

# **SRI LANKA AIR FORCE**

**DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA**



## **BIDDING DOCUMENT**

**[NATIONAL COMPETITIVE BIDDING]**

**PURCHASE OF BRAND NEW BOWSER AVIATION REFUELING  
TO THE SRI LANKA AIR FORCE**

**TENDER REFERENCE: AHQ/18/PUB/E/1031**

## **PROCUREMENT OF GOODS THROUGH NATIONAL COMPETITIVE BIDDING**

This Bidding Document has been drawn up in line with the Procurement Guidelines (Goods & Works) – 2006 of National Procurement Agency in view of

- a. Maximizing Economy, efficiency and effectiveness (value for money).
- b. Adhering to prescribed standards, specifications, local laws rules and regulations and international obligations.
- c. Fair, equal and maximum opportunity for interested parties to participate in the Procurement process.
- d. Expeditious execution of delivery of Goods and Related Services Ensuring transparency and consistency and
- e. Retaining confidentiality of information.

This Bidding Document for procurement of goods shall be used for National Competitive Bidding, for the tender that is financed by the Government of Sri Lanka.

Please feel free to contact any of the following Officers to make any clarifications on this Bidding Document.

### **HMMSB HERATH**

Group Captain  
Chief Procurement Officer  
Sri Lanka Air Force  
Colombo.  
Tel: 011 2325468  
Fax: 011 2347694/2441554  
Email: [cpo@slaf.gov.lk](mailto:cpo@slaf.gov.lk)

### **BWDNM SAMARAKOON**

Group Captain  
Procurement Officer (Tenders)  
Sri Lanka Air Force  
Colombo  
Tel: 011 2441553  
Fax: 011 2441553  
Email: [acpot@slaf.gov.lk](mailto:acpot@slaf.gov.lk)

### **RDPB RAJAGURU**

Flight Lieutenant  
Procurement Officer (Tenders) 1  
Sri Lanka Air Force  
Colombo  
Tel: 011 2441553  
Fax: 011 2441553  
Email: [acpot@slaf.gov.lk](mailto:acpot@slaf.gov.lk)

## SECTION I.

### INSTRUCTIONS TO BIDDERS (ITB)

*ITB shall be read in conjunction with the Section II, Bidding Data Sheet (BDS), which shall take precedence over ITB.*

#### General

#### 1. Scope of Bid

- a. 1.1 The PURCHASER **indicated in the Bidding Data Sheet (BDS)**, issues these Bidding Documents for the supply of Goods and Related Services incidental thereto as specified in Section V, Schedule of Requirements. The name and identification number of this procurement are **specified in the BDS**.
- 1.2 Throughout these Bidding Document:
- (a) The term “in writing” means communicated in written form by mail (other than electronic mail) or hand delivered with proof of receipt;
  - (b) If the context so requires, “singular” means “plural” and vice versa; and
  - (c) “Day” means calendar day.

#### 2. Source of Funds

- 2.1 Payments under this contract will be financed by the source **specified in the BDS**.

#### 3. Ethics, Fraud and Corruption

3.1 The attention of the BIDDER is drawn to the following guidelines of the Procurement Guidelines published by National Procurement Agency:

- Parties associated with Procurement Actions, namely, suppliers/ contractors and officials shall ensure that they maintain strict confidentiality throughout the process;
- Officials shall refrain from receiving any personal gain from any Procurement Action. No gifts or inducement shall be accepted. Suppliers/ contractors are liable to be disqualified from the bidding process if found offering any gift or inducement which may have an effect of influencing a decision or impairing the objectivity of an official.

3.2 The PURCHASER requires the BIDDER s, suppliers, contractors, and consultants to observe the highest standard of ethics during the procurement and execution of such contracts. In pursuit of this policy.

- (a). “corrupt practice” means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the procurement process or in contract execution;

(b). “Fraudulent practice” means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract;

(c). “collusive practice” means a scheme or arrangement between two or more BIDDERS, with or without the knowledge of the PURCHASER to establish bid prices at artificial, non-competitive levels; and

(d) “Coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of a contract.

3.3. If the PURCHASER found any unethical practices as stipulated under ITB Clause 3.2, the PURCHASER will reject a bid, if it is found that a BIDDER directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the Contract in question.

#### **4. Eligible BIDDERS**

4.1. All BIDDERS shall possess legal rights to supply the Goods under this contract.

4.2 A BIDDER shall not have a conflict of interest. All BIDDERS found to have conflict of interest shall be disqualified. BIDDERS may be considered to have a conflict of interest with one or more parties in this bidding process, if they:

(a). are or have been associated in the past, with a firm or any of its affiliates which have been engaged by the PURCHASER to provide consulting services for the preparation of the design, specifications, and other documents to be used for the procurement of Goods and Related Services to be purchased under these Bidding Documents; or

(b). submit more than one bid in this bidding process. However, this does not limit the participation of subcontractors in more than one bid.

4.3 A BIDDER that is under a declaration of ineligibility by the National Procurement Agency (NPA), at the date of submission of bids or at the date of contract award, shall be disqualified. The list of debarred firms is available at the website of NPA, [www.npa.gov.lk](http://www.npa.gov.lk).

4.4 Foreign BIDDER may submit a bid only if so **stated in the BDS**.

#### **5. Eligible Goods**

5.1 All goods supplied under this contract shall be complied with applicable standards stipulated **in the BDS**.

### **Contents of Bidding Documents**

#### **6. Sections of Bidding Documents**

6.1 The Bidding Documents consist of 2 Volumes, which include all the sections indicated below, and should be read in conjunction with any addendum issued in accordance with ITB Clause 8. All eligible BIDDERS specified in the ITB sub clause 5 shall download a copy of this bidding document as specified in the BDS.

## **Volume 1**

- Section I. Instructions to Bidders (ITB)
- Section VI. Conditions of Contract (CC)
- Section VIII. Contract Forms

## **Volume 2**

- Section II. Bidding Data Sheet (BDS)
- Section III. Special Conditions
- Section IV. Bidding Forms
- Section V. Schedule of Requirements
- Section VII. Contract Data
- Invitation for Bid

6.2 The BIDDER is expected to examine all instructions, forms, terms, and specifications in the Bidding Documents. Failure to furnish all information or documentation required by the Bidding Documents may result in the rejection of the bid.

## **7. Clarification of Bidding Documents**

7.1 A prospective BIDDER requiring any clarification of the Bidding including the restrictiveness of specifications shall contact the PURCHASER in writing at the PURCHASER's address **specified in the BDS**. The PURCHASER will respond in writing to any request for clarification, provided that such request is received no later than ten (10) days prior to the deadline for submission of bids. The PURCHASER shall forward copies of its response to all those who have purchased the Bidding Documents, including a description of the inquiry but without identifying its source.

Should the PURCHASER deem it necessary to amend the Bidding Documents as a result of a clarification, it shall do so following the procedure under ITB Clause 8.

## **8. Amendment of Bidding Documents**

8.1 At any time prior to the deadline for submission of bids, the Bidding PURCHASER may amend the Bidding Documents by issuing Documents addendum.

8.2 Any addendum issued shall be part of the Bidding Documents and shall be communicated in writing to all who have purchased the Bidding Documents.

8.3 To give prospective BIDDERs reasonable time in which to take an addendum into account in preparing their bids, the PURCHASER may, at its discretion, extend the deadline for the submission of bids, pursuant to ITB Sub-Clause 23.2.

## Preparation of Bids

### 9. Cost of Bidding

9.1 The BIDDER shall bear all costs associated with the preparation and submission of its bid, and the PURCHASER shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

### 10. Language of Bid

10.1 The Bid, as well as all correspondence and documents Bid relating to the Bid (including supporting documents and printed literature) exchanged by the BIDDER and the PURCHASER, shall be written in English language.

### 11. Documents Comprising the Bid

11.1 The Bid shall comprise the following:

- (a) Bid Submission Form and the applicable Price Schedules, in accordance with ITB Clauses 12, 14, and 15;
- (b) Bid Security or Bid-Securing Declaration, in accordance with ITB Clause 20;
- (c) Documentary evidence in accordance with ITB Clauses 18 and 30, that the items are conform to the Bidding Documents;
- (d) Documentary evidence in accordance with ITB Clause 18 establishing the BIDDER's qualifications to perform the contract if its bid is accepted; and
- (e) Any other document **required in the BDS**.

### 12. Bid Submission Form and Price Schedules

12.1 The BIDDER shall submit the Bid Submission Form using the form furnished in Section IV, Bidding Forms. This form must be completed without any alterations to its format, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested.

### 13. Alternative Bids

13.1 Alternative bids shall be considered as **specified in the BDS**.

### 14. Bid Prices and Discounts

14.1 The BIDDER shall indicate on the Price Schedule the unit prices and total bid prices of the brand new Bowser Aviation Refueling which proposes to supply under the Contract.

14.2 Any discount offered against any single item in the price schedule shall be included in the unit price of the item. However, a BIDDER wishes to offer discount as a lot the BIDDER may do so by indicating such amounts appropriately.

14.3 If so indicated in ITB Sub-Clause 1.1, bids are being invited for individual contracts (lots) or for any combination of contracts (packages). Unless otherwise **indicated in the BDS**, prices quoted shall correspond to 100 % of the items specified for each lot and to 100% of the quantities specified for each item of a lot. BIDDERS wishing to offer any price reduction (discount) for the award of more than one Contract shall specify the applicable price reduction separately.

14.4 The Prices indicated on the Price Schedule shall include all duties and sales and other taxes already paid or payable by the Supplier. However, **VAT shall not be included in the price** but shall be indicated separately;

14.5 The Prices quoted by the BIDDER shall be fixed during the BIDDER's performance of the Contract and not subject to variation on any account. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected, pursuant to ITB Clause 32.

14.6 All lots, if any and items must be listed and priced separately in the Price Schedules. If a Price Schedule shows items listed but not priced, their prices shall be assumed to be included in the prices of other items.

14.7 If the BIDDERS are registered for the purpose of VAT, they should indicate the amount of VAT claimed separately in the price schedule in addition to the net value of the Bid, along with the VAT registration number. Declaration of VAT registration number is a mandatory requirement for determination of Bids and any BIDDER who does not declare his/her VAT registration number will be liable for rejection of the Bid. All BIDDERS who do not pay VAT shall submit the VAT exception letter issued by the Inland Revenue Department along with the bid. It is essential that the Unit Prices of the Article or Services be inclusive of NBT Tax, if applicable.

14.8 If unrealistically low rates quoted by a BIDDER are found on critical or very important items he will be asked to prove to the satisfaction of the PURCHASER how he could supply the particular item within that rate, if relevant with a rate analysis also. If the PURCHASER is of the view that the clarifications given are unacceptable and BIDDER would fail in performing on those rates the Bid may be rejected. If clarifications are acceptable and Technical Evaluation Committee is satisfied on that evaluation will be continued.

## **15. Currencies of Bid**

15.1 Unless otherwise **stated in Bidding Data Sheet**, the BIDDER shall quote in Sri Lankan Rupees and payment shall be payable only in Sri Lanka Rupees.

## **16. Documents Establishing the Eligibility of the BIDDER**

16.1 To establish their eligibility in accordance with ITB Clause 4, BIDDERS shall complete the Bid Submission Form, included in Section IV, Bidding Forms.

## **17. Documents Establishing the Conformity of the vehicle**

17.1 To establish the conformity of the Goods and Related Services to the Bidding Documents, the BIDDER shall furnish as part of its Bid the documentary evidence that the

vehicles conform to the technical specifications and standards specified in Section V, Schedule of Requirements.

17.2 The documentary evidence may be in the form of literature, drawings or data, and shall consist of a detailed item by item description (given in Section V, Technical Specifications) of the essential technical and performance characteristics of the Goods and Related Services demonstrating substantial responsiveness of the vehicles to the technical specification, and if applicable, a statement of deviations and exceptions to the provisions of the Schedule of Requirements.

- b. 17.3 The BIDDER shall also furnish a list giving full particulars, including quantities, available sources and current prices of spare parts, special tools, etc., necessary for the proper and continuing functioning of Goods and Related Services during the period if **specified in the BDS** following commencement of the use of Bowser by the PURCHASER.

## 18. Documents Establishing the Qualifications of the BIDDER

18.1 The documentary evidence of the BIDDER's qualifications to perform the contract if its bid is accepted shall establish to the PURCHASER's satisfaction:

(a) A BIDDER that does not manufacture or produce Goods and Related Services it offers to supply shall submit the Manufacturer's Authorization using the form included in Section IV, Bidding Forms to demonstrate that it has been duly authorized by the manufacturer or producer of the vehicles to supply this vehicle.

(b) That, if **required in the BDS**, in case of a BIDDER not doing business within Sri Lanka, the BIDDER is or will be (if awarded the contract) represented by an Agent in Sri Lanka equipped and able to carry out the Supplier's maintenance, repair and spare parts-stocking obligations prescribed in the Conditions of Contract and/or Technical Specifications.

## 19. Period of Validity of Bids

19.1 Bids shall remain valid until the date **specified in the BDS**. A bid valid for a shorter date shall be rejected by the PURCHASER as non responsive.

19.2 In exceptional circumstances, prior to the expiration of the bid validity date, the PURCHASER may request BIDDERS to extend the period of validity of their bids. The request and the responses shall be made in writing. If a Bid Security is requested in accordance with ITB Clause 20, it shall also be extended for a corresponding period. A BIDDER may refuse the request without forfeiting its Bid Security. A BIDDER granting the request shall not be required or permitted to modify its bid.

## 20. Bid Security

20.1 The BIDDER shall furnish as part of its bid, a Bid Security or a Bid-Securing Declaration, as **specified in the BDS**.

20.2 The Bid Security shall be in the amount **specified in the BDS** and denominated in Sri Lanka Rupees, and shall,



- (a) At the BIDDER's option, be in the form of a bank draft, a letter of credit, or a bank guarantee from a banking institution;
- (b) Be issued by an institution acceptable to PURCHASER. The acceptable institutes are published in the NPA website, [www.npa.gov.lk](http://www.npa.gov.lk).
- (c) Be substantially in accordance with the form included in Section IV, Bidding Forms;
- (d) Be payable promptly upon written demand by the PURCHASER in case the conditions listed in ITB Clause 20.5 are invoked;
- (e) Be submitted in its original form; copies will not be accepted;
- (f) Remain valid for the period **specified in the BDS**

20.3 Any bid not accompanied by a substantially responsive Bid Security or Bid Securing Declaration in accordance with ITB Sub-Clause 20.1 and 20.2, may be rejected by the PURCHASER as non-responsive.

20.4 The Bid Security of unsuccessful BIDDER s shall be returned as promptly as possible upon the successful BIDDER's furnishing of the Performance Security pursuant to ITB Clause 44.

20.5 The Bid Security may be forfeited or the Bid Securing Declaration executed:

- (a) If a BIDDER withdraws its bid during the period of bid validity specified by the BIDDER on the Bid Submission Form, except as provided in ITB Sub-Clause 19.2; or
- (b) If a BIDDER does not agreeing to correction of arithmetical errors in pursuant to ITB Sub-Clause 31.3
- (c) If the successful BIDDER fails to:
  - (i) sign the Contract in accordance with ITB Clause 43;
  - (ii) Furnish a Performance Security in accordance with ITB clause 44

## **21. Format and Signing of Bid**

21.1 The BIDDER shall prepare one original of the documents comprising the bid as described in ITB Clause 11 and clearly mark it as "ORIGINAL." In addition, the BIDDER shall submit a copy of the bid and clearly mark it as "COPY." In the event of any discrepancy between the original and the copy the original shall prevail.

21.2 The original and the Copy of the bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the BIDDER.

21.3 Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialled by the person signing the Bid

## **Submission and Opening of Bids**

### **22. Submission, Sealing and Marking of Bids**

22.1 BIDDERS may always submit their bids by mail or by hand.

(a) BIDDERS submitting bids by mail or by hand, shall enclose the original and the copy of the Bid in separate sealed envelopes, duly marking the envelopes as "ORIGINAL" and "COPY." These envelopes containing the original and the copy shall then be enclosed in one single envelope.

22.2 The inner and outer envelopes shall:

(a) Bear the name and address of the BIDDER;

(b) Be addressed to the PURCHASER in accordance with ITB Sub-Clause 23.1;

(c) Bear the specific identification of this bidding process as **indicated in the BDS**; and

(d) Bear a warning not to open before the time and date for bid opening, in accordance with ITB Sub-Clause 27.1. If all envelopes are not sealed and marked as required, the PURCHASER will assume no responsibility for the misplacement or premature opening of the bid.

### **23. Deadline for Submission of Bids**

23.1 Bids must be received by the PURCHASER at the address and no later than the date and time **specified in the BDS**.

23.2 The PURCHASER may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Documents in accordance with ITB Clause 8, in which case all rights and obligations of the PURCHASER and BIDDERS previously subject to the deadline shall thereafter be subject to the deadline as extended.

### **24. Late Bids**

24.1 The PURCHASER shall not consider any bid that arrives after the deadline for submission of bids, in accordance with ITB Clause 23. Any bid received by the PURCHASER after the deadline for submission of bids shall be declared late, rejected, and returned unopened to the BIDDER.

## **25. Withdrawal and Modification of Bids**

25.1 A BIDDER may withdraw, or modify its Bid after it has been submitted by sending a written notice in accordance with ITB Clause 22, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITB Sub-Clause 21.2, (except that no copies of the withdrawal notice are required). The corresponding substitution or modification of the bid must accompany the respective written notice. All notices must be:

- (a) Submitted in accordance with ITB Clauses 21 and 22 (except that withdrawal notices do not require copies), and in addition, the respective envelopes shall be clearly marked “WITHDRAWAL,” or “MODIFICATION;” and
- (b) Received by the PURCHASER prior to the deadline prescribed for submission of bids, in accordance with ITB Clause 23.

25.2 Bids requested to be withdrawn in accordance with ITB Sub-Clause 25.1 shall be returned to the BIDDERS only upon notification of contract award to the successful BIDDER in accordance with sub clause 42.1.

25.3 No bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the BIDDER on the Bid Submission Form or any extension thereof.

## **26. Samples**

26.1 Not applicable

## **27. Bid Opening**

27.1 The PURCHASER shall conduct the bid opening in public at the address, date and time **specified in the BDS**.

27.2 First, envelopes marked “WITHDRAWAL” shall be opened and read out and the envelope with the corresponding bid may be opened at the discretion of the PURCHASER. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at bid opening. Envelopes marked “MODIFICATION” shall be opened and read out with the corresponding Bid. No Bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at Bid opening. Only envelopes that are opened and read out at Bid opening shall be considered further.

27.3 All other envelopes shall be opened one at a time, reading out: the name of the BIDDER and whether there is a modification; the Bid Prices, including any discounts and alternative offers; the presence of a Bid Security or Bid-Securing Declaration, if required; and any other details as the PURCHASER may consider appropriate. Only discounts and alternative offers read out at Bid opening shall be considered for evaluation. No Bid shall be rejected at Bid opening except for late bids, in accordance with ITB Sub-Clause 24.1.

27.4 The PURCHASER shall prepare a record of the Bid opening that shall include, as a minimum: the name of the BIDDER and whether there is a withdrawal, or modification; the Bid Price, per lot if applicable, including any discounts, and the presence or absence of a Bid Security or Bid-Securing Declaration. The bids that were opened shall be resealed in separate envelopes, promptly after the bid opening. The BIDDER s' representatives who are present shall be requested to sign the attendance sheet. A copy of the record shall be distributed to all BIDDER s who submitted bids in time.

## **Evaluation and Comparison of Bids**

### **28. Confidentiality**

28.1 Information relating to the examination, evaluation, comparison, and post-qualification (if applicable) of bids, and recommendation of contract award, shall not be disclosed to BIDDER s or any other persons not officially concerned with such process until publication of the Contract Award.

28.2 Any effort by a BIDDER to influence the PURCHASER in the examination, evaluation, comparison, and post-qualification of the bids or contract award decisions may result in the rejection of its Bid.

28.3 Notwithstanding ITB Sub-Clause 28.2, if any BIDDER wishes to contact the PURCHASER on any matter related to the bidding process, from the time of bid opening to the time of Contract Award, it should do so in writing.

### **29. Clarification of Bids**

29.1 To assist in the examination, evaluation, comparison and post-qualification of the bids, the PURCHASER may, at its discretion, request any BIDDER for a clarification of its Bid. Any clarification submitted by a BIDDER in respect to its Bid and that is not in response to a request by the PURCHASER shall not be considered for purpose of evaluation. The PURCHASER's request for clarification and the response shall be in writing. No change in the prices or substance of the Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the PURCHASER in the Evaluation of the bids, in accordance with ITB Clause 31.

### **30. Responsiveness of Bids**

30.1 The PURCHASER's determination of a bid's responsiveness is to be based on the contents of the bid itself.

30.2 A substantially responsive Bid is one that conforms to all the terms, conditions, and specifications of the Bidding Documents without material deviation, reservation, or omission. One that: A material deviation, reservation, or omission is

- (a) Affects in any substantial way the scope, quality, or performance of the Goods and Related Services specified in the Contract; or
- (b) Limits in any substantial way, inconsistent with the Bidding Documents, the PURCHASER's rights or the BIDDER's obligations under the Contract; or

(c) If rectified would unfairly affect the competitive presenting of other BIDDERS presenting substantially responsive bids.

30.3 If a bid is not substantially responsive to the Bidding Documents, it shall be rejected by the PURCHASER and may not subsequently be made responsive by the BIDDERS by correction of the material deviation, reservation, or omission.

### **31. Non conformities, Errors, and Omissions**

31.1 Provided that a Bid is substantially responsive, the PURCHASER may waive any non-conformities or omissions in the Bid that do not constitute a material deviation.

31.2 Provided that a bid is substantially responsive, the PURCHASER may request that the BIDDERS submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities or omissions in the bid related to documentation requirements. Such omission shall not be related to any aspect of the price of the Bid. Failure of the BIDDERS to comply with the request may result in the rejection of its Bid.

31.3 Provided that the Bid is substantially responsive, the PURCHASER shall correct arithmetical errors on the following basis:

(a) if there is a discrepancy between the unit price and the line item total that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the line item total shall be corrected, unless in the opinion of the PURCHASER there is an obvious misplacement of the decimal point in the unit price, in which case the line item total as quoted shall govern and the unit price shall be corrected;

(b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and

(c) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.

31.4 If the BIDDERS that submitted the lowest evaluated Bid does not accept the correction of errors, its Bid shall be disqualified and its Bid Security shall be forfeited or its Bid-Securing Declaration shall be executed.

### **32. Preliminary Examination of Bids**

32.1 The PURCHASER shall examine the bids to confirm that all documents and technical documentation requested in ITB Clause 11 have been provided, and to determine the completeness of each document submitted.

32.2 The PURCHASER shall confirm that the following documents and information have been provided in the Bid. If any of these documents or information is missing, the Bid shall be rejected.

(a) Bid Submission Form, in accordance with ITB Sub-Clause 12.1;

- (b) Price Schedules, in accordance with ITB Sub-Clause 12;
- (c) Bid Security or Bid Securing declaration in accordance with ITB Clause 20.

**33. Examination of Terms and Conditions; Technical Evaluation**

33.1 The PURCHASER shall examine the Bid to confirm that all terms and conditions specified in the CC and the Contract Data have been accepted by the BIDDER without any material deviation or reservation.

33.2 The PURCHASER shall evaluate the technical aspects of the Bid submitted in accordance with ITB Clause 17, to confirm that all requirements specified in Section V, Schedule of Requirements of the Bidding Documents have been met without any material deviation or reservation.

33.3 If, after the examination of the terms and conditions and the technical evaluation, the PURCHASER determines that the Bid is not substantially responsive in accordance with ITB Clause 30, the PURCHASER shall reject the Bid.

**34. Conversion to Single Currency**

34.1 If the BIDDERS are allowed to quote in foreign currencies in accordance with sub clause 15.1, for evaluation and comparison purposes, the PURCHASER shall convert all bid prices expressed in foreign currencies in to Sri Lankan Rupees using the selling rates prevailed 28 days prior to closing of bids as published by the Central Bank of Sri Lanka. If this date falls on a public holiday the earliest working day prior to the date shall be applicable.

**35. Domestic Preference**

35.1 Domestic preference shall be a factor in bid evaluation only if **stated in the BDS**. If domestic preference shall be a bid-evaluation factor, the methodology for calculating the margin of preference and the criteria for its application shall be as specified in Section III, Evaluation and Qualification Criteria.

**36. Evaluation of Bids**

36.1 The PURCHASER shall evaluate each bid that has been determined, up to this stage of the evaluation to be substantially responsive.

36.2 To evaluate a Bid, the PURCHASER shall only use all the factors, methodologies and criteria defined in this ITB Clause 36.

36.3 To evaluate a Bid, the PURCHASER shall consider the following:

- (a) The Bid Price as quoted in accordance with clause 14.
- (b) Price adjustment for correction of arithmetic errors in accordance with ITB Sub-Clause 31.3.
- (c) Price adjustment due to discounts offered accordance with ITB Sub-Clause 14.2; and 14.3 in

(d) Adjustments due to the application of the evaluation criteria **specified in the BDS**.

(e) Adjustments due to the application of a domestic preference, in accordance with ITB Clause 35 if applicable.

36.4 The PURCHASER's evaluation of a bid may require the consideration of other factors, in addition to the factors stated in ITB Sub-Clause 36.3, if **specified in BDS**. These factors may be related to the characteristics, performance, and terms and conditions of purchase of Goods and Related Services. The effect of the factors selected, if any, shall be expressed in monetary terms to facilitate comparison of bids

36.5 If so **specified in the BDS**, these Bidding Documents shall allow BIDDERS to quote for one or more lots, and shall allow the PURCHASER to award one or multiple lots to more than one BIDDER. The methodology of evaluation to determine the lowest-evaluated lot combinations is specified in Section III, Evaluation and Qualification Criteria.

### **37. Comparison of Bids**

37. The PURCHASER shall compare all substantially responsive bids to determine the lowest-evaluated bid, in accordance with ITB Clause 36.

### **38. Post qualification of the BIDDER**

38.1 The PURCHASER shall determine to its satisfaction whether the BIDDER that is selected as having submitted the lowest evaluated and substantially responsive bid is qualified to perform the Contract satisfactorily.

38.2 The determination shall be based upon an examination of the documentary evidence of the BIDDER's qualifications submitted by the BIDDER, pursuant to ITB Clause 18.

38.3 An affirmative determination shall be a prerequisite for award of the Contract to the BIDDER. A negative determination shall result in disqualification of the bid, in which event the PURCHASER shall proceed to the next lowest evaluated bid to make a similar determination of that BIDDER's capabilities to perform satisfactorily.

### **39. PURCHASER's Right to Accept Any Bid, and to reject any or All Bids**

39.1 The PURCHASER reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award, without thereby incurring any liability to BIDDERS.

## **Award of Contract**

### **40. Award Criteria**

40.1 The PURCHASER shall award the Contract to the BIDDER whose offer has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Documents, provided further that the BIDDER is determined to be qualified to perform the Contract satisfactorily.

**41. PURCHASER's Right to Vary Quantities at Time of Award**

- a. 41.1 At the time the Contract is awarded, the PURCHASER reserves the right to increase or decrease the quantity Goods and Related Services originally specified in Section V, Schedule of Requirements, provided this does not exceed twenty five percent (25%) or one unit whichever is higher and without any change in the unit prices or other terms and conditions of the bid and the Bidding Documents.

**42. Notification of Award**

42.1 Prior to the expiration of the period of bid validity, the PURCHASER shall notify the successful BIDDER, in writing, that its Bid has been accepted.

42.2 Until a formal Contract is prepared and executed, the notification of award shall constitute a binding Contract.

42.3 Upon the successful BIDDER's furnishing of the signed Contract Form and performance security pursuant to ITB Clause 44, the PURCHASER will promptly notify each unsuccessful BIDDER and will discharge its bid security, pursuant to ITB Clause 20.4.

**43. Signing of Contract**

43.1 Within Seven (7) days after notification, the PURCHASER shall complete the Agreement, and inform the successful BIDDER to sign it.

43.2 Within Seven (7) days of receipt of such information, the successful BIDDER shall sign the Agreement.

**44. Performance Security**

44.1 Within fourteen (14) days of the receipt of notification of award from the PURCHASER, the successful BIDDER, if required, shall furnish the Performance Security in accordance with the CC, using for that purpose the Performance Security Form included in Section VIII Contract forms. The Employer shall promptly notify the name of the winning BIDDER to each unsuccessful BIDDER and discharge the Bid Securities of the unsuccessful BIDDER s pursuant to ITB Sub-Clause 20.4.

44.2 Failure of the successful BIDDER to submit the above mentioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security or execution of the Bid-Securing Declaration. In that event the PURCHASER may award the Contract to the next lowest evaluated BIDDER, whose offer is substantially responsive and is determined by the PURCHASER to be qualified to perform the Contract satisfactorily.

**45. Payment Method**

45.1 Minimum 45 days of credit period is required. Other payment options subjected to Departmental Procurement Committee decision.

**-Signed-**  
**(HMMSB HERATH)**  
Group Captain  
**CHIEF PROCUREMENT OFFICER**

09<sup>th</sup> January 2019



## Section II. Bidding Data Sheet (BDS)

The following specific data for the Item to be procured shall complement, supplement, or amend the provisions in the Instructions to BIDDERS (ITB). Whenever there is a conflict, the provisions herein shall prevail over those in ITB.

*[Instructions for completing the Bid Data Sheet are provided, as needed, in the notes in italics mentioned for the relevant ITB Clauses.]*

ITB Clause Reference	A. General
<b>ITB 1.1</b>	The PURCHASER is Sri Lanka Air Force on behalf of Democratic Socialist Republic of Sri Lanka
<b>ITB 1.1</b>	The name and identification number of the Contract is :  <b><u>Procurement of Brand New Bowser Aviation Refueling to the Sri Lanka Air Force</u></b>  Tender reference: (AHQ/18/PUB/E/1031)
<b>ITB 2.1</b>	The source of funding is Government of Democratic Socialist Republic of Sri Lanka
<b>ITB 4.4</b>	Foreign BIDDERS are not allowed to participate in bidding.
<b>ITB 5.1</b>	All specifications and special conditions are stipulated at Volume- 2, Section III and Section V Schedule of requirements respectively.
<b>B. Contents of Bidding Documents</b>	
<b>ITB 6.1</b>	Bidding documents could be inspected by interested bidders from the Sri Lanka Air Force website <a href="http://www.airforce.lk">www.airforce.lk</a> and may purchase between 1000 hrs and 1300 hrs on every working day from the Procurement Division Sri Lanka Air Force Station Colombo before the closing date of the upon payment of a non-refundable fee of <b>Rs. 12,500.00</b> for each procurement. The offers without the receipt of the payment will not be accepted.
<b>ITB 7.1</b>	The PURCHASER's address is for the purposes of <b><u>Clarification of bid</u></b>  Attention : Chief Procurement Officer  Address: No 140, Chittampalam A Gardiner Mawatha, Colombo 02.  Telephone: 0112325468  Facsimile number: 0112347694 /0112441553  Electronic mail address: cpo@slaf.gov.lk
<b>C. Preparation of Bids</b>	
<b>ITB 11.1 (e)</b>	The BIDDERS shall submit the following additional documents:

	<p>a. Authorization letter issued by the Manufacturer, that the Bidder is authorized to bid on behalf of.</p> <p>b. Power of Attorney (when relevant)</p> <p>c. Authorization letter issued by the Board of Management of the Company that certifying the signatures of the person/personnel signing the bid.</p> <p>d. Copy of Agreement (in case of Partnership / Joint Venture)</p> <p>e. A copy of company registration certificate.</p> <p>f. Annual Reports / Audited Final Account of the last three years (2016, 2017, 2018).</p> <p>g. The offer shall be submitted along with original catalogues/sketches/diagrams/broachers/warranty certificate and technical details.</p> <p>h. Details of the maintenance workshops.</p> <p>j. VAT Registration certificate or VAT exemption letter issued by the Inland Revenue department.</p> <p>k. Past performance report of the suppliers in the similar type of contracts.</p> <p>l. Place, organization structure, Technicians strength of maintenance workshop.</p> <p>m. Availability of modern technical equipment's at workshop such as fault diagnosing tools etc</p>
<b>ITB 13.1</b>	<b>Alternative bids shall not be accepted</b>
<b>ITB 14.3</b>	Not Applicable
<b>ITB 15.1</b>	The BIDDERS shall quote only in <b>Sri Lankan rupees</b> .
<b>ITB 19.1</b>	The Bid shall valid until <b>15<sup>th</sup> May 2019</b> (91 Days from the date of opening of the bids)
<b>ITB 20.1</b>	<p>a. Bid Security shall be in a form of <b><u>Bank guarantee</u></b>.</p> <p>b. The beneficiary of the bid security shall be <b><u>Commander of the Sri Lanka Air Force</u></b></p>
<b>ITB 20.2</b>	The Amount of the Bid security shall be <b><u>Rs. 470, 000.00 Four Hundred Seventy Thousand (without vat)</u></b> and shall be in Sri Lanka Rupees.
<b>ITB 20.2 (b)</b>	Bid Security should be issued by any <b>Commercial Banks approved by the Central Bank of Sri Lanka</b> .
<b>ITB 20.2 (f)</b>	The validity period of the Bid Security Shall be until <b>12<sup>th</sup> June 2019</b> (105 days from the date of opening of the bids)
	<b>D. Submission and opening of Bids</b>
<b>ITB 22.2 (c)</b>	<p>The inner and outer envelopes shall bear the following identification marks</p> <p>Heading : <b><u>Procurement of Brand New Bowser Aviation Refueling to the Sri Lanka Air Force</u></b></p> <p>Tender reference: (AHQ/18/PUB/E/1031)</p>

	Opening Date : <b>31<sup>st</sup> January 2019</b>
<b>ITB 23.1</b>	For the bid submission purposes, the PURCHASER's address should be Chief Procurement Officer No 140, Chittampalam A Gardiner Mawatha, Colombo 02. The deadline for the submission of bids is : Date: <b>31<sup>st</sup> January 2019</b> Time: <b>1030 hrs</b>
<b>ITB 27.1</b>	The bid opening shall take place at : Address: No 140, Chittampalam A Gardiner Mawatha, Colombo 02. Date: <b>31<sup>st</sup> January 2019</b> Time: <b>1030hrs</b>
<b>E. Evaluation and comparison of bids</b>	
<b>ITB 35.1</b>	Domestic preference shall not be a bid evaluation factor
<b>ITB 36.3(d)</b>	Not applicable
<b>ITB 36.4</b>	The Substantially responded bidder will be selected at the Evaluation and following factors and methodology will be used for evaluation :  a. Past experience of selling similar product in Sri Lanka b. After sales service (Service & repair facility in Sri Lanka) c. Delivery period may consider during the evaluation.
<b>ITB 36.5</b>	Not applicable
<b>ITB 45.1</b>	Minimum 45 days of credit period is required (if import & Supply).

## Section III.

### Special Conditions

#### SPECIFICATIONS FOR THE PURCHASE OF BRAND NEW BOWSER AVIATION REFUELING FOR SRI LANKA AIR FORCE

##### Summary of Aircraft Refueller Specification

This specification covers requirements for supply or construction of 10,000 litre capacity aviation fuellers on a rigid, diesel powered, 4 X 2 chassis, capable of fuelling jet aircraft under-wing at flow rates up to 1,000 litres/min., with a suction defuelling capability up to 400 litres/min. and over-wing refuelling facility of 200 l/min minimum.

#### 01. Suppliers compliance for the specification depicted in Chapter 01 to 09 (Aircraft refueller specification)

S/NO	SPECIFICATION	REFERENCE	COMPLY	Sign	NOT COMPLY	Sign	REMARKS
01	<b>GENERAL STATUS</b>	<b>Chapter 1</b>					
02	<b>GROSS VEHICLE WEIGHT</b>	<b>Chapter 2</b>					
03	<b>STANDARDS AND SPECIFICATIONS</b>	<b>Chapter 3</b>					
	Standards and specifications	3.1					
	Chassis Related Details	3.2 (3.2.1 to 3.2.1.3.2)					
	Chassis – Features	3.3 (3.3.1 to 3.3.3.11)					
04	<b>FUNCTIONALITY AND CONSTRUCTION</b>	<b>Chapter 4</b>					
	Flow performance	4.1 (4.1.1 to 4.1.2)					
	Dimensions – Aircraft Refueller	4.2					
	Transverse Weight Distribution	4.3					
	Equipment and functions	4.4 (4.4.1 to 4.4.11.6)					
	Pipe work, flanges and isolating valves	4.5 (4.5.1 to 4.5.12)					
05	<b>TANK AND FITTINGS</b>	<b>Chapter 5</b>					
	Tank design	5.1 (5.1.1 to 5.1.2.10)					
	Tank attachments and controls	5.2 (5.2.1 to 5.2.3.2)					
	Tank venting and pressure relief	5.3 (5.3.1 to 5.3.2.5)					
	Tank calibration and contents	5.4 (5.4.1 to 5.4.3)					
06	<b>TESTING AND</b>	<b>Chapter 6</b>					

	<b>RECORDS</b>	(6.1 to 6.9)					
07	<b>EXTERNAL PAINTING</b>	<b>Chapter 7</b>					
	General	7.1					
	Surface Preparation, Priming and finish Painting	7.2 (7.2.1 to 7.2.2.2)					
08	<b>INSTRUCTION MANUAL (IM)</b>	<b>Chapter 8</b>					
	Workshop Manual for the Chassis and engine - Two Copies	1					
	Spare Part Catalogue for the Chassis and engine- Two Copies	2					
	Operations & Maintenance Manual for the Refueller Module - Two Copies	3					
	Spare Part Catalogue for the Refueller Module – Two Copies	4					
	Calibration chart of the tank –Two copies	5					
	Contents and format	IM 1					
	Miscellaneous sections	IM 2 (2.1 to 2.10)					
	System detail sections	IM 3 (3.1 to 3.5)					
	Maintenance sections	IM 4 (4.1 to 4.4)					
	Test certificates	IM 5					
	Illustrated parts list and drawings	IM 6					
	Warranty	IM 7					
	Training of personnel	IM 8 (a,b,c)					
	Interim inspection	IM 9					
	Final inspection	IM 10					
09	<b>INSPECTIONS, TRAINING AND TESTS</b>	<b>Chapter 9</b> (a,b,c,d, e)					

## 10,000 Litre Capacity

### Aircraft Refueller Specification

#### Chapter 01: -

#### General

#### Status

*This specification sets out the requirements for the Supply, design, construction and testing of the fueller. The vehicle is intended for use on private roads and airside areas at limited speeds. It is intended for general transportation as well as delivery on the public highway.*

*This specification sets out the requirements for the design, construction and testing of the Aircraft Refuellers. The vehicle is intended for use on public roads and airside areas at the speed of 72 km/h. It is intended for general transportation and delivery on public highways.*

*The dimensions and other requirements set forth by Motor Traffic Department, Sri Lanka (Motor Traffic Act chapter. 203) are listed below for reference. The Aircraft Refuellers offered shall comply with said requirements.*

*(1) The dimensions of any motor vehicle must not exceed the dimensions specified hereunder for motor vehicles of the class or description to which the motor vehicle belongs:-*

<i>Length, width and Height</i>	<i>Millimetres</i>
<i>-----</i>	<i>-----</i>
<i>Overall width of motor vehicle,</i>	<i>2,500</i>
<i>Height of motor vehicle (other than a double decked motor coach)</i>	<i>3,800</i>
<i>Height of a double decked motor coach</i>	<i>4,600</i>
<i>Overall length of motor vehicle with two axles other than a motor coach</i>	<i>10,000</i>
<i>Overall length of motor vehicle with more than two axles</i>	<i>11,000</i>
<i>Overall length of an articulated vehicle</i>	<i>14,000</i>
<i>Overall length of motor coach</i>	<i>10,700</i>
<i>Overall length of a combination vehicle with one trailer</i>	<i>17,000</i>

## **Chapter 02:-**

<i>GROSS VEHICLE WEIGHT</i>	<i>Kgs</i>
<i>(a). No motor vehicle with a 4 wheeled rear axle shall exceed</i>	<i>15,275</i>
<i>(b). No motor vehicle with an wheeled dual rear axle shall exceed</i>	<i>20,000</i>
<i>(c). No articulated or combination vehicle with a 4 wheeled rear axle for driving unit and a 4 wheeled axle for trailer shall exceed</i>	<i>21,000</i>
<i>(d). No articulated or combination vehicle having a lesser number of wheels than (c) above shall exceed</i>	<i>16,500</i>
<i>(e). No articulated or combination vehicle with two wheeled front axle and 4 wheeled rear axle driving unit and dual axle 8 wheeled trailers shall exceed</i>	<i>27,500</i>
<i>(f). No articulated or combination vehicle with 2 wheeled front axles and 8 wheeled dual rear axle for driving unit and 8 wheeled dual axle trailer shall exceed</i>	<i>30,500</i>

*2.1 (a) The overhang of any motor vehicle other than an articulated vehicle must not exceed 60 per centum of the distance between the plane perpendiculars to the longitudinal axle of the vehicle which passes through the centre of centres of the front wheel or wheels and the rearmost vertical plane from which the overhang is to be measured as defined in regulation 57:*

*Provided that the preceding provisions of this regulations shall not apply to a motor vehicle designed for use and used buy or on behalf of a local authority solely in connection with the clearing of streets , the collection of disposal of refuse or the collection of disposal of the contents of gullied or cesspool.*

*2.1.(b). A vehicle designed so that it can dispose of its load by tripping to the rear shall in addition to the requirements of 2(1)(a) have a distance not exceeding one thousand one hundred and fifty millimetres, between the vertical passing through the axis on which the load is pivoted and the second plane described in the definition of wheel base in Regulation 57.*

*(2). the overhang of an articulated vehicle must not exceed that specified for any motor vehicle in paragraph (1) of this Regulation or 1,850 millimetres whichever is less.*

## **Chapter 03:-**

### **3.1 Standards and specifications**

*The following shall be the applicable standards for the respective equipment.*

*The following shall be the applicable standards for the respective equipment.*

TABLE 1: APPLICABLE STANDARDS

<b>Int'l/Euro/ German</b>	<b>British</b>	<b>USA</b>	<b>Subject</b> <b>(not necessary the full and proper title)</b>
DIN ISO 1185	BS AU 197	SAE J 560b	Electrical connections, 24V type 24N normal - 7 contact
DIN ISO 3731	BS AU 198		Electrical connections, 24V type 24S Supplementary -7 contact
DIN ISO 4009	BS AU 195a		Mounting of electrical connections on the rear cross members
DIN ISO 4141		SAE J1067	Seven conductor jacketed cable for truck/trailer connections
German GGVS			Electrical connection for vehicles, 13 contact
ISO 7638			Brake anti - lock device connector - truck to trailer
DIN ISO 1728		SAE J318	Pneumatic braking connections - Palm/Glad-hand type
	BS AU 138a		Contact type brake couplings
ISO 1728	BS AU 138a		Location of brake couplings on rear cross members
ISO 1102	BS AU 220		Dimensions of 50 mm drawbar couplings
ISO 3584	BS AU 166		Mounting of drawbar couplings on rear cross members
		SAE J697	Safety chain for full trailers or converter dollies
DIN ISO 7706	BS AU 215		Power take off's (PTO's) - Clearance envelope
DIN ISO 7653	BS AU 203a		Dimensions of couplings between PTO's and ancillary units
ISO – various	BS AU 50		Vehicle tyres, loads, rims, wheels
ISO 2882/3	BS 2050		Elect. resistance-conductive/anti static products/inc. tyres
ISO 45	BS 3C 14	MS 24484	Adapter, Pressure Fuel Servicing, nominal 2.5 inch diameter
		MIL.A 25896	Adapter, Fuel, 2.5 inch diameter-includes strength tests.
<b>Int'l/Euro/ German</b>	<b>British</b>	<b>USA</b>	<b>Subject</b> <b>(not necessary the full and proper title)</b>
		API RP 1004	Tank Vehicle Bottom loading and Unloading-4 inch Adapters
ISO 102	BS 2C 13	SAE AS 1852	Gravity/over-wing fuelling nozzles and ports
		API 1542	Airport Equipment Marking for Fuel Identification
	IP/ Filtration	API 1583	Aviation Fuel Filter Monitors with absorbent Type Elements
	BS 3158	API 1529	Aviation fuelling hose and hose assemblies
VG 85 328			Hose couplings with clamps
VG 95 950			Hose couplings with Whitworth pipe threads (BSPP)



ECE/TRANS /110			European Agreement concerning the international carriage of dangerous goods by road (ADR)
(pr)EN 12312-5			Aircraft Ground Support Equipment-refuellers, Dispensers etc.
		NFPA 30	Flammable and Combustible Liquids Code/vent requirements
		NFPA 385	Tank Vehicles for Flammable and Combustible Liquids.
		NFPA 407	Aircraft Fuel Servicing
	BS 476		Fire tests - pt. 7 flame spread classification pts. 12/13 ignitability
	BS 5958		Control of undesirable static electricity
	BS 2915	ASME.VIII UG131	Vapour flow calculations - BS 2915 specific to Bursting discs.
		Mil.F. 38363	US Mil. Spec- Aircraft fuel systems, general
		SAE.AS 1484A	Test procedure/limits of surge pressure - fuel dispensing system.
		Various SAE-AE-5C Documents In Preparation	Surge pressure generation and measurements
			Glossary of terms – Aircraft fuelling
			Commercial nozzle specification
			Guidelines for procurement of fuelling vehicles Adapter wear limits.
<b>Int'l/Euro/ German</b>	<b>British</b>	<b>USA</b>	<b>Subject (not necessary the full and proper title)</b>
DIN 28459		Similar in TTMA and NTT specs	Flanges for 'Tank wagon' - connecting flanges
DIN 28460			Flanges for 'Tank wagon' - welded, for aluminium pipe
DIN 28461			Flanges for 'Tank wagon'-welded, for steel pipe
DIN 28462			Flanges for 'Tank wagon'-threaded flanges for couplings
DIN 28463			Flanges for 'Tank wagon'- gaskets
		ANSI B.16.5	Steel pipe flanges and fittings
	BS 1560		Steel pipe flanges and flanged fittings
DIN ISO 228/1	BS 2779	JIS B0202 p'll	Pipe threads- tubes and fittings-fastening/non thread seal type
DIN 2999, ISO.7/1	BS.21	JIS.B0203 tpr	Pipe threads - tubes and fittings - thread seal type / tapered
	BS 4677		Arc welding of austenitic stainless steel pipe
BS EN 485/515/573	BS 1470/1/2/3/4/5		Aluminium and aluminium alloys, tube, forging, sheet, plate

	BS 6363		Welded cold formed steel structural hollow section
	BS 5323		Code of Practice for scissor lifts
	BS 7171		Mobile elevating work platform
	BS 5395		Stairs, ladders and walkways
	BS 4592 pt.1		Open bar/mesh gratings and panels
	BS.4592 pt.2		Expanded metal gratings and panels
BS EN ISO 8503 ISO 8502/4 ISO 11124/5/6/7	BS 7079		Preparation of steel substrates before application of paint -Blast cleaning etc.
	BS 308 series		Engineering drawing
IEC 617-4	BS 3939		Graphic symbols and diagrams for electrical power circuits
<b>Int'l/Euro/ German</b>	<b>British</b>	<b>USA</b>	<b>Subject (not necessary the full and proper title</b>
BS EN 60598 IEC 598	BS 4533		Luminaries
	BS 5308		Instrumentation cables
	BS 6862 Pt.1		Cables with copper conductors for vehicles
	BS 2950		Cartridge fuse links for telecomm's and light electrical apparatus.
	IP/Electrica 1		Electrical Safety Code. pt.1 of the Model Code of Safe Practice
IEC 529	BS 5490(obs)		Classification of degrees of protection provided by enclosures
BS EN 60947 IEC 144			Degrees of protection of enclosures/low voltage switch gear and control gear
	BS 5435		Selection, installation and maintenance of electrical apparatus for use in potentially explosive atmospheres
DIN EN 50 0srs IEC 79 series VDE 0170series	BS 5501 Series	USA UL698	Electrical apparatus for potentially explosive atmospheres
IEC 79-15	BS 6941		Specification for electrical apparatus for explosive atmospheres with type of protection N (Zone 2)
IEC 34 Pt.5 EN 60 034 Pt5	BS 4999 BS 5000		Rotating electric machines
ISO 4148 ECE 65 / *		SAE J1318	Flashing beacons- *Also EEC Automotive Directive 72/245 for EMC (Electro-magnetic compatibility)
*		SAE J994	Audible alarms - *Also EEC Directive 91/368-supply

			of Machinery (safety) Regulations, clauses 3.2.1 and 3.6.1
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### 3.2 Chassis Related Details

#### 3.2.1 Refueller

##### 3.2.1.1 General

- 3.2.1.1.1 The chassis must be capable of carrying, when fully laden with having a capacity of 10,000 litres of Jet A-1.
- 3.2.1.1.2 The chassis shall be purchased by the aircraft refueller manufacturer and it shall be equipped with following typical requirements as appropriate.

TABLE 2: BASIC FEATURES

Model	4x2 day cab, right hand drive.
GVW	Shall be capable of carrying the minimum payload capacity of 8,400 kg.
Engine	4 strokes, direct injection, naturally aspirated/turbocharged, water cooled, six cylinder, diesel engine.
Turning circle Diameter	21 meters - minimum possible.
Gear box	Six speeds standard, with PTO, manual, fully synchronised.
Axle	Total axle loading capacity shall be more than the GVW.

- 3.2.1.1.3 Before supply, the chassis manufacturer shall ensure that all the required optional fitments have been included correctly. A repeat check shall be performed by the Aircraft refueller manufacturer when the chassis is received at his works.

##### 3.2.1.2 Weights, Distribution, Stability

- 3.2.1.2.1 The GCW of the vehicle shall be capable for the payload capacity of 8,400 kg on the Refueller tank.
- 3.2.1.2.2 The height of centre of gravity of the fully loaded vehicle shall not be greater than 95% of the distance between the outer ground contact/track widths of the tyres

##### 3.2.1.3 Performance - Speed, Power, Traction Effort and Distance

- 3.2.1.3.1 For normal Aircraft refuelling services, the refueller to travel up to the maximum speed of 30 km/h. This will be comprised of many 'cold starts, very short journeys, mostly static engine operations and tight turns over level / coarse concrete surfaces and tar roads.

3.2.1.3.2 When considering chassis selection, it must be ensured that the maximum torque applied by the PTO gear unit output drive shaft to the pump does not exceed the rated capacity of the fuel pump gear box. (Hydraulic pump gear box for hydraulically driven fuel pump)

### **3.3. Chassis – Features**

#### **3.3.1. Engine / Mechanical**

##### **a. Engine**

Water- cooled- 4 stroke, 06 cylinder diesel engine having dry air cleaner. Engine output should be not less than 160 KW at maximum RPM.

##### **b. Clutch**

Dry single plate friction clutch

##### **c. Transmission**

Fully synchronize manual gear box with at least five forward and one reverse gear. PTO (Power Take off) facility required for the refueller pump.

##### **d. Suspension**

Front:- Heavy duty type comprising leaf springs, shock absorbers and stabilities.

Rear :- Heavy duty type comprising leaf springs with tandem axle unit having toque bars.

##### **e. Brakes**

Dual circuit air brakes with automatic slack adjusters and exhaust brake.

##### **f. Parking brakes**

Standard fail safe brakes acting on rear wheels or transmission.

##### **g. Axle**

Front Axle- Eliot "I" Beam type

Rear Axle - Two power assisted Rear axles employ a single through-shaft-line tandem

drive system with differential locks.

##### **h. Steering**

Right hand drives hydraulic power steering with adjustment steering column.

##### **j. Tools and Accessories**

Standard tool kit in a lockable compartment. Tools in the tool kit to be specified.

##### **k. Spares**

Confirmation of availability of spare parts in the local market and availability of the local agents in Sri Lanka for the vehicles for next ten (10) years from the date of delivery to be stated.

##### **l. Brochures and Drawings**

Bidders should submit all relevant brochures and appropriate drawings in English language along with the offer and offers without the said details will be rejected.

**m. Manuals**

Following manuals are to be provided in English language for each vehicle with a soft copy of all manuals (CD).

- a. Operators' Manual
- b. Workshop Manual
- c. Illustrated Parts catalogues

**n. Past performance**

Sales history and customer base of the offered brand of refuelling bowser in aviation field in Sri Lanka and international market during last 05 years to be indicated. Preference will be given for bidders of larger customer base and satisfactory after sale service in market history in aviation industry

**p. After sales service**

The prospective tenderer should have well equipped workshop facilities for carrying out complete overhauls of all systems. If the tenderer does not have said facilities it may enter into an agreement with any party after seal services of all systems of vehicle and part of the vehicle should be the responsibility of the local agent past history of violating warranty contracts and delay in repair/warranty repair/ spares supply and non-response for after seals requirements will be considered as negative factors. Who will provide such support facilities for a minimum of 5 years. A certified copy of said agreement is to be furnished along with the bid. The TEC reserves the right to call for the original of the agreement at any time during the evaluation process.

**q. Credit facilities for repairs/ overhauls/spares**

Minimum 60 days Credit facilities should be provided for purchase of spares, repairs, servicing and overhauls.

**r. Delivery**

- a. Delivery period to be specified.
- b. The refuel bowsers need to be delivered after registering at the Department of Motor Traffic in Sri Lanka by the local agent under the name of **“The Commander of the Air Force”** with civil number plates, Registration Certificate at RMV with all other necessary documents.
- d. **Refuel bowsers to be delivered to the Supply and Maintenance Depot at SLAF Base Katunayake.**

**Basic Chassis Features**

3.3.1.1. The diesel engine is to be sized to meet performance requirements in marginal 3.2.1.3 and shall develop a minimum of 160 Kw at rated rpm.

The engine exhaust manifold, radiator and thermostat shall be suitable for stationary engine operations in tropical climates, driving a P.T.O pump and auxiliary power unit. A standard electric starter and air compressor shall be fitted.

3.3.1.2 The transmission and any modifications must be suitable for the service specified via a manual gearbox.

- 3.3.1.3 Electrical current is to be supplied by a heavy duty alternator and rectifier to heavy duty/high capacity batteries, suitable for the tropical climate. Selection shall take into account that although the engine will be kept running during fuelling, overall journey times will be short.
- 3.3.1.4 The exhaust is to be routed forward of the front axle with discharge on the opposite side to the aviation fuel operating station.
- 3.3.1.5 The opening of the air induction system shall be routed outside the cab (Snorkel) and face in the forward direction.
- 3.3.1.6 The cab shall be full forward with forward tilting.
- 3.3.1.7 Leaf springs selected for the chassis must be suitable for the applied loads.
- 3.3.1.8 Power steering with a reasonable degree of 'feel' shall be fitted.
- 3.3.1.9 The wheel base of the chassis shall be selected so that the equipment can be arranged without exceeding the permitted load for front and rear axles, so that the chassis frame remains substantially horizontal, and so that the tank minimum bottom is maintained whatever the load.
- 3.3.1.10 The braking system shall be the dual circuit type meeting all EC requirements including hand control air valves if necessary, shall be the Palm or Glad-hand type coupling ISO. 1728/SAE.J318 Standard. 'Contact' or 'plug in' type couplings meeting BS.AU.138a ( BS.AU.5 is for vacuum systems) may be used in place of palm type couplings. Brake action is to be spring loaded on, air pressure off. Pneumatic Couplings shall be positioned in accordance with ISO.1728/BS.AU.138a
- 3.3.1.11 Electrical requirements are described separately in item 3.3.2. When possible, it is better that equipment normally fitted by the chassis manufacturer is suitable and retained for further use. However, the aircraft refueller manufacturer will need to carry out double pole rewiring and other modifications.
- 3.3.1.12 Dual large rectangular rear view mirrors is required (convex type) extended as necessary to provide a clear / unobstructed view along the side of the vehicle / tank, even in the maximum turning position. In addition, there shall be a mirror on the passenger side, positioned so that the driver can see to ground level beneath the door and front of the cab.
- 3.3.1.13 No cigar lighter or ash tray is to be fitted. However, if the chassis is normally provided with a cigar lighter socket, then the electrical supply shall be disconnected and insulated.
- 3.3.1.14 Adequate ventilation is required for use in hot climates and air condition too is required. No cab heater to be fitted.
- 3.3.1.15 Front and rear directional signals, normal hazard flasher warning, reverse and brake lighting are required.
- 3.3.1.16 In addition to normal panel / dashboard instruments, an engine revolution counter and low air pressure indicator are required.
- 3.3.1.17 To prevent fuel or fuel vapour from contacting hot parts of the engine or exhaust , a metal fire screen is to be fitted, extending from the back of the cab, over most of its width, to the top of the chassis and below on each side to 500 mm above ground level. To allow the cab to tilt forward, the fire screen shall be in two parts. One section attached to the back of

the cab extending almost the whole of its width, and this overlaps, by 50 mm minimum, measured as a vertical dimension, another section attached to the chassis frame. Further it is mandatory to provide **suitable stainless steel shelter over the refuelling system installed (Fueling cabinet) and roller shutter doors** are required to be installed in both sides in order to protect the refuelling system from the rain and moisture.

The gap between the two parts shall be as small as practicable but in any case not more than  $\frac{1}{4}$  of the vertical overlap.

As required, additional screening shall be attached to the front wheel mud flaps or the side of the chassis frame to the screen exhaust pipes.

3.3.1.18 If windows do exist in the rear cab wall, preferably they shall be removed and replaced with metal panels.

3.3.1.19 A robust channel bumper shall be fitted at the rear of the aircraft refueller.

3.3.1.20 A system must be provided to stop the engine from the pumping control station. Controls shall be the push button/lock off type, requiring a special action to reset them.

3.3.1.21 Rear mudguards and mud flaps shall be provided.

### **3.3.2 Electrical requirements**

#### **Standards and specifications**

3.3.2.1. All electrical requirements shall comply with particular BS, EN and IEC standards.

#### **3.3.2.2. Miscellaneous items**

3.3.2.3. Lighting (with glass lenses) is required to illuminate the meter counters and all gauges and controls and VCFS at the operating station and access ladders. These lamps may be controlled either locally, from the vehicle cab, or near the operating station by a separate switch.

3.3.2.4. An adjustable light shall be fitted to illuminate the aircraft panel. It shall not be of such high intensity that it causes a dazzling effect but of sufficient brightness to enable, by adjusting its position, to give adequate illumination.

3.3.2.5 Aircraft / obstruction / marker warning lights shall be fitted, 2 at the front of the cab, 2 at rear of tank. These shall be in amber colour. A large flashing beacon is required, centrally placed on top of the cab roof.

3.3.2.6 Where applicable, all electrical connections shall be fitted with heat shrink insulation sleeves, and well fitted boots as a minimum standard.

3.3.2.7 All cables and electrical connections to be labelled and colour coded  
(with matching the details in the operating / maintenance manual).

3.3.2.8 Any modifications or repairs to electrical circuits or equipment on vehicles shall be to recognised manufacturer's standards or equivalent and all the wiring diagrams should be display in the vehicle control panels for the maintenance purpose.

3.3.2.9 As a reversing aid, buzzer or voice type to warn other personnel when reverse gear is selected shall be provided.

### **General Design**

The electrical system shall be designed and installed to minimise the risk of sparking and electrical fires.

3.3.2.10 There shall be electrical continuity between the chassis, tanks and sub frames, fuelling cabinet and all fuelling components. Electrical resistance shall not exceed 10 ohms.

The tank shall be bonded to the chassis by means of a substantial braided copper strap.

3.3.2.11 The nominal system voltage on the circuit shall not exceed 24 volts and the equipment shall be suitable for the appropriate zone as defined in British Standard 5345 for a Class II (2) product.

Jet A-1 fuel is covered by the category of **Gas Group IIA**,

#### **Temperature Classification T3**

Zone 0 Within the main tank or product recovery / sample recovery tank.

Zone 1 Within an area, between the ground and a point 300 mm above and on each side of any discharge opening or vent on top of the tank.

Zone 2 Within an area between the ground and a point 1000 mm above and on each side of any discharge opening, vent or sealed (gasket / O ring) joint.

3.3.2.12 Behind the rear of the driver's cab all wire conductors shall conform to BS.6862 or equivalent to ensure that they are adequately insulated and able to carry more than the designed circuit current without causing an unsafe rise in wire temperature.

The conductors shall also be adequately fixed and protected so as to minimize the risk of damage or deterioration. Plastic flexible conduit is acceptable providing it is resistant to degradation by UV light. Where metal conduit is used for added protection and durability in particular location, then it must be corrosion resistant.

Conduit must not be routed where it might provide a tempting hand hold or be easily stood upon. All terminals including battery terminals shall be effectively protected and insulated by a cover against inadvertent contact and spillage of flammable liquids. All electrical enclosures to be to IEC .144/BS.EN.60947(was BS.5420) / IP65 Standards.

3.3.2.13 Behind the rear of the driver's cab:-

-No screw-in or cap-less bulbs shall be used.

Junction box, connectors and all electrical equipment shall be adequately protected and shielded as far as practicable from the ingress of moisture or dangerous substances under normal conditions of use.

3.3.2.14 An insulated return circuit must be used (double pole wiring), and shall not have more than 300 milliamps leakage between either polarity circuit or the vehicle chassis.



### 3.3.2.15A double-pole master switch to zone 2 requirements, as defined in

BS.5345, to enable all electrical circuits to be isolated (including open circuiting of the generator field windings) shall be placed as near as possible to the battery and extra remote battery isolation switch shall be provided inside the cab.

This shall not prevent intrinsically safe or flameproof circuits, as defined in BS.5345 requirements, from being taken from the battery side of the master switch. The master switch control shall be readily accessible to personnel outside the vehicle and its location shall be indicated by a clearly visible notice with an indication to when it is in the “ON” position.

#### **Circuit protection**

The following steps shall also be taken to ensure the protection of electrical circuits

3.3.2.16 All circuits, with the exception of the main battery supply and the starter and generator circuits shall be protected with fuses or circuit breakers in the feed side of each circuit.

3.3.2.17 Exposed fuse wire or links shall be avoided, but if used shall be fitted within a sealed unit.

3.3.2.18 All circuit protection devices with the exception of any barrier device for a tachometer or other intrinsically safe device shall be mounted forward side of the cab rear wall.

#### **3.3.3 Brake interlocks: Electrical Switches acting over pneumatic operation**

3.3.3.1 Any pneumatic circuit for control or ancillary operation must include an auxiliary air reservoir and circuit, quite separate from the vehicle braking system, and supplied through a pressure regulating valve from the main braking system.

3.3.3.2 A brake interlock system, with switches in series, is to be fitted, so that when any of the fuelling nozzles is not secure in its holder is not in the fully down position, or a hose is connected to the loading adapter, or a power take off is selected, then the vehicle brakes will be applied, (either main system or parking brake system).

3.3.3.3 A separate warning light shall be provided to clearly indicate when the PTO is engaged. It shall not be possible to drive the vehicle with the PTO engaged.

3.3.3.4 In the event that an interlock is inadvertently activated and the brakes applied while the vehicle is moving, the application shall be slow enough to bring the vehicle to a controlled halt without endangering the driver, passengers or Aircraft.

3.3.3.5 Whether the interlock switches are electrical reed switch / magnetic proximity type, the system shall be designed to exhaust air from the vehicle brake actuating pilot. Systems which require a positive air pressure signal to cause the vehicle brakes to be applied shall not be used.

3.3.3.6 The use of shuttle, check or non-return valves shall be minimized.

3.3.3.7 All switches and related devices shall be designed, arranged and protected to withstand external fuel contact and environmental conditions - bright sunlight / high and low humidity / dust and windblown sand / rain etc.

3.3.3.8 The brake interlock switch system fitted must respond to

- (I) A Jet A-1 selective spout, and
- (II) The presence of the nozzle body for over-wing fuelling system.
- (III) In presence of non-Selective spout (Separate Holder for ZRS 32)

3.3.3.9 An emergency override pneumatic switch shall be fitted in the vehicle cab to allow the vehicle to be driven even if an interlock is operating to apply the brakes. This override switch is to be clearly marked and wire sealed in the position where it is non operative.

The override switch system shall be arranged to by-pass and isolate the interlock switches (and in the case of electrical switches, the solenoid operated pilot valve) and act directly to apply pressure to the pilot valve controlling air supply to the chassis spring break actuators.

3.3.3.10 Four large (50 mm min. dia.) warning lights, protruding 30 to 40 mm. shall be provided in the cab in a prominent position, with shielding as necessary from bright sunlight.

- One flashing red, to indicate that the override system is in operation.
- One flashing amber, to indicate if any interlock has been operated (Equipment not stowed)
- One continuous amber to indicate that pump drive is fully engaged.
- One continuous amber to indicate that road drive is fully engaged.
- Small pneumatic 'blinking eye' type indicators shall not to be used.
- The colour green must not to be used for indicating that the P.T.O pump is in the drive position since it might be understood to indicate that it is safe to drive the vehicle away from an aircraft, even though the interlock warning light is flashing.

3.3.3.11 Signals for indicating the pump gearbox engagement position can be taken from switches or sensors actuated by a device attached to the exposed selector shaft - monitoring selection by the presence or absence of air pressure to the gearbox is not sufficient to give clear indication of engagement / dis-engagement.

## Chapter 4:- Functionality and Construction

### 4.1 Flow performance

The operating capacities noted below must be sustainable for periods long enough to enable the complete contents of the fueller to be delivered or received (during defuelling or self-loading) without any components being over rated or overheated.

#### 4.1.1 Fuelling

Under mentioned deck hose and reel hose flow rates shall be achieved when the secondary pressure control valve is set to provide maximum 65 psi (air reference pressure shall be 65 psi + spring bias) meanwhile the pressure downstream of the nozzle/aircraft adapter is 2 bars:-

Also the same flow rates shall be achieved within the **most economical engine RPM range (operation)**

- a) Reel hose - 1000 l/m via 30m x 2 1/2 inch

Pressure losses between the pump outlet and hose inlet (s) shall be minimized and shall take into account a potential pressure loss across the filter monitor of 1.5 bar at maximum rated flow.

### **Over-wing fuelling facility:**

One over-wing hose reel – 200 l/min minimum discharge rate via 20 meters of 1.5 inch diameter hose.

#### **4.1.2 Defuelling**

In this mode, fuel will pass through the meter (counting in the reverse direction) and into the fueller via the normal bottom loading system.

Required performance is: - 1 reel hose - 400 l/m,

The flow rate is to be achieved with the engine at idle speed, increased automatically above normal by pump engagement and, if necessary, by using RQV governor.

#### **4.2 Dimensions – Aircraft Refueller**

Width: 2500mm Maximum

Height of completed vehicle with dead stock

Chassis cab height (with flash beacon):3300 mm maximum

Notes:-

- The heights specified are based on IATA recommendations for minimum clearance of 250 mm between the vehicle and potential collision points under the aircraft wing. The minimum would apply when the aircraft is fully loaded to the maximum permitted weight including a full fuel load, at critical centre of gravity, with tyres in the normal serviced condition, and the fueller empty except for dead stock.
- The length is based on what has been possible to achieve in practice with a reasonably sized platform.

#### **4.3 Transverse Weight Distribution**

Aspects of longitudinal weight distribution are covered in items 3.2.1.2.1, 3.3.1.9 and 5.1.1.4 Transverse weight distribution must be arranged such that the vehicle remains substantially horizontal under all loading conditions.

#### **4.4 Equipment and functions**

##### **4.4.1 General information**

4.4.1.1 Where a fuelling component is not specified by name, the constructor or service provider is required to propose a suitable item. Where a component is specified 'typical' or 'equal' is stated, the constructor shall submit details of an alternative items.

4.4.1.2 The meter, all pumping controls and the system instruments are to be located close together at an "operating station" on the driver's side of the aircraft refueller.

- 4.4.1.3 The movement of only one control shall be required to convert from fuel to defuel operation or vice versa.
- 4.4.1.4 The fuelling equipment shall be laid out in a compact, neat and tidy manner with adequate spaces to for the repairs and maintenance in order to provide an overall streamlined appearance to the aircraft refueller.
- 4.4.1.5 All hose reels, meters and controls must be arranged as specified above paragraph and shall be totally enclosed in a cabinet.
- 4.4.1.6 There shall be a minimum clearance of 600 mm, when loaded, between the ground and vulnerable fittings such as sample point and drain line outlets. This distance allows easy access for bucket, sample jar or small bore hose connection. However, sample points shall not be too high off the ground otherwise excessive splashing and spillage could occur.
- 4.4.1.7 Only square or rectangular corrosion resistant tubing is to be used for vertical or horizontal members of the panel and top deck. Finished appearance of the unit must be good and angled section bar supports are not acceptable if they are visible, except where used for securing fuelling components. All steel sub-assembly components must grit blasted and prime coated before attachment.
- 4.4.1.8 The design and position of equipment shall minimise corrosion.
- Surface preparation and coating shall be of the highest standard with water traps avoided. All small fastenings shall be of non-corrosive materials.
- 4.4.1.9 All the welding shall be continuous where practical and possible. Where stitch welding on exterior components is used, epoxy sealant shall be applied to un-welded areas to prevent water entrapment. All welding must achieve full penetration and any weld splatter must be removed.
- 4.4.1.10 All pop rivets shall be stainless steel or aluminium with high magnesium alloy (5%) material composition to British Standard 1473 A1 Mg5 or similar.
- 4.4.1.11 The material or finish of fuel sense lines shall differ from that of pneumatic lines for ease of identification.

4.4.1.12 Tamper proof covers or locking devices are required on the following

controls to prevent inadvertent alteration :-

- the hydraulic flow divider (if fitted)
- The air sense pressure regulator
- Hydraulic hose reel rewind speed controls

#### **4.4.2. Functions**

- 4.4.2.1 The design of the system ensures that when fuelling, product cannot by-pass the filter water separator or be circulated or returned to storage from downstream of the meter. Interlocked systems, which are intended to achieve this, are not acceptable. - i.e. the meter must be downstream of all other branches connected back to the tank or pump inlet.

No pressurised transfer or delivery pipe work is permitted inside the tank.

- 4.4.2.2 A combined bottom loading / outlet valve is not used. Use of a single valve does not permit re-circulation for purposes such as hose / system flushing or fuel drying. The short length of common line would also contain fuel, which had not been in the tank for settling or checking. For defuelled product, all these aspects are particularly relevant.
- 4.4.2.3 All products entering the tank goes through the bottom loading system (The bottom loading valve shall be off-loading lever operated type or pneumatically operated type) and hence is subject to the high level shut off control system.
- 4.4.2.4. A non return / check valve is positioned downstream of the pump / filter to prevent reverse flow in the fuelling mode of operation.
- 4.4.2.5 When defuelling, no product can be recorded as being defuelled which has not been removed from the aircraft. Potentially contaminated bacteria laden product does not pass through the filter water separator and filter monitor, which is additionally protected from possible contamination by a closed valve on the inlet side. The deadman valve may be used for this purpose depending on equipment arrangement.
- 4.4.2.6 During pressurized defueling, when the aircraft pumps are operating and if the fuel / defuel control is in the fuelling position, thus allowing the deadman valve to be opened, the non-return valve also prevents product from being passed backwards through the filters, thus causing element damage, and into the tank via the foot valve, the tank being unprotected by the high level shut off system.
- 4.4.2.7 In the defuel mode, it shall not be possible for the operator to increase pump speed using the control lever. This can be achieved by arranging for air pressure to be applied to the air cylinder installed to automatically reduce engine speed to idle when the deadman valve handle is released.
- 4.4.2.8 There is an isolating valve in the return line between pump outlet and the tank, automatically open for defuel and closed for fuelling. This prevents high pump pressure from being imposed on the bottom loading couplings in the reverse direction and on the bottom loading valve.
- 4.4.2.9 There is a non-return valve in the defuel line between the pump and connection to the bottom loading system. This ensures that all product entering the fueller passes into the tank, even if the isolating valve is open (control lever in ‘defuel’) or has failed.
- In addition, if the control lever is in the ‘defuel’ position, the non-return valve prevents fuel being pumped from elsewhere into the bottom loading couplings, through the defuel return line, backwards through the pump, backwards through the line by-passing the filter and hence into aircraft.
- 4.4.2.10 The system provides an ability to draw from an outside fuel source so that the fueller can normally be arranged via the deadman valve, filter monitor, delivery hose system to aircraft.
- 4.4.2.11 When Fuelling from the outside suction point using the on-board pump, the fueller ‘foot valve’ lever controls will need to be closed, and the ‘fuel / defuel’ selector will be in the ‘fuel’ position.

**Note:-** In general, it is not recommended that a pressurized source of product be connected to the outside suction point of a fueller (A), e.g. from a second fueller (B), since there is a risk that the tanks of fueller (A) could be reverse filled via their respective foot valves without the safety benefit offered by the high level automatic shut off system.

#### 4.4.3. Instrument panel / Control station

The following instruments and controls are required and are to be neatly located at the pumping control station. Minimum length of the instrument control panel (instrument cabinet as mentioned in 4.4.1.5) shall be 2000mm.

##### 4.4.3.1

- Pump speed control lever (below panel, not illustrated).

A movement limit stop shall be fitted and adjusted to prevent over speeding the pump. Item 4.4.5 gives more information.

- Engine RPM indicator or pump RPM indicator (mechanical drive type). A red line is to be marked on the gauge face at the maximum speed recommended for pump operation (or affix an adjacent label).
- Hydraulic oil pressure gauge.
- Pump vacuum gauge, 100 mm, glycerine damped, calibrated in inches of mercury.
- Pump discharge pressure gauge, 100 mm, glycerine damped.

Maximum range shall be approximately zero to 200 lbf/in<sup>2</sup>/14 bar.

- Filter monitor differential pressure gauge, direct reading piston type 0-30 lbf/in<sup>2</sup>, with low pressure side drain test and isolating valves and drain line to be extended up to slope tank. Also see item 4.5.9. concerning tubing and fittings.
- Fuel sense point (venturi) pressure gauge, 100 mm, glycerine damped, for the secondary pressure control. The range shall be approximately zero to 150 lbf/in<sup>2</sup>/10 bar.
- Air reference pressure gauge for the SPCV, 100 mm, range zero to approximately 150 lbf/in<sup>2</sup> / 10 bars.

**Note:-** Gauges are to be dual calibration (bar and lbf/in<sup>2</sup>).

- Quick disconnect fittings (male and female halves) with isolating valves to permit the pump discharge, sense point (Venturi), and air reference pressure gauges to be tested in situ.
- Air pressure regulator (on or easily accessible just behind the panel) for setting the secondary pressure control valve.

The regulator must be stable and of the self relieving, rapid response type. It shall be capable of handling the volume of air displaced by the secondary pressure control valve when caused to close by increasing downstream fuel pressure.

- De-pressurising control. (Manual)

- Fuel / defuel selector lever control (or adjacent push / pull type with indicator).
- Outlet / foot valve control (with emergency trip on the other side of the aircraft refueller).
- Push and lock type engine stop control (with another on the platform).

#### **4.4.4 Labels and signs**

4.4.4.1 All gauges, controls, switches and warning lights are to be labelled using engraved laminate or similar plastic UV light resistant material not embossed Dymotape - suitably inscribed to give white letters on a contrasting background, or vice versa.

Notwithstanding the above, items whose functions are very obvious do not need to be so identified. Excessive labelling / identification shall be avoided where it results in overcrowding or potential confusion.

4.4.4.2 Thin, self adhesive labelling or painting (except on the tank or cab) is not acceptable. Labels inside the cab may be bonded in position but those outside the cab shall be affixed using rivets. Care shall be taken to ensure that labels are aligned correctly / not askew and located adjacent to the item or control to which they apply.

4.4.4.3 The SPCV 'fuel sense pressure' gauge shall be labelled as such. If a venturi pressure control system is fitted, the gauge shall be labelled 'venturi pressure' - not 'fuelling pressure' or 'nozzle pressure'.

4.4.4.4. A fuelling circuit and operating instruction plate shall be affixed near the control station.

4.4.4.5 An instruction plate shall be attached near the pump selector on the dashboard giving clear instructions for:-

- Minimum air pressure requirement
- Engaging pump drive
- Disengaging pump drive

4.4.4.6 Labels for tyre inflation pressure shall be affixed to the wheel arches / mudguards.

4.4.4.7 Filter monitor and filter water separator sample points are to be clearly marked - Filter Inlet Filter Outlet.

4.4.4.8 Jet A-1 grade stickers (API.1542) shall be fixed to sides, front and rear of vehicle. "No smoking" signs are to be attached to the doors of the cab (International Symbol).

4.4.4.9 The language used for labels and signs shall be English.

#### **4.4.5 Pump controls**

4.4.5.1 Pump engagement and dis-engagement shall be controlled from the vehicle cab, the control lever and air pressure gauge being adjacent to the normal gear selector.

Selection of pump drive shall automatically increase engine idling speed to prevent gearbox chatter.

4.4.5.2 A manually adjustable, lever type engine speed control (non pneumatic) is required at the pumping control station, complete with quick release action. An automatic control linked to the deadman operation is also required to return the engine to the idle position when the deadman valve is closed. Subsequent operation of the deadman shall not cause the engine to automatically increase above idling speed.

4.4.5.3 Also see:

Items 3.3.3.10 and 3.3.3.11 concerning warning lights

Items 3.3.3.2 concerning interlocks

Item 4.4.2.7 concerning de-activation of the speed control during defueling

Item 4.4.4.6 concerning labelling / instructions

#### **4.4.6 Outside suction / self loading**

4.4.6.1 The outside suction point shall comprise a 3 inch ball valve and 2 ½ inch aircraft adapter type tank unit with ANSI 150 flange complete with dust / sealing cap. Outside suction point shall be upstream of isolation valve.

#### **4.4.7 Pressure control / deadman**

4.4.7.1 Pressure control is to be provided both by hose end (primary) pressure control valves (HEPCV's) and by a direct line mounted, non bypass, secondary pressure control valve (SPCV). The latter will also act as a deadman valve, it shall be remote sensed.

4.4.7.2 Sense line valve shall be sealed in the open position.

4.4.7.3 The system may include one or more venturi to compensate for downstream pressure loss. In this case, the venturi sense lines shall be connected together via 'leaky non return valve' for selection purposes. Solenoid or pilot operated selection shall not be used. In this case, the venturi system shall not allow the pressure downstream of a blocked open HEPCV to exceed 55 lbf/in<sup>2</sup> from maximum to low flow rate, with shut off pressure being 65 lbf/in<sup>2</sup> maximum.

4.4.7.4 The standard method of deadman control shall be an electric over air system using a Suzy (Suzie) cable connection rather than a reel. Single line air bleed systems shall be avoided since in general, they introduce reaction time delays and are difficult to adjust correctly.

Spring loaded push button type deadman override which requires constant pressure on the button to maintain fuel flow shall be provided.

4.4.7.5 The deadman handle is to be located at the operating station, is to be easily operated by one hand and designed so that when dropped onto the ground or stowed it is not normally possible for it to become operative. For stowage, a simple open box, with water drain hole, is adequate. Although difficult to achieve, every effort shall be made when designing the operating station area not to create nooks or crannies where an operator could place and leave the deadman handle in the operating / active state. A deadman timer system Green prompt lamp is required.

4.4.7.6 No deadman override shall be provided for over-wing fuelling applications. (Over wing refuelling shall be done by operating deadman.



4.4.7.7 The deadman operation, with minimal reaction time, shall shut-off flow evenly in not less than 2 to 5 seconds from the maximum rated flow of 3000 litres/minute, overshoot quantity after release of the handle being less than 200 litres.

When the deadman valve is signaled to open, initial response shall be with minimum delay and flow shall increase evenly from zero to maximum in not less than 5 seconds. There is no upper time limit from the viewpoint of safety, but for practical reasons 15 seconds shall be regarded as a maximum.

#### 4.4.8 Meters

4.4.8.1 Two positive displacement (PD) meters shall be provided. One (main) meter will be for flow through the reel and deck hoses, the other for the over wing delivery. The meter shall be designed as per the requirements set forth by API MPMS 6.4 manual of petroleum measurement standards chapter 6-metering assemblies, section 4-metering system for aviation fuelling facilities

Turbine type meters are not acceptable for sales purposes.

4.4.8.2 The over wing fuelling meter shall be a suitable for the flow rates.

4.4.8.3 The main meter shall be accompanied, when purchased, by a calibration / test certificate using kerosene or a test fluid with a viscosity representative of Jet A-1

**This meter is available with optional flow configurations - left to right or vice versa.**

4.4.8.4 Meter characteristics are to be:-

- Accuracy to be:-

- a) +/- 0.05% at 75% of meter rated maximum flow rate or the maximum achievable if less.

- b) +/- 0.2% at 20% of meter rated capacity.

- Maximum linearity
  - a) 0.18% for 4 inch and 6 inch triple-capsule size
  - b) 0.15% for 3 inch and 4 inch double capsule size
  - c) 0.10% for 2<sup>1</sup>/<sub>2</sub> inch and 3 inch single capsule size

- Repeatability shall not exceed 0.02%.

- The indicated reading of the mechanical rate of flow indicator (ROF) shall be accurate to +/- 5% of the true value.

4.4.8.5 The meter register must be fitted with a non-resettable totaliser and a large numeral counter. The right hand wheel or drum must be subdivided. Measurement units shall be in litres.

4.4.8.6 The meter shall be capable of occasional over speeding by 25% without damage or losing set calibration.

4.4.8.7 Meters must be able to operate / **count under reverse flow** and shall be fitted with a **rate of flow indicator**.

#### **4.4.9 Reels and hoses**

4.4.9.1 Reel Hoses:- One delivery hoses 2 ½ inch in accordance with EI 1529 type C. 20 meter long 2 ½ inch Female coupling for vehicle end with BSPP thread and other end 2 ½ inch male coupling with BSPP thread.

Overwing Hose:- One delivery hoses 1 ½ inch in accordance with EI 1529 type C. 20 meter long 1 ½ inch Female coupling for vehicle end with BSPP tread and other end 1 ½ inch male coupling with BSPP tread .

Attachment screw threads shall be BSPP.

The couplings shall be of the bolted clamp type meeting VG.85 328 / VG.95 950 requirements.

Swaged couplings are not acceptable and shall not be used.

4.4.9.2 Under-wing hose reels shall be of the Catherine wheel type, single width with a minimum core diameter of 600 mm, and be located close to the meters and controls.

Catherine wheel type hose reels are preferred and Drum or bobbing multi-width type hose reels are also acceptable when used for small bore over-wing hose application.

4.4.9.3 Swivel joints, which need grease for lubrication, are not permitted.

In addition, the design of the swivels shall be such that seals are easily accessible and can be replaced without the need to either remove the reels or engage in major disassembly work.

4.4.9.4 The reels are to be free running out and hydraulic power rewind. The control levers (each with lock, reel out, rewind functions) are to be situated at the hose reels, on the pumping control station side only.

Rewind speed shall be adjustable by means of a valve or other device which can be locked / sealed in its set position.

4.4.9.5 Suitable rollers or trays below the reel and rollers at the pull off points are required to ensure proper hose handling, prevent drooping and tangling etc.

4.4.9.6 Hoses must be easy to pull off the reels under all conditions but adjustable devices to prevent excessive overrun, when pulling stops, shall be provided if necessary.

4.4.9.7 Male threaded connections are required on hose reel outlets. It shall not be necessary to remove the reel outlet elbow in order to facilitate hose removal. The female swivel nut connection on the hose at reel end shall be easily accessible using normal tools.

4.4.9.8 Hose reels must be suitable for testing hoses to 20 bar while still connected.

#### **4.4.10 Filter water separator**

4.4.10.1 Only **EI** approved stainless steel vessels shall be used. These comply with **EI** requirements and are fitted with an interlock system so that the cover cannot be closed unless all elements are installed. The size of the filter **water separator** element shall be six inch (6")

- 4.4.10.2 The filter **water separator** covers shall have a swing bolted cover (not flanged through bolts) and be installed to allow easy removal of the elements without the need to remove any other components or panels. It shall be situated to open on the opposite side of the fueller from the 'operating station'.
- 4.4.10.3 It shall have  $\frac{3}{4}$  inch low point / sample drain lines with ball type isolating valves both at the vessel and at the sampling outlet point on both clean(down stream) and dirty(up stream) sides of the filter element mounting/division plate. The sample / drain lines shall be as short as possible and conveniently positioned for use with a bucket or jar.
- 4.4.10.4 The filter **filter water separator** are to be fitted with a piston type differential pressure gauge. Isolating valves shall be fitted in the sense lines together with a valve to allow fuel from the underside of the piston to be bled to a collection jar for the purpose of verifying that the integral filter is not blocked and that the piston is free to move over the whole of its potential stroke. The low pressure side isolating and piston chamber bleed (drain) valves may be combined into one multi-port valve if desired.
- 4.4.10.5 An automatic air eliminator is required on the highest point of the filter monitor. The air bleed line is to be taken back into the tank through a visible flow (Show Flow) indicator, easily identifiable from the control station. The flow indicator shall not be a plain window type, but shall incorporate a ball or spinner to indicate that flow is occurring. The design shall be such that incoming air or vapour will easily displace accumulated liquid downstream - i.e. it shall be self draining. Air shall be able to pass freely into the tank vapour space, but liquid leakage shall pass via a tube to the bottom of the tank. A non return valve shall be installed in the air eliminator line to ensure that the filter cannot drain back into an empty tank (fueller) via an open foot valve.

**Additional set of filter water separator elements are required to be provided along with the refuelers on delivery.**

#### **4.4.11 Miscellaneous Equipment**

The following miscellaneous equipment is to be fitted.

- 4.4.11.1 Weatherproof **lockable stowage** for two 5 litre containers and miscellaneous sampling equipment shall be provided. Typical dimensions shall be 600 mm long x 600 mm. high x 250 mm deep. Standard electrical enclosure boxes, fitted with a wooden internal base panel, have been found suitable for this application.
- 4.4.11.2. A **sample recovery tank** of approximately 150 litre capacity, equipped with fill point, vent, dial or fire resistant window type level gauge and drain shall be fitted at operational station side.

The fill point shall be of an easy to use design incorporating a funnel, removable screen filter and down pipe. The fill point cover shall be operated by one hand and stay in the open position when so set. Large diameter fill covers / inspection hatches of the type used on vehicle cargo tanks shall not be used.

The funnel opening shall be of an adequate size and positioned high enough above surrounding surfaces or obstructions so that a full 5 litre jar can be easily positioned and emptied without spillage.

4.4.11.3 Two manual rewind reels, each with 40 metres of bonding cable and a substantial clip (MIL-C-83413/7) are to be fitted for fueller one near the pumping control station, the other on the opposite side of the vehicle in a convenient location.

These may be used both for fuelling and bottom loading purposes.

**Characteristics of the reel** and its operation are important. **Materials shall be corrosion resistant and strong enough to operate the system.** It must not over-run on reeling out when the cable is no longer being pulled. It must not be stiff to rewind. It must be possible for the operator to properly / evenly guide the cable onto the reel over its full width, thus avoiding localised coil build up and subsequent loosening / overlaying / tangling. It must not be possible for the reel / cable to unwind due to vibration when the vehicle is moving.

The **cable** is to be very flexible, non corrodable, resistant to kink and have substantial tensile strength. Core material 16×14×0.15 single copper braided 3mm diameter, electrical resistant 0.007 Ohms per metre cable has been found to be very good and is recommended.

For protection against abrasion, it must be covered in a suitable, UV light resistant clear plastic coating.

The coating may be transparent (to aid location of faults or damage) or coloured bright yellow or have a reflective surface to aid visual identification of its presence on the ground.

An interlock switch is not required at the bonding clip securing point.

4.4.11.4 A bonding connection shall be installed at each bottom loading point, the tank drain, the product recovery (dump) tank and at the drain panel.

4.4.11.5 Two bucket or scabbard type fire extinguisher holders shall be provided, one at each side of the fueller, suitable for both 9 kg. dry powder type units.

They must be easy to use, at a shallow slope, with water drain holes and of non corrosive material. To ease handling and help prevent the hose from being squashed or damaged, wooden slats either side of the lower centre line may be found useful.

Holders, which require clamps or latches, must not be used.

4.4.11.6 01 No. Two kg. CO<sub>2</sub> fire extinguisher shall be fixed in an accessible position in the cab.

#### **4.5 Pipe work, flanges and isolating valves**

4.5.1 All piping used shall be seamless Aluminium Alloy or Stainless Steel. Mild Steel is **not permitted even if internal surfaces are completely coated by hot tin dip or epoxy lining.**

For visual appearance, pipe sections shall normally be butt welded together.

For information, the following stainless steel material has been found to be generally suitable.

Pipe to ASTM A.312, grade TP. 304 L, and Schedule 5S (0.083" thick). Forged flanges to ASTM A.182, grade F.304L. Wrought fittings to ASTM A.403 grade WP .304L.

ASTM grades A.321 and A.316 are also acceptable.

- 4.5.2 Victualic joints and flexible couplings are not permitted downstream of the pump
- 4.5.3 Flanges shall be to ANSI.B16.5 class 150 pattern dimensions
- 4.5.4 Swivel joints are to be self lubricating, without the need for grease. Ductile iron swivels are not acceptable even if they are internally coated.
- 4.5.6 All pipe work is to be fully drainable. There shall be a drain line with ball isolating valve and Kamlock coupling / sealing cap installed from a point where the bulk of the fuel can be drained.
- Other piping low points are to be fitted with minimum  $\frac{3}{4}$  inch BSPPF (mutter) drain points, fitted with screwed plugs (parallel thread with sealing washer).
- 4.5.7 Plugged, parallel threaded connection ports shall be provided on pipe work in accessible positions to permit hose testing to be carried out on the fueller. Provision shall also be made in the design of the piping layout to permit in situ routine testing of the riser hoses to the elevating platform.
- 4.5.8 All hoses shall be capable of being isolated for routine pressure testing to 20 bars, without the need of removing them from the vehicle. Accordingly, all pipework, fittings and isolating valves, which would be subject to this pressure, shall be suitably rated for 'hose test use, even though the normal system hydrostatic test pressure is 15 bars.
- Isolating valves shall not leak in the reverse direction when subject to 20 bar applied from the downstream side.
- 4.5.9 All fuel sample, drain, sense and gauge lines shall be Stainless Steel except in sized of  $\frac{1}{2}$  inch and above when Aluminium can also be used. Where there are individual sections as part of a whole, it shall be possible to dismantle them separately i.e. use compression ferrule type fittings and avoid multiple screwed joints.
- Elbow fittings with tapered threads must never be used in parallel threaded ports such as on the differential pressure gauge and filter monitor vessel.
- 4.5.10 Valves on drain / sample lines are to be ball type, terminating in Kamlock type couplings with quick release sealing caps secured by retaining wires or chains.
- 4.5.11 Copper, Copper Alloys with more than 35% Copper, Zinc or Cadmium shall not be in contact with the fuel. All valves, couplings, and swivels etc. in contact with the fuel shall be non-ferrous. Valves may use Aluminium, Stainless Steel or chromium plated bronze components.
- 4.5.12 Where valves are actuated by pneumatic cylinders, consideration shall be given to protecting shafts and seals, which could be damaged in a potentially dirty / wet environment, by use of a flexible rubber boot.
- This may apply even if the shaft is made of stainless steel.
- Advice on this aspect shall be sought from the cylinder manufacturer since in some cases, a rubber boot may accelerate rather than prevent wear by 'inhaling' and accumulating abrasive particles / moisture during the extension mode.

## **Chapter 5:- Tank and fittings**

### **5.1 Tank design**

## 5.1.1 Basic structure

5.1.1.1 This specification gives some general design principles and particular requirements. For detail on material grades and thickness, or weld procedures refer NFPA.385, (pr) EN12312-5, ECE/TRANS/110 (ADR) and DOT 406

### 5.1.1.2 The tank is to be made from Aluminium Alloy or stainless steel.

Refueller tank is to be a single compartment with baffles and a usable liquid capacity of 10,000 litres for Refueller a sump giving minimum dead stock and a minimum of 3% liquid expansion / ullage space. A typical gross 'rate' would be 3.76 liters / mm length.

With due regard to the constraints of width and height, the length shall be minimised. The manlids and vent valves do not protrude above the tank top, but instead are set below it.

5.1.1.3 The tanks must be able to withstand an internal pressure of at least 0.35 bar.

5.1.1.4 The tank sump / bottom, when mounted on the chassis in both the loaded and unloaded condition, shall have a bottom slope of not less than 2° (1:24 or 3.6%) from each end towards a single low point in a convenient central location.

5.1.1.5 **The bottom interior surface must be smooth and free from pockets or depressions where water might collect. Welds around the sump and in the centre bottom area shall be ground flat / flush to prevent obstruction to water flow.** Other welds, either of the baffles or tank plates, shall be positioned such that flow of water / water globules to the centre bottom and sump is not obstructed.

5.1.1.6 Refueller tank is to be fitted with suitable baffles to form divisions, each of about 5,000 litre capacities, varying according to the design constraints of the tank. Baffles shall be dished to give increased strength and acute angles at the tank shell joint shall be avoided.

All baffles must be open at the top and the bottom for liquid levelling and be provided with substantially off-set (not overlapping) access holes, with smooth edges, approximately 600 mm. diameter at some intermediate height. It shall be possible for a person to clamber through these holes without undue difficulty. Internal piping must not pass through these access holes.

## 5.1.2 Miscellaneous

5.1.2.1 The outlet line from the filter air eliminator and any other fill lines into the Refueller tank must be taken to near the tank bottom to minimise splashing. However, air shall be able to pass directly into the tank vapour space to avoid it bubbling up through the fuel.

5.1.2.2. A spring-loaded soft seat non-return valve is to be fitted at any point where sense or return or control lines enter the tank. This is to prevent spillage in case of accident damage or if equipment is removed for maintenance.

5.1.2.3 A side mounted contents gauge, unaffected by tank pressure, is required - see item 5.4.3.

5.1.2.4 Any appendages fixed to the tank (ladders, grips, braces, etc.) shall be suspended from pads or brackets welded to the tank shell.

5.1.2.5 Flat washers lock washers and self locking nuts / stiff-nuts are to be used on all bolted or studded fastenings.

5.1.2.6 Studs or captive nuts must not be welded to the tank shell, affixed pads or brackets.

- 5.1.2.7 An access ladder shall be fitted at rear of the tank and the tank top shall have an aluminium chequered walkway from the access point to the manholes.
- 5.1.2.8 Electric cables / conduit must not be positioned such that they provide a convenient hand hold or grip for someone climbing onto the tank top.
- 5.1.2.9 No pressurised fuel delivery pipes are permitted to pass through the tank.
- 5.1.2.10 One and half inch (1 ½") rapid drain line shall be installed from the tank sump, flush with the bottom and not surrounded by raised welds, to an accessible point. A ball valve shall be installed at the sump end and the outlet shall terminate in a 1 ½" inch ball valve and 1 ½ inch extended pipe with BSPP sealing dust cap.

A ¾ inch sample line and valve shall be connected into bottom of the 1 ½ inch line as close as possible to the outside valve.

## **5.2 Tank attachments and controls**

### **5.2.1 Top fittings**

- 5.2.1.1 Hinged manhole cover assemblies shall be provided to enable the tank to be inspected internally. They shall be of lightweight construction but sufficiently robust to withstand rough treatment. They shall be capable of being locked or sealed and shall be easily detachable from the tank for maintenance purposes.
- 5.2.1.2 When pressure / vacuum valves (or other equipment) are fitted to the manhole cover they shall be so positioned that they are protected from damage in case of any vehicle overturn.
- 5.2.1.3 The arrangement of vent valve and cover installation shall be such that there will be no liquid spillage when the Refueller is on an incline of 1:15 (6.7%), the most suitable position for this equipment are the centre two baffled sections as opposed to the end ones.
- 5.2.1.4 The manhole arrangement shall be positioned so that if the cover is inadvertently left open, the cover will fall to the closed / latched position when the vehicle moves forward.
- 5.2.1.5 In order to provide for adequate gas freeing prior to entry of personnel, and to provide for escape in case of emergency, at least 2 openings for the fueller tank each of 600 mm diameter shall be available. These may form part of the manhole / inspection hatch installation, or may be separated.
- 5.2.1.6 Any recess on top of the tank, which could collect rain water, shall be provided with a drain tube, minimum diameter 25 mm.
- 5.2.1.7 Stainless steel studs / fasteners shall always be used for attaching man lids and cover plates to the top of the tank.
- 5.2.1.8 Safety hand rail shall be provided on top of the tank for the safety of persons who are working there during the operations and maintenance. Mechanism shall be introduced to raise the safety hand rail before a person use the ladder to enter the tank top as well as collapse the hand rail after getting down once the job is completed.

### **5.2.2. Bottom loading**

- 5.2.2.1 Two non-selective bottom fill point flanged connections shall be fitted on each side of the fueller , one of each pair being fitted with a 2 ½ inch aircraft type self-sealing adapter and metal sealing dust cap, the other being blanked.

Flange type Isolating ball valves are required downstream of the bottom loading adapters with sealing provision for open position.

5.2.2.2. Required height for the centre line of bottom fill point flanged connections shall be in between 550 and 750 mm.

They shall be positioned so that they are not overly vulnerable to impact damage.

5.2.2.3 The tank filling systems must be arranged so that fuel flow is stopped automatically when the fuel level reaches a predetermined maximum. The bottom loading valve shall be positioned on the same side as the operating station. Two automatic high-level shut-off valves shall be provided (first to act as primary and second to act if first fails) One of the high level detectors shall be the jet sensing type, acting in conjunction with a wholly mechanical / hydraulically balanced bottom loading valve. Drain tubing shall be 'anti static', resistant to fuel, and be substantial enough not to kink easily.

Systems using floats, magnetic switches or air pressure shall not be fitted.

5.2.2.4 A pre-check system, removable and serviceable from outside the tank (i.e. normally mounted on a pad or block flange), is to be fitted adjacent to the bottom loading valve in order to simulate loss of the hold open pressure to the high level jet sensor, thus causing the valve to close.

The pre-check test device also acts as an emergency closure for the bottom loading valve before the fueller is full but it will not otherwise act as an emergency stop if the loading valve itself is faulty and allows liquid over spill.

5.2.2.5 Inside the tank, the bottom loading valve shall be fitted with a deflector to minimise splashing and cause the product to flow laterally.

### **5.2.3 Outlet valve**

5.2.3.1 The outlet / emergency / foot valve on the Refueller tank outlet is to be mechanically or pneumatically actuated from the operating station and should be located in between tank and the chassis and should not be positioned under the chassis and located as close as possible to the pump inlet. Low level indication shall be provided before suction loss of the pump. If necessary, a suitable vortex breaker shall be fitted.

5.2.3.2 An emergency button or mechanical trip device is also to be located on the opposite side of the Refueller to close the foot valve. Emergency closure trips / stops shall not require a pull action actuate them - rather, a push action shall be necessary, the device remaining in the actuated / stop position until reset.

## **5.3 Tank venting and pressure relief**

### **5.3.1 Normal service - loading, fuelling**

5.3.1.1. With due allowance for safety factors, sufficient venting capacity shall be provided to cope with thermal breathing, fuel loading at up to 2,000 litres / minute and for delivery up to 2,000 litres / minute.

5.3.1.2 The valves used for these purposes shall be wholly mechanical, self contained and automatic in operation. Air operated vents connected to the loading or delivery system shall not be used.



5.3.1.3 General requirements and practice are that for outward vapour flow, the vent valve system shall begin to open at approximately 70 m. bar for thermal breathing, and 175 m. bar for loading with a sufficient number of small and large capacity devices provided so that the tank internal pressure does not exceed 175 m bar for inward flow, the vent valve system shall begin to open at a differential pressure of 4.5 m. bar with a sufficient number of small and large capacity devices provided so that the tank is not subject to a vacuum of more than 70 m.bar. Vent valves of different types and sizes within the system may have different settings, provided the above overall requirements are met at the liquid loading and discharge flow rates specified.

5.3.1.4 For safety purposes, the valves shall restrict leakage of product 15 ml in 30 minutes in the event of vehicle overturn and when subject to a pressure equivalent to 110% of the maximum static head of liquid in the tank.

Valves shall be fitted with a fine mesh wire screen (wire 0.3 mm minimum diameter, maximum aperture 0.5 mm x 0.5 mm) or equivalent.

5.3.1.5 The valves may be all of one type or a combination of various capacities according to what can be provided by the manufacturer.

For example, small valves attached to the manhole covers may be used for thermal venting with larger ones fitted alongside or elsewhere on the tank. Alternatively, if the manufacturer can provide high capacity valves for cover installations, additional vents elsewhere may not be necessary.

**5.3.2 Emergency - fire engulfment, liquid overspill**

5.3.2.1 To cope with fire engulfment, additional pressure relief / venting shall be provided by the manhole covers or other special purpose, high capacity vent valves lifting against a spring - they shall begin to open at not less than 210 m.bar, and be fully open at 350m. bar. The man lids / emergency devices shall not lift under normal operation for venting purposes.

5.3.2.2. The venting devices shall have a minimum flow capacity, at 350 m.bar tank pressure, of equivalent free air based on a log / log graph constructed using the following data points (general application).

Approximate Tank Capacity - m <sup>3</sup>	Total Surface Area m <sup>2</sup>	Capacity of Free Air m <sup>3</sup> / hour
1	6.2	1,817
8	24.8	7,269
57	124.0	18,070
150	347.0	25,602

The basis for calculation is NFPA.30, using 75% wetted area and n-Hexane plus 22%, included to allow for Jet A-1 molecular mass, enthalpy of evaporation, relieving temperature and the isentropic exponent of fuel vapour. These figures also cover the Avgas requirement, this being 19% greater than for n-hexane. When tanks are circular or

elliptical in cross section, the above tabled capacities for Jet A-1 will need to be increased by up to 14.5% - e.g. for up to 86% wetted area.

5.3.2.3 The fueller covered by this specification requires an emergency venting capacity of 15,500 m<sup>3</sup>/hour of equivalent free air at 350 m.bar internal pressure.

5.3.2.4 The size of holes at the top of the baffles is critical and shall be determined by calculations similar to those used for bursting discs - e.g. B.S. 2915. These holes shall be large enough to allow vapour to flow easily, with minimal pressure drop, from baffled sections with no emergency venting device to those so provided, thus preventing changes in liquid level which could otherwise result in the vent being blocked / flooded with liquid in a situation which would otherwise be contained.

5.3.2.5 The equipment provided for emergency air venting shall also be capable of preventing the tank pressure from exceeding 350 m.bar in the event of liquid overspill at flow rates up to 4,000 litres/minute.

#### **5.4 Tank calibration and contents**

5.4.1 The tanks are to be calibrated in litres. and calibration charts are required to be provided along with the refueler.

During calibration, the refueller is to be standing on level ground, with all tyres inflated to the correct pressures.

5.4.2 An aluminium dip tube shall be fitted in tank. The closure shall be such that any excess pressure in the tank will be released before the closure can be removed.

The tube shall have an opening in the wall above the maximum contents level to provide a pressure balance.

A captive black anodised aluminium or hardwood dip stick or equivalent is to be provided with each tank, calibrated and marked with suitably small increments according to actual measurements.

The marking must be directly in volume units. Those which require reference to calibration tables are not acceptable.

5.4.3 A 250 mm diameter tank contents gauge is to be fitted in fueller tank to indicate either litres x 1000 (preferred) or as a minimum - empty,  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and full - based on actual measured volumes. The fueller manufacturer will therefore need to make or obtain a new scale for the gauge. Operation must be unaffected by the pressure

in the tank. The gauge is to be fitted on the same side of the tank as the fuelling control station.

### **Chapter 6:- Testing and records**

6.1 Testing shall be performed after completion of painting.

6.2 On completion, hydrostatic pressure of 15 bar or 20 bar(as applicable) are to be applied to the fuelling circuits, followed by performance/functional tests to check that all items are in good working order.

These tests shall be repeated in the presence of the representatives of Sri Lanka Air Force.

- 6.3 The tank shall be subjected to a hydrostatic test of 0.35 bar measured at the top surface.
- 6.4 A set of filter elements for flow testing shall be provided by the constructor or the service provider.
- 6.5 Proof is to be furnished that the filter water separator have been hydrostatically tested to the design test pressure.
- 6.6 A calibration / test certificate for the meter shall be available.
- 6.7 A complete functional test on all items of equipment shall be undertaken prior to shipment of the refueller in the presence of the committee appointed by the MOD. .
- 6.8 An Inspection test report and record shall be completed and forwarded with a copy also being included in the vehicle operating / maintenance manual.
- 6.9 Six weeks prior to inspection & testing, the contractor shall forward an inspection and performance test schedule for the approval of the client. The schedule shall cover all the major and important components of the equipment / vehicle offered. It shall also include equipments and gauges used for inspection and testing.

## **Chapter 7:- External painting**

### **7.1 General**

The vehicle is required for operation in a humid, tropical climate and may expose to conditions such as about 90% humidity, heavy rain, foggy weather, bright sunlight and a daily average air temperature range of 20 to 40°C.

Coatings shall not be affected or discoloured by the contamination with grease, oil hydraulic fluids, fuels or routine pressure/chemical washing.

It is therefore essential that surfaces to be painted are correctly prepared and properly coated, with particular attention to hidden surfaces to avoid early breakdown of paint film. The final finish must be smooth and free from specks and runs.

The mating faces of bolted assemblies must be sealed with a mastic type compound to prevent corrosion resulting from the ingress of water.

Any components or assemblies which shall not to be painted, such as nozzles, hoses, interlock switches, screw threads, adjusting devices, pressure/vacuum valves, data plates etc., shall be removed or suitably masked. Open ports shall be securely capped.

### **7.2 Surface Preparation, Priming and finish Painting**

The following information shall be considered as a general guide the paint manufacturer's recommendations on the selection and application instructions should always be followed.

The applicator must be experienced and equipped with adequate facilities and all necessary equipment in safe and orderly manner.

#### **7.2.1 Surface Preparation/Priming**

7.2.1.1 Bare steel shall be de-greased/oiled and cleaned before painting. If de-rusting chemical solutions are used, all traces shall be removed by neutralizing/washing. Tanks and steelwork shall be grit-blasted to

BS.4232:1967 2nd Quality or Swedish Standard Sa.2½. After blast cleaning, all the components shall be Hot Zinc Spray coated or Hot Dip Galvanized.

7.2.1.2 Upon completion of applicable surface preparation, Hot Zinc Spray coating or Hot Dip Galvanizing shall be performed on all the steel structures and the steel plates of the refuelling module.

7.2.1.3 Aluminium or aluminium-alloy sheet, shall be de-greased and be treated with a thin a coat of applicable primer before painting. It should not be abraded.

7.2.1.4 Wood surfaces shall be abraded smooth and dry before priming/painting

.7.2.1.5 Glass fibre reinforced surfaces shall be de-greased and lightly abraded before painting.

7.2.2 Preparation/Finish Painting

7.2.2.1 Further Preparation:-

Any indentations, welds or rough uneven surfaces shall be filled with stopping putty or brushing filler applied in thin layers at suitable intervals. When completely dry/cured, the surface shall be rubbed down wet with waterproof abrasive paper.

7.2.2.2 Finish coating:-

The cab (if necessary) and other components (as required) shall be under coated and top coated according to the paint manufacturer's instructions. Particular care must be taken to achieve the correct film thickness at each stage, taking into account the surface texture/finish of the item being painted. If necessary, additional coats shall be applied but excessive thickness shall be avoided as this can reduce the durability of the coating. Specks and runs, shall be avoided and in the case of panels, will not be accepted.

## **Chapter 8 :- Instruction Manual (IM)**

Supplier shall provide following Manuals/Catalogues on delivery of the Aircraft Refueller and shall cover the entire units. All such manuals shall be in **English**.

1. **Workshop Manual for the Chassis and engine** - Two Copies
2. **Spare Part Catalogue for the Chassis and engine**- Two Copies
3. **Operations & Maintenance Manual for the Refueller Module** - Two Copies
4. **Spare Part Catalogue for the Refueller Module** – Two Copies
5. Calibartion chart of the tank –Two copies

### **IM 1 Contents and format**

The manual shall provide clear and comprehensive guidance on vehicle operation and maintenance, so that it can be kept in good working order. All due allowance shall be made for lack of user familiarity with a completely new vehicle.

A typical content / arrangement would be as described in IM2 to IM6.

### **IM 2 Miscellaneous sections**

- IM 2.1. A title page showing manufacturer's name / address / telecommunication details, customer, purchase order number, works order / serial number. This shall be followed with 4 colour photographs showing the vehicle right and left views, the rear, and tank top (to include fittings / manholes / vents).

- IM 2.2 An index / contents list showing the various sections and list of illustrations.
- IM 2.3 A list of applicable specifications and standards - e.g. BS, ISO, EN etc.
- IM 2.4 General safety precautions relating to workshop practices, fire prevention/precautions, toxic vapours/fumes, the battery, main electrical equipment, asbestos packing (if any). Also list sources of potential danger when loading, driving, fuelling etc. and stress that the equipment shall only be operated by personnel qualified to do so by the user company.
- IM 2.5 A list of threaded fastener sizes used - metric/UNC/UNF/BSW/BSF etc., with spanner/hexagon sizes and recommended torque values.
- IM 2.6. Basic vehicle data - chassis details (make/model/VIN/engine model/power output/serial no/wheel-base etc.) - actual measured weights per axle when loaded-tyres/pressures-actual dimensions (heights of cab, tank, platform, overall length, width)- tank fabrication number - scissor lift fabrication number.

### **IM 2.7 General description**

This shall be written to aid understanding of the more complex details later in the manual. Content can be short or long according to the other information provided. A simple diagram shall be included.

### **IM 2.8 Tank and fittings**

This detailed information is necessary as preparation for the operating instruction and commissioning procedure sections.

**To cover topics such as** - description including attachments and their controls- bottom loading valve-high level shut off and test cock - man lids and vents - contents gauge - dip stick - sampling and rapid draining.

### **IM 2.9 Operating instructions**

To be read only at first, in preparation for carrying out the commissioning procedure.

**To cover such topics as** - loading from the depot - self loading - engaging/ disengaging the pump - reeling out and rewind the hose reels - starting flow(to recirculate or fuel aircraft) - fuelling operations with a trailer - stopping flow - depressurising the hoses - defuelling aircraft - use of emergency engine stops - use of the sampling cabinet and dump/recovery tank - use of the interlock override - etc.

### **IM 2.10 Commissioning procedure**

**To cover topics such as** - packing removal - installing (as applicable) nozzles, filter elements, fire extinguishers bonding reels or anything else such as lights, fuses and relays which may have been removed for safe keeping during shipment/transportation - loading - purging air from the fuelling pipework - purging air from the SPCV/ deadman valve-recirculating via each hose - checking /cleaning nozzle strainers - purging air from the defuel pipework - clearing of tank and filter sample / drain lines etc. Also it shall be cover in detail with block diagrams the procedure for re-commissioning after a major overhaul of the vehicle.

**System detail sections**

These sections are needed to describe very clearly, details of the various systems as follows. For clarify, it is suggested that numbered items on circuit drawings also be given a letter prefix.

Where the systems interface, the diagrams shall so indicate and thus, the related or linked item will be easier to identify.

It is suggested that the following letter prefixes be used:-

**A** - Fuelling system - e.g. A5 Meter, A17 Fuel sense pressure gauge.

**B** - Pneumatic system - e.g. B17 Foot valve control, B9 Interlock  
override switch

**C** - Hydraulic system - e.g. C23 Cylinder, C4 Flow control valve, reel

**D** - Electrical system - e.g. D35 Pump tachometer, D12 1/S relay unit

**E** - Miscellaneous - e.g. E17 Drawbar coupling, E6 Pump speed control cable

Each of these sections shall include a clear circuit diagram, on large size paper (A3 folded) for clarity if necessary, with all components given a discreet item number such as C5, D23 etc. with any interfaces to other systems shown.

For example, the electrical circuit diagram will have most items marked with the prefix D but when electric interlock switches are used, there will also be a B item shown representing the solenoid actuated pilot valve for the brake system.

Where components can fall into two categories, it is suggested that the code letter to apply is that for the first diagram in which it appears.

For example, the pneumatic operator of a foot valve, code A, would also have a code A. When the same pneumatic operator was illustrated with other pneumatic B components, it would still be code A.

Similarly, a pneumatically operated pressure switch to activate a warning light would appear as code B in both pneumatic and electrical systems. Each section shall also include a table showing, for example, the following information:-

Item	Part No.	Description	Qty.	Location	Supplier
A20	N2005060010	Non return valve	01	Tank rear, right hand side defuel line	Northvale Korting

Where it is not feasible to describe the item location such that it could be easily found, then simple sketches or photographs shall be provided.

For wholly bought out/unmodified items, the **original manufacturer's part numbers** must be used. Where items have been purchased and modified or added to by the fueller manufacturer to form a distinguishable separate assembly, then preferably, the separate

part numbers shall be given. Where this is really not feasible, a new unique part number may be given and the fueller manufacturer may be given and the fueller manufacturer may be mentioned as the supplier.

### **IM 3.1 Fuelling system A**

**Comprising** - Diagrams of the fuelling circuit and operating panel. parts list, operating/functional descriptions of fuelling/defuelling, secondary pressure control system, depressurising etc.

Reference shall be made to the item numbers on the circuit and what occurs when each control is selected.

### **IM 3.2 Pneumatic System B**

**Comprising** - A diagram of the pneumatic circuit including inter-connections with other systems, parts list, operating/ functional descriptions of pump selection, fuel/defuel selection, deadman control system (if pneumatic), air reference supply to the SPCV, brake interlock system, engine stop control system, trailer interlock and foot valve controls etc.

Reference shall be made to the item numbers on the circuit and what occurs in what sequence to what component, where air can go and does go under various circumstances.

### **IM 3.3 Hydraulic System C**

**Comprising** - A diagram of the hydraulic circuit including, parts list, descriptive information on safety, cleanliness, the reservoir, pump, pressure relief and flow control system, hose rewind and elevating platform operations/controls. Reference shall be made to item numbers on the circuit and where the oil travels in each situation. There shall also be a section here, or under 'Trouble Shooting' per item IM 4.2 describing how to remedy a 'stuck up' platform and re-set the various flow controls. This may be necessary following injudicious opening of the platform cylinder outward flow control, allowing excess flow rate and triggering of the cylinder emergency fuses/ restrictors. In turn, this would cause the platform to stick in the up position or only descend exceptionally slowly.

### **IM 3.4 Electrical system D**

**Comprising** - A diagram of the electrical circuit including wire colours and interconnections with other systems, parts lists, operating/functional descriptions of operations lights, obstruction lamps, deadman system (if electrical), pump speed tachometer, pump/road drive warning lights, platform alarm, brake interlocks (if electrical switches), brake override warning light, battery isolator, alternator protection circuit etc.

### **IM 3.5 Miscellaneous items E**

**Comprising** - Itemised parts list/location description etc. Components to be included with diagrams if necessary can include such things as pump speed controls, sampling cabinet, chain tensioners, hose reels guide rollers,, bonding reel, nozzle stowage assemblies/shrouds, scissors lift assembly, cab fire extinguisher, drive shaft modifications (gearbox to pump, pump to rear axle), recovery tank contents gauge, earthing/bonding lugs, tamper proof covers for adjusters, hydraulic drive coupling on the product pump extension, latch on bottom loading coupling interlock lever etc.

### **IM 4 Maintenance sections**

#### **IM 4.1 Routine inspection and lubrication.**

This part of the manual applies to the items and equipment installed by the fueller manufacturer as opposed to the chassis itself. Aspects covered shall include recommended **lubricants** and **schedules** - daily, weekly, monthly, 3 monthly, 6 monthly etc. as appropriate.

Typical details might be:-

**Daily** - check air reservoir drain

**Weekly** - check/top up hydraulic oil reservoir level , grease drawbar coupling pin, top up the pneumatic system lubricator and drain water, operate fuel/defuel selector switches to prevent seal stiction.

**Monthly** - Apply a few drops of oil to the drawbar actuating lever,platform gate hinges, air cylinder pivots pins, deck nozzle stowage cover hinges, bottom loading interference bar pivots. Apply grease to spring loaded catches. Check/top up oil level in the fuelling pump gearbox.

**3 monthly** - check /top up oil level in the bulk meter gearbox. Check/replace oil filter in hydraulic system Clean the pneumatic system filter elements. Lubricate the hose reel rewind chains.

**6 monthly** - change the oil in the fuelling pump gearbox.

#### **IM 4.2 Trouble shooting**

Clearly it is not possible to cover every eventuality and difficulty which might be encountered in a complex system. Sections covering the fuelling, pneumatic, hydraulic, and electrical systems shall be good enough for users to educate themselves and decide what may be causing trouble. Nevertheless, the following major difficulties shall be addressed and suggestions made to investigate and remedy the situation.

- Brakes cannot be released.
- Interlock action to apply brakes slowly or not working.
- No fuel flow when in the fuelling mode.
- Flow rate unusually low in the fuelling mode.
- Release of the deadman handle does not stop flow or flow stops too slowly.
  
- Release of deadman does not return pump speed to idle.
- No fuel flow when in the defuelling mode.
- No fuel flow when bottom loading.
- Elevating platform will not rise, stop rising or lower.
- Fuel pump will not engage or disengage or gears baulk.
- Reels will not rewind, lock or free-wheel out.

#### **IM 4.3 Recommended spare parts**

The bidder shall submit the following priced spare parts lists along with on a per unit basis.

- (2). To cover anticipated **major maintenance requirements** over a 5 year period, on a per unit basis.



#### **IM 4.4 Component servicing and repair**

In this section, it will not be sufficient only to enclose manufacturers' general leaflets and information sheets.

In some cases, for the more simple assemblies, it will be sufficient to provide only the drawings covered by item IM 6 below.

In other cases, complete and current information will be required for such items as:-

Bulk meter - Fuel pump - Platform hydraulic cylinders - Hose reel swivels

Fuelling nozzles and regulators - Secondary pressure control/deadman valve

Tank foot valve - Bottom loading valve and high level sensor – Filter monitor element changing - Fuel/defuel valve - Differential pressure gauge - Hydraulic pump and motors

#### **IM 5 Test certificates**

Certificates shall be provided for the tank pressure test, bulk meter calibration, the 5 bar general circuit pressure test, the 20 bar system test downstream of the closed line isolating valves.

In addition, the manufacturer shall enclose a copy of his own test schedule/results.

A copy of a check list for verifying all the chassis options and type variants specified on the purchase order shall be provided for easy reference.

#### **IM 6 Illustrated parts list and drawings**

General arrangement, sub-assembly and any useful detail drawings or descriptive sketches, which are not included elsewhere, shall be placed here, together with an index. The aim shall be to provide as much information as possible in the form of an "illustrated catalogue" of components, with readily available (not necessarily specially created) exploded views and parts lists so that locally, equipment can be dismantled/repaired if necessary without specialised overhaul instructions to hand.

As necessary, the drawings shall be marked with the item number from the detailed parts list and placed in sections A, B, C and E. Full size drawings shall be carefully folded and kept in plastic pockets, together with any other booklets and leaflets and leaflets covering complete units, such as pressure control equipment, meters, etc.

#### **IM 7. WARRANTY**

- a. Period of warranty for vehicle and fueling pump and accessories should be minimum of two years.
- b. **Components that come under warranty to be stated.**
- c. Indicate the number of free servicing provided by the Local agent.

## **IM 8. TRAINING OF PERSONNEL**

The successful tender will be responsible for meeting the cost and arranging the following training, including course notes. The training will have to take place at the manufacture premises. The total cost related to same should be born by the tender.

### **Operational and Routine Maintenance Training**

a. **Instructor/Operator**

A total number of **eight (08) supplier AFQC** personnel (Bowser Operator) tradesmen are to be trained as instructor / Operator, to the level where they competent to instruct other Supplier AFQC personnel (Bowser Operator) tradesmen in the safe and efficient operation, inspection and daily maintenance.

b. **Maintenance Training**

A total number of **two (02) MT engineering staff** to be trained to the level where they are competent to carry out standard routine preventive maintenance, fault finding, operation and testing of vehicle tasks.

c. **Specialized Training**

The successful bidder will be responsible for training of **05 personnel (03 AFQC Operators and 02 MT Technicians)** to be fully competent to handle major repairs and servicing tasks related to the vehicle chassis and fueling equipment & accessories fitted to this specialist vehicle.

## **IM 9 INTERIM INSPECTION**

The successful bidder will be responsible to arrange an interim inspection on Chassis and all the components prior to the assembling of fueling equipment to the main chassis at manufactures premise for **two officers** (one logistics and one engineering) and **five airmen** (Three AFQC and two MTM) nominated by the Commander of the Air Force. All the expenses, including return air tickets inland transport, food and accommodation to be borne by the bidder.

## **IM 10 FINAL INSPECTION**

The successful bidder will be responsible to arrange final inspection on total function after assembling fueling equipment to the main chassis, before painting at manufactures premise for **five Officers** (Three logistics and two engineering) and **six airmen** (four FQC and two MTM) nominated by the Commander of the Air Force. All the expenses, including return air tickets inland transport, food and accommodation to be borne by the bidder.

## **Chapter 9 : - Inspections, Training and Tests**

The following inspections and tests shall be performed;

### **Inspection:**

- a. Inspecting authority - Sri Lanka Air Force
- b. Place of Inspection - At Manufacturer's premises
- c. Training of personnel - At Manufacturer's premises
- d. The Supplier will provide all administrative facilities and all financial requirements (Air tickets, food and accommodation etc..) to the trainees and inspectors at the time of inspection at its premises.

e. Scope of Inspection;

- (1) Confirmation of the specification laid down in the contract.
- (2) Road Test for the vehicle and 100% functional test for refuelling system
- (3) 100% Completeness of equipment in all respect.
- (4)** It shall be accepted by the buyer that the vehicles inspected would be from the order placed by the buyer and inspected vehicle/s would be shipped to Sri Lanka with the mileage it incurs during the said inspection and no separate vehicle would be offered for inspection and/or road test.

**Section IV. Bidding Forms**

**Table of Forms**

Bid Submission Form.....

Bid Security (Guarantee) .....

Bid-Securing Declaration .....

## **Bid Submission Form**

*[The BIDDER shall fill in this Form in accordance with the instructions indicated No alterations to its format shall be permitted and no substitutions shall be accepted.]*

Date: *[insert date (as day, month and year) of Bid Submission]*

No.: *[insert number of bidding process]*

To: **Commander of the Air Force**

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda No.: *[insert the number and issuing date of each Addenda];*
- (b) We offer to supply in conformity with the Bidding Documents and in accordance with the Delivery Schedules specified in the Schedule of Requirements the following Goods and Related Services [*\* insert a brief description of the Goods and Related Services*];
- (c) The total price of our Bid without VAT, including any discounts offered is: *[insert the total bid price in words and figures];*
- (d) The total price of our Bid including VAT, and any discounts offered is: *[insert the total bid price in words and figures];*
- (e) Our bid shall be valid for the period of time specified in ITB Sub-Clause 18.1, from the date fixed for the bid submission deadline in accordance with ITB Sub-Clause 23.1, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (f) If our bid is accepted, we commit to obtain a performance security in accordance with ITB Clause 43 and CC Clause 17 for the due performance of the Contract;
- (g) We have no conflict of interest in accordance with ITB Sub-Clause 4.3;
- (h) Our firm, its affiliates or subsidiaries—including any subcontractors or suppliers for any part of the contract—has not been declared blacklisted by the National Procurement Agency;
- (k) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed.
- (l) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

Signed: *[insert signature of person whose name and capacity are shown]*

In the capacity of *[insert legal capacity of person signing the Bid Submission Form]*

Name: *[insert complete name of person signing the Bid Submission Form]*

Duly authorized to sign the bid for and on behalf of: *[insert complete name of BIDDER ]*

Dated on \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ *[insert date of signing]*

## **Bid Guarantee**

*[Note: the PURCHASER is required to fill the information marked as "\*" and delete this note prior to selling of the bidding document]*

*[this Bank Guarantee form shall be filled in accordance with the instructions indicated in brackets]*

----- *[insert issuing agency's name, and address of issuing branch or office]* -----

**\*Beneficiary:** ----- *[ name and address of PURCHASER]*

**Date:** ----- *[insert (by issuing agency) date]*

**BID GUARANTEE No.:** ----- *[insert (by issuing agency) number]*

We have been informed that ----- *[insert (by issuing agency) name of the BIDDER ; if a joint venture, list complete legal names of partners]* (hereinafter called "the BIDDER ") has submitted to you its bid dated ----- *[insert (by issuing agency) date]*(hereinafter called "the Bid") for the supply of *[insert name of Supplier]* under Invitation for Bids No. ----- *[insert IFB number]* ("the IFB").

Furthermore, we understand that, according to your conditions, Bids must be supported by a Bid Guarantee.

At the request of the BIDDER, we ----- *[insert name of issuing agency]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of ----- *[insert amount in figures]* -----*[insert amount in words]*) upon receipt by us of your first demand in writing accompanied by a written statement stating that the BIDDER is in breach of its obligation(s) under the bid conditions, because the BIDDER :

- (a) Has withdrawn its Bid during the period of bid validity specified; or
- (b) Does not accept the correction of errors in accordance with the Instructions to BIDDER s (hereinafter "the ITB"); or
- (c) having been notified of the acceptance of its Bid by the PURCHASER during the period of bid validity, (i) fails or refuses to execute the Contract Form, if required, or (ii) fails or refuses to furnish the Performance Security, in accordance with the ITB.

This Guarantee shall expire: (a) if the BIDDER is the successful BIDDER, upon our receipt of copies of the Contract signed by the BIDDER and of the Performance Security issued to you by the BIDDER, or (b) if the BIDDER is not the successful BIDDER , upon the earlier of (i) our receipt of a copy of your notification to the BIDDER that the BIDDER was unsuccessful, otherwise it will remain in force up to ----- *(insert date)*

Consequently, any demand for payment under this Guarantee must be received by us at the office on or before that date. \_\_\_\_\_

*[signature(s) of authorized representative(s) ]*

## Section V

### Schedule of requirements

#### Price Schedule

#### IMPORTANT

\* Please refer to **ITB 14 and 21** prior to indicate the prices. The total amount of each item shall be written in words in the space given against them.

<b>Description</b>	<b>D of Q</b>	<b>Unit Price without VAT (Rs.)</b>	<b>Discounted Price (Rs.)</b>	<b>VAT (Rs.)</b>	<b>Unit Price with VAT (Rs.)</b>	<b>Total Price with VAT (Rs.)</b>
Bowser Aviation Refuelling (10,000 Ltrs Capacity)	Ea 01					
Total price in words: Rupees						

- \* The price schedule shall be authenticated by the BIDDER.
- \* The BIDDER shall ensure that all the details provided herein are 100% accurate.
- \* It is mandatory that the unit price of the article or service be inclusive of NBT Tax, if applicable. Based on that, VAT shall be indicated separately in the price schedule.
- \* Please indicate the details listed below with regard to the above items.

S/N	Item	Description							
		D of Q	Brand and Model	Country of origin and Manufacture's Name	Guaranty /Warranty	VAT Reg. No.	Bid Validity 91 days <u>15<sup>th</sup> May 2019</u> )	Delivery Period	Address Telephone/ Fax
1	Bowser Aviation Refuelling (10,000 Ltrs Capacity)	Ea 01					Agreed / Not Agreed		

**Contact details of the BIDDER**

**Name:** .....

**Address:**.....

.....

**Tel:**...../...../.....

**Fax:** .....      **Email.** .....

**Date** .....

**Signature of BIDDER** .....

**Affix Company Rubber Seal**



## **Inspections and Tests**

**As per the Contract agreement.**

**Section VI. Conditions of Contract**

**A Formal Contract agreement will be executed with the selected BIDDER.**

**Section VII.**  
**Contract Data**

**As per the Contract agreement.**

## **Section VIII. Contract Forms**

- 01. Performance Security**
- 02. Bank Guarantee for advanced payment**

**\* Formats will be submit along with the Letter of award**

# Invitation for Bids (IFB)

## Paper Advertisement



### **PROCUREMENT OF VEHICLES AND JOGGING SHOES FOR THE SRI LANKA AIR FORCE**

1. The Chairman, Department Procurement Committee of the Sri Lanka Air Force invites sealed Bids from eligible and qualified bidders for the supply of under mentioned items to the Sri Lanka Air Force.

Procurement Identification Number	Description	D of Qty	Qty	Date and time of Bid closing	Non Refundable Fee (Rs.)
AHQ/18/PUB/E/1028	Tractor trailers	Each	50	30 <sup>th</sup> January 2019 at 1030 Hrs	6,000.00
AHQ/18/PUB/E/1029	Passenger Coaches (Non air condition)	Each	10	30 <sup>th</sup> January 2019 at 1030 Hrs	14,500.00
AHQ/18/PUB/E/1030	Dump Truck	Each	05	30 <sup>th</sup> January 2019 at 1030 Hrs	12,500.00
<b>AHQ/18/PUB/E/1031</b>	<b>Aviation refuelling Bowser</b>	<b>Each</b>	<b>01</b>	<b>31<sup>st</sup> January 2019 at 1030 Hrs</b>	<b>12,500.00</b>
AHQ/18/PUB/MT/1006	Single Cabs	Each	10	31 <sup>st</sup> January 2019 at 1030 Hrs	14,500.00
AHQ/18/PUB/CLO/1009	Jogging Shoes for Senior non Commissioned Officers	Pairs	6000	31 <sup>st</sup> January 2019 at 1030 Hrs	6,000.00

2. Procurement will be conducted through National Competitive Bidding method.

3. Complete set of bidding documents in English language could be inspected by interested bidders from the Sri Lanka Air Force website [www.airforce.lk](http://www.airforce.lk). Further Bidding documents may purchase between 1000 hrs and 1300 hrs on every working day from the Procurement Division upon payment of a non refundable fee to the Shroff at Sri Lanka Air Force Station Colombo. Deadline for the payment and document collection will be the closing date of the respective procurement. The offers submitted without the payment will not be accepted and the receipt for the payment shall be attached to the offer at the time of submitting.

4. The sealed bids in duplicate, shall be addressed to “The Chairman, Departmental Procurement Committee and may be either dispatched by registered post or deposited in the Tender Box at the Main Guard Room well before the closing time. Late bids will not be accepted. Bids will be opened soon after closing the bids. Bidders or their authorized representatives will be permitted to be present at the opening of the bids, upon presentation of their National Identity Card and letters of authorization from their employers. No bidder or his representative will be permitted to attend the bid opening after the bid closing time.

5. The special conditions ruled for this procurement are clearly indicated in section II (Bidding Data Sheet) and section III (Special Condition) of bidding document. Further, required items are listed in the section V (schedule of requirements) of each bidding document and the applicable rates of supplies shall be indicated only in the relevant cages of price schedule. The rates quoted by each bidder details in the Schedule of Prices shall not be subjected to variation on any account.

6. The supplies shall be made to Sri Lanka Air Force Base Katunayake. The prospective bidders shall be aware that they shall include all their expenses with all taxes including VAT and other levies in the quotations submitted.

7. Interested eligible bidders may obtain further information from the Chief Procurement Officer (Tel. 011-2325468) or Procurement Officer Tenders (Tel. 011-2441553 or 011-2441044 Extension 23569 Fax: 011- 2441553 and 011-2347694).

8. The address referred to above is:  
Sri Lanka Air Force  
No.140  
Sir Chittampalam A Gardiner Mawatha  
Colombo 02

**COMMANDER OF THE AIR FORCE**

Air Force Headquarters  
P.O. Box 1592  
Colombo 02