden. On 27/08/19, TWS confirmed that their memo of 2013 was still valid. This memo states: *"for a compensated CT, because the errors can become positive, there is the very real chance that the CT will go out of class in the positive direction when under-burdened".* Some test results have been provided for three models of CT confirming accuracy at 1.0VA but there is no additional information confirming that any TWS compensated CT is accurate below 1.0VA. The graph below is from a TWS test report at 20% load and different VA points. As the burden reduces the error goes positive towards 0.5% which is the class of the CT. It's possible this particular CT may stay within 0.5% with burden lower than 1.0VA but there is no information to support this. There is a strong argument that installations are not confirmed as "fit for purpose" if measuring transformers are under burdened and are potentially operating outside their accuracy class.



ICP 0230120008PN0F0 had an absolute error and uncertainty test result of 2.47%, which included a known test equipment uncertainty of 0.27%. The meter is a Class 1 and the CTs are class 0.5, so this error means at least one of the components is operating outside its class, which does not comply with the Code.

I recommend Wells sets a pass/fail threshold for Category 2 comparative testing which takes into account the class of the metering components. For example, with Class 1 meters and Class 0.5 CTs there should not be errors greater than 1.5%.

Recommendation	Description	Audited party comment	Remedial action
8(1) Of Schedule 10.7	I recommend Wells sets a pass/fail threshold for Category 2 comparative testing which takes into account the class of the metering components.	We will modify procedures and workflows to use the sum of the meter and CT classes (already being recorded) as the pass/fail threshold for the Prevailing Load Test's Combined Absolution Error & Uncertainty instead of the current 2.5%. We suggest that a code re-word is also required to clarify this as a requirement.	Identified

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.1 With: Clause 8(1) Of Schedule 10.7 From: 10-Jan-20 To: 01-Dec-20	7 Category 2 metering installations certified with burden lower than 25% of the rated burden. ICP 0230120008PN0F0 had an absolute error and uncertainty test result of 2.47%, meaning at least one of the components is operating outside its class. Potential impact: Medium Actual impact: Medium Audit history: Twice Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are recorded as moderate because there is room for improvement in order to identify such situations. The impact on settlement could be moderate, and the impact on MEPs is moderate because certification is cancelled, leading to non-compliance for the MEP in addition to non-compliance for Wells; therefore, the audit risk rating is medium.

Actions taken to resolve the issue	Completion date	Remedial action status

1. The 7 installations all had TWS CTs installed. All 3 CT models involved are compensated. 0007109459RNB49 SEV86A 0005853300CN70D SEW90B 0001602275WMC79 SEV86A 0009060320WM593 SEV86A 0272000121PN00F SEV87 0110110060PNF11 SEV86A 1001280367TC8A6 SEV86A 2 of the 3 CT models have been said by TWS to remain in class at low burden. This leaves just 0005853300CN70D which did require additional burden. Job notes from the MEP stated "Burden resistors ARE NOT REQUIRED as there are some already fitted" which presumably caused the tech to not install more, even though the CTs failed the burden test. 2 We will bring to the attention of the MEP concerned, the test result for this installation.	21-1-21	Disputed Post audit comment by auditor contained in Appendix 1
Preventative actions taken to ensure no further issues will occur	**Completion date**	
1. Even though the MEP has ultimate responsibility for the metering installation and its certification compliance, technicians, photocheckers and datacheckers will be instructed that the results of tests over-ride any comments from the MEP. **2.** We will modify procedures and workflows to use the sum of the meter and CT classes (already being recorded) as the pass/fail threshold for the Prevailing Load Test's Combined Absolution Error & Uncertainty instead of the current 2.5%. We suggest that a code re-word is also required to clarify this as a requirement.	26-1-21 26-1-21	

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 44 metering installations to confirm compliance.

Audit commentary

All 44 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 44 metering installations.

Audit commentary

Wells uses design reports modified in conjunction with MEPs. These reports contain all of the required information, including configuration schemes and schematic drawings. A design report reference was recorded in all of the 44 certification records 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 44 metering installations.

Audit commentary

Wells uses design reports modified in conjunction with MEPs. These reports contain all of the required information, including configuration schemes and schematic drawings. A design report reference was recorded in all of the 44 certification records checked.

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.

Audit commentary

Wells has processes to certify as a lower category. Some installations have been certified in accordance with these clauses prior to this audit period and they are all HHR installations, allowing the MEP to monitor the maximum demand. The process documentation stipulates that installations must be HHR.

There were no examples identified during the audit period.

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.

Audit commentary

Wells has processes to certify as a lower category. Some installations have been certified in accordance with these clauses prior to this audit period and they are all HHR installations, allowing the MEP to monitor the maximum demand. The process documentation stipulates that installations must be HHR.

There were no examples identified during the audit period.

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.

Audit commentary

Wells has processes to certify as a lower category. Some installations have been certified in accordance with these clauses prior to this audit period and they are all HHR installations, allowing the MEP to monitor the maximum demand. The process documentation stipulates that installations must be HHR.

There were no examples identified during the audit period.

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.

Audit commentary

Wells has processes to certify as a lower category. Some installations have been certified in accordance with these clauses prior to this audit period and they are all HHR installations, allowing the MEP to monitor the maximum demand. The process documentation stipulates that installations must be HHR.

There were no examples identified during the audit period.

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 44 metering installations to confirm compliance.

Audit commentary

Wells has used the selected component certification method for category 1 and 2 metering installations. Since the last audit a certification method field has been added to the certification reports. This field was populated with the certification method for all 44 certification reports checked.

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 44 metering installations to confirm compliance.

Audit commentary

Wells has used the comparative recertification method for category 2 metering installations. Statistical certification has not been conducted. Since the last audit, a certification method field has been added to the certification reports. This field was populated with the certification method for all 44 certification reports checked.

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 one Category 3 metering installation during the last audit, which was the only recent example available.

Audit commentary

Category 3 certification has not been conducted during the audit period.

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.

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

I checked process documentation and 44 certification reports to confirm compliance.

Audit commentary

Prevailing load tests for comparative recertification are conducted using a working standard.

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. Wells 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. This test is conducted by scrolling through the meter and checking the scheme vs the design drawing.

- Raw meter data output tests for 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. This test is conducted by using the register advance for Category 2 installations, and by using pulses for Category 1 installations.

- Raw meter data output tests for a 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. Wells has written confirmation from AMS, FCL and IHUB that this comparison occurs.

- 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. There were no installations certified at category 3 or above during the audit period.

- 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. Wells has conducted raw meter data output tests in accordance with this clause using a working standard.

If an ATH performs a raw meter data output test, for a metering installation that will be certified for remote meter reading, the ATH must obtain the raw meter data from the back office system where the raw meter

data is held or 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. Wells has written confirmation from MEPs confirming that they have a process to validate meter readings and that meters are appropriately advancing.

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 44 certification reports to confirm compliance.

Audit commentary

Wells has a letter from relevant MEPs confirming that they have a back-office validation 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

I checked process documentation to confirm whether Wells conducts this test.

Audit commentary

Wells uses pulse outputs or meter registers for testing.

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 44 metering installations to confirm compliance.

Audit commentary

The records checked confirmed that the test results were within the accuracy tolerances set out in Table 1 of Schedule 10.1.

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 44 metering installations to confirm compliance.

Audit commentary

As recorded in **sections 5.1** and **5.40**, there were seven metering installations that do not meet the requirements for certification because the in-service burden is less than the lowest test point.
As recorded in **section 4.12**, 472 metering installations and data storage devices were certified when they do not comply with the Code, as recorded in the type test report.

Section 5.1 records that ICP 0230120008PN0F0 had an absolute error and uncertainty test result of 2.47%, which included a known test equipment uncertainty of 0.27%. The meter is a Class 1 and the CTs are class 0.5, so this error means at least one of the components is operating outside its class, which does not comply with the Code.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.16 With: Clause 10(1) & (2) of Schedule 10.7 From: 01-Jan-12 To: 01-Dec-20	7 Category 2 metering installations certified with low burden. 472 data storage devices certified when they don't comply with the Code, as recorded in the type test report. ICP 0230120008PN0F0 had an absolute error and uncertainty test result of 2.47%, meaning at least one of the components is operating outside its class. Potential impact: Medium Actual impact: Medium Audit history: Twice Controls: Weak Breach risk rating: 6

Audit risk rating	Rationale for audit risk rating		
Medium	The controls are recorded as weak because they do not identify instances of non-compliance prior to certification being applied. Certification is cancelled for these installations which impacts on the compliance of the MEPs; therefore, the audit risk rating is medium.		
Actions taken to resolve the issue		**Completion date**	**Remedial action status**

1. The 7 installations all had TWS CTs installed. All 3 CT models involved are compensated 0007109459RNB49 SEV86A 0005853300CN70D SEW90B 0001602275WMC79 SEV86A 0009060320WM593 SEV86A 0272000121PN00F SEV87 0110110060PNF11 SEV86A 1001280367TC8A6 SEV86A 2 of the 3 CT models have been said by TWS to remain in class at low burden. This leaves just 0005853300CN70D which did require additional burden. Job notes from the MEP stated "Burden resistors ARE NOT REQUIRED as there are some already fitted" which presumably caused the tech to not install more, even though the CTs failed the burden test.	21-1-21	Disputed Post audit comment by auditor contained in Appendix 1
2. The MEP concerned was contacted for comment immediately following this audit, and whilst they acknowledged the alleged breach, it appears that the registry had not been updated with cancellations to the installation certifications, jobs had continued to be issued to us for installations containing ARC devices, and we had not been made aware of the alleged breach. 400 of the 488 installations listed have Gen 1 model data storage devices and we have had on file since January 2012 a Type Test Report for the ESM 2052 (Gen 1) device which showed that model to be compliant with Electricity Industry Participation Code 2010, Schedule 10.1, Code of Practice 10.4. If there has been a subsequent Type Test Report produced for this device, we were not made aware of it by the MEP and we are unclear how we could have known of its existence, and the potential non-compliances identified within it. Of the remaining 88 jobs at installations with Gen 2 model data storage devices, 38 of the jobs did not involve device replacement as they were meter un-bridge's, reseals and the like. Our interpretation of the requirements is that if all indications were that an installation had existing valid certification prior to a meter being bridged, and all we were requested to do was un-bridge a meter, reseal, and recertify the installation (retaining the existing expiry date), and we were confident that the accuracy and continued integrity of the metering installation had not been affected, we are unaware of any requirement to perform additional tests or to check the validity of the existing certifications. Of the remaining 50 jobs with Gen 2 model data storage devices, just 7 were completed as BAU device replacement jobs within the audit period, 1-12-18 until 1-12-20.		Disputed Post audit comment by auditor contained in Appendix 1

Until this alleged breach was mentioned during our audit, we were unaware of the Gen 2 model, which from our subsequent research appears that it started to be supplied to us in the first part of 2017, We have no record of a Type Test report having been supplied to us by the MEP as is expected. Even our field supervisor was unclear on the exact difference between the Gen 1 and Gen 2 models. In line with our longstanding arrangement with the MEP that they would only supply us with compliant equipment for like-for-like replacements, where the MEP has ultimate responsibility for ensuring the metering components and the installation in which they are installed is compliant, we had no reason to believe there was any issue with any ARC devices, however we had not been formally made aware of the model change, nor of the non-compliance and alleged breach that resulted from their audit, even 12 months after that audit. Additionally there do not appear to have been any steps taken by the MEP to prevent further similar alleged breaches from occurring 3. We will bring to the attention of the MEP concerned, the test result for this installation.		Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

1. Even though the MEP has ultimate responsibility for the metering installation and its certification compliance, technicians, photocheckers and datacheckers will be instructed that the results of tests over-ride any comments from the MEP.	26-1-21	
2. All jobs involving the recertification of installations containing an ARC device were halted immediately and the MEP made aware of our stance. A copy of the latest Type Test Reports for these two devices have now been obtained from the MEP. If it is in fact a requirement that the validity of all existing device certifications in an installation be verified when recertifying an installation, then we will amend our procedures accordingly, however we do not believe this is a code requirement at this time. If it were to become a requirement, then it will obviously carry a cost to the industry in the additional time spent verifying existing device certifications at every installation recertification. Additionally, we will no longer act in good faith that all MEP supplied devices, even for use as like-for-like replacements, are, or will be compliant.	21-1-21	
3. We will modify procedures and workflows to use the sum of the meter and CT classes (already being recorded) as the pass/fail threshold for the Prevailing Load Test's Combined Absolution Error & Uncertainty instead of the current 2.5%. We suggest that a code re-word is also required to clarify this as a requirement.	26-1-21	

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 25 metering installations to confirm compliance.

Audit commentary

The process documentation is clear, and all 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 25 metering installations to confirm compliance.

Audit commentary

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

An issue was identified with ARC Innovations data storage devices not being fit for purpose when certified as HHR. The HHR data from ARC Innovations data storage devices only contain one decimal place so the smallest kWh increment is 0.1 kWh. The pulse rate is 200 pulses per 0.1 kWh, so once the controller (data storage device) has received 200 pulses in its accumulator, the 0.1 kWh is transferred to the registers. If the end of an interval is reached and the accumulator has only received 190 pulses, the consumption associated with these pulses is apportioned to the next interval. There will be very few HHR intervals where the consumption is accurate to within 2.5% (the accuracy threshold for Category 1 and Category 1 installations). Clause 11(4) of Schedule 10.7 requires that each metering component is confirmed as being fit for purpose. Wells has not ensured data storage devices are fit for purpose. Wells has certified 461 category 1 installations that are not fit for purpose.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.18 With: Clause 11(4) of Schedule 10.7 From: 01-Jan-12 To: 16-Sep-20	461 installations certified as HHR despite the data storage devices not being accurate or fit for purpose. Potential impact: High Actual impact: High Audit history: None Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	The controls are recorded as weak because data storage devices have been certified for many years despite not being suitable for recording HHR. The impact on settlement is major because each HHR interval has a different price and consumption is being recorded in the incorrect intervals. There is also a major impact on the MEP because certification is cancelled. The other major impact is on retailers due to inaccurate invoicing and because they may need to arrange for displacement.

Actions taken to resolve the issue	Completion date	Remedial action status

The MEP concerned was contacted for comment immediately following this audit, and whilst they acknowledged the alleged breach, it appears that the registry had not been updated with cancellations to the installation certifications, jobs had continued to be issued to us for installations containing ARC devices, and we had not been made aware of the alleged breach. 400 of the 488 installations listed have Gen 1 model data storage devices and we have had on file since January 2012 a Type Test Report for the ESM 2052 (Gen 1) device which showed that model to be compliant with Electricity Industry Participation Code 2010, Schedule 10.1, Code of Practice 10.4. If there has been a subsequent Type Test Report produced for this device, we were not made aware of it by the MEP and we are unclear how we could have known of its existence, and the potential non-compliances identified within it. Of the remaining 88 jobs at installations with Gen 2 model data storage devices, 38 of the jobs did not involve device replacement as they were meter un-bridge's, reseals and the like. Our interpretation of the requirements is that if all indications were that an installation had existing valid certification prior to a meter being bridged, and all we were requested to do was un-bridge a meter, reseal, and recertify the installation (retaining the existing expiry date), and we were confident that the accuracy and continued integrity of the metering installation had not been affected, we are unaware of any requirement to perform additional tests or to check the validity of the existing certifications. Of the remaining 50 jobs with Gen 2 model data storage devices, just 7 were completed as BAU device replacement jobs within the audit period, 1-12-18 until 1-12-20. Until this alleged breach was mentioned during our audit, we were unaware of the Gen 2 model, which from our subsequent research appears that it started to be supplied to us in the first part of 2017, We have no record of a Type Test report having been supplied to us by the MEP as is expected. Even our field supervisor was unclear on the exact difference between the Gen 1 and Gen 2 models. In line with our longstanding arrangement with the MEP that they would only supply us with compliant equipment for like-for-like replacements, where the MEP has ultimate responsibility for ensuring the metering components and the installation in which they are installed is compliant, we had no reason to believe there was any issue with any ARC devices, however we had not been formally made aware of the model change, nor of the non-compliance and alleged breach that resulted from their audit, even 12 months after that audit. Additionally there do not appear to have been any steps taken by the MEP to prevent further similar alleged breaches from occurring	21-1-21	Disputed Post audit comment by auditor contained in Appendix 1

Preventative actions taken to ensure no further issues will occur	Completion date	
All jobs involving the recertification of installations containing an ARC device were halted immediately and the MEP made aware of our stance. A copy of the latest Type Test Reports for these two devices have now been obtained from the MEP. If it is in fact a requirement that the validity of all existing device certifications in an installation be verified when recertifying an installation, then we will amend our procedures accordingly, however we do not believe this is a code requirement at this time. If it were to become a requirement, then it will obviously carry a cost to the industry in the additional time spent verifying existing device certifications at every installation recertification. Additionally, we will no longer act in good faith that all MEP supplied devices, even for use as like-for-like replacements, are, or will be compliant.	26-1-21	

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 19 metering installations to confirm compliance.

Audit commentary

The process documentation is clear, and the comparative certification reports for 18 of the 19 records contained confirmation the meter was replaced by another certified meter and the certification of the current transformers in the metering installation expired before the meter certification expiry date.

The certification report for ICP 1099579414CN729 stated that the certification was carried out using the comparative recertification method on 5th May 2020. The existing meter and current transformers were not replaced. The registry information shows that the existing meter and current transformers were first installed and certified on 11th March 2020 and had the same expiry date of 11th March 2030.

Audit outcome

Non-compliant

Non-compliance	Description

Audit Ref: 5.19 With: Clause 12(2) of Schedule 10.7 From: 05-May-20 To: 01-Dec-20	Incorrect use of comparative recertification method for one installation. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	I have recorded the controls as moderate because there is room for improvement. There is no impact on the accuracy of the metering installation; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
It was believed that the meter and CTs at this installation were new and installed by the MEP prior to our visit. There was no knowledge or onsite evidence of a previous certification. The certification method should therefore have been Selected Component	21-1-21	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Additional training will be given to both metering techs and data checkers to ensure this does not recur	26-1-21	

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 19 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.

Since the last audit Wells has updated the comparative recertification workflow to ensure that installations are not certified if the uncertainty is greater than 0.6% or the overall error and uncertainty

exceeds the requirements of Table 1 of Schedule 10.1. The error and uncertainty is now recorded on the certification reports.

The error and uncertainty processes are discussed in more detail in **section 5.30**.

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

Wells does not conduct certification under this clause.

Audit commentary

Wells does not conduct certification under this clause.

Audit outcome

Not applicable

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

Wells does not conduct certification under this clause.

Audit commentary

Wells does not conduct certification under this clause.

Audit outcome

Not applicable

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

Wells does not conduct certification under this clause.

Audit commentary

Wells does not conduct certification under this clause.

Audit outcome

Not applicable

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

Wells does not conduct certification under this clause.

Audit commentary

Wells does not conduct certification under this clause.

Audit outcome

Not applicable

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

Wells has not conducted insufficient load certification.

Audit commentary

Wells has not conducted insufficient load certification. The Wells process requires technicians to add load to ensure testing can be conducted.

Audit outcome

Not applicable

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

Wells has not conducted statistical certification.

Audit commentary

Wells has not conducted statistical certification.

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

Wells has not conducted statistical certification.

Audit commentary

Wells has not conducted statistical certification.

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 44 metering installation certification records to confirm compliance.

Audit commentary

The commissioning date and expiry date is calculated and recorded correctly in the metering installation certification reports for 39 of the 44 installations.

There were five category 2 installations certified for the Counties MEP with incorrect certification expiry dates. The registry information shows that these five installations had been previously certified by another ATH. Wells certified these installations and applied new certification validity periods and expiry dates to the existing metering components and installations. Details of these installations are as follows,

ICP	Initial installation and certification date	Initial expiry date	Wells certification date	New expiry date
1099579414CN729	11/03/2020	11/03/2030	05/05/2020	05/05/2030
1099579659CN0D0	10/07/2020	10/07/2030	10/09/2020	10/09/2030
0002664022CNFA4	16/09/2020	16/09/2030	24/09/2020	24/09/2030
1099579885CN887	22/09/2020	22/09/2030	24/09/2020	24/09/2030
0009262570CN04E	21/08/2020	21/08/2030	18/09/2020	18/09/2030

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.28 With: Clause 17 of Schedule 10.7 From: 05-May-20 To: 01-Dec-20	Certification expiry dates incorrectly calculated for five category 2 metering installations. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	I have recorded the controls as moderate because there is room for improvement. There is no impact on the accuracy of the metering installation; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
It was made clear from the MEP's job instructions that these installations were all new, and that the MEP had installed the meter and CTs themselves just prior to requesting us to certify the installations. There was no indication provided that the installations had existing certification, nor were there any metering installation certification stickers and therefore the Installation Certification Expiry Date was correctly recorded as 10 years from the date that our technician visited and certified the installation. If the MEP had submitted incorrect certification details to the registry prior to our visit, then Sched 10.6 Cl 6 **6 Provision of metering records when ATH recertifying metering installation** (1) This clause applies if— (a) a **metering equipment provider** contracts with an **ATH** to **recertify** a **metering installation** for which the **metering equipment provider** is responsible; and (b) the **ATH** did not perform the previous **certification** of the **metering installation**. (2) If this clause applies, the **metering equipment provider** must, no later than 10 **business days** after the effective date of the contract, provide the **ATH** with a copy of all relevant **metering records**. and Cl 10.4 (2) (2) If a **participant** (**participant** A) incorrectly populates the **registry**, causing another **participant** (**participant** B) to breach an obligation under this Code, and **participant** B relies, in good faith, on the incorrect information in the **registry**, **participant** B has not breached its obligation. would apply, making this situation the MEP's responsibility, and not something we could have reasonably foreseen or avoided.	21-1-21	Disputed Post audit comment by auditor contained in Appendix 1
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We cannot identify any action on our part which could prevent a recurrence	21-1-21	

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 44 metering installation certification records to confirm compliance.

Audit commentary

Since the last audit Wells has updated the comparative recertification workflow to ensure that installations are not certified if the uncertainty is greater than 0.6% or the overall error and uncertainty exceeds the requirements of Table 1 of Schedule 10.1. The error and uncertainty is now recorded on the certification reports.

The error and uncertainty processes are discussed in more detail in **section 5.30**.

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 19 metering installation certification records and discussed the process for error calculation.

Audit commentary

Wells conducts comparative recertification tests using a working standard as required by this clause. The error and uncertainty calculation has been updated to more clearly show the total uncertainty. This will alert the technician if any uncertainty is over 0.6%. The certification report template has been updated to record error and uncertainty.

Wells has considered the sources of uncertainty and included the influence of ambient temperature on the accuracy of the Hioki working standard. Ambient temperature is measured and recorded by the technician on-site. The uncertainty calculation includes an allowance based on the difference between the calibrated temperature of the working standard to the ambient temperature based on the temperature drift specification of the device. This influence is also added as an absolute figure to the overall error measurement. It appears that the influence of the ambient temperature is being applied twice. I recommend that Wells review the application of the ambient temperature influence to determine if the adjustment of the overall error figure is necessary.

The comparative recertification process includes a comparison between the meter register and the Hioki working standard. The technician starts and stops the Hioki by pushing a button when the least significant digit on the meter registers advances. The uncertainty process does not include any potential error introduced by the reaction time of the technician when pushing the button. I recommend that Wells investigate the possibility of using pulses from the meter or determine and add an allowance in the uncertainty calculation for the influence of the reaction time.

Recommendation	Description	Audited party comment	Remedial action
Regarding 22 of Schedule 10.7	Regarding the comparative recertification error and uncertainty calculation process - review the application of the ambient temperature influence to determine if the adjustment of the overall error figure is necessary.	MSL were contacted on 7-12-20 for guidance. At this stage no response has been received.	Investigating

Recommendation	Description	Audited party comment	Remedial action
Regarding 22 of Schedule 10.7	Regarding the comparative recertification error and uncertainty calculation process - investigate the possibility of using pulses from the meter or determine and add an allowance in the uncertainty calculation for the influence of the reaction time.	MSL were contacted on 7-12-20 for guidance. At this stage no response has been received.	Investigating

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 44 metering installation certification records, and process documentation.

Audit commentary

Wells has a documented process for the management of compensation factors (multipliers). The testing procedures provide confirmation of the multiplier and CT ratio, the multiplier is recorded on the metering installation certification report. Wells only deals with multipliers, not loss or error compensation factors.

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 44 metering installation certification records, and process documentation.

Audit commentary

Wells has a documented process for the management of compensation factors (multipliers). The testing procedures provide confirmation of the multiplier and CT ratio, the multiplier is recorded on the metering installation certification report. Wells only deals with multipliers, not loss or error compensation factors.

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

This clause is designed to allow switchboard manufacturers to install measuring transformers in switchboards at the time of manufacture. This clause does not allow the installation of meters or data loggers. Wells has a documented process to ensure compliance with this clause. 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 44 certification records to confirm compliance.

Audit commentary

The commissioning date and expiry date is calculated and recorded correctly in the metering installation certification reports for 39 of the 44 installations.

There were five category 2 installations certified for the Counties MEP with incorrect certification expiry dates. The registry information shows that these five installations had been previously certified by another ATH. Wells certified these installations and applied new certification validity periods and expiry dates to the existing metering components and installations. Details of these installations are as follows,

ICP	Initial installation and certification date	Initial expiry date	Wells certification date	New expiry date
1099579414CN729	11/03/2020	11/03/2030	05/05/2020	05/05/2030
1099579659CN0D0	10/07/2020	10/07/2030	10/09/2020	10/09/2030
0002664022CNFA4	16/09/2020	16/09/2030	24/09/2020	24/09/2030
1099579885CN887	22/09/2020	22/09/2030	24/09/2020	24/09/2030
0009262570CN04E	21/08/2020	21/08/2030	18/09/2020	18/09/2030

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.34 With: Clause 27(1) & (2) Of Schedule 10.7 From: 05-May-20 To: 01-Dec-20	Certification expiry dates incorrectly calculated for five category 2 metering installations. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	I have recorded the controls as moderate because there is room for improvement. There is no impact on the accuracy of the metering installation; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status

It was made clear from the MEP's job instructions that these installations were all new, and that the MEP had installed the meter and CTs themselves just prior to requesting us to certify the installations. There was no indication provided that the installations had existing certification, nor were there any metering installation certification stickers and therefore the Installation Certification Expiry Date was correctly recorded as 10 years from the date that our technician visited and certified the installation. If the MEP had submitted incorrect certification details to the registry prior to our visit, then Sched 10.6 Cl 6 **6 Provision of metering records when ATH recertifying metering installation** (1) This clause applies if— (a) a **metering equipment provider** contracts with an **ATH** to **recertify** a **metering installation** for which the **metering equipment provider** is responsible; and (b) the **ATH** did not perform the previous **certification** of the **metering installation**. (2) If this clause applies, the **metering equipment provider** must, no later than 10 **business days** after the effective date of the contract, provide the **ATH** with a copy of all relevant **metering records**. and Cl 10.4 (2) (2) If a **participant** (**participant** A) incorrectly populates the **registry**, causing another **participant** (**participant** B) to breach an obligation under this Code, and **participant** B relies, in good faith, on the incorrect information in the **registry**, **participant** B has not breached its obligation. would apply, making this situation the MEP's responsibility, and not something we could have reasonably foreseen or avoided.	21-1-21	Disputed Post audit comment by auditor contained in Appendix 1
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We cannot identify any action on our part which could prevent a recurrence	21-1-21	

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 44 certification records to confirm compliance.

Audit commentary

None of the installations had electromechanical meters. Wells understands the requirements of this clause. Electromechanical meters are seldom installed.

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 34 certification records to confirm compliance.

Audit commentary

All of the installations had measuring transformers that had been certified.

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 ATH uses the measuring transformer's actual accuracy (rather than class accuracy) when calculating the maximum permitted error for the relevant metering installation category
- 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 burden (magnitude and phase angle, where appropriate), including burden resistors if used, on the measuring transformer does not exceed its name plate rating or an alternative rating lower than the name plate rating, if specified in the metering installation design report.

Audit observation

I checked 34 certification records, and process documentation to confirm compliance.

Audit commentary

The process documentation and design reports stipulate all of the requirements above. The certification reports confirmed compliance with regard to certification and high burden.

During the last audit it was recorded that Wells had used a methodology to deal with low burden by installing burden resistors at the test facility which disabled the functionality of the test facility. This methodology is no longer used by Wells.

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 16 category 2 certification records to confirm compliance.

Audit commentary

The current transformer certification expiry date is calculated and recorded correctly in the metering installation certification reports for 11 of the 16 installations.

There were five category 2 installations certified for the Counties MEP with incorrect current transformer certification expiry dates. The registry information shows that these five installations had been previously certified by another ATH. Wells certified these installations and applied new certification validity periods and expiry dates to the existing metering components and installations. Details of these installations are as follows,

ICP	Initial installation and certification date	Initial expiry date	Wells certification date	New expiry date
1099579414CN729	11/03/2020	11/03/2030	05/05/2020	05/05/2030
1099579659CN0D0	10/07/2020	10/07/2030	10/09/2020	10/09/2030
0002664022CNFA4	16/09/2020	16/09/2030	24/09/2020	24/09/2030
1099579885CN887	22/09/2020	22/09/2030	24/09/2020	24/09/2030
0009262570CN04E	21/08/2020	21/08/2030	18/09/2020	18/09/2030

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.38 With: Clause 29 of Schedule 10.7 From: 05-May-20 To: 01-Dec-20	CT certification expiry dates incorrectly calculated for five category 2 metering installations. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	I have recorded the controls as moderate because there is room for improvement. There is no impact on the accuracy of the metering installation; therefore, the audit risk rating is low.
Actions taken to resolve the issue	**Completion date** / **Remedial action status**

It was made clear from the MEP's job instructions that these installations were all new, and that the MEP had installed the meter and CTs themselves just prior to requesting us to certify the installations. There was no indication provided that the installations had existing certification, nor were there any metering installation certification stickers and therefore the Installation Certification Expiry Date was correctly recorded as 10 years from the date that our technician visited and certified the installation. If the MEP had submitted incorrect certification details to the registry prior to our visit, then Sched 10.6 Cl 6 **6 Provision of metering records when ATH recertifying metering installation** (1) This clause applies if— (a) a **metering equipment provider** contracts with an **ATH** to **recertify** a **metering installation** for which the **metering equipment provider** is responsible; and (b) the **ATH** did not perform the previous **certification** of the **metering installation**. (2) If this clause applies, the **metering equipment provider** must, no later than 10 **business days** after the effective date of the contract, provide the **ATH** with a copy of all relevant **metering records**. and Cl 10.4 (2) (2) If a **participant** (**participant** A) incorrectly populates the **registry**, causing another **participant** (**participant** B) to breach an obligation under this Code, and **participant** B relies, in good faith, on the incorrect information in the **registry**, **participant** B has not breached its obligation. would apply, making this situation the MEP's responsibility, and not something we could have reasonably foreseen or avoided.	21-1-21	Disputed Post audit comment by auditor contained in Appendix 1
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We cannot identify any action on our part which could prevent a recurrence	21-1-21	

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

This scenario is not likely to occur with the scope of the Wells ATH operation, and no examples were available to review.

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 measuring transformer where the in-service burden is less than the lowest burden test point specified in a standard set out in Table 5 of Schedule 10.1, the ATH must install burdening resistors to increase the in-service burden to be equal to or greater than the lowest test point of the measuring transformer certification test or confirm from the manufacturer of the instrument transformer that the accuracy will not be adversely affected by the low in-service burden.

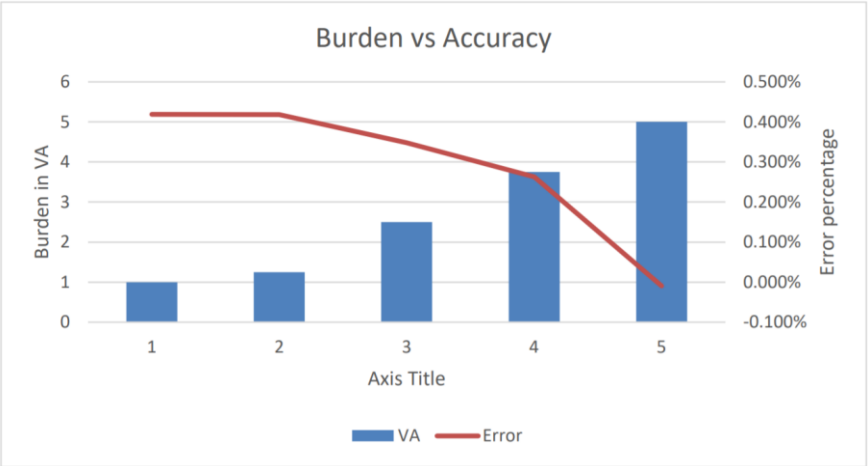
Audit observation

I checked processes and the records for 34 metering installations to confirm compliance.

Audit commentary

There were seven Category 2 installations where the in-service burden was less than the lowest test point (25% of rated burden) and burden resistors were not installed.

The issue of the low burden for CTs has been clarified by the Authority through a memo, which confirms that ATHs are required to take certain actions if the in-service burden is less than the lowest test point used when the CT was calibrated. The actions are to install burden resistors or confirm with a Class A ATH or the manufacturer that the CTs will continue to operate accurately at low burden. On 27/08/19, TWS confirmed that their memo of 2013 was still valid. This memo states: *"for a compensated CT, because the errors can become positive, there is the very real chance that the CT will go out of class in the positive direction when under-burdened".* Some test results have been provided for three models of CT confirming accuracy at 1.0VA but there is no additional information confirming that any TWS compensated CT is accurate below 1.0VA. The graph below is from a TWS test report at 20% load and different VA points. As the burden reduces the error goes positive towards 0.5% which is the class of the CT. It's possible this particular CT may stay within 0.5% with burden lower than 1.0VA but there is no information to support this. There is a strong argument that installations are not confirmed as "fit for purpose" if measuring transformers are under burdened and are potentially operating outside their accuracy class.



Wells has implemented a process for the addition of burden, but it has not been applied to all installations.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.40 With: Clause 31 Of Schedule 10.7 From: 01-Jan-19 To: 01-Dec-20	7 installations had low burden and burden resistors were not installed. Potential impact: Low Actual impact: Low Audit history: twice Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	There is a process to install burden resistors, but it is not applied to all current transformers therefore the controls are moderate. The impact on settlement is likely to be minor because the overall error of the installations is measured and recorded.

Actions taken to resolve the issue	Completion date	Remedial action status

The 7 installations all had TWS CTs installed. All 3 CT models involved are compensated. 0007109459RNB49 SEV86A 0005853300CN70D SEW90B 0001602275WMC79 SEV86A 0009060320WM593 SEV86A 0272000121PN00F SEV87 0110110060PNF11 SEV86A 1001280367TC8A6 SEV86A 2 of the 3 CT models have been said by TWS to remain in class at low burden. This leaves just 0005853300CN70D which did require additional burden. Job notes from the MEP stated "Burden resistors ARE NOT REQUIRED as there are some already fitted" which presumably caused the tech to not install more, even though the CTs failed the burden test.	21-1-21	Disputed Post audit comment by auditor contained in Appendix 1
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Even though the MEP has ultimate responsibility for the metering installation and its certification compliance, technicians, photocheckers and datacheckers will be instructed that the results of tests over-ride any comments from the MEP.	26-1-21	

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 process documentation and whether any examples had occurred.

Audit commentary

Wells has not applied alternative certification, but the process documentation is compliant.

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

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

Audit commentary

Wells is certifying control devices and correctly applying stickers. The control device certification expiry date is correctly recorded in the installation certification report. MEPs have stated in writing that there are no signal propagation issues they are aware of.

All points above are met.

Audit outcome

Compliant

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

I checked correspondence in relation to this matter to determine compliance.

Audit commentary

Wells has appropriate fields in the metering installation certification report to confirm compliance with this clause. Wells checked with all MEPs whether there were any known control signal issues they needed to be aware of, and it was confirmed there were no areas in this category.

Audit outcome

Compliant

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 44 metering installations to confirm compliance.

Audit commentary

All data storage devices are recertified prior to being 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. Wells is ensuring data storage devices are certified and the maximum interrogation cycle is recorded.

The type test report for the ARC Innovations Generation 2 data storage device contains two points indicating compliance may not be achieved with the Code. The issues are as follows:
The type test report states that the “Data Logger retains all data pertaining to energy and events for a minimum period of the interrogation cycle plus five days”. The interrogation cycle is one day; therefore, the type test has only confirmed that data will be retained for six days, but Clause 5(b)(xii) of Schedule 10.7 requires “that the data storage device has data loss protection providing a continued clock and memory operation for a continuous period of at least 15 days when the power supply to the data storage device is lost”.
The type test report also has the following statement regarding clock and memory operation when supply is lost:

(9)	Data logger is designed to ensure continued clock and memory operation when power supply is lost		P
	When supply is restored, time and date remain within the site design specification	Remark 1	
	Time variation	1.5 seconds per day	

It's not showing as a "pass" and "Remark 1" states:

REMARKS

Remark 1. To be determined by the approved test house certifying the installation.

Wells has certified 472 (45 during the audit period) ARC Innovations installations since this type test report was produced and it appears the data storage devices do not meet the requirements for certification.

An issue was identified with ARC Innovations data storage devices not being fit for purpose when certified as HHR. The HHR data from ARC Innovations data storage devices only contain one decimal place so the smallest kWh increment is 0.1 kWh. The pulse rate is 200 pulses per 0.1 kWh, so once the controller (data storage device) has received 200 pulses in its accumulator, the 0.1 kWh is transferred to the registers. If the end of an interval is reached and the accumulator has only received 190 pulses, the consumption associated with these pulses is apportioned to the next interval. There will be very few HHR intervals where the consumption is accurate to within 2.5% (the accuracy threshold for Category 1 and Category 1 installations). Clause 11(4) of Schedule 10.7 requires that each metering component is confirmed as being fit for purpose. Wells has not ensured data storage devices are fit for purpose. Wells has certified 461 category 1 installations that are not fit for purpose.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.45 With: Clause 5(1) of Schedule 10.8 From: 01-Jan-12 To: 16-Sep-20	472 data storage devices certified when they don't comply with the Code, as recorded in the type test report. 461 installations certified as HHR despite the data storage devices not being accurate or fit for purpose. Potential impact: High Actual impact: High Audit history: None Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**

High	The controls are recorded as weak because data storage devices have been certified for many years despite not being suitable for recording HHR. The impact on settlement is major because each HHR interval has a different price and consumption is being recorded in the incorrect intervals. There is also a major impact on the MEP because certification is cancelled. The other major impact is on retailers due to inaccurate invoicing and because they may need to arrange for displacement.

Actions taken to resolve the issue	Completion date	Remedial action status

The MEP concerned was contacted for comment immediately following this audit, and whilst they acknowledged the alleged breach, it appears that the registry had not been updated with cancellations to the installation certifications, jobs had continued to be issued to us for installations containing ARC devices, and we had not been made aware of the alleged breach. 400 of the 488 installations listed have Gen 1 model data storage devices and we have had on file since January 2012 a Type Test Report for the ESM 2052 (Gen 1) device which showed that model to be compliant with Electricity Industry Participation Code 2010, Schedule 10.1, Code of Practice 10.4. If there has been a subsequent Type Test Report produced for this device, we were not made aware of it by the MEP and we are unclear how we could have known of its existence, and the potential non-compliances identified within it. Of the remaining 88 jobs at installations with Gen 2 model data storage devices, 38 of the jobs did not involve device replacement as they were meter un-bridge's, reseals and the like. Our interpretation of the requirements is that if all indications were that an installation had existing valid certification prior to a meter being bridged, and all we were requested to do was un-bridge a meter, reseal, and recertify the installation (retaining the existing expiry date), and we were confident that the accuracy and continued integrity of the metering installation had not been affected, we are unaware of any requirement to perform additional tests or to check the validity of the existing certifications. Of the remaining 50 jobs with Gen 2 model data storage devices, just 7 were completed as BAU device replacement jobs within the audit period, 1-12-18 until 1-12-20. Until this alleged breach was mentioned during our audit, we were unaware of the Gen 2 model, which from our subsequent research appears that it started to be supplied to us in the first part of 2017, We have no record of a Type Test report having been supplied to us by the MEP as is expected. Even our field supervisor was unclear on the exact difference between the Gen 1 and Gen 2 models. In line with our longstanding arrangement with the MEP that they would only supply us with compliant equipment for like-for-like replacements, where the MEP has ultimate responsibility for ensuring the metering components and the installation in which they are installed is compliant, we had no reason to believe there was any issue with any ARC devices, however we had not been formally made aware of the model change, nor of the non-compliance and alleged breach that resulted from their audit, even 12 months after that audit. Additionally there do not appear to have been any steps taken by the MEP to prevent further similar alleged breaches from occurring	21-1-21	Disputed Post audit comment by auditor contained in Appendix 1

Preventative actions taken to ensure no further issues will occur	Completion date	
All jobs involving the recertification of installations containing an ARC device were halted immediately and the MEP made aware of our stance. A copy of the latest Type Test Reports for these two devices have now been obtained from the MEP. If it is in fact a requirement that the validity of all existing device certifications in an installation be verified when recertifying an installation, then we will amend our procedures accordingly, however we do not believe this is a code requirement at this time. If it were to become a requirement, then it will obviously carry a cost to the industry in the additional time spent verifying existing device certifications at every installation recertification. Additionally, we will no longer act in good faith that all MEP supplied devices, even for use as like-for-like replacements, are, or will be compliant.	21-1-21	

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.

Audit observation

I checked the photos for 44 metering installations to confirm compliance.

Audit commentary

In all cases, the certification stickers contained the appropriate detail and were correctly applied.

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 Wells whether this scenario had arisen.

Audit commentary

This scenario has not arisen and is unlikely to arise.

Audit outcome

Compliant

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 photos for 44 metering installations to confirm compliance.

Audit commentary

In all cases, the certification stickers contained the appropriate detail and were correctly applied.

Audit outcome

Compliant

5.49 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 photos for 44 metering installations 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.

The photos for 44 metering installations showed that all enclosures were appropriate for the environment, and the Wells certification sticker has an appropriate warning. Wells reviews photos of all installations to confirm enclosure suitability.

Wells has developed and implemented the use of a separate sticker for CT chambers. This was recommended in the last audit.

Audit outcome

Compliant

5.50 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 38 metering installations to confirm compliance.

Audit commentary

As mentioned in earlier sections, Wells has ensured each metering component is certified prior to certification of metering installations.

Wells has appropriate arrangements for storage and transportation, and they have letters on file from MEPs confirming that storage and transportation arrangements are appropriate from the factory to Wells.

Audit outcome

Compliant

5.51 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 photos for 44 metering installations to confirm compliance.

Audit commentary

The process documentation, design reports and the photos for 44 metering installations confirm compliance.

Audit outcome

Compliant

5.52 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 photos for 44 metering installations to confirm compliance.

Audit commentary

The process documentation, design reports and the photos for 44 metering installations confirm compliance. The warning label is installed in a prominent position.

Audit outcome

Compliant

5.53 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 photos for 44 metering installations to confirm compliance.

Audit commentary

The process documentation, design reports and the photos for 44 metering installations confirm compliance. The certification records contain the relevant details required by this clause.

Audit outcome

Compliant

5.54 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 to confirm compliance.

Audit commentary

When a seal is discovered to be broken or missing there is a procedure to ensure the MEP is notified. Wells also has a procedure and instruction to notify the MEP if any issues are present due to broken or damaged seals. Wells records any seals they have broken as an ATH.

Audit outcome

Compliant

5.55 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 1 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 photos for 44 metering installations to confirm compliance.

Audit commentary

The process documentation, design reports and the photos for 44 metering installations confirm compliance.

Audit outcome

Compliant

5.56 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 photos for 34 metering installations to confirm compliance.

Audit commentary

The checks demonstrated compliance with this requirement.

Audit outcome

Compliant

5.57 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 44 certification reports to confirm compliance.

Audit commentary

All certified components have calibration reports and stickers.

Audit outcome

Compliant

5.58 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 44 certification reports to confirm compliance.

Audit commentary

All certified components have calibration reports and stickers.

Audit outcome

Compliant

5.59 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

The Wells Class B ATH does not calibrate components.

Audit commentary

The Wells Class B ATH does not calibrate components.

Audit outcome

Not applicable

5.60 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

The Wells Class B ATH does not calibrate components.

Audit commentary

The Wells Class B ATH does not calibrate components.

Audit outcome

Not applicable

5.61 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

The Wells Class B ATH does not calibrate components.

Audit commentary

The Wells Class B ATH does not calibrate components.

Audit outcome

Not applicable

5.62 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

The Wells Class B ATH does not calibrate components.

Audit commentary

The Wells Class B ATH does not calibrate components.

Audit outcome

Not applicable

5.63 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 44 metering installations to confirm compliance.

Audit commentary

Wells certifies meters based on the fact MEPs have a copy of type test certificates and calibration reports. Written confirmation has been provided to Wells.

Audit outcome

Compliant

5.64 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

This clause is designed to allow builder's temporary supplies to be portable without the need to calibrate the meter every time. Wells understands the requirements of this clause and has appropriate processes in place to correctly determine expiry dates.

Audit outcome

Compliant

5.65 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

Wells certifies CTs based on calibration reports provided by a Class A ATH.

Audit commentary

Wells certifies CTs based on calibration reports provided by a Class A ATH, which covers the points raised above.

Audit outcome

Compliant

5.66 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 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 Wells processes for certification of current transformers and the certification records for 34 category 2 metering installations.

Audit commentary

When conducting selected component certification of category 2 metering installations Wells certifies the CTs based on calibration reports provided by a Class A ATH, which covers the points raised above.

When conducting comparative recertification of category 2 installations Wells records that the CTs have been certified and applies certification stickers for the CTs. I have recorded non-compliance as the CTs are certified without calibration being carried out.

Non-compliance	Description
Audit Ref: 5.66 With: Clause 3 of Schedule 10.8 From: 01-Jan-19 To: 01-Dec-20	CTs are certified without calibration being carried out. Potential impact: Low Actual impact: Low Audit history: None Controls: None Breach risk rating: 5
Audit risk rating	**Rationale for audit risk rating**
Low	I have recorded that there are no controls as the Wells processes includes CT certification during comparative recertification. The impact on settlement and participants is minor; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
We had not understood that the requirement for all devices to be certified and to carry a certification sticker did not apply to CTs in Comparative Recertification.	21-1-21	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will amend our processes to not certify existing CTs under Comparative Recertification.	26-1-21	

Audit outcome

Compliant

5.67 Measuring Transformers In-Service Burden lower than Calibration Test Point Burden (Clause 2(1)(C) Of Schedule 10.8)

Code related audit information

If the in-service burden of a measuring transformer is lower than a test point specified in a standard listed in Table 5 of Schedule 10.1, the ATH must confirm the accuracy of the measuring transformer at the in-service burden by:
a) obtaining confirmation of accuracies at the in-service burden from the measuring transformer's manufacturer; or
b) if the primary voltage of the measuring transformer is greater than 1 kV, a class A ATH calibrating the measuring transformer at the in-service burden.

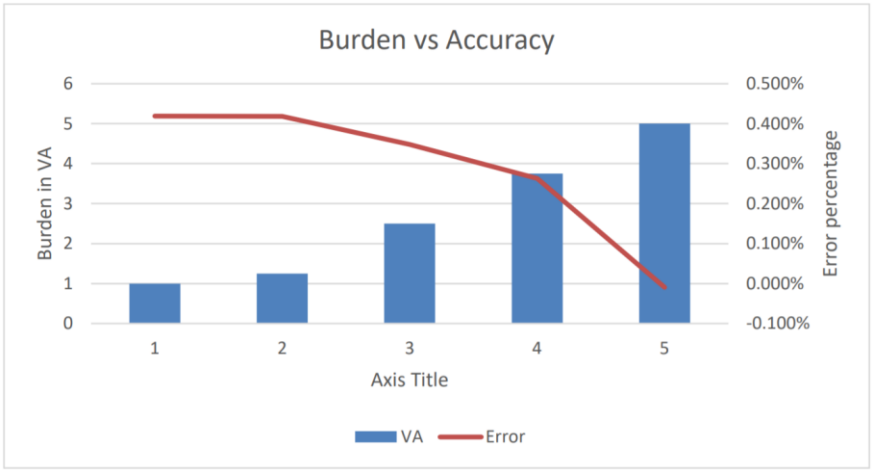
Audit observation

I checked the certification records for 34 metering installations to confirm compliance.

Audit commentary

There were seven Category 2 installations where the in-service burden was less than the lowest test point (25% of rated burden) and burden resistors were not installed.

The issue of the low burden for CTs has been clarified by the Authority through a memo, which confirms that ATHs are required to take certain actions if the in-service burden is less than the lowest test point used when the CT was calibrated. The actions are to install burden resistors or confirm with a Class A ATH or the manufacturer that the CTs will continue to operate accurately at low burden. On 27/08/19, TWS confirmed that their memo of 2013 was still valid. This memo states: *"for a compensated CT, because the errors can become positive, there is the very real chance that the CT will go out of class in the positive direction when under-burdened".* Some test results have been provided for three models of CT confirming accuracy at 1.0VA but there is no additional information confirming that any TWS compensated CT is accurate below 1.0VA. The graph below is from a TWS test report at 20% load and different VA points. As the burden reduces the error goes positive towards 0.5% which is the class of the CT. It's possible this particular CT may stay within 0.5% with burden lower than 1.0VA but there is no information to support this. There is a strong argument that installations are not confirmed as "fit for purpose" if measuring transformers are under burdened and are potentially operating outside their accuracy class.



Wells has implemented a process for the addition of burden, but it has not been applied to all installations.

Audit outcome

Non-compliant

Non-compliance	Description

Audit Ref: 5.67 With: Clause 2(1)(C) Of Schedule 10.8 From: 01-Jan-19 To: 01-Dec-20	7 installations had low burden and burden resistors were not installed. Potential impact: Low Actual impact: Low Audit history: Twice Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	There is a process to install burden resistors, but it is not applied to all current transformers therefore the controls are moderate. The impact on settlement is likely to be minor because the overall error of the installations is measured and recorded.

Actions taken to resolve the issue	Completion date	Remedial action status
The 7 installations all had TWS CTs installed. All 3 CT models involved are compensated. 0007109459RNB49 SEV86A 0005853300CN70D SEW90B 0001602275WMC79 SEV86A 0009060320WM593 SEV86A 0272000121PN00F SEV87 0110110060PNF11 SEV86A 1001280367TC8A6 SEV86A 2 of the 3 CT models have been said by TWS to remain in class at low burden. This leaves just 0005853300CN70D which did require additional burden. Job notes from the MEP stated "Burden resistors ARE NOT REQUIRED as there are some already fitted" which presumably caused the tech to not install more, even though the CTs failed the burden test.	21-1-21	Disputed Post audit comment by auditor contained in Appendix 1
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Even though the MEP has ultimate responsibility for the metering installation and its certification compliance, technicians, photocheckers and datacheckers will be instructed that the results of tests over-ride any comments from the MEP.	26-1-21	

5.68 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 the policy regarding epoxy CTs.

Audit commentary

Epoxy insulated CTs are discarded upon discovery.

Audit outcome

Compliant

5.69 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

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

Audit commentary

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

Audit outcome

Compliant

5.70 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 certification records for 44 metering installations and the process documentation to confirm compliance.

Audit commentary

The process documentation and certification records confirmed that data storage devices are recalibrated prior to installation.

Audit outcome

Compliant

5.71 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

Wells does not conduct onsite calibration of metering components.

Audit commentary

Wells does not conduct onsite calibration of metering components.

Audit outcome

Not applicable

5.72 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

Wells does not conduct onsite calibration of metering components.

Audit commentary

Wells does not conduct onsite calibration of metering components.

Audit outcome

Not applicable

5.73 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

Wells conducts comparative recertification but does not conduct onsite calibration of metering components.

Audit commentary

Wells conducts comparative recertification but does not conduct onsite calibration of metering components.

Audit outcome

Not applicable

5.74 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 44 metering installations to confirm compliance.

Audit commentary

Wells is correctly applying certification in accordance with this clause.

Audit outcome

Compliant

5.75 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 44 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

Wells has not conducted any inspections.

Audit commentary

Wells has not conducted any inspections.

Audit outcome

Not applicable

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

Wells has not conducted any inspections.

Audit commentary

Wells has not conducted any inspections.

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

Wells has not conducted any inspections.

Audit commentary

Wells has not conducted any inspections.

Audit outcome

Not applicable

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

Wells has not conducted any inspections.

Audit commentary

Wells has not conducted any inspections.

Audit outcome

Not applicable

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

Wells has not conducted any Category 2 or above inspections.

Audit commentary

Wells has not conducted any Category 2 or above inspections.

Audit outcome

Not applicable

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 Wells' process documentation and three examples to confirm compliance.

Audit commentary

Wells has a process which is compliant with the Code. Three examples were examined which contained sufficient detail for the MEP.

The installations mentioned in **section 5.40** are deemed to be "not fit for purpose" because of low CT burden, therefore certification is cancelled. The Authority has clarified that non-compliance exists in this situation and that certification is cancelled for installations where low burden is not addressed, therefore I have concluded that Wells should have notified the relevant MEPs.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 7.1 With: Clause 10.43(3) of Part 10 From: 10-Jan-20 To: 01-Dec-20	MEP not notified that 7 metering installations with low burden are not fit for purpose and therefore have cancelled certification. Potential impact: Medium Actual impact: Medium Audit history: None Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are recorded as moderate because there is room for improvement in order to identify and report on such situations. The impact on settlement could be moderate and the impact on MEPs is moderate because certification is cancelled, leading to non-compliance for the MEP in addition to non-compliance for Wells; therefore, the audit risk rating is medium.

Actions taken to resolve the issue	Completion date	Remedial action status

The 7 installations all had TWS CTs installed. All 3 CT models involved are compensated. 0007109459RNB49 SEV86A 0005853300CN70D SEW90B 0001602275WMC79 SEV86A 0009060320WM593 SEV86A 0272000121PN00F SEV87 0110110060PNF11 SEV86A 1001280367TC8A6 SEV86A 2 of the 3 CT models have been said by TWS to remain in class at low burden. This leaves just 0005853300CN70D which did require additional burden. Job notes from the MEP stated "Burden resistors ARE NOT REQUIRED as there are some already fitted" which presumably caused the tech to not install more, even though the CTs failed the burden test.	21-1-21	Disputed Post audit comment by auditor contained in Appendix 1
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Even though the MEP has ultimate responsibility for the metering installation and its certification compliance, technicians, photocheckers and datacheckers will be instructed that the results of tests over-ride any comments from the MEP.	26-1-21	

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 Wells' process documentation and three examples to confirm compliance.

Audit commentary

Wells has a process which is compliant with the Code. Three recent examples were examined which contained sufficient detail for the MEP.

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 Wells' process documentation to confirm compliance.

Audit commentary

Wells has a process which is compliant with the Code. Three recent examples were examined which contained sufficient detail for the MEP.

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 Wells' process documentation to confirm compliance.

Audit commentary

Wells has a process which is compliant with the Code. Three recent examples were examined which contained sufficient detail for the MEP.

Audit outcome

Compliant

8. Conclusions

The audit report records 19 non-compliances, the main areas are as follows:

- The most recent application for renewal of approval included an interim audit report completed on 25th April 2019. The executive summary of this audit report states, “Wells is a Class B Approved Test House and this audit was performed at their request, to evaluate the resolution of the non-compliance issues identified during the November 2018 audit.” As this was not a final audit report obtained under Part 16A Wells did not meet the requirements of this clause.

- Wells has certified 472 metering installations containing data storage devices that have failed type testing. 461 of these metering installations have been certified as HHR when they are not fit for purpose. The total consumption is accurate but the inaccuracy of apportionment between intervals is greater than 2.5% and for low consuming installations can be significantly higher than 2.5%.

- Wells has not confirmed the accuracy of CTs when the in-service burden is lower than the lowest test point recorded in the IEC standard. A process has been developed for installing burden resistors, but this was not used for seven installations checked during the audit.

- ICP 0230120008PN0F0 had an absolute error and uncertainty test result of 2.47%, meaning at least one of the components is operating outside its class.

- Missing or inaccurate information recorded in certification reports.

- Incorrect use of the comparative recertification method.

- Current transformers are certified without calibration being carried out when metering installation certification is conducted using the comparative recertification method.

Four recommendations are made. Three are made regarding improvements to the comparative recertification error and uncertainty calculation process. One relates to the lack of clarity with metering installation certification reports.

The date of the next audit is determined by the Electricity Authority and is dependent on the level of compliance during this audit. The Future Risk Rating table provides some guidance on this matter and recommends a next audit frequency of three months, I agree with this recommendation.

9. Wells Response

We acknowledge some of the issues raised, a few of which we believe were not due to specific negligence on our part and were beyond our ability to foresee to the extent that we do not believe there is anything we can do to prevent a recurrence. Others we have proposed remedial actions for, but some appear to be incorrectly identified as the data we have reviewed is not consistent with the issue raised.

Appendix 1 – Post audit comments by auditor

Sections 2.2 and **2.4**, ATH application did not include a copy of the final audit report.
Wells disputes this non-compliance, stating:
"We cannot see what identifies the interim report as not being a "final" report, and therefore saw no reason for it not to be included with our approval renewal application in 2019, particularly since it addressed all but one of the 2018 audit issues".
I checked with the author of the interim audit report and confirmed that it was clearly not a "final report", because it was not saved as a "final audit report" and was not in pdf format. It was supplied as a word document and was changed to a pdf and renamed (not by the auditor) prior to publication.
Furthermore in the executive summary it clearly states the audit was "…to evaluate the resolution of the non-compliance issues identified during the November 2018 audit"
On 01/03/20, Wells were advised by email that their application needed to include the final audit report.

The audit report that needs to be submitted with your application is the one dated 06/12/18 because it is the "final audit report obtained under Part 16A"

(2) An applicant must—
(a) include in its application—
(i) the final audit report obtained under Part 16A, together with its responses to the report; and

The "interim audit report" was a check of the resolution of compliance issues, it wasn't an audit conducted under Part 16A. Ron may consider it as part of the clause below:

(b) provide promptly any other information or documentation the **Authority** may reasonably request.

Sections 2.2, 3.11 and **3.14,** The maximum interrogation cycle of 90 days in the design report appears to be incorrect, because it should refer to the period of memory availability, which is unlikely to be 90 days. It is accepted industry practice to record the maximum interrogation cycle for legacy meters as 365 days. In both of these cases the maximum interrogation cycle is recorded in the registry as 365 days.
Sections 4.12, 5.16, 5.18 and **5.45,** the issue of non-compliant data storage devices was raised in the ARC Innovations MEP audit. The MEP has accepted the non-compliance and is working on a resolution with the Authority. The ATH is responsible for ensuring that all metering components are fit for purpose when certifying metering installations.
Sections 5.1, 5.16, 5.40, **5.67** and **7.1** TWS has stated that CTs with compensation windings will be inaccurate at low burden. The CTs in the installations recorded are compensated, therefore additional burden is required. In the case were burden resistors had been installed the ATH performed testing which shows the resistors were insufficient but took no further action. It is the ATHs responsibility to ensure the burden is correct.
Sections 2.2, 5.28, 5.34 and **5.38** The registry shows prior certification for these ICPs, which may be incorrect if there were no certification stickers. Further investigation should have been conducted with

Counties MEP to determine when the metering components were installed in order to determine the expiry dates.