



**INTERNATIONAL ELECTROTECHNICAL COMMISSION SCHEME
FOR CERTIFICATION TO STANDARDS RELATING TO EQUIPMENT FOR USE IN
EXPLOSIVE ATMOSPHERES (IECEx SCHEME)**

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

To: Members of the IECEx Management Committee, ExMC

Introduction

This document contains the IECEx Re-assessment Report for Safety in Mines Testing and Research Station (Simtars) of Australia as an Ex Test Laboratory in accordance with the 5-year re-assessment plan for the surveillance and monitoring of bodies under the IECEx Scheme.

This Report is issued for endorsement at the 2005 ExMC Buxton Meeting.

It should be noted that the re-assessment of ITACS was conducted as a joint IECEx/NATA Assessment in accordance with the IEC/ILAC MOU.

Chris Agius
IECEx Secretariat

Address:

**SAI Building
286 Sussex Street
Sydney NSW 2000
Australia**

Contact Details:

**Tel: +61 2 8206 6940
Fax: +61 2 8206 6272
e-mail: chris.agius@iecex.com
<http://www.iecex.com>**



IECEX RE-ASSESSMENT REPORT FORM

For Accepted Ex Testing Laboratory (ExTL)

1. OBJECT AND FIELD OF APPLICATION

1.1 **Country**
Australia

1.2 **ExTL under Re-Assessment**
Simtars ETCC
Safety in Mines Testing and Research Station (Simtars)
Engineering, Testing and Certification Centre (ETCC)

1.3 **Members of the Assessment Team**
Ian Cleare, Lead assessor
Wolf Dill, Assessor

1.4 **Place and Date of Re-Assessment**
2 Smith Street, Redbank, Queensland 4301, Australia
29 & 30 November 2004

1.5 **Assessment References**

Document:

- i) IECEx 02 Second Edition
- ii) IECEx Operational Document OD/009/V1
- iii) ISO/IEC 17025
- iv) IECEx Technical Guidance Documents

1.6 **Current Scope of Acceptance**

Product Category	Standard
General requirements	IEC 60079-0
Flameproof enclosure "d"	IEC 60079-1
Pressurization "p"	IEC 60079-2
Powder filling "q"	IEC 60079-5
Oil immersion "o"	IEC 60079-6
Increased safety "e"	IEC 60079-7
Intrinsic safety "i"	IEC 60079-11
Type of protection "n"	IEC 60079-15
Encapsulation "m"	IEC 60079-18
Apparatus for combustible dusts	IEC 61241-1-1

1.7 **Any Changes in Scope**

Changes in scope were discussed.

In response to a request from Simtars the possibility of extending the scope to include Cap lamps (IEC 62013-1), Trace heating (IEC 62086-1), FISCO (IEC 60079-27) and Intrinsically safe systems (IEC 60079-25) was investigated. Staff knowledge in all areas was found to be good, but for IEC 62086-1 and IEC 62013-1 some items of test equipment would need to be provided.

Discussions also took place on the inclusion of the new IEC 61241 standards covering different protection types for use with combustible dusts. The assessment team was of the opinion that the existing knowledge of the staff regarding dust protection and the types of protection for gas atmospheres was sufficient to allow the new standards to be included in the ExCB scope.

1.8 ExTL Persons Interviewed

Name	Title	Responsibility
Geoff Barnier	Principal Engineer	Section Head, Intrinsic safety section
Gunter Lenicek	Senior Engineer	Intrinsic safety assessment & test
Jenny Theiss	Supervising Technical Officer	Intrinsic safety assessment & test
Vijay Krishnaratnam	Engineer	Intrinsic safety assessment & test
Bipin Parmar	Principal Engineer	Section Head, Flameproof & general section
Paul Binnie	Supervising Technical Officer	Flameproof and general assessment & test
John Ellis	Technical Officer	Flameproof and general assessment & test
David Soady	Technical Officer	Flameproof and general assessment & test
Graeme Park	Technical Officer	Flameproof and general assessment & test

1.9 Any changes in Legal Status and/or national accreditation of the ExTL

Nil

1.10 Associated Certifying ExCB

Safety in Mines Testing and Research Station (Simtars)

1.11 Financial Support

Simtars is a division of the Queensland Department of Natural Resources and Mines. Its operating and capital expenditure are funded by the Department on an annual budget basis, with a requirement to achieve a budgeted revenue by charging fees for its services. Work carried out for the Department is not counted as revenue earning.

2. ORGANISATION

2.1 Names, Titles and Experience of the Senior Executives

Name	Title	Experience
Jim Birch	Manager, ETCC	2½ years Intrinsic Safety <ul style="list-style-type: none"> ○ Technical officer ○ Section Head 4 years Certification as Section Head 4 years as Manager of ETCC

2.2 Name, Title and Experience of the Quality Management Representative

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

2.3 Name and Title of Nominated Principal Contact

Name	Title
Jim Birch	Manager, ETCC

2.4 Other Employees in ExTL activity

Name	Title	Responsibility
All staff in ETCC		

2.5 Information about external staff (if any) working for ExTL

ETCC does not employ or utilise any external staff for testing.

2.6 Organisational Structure (Including Changes since Last Assessment)

		Jim Birch Manager, ETCC			Ashraf Chowdhury Quality Co-ordinator
Ashraf Chowdhury Certification Engineer	Geoff Barnier Section Head Intrinsic Safety Section	Bipin Parmar Section Head Flameproof & General Testing Section	Ray Davis Section Head Flameproof & General Testing Section	Other Section Heads	
Certification	Assessment Testing Quality auditing	Assessment Testing Quality auditing	Assessment Testing Quality auditing	Calibration Workshops	

3. RESOURCES

Simtars Engineering, Testing and Certification Centre (ETCC) appears to have a sufficient number of staff to meet the current level of business. They are well-experienced in explosion protection assessment and testing. Training needs are identified through an annual review of competences across the range of ETCC's work. Competence is attained mostly through on the job training, with assessments by experienced staff being recorded to build up the competence matrix. The management system is controlled in electronic form as part of the Simtars system. It appeared to be adequately controlled and backed up.

The already from the start-up very good accommodation for ETCC has been improved in the past two years and is to a high standard for both office and laboratory areas, providing protected accommodation and stable environmental conditions for testing equipment.. Further improvements, for example in the flameproof testing facilities, are planned. The work equipment appears adequate for its purpose and work space for engineers in shared office areas provides for reasonable communication and supervision. The layout of the site ensures adequate security for the protection of confidential information.

4. TEST METHODS

4.1 Procedures

Procedures are documented in procedural documents (EP...), which are comprehensive, easy to use and available via intranet.

4.2 Staff Work Instructions

Very Detailed Work instructions (EI ...) have been developed carefully taking into account all possible problems arising during tests. Test results are documented using standardized forms (EF...). The relevant instructions and forms were found to be satisfactory and effectively implemented.

4.3 New or upgraded laboratory equipment

2 New Voetsch (VC 4060) environment chambers
Exposure to light test chamber
Charpy test rig
Battery charge discharge set

4.4 Laboratory equipment put out of service without replacement

Nil

4.5 Review of subcontracted work

No laboratory work is subcontracted actually.

5. TEST REPORTS AND RECORDS

5.1 IECEx Test Reports (ExTRs) Issued During the Past 2 Years:

Type of Protection	Code	2003	2002
flameproof	d		2
intrinsic safety	i	1	
increased safety	e		
special	s		
powder filled	q		
encapsulated	m		
type	n		
pressurised	p		
DIP			2

5.2 Other Test Reports Issued During the Past 2 Years

Type of Protection	Code	2003	2002
flameproof	d	33	23
intrinsic safety	i	14	22
increased safety	e	3	2
special	s	-	2
powder filled	q		
encapsulated	m	-	2
type	n	5	9
pressurised	P	2	1
Gas Detectors			
DIP		5	3

5.3 Test Records

Data from 2003

Test	Description Approximate Number Conducted
Impact	46
Drop	10
Degree of protection (IP)	65
Thermal Shock	15
Temperature Rise	44
Torque	20
Thermal Endurance to Heat	4
Thermal Endurance to Cold	4
Resistance to Light	-
Resistance to Chemicals Agents for Group I	-
Surface Resistance Test	18
Voltage Tests	8
Flameproof Determination of Reference Pressure	30
Overpressure Test - Static	30
Flameproof Non-transmission	30
Flame Erosion	1
Flameproof Test for Breathing Devices	-
Pressure Test for Breathing Devices	-
Thermal Test for Breathing Devices	-
Flammability	1
Pressurisation Leakage	2
Dilution	1
Overpressure	2
Ex e – Dielectric Strength	2
Mechanical tests for screw lamp holders	-
Transformer Type Tests	5
Spark Ignition	10
Electrolyte Leakage	3
Spark Ignition and Surface Temperature Tests for Cells	3
Casting Compound Mechanical Tests	2
Tests for Piezoelectric devices	2
Tests for Diode Barriers and Safety Shunts	2
Gasket/Seal Test (Oxygen Bomb)	2
Sealed Device Leakage	-
Diffusion Half Time	-
Water Absorption	-
Thermal Cycling	-

Some of the tests above also include similar tests from other explosion protection technique standards

Estimate for the amount of witnessed testing at manufacturer's premises per year:

Type of test
Nil

Number of tests (~) per year

Where thermal testing for rotating machines is required, the testing is conducted under the control of the Simtars testing officer/engineer under NATA laboratory accreditation (NATA).

6. CALIBRATION

- During the site visit of the laboratory calibration labels of test equipment were inspected and found to be satisfactory.
- Most calibrations are done internally in the own calibration laboratory which is very well equipped for the necessary units and accredited by NATA under No 2679 (electrical), No 2681 (gases, gas analysers, mine atmospheres) and No. 2683 (pressure and vacuum measuring).
The calibration laboratory was visited. Calibration instruments were found calibrated and traceable to national standards.
- External calibrations - if required - are dealt with in Simtars Instruction EI0036.

7. DOCUMENTATION

7.1 *Quality Manual*

The quality manual is integral with the ExCB's manual.
Quality system requirements apparently support and help to improve laboratories' activities.
Review of applications, services to clients, control of records and test and calibration methods in selected sample jobs showed good housekeeping in every aspect.

7.2 *Document Change Control*

Covered by ExCB assessment.

8. AUDIT AND PERIODIC REVIEW

8.1 *Internals audits*

Covered by ExCB assessment.

8.2. *External audits (national accreditors, other accreditors)*

NATA on 3 December 2002 and 28 & 29 January 2003 successfully reassessed NATA accreditation No. 2679.

The assessment reports were used to prepare the IECEx assessment, to check transposition of findings as far as relevant for the acceptance IECEx ExTL. No observations specifically related to NATA reports were noted.

9. COMPLAINTS

Covered by ExCB assessment.

10. REVIEW OF ISSUED EXTRS BY ASSESSMENT TEAM

The following jobs including test reports and certificates were reviewed:

Job No.	Test report	Type(s) of protection	Equipment type	Certificate
04/0010	NE 04/0041	Ex d I	Throttle operator	AUS Ex 04.2609U
02/0117	NE04/0063	Ex p	Purged enclosure	AUS Ex 1297X
00/0096	NI 03/227	Ex e II	Junction box	AUS Ex 00.2453 X
03/0149	ExTR NI 04/004	Ex ib d IIA IP65	Ex i system	AUS Ex 04.2600 X
03/0114	NE04/0066	Ex nR	Luminaries	Not yet issued – will be IECEx certificate
04/0108	NE05/0011, NE05/0012	Ex m IIC	Solenoid	Not yet issued – will be IECEx certificate
04/0090	Ex TR 04/0090	DIP Zone 21	Light fitting	Not yet issued – will be IECEx certificate

No major observations were made, no non-conformances found. Results are commented in section 11.

11. FINDINGS FROM THE RE-ASSESSMENT

Main partners for interviews, review of documents and inspection of test equipment were Geoff Barnier (Section Head, Intrinsic safety section) and Bipin Parmar (Section Head, Flameproof & general section). Other staff members having done work on specific jobs were interviewed during review of documents.

High competence of technical staff and careful supervision of new technical staff was found. Up-to date and calibrated laboratory equipment is used. Good housekeeping in laboratories and in offices was visible.

Facilities for the necessary machining of test objects and produces adapters, small test rigs and other necessary components are available.

It has to be appreciated that competence of staff and competent application of standards is also maintained by substantial participation in national and international standards committees.

The assessment consisted of five elements:

- Interviews with managers and other staff working in testing.
- Using certification files together with the TGDs in co-operation with managers to identify compatibility of existing testing and assessment procedures with IEC standards and IECEx requirements and as check for nonconformities.
- Several visits to the laboratories to check existing test equipment and discuss suitability for IEC testing.
- Review of a project data records and test records
- Demonstration of one tests for a key test method

Both managers (section heads) have an excellent level of competence and experience in the field of testing and assessing electrical equipment and explosion protection, not restricted to their own section.

Competence of other staff interviewed was found to be very good also, of course depending on number of years of experience in Simtars.

The laboratory equipment is suitable to do all tests required by IEC 60079-... and IEC 61241-... No non-conformities related to test equipment or test procedures were found.

Procedures for updating calibrations were working no problems were detected.

The review of the project data records showed an excellent documentation of all engineering based assessments, calculations and evaluations. Testing procedures and sample test records were containing all necessary information.

Filing system showed good housekeeping. The files itself contain all project related documents.

The review of the application / conformity with the Technical Guidance Documents (TGD) has been made via

- review of specific testing files (IECEx TR, or - if not available - TR produced for national certification),
- interviewing involved section heads, testing officers and technicians, and
- visual inspection of test equipment.

One key testing procedure (d - reference pressure determination) has been demonstrated successfully.

No recent applications for o and q were available, but test equipment and competence would cover both types of protection if requested.



Very few of the observations noted during site assessment led to proposals for improvement, which have been noted in the Technical Guidance Documents forms, which will stay confidential.

12. RECOMMENDATIONS

The assessment team recommends that:

1. Acceptance of Simtars as ExTL for the existing scope is continued;
2. The scope of acceptance is extended to cover :
 - IEC 62013-1 Cap lamps
 - IEC 62086-1 Trace heating
 - IEC 60079-25 Intrinsically safe systems
 - IEC 60079-27 FISCO

once these standards are included in Simtars's NATA scope and documentary evidence of the acquisition of the necessary test equipment and the related work instructions are received by the IECEx assessors/Secretary;

3. When the new IEC 60079 standards combining gas and dust hazards are published, these are included in the accepted scope.

LIST OF ANNEXES

None

Ian Cleare
Lead Assessor

Wolf Dill
Expert Assessor