

AWES Recommended PracticeFor Control Lines (CL)

AWES: 3362-AWES-CL-MAIN-FINAL

Issue date: December 2017

OTM Consulting Ltd



Thanks to the following companies for their contributions to this document
Ametek (Fine Tubes)
Baker Hughes
Halliburton
Mid-South Control Lines
Prysmian
RSCC
Sandvik



Content

1.	Introduction	6
2.	Scope	7
3.	Terms, Definitions and Abbreviated Terms	
3.1.	Terms and Definitions	
3.2.	Abbreviated Terms	
4.	Normative References	
5.	General Requirements	
5.1.	Tube Chemical Composition	
5.2.	Tube Dimensional Requirements	
5.3.	Tube Mechanical Properties and Testing Requirement	
5.4.	Metallurgical Test for Duplex Stainless Steels	
5.5.	External Surface Condition Requirements	
5.6.	Encapsulation Dimensions	
6.	Manufacturing Requirements	
6.1.	Welding Qualifications	
6.2.	Tube Weld Integrity Tests	
6.2.1.	Longitudinal Welds (for seam welded tubing)	
6.2.2.	Orbital Welds	
6.2.3.	Repair Welds	
6.3.	Internal Pressure Test	
6.4.	Minimum Tube Print Requirements	
6.5.	Recommended Routine Testing (FAT)	
6.5.1.	Object	
6.5.2.	Test Sample(s)	
6.5.3.	Apparatus	
6.5.4.	Item Tests to be Completed (Done on each unique item)	
6.5.5.	Item Tests to be Mill Cert Verified (Done on each unique item)	
6.5.6.	Lot Tests to be Mill Cert Verified	
7.	Type Tests (Qualification Tests)	
7.1.	External Pressure Test	
7.2.	Encapsulation Un-aged physical properties	
7.2.1.	Sample	
7.2.2.	General Procedure	
7.2.3.	Requirements	
7.3.	Encapsulation Material Penetration	
7.3.1.	Object	
7.3.2.	Sample	
7.3.3.	Procedure	
7.3.4.	Requirements	
7.4.	Encapsulation Abrasion Test	



7.5.	Encapsulation Chemical Compatibility at Temperature
7.5.1.	Object
7.5.2.	Sample
7.5.3.	Procedure
7.5.4.	Requirements
7.6.	Encapsulation Slip/Adherence Test
7.6.1.	Object
7.6.2.	Sample
7.6.3.	Procedure
7.6.4.	Requirements
8.	Other Recommendations and Guidelines
8.1.	Packaging and Preservation Recommendation
8.2.	Customer Receipt of Control Line
8.3.	Storage
8.4.	Reel & Skid Handling
8.5.	Control Line Handling – Un-spooling/Re-Spooling/ Repackaging/ Installation
8.6.	Product Documentation
8.7.	Temperature De-rating



Foreword

AWES (Advanced Well Equipment Standards) Group is a global industry JIP formed under the guidance of OTM Consulting. Invitation to this group has been extended to members of various branches of the oil and gas industry including oil and gas exploration and production companies, service companies and equipment suppliers.

The main task of this technical committee is to prepare an international recommended practice based on the statement of requirements of the end users of said Control Lines. This committee and the resultant recommended practice will not be designed to hamper innovation of equipment developed by suppliers/manufacturers. Instead the focus has been dedicated to standardizing the qualification testing criteria of said equipment as per mutually agreeable conditions.

This document is only valid if it has been verified to be the latest revision.



1. Introduction

This Recommended Practice (RP) has been developed by users/purchasers and suppliers/ manufacturers of downhole equipment and products that are intended for use in the petroleum and natural gas industry worldwide. This RP is intended to provide requirements and information to both parties regarding qualification and acceptance testing performed on the device to validate product functionality.

Users of this RP should be aware that requirements above those outlined in this RP may be needed for individual applications.

This RP is not intended to inhibit a supplier/manufacturer from offering, or the user/purchaser from accepting, alternative equipment or engineering solutions. This may be particularly applicable where there is innovative or developing technology. Where an alternative is offered, the supplier/manufacturer should identify any variations from this RP.



2. Scope

The scope of this RP covers small diameter Corrosion Resistance Alloy (CRA) continuous tubing for applications such as sub surface safety valve, chemical injection, hydraulic control lines and fiber injection.

This document covers bare and encapsulated tubing.

Cold worked products are commercially available and ASTM B-423 can be used as a guideline for the properties associated with these materials. However there are issues regarding temperature de-rating, corrosion resistance and NACE compliance that would need to be addressed between the supplier and customer. These materials are not within the scope of this document.

This document will detail qualification tests, requirements, FAT and define minimum performance standards. It will also address fluid/tube cleanliness and packaging.