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	PROGRAM: ALL		-	
	AREA: ALL		-	
SRGE	TITLE: <b>REQUIREMENTS FOR MATERIALS TRACEABILITY</b>		INTERNAL	
			ESUP	

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DESIGN	EICOM								
EXECUTION	CSM5								
CHECK	UQ00								
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## 1 OBJECTIVE

This technical specification establishes the supplementary requirements to ISO 9001 for traceability of materials during manufacturing, construction and assembly to be fulfilled by SELLER and its supply chain.

BUYER reserves the right to check the application and maintenance of the requirements herein defined, at any time, including those related to suppliers and subcontractors. This may include diligences, inspections, audits and application of checklists.

## 2 REFERENCE DOCUMENTS

- I-ET-3010.00-1200-940-P4X-002 GENERAL TECHNICAL TERMS
- ISO 9001:2015 – Quality Management System – Requirements

## 3 DEFINITIONS AND ABBREVIATURES

In addition to I-ET-3010.00-1200-940-P4X-002, the following terms are adopted:

- ISO International Organization for Standardization
- NDT Non-Destructive Testing
- FRP Fiber Reinforced Polymers
- PT Penetrant Testing
- MT Magnetic Testing
- RT Radiographic Testing
- UT Ultrasonic Testing

## 4 TYPE OF TRACEABILITY

- Full Traceability ("FT") – Material is uniquely identified and its history (quality certificate) tracked from manufacture (mill) through stockist (where applicable) and throughout fabrication, construction and assembly stating final position of the component with specific location defined on a material placement record.

NOTE: The material placement record (correlation between material quality certificates and individual component position) shall be included in data book.

- Limited Traceability ("LT") – Material is tracked throughout fabrication, construction and assembly, with traceability to a material quality certificate.
- Recognized Origin ("RO") – Material purchased from a qualified supplier with traceability that assure compliance of the component with design.



**5 REQUIREMENTS PER MATERIALS**

Material Certificates are required for all materials being received. Receiving Inspection shall be performed including the verification of the manufacturing certificate, according to the applicable standard.

Spare parts shall comply with the same requirements of related main parts.

Contractor and subcontractors shall comply with the following rules for the traceability of materials presented in tables 1 to 10. Complementary Notes shall be considered according to specific materials. Traceability requirements for items not listed shall be agreed between BUYER and SELLER.

Table 1: General Requirements.

MATERIALS / COMPONENTS	FT	LT	RO
Bolts, Nuts, Washers (Note 1)			X
Gaskets (Note 2) and O-rings			X
Insulating and refractory consumables			X
Painting consumables (paint, varnish and solvents)		X	
NDT consumables			X
Welding Filler Metal and Flux	X (Note 3)		X
Welding Gas and other Consumables			X
Valves (manual or actuated)	X		
Safety Valves	X		
Fire Safe Materials	X		
Composite Materials			X

Table 2: Valves, safety valves and expansion joints parts requirements.

Valves, safety valves and expansion joints parts	FT	LT	RO
Gearbox assembly		X	
Metallic materials pressure-containing and pressure-controlling parts (as a minimum includes bodies, end connections, bonnets/covers, bolting, stems, shafts, trunnions, ball, disc, plug, gate, bellow, nozzle and seat)	X		



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Metallic materials non-pressure-containing and non-pressure-controlling parts		X	
Non-metallic parts (materials shall have a certificate of compliance in conformance based on batch testing)			X
Welded components including Casting weld repairs, Pup piece welds and Lifting attachments		X	
Lifting Points		X	

Table 3: Piping Requirements.

MATERIALS / COMPONENTS	FT	LT	RO
Pressure retaining parts (pipes, forgings, castings)	X (Note 4)	X	
Expansion Joints	X		
Special Supports	X		
Spring Hangers	X		
Hoses			X
Quick release couplings			X
Welded Joints (Note 5)	X (Note 4)	X	

Table 4: Static Equipment (pressure vessels, heat exchangers, tanks, filters, flare and so on).

MATERIALS / COMPONENTS	FT	LT	RO
Pressure retaining parts	X		
Internals		X	
Welded Joints (Note 5)	X (Note 4)	X	

Table 5: Rotating Equipment, Cranes, Mechanical Parts and Pull in System.

EQUIPMENTS AND COMPONENTS			
	FT	LT	RO
Rotative Compressors, Gear Boxes, VSFD and Rotative Pumps.			
Casing, Nozzles and Inner Case Parts	X		
Rotating Elements and Wear Rings	X		
Welded Joints and Repairs (Note 5)	X		



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Bearings		X	
Bearing Housings		X	
Cranes	FT	LT	RO
Primary Structure	X		
Lifting Equipment-Hook. Hook Block and Ropes	X		
Critical Components (Note 6)		X	
Hoses (Hydraulic and Pneumatic)		X	
Critical Fasteners		X	
Welded Joints for Primary Structures (Note 5)	X		
Mechanical Parts (Note 7)	FT	LT	RO
Steel Wires		X	
Fuels and Lubricants			X
Couplings		X	
Seal (Gland and Sleeve)	X		
Seal (other parts)			X
Pull-in System	FT	LT	RO
Anchor	X		
Mooring Chain and Accessories			X
Steel Wire Ropes			X
Steel Wire Rope End Attachment			X
Fiber Rope Segments and Termination Hardware			X
Winch Drum and Drum Flanges	X		
Windlass/Winch Framework	X		
Shafts for Cable Lifter and/or Drum	X		
Couplings		X	
Gear Shafts and Gear Wheels	X		
Brake Components (Pawl Wheel/Stopper)	X		
Chain Stopper	X		
Mooring Line Buoyancy Element (MLBE)	X		
Fairlead (Cable Lifter/Sheaves, Shafts, Housing and Support)		X	



Towing Equipment (Shackles, Flounder Plate, Steel Wire Rope and Chain)		X	
Welded Joints (Note 5)	X		

Table 6: Electricity and Telecommunications.

EQUIPMENTS, MATERIALS AND COMPONENTS	FT	LT	RO
General use Materials			X
Electrical cables		X	
Trays and supports		X (Note 8)	X
MCT			X
IP or Ex Components (lightening, junction box, connectors, cable gland and so on)		X	
Motors and Generators Materials		X	
Transformers Materials		X	
Panels Materials			X
UPS Materials		X	
Batteries Materials		X	

Table 7: Instrumentation.

MATERIALS AND COMPONENTS	FT	LT	RO
Cables and multiple cables		X	
Valves (hydraulic/pneumatic systems)		X	
Connectors and end fittings			X
Junctions Box (with IP or Ex)		X	
Trays and supports		X (Note 8)	X
Small Bore Tubing System (Tubes, Fittings, tubing valves and air manifolds)		X	
Solenoids, contactors			X
Instruments Materials		X	



Table 8: Safety.

EQUIPMENTS, MATERIALS AND COMPONENTS	FT	LT	RO
Fire extinguishers			X
Hydraulic systems			X
Electronic systems			X
Mechanical Equipment			X
Life buoys and jackets			X
Flash lights			X
Light and smokes signaling devices			X
Metallic and nonmetallic fabric			X
Hoses			X
Masks, fiber glass boxes			X


Table 9: Mooring System.

MATERIALS AND COMPONENTS	FT	LT	RO
Hook up/installation chains	X		
Fairleads Materials	X		
Chain-stoppers Materials	X		
Hook-up/installation wire ropes	X		

Table 10: Structure.

STRUCTURAL COMPONENTS	FT	LT	RO
Hull and Modules Plates	X		
Hull and Modules Beams	X		
Hull Longitudinal Profiles		X	
Equipment Skids		X	
Walkways, stairs, handrails, piping supports, attachments and general outfitting		X (Note 8)	X
Welded Joints (Note 5)	X (Note 9)	X	



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Complementary Notes:

Note 1: All bolts and nuts shall be properly hard stamped (by the manufacturer) according to the applicable standard. This is intended to properly identify and avoid misuse of regular bolts and special purpose bolts (e.g., low temperature, H2S service, high yield strength).

Note 2: All gaskets shall be properly marked and color coded as required by the applicable standards.

Note 3: FT for welding filler metal and flux is required when lot testing is applicable (e.g., AWS A5.01 Schedule J or K).

Note 4: FT is required on the following cases:

- a) Carbon steel piping for minimum design temperature below -29 °C.
- b) Alloy steel (low, medium, high alloy, including stainless steel grades), clad or overlaid steel and all non-ferritic materials (Cu-Ni, Inconel, Titanium, Hastelloy, and so on).
- c) Pressure rating #900 and above.
- d) H2S and amine service.

Note 5: When FT is required for welded joints it shall be traceable to the welder, welding procedure specification (WPS) and NDT reports applicable.

Note 6: A critical component is any component of the crane assembly devoid of redundancy and auxiliary restraining devices, whose failure results in an uncontrolled movement of the crane or load.

Note 7: Materials are considered purchased individually, independently of equipment purchase. For materials that are part of the equipment, the supplier shall guarantee the traceability of every material.

Note 8: LT is required for FRP materials.

Note 9: FT is required for welded joints which PT, MT, RT or UT is required.