Polski Rejestr Statków

RULES

PUBLICATION NO. 34/P

INSPECTION OF UNDERWATER WELDED JOINTS

1995

Publications P (Additional Rule Requirements), issued by Polski Rejestr Statków, complete or extend the Rules and are mandatory where applicable.

GDAŃSK

PRS Publication No. 34/P “Inspection of Underwater Welded Joints” is an extension of the requirements contained in Part IX “Materials and Welding” of the Rules for the Classification and Construction of Sea-going Ships – 1995.

This Publication was accepted by the PRS Technical Committee and was approved by the PRS Director General on 22 December 1995 by the Directive No. 41-P.

This Publication enters into force on 1 February 1996.

PRS/TW, 12/95

CONTENTS

page

1 Introduction 5

2 Classification of underwater welded non-marine structures 5

3 Underwater inspection of underwater welded joints 5

4 The required mechanical properties and quality of underwater welded joints 7

1 INTRODUCTION

The present Publication gives the requirements for the inspection of welded joints used in underwater welding repair of ships or the inspection of underwater welded joints of other marine and hydroengineering structures surveyed by Polski Rejestr Statków.

As regards underwater welding repair of ships, the welded joints, made underwater, are to be subjected, at the nearest drydocking, to a 100% radiographic or ultrasonic testing.

2 CLASSIFICATION OF UNDERWATER WELDED NON-MARINE STRUCTURES

With respect to underwater welding repair of ships, the welded joint preparation, checking the mechanical properties and the welded joint quality inspection are to be performed according to the requirements of Part IX "Materials and Welding" of the Rules for the Classification and Construction of Sea-going Ships, 1995.

Non-marine structures, welded underwater, are graded Class I, II, and III. The scope of the welded joint inspection will depend on the class of structure.

Classification of welded non-marine structures:

Class I – welded joints in important highly stressed structures (up to 0.8 R_e). For the produced welded joints, a complete welding procedure technology will be required.

Class II – welded joints in moderately stressed structures (up to 0.6 R_e). For the produced welded joints, a complete welding procedure technology will be required.

Class III – welded joints in low stressed structures. The quality of the welded joints is to be such that the joints do not constitute crack starter points which may be hazardous to the entire structure.

3 UNDERWATER INSPECTION OF UNDERWATER WELDED JOINTS

Inspection of joints welded underwater is to be carried out by supervisory staff of the manufacturer performing the welding or by an independent institution, both being recognized by PRS.

Non-destructive testing of underwater welded joints in Class I and II structures is to be supplemented by destructive testing of test plates.

After welding operations, on a given structure, have been completed, the manufacturer's supervisory staff mark the point for non-destructive testing according to the approved plan.

The extent of inspection of underwater welded joints depends on the type and class of structure and is to be specified, in each particular case, in the welded joint inspection plan.

Welded joint inspection plan is to be prepared on the basis of guidelines given in Table 1 and is to be approved by PRS.

Table 1

Class of structure (welded joint) / Method of inspection	Non-destructive*		Destructive
	Visual**	Magnetic-particle or with use of eddy currents	Test plates***
I	100%	100%	At least one plate for each joint
II		As agreed with PRS	At last one plate for a welder
III		At random, in suspected areas	---

* Subject to the agreement with PRS, other methods of inspection may be applied.

** In suspected areas, the inspection is to be supplemented by the joint surface impression to enable a laboratory assessment of defects.

*** Where practicable, these are to be run-off plates.

If defects have been found, the inspection is to be extended within the appropriate scope.

4 THE REQUIRED MECHANICAL PROPERTIES AND QUALITY OF UNDERWATER WELDED JOINTS

With respect to repair of ships, the mechanical properties and quality of the welded joints are to comply with the relevant requirements of Part IX “Materials and Welding” of the Rules for the Classification and Construction of Sea-going Ships, 1995.

With respect to underwater welding of other structures, the mechanical properties and quality of the welded joints are to comply with the requirements specified in production documentation.

Where such data have not been provided in production documentation, the mechanical properties of the welded joints are to comply with the requirements specified in the relevant standard for the steel applied.