

INTERNATIONAL ELECTROTECHNICAL COMMISSION SYSTEM FOR CERTIFICATION TO STANDARDS RELATING TO EQUIPMENT FOR USE IN EXPLOSIVE ATMOSPHERES (IECEX SYSTEM)

Title: Re-assessment Report for the continued acceptance of Safety in Mines, Testing and Research Station, SIMTARS, as an Accepted Ex Test Laboratory (ExTL)

To: Members of the IECEx Management Committee, ExMC

Introduction

In accordance with the 5 year re-assessment plan for the surveillance and monitoring of bodies within the IECEx System, the following document contains the IECEx Re-assessment Report for **Safety in Mines, Testing and Research Station, SIMTARS,** as an Accepted Ex Test Laboratory (ExTL).

This report is issued for endorsement during the 2013 Fortaleza, Brazil Meeting.

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IECEX ASSESSMENT REPORT FOR SIMTARS (IECEX TEST LABORATORY, EXTL)

Type of Assessment: (please mark)

Initial assessment for Candidate ExTL

Re-Assessment of ExTL X

Scope Extension of ExTL

1. OBJECT AND FIELD OF APPLICATION

1.1. Country:

AUSTRALIA

1.2. Name of Accepted TL

SIMTARS - Safety in Mines, Testing and Research Station

1.3. Members of the Assessment Team

IECEx Team Leader:Thierry HoueixExpert Assessor:Herbert PetersObservers:Chris Agius

1.4. Place and Date of Assessment

2 Smith Street, REDBANK, QLD 4301, Australia 27-30 June 2011 Post assessment reviews

1.5. Assessment References

- i) IECEx 02:2010 IECEx Scheme rules of procedure
- ii) Ex OD 003 IECEx Assessment procedures
- iii) Ex OD 009 Issuing of CoCs, ExTRs and QARs
- iv) ISO/IEC 17025:2005
- v) IECEx Technical Guidance Documents (TGDs)
- vi) ExTAG decision sheets (DSs)
- vii) ExTL application documents dated



1.6. Scope of Assessment

Number	Title
60079-0	Explosive atmospheres -
Edition 5	Part 0: Equipment - General requirements
60079-1	Explosive atmospheres -
Edition 6	Part 1: Equipment protection by flameproof enclosures "d"
60079-2	Explosive atmospheres -
Edition 5	Part 2: Equipment protection by pressurized enclosure «p»
60079-5	Explosive atmospheres -
Edition 3	Part 5: Equipment protection by powder filling «q»
60079-6	Explosive atmospheres -
Edition 3	Part 6: Equipment protection by oil immersion «o»
60079-7	Explosive atmospheres -
Edition 4	Part 7: Equipment protection by increased safety "e"
60079-11	Explosive atmospheres -
Edition 5	Part 11: Equipment protection by intrinsic safety "i"
60079-15 Edition 4	Electrical apparatus for explosive gas atmospheres - Part 15: Construction, test and marking of type of protection "n" electrical apparatus
60079-18 Edition 3	Electrical apparatus for explosive gas atmospheres - Part 18: Construction, test and marking of type of protection encapsulation "m" electrical apparatus
60079-19	Explosive atmospheres –
Edition 3.0	Part 19: Equipment repair, overhaul and reclamation
60079-25	Electrical apparatus for explosive gas atmospheres -
Edition 2	Part 25: Intrinsically safe systems
60079-27	Explosive atmospheres –
Edition 2	Part 27: Fieldbus intrinsically safe concept (FISCO)
60079-30-1	Explosive atmospheres –
Edition 1	Part 30-1: Electrical resistance trace heating – General and testing
60079-31	Explosive atmospheres –
Edition 1	Part 31: Equipment dust ignition protection by enclosure "t"
60079-35-1 Edition 1	Explosive atmospheres Part 35-1: Caplights for use in mines susceptible to firedamp - General requirements - Construction and testing in relation to the risk of explosion
61241-0	Electrical apparatus for use in the presence of combustible dust -
Edition 1	Part 0: General requirements
61241-1	Electrical apparatus for use in the presence of combustible dust -
Edition 1	Part 1: Protection by enclosures 'tD'
61241-1-1 Edition 1	Electrical apparatus for use in the presence of combustible dust Part 1: Electrical apparatus protected by enclosures and surface temperature limitation - Specification for apparatus
61241-4	Electrical apparatus for use in the presence of combustible dust



Number	Title
Edition 1	Part 4: Protection by enclosures "tD" plus -1
61241-11 Edition 1	Electrical apparatus for use in the presence of combustible dust – Part 11: Type of Protection 'pD'
61241-18 Edition 1	Electrical apparatus for use in the presence of combustible dust Part 18: Protection by encapsulation "mD"
62013-1 Edition 2	Caplights for use in mines susceptible to firedamp Part 1: General requirements - Construction and testing in relation to the risk of explosion
62086-1 Edition 1	Electrical apparatus for explosive gas atmospheres – Electrical resistance trace heating – Part 1: General and testing requirements

1.7. Accepted TL Persons Interviewed

Name	Position
Jim Birch	Manager – ETCC
André De Kock	Principal Engineer
Ashraf Chowdhury	Principal Engineer
Gunter Lenicek	Senior Engineer

1.8. Legal Entity of The Accepted TL

SIMTARS (the Safety in Mines Testing and Research Station) is a division of the Queensland Government - Department of Employment, Economic Development and Innovation. It reports to the Minister for Natural Resources, Mines and Energy and Minister for Trade through the Associate Director General – Mines & Energy.

1.9. Associated ExCB

SIMTARS - Safety in Mines, Testing and Research Station - Engineering, Testing and Certification Centre, ETCC

1.10.Financial Support

SIMTARS is a division of the Queensland Department of Employment, Economic Development and Innovation (DEEDI). It's operating and capital expenditures are funded by the Department on an annual budget basis, with a requirement to achieve a budgeted revenue by charging fees for its services.

1.11.History

SIMTARS was established in 1986 by the Queensland Government as a result of mining disasters in Queensland to provide research and technical services aimed at reducing the risk of disaster events and minimising fatalities, lost-time injuries and occupational disease in mining and related industries.

Commercial activities began in the 1990s when industry recognised the commercial relevance of the work undertaken.



Core functions are to:

- Conduct mine safety research
- Undertake testing of explosion-protected and general purpose equipment
- Investigate technical aspects of accidents
- Investigate mine fires and explosions
- Scientifically assess health and safety

SIMTARS achieved accreditation to ISO/IEC 17025 in 1989 and its management system was certified in 1993. In 1999 the certification service was accredited to Guide 65, followed by recognition by the IECEx for product certification. Acceptance into the IECEx Service Facility program was in 2007 and the Mark Licensing program in 2009.

2. ORGANISATION

Name	Title	Experience
Jim Birch	Manager	2 ¹ / ₂ years Intrinsic Safety
		4 years Certification as
		Section Head
		11 years as Manager
Bipin Parmar	A/Director	9 years explosion
		protection concepts as
		Supervising Technical
		Officer
		7 years as Principal
		Engineer, Section Head,
		Auditor
		3 years as Manager-STC
		1 year as A/Director-ETCC

2.1. Names, Titles and Experience of the Senior Executives

2.2. Name, Title and Experience of the Quality Management Representative

Name	Title	Experience
Ashraf Chowdhury	Quality Coordinator	4 years Flameproof as
		Section Head
		11 years Certification as
		Section Head
		Includes Quality Co-
		ordinator role

2.3. Name and Title of Nominated Principal Contact

Name	Title	Comments
Bipin Parmar	A/Director	

2.4. Employees

Name	Title	Experience
Andre De Kock	Principal Engineer	Section Head – Ex Testing
		4 years



Name	Title	Experience
Geoff Barnier	Principal Engineer	Section Head – General Testing Ex d, p, e, i, n, m, t, iD, mD 20 Years
Chang Woo Lee	Supervising Senior Engineer	Certification, Ex Testing, 15 years
Gunter Lenicek	Senior Engineer	Testing & assessment, Ex i, iD 14 years
David Soady	Senior Technical Officer	Testing & assessment Ex d, t 17 years
John Ellis	Assessment Officer	Testing & assessment Ex d, p, e, n, m, t, mD 13 years
Grant Ross	Testing Officer	Testing & assessment IP tests 5 years
Ewan Paton	Testing Officer	Testing & assessment 5 years

2.5. Organizational Structure

Refer to SIMTARS Organisational Chart in Annex A

3. RESOURCES

Resources are allocated in terms of buildings, equipment, services and trained personnel by the Ex Managers. A business plan is produced from which budgets are set and reviewed quarterly during the Directors meetings. Competent staffs are ensured by an annual appraisal system which identifies future training needs.

The Ex operation at SIMTARS has 15 professional and technical staff involved in Ex testing. It has a comprehensive range of testing equipment and good facilities for this type of testing. The following are some of the major test equipment at SIMTARS:

- Climatic chambers
- Equipment for IP testing to IEC 60529
- Various test apparatus for testing to IEC 60079-0
- Equipment for light aging test to IEC 60079-0
- Gas mixing and measurement systems
- Explosion chambers for testing to IEC 60079-1
- System for pressure measurement to IEC 60079-1, including associated software
- Hydraulic bench for tensile tests on cables to IEC 60079-0
- Hydraulic bench for overpressure tests to IEC 60079-1
- Dielectric tests to IEC 60079-7
- Apparatus for CTI test to IEC 60079-7 and IEC 60079-11
- Spark test apparatus for tests to IEC 60079-11 with associated calibration system
- Heating bench for small components according to IEC 60079-11



• Recorders for temperature measurement

4. DOCUMENTATION

4.1. Quality Manual

SIMTARS has a comprehensive quality manual supported by other procedural documents, which refer to ISO 9001, ISO/IEC 17025 standards and ISO/IEC Guide 65. as well as the IECEx rules, procedures and relevant documents.

4.2. Procedures

SIMTARS has a very comprehensive range of procedures covering all aspects of the testing operations that were audited as part of this assessment. Where applicable each procedure has with it an associated test sheet for completion by the staff.

4.3. Work Instructions

Work Instructions (EI series documents) are controlled electronically and are accessible to all staff. Instructions are available for tasks that are not fully defined in the Standards or if it has been found to be required to maintain consistency.

4.4. Records

All records are maintained in according EP0020 procedure. The records (EF series documents) are controlled electronically and are accessible to all staff. Test data are held on structured job files and each bear identification. Procedure (EP0020) provides guidance on information to be recorded. This was found to comply with IECEx requirements.

4.5. Document Change Control

Document change control is affected by having the master document as the digitally document on the intranet in accordance with GGP032-Document Control procedure.

4.6. Test Records

Procedure for changes to controlled documents is addressed in QP0010. The procedure involves making of the changes, circulation for feedback, issuing by the document controller and notification to staff. The Workwise work flow software is used to log details of the change.

5. TEST REPORTS

Number of test reports issued under the IECEx, national or regional schemes in the preceding four years for each type of protection:



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Standards	Title	Number of issued test reports				
		2008	2009	2010	2011	Total
						Part 0 included in
						numbers below
IEC60079	Part 1: Equipment protection by flameproof enclosures "d"	20	13	13	13	59
IEC60079	Part 2: Equipment protection by pressurized Enclosure "p"	-	-	-	-	0
IEC60079	Part 5: Equipment protection by powder filling "q"	-	-	-	-	0
IEC60079	Part 6: Equipment protection by oil immersion «o»	-	-	-	-	0
IEC60079	Part 7: Equipment protection by increased safety "e"	1	1	-	5	7
IEC60079	Part 11: Equipment protection by intrinsic safety "i"	5	2	6	2	15
IEC60079	Part 15: Construction, test and marking of type of protection "n" electrical apparatus	1	1	1	1	4
IEC60079	Part 18: Construction, test and marking of type of protection encapsulation "m" electrical apparatus	-	1	1	-	2
IEC60079	Part 30-1: Electrical resistance trace heating – General and testing requirements	-	-	-	-	0
IEC60079	Part 31: Equipment dust ignition protection by enclosure "t"	5	3	1	7	16
IEC61241	Part 4: Protection by enclosures "pD"	-	-	-	-	0
IEC61241	Part 11: Protection by intrinsic safety 'iD'	-	-	-	-	0
IEC61241	Part 18: Protection by encapsulation "mD"	-	-	-	-	0
IEC62013	Part 1: General requirements - Construction and testing in	-	-	-	-	0



Standards	Title	Numbe	Number of issued test reports			
		2008	2009	2010	2011	Total
						Part 0 included in numbers below
	relation to the risk of explosion					

6. CALIBRATION

SIMTARS has a purpose built calibration laboratory where most of the equipment used by the ExTL are calibrated. The calibration laboratory is accredited by the national accreditation body, NATA. Calibrations that are outside the scope of the accreditation are sent to external agencies. The scope of accreditation is available from the network. The calibration laboratory offers its services to external organizations. Calibration work is processed in accordance with Procedure El0036.

During the site visit of the laboratory calibration labels of test equipment were inspected and found to be satisfactory.

7. CONFIDENTIALITY

All employees and members of committees sign confidentiality agreements. Examples of these were sighted by the team.

Confidentiality is addressed in CI 18 of the Certification Regulation Manual. Code of Conduct also addresses confidentiality and conflict of interest.

There is a system of security control at the main entrance gate and entrance to buildings is controlled by key. This was found to comply with ISO/IEC 17025 as well as the IECEx rules, procedures and relevant documents.

8. NATIONAL ACCREDITATION

SIMTARS has accreditation from NATA: Certificate No 2681 to ISO/CEI 17025. The NATA accreditation was issued in June 1989. The current scope was issued in January 2011. The scope includes the IEC standards covered by the scope of acceptance by the IECEx.

9. RECOGNITION AND AGREEMENTS

SIMTARS have Memorandum of Understanding with Korea Gas Safety Corporation (KGS), which covers cooperative ventures between the two organisations.

10. INTERNAL AUDIT AND PERIODIC REVIEW

Internal audit schedule is available electronically on the system. Audits are scheduled for assessment against elements of ISO/IEC 17025, Guide 65 and ISO 9001.



Requirements of the IECEx are addressed through such assessments.System review by management is carried out at Management Meeting, which are planned to be held once every two months.

11. COMPLAINTS AND APPEALS (Including appeals to IECEx)

SIMTARS operates a customer feedback system which deals with complaints and appreciations of service. The form which is used allows for follow-up action to be identified and satisfactory completion to be recorded. One appeal was lodged since the last IECEx assessment. This appeal did not go past SIMTARS. There has been no complaints and some appreciations.

12. SPECIAL FACTS TO BE NOTED

12.1. Supporting Documentation

Copies of additional supporting information for this assessment have been provided to the applicant and the IECEx Secretariat. These include:

- Details of issues raised and how these have been resolved
- Checklist for ISO/IEC 17025
- Photos of the tests carried out
- Assessors' notes from the assessment

12.2. Review of Test Reports

A review was carried out of ExTRs that had been issued. Some errors were found and SIMTARS was advised of these, however following investigations they were not such to affect previously certified product. Additional training of SIMTARS staff were conducted with the Assessment Team reviewing corrective actions and found to meet the requirements of the IECEx. Details are included in the site assessment report and held by the Secretariat.

12.3. Witnessed Tests

The following tests were witnessed during the re-assessment:

- Use of the spark test apparatus
- Pressure determination for Ex d
- Temperature rise test
- Dust testing for IP6X

All tests were performed competently and demonstrated the capability of SIMTARS staff carry out Ex testing

13. COMMENTS (Including issues found during assessment)

There were some issues during assessment that were subsequently resolved to the satisfaction of the assessment team. These issues were to do with:

- Impact test, Reference pressure test, Short Circuit Test, Temperature Test with dust layer, CTI test, Bubble test, Electrical strength test on encapsulated equipment, Resistance to chemical agent.
- Some testing equipment which were out of calibration



All issues were resolved to the satisfaction of the assessment team.

14. **RECOMMENDATION**

Based on the re-assessment performed on 21-23 June 2011, SIMTARS is recommended for (continued) acceptance in the IECEx scheme as a IECEx Testing Laboratory (ExTL) according to the scope of the standards listed in this document.

Thierry Houeix Lead Assessor Herbert Peters Expert Assessor

List of Annexes:

- 1. Accreditation Certificate for Testing
- 2. Organisation Chart

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ANNEX 1

NATA Accredited Laboratory

National Association of Testing Authorities, Australia (ABN 59 004 379 748)

has accredited

Simtars Engineering, Testing and Certification Centre

following demonstration of its technical competence to operate in accordance with

ISO/IEC 17025

This facility is accredited in the field of

Measurement Science and Technology

for the tests, calibrations and measurements shown on the Scope of Accreditation issued by NATA

Alan Patterson Chief Executive

Date of accreditation: 30 June 1989 Accreditation number: 2681 Corporate site number: 2672

NATA is Australia's government-endorsed laboratory accreditor, and a leader in accreditation internationally. NATA is a signatory to the international mutual recognition arrangements of the International Laboratory Accreditation Cooperation (ILAC) and the Asia Pacific Laboratory Accreditation Cooperation (APLAC).

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Annex 2 Organization Chart of SIMTARS