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**SOLICITATION AMENDMENT
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The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

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Title - Sujet Hydraulic Test Bench System	
Solicitation No. - N° de l'invitation W1985-212030/A	Amendment No. - N° modif. 005
Client Reference No. - N° de référence du client W1985-212030	Date 2020-12-02
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File No. - N° de dossier MTA-0-43044 (170)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM Eastern Standard Time EST on - le 2020-12-21 Heure Normale de l'Est HNE	
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AMENDMENT 005

This amendment aims to publish questions and answers.

Q44 : Regarding the qualification of the contractor and with reference to question and answer No.2. Our company, specialized in the manufacture of hydraulic equipment including automation and control, carries out projects that require the required qualifications. However, with reference to your appendix A-1, we work in partnership with outside firms that meet the required requirements. In fact, it is the same structure that you propose in point 1.14 to meet requirement 8 of Annex A-1 (Seismic risks). Does our association with our suppliers allow us to qualify?

A44 : If your company is the primary project entity dealing with design, manufacture, installation, commissioning and training, this is acceptable. It is certain that a company may have to call on a specialist firm for seismic requirements, which is a specific area requiring expertise other than hydraulics.

Q45 : Reference article 2.1.3: "... Hydraulic equipment for universal testing of linear actuators and servovalves shall be supplied directly from the hydraulic test stand."

Can you specify what equipment you need?

A45 : Servovalves and Servo-Proportional Valves are electrohydraulic, continuously acting valves that transform a changing analogue or digital input signal into a stepless hydraulic output (flow or pressure).

For necessary equipment, see answer 58.

For the cylinders all the equipment necessary to make all the tests according to the standard SAE J214.

Q46 : From the analysis of your quote in French, you describe two different pump-motor units, namely the "bloc d'alimentation" and the "unité d'alimentation" (2.1.4.1 1 and 2.1.4.2 1). In the English version, you name these two groups by the same name: Main power supply. Do we have to consider that there is only one 150 HP / 250 l / min at 230 bar pump-motor unit that can also deliver 90 l / min at 410 bar?

A46 : Yes

Q47 : In section 2.2.2.1, you mention that the tank should have a double wall construction for secondary oil containment. Are you referring to a tank + 110% retention failure or really a double wall tank? Please describe more specifically your requirement.

A47 : A double-wall tank is required and the double wall interstice must be monitored (pressure gauge or mag probe).

Q48 : Reference article 3.1.2: Should the main pump be installed directly on a concrete base, on your floor, independent of the tank and the retention basin?

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A48 : If the 3 elements form a single structure, the latter must be installed directly on a concrete base, but each element can be assembled on the structure without being in direct contact with the concrete base.

Q49 : Reference article 2.7.2.2: You are requesting a temperature control of +/- 5 ° C, over the entire temperature range between 35 ° C and 75 ° C. Are you asking that the cooling system must be able to maintain the oil at +/- 5 ° C when the system is operating at full load, even if the outside temperature is at 30 ° C?

A49 : +/- 5 is the margin of error on the temperature reading. In order to preserve the seals and the oil quality, the system should never exceed 66°C, whatever the outside temperature, see: <https://www.eaton.com/ecm/groups/public/@pub/@eaton/@hyd/documents/content/ct233701.pdf> . The most important is to keep the temperature below 66 ° C at all times.

Q50 : Reference Article 3.5.1: The contractor must provide a technically qualified manufacturer's representative for each item of equipment. Are you referring to a representative of the manufacturer for each component contained on the equipment or are you referring to a representative of the contractor?

A50 : A representative for each component of the equipment. This is not about standard components, but components manufactured for this project. If the contractor has manufactured all of the components, there may be only one representative. On the other hand, if part of the equipment has been manufactured by a subcontractor, a representative of the subcontractor must be present.

Q51 : Reference article 2.1.1: In the estimate, in point 2.1.1 you mention that the strictest codes and standards prevail.

Can you clarify the following points which seem contradictory?

In section 2.1.7.1.1: Speed range: 0 to 4000 rpm (minimum). Higher speeds are acceptable.

In Section 2.4.9.5.3: Must be able to measure a maximum rotational speed of at least 4000 rpm.

In Appendix 3, pump 10617921 should rev at 4500 rpm and engine 925660 3105 should rev at 6300 rpm.

In section 2.1.7.2 you are asking for a motor with a capacity of 75 HP, but the requirement according to Annex 3 would be beyond this power, i.e. 84 kW or 112 HP.

A51 : The article 2.1.1 clearly states: The design criteria provided below are minimum requirements. If there is a conflict between the criteria stated below, those indicated in the applicable codes and standards and those necessary for testing the equipment, as indicated in Annex A-3 - List of Equipment, the more stringent criteria shall prevail.

In this sense, it is necessary to dimension according to the most critical case.

Q52 : Control and Data Acquisition - Reference Article 2.4.1.1: Can you provide an example list of data to be entered by the user in the operator interface. We have the information described in Appendix A-2, but there is no mention of the upcoming operator interface.

A52 : The data acquisition system should display all the readings described in point 2.1.8.1, i.e. flow, oil temperature, pressure, RPM of the engine or pump under test, oil quality (particle counter), vibration, torque, power and vacuum. In addition, for servo valves and proportional valves, the current and the potential difference (voltage) going to the component under test must be displayed. Also, the time

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elapsed during the test should always be displayed. The information to be entered by the user are the PO #, the project #, general information about the equipment tested and the theoretical displacement of the pumps and motors.

Q53 : Control and data acquisition - Reference article 2.4.1.2: What is the maximum recording frequency (the minimum time between samples?)

A53 : The frequency that is standard in the hydraulic test bench industry.

Q54 : Control and data acquisition - Reference article 2.4.1.5: You state that you want to compare the manufacturer's data. How would you like to make these comparisons, if the data provided is only graphical or incomplete?

How will the comparison charts be provided?

A54 : In the technical documentation provided by the manufacturers.

Q55 : Control and data acquisition - Reference article 2.4.1.7: Define the formats personalized by users and whether these customizations will be predefined or free. Provide an example if possible.

A55: It would be interesting if the data acquired by the bench could be transferred into an Excel-type spreadsheet. For pumps and motors, we should have, for example, a volumetric efficiency curve and a total efficiency curve of the tested components. Pressure, flow, temperature and all formats that you deem relevant for evaluating the operation of the components under test and the test bench. (See question 52)

Q56 : Control and data acquisition - Reference article 2.4.3.8: Access to data stored on the SQL type server will be accessible via your network or will be independent on a stand-alone network?

A56 : Should be accessible through our network. Depending on the nature of communications with the network, a stand-alone network may be required.

Q57 : Control and data acquisition - Reference article 2.11.2.4.3.2: Are these indicators on the screen interface / alarms or are they lights physically on the equipment?

A57 : On the screen / alarm interface.

Q58 : Control and data acquisition - Reference article 2.11.2.4.3.1.10.5:

You mention a "current" converter, but nowhere is a current converter mentioned in the components. Can you clarify the technical specifications of this component and describe its purpose.

Assuming you are talking about the frequency converter, what type of checks would you like to perform without the motor plugged into the frequency converter?

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Should the reporting tool be available on the operator interface or can it be located on a remote computer station?

A58 : The current converter is needed to test servo valves and proportional valve, because it is by varying the current or the voltage that you can see if the component is varying the flow or the pressure. The data acquisition system should have the ability to integrate the current and voltage data fed by the current converter to construct curves to verify the operation of servo valves and proportional valves.

The report tool must be available on the operator interface. It can also be located on a remote computer station.

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