**AQSIQ Notice No.151 (2012)**

# Notice for Pressure Special Equipment Manufacture Licensing

To further enhance the implementation of the manufacture licensing system to imported pressure special equipment, this is to notice the relevant requirements as follows.

1. Manufacture Licensing Requirements

1.1 The manufacturers of boilers, pressure vessels, gas cylinders and their safety appurtenances and safety protecting devices (including safety valves, rupture discs and gas cylinder valves) as well as the manufacturers of safety valves and rupture discs used on pressure pipelines shall acquire the special equipment manufacture license.

1.2 Imported pressure pipeline components (excluding the safety valves and rupture discs stated in Article 1.1) are not subject to the manufacture license for the time being, but must satisfy the requirements of Chinese safety technical codes and the mandatory requirements of national standards. The first time imported pressure pipeline components shall go through the type tests performed by the type test laboratories authorized by the General Administration of Quality Supervision, Inspection and Quarantine (hereinafter referred to as AQSIQ). When conducting the import inspections to the imported pressure pipeline components, the type test conformity certificates issued by the type test laboratories shall be submitted to the entry-exit inspection and quarantine departments. The products should not be put into market or service domestically in China before they pass the safety performance inspection. The ancillary pressure pipeline components of the imported boiler and pressure vessel are not subject to the type tests. The manufacturer of the boiler and pressure vessel shall be responsible for the product quality of the ancillary pressure pipeline components, and they shall go through the safety performance inspections along with the boilers and pressure vessels.

2. Requirements on Quality Assurance System

After six months of the publication date of this Notice, the quality assurance system of international boiler and pressure vessel manufacturers, including new applicants as well as renewal applicants, shall meet the *Basic Requirements for Special Equipment Quality Assurance System on Manufacture, Installation, Alteration and Repair* (TSG Z0004-2007).

3. Essential Safety Requirements

The safety quality of pressure vessels shall meet the essential safety requirements stipulated in the applicable pressure vessel safety technical supervision regulations. For stationary pressure vessels and transportable pressure vessels, when Chinese standards cannot be adopted for their construction, the manufacture license holders can adopt mature and widely used international standards for design and construction, and at the same time they shall submit the Special Equipment Licensing

Office of AQSIQ(hereinafter referred to as SELO) the Conformity Declaration by which the manufacturer declares its product quality is in conformance with the essential safety requirements of Chinese safety technical codes (hereinafter referred to as “Conformity Declaration”) as well as the Comparison Table for pressure vessel products and the essential safety requirements of the supervision regulations on safety technology for pressure vessels (hereinafter referred to as “Comparison Table”). For the same type of products with the same design parameters, the Conformity Declaration and the Comparison Table should be submitted just once. After receiving the written files, within five working days, SELO informs the license holder of the assigned serial number for its Conformity Declaration and publishes this serial number on SELO’s website. The manufacturer shall include the published serial number, the Conformity Declaration and the Contrast Table in the product delivery files. See Appendix 1 for the specific format of the Conformity Declaration; see Appendix 2 for the specific format of the Contrast Table for stationary pressure vessels; see Appendix 3 for the specific format of the Contrast Table for transportable pressure vessels.

For gas cylinders and valves of gas cylinders, when Chinese standards cannot be adopted for construction, the manufacture license holders shall submit the adopted standards to SELO for assessment and registration by the relevant Chinese technical organizations for standardization in accordance with the requirements of the *Safety Supervision Regulations for Gas Cylinders*. The manufacture license holders shall design, construct and inspect their products in compliance with the assessed and registered standards, and the products shall go through the type tests and design documents appraisal by the inspection agencies authorized by AQSIQ.

4. Risk Evaluation Requirements

For Category III stationary pressure vessels, transportable pressure vessels and ultra-high pressure vessels, a risk evaluation report (see Appendix 4) shall be included in the product delivery files.

5. Miscellaneous

Since the publication date of this Notice, the requirements of Chapter 4 and from Article 52 through Article 57, and the stipulation of Article 16 “ No manufacture license is required for those manufacturers who produce pressure vessel products with design pressure less than 10MPa, at the same time the maximum inner diameter less than 150mm or the water volume less than 25L” in the *Requirements for Boiler and Pressure Vessel Manufacture Licensing* (Guozhijianguo (2003) No.194) are no longer in execution.

General Administration of Quality Supervision, Inspection and Quarantine

Oct.11, 2012

Appendix:

1. Conformity Declaration for Pressure Vessel Quality in Conformance with the Essential Safety Requirements
2. Contrast Table for Stationary Pressure Vessel Products and the Essential Safety Quality Requirements of the Supervision Regulations on Safety Technology for Stationary Pressure Vessels
3. Contrast Table for Transportable Pressure Vessel Products and the Essential Safety Quality Requirements of the Supervision Regulations on Safety Technology for Transportable Pressure Vessels
4. The Basic Requirements for Risk Evaluation Report

Appendix 1

Conformity Declaration for Pressure Vessel Quality in Conformance with the Essential Safety Requirements

<table>
<tr><td>Declarer</td><td></td><td>Address</td><td colspan="2"></td><td>Manufacture Licensing level</td><td></td></tr>
<tr><td>License No.</td><td></td><td>Contact person</td><td></td><td>Telephone & E-mail</td><td colspan="2"></td></tr>
<tr><td>Product name</td><td></td><td>General drawing No.</td><td></td><td rowspan="4">Pressure vessel category</td><td colspan="2" rowspan="4">Stationary pressure vessel<br>☐Category I ☐Category II ☐Category III<br>☐Super high pressure vessel<br>☐Non-metallic pressure vessel<br>☐Medical Oxygen-cabin<br>☐Simple pressure vessel</td></tr>
<tr><td>Design pressure</td><td>MPa</td><td>Design temperature</td><td>℃</td></tr>
<tr><td>Body dimension</td><td></td><td>Shell material</td><td></td></tr>
<tr><td>Medium category</td><td>☐Group I<br>☐Group II</td><td>Design and manufacture standard</td><td></td></tr>
<tr><td colspan="7">After comparing with the pressure vessel essential safety quality requirements of (please fill in here the name of the applicable pressure vessel safety technical supervision regulation), we hereby declare the (product name) products that we designed/manufactured in accordance with (_design/manufacture standards) conform to the essential safety requirements. Please refer to the attached Comparison Table for Pressure Vessel Products and the Essential Safety Requirements of the Supervision Regulations on Safety Technology for ****Pressure Vessels for the comparison results; we commit ourselves to be responsible for the authenticity of the declaration.<br><br>Responsible person（signature）:<br>Year Month Date</td></tr>
<tr><td colspan="7">(This column shall be filled by SELO of AQSIQ）<br>Serial No.:</td></tr>
</table>

# Appendix 2

Comparison Table for Stationary Pressure Vessel Products and the Essential Safety Requirements of the *Supervision Regulations on Safety Technology for Stationary Pressure Vessels*

| No. | Chinese basic safety quality requirements | | Adopted code requirements | Products' practical situation | Conformity declaration | Note（Disposition） |
|---|---|---|---|---|---|---|
| 1 | Material requirements | (Regulations 2.3)[1] Steel material chemical composition | C≤___%，S≤___%，P≤___% | Shell material standards：_____<br>Shell material designation：_____<br>C≤___%，S≤___%，P≤___% | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | Pay attention to other pressure parts material |
| 2 | | (Regulations 2.4)<br>Steel material mechanical properties | Impact energy（$KV_2$）＝_____<br>Elongation after fracture（$A$）＝_____ | Impact energy（$KV_2$）＝_____<br>Elongation after fracture（$A$）＝_____ | ☐Not applicable<br>☐Conform<br>☐ Conform after disposition<br>☐Not conform | Pay attention to other pressure parts material |
| 3 | | (Regulations 2.5)<br>Steel plate ultrasonic inspection | □Require 100%<br>□Require other percentage：_____<br>□Not required | □Require 100%<br>□Require other percentage：_____<br>□Not required | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 4 | | (Regulations 2.6 2.7)<br>Cast iron or non-ferrous metal | Material designation：_____<br>Design temp limit：_____℃<br>Design pressure limit：_____MPa<br>Operation situation：_____ | Material designation：_____<br>Design temp limit：_____℃<br>Design pressure limit：_____MPa<br>Operation situation：_____ | ☐Not applicable<br>☐Conform<br>☐ Conform after disposition<br>☐Not conform | |

[1] Regulations refers to the *Supervision Regulations on Safety Technology for Stationary Pressure Vessels*( TSG R0004-2009)

| | | | | | | |
|---|---|---|---|---|---|---|
| 5 | Design requirements | (Regulations 3.5)<br>Design method | | □Design by rules □Design by analysis<br>□Design by experimental method<br>□Design by empirical method<br>□Technical review | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | Design by experimental method and design by empirical method shall be subject to technical review by the third party designated by AQSIQ |
| 6 | | (Regulations 3.3 3.5)<br>Design load | □Pressure □Gravitational load<br>□External acting force<br>□TEMP difference load □Wind load<br>□Earthquake load<br>□Snow load □Other load | □Pressure □Gravitational load<br>□External acting force<br>□TEMP difference load □Wind load<br>□Earthquake load<br>□Snow load □Other load | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 7 | | (Regulations 3.5)<br>Failure mode | □Brittle fracture(1) □Ductile rupture(2)<br>□Creep rupture(3) □Elastic or plastic instability(4)<br>□Nozzle leakage(5) □Others:____(6) | Possible failure mode<br><br>Risk analysis report<br>□ Required □Not required | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | For category III pressure vessel, the risk evaluation report shall be issued |
| 8 | | (Regulations 3.8)<br>Safety coefficient | $n_b \geq$_____ $n_s \geq$_____<br>$n_d \geq$_____ $n_n \geq$_____ | $n_b \geq$_____ $n_s \geq$_____<br>$n_d \geq$_____ $n_n \geq$_____ | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 9 | | (Regulations 3.20)<br>Quick opening pressure vessel | Safety interlock function： | □When the quick opening device reaches the preset closure position, pressure can be raised for operation<br>□Only after the internal pressure is completely released, the quick opening device can be opened | ☐Not applicable<br>☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 10 | Manufacture requirements | (Regulations 4.5)<br>NDT | Method and percentage： | □RT percentage：_____<br>□UT percentage：_____<br>□MT percentage：_____<br>□PT percentage：_____ | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 11 | | (Regulations 4.6)<br>Postweld heat treatment | Heat treatment: | □ Not required<br>□ Heat treatment process | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 12 | | (Regulations 4.7)<br>Pressure testing | Method:<br>Pressure coefficient: | □Hydraulic test<br>pressure coefficient: _____<br>□Air pressure test<br>pressure coefficient: _____<br>□The gas-liquid combined test<br>pressure coefficient: _____ | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 13 | | (Regulations 4.8)<br>Leakage test | Method:<br>□Air-tight test<br>□Ammonia leak test<br>□Halogen leak test<br>□Helium leak test<br>□Others | □Air-tight test<br>□Ammonia leak test<br>□Halogen leak test<br>□Helium leak test<br>□Others | ☐Not applicable<br>☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 14 | | (Regulations 4.3)<br>Welding coupon and base metal heat treatment specimen | Welding coupon:<br>□Required □Not required<br>Base metal heat treatment specimen :<br>□Required □Not required | Welding coupon:<br>□Available □Not available<br>Base metal heat treatment specimen :<br>□Available □Not available | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 15 | Others | Other items not listed above | | | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 16 | Other issues need to be emphasized and specified: | | | | | |

# Appendix 3

Contrast Table for Transportable Pressure Vessel Products and the Essential Safety Requirements of the *Supervision Regulations on Safety Technology for Transportable Pressure Vessels*

| No. | Chinese basic safety quality requirements | | Adopted code requirements | Products' practical situation | Conformity declaration | Note（Disposition） |
|---|---|---|---|---|---|---|
| 1 | Material requirements | (Regulations 2.3)[2] Steel material chemical composition | C≤___%，S≤___%，P≤___% | Shell material standards：_____<br>Shell material designation：_____<br>C≤___%，S≤___%，P≤___% | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | Pay attention to other pressure parts material |
| 2 | | (Regulations 2.4) Steel material mechanical properties | Ratio of the yield strength and the tensile strength＝_____<br>Impact energy（$KV_2$）＝_____<br>Elongation after fracture（$A$）＝_____ | Ratio of the yield strength and the tensile strength＝_____<br>Impact energy（$KV_2$）＝_____<br>Elongation after fracture（$A$）＝_____ | ☐Not applicable<br>☐Conform<br>☐ Conform after disposition<br>☐Not conform | Pay attention to other pressure parts material |
| 3 | | (Regulations 2.5) Steel plate ultrasonic inspection | □Require 100%<br>□Require other percentage：_____<br>□Not required | □Require 100%<br>□Require other percentage：_____<br>□Not required | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 4 | | (Regulations 2.8) Aluminum and aluminum alloy | Material designation：_____<br>Design temp limit：_____℃<br>Design pressure limit：_____MPa<br>Operation situation：_____ | Material designation：_____<br>Design temp limit：_____℃<br>Design pressure limit：_____MPa<br>Operation situation：_____ | ☐Not applicable<br>☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 5 | Design requirements | (Regulations 3.5) Design method | | □Design by rules □Design by analysis | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |

[2] Regulations refers to the *Supervision Regulations on Safety Technology for Transportable Pressure Vessels*( TSG R0005-2011)

| | | | | | | |
|---|---|---|---|---|---|---|
| 6 | | (Regulations 3.3 3.10)<br>Design load | □Pressure □Gravitational load<br>□External acting force<br>□TEMP difference load<br>□Earthquake load □Wind load<br>□Fatigue load □Initial load<br>□Other load | □Pressure □Gravitational load<br>□External acting force<br>□TEMP difference load<br>□Earthquake load □Wind load<br>□Fatigue load □Initial load<br>□Other load | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 7 | | (Regulations 3.5)<br>Failure mode | □Brittle fracture(1) □Ductile rupture(2)<br>□Creep rupture(3) □Elastic or plastic instability(4)<br>□Nozzle leakage(5) □Others:____(6) | Possible failure mode<br><br>Risk analysis report<br>□ Require □No require | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | For category III pressure vessel, the risk evaluation report shall be issued |
| 8 | | (Regulations 3.8)<br>Safety coefficient | $n_b \geq$_____ $n_s \geq$_____<br>$n_d \geq$_____ $n_n \geq$_____ | $n_b \geq$_____ $n_s \geq$_____<br>$n_d \geq$_____ $n_n \geq$_____ | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 9 | | (Regulations 3.9, 3.10.7, 3.10.8)<br>Medium group, hazardness, filling quantity | Medium number:_____<br>Name:_____<br>Medium group:_____<br>Hazardness:_____<br>The maximum allowable filling quantity:_____ | Medium number:_____<br>Name:_____<br>Medium group:_____<br>Hazardness:_____<br>The maximum allowable filling quantity:_____ | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | The medium which is beyond the scope of the Table 3-4 of the Regulation shall be subject to technical review by the third party designated by AQSIQ. |
| 10 | Manufacture requirements | (Regulations 4.5)<br>NDT | Method and percentage： | □RT percentage：_____<br>□UT percentage：_____<br>□MT percentage：_____<br>□PT percentage：_____ | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 11 | | (Regulations 4.6)<br>Postweld heat treatment | Heat treatment： | □ Not required<br>□ Heat treatment process | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 12 | | (Regulations 4.7)<br>Pressure testing | Method:<br>Pressure coefficient: | □Hydraulic test<br>pressure coefficient: _____<br>□Air pressure test<br>pressure coefficient: _____ | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 13 | | (Regulations 4.8)<br>Leakage test | Method:<br>□Air-tight test<br>□Ammonia leak test<br>□Halogen leak test □Helium leak test<br>□Others | □Air-tight test<br>□Ammonia leak test<br>□Halogen leak test<br>□Helium leak test<br>□Others | ☐Not applicable<br>☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 14 | | (Regulations 4.3)<br>Welding coupon and base metal heat treatment specimen | Welding coupon:<br>□Required □Not required<br>Base metal heat treatment specimen :<br>□Required □Not required | Welding coupon:<br>□Available □Not available<br>Base metal heat treatment specimen :<br>□Available □Not available | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 15 | Others | Other items not listed above | | | ☐Conform<br>☐ Conform after disposition<br>☐Not conform | |
| 16 | Other issues need to be emphasized and specified: | | | | | |

Appendix 4

**The Basic Requirements for Risk Evaluation Report**

1. General Principles

1.1 This document specifies the basic requirements for risk evaluation report of pressure vessels.

1.2 The pressure vessel designer (or the designing unit*) shall draft the risk evaluation report for the intended use condition in accordance with the relevant regulations or the requirements of its client.

1.3 The designer (or the designing unit*) shall give adequate consideration to all the possible failure modes of the pressure vessel under various working conditions( for transportable pressure vessels, the envisioned transportation methods and the various working conditions* under different transportation methods shall be covered) and draw up safety measures in respect of material selection, structure design, manufacture inspection, transportation and service*, loading and unloading* to prevent failures.

1.4 The designer (or the designing unit*) shall provide the end user the needed information for the making of emergency response plan.

2. The Drafting Principle and Procedures

2.1 The main target of risk evaluation during design stage is to identify hazards and control risk;

2.2 The risk evaluation during design stage shall follow the below procedures:

a) to identify various working conditions based on the design conditions of the user and other design input information(including transportation methods and various working conditions*);
b) to identify hazards based on the working conditions such as working medium, operating conditions, environmental factors, loading and unloading conditions*, transportation conditions* to predict the possible hazards and consequences;
c) to specify the safety measures that shall be adopted for all the possible hazards and their corresponding failures, and explain the basis;
d) to provide the needed information for the making of emergency response plan for failures that might happen;
e) to complete the risk evaluation report.

3 The Contents of the Risk Evaluation Report

The risk evaluation report shall include at least the following:

a) the basic design parameters of the pressure vessel: pressure, temperature, material, medium nature and external load; for transportable pressure vessels, the following shall be taken into consideration: transportation methods( such as railway, highway, waterway, or the combined transport of the aforementioned methods), working conditions( such as working pressure, working temperature, corrosion conditions), loading and unloading conditions( such as loading and unloading methods and pressure), basic structures( such as single-layered tank, the stacked insulation tank, vacuum thermal insulation tank and gas cylinders);
b) description of all the possible operating conditions;
c) All the possible hazards that may happen under operation and design conditions, like explosion, leak, wearout, deformation, vacuum failure*, and side tumbling*;
d) For failure modes which are stipulated in standards, safety technical codes and other regulatory documents, please specify the adopting article number;

e) For failure mode not quoted in applied standards, please specify the basis for the determination of load, safety factor and the corresponding calculation method in design;
f) Specify the disposition measures for medium slight leakage, serious leakage, explosion and traffic accident*;
g) In accordance with the possible accident, stipulate the appropriate people protection equipment and protection measures* for the escort people, operator and other concerned people;
h) The risk evaluation report and the general design drawing shall bear the same signature.

Note: special attention shall be given to the parts with "*" for transportable pressure vessels.