



ExMC/267/R
August 2005

**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 TestSafe as an
Ex Test Laboratory (ExTL)**

To: Members of the IECEx Management Committee, ExMC

Introduction

This document contains the IECEx Re-assessment Report for TestSafe 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.

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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**
Testsafe Australia

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

1.4 **Place and Date of Re-Assessment**
Londonderry, NSW
24, 25 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**

No application for extension of scope had been received prior to the re-assessment, but TestSafe indicated that it would be applying for scope extension to cover intrinsically safe systems, FISCO and trace heating products.

1.8 **ExTL Persons Interviewed**

High Current Branch

Name	Title	Responsibility T = Testing A = Assessment V = Verification S = (NATA) Signatory
Gordana Manojlovic	Manager – Electrical High Current Branch	Management of Branch, TAVS
Russell Ashley	Senior Technical Officer	TAVS



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James Bes	Senior Technical Officer	TAVS
Les Golder	Senior Technical Officer	TA
Laurie Gerisch	Senior Technical Officer	TA (glands)
Henry Huynh	Senior Electrical Engineer	TAV
Vince Higginbotham	Manager-Testing Services	TA (impact and DIP)
John Watt	Senior Technical Officer	TAVS
Steve Dolding	Electrical Engineer	TA
Adrian Rietdijk	Senior Technical Officer	TAVS

Low Current Branch

Name	Title	Responsibility T = Testing A = Assessment V = Verification S = (NATA) Signatory
Ajay Maira	Manager – Electrical Low Current Branch	Management of Branch, TAVS
Mohamed Abdelkrimi	Electrical Engineer	Low current assessment and certification
Garry Jeffery	Electrical Engineer	Low current assessment and certification
James Zhao	Electrical Engineer	Low current assessment and certification

Calibration laboratory

Name	Title	Responsibility
Ajay Maira	Manager - ELCB	Management of Cal. Lab.
Anthony Jackson	Head of Calibration Unit	Head of Calibration Unit
Kerry Fernandez	Senior Metrologist	Equipment Calibration

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

Nil

1.10 Associated Certifying ExCB

TestSafe Australia

1.11 Financial Support

WorkCover NSW financially supports TestSafe Australia

2. ORGANISATION

2.1 Names, Titles and Experience of the Senior Executives

Name	Title	Experience
Peter Harley	Director	

2.2 Name, Title and Experience of the Quality Management Representative

Name	Title	Experience
Ujen Singh	Quality & Certification Manager	Lead Quality Auditor, QMS and certification



2.3 Name and Title of Nominated Principal Contact

Name	Title	Comments
Ujen Singh	Quality & Certification Manager	Lead Quality Auditor, QMS and product certification

2.4 Other Employees in ExTL activity

Name	Title	Responsibility
All staff in the Electrical High and Low Current Branches		

2.5 Information about external staff working for ExTL

Two retired testing officers, former members of the staff, are working for the ExTL.

2.6 Organisational Structure (Including Changes since Last Assessment)

		Peter Harley Director		Ujen Singh Quality & Certification Manager
Ravi Johnpullé Business Manager	Ajay Maira Manager, Low Current Branch	Gordana Manojlovic Manager, High Current Unit	Vince Higginbotham Testing Manager	(Other managers)
Client services Accounts IT Admin Marketing	Certification Assessment Testing Calibration	Certification Assessment Testing	Electrical testing Stores Functions	(Other functions)

Personnel changes have included the Director, the Quality & Certification Manager and the Business Manager.

Since the previous assessment, the structure has been changed to provide a separate testing manager function.

3. RESOURCES

TestSafe appears to employ an adequate number of suitably competent people. The organization structure gives a good level of supervision of the work as well as providing the opportunity for people to extend their knowledge and skills. The management system is constantly under review and provides for continuous improvement through the internal audit process and other means.

TestSafe operates on a large site with substantial exclusion zones for the fire and explosion tests that are carried out from time to time. The operations are accommodated in substantial buildings that provide a reasonable working environment and protected accommodation and environmental conditions for testing equipment.

The layout of the site ensures adequate security for the protection of confidential information. The work equipment appears sufficient for the tasks that are performed, with an IT system linked to the WorkCover system. Workspace for the certification engineers is in an open plan arrangement that seems adequate for the purpose. The layout of the office areas enables good communications between the various business units.

4. TEST METHODS

4.1 Procedures

Procedures are documented in Electrical Work Instructions (EWI), Calibration Work Instructions (CWI) and general procedural documents (GGP).
All documents are comprehensive, easy to use and available via intranet.

4.2 Staff Work Instructions

Work instructions have been updated to include new standards, IECEx and NATA requirements.

Other changes were necessary to update quality management.

For the assessment of the laboratory 7 Electrical Work Instructions (EWI), 2 Calibration Work Instructions (CWI) and 2 general work instructions (GGP: Purchase Gas Bottles, Witnessed Testing, Subcontracting) were relevant, found to be satisfactory and effectively implemented.

4.3 New or upgraded laboratory equipment

- **IP small dust chamber installed**
- **IP water test facility was upgraded with immersion tank**
- **New micro-ohmmeter was purchased for resistance measurement for a motor winding.**
- **New Lab-view software for pressure determination tests is in process of installation.**
- **New high pressure water pump was installed.**

Scope and equipment of internal calibration have been significantly upgraded. The ExTL prepares itself to be accredited as NATA accredited calibration laboratory.

4.4 Laboratory equipment put out of service without replacement

None.

4.5 Review of subcontracted work

No laboratory work is subcontracted.

Procedure and (actually empty) list of subcontractors is available in GGP023.

5. TEST REPORTS AND RECORDS

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

In 2003 2 IECEx TRs were issued.

5.2 Other Test Reports Issued During the Past 2 Years

Type of Protection	Code	2003	2002
flameproof	d	73	66
intrinsic safety	i	124	70
increased safety	e	30	19
special	s	5	16
powder filled	q	0	0
encapsulated	m	4	13
type	n	7	15
pressurised	p	0	0
Gas		0	0

Detectors			
DIP		13	13

5.3 Test Records

Information about the individual amount of physical testing for different types (e.g. thermal endurance, DIP, mechanical, flameproof, IS spark ignition, IS small hot component ignition, thermal) was not directly available, as they are contained within test reports as appendices. To some extent the amount can be deducted from the number of test reports for different types of protection.

The LC branch would probably have done 50 tests on spark test, thermal, dielectric strength and segregation measurements in 2003/2004.

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

Type of test	Number of tests (~) per year
Thermal tests for rotating machines	5
Thermal endurance	0

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 their own calibration laboratory that is very well equipped for the necessary units.
The calibration laboratory was visited. Calibration instruments were found calibrated and traceable to national standards. Reviewed calibration records showed good housekeeping.
- The wish to produce a calibration due list could be fulfilled immediately.
- The review of the list related to the electrical branches showed some instruments that had been due to be calibrated for some time. These instruments were not in service, but were retained in the calibration laboratory for transfer to repair or decision on repair adequacy. Other instruments were just missing.
- Newly purchased test equipment was automatically included in the calibration process (CWI 005).
- External calibrations - if required - are dealt with in CWI000. No change in external calibration suppliers - only NATA accredited laboratories are used.

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 laboratory's 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, ExMC/267/R.

8. AUDIT AND PERIODIC REVIEW

8.1 Internals audits

Covered by ExCB assessment, ExMC/267/R.

8.2 External audits (national accreditors, other accreditors)

NATA accreditation No. 1032 was reassessed by NATA on 09-13 October 2000 and on 13-15 November 2002.

The assessment report of 2000 was 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 this NATA report were noted.

9. COMPLAINTS

Covered by ExCB assessment, ExMC/267/R.

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
H 6474	AU/TS/04.019 Section 2: TR 25751	Ex d I	electrical motors	TSA 04.0017 X
H 4443	TR 23140	Ex d, Ex e, DIP	cable glands	
L 6256	TR 25272	Ex ia I	electronic device	TSA 04.0001 X
L 5641	AU/TS 04.002 TR 24320	Ex n IIC	Transmitter	TSA 04.0004 X
H 6448	TR 25623	Ex m	Solenoid	TSA 04.0014 X
H 4512	TR 22700 (DIP) TR 22818 (Ex d) TR 22282	DIP	Transducer	

No major observations were made, no non-conformances found. Results are commented in section 11, proposals for improvements have been included into the TGD forms used for assessment (See 11).

11. FINDINGS FROM THE RE-ASSESSMENT

Main partners for interviews, review of documents and inspection of test equipment were the responsible branch managers for High Current Branch Gordana Manojlovic and for Light Current Branch Ajay Maira. 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.

An own workshop provides the necessary machining of test objects and produces adapters, small test rigs and other necessary components.

It has to be appreciated that competence of staff and competent application of standards is also maintained by active participation in national and international standards committees for the key standards for equipment for potentially explosive atmospheres.

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.



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- Several visits to the laboratories to check existing test equipment and discuss suitability for IEC testing.
- Review of a Project Data Records and single test records
- Demonstration of tests for key test methods

Both managers 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, depending on number of years of experience in TS.

The laboratory equipment is suitable to do all tests required by IEC 60079 series and IEC 61241 series covered by the scheme.

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 excellent documentation of all engineering based assessments, calculations and evaluations. Testing procedures and sample test records contained all necessary information.

Filing system showed good housekeeping. The files 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 branch managers, testing officers and technicians, and
- visual inspection of test equipment.

Three key testing procedures (d, i - spark test, General: surface temperature) have been demonstrated successfully.

For Ex p within the last three years there were no applications. Competence of staff is maintained; test equipment is available.

There were no applications for Ex o and Ex q, but the required tests could be made. For Ex n only Ex nL was available for review.

For performance testing of gas detectors (IEC 61779-1 to -5) no equipment for the tests with test gases is available. The external laboratory to which these tests have been subcontracted recently has been relocated and is not yet in operation again.

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

12. RECOMMENDATIONS

It is recommended that:

1. TestSafe Australia should continue to be an accepted ExTL in the IECEx scheme, but IEC 61779-1 to -5 should be removed from its scope until the arrangements for the new test facility have been successfully assessed.



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2. The ExTL scope should be extended to include:

- Intrinsically safe systems to IEC 60079-25
- FISCO to IEC 60079-27
- Cap lamps to IEC 62013-1
- Trace heating to IEC 62086-1

once these activities have been included in the NATA scopes.

No Annexes

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Lead Assessor

Wolf Dill
Expert Assessor