DELHI AVIATION FUEL FACILITY PRIVATE LIMITED
AVIATION FUELLING STATION
SHAHBHAD MOHAMMADPUR
IGI AIRPORT
NEW DELHI-110061

TENDER NO: DAFFPL/MOD/FF/2015-16/14

INVITING TENDER FOR
SUPPLY & SUPERVISION OF INSTALLATION and COMMISSIONING
OF HYDRANT CENTRIFUGAL PUMPSETS

BID DUE DATE & TIME: 1500 Hrs. IST on January 28th, 2016

OPENING OF TECHNICAL BIDS: 1100 Hrs. IST on January 29th, 2016

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Sign & Stamp of Bidder

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NOTE: BIDDERS ARE REQUESTED TO SIGN AND STAMP ALL THE PAGES OF THE TENDER DOCUMENT AND SEND THE SAME BACK IN THEIR OFFER AS A TOKEN OF UNCONDITIONAL ACCEPTANCE OF TENDER FIRMS.

THE DEVIATIONS, IF ANY, SHOULD BE MENTIONED SEPARATELY ON BIDDER‟S LETTER HEAD IN TECHNICAL BID. THE DEVIATIONS MENTIONED ANYWHERE ELSE SHALL NOT BE CONSIDERED. IN ABSENCE OF DEVIATION SHEET IT WOULD BE CONCLUDED THAT BIDDER HAS ACCEPTED THE TENDER TERMS WITHOUT ANY DEVIATIONS. CORRECTIONS IN TENDER DOCUMENT WILL NOT BE ACCEPTED.

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Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

TENDER NOTICE
DELHI AVIATION FUEL FACILITY PROVATE LIMITED

INVITING TENDER FOR
SUPPLY & SUPERVISION SERVICES FOR INSTALLATION and COMMISSIONING OF FUEL HYDRANT CENTRIFUGAL PUMPSETS COMPLETE AS PER SPECIFICATION AS REQUIRED

TENDER NO: DAFFPL/MOD/FF/2015-16/14

Delhi Aviation Fuel Facility (P) Ltd (DAFFPL) invites sealed bids under single stage two bid system from eligible bidders for supply of Fuel Hydrant Centrifugal Pumpsets complete as per specification as required.

Brief Scope of work:

We intends to procure Fuel Hydrant Centrifugal Pumpsets complete as per specification as required. Scope of supply includes Design, Manufacturing, Testing, Supply, and Supervision of Installation & Commissioning for Fuel Hydrant Centrifugal Pumpsets at our DAFFPL office.

Bid Security (EMD):	As mentioned in the Tender document
Date, Time & Venue for Voluntary Pre-bid Meeting:	January 08th, 2016; 14:30 HRS (IST) at DAFFPL, Aviation Fuelling Station, Shahabad Mohammadpur, New Delhi-110061
Bid Due Date, Time & Place of Submission:	Upto 15:00 HRS (IST) on January 28th, 2016 at the office of the Chief Executive Officer, DAFFPL, Aviation Fuelling Station, Shahabad Mohammadpur,

Detailed Invitation for Bids (IFB) along with Pre-qualification Criteria, Bid Document Corrigenda can be viewed and downloaded from DAFFPL's website: **http://www.daffpl.in**

Chief Executive Officer
DAFFPL, New Delhi
8826120066

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CHAPTER 1: INTRODUCTION (COVERING NOTE)

TENDER FOR SUPPLY OF FUEL HYDRANT CENTRIFUGAL PUMPSETS COMPLETE AS PER SPECIFICATION FOR OUR FUEL FACILITY IN SHAHBAD MOHAMADPUR, NEW DELHI, INDIA

We are pleased to invite your most competitive offer for the captioned work in complete accordance with the tender documents attached herewith.

Delhi Aviation Fuel Facility Private Limited (DAFFPL) is a Joint Venture comprising Indian Oil Corporation Ltd. (IOCL), Bharat Petroleum Corporation Ltd. (BPCL), and Delhi International Airport (P.) Ltd. (DIAL). We provides the infrastructure aimed at ensuring an uninterrupted flow of Aviation Turbine Fuel (ATF) to all type of aircrafts at the Indira Gandhi International Airport, New Delhi (IGI Airport) as per international benchmarking.

We intend to procure Fuel Hydrant Centrifugal Pumpsets complete as per specification as required.

Fuel Hydrant Centrifugal Pumpsets are required to be supplied as specified in the tender document, specifications / Bill of quantities.

The details of specifications of Fuel Hydrant Centrifugal Pumpsets required to be procured is enclosed along with this tender document.

Delhi Aviation Fuel Facility Private Limited (DAFFPL) invites sealed tenders in prescribed tender form under two-bid system. For viewing details including EMD, BID QUALIFICATION CRITERIA etc. please visit our web site www.daffpl.in and go to tender section by clicking the link “Tenders”. Tender documents are available on our website.

The bid documents can also be collected from our office and the bids are to be submitted in Physical form in the Tender Box kept at the office of the **Delhi Aviation Fuel Facility Private Limited (DAFFPL)** at Shahabad Mohammadpur, New Delhi-110061, India.

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1. The Tender is floated in Two Bid system consisting of Technical Bids (Bid Qualification Criteria - BQC, Technical plus Commercial) and Price Bids.

   Part-I : Bid Security / EMD in accordance with tender document.
   Part-II : BQC (Bid qualification criteria), Technical & commercial Bid, duly filled in & along with all supporting as requested to be submitted in Physical form in the Tender Box.
   Part –III : Price Bid.

2. The bidder should be able to manufacture & supply the entire size/type/quantity bidded by them. Bidders cannot bid for part items or part quantity of a lot.

3. Firstly the Technical bid (BQC & Techno commercial bids) shall be opened. The Bids shall be initially scrutinized by a team as per tender requirements of BQC (Bid qualification criteria). Technical cum commercial bids of only those vendors who qualify the BQC will be processed further. The price bids of only techno-commercially qualified bidders will be opened, evaluated and shortlisted for Placement of Purchase Order.

4. Each page of bid documents is to be duly signed & stamped by the bidder before submitting the Tender.

5. The bids submitted should be valid for **four months** from the due date of bid submission for Owners acceptance. Once accepted it will remain firm till completion of contracts/orders.

6. We request the bidder to carefully go through all tender documents before submitting the offer. Please note that any exceptions or deviations to the tender document are necessarily to be recorded in the attached deviation statement only. Any exceptions/deviations brought out elsewhere in the bid shall not be considered.

7. The bidders may be invited for a presentation to DAFFPL during Techno-commercial evaluation before price bid opening.

8. The bidders to provide their bank details/ PAN / Sales Tax /WCT Registration numbers/Service Tax Registration No. / VAT registration No., as applicable for updating vendor master file. You are also requested to keep us informed of any change in address / status of your business / contact details including email address etc.

9. Party can quote with the deviations as referred in Point No.6 above. Please refer query end date / time in tender calendar after which no query posted by bidder shall be considered. However DAFFPL reserves the right to respond the queries

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after cutoff date / time mentioned in tender calendar.

10. Please note that queries related to scope of job, tender specifications, terms & conditions etc., should be submitted by means of letter/E mail to reach the owner's office not later than one week before the meeting .It may not be practicable to answer queries received late, but queries and responses/clarifications will be posted in the form letter, E-mail within one week from the date of Pre Bid Meeting. Any modification in the bid document that may become necessary as a result of the Pre Bid meeting shall be made by the owner exclusively through the issues of corrigendum/ addendum posted at web site and not through the minutes of the pre bid meeting.

11. UNSOLICITED POST BID MODIFICATION
    Bidders are advised to quote strictly as per terms and conditions of the Bidding Document. After tender submission due date & time/ extended due date & time (as the case may be) the bidders shall not make any subsequent price changes, whether resulting or arising out of any technical / commercial clarifications sought/allowed on any deviations or exceptions mentioned in the bid unless discussed and agreed by DAFFPL in writing.

12. EMD & Techno Commercial bid shall be opened on **January 29th, 2016 at 11:00 Hrs (IST)** in the presence of authorized representative of bidders (Restricted to one [1] person per bidder only) at the office of DAFFPL. Price Bid of only those bidders whose offer is found meeting both PQC & techno-commercially acceptable, shall be opened on a later date as per convenience of DAFFPL after intimation to the qualified bidders.

13. DAFFPL reserves the right to accept any tender in whole or in part or reject any or all tenders without assigning any reason. DAFFPL reserves right to accept any or more tenders in part. Decision of DAFFPL in this regard shall be final and binding on the bidder.

QUERIES AND CLARIFICATIONS: Any query or clarification with regard to this tender may please be referred to below address & phone nos. on any working day during office working hours

Mr Manish Kumar Project Coordinator consultant@daffpl.in, bksingh@daffpl.in 9810640818	Mr V S Thakur (Consultant) Project Manager Virender.Thakur@mottmac.com 91-120-3992308 9313834546

14. GOVERNING LAWS: The laws of Union of India shall govern all matters concerning the tender. Any issue arising related to the tender or the selection process shall be adjudged by the courts in Delhi alone.

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15. A Pre-bid meeting is scheduled for **08/01/2016 at 14:30 hrs IST** at the office of DAFFPL, New Delhi. All prospective bidders can participate in the same. Any clarification with regard to tender shall be sorted out during the pre-bid meeting.
    a. The purpose of the pre-bid meeting is to clarify any doubts of the BIDDER on the interpretation of the provisions of tender.
    b. Bidder(s) are requested to submit their queries, mentioning form name, clause no. & clause, by a letter / e-mail to our office as per schedule in order to have fruitful discussions during the meeting.
    c. All the Bidder(s) are requested to attend the pre-bid meeting to be held at DAFFPL Office as per schedule.

16. **Tender document can be purchased from our office located at Shahabad Mohammadpur at a cost of Rs 1000/- and also can be downloaded from our website www.daffpl.in.**
    - **A bidder who downloads the document from website has to submit a separate DD for an amount of Rs.1000/- along with the EMD document.**
    - **Bidders who purchase the document from our office have to submit a DD for an amount of Rs.1000/- at the time of purchase.**
    - **Bidders who had purchased the documents of cancelled TENDER NO: DAFFPL/MOD/FF/2015-16/04 are exempted from document fee.**

17. **Earnest Money Deposit (EMD) (also referred to as Bid Security):** Bidder shall be required to submit the Earnest Money Deposit (EMD), either in the form of Bank guarantee as per format (provided as Annexure) or PAY ORDER or BANK DRAFT (in favour of Delhi Aviation Fuel Facility Private Limited, payable at New Delhi) at our office. The EMD in either form has to be submitted on or before the due date & due time of bid submission of this tender with a covering note mentioning the tender no.

    a. The bidders not submitting EMD by due time & date shall be rejected & their bids shall not be evaluated further.
    b. **The EMD amount shall be 2.0 Lakhs INR**
    c. Firms registered with National Small scale Industries (NSIC)/MSME of India are exempted from submission of bid security .Central Public Sector Enterprises of India and Firms registered with Nation Small Scale Industries Corporation (NSIC) of India are exempted from submission of Bid Security. Central Public Sector Enterprises are requested to give a self-declaration on their letter head to this effect. Bidders registered with NSIC of India are also requested to submit self-declaration on their letter head to this effect along with a copy of their Valid Registration certificate, specifying limit of volume and other details which should be submitted.

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THE FORMS /ATTACHMENTS TO THIS TENDER ARE AS UNDER:

1. Covering Note – CHAPTER: 1
2. Instructions To Bidders - CHAPTER: 2
3. Bid-Qualification Criteria - CHAPTER: 3
4. BQC –List of Documents – CHAPTER: 4
5. General Purchase Conditions- CHAPTER: 5
6. Technical Specification Documents - **(Attached separately as Annexures I & II)**
7. Annexure attached are as follows:
   - Annexure III – DEVIATION SHEET
   - Annexure IV – DECLARATION SHEET
   - Annexure V – FORMAT FOR DRAFT BANK GUARANTEE IN LIEU OF BID SECURITY (EMD)
   - Annexure VI - FORMAT DRAFT COMPOSITE BANK GUARANTEE FOR SECURITY DEPOSIT/PERFORMANCE GUARANTEE
   - Annexure VII – FORM OF LETTER OF UNDERTAKING
   - Annexure VIII – DECLARATION TO BE SUBMITTED ALONGWITH Technical BID

Thanking you,
Yours faithfully,
For DELHI AVIATION FUEL FACILITY (P) LTD.

Chief Executive Officer
DAFFPL, New Delhi

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Sign & Stamp of Bidder

CHAPTER 2: INSTRUCTIONS TO BIDDERS

1. The bidder shall bear all costs associated with the preparation and submission of the bid and Owner will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

2.
   - Vendor is requested to submit their bids taking full notice of all the technical specifications, terms and conditions, forms & attachments to this tender. Bids must be submitted in Physical form only.
   - The authorized Indian representatives of foreign manufacturers submitting their offers shall ensure that the bids are submitted strictly as per the rules. Bids in Foreign Currency will not be accepted. If successful, order will be on Indian representative only. EMD shall also be submitted in Indian currency as per Clause mentioned above.

3. Owner reserves the right to accept / reject any or all bid qualification documents at their sole discretion without assigning any reason whatsoever.

4. Owner is not responsible for any delays from bidder end.

5. Owner reserves the right to make any changes in terms and conditions of purchase before due date of bid submission and to reject any or all bids received incomplete.

6. Undertaking by the bidder:
   a. I/we hereby undertake that the statements made herein/information given in the bids through Physical Tendering system/annexure/forms referred are true in all respects and that in the event of any such statement or information being found to be incorrect in any particular, the same may be construed to be a misrepresentation entitling DAFFPL to avoid any resultant contract.
   b. I/we further undertake as and when called upon by DAFFPL to produce, for its inspection, original(s) of the document(s) of which copies have been annexed hereto.

7. Owner, at its discretion reserves the right to verify information submitted by the bidders.

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8. Bidder to submit documents/information to satisfy the bid qualification criteria. Bidders should also be in a position to produce further information as and when required by DAFFPL with in a time limit of 15 days.

9. DAFFPL reserves their right to negotiate the quoted prices with lowest bidder.

10. Bidders would be qualified based on data and documents submitted by them.

11. Owner's decision on any matter regarding short listing of vendors shall be final and no corresponding in this regards will be entertained.

12. The vendors who are on IOCL/BPCL/DIAL holiday list or delisted will not be considered.

13. The bidder is expected to examine all instructions, forms, attachments, terms and specifications in the tender document. The entire tender document together with all its attachments thereto, shall be considered to be read, understood and accepted by the bidder, unless deviations are specifically stated seriatim by the bidder. Failure to furnish all information required in the tender document or submission of a bid not substantially responsive to the tender documents in every respect will be at bidder risk and may result in the rejection of his bid. The bidder scope of supplies as specified in the material requisition shall be in strict compliance with the scope detailed therein and in the bid document.

14. Bidders in their own interest shall ensure that they submit their bid, complete in all respects, well within the specified bid due date and time. No relaxation shall be given for delay due to any unforeseen event in submission of bid.

15. At any time prior to the bid due date, we may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the bid document. The amendment will be notified through our portal www.daffpl.in to all prospective bidders and will be binding on them. In order to afford prospective bidder, reasonable time in which to take the amendment into account in preparing their bids, we may, at our discretion, extend the bid due date.

16. The bid prepared by the bidder and all correspondence/ drawings and documents relating to the bid exchanged by bidder and the owner shall be written in ENGLISH language, provided that any printed literature furnished by the bidder may be written in another language so long as accompanied by an ENGLISH translation, in which case, for the purpose of interpretation of the bid, the ENGLISH translation shall govern.

17. Declaration with the bid qualification criteria that bidder has not been banned or delisted by any Government or quasi Government agencies or Public Sector

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Undertaking (PSU) as per declaration format (provided as annexure) of the tender document should be submitted along with the bid.

18. Bidders are advised to submit bids based strictly on the terms & conditions and specifications contained in the tender document and not to stipulate any deviations. Each Bidder shall submit only one bid. A Bidder who submits more than one bid will be rejected. Alternative bids will not be accepted.

19. The Owner may, at its discretion, extend the bid due date, in which case all rights and obligations of the Owner and the Bidders, previously subject to the bid due date, shall thereafter be subject to the new bid due date as extended. The same will be hosted in the web site.

20. Bids shall be kept valid for 4 months from the bid due date. A bid valid for a shorter period shall be considered as non-responsive and rejected by the Owner. Notwithstanding above, the Owner may solicit the Bidder consent to an extension of the period of bid validity. The request and the responses thereto shall be made in writing. The EMD (bid security) shall also be accordingly extended.

21. Telex/ Telegraphic/ Telefax / E-mail offers will not be considered and shall be rejected.

22. No bid shall be modified subsequent to the due date & time or extension, if any, for submission of bids. Bidder(s) to note that Price changes after submission of bid shall not be allowed. In case any bidder gives revised prices/price implication, his bid shall be rejected. No bid shall be allowed to be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder. Withdrawal of a bid during this interval shall result in the forfeiture of Bidder s EMD.

23. Bids that do not meet the Bid qualification criteria as specified in the bid document shall be rejected. A bid with incomplete scope of work and/or which does not meet the technical requirements as specified in the bid document, shall be considered as non-responsive and rejected. Conditional bids will be liable for rejection.

24. The Owner will examine the bids to determine whether they are complete, whether any computational errors have been made, whether the documents have been properly signed and whether the bids are generally in order.

25. The bids without requisite EMD and/or not in the prescribed Performa and the time limit will not be considered and bids of such bidder Bidder(s) shall be rejected.

26. PRICE EVALUATION CRITERIA: As award is on overall landed lowest basis, part

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offers will be rejected. Bidder has to quote for all items in a lot for us to consider them.

27. Prior to the expiration of period of bid validity, the owner will notify the successful bidder in writing or by e-mail, that his bid has been accepted. The Notification of Award will constitute the formation of the Contract. Delivery Period shall be counted from the date of notification of award (Letter/Fax/e-mail of Intent).

28. Any efforts by a bidder to influence the owner/ in the owner bid evaluation, bid comparison or contract award decisions may result in the rejection of their bid.

29. ISSUE OF CONTRACT/ PURCHASE ORDER: After the successful bidder has been notified that his bid has been accepted, DAFFPL will send to such bidder a detailed contract/purchase order incorporating all the terms and conditions agreed between the parties. Within 15 days of receipt of the detailed purchase order, the bidder shall sign and return to the owner the duplicate copy of the order as a token of their acknowledgement.

30. Vigil Mechanism: DAFFPL has developed the Vigil Mechanism to deal with references/ grievances, if any, that is received from bidders who participated / intends to participate in the tender. The details of the same are available on our website www.daffpl.in

31. VERIFICATION BY OWNER: All statements submitted by bidder regarding experience, manpower availability, equipment and machinery availability etc., are subject to verification by the owner either before placement of order or after placement of order. If any data submitted by the bidder at the bid stage is found to be incorrect, the offer is liable to be rejected or the contract/order is liable to be terminated.

32. SEALING & MARKING OF BIDS

A. Bids shall be submitted separately in THREE SECTIONS in sealed envelopes superscribed with the Bid Document number, bid due date and time, item and nature of bid as under:

- **SECTION - I (Envelope No. 1): Bid Security / EMD:**
  Bid security in accordance with tender document.

- **SECTION - II (Envelope No. 2): Technical Bid:**
  a. Information and documentary evidence establishing bidder's claim for meeting qualification criteria as stipulated in IFB. This section/envelope should necessarily contain all the required back-up documents for Bid Qualification.

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b. Technical bid complete with all technical and commercial details, covering letter and un-priced copy of price Schedule with prices substituted with 'QUOTED' or 'NOT QUOTED' or 'NOT APPLICABLE'. **Deviation sheet duly filled with deviations, if any, shall form part of technical bid.**

- **<u>SECTION - III (Envelope No. 3):</u> Price Bid:**

a. PRICE BID WITH FULL PRICE DETAILS. The price bid shall contain prices only in the prescribed price schedule formats, without any technical and commercial details. Technical specifications or commercial terms given in unpriced schedule will only be evaluated and the same will be binding on the Bidder. The bids shall be sealed and kept in a single envelope with marking as Section - III (Price Bid) / Envelope No. 3 : "Original'
b. The bidder shall quote the final prices (including taxes, Cess, duties and other levies etc) in the 'PRICE SCHEDULE FORMAT' of bid document ONLY. Prices quoted in any other format shall not be considered for evaluation.
c. The Price bid shall be kept in a larger envelope duly sealed and shall bear the name and address of the bidder.

B. The envelopes containing Section -I, Section -II, Section -III of bid shall be enclosed in a larger envelope duly sealed and pasted and shall bear the name and address of the bidder.
C. Bidder to note that if bid security / EMD (in the Proforma attached with these documents) in original and/or bid document fee (if the bid document is downloaded) is kept in any other envelope and not found in envelope no. 1, the offer of the bidder(s) will be REJECTED during opening.
D. Bidder to note that prices are to be quoted in the format provided in the price schedule formats provided along with the tender without any conditions. Price bids submitted in any other format and conditional price bids will be liable to be rejected. Price bids received in open condition (not in sealed envelope) or kept in any other Section of the bid (i. e, Section - I or II) will also be liable for rejection.
E. If the outer envelope is not sealed and not marked as required, then DAFFPL will assume no responsibility for the bid's misplacement or premature opening.
F. Bidders in their own interest shall ensure that they send their bid complete in all respects well in time to reach the specified office within the specified bid due date and time. No relaxation shall be given for delay due to any unforeseen event in submission of bid.
G. Central Public Sector Enterprises and Firms registered with NSIC are exempted from submission of Bid Security. Central Public Sector

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Enterprises are requested to give a self declaration on their letter head to this effect, which should be submitted in a sealed envelope marked as Bid Security.

H. Bidders registered with NSIC are also requested to submit self declaration on their letter head to this effect along with a copy of their Valid Registration certificate, specifying limit of volume and other details which should be submitted in a separate sealed envelope no. 1 marked as Bid security.

I. Bid Security strictly in the Proforma attached with these documents shall be submitted in Original along with the Bid. Bids received without original bid security, shall not be opened for evaluation.

J. Tender document complete in all respects must be submitted in the tender box provided at the DAFFPL office before due date and time

33. DOCUMENTS COMPRISING THE BIDS

The bid prepared by the Bidder shall comprise the following components:

I. **ORIGINAL BID SECURITY (Section - I):** Bidders are advised to instruct their banks not to post Bid Security directly to Owner as the same has to accompany with the bid.

II. **TECHNICAL BID (Section -II):**

- Documentary evidence establishing Bidder's claim for meeting qualification criteria as stipulated in the Bid Document.
- Notarized Audited Annual Report of previous three financial years.
- Documentary evidence establishing Bidder's eligibility to bid and that the offered Goods conform to the Bid Document.
- Price Schedule (with Price figures blanked) completed in accordance with the requirements specified in the bid document.
- Agreed Terms & Conditions duly filled-in.
- Deviation Sheet, if any.
- Declaration with the bid qualification criteria that bidder has not been banned or delisted by any Government or quasi Government agencies or PSU's.
- Any other information/details/documents/data required as per Bid Document.
- Parent Company Guarantee, if applicable

III. **PRICE BID (Section -III):** Bid Form and Price Schedule (Both given along with tender) duly filled in.

34. BID FORM & PRICE SCHEDULE

The bidders shall complete the Bid Form and appropriate Price schedule furnished

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of Bid Document, indicating the required information for all quoted items.

35. FORMAT AND SIGNING OF BID

a. The Bidder shall prepare required number of copies of the bid, clearly marking each 'Original Bid' and 'Copy of Bid' as appropriate. In the event of any discrepancy between them, the 'Original Bid' shall govern.
b. The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person or persons duly authorized to sign on behalf of the bidder on all pages of the bid. Such authorization shall be indicated by written Power of Attorney accompanying the bid. The name and position held by each person signing must be typed or printed below the signature. The person or persons signing the bid shall initial all pages of the bid, except for unamended printed literature.
c. The complete bid shall be without alterations, interlineations or erasures, except as may be necessary to correct errors made by the Bidder, in which case such corrections shall be rewritten & initialed by the person or persons signing the bid.
d. All the pages of the price bid shall be signed by the authorized signatory. In case all the pages of the price bid are not signed, the bid shall be rejected.

36. OPENING OF BIDS

Bids will be opened by Owner at DAFFPL Office, New Delhi, in the presence of bidders/bidders authorized representatives available on the opening date and time (duly authorized by a competent person and having the letter of authority).

a. **BID SECURITY / EMD (SECTION-I) AND TECHNICAL BID (SECTION-II):**
   I. On the day and time of bid opening, Bid security (Envelope 1) and Technical Bid (Envelope 2) shall be opened in presence of bidders.
   II. The Bidder's representatives, who are present, shall sign a register/attendance sheet evidencing their attendance.
   III. The Bidder(s) names, presence or absence of requisite bid security will be announced at the opening.
   IV. Bidder (s), whose bids are not opened for any reason, including non receipt of original bid security, will not be allowed to be present during bid opening.

b. **PRICE BID OPENING (SECTION -III):**
   I. Only those bidders whose bids meet the qualification criteria and are technically/commercially acceptable shall be called for opening of Price bid (Envelope 3) at a later date, informed in advance.
   II. The Bidder's representatives, who are present, shall sign a register/ attendance sheet evidencing their attendance.
   III. Bidder(s), whose bids are not opened for any reason, will not be allowed to be present during bid opening.

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Sign & Stamp of Bidder

37. EVALUATION OF BIDS

a. Qualification of Bidder: The experience details and financial & technical capabilities of the bidder(s) shall be examined to determine whether the bidder(s) meet the Bid Qualification Criteria mentioned in the INVITATION FOR BIDS (IFB).
b. The Owner will examine the bids to determine whether they are complete, any computational errors have been made, whether the documents have been properly signed and whether the bids are generally in order.
c. The bids without requisite Bid Security and/or not in the prescribed proforma will not be considered and bids of such bidder Bidder(s) shall be rejected.
d. To assist in the examination, evaluation and comparison of technical bids, the owner/ may, at its discretion, ask the Bidder clarifications on the bid. The request for such clarifications and the response thereto shall be in writing.
e. Prior to the evaluation and comparison of the bid, the owner will determine the substantial responsiveness of each bid to the bidding documents. For the purpose of this Article, a substantially responsive bid is one, which conforms to all the terms and conditions of the bidding document without material deviations or reservations. A material deviation or reservation is one which affects in any substantial way the scope, quality, or performance of the works or which limits in any substantial way, inconsistent with the bidding document, the DAFFPL's rights or Bidder's obligation under the contract and retention of which deviation or reservation would affect unfairly the competitive position of other bidders presenting substantially responsive bids. The owner's determination of bid responsiveness is to be based on the contents of the bid itself without recourse to the extrinsic evidence.
f. A bid determined as substantially non-responsive will be rejected by the Owner and shall not subsequently be allowed by the Owner to be made responsive by the Bidder by correction of the non-conformity.
g. The Pumpsets shall be supplied from the same Manufacturing unit as specified in the Documents submitted by Bidder in Compliance to BQC(Bid Qualification Criterion).

Note:

1) **The Bid Shall be submitted in English Language Only**
2) **For any Document submitted in any language other than English, the translation copy in English language shall be submitted.**

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Sign & Stamp of Bidder

CHAPTER 3: BID-QUALIFICATION CRITERIA:

BQC REQUIREMENT	BIDDER RESPONSE
1. **ESTABLISHED MANUFACTURER**	
Vendor shall be a regular manufacturer and supplier of the specified equipment/ package. Bidder to give complete details of their manufacturing unit/s & to submit necessary documents in support of same	
2.**ORDER ONLY ON MANUFACTURING COMPANY-**	
Authorized Indian representative of foreign manufacturer is also permitted to quote / participate on behalf of the foreign manufacture. All documents to be submitted should pertain to the foreign manufacture only along with relevant authorization / warranties / guarantees from foreign manufacture. However, if successful, the purchase order will be placed on the Indian representative company only	
3. **OWN FACILITY FOR MANUFACTURING**	
Supply of entire tendered quantity for Fire Water Pump Sets shall be from bidders own manufacturing facility	
4. **COMPLIANCE CERTIFICATE**	
Pumpsets testing and inspection shall strictly as per the applicable Codes and Standards. "Vendor" shall provide the compliance certificate.	
5.THREE YEARS PROVEN EXPERIENCE OF SUPPLY	
The vendor should be having minimum **3 years** proven supply experience of specified equipment/ package (3 years shall be reckoned prior to the due date of bid submission). Vendors should provide valid proof of pump sets supplied from vendors same manufacturing location from which the vendor proposes to supply against this tender. The acceptable proof is copy of Excise/vat Invoices / custom documents and the related Purchase orders, two years prior to due date of bid submission.	
6. MINIMUM QUANTITY SUPPLIED IN THE PAST	
Vendor in the last five years should have engineered, manufactured, tested, supplied and commissioned at least TEN (10) nos. of identical or similar packages (or higher capacity packages) in terms of capacity, rate, accuracy, relevant parameters etc and at least FIVE (5) of these packages shall have completed the continuous trouble free operations of a minimum 8000 Hrs. as on the bid due date in the last three (3)	

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financial years. Vendor to give documentary evidence (confirmation from the purchaser)	
7. AFTER SALES SUPPORT	
The vendor shall have full-fledged service support set-up in India or have appropriate arrangements for the same with the established local reputed company	
8.FINANCIAL CAPACITY	
The vendor or their group companies should have achieved a minimum average Annual financial turnover as per Audited Balance Sheet and Profit & Loss account, in the last three accounting years, ending March 2015 prior to due date of bid submission, as indicated below: **Other than MSME: INR 90 Lakhs** **For MSME as per CTE Guidelines**	
Vendor to submit their Audited Balance Sheets & Profit & Loss accounts for last 3 years, ending 31st march 2015 of the previous financial year prior to the due date of bid submission.	
Group companies are defined as parent company and all their subsidiaries. Subsidiaries are those companies in which the parent company holds 51% or more of the equity share capital.	
9. Positive Net Worth	
Vendor's Net worth as per latest Audited Balance Sheet should be positive.	

OTHER INFORMATION OF PQC

1. Parties who are affiliates of one another can decide which Affiliate will make a bid. Only one affiliate may submit a bid. Two or more affiliates are not permitted to make separate bids directly or indirectly. If 2 or more affiliates submit a bid, then any one or all of them are liable for disqualification. However up to 3 affiliates may make a joint bid as a consortium, and in which case the conditions applicable to a consortium shall apply to them.
   "Affiliate" of a Party shall mean any company or legal entity which:
   a. Controls either directly or indirectly a Party, or
   b. Which is controlled directly or indirectly by a Party; or
   c. Is directly or indirectly controlled by a company, legal entity or Partnership which directly or indirectly controls a Party. "Control" means actual control or ownership of at least a 50% voting or other controlling interest that gives the power to direct, or cause the direction of, the management and material business decisions of the controlled entity.

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2. Bids may be submitted by:
    a. A single person/ entity (called sole bidder);
    b. A newly formed incorporated joint venture (JV) which has not completed 3 financial years from the date of commencement of business;
    c. A consortium (including an unincorporated JV) having a maximum of 3 (three) members;
    d. An Indian arm of a foreign company.

3. Fulfillment of Eligibility criteria and certain additional conditions in respect of each of the above 4 types of bidders are stated below, respectively:
    a. The sole bidder (including an incorporated JV which has completed 3 financial years after date of commencement of business) shall fulfill each eligibility criteria.
    b. In case the bidder is a newly formed and incorporated joint venture and which has not completed three financial years from the date of commencement of business, then either the said JV shall fulfill each eligibility criteria or any one constituent member/ promoter of such a JV shall fulfill each eligibility criteria. If the bid is received with the proposal that one constituent member/ promoter fulfils each eligibility criteria, then this member/promoter shall be clearly identified and he/it shall assume all obligations under the contract and provide such comfort letter/guarantees as may be required by Owner. The guarantees shall cover inter alia the commitment of the member/ promoter to complete the entire work in all respects and in a timely fashion, being bound by all the obligations under the contract, an undertaking to provide all necessary technical and financial support to the JV to ensure completion of the contract when awarded, an undertaking not to withdraw from the JV till completion of the work, etc.
    c. In case the bidder(s) is/are a consortium (including an unincorporated JV), then the following conditions shall apply:
        I. Each member in a consortium may only be a legal entity and not an individual person;
        II. The Bid shall specifically identify and describe each member of the consortium;
        III. the consortium member descriptions shall indicate what type of legal entity the member is and its jurisdiction of incorporation (or of establishment as a legal entity other than as a corporation) and provide evidence by a copy of the articles of incorporation (or equivalent documents);
        IV. One participant member of the consortium shall be identified as the “Prime member” and contracting entity for the consortium;
        V. This prime member shall be solely responsible for all aspects of the Bid/ Proposal including the execution of all tasks and performance of all consortium obligations;
        VI. The prime member shall fulfill each eligibility criteria;

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VII. a commitment shall be given from each of the consortium members in the form of a letter signed by a duly authorized officer clearly identifying the role of the member in the Bid and the member's commitment to perform all relevant tasks and obligations in support of the

VIII. Prime/lead member of the Consortium and a commitment not to withdraw from the consortium;

IX. No change shall be permitted in the number, nature or share holding pattern of the Consortium members after pre-qualification, without the prior written permission of the Owner.

X. No change in project plans, timetables or pricing will be permitted as a consequence of any withdrawal or failure to perform by a consortium member;

XI. No consortium member shall hold less than 25% stake in a consortium;

XII. Entities which are affiliates of one another are allowed to bid either as a sole bidder or as a consortium only;

XIII. Any person or entity can bid either singly or as a member of only one consortium.

d. In case the bidder is an Indian arm (subsidiary, authorized agent, branch office or affiliate) of a foreign bidder, then the foreign bidder shall have to full fill each eligibility criteria. If such foreign company desires that the contract be entered into with the Indian arm, then a proper back to back continuing (parent company) guarantee shall be provided by the foreign company clearly stating that in case of any failure of any supply or performance of the equipment, machinery, material or plant or completion of the work in all respects and as per the warranties/ guarantees that may have been given, then the foreign company shall assume all obligations under the contract. Towards this purpose, it shall provide such comfort letter/guarantees as may be required by Owner. The guarantees shall cover inter alia the commitment of the foreign company to complete the entire work in all respects and in a timely fashion, being bound by all the obligations under the contract, an undertaking to provide all necessary technical and financial support to the Indian arm or to render the same themselves so as to ensure completion of the contract when awarded, an undertaking not to withdraw from the contract till completion of the work, etc.

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CHAPTER 4: BQC DOCUMENTS BY VENDORS

LIST OF DOCUMENTS FOR BID-QUALIFICATION OF VENDORS		
1	Copy of approvals from any statutory body or equivalent, if applicable	
2	Details of the Manufacturing Facility	
3	Details of testing facilities available	
4	Certified list giving supply quantity details to meet minimum quantity supplied in the past criteria along with copies of Excise / VAT Invoices / Custom documents and the related purchase orders	
5	Audited Balance Sheets & Profit and Loss accounts for the previous 3 accounting years prior to the due date of bid submission	
6	Bank Guarantee in lieu of EMD / Demand Draft / Pay Order	
7	Declaration documents as per attached Annexure of the Tender	
8	Satisfactory Performance certificates from minimum 3 Installations / Terminals in India or Abroad	
9	Relevant authorization from foreign Manufacturer for their Indian representative if applicable	
10	Details of the agency / company in India who will be providing maintenance & service support OR declaration to set up Service centre in India on being awarded the order, as applicable	
11	Other Supporting Documents, if any	

Every page of attachments to be duly signed stamped before submitting the Tender.

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CHAPTER 5: GENERAL TERMS & CONDITIONS OF PURCHASE:

1. DAFFPL reserves the right to accept any tender in whole and reject any or all tenders without assigning any reason. DAFFPL also reserves the right to allow public enterprises (Central/State) Price / purchase /contract / service preference as admissible under the Indian Government Policy.

2. BID PRICES:
   a) Prices shall be furnished strictly in the Price Bid format of the tender document.
   b) Bidder should quote their lowest and best offered price. Prices so quoted will remain firm till satisfactory completion of order. The price will not be subjected to escalation for any reason whatsoever.
   c) Bidders quoted prices shall be deemed to include entire Specification of Fuel Hydrant Pumpsets and all obligations and responsibilities to be carried out / executed by the Bidder as per terms of tender document. It is clearly understood by the Vendor that it is for the Vendor to ascertain and assess the applicable Acts/ Regulations/ Laws etc., entirely of their own. It is also for the Vendor to ascertain and assess the applicability of taxes, duties, levies etc. In case of any difference of opinion between Vendors proposal and interpretation by any tax/assessing (or similar) authorities, on the rate or terms and conditions related to taxes and duties etc., owners liability shall be strictly as per terms/provisions of the contract based on tender document and Vendors offer.
   d) No other charges accept those mentioned in the tender document will be payable to vendor.

3. The materials should be properly packed so as to withstand all transit hazards. Materials are required to be dispatched by the vendor to the locations, on freight paid DOOR- DELIVERY CONSIGNEE COPY ATTACHED basis along with copies of Inspection release note & internal test certificates & other documents as mentioned elsewhere in this tender document.

4. All shipment shall be under deck unless carriage on deck is unavoidable.

5. Bidder to note that Special Packaging Requirement as in technical specifications of this tender. The materials should be properly packed so as to withstand all transit hazards (both ocean & inland transit).

6. Indian agent Commission will not be paid by the owner.

7. TAXES & DUTIES:

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a) Bidder(s) quoted prices shall be inclusive of all taxes, duties, cess, levies etc., paid or payable on the raw material/components incorporated or to be incorporated in the offered finished goods but excluding applicable taxes and duties on finished goods.
b) The invoice should clearly mentioned that applicable Excise Duty, Education Cess or any other taxes charged and paid / payable on quoted item to enable the owner to claim MODVAT / Input credit.
c) The statutory variation in Excise duty, Education Cess and Sales tax / VAT on finished goods and introduction of new tax, from bid due date till the contractual completion period shall be to owner account against submission of the documentary evidence. However, any increase in the rate of these taxes and duties beyond the contractual delivery period shall be to Seller account. Any decrease in the rate of these taxes and duties shall be passed on to the owner. Any additional excise duty due to increase in turn-over would be to seller account.
d) It is for the Bidder to assess and ascertain the rate of excise duty, education Cess and sales tax/VAT applicable on quoted items. It is clearly understood that Owner will not have any additional liability towards payment of Excise Duty, Education Cess and Sales Tax/VAT which is based on Bidders wrong assessment / interpretation of applicability of such Excise Duty and/or education cess and / or Sales Tax/VAT.
e) Successful bidder shall carry out its obligations towards services at site as mentioned in technical specifications without any extra charges.
f) Octroi/Entry tax, if any, in the any state of India shall be directly paid by the vendor, if applicable.
g) DAFFPL shall not be liable, in case the tax authorities assess the tax elements in a different way on account of any reason, whatsoever.
h) Taxes and duties other than those specified in this document, if any, shall be included in the quoted prices and no separate reimbursement shall be made by DAFFPL.

8. Income Tax / Corporate Tax :
a) As regards Income Tax, Surcharge on Income Tax or any other Corporate Tax payable by the Bidder for reason of the contract awarded, and / or on their expatriate personal, the Owner shall not bear any Tax liability whatsoever, irrespective of the mode of construction of contract / order. The Bidder shall be liable and responsible for payment of such tax, if attracted under the provision of Indian Income Tax Act.
b) Bidder may note that if any tax is deductible at source as per Indian Income Tax Law, the same will be so deducted before releasing any payment to the Bidder and a TDS (Tax deducted at source) certificate will be furnished to the Bidder.
c) Accordingly, Bidder shall have the responsibility to check and include such provision of taxes in the prices.

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d) In case of delay in delivery due to reasons attributable to Bidder, any new or additional taxes or duties levied by Statutory authorities during this period shall be borne by the Bidder.

9. DELIVERY PERIOD:
The items covered in this enquiry are required to be delivered as per Delivery Schedule stipulated below.

a) DELIVERY PERIOD (FOR SUPPLY)
Total Order quantity of Pumpsets should be delivered within 06 months from date of notification of award.
b) Delivery Period shall be counted from the date of notification of award (Letter/Fax/e-mail of Intent) up to the Date of receipt of goods at defined locations.

10. EMD / BID SECURITY
a) The bidder shall furnish, as part of his bid, a bid security in original for the amount specified in the tender document by way of pay order, bank guarantee on Rs.100/-value non-judicial stamp paper or demand draft.
b) The bid security is required to protect the Owner against the risk of Bidders conduct, which would warrant the security forfeiture.
c) If bid Security / EMD is in the form of bank guarantee, it shall be in the form of irrevocable bank guarantee (in the format attached) issued by any Indian Scheduled Bank (other than Co-operative Bank) will be accepted.
d) Bid Security / EMD shall be issued in favour of M/s Delhi Aviation Fuel Facility (P) Limited, New Delhi. .
e) Unsuccessful bidders bid security without any interest will be discharged/ returned as promptly as possible, but not later than 60 days after the expiry of the period of bid validity prescribed by the Owner.
f) The successful bidder bid security without any interest will be discharged, upon the Bidder accepting the Contract/ Purchase Order and furnishing the Contract performance bank guarantee to DAFFPL.
g) The bid security may be forfeited:
   i. If a bidder withdraws his bid during the period of bid validity or
   ii. In the case of a successful bidder, if the bidder fails or refuses to:
      - Accept the Purchase Order in accordance with agreed terms and conditions.
      - Furnish Contract performance bank guarantee as per bid document/ Purchase Order.
   iii. Detection of submission of false / forged documents and fraud.

h) Bid Security / EMD should be in favour of "Delhi Aviation Fuel Facility Private Limited", payable at New Delhi and submitted to the relevant office of DAFFPL as mentioned in covering note of the tender document. Covering

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letter to bid Security / EMD must indicate the tender number. This is essential to have proper co-relation at a later date. The bid security / EMD shall be strictly in the form provided in the bid document before the due date & time of bid submission.

i) Central Public Sector Undertaking of Govt. Of India are exempted from furnishing the bid security. Firms registered with NSIC/ MSME are also exempted from furnishing bid security, provided they are registered for the tendered items and up to the monetary limit they intend to quote. Provided further that they submit a copy of the current and valid registration certificate for the quoted item and monetary value along with their bid(s). Owner reserves right to verify the registration certificate provided, with relevant authorities.

11. CONTRACT PERFORMANCE BANK GUARANTEE [CPBG]

a) As a Performance security, the successful Bidder, to whom the work is awarded by, shall be required to furnish within 30 days of notification of award of contract (Letter/ Fax/e-mail of Intent) a Performance Bank Guarantee on RS.100/- VALUE non-judicial stamp paper in favour of the Owner (M/S DAFFPL).
b) The Bank Guarantee amount shall be equal to TEN PERCENT (10%) of the Total Order Value and it shall guarantee the faithful performance of the Order in accordance with the Terms and conditions specified in the documents and specifications.
c) CPBG shall be in the form of an irrevocable Bank Guarantee (in the format attached) issued by any Indian Scheduled Bank (other than Co-operative Bank).
d) The Bank Guarantee shall be valid for the entire period of the Contract, namely, till the end of the guarantee / warranty period. The guarantee amount shall be payable on demand to the Owner.
e) In case, the Contract Performance Bank Guarantee stated above gets reduced/ deducted for reasons of non-fulfillment of any Contractual obligations upto the completion of guarantee period, the bidder shall immediately take action to increase the value of Bank Guarantee to TEN PERCENT (10%) of the Contract price, to cover his guarantee/warranty obligations.
f) The Performance Guarantee will be returned to the bidder without any interest at the end of the warranty / guarantee period subject to fulfillment of all contractual obligations by the Bidder. The bank guarantee shall have a claim period of 3 months beyond the contractual guarantee period.
g) The proceeds of performance security shall be appropriated by the owner as compensation for any loss resulting from vendor's failure to complete his obligations under the contract to the prejudice to any of the rights or remedies the owner may be entitled to as per terms and conditions of

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contract. The proceeds of this performance security shall also govern the successful performance of goods and services and vendors all obligations during the entire period of contractual warrantee / guarantee.

12. PRICE REDUCTION FOR DELAY IN DELIVERY:
    a) The delivery period quoted must be realistic & specific. The inability of successful bidder to execute orders in accordance with the agreed delivery schedule will entitle DAFFPL, at its options, to:
    b) Accept delayed delivery at prices reduced by a sum equivalent to half percent (0.5%) of the value of any goods not delivered for every week of delay or part thereof, limited to a maximum of 10% of the total order value. Date of receipt of materials at owners premises shall be considered for calculation of price reduction
    c) The price reduction clause shall become applicable for deliveries made beyond the schedule delivery period of six months.

13. INSURANCE
    Supplier shall carry and maintain any and all statutory insurance(s) required under Indian Laws and Regulations, including Workmen compensation Act/ESI/Third party liabilities etc. and insurances for their personnel engaged in performance of the work at their own cost.

14. INSPECTION:
    a) Material shall be inspected by owner or its representative before dispatch of material from bidder works. Charges other than third party inspection, however, arranging & providing inspection facilities is entirely vendor responsibility and in no way should affect the delivery schedule.
    b) OWNER may, at its own expense, witness any test or inspection. In order to enable OWNER to witness the tests/inspections OWNER will advise the bidder in advance whether it intends to be present at any of the inspections.
    c) Even if the inspection and tests are fully carried out, the Vendor shall not be absolved from its responsibilities to ensure that the Material(s), raw materials, components and other inputs are supplied strictly to conform and comply with all the requirements of the Contract at all stages, whether during manufacture and fabrication, or at the time of Delivery as on arrival at site and after its erection or start up or consumption, and during the defect liability period. The inspections and tests are merely intended to prima-facie satisfy OWNER that the Material(s) and the parts and components comply with the requirements of the Contract. The Vendor s responsibility shall also not be anywise reduced or discharged because OWNER or OWNER s representative(s) or Inspector(s) shall have examined, commented on the Vendor s drawings or specifications or shall have witnessed the tests or required any chemical or physical or other tests or shall have stamped or approved or certified any Material(s).

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d) Although material approved by the Inspector(s), if on testing and inspection after receipt of the Material(s) at the location, any Material(s) are found not to be in strict conformity with the contractual requirements or specifications, OWNER shall have the right to reject the same and hold the Vendor liable for non-performance of the Contract.

15. UNLOADING & STACKING

Unloading & stacking will be arranged by consignee. However, advance information regarding expected date of delivery to Site In-charge must be given well in time for making unloading arrangements under advice to originator of ORDER.

16. PAYMENT TERMS

a) Bidders to note that Advance Payment is not permissible in the contract.
b) The following payment terms shall be applicable :
   - 80% payment will be released within 30th day from the receipt and acceptance of materials at site adjusting deductable if any and balance 20% after completion of supervision.
   - Supervision charges for Installation, Testing & Commissioning will be paid on Prorate basis as and when the Pumpsets are commissioned.

17. GUARANTEE/WARRANTY:

a) Materials shall be guaranteed against manufacturing defects, materials, workmanship and design for a period of 12 months from the date of commissioning or 24 months from the date of dispatch whichever is later. Warranty for replacement of material / accessories should be provided free of charges at our premises. The above guarantee/warranty will be without prejudice to the certificate of inspection or material receipt note issued by us in respect of the materials.
b) All the materials including components and sub contracted items should be guaranteed by the vendor within the warranty period mentioned above. In the event of any defect in the material, the vendor will replace / repair the material at DAFFPL concerned location at vendor risk and cost on due notice.
c) Alternatively, DAFFPL reserves the right to have the material repaired / replaced at the locations concerned, at the vendors risk, cost and responsibility, in case, vendor does not replace / repair the material.
d) The Vendor shall provide similar warrantee on the parts, components, fittings, accessories etc. so repaired and / or replaced.
e) Vendor shall guarantee that the performance of the EQUIPMENT supplied under the CONTRACT shall be strictly in conformity with the specifications and shall perform the duties specified under the CONTRACT.
f) RISK PURCHASE CLAUSE: We reserve the right to curtail or cancel the order either in full or part thereof if bidder fails to comply with delivery schedule and other terms & conditions of the order. DAFFPL also reserves the right to procure same or similar materials/equipment through other sources at

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vendor's entire risk, cost and consequences.

18. TEST & PERFORMANCE CERTIFICATES: Bidder shall furnish Material test and Performance Certificates for the materials along with the challans and invoice.

19. Only in the event of causes of Force Majeure occurring within the contractual delivery period and if they impede the performance of contract, the delivery dates shall be extended on receipt of application from the bidder / Owner without imposition of penalty. Only those causes which depend on natural calamities, civil wars, fire and national strikes which have duration of more than seven consecutive calendar days are considered the causes of force Majeure. The decision of Owner shall be final and binding on vendor.

20. The Vendor must advise the Owner by a registered letter duly certified by Local Chamber of Commerce or statutory authorities and Owner must advise the Vendor by a letter, the beginning and the end of the delay immediately, but in no case later than within 10 days of the beginning and end of such causes of Force Majeure condition as defined above. Provided further that if the performance in whole or part of any obligation under this contract is prevented or delayed by reason of any such event for period exceeding 60 days either party may at its option terminate the contract.

21. Repeat Order: DAFFPL reserves the right to place repeat order up to the order quantity within SIX MONTHS from the date of original order on mutual agreement basis.

22. Any reference to the Govt. Acts /Regulations etc. in the Bid Document is only indicative, and it is entirely for the bidder to ascertain the applicable Acts/Regulations.

23. Rejected material lying in Owner premises must be replaced within 60 days from date of final report on rejection of material.

24. RECOVERY OF SUMS DUE: Whenever, any claim against bidder for payment of a sum of money arises out of or under the contract or in any other form, the owner shall be entitled to recover such sums from any sum then due or when at any time thereafter may become due from the vendor under this or any other form and should this sum be not sufficient to cover the recoverable amount of claim(s), the vendor shall pay to DAFFPL on demand the balance remaining due.

25. PATENTS & ROYALTIES: The vendor shall fully indemnify owner and users of materials specified herein/supplied at all times, against any action, claim or demand, costs and expenses, arising from or incurred by reasons of any infringement or

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alleged infringement of any patent, registered design, trademark or name, copy right or any other protected rights in respect of any materials supplied or any arrangement, system or method of using, fixing or working used by the vendor. In the event of any claim or demand being made or action sought against Owner in respect of any of the aforesaid matter, the vendor shall be notified thereof immediately and the vendor shall at his/its own expense with (if necessary) the assistance of Owner (whose all expense shall be reimbursed by the vendor) conduct all negotiations for the settlement of the same and/or litigation which may arise thereof.

26. LIABILITY CLAUSE: In case where it is necessary for employees or representatives of the Vendor to go upon the premises of owner, vendor agrees to assume the responsibility for the proper conduct of such employees/representatives while on said premises and to comply with all applicable Workmen s Compensation Law and other applicable Government Regulations and Ordinances and all plant rules and regulations particularly in regard to safety precautions and fire hazards. If this order requires vendor to furnish labour at site, such vendors workmen or employees shall under NO circumstances be deemed to be in owner s employment and vendor shall hold himself responsible for any claim or claims which they or their heirs, dependent or personal representatives, may have or make, for damages or compensation for anything done or committed to be done, in the course of carrying out the work covered by the purchase order, whether arising at owner s premises or elsewhere and agrees to indemnify the owner against any such claims, if made against the owner and all costs of proceedings, suit or actions which owner may incur or sustain in respect of the same.

27. COMPLIANCE OF REGULATIONS: Vendor warrants that all goods/Materials covered by this order have been produced, sold, dispatched, delivered and furnished in strict compliance with all applicable laws, regulations, labour agreement, working condition and technical codes and statutory requirements as applicable from time to time. The vendor shall ensure compliance with the above and shall indemnify owner against any actions, damages, costs and expenses of any failure to comply as aforesaid.

28. REJECTION, REMOVAL OF REJECTED GOODS AND REPLACEMENT: In case the testing and inspection at any stage by inspectors reveal that the equipment, materials and workmanship do not comply with specification and requirements, the same shall be removed by the vendor at his/its own expense and risk, within the time allowed by the owner. The owner shall be at liberty to dispose off such rejected goods in such manner as he may think appropriate. In the event the vendor fails to remove the rejected goods within the period as aforesaid, all expenses incurred by the owner for such disposal shall be to the account of the vendor. The freight paid by the owner, if any, on the inward journey of the rejected materials shall be reimbursed by the vendor to the owner before the rejected materials are removed by the vendor. The

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vendor will have to proceed with the replacement of the equipment or part of equipment without claiming any extra payment if so required by the owner. The time taken for replacement in such event will not be added to the contractual delivery period.

29. NON-WAIVER : Failure of the Owner to insist upon any of the terms or conditions incorporated in the Purchase Order or failure or delay to exercise any rights or remedies herein, or by law or failure to properly notify Vendor in the event of breach, or the acceptance of or payment of any goods hereunder or approval of design shall not release the Vendor and shall not be deemed a waiver of any right of the Owner to insist upon the strict performance thereof or of any of its or their rights or remedies as to any such goods regardless of when such goods are shipped, received or accepted nor shall any purported oral modification or revision of the order by DAFFPL act as waiver of the terms hereof. Any waiver to be effective must be in writing. Any lone incident of waiver of the any condition of this agreement by DAFFPL shall not be considered as a continuous waiver or waiver for other condition by DAFFPL.

30. NEW & UNUSED MATERIAL: All the material supplied by the vendor shall be branded new, unused and of recent manufacture.

31. CANCELLATION:
    a) DAFFPL reserves the right to cancel the contract/purchase order or any part thereof through a written notice to the vendor if –
        i. The vendor fails to comply with the terms of this purchase order/contract.
        ii. The vendor becomes bankrupt or goes into liquidation.
        iii. The vendor fails to deliver the goods on time and/or replace the rejected goods promptly.
        iv. The vendor makes a general assignment for the benefit of creditors.
        v. A receiver is appointed for any of the property owned by the vendor.
        vi. Any other conditions where owners commercial interest get affected.
    b) Upon receipt of the said cancellation notice, the vendor shall discontinue all work on the purchase order matters connected with it. DAFFPL in that event will be entitled to procure the requirement in the open market and recover excess payment over the vendor s agreed price if any, from the vendor and also reserving to itself the right to forfeit the security deposit if any, made by the vendor against the contract. The vendor is aware that the said goods are required by DAFFPL for the ultimate purpose of materials production and that non-delivery may cause loss of production and consequently loss of profit to the DAFFPL. In this-event of DAFFPL exercising the option to claim damages for non delivery other than by way of difference between the market price and the contract price, the vendor shall pay to DAFFPL, fair compensation to be agreed upon between DAFFPL and the vendor. The provision of this clause shall not

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prejudice the right of DAFFPL from invoking the provisions of price reduction clause mentioned aforesaid.

32. ANTI –COMPETITIVE AGREEMENTS/ABUSE OF DOMINANT POSITION : The Competition Act, 2002 as amended by the Competition (Amendment) Act, 2007 (the Act), prohibits anti- competitive laws and aims at fostering competition and at protecting Indian markets against anti- competitive practices by enterprises. The Act prohibits anti- competitive agreements, abuse of dominant position by enterprises, and regulates combinations (consisting of acquisition, acquiring of control and M&A) wherever such agreements, abuse or combination causes, or is likely to cause, appreciable adverse effect on competition in markets in India. DAFFPL reserves the right to approach the Competition Commission established under the Act of Parliament and file information relating to anti-competitive agreements and abuse of dominant position. If such a situation arises, then Vendors are bound by the decision of the Competitive Commission and also subject to penalty and other provisions of the Competition Act.

33. ASSIGNMENT: The Vendor can / does not have any right to assign his rights and obligations under these general purchase conditions without the prior written approval of DAFFPL.

34. GOVERNING LAW: These General Purchase Conditions shall be governed by the Laws of India.

35. AMENDMENT: Any amendment to these General Purchase Conditions can be made only in writing and with the mutual consent of the parties to these conditions.

36. The following expressions used in these terms and conditions and in the purchase order shall have the meaning indicated against each of these:
    a) **OWNER,** Client, Purchaser, buyer **:** means DAFFPL
    b) **VENDOR**, tenderer, Bidder, Contractor, Seller, Supplier, manufacturer stated anywhere in the tender document carry the same meaning: It means the person, firm or the Company / Corporation to bidding and shall include its successors and assigns.
    c) **INSPECTOR/ TPIA:** Person/agency deputed by Owner for carrying out inspection, checking/testing of items ordered and for certifying the items conforming to the purchase order specifications..
    d) **GOODS / MATERIALS:** means any of the articles, materials, machinery, equipments, supplies, drawing, data and other property and all services including but not limited to design, delivery, installation, inspection, testing and commissioning specified or required to complete the order.
    e) **SITE / LOCATION:** means any Site where DAFFPL desires to receive materials anywhere in India as mentioned in tender
    f) **CONTRACT**, Order or Purchase Order/CALL-OFF means the agreement for

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supply of goods/ materials for required quantity between Owner and Vendor, for a fixed period of time on mutually agreed terms and conditions.

g) The term MR means Material Requisition containing technical requirements and scope of work (technical), GPC means General Purchase Conditions containing commercial terms & conditions, PO means Purchase order issued after award of contract incorporating agreed deviations in MR, ATC means Agreed Terms & Conditions , RFQ means Request For Quotation.

h) For the purpose of contract, the trade terms FOB, CFR and CIF, DAP shall have the meanings as assigned to them by INCOTERMS 2010 published by ICC, Paris.

37. REFERENCE FOR DOCUMENTATION :

The number and date of Collective Request for Quotation (CRFQ) must appear on all correspondence before finalization of Contract / Purchase Order.

After finalization of Contract / Purchase Order: The number and date of Contract /Purchase Order must appear on all correspondence, drawings, invoices, dispatch advices, (including shipping documents if applicable) packing list and on any documents or papers connected with this order.

38. ARBITRATION

a) Any 'dispute or difference of any nature whatsoever, any claim, cross-claim, counterclaim or set off of the Owner against the Consultant or regarding any right, liability, act, omission or account of any of the parties hereto arising out of or in relation to this agreement shall be referred to the Sole Arbitration of the nominated Director of the Owner or of some Officer of the Owner who may be nominated by the nominated Director. The consultant will not be entitled to raise any objection to any such arbitrator on the ground that the arbitrator is an officer of the Owner or that he has dealt with the matters to which the contract relates or that in the course of his duties as an Officer of the Owner, he had expressed view on all or any other matters in dispute or difference. In the event of the arbitrator to whom the matter is originally referred being transferred or vacating his office or being unable to act for any reason, the nominated Director as aforesaid at the time of such transfer, vacation of office or inability to act may in the discretion of the nominated Director designate another person to act as arbitrator in accordance with the terms of the agreement to the end and intent that the original Arbitrator shall be entitled to continue the arbitration proceedings notwithstanding his transfer or vacation of office as an officer of the Owner if the nominated Director does not designate another person to act as arbitrator on such transfer, vacation of office or inability of original arbitrator. Such person shall be entitled to proceed with the reference from the point at which it was left by his predecessor. It is also a term of this contract that no person other than the nominated Director of the Owner or a person nominated by such

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nominated Director as aforesaid shall act as arbitrator hereunder. The award of the arbitrator so appointed shall be final, conclusive and binding on all parties to the agreement subject to the provisions of the Arbitration & Conciliation Act,1996 or any statutory modification or reenactment thereof and the rules made there under for the time being in force shall apply to the arbitration proceedings under this clause.

b) The arbitrator shall have power to order and direct either of the parties to abide by, observe and perform all such directions as the arbitrator may think fit having regard to the matters in difference i.e. dispute, before him. The arbitrator shall have all summary powers and may take such evidence oral and/or documentary, as the arbitrator in his absolute discretion thinks fit and shall be entitled to exercise all powers under the Indian Arbitration & Conciliation Act 1996 including admission of any affidavit as evidence concerning the matter in difference i.e. dispute before him.

c) The parties against whom the arbitration proceedings have been initiated, that is to say, the Respondents in the proceeding, shall be entitled to prefer a cross claim, counter claim or set off before the Arbitrator in respect of any matter in issue arising out of or in relation to the Agreement without seeking a formal reference of arbitration to the nominated Director/officer for such counter-claim, or set off and the Arbitrator shall be entitled to consider and deal with the same as if the matters arising therefore has been referred to him originally and deemed to form part of the reference made by the nominated Director/officer.

d) The arbitrator shall be at liberty to appoint, if necessary any accountant or engineering or other technical person to assist him, and to act by the opinion so taken.

e) The arbitrator shall have power to make one or more awards whether interim or otherwise in respect of the dispute and difference and in particular will be entitled to make separate awards in respect of claims of cross claims of the parties.

f) The arbitrator shall be entitled to direct any one of parties to pay the costs to the other party in such manner and to such extent as the arbitrator may in his discretion determine and shall also be entitled to require one or both the parties to deposit funds in such proportion to meet the arbitrators expenses whenever called upon to do so.

g) The parties hereby agree that the courts in the city of Delhi alone shall have jurisdiction to entertain any application or other proceedings in respect of anything arising under this agreement and any award or awards made by the Sole Arbitration hereunder shall be filed (if so required) in the concerned courts in the city of Delhi only.

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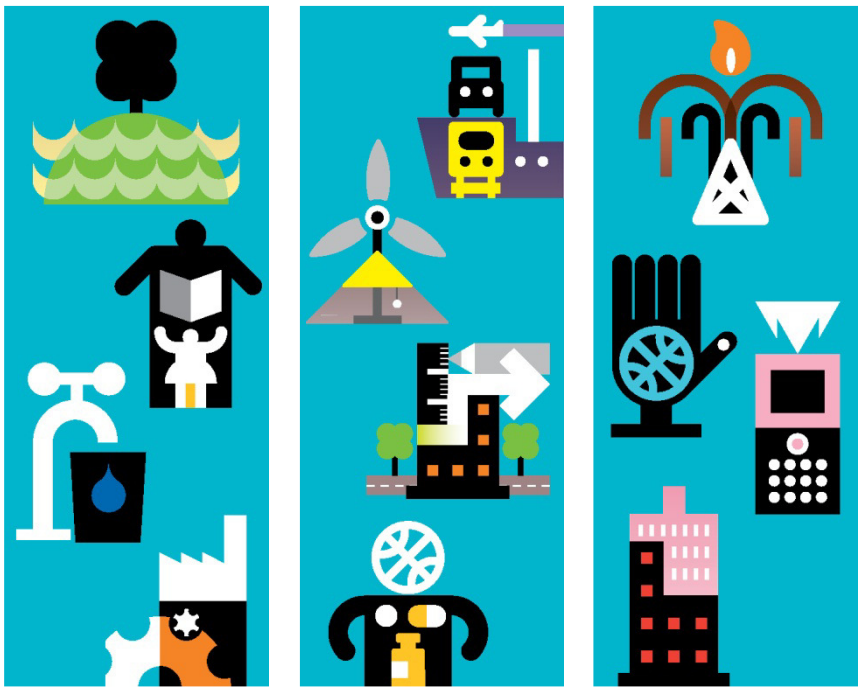

Technical Specifications for Hydrant Centrifugal Pumps

Modernization of Fuel Farm-IGI Airport,
Shahbad Mohammadpur, New Delhi

December 2015

Delhi Aviation Fuel Facility Private Limited

DAFFPL

Mott MacDonald

Technical Specifications for Hydrant Centrifugal Pumps

Modernization of Fuel Farm-IGI Airport,
Shahbad Mohammadpur, New Delhi

December 2015

Delhi Aviation Fuel Facility Private Limited

C/o Aviation Fuelling Station,Delhi International Airport, Shahabad Mohammadpur,
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Standard

Modernization Of Fuel Farm of Delhi Aviation Fuel Facility Pvt. Ltd. IGI Airport, New Delhi

SPECIFICATIONS **ATF Hydrant Centrifugal Pumps**	**Project No.:322538**
	Reference: Tank Farm Area (ATF)
	No. of Sheets: 26

Job Number	Facility Location Code	Document Number
322538	Shahabad Mohammadpur, IGI Airport-New Delhi	322538-RSD-101

☐ **Code 1**: Approved and Work may Proceed.

☐ **Code 2:** Revise & Re-submit. Work may Proceed subject to incorporation of comments.

☐ **Code 3:** Revise & Re-Submit. Work should Not Proceed.

☐ **Code 4:** Review Not Required. Work may Proceed.

Approval to proceed shall not be deemed as Acceptance or Clearance of Design, Calculations, Analyses, Test Procedures/Methods, or Selection of Materials by the Contractor. The Contractor shall Not be relieved from full compliance of Contract Requirements and Technical Specifications.

Dated: **Delhi Aviation Fuel Facility Pvt. Ltd.**

Document No.

Rev	**Date**	**Issued For**	**Prepared By:**	**Checked By:**	**Approved By:**	**Approved By:**
			Mott MacDonald Pvt. Ltd.			**Client**

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Abbreviations

ASA	-	American Standards Association
ASME	-	American Society for Mechanical Engineers
QA/QC	-	Quality Assurance / Quality Control
API	-	American Petroleum Institute
ASTM	-	American Society for Testing and Materials
SS	-	Stainless Steel
CS	-	Carbon Steel
GA	-	General Arrangement
NPSH	-	Net Positive Suction Head
MLC	-	Metre of Liquid Column
BKW	-	Brake Kilo Watt
MOC	-	Material of Construction

1 General

1.1 Introduction

- M/s Delhi Aviation Fuel Facility Private Limited (DAFFPL) is a joint venture between Indian Oil Corporation Limited (IOCL), Bharat Petroleum Corporation Limited (BPCL) & Delhi International Airport Limited (DIAL). M/s Indian Oil Sky Tanking Limited (IOSL) is responsible for running day to day operations of receiving the Jet fuel, storing the same in Fuel Farm and refuelling the Air Crafts.
- DAFFPL has availed design, engineering, procurement assistance and construction management services from Mott MacDonald which has been retained to provide consultancy services for the same.
- Existing Fuelling System i.e. Fuel Farm of Delhi Aviation Fuel Facility Pvt. Ltd. (DAFFPL) for refuelling the aircrafts at IGI Airport, New Delhi is slated for modernization and up-gradation so as to conform to International Standards for receipt, storage and dispensing of Jet A1 fuel.
- At DAFFPL fuel farm, Jet A1 fuel is brought by aboveground/underground pipe from Oil Terminals of IOCL and BPCL and also by road tanker. This fuel is stored in the Cone Roof Vertical Tanks installed in the fuel farm. Presently, the aircrafts are being refuelled by hydrant pumps through underground Jet A1 fuel hydrant pipe line.
- This document specifies the minimum acceptable requirements set by the Purchaser for design, engineering, procurement, fabrication, assembly, inspection, testing, commissioning and delivery to site of Electrically Driven ATF Centrifugal Pumps for installation within the Fuel Farm of DAFFPL, IGI Airport, New Delhi.

1.2 Definitions

For the purposes of this document the following definitions shall be used.

▪ Must/Shall	the word ‘shall’ is to be understood as mandatory.
▪ Should	the word ‘should’ is to be understood as strongly recommended.
▪ May	the word ‘may’ is to be understood as indicating a possible course of action.
▪ Purchaser	Delhi Aviation Fuel Facility Pvt. Ltd., IGI Airport, New Delhi.
▪ Consultant	Mott MacDonald Pvt. Ltd.
▪ Mfg. / Supplier/vendor	The party responsible for manufacture or supply of equipment and Services to perform the duties specified by the Consultant or Company.

1.3 Site Particulars

1.1.1 Location

The site is located at Shabad Mohammadpur adjoining to Indira Gandhi International Airport, New Delhi. The site is approachable by road.

1.1.2 Environmental Design Parameters

The following information is set out here for general guidance:

Project	:	Delhi Aviation Fuel Facility Private Limited
Site address	:	Aviation Fuelling Station Shahbad, Muhammadpur IGI Airport, New Delhi
Nearest Railway Station	:	New Delhi Railway Station
Nearest Airport	:	Indira Gandhi International Airport, New Delhi
Altitude	:	237 m
Operating Max. Temperature	:	48.4 °C
Operating Min. Temperature	:	-2.2 °C
Design Temperature	:	50 °C
Humidity, Maximum	:	100 %
Humidity, Minimum	:	25 %
Maximum Rainfall	:	20-30 mm in one hour duration
Designed Wind Velocity	:	47 m/s
Barometric Pressure	:	0.98 bar
Seismic Zone	:	Zone IV as per IS: 1893

1.4 Battery limits (as applicable)

1.4.1 Civil

- Complete civil structural requirements related to pump installation (by Purchaser). However, the Supplier will provide the detailed Good For Construction (GFC) foundation drawings for the pump sets. The pump sets foundations shall be got constructed by the Purchaser. The Supplier will also certify the correctness of the pump set foundations.

1.4.2 Electric Supply

- 240 V ± 10 % AC, 50 Hz ± 5% single phase supply and also 415 V ± 06 % AC, 50 Hz ± 3% three phase supply shall be provided by the Purchaser at one point at site.

1.4.3 Area Classification

- Hazardous

1.5 General Purchase Conditions

1.5.1 Conflicting requirements

- All conflicts between the requirements of this specification, related specifications, standards, codes, requisition data sheets and data sheets shall be referred to the Purchaser for clarification before proceeding with the manufacture of the affected parts.

1.5.2 Qualification Criteria

- The Vendor shall have the single point responsibility for the complete work.
- The Vendor shall be a regular manufacturer and supplier of the specified equipment/ package.

- Vendor in the last five years should have engineered, manufactured, tested, supplied and commissioned at least TEN (10) nos. of identical or similar packages in terms of capacity, rate, accuracy etc. relevant parameters and at least FIVE (5) of these packages shall have completed the continuous trouble free operations of a minimum 8000 Hrs. as on the bid due date in the last three (3) financial years. **Vendor to submit documentary evidence (confirmation from the purchaser and to refer name of the contact person details).**
- The vendor shall have full-fledged service support set-up in India or have appropriate arrangements for the same with the established local reputed company.
- The offered packages shall be of proven make from the existing production range of the manufacturer and must meet performance requirement as stated in the specifications.
- The Supplier shall be required to submit the documentation and proof for above requirements and purchasers may at his discretion make additional checks for the same.

1.5.3 Bid submission

The bidder is advised to submit the bid/offer as per following procedure:-

- All the pages of the bid shall be duly signed and stamped.
- Bidder is requested to adhere to all Technical Specification as well as all Commercial Terms. The Technical Bid should contain:
  - The proposed quality assurance plan.
  - Bidders to submit company profile.
  - The details of similar works done as per Para 1.5.2 above.
  - Copies of certificates from clients to whom the equipment/packages have been supplied and commissioned.
  - Copies of Profit & Loss Account, Balance Sheet and Income Tax Return of their Company for the Financial Years 2012-13, 2013-14 and 2014-15.

- One copy of **Unpriced Technical Bid** shall be sent with Enquiry No. and Due Date on email id bksingh@daffpl.in with Copy to vishnu.vardhan@daffpl.in,

  Mr BK Singh
  M/s DAFFPL, Aviation Fuelling Station,
  Shahabad Mohammadpur,
  IGI Airport, New Delhi - 110061.

- One copy of **Unpriced Technical Bid** shall be sent marked with Enquiry No. and Due Date on email id Virender.Thakur@mottmac.com

  Mr. Virender Thakur –Project Manager
  Mott Mac Donald, A-20, Sector-2
  Noida-201301.

- Please note that Priced offer should be sent through COURIER ONLY. Priced offer SHOULD NOT to be sent through E-Mail or Fax. **Non-compliance shall result in rejection of offers.**

- The bidder is requested not to take any deviations from the Technical / Commercial conditions. However, in case bidder expressly desires to deviate on any specific point, the same shall be highlighted under a separate clause called "**DEVIATIONS**" made part of the bidder's offer. (Deviations, if any, as per the attached Performa)

- The rates & list for mandatory spares for 2 years shall be furnished separately; the same shall be supplied one month before trial run.

- Vendor shall clearly specify whether equipment shall be transported in fully assembled condition or in a knocked down condition and to be assembled at site.

- If not bidding, please return enquiry documents along with regret letter by due date. Bids received after DUE DATE or NOT fully in accordance with enclosures shall NOT be considered.

- DAFFPL reserves the right of cancelling this Enquiry without assigning any reasons.

2 Centrifugal Pump sets

2.1 Scope of Work

2.1.1 Vendor's Scope

- This specification covers the minimum requirements for:
  - The design, selection, engineering,
  - Obtaining approval from Purchaser/consultant.
  - Manufacturing, supply, guarantee, inspection, installation, testing and commissioning as per the approved Quality Assurance Plan.
  - Packaging, transportation and delivery of pump sets to site.
  - Compliance with the mechanical data sheet, specification and standards attached to these specifications along with all other associated auxiliaries like motor, bearing base plate, coupling, foundation bolts, etc. and mountings.
  - The scope also includes supervision during erection, testing and commissioning and providing performance guarantee.
- The Vendor shall provide electrically driven Centrifugal Pump set in accordance with this specification, the duties and conditions listed in the relevant data sheet, and the documents included in the bid documents.
- The scope of supply includes:
  - Electric Motor Driven Centrifugal Pumps with effective sealing system.
  - Flameproof Electric Motors as the prime mover having class F insulation.
  - Flexible Coupling System between prime movers (electric motors) and driven (centrifugal pumps).
- The Vendor should ensure technical feasibility of their tender offer, after inspecting the site. It must be understood that the vendor shall be required to Supply & execute/s every such items of work which is considered necessary for satisfactory performance of the pump sets, though such items is required are not specified in the tender documents.

2.1.2 Owner's Scope

- Open space at site for site storage as per availability of space at site.
- All civil works including foundations based on complete loading data (static & dynamic), GA, Elevation and foundation plan supplied by vendor.
- Interfacing with electrical, instrumentation and piping up to battery limits.
- Receiving, unloading and erection-commissioning (under Vendor's supervision).

2.2 Construction Method

- The Centrifugal pump sets shall be designed, engineered and constructed to conform to the latest Edition of the EI (erstwhile API) 610 Code mentioned in the specifications.
- The Vendor shall specify and recommend materials class for pump sets parts as suitable for Jet A1 fuel in accordance with EI (erstwhile API) Standard 610 (Latest Edition) and Data Sheet of each type of pump sets.
- All wetted areas must NOT contain any zinc, cadmium, bronze, copper, brass or other yellow metals.
- The material specification of all components of the Jet A1 fuel pump sets unit/(s) shall be clearly stated in the Vendor's Technical Bid Documents.

- Welding and weld repairs shall be performed in accordance with the procedures qualified to the requirements of Relevant Table of the EI (erstwhile API) Standard 610 (Latest Edition).
- Major parts of rotating elements, such as impellers etc., shall be individually statically balanced. In addition to the static balancing, impeller, shafts and other rotating assemblies shall also be dynamically balanced.
- Impellers shall be made in one piece and preferably shall have solid hubs; **fabricated impellers shall not be used.** Impellers shall be secured to the pump shaft and shall be retained against circumferential movement by keying or lock rings. Means shall be provided to prevent loosening during operating including rotation in reverse direction. On pumps with overhung shafts, impellers shall be secured to the shaft by a locknut or cap screw which tightens in the direction of normal rotation. Cap screws shall be of high strength material.
- Shafts shall be suitable to transmit the full driver output, accurately machined throughout their entire length and properly finished at the bearing surfaces. Shafts shall be provided with sleeves locked to the shaft. The sleeves shall be furnished of wear, corrosion and erosion resistant material suitable for the fluid handled. Shafts shall have adequate stiffness to with stand any hydraulic thrust imbalance that may occur over entire range of the pump characteristic curve.
- Coupling shall be a flexible spacer type. The bidder shall indicate make and supplier of the coupling. Coupling shall be dynamically balance after full machining and key way cut. Vendor shall deliver the fully machined coupling assembly along with the pump sets. The driver shaft dimensions and tolerances shall be as per the standards applicable. Removable coupling guard, non-sparking type shall be supplied and mounted so that they cover rotating parts to within 15 mm of stationary housing and shall be open at the bottom to permit manual shaft rotation. Guards shall be designed to prevent contact with coupling or shaft as a result of bodily contact. Guards shall be of spark proof material.
- Common base plate with trolley arrangement shall be supplied for pumps and motors by the pump vendor. Technically suitable Base plate shall be fabricated mild steel drain-rim type and shall be provided with sloping surface to avoid any accumulation of liquid. The base plate shall be fully machined to receive pump and driver. Base plate, pump supports and pumping unit shall be constructed so to minimise misalignment caused by mechanical forces such as normal piping strains, internal differential thermal expansion and hydraulic piping thrust.
- The Centrifugal pump shall be easily removable from motor.
- These pumps shall be located in a sheltered pump house, which will of structural steel and roofing sheets. The pump house will be open from all sides and covered on top.
- Tie in points for all disciplines shall be located at the Jet A1 fuel pump sets unit/(s) extremities at those locations agreed with the Purchaser. The Vendor shall route systems to these points on board of the packages.
- Head Vs Flow Rate Capacity curve shall preferably be flat but in no circumstance the shut off head be less than the total dynamic head at any capacity of the pump.
- Similar pumps shall have the same shut off head and shall have characteristics suitable for capacity sharing.
- Pumps of self-venting type are preferred and casing drain connections are required for all pumps. Casing vent connections are required for pumps, except those with top suction nozzle, which may be considered as self venting. Pressure gauge connection in pump nozzles shall not be furnished, unless specifically noted on the data sheets.
- The pump sets are required to operate/run in parallel.
- Unless otherwise specified, all CS outside surfaces of the parts shall be suitable cleaned and coated as per code requirement and site climate condition by vendor.
- A nameplate of 18 Cr and 8 Ni stainless steel, securely attached by stainless steel pins at an easily accessible point on the pump sets, shall be furnished. The nameplate shall be stamped with the following information.
  - DAFFPL Tag No. :

- Serial No. mode of pump and year of manufacture :
- Service :
- Capacity (m3/hr) :
- Pumping head (m) :
- Specific gravity of liquid :
- Revolutions per minute :
- Motor rating :
- Weight of pump set unit :

- The maximum permissible noise level shall not exceed 85 dBA, when measured at 1 metre from pump discharge.
- For the classification of hazardous areas, Vendor to follow the IP "Model Code of Safe Practice in the Petroleum Industry" (Part 15 3rd Ed: 2005 "Area classification Code"); IEC 60079, "Electrical Apparatus for Explosive Gas Atmospheres" (Part 10, "Classification of Hazardous Areas").
- Jet A1 fuel pump set unit/(s) shall be located in a Hazardous Area Div. 2. All instrumentation and electrics shall be suitable for Class 1, Div. 2, and Group D hazardous area, temperature Class T4 to NEC standard or equivalent IEC standard.
- The design of electrical equipment shall be such as to minimise the risk of explosion or fire due to the use of electricity in areas where flammable liquids, vapour and gases will always be present.
- The Vendor shall ensure all supplied equipment and assemblies should conform to the ATEX 95 Directive and associated guidelines.
- The Vendor shall ensure all supplied equipment and assemblies conform to the electromagnetic compatibility requirements [EMC] and associated guidelines.
  - Low Voltage Directive 72/23/EEC
  - Machine Directive 89/392/EEC
- The vendor shall furnish details of motors as listed in data sheets. For each pump set, the vendor shall furnish the above details with Tag Nos., for each pump clearly. The pump set vendor shall stand guarantee for the satisfactory performance of the pump set. The performance of the pump set shall be tested without overloading the motors. Motor shall be subject to test run.
- All pumps and motors shall be properly aligned, bolted and doweled to the base plates by pump set vendor. Trial runs of pump sets shall be carried out for 72 hours continuous duty at site.
- Electrical motor motors shall confirm to IE2 standard for high efficiency electric motors. The frame size shall be suitable for motor with VFD application.
  - 100% of load, then Insulation Class - F temperature rise limited to class F.
  - 85% of load, Insulation Class - F temperature rise limited to class B.
- The motor to be supplied by vendor shall be compatible with the existing VFD, for which parameter are as below :
  - Make : DANFOSS
  - Model : VLT (R) HVAC Drive
  - Year of manufacture : Procured in 2009
  - KW : 200 kW
  - Current : IN : 381/348A
  - OUT: 395/361A
  - Voltage : IN : 3 x 380 - 480V 50/60 Hz
  - OUT: 3 x 0-Vin 0-800 Hz

- The Vendor shall submit a detailed procedure for welding and weld repairs, for approval by the Purchaser before commencement of work. Pre-qualified procedures shall be permitted, subject to approval by the Purchaser.

- Welding and welds repairs shall be in accordance with a written procedure, duly approved by the Purchaser.
- All NDT procedures shall be in accordance with the ASME design code applicable to the Jet A1 fuel pumping unit/(s) and shall be submitted by the Vendor for approval by the Purchaser. However, pre-qualified procedures shall be permitted, subject to approval by the Purchaser.
- Post Weld Heat Treatment (PWHT) shall be in accordance with the requirements of the EI (erstwhile API) Standard 610 (latest edition).

3 Technical Specifications

3.1 Pump Technical Details

- The Suction Specific Speed (Nss), calculated at the best efficiency point (bep) for the maximum impeller diameter of the casing, shall not exceed 13,000 (rpm, m^3/hr, m).
- The impellers, shaft and couplings shall be dynamically balanced to the required grade as per applicable codes.
- Pumps shall be equipped with mechanical seals (conforming to latest applicable EI Code of Practice) unless otherwise specified on the pump data sheet.
- The pump model shall be selected so that required margin (minimum 1 m) between NPSH available and NPSH required is maintained for prescribed configuration throughout the entire operating range from minimum continuous stable flow up to and including rated capacity. Further up to 125% of the BEP capacity, the NPSH required shall be less than the NPSH available.
- The base plate shall incorporate a sloping drip collecting area under the pump unit (as a minimum) including a drain point and flange at the lowest point. Flanged drain valve with a blind flange shall be provided.
- Bearings shall be of the antifriction type and shall have a bearing design life of L10 - 25,000 hours minimum in continuous operation at rated pump conditions. Bearings for horizontal pumps shall be oil lubricated.
- No part of the equipment mounted on the base plate shall overhang the edge i.e. all equipment shall be within the dimensions of the base plate.
- The base plate shall be provided with lifting lugs for a single point lift, installed such that the centre of gravity of the package is midway between opposite lugs. In addition, none of the slings shall bear against any of the equipment on the pump base plate.
- In the pump performance curve, the Rated flow shall be lying within a range of 80% to 110% of best efficiency flow rate.
- Impellers shall be dynamically balanced with wear rings, if installed. Pumps shall be provided with replaceable casing wear rings (and if specified on data sheet, impeller wear rings) of compatible materials with non-galling characteristics. The wear rings shall be positioned and rigidly attached to prevent loosening. Spot/Tack welding is not considered an acceptable means of rigidly attaching wear rings. If open bladed impellers are offered and accepted a means shall be provided to compensate for wear between the impeller blades and the cover plate.
- Shafts shall be designed to carry loads without exceeding normal limits of combined stress, taking into account fatigue stress due to change in load or speed. The shaft stiffness shall limit the total deflection to 0.002 in (50µm) at the primary seal faces under the most severe dynamic conditions for the entire operating range of the pump with maximum diameter impeller and the specified speed and fluid.
- Oil lubricated bearings shall be provided with oil level indicators.
- Bearing housings shall be equipped with labyrinth type end seals where the shaft passes through the housing.
- Lifting lugs or eyes shall be provided on the pump base plate or mounting plate. Earthing lugs (2 off) shall also be provided.
- All flanged connections shall be in accordance with ASME B16.5. Bolt holes on all flanges shall straddle the horizontal and vertical centre lines. Vendor shall provide mating flanges with, nuts, bolts and gaskets in case of non-standard sizes.
- Vent, if required, and drain connections shall be provided at suitable points on the pump casing, with isolation valve, flanged connection & termination at the base plate edge.

- Motor shall have power ratings, including the service factor (if any), at least equal to the following percentage of pump rated brake horse power.

Motor Nameplate Rating (KW)	Percentage of Rated Pump Power (%)
<22	125
22-55	115
>55	110

- Pump couplings shall be supplied by the pump vendor. Spacer type flexible all-steel couplings shall be provided for all pumps.
- Pump performance testing, when specified on data sheet, shall be done at a minimum of five points, which will be:
  - Closed valve (where practical otherwise at minimum thermal flow)
  - Minimum stable flow
  - Rated flow
  - Best efficiency Point
  - Maximum Operating Point
- When performance test is specified on the data sheet, bearings temperature and vibration shall be measured at all points of the performance test, including closed valve when acceptable and jointly agreed by Purchaser and Vendor.
- Hydrostatic test pressure shall be 1.5 times the design pressure of the component and shall be for a minimum of 30 minutes. Hydro testing shall apply to all pressure retaining components.
- Each pump will be tagged with a permanent corrosion-resistant nameplate that is completely visible after installation of the equipment. The following information, as a minimum, shall be shown on the nameplate:
  - Purchaser's Order Number
  - Pump Serial Number.
  - Month & Year of Manufacture
  - Purchaser's item number (if provided)
  - Rated Discharge in M^3/hr.
  - Rated Head in MLC.
  - Differential Pumping Head at rated conditions
  - Impeller Speed in RPM.
  - Suction Port Diameter.
  - Discharge Port Diameter.
- Modifying the impeller to meet performance by under filing, or overfilling is not allowed. An increase of 5% in head at rated flow shall be possible by fitting an increased diameter impeller in the pump.
- The underside of the base plate shall be painted by vendor such that the package can be installed without further preparations. Holes in the base plate for grouting shall be located to allow ease of installation. The base plate shall be designed such as to keep the volume of grouting to a minimum.
- The noise level of all equipments shall not exceed the limits as specified. The maximum permissible noise level (sound pressure level) at a distance of 1 m from the pump set shall be in accordance with provisions in relevant Para of EI 610 (latest edition). The Vendor shall submit the guaranteed sound power levels and sound pressure levels of the equipment. The equipment shall meet the maximum noise limits by design and not by corrective measures. Vendor shall submit Equipment Noise data sheet in accordance with the format provided in Appendix G.
- The motor rating shall be based on the end of curve power requirement (considering maximum fluid density and viscosity)

3.2 Sealing System

- The seal system shall be provided in its entirety by one of the approved Seal Vendors. The seal system shall be in accordance with latest edition of EI (API) 682. The seal selection, piping plan and leakage detection system shall be in accordance with codes
- Mechanical seal guarantees shall be in accordance with applicable codes.
- For single seals, the seal leakage detection system shall be based on a pressure transmitter operation, fitted on the seal cavity upstream of the leakage line orifice.
- To ensure selection of the optimum mechanical seal and seal auxiliary facilities for the duty specified, the pump manufacturer shall be responsible for the engineering coordination, installation, and performance of its auxiliary facilities such as circulation, injection, quenching and cooling, as required for the seal selected by the seal manufacturer.
- The seal system and the seal facing materials shall be robust against entrained solids in the process media.
- The Vendor, in conjunction with the seal vendor, shall guarantee three years of trouble free operation for double mechanical seals and one year of trouble free operation for single mechanical seals. Vendor shall replace at no cost to Purchaser any failed components or alternatively, the entire seal system if repeated failures occur within this period. The technical bid shall propose how this warranty can be implemented, preferably in the form of a maintenance bond.

3.3 Vibration Acceptance Levels

- Vibration limits shall be confirmed at rated speed and at flow + 10% of rated flow as per API 610, 11th edition.

3.4 Painting of the Jet A1 Fuel Pump set Units

- Detailed proposed procedures for painting and repair system shall be submitted by the Vendor for approval by the Purchaser. The painting shall preferably be carried out with following procedure for 4 coat system having a total DFT, of not less than 300 microns:
  - Surface preparation by sand /grit blasting to SA 21/2.
  - Surface primer followed by corrosion resistant layer of paint.
  - Final top layer over and above the corrosion resistant layer of paint.
  - Layer for protection during transit.
  - Colour shade of final coat of paint shall have prior approval of Purchaser.
  - All electrical and instrumentation items shall be masked during painting.
  - External Stainless steel components shall be solvent cleaned and left bare.

3.5 Tagging of the Jet A1 Fuel Pump set Units

- The Vendor shall supply & tag all equipment with its appropriate ID number.
- The Vendor shall fix to each pump set, a plate detailing the design, operating and test conditions for individual equipment items and the pumping unit as a whole.
- The Vendor shall supply and install a range of safety signs, agreed with the Purchaser pertaining to the function of Jet A1 fuel pumping unit/(s).
- All tags, labels and signs shall be compatible with the environmental conditions.
- All tags shall be stainless steel engraved with black text in English.

3.6 Accessories for jet A1 fuel pump set unit

- Following accessories of Jet A1 Fuel Pump set Units shall be in accordance with API Standard 610 (latest edition) and the data sheet:
  - Prime Movers for the pump set unit.
  - Coupling and guards between prime mover and pump set unit.
  - Base plate for the pump set unit.

- Piping & Appurtenances.
- Special Tools.

3.7 Applicable Codes and Standards

- Latest published issue of Codes & Recommended Practices or amendment shall be followed unless stated otherwise.
- Specified standards may be replaced by equivalent standards that are internationally or otherwise recognised provided that it can be shown to the satisfaction of the Purchaser that they meet or exceed the requirements of the latest edition of the Specified standards.
- All standards, codes or specifications proposed by the Vendor shall be the latest issue of internationally recognised, and agreed with the Purchaser before implementation.

Heading Left	Heading Right
EI (erstwhile API) 610	Centrifugal Pumps for Petroleum, Petrochemical and Natural Gas Industries.
ASME B31.3	Process Piping.
ASME B16.34	Valves – Flanged, Threaded and Weld Ended
API 598	Inspection and Test of Valves
ASME B16.5	Steel Pipe Flanges and Flange Fittings
ASME B16.11	Forged Steel Fittings, Socket-Welding and Threaded.
ASME B16.20	Metallic Gaskets for Pipe Flanges - Ring-Joint, Spiral-Wound, and Jacketed.
API 682	Mechanical Seals of Centrifugal Pumps for Jet A1.
ASTM A193	Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service
ASTM A194	Standard Specification for Carbon and Alloy Steel Nuts for Bolt for High Pressure or High Temperature Service, or Both
ISO 9001:2008	Quality Management Systems
IS 1571:2008	Jet A1 Fuel Specifications
DEF STAN 91-91 Issue 8 (amendment 3)	

3.8 Acceptance Criteria

The following shall be minimum acceptance criteria

- "Vendor" shall submit a detailed Quality Assurance Plan incorporating the stages of inspection to be carried out by "DAFFPL's Representative", for approval, prior to commencement of work.
- Access to the "Vendor" manufacturing shop, at all reasonable times shall be available to "DAFFPL's
- Representative". All raw materials to be used in fabrication shall be offered for inspection and shall be used only if duly approved by the "DAFFPL's Representative".
- "Vendor" shall arrange for inspection & testing of the equipment at his own cost, which shall be witnessed by "DAFFPL's Representative".
- "Vendor" shall furnish all the material test certificates.
- "Vendor" shall issue a call for inspection to "DAFFPL's Representative" intimating readiness of the equipment / components for inspection / witnessing test giving 7 days prior notice.
- No surface / parts shall be painted or sandblasted until the inspection is completed.
- "Vendor" shall extend all required testing equipment / facilities to "DAFFPL's Representative".
- Centrifugal pump testing and inspection shall strictly as per the Energy Institute (erstwhile American Petroleum Institute) Codes. "Vendor" shall provide the compliance certificate.
- The "Vendor" shall submit the testing procedures to "DAFFPL's Representative".
  The following tests shall be carried out as minimum requirement for testing:
  - Material test
  - Final Dimensional Check
  - Hydro Testing : @ 1.5 times the design pressure
  - Performance Testing

- Fresh tap water will be used for hydrostatic testing. However, immediately after completion of the test the water shall be drained off and the vessel shall be thoroughly dried with hot air. The "Vendor" shall take adequate precaution, such that no scaling or rusting occurs inside the pump or any part thereof.
- Type, routine & acceptance test of electrical items.
- All welds shall be flush ground and sharp edges shall be rounded off.
- All bolt holes shall be straddle centre line of unit.
- Site performance test for pump sets to be carried out.
- Trial runs of pump sets shall be carried out for 72 hours continuous duty at site.
- Upon successful completion of testing operation and after the "DAFFPL's Representative" has been satisfied that the equipment installed is functioning as intended, the "DAFFPL's Representative" shall issue to the "Vendor" a "Taking Over Certificate" as a proof of the final acceptance of the system by the "DAFFPL's Representative". Such certificate shall not be unreasonably withheld nor shall the "DAFFPL's Representative" delay issuance thereof. Such certificate shall not relieve the "Vendor" of any of his obligations, which otherwise survive by the terms and conditions of the contract after issuance of such certificate.
- "Vendor" shall arrange test certificates for all the accessories being provided with pump sets.
- "2 sets of detailed O&M manual shall be provided.

3.9 Exclusion from "Vendor" scope

- All civil works. However, necessary civil loading data shall be furnished by "Vendor" within 15 days of the purchase order date for the design of civil foundation, etc. The vendor may also inspect the existing foundations of the pump sets on which the similar are working satisfactorily.

3.10 Deviations

There shall be no deviations to this bid specification. However, if any special deviation from this technical requisition is must, the same supported by adequate technical back-up data shall be furnished separately during submission of offer by the "Vendor". In the absence of any such indications, it shall be assumed that the offer complies with all the requirements and such assumptions shall be strictly binding on the Vendor.

3.11 Vendor's Quality Control

- Unless accepted otherwise by the "DAFFPL's Representative", the Vendor" shall employ a Quality Management System complying with the program described in ISO 9001-2008. The Vendor shall prove and satisfy the Purchaser that his obligations within the scope of this document are in accordance with the relevant section of BS EN ISO 9001. Prior to commencement of work, the Vendor shall submit a Quality Plan and procedural specifications for Purchaser's review and approval.
- Jet A1 Fuel specifications are as per IS 1571:2008 and DEF STAN 91-91 Issue 8 (amendment 3).
- The Quality Plan shall define scope of work of all the sub-vendors associated with the work. This Specification shall only indicate a general requirement and shall not relieve the Vendor of his obligations to comply with the requirements of the Contract.
- Works which, in the opinion of the "DAFFPL's Representative", are not in accordance with the Drawings or this Specification, shall be rejected. Any delay caused by such rejection shall not in any way relieve the "Vendor" of his obligations under the Contract.

3.12 Guarantee

Unless otherwise specified in General purchase conditions regarding guarantee, the following shall govern and the following are covered by the guarantee clause:

- Quality of components used.
- In case of any defect / non-performance, the “Vendor” at his own cost shall undertake necessary modification / replacement work at site in order to set right the defect.
- “Vendor” shall guarantee that all materials used in the equipment are new and have been submitted to regular acceptance procedure and are free from any defect regarding quality, form and appearance.
- Pump set unit shall be guaranteed for design, materials, workmanship and satisfactory performance for a period of 12 months from the date of commission or 18 months from the date of receipt at site, whichever is earlier. The “Vendor” shall be completely responsible for any design work carried out by him. "DAFFPL’s Representative“ approval of his design shall not relieve him of his responsibility from the satisfactory performance of such item.
- Compliance with this specification or approval of work by "DAFFPL’s Representative“ or release of units for shipment, shall in no way release or relieve the “Vendor” of any responsibility for carrying out all provisions of this specification.
- The guarantee for performance shall cover individual items, bought-out items and systems including any electrical for their ratings / outputs as well as for the integrated operation of the equipment and its auxiliaries as a whole.

3.13 Documentation/Information to be furnished

The Vendor shall submit all necessary completely filled-in data sheets, G.A. of all pump sets, Pump foundation drawings with loading details along with offer and documentation relating to the Works as stated in the Project Specifications and Drawings or as otherwise requested by the "DAFFPL’s Representative“.

- Complete technical particulars & General Arrangement scheme and terminal details drawing of pumps with overall dimensions.
- QA/QC plan
- List of Erection & commissioning spares, Special tools and fixtures for installations of the pumping unit/(s) shall be included in the quotation and furnished as part of the initial supply. The requirements for quantities shall be agreed upon by the Purchaser and the Vendor
- The Vendor shall provide a list with prices of specialist tools and operational spare parts for Jet A1 fuel pumping unit/(s) and instrumentation for start-up, commissioning and for twenty four (24) months operation.
- All spares shall be suitably marked and numbered, for easy identification with the maintenance manuals and with the particular item and shall be suitably packed and preserved to prevent deterioration during transport and / or storage at DAFFPL Fuel Farm, Shabad Mohammadpur IGI Airport, New Delhi.
- Following documents for motors also to be submitted by vendor-

    1. Torque - Speed Curve
    2. Thermal Withstand Curves (Cold & Hot)
    3. Load – Efficiency Curve
    4. Starting Current - Time Curve
    5. Motor Data Sheets / Technical Particulars

- Operation & Maintenance Manual.
- Qualification data for firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of engineers and owners, and other information specified.
- Product Test Reports: Certified reports of manufacturers design and production tests indicating compliance of unit and accessories with referenced standards.

- Field test reports indicating and interpreting test results relative to compliance with performance requirements specified. Include certified copies of field test records.
- "Vendor" shall submit the drawings and documents in required number of copies to the "DAFFPL's Representative ", for approval, as per the schedule given below.

		After Order Placement	
SN	Drawing / Documents	For Approval	Prior to Dispatch
1	G.A. drawings showing location of suction & discharge connections, auxiliary piping details, direction of rotation, when viewing from the coupling end, model no., dimension, weights etc.	7	6
2	Cross-sectional drawings with parts numbered with MOC and list of parts, which agreed with the pumps, furnished.	7	6
3	Description & literature of all accessories including make, model, capacity, etc.	7	6
4	Allowable forces and moments, Performance curves which include differential Head, efficiency, NPSH required, BKW all expressed as function of capacity at peak efficiency. In addition, the head curve for max. & min. These curves shall indicate viscosity corrections, if any.	7	6
5	Completely filled in pump data sheets and separate deviation list, if any.	7	6
6	Material Test certificates.	--	6
7	Test certificates for tests carried out at vendor/sub-vendor's shop.	--	6
8	List of recommended spare parts, prices and delivery dates.	7	6
9	Operating and maintenance manuals.	--	6
10	Drawing showing mechanical seal installation and other setting dimensions.	7	6
11	Installation drawings.	7	6

Vendor shall furnish the final record documents as listed above along with or immediately after the supply/despatch of the equipment. The reports and other documents shall be grouped for each equipment and all the documents shall be provided in a folder.

3.14 Testing the Jet A1 Fuel Pumping Units

3.14.1 Purchaser's Requirements

The Vendor will perform following scope of activities in seriatim to fulfill Purchaser's Requirement for Testing the Jet A1 Fuel Pumping Unit/(s):

3.14.2 General

Preparation of all testing processes and procedures and submit the same for approval by the Purchaser. These should be in line with the design codes and international standards.

3.14.3 Pre Test Inspection

The Purchaser shall undertake a visual and dimensional inspection of the pumping units and produce a list of deviation in items. Any deviation from the standards shall have to be corrected by the Vendor prior to commencement of any test.

3.14.4 Testing of Strength

Hydrostatic Testing of the pumping units shall be conducted in accordance with applicable Design Code. A stabilised test pressure test shall be held for the specified time. During testing, pre tested items unsuitable to be in the test system may be removed.

3.14.5 Cleaning & Drying

The pumping units shall be cleaned and dried thoroughly on completion and acceptance of the strength test.

3.14.6 Leak Testing

The pumping units shall be shall be fully assembled and pneumatically leak-tested on completion of cleaning and drying. Leaks, if any, shall be rectified.

3.14.7 Functional Testing

The pumping units shall be assembled and functionally tested on completion of leak testing.

3.14.8 Factory Acceptance Test

Upon satisfaction of the Vendor that the pumping units are fully functional, the Vendor shall inform the Purchaser with 10 days advance notice for Factory Acceptance Test, which shall be undertaken in the presence of the “DAFFPL’s Representative”.

3.14.9 Post Test Inspection

Purchaser shall undertake visual inspection of the pumping units after completion of the FAT. The purchaser will produce a list of his observations, which shall be attended by the Vendor prior to commencing any activity for packing.

3.14.10 Dossiers

The Vendor shall prepare a detailed dossier/(s) for manufacturing, inspection and testing and submit the same to the Purchaser.

3.15 Packing, Protection, Preservation & Delivery

The Vendor will perform following activities for packing & transportation of the Jet A1 Fuel Pumping Unit/(s):

3.15.1 Packing, Protection & Preservation

On completion and acceptance of testing and FAT, the pumping units shall be preserved, protected, packaged keeping in view the outer maximum dimension of the package acceptable for transportation either by land/rail to DAFFPL’s Fuel Farm at Shahabad Mohammadpur, Indira Gandhi International Airport, New Delhi for its storage.

3.16 Method of Measurement

The item shall be measured in numbers.

3.17 Basis of Payment

Payment terms shall be as per “DAFFPL" terms and conditions.

Project Delhi Aviation Fuel Facility Private Limited Modernization of Fuel Farm-IGI Airport			
Concept Note: **Additional Information regarding ATF Pump**	**Divn/Dept : Process**	**Job Nr/File No : 322538-PZD-001**	**Rev. – R0**
	Prepared by: JCP	**Date: 04.12.15**	**Sheet No Of 1 of 1**
	Checked by: HRS	**Date: 04.12.15**	

Additional Information regarding ATF Hydrant Pump (Vendor has to consider)

- These pump sets will be used to handle Jet A1 fuel at temperature condition written elsewhere in this specification and Data Sheet. Temperature more than 50°C is not envisaged. Hence, the construction/manufacture of the pump sets need to be considered with this technical consideration in view.

- The new pump sets will be required to replace old pump sets, which are already in operation. In no circumstances, Aircraft refuelling cannot be delayed. Hence to the extent possible, the following important factors need to be considered to manufacture the pumps:

  - The dimensional details and the metallurgy of the base plates of new pump sets may be the same as that of existing pump sets.
  - The centre to centre distance of the hole for foundation bolts in the foundation plates, new pump set may to be the same as that of existing pumps.
  - The height of centre line of pump suction port above the foundation plate of new pumps, need to be same as that of the existing pumps.
  - The height of centre line of pump discharge port above the foundation plate of new pumps, need to be same as that of the existing pumps.
  - Diameter of suction port of new pumps, need to be the same as that of existing pumps.
  - Diameter of discharge port of new pumps, need to be the same as that of existing pumps.

  If the above site specific requirements are possibly achieved in manufacture of new pump sets, then it will be of immense help and convenience to install, align the new pump sets on the existing foundations and commission the same with least possible down time.

DATA SHEET FOR CENTRIFUGAL PUMP

APPLICABLE TO: ○ PROPOSALS ● PURCHASE ◯ AS BUILT ○ APPROVAL

TAG NO : **PF-301-306** | SERVICE : **Aviation Turbine Fuel (JET A1)**

P & ID NO : **--** | CLIENT : **Delhi Aviation Fuel Facility Private Limited**

QUANTITY: **6** WORKING: **6** INS STBY: **N** NON INS STBY: **N** | LOCATION : **New Delhi**

SERVICE DESCRIPTION: **ATF Hydrant Pump** | CONSTRUCTION CODE: **API-610, Latest Edition**

NOTES: INFORMATION BELOW TO BE COMPLETED: ○ BY PURCHASER ☐ BY MANUFACTURER ◯ BY MANUFACTURER OR PURCHASER

○ **DATA SHEETS**

	ITEM NO.	ATTACHED	ITEM NO.	ATTACHED	ITEM NO.	ATTACHED
PUMP		●		○		○
MOTOR		○		○		○
GEAR		○		○		○
TURBINE		○		○		○

REVISIONS

REV.	DATE	BY
R0	**04.03.15**	**RPS**
R1	**30.03.15**	**JCP**
R2	**01.04.15**	**JCP**
R3	**01.12.15**	**JCP**

APPLICABLE OVERLAY STANDARD(S):

● OPERATING CONDITIONS (5.1.3)

FLOW, NORMAL **275** (m^3/h) MAX **275** (m^3/h)

OTHER

SUCTION PRESSURE MAX./MIN **Flooded** (Kg/cm2a)

DISCHARGE PRESSURE **155** (mLC)

DIFFERENTIAL PRESSURE **--** (Kg/cm2)

DIFF. HEAD **155** (mLC) NPSHA **7** (mLC)

PROCESS VARIATIONS (5.1.4)

STARTING CONDITIONS (5.1.4)

SERVICE: ● CONT. ○ INTERMITTENT (STARTS/DAY)

○ PARALLEL OPERATION REQ'D (5.1.13)

● SITE DATA (5.1.3)

LOCATION: (5.1.30)

● INDOOR ○ HEATED ○ OUTDOOR ○ UNHEATED

● ELECTRICAL AREA CLASSIFICATION (5.1.24 / 6.1.4)

CL **I** GR **II A/II B** TEMP **T4**

○ WINTERIZATION REQ'D ● TROPICALIZATION REQ'D.

SITE DATA (5.1.30)

● ALTITUDE (m) BAROMETER (Kg/cm2g)

● RANGE OF AMBIENT TEMPS: MIN./MAX. **-2.2** / **50** (°C)

● RELATIVE HUMIDITY: MIN. / MAX. / (%)

UNUSUAL CONDITIONS: (5.1.30) ● DUST ○ FUMES

○ OTHER

● LIQUID (5.1.3)

LIQUID TYPE OR NAME **Aviation Turbine Fuel (JET A1)**

● HAZARDOUS ● FLAMMABLE (5.1.5)

	MIN.	NORMAL	MAX.
PUMPING TEMP (°C)	**-2.2**	**Ambient**	**50**
VAPOR PRESS. (Kg/cm2a)	**--**	**0.07**	**--**
RELATIVE DENSITY (SG)	**--**	**0.775 to 0.83**	**--**
VISCOSITY (Cst)	**--**	**1.6 - 3.4**	**--**

SPECIFIC HEAT, Cp (kJ/kg·K)

○ CHLORIDE CONCENTRATION (6.5.2.4) (mg/kg)

○ H_2S CONCENTRATION (mol fraction) WET (5.12.1.12c)

CORROSIVE / EROSIVE AGENT **Non - Corrosive** (5.12.1.9)

MATERIALS (5.12.1.1)

● ANNEX H CLASS (5.12.1.1)

● MIN DESIGN METAL TEMP (5.12.4.1) (°C)

○ REDUCED-HARDNESS MATERIALS REQ'D. (5.12.1.12)

☐ BARREL/CASE **CS** IMPELLER **CF8M (SS 316)**

☐ CASE/IMPELLER WEAR RINGS **AISI 304**

☐ SHAFT **AISI 410**

☐ DIFFUSERS

◯ PERFORMANCE:

PROPOSAL CURVE NO. ☐ r/min

☐ IMPELLER DIA. RATED MAX. MIN. (mm)

☐ IMPELLER TYPE

☐ RATED POWER (kW) EFFICIENCY (%)

☐ MINIMUM CONTINUOUS FLOW:

THERMAL (m^3/h) STABLE (m^3/h)

☐ PREFERRED OPER. REGION TO (m^3/h)

☐ ALLOWABLE OPER. REGION TO (m^3/h)

☐ MAX. HEAD @ RATED IMPELLER (m)

☐ MAX. POWER @ RATED IMPELLER (kW)

☐ NPSHR AT RATED FLOW (m) (5.1.10)

◯ MAX. SUCTION SPECIFIC SPEED: (5.1.11)

◯ MAX. SOUND PRESS. LEVEL REQ'D **85** (dBA) (5.1.16)

◯ EST. MAX. SOUND PRESS. LEVEL (dBA) (5.1.16)

◯ EST. MAX. SOUND POWER LEVEL (dBA) (5.1.16)

○ UTILITY CONDITIONS (5.1.3)

ELECTRICITY	VOLTAGE	PHASE	HERTZ
DRIVERS	**415 ± 6%**	**3**	**50 ± 3%**
HEATING			

SYSTEM VOLTAGE DIP ● 80% ○ OTHER (6.1.5)

STEAM	MAX. PRESS.	MAX. TEMP.	MIN. PRESS.	MIN. TEMP.
DRIVERS				
HEATING				

COOLING WATER: (5.1.19) SOURCE

SUPPLY TEMP. (°C) MAX. RETURN TEMP. (°C)

NORM. PRESS. (Kg/cm2g DESIGN PRESS. (Kg/cm2g)

MIN. RET. PRESS. (Kg/cm2g MAX. ALLOW. D.P. (Kg/cm2g)

CHLORIDE CONCENTRATION: (mg/kg)

Client: Delhi Aviation Fuel Facility Private Limited
C/o Aviation Fuelling Station,
Delhi International Airport,
Shahabad Mohammadpur, New Delhi – 110061

Title: ATF Hydrant Pump (PF-301-306)
Centrifugal Pump Datasheet

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Date	Prepared	Checked	Approved	SCALE	DRAWING/DOC. NO	SHEET	REV	STATUS
01.12.15	JCP	HRS	VST	NA	**DAFFPL-MMD-322538-RSD-01**	1 OF 3	R3	BID

DATA SHEET FOR CENTRIFUGAL PUMP

TAG NO : **PF-301-306**	SERVICE : **Aviation Turbine Fuel (JET A1)**
P & ID NO : **--**	CLIENT : **Delhi Aviation Fuel Facility Private Limited**
QUANTITY: **6** WORKING: **6** INS STBY: **N** NON INS STBY: **N**	LOCATION : **New Delhi**
SERVICE DESCRIPTION: **ATF Hydrant Pump**	CONSTRUCTION CODE: **API-610, Latest Edition**

CONSTRUCTION

ROTATION: (VIEWED FROM COUPLING END) ■ CW ☐ CCW

PUMP TYPE: (4.1)

○ OH1 ● OH2 ○ OH3 ○ OTHER _____

CASING MOUNTING:

■ CENTERLINE ○ IN-LINE ☐ OTHER _____

CASING TYPE:

■ SINGLE VOLUTE ☐ MULTIPLE VOLUTE ☐ DIFFUSER

CASE PRESSURE RATING:

○ OH6 PUMP SUCTION REGION DESIGNED FOR MAWP (5.3.6)

☐ MAX. ALLOWABLE WORKING PRESSURE _____ (MPa)

@ _____ (°C)

☐ HYDROTEST PRESSURE _____ (MPa)

☐ **NOZZLE CONNECTIONS: (5.4.2)**

	SIZE	FLANGE RATING	FAC'G	POSITION
SUCTION	**VTA**	**300#**	**RF**	**END**
DISCHARGE	**VTA**	**300#**	**RF**	**TOP**

PRESSURE CASING AUX. CONNECTIONS: (5.4.3)

	NO.	SIZE (DN)	TYPE
■ DRAIN			
■ VENT			
○ WARM-UP			

○ MACHINED AND STUDDED CONNECTIONS (5.4.3.8)

○ CYLINDRICAL THREADS REQUIRED (5.4.3.3)

ROTOR:

○ COMPONENT BALANCE TO ISO 1940 G1.0 (5.9.4.4)

COUPLINGS:(6.2.2)

○ MANUFACTURER _____ ○ MODEL _____

☐ RATING (kW per 100 r/min) _____

○ SPACER LENGTH _____ (mm) ○ SERVICE FACT. _____

○ COUPLING BALANCED TO ISO 1940-1 G6.3 (6.2.3)

○ COUPLING WITH PROPRIETARY CLAMPING DEVICE (6.2.11)

○ COUPLING PER ISO 14691 (6.2.4)

○ COUPLING PER ISO 10441 (6.2.4)

○ COUPLING PER API 671 (6.2.4) ○ ASME B15.1

● NON-SPARK COUPLING GUARD (6.2.14c)

○ COUPLING GUARD STANDARD PER _____ (6.2.14a)

BASEPLATES:

☐ API BASEPLATE NUMBER _____ (ANNEX D)

○ NON-GROUT CONSTRUCTION (6.3.13)

○ OTHER _____

MECHANICAL SEAL: (5.8.1)

● AS PER API 682 LATEST EDITION

● VENDOR TO SUBMIT FILLED IN API 682 DATA SHEET

SURFACE PREPARATION AND PAINT

■ MANUFACTURER'S STANDARD ○ OTHER (SEE BELOW)

○ SPECIFICATION NO. Bidder to submit the type of painting Std to be used.

PUMP:

● PRIMER _____

● FINISH COAT _____

BASEPLATE: (6.3.17)

● PRIMER _____

● FINISH COAT _____

● DETAILS OF LIFTING DEVICES(6.3.20) _____

SHIPMENT: (7.4.1)

● DOMESTIC ○ EXPORT ○ EXPORT BOXING REQUIRED

○ OUTDOOR STORAGE MORE THAN 6 MONTHS

SPARE ROTOR ASSEMBLY PACKAGED FOR:

○ HORIZONTAL STORAGE ○ VERTICAL STORAGE

○ TYPE OF SHIPPING PREPARATION _____

HEATING AND COOLING

○ HEATING JACKET REQ'D. (5.8.9)

○ COOLING REQ'D.

○ COOLING WATER (C.W.) PIPING PLAN (6.5.3.1) _____

C.W. PIPING:

○ PIPE ○ TUBING; FITTINGS _____

C.W. PIPING MATERIALS:

○ S. STEEL ○ C. STEEL ○ GALVANIZED

COOLING WATER REQUIREMENTS:

☐ BEARING HOUSING _____ (m^3/h)

HEAT EXCHANGER _____ (m^3/h)

TOTAL COOLING WATER _____ (m^3/h)

HEAT MEDIUM: ○ STEAM ○ OTHER

HEATING PIPING: ○ TUBING ○ PIPE

BEARINGS AND LUBRICATION

BEARING (TYPE/NUMBER) (5.10.1):

☐ RADIAL _____ /

☐ THRUST _____ /

LUBRICATION (5.11.3, 5.11.4):

○ GREASE ■ OIL

○ PURGE OIL MIST ○ PURE OIL MIST

○ CONSTANT LEVEL OILER PREFERENCE (5.10.2.2): _____

○ OIL VISC. ISO GRADE

INSTRUMENTATION

○ ACCELEROMETER (6.4.2.1) _____

○ PROVISION FOR MOUNTING ONLY (5.10.2.11)

○ FLAT SURFACE REQ'D (5.10.2.12)

○ TEMP. GAUGES (WITH THERMOWELLS) (8.1.3.6) _____

○ PRESSURE GAUGE TYPE _____

Contractor to recommend the type of instrument if any is envisaged for the safe operation of the pump

REMARKS: _____

MASSES (kg)

PUMP	**VTA (Vendor to Advise)**
BASEPLATE	**VTA (Vendor to Advise)**
DRIVER	**VTA (Vendor to Advise)**
TOTAL	

Client: Delhi Aviation Fuel Facility Private Limited
C/o Aviation Fuelling Station,
Delhi International Airport,
Shahabad Mohammadpur, New Delhi – 110061

Title: ATF Hydrant Pump (PF-301-306)
Centrifugal Pump Datasheet

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Date	Prepared	Checked	Approved	SCALE	DRAWING/DOC. NO	SHEET	REV	STATUS
01.12.15	JCP	HRS	VST	NA	**DAFFPL-MMD-322538-RSD-01**	2 OF 3	R3	BID

DATA SHEET FOR CENTRIFUGAL PUMP

TAG NO : **PF-301-306**	SERVICE : **Aviation Turbine Fuel (JET A1)**
P & ID NO : **--**	CLIENT : **Delhi Aviation Fuel Facility Private Limited**
QUANTITY: **6** WORKING: **6** INS STBY: **N** NON INS STBY: **N**	LOCATION : **New Delhi**
SERVICE DESCRIPTION: **ATF Hydrant Pump**	CONSTRUCTION CODE: **API-610, Latest Edition**

SPARE PARTS (TABLE 18)

- ● START-UP ○ NORMAL MAINTENANCE
- ○ OTHER

OTHER PURCHASER REQUIREMENTS

- ○ COORDINATION MEETING REQUIRED (9.1.3)
- ○ MAXIMUM DISCHARGE PRESSURE TO INCLUDE (5.3.2)
  - ○ MAX RELATIVE DENSITY
  - ○ MAX DIA. IMPELLERS AND/OR NO. OF STAGES
  - ○ OPERATION TO TRIP SPEED
- ○ OH3 BEARING HS6 LIFTER (8.1.2.6)
- ● CONNECTION DESIGN APPROVAL (5.12.3.4)
- ◯ TORSIONAL ANALYSIS REQUIRED (5.9.2.1)
- ○ TORSIONAL ANALYSIS REPORT (5.9.2.6)
- ☐ FOUNDATION BOLT
- ☐ PUMP GA & FOUNDATION BOLT PLAN
- ○ PROGRESS REPORTS (9.3.3)
- ○ OUTLINE OF PROCEDURES FOR OPTIONAL TESTS (9.2.5)
- ○ ADDITIONAL DATA REQUIRING 20 YEARS RETENTION (7.2.1.1f)

PIPING AND APPURTENANCES

- ● MANIFOLD PIPING TO SINGLE CONNECTION (6.5.1.6)
  - ◯ VENT ◯ DRAIN ◯ COOLING WATER
- ◯ MOUNT SEAL RESERVOIR OFF BASEPLATE (6.5.1.4)
- ● FLANGES REQ'D IN PLACE OF SOCKET WELD UNIONS (6.5.2.8)
- ◯ INSTALLATION LIST IN PROPOSAL (9.2.3L)

CONNECTION BOLTING

- ○ PTFE COATING ○ ASTM A 153 GALVANIZED
- ○ PAINTED ● SS

QA INSPECTION AND TESTING

- ● SHOP INSPECTION (7.1.4)
- ● PERFORMANCE CURVE APPROVAL
- ◯ TEST WITH SUBSTITUTE SEAL (7.3.3.2b)
- ○ MATERIAL CERTIFICATION REQUIRED (5.12.1.8)
  - ● CASING ● IMPELLER ● SHAFT
  - ○ OTHER _____
- ○ CASTING REPAIR PROCEDURE APPROVAL REQ'D (5.12.2.5)
- ◯ INSPECTION REQUIRED FOR CONNECTION WELDS (5.12.3.4e)
  - ◯ MAG. PARTICLE ◯ LIQUID PENETRANT
  - ◯ RADIOGRAPHIC ◯ ULTRASONIC
- ◯ INSPECTION REQUIRED FOR CASTINGS (7.2.1.3 / 5.12.1.5)
  - ◯ MAG. PARTICLE ◯ LIQUID PENETRANT
  - ◯ RADIOGRAPHIC ◯ ULTRASONIC
- ○ HARDNESS TEST REQUIRED: _____ (7.2.2.3)
- ○ ADDITIONAL SUBSURFACE EXAMINATION FOR 7.2.1.3
  - FOR _____
  - METHOD _____

QA INSPECTION AND TESTING (CONT.)

TEST	NON-WIT	WIT	OBSERVE
● HYDROSTATIC (7.3.2)	○	●	○
● PERFORMANCE (7.3.3)	○	●	○
● RETEST ON SEAL LEAKAGE (7.3.3.2d)	○	●	○
● NPSH (7.3.4.2)	○	●	○
○ TRUE PEAK VELOCITY DATA (7.3.3.4d)	○	○	○
● COMPLETE UNIT TEST (7.3.4.3)	○	●	○
● SOUND LEVEL TEST (7.3.4.4)	○	●	○
● CLEANLINESS PRIOR TO FINAL ASSEMBLY (7.2.2.2)	○	●	○
● DIMENSIONAL TEST	○	●	○
○ NOZZLE LOAD TEST (6.3.6)	○	○	○
○ CHECK FOR CO-PLANAR MOUNTING PAD SURFACES (6.3.3)	○	○	○
○ MECHANICAL RUN UNTIL OIL TEMP. STABLE (7.3.4.7.1)	○	○	○
○ 4 h MECHANICAL RUN AFTER OIL TEMP. STABLE (7.3.4.7.3)	○	○	○
○ 4 h MECH. RUN TEST(7.3.4.7.2)	○	●	○
○ BRG HSG RESONANCE TEST (7.3.4.6)	○	○	○
○ AUXILIARY EQUIPMENT TEST (7.3.4.5)	○	○	○
◯ IMPACT TESTING (5.12.4.3) ○ PER EN 13445 ○ PER ASME VIII	○	○	○
○ _____	○	○	○

- ● VENDOR KEEP REPAIR AND HT RECORDS (7.2.1.1c)
- ● VENDOR SUBMIT TEST PROCEDURES (7.3.1.2 / 9.2.5)
- ● VENDOR SUBMIT TEST DATA WITHIN 24 h (7.3.3.3e)
- ○ INCLUDE PLOTTED VIBRATION SPECTRA (5.9.3.3)
- ○ SUBMIT INSPECTION CHECK LIST (7.1.6)

REMARKS

1. Vendor to furnish pump characteristic curve.
2. Mechanical seal and elastomers shall suit pumping fluid.
3. Motor should not be overloaded over the entire range of curve.
4. Vibration shall be less than 50 microns in all directions.
5. Pump motor shall be suitable for VFD driven.
6. All wetted components must not contain any zinc, cadmium, bronze, copper, brass or other yellow metals. All materials shall be chemically compatible with Jet A1 Fuel.
7. Pump assembly shall be dynamically balanced.
8. Vendor to furnish list of mandatory spares for 2 years of O & M.
9. Match flanges of class ASA 300# (Std. B16.5) shall be provided by vendor.
10. Hydro test pr. Shall be 2 times max duty pressure and 1.5 times shut off pressure.
11. Nozzle orientation plan shall be proposed by the vendor and approved by the client.
12. Suitability of motor terminal box for specified cable size: 2R-3C x 240 sq. mm Armoured cable.
13. Test: 100% radiography, UT+MPI+DPI as per code , Hydrostatic
14. Motor shall be invertor Duty type & capable of operation with VFD in normal mode and in bypass mode with soft starter.
15. Process Fluid is Jet A1 Fuel conforming to IS 1571: 2008 and DEF STAN 91-91 Issue 8 (amendment 3).

Client: Delhi Aviation Fuel Facility Private Limited
C/o Aviation Fuelling Station,
Delhi International Airport,
Shahabad Mohammadpur, New Delhi – 110061

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Centrifugal Pump Datasheet

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01.12.15	JCP	HRS	VST	NA	**DAFFPL-MMD-322538-RSD-01**	3 OF 3	R3	BID

Specifications for Electric Motor

Modernisation of Fuel Farm-IGI Airport,
Shahabad Mohammadpur, New Delhi

March 2015

Delhi Aviation Fuel Facility Private Limited

DAFFPL

Mott MacDonald

Specifications for Electric Motor

Modernisation of Fuel Farm-IGI Airport, Shahabad Mohammadpur, New Delhi

March 2015

Delhi Aviation Fuel Facility Private Limited

C/O Aviation Fuelling Station Delhi International Airport, Shahabad Mohammadpur
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Information class: Standard

Modernization Of Fuel Farm of Delhi Aviation Fuel Facility Pvt. Ltd. IGI Airport, New Delhi

Specifications for **Electrical Motor**	**Project No.:322538**
	Reference: Tank Farm Area (ATF)
	No. of Sheets:

Job Number	Facility Location Code	Document Number
322538	Shahbad Mohammadpur, IGI Airport-New Delhi	322538-ESD-101A

☐ **Code 1**: Approved and Work may Proceed.

☐ **Code 2:** Revise & Re-submit. Work may Proceed subject to incorporation of comments.

☐ **Code 3:** Revise & Re-Submit. Work should Not Proceed.

☐ **Code 4:** Review Not Required. Work may Proceed.

Approval to proceed shall not be deemed as Acceptance or Clearance of Design, Calculations, Analyses, Test Procedures/Methods, or Selection of Materials by the Contractor. The Contractor shall Not be relieved from full compliance of Contract Requirements and Technical Specifications.

Dated: **Delhi Aviation Fuel Facility Pvt. Ltd.**

Document No.

RI	17.04.15	Bidding	SK	HBC/TKV	VST/VKG	
Rev	**Date**	**Issued For**	**Prepared By:**	**Checked By:**	**Approved By:**	**Approved By:**
			Mott MacDonald Pvt. Ltd.			**Client**

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1 Performance Requirements for Electric Motors for Jet A1 Pumps

1.1 General

Existing Fuelling System i.e. Fuel Farm of Delhi Aviation Fuel Facility Pvt. Ltd. (DAFFPL) for refueling the aircrafts at IGI Airport, New Delhi is slated for modernization and up-gradation so as to conform to International Standards for receipt, storage and dispensing of Jet A1 fuel.

At DAFFPL fuel farm, Jet A1 fuel is brought aboveground/underground pipe from Oil Terminals of IOCL and BPCL and also by road tanker. This fuel is stored in the Cone Roof Vertical Tanks installed in the fuel farm. Presently, the aircrafts are being refueled by hydrant pumps through fuel underground Jet A1 fuel hydrant pipe line.

This document specifies the minimum acceptable requirements set by the Purchaser for design, engineering, procurement, fabrication, assembly, inspection, testing, commissioning and delivery to site of electric motor duly coupled to Centrifugal Pumps for its installation within the Fuel Farm of DAFFPL, IGI Airport, New Delhi.

1.2 Summary

This specification for electric motors describes the minimum acceptable parameters for factory and field installed electric motors. It should be the aim not to deviate from good engineering practice, and, in the absence of specifications, good engineering practices will prevail, utilising first quality materials and workmanship.

1.3 Definitions

Purchaser	Delhi Aviation Fuel Facility Limited, (DAFFPL)
Vendor	The Company designated on the purchase order form as being the selected supplier of the goods, materials and services.
"must / shall"	Indicates a mandatory requirement.
"should"	Indicates a preferred course of action.
"may"	Indicates one acceptable course of action.

1.4 Compliance

Compliance by the Vendor with this specification shall not relieve him of his responsibilities to supply the Package to meet the specified requirements of mandatory codes and standards.

Where there is a conflict between the Purchasers supplied documents and the referenced / mandatory specifications, the more onerous shall apply.

The Vendor shall notify the Purchaser in writing, of any proposed deviation from this Specification or associated data sheets. The Purchaser's decision in respect of concession requests will be final.

1.5 Quality Assurance

It is mandatory that the Vendor shall demonstrate to the entire satisfaction of the Purchaser that his activities within the scope of this document are in accordance with the relevant section of BS EN ISO 9001. The Vendor shall submit to the Purchaser for review and approval, a Quality Plan and procedural specifications prior to commencement of work. The Quality Plan shall define all sub – Vendor's involvement in the work. The review in this Specification shall only indicate a general requirement and shall not relieve the Vendor of his obligations to comply with the requirements of the Contract.

1.6 Safety

All work shall be performed in accordance with the safety requirements listed in the contract documentation and any mandatory standards and legislation.

2 Codes & Standards

A reference invokes the latest published issue or amendment unless stated otherwise.

Referenced standards may be replaced by equivalent standards that are internationally or otherwise recognised provided that it can be shown to the satisfaction of the Purchaser that they meet or exceed the requirements of the latest edition of the referenced standards.

All standards, codes or specifications proposed by the VENDOR shall be the latest issue of internationally recognised, and agreed with the PURCHASER before implementation.

IEC 60034	Rotating Electrical Machines
IEC 60072	Dimensions And Output Series For Rotating Electrical Machines
NFPA	National Electrical Code
NEMA MG-1	Motors And Generators
UL 1004	Electric Motors
NETA ATS-99	International Electrical Testing Association
IEC 60079	Electrical apparatus for explosive gas atmospheres
ATEX	Directive 94/9/EC
Low Voltage Directive	73/23/EEC & 93/68/EEC
Machinery Directive	89/392/EEC, 91/368/EEC, 93/44/EEC & 93/68/EEC
Electromagnetic Compatibility	89/336/EEC, 92/31/EEC & 93/68/EEC

IS 1571:2008	Aviation Turbine Fuels, Kerosene Type, Jet A-1 [PCD 3: Petroleum, Lubricants and their Related Products]
IS 5571:2009	Guide for Selection and installation of Electrical Equipment for Hazardous Areas (other than mines) [ETD 22: Electrical Apparatus for Explosive Atmosphere]
IS 5572:2009	Classification of hazardous areas (other than mines) having flammable gases and vapours for electrical installation [ETD 22: Electrical Apparatus for Explosive Atmosphere]

3 Environmental Conditions

3.1 Location

The site is located at Shahbad Mohammadpur

adjoining to Indira Gandhi International Airport, New Delhi. The site is approachable by road.

3.2 Topography

The whole Site is levelled surface, with a nominal gradual slope.

3.3 Climatic Conditions

DAFFPL Fuel Farm, IGI Airport, New Delhi (Palam) has a tropical desert climate with high humidity. The highest maximum humidity (up to 100%) occurs during July - August. The highest temperature occurs between May and June. At the time of maximum temperature, the maximum relative humidity is 40%.

3.4 Environmental Design Parameters

Project	:	Delhi Aviation Fuel Facility Private Limited
Site address New Delhi	:	Aviation Fuelling Station Shahbad, Muhammad Pur, IGI Air Port,
Nearest Railway Station	:	New Delhi Railway Station
Nearest Airport	:	Indira Gandhi International Airport, New Delhi
Altitude	:	237 m
Operating Max. Temperature	:	48.4 °C
Operating Min. Temperature	:	-2.2 °C
Design Temperature	:	50 °C
Humidity, Maximum	:	95 %

Humidity, Minimum	:	25 %
Maximum Rainfall	:	20-30 mm in one hour duration
Designed Wind Velocity	:	47 m/s
Barometric Pressure	:	0.98 bar
Seismic Zone	:	Zone IV as per IS:1893

3.5 Design Temperature

The Maximum Design is considered as 75° C. This is an appropriate margin above the Maximum Operating Temperature of 48.4° C.

4 System Voltages

Primary Distribution:	11,000V (+/- 10%), 3 Phase, 3 Wire, 50Hz
Secondary Distribution:	415V (+/- 10%), 3 Phase, 4 Wire, 50Hz
Motors:	415V (+/- 6%), 3 Phase, 50Hz.

5 Motors

5.1 General Requirements

A. Motor requirements apply to mechanical equipment motors unless otherwise indicated.

1. Different ratings, performance, or characteristics for motor are specified in Section 6.1.
2. Motorized-equipment manufacturer requires ratings, performance, or characteristics, other than those specified in this Section, to meet performance specified.

B. Provide premium efficient motors, as defined in NEMA MG 1.

C. Select motors to operate in the non-overloaded condition under the operating conditions required for the application. Do not consider motor service factor when determining required motor size.

D. Motors below 0.63 kW: 240 V, 1 Phase & Neutral, 50Hz.

E. Motors from 0.63kW (□HP) up to 250kW (305HP): 415V, 3 Phase, 50Hz.

F. Motors Larger than 250 kW (305 HP): 6600 V, 3 Phase, 50 Hz

G. Frequency Rating: 50 Hz +/-3%, unless otherwise specified

H. Voltage Rating: NEMA standard voltage selected to operate on nominal circuit voltage to which motor is connected.

I. Service Factor:

1. In accordance with IEC 60034 and standards listed within section 2.
2. Not less than 1.15 for open drip proof motors unless otherwise indicated.

3. Not less than 1.0 for totally enclosed motors, unless otherwise indicated.

J. Duty:

1. Motors operating in ambient conditions; continuous duty (S1) at ambient temperature of 50° C.

2. Not less than 1.0 for totally enclosed motors, unless otherwise indicated.

K. Capacity and Torque Characteristics:

Rated for continuous duty and sufficient to start, accelerate, and operate connected loads at designated speeds, in indicated environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

L. Stator:

Copper windings, unless otherwise indicated. Multi- speed motors shall have separate winding for each speed.

M. Rotor:

Squirrel cage, unless otherwise indicated.

N. Code Letter Designation:

1. Motors 11 KW and Larger: NEMA starting Code F or Code G.

2. Motors Smaller Than 11 KW: Manufacturer's standard starting characteristic.

5.1.1 Motors with Additional Requirements

a) Motors Used with Reduced-Inrush Controllers: Match wiring connection requirements for controller with required motor leads.

b) Motors Used with Variable Frequency Controllers: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.

1. Designated with critical vibration frequencies outside operating range of controller output.
2. Temperature Rise: Matched to rating for limit to Class F for100% load and 85% for limit to class B insulation.
3. Insulation: Class H.
4. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.

c) Rugged Duty Motors: Totally enclosed, with 1.25 minimum service factor, greased bearings, integral condensate drains, and capped relief vents. Windings insulated with non-hygroscopic material.

1. Finish: Chemical-resistant paint over corrosion-resistant primer.

d) Source Quality Control For Field Installed Motors: Perform the following tests on each motor according to NEMA MG 1:-

1. Measure & record winding resistance.
2. Read & record no-load current and speed at rated voltage and frequency.
3. Measure & record locked rotor current at rated frequency.

5.1.2 Rating plates

- Rating plates shall be made of stainless steel and be screw fixed to a non-removable part of the motor frame and shall be stamped with data as per standard. Values given shall be those measured during tests. The following information shall also be given.
  - Enclosure degree of protection IP Number.
  - Hazardous area certification data, wherever applicable.
  - Locked rotor current: percentage of rated current.
  - Locked rotor torque : percentage of rated torque
  - Allowable run-up time: seconds.
  - Bearing type, size, fit, greasing period and type of grease.
  - Net weight.
  - Date of Manufacture.
  - Equipment Number
  - Vendor's Name
  - Serial Number.
  - Motor KW rating.
  - Motor rated volt / phase / frequency (Hz).
  - Full load Amps.
  - Full load power factor.
  - Frame size

5.2 Hazardous Area Motor Specifications (Invertor duty)

5.2.1 General

A. All motors shall be manufactured to and have performance characteristics in accordance with the latest edition of NEMA MG 1 or IEC 60034. They also must comply with IEC 60079 & ATEX 94/9/EC 'Electrical Apparatus For Explosive Gas Atmospheres' and be suitable for operation within area's classified as Zone 2 IIB T3.

B. Motors shall be rated for the designed voltage and shall be capable of operating continuously under service conditions with a voltage variation of +/-10% and a frequency variation of +/-5% of the nominal value.

C. The continuous rating is the maximum constant load that can be carried continuously without exceeding established temperature rise limitations under prescribed conditions of load and within the limitations of established standards.

D. The output value for a particular machine designation or frame size shall be in accordance with NEMA MG 1 or IEC 60034.

E. All motors except Exd shall be supplied with a six (6) stud terminal block complete with nuts and links for star/delta connection. The terminal box must be certified for the area it is to be used in. For Exd motors only, a three (3) stud terminal block is acceptable if the motor is to be used with D.O.L or auto transformer starting. However six (6) terminals for star/delta starting must be available for frames 112 and larger.

5.2.2 Construction

a) All Totally Enclosed Fan Cooled (TEFC) motors shall have following minimum enclosure ratings:

Exe - IP56

Exn - IP66
Exd - IP65

b) For Exe & Exn motors up to and including 90 frame are to be aluminium for light weight, motor frames 100/112/132 are to be available in both aluminium and cast iron. All other frames shall be cast iron or steel. All Exd motors must have cast iron or steel frames. All end shields are to be cast iron; aluminium end shields are not acceptable.

c) For Exe & Exn motors, fans for frames 63 up to and including 132 may be plastic; however cast iron fans must be available on request for 80 frame and above. Fans for larger frames Exe & Exn may be aluminium or plastic, however cast iron fans must be available on request. All Exd motors must have cast iron or steel fans. All fans must be bi-directional. Low noise fans must be available on request and shall be cast iron/steel.

d) Fan cowls shall be ferrous metals. Plastic, fibreglass or aluminium cowls are not acceptable.

e) All motor shafts are to be manufactured from one piece 4140 steel. Shafts shall be supplied with key and have the shaft end drilled and tapped in accordance with NEMA MG 1 or IEC 60034. Shaft protection in the form of plastic covers or shaft coating shall be supplied. Rotor locks shall be provided for frames 160 and above.

f) For Exe & Exn motors, 100 frame and larger shall be provided with drain holes, porous hole plugs shall be available for 100 frame and above on request. For Exd motors drain holes are not required

5.2.3 Insulation

All motors shall be insulated to Class F standard. The maximum temperature rise should be 75^{o}C, by resistance method, based on an ambient of 50^{o}C however the maximum rise must not exceed 80^{o}C. Both insulation and temperature rise details shall be stamped on the nameplate.

5.2.4 Winding

Inverter (VFD) driven motors shall be provided with vacuum impregnation treatment, AAP paint, thermistor & gel coating on winding (Dual coat winding).

5.2.5 Thermistors

a) All Exn & Exe motors in frame 160 and greater shall be fitted with one (1) set of PTC thermistors located in the hottest spots of the winding and rated to operate at 150° C. All Exd motors in frame 112 and greater shall be fitted with one (1) set of PTC thermistors located in the hottest spots of the winding and rated to operate at 150^{o} C.

b) For Exn & Exe motors, frames from 160 up to & including 280 shall have thermistors fitted as per ‘A’ but shall have the wiring from the thermistor sets brought out to terminals within the main terminal box. For Exd motors from frame 112 and greater shall have thermistors fitted as per ‘A’ but shall have the wiring from the thermistor sets brought out to terminals within the main terminal box. The thermistor terminals shall be suitably identified. A separate cast iron terminal box must be available request. For 315/355 frames a separate cast iron terminal box is mandatory.

5.2.6 Bearings

a) Motors up to and including 132 frame shall be fitted with sealed for life ball bearings. They must be protected by non-rotating seals to provide the same protection as the motor.

b) Motors in frames 160 up to and including 280 shall be fitted with ball or roller bearings with a grease nipple to provide re-greasing while operating. The bearing housing shall be equipped with non-rotating seals to provide IP56 protection as a minimum. Both inner and outer bearing caps are required.

c) Motor in frames 315/355 shall be fitted with a roller bearing at the drive end and a ball bearing at the non-drive end. They shall also be fitted with bearing seals, grease nipples and relief ports to provide for re-greasing while the motor is operating.

d) To avoid generation of voltage due to high switching frequency of convertor and more length of cable between convertor and motor, result bearing failure due to current flow. All motors shall have the bearing located at the drive end as standard, insulated bearing at Non drive end for the inverter duty operated motor

e) The grease used must have a temperature range of –50^{o} C to +140^{o} C

5.2.7 Terminal Boxes

a) Terminal boxes shall be either top mounted or mounted on the right hand side looking at the shaft.

b) For Exn & Exe motors, frames up to and including 132 it is preferred that the terminal boxes be of cast iron, however pressed metal will be accepted as an alternative.

c) For frames 160 and above, and all Exd motors, the terminal boxes shall be of ferrous metal.

d) For Exn & Exe motors up to and including 90 frame and Exd motors up to and including 112, shall be supplied with a single cable entry. Size to be advised.

e) For Exn & Exe motors from frame 100 up to and including frame 280, and Exd motors 112 and larger, shall be supplied with two cable entries. Size to be advised, also refer cables as in h.

a) Motors in frames 315/355 shall be supplied with a blank cable entry gland plate.

b) The following sizes of XLPE cable to be accommodated without going for adaptor boxes.

i. Tag No HP301, HP306, HP307, HP308 - 1100V, 2R- 3C x 240Sq.mm-A2XFY - 150m (appx.)
ii. Tag No HP309, HP310- 1100V, 2R-3C x 300Sq.mm. -A2XFY- 150m (appx.)

c) Cable terminal boxes for the incoming cables shall be suitable for isometric threads which shall be provided to allow compression-type glands to be fitted.

d) Cable connection shall allow for the removal of motors without breaking or stressing the cable sealing.

e) The terminals shall be of the stud type with necessary plain washers, spring washers and check-nuts. They shall be substantially designed for the current carrying capacity and shall ensure ample phase to phase and phase to earth clearances.

f) Please note cables are already laid and termination has to be done for motor as per details provided.

5.2.8 Painting

a) All surfaces shall be cleaned and degreased. They shall then be blown dry with filtered air prior to painting.

b) The motor shall have a corrosion resistant primer with a chemical resistant top coat finish.

c) Minimum D.F.T is 50 microns.

5.2.9 Motor for VFD Use

a) If a motor is offered for use with electronic variable speed drives the motors must be certified for the area of use and the range of operation. Calculation sheets detailing the method of selection must be submitted with the tender for consideration.

b) Motors which used with variable speed operations shall be designed to ensure that there is no overheating at design minimum speed. The VFD/Motor equipment manufacturer shall advise the power and torque required throughout the entire speed range.

c) Where motor is part of a VFD system, both VFD and motor shall be tested, certified and approved as a combined unit. The approval certificate shall be obtained from the certifying authorities. The certificate shall state that motor is meant for VFD applications and shall detail the range of speeds over which the motor may be operate (Anyhow VFD to be utilised as in existing, vendor to coordinate with DAFFPL for the testing method).

d) The equipment's installing in the area of non-sparking, the type of motor shall be flame proof Totally-enclosed fan-cooled (TEFC - IP 55) squirrel cage motor Ex (d), Cooling air is blown over the totally enclosed motor surface by a fan mounted on the shaft suitable for use in hazardous area.

e) Equipment having combination of various types of protection, for example, Ex (e), Ex (i), Ex (d) may also be used in Zone 1 or Zone 2 areas provided that the sparking parts are having Ex (d) protection.

f) Motors can optionally be equipped with thermistors which can be used as direct thermal protection to limit the motor surface temperature to a safe level.

g) The insulation shall be given tropical and fungicidal treatment for successful operation of the motor in hot, humid and tropical climate.

h) Motors weighing more than 25 Kg. shall be provided with eyebolts, lugs or other means to facilitate safe lifting.

i) Except as noted, horizontal motors shall be foot mounted type and vertical motors shall be base mounted type.

j) Motor supplied at varying frequency and voltage by a converter shall be tested and certified for this duty as a unit in association with converter specification as detailed in the descriptive documents according to 23.2 of IEC 60079-0. The test shall be performed with the protective device provided.

k) Information on the thermal protection in service of cage motors by overload protective devices is given in annex C. Annex c should be taken into account as far as applicable for motors supplied by a converter.

l) Bearing currents require special consideration. Possible solutions include the use of insulated bearings, either alone, or in accordance with a filter that reduces common mode voltages and / or dv/dt.(The same shall be checked with VFD vendor)

5.2.10 Combined Testing of motor and converter:

- **Manufacturers have been tested and approved by statutory authorities** for given temperature class with sinusoidal supply. Since VFD supply contains more harmonics, temperature rise of motor Increases on VFD supply. This leads to increase in surface temperature. Also, with the VFD, motor speed is varied. When motor speed is reduced, it leads to poor cooling and higher temperature rise. So the new temperature class needs to be verified by statutory authority.

- IS 5571 (Guide for selection and installation of electrical equipment for hazardous areas - other than mines) or IEC 60079-14 (Explosive atmospheres - Part 14: Electrical installations design, selection and erection) is the selection & installation guide for the user.

- The statutory testing authorities insist that the motors intended for use in hazardous area, which are to be supplied with varying voltage and frequency by converter, shall be tested, certified and approved in association with the converter to determine the temperature class / maximum surface temperature. The authorities give reference to IS 5571:2009 clause 14.4.2 (a) for this testing.This is also mentioned in the international standard IS/IEC 60079-15:2005 clause 17.8.2.2 also states that the motor shall be tested with the converter to prove that the temperature class limits are not exceeded.

m) All motors must be fitted with two sets of thermistors in the winding.

n) For all motors it is acceptable to terminate the thermistors in the main terminal box. However for all frames, except Exd, a separate terminal box must be available if requested. For Exd motors a separate entry must be provided in the main terminal box for connection of the thermistors.

5.2.11 Data to Be Supplied

a) Certification for the area of use must be supplied with the tender for all motors. Failure to do so will exclude offer from being considered.

b) Letter of conformance stating compliance with relevant material standard & technical specification.

c) Following documents for motors also to be included:-

1. Torque - Speed Curve
2. Thermal Withstand Curves (Cold & Hot)
3. Load – Efficiency Curve
4. Starting Current - Time Curve
5. Motor Data Sheets /
6. Torque full load.
7. Locked rotor torque as a percentage of full load torque (FLT).
8. Pull up torque as a percentage of full load torque (FLT).
9. Breakdown torque as a percentage of full load torque (FLT).
10. Amperes at no load and 1/4, 1/2, 3/4 of full load (FL).
11. Power factor at no load and 1/4, 1/2, 3/4 of full load (FL).
12. Bearing (Number and manufacture).
13. Noise level - dB at 1m.

d) General arrangement drawings and installation/maintenance manuals

5.2.12 Test

1. The following routine tests shall be carried out on each motor :-
    a. Insulation resistance test.
    b. High voltage test.
    c. No load running of motor and reading of current in three phases and voltage.
    d. Locked rotor test at a suitable voltage.
    e. Reduced voltage running up test.
2. All the above tests shall be carried out for all motors.

5.3 Data Sheet for Motor

Refer attached Motor data sheet.

5.4 List of Make

ABB/Siemens/Kirloskar/CGL/Bharat Bijlee

INDUCTION MOTOR DATA SHEET

APPLICABLE TO: ○ PROPOSALS ● PURCHASE ○ AS BUILT ○ APPROVAL

TAG NO : **PF-301-306**

P & ID NO :

QUANTITY: **6** WORKING: **6** INS STBY: **N** NON INS STBY: **N**

SERVICE DESCRIPTION: **ATF Hydrant Pump**

SERVICE : **Aviation Turbine Fuel (JET A1)**

CLIENT : **Delhi Aviation Fuel Facility Private Limited**

LOCATION : **New delhi**

A Site Condition

1	Ambient Teperature:	:	48.4 °C	3	Atmospheric condition	:	Tropical
		:		4	Altttute	:	210 m
		:	Design 50 °C	5	Location	:	New Delhi
2	Relative Hummidity	:	95 %				

B Technical particulars

1	Motor Tag No	:	**PF-301-306**					
2	Driven Equipment name	:	ATF Hydrant Pump					
3	Voltage	:	415 V	+/-6%	15	Hazardous area classification	:	Class1, division 2
4	Phase	:	3		16	Dust classification	:	
5	Frequency	:	50 Hz	+/-3%	17	Gas Group	:	IIA/B
6	Fault level	:			18	Type of explosion protection	:	Exd
7	Method of starting	:	VFD		19	Prestart purging for Ex(n) motor	:	Not required
8	Winding connection	:	Delta		20	Type of ingress protection	:	IP55
9	No, of terminals	:	6		21	Colour shade		
10	Cable size	:	Ref spec		22	Thermister	● Required	○ Not Required
11	Cable type	:	A2XFY		23	RTD	● Required	○ Not Required
12	Temperature rise	:	80 °C		24	BTD	● Required	○ Not Required
13	Cooling	:	TEFC		25	RTD/BTD monitoring device	○ Required	● Not Required
14	Insulation class	:	F (temp. rise limited to B)		26	Applicable specification		
14	Speed (Vendor to suggest)		RPM		27	Efficiency	:	IE2 as per IEC

DRIVEN EQUIPMENT MANUFACTURER'S DATA

* Vendor to Furnish data and Advise

1	Suggested motor rating	:	* kW	9	Torque required	starting	* mkg
2	Manufacturer	:				maximum	*
3	BkW at full load	:	* kW	10	GD² of equipment, including flywhe		* kg/m²
4	kW at end of curve	:	* kW			excluding flywheel	* kg/m²
5	Speed	:	* RPM	11	Thrust,	up	* kg
6	Rotation viewed from coupling end	:	*			down	* kg
7	Driven equipment	:	*	12	Staring condition		*
8	Coupling type	:	*				

MOTOR MANUFACTURER'S DATA

* Vendor to Furnish data and Advise

1	Rating	:	* kW	16	Space heater - voltage & power		
2	Manufacturer	:		17	Efficiency at,	75% load	* %
3	No, of poles	:				100% load	* %
4	Frame designation	:		18	Power factor at,	75% load	*
5	full load speed	:				100% load	*
6	Mounting	:				starting	*
7	Full load torque (FLT)	:	* mkg	19	Moment of inertia, GD²		* kg/m²
8	Satrting torque	:	* % of FL	20	NDE bearing type & nno.		*
9	Breakdown or pull out torque		* %	21	DE bearing type & nno.		*
10	Full load current		* A	22	Type of loubrication		*
11	Insulation class		*	23	weight of motor		* kg
12	Starting curent at 100% voltage		* % of FL	24	Thermistor	qty.	* no
13	Rotation viewed from coupling end			25	Make	Type	*
	Starting time at 75% voltage		* sec.	26	RTD	qty.	* no
13	100% voltage		* sec.	27	Make	Type	*
	Locked rotor withstand time (cold/hot) at,			28	BTD	qty.	* no
	75% voltage		* sec.	29	Make	Type	*
14	100% voltage		* sec.	30	Shaft voltage		* V
	Time (Te) for increased safety motors		* sec.	31	Critical speed, 1st/2nd stage		* RPM
15	at 100% voltage			32	Canopy		
16	Heating/Cooling time const. (min,)		* min				

Client: Delhi Aviation Fuel Facility Private Limited
C/O Aviation Fuelling Station
Delhi International Airport
Shahabad Mohammadpur, New Delhi 110061

Title: ATF Hydrant Pump (PF-301, 306, 307, 308, 309 & 310)
Motor Datasheet

Mott MacDonald

A-20, Sector-2
Noida
UttarPradesh - 201301
India
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F +91 (0) 120 2543s62
W www.mottmac.com

Date	Prepared	Checked	Approved	SCALE	DRAWING/DOC. NO	SHEET	REV	STATUS
30.11.15	S.K	PPP/JCP	VST	NA	DAFFPL-MMD-322538-RSD-101A	1 OF 2	R2	BID

INDUCTION MOTOR DATA SHEET

APPLICABLE TO:	○	PROPOSALS	●	PURCHASE	○	AS BUILT	○	APPROVAL	
TAG NO :	**PF-301-306**								
P & ID NO :									
QUANTITY:	**6**	WORKING:	**6**	INS STBY:	**N**	NON INS STBY:	**N**		
SERVICE DESCRIPTION:	**ATF Hydrant Pump**					SERVICE :	**Aviation Turbine Fuel (JET A1)**		
						CLIENT :	**Delhi Aviation Fuel Facility Private Limited**		
						LOCATION :	**New delhi**		

Note:
Starting time calculations shall be based on operating conditions specified on spec. eg. open valve ccondition/
closed valve condition, at no load/full load, as applicable.
Cable glands to be supplied with motors shall meet all requirements as per IEC-60079.
Motors rated 30 kW and above shall be provided with anti-condensation Heaters.
Motors rated 30 kW and below shall be provided with Winding Heating arrangement.

INDUCTION MOTOR DATA SHEET

Atmospheric condition	210 M	Location	Prestart purging
Humid	95% Max	In door	Required
Corrosive	No	Outdoor	Not required

Voltage	Phases	Fault level	Starting method	Connection	No of terminal
415V+/-6%	Three		D.O.L	Star	3
240V+/-6%	Single		V.S.D	Delta	6
			Star - delta		

Cable type	Insulation class	Area class	Gas group	Explosion	Dust class	IP
Al. Cond. XLPE insulate	B	Zone-1	IIA	Ex(n)	IP23	
Al. Cond. PVC insulate	F (Temp. rise limited to B	Zone-2	IIB	Ex`(e)'	IP44	
Cu Cond. XLPE insulate	H	Divn.1	IIC	Ex(de)	IP55	
Acu. Cond. PVC insulat	C	Divn.2	IIA/B/C			
			A			
			B			
			C			
			D			
			C&D			

Spec. No.	Efficiency
	IE2

Frequency1	Frequency2	Cooling	RTD/BTD	Colour
±3%	50Hz	IC401		632 as per IS5

Client: Delhi Aviation Fuel Facility Private Limited
C/O Aviation Fuelling Station
Delhi International Airport
Shahabad Mohammadpur, New Delhi 110061

Title: ATF Hydrant Pump (PF-301, 306, 307, 308, 309 & 310)
Motor Datasheet

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Date	Prepared	Checked	Approved	SCALE	DRAWING/DOC. NO	SHEET	REV	STATUS
30.11.2015	S.K	PPP/JCP	VST	NA	DAFFPL-MMD-322538-RSD-101A	2 OF 2	R2	BID

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

ANNEXURE III – DEVIATION SHEET

EXCEPTION AND DEVIATIONS STATEMENT				
S.NO.	PAGE NO. OF TENDER DOCUMENT	CLAUSE NO.	SUBJECT	DEVIATIONS

Bidder shall list all the deviations in the following given format only on their Letterhead. The Deviation sheet should be submitted along with technical bid.

In case no deviation sheet is submitted along with technical bid, it would be concluded that bidder has accepted all specifications, terms and conditions.

_____

Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

ANNEXURE IV – DECLARATION SHEET

Date:

DECLARATION

We, M/s hereby, unconditionally accept all terms & conditions of TENDER NO. : DAFFPL/MOD/FF/2015-16/14 (JOB: TENDER FOR SUPPLY OF FUEL HYDRANT CENTRIFUGAL PUMPSETS) including Scope of job, quantities, completion period, terms & condition without any deviations.

Sign & Stamp of Bidder

Note: In case of deviations (whether technical or commercial) the above declaration should not be submitted and the deviations should be mentioned separately on bidders letter head with the heading "DEVIATION SHEET". In absence of "DEVIATION SHEET", it would be concluded that bidder has submitted his offer as per tender specifications, terms & conditions. Corrections in tender booklet will not be accepted.

_____

Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

ANNEXURE-V

PROFORMA OF BANK GUARANTEE
(EARNEST MONEY DEPOSIT)
(On Non-Judicial Stamp paper for appropriate value)

BANK GUARANTEE NO. :
BANK GUARANTEE AMOUNT:
CLAIM:
(Till 120 days from date of submission of Proposal)
TENDER NO. /DATE:
JOB DESCRIPTION/
LOCATION:

Tender Security No. [*]

Name and Address of the Beneficiary: Delhi Aviation Fuel Facility (Private) Limited
Aviation Fuelling Station, Shahabad Mohammadpur, IGI Airport, New Delhi – 110 061, India

We [*name and address of the issuing bank*] have been informed that [*Name of the Interested party*] (hereinafter called the "Interested Party") is submitting a proposal for the Award of the Works in response to a Request for Proposal ("RFP") by Delhi Aviation Fuel Facility (P.) Ltd. ("DAFFPL" or 'Beneficiary") for [*Insert description of work*] ("Works"). The conditions of the RFP, which are set out in a documents entitled Request for Proposal dated [*Please insert*] require its offer to be supported by a Tender Security.

At the request of the Interested Party, we hereby irrevocably undertake to pay you without demur, the Beneficiary, any sum or sums not exceeding Rs. _____ [*Please insert*].

Upon receipt by us of your demand in writing and your written statement (in the demand) stating that:

1) The Interested Party has, without written consent of DAFFPL, withdrawn its offer after the latest time specified for its submission and before the expiry of its period of validity; or
2) The Interested Party has refused to accept the correction of errors in nits offer in accordance with the instructions to Interested parties contained in the RFP; or

_____
Sign & Stamp of Bidder

3) DAFFPL entered in to the contract with the Interested party but the Interested party has failed to deliver the **COMPOSITE BANK GUARANTEE (SECURITY DEPOSIT & PERFORMANCE**) in compliance with the Contract conditions; or

4) The Interested Party has failed to enter into the Contract within 30 (Thirty) days of being required to do so by the Tender Officer.

Any demand for payment must contain your signature(s). The demand must be received by us at this office on or before the expiry of the earliest of the following dates, when this security guarantee shall expire and shall be returned to us:

a) Date of issue of letter communicating to the Interested Party that it has not qualified for the contract or the Proposal submitted by the Interested Party is unsuccessful or the TENDER is withdrawn and/or cancelled by the Beneficiary; or

b) 7 (seven) days after the date of delivery of an acceptable performance bond complying with the Contract conditions and execution of the Contract after the award of the works to the Interested Party; or

c) 120 (One hundred twenty) days from the last date of submission of Proposal in accordance with the TENDER.

Date:

Signature:

Designation:

Name of the Branch

_____

Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

ANNEXURE-VI

PROFORMA OF COMPOSITE BANK GUARANTEE (SECURITY DEPOSIT & PERFORMANCE)

(On Non-Judicial paper of Rs. 100/-value)

To,

DAFFPL

Dear Sirs,

M/s ……..have taken tender for the work ……for DAFFPL,.

The tender Conditions of Contract provide that the Contractor shall pay a sum of Rs. …….. (Rupees ……..) as security deposit & performance guarantee in the form therein mentioned. The form of payment of security deposit & performance guarantee includes guarantee executed by Scheduled Bank at New Delhi, undertaking full responsibility to indemnify DAFFPL, in case of default. The said party …….. have approached us at and their request and in consideration of the premises we …….. having our office at …….. have agreed to give such guarantees as hereinafter mentioned.

1. We ----------hereby undertake and agree with you that if default shall be made by M/s. ----------in performing any of the terms and conditions of the tender or in payment of any money payable to Daffpl. We shall on demand pay to you, without demur, protest or requiring you to seek recourse to M/s _____, in such matter as to you may direct the said amount of Rupees ---------- ----only or such portion thereof not exceeding the said sum as you may from time to time require.
2. You will have the full liberty without reference to us and without effecting this guarantee, postpones for any time or from time to time the exercise of any of the powers and rights conferred on you under the contract with the said ---------- ----------and to enforce or to forbear from endorsing any powers of rights or by reason of time being given to the said ----------which under law relating to the sureties would but for provision have the effect of releasing us.
3. Your right to recover the said sum of Rs. ---------- (Rupees ----------) from us in manner aforesaid will not be affected or suspended by reason of the fact that any dispute or disputes have been raised by the said M/s. ----------

_____
Sign & Stamp of Bidder

--------and/or that any dispute or disputes are pending before any officer, tribunal or court.

4. The guarantee herein contained shall not be determined or affected by the liquidation or winding up dissolution or change of constitution or insolvency of the said ----------but shall in all respect and for all purposes be binding operative units payment of all money due to you in respect of such liabilities is paid.
5. Our liability under this guarantee is restricted to Rupees ----------our guarantee shall remain in force until ----------unless a suit or action to enforce a claim under Guarantee is filed against us within six months from ----------(which is date of expiry of guarantee) all our rights under the said guarantee shall be forfeited and we shall be relieved and discharged from all liabilities there under.
6. NOT WITHSTANDING anything hereinbefore contained our liability under this Bank Guarantee is restricted to Rupees ----------(Rupees ----------).This Bank Guarantee shall be valid up to ----------and we are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if you serve upon us a written claim or demand on or before.
7. This guarantee is to be returned to us within fifteen (15) days from the date it ceases to be in force. If the guarantee is not returned to us within the date of aforementioned it shall be automatically cancelled.
8. We have power to issue this guarantee in your favour under Memorandum and Articles of Association and the undersigned has full power to do under the Power of Attorney dated ----------granted to him by the Bank.

Yours faithfully

----------Bank
By its Constituted Attorney
Signature of a person duly
Authorized to sign on behalf of the bank

_____
Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

Annexure- VII

Form of Letter of Undertaking

[On the letterhead of the Interested Party]

Letter of Undertaking

Date:

Delhi Aviation Fuel Facility (Private) Limited
Aviation Fuelling Station, Shahabad Mohammadpur,
IGI Airport, New Delhi – 110 061, India

Re:

The undersigned Interested Party acknowledges that the TENDER issued is confidential and personal to the undersigned Interested Party and hereby undertakes and agrees as follows:

1. "**Confidential Information**" means the TENDER and everything contained therein, all documentation, data, particulars of the Works and technical or commercial information made by (or on behalf of) Delhi Aviation Fuel Facility (Private) Limited or obtained directly or indirectly from Delhi Aviation Fuel Facility (Private) Limited or its representatives by the undersigned Interested Party or which is generated by the undersigned Interested Party or any information or data that the undersigned Interested Party receives or has access to, as a result of the TENDER, as being confidential information of Delhi Aviation Fuel Facility (Private) Limited, provided that such term does not include information that (a) was publicly known or otherwise known to undersigned Interested Party prior to the time of such disclosure, (b) subsequently becomes publicly known through no act or omission by undersigned Interested Party or any person acting on its behalf.

2. The undersigned Interested Party shall maintain the confidentiality of Confidential Information in accordance with procedures adopted by the undersigned Interested Party in good faith to protect confidential information of third parties delivered to it, provided that the undersigned Interested Party may deliver or disclose Confidential Information to its authorized representatives who agree to hold confidential the Confidential Information substantially in accordance with the terms of this Undertaking.

3. The undersigned Interested Party shall not at any time whatsoever:

   (i) Disclose, in whole or in part, any Confidential Information received directly or indirectly from the Delhi Aviation Fuel Facility (P) Limited to any third party.

_____
Sign & Stamp of Bidder

(ii) Reproduce, publish, transmit, translate, modify, compile or otherwise transfer the Confidential Information.

4. In case the Proposal of the undersigned Interested Party is not accepted and immediately upon the acceptance of the Proposal of any of the other Interested Party, the undersigned Interested Party, shall:

(i) Return all Confidential Information including without limitation, all originals, copies, reproductions and summaries of Confidential Information; and

(ii) Destroy all copies of Confidential Information in its possession, power or control, which are present on magnetic media, optical disk or other storage device, in a manner that ensures that the Confidential Information is rendered unrecoverable.

5. The undersigned Interested Party shall certify to Delhi Aviation Fuel Facility (Private) Limited that it has returned or destroyed such Confidential Information to the Delhi Aviation Fuel (Private) Limited within two (2) days of such a request being made by Delhi Aviation Fuel (Private) Limited.

Name of Interested Party's

Signature **of Authorized Representative**

_____

Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

Annexure VIII

DECLARATION to be submitted along with Technical Bid

(M/s.) hereby declare / clarify that we have not been banned or delisted by any government or quasi Government agencies or Public Sector Undertakings.

Stamp & Signature of the bidder

NOTE: If a bidder has been banned by any Government or quasi Government agencies or PSUs, this fact must be clearly stated with details. If this declaration is not given along with the technical bid, the tender will be rejected as non-responsive.

_____

Sign & Stamp of Bidder

Price schedule & Bill of quantities

Price Schedule (separately sealed cover with enquiry number & due date)				
SN	Scope	Set No.	Unit Rate including all taxes and transportation up to the site (in Rs.)	Total Cost (in Rs)
1	The pump shall be OH2 (Centreline mounted) type centrifugal pump as per API standard 610, latest addition. Design, manufacture, supply of pump sets (Pump + Motor) to site in compliance with the mechanical data sheet, Drawings, specification and standards attached to these specifications along with all other associated auxiliaries like motor, bearing base plate, coupling, foundation bolts, Vibration Sensors for each pump, all required etc. Design, manufacture, supply of Electric Motor (Refer as per specification and data sheet). Suitable for system voltage of 415 ± 6% V, 3 phase, 50 ± 3% Hz. The Electric motor shall be premium efficient, insulation Class F, and temp. rise limited to B, suitable for installation in Zone 1 and 2 hazardous areas and shall be certified for use in those areas by a recognized Testing Authority. Motors shall be certified flameproof Exd, gas groups IIA and IIB, temperature class T4. Motors for use with variable speed drive invertor duty type.	6		
2	Special tools kit, set of commissioning spares, 2 years maintenance spares, & commissioning manual for each pump-set.	*		
3	Installation & commissioning assistance by providing services of 'Installation & commissioning supervisor per diem rate. (Estimated time @10 days)	10		
Grand Total in Figures				
Grand Total in Words:				

* Marked Row not to be considered for Grand Total

Signature of the Contractor along with Company seal