

WESTERN AUSTRALIA

RADIATION SAFETY ACT 1975

FIXED INDUSTRIAL GAUGES
COMPLIANCE TESTING

PROGRAM REQUIREMENTS

2000

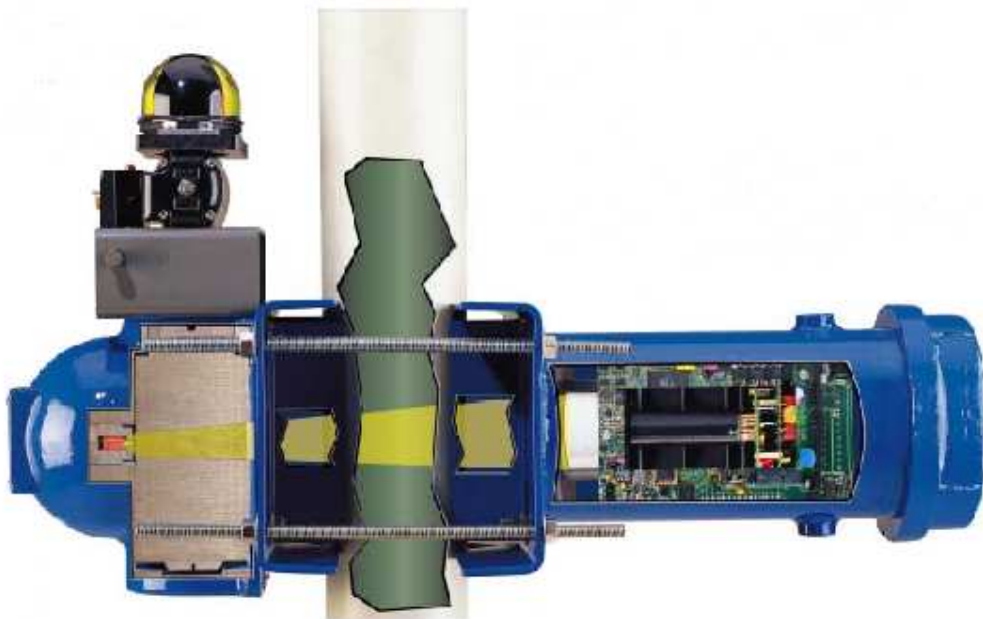
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FIXED INDUSTRIAL GAUGES
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1. PROGRAM OVERVIEW

1.1 INTRODUCTION

Radiation producing equipment used in some industrial applications can be a significant source of unnecessary radiation exposure to workers if the equipment is not operated and maintained to required standards.

To address this concern, quality assurance (QA) programs for industrial radiation equipment have been developing in Western Australia and elsewhere for a number of years. These programs are now mandatory in a number of jurisdictions.

The Radiological Council, the statutory authority under the Radiation Safety Act of Western Australia, has decided that a program for the compulsory compliance testing of industrial fixed gauges will commence on 1 July 2000.

The Council is empowered under regulation 23 of the Radiation Safety (General) Regulations to implement such a program although the specific requirements of the program will be imposed under section 36 of the Act as a condition on registrations.

The Council is mindful of the cost-benefit aspects of such a program, and will keep its critical parameters under review.

The required tests are essentially concerned with the radiation safety of radioactive sources and x-ray equipment.

1.2 EQUIPMENT TO BE TESTED

The program will, when fully implemented, apply to all ionising radiation producing equipment used in industry ie. fixed and portable radiation gauges, well logging equipment, industrial radiography equipment, x-ray analysis equipment, portable mineral analysers, special purpose x-ray and cabinet x-ray equipment.

1.3 FREQUENCY OF TESTING

The frequencies for testing of fixed gauges will be triennially.

Compliance testing is also required for all new gauges prior to registration and use or operation under the Radiation Safety Act.

The Radiological Council will keep this frequency under review, and may adjust it as appropriate.

1.4 RESPONSIBILITY FOR TESTING

Compliance testing is the responsibility of the registrant.

It will be an offence to operate or use gauges unless a current¹ compliance certificate is held.

The Registrant must retain a copy of each signed and dated test report.

The responsibilities of the registrant under the compliance testing program are given in conditions of registration. See Appendix 1 for an example of the conditions of registration for Gauges - Industrial.

1.5 TESTING METHODS

The required tests will assess compliance with the regulations under the Radiation Safety Act and with other requirements approved by the Radiological Council.

A working group of the Council has developed a workbook that describe the tests to be undertaken for fixed gauges, and the approved test methods.

The workbook is procurable from the Radiation Health Section of the Health Department of WA.

Variations of the recommended test methods may be used provided they are approved by the Radiological Council. Documentation on the alternative test method would need to be provided with each test report.

A summary of the tests is given in Section 4 and full details are given in the Workbooks.

¹ “current” means that the certificate was issued within the previous 36 months following a compliance test by a licensed compliance tester

1.6 TESTING PERSONNEL

Compliance testing is only to be undertaken by a person who holds a licence for that purpose, or by a person who is acting under the direction and immediate personal supervision² of a licensee.

Requirements for compliance testing licensees are given in Sections 3.

Special note should also be taken of Section 2.4 concerning compliance tests undertaken by persons during service of radiation equipment.

² *Immediate personal supervision requires the licensee to be present and directly observing the person concerned.*

2. DOCUMENTATION, CERTIFICATION AND AUDITING OF COMPLIANCE TESTS

2.1 TEST REPORTS

All compliance tests must be performed by a licensed compliance tester or by persons under the direction and immediate personal supervision of a licensee.

The compliance tester must carry out all the tests and report the additional specified information required by the Council, using the methods described in the relevant workbook or as otherwise approved by the Radiological Council (see Section 1.5).

All test results must be recorded and submitted with the test report. In particular, all equipment faults must be reported even if such faults are corrected before the completion of testing.

Compliance tests that cannot be completed because of equipment faults must also be reported. See also Section 2.5.

There is no required format for test reports. However, Radiological Council officers have developed test sheets that facilitate standardised reporting of the required compliance test data. Supplies of the test sheets may be obtained from the Council, or by photocopying the sample from the workbook.

Use of these test sheets is recommended to assist reporting and auditing of the compliance tests.

Copies of the compliance test report must be forwarded to:

The Secretary
Radiological Council
Locked Bag 2006 P O
NEDLANDS WA 6009

Copies of these documents should be retained by the registrant and the compliance tester.

The compliance tester may submit the reports on the registrant's behalf. However, it is the registrant's responsibility to ensure compliance test reports are submitted to the Radiological Council.

2.2 AUDITING AND CERTIFICATION

The compliance test report is used by Council Officers as the basis for issuing, or not issuing, as may be the case, a compliance certificate for the equipment tested.

***Note:** A compliance test report indicates that the compliance test has been conducted properly by the approved test methods. It does not necessarily indicate that the equipment itself complies with the Radiological Council's requirements. That is, a compliance test report does not cause the automatic issuing of a compliance certificate for the equipment tested.*

Radiological Council officers will also use the data from the test reports to monitor the program. These officers may also decide to re-test equipment, either randomly or as indicated by the test data.

A sample certificate is given in Appendix 2.

2.3 COMPLIANCE TAGS

Gauges that have been tested and certified to comply must be tagged by the registrant using a durable label or tag. An adhesive label may be used for gauges permanently located inside a building which are not exposed to harsh treatment which could obscure the label. Tags on gauges outdoors and/or in harsh environments may require a different means of attachment and/or a protective cover.

The tag must show the date of testing, the name of the tester, and the expiry date of the compliance certificate. The tag must be fixed in a conspicuous position on the gauge or near the control on the gauge that has been tested. The tag may provide for single or multiple entries.

A sample of an acceptable tag is given in Appendix 3.

2.4 COMPLIANCE TESTING BY SERVICE PERSONNEL

For compliance tests performed by persons who are also licensed to service gauges, the compliance test sheet must show the performance of the equipment *before* any service is undertaken (unless a particular fault renders subsequent tests invalid).

That is, compliance testing must precede normal service and maintenance procedures.

Any faults found during testing must be detailed on the test sheet, even if such faults are corrected before the completion of testing. These faults may be common to the particular type gauge, and failure to report them may put other users at risk. An appropriate test must be undertaken and recorded following correction of any fault.

2.5 NON-COMPLYING GAUGES

Gauges registered under section 28 of the Radiation Safety Act before the gazettal of the 1983 regulations may not pass all compliance tests. Should this arise, the results of the tests in question will be reviewed by Council officers and, where practicable, modification of the gauge considered, particularly where the failure may have a significant bearing on radiation dose to operators and workers in the vicinity.

Failure to comply with any particular test will not necessarily prevent continued use of the gauge by the present owner.

However, gauges which by virtue of their design and manufacturer's specifications are capable of complying but fail to do so will be required to undergo repair and/or adjustment to rectify the areas of non-compliance. If the gauge in question is a new model and cannot be brought into compliance, registration of the gauge may be refused.

2.6 CALIBRATION OF RADIATION MEASURING INSTRUMENTS

Any compliance test involving the use of a radiation measuring instrument is valid only if that instrument is of an approved type, and was last

calibrated by a recognised³ laboratory no more than one year before the compliance test.

³ *Recognised means recognised in writing by the Radiological Council*

3. REQUIREMENTS FOR COMPLIANCE TESTERS

3.1 FUNCTIONS

Persons carrying out compliance tests required by regulations under the Act or as otherwise required by the Radiological Council must be licensed for this purpose or be acting under the direction and immediate personal supervision⁴ of a licensee. All test reports must be submitted to the Radiological Council for assessment.

Persons licensed to carry out compliance testing must

- have a working knowledge of the gauge to be tested
- conduct the tests according to the workbook or using a method approved by the Radiological Council
- submit the test report to the Radiological Council and a copy to the registrant.

3.2 QUALIFICATIONS

A licence issued under the Radiation Safety Act to use the gauge being tested. Applicants must be able to meet the criteria for gaining approval as a Radiation Safety Officer for the device or category of equipment being assessed and have relevant experience in its use.

3.3 LICENSING

Persons who satisfy the qualification criteria are eligible to apply for a compliance testing licence. The conditions attached to this licence are given in Appendix 4.

Refer also to Section 2 on the requirements for a valid compliance test.

⁴ *Immediate personal supervision requires the licensee to be present and directly observing the person concerned.*

4. REQUIRED COMPLIANCE TESTS

All gauges that are in use and capable of producing ionising radiation will be required to undergo compliance testing under the Western Australian Radiation Safety Act. The recommended test methods are provided in the Council's workbook for fixed industrial gauges.

Variations of the recommended test methods may be used provided the Radiological Council gives prior approval. Documentation on any alternative test methods must be provided with the test report.

FIXED GAUGES

Record Keeping

- inventory of gauges
- wipe tests
- shutter operation tests
- radiation measurement results

Storage Area

- warning signs
- dose rates
- gauges locked off
- log book
- security
- RSO name and phone number

Registration Details

- address
- RSO
- gauge details tally

Gauges

- warning signs
- labels
- function
- condition
- signs of corrosion
- mounting points safe

Radioactive Sources

- ID numbers
- type, activity and date
- working life

Working Rules / Emergency Procedures

- staff training
- manuals available to staff
- clear in defining which type of emergency

Radiation Monitoring

- calibrated radiation survey meter available

Full details of all methods are contained in Workbook 1

RELATED PUBLICATIONS

1. Radiation Safety Act 1975
Radiation Safety (General) Regulations 1983
Radiation Safety (Transport of Radioactive Substances) Regulations 1991
2. Code of Practice for the Safe Use of Radiation Gauges (1982).
National Health and Medical Research Council. Australian Government Printing Service, Canberra.
3. 1990 Recommendations of the International Commission on Radiological Protection - ICRP Publication 60.
4. Recommendations for limiting exposure to ionising radiation (1995).
National Health and Medical Research Council. Australian Government Printing Service, Canberra.
5. Code of Practice for the Safe Transport of Radioactive Substances 1990.
Environment Protection (Nuclear Codes) Act 1978. Commonwealth of Australia.

APPENDIX 1 – REGISTRATION CONDITIONS

R

RADIATION SAFETY ACT**CONDITIONS, RESTRICTIONS AND LIMITATIONS (SECTION 36)****GAUGES - INDUSTRIAL**

1. This registration provides for the possession and use of radiation gauges.
2. The registrant is directed to ensure that:-
 - 2.1. apart from Sections 2.3 and 4.2, radiation gauges, all of their component parts, and all associated equipment comply with the provisions of the Code of Practice for the Safe Use of Radiation Gauges issued by the National Health and Medical Research Council at its 93rd session in June 1982.
 - 2.2. any persons working with or near radiation gauges are informed of and directed to comply with Section 4.5 of the Code of Practice.
 - 2.3. no person is permitted in an area where it may be possible to enter the useful (primary) radiation beam emitted from a gauge unless that area has been surveyed with a calibrated radiation survey meter and the radiation exposure rate at that point confirmed as being less than 25 $\mu\text{Sv/hr}$.
 - 2.4. the storage of radiation gauges not permanently fixed to a component at the registered site is in compliance with Regulation 30 of the Radiation Safety (General) Regulations 1983 and Section 7.1 of the Code of Practice.
 - 2.5. no radioactive gauge is installed, operated or used unless it has:
 - (a) a current^a Certificate of Compliance^b; or
 - (b) a current Certificate of Conditional Compliance^c; or
 - (c) an exemption from compliance granted by the Council.

This Item is effective from 1 July 2000.

A radioactive gauge that has been tested but which requires service or modification before a Certificate of Compliance can be issued, can continue to be used for a period of 3 months after expiry of the current certificate provided:-

- *the Council is satisfied that the fault(s) do not pose a significant radiation risk; and*
- *the Council has issued a written order (Notice of Non-Compliance) to the registrant for correction of the fault(s).*

NOTES:

- a “current” means that the certificate was issued within the past 36 months following a compliance test by a licensed compliance tester*
- b “compliance” means compliance with the Radiation Safety (General) Regulations 1983, with any subsequent amendments to those regulations, and with any additional requirements of the Council applicable to that class of radioactive gauge*
- c “conditional compliance” may be granted to non-complying gauges if it is subject to an existing registration and was manufactured before the particular regulations or standards applying to the non-compliance came into effect, and if the non-compliance, as assessed by Council officers:*
- *cannot reasonably be rectified; and*
 - *is unlikely to lead to a situation where any person may receive an unacceptable radiation dose.*

*The attention of the registrant is drawn to Section 38 of the Act which requires **prior notice in writing to be given to the Council** if “the information furnished to the Council in relation to any radioactive substance, irradiating apparatus, electronic product, or premises will cease to be correct or will be misleading or incomplete in a material particular”.*

CONDITION NO: 9

CERTIFICATE NO: RS

EXPIRES ON:

APPENDIX 2 – SAMPLE COMPLIANCE CERTIFICATE

**WESTERN AUSTRALIA
RADIATION SAFETY ACT
CERTIFICATE of COMPLIANCE**

The following gauges listed in Schedule 1 (attached) have been assessed and are certified to be in compliance with the Radiation Safety (General) Regulations 1983, with any subsequent amendments to those regulations, and with any additional requirements of the Radiological Council as of the date the assessment was performed.

Registrant (the "owner" or intended user)

Registered Location (address where installed or to be used)

Tested by

Test Date

Licence Number of Tester

Certificate expires

Council Officer

Signature _____ **Date** _____

CERTIFICATE of COMPLIANCE

SCHEDULE 1

EQUIPMENT DETAILS				
<i>Item</i>	<i>DETAILS</i>			
	<i>Make</i>	<i>Model</i>	<i>Category¹</i>	<i>Container serial number</i>
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

¹ Density, level

APPENDIX 3 – SAMPLE COMPLIANCE TAG

⊖

**SAFETY
INSPECTION**

EQUIPMENT ID. _____
LOCATION _____

DATE	BY	CERT #	EXPIRY

DO NOT REMOVE THIS TAG

APPENDIX 4 – COMPLIANCE TESTING LICENCE CONDITIONS

L

RADIATION SAFETY ACT**CONDITIONS, LIMITATIONS AND RESTRICTIONS (SECTION 36)****COMPLIANCE TESTING OF RADIOACTIVE GAUGES**

- 1 This licence permits the holder, and persons acting under the direction and immediate personal supervision^a of the licensee, to deal with radiation gauges for the purpose of compliance testing^b.

- 2 The licensee is directed:-
 - 2.1 to ensure that no person is exposed to the useful radiation beam for any purpose during test procedures;
 - 2.2 to take appropriate precautions to minimise the potential for their exposure to radiation and shall at all times during testing have at hand a functional and calibrated survey meter;

Note: Personal monitoring by film badge, TLD or related device should not be necessary as, with appropriate work practices, no significant exposure is likely to be received during these routine test procedures. However, licensees should consider the use of an electronic integrating dosimeter to check their radiation exposure at any given time.

- 3 Where compliance testing has been imposed as a statutory requirement by the Radiological Council, the licensee is directed to :-
 - 3.1 test the equipment according to the protocols in the workbook approved by the Council using appropriately calibrated instruments;
 - 3.2 ensure that any faults found, or found and corrected, during testing are detailed in the test report;
 - 3.3 forthwith provide a copy of the test report to the registrant and to the Radiological Council;

NOTES:

- a* `Immediate personal supervision' means maintaining direct visual supervision of the person concerned.
- b* `Compliance testing' means testing radioactive gauges for compliance with the regulations under the Act and with other standards that may have been adopted by the Radiological Council for that class of equipment.

CONDITION NO: **139**

CERTIFICATE NO: **LS**

EXPIRES ON: