

DATE: 29 JUL 2002

SOLICITATION: DAAE20-02-R-0130

NOUN: Fuel Injection Test Stand (FITS) System

NSN: 4910-01-465-4537

The following responses are for clarification only, any changes to the solicitation will be made by a formal amendment and posted to the internet.

1. QUESTION & ANSWER:

QUESTION: Contractors attending the pre-proposal conference dated 30 May 2002, for the FITS System have requested that the briefing charts be posted to the web for all interested sources to view.

ANSWER: The briefing charts presented at the pre-proposal conference 30 May 2002, can be seen under the ICON entitled "Briefing Charts". If you have questions, please contact Mr. Jeff De Vilder at (309) 782-6329.

2. QUESTION & ANSWER:

QUESTION: On page 16 paragraph e of the solicitation it states that if the government wants delivery of one or a number of units before the stated delivery time then the government can purchase them elsewhere. My objection is this. There is no guarantee of quantities for this contract. This means that if the unit(s) that the government wants earlier than the discussed delivery date are purchased somewhere else, the company where the order is cancelled may be left holding the incomplete FITS(s). This would obviously cost money and depending on the numbers could become quite excessive.

ANSWER: Paragraph e refers to quantities of FITS Systems not yet placed on contract, therefore, the government can not cancel any order already issued as a result of the contractors inability or refusal to accelerate deliveries. Paragraph e provides the government, when FITS Systems are urgently needed, an option to obtain them from a supplier with the earliest delivery time.

3. QUESTION & ANSWER:

DFP 390-2 paragraph 3.3.1 Fuel injection pump test stand (FITS)

Question/Comment: As discussed during the pre proposal meeting the government needs to clarify if adapters only or adapters and special tooling are to be supplied for each pump listed. Also the list of pumps was to be rationalized.

Answer: The list of pumps has been examined. One Caterpillar engine has been removed. Paragraph 3.11 and Appendix B has been added to DFP-390-2, clarifying the adapter kits.

4. QUESTION & ANSWER:

DFP 390-2 paragraph 3.3.2 FITS operational requirements

Refer to paragraph 3.4.6.9.

3.4.1 Main Drive Assembly

Question/Comment: The speed range requested is from 50 to 5000 RPM. As no pump on the list provided in DFP390-2 require any tests to be done in excess of 4200RPM there is no reason for the maximum speed to be so high. I am requesting that the maximum speed be reduced to 4200RPM. The speed droop tolerances stated in the specification could cause problems with hysteresis in the movement of governor systems on the fuel pumps. I am requesting that the speed droop tolerance be changed to +/- 1 RPM at any speed when the pump's output is changed from 0 to maximum. I would also like to highlight that the hydrostatic drive currently used in these machines is not state of the art and should be totally refitted with electronic controlled thyristor drive.

Summary

1. Reduce maximum speed to 4200RPM.
2. Improve the speed drop tolerance to +/- 1 RPM.
3. Request that the specification is changed so there is a requirement to upgrade the drive control system with something other than a hydrostatic type.

Answer:

1. The 50 to 5,000 RPM speed range is an Army requirement.
2. The 5% speed droop tolerance is the "no more than" requirement. Tighter tolerances may be incorporated, and are expected if a pump manufacturer's test plan requires tighter tolerances. Offerors are expected to furnish test stands to test fuel injection pumps in accordance with pump manufacturers' test plans. If a tighter speed droop tolerance is required to test certain pumps, offerors are expected to incorporate it into the test stands accordingly.
3. The second sentence of paragraph 3.4.1 states, "The main drive motor shall be a direct drive, single shaft, speed controlled, electronic-type motor." There is no requirement for a hydrostatic drive. Offers that incorporate hydrostatic drives would be considered deficient.

5. QUESTION & ANSWER:

DFP 390-2 paragraph 3.4.2.4 Calibration fluid system temperature requirements

Refer to paragraph 3.4.6.9.

3.4.5.2 Drive shaft speed

Refer to paragraph 3.4.1.

3.4.5.5 Combination display.

Question/Comment: The specification states that the maximum indicated pressure be no less than 100psi. As there is not a pump on the list in paragraph 3.3.1 that would require such a high inlet pressure I am requesting the specification is reduced to 60 PSI which has been the industry standard for many years.

Summary

1. Request that the specification is changed from 100PSI to 60 PSI.

Answer: Since this test stand will be the Army standard for many years, we feel that it is in our best interest to allow growth for future requirements.

6. QUESTION & ANSWER:

DFP 390-2 paragraph 3.4.5.6 Transfer pressure display.

Question/Comment: The specification states that the minimum pressure range should be 0 to 150PSI. Some DB2 pumps have maximum transfer pressures close to the maximum specification. I suggest as a matter of good practice that the maximum specification of the gauge is changed to 200PSI.

Summary

1. Request that maximum specification is changed from 150PSI to 200PSI.

Answer: The pressure range of 0 – 150 psi is a minimum range. Offerors are free to offer a wider range. A wider range would be considered an advantage during bid evaluations.

7. QUESTION & ANSWER:

DFP 390-2 paragraph 3.4.5.11 Pressure Phasing

Question/Comment: I would like to suggest that a method of dynamically phasing a pump is included in the specification. Many manufacturers have a phase angle tolerance of 0.5 degrees or less. Using the static phasing method it is very difficult to accurately meet this specification. As emission controls increase this parameter/tolerance is getting tighter and tighter. The most accurate way of measuring these angles is using electronic dynamic phasing. I therefore request that this feature be added to the specification. The resolution of this feature should be 0.1 degree.

Summary

1. Request that electronic dynamic phasing be added to the specification.

Answer: The specification as written does not specify the method of pressure phasing or preclude electronic dynamic phasing. Specifying a particular solution could be considered restrictive. Electronic dynamic phasing, or any methods that make it easier to calibrate a fuel injection pump, would be considered an advantage during bid evaluations.

8. QUESTION & ANSWER:

DFP 390-2 paragraph 3.4.6.3 Speed controller

Refer to paragraph 3.4.1 regarding speed range.

3.4.6.9 Calibration Fluid Temperature Control

Question/Comment: The specification requires that the temperature should be maintained to +/- 1 deg C. This is far tighter than the ISO7008 specification which calls for +/- 2deg C. Therefore I am requesting the specification is changed to meet the industry standard +/- 2 deg C. The tighter tolerance would be a lot more expensive for the army and none of the pumps listed in paragraph 3.3.1 require such a tight tolerance.

Summary

1. Request that the temperature control tolerance is changed to +/- 2 deg C.

Answer: The comment refers to ISO 7008 as the design standard. ISO 7008 is not a design standard for fuel injection pump test stands. The standard for calibration fluid temperature is contained in ISO 4008/2. Our research has shown that calibration fluid temperature tolerances of less than $\pm 1^{\circ}\text{C}$ is achievable and commonly available in fuel injection pump test stands commercially marketed.

9. QUESTION & ANSWER:

DFP 390-2 paragraph 3.4.7.3 Pressure Phasing & Backleakage Connections

Question/Comment: Specification states that 2% of FSD is required on backleakage transducer. Most backleakage specs allow a very wide range of figures often varying more than 300cc/min. For this reason a 2% backleakage transducer is too tight a tolerance and would add unnecessarily to the cost. A 10% transducer would be adequate for all applications. Also, the specification calls for a flow range of 10 – 570cc/min. This range is not adequate because the DPA pump, 3248F491, has a potential maximum flow of 850cc/min. 30% more than the specification calls for.

Summary

1. Request that the specification for the backleakage transducer is changed to a 10% transducer.
2. Request that the flow range of the backleakage is increased to at least to 850cc/min.

Answer:

1. The Government's minimum requirement for back leakage is stated in the specification.
2. The Government requirement stated in the specification is a minimum range. Offerors are expected to provide test stands to test fuel injection pumps in accordance with pump manufacturers' test plans. If a wider range is required to test certain pumps, offerors are expected to provide a test stand that has the capability to test those pumps.

10. QUESTION & ANSWER:

DFP 390-2 paragraph 3.4.9 DC Voltage Supply

Question/Comment: The specification states that the power supply should be capable of supplying a maximum voltage of 30VDC at a current of 10 A. None of the pumps on the list require such a high current or voltage. Therefore I am requesting the specification is change to 25VDC at a current of 6A.

Summary

1. Request specification is changed to 25VDC with a current of 6A.

Answer: Our research has shown that commercially available fuel injection pump test stands have a DC voltage supply of 24 volts. The requirement has been changed to no less than 24 volts DC at no less than 7 amperes. A greater voltage range will be considered an advantage.

11. QUESTION & ANSWER:

DFP 390-2 paragraph 3.4.10 Fluid Measuring System

Question/Comment:

Accuracy

The specification calls for an accuracy of within 2% of true flow rate. If a metering unit gives this accuracy then it is possible that overfueling of certain pumps may occur. This will cause engine or transmission failures in some cases. If the pump is pumping $300\text{mm}^3/\text{st}$ and you are allowed an accuracy of 2% then this would give a tolerance band of 294 to $306\text{mm}^3/\text{st}$ a total range of $12\text{mm}^3/\text{st}$. This is outside the tolerance of almost all test plans included in this spec. Fuel systems produced today have a tolerance on average of 4 – $6\text{mm}^3/\text{st}$. Even now OEMS are demanding tolerances of $\pm 1\text{mm}^3/\text{st}$ so it is imperative that the measuring systems have a lot higher capability. I therefore request that the tolerance be changed to $\pm 0.4\text{mm}^3/\text{st}$.

Temperature Compensation

Another issue is that fuel systems of the future incorporate a very high injection pressure. This causes very high fuel temperatures in the metering system. This can cause inaccuracies due to the expansion of the fuel. To compensate for this most manufacturers test plans are developed with a feature called T40 where the volume of fuel is compensated for temperature. The reading given is given as if the fuel temperature was at 40 deg C. This eliminates any inaccuracies. To be able to test a pump that has a test plan that was developed using temperature compensation then the army will need this feature on their machines. I therefore request this addition to the specification.

Durability

An issue that is caused by high temperatures is the service life of the metering unit that can be drastically reduced. To accommodate this the metering systems of today need to be water-cooled. I therefore request that this be added to the specification.

Summary

1. Request that the metering results accuracy is increased to $0.4\text{mm}^3/\text{st}$.
2. Request the addition of the temperature compensation feature.
3. Request the addition of a cooling system for the metering unit.

Answer:

1. The Government requirement stated in the specification is a minimum. Offerors are expected to furnish test stands to test fuel injection pumps in accordance with pump manufacturers' test plans. If a closer accuracy is required to test certain pumps, then offerors are expected to provide test stands that will test the pumps accordingly.
2. The Government requirement is stated in the specification. However, the specification does not preclude an offeror from offering a temperature compensation feature. Offerors are expected to furnish test stands to test fuel injection pumps in accordance with pump manufacturers' test plans. If temperature compensation is required to test certain pumps, then offerors are expected to upgrade the test stands accordingly. A temperature compensation feature would be considered an advantage during bid evaluations.
3. The Government requirement is stated in the specification. The specification does not prevent the offeror from offering a metering cooling system. The Government

requirement stated in the specification is a minimum range. Offerors are expected to upgrade the test stands to test fuel injection pumps in accordance with pump manufacturers' test plans. If a metering unit cooling system is required to test certain pumps, then offerors are expected to upgrade the test stands accordingly. Anything that would increase the durability and life of the test stand would be considered an advantage during bid evaluations.

12. QUESTION & ANSWER:

QUESTION: Concerning paragraph 3.3.1 of the latest version of DFP 390-2 dated 13 Jun 02, the paragraph requests that only adapters are supplied for the list of pumps. During the pre-proposal meeting it was mentioned that special tools for working on the pumps should be supplied also. Can you clarify whether this is still the case or whether it is still only adapters that are required.

ANSWER: Appendix B of DFP-390-2, paragraph B3.1.1 states the requirement for special tools:

"B3.1.1 Special tools. Special tools peculiar to testing and calibrating each of the specified pumps shall be included in the kit for each pump. Common tools such as end wrenches, screwdrivers, pliers, etc. and special tools required to repair/rebuild the pumps shall not be included."

If a special tool is needed to test and calibrate a pump, then it is to be included in the kits.

13. QUESTION & ANSWER:

QUESTION: It has been requested that DFP 390-2 dated 13 Jun 02, which has been made as attachment 010 to amendment 0002, be provided to offerors as a Microsoft word format file.

ANSWER: The DFP 390-2 dated 13 Jun 02, will be emailed to prospective offerors in a Microsoft word document file upon written request. Contact Mr. Jeff De Vilder, HQ. TACOM-RI, AMSTA-LC-CTR-E, Rock Island, IL. 61299, Telephone: (309) 782-6329, Email address: devilderj@ria.army.mil.

14. QUESTION & ANSWER:

Concerning DFP 390-2 dated 13 Jun 02.

QUESTION: Paragraph 3.4.2.2 Reservoir - The specification states that the fuel tank should be a minimum of 13 gallons. In our experience a tank of 12 gallons is sufficient to test the pumps on the list in paragraph 3.3.1. Also the the fuel systems of the future are not likely to make a requirement on the system that would need a larger resevoir. I am therefore asking that the spec is changed to state that the minimum size of test oil resevoir is reduced to 12 gallons.

ANSWER: Offerors are responsible for designing and furnishing a FITS system that will test all pumps in accordance with the pump manufacturers' test plans and have sufficient temperature controlled calibration fluid for doing so. Offerors will have to gauge how much calibration fluid is needed, and the size of reservoir required while considering cooling requirements. Offerors are advised that the requirements of paragraph 3.4.2.1 must still be met. Change the first sentence of paragraph 3.4.2.2 to read, "The calibration fluid shall be stored in a closed reservoir with a capacity large enough to test the pumps listed in paragraph 3.3.1 in accordance with manufacturers' test plans. The reservoir shall have a filler, drain valve and a magnetized sludge trap readily accessible without requiring disassembly."

BE ADVISED: The change mentioned above will be incorporated into amendment 0003 to the solicitation. The closing date will not change.

15. QUESTION & ANSWER:

Concerning DFP 390-2 dated 13 Jun 02.

QUESTION: Paragraph 3.4.3 Lubrication oil system - The specification states that the oil reservoir is a minimum of 4 gallons. In our experience a tank of 3.6 gallons is more than sufficient to test the pumps on the list in paragraph 3.3.1. Also the fuel systems of the future are not likely to make a requirement on the system that would need a larger reservoir. I am therefore asking that the spec is changed to state that the minimum size of test oil reservoir is reduced to 3.6 gallons.

ANSWER: Offerors are responsible to design and furnish a FITS system that is able to test fuel injection pumps in accordance with manufacturers' test plans. This includes having sufficient lubrication oil. Change the first sentence of paragraph 3.4.3 to read, "The lubrication oil shall be stored in a closed reservoir, with a capacity large enough to test the pumps listed in paragraph 3.3.1 in accordance with manufacturer's test plans. The reservoir shall have a filler and drain valve accessible without requiring disassembly." Offerors are advised that the other requirements of paragraph 3.4.3 must be met.

BE ADVISED: The change mentioned above will be incorporated into amendment 0003 to the solicitation. The closing date will not change.

16. QUESTION & ANSWER:

QUESTION: It has been requested that the Price Evaluation Spreadsheet (attachment 007 to the solicitation) be provided to offerors in a Microsoft Excel file.

ANSWER: The Price Evaluation Spreadsheet will be emailed to prospective offerors in a Excel format file upon written request. Contact Mr. Jeffrey De Vilder, HQ. TACOM-RI, AMSTA-LC-CTR-E, Rock Island, IL 61299, Telephone: (309) 782-6329, Email address: devilderj@ria.army.mil.

17. QUESTION & ANSWER:

QUESTION: Concerning paragraph B3.2.4.2 of the DFP 390-2, we need to know actual pump numbers in order to provide the correct injectors in the kit. The PES6P denotes a family of pumps. Depending what application they are used will change the type of test injectors that are used when testing to manufacturer's specs.

ANSWER: The kit for the PES6P pump shall have the capability to test all of the family of PES6P pumps. The list of pumps and part numbers are available and can be obtained from Robert Bosch.