

UR G3 “Liquefied gas cargo and process piping”

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Withdrawal of Rev.3 and Rev.3, Corr.1 (Jun 2010)	14 June 2010	-
Rev.3, Corr.1 (Dec 2009)	11 December 2009	1 July 2010
Rev.3 (Dec 2008)	19 December 2008	1 January 2010
Rev.2 (1997)	12 May 1997	-
Rev.1 (1979)	<i>No record</i>	-
NEW (1974)	<i>No record</i>	-

- **Withdrawal of Rev.3 and Rev.3, Corr.1 (Jun 2010)**

On 14 June 2010 GPG agreed to the withdrawal of UR G3 Rev.3 and Rev.3 Corr.1 pending further review by the Survey Panel (ref. 8508bIGj).

- **Rev.3, Corr.1 (Dec 2009)**

Postponement of implementation date for Rev.3 from 1 January 2010 to 1 July 2010. Approved by GPG 11 December 2009 (ref. 8508bIGc).

No TB document available.

- **Rev.3 (Dec 2008)**

Changes to section G3.6 - see TB document in Part B.

- **Rev.2 (1997)**

Consequential change further to adoption at MSC67 of MSC.58(67) for IBC Code and MSC.59(67) for IGC Code concerning avoidance of “vague expressions in the IBC and IGC codes”.

No TB document available.

- **Rev.1 (1979)**

No TB document available.

- **NEW (1974)**

No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UR G3:

Annex 1. **TB for Rev.3 (Dec 2008)**

See separate TB document in Annex 1.



Note: *There are no separate Technical Background (TB) documents for the original resolution (1974), Rev.1 (1979), Rev.2 (1997) and Rev.3, Corr.1 (Dec 2009).*

Technical Background

UR G3 (Rev.3, Dec 2008)

Survey Panel Task 57: Consider amending UR G 3 “Liquefied gas cargo and process piping” to reflect the common survey practices of the Members on testing of cryogenic valves and adding in test requirements for valves intended to be used at a working temperature not lower than -55°C and for new LNG and LPG pumps.

1. Objective

Consider amending the present survey tightness test requirements contained in UR G3, section 3.6.1, which is only each size and each type of valve intended to be used at a working temperature below -55°C to take into account the present best practices of the members. Also consider adding in new sections containing survey test requirements based on best practices of Members for valves intended to be used at a working temperature not lower than -55°C and new LNG and LPG cargo pumps as presently there are no requirements.

2. Background

ABS Panel member initially requested clarification on testing of cryogenic valves and requirements for testing of new LNG pumps based on email correspondence dated 28 Nov 2007. NK Panel member requested that survey requirements for valves intended to be used at a working temperature not lower than -55°C be considered based on email dated 14 Dec 2007.

3. Methodology of Work

The Survey Panel has progressed its work through meetings as well as a Survey Panel Project Team consisting of ABS (Chair), BV, DNV, KR and NK. The proposed scope of work as well as the draft recommendation by the Project Team was circulated to all Members for comment and agreement.

4. Discussion

- **Valves**

The Project Team first discussed the survey practices of the members on testing of cryogenic valves for temperatures lower than -55°C. The use of the term “type testing” caused considerable confusion due to current type approval programs offered by the societies. After lengthy discussion, in order to eliminate confusion, the members decided to use the terms “prototype” testing and “unit production” testing.

All members stated that prototype testing was carried out for each type and size of valve and that surveyor attendance was required during these tests. However, for unit certification, the practices differed. The members also reported that it was common practice to carry out cryogenic testing of 10 percent of the valves.

For prototype testing, all members agreed that the required minimum tests in the presence of a surveyor include hydrostatic test of the valve body at a pressure equal to 1.5 times the design pressure, seat and stem leakage test at a pressure equal to 1.1 times the design pressure, and cryogenic testing consisting of valve operation and leakage verification. They also agreed that testing is to be carried out at the minimum

design temperature or lower and to a pressure not lower than the maximum design pressure foreseen for the valves.

For unit production testing, the members agreed there should be two options for testing of the valves based on current practices. The first option required surveyor attendance for all valve testing. The second option allowed the manufacturer to carry out the testing if they had a recognized quality system which had been assessed by the society and is subject to periodic audits.

All members agreed that the required minimum tests for both options include hydrostatic test of the valve body at a pressure equal to 1.5 times the design pressure, seat and stem leakage test at a pressure equal to 1.1 times the design pressure. It was also decided to include the industry standard of requiring cryogenic testing consisting of valve operation and leakage verification for a minimum of 10% of each type and size of valve for valves intended to be used at a working temperature below -55°C. The cryogenic tests are to be carried out in the presence of a surveyor for both of the above options.

The members then discussed the requirements for valves intended to be used at a working temperatures above -55°C. Based upon service experience, and that there is no testing medium for -55°C, it was decided that prototype testing was not required for these valves.

- **Cargo Pumps**

The members decided to use the same methodology for cargo pumps as was used for valves. All members reported their procedures followed the prototype and unit production testing similar to valves.

Again, the members decided that surveyor attendance was required for prototype testing and that two options be available for unit production testing. The first option required surveyor attendance for all pump testing. The second option allowed the manufacturer to carry out the testing if they had a recognized quality system which had been assessed by the society and is subject to periodic audits.

For prototype and unit production testing, all members agreed the required minimum tests include hydrostatic test of the pump body equal to 1.5 times the design pressure and a capacity test. For pumps intended to be used at a working temperature below -55°C, the capacity test is to be carried out at the minimum working temperature. After completion of tests, the pump is to be opened out for examination. Based upon service experience, and that there is no testing medium for -55°C, it was decided pumps intended to be used at temperatures above -55°C, could be tested at ambient temperature.

- **IACS UR G3**

The members also decided to change the title of G3.6 to indicate these tests were to be carried out prior to installation onboard and differentiate it from G3.8. It was also decided to revise the title of G3.8 to "Test onboard".

In order to differentiate between prototype testing and type testing, the members also recommend the proposed change to G3.6.2. It is further recommended that this section be revised to incorporate the same methodology used for the valves and pumps. Since this was not included in the task, the project team took no action at this time.

During the discussions on the task, the team noted that UR G3 may require updating to reflect current practices. This is probably due to the fact that UR G3 was written in 1974 and revised in 1979 and 1997.

Submitted by Survey Panel Chairman

12 November 2008

Permanent Secretariat note (January 2009):

UR G3 (Rev.3) was approved by GPG on 19 December 2008 (ref. 8508alGd) with the following implementation statement:

“The requirements of G3.6 Rev.3 are to be uniformly implemented by IACS Societies for piping components and pumps:

- i) when an application for testing is dated on or after 1 January 2010; or*
- ii) which are installed in new ships for which the date of contract for construction is on or after 1 January 2010.”*