PETROLEUM & ENERGY INFRASTRUCTURE LTD.

KIRYAT HAIM TERMINAL

REPLACEMENT OF BLADDER TANKS IN PUMP HOUSE J-5

SPECIFICATION FOR
Foam Concentrate Proportioning Unit

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P1	03.04.2019	For Bids	Zvi Schaffer	Zeev Sapoznikov	Zeev Sapoznikov		
P0	25.12.2018	For Purchase	Zvi Schaffer	Zeev Sapoznikov	Zeev Sapoznikov		
Rev	**Date**	**Description**	**Prepared by**	**Checked by**	**Approved by**		
			PAZ Engineering			**PEI**	

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1. GENERAL

This specification covers the design and supply of one (1) proportioning unit for supply of foam/water concentrate mix to the firefighting installation in the Kiryat Haim – tank terminal.

2. DUTY AND REQUIREMENTS

2.1 The unit should mix foam concentrate (AR-AFFF 3%-3%) with sea water to supply foam solution, accurately mixed irrespective of flow and pressure variations.

2.2 Admixture rate – 3%

2.3 The foam concentrate in use with typical properties is specified in appendix A.

2.4 The solution is to be supplied to foam/water deluge systems.

2.5 The flow through the water motor will be horizontal.

2.6 The required premix flow rate is 20,000 l/m

2.7 Water supply pressure upstream the system is 8 -10 bar operating (Max – 14 bar).

2.8 The proportioning system unit will be installed outdoors.

2.9 The system is to be FM approved.

3. SCOPE OF SUPPLY

The system will be supplied pre-piped and mounted on a skid, complete with all accessories according to the requirements of NFPA 11 and shall include at least:

3.1 A piston-type proportioning pump, flow meter on return concentrate line and preparation for water motor frequency regulation.

3.2 Valve (full bore) on concentrate suction line.

3.3 Flow metering device on water main (optional).

3.4 Pressure indicators on concentrate line and water main.

3.5 Full functional test proving accuracy of proportioning rate in accordance with NFPA tolerances over the full design flow of the unit, using the selected foam concentrate.

3.6 Test shall be carried out on completed skid-mounted unit.

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3.7 Vendor's technician to be present on site for performance-based commissioning test.

3.8 Drawings and data according to paragraph 5.

3.9 Packing suitable for transport and delivery to site.

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4. CONNECTIONS AND FLOW DIRECTIONS

Connections of the proportioning system to main piping will be flanged according to ANSI B16.5 150# RF.

The water motor unit shall be fitted with 16" flanges. The concentrate pump shall be fitted with 4" flanges.

The water flow in the proportioning unit should be from right to left when the plunger pump is facing the viewer (see Appendix B).

5. DATA TO BE SUBMITTED WITH OFFER

- Data Sheet
- P&ID
- Complete and detailed technical description
- General arrangement drawing
- FM approval certificate
- Foundation requirements
- Materials of construction
- Catalogues.
- Itemized price list of recommended spare parts for two years
- Operating Instructions
- Maintenance instructions.

6. PAINTING

All carbon steel and cast iron external surfaces shall be epoxy painted in accordance with paint manufacturer's instructions. Coating will have a dry film thickness of not less than 200 micron.

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7. NAMEPLATE

One 16 gauge 304 S.S. nameplate containing the following data shall be fixed to the proportioning system:

- Name of manufacturer
- Year of manufacture
- Oil Services Ltd Tag. No.
- Order number
- Manufacturers serial or reference number
- Model number
- Concentrate percentage
- Operating flow range

8. LOCATION

Prevailing weather conditions are as follows:

Temperature: Minimum winter 0° C

Maximum summer +45° C

Altitude: 4 m above sea level

Maximum relative humidity: 90%

9. DEMONSTRATION

9.1 Prior to selection the vendor will be required to demonstrate the performance of the unit which is being offered.

9.2 Vendor will submit with proposal a list of installations in which similar equipment is in use and upon request the vendor will arrange an operating demonstration of the equipment.

9.3 All demonstration costs will be paid by the vendor.

10. TESTING and COMMISSIONING

10.1 The following tests will be conducted prior to shipping of the equipment:

1) The unit will be assembled and tested for full functionality under specified pressure and flow rate;
2) The unit will be assembled and tested for static pressure as specified.

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The above mentioned tests shall be performed **using the selected foam concentrate**. The foam concentrate will be supplied by the Purchaser.

The above mentioned tests shall be performed in presence of an official representative of the manufacturer of the unit and Purchaser representative.

10.2 The same above mentioned tests will be conducted again after finalizing the assembling of the equipment at the customer's site, in presence of an official representative of the manufacturer and the customer. Following these tests, the official representative of the manufacturer will submit to the customer a detailed report of those tests with compliance and performance certification documents.

11. GUARANTEE

11.1 The Supplier guarantees that the equipment furnished is free from faults in design, workmanship and material, and is of sufficient size and capacity to meet the requirements of this specification.

11.2 Should any defects in design, material, workmanship, installation or operating characteristics develop during the first year of operation, the Supplier agrees to make all necessary or desirable alteration, repairs and replacement of equipment, free of charge to Oil Services Ltd.

11.3 Vendor will be required to sign a contract for continuous service, maintenance and spare parts supply for at least 10 years following the guarantee period.

11.4 Vendor is required to keep in stock a sufficient number of spare parts for all components.

11.5 Vendor is required to supply spare parts or service within 48 hours upon request.

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Appendix A

12. FOAM CONCENTRATE SPECIFICATION

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CERTIFICATE OF ANALYSIS / CERTIFICAT D'ANALYSES

Customer / Client:

Petroleum & energy infrastructures Ltd

Contact / Personne de contact: **Rami Zeitune**

Your reference / Votre référence:
Terminal CT-4

Our reference / Notre référence:
2018-131

Date of signature / Date de signature: **06/07/2018**

Product / Produit **AFFF 3% FC 203 CF 3 M**

Propriétés du produit ***Product Properties***		**Results**	**Specifications**	**Unit**	**Standard**
pH / *pH-Value*		**8.1**	6.0 – 9.5		EN 1568
Density / *Densité*		**1.03**	≥1.02	g/ml	
Refractive Index / Indice de réfraction		**1.366**	NA		EN 1568
Surface Tension / Tension superficielle *3% Solution at 20°C*		**15.3**	≤ 17.5	mN/m	EN 1568
Quality of Foam / Qualité de l'émulseur		**Concentration d'utilisation** ***Usage Concentration***	3	%	
Potable Water / Eau potable	*Expansion Ratio* Taux de foisonnement	**11.0**	≥ 5.4		EN 1568-3
low Exp / Bas foisonnement	*25% Drainage Time* Temps de décantation	**178**	≥ 120	s	EN 1568-3
Analysis Conclusion / Conclusion de l'Analyse		**Pass***	Pass / Fail		

Quality Department / Departement Qualité
Abubakar Hassan

**Product mentioned above is in conformity with the specifications / Le produit mentionnés ci-dessus est conforme aux spécifications*

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Appendix "B

LAY OUT OF PROPORTIONING UNIT

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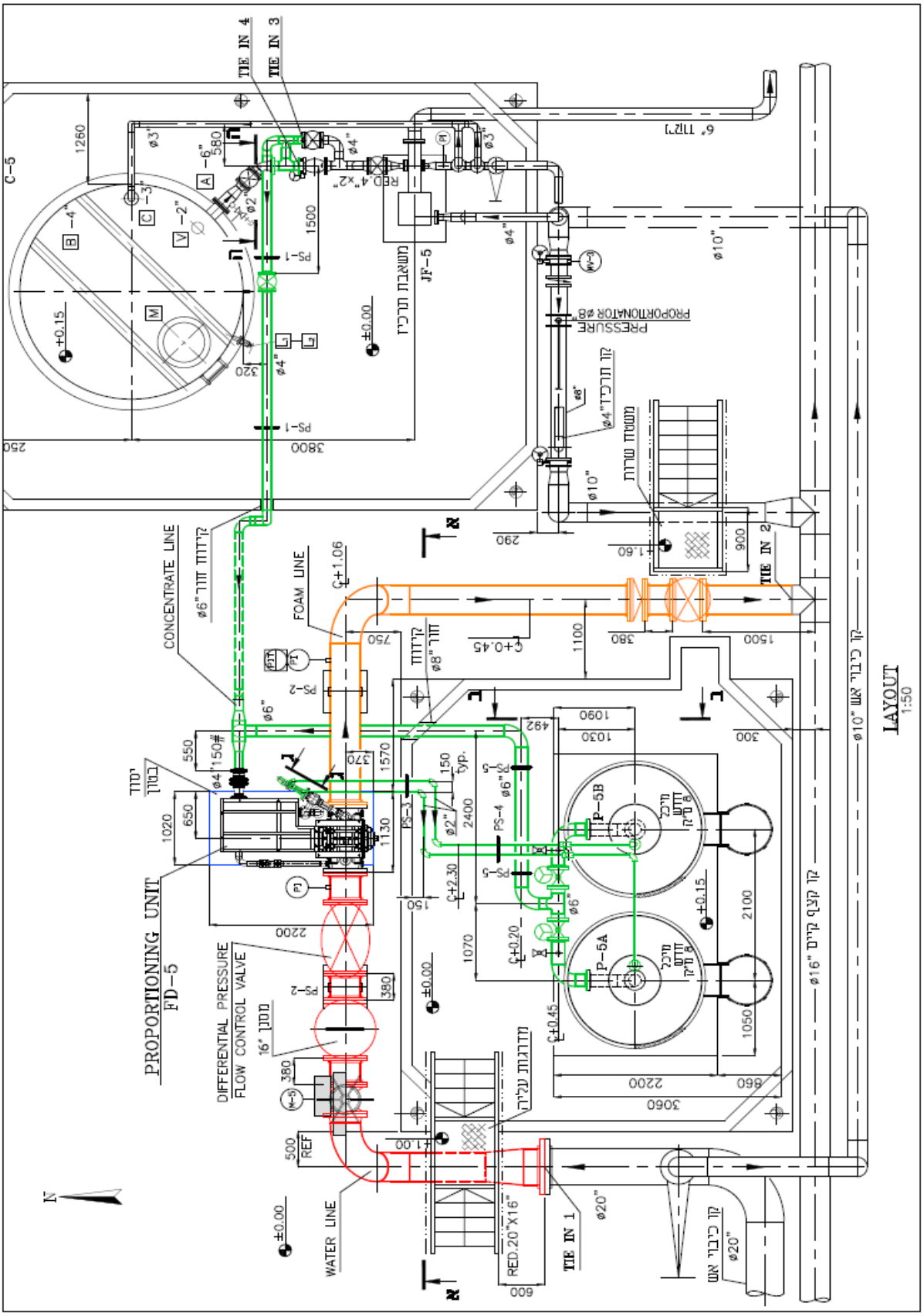

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