Poseidon Pipeline Project - Offshore Section Update

Isolation Joint Datasheet

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1 INTRODUCTION

1.1 Background

The Poseidon Pipeline Project, developed by IGI Poseidon S.A., will be designed for the supply of gas from Turkey and the Eastern Mediterranean region to the European market through the interconnection of the Greek and Italian gas networks.

The Poseidon Pipeline consists of two sections:

- An onshore section, stretching from Kipi (north-east of Greece, next to the Greek Turkish border) to the north western coast of Greece (Thesprotia area);
- An offshore section, from the north-western coast of Greece to Italy (Figure 1-1).

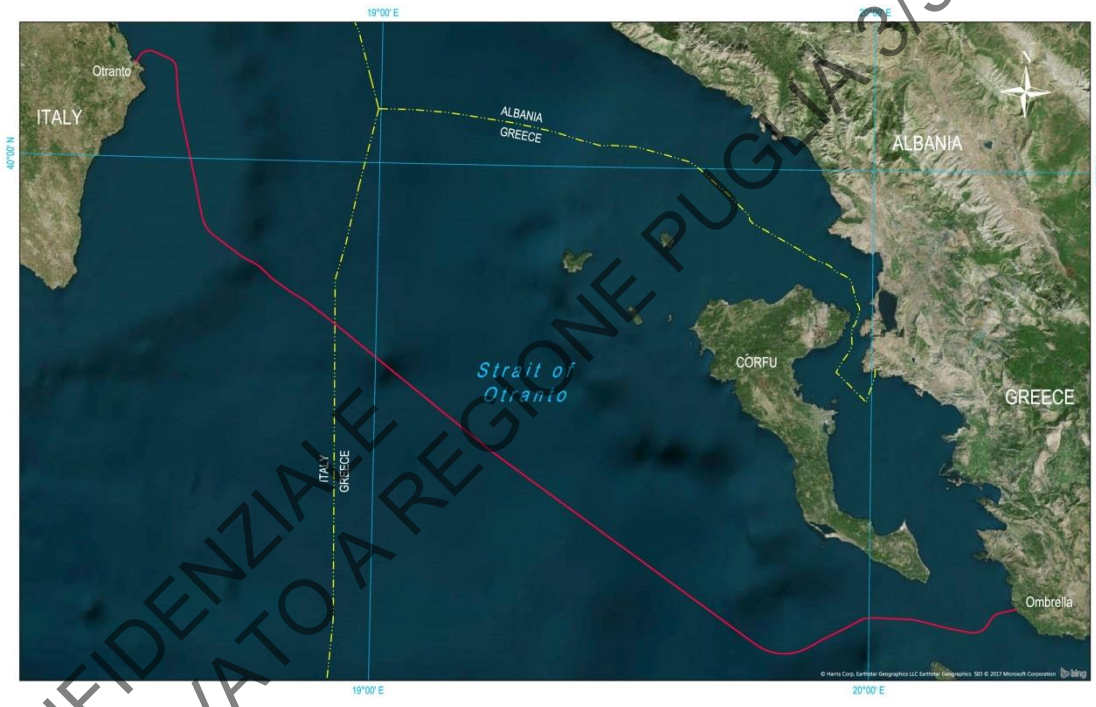

Figure 1-1 Poseidon Pipeline Project – Offshore Section

The offshore section of the Poseidon pipeline comprises:

- A compressor and fiscal metering station next to the Greek landfall (Thesprotia area);
- A deep water offshore pipeline from the Greek landfall to Italy (Otranto, Apulia region). The offshore section (about 200 km, ca. 1,370 m water depth) will cross the Greek shelf, descend the slope into the north Ionian Basin and then ascend the Italian slope, to make landfall east of Otranto;
- A receiving fiscal metering and pressure reduction station in Italy (Otranto, Apulia region);
- Two short buried onshore pipeline sections connecting compressor station in Greece and metering station in Italy to the respective landfalls, including associated scraper launching and receiving facilities.

The FEED phase of the offshore section of the Poseidon Pipeline Project was completed in 2013 and designed for a maximum flow rate of 12 BNCMA of gas (12.66 BSCMA).

ENGINEER's scope of work is named the Poseidon Pipeline Project - Offshore Section Update (the PROJECT). It concerns the Design Update to accommodate a maximum flow rate of 20 BSCMA of gas (which represents a potential development of the gas pipeline, not yet authorized, but evaluated for the maximum design capacity and related technical aspects) for the deep water offshore pipeline from the Greek landfall to Italy (Otranto) and the short onshore buried pipelines connecting compressor station in Greece and fiscal metering and pressure reduction station in Italy to the respective landfalls. Updating of FEED specific aspects for the Greek onshore section, such as the geological, geotechnical, route selection and civil design aspects is not included in the scope.

The document numbers for the FEED Revision have a new CTR number (1000 series).

1.2 Document Scope

This document presents the minimum technical requirements for the monolithic block isolation joint.

Isolation joint is provided in the pipeline system of the Poseidon Project to separate the onshore pipeline cathodic protection system from the cathodic protection systems of the offshore pipeline and the onshore facilities, respectively. This document shall be read in conjunction with NACE RP0286, DNVGL-ST-F101 and Specification for Isolation Joint, IGI-270-10-PL-SPC-012.

2 DEFINITIONS AND ABBREVIATIONS

2.1 Project Definitions

Definitions applicable to the Project are provided in Table 2-1.

Table 2-1 Project Definitions

WORK	Scope of Services per CONTRACT for "Poseidon Pipeline Project – Offshore Section Update"
CONTRACT	The CONTRACT between IGI Poseidon and ENGINEER for WORK as detailed in the CONTRACT documents
CLIENT	IGI Poseidon (50% EDISON S.p.A. and 50% DEPA)
INTECSEA	INTECSEA B.V, the engineering company appointed by CLIENT to carry out the WORK
ENGINEER	INTECSEA
Project	The official title of the Project is "Poseidon Pipeline Project – Offshore Section Update"
INTECSEA Project No.	406010-00159

2.2 Other Definitions

Other definitions are provided in Table 2-2.

Table 2-2 Other Definitions

May	Indicates possible course of action
Shall	Indicates mandatory requirement
Should	Indicates preferred course of action
Will	Indicates an intention of action
COMPANY	IGI Poseidon (50% EDISON S.p.A. and 50% DEPA)
CONTRACTOR	The Party, which manufactures and/or supplies material, equipment and services to perform the duties as specified in the scope of supply.

2.3 Abbreviations

Abbreviations applicable to the Project are provided below.

BNCMA	Billion Normal Cubic Meters per Annum
BSCMA	Billion Standard Cubic Meters per Annum
OD	Outside Diameter

3 CODES AND STANDARDS

The latest issue of the following codes, standards and regulations shall form part of this document unless a specific edition or publication year is given. In the event of conflict between this document and other specifications, data sheets, applicable codes or references, written clarification shall be sought from the COMPANY before proceeding with the work.

3.1 American Society of Mechanical Engineers (ASME)

ASME/BPV part VIII division 1	Boiler & Pressure Vessel Code, Rules for Construction of Pressure Vessels.

3.2 Project Specifications

IGI-1207-10-PL-SPC-001	Specification for Line Pipe
IGI-207-10-PL-SPC-003	Specification for Internal Flow Coating
IGI-207-10-PL-SPC-004	Specification for Anti-Corrosion Coating
IGI-207-10-PL-SPC-012	Specification for Isolation Joint
IGI-1207-10-PL-MTO-001	Pipeline Component Material Take-Off
IGI-409-10-CM-SPC-002	Specification for Site Welding and NDT – Onshore Pipeline

4 32-INCH ISOLATION JOINT DATASHEET

In Table 4-1 a summary of the main isolation joint characteristics for the 32-inch pipeline at the Italian side is shown. For the full details of the isolation joint, reference is made to document Specification for Isolation Joint, IGI-207-10-PL-SPC-012 (Ref. [2]).

Table 4-1 Isolation Joint Datasheet

Isolation joint material	ASTM A694 GR. F70
Pup piece material	DNV SAWL 485 with addendum F, D and U; identical to the line pipe sections they are attached to, with minimum length of 2xOD. *As per "Specification for Line Pipe, Doc. No. IGI-1207-10-PL-SPC-001" (Ref. [3]) and "Pipeline Component Material Take-Off, Doc. No. IGI-1207-10-PL-MTO-001" (Ref. [4]).*
Pipeline design code	DNVGL-ST-F101 (2017)
Insulation joint design code	ASME/BPV – part VIII – division 1
Isolation material	Bakelised cotton fabric or equivalent accepted by COMPANY and compliable to ASTM D709 Type IV G10. As per *"Specification for Isolation Joint, Doc. No. IGI-207-10-PL-SPC-012 (Ref. [2])".*
Outside diameter	812.8 mm As per *"Specification for Line Pipe, Doc. No. IGI-1207-10-PL-SPC-001" (Ref. [3])* and *"Pipeline Component Material Take-Off, Doc. No. IGI-1207-10-PL-MTO-001" (Ref. [4]).*
Wall thickness	30.7 mm As per *"Specification for Line Pipe, Doc. No. IGI-1207-10-PL-SPC-001" (Ref. [3]) and "Pipeline Component Material Take-Off, Doc. No. IGI-1207-10-PL-MTO-001" (Ref. [4]).*
SMYS	Between 485MPa and 605MPa as per *"Specification for Line Pipe, Doc. No. IGI-1207-10-PL-SPC-001" (Ref. [3])* and *"Specification for Isolation Joint, Doc. No. IGI-207-10-PL-SPC-012" (Ref. [2]).*
Service	Sweet dry gas
Design Pressure	170barg
Design temperature	Between -10°C and 70°C

Hydrostatic test pressure	1.5x design pressure As per *"Specification for Isolation Joint, Doc. No. IGI-207-10-PL-SPC-012" (Ref. [2]).*
Corrosion allowance	0 mm
Quantity	Two (2) in total As per *"Pipeline Component Material Take-Off, Doc. No. IGI-1207-10-PL-MTO-001" (Ref. [4]).*
End connections	Welding of pup pieces to the isolation joint shall be in accordance with *"Specification for Site Welding and NDT – Onshore Pipeline, Doc. No. IGI-409-10-CM-SPC-002" (Ref. [5])* and *"Specification for Line Pipe, Doc. No. IGI-1207-10-PL-SPC-001" (Ref. [3]).*
Internal coatings	Liquid epoxy paint As per *"Specification for Internal Flow Coating, Doc. No. IGI-207-10-PL-SPC-003" (Ref. [6]).*
External coatings	3 layer polypropylene As per *"Specification for Anti-Corrosion Coating, Doc. No. IGI-207-10-PL-SPC-004" (Ref. [7])*.
Design life	30 years with extension to 50 years

For the testing and inspection of the isolation joints, as well as for the qualification tests, reference is made to document Specification for Isolation Joint, IGI-207-10-PL-SPC-012 (Ref. [2]).

5 REFERENCES

Ref. [1] INTECSEA, Poseidon Pipeline Project – Offshore Section Update, Document Control System & Communication Protocol, Doc. No. IGI-102-00-PM-PRO-001

Ref. [2] INTECSEA, Poseidon Pipeline Project – Offshore Section Update, Specification for Isolation Joints, IGI-207-10-PL-SPC-012

Ref. [3] INTECSEA, Poseidon Pipeline Project – Offshore Section Update, Specification for Line Pipe, IGI-1207-10-PL-SPC-001

Ref. [4] INTECSEA, Poseidon Pipeline Project – Offshore Section Update, Pipeline Component Material Take-off, IGI-1207-10-PL-MTO-001

Ref. [5] INTECSEA, Poseidon Pipeline Project – Offshore Section Update, Specification for Site Welding and NDT, IGI-409-10-CM-SPC-002

Ref. [6] INTECSEA, Poseidon Pipeline Project – Offshore Section Update, Specification for Internal Flow Coating, IGI-207-10-PL-SPC-003

Ref. [7] INTECSEA, Poseidon Pipeline Project – Offshore Section Update, Specification for Anti-Corrosion Coating, IGI-207-10-PL-SPC-004