PETROBRAS	TECHNICAL SPECIFICATION	Nº	I-ET-0000.00-0000-942-P9U-001
	CLIENT: PETROBRAS		SHEET: 1 of 4
	PROGRAM: RIGID OFFSHORE PIPELINES		CC:
	AREA:		PROJECT:
DP&T	TITLE: ALIGNMENT SHEET REQUIREMENTS		

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REVISION INDEX

REV	DESCRIPTION AND/OR REVISED SHEET
0	THIS DOCUMENT SUPERSEDES AND REPLACES DOCUMENT I-ET-0000.00-6500-942-P9U-001, REV. A.

	REV. 0	REV. A	REV. B	REV. C	REV. D	REV. E	REV. F	REV. G	REV. H
DATE	30/11/2017								
PROJECT	EISE /EDR								
EXECUTION	SG5H								
CHECK	BF6J								
APPROVAL	CLZ2								

CONTENTS

1. INTRODUCTION

One of the pipeline design activities is the development of a document called alignment sheet. This document is composed generally by several sheets and presents the final pipeline route in details.

2. OBJECTIVE

This technical specification lists the main characteristics of the document alignment sheet.

3. ALIGNMENT SHEET CONTENTS

The document alignment sheet shall contain at least the following items:

3.1. Project Description

This section describes the pipeline project main characteristics such as: pipeline name, pipeline length, start and end coordinate point facilities on both extremities, location of pipeline to be laid, water depth, fluid flow direction, equipment on pipeline extremities, if applicable, type of pipeline connection on both extremities, etc.

It is desirable to include in this section a sketch of the whole pipeline system.

3.2. References

This section includes a list with all documents considered or used during the execution of the alignment sheet and shall include the documents supplied by COMPANY and the documents developed by CONTRACTOR.

The coordinate reference system shall be included.

3.3. Scope

This section shall include a brief description of the scope of this document. It should be highlighted that any occurrence detected during pre-lay survey or any new data supplied is to be included in the alignment sheet lastest revision.

3.4. Alignment Sheet Drawings

The scale of the alignment sheet drawing shall be at least 1:5000 or smaller, if necessary. These drawings shall contain at least the following information:

a) General key drawing of the whole pipeline on top right position of the alignment sheet with the position and number of the actual pipeline section.
b) The actual SGO (“Sistema de Gerenciamento de Obstáculos”) system. Geodetic parameters, UTM coordinates and geographic coordinates of main pipeline/equipment points.
c) Brazilian navy chart information and restrictions.

d) Bathymetric data, side-scan sonar data, type of soil along pipeline route, location of soil samples and the related legends and notes;
e) Pipeline route, pipeline heading;
f) Pipeline coordinates points as: start point, end point, start curve point, end curve point, target areas points, accessories and points of interest;
g) Riser nominal TDP (Touch Down Point), NMP (No Motion Point), CRF (Connection Riser-Flowline) and inline anchoring location;
h) Table with coordinates and KP positions of the equipment within the pipeline;
i) Real length of pipeline, KP marks and interfaces with the previous and next alignment sheet;
j) Pipeline position and seabed profile along the pipeline top of pipe route;
k) Information about pipeline burying (depth, length and KP);
l) Radius of curvature of pipeline curves, length and angle of curve;
m) Line pipe specification along pipeline route (ex.: diameter, thickness, steel grade, etc.);
n) Anticorrosion coating specification along pipeline route;
o) Concrete weight coating specification along pipeline route;
p) Insulation coating specification along pipeline route;
q) Internal coating specification along pipeline route;
r) Field joints anticorrosion and infill materials along pipeline route;
s) Pipeline weights along pipeline route;
t) Lay tolerances along pipeline route and target areas;
u) Anode specification and anode spacing along pipeline route;
v) Anode sled location and its points of connection to pipeline;
w) Accessories specification and location along pipeline route;
x) Allowable free spans considering the installation, hydrotest and operation conditions of pipeline along pipeline route;
y) Expected free spans along pipeline route defining its location, length and height;
z) Location of mechanical supports or grout bags along pipeline route defining if it will be installed before or after pipeline installation;
aa) Location of concrete mattresses along pipeline route defining if it will be installed before or after pipeline installation;
bb) Pipeline design pressure and pre-commissioning requirements;
cc) Location of any possible occurrences detected during pre-lay survey;
dd) Buckle arrestors specification and spacing along pipeline route;
ee) Location of thermomechanical mitigation devices.

4. ALIGNMENT SHEET AS-BUILT

The alignment sheet shall be updated after the end of installation activity and supplied in the Project As-Built Book.