 <b>PETROBRAS</b>	<b>TECHNICAL SPECIFICATION</b>		Nº: <b>I-ET-3010.00-5513-766-PPT-001</b>	
	CLIENT: <b>SRGE</b>		SHEET: <b>1</b> of <b>11</b>	
	JOB: <b>VIDEOCONFERENCE</b>			
	AREA: <b>-</b>			
<b>TIC</b>	TITLE: <b>VIDEOCONFERENCE SYSTEM</b>		<b>INTERNAL</b>	
			<b>OI/CS</b>	


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DATE	APR/15/2022	OCT/25/2022							
DESIGN	PROJ-US	PROJ-US							
EXECUTION	Y3S7	Y3S7							
CHECK	CY22	CY22							
APPROVAL	X187	X187							


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## 1. SUBJECT

- 1.1 The subject of this document is to establish the criteria and basic characteristics for the detailed design, supply and installation of VIDEOCONFERENCE SYSTEM that shall be installed in PETROBRAS FPSO Unit, to provide Videoconference Service.
- 1.2 The Videoconference System shall comply with and will integrate the PETROBRAS Corporative Communication Network.

## 2. ABBREVIATIONS

ABNT	Associação Brasileira de Normas Técnicas (Brazilian Association of Technical Standards)
AC	Alternating Current
ANSI	American National Standards Institute
ART	Anotação De Responsabilidade Técnica (Technical Responsibility Note)
ASTM	American Society for Testing and Materials,
AWG	American Wire Gauge
CAB	Cable
CAT	Category
CCR	Central Control Room
CODEC	Codifier & Decodifier
CREA	Conselho Regional de Arquitetura e Urbanismo (Brazilian Engineering Counsel)
DSP	Digital Signal Processing
EIA	Electronic Industries Alliance
FPSO	Floating, production, storage and offloading
HDMI	High-Definition Multimedia Interface
Hz	Hertz
IEC	International Electrotechnical Commission
IEEE	Institute of Electric and Electronic Engineers
INMETRO	Instituto Nacional de Metrologia (National Institute of Metrology)
IMO	International Maritime Organization
IP	Internet Protocol
IS	Intrinsec Safe
ITU	International Telecommunication Union
LAN	Local Area Network
LED	Light-Emitting Diode
LSZH	Low Smoke Zero Halogen
MODU	Mobile Offshore Drilling Unit
OLED	Organic Light-Emitting Diode
OSI	Open Systems Interconnection
PoE	Power Over Ethernet
SOLAS	Safety Of Life At Sea
SPL	Sound Pressure Level
TIA	Telecommunications Industry Association
TV	Television
UPS	Uninterruptible Power Supply
USB	Universal Serial Bus
UTP	Unshielded Twisted Pair
WAN	Wide Area Network

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### 3. REFERENCE DOCUMENTS, CODES AND STANDARDS

#### 3.1 International Standards

- a. IEC 60092-502: Electrical installations on ships
- b. IEC 60529: Degrees of protection provided by enclosures (IP code)
- c. IEC 61892-7: Mobile and fixed offshore units - electrical installations - part 7: hazardous area

#### 3.2 Brazilian Standards

##### 3.2.1. INMETRO

- a. INMETRO PORTARIA Nº 115 (21/março/2022): regulamento de avaliação da conformidade de equipamentos elétricos para atmosferas potencialmente explosivas, nas condições de gases e vapores inflamáveis e poeiras combustíveis.

##### 3.2.2. NR's – Normas Regulamentadora


- a. NR-10: Segurança em instalações e serviços em eletricidade.
- b. NR-37: Segurança e saúde em plataformas de petróleo.
- c. It shall be followed all others NR's – Normas Regulamentadoras (Regulatory Standards) from Ministério do Trabalho (Brazilian Ministry of Labor) applicable to this Technical Specification.

### 4. GENERAL REQUIREMENTS

- 4.1 CONTRACTOR shall provide all the materials to install all equipment, accessories, cables and infrastructure that compose the VIDEOCONFERENCE SYSTEM.
- 4.2 It shall be CONTRACTOR responsibility to interconnect all videoconference devices according to vendor requirements.
- 4.3 The VIDEOCONFERENCE SYSTEM shall be installed inside the Accommodation Module.
- 4.4 In order to comply with the PETROBRAS Corporative Network all the necessary materials shall be based in technology indicated in this Technical Specification.

### 5. SYSTEM DEFINITIONS

- 5.1 For PETROBRAS detailed design requirements for installation, configuration, tests training and commissioning, CONTRACTOR shall comply with the DESCRIPTIVE

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MEMORANDUM I-MD-3010.00-5510-760-PPT-001 – GENERAL CRITERIA FOR TELECOMMUNICATIONS DESIGN.

- 5.2 For telecommunications symbols, the Detailed Design shall comply with the Technical Specification: I-ET-3000.00-0000-940-P4X-002 – SYMBOLS FOR PRODUCTION UNITS DESIGN.
- 5.3 For telecommunications TAGs, the Detailed Design shall comply with the Technical Specification: I-ET-3000.00-1200-940-P4X-001 – TAGGING PROCEDURE FOR PRODUCTION UNITS DESIGN.
- 5.4 CONTRACTOR shall supply only equipment, cables, and accessories approved and certificated by Classifying Society and technical conformity with the International and National standardization organism: ABNT, IEC and INMETRO.
- 5.5 CONTRACTOR shall guarantee full integration and interoperability between the VIDEOCONFERENCE SYSTEM object of this document with the Corporate Videoconference System used by PETROBRAS.
- 5.6 CONTRACTOR shall design the audio and ambience automation system of the AUDITORIUM and supply the necessary accessories (DSPs, speakers, microphones, supports and cables) to ensure the adequate automation and audio coverage.

## 6. TECHNICAL REQUIREMENTS

6.1 The following requirements shall be observed:

### 6.1.1. Noise


- a. The room shall be submitted to an acoustic treatment, so that the maximum internal noise level does not exceed 70 dB-SPL (70 dBA);

### 6.1.2. Lighting

- a. It shall be recommended that the meeting room, preferably, using fluorescent lamps with color temperature between 3200 °K and 5600 °K and it shall be illuminated by homogeneous lighting;
- b. The use of light sources such as incandescent lamps or day light (window), mixed to the fluorescent illumination shall be avoided.

### 6.1.3. Luminous Intensity

- a. It is expected a minimum of 800 lux and a maximum of 1200 lux measured at 1,2 m over the floor.

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#### 6.1.4. Colors

- a. Shiny colors shall be avoided on the walls and floor;

#### 6.1.5. Air-conditioning


- a. It shall be covered by the accommodations central VAC system.
- b. Portable air-conditioning systems or the internal units of split systems shall be avoided.

#### 6.1.6. It shall avoided install the videoconference system near of the noise sources as:

- a. Pumps and compressors;
- b. Restroom flushing noise;
- c. Engines;
- d. Loudspeakers.

#### 6.1.7. Additional requirements:

- a. It shall be provided, at least, 220 AC power outlets for each videoconference system:
  - i. 01 (one) for Videoconference mini-PC;
  - ii. 01 (one) for Videoconference camera;
  - iii. 01 (one) for Videoconference switch;
  - iv. 01 (one) for each TV;
- b. In the videoconference and meeting room, it shall be provided extra 220 AC power outlets:
  - i. 04 (four) on the videoconference table;
- c. It shall be provided LAN sockets of structured cabling network (Cat. 6 female connector RJ-45) for each videoconference system:
  - i. 02 (two) next to the Videoconference mini-PC.
- d. In the videoconference and meeting room, it shall be provided extra LAN sockets of structured cabling network (Cat. 6 female connector RJ-45):
  - i. 08 (eight) LAN sockets shall be provided on the table;
- e. The furniture that will be deployed in the videoconference room shall attend the following requirements:
  - i. The general metallic structure shall be black.
  - ii. The seat and the back covering of all chairs shall use opaque colors like brown or dark green.
  - iii. There shall be avoided checkered colors or other compound colors.
  - iv. The surface of tables shall be made of wood, not brilliant.

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- v. 10 (ten) office chairs with rolls;
- vi. 01 (one) conference table with adequate dimensions to accommodate 10 (ten) users. For each user, shall be considered 0,70 m width and 0,75 m in height;
- vii. In the meeting room and videoconference room shall be foreseen one shelf with: width 500 mm x depth 400 mm installed between and underneath TVs in order to install the mini-PC and CAMERA.

## 7. SCOPE OF SUPPLY


7.1 It shall be installed a videoconference system in each location listed below:

- 7.1.1. Corporative Videoconference System shall be installed in **Meeting/Videoconference Room #1 and #2**, for corporative uses;
- 7.1.2. Corporative Videoconference System shall be installed in the **Auditorium**, integrated with the audiovisual system installed in the auditorium;
- 7.1.3. Medical Videoconference System shall be installed inside the **Hospital**, only, for uses of medical services, and
- 7.1.4. Operational Videoconference System shall be installed inside the **Central Control Room (CCR)**.

7.2 Technical specifications of each videoconference room

7.2.1. Each **Meeting/Videoconference Room** system shall have the configuration below:

- a. 01 (one) **YEALINK MVC860** Room Kit Solution for **MICROSOFT TEAMS ROOM** or a more recent model, with accessories and licenses in order to allow content sharing;
- b. The kit shall include:
  - i. 01 (one) mCore mini-PC (Windows IoT);
  - ii. 01 (one) UVC86 camera with TV mount kit and wall mount kit;
  - iii. 01 (one) mTouch II touch panel (on the table), including content sharing cable (HDMI adapter);
  - iv. 01 (one) Yealink remote control;
  - v. 01 (one) VCM34 microphone (on the table);
  - vi. 02 (two) mSpeaker II soundbars;
  - vii. 01 (one) 4-port PoE (802.3af) switch – Yealink RCH40 or similar;
  - viii. 01 (one) 5m USB 3.0 cable type A male to B male (camera x mCore);
  - ix. 03 (three) 5m pre-made CAT5e cables;
  - A. UVC86 x switch (1x);

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- B. Soundbars x switch (2x);
- x. 02 (two) 10m pre-made CAT5e cables
  - A. mTouch x mCore (1x);
  - B. VCM34 x switch (1x);
- xi. 02 (two) 3m HDMI 3.0 cable (TVs x mCore);
- c. CONTRACTOR shall confirm with PETROBRAS the manufacturer and model during the detailed design.
- d. The firmware version required for this equipment to be connected in the PETROBRAS NETWORK will be informed by PETROBRAS during the project detailed.
- e. 02 (two) TVs with 65 inch minimum that shall be supplied by TVRO supplier according to I-ET-3010.00-5590-766-PPT-001 TVRO AND ENTERTAINMENT SYSTEM.
- f. Following a Meeting/Videoconference Room layout, for example and reference.




Figure 1: Meeting/Videoconference Room layout

7.2.2. The **Auditorium Videoconference** system shall have the configuration below:

- a. 01 (one) **YEALINK MVC860** Room Kit Solution for **MICROSOFT TEAMS ROOM** or a more recent model, with accessories and licenses in order to allow content sharing;
- b. The kit shall include:
  - i. 01 (one) mCore mini-PC (Windows IoT);
  - ii. 01 (one) UVC86 camera with TV mount kit and wall mount kit;
  - iii. 01 (one) mTouch II touch panel (on the table), including content sharing cable (HDMI adapter);
  - iv. 02 (two) VCM38 ceiling microphone;
  - v. 03 (three) mSpeaker II soundbars (1x front + 2 rear);



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- vi. 01 (one) Yealink remote control;
- vii. 01 (one) 8-port PoE (802.3af) switch;
- viii. 01 (one) 5m USB 3.0 cable type A male to B male (camera x mCore);
- ix. 02 (two) 5m pre-made CAT5e cables
  - A. UVC86 x switch (1x);
  - B. Front soundbar x switch (1x);
- x. 04 (four) 20m pre-made CAT5e cables
  - A. VCM38 x switch (2x);
  - B. Rear soundbars x switch (2x);
- xi. 01 (one) 5m pre-made CAT5e cables
  - A. mTouch x mCore (1x);
- xii. 02 (two) 5m HDMI 3.0 cable (TVs x mCore).

- c. CONTRACTOR shall confirm with PETROBRAS the manufacturer and model during the detailed design.
- d. The firmware version required for this equipment to be connected in the PETROBRAS NETWORK will be informed by PETROBRAS during the project detailed.
- e. 02 (two) TVs with 70 inches minimum that shall be supplied by TVRO supplier according to I-ET-3010.00-5590-766-PPT-001 TVRO AND ENTERTAINMENT SYSTEM.

7.2.3. The **Infirmiry Videoconference** system shall have the configuration below:

- a. 01 (one) **YEALINK MVC400** Room Kit Solution for **MICROSOFT TEAMS ROOM** or a more recent model, with accessories and licenses in order to allow content sharing;
- b. The kit shall include:
  - i. 01 (one) mCore mini-PC (Windows IoT);
  - ii. 01 (one) UVC40 camera with TV mount kit;
  - iii. 01 (one) mTouch II touch panel, including content sharing cable (HDMI adapter) and wall mount;
  - iv. 01 (one) Yealink remote control;
  - v. 01 (one) 5m USB 3.0 cable type A male to B male (camera x mCore);
  - vi. 01 (one) 5m pre-made CAT5e cable (mTouch x mCore);
  - vii. 01 (one) 3m HDMI 3.0 cable (TV x mCore);
- c. CONTRACTOR shall confirm with PETROBRAS the manufacturer and model during the detailed design.

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- d. The firmware version required for this equipment to be connected in the PETROBRAS NETWORK will be informed by PETROBRAS during the project detailed.
- e. 01 (one) TV with 32 inches minimum that shall be supplied by TVRO supplier according to I-ET-3010.00-5590-766-PPT-001 TVRO AND ENTERTAINMENT SYSTEM.
- f. Videoconference equipment shall be arranged in Hospital or Treatment Room so that camera can focus on injured patient on stretcher and doctor;
- g. 01 pedestal (CART) for TV and videoconference equipment installation, as following or similar;



Figure 2: CART for Infirmary Videoconference installation

7.2.4. The **CCR Videoconference** system shall have the configuration below:

- a. 01 (one) **YEALINK MVC860** Room Kit Solution for **MICROSOFT TEAMS ROOM** or a more recent model, with accessories and licenses in order to allow content sharing;
- b. The kit shall include:
  - i. 01 (one) mCore mini-PC (Windows IoT);
  - ii. 01 (one) UVC86 camera with TV mount kit and wall mount kit;
  - iii. 01 (one) mTouch II touch panel (on the table), including content sharing cable (HDMI adapter);
  - iv. 01 (one) Yealink remote control;
  - v. 01 (one) VCM34 microphone (on the table);
  - vi. 01 (one) mSpeaker II soundbar;
  - vii. 01 (one) 4-port PoE (802.3af) switch – Yealink RCH40 or similar;
  - viii. 01 (one) 5m USB 3.0 cable type A male to B male (camera x mCore);
  - ix. 02 (two) 5m pre-made CAT5e cables;
    - A. UVC86 x switch (1x);
    - B. Soundbar x switch (1x);

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x. 02 (two) 10m pre-made CAT5e cables

A. mTouch x mCore (1x);

B. VCM34 x switch (1x);

xi. 01 (one) 3m HDMI 3.0 cable (TVs x mCore);

- a. CONTRACTOR shall confirm with PETROBRAS the manufacturer and model during the detailed design.
- b. The firmware version required for this equipment to be connected in the PETROBRAS NETWORK will be informed by PETROBRAS during the project detailed.
- c. 01 (one) TV with 55 inches minimum that shall be supplied by TVRO supplier according to I-ET-3010.00-5590-766-PPT-001 TVRO AND ENTERTAINMENT SYSTEM.

## 8. COMMISSIONING

- 8.1 Each videoconference equipment in each room shall be properly interconnected and tested individually.
- 8.2 As soon as the local network and the WAN circuit to Petrobras is activated, each CODEC shall be configured with IP addresses provided by PETROBRAS
- 8.3 A local and remote videoconference session with image and audio intelligible shall be made to/from Petrobras and to/from Third parties' videoconference systems;
- 8.4 It shall be tested the Microsoft Teams interface in each videoconference system.