Recommended Practice for Transportation of Line Pipe on Barges and Marine Vessels

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Suggested revisions are invited and should be submitted to the Standards Department, API, 200 Massachusetts Avenue, NW, Washington, DC 20001, standards@api.org.

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Introduction

This recommended practice (RP) shall become effective on the date printed on the cover but may be used voluntarily from the date of distribution. This RP is under the jurisdiction of the API Subcommittee on Standardization of Tubular Goods. Line pipe shipments on inland and marine waterways should be designed to assure that the pipe will arrive at the destination undamaged. The minimum mandatory rules in force for such shipments shall be followed. The rule of governing regulatory agencies shall be considered as basic, with the recommendations given herein as supplementary thereto. These supplementary recommendations are the result of line pipe shippers' experience that damage to the pipe during shipment can consist of three principal types as follows.

a) End Damage—End damage to pipe can occur during loading and unloading, or from a longitudinal load shift against a bulkhead or an adjacent pipe.

b) Abrasions or Peening—These result from a rubbing or pounding action against some protrusion such as the weld reinforcement of the adjacent pipe. This condition may result in initiation of fatigue cracks at the damaged areas during transit.

c) Longitudinal Fatigue Cracks—These are initiated in the pipe by vertical cyclical forces with no apparent local abrasion or denting. Fatigue cracks result from a combination of static and cyclic stresses produced by the weight of upper layers of pipe and/or other cargo giving a static load, and a cyclic load caused by the vertical movement.

The third edition of this RP incorporates revisions in light of an identification of inaccuracies in the equations for static load stress, which were derived by numerical methods decades ago. These inaccuracies were discovered when finite element analysis methods were used to check the equations. API is working to update and revise these equations for a future edition. Notwithstanding these inaccuracies, there have been no confirmed transit fatigue failures reported in pipe loaded in accordance with previous editions of this document.

Recommended Practice for Transportation of Line Pipe on Barges and Marine Vessels

1 Scope

The recommendations in this document apply to transportation of API Specification 5L steel line pipe by ship or barge on both inland and marine waterways, unless the specific requirement of a paragraph in this document references only marine or only inland waterway transport. Inland waterways are defined as those waterways with various degrees of protection, such as rivers, canals, intracoastal waterways, and sheltered bays. These waterways can be fresh or saltwater but are usually traversed by barges. Marine waterways are defined as waterways over open seas with limited or no protection from wind, current, waves, and the like. These areas are normally traversed by sea-going vessels. These recommendations apply to steel line pipe that has 2 3/8-in. outside diameter (OD) and larger.

These recommendations cover coated or uncoated pipe, but they do not encompass loading practices designed to protect pipe coating from damage. These recommendations are not applicable to pipe-laying vessels or supply vessels. They must be considered as supplementary to the existing rules of governing agencies.

These recommendations are supplemental to shipping rules for the convenience of purchasers and manufacturers in the specification of loading and shipping practices and are not intended to inhibit purchasers and manufacturers from using other supplemental loading and shipping practices by mutual agreement.

2 Acronyms, Abbreviations and Symbols

D	specified outside diameter
GMAW	gas metal arc welding
OD	outside diameter
SAW	submerged arc welding
t	specified wall thickness

3 General Requirements

3.1 Vessel Condition

Cargo compartments should be reasonably free from any foreign objects or material likely to cause either physical damage, contamination, or chemical reaction with the pipe.

The bilge pumping system shall be in working order to remove standing water from the cargo hold.

3.2 Shipping Space

Pipe may be laid longitudinally or athwart the vessel to make the best use of available space. A clearance of 1 ft must be left between the ends of the pipe and the vessel (or other cargo) to facilitate unloading. Dimensions of hatchways should be large enough to allow the pipe to pass in a horizontal position unless special precautions are taken.

3.3 Handling Equipment

When end hooks are used for handling pipe, they shall be designed to prevent end damage and should be lined in the area of land (bevel face) contact with a cushioning material (e.g. a nonmetallic material such as rubber or a metallic material such as aluminium, but brass or copper shall be excluded). These hooks shall also have sufficient width and depth to fit the internal curvature of the pipe. Rubber aprons should be attached to pipe hooks to protect the pipe ends unless adequate end protectors are used. Lifting shall be carried out in such a manner that impact loads sufficient to