TEST REPORT

ANSI/UL 842-2015

STANDARD FOR SAFETY Valves for Flammable Fluids

For

Zhuzhou Chenxin Induction Equipment Co.,LTD

4-2# Huijia Huanbao Industrial Park, Aviation Street, Lusong, Zhuzhou, Hunan

Model: A27TW-2Q

2023-11-21

This Report Concerns:	**Equipment Type:**
☒ Original Report	Pressure relief valve

Test Engineer:	Engine Chen / Engine Chen
Report Number:	TH2310260-C02-R01
Test Date:	2023-11-06 to 2023-11-21
Reviewed By:	Prince Huang / Prince Huang
Approved By:	Prince Huang / Prince Huang
Prepared By:	**Shenzhen Tian Hai Test Technology Co,.Ltd.** 4F, A3 BLDG, The Silicon Valley Power intelligent terminal industrial park, Guanlan street, Longhua district, Shenzhen Tel: +86-755-86615100 Fax: +86-755-86615105

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Shenzhen Tian Hai Test Technology Co,.Ltd.

TEST REPORT
ANSI/UL 842-2015
STANDARD FOR SAFETY Valves for Flammable Fluids

Report Reference No.....:	TH2310260-C02-R01
Tested by (signature).....:	Engine Chen /
Reviewed by (signature).....	Prince Huang /
Approved by (signature).....	Prince Huang /
Date of issue.....:	2023-11-21
Testing Laboratory Name.....:	**Shenzhen Tian Hai Test Technology Co., Ltd.**
Address.....:	4F, A3 BLDG, The Silicon Valley Power intelligent terminal industrial park, Guanlan street, Longhua district, Shenzhen
Applicant's Name.....:	**Zhuzhou Chenxin Induction Equipment Co.,LTD**
Address.....:	4-2# Huijia Huanbao Industrial Park, Aviation Street, Lusong, Zhuzhou, Hunan
Test specification	
Standard.....:	ANSI/UL 842-2015
Test procedure .....:	N/A
Procedure deviation.....:	N/A
This test report is specially limited to the above client company and product model only, It may not be duplicated without prior written consent of Tian Hai Test.	
Test item description.....:	**Pressure relief valve**
Trade mark.....:	/
Model No.....:	A27TW-2Q
Manufacturer.....:	**Jinan Yufeng Lian Machinery Equipment Co., Ltd**
Address.....:	Xianggongzhuang Town Central Street North Head, Zhangqiu District, Jinan City, Shandong Province
Rating(s).....:	/
Note:.....:	This test report is limited to the above client company and the product model (high temperature furnace) only.

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Test case verdicts	
Test case does not apply to the test object …….:	N/A(Not applicable)
Test item does meet the requirement ……..:	P(ass)
Test item does not meet the requirement…….:	F(ail)
Testing:	
Date of receipt of test item……..:	2023-11-06
Date(s) of performance of test……..:	2023-11-06 to 2023-11-21

General remarks:

This test report shall not be reproduced, except in full, without the written approval of the testing laboratory.

The test results presented in this report relate only to the object(s) tested.

"(see remark #)" refers to additional information appended to the report.

"(see appended table)" refers to a table appended to the report.

General product information:

/

Test conclusion:

The products are tested according to ANSI/UL 842-2015.

Test result:

Pass

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ANSI/UL 842-2015			
Clause	**Requirement-Test**	**Result**	**Verdict**
CONSTRUCTION			
4	**Assembly**		**P**
4.1	All valves		P
4.1.1	A valve shall include all of the components required for its intended function and installation.	Complied	P
4.1.2	When a valve requires the use of special pipe flanges, gaskets, bolts, or other special fittings or parts for making an installation, such parts shall be furnished by the manufacturer with each valve.	Complied	P
4.1.3	Two or more subassemblies intended to be assembled in the field as a unit shall be capable of being joined together without requiring any of the subassemblies to be cut, drilled, welded or otherwise altered.		N/A
4.1.4	When two or more valves or actuating devices, or both, are to be used together as one unit, the entire assembly is, for the purpose of these requirements, to be considered and tested as one valve.		N/A
4.1.5	A seat disc shall be attached to its poppet or holder or otherwise assembled so as to prevent it from becoming dislocated under service conditions as determined by the Endurance Test, Section 18. The means to secure the disc shall not rely upon cement or adhesive.		N/A
4.1.6	A brazing material used for joining liquid confining parts of a valve shall have a melting point (solidus temperature) of minimum 538°C (1000°F).		N/A
4.1.7	A valve with socket or butt weld ends shall be capable of being installed without damaging nonmetallic seats or seals. Required instructions for accomplishing this shall accompany each valve.		N/A
4.2	Shutoff valves		N/A
5	**Materials**		**P**
5.1	Liquid-confining parts of a valve or operating parts shall have the strength and durability to provide reliable service of the parts and of the assembly, when failure of the part allows leakage or hazardous operation.	Complied	P
6	**Bodies and Covers**		**N/A**
6.1	A threaded section of a body intended for the connection of pipe shall have a section to serve as a wrench grip.		N/A
7	**Seals and Stuffing Boxes**		**N/A**

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ANSI/UL 842-2015			
Clause	**Requirement-Test**	**Result**	**Verdict**
7.1	A valve shall include a stuffing box or other means for sealing to prevent leakage at the valve stem.		N/A
8	**Diaphragms**		**N/A**
8.1	A valve in which a flexible diaphragm, bellows, or similar construction constitutes the only fluid seal shall have the atmospheric side of the diaphragm or bellows enclosed in a casing intended to limit external leakage in the event of diaphragm or bellows rupture, or shall have provision for connection of a vent pipe or tubing intended to be routed to the outdoors or other location.		N/A
9	**Springs**		**N/A**
9.1	A spring shall be guided and arranged to minimize binding, buckling, or other interference with its free movement. When required, ends of a spring shall be closed and squared.		N/A
10	**Operating Mechanisms**		**N/A**
10.1	Screws and nuts used to attach operating parts to movable members shall be upset or otherwise locked to prevent loosening.		N/A
10.2	A manually-operated mechanism of a valve shall provide free movement of all parts.		N/A
11	**General**		**P**
11.1	Except as otherwise indicated, representative samples of each type of valve are to be subjected to the tests described in these requirements. Additional samples of parts constructed of nonmetallic materials, such as seal materials and valve seat discs, shall be provided as required for physical and chemical tests.	Complied	P
11.2	When a series of valves is to be investigated in which the bodies differ in size only, three representative samples are to be chosen to include the largest, smallest, and one intermediate size.	Complied	P
11.3	A valve is to be investigated for a specific fluid or fluids and for the service conditions for which it is to be recommended, such as ambient and fluid temperature and fluid pressure. When a valve is intended for use with a specific grade of fuel oil, it is capable of being used with that or any lighter grade.	Complied	P

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Clause	**Requirement-Test**	**Result**	**Verdict**
11.4	A valve which is intended to be mounted in a definite position in order to function as intended is to be so tested.	Complied	P
11.5	Leakage tests for fuel gas valves are to use a source of aerostatic pressure such as air.	Complied	P
11.6	Leakage tests for liquid handling valves are not prohibited from being conducted with air. When leakage is observed, the tests shall be repeated with kerosene or fuel oil consistent with the service for which the valve is used. A solvent considered equivalent to ″white gasoline″ is one having a Kauri Butanol value of 44.		N/A
11.7	Water or other liquid is not prohibited from being used for developing the required pressure in a hydrostatic pressure strength test.	Complied	P
12	**Deformation Test**		**P**
12.1	Joints in a valve shall not leak, nor shall there be evidence of loosening of joints, distortion, or other damage resulting from the stress imposed on pipe-threaded sections when tested in accordance with these requirements.	Complied	P
12.2	The sample valve used in this test is to be rigidly anchored or otherwise supported. A length of Schedule 80 pipe, sufficient to provide for wrench engagement, is to be connected to a female pipe threaded section of the body. The male threads shall have pipe joint sealing compound or polytetrafluoroethylene (PTFE) tape applied to them first or be coated as specified by the manufacturer.Each pipe is then to be tightened across the valve body to the torque specified by the manufacturer.	Complied	P
12.3	After the torque force has been applied to each connected pipe, the test sample is to be subjected to the External Leakage Test, Section 13.	Complied	P
12.4	Upon removal of the pipe from the test sample, the assembly is to be examined for loosening of body joints.	Complied	P
13	**External Leakage Test**		**P**
13.1	Fuel gas valves	Complied	P
13.1.1	A fuel gas valve subject to pressure on both inlet and outlet connections shall not leak externally at a rate in excess of 200 cubic centimeters per hour when subjected to a pressure of 1-1/2 times the maximum rated pressure, but not less than 1/2 psi (3.4 kPa) with the valve in the open position and the outlet closed.	Complied	P

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ANSI/UL 842-2015			
Clause	**Requirement-Test**	**Result**	**Verdict**
13.1.2	The inlet of the test valve is to be connected to a system capable of supplying clean air or other test medium at the specified test pressure. The outlet of the valve is to be sealed. Any bypass or other opening not essential to the operation of the valve during this test is to be sealed unless it discharges in the main fluid stream before the outlet of the valve. The test fluid is to be admitted and maintained at the specified test pressure. In the case of diaphragm elements which, in intended usage, are subjected to gas pressure on both sides of the diaphragm, the test pressure is to be applied to both sides of the diaphragm slowly and without shock to avoid stressing the diaphragm.	Complied	P
13.1.3	Leakage shall be observed by a flowmeter capable of indicating, for the test fluid employed, a flow rate of 200 cubic centimeters per hour. A valve is considered as complying with 13.1.1 when, with the fluid-containing parts of the test valve submerged in water to a depth of approximately 1 inch (25.4 mm) while under the test pressure, no bubbles indicating leakage are observed.	Complied	P
13.2	Fuel gas valves intended to discharge to atmosphere		N/A
13.3	Diaphragm-type fuel gas valves		N/A
13.4	Liquid handling valves		N/A
14	**Seat Leakage Test**		**P**
14.1	General	Complied	P
14.1.1	The seat leakage test is conducted on as received samples and after the Endurance Test, Section 18.	Complied	P
14.1.2	All seat leakage tests employing a gas as the test medium are to be maintained for at least 1 minute. All seat leakage tests employing a liquid as the test medium are to be maintained for at least 5 minutes.	Complied	P
15	**Operation Test**		**N/A**
15.1	General		N/A
15.1.1	An automatically operated valve intended for use with fuel oil, other than a fusible link valve, and emergency shutoff valve shall function while handling the fluid for which it is intended and under the temperature condition designated in Table 15.1.		N/A
16	**Fire Test**		**N/A**

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Clause	**Requirement-Test**	**Result**	**Verdict**
16.1	A fusible link shutoff valve and an emergency shutoff valve shall operate to limit contribution of flammable fluid to a fire, when tested in accordance with 16.2 – 16.8. An example of the test configuration is shown on Figure 16.1.		N/A
17	**Weak Section Strength Test**		**N/A**
17.1	An emergency shutoff valve for flammable liquids intended for installation at the supply connection of a dispensing device shall close when a bending moment of not more than 650 pound-feet (884 N·m) is applied to its assembly.		N/A
18	**Endurance Test**		**P**
18.1	A manually operated valve shall perform in its intended manner when tested as described in 18.3 –18.14. There shall be no external leakage, no sticking of the valve, nor shall the valve become inoperative.	Complied	P
	Required corrosion protection shall not be impaired.	Complied	P
	Exception: Flow limiters and emergency shutoff valves are not subjected to an endurance test.	Complied	P
19	**Endurance Test – Mechanical Line Leak Detectors**		**N/A**
19.1	A sample of a mechanical line leak detector shall comply with the requirements for external leakage specified in Section 13 after being subjected to the test described in 19.2.		N/A
20	**Hydrostatic Strength Test**		**N/A**
20.1	All parts of a valve which are subjected to pressure during intended use shall withstand, without rupture or permanent deformation, a hydrostatic pressure of five times the rated pressure of the valve. The samples shall be tested in the open position and the outlets shall be sealed.		N/A
20.2	Prior to the beginning of this test, a valve is to comply with the requirements for deformation and external leakage test specified in Sections 12 and 13.		N/A
20.3	The pressure is to be raised slowly to the required test pressure and held for at least 1 minute.		N/A
21	**Moist Ammonia-Air Stress Cracking Test**		**N/A**
	After being subjected to the conditions described in 21.2 – 21.4, a pressure-confining brass part containing more than 15 percent zinc shall:		N/A
	a) Show no evidence of cracking, delamination, or degradation, or		N/A

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Clause	**Requirement-Test**	**Result**	**Verdict**
	b) Perform as intended when tested as described in 21.4.		N/A
22	**Tests of Synthetic Rubber Parts**		**N/A**
22.1	General		N/A
22.1.1	A synthetic rubber part in contact with one of the fluids indicated in Table 22.1 shall not show change in volume of more than 25 percent swelling (40 percent in Reference Fuel C and H) or 1 percent shrinkage, or a weight loss (extraction) of more than 10 percent when considered on the basis of its intended function following immersion for 70 hours in the specified test liquid.		N/A
	Polymeric parts shall show no evidence of shrinkage, warpage, cracking, a dimensional change exceeding 3 percent, or other signs of deterioration following the immersion in the specified test liquid.		N/A
23	**Marking Adhesion Test**		**P**
23.1	A pressure-sensitive label, or a label secured by cement or adhesive, shall comply with the requirements of 23.2 – 23.3.	Complied	P
23.2	Pressure-sensitive labels, or labels secured by cement or adhesive shall comply with the applicable requirements for permanence and legibility in the Standard for Marking and Labeling Systems, UL 969. Representative samples of a label are to be subjected to exposure conditions for indoor use (Standard Atmosphere Test, Water Immersion Test, and Oven Aging Test) or, when applicable, to exposure conditions for outdoor use (the above tests, plus Low Temperature and Ultraviolet Light and Water Exposure Test), to determine compliance with the applicable requirements for permanence and legibility in the Standard for Marking and Labeling Systems, UL 969.	Complied	P
23.3	When a label is exposed to unusual conditions in service (such as gasoline, detergents, and the like), they shall also be evaluated as described in the Standard for Marking and Labeling Systems, UL 969. Following each test, the labels shall comply with the requirements for permanence and legibility in the Standard for Marking and Labeling Systems, UL 969.	Complied	P
MANUFACTURING AND PRODUCTION TESTS			
24	**General**		**P**

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Clause	**Requirement-Test**	**Result**	**Verdict**
24.1	To verify compliance with these requirements, the manufacturer shall provide the required production, control, inspection, and tests. The program shall include at least the following:		P
	a) Seat and external leakage test of pressure parts of each assembled valve at an aerostatic pressure not less than the rated operating pressure of the valve, or	Complied	P
	b) Seat and external leakage test of pressure parts of each assembled valve at a hydrostatic pressure not less than 1-1/2 times the rated operating pressure of the valve, and	Complied	P
	c) External leakage test of each assembled valve intended to discharge to atmosphere at an aerostatic pressure between 5 and 10 psi (34 and 69 kPa), and	Complied	P
	d) Operation of automatic parts and devices.	Complied	P
INSTALLATION INSTRUCTIONS			
25	**General**		**P**
25.1	A copy of the installation and operating instructions intended to accompany each emergency shutoff valve or component, or equivalent information, shall be used as a guide in the examination and test of the sample or component. For this purpose, a printed edition is not required.	Complied	P
25.2	The instructions shall include such directions and information as deemed by the manufacturer to be adequate for attaining proper installation, maintenance, and use of the valve. These shall include such items as method of attachment to dispenser piping, location of shear section with regard to grade, directions for manually closing and resetting the valve, and periodic maintenance recommendations.	Complied	P
MARKING			
26	**General**		**P**
26.1	Each valve shall be marked with the following:		P
	a) The manufacturer's or private labelers name or identifying symbol.	Complied	P
	b) A distinctive catalog number or the equivalent.	Complied	P
	c) The positions or direction of movement of levers or reset handles of non self-closing type valves. See 4.2.3.	Complied	P

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	d) The mounting directions for a valve intended to be installed in a definite position in order to function as intended.	Complied	P
	e) The rated operating pressure, also the pressure at the seat when lower than the rated operating pressure.	Complied	P
	f) The kind of fluid or fluids for which the valve is intended.	Complied	P
	Exception: The requirements in subitems (e) and (f) are not required for emergency shutoff valves.		P
26.2	All markings shall be legible and permanent such as metal stamping, molding in a casting, a metal nameplate that is permanently secured, indelibly stamped lettering, or printed on pressure-sensitive labels secured by adhesive. Pressure-sensitive labels, upon investigation, shall be intended and appropriate for the application. Ordinary usage, handling, and the like, of the valve and the atmosphere in which it is used are considered in the determination of the permanence of the marking.	Complied	P
	Exception: The marking required by 26.4 is not required to be permanent.	Complied	P
26.3	When a manufacturer produces valves at more than one factory, each valve shall have a distinctive marking to identify it as the product of a particular factory.	Complied	P
26.4	Valves constructed using pipe thread in accordance with the Exception to 6.2 shall be provided with a tag, label, or similar marking on the product or smallest unit package, identifying the pipe thread type for the installer.	Complied	P

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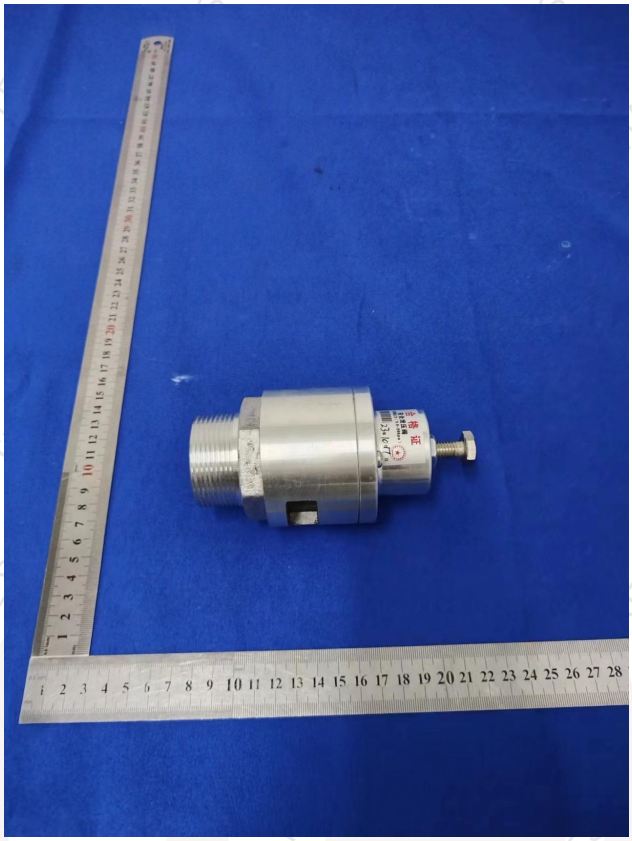
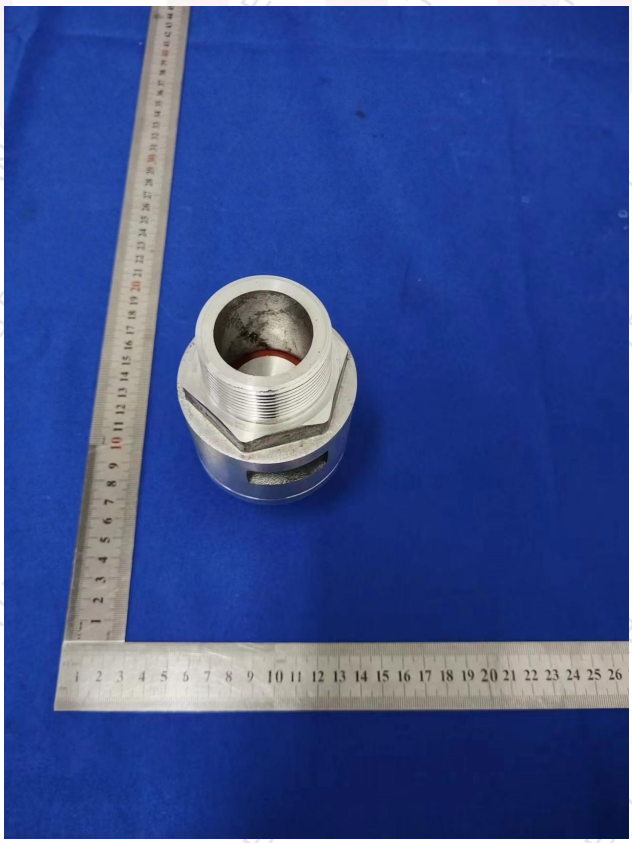
EUT PHOTOGRAPHS





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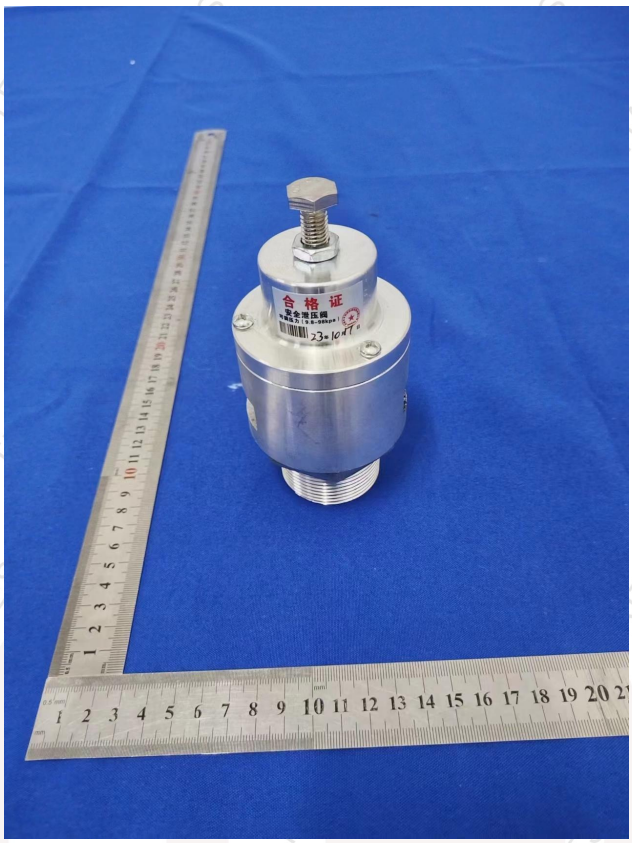

**********END OF REPORT**********

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China National Accreditation Service for Conformity Assessment

LABORATORY ACCREDITATION CERTIFICATE

(Registration No. CNAS L5885)

Shenzhen Tianhai Test Technology Co., Ltd.

(Legal Entity: Shenzhen Tianhai Test Technology Co., Ltd.)

4B/F., Building A3, The Silicon Valley Power Intelligent Terminal Industrial Park, Guanlan Street, Longhua District, Shenzhen, Guangdong, China

is accredited in accordance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence to undertake the service described in the schedule attached to this certificate.

The scope of accreditation is detailed in the attached schedule bearing the same registration number as above. The schedule forms an integral part of this certificate.

Effective Date：2019-01-22

Expiry Date：2025-01-21

Signed on behalf of China National Accreditation Service for Conformity Assessment

China National Accreditation Service for Conformity Assessment(CNAS) is authorized by Certification and Accreditation Administration of the People's Republic of China (CNCA) to operate the national accreditation schemes for conformity assessment. CNAS is a signatory of the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC MRA) and the Asia Pacific Laboratory Accreditation Cooperation Mutual Recognition Arrangement (APLAC MRA).

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