GUIDE FOR THE CLASS NOTATION FOR

BOW OR STERN LOADING AND UNLOADING (BLU or SLU) FOR OIL CARRIERS, LIQUEFIED GAS CARRIERS OR CHEMICAL CARRIERS

JULY 2008 (Updated November 2010 – see next page)

American Bureau of Shipping
Incorporated by Act of Legislature of
the State of New York 1862

Copyright © 2008
American Bureau of Shipping
ABS Plaza
16855 Northchase Drive
Houston, TX 77060 USA

Updates

November 2010 consolidation includes:

- July 2008 version plus Notice No. 1

Foreword

This Guide has been developed in response to industry requests for an optional class notation to address arrangements where an Oil Carrier, Liquefied Gas Carrier or Chemical Carrier is provided with facilities to load or unload cargo with piping manifold located at the bow or stern of the vessel.

ABS currently has requirements for bow or stern loading and unloading arrangements of Oil Carriers, Liquefied Gas Carriers or Chemical Carriers in the ABS *Rules for Building and Classing Steel Vessels (Steel Vessel Rules)*. This Guide consolidates the requirements in the 2008 version of the ABS *Rules for Building and Classing Steel Vessels* for certifying bow or stern loading arrangements on these types of vessels.

GUIDE FOR THE CLASS NOTATION

BOW OR STERN LOADING AND UNLOADING (BLU or SLU) FOR OIL CARRIERS, LIQUEFIED GAS CARRIERS OR CHEMICAL CARRIERS

CONTENTS

SECTION 1 Introduction 1

1 Scope 1

3 Application 1

5 Definitions 1

5.1 Oil Carrier 1

5.3 Liquefied Gas Carrier 1

5.5 Chemical Carrier 1

5.7 Cargo Area 1

5.9 Hazardous Areas 2

7 Submission of Design Plans and Data 2

SECTION 2 Oil Carriers 3

1 General 3

3 Cargo Piping System 3

5 Hazardous Areas and Electrical Systems 3

7 Precautions for Ventilation of Accommodation and Machinery Spaces 4

9 Communication and Instrumentation Systems 4

11 Fire Extinguishing Arrangements 4

SECTION 3 Liquefied Gas Carriers 5

1 General 5

3 Cargo Piping System 5

5 Hazardous Areas and Electrical Systems 6

7 Communication System 6

9 Fire Extinguishing Arrangements 6

SECTION 4 Chemical Carriers 7

1 General 7

3 Cargo Piping System 7

5 Hazardous Areas and Electrical Systems 8

7 Communication and Remote Shutdown Systems 8

9 Fire Extinguishing Arrangements 8

SECTION 1 Introduction

1 Scope

This Guide covers the criteria for the Notation **BLU** (Bow Loading and Unloading arrangements) and the Notation **SLU** (Stern Loading and Unloading arrangements) on Oil Carriers, Liquefied Gas Carriers and Chemical Carriers classed with ABS.

This Guide consolidates the requirements for bow or stern loading and unloading arrangements currently found in the following sections of the 2008 version of the ABS *Rules for Building and Classing Steel Vessels (Steel Vessel Rules):*

- 5C-1-7/3.3.3 Bow or Stern Loading and Unloading (Oil Carriers)
- 5C-8-3/8 Bow or stern loading and unloading arrangements (Liquefied Gas Carriers)
- 5C-9-3/7 Bow or stern loading and unloading arrangements (Chemical Carriers)

3 Application

This Guide is applicable to Oil Carriers, Liquefied Gas Carriers and Chemical Carriers with bow or stern loading and unloading arrangements. A vessel provided with bow loading and unloading arrangements in compliance with this Guide will be eligible for the notation **BLU.** A vessel provided with stern loading and unloading arrangements in compliance with this Guide will be eligible for the notation **SLU**.

5 Definitions

5.1 Oil Carrier

An *Oil Carrier* is a vessel designed and constructed to carry oil in bulk, having flash points at or below 60°C (140°F) closed cup test, and includes vessels of similar types, such as combination carriers (Ore/Oil Carriers, etc).

5.3 Liquefied Gas Carrier

A *Liquefied Gas Carrier* is a vessel designed and constructed for the transportation in bulk of liquefied gas or other products listed in Section 5C-8-19 of the *Steel Vessel Rules*, or Chapter 19 of the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code).

5.5 Chemical Carrier

A *Chemical Carrier* is a vessel designed and constructed for the carriage in bulk of any liquid product listed in Section 5C-9-17 of the *Steel Vessel Rules,* or Chapter 17 of the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code).

5.7 Cargo Area

For an Oil Carrier the *Cargo Area* is that part of the vessel that contains cargo tanks, slop tanks and cargo pump rooms including pump rooms, cofferdams, ballast and void spaces adjacent to cargo tanks and also deck areas throughout the entire length and breadth of the part of the vessel over the above mentioned spaces.

For a Liquefied Gas Carrier the *Cargo area* is that part of the ship which contains the cargo containment system and cargo pump and compressor rooms and includes deck areas over the full length and breadth of the part of the ship over the above-mentioned spaces. Where fitted, the cofferdams, ballast or void spaces at the after end of the aftermost hold space or at the forward end of the forwardmost hold space are excluded from the cargo area.

For a Chemical Carrier the *Cargo area* is that part of the ship that contains cargo tanks, slop tanks, cargo pump-rooms including pump-rooms, cofferdams, ballast or void spaces adjacent to cargo tanks or slop tanks and also deck areas throughout the entire length and breadth of the part of the ship over the above-mentioned spaces. Where independent tanks are installed in hold spaces, cofferdams, ballast or void spaces at the after end of the aftermost hold space or at the forward end of the forwardmost hold space are excluded from the cargo area.

5.9 Hazardous Areas

Areas where flammable or explosive gases or vapors are normally present or likely to be present are known as *Hazardous Areas*. The flammable or explosive atmosphere may be expected to exist continuously or intermittently. Typically, the cargo area, spaces around cargo tank openings, spaces around disconnectable cargo oil pipe joints, etc., are to be regarded as hazardous areas. The word 'hazardous', where used in this Guide, means the presence of a flammable atmosphere.

7 Submission of Design Plans and Data *(2011)*

In addition to the submission of plans according to the requirements stated in Section 1-1-7 of the ABS *Rules for Condition of Classification (Part 1)*, the following design plans and data are to be submitted:

- Booklet showing standard construction details for piping (see 4-6-1/9.5 of the *Steel Vessel Rules*)
- Details of the cargo piping from the cargo area to the bow or stern loading/unloading manifold
- Hazardous area plan and electrical equipment data
- Fire extinguishing arrangements for the bow or stern loading/unloading areas
- Spill containment arrangements

Plans should generally be submitted electronically to ABS. However, hard copies will also be accepted.

SECTION 2 Oil Carriers

1 General

The bow or stern loading and unloading arrangements for an Oil Carrier are to comply with requirements of 5C-1-7/3.3.3 of the *Steel Vessel Rules*. The requirements are repeated below for ready reference.

3 Cargo Piping System

3.1

Cargo lines outside the cargo area are to be installed outside accommodation spaces, service spaces, machinery spaces and control stations.

3.3

Pipe joints outside of the cargo area are to be welded, except for connections to the manifold or the loading and unloading equipment.

3.5

The cargo loading and unloading lines are to be clearly identified and provided with means to segregate them from the cargo main line when not in use. The separation is to be achieved by:

i) Two valves, located in the cargo area, which can be locked in the closed position, and fitted with means to detect leakage past the valves; or

ii) One valve together with another closing device providing an equivalent standard of segregation, such as a removable spool piece or spectacle flange.

3.7

The loading and unloading connection is to be fitted with a shut-off valve and a blank flange. The blank flange may be omitted if an equivalent means of closing is incorporated in the connection to the hose coupling.

3.9

Arrangements are to be provided for cargo lines outside the cargo area for easy draining to a slop tank or cargo tank and for cleaning and inerting.

3.11

Spill containment is to be provided under the loading and unloading manifold.

5 Hazardous Areas and Electrical Systems

The space within 3 m (10 ft) from the oil spill containment boundary and the manifold is considered to be hazardous. Accordingly, there is to be no source of ignition present within this space. Electrical equipment, if installed in this space, is to be of the certified safe type, see 5C-1-7/31.9 of the *Steel Vessel Rules*.

7 Precautions for Ventilation of Accommodation and Machinery Spaces

The arrangement of ventilation inlets and outlets and other deckhouse and superstructure boundary space openings are to be such as to complement the provisions of 5C-1-7/11 of the *Steel Vessel Rules*. Such vents, especially for machinery spaces, are to be situated as far aft as practicable. Due consideration in this regard is to be given when the vessel is equipped to load or discharge at the stern.

9 Communication and Instrumentation Systems

Means of communication (e.g. telephones, two-way portable radios, etc.) is to be provided onboard between the cargo control station and the location of the cargo shore connection.

See 5C-1-7/11.11.1 of the *Steel Vessel Rules* for measures for preventing liquid rising in the vent pipes.

11 Fire Extinguishing Arrangements

Vessels fitted with bow or stern loading and unloading arrangements are to be provided with one additional foam monitor meeting the requirements of 5C-1-7/27.7 of the *Steel Vessel Rules* and one additional applicator meeting the requirements of 5C-1-7/27.13 of the *Steel Vessel Rules*.

The additional monitor is to be located to protect the bow or stern loading and unloading arrangements. The area of the cargo line forward or aft of the cargo block area is to be protected by the above-mentioned applicator.

SECTION 3 Liquefied Gas Carriers

1 General

The bow or stern loading and unloading arrangements for a Liquefied Gas Carrier are to comply with requirements of 5C-8-3/8 of the *Steel Vessels Rules*. The requirements are repeated below for ready reference.

1.1

Bow or stern loading and unloading lines which are led past accommodation spaces, service spaces or control stations are not to be used for the transfer of products requiring a type 1G ship.

Bow or stern loading and unloading lines are not to be used for the transfer of toxic products as specified in 5C-8-1/3.38 of the *Steel Vessels Rules* unless specifically approved by ABS.

1.3

Entrances, air inlets and openings to accommodation spaces, service spaces, machinery spaces and control stations are not to face the cargo shore connection location of bow or stern loading and unloading arrangements. They are to be located on the outboard side of the superstructure or deckhouse at a distance of at least 4% of the length of the vessel, but not less than 3 m from the end of the superstructure or deckhouse facing the cargo shore connection location of the bow or stern loading and unloading arrangements. This distance, however, need not exceed 5 m. Sidescuttles facing the shore connection location and on the sides of the superstructure or deckhouse within the distance mentioned above are to be of the fixed (non-opening) type. In addition, during the use of the bow or stern loading and unloading arrangements, all doors, ports and other openings on the corresponding superstructure of deckhouse side are to be kept closed. Where in the case of small vessels, compliance with 5C-8-3/2.4 of the *Steel Vessel Rules* and this paragraph is not possible, ABS may approve relaxations from the above requirements.

1.5

Deck openings and air inlets to spaces within distances of 10 m from the cargo shore connection location are to be kept closed during the use of bow or stern loading or unloading arrangements.

1.7

Portable arrangements are not permitted.

3 Cargo Piping System

In addition to the requirements of Section 5C-8-5 of the *Steel Vessel Rules*, the following provisions apply to cargo piping and related piping equipment.

3.1

Cargo piping and related piping equipment outside the cargo area are to have only welded connections. The piping outside the cargo area is to run on the open deck and is to be at least 760 mm inboard, except for athwartships shore connection piping. Such piping is to be clearly identified and fitted with a shutoff valve at its connection to the cargo piping system within the cargo area. At this location, it is to also be capable of being separated by means of a removable spool piece and blank flanges when not in use.

3.3

The piping is to be full penetration butt welded and fully radiographed, regardless of pipe diameter and design temperature. Flange connections in the piping are only permitted within the cargo area and at the shore connection.

3.5

Arrangements are to be made to allow such piping to be purged and gas-freed after use. When not in use, the spool pieces are to be removed and the pipe ends be blank-flanged. The vent pipes connected with the purge are to be located in the cargo area.

5 Hazardous Areas and Electrical Systems

Electrical equipment within a zone of 3 m from the cargo shore connection location is to be in accordance with Section 5C-8-10 of the *Steel Vessel Rules*.

7 Communication System

Means of communication between the cargo control station and the shore connection location are to be provided and if necessary certified safe.

9 Fire Extinguishing Arrangements

On vessels carrying flammable or toxic products or both, a water spray system for cooling, fire prevention and crew protection is to be installed to cover the cargo liquid and vapor discharge and loading manifolds and the area of their control valves and any other areas where essential control valves are situated and which is to be at least equal to the area of the drip trays provided.

Vessels fitted with bow or stern loading and discharge arrangements are to be provided with an additional dry chemical powder unit complete with at least one monitor and one hand hose line complying with the requirements of 5C-8-11/4.1 to 5C-8-11/4.6 of the *Steel Vessel Rules*. This additional unit is to be located to protect the bow or stern loading and discharge arrangements. The area of the cargo line forward or aft of the cargo area is to be protected by hand hose lines.

SECTION 4 Chemical Carriers

1 General

The bow or stern loading and unloading arrangements for a Chemical Carrier are to comply with requirements of 5C-9-3/7 of the *Steel Vessel Rules*. The requirements are repeated below for ready reference.

1.1

Bow or stern loading and unloading lines are not to be used for the transfer of products required to be carried in type 1 ships.

Bow and stern loading and unloading lines are not to be used for the transfer of cargoes emitting toxic vapors required to comply with 5C-9-15/12.1 of the *Steel Vessel Rules* unless specifically approved by ABS.

1.3

Entrances, air inlets and openings to accommodation, service and machinery spaces and control stations are not to face the cargo shore connection location of bow or stern loading and unloading arrangements. They are to be located on the outboard side of the superstructure or deckhouse at a distance of at least 4% of the length of the vessel, but not less than 3 m from the end of the house facing the cargo shore connection location of the bow or stern loading and unloading arrangements. This distance, however, need not exceed 5 m. Sidescuttles facing the shore connection location and on the sides of the superstructure or deckhouse within the distance mentioned above are to be of the fixed (non-opening) type. In addition, during the use of the bow or stern loading and unloading arrangements, all doors, ports and other openings on the corresponding superstructure or deckhouse side are to be kept closed. Where, in the case of small vessels, compliance with 5C-9-3/2.3 of the *Steel Vessel Rules* and this paragraph is not possible, ABS may approve relaxations from the above requirements.

1.5

Air pipes and other openings to enclosed spaces not listed in 5C-9-3/7.4 of the *Steel Vessel Rules* are to be shielded from any spray which may come from a burst hose or connection.

1.7

Portable arrangements are not permitted.

1.9

Escape routes are not to terminate within the coamings required by 4/3.13 below or within a distance of 3 m beyond the coamings.

3 Cargo Piping System

In addition to 5C-9-5/1 of the *Steel Vessel Rules*, the following provisions apply.

3.1

The piping outside the cargo area is to be fitted at least 760 mm inboard on the open deck. Such piping is to be clearly identified and fitted with a shutoff valve at its connection to the cargo piping system within the cargo area. At this location, it is to also be capable of being separated by means of a removable spool piece and blank flanges when not in use.

3.3

The shore connection is to be fitted with a shutoff valve and a blank flange.

3.5

The piping is to be full penetration butt welded and fully radiographed. Flange connections in the piping are only permitted within the cargo area and at the shore connection.

3.7

Spray shields are to be provided at the connections specified in 4/3.1, as well as collecting trays of sufficient capacity with means for the disposal of drainage.

3.9

The piping is to be self-draining to the cargo area and preferably into a cargo tank. Alternative arrangements for draining the piping may be accepted by ABS.

3.11

Arrangements are to be made to allow such piping to be purged after use and maintained gas-safe when not in use. The vent pipes connected with the purge are to be located in the cargo area. The relevant connections to the piping are to be provided with a shutoff valve and blank flange.

3.13

Continuous coamings of suitable height are to be fitted to keep any spills on deck and away from the accommodation and service areas.

Note: The expression "suitable height" means the height of coaming to be of approximately 150 mm, however nowhere less than 50 mm above upper edge of sheer strake.

5 Hazardous Areas and Electrical Systems

Electrical equipment within the coamings required by 4/3.13 or within a distance of 3 m beyond the coamings is to be in accordance with the requirements of Section 5C-9-10 of the *Steel Vessel Rules.*

7 Communication and Remote Shutdown Systems

Means of communication between the cargo control station and the cargo shore connection location are to be provided and certified safe, if necessary. Provision is to be made for the remote shutdown or cargo pumps from the cargo shore connection location.

9 Fire Extinguishing Arrangements

Vessels fitted with bow or stern loading and unloading arrangements are to be provided with one additional foam monitor meeting the requirements of 5C-9-11/3.7 of the *Steel Vessel Rules* and one additional applicator meeting the requirements of 5C-9-11/3.10 of the *Steel Vessel Rule*. The additional monitor is to be located to protect the bow or stern loading and unloading arrangements. The area of the cargo line forward or aft of the cargo area is to be protected by the above-mentioned applicator.