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## **TECHNICAL SPECIFICATION**

**Doc No: DSF-SPC-PIP-036**

**Rev. 1**

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### **HIGH PRESSURE (HP) TRANSMISSION SYSTEMS**

# **STUD – BOLTS AND NUTS**

**JUNE 2021**

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1	Second Issue	30-06-2021	MP	DK	TPI
0	First Issue	05-04-2011	PQ DPT.		V.G.
<b>REV</b>	<b>DESCRIPTION</b>	<b>DATE</b>	<b>PRPD</b>	<b>CHKD</b>	<b>APVD</b>





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## **REFERENCES DOCUMENTS**

Job Spec. DSF-SPC-QAC-005

[Shop Inspection of Equipment and Material for NGT Project]

ELOT EN 1515-1

[Flanges and their joints - Bolting - Part 1: Selection of bolting]

ELOT EN 1515-3

[Flanges and their joints. Bolting. Classification of bolt materials for steel flanges, class designated]

ELOT EN 1759-1 [Flanges and their joints. Circular flanges for pipes, valves, fittings and accessories, class-designated. Steel flanges, NPS 1/2 to 24]

ELOT EN ISO 148-1

[Charpy impact test on metallic materials; part 1: test method]

ELOT EN 10269

[Steels and nickel alloys for fasteners with specified elevated and/or low temperature properties]

All standards or codes mentioned in this specification are valid in their latest version or by the relative superseded edition.



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## **1. SCOPE**

### **1.1 ITEM**

Bolting materials for flanged joints.

### **1.2 SERVICE**

Sweet natural gas with sporadic passage of wafer and glycol.

### **1.3 ADDITIONAL INFORMATION**

Additional information may be given in the Material Requisition and should be read in conjunction with this material specification.

## **2. GENERAL REQUIREMENTS**

### **2.1 TYPE**

Stud bolts with 2 nuts as per **ELOT EN 1515-1** and **ELOT EN 1515-3**, for flanges as per **ELOT EN 1759-1**.

### **2.2 MATERIAL**

#### **2.2.1 STUD BOLTS**

Material 42CrMo4 as per **ELOT EN 10269**. See also table 1 of **ELOT EN 1515-3**.

#### **2.2.2 NUTS**

Material C45E as per **ELOT EN 10269**.

Nuts larger than 12 mm shall not be machined from barstock.

#### **2.2.3 IMPACT TESTS**

Stud bolts and nuts with thread diameter >50mm shall be Charpy V-notch impact tested in accordance with **ELOT EN ISO 148-1**. Test temperature shall be -20°C or lower.

### **2.3 DIMENSIONS**

#### **2.3.1 DIAMETER**

As per Material Requisition.



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### **2.3.2 BOLT LENGTH**

As per Material Requisition.

### **2.3.3 THREAD**

Fine thread as per **ELOT EN 1515-1**.

### **2.3.4 NUT**

As per **ELOT EN 1515-1**.

## **2.4 MARKING**

As per material standard.

## **2.5 SURFACE TREATMENT**

Zinc (hot dipped galvanized) or phosphate coated.

## **2.6 PACKING**

Bolts with nuts shall be packed separately by type, diameter and length. The packing shall be legibly marked with diameter and length.

# **3. TECHNICAL DOCUMENTATION**

## **3.1 QUANTITY**

Four copies of each, inclusive of original, for all documents and certificates. Also electronic files of all Documents and Certificates must be submitted by Contractor to the Owner.

## **3.2 DOCUMENT REQUIREMENTS**

### **3.2.1 ON DELIVERY**

Vendor's inspection certificate marked with Owner's supply contract number and containing as a minimum.

- Chemical analysis results.
- Tensile test results representative of the finished materials (studs only).
- Proof load test results representative of the finished materials (nuts only).
- Hardness test results representative of the finished materials (nuts only).



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- Impact test results (thread diameter > 50 mm only).

#### **4. INSPECTION AND CERTIFICATION**

Inspection requirements are defined in the following documents.

- a. Material requisition
- b. DESFA Job Specification DSF-SPC-QAC-005 "Shop inspection of equipment and material for NGT project"
- c. Relevant project specifications
- d. Inspection clauses of applicable codes

Inspection procedures to be followed are detailed in Owner's document "Inspection and Test Instructions".