

Ref No / 1867

date / 31/6/2014

شركة مصافي الجنوب / شركة عامه

WWW.SRC.GOV.IQ

SOUTH REFINERIES COMPANY IS ANNOUNCING THE ISSUANCE OF HEREUNDER REQUISITION . ACCORDINGLY WHOSOEVER WOULD LIKE TO PARTICIPATE AND OFFER SHOULD ATTEND SRC / HEADQUARTER LOCATED IN BASRAH/ SHUAIBA.

GAINING TENDER SPECIFICATIONS FOR AN AMOUNT MENTIONED AGAINST EACH TENDER CASH IN ADVANCE IT IS NON REFUNDABLE WHATEVER REASONS AND WHO WINS THE TENDER SHALL PAY THE COSTS OF LAST ANNOUNCEMENT.THE WELL KNOWN INTERNATIONAL COMPANIES WHICH HAVE NO BRANCH OR REPRESENTATIVE IN IRAQ CAN PARTICIPATE AND SEND THEIR OFFERS THROUGH DHL OR FEDEX OR ANY OTHER WAY WITHIN TIME DECIDED WITHOUT ATTACHING THE BILL OF PURCHASING BIDDING DOCUMENTS.

CLOSING DATE OF A.M. REQ .UP TO 12:00pm ON 20/7/ 2014

ITEM	REQ NO	DESCRIPTION	PRICE
1-	174/2014/E	Invitation For Design And Supplying Storage Tanks And Supplying Pumps (EP) Project .	\$100

Please, see attached conditions

FOR/ DIRECTOR GENERAL
Akeel SH. Ahmed

27/5/2014

***TENDER INVITATION FOR DESIGN AND SUPPLYING STORAGE TANKS AND SUPPLYING PUMPS
(EP) PROJECT***

2

SECTION ONE: - INSTRUCTION TO BIDDING

A. General

- 1. Scope of Bid**
 - 1.1 The Employer, South Refineries Company with a registered address at Shuaiba P.O. Box 84977, Basrah, Iraq on behalf of Iraqi Minister of Oil, issues these Bidding Documents for the design ,engineering and supplying of storage Tanks and supplying pumps Project ("EP as specified in Employer's Requirements). The reference identification number of the contract is (.....).
- 2. Fraud and Corruption**
 - 2.1 It is SRC policy to require that Bidders and Contractors, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, SRC.will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question.
- 3. Eligible Bidders**
 - 3.1 A Bidder may be a single entity or any combination of such entities in the form of a joint venture or association (JVA)constituted *in to a legally enforceable JVA to inter in to an agreement or under un existing agreement* . In the case of a JVA:
 - (a) all partners to the JVA shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms; and
 - (b) the JVA shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the partners of the JVA during the bidding process, and in the event the JVA is awarded the Contract, during contract execution.
 - 3.2 A Bidder and all partners constituting the Bidder shall be from an eligible source country accepted to Iraq
 - 3.3 A Bidder and all partners constituting the Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified.
 - 3.4 A Bidder shall submit only one bid in the same bidding process, either individually as a Bidder or as a partner of a JVA. A Bidder who submits or participates in, more than one bid will cause all of the proposals in

which the Bidder has participated to be disqualified. No Bidder can be a subcontractor while submitting a bid individually or as a partner of a JVA in the same bidding process. A Bidder, if acting in the capacity of subcontractor in any bid, may participate in more than one bid, but only in that capacity.

4. Eligible EP Services

- 4.1 The EP Services to be supplied under the Contract shall have their origin in eligible source countries accepted to Iraq and all expenditures under the Contract will be limited to such EP Services.

B. Contents of Bidding Documents

5. Sections of Bidding Documents

- 5.1 The Bidding Documents consists of the following sections:

Section one :- instruction to bidder (ITB)

Section two :- Bidding & contractor forms

Section three:- Employer's Requirements

1- Contractor's Scope of work

2- Technical Requirements

Section four :- conditions of contract

- 5.2 The Employer is not responsible for the completeness of the Bidding Documents and its addenda, if they were not obtained directly from the source stated by the Employer in the Invitation for Bids.

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

5.4 Examination of Enquiry Package and Explanation to Bidders

The Bidder is responsible for examining with appropriate care the complete ITB package including all Bid bulletins and is also responsible for informing itself with respect to all conditions which might in any way affect the cost or the performance of the Work. Failure to do so will be at the sole risk of the Bidder and no relief can be given for error or omission by the Bidder.

Should the Bidder find discrepancies in or omissions from the

ITB package or should their intent or meaning appear unclear or ambiguous or should any other question arise relative to the ITB package, the Bidder must notify the Employer of such finding in writing

- 6. Clarification of Bidding Documents, Site Visit, Pre-Bid Meeting**
- 6.1 A prospective Bidder requiring any clarification of the Bidding Documents shall contact the Employer in writing at the Employer's address at Shuaiba P.O. Box 84977, Basrah, Iraq or raise his enquiries during the pre-bid meeting if provided for in accordance with ITB 6.0. The Employer will respond to any request for clarification, provided that such request is received no later than twenty one (21) days prior to the deadline for submission of bids. . Should the Employer deem it necessary to amend the Bidding Documents as a result of a request for clarification, it shall do so following the procedure under ITB 7 and ITB 19.
- 6.2 The Bidder's designated representative is invited to attend a pre-bid meeting to be held at (>>>>) on ((>>>>)). The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 6.3 The Bidder is requested, as far as possible, to submit any questions in writing, to reach the Employer not later than one (1) week before the meeting.
- 6.4 Minutes of the pre-bid meeting, including the text of the questions raised without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Bidding Documents in accordance to ITB 5.2. Any modification to the Bidding Documents that may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to ITB 7 and not through the minutes of the pre-bid meeting.
- 6.5 Nonattendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.
- 7. Amendment of Bidding Documents**
- 7.1 At any time prior to the deadline for submission of bids, the Employer may amend the Bidding Documents by issuing addenda.
- 7.2 Any addendum issued shall be part of the Bidding Documents and shall be communicated in writing to all who have obtained the Bidding Documents from the Employer in accordance to ITB 5.2.
- 7.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may, at its discretion, extend the deadline for the submission of bids pursuant to ITB 19.2.

C. Preparation of Bids

- 8. Cost of Bidding** 8.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
- 9. Language of Bid** 9.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in the English language. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the English language, in which case, for purposes of interpretation of the Bid, such translation shall govern.
- 10. Documents Comprising the Bid** 10.1 The Bid submitted by the Bidder shall comprise the following:
- (a) Letter of Bid.
 - (b) completed schedules as required, including Price Schedules in accordance with ITB 11,13.
 - (c) Bid Security in accordance with ITB 16.
 - (d) alternative bids, if permissible in accordance with ITB 12.
 - (f) written confirmation authorizing the signatory of the Bid to commit the Bidder in accordance with ITB 17.2.
 - (i) documentary evidence established that the EP Services offered by the Bidder conform to the Bidding Documents;
 - (j) in the case of a bid submitted by a JVA, JVA agreement, or letter of intent to enter into a JVA including a draft agreement, indicating at least the parts of the EP to be executed by the respective partners;
 - (k) list of subcontractors.
 - (l) any other document requested in Bidding Documents.
- 11. Letter of Bid and Schedules** 11.1 The Bidder shall complete the Letter of Bid, including the appropriate Price Schedules using the attached Form.
- 12. Alternative Bids** 12.1 The alternative bids for the Time Schedule are accepted. The time Schedule presented in (six months) is the Employer's estimate for referential purpose. Bidder is requested to propose possible Time Schedule as an alternative to the Time Schedule in (one months).
- 13. Bid Prices and Discounts** 13.1 Bidders shall quote for the entire EP Services on a "single responsibility" basis such that the total bid price covers all the Contractor's obligations mentioned in or to be reasonably inferred from the Bidding Documents in respect of the design, manufacture, including procurement and subcontracting (if any), delivery.
- 13.2 Bidders are required to quote the price for the commercial,

contractual and technical obligations outlined in the Bidding Documents.

13.3 Bidders shall give a breakdown of the prices in the manner and detail called for in the Price Schedules as mentioned in section 2

13.4 The prices quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.

13.5 Bidders wishing to offer any unconditional discount shall specify in their Letter of Bid the offered discounts and the manner in which price discounts will apply.

14. Currencies of Bid and Payment

14.1 The currency of the bid and the currency of payments shall be basically in USD \$ or Euro.

14.2 Bidders may be required by the Employer to justify, to the Employer's satisfaction, their local and foreign currency requirements.

15. Period of Validity of Bids

15.1 Bids shall remain valid for the period of one hundred eighty days (180 days) after the bid submission deadline date prescribed by the Employer. A bid valid for a shorter period shall be rejected by the Employer as non-responsive.

15.2 In exceptional circumstances, prior to the expiration of the bid validity period, the Employer may request Bidders to extend the period of validity of their bids. The request and the responses shall be made in writing. If a Bid Security is requested in accordance with ITB 16, the Bidder granting the request shall also extend the Bid Security for twenty-eight (28) days beyond the deadline of the extended validity period.. A Bidder granting the request shall not be required or permitted to modify its bid.

16. Bid Security

16.1 The Bidder shall furnish a Bid Security as part of its bid in **1%** of the bid amount

16.2 If a Bid Security is specified pursuant to ITB 16.1, the Bid Security shall be an unconditional guarantee issued by Trade Bank of Iraq. The Bid Security shall be submitted either using the attached Bid Security Form, or in another substantially similar format approved by the Employer prior to bid submission. In either case, the form must include the complete name of the Bidder. The Bid Security shall be valid for twenty-eight (28) days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 15.2.

16.3 If a Bid Security is specified pursuant to ITB 16.1, any bid not accompanied by a substantially responsive Bid Security shall be rejected by the Employer as non-responsive.

16.4 If a Bid Security is specified pursuant to ITB 16.1, the Bid Security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's furnishing of the Performance Security pursuant to ITB 31.

16.5 The Bid Security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required Performance Security.

16.6 The Bid Security may be forfeited:

(a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid or

(b) if the successful Bidder fails to:

(i) furnish a Performance Security in accordance with ITB 30.

(ii) *sign the Contract in accordance with ITB 31*

16.7 The Bid Security of a JVA shall be in the name of the JVA that submits the bid. , the Bid Security shall be in the names of all future partners referred to in ITB 3.1.

17. Format and Signing of Bid

17.1 The Bidder shall prepare one original of the documents comprising the bid as described in ITB 10 and clearly mark it "ORIGINAL." In addition, the Bidder shall submit three (3) copies of the bid and clearly mark them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail.

17.2 Per each original and copy, the Bidder shall prepare the bid in two (2) separate volumes such as "Technical Proposal" and "Commercial Bid" with following contents:

(a) Technical Proposal shall include the following documents;

- Copy of Letter of Bid by concealed prices indication

- Copy of Bid Security

Note: When the Bid Security is issued by Trade Bank of Iraq (TBI), a copy of Bid Security can be filed in the Technical Proposal, since an original shall be delivered to the Employer directly by TBI at the time of TBI 's acceptance of the request from Bidders' bank to issue such Bid Security.

- Power of Attorney

- Deviations (if any) (without prices)

- Technical Proposal Scheduled

(b) Commercial Bid shall include the following documents. _____

- Original Letter of Bid
- Price Schedules
- Deviations (if any) (with prices)

17.3 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by legal representative of the Bidder or duly authorized person with the legalized power of attorney and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid where entries or amendments have been made shall be signed or initialed by the person signing the bid.

17.4 A bid submitted by a JVA shall comply with the following requirements:

- (a) Be signed so as to be legally binding on all partners; and
- (b) Include the Representative's authorization referred to in ITB 3.1 (b), consisting of a power of attorney signed by those legally authorized to sign on behalf of the JVA.

17.5 Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the bid.

D. Submission and Opening of Bids

18. Submission, Sealing and Marking of Bids

18.1 Bidders shall enclose the original and each copy of the bid, including alternative bids, if permitted in accordance with ITB 12, in separate sealed envelopes, duly marking the envelopes as "TECHNICAL PROPOSAL", "COMMERCIAL BID", "ORIGINAL," "ALTERNATIVE" and "COPY." These envelopes containing the original and the copies shall then be enclosed in one single envelope. The divisions into suitable volume in one envelop are acceptable depending on its volume, but each envelop should be clearly marked in its series.

18.2 The inner and outer envelopes shall:

- (a) bear the name and address of the Bidder;
- (b) be addressed to the Employer in accordance with ITB 19.1;
- (c) bear the specific reference identification number of this bidding process,
- (d) bear a warning not to open before the time and date for bid

opening.

18.3 If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the bid.

19. Deadline for Submission of Bids

19.1 Bids must be received by the Employer at the address and no later than the date and time mentioned below;

Address:

Date: \ \ 2014

Time: 12.00 pm

19.2 The Employer may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Documents in accordance with ITB 7, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

20. Late Bids

20.1 The Employer shall not consider any bid that arrives after the deadline for submission of bids, in accordance with ITB 19. Any bid received by the Employer after the deadline for submission of bids shall be declared late, rejected, and returned unopened to the Bidder.

21. Bid Opening

21.1 The Employer shall open the bids in public, in the presence of Bidders' designated representatives and anyone who choose to attend, and at the address, date and time mentioned below;

Address:

Date:

Time:

Commercial Bids of the Bidders who have passed the Technical Evaluation, , will be opened soon after the Technical Evaluation and the exact place of bid opening and time will be advised later.

21.2 All other envelopes shall be opened one at a time, reading out: the name of the Bidder and indicating whether there is a modification; the presence or absence of a Bid Security, and any other details as the Employer may consider appropriate. No bid shall be rejected at bid opening except for late bids, in accordance with ITB 20.1.

21.3 The Employer shall prepare a record of the bid opening that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, or modification; and the presence or absence of a Bid Security. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of

the record shall be distributed to all Bidders.

21.4 The bid opening of Commercial Bids shall be done as same manners described in ITB 21.2 and 21.3, reading out the name of the Bidders and Bid Price(s) including any discounts and record and to be distributed to all attended Bidders.

E. Evaluation and Comparison of Bids

22. Confidentiality

22.1 Information relating to the evaluation of bids and recommendation of Contract award shall not be disclosed to Bidders or any other persons not officially concerned with such process until information on Contract award is communicated to all Bidders.

22.2 Any attempt by a Bidder to influence the Employer in the evaluation of the bids or Contract award decisions may result in the rejection of its bid.

22.3 Notwithstanding ITB 22.2, from the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it should do so in writing.

23. Clarification of Bids

23.1 To assist in the examination, evaluation, and comparison of the bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change in the prices or substance of the bid shall be sought, offered, or permitted, except to confirm the correction of arithmetical errors discovered by the Employer in the evaluation of the bids, in accordance with ITB 25.

23.2 If a Bidder does not provide clarifications of its bid by the date and time set in the Employer's request for clarification, its bid may be rejected.

24. Determination of Responsiveness

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

24.2 The Employer shall examine the technical aspects of the bid in particular, to confirm that all requirements of , technical Requirements have been met without any material deviation, reservation, or omission.

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

25. Correction of Arithmetical Errors

25.1 Provided that the bid is substantially responsive, the Employer shall correct arithmetical errors on the following basis:

(a) where there are errors between the total of the amounts given under the column for the price breakdown and the amount given under the

Total Price, the former shall prevail and the latter will be corrected accordingly;

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

25.2 If the Bidder does not accept the correction of errors, its bid shall be declared non-responsive.

26. Conversion to Single Currency

26.1 For evaluation and comparison purposes, the currency (ies) of the bid shall be converted into a single currency in USD \$ with the exchange rate issued by the Central Bank of Iraq (CBI).

27. Employer's Right to Accept Any Bid, and to Reject Any or All Bids(Bid Requirements)

27.1 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to Contract award, without thereby incurring any liability to Bidders. In case of annulment, all bids submitted and specifically, Bid Securities, shall be promptly returned to the Bidders.

27.2 Bid Conditions and Rejection of Bid

Employer has sole right to select or reject any Bid. Employer is not bound to award the Contract to any Bidder or the lowest priced Bid resulting from this ITB.

Bidder should make every effort during the tendering period to seek clarifications from Employer on any matters which are not clear and which could give rise to Bid.

Bidder accepts that Employer's decision in selection of the successful Bidder shall be final. Employer is not obliged to provide an explanation of the reason for Employer's selection decision or enter into any correspondence with unsuccessful Bidders.

Employer shall have the sole right to allow or refuse any irregularities in any Bid or any deviation from the requirements of the ITB. Employer shall have no obligation to review a non-compliant Bid.

The acceptance by Employer of the delivery of a Bid, and the opening of a Bid, does not preclude subsequent rejection of such Bid by Employer in the event it is found on detailed review to be non-compliant with the ITB.

F. Award of Contract

28. Award Criteria

28.1 Subject to ITB 27.1, the Employer shall award the Contract to the Bidder whose offer has been determined to be the first successful Bidder

lowest and is substantially responsive to the Bidding Documents, provided further that the Bidder is determined to be eligible and qualified to perform the Contract satisfactorily.

29. Notification of Award

29.1 Prior to the expiration of the period of bid validity, the Employer shall notify the successful Bidder, in writing, that its bid has been accepted.

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

29.3 Contract Documents

The Contract documents to be executed by Employer and the selected Bidder will comprise:

Conditions of Contract

Commercial Attachments and schedule a

Employer's Requirements

30. Performance Security

30.1 Within twenty-eight (28) days of the receipt of notification of award from the Employer, the successful Bidder shall furnish the Performance Security, using for that purpose the attached Performance Security, or another form acceptable to the Employer. If the Performance Security furnished by the successful Bidder is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder to be acceptable to the Employer. A foreign institution providing a Performance Security shall have a correspondent financial institution located in the Employer's Country.

30.2 Failure of the successful Bidder to submit the above-mentioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security. In that event the Employer may award the Contract to the next successful Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily.

31. Signing of Contract

31.1 Within twenty-eight (28) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.

32. Depts.

Debts due to first party will be deduct according to the law of governmental debts obtainment no 56 of 1977 or by any other alternative law

33. Penalties

Contractor has to pay Penalties for each delay according to the following equation which should not exceed 10 % of the total amount of the contract (total amount of the contract/delivery period /by day X10%= penalty per

day. Before the penalty reach the 10 % Total amount of the contract and when the delayed period reach 25 % of the contract period plus all given period the client has the right to cancel the contract or withdrew the work and the contract will be fulfilled on contractor amount and the contractor shall be bear all financial consequence arising from without any need for notification or warning or any judgment

When the bidder purchase the bid , after termination decide to execute any part of contractor obligation another party , the rate of the administrative charge should not exceed 20 % of the actual cost of executing such obligation

34. Administration

Charge

Which is equal to 0.002 of the total contract amount of the contract should be borne by the contractor

35. Stamp Fee

SECTION TWO :- BIDDING & CONTRACT FORMS

Attachment No.1-Letter of Bid

Date: _____

Reference ID No.: _____

To: _____

We, the undersigned, declare that:

(a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) 7;

(b) We offer to *[insert the services that apply, i.e., design, manufacture, test, deliver, install, precommission and commission]*, in conformity with the Bidding Documents, the following facilities: *[insert a brief description of the Plant and Services]*

(c) The price of our Bid, excluding any discounts offered in item (d) below is the sum of: *[insert amount in words] (amount in figures)*;

(d) The discounts offered and the methodology for their application are: *[insert any discounts offered and the methodology for their application]*;

(e) Our bid shall be valid for a period of *[insert number of days in words and figures]* days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(f) If our bid is accepted, we commit to obtain a Performance Security in accordance with the Bidding Documents;

(g) We are not submitting more than one bid in this bidding process as a Bidder, either individually or as a partner in a joint venture, in accordance with ITB3.4, except for alternative offers permitted under ITB 12;

(h) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and

(i) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

Name _____ In the capacity of _____

Signed _____

Duly authorized to sign the bid for and on behalf of _____

Dated on _____ day of _____, _____

**Attachment No.2
Employer's requirements**

Declaration of Endorsement of

We dedare that we have read carefully all of the Employer's Requirements Section III part of ITB and are satisfied with the quality, quantity and degree of detail of the Employer's Requirements

We confirm that the said the Employer's Requirements have been checked by ourselves and found clear of any errors, omissions, deficiencies, inaccuracies, contradictions, ambiguities and/or discrepancies of whatever nature.

However, in the event, any errors, omissions, deficiencies, inaccuracies, contradictions, ambiguities and/or discrepancies are found existing in the the Employer's Requirements , provision has been made in our Bid for rectification of any such errors, omissions, deficiencies, inaccuracies, contradictions, ambiguities and/or discrepancies whether or not these have been formally notified to the Employer during the bidding period. The Employer's decision shall be final and binding on the rectification of any such erros, omissions, deficiencies, inaccuracies, contradictions, ambiguities and/or discrepancies.

We confirm that, we therefore endorse the the Employer's Requirements and accept full technical and commercial responsibility associated with the said the Employer's Requirements and thereby accept the same responsibility to the Employer in respect of them as if we had prepared such the Employer's Requirements ourselves.

We confirm that the said the Employer's Requirements documents of the Contract Form are perfectly suitable as a sound basis for submitting a lump sum bid against the subject bidding and for subsequent execution of the Work under the Agreement without recourse to a variation, and we commit ourselves not to question them at any time. We hereby waive any right of recourse, whatsoever, in respect thereof against the Employer.

Signature

Date

Signed by

In the capacity of

Attachments No.3

Schedules

1-Schedules of Rates and prices

Grand summary of price

Description	Price
	Total
1- Engineering	
2- Equipment & materials	
3- Training	
4- Other expences (third party inspection , insurances , others)	
Bid price total	

Schedule No.2 provisional sum	
Description	Price
	Total
Spare parts for two years operation	
Provisional sum	

Name of Bidder :

Signature of Bidder:

Schedule No.3

Spare parts for two years operation (As Provisional)

	Unit No.	Item No.	Spare parts Description	Quantity	Total price
				(1)	
Total					

Name of Bidder:

Signature of Bidder:

Schedule No.4

Training

	Description	Total
	Total	

Name of Bidder:

Signature of Bidder:

Schedule No.5

Equipment and Materials

	Total		
	Quantity m/ton	weight kg	Price
Equipment & material			
Pumps			
Piping materials			
Electrical material			
Instrument material			
Others			
Total			

Name of Bidder:

Signature of Bidder

Attachment No.4- Technical Proposal

Attachment No.5- Shipping Plan and Inland Transportatio

Attachment No.6- Form of Bid Security (Bank Guarantee)

Beneficiary: _____

Date: _____

BID GUARANTEE No.: _____

We have been informed that *[insert name of Bidder]* (hereinafter called “the Bidder”) has submitted to you its bid dated *[insert date]* (hereinafter called “the Bid”) for the execution of *[name of contract]*

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

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

(a) _____ has withdrawn its Bid during the period of bid validity specified by the Bidder in the Form of Bid; or

(b) _____ having been notified of the acceptance of its Bid by the Employer during the period of bid validity, (i) fails or refuses to execute the Contract Form, if required, or (ii) fails or refuses to furnish the Performance Security, in accordance with the Instructions to Bidders.

This guarantee will expire: (a) if the Bidder is the successful Bidder, upon our receipt of copies of the contract signed by the Bidder and the Performance Security issued to you upon the instruction of the Bidder; and (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy your notification to the Bidder of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of the Bidder’s bid.

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

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

Notification of Award - Letter of Acceptance

[on letterhead paper of the Employer]

[insert date]

To: *[insert name and address of the Contractor]*

This is to notify you that your Bid dated *[insert date]* for execution of the *[insert name of the contract and identification number]* for the Accepted Contract Amount of the equivalent of *[insert amount in numbers and words] [insert name of currency]*, as corrected and modified in accordance with the Instructions to Bidders and on the terms and conditions set forth in the Contract Agreement attached hereto, is hereby accepted by our Agency.

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose one of the Performance Security Forms included in section II to the Contract Agreement below.

Authorized Signature: _____

Name and Title of Signatory: _____

Name of Agency: _____

Attachment No.7-Contract Agreement

THIS AGREEMENT is made the (_____) day of (_____), (____),
BETWEEN

- (1) South Refineries Company on behalf of the Ministry of Oil of the Republic of Iraq, a corporation incorporated under the laws of the Republic +
- (2) of Iraq and having its principal place of business at Shuaiba, P.O. Box 84944, Basrah, Iraq (hereinafter called "the Employer"), and (2) *[insert name of Contractor]*, a corporation incorporated under the laws of and having its principal place of business at *[insert address of Contractor]* (hereinafter called "the Contractor").

WHEREAS the Employer desires to engage the Contractor to design, manufacture, test, deliver, certain Facilities ("the Facilities"), and the Contractor has agreed to such engagement upon and subject to the terms and conditions hereinafter appearing.

NOW IT IS HEREBY AGREED as follows:

Article 1. Contract Documents

1.1 Contract Documents (Reference GC Clause 2)

The following documents shall constitute the Contract between the Employer and the Contractor, and each shall be read and construed as an integral part of the Contract:

- (a) This Contract Agreement and the Appendices hereto
- (b) Letter of Bid and Price Schedules submitted by the Contractor
- (c) Particular Conditions (not applicable)
- (d) General Conditions (GC)
- (e) Specification
- (f) Drawings
- (g) Other completed bidding forms submitted with the Bid
- (h) Any other documents forming part of the Employer's Requirements

1.2 Order of Precedence (Reference GC Clause 2)

In the event of any ambiguity or conflict between the Contract Documents

listed above, the order of precedence shall be the order in which the Contract Documents are listed in Article 1.1 (Contract Documents) above.

**Article 2. Contract
Price and Terms
of Payment**

2.1 Contract Price (Reference GC Clause 10)

The Employer hereby agrees to pay to the Contractor the Contract Price in consideration of the performance by the Contractor of its obligations hereunder. The Contract Price shall be the aggregate of: *[insert amount in words]*, *[amount in figures]* as specified in Price Schedule No. (_____) (Grand Summary), or such other sums as may be determined in accordance with the terms and conditions of the Contract.

2.2 Terms of Payment (Reference GC Clause 11)

The terms and procedures of payment according to which the Employer will reimburse the Contractor (Terms and Procedures of Payment) are agreed between the parties.

The Employer may instruct its bank to issue an irrevocable confirmed documentary credit made available to the Contractor in a bank in the country of the Contractor.

In the event that the amount payable under Price Schedule No. 1 is adjusted in accordance with GC 10.2 or with any of the other terms of the Contract, the Employer shall arrange for the documentary credit to be amended accordingly.

**Article 3. Effective
Date**

3.1 Effective Date (Reference GC Clause 1)

The Effective Date from which the Time for Completion of the Facilities shall be counted is the date when all of the following conditions have been fulfilled:

- (a) This Contract Agreement has been duly executed for and on behalf of the Employer and the Contractor; and
- (b) The Contractor has submitted to the Employer the performance security and the advance payment guarantee; and
- (c) (d) The concurrences and/or registrations of the Contract shall be completed in accordance with the rules and regulations of the Republic of Iraq; and
- (e) The Contractor has been advised that the documentary credit referred to in Article 2.2 above has been issued in its favor; and
- (f) The Employer shall have issued a written Notice to Proceed to be sent by e-mail in PDF form to the Contractor.

Each party shall use its best efforts to fulfill those of the above conditions for which it is responsible as soon as practicable.

3.2 not Used

**Article 4. Communica-
tions**

4.1 The address of the Employer for notice purposes, pursuant to GC 4.1 is:

Attention : (_____)

Address: (_____)

E-mail: (_____)

Facsimile: (_____)

Phone: (_____)

4.2 The address of the Contractor for notice purposes, pursuant to GC 4.1 is:

Attention : (_____)

Address: (_____)

E-mail: (_____)

Facsimile: (_____)

Phone: (_____)

Article 5.

5.1 not Used Not Used

Article 6. Appendices

6.1 The formes and attached hereto shall be deemed to form an integral part of this Contract Agreement.

IN WITNESS WHEREOF the Employer and the Contractor have caused this Agreement to be duly executed by their duly authorized representatives the day and year first above written.

Signed by, for and on behalf of the Employer

[Signature]

[Title]

in the presence of _____

Signed by, for and on behalf of the Contracto

[Signature]

[Title]

in the presence of _____

Attachment-8- Performance Security Form – Bank Guarantee

[insert Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: *[insert name and address of Employer]*

Date: _____

PERFORMANCE GUARANTEE No.: _____

We have been informed that *[insert name of Contractor]* (hereinafter called "the Contractor") has entered into Contract No. *[insert reference number of the contract]* dated *[insert date of the contract]* with you, for the execution of *[insert name of contract and brief description of Facilities]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Contractor, we *[insert name of Bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[insert amount in figures ([amount in words])]*, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall be reduced by half upon our receipt of a copy of the Operational Acceptance Certificate

.

This guarantee shall expire no later than the earlier of:

(a) eighteen months after our receipt of:

(i) a copy of the Completion Certificate;

(b) the ____ day of ____, 2__.

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

[signature(s)]

Attachment-9- Bank Guarantee Form for Advance Payment

[insert Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: *[insert name and address of the Employer]*

Date: _____

ADVANCE PAYMENT GUARANTEE No.: _____

We have been informed that *[insert name of Contractor]* (hereinafter called "the Contractor") has entered into Contract No. *[insert reference number of the contract]* dated *[insert date of the contract]* with you, for the execution of *[insert name of contract and brief description of Facilities]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum of *[insert amount in figures]([amount in words])* is to be made against an advance payment guarantee.

At the request of the Contractor, we *[insert name of Bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[insert amount in figures]([amount in words])* upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than toward the execution of the Works.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above must have been received by the Contractor on his account number *[insert account number]* at *[insert name and address of Bank]*.

The maximum amount of this guarantee shall be progressively reduced in proportion to the value of each part-shipment or part-delivery of plant and equipment to the site, as indicated

in copies of the relevant shipping and delivery documents that shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of documentation indicating full repayment by the Contractor of the amount of the advance payment, or on the ____ day of _____, 2____, whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

[signature(s) name of bank or financial institution

Attachment-10- Form of Completion Certificate

Date: _____

Loan Agreement N°: _____

Reference ID N°: _____

To: _____

Ladies and/or Gentlemen,

Pursuant to GC Clause 17 (Completion of the Facilities) of the General Conditions of the Contract entered into between yourselves and the Employer dated _____, relating to the _____, we hereby notify you that the following part(s) of the Facilities was (were) complete on the date specified below, and that, in accordance with the terms of the Contract, the Employer hereby takes over the said part(s) of the Facilities, together with the responsibility for care and custody and the risk of loss thereof on the date mentioned below.

1. Description of the Facilities or part thereof: _____
2. Date of Completion: _____

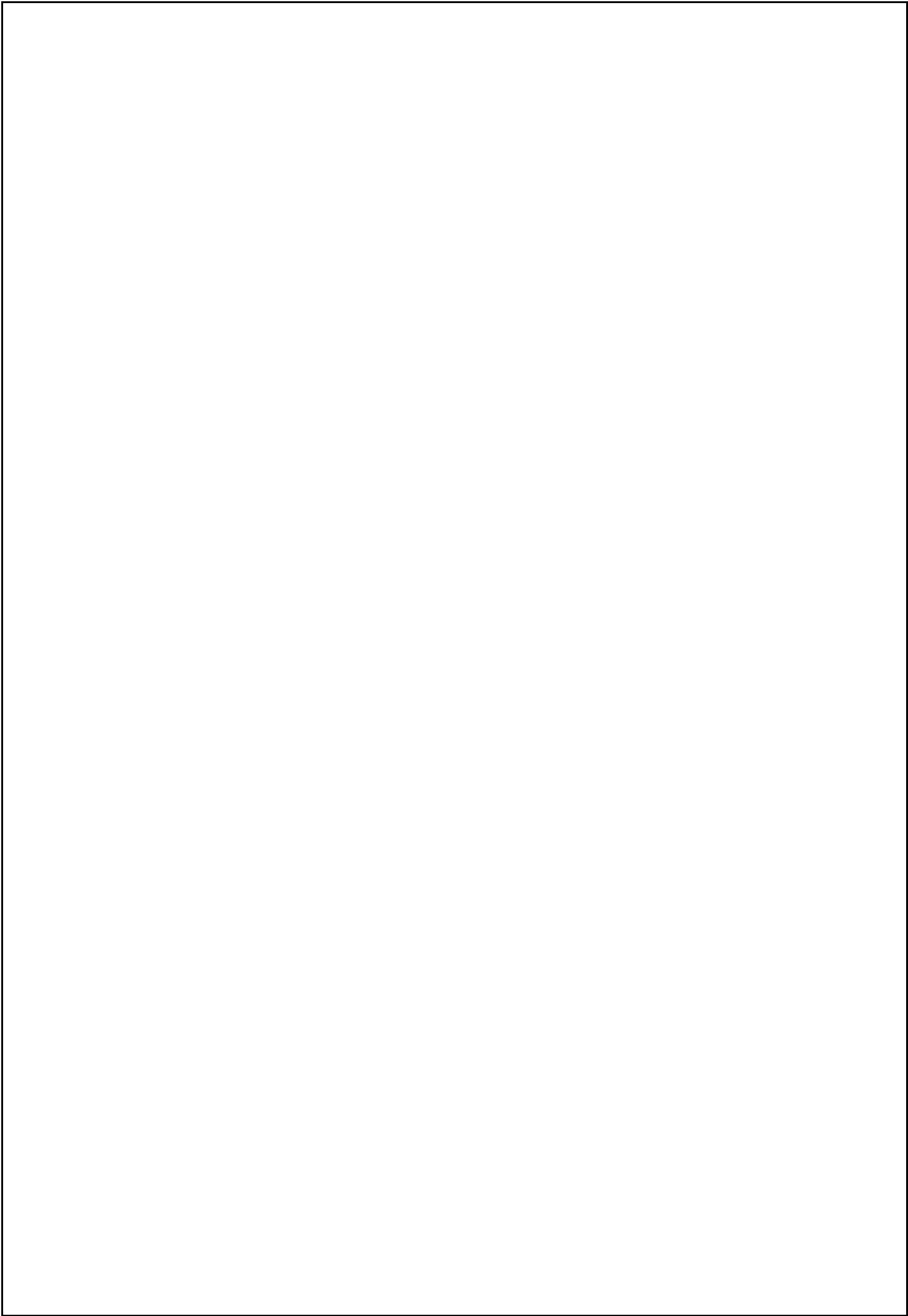
However, you are required to complete the outstanding items listed in the attachment hereto as soon as practicable.

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

Title

(employer)



SECTION THREE: - EMPLOYER REQUIERMENT

A- Contractor's scope of work and supply

1-Scope

This specification covers the minimum requirement for the design, fabrication , inspection , field erection testing of atmospheric , welded steel , above ground storage tanks, and supplying pumps .

- 1-1 bidder shall quote for the design , supply and delivery for all necessary materials and accessories required to tanks indicated in table (A) and pumps as specifications in table(B).
- 1-2 The successful bidder shall include in his scope of work a detailed list of material for each tank and pump separately.
- 1-3 The offer shall included all services required for the tanks including not limited to the verification of basic design given in the attached tank data sheets and detailes engineering .
- 1-4 Contractor should be responsible of overall basic design , complete detail engineering for all storage tanks requirements and interconnection piping , procurement (material and equipment supply)
- 1-5 A third party inspection agency shall be utilized to inspect material, equipments. test certificates and approval documents shall be signed by the said agency .All costs associated with third party inspection are to be included in contract price. Contract shall nominate at least three agencies for SRC approval.
- 1-6 Bidder shall submit a vendor list and country for each group of materials and equipments to SRC for approval.
- 1-7 Interconnection between tanks and existing units and tanks shall be included
- 1-8 Fire fighting and foam system shall be included.
- 1-9 Factory Acceptance Test (FAT).
- 1-10 Price list shall be include in commercial offer and unprice list in the technical offer.
- 1-11All equipment for tanks , pumps and accessories shall arrived to basrah site CIP
- 1-12Vendor's proposal shall include a completed data sheet for each tank.

2.0 DRAWINGS AND DOCUMENTS

The drawings and documents mentioned beneath are to be supplied in the number and copies and within the time periods established in the inquiry and purchase order.

Vendor to present, for comment, within the time periods established in the number and copies and within the time periods established in the inquiry and purchase order.

Vendor to present, for comment, within the time periods established in the purchase order, the following drawings complete with all fabrication details:

- a-All details calculations necessary for tank design .
- b-Dimensional drawing , showing the main dimensions of tank.
- c-Drawings of bottom layout .
- d- Shell layout .
- e-Roof drawing and roof structure.
- f-Drawings of accessories .
- g-Drawing of nozzles .
- h-Testing procedure.
- i-Stress relief treatment.
- j-Floating roof sealing system.
- k-Stairways.
- l-Loa diagram and other information required for tank foundation design.

The approval of any of the above mentioned documents shall not be construed as permission for deviation from code or specification requirements

3.0 TRANSPORTATION , SHIPMENT, PACKING AND IDENTIFICATION

A general transportation schedule shall be prepared by vendor and submitted to SRC for approval. Before shipment each package and container shall be properly marked .

Tanks, pumps and parts there of shall be properly protected . weather hoods shall be provided wherever practical. Tanks and parts there of shall be protected against atmospheric corrosion, entry of water and other foreign material shall be avoided . flanges shall be protected with wooden lids. Loose parts shall be packed in boxes.

Tanks and parts thereof that have been heat treated or are internally lined shall have the phrases below painted with easily readable letters .

“HEAT TREATED-DO NOT WELD”

“INTERNALLY LINED- DO NOT WELD

4.0 TANKS REQUIERMENTS

4-1 Design and supply storage tanks required as bellow completed fully prefabricated material ready for erection with all accessories needed for good and safety operation and all consumable needed (welding electrode & wire flux , gouging electrode , grinding stones, cutting stone and tools for erection).

Operatin g capacity m 3	Mixtur e	Flui d	Sp.g r	Inlet rate M3\h r	Outlet rate m3\h r	NO. OF TANK S	TYPE
30000	Yes	CRUDE OIL				3	FLOATIN G

4-2 Tanks Accessories

- **ROOF**

- 1- Roof manholes
- 2- Pontoon manholes
- 3- Emergency roof drain
- 4- Automatic bleeder vent
- 5- Deck manholes
- 6- Guide pole
- 7- Deck support
- 8- Rolling larder & ladder run way
- 9- Seal device :Mechanical seal with stainless steel sheet.
- 10- Deck Earth.
- 11- Platform.
- 12- Run Way.
- 13- Drain system for floating roof.

- **SHEEL**

- 1- Inlet Nozzle
- 2- Return Nozzle
- 3- Outlet Nozzle
- 4- Shell Manhole
- 5- Temp. Themocouple
- 6- Foam System according to NFPA standards (last addition)
- 7- Roff drain Nozzle
- 8- Stair Way
- 9- Earth connect device
- 10- Cathodes protection (as per attached specification)

- 11- Name plate
- 12- Lighting(as per attached specification)
- 13- Transfer line
- 14- Wind girder
- 15- Top angle
- 16- Cooling water system according to NFPA standards
- 17- Over Flow
- 18- Foam dams

4-3 Consumables.

Semi automatic welding wire with flux for bottom plates joint , other plates joints of the tank should be welded by electrode AWSE 7018, AWSE 60113 for pipes , gauging electrodes grinding stone , cutting stone) with 10% extra.

4-4 Control valves

Contractor shall supply For inlet and outlet motorize valves as bellow.

24 inch motorize valve (2) for each tanks

16 inch motorize valve (1) for each tanks

12 inch motorize valve (2) for each taanks

4-5 Valves: For all supplied nozzles according to API standard and ANSI B16.5

4-6 Tanks nozzle

ROOF NOZZLE

FUNCTION	Tank of crude	
	Size	NO.
Man way	30	3
Venting filter		
Sample	1.5	3
Level gauge		
Venting filter		
Level messurmerment		

SHELL NOZZLE:

FUNCTION	Tank of crude	
	Size	NO.
Inlet	16	2
Inlet	12	2
Outlet	24	2
Inlet heat steam		
Outlet steam cond.		
Water draw off	6	2
Draining	6	1
Roof water drain	8	1
Nozzle for mixer	24	3
Thermo well	2	1
Over flow		
Nozzle for extinguishing	6	2

Man way	30	3
Rectangular manhole		1
Welded on piece		

NOTE:-

Bidders shall fill in the blanks data sheet in attached No.(1)

2-5 General Requirements:

1- Vender shall be responsible for the following main activities:

- a) Basic and detail design.
- b) Preparation of bill of quantities and requisitions.
- c) Shop fabrication.
- d) Shop, testing and inspection certification.
- e) Equipment preparation and protection for transportation.
- f) Loading and transportation.
- g) Supply of all documents related to the followings:

- *Basic design

- *Detail design

- *Plot plans and Key plans.

- *Support standard and location

- *Shop inspection report.

- *Shop testing repot.

- *Loading and transportation.

- h) All documents related to calculations.

- i) Supply of all documents related to the followings:

- *Erection

- *Testing

- *Operation manuals

- *Maintenance guides

- *Preparation of bill of materials, and the supply of all consumable materials related to erection at site.

2- Activities indicated in above shall be documented and assumed official

after SRC approval.

3- Modification imposed by SRC on all above documents shall be accepted by vendor without any modification to contract original price when such modification are related to one or more of the reasons indicated below:

- *Modification in accordance with agreed Specification, Standard, or Codes and tender documents.

- *Modification needed to ease maintenance or operation.

- *Modification related to safety.

4- Additional (Specification, Standards, and Design Practices) required to cover all materials necessary for the project shall be submitted to SRC for approval.

5- Additional Codes or Specification of International nature shall be limited to the American code of practice such as (ASME, ANSI, API and ASTM).

6- All necessary Walkways, platforms are within the scope of supply.

7- All documents related to details design for,

- *tanks

- *Supports for piping.

- * Walkways and platforms.

- * Steel structures/shed.

- * pumps.

Shall be submitted to SRC for approval.

8- pumps shall be located under sheds

accordingly the following materials shall be within the scope of vendor supply.

- a) All necessary sheds and their supports.

- b) All necessary lifting equipments to lift and move heavy parts.

9 - If any divergence between the required specification & proposed. The contractor should follow more stringent specification provided the SRC approves.

B-TECHNICAL REQUIERMENT

1-PROCESS REQUIERMENT

*Large welded vertical above ground storage tanks for atmospheric or near atmospheric and pumps for crude oil which have specifications in Attached NO. 2, Unless otherwise specified tank height and diameter shall be proportioned for the most economical design, contractor shall indicate in his submittal data how required liquid capacity is calculated

* pumps for light product (kerosene, heavy Naphtha and Gasoil) which have specifications in attached NO. 3 , 4&5

1-1 BOTTOM

*All bottom plate shall have a minimum thickness of 6.3mm exclusive of any corrosion allowance.

*Lap joint shall not be allowed in bottom welded to tank shell , the prepheral ring on which shell plates shall be welded shall have a minimum of 750mm.

*The joint between inner plates with each other shall be of the overlapping type. Overlap shall not be less than five times the nominal plate thickness.

*The joint between the inner plates with those of the peripheral ring shall be of the overlapping type, overlap shall be not be less than 60mm.

*The plates of the peripheral ring shall be always jointed by butt joints, they may be single welded with backing strip, or welded.

*Welding sequence shall be made in order to minimize plate distiotion , the welding sequence plan shall submitted to SRC for review.

*Tank bottom shall be installed with a 1:120 minimum slope from coenter to periphery, unless otherwise specified on the tank data sheet.

*Before the welding work is started, overlapping limits shall be marked to simplify the inspection work.

*Wear plates, 360mm diameter by 12mm thick shall be supplied and shall be continuously seal-welded to bottom plates under all roof legs and supports that contact the tank bottom.

*Tanks which are intended to be set concrete ring wall foundation shall be provide with a drip angle around the tank base ring.

*All tanks shall have draw-off sump with associated internal piping and shell nozzle. Sumps shall be near the periphery of the tank and close to manhole.

*A bitumen's paints coal-tar base type shall be applied on the outer surface of the bottom plates.

*Metal surface shall be carefully cleaned before paint application . coal-tar film thickness shall not less than 2mm.

1-2 SHELL

Minimum thickness of tank shell to be calculated accordance with API standard 650.

Corrosion allowance shall be as specified in tank data sheet.

Minimum thickness for shop-assembled tank shell should be according to API standard 650.....

Reinforcing pads shall be welded to the shell for all pipe supports, gauges and sample lines.

All attachment to the shell, such as roof external appurtenances which include reinforcing pads , shall seal-welded all around . seal welding is required on the underside of fixed roof only if the roof is to be internally lined or painted.

Reinforcing pads and all other external attachment pads shall have rounded corners of minimum 50mm radius.

Nozzle reinforcing pads and pads that cross shell seams shall be provided with a 1¼ inch tapped hole for a compressed air-Soapsuds test of sealing welds.

All horizontal butt joints have complete penetration and fusion. Square groove btt joints shall be permitted to a maximum plate thickness of 7mm. except that this may be increased to 9mm. plate thickness if submerged arc welding process is used or if one side of the weld is background to form a grove.

Automatic welding of vertical joints is not permitted unless specifically approved.

Submittals for approval by SRC shall include all necessary information and previous experience.

1-3 ROOF

Coon roof tank of large diameter up to 6 meters shall be provide with roof supporting structure , this structure may use solid Web beam of stresses columns may or may not use.

Roof shall be designed with a minimum slop of 1:16 from center to periphery, This minimum value shall be used whenever possible . Roof with slopes steeper than 1';16 shall be provided with protective handrail around the entire circumference. Cone roofs shall have a maximum slope of 75mm in 300mm(3 inches in one root).

Floating roof shall be design in accordance with appendix c of API 650 .

They shall be of the multiple completely type, low deck pontoon or double deck as noted.

Pontoon bulkhead shall be completely welded for liquid tightness. Roof shall be fabricated with 4.76 mm(3\16) inch plates. Welded joints shall be of the overlap type , Roof surface shall be free of concavities to ensure complete rainwater runoff.

Pontoon type floating roof 35 meter diameter or larger shall have the central deck properly reinforced to avoid buckling or distortion of the steel plates.

Floating roofs shall have a performance guarantee against specific gravity variations of the stored liquid up to (- 10%) , Unless otherwise mentioned on the tank data sheet.
Contractor shall inform of the design criteria for the design of the roof supporting legs .
Supporting legs shall be provided with base plates, thickness shall be no less than 10mm.
Floating roof shall not sink or in any other way be render inoperative in either of the following conditions concerning floating requirements.

(A) First condition :- Roof flooded with 250 mm of rain water while floating on a liquid with specific gravity equal 0.7

(B) Second condition :- Two adjacent compartments flooded and central deck flooded as ruptured , while floating on a liquid with specific gravity equal to 0.7 , contractor shall be inform and analytically demodulate which are the most critical compartments with respect to floatability.

Floating roof drawing shall indicate floating level for actual operation and hydrostatic conditions.

Pantograph-type seal shoes shall be eclectically bonded to the roof with stainless steel shunts at intervals of 3 meter , maximum on the tank circumference in tanks to be protected with non-conductive internal shell coating the e roof shall be bonded to the shell by a suspended cable arrangement. Roof rotation shall be prevented by means of vertical guide pipe. If specified this pipe shall be arranged to permit sampling through it.

Floating Roof drawing shall indicate floating levels for actual operation and hydrostats conditions.

Floating roof drains shall be manufactured with steel pipe with swing joints or flexible pipe with exterior cover suitable for hydrocarbon service , exact type shall be indicated on job specification.

The flexible pipe shall be oriented to prevent interference with roof support legs or other internals. A check valve shall be provide between roof rain water collection and drain piping. This valve shall be located so as to allow easy access and maintenance .Tanks up to 36 meter diameter shall be provided with 4 inch minimum diameter drain line. Larger tank drain line shall be at least 6 inch diameter . Drain sizing shall take into consideration the maximum local rainfall . Each of the proposed drains shall be able to drain all roof water with the other drains inoperative calculation sheet regarding floating roofs draining system design shall be submitted to SRC for approval.

Seals for floating shall be as specified in tank data sheet.

Non- metallic type seals when specified shall be equipped with metallic weather hood unless secondary seals are provide.

Seals shall be of the foam-filled type , non – metallic seal material shall be satisfactory for use with petroleum products with aromatic content up to 75%.

Seal material shall have a flame spread rating of not more than 35 in accordance with ASTM E162.

If metallic seal is specified, the seal material dosing the rim space between the metal shoe and the floating roof shall be a vapor-tight, weatherproof, and fire resistance. The fabric seal shall be durable in its environment and shall not contaminate, discolor or be affected by the liquid stored.

The metal shoes employed in the sealing. Device between the roof and the tank shell shall be ASTM A240 Type 304 stainless steel, 1.6 mm thickness minimum.

The followings are specific requirement for secondary seals:-

(A) Seal material shall be compatible with tank product.

(B) The seal design shall have been tested by the vendor or an independent laboratory. Result shall be submitted to SRC with the vendor's bid.

(C) The seal shall be designed for a temperature rang from zero to 80°C.

(D) The seal shall be designed or tested for at least 2000 cycles of tank filling.

(E) The seal shall be inspection of the primary seal without removal.

*Roof plate shall be joined by mean of single welded lap joints, overlap shall be no less than the larger value of the following

(A) Five times the nominal thickness of the plates being joined

(B) 25mm (10 inch)

* Overlap shall be oriented so as to provide adequate rainwater runoff.

*Roof to shell weld joints shall be designed so that in case of excessive internal pressure they will fail before failure occurs in the tank shell to bottom joint.

*Welding sequence shall be made in order to minimize plate distortion. Welding sequence shall submitted to SRC for review.

*Bloted joints of roof structure shall be designed so as to allow axial expansion of beams, and shall also be cabable of absorbing movement caused by foundation settlement.

1-4 ACCESSORIES

(A) NOZZLES

Unless otherwise mentioned flanges shall be ANSI B16.5 slip-on type. Bolt holes shall straddle tank center line.

*All shell nozzles 2 inch diameter and larger shall be provided with reinforcing plates the dimension of which shall be as specified in API650.

*All bottom nozzles shall be provided with reinforcing plates the dimensions of which shall be as specified in API 650.

*Coupling and half couplings shall be made of forged carbon steel, 3000-ib class.

*The neck of nozzle used as mixer supports shall be reinforced by gusset plates.

*Cleanout fittings shall be flush. Type; dimensions shall be as specified by API 650.

*Gauge hatches shall be made of non- sparking material with hinged gas tight lids.

*Flanges for –non – process piping, such as man ways , may be light weight plate flanges. Carbon steel forgings shall meet the requirement of API standard 650.

*Manholes cover shall be fixed to a davit when the weight exceeds 50 kg.

Nozzle lengths shall be long enough to permit removal of a standard length bolt from the back side of the flange and clear the –tank shell.

*Nozzles welded to tank shells or roofs shall have full penetration welds.

*For nozzles in the first course of field- erected API 650 tanks , a stress analysis of the tank to piping intersection shall be performed to assure adequacy of the design . the analysis shall be submitted to SRC for review .

*Flush – type cleanout doors are required to facilitate cleaning. A 900 mm.by 1200 mm cleanout door shall be used on all tanks having a capacity of 1600 cu.m or greater and storing diesel ,crude, or fuels. The cleanout door shall be used on all tank (regardless of product stored) with diameters above 30m.

Where possible cleanout doors and bottom cleanouts shall be located transverse to the prevailing winds and easily accessible from the roadway .

(B) ADJUSTABLE (ROLLING) LADDER

Floating roofs shall be supplied with one inside Rolling ladder and runway. The ladder shall be designed to connect with the top stair platform. The lower end of the ladder shall have wheels of such size as to prevent binding in position of the roof. The wheels shall have bearings that do not require lubrication after erection, and which will not oxidize or rust in a corrosive atmosphere.

(C) SPIRAL STAIRWAY AND HANDRAILS

Unless otherwise specified in tank data sheet, all tank shall be equipped with an external stairway and handrail stairway angle with the horizontal shall be 45 degree. Non-slip material shall be used for the treads.

In insulated tank stairway should be provided with a handrail on both sides, with sufficient available space to permit the shell of the tank to be insulated.

Hand rails shall be provided on the top wind girder and tank roof the entire circumference. external carbon steel attachments, such as brackets, shall be seal- welded at all joining edges in addition to strength welds.

External attachments which will retain rainwater shall not be used.

Stairways shall be located on the upwind side of the tank when possible .

(D) WIND GIRDERS

Floating – roof tank shall be provided with ring type wind girders. This girder shall be placed 1.0 m below the reinforcing shell top angle.

Unless otherwise specified width of wind girder shall not be less than 600mm. and shall be provided with handrail.

(E) GROUDING

Each tank shall be furnished with electrical grounding plate(s) at least 12 * 75 * 75 mm. of 300 series stainless steel welded perpendicular to the tank near grade.

Grounding details shall be clearly shown on tank drawings. Number of grounding plates shall be as indicated on tank data sheet.

(F) MECHANICAL REQUIRMENTS FOR FIRE PROTECTION SYSTEM

*The distribution and riser piping for the fire protection system shall be in accordance with project piping material specification.

*The splash boards shall be mounted to top of the tank shell. The height of the splash board shall be such that discharge port of the foam maker is above the roof and seal when the roof is at its highest position.

*The splash board shall be fabricated of steel plate with steel angle members for structural stiffening.

*The splash board shall be adequately braced to the shell and wind grader, so as to prevent deflection and movement under design wind loading.

*The bottom edge of the splash board shall mate smoothly with the inside of the tank shell such that the foam will flow evenly to the shell.

*Foam dam shall be of a height such that the top of the dam extends at least 50mm above the top of the weather seal, but not shall be less than 600 mm high. The dam shall be

*provide with drain slots at the bottom, evenly spaced along the circumference.

*The dam shall be fabricated of steel and shall be adequately braced to hold the hydraulic head generated by the foam.

1.5 MATERIALS SPECIFICATIONS

Materials shall comply with the requirements of API 650, unless equivalent materials are proposed by the vendor and approved by SRC. Such material shall comply as a minimum with ASTM specification, chemical and mechanical properties shall be furnished by the vendor for evaluation.

Plate material for shell, roof, bottom shall be A-283 Gr C, material of reinforcing plates to be the same as for base plates.

Structural shape, shall be A-36 OR A-53.

Forging, including lap-joint flanges, shall be A-181, or A-105.

Structural shape, shall be A-53.

Forging, including lap-joint flanges, shall be A-181, or A-105.

Piping shall be seamless carbon steel A-53, A-106, Gr A or B, or API 5L.

External bolting for man ways, flanges, and connections shall be stud bolts and hex nuts.

Material grade shall be not less than A-193 Gr B7 for bolts and A-194 Gr 2H for nuts.

Tank internals made of carbon steel that are joined by bolting shall use A-193 Gr B6 bolts and A-194 Gr 6 (AISI 416) nuts.

Internal bolting for connecting parts in areas of corrosion shall be 18-8 stainless steel.

Gaskets for raised or flat face pressure connections, handholds, shall be compressed asbestos.

Man ways and end flanges gaskets shall be compressed asbestos, 1.6mm thick
Gasket shall seat against surface finishes of 125 AARH minimum to 200 AARH
maximum (arithmetic average roughness height).

At least two sets of gaskets to be supplied one for the hydrostatic test and
other, Un-used, should be supplied separately with suitable protection .

Rimmed and capped steels are acceptable only for low stressed components
such as hand rails, but are not permitted for roof (fixed or floating), bottom and
shell plates.

2-MECHANICAL REQUIERMENT

2.1. General

This mechanical requirements covers the minimum requirements for design

Elaboration materials, procurement, construction, Pipeline and all related accessories shall be engineering and procurement (EP) .

2.2 Summary

The scope of Bidder's mechanical works covers the followings:

- *Complete design and engineering of the project.
- *Procurement and supply of all equipment, materials, and relevant spare parts, including shop inspection and tests.
- *Mechanical manuals, Operating manuals in English language including construction (installation manual).
- *Spare parts for pumps for two years
- *Mechanical and performance guaranty for pumps.

The work described in this tender is intended to give the Bidder an overall view of the project. The Bidder shall refer to the complete specifications and drawings included within the tender; and shall be responsible for the checking, verification, modification and redesigning wherever deemed necessary; the bidder shall provide whatever is required for the mechanical completion of the project so.

* All material shall conform to ASTM specification and shall be selected for the specified design conditions.

*All tank materials shall be new and free from rust and pits . Materials shall be in accordance with API 650 latest addition.

*Reinforcing pads and rolled plates nozzle necks shall be of the same quality as specified for materials of tank part to which they are attached .

*Bidder shall supply mill test reports on all plates to be used in the construction of the tanks. Plates not having mill test certificates shall be acceptable and shall be rejected.

*All bolting shall conform to ASTM standard. External bolting for man ways, flanges and connections shall be stud bolts

2-3 Country Of Origin:

*All required materials related to this tender document shall be sourced from

the following countries (UK, USA, CANADA, ITALY, BELGIUM,

GERMANY, FRANCE, SPAIN, SWITZERLAND, NORWAY, SWEDEN,

FINLAND, JAPAN and SOUTH KOREA).

*The equipment shall be supplied from reliable manufacture.

*Vendor list for equipment shall be submitted to SRC for approval.

2-4 Piping Systems:

A-Contractor activities shall include but not limited to:

1) Hydrostatically test all piping as required by the drawings or specifications

2) Check pipe hangers, supports, guides and pipe specialties for the removal

of all shipping and erection stops and for the correctness of the cold

settings for the design service.

3) Metallurgy check to confirm the correct material is used.

B- Contractor shall supply pipes required for interconnections as below

24 inch pipe carbon steel (1200m)

16 inch pipe carbon steel (1250m)

12 inch pipe carbon steel (1750m)

6 inch pipe carbon steel (100m).

2-5 pumps

A-Pump Engineering shall include, but not be limited to the following:

- 1 -Select equipment and auxiliaries as required best suiting the process conditions throughout various operating
- 2-Review/complete data sheets prepared by process in accordance with Project specifications..
- 3-Define principles and integrate equipment control system with plant control systems such as DCS, ESD, Fire & Gas, etc. The integration includes, but is not limited to the required hardware and software in terms of serial interface, data base and display configuration, etc. Define machine conditions and performance monitoring systems.
- 4-Prepare packaged equipment auxiliary and system P&IDs in accordance with relevant Project Standards, including symbols and level of details.
- 5-Develop pump and other related calculations applicable for Pump design and engineering.
- 6-Prepare material requisitions for inquiry.
- 7- Issue technical evaluation and recommendation reports for COMPANY approval.
- 8- Prepare and issue material requisitions for order, including definition of shop testing and documentation requirements.
- 9-Define Vendor's scope for performance tests in field and the performance guarantee requirements.

10-Arrange kick-off meetings and pre-inspection meetings between
VENDOR, COMPANY and CONTRACTOR.

11- Receive, review and approve VENDOR data, drawings, calculations and
documentation including operating and maintenance manuals and
manufacturing data reports.

12-Carry-out shop inspection activities and issue periodic and shop test
inspection reports to COMPANY.

13- Witness testing of all final shop tests (mechanical run tests/performance
tests/string tests/, etc.).

14-Perform audit of major (API 612, 617, 618 and large API 610) equipment
by a Third Party and incorporate their recommendations.

15-Approve shop and field test procedures.

16-Prepare and issue Operation and Maintenance philosophy and any
specific requirements on an equipment tag number basis.

17-Process all VENDOR concession requests, maintain a log and gain
COMPANY approval if necessary.

18-Define VENDOR'S assistance required for field installation and start-up of
rotating equipment.

19-Supply final technical assistance for equipment field installation which
includes:

- Level base plated and soleplates and grout all bearing surfaces.
- Remove rust preventers.

20-Supply requirements and prepare procedures for field
hydrostatic/pneumatic testing.

21-Assign the criticality rating to all equipment data sheets in accordance
with project specifications.

22-Check, verify and confirm material selection and develop material

specification data sheets, giving ASME/ASTM material designations, for all items.

23- Prepare specifications/standard drawings for equipment.

24-Supply final technical requirements for equipment purchase.

25-Prepare a detailed Inspection Quality Plan for each individual equipment, including a fabrication schedule, all in agreement with Project Requirements.

26-Define interfaces with Civil for support, etc.

B-The contractor shall supply six pumps as below specifications

1 - Two completely crude oil pumps according to API 610 Last addition

Service crude oil which have specifications in attached NO.2

Specific gravity at minimum operate 0.84 to .86 API 32 TO 36

Viscosity @ 40 C 6.0 sct

Capacity 600m³| hr

Operating pressure 10 kg|cm²

2 - four completely light product pumps according to API 610 plus addition

a. Tow pumps for Heavy Naphtha as specification below(See attached NO.5)

Capacity :-250 m³/hr

Specific gravity :-((0.67 -0.76)) at 15 c°

Operating pressure :- 10 kg/ cm³ at 43 c°

Vapour pressure :- (0.78 -0.85) atm at 15 c°

b. One pump for Kerosene as specification below(See attached NO.3) :-

Capacity :- 250m³/hr

Density :- 0.8

Operating pressure :- 10 kg/ cm³ at 55 c°

Vapour pressure :- (0.78 -0.85) atm at 15 c°

c. One pump Gas oil (See attached NO.4)

Capacity :- 250m³/hr

Density :- 0.84

Temperature (minimum) :- 30 c°

Operating pressure :- 10 kg/ cm³ at 63 c°

Viscosity :- 208 cst at 40 c°

3- spare part for two years operation must be providing with the fooling :-

• Shift with key and nut	2
• Bearing bracket	1 set
• Impeller	1 set
• Casing wear ring	1 set
• Mechanical seal	2
• Shaft sleeve	2
• Coupling complete	1
• Set of gasket	4

2-6 Tanks, And Pig Traps

tanks and relevant internal tanks engineering shall include,

but not be limited to the following:

1-Provide tank calculations required by codes and Project

specifications for all equipment items.

2-Prepare/complete the tank data sheets and/or general arrangement

tank drawings

3-Prepare/complete all of the detailed material requirements on the data

sheets, giving the ASME/ASTM designations.

4-Identify all of the required reference specifications and standard drawings

and input to data sheets.

5-Prepare nozzle orientation and detailed support drawings.

6-Prepare design drawings for vessel internal/external details and special

flanges.

7-Prepare/complete nozzle loadings and develop reinforcement calculations.

8-Prepare/complete any nozzle or pipe support loadings to tank VENDOR

for analysis.

9-Check and approve all VENDOR calculations, data, drawings and

procedures.

10-Prepare drawings showing orientations for ladder and platforms, pipe

supports/guides, column davits and support clips. These drawings shall be

in line with Company specifications, the ladders and platforms requirements indicated on drawings for tanks.

11-Perform structural and local loading calculations for ladder and platforms, pipe supports/guides, column, davits and support clips.

12-Review and approval of final data/information from VENDORS, including as built data and Manufacturer's Data Reports.

13-Define inspection heat treatment and NDE requirements.

14-Coordinate interfaces between ladder and platform VENDOR and vessel VENDOR.

15-Complete equipment material selection requirements and specifications.

16-Complete heat treatment requirements.

17-Provide welding procedures (WPS/PQR/WPQ, welding key forms, etc.) both for VENDOR shop and field welding.

18-Provide field heat treatment procedures.

19-Prepare material requisitions and perform technical evaluation for COMPANY approval.

20-Prepare material requisitions for order.

21-Supply final technical requirements for equipment purchase.

22-Prepare a detailed Inspection Quality Plan for each individual equipment,

23-Supply requirements and procedures for field hydrostatic/pneumatic testing.

2-7 Tanks Technical Requirements:

1- All materials are delivered fabricated and ready for construction.

2- The offer shall include all services required for the tanks including but not limited to the verification of basic design given in the attached tank data sheet and detailed engineering.

3- Detailed engineering shall include the following:

3.1 Tank detailed engineering which shall be performed in accordance with the latest edition of API 650, API 620 and the attached data sheets for the tanks. This detailed engineering shall be subject for SRC's approval and shall include the followings:

- Thickness calculation.
- Shell stability calculation.
- Safety devices calculation.
- Material and equipment specification.
- Tank erection and installation specification.
- Inspection specification.
- Nozzle orientation.
- Testing specification.

3-2 Detailed fabrication drawings including bill of materials for bottom, shell, roof, attachments and accessories.

2-8 Fired Equipments:

Fired equipment engineering shall include, but not be limited to the following services:

- 1- Preparation of supporting specification to Project specification and Standards as required.
- 2- Development of all equipment and auxiliary data sheets and/or duty specifications to the level of detail required by PROJECT specification.
- 3- Preparation of material requisition for inquiry for fired equipment.
- 4- Analysis and technical evaluation of Vendors proposal, for COMPANY approval.
- 5- Preparation of material requisition for order with updating of equipment and auxiliary data sheets with as-purchased information.

6- Review and approval of all vendors data, drawings, calculations, procedures and documentation as required.

7- Perform engineering and pre-inspection meeting with VENDORS.

8- Definition and integration of the equipment control and emergency shutdown system with the plant control and Emergency Shutdown (ESD) system.

9- Provide welding documentation according to contractual Codes (WPS/PQR, WPQ, welding key forms, etc.) for both VENDOR shop & field welding activities.

10- Definition of the VENDORS assistance required for field equipment assembly, commissioning and start-up

11- Supply requirements and procedures for field hydrostatic/pneumatic testing.

3- INSPECTION REQUIERMENT

Design and supply oil storage tanks, (three) double- deck floating roof tanks and completely prefabricated ready for erection with all accessories needed for good and safety operation with piping systems connection between these tanks . And (6) pumps as specification mention in mechanical requirement . The requirements for this Order included but not limited as below:

*** Codes and standard (last edition):**

API 650 with applicable appendixes (welded tanks for oil storage tank).

API 2000 (venting atmospheric and low –pressure storage tank).

API 651 (cathodic protection of aboveground petroleum storage) .

ASME 16.5 (pipe flanges and flanged fittings) .

ASME 16.25 (butt welding ends) .

ASME 16.9 (valves , flanges, fitting and gasket) .

ASME 16.34 (valves –flanged, threaded and welding end) .

ASME SEC IX (welding and brazing qualifications) .

ASTM for pipes and tubes.

***Design data :**

- Shell thickness calculations shall be one –foot method
- -corrosion allowances for shell plates shall be (2) mm, for roof plates(2 mm), for
- Bottom plates shall be(3 mm) for submerged piping (3mm).
- Design Temperature liquids at 93c
- Minimum design metal temperature (MDMT) min.-5 C ,max. 55C
- Rainfall shall be 250 mm\year , wind velocity 180 km\hour

Materials :

The storage tank plates shall be prefabricated, assembled according to API 650 sec 4 with thicknesses considerations.

- flush- type clean out connections shall be fully fabricated and heat- treated according to API Standard Before furnished.
- .
- for first shell course exceed 25 mm thickness with nozzle size (12 in.) shall supply completely fabricated, assembled and stress relieve according to API.
- all plates shall be primer coated.
- mill and shop inspection shall not release the manufacturer from responsibilities for replacing any defective material that discovered later in our site.
- the plates shall be the same type of metal for all tank plates .
- materials groups IV,V,IVA,VI shall be excluded.
- materials of tank plates shall be according to ASTM.
- the minimum thickness for the highest shells plates courses shall be 8mm .
- plate used to reinforce shell opening and insert plate shall be the same plate as shell plate to which they are attached except for nozzle and man way neck the material shall be equal or greater than yield and tensile strength .
- for pipes less than 16 in. shall be according to ASTM 106 GR.B SCH.STD.
- for pipes greater than 16 in. shall be API 5L SCH. STD (SAW) single straight.

-**the insulation materials** is usually fitted externally to the wall of the tank and must be design to avoid the absorption of oil and water with feature included but not limited to :

- 1- supply the insulation materials according to ASTM
- 2- thermally efficient ,energy –saving contracture
- 3- eliminate potential condensation and mold
- 4- high load capacity structural integrity , and personnel health , safety concerns
- 5- low thermal conductivity to reduce loss heat

DOCUMENTATIONS :

THE Manufacturer shall supply these documentations that related to storage tanks (included but not limited to).

- Materials test reports (MTR),(MTC) approved by third party
- Shop inspections certificate approved by third party
- Drawings for all storage tanks with 6 copies and 3 on CD that contain all details for Erections.
- Weld assembly sequences .

- Welding procedure specifications.
- Insulations procedure if applicable for tanks .
- All NDE requirements and inspection plans.
- Hydrostatic test certificate if applicable such as coil steam.
- Heat treatment procedures requirement.

Calculations :

- Determinations of thickness for all pressure boundary elements to Satisfy all loading condition ,included but not limited to contents Pressure , partial vacuum , rain load , dead load , snow load, roof Flootation ,dike or flood plain partial submergence ,wind and seismic activity , rainfall rate
Overturning check and anchorage ,due to wind forces ,seismic forces, And internal pressure if applicable
- Seismic design requirements (eg. base shear ,long. Compression, sliding Friction resistance checks ,overturning moment checks , and anchorage , if applicable .
Stability checks to determine whether shell stiffeners or increased shell Course. Thicknesses will be required.
- Floating roof buoyancy calculations
- Intermediate wind girders calculations
- . determination of the venting requirement.
- The calculations shall be in SI unit

Third Party:

The third party inspection shall be carried out by one of the following (TUV , Lloyds ,B.V)

Responsibilities of third party inspection:

- Review drawings, documentations and applicable document check list.
- Review WPS, PQR, welding key forms and welder qualification.
- Review NDT personal qualification ,procedure ,&NDT report .
- Review base &filler metal certificate .
- Review and verify transfer marking of basic material .
- Witness welding , monitor welding process as per relevant WPS at random basis.
- check beveling (weld preparation) and visual testing of weld during production.
- review NDE inspection plan and results of NDE records
- examine surface and weld visually for parts that welded in the shop .
- review pressure test report if applicable .
- verify the identification stamping .
-

MARKING:

all plates (special plate which are cut to shape before shipments) roof, supporting structural members shall marked as shown on the manufacturer drawings.

. PACKING:

- all accessories for each tank shall be packed or boxed (for small sizes) individually marked with tank number.

SHIPMENT:

Tank plates and other materials ship in a manner that ensure without damage ,others

Shall be boxed ,all flange and machined surfaces shall protected .

5- ELECTRICAL REQUIERMENT

GENERAL: The purpose of this specification is to:

- a) Elaborate the general scope of work of the electrical system.
 - b) Define the technical basis for the design, equipment selection, and supply, installation.
- It's intended in this design requirement to indicate the relevant codes and standards and general requirements in order to understand the bases of SRC requirement and carry out the following unless so modified in the tender document.

- Basic design
- Detailed design
- Material and equipment supply

Electric outdoor panel:

400V, metal glad with stainless steel sun shade, EEXed, IP65, 50Hz, 3Ph+N+E
busbar rated as designer in addition of 1.5 safety factor, control voltage for motor 220V,
control voltage for actuators as designe ,this panel should have a main CB and divided to
multi section to deliver electric power for all tanks as lighting fixtures ,actuators
,cathodic protection &mixers motor starters.

Motor starter the starter should have motor circuit breaker, contactor, motor protective device with earth fault ,MCB for control voltage, current transformer secondary 5 ampere ,digital ampere meter, control and signaling unit ,local/remote selector switch .

EEXed Sites motor controlling Start/stop push button (starting box)with ampere meter should be supplied for each mixer and pump motor.

Lighting:

lighting fixtures should be 220V, 50Hz , EEXed , IP55, each tank should have switch to control lighting installed at the first step of the ladder .

Earthing system:

A complete earthing system should designed and supplied (all materials must be pure copper) for all tanks to achieve earthing resistance less or equal to 4 Ω .

Power and Control cables :

All the cables from the electric panel above till each our required tanks accessories(lighting fixtures ,actuators ,cathodic protection &mixers motor starters) should be PVC/SWA/ PVC stranded copper wire.

Motors :

3 ph induction motors, heavy duty (S1), ambient temperature 55°C, EExedT3, insulation class F, temperature rise class B, cast iron, IP 55, 380 V, 50 Hz.

Cathodic protection system:

A cathodic protection system should be designed and offered for all tanks , anods should be metal oxide ,oil cooled transformer, high impressed current, portable Cu/CuSo4 reference cell quantity 2 should be supplied.

Lightning arrester system:

Each tank should be protected against lightning by surge arresters.

Actuators

- 1- 3-phase 380 50Hz IQ rang
- 2- EExedIIBT4
- 3- IP 55
- 4- Temp. rise 80K
- 5- Ambient temp 60C°
- 6- Insulation Class F
- 7- Winding over temperature protection
- 8- Over load motor protection
- 9- Lost phase protection
- 10- Automatic phase rotation correction
- 11- 60 start / hour
- 12- 40%-100% setting torque
- 13- (2-40) mA position indicator CPT
- 14- LCD for showing(alarm , trip , status , torque.....etc.)
- 15- LED for (ON, open ,close) indication
- 16- open/close push
- 17- Local /remote selector
- 18- IQ Setting tool qty (3)

Manufacturers:

a- For cables :

Japan or USA or West Europe.

b- For other equipment :

- ABB / France or UK.
 - Alstoms / France.
 - Schneider / France.
 - Siemens / Germany.
 - GE / USA.
- c- ROTORK for actuator

6- INSTRUMENT REQUIERMENT

6.1 General

The Instrumentation and control system shall be designed to manage all the process facilities for storage tanks and pumps according to latest International codes and standards

This request defines the requirements for **supply, install, operating and commissioning** high precision radar tank gauge with custody transfer and inventory accuracy for storage tanks in **Basrah** refinery . The request covers all hardware, software, software configuration, calibration and communication with host to connected to our existing system and software In addition to level measurement, the request covers auxiliary temperature, pressure and water level interface instrumentation.

The Main Automation Contractor (MAC) shall be responsible of Engineering, Procurement, Construction and (pre-commissioning and commissioning) activities for all the process units (including Offsite and Utilities) and any other supporting systems.

The new facilities comprising the Project units will be provided with their own dedicated systems for safe and reliable process operations by installing an integrated Control and Safety system (ICSS)

which shall include a Distributed Control System (DCS), Emergency Shutdown system (ESD), Fire and Gas system

Fire and Gas System (FGS)

Alarm Management System (AMS)

Tank Gauging system :- A tank gauging system shall be used for inventory management within the Project units. Radar tank gauging (for custody transfer/ highest measurement accuracy) shall be the preferred method of implementation for tank gauging systems, together with tank strapping tables and temperature and pressure compensation as required.

The tank gauging system shall be an independent system with communication links to the DCS and ESD as required. All control and operation around these tanks shall be performed on the DCS/ESD system and not on the tank gauging system.

6-2 Industry Standards

American Petroleum Institute/Manual of Petroleum Measurement Standards:

API MPMS ch. 1	Vocabulary
API MPMS ch. 3.1A	Standard Practice for Manual Gauging of Petroleum and Petroleum Products in Stationary Tanks
API MPMS ch. 3.1B	Standard Practice for Level Measurement of Liquid Hydrocarbons in Stationary Tanks by Automatic Tank Gauging
API MPMS ch. 3.3	Standard Practice for Level Measurement of Liquid Hydrocarbons in Stationary Pressurized Storage Tanks by Automatic Tank Gauging
API MPMS ch. 3.6	Measurement of Liquid Hydrocarbons by Hybrid Tank Measuring Systems
API MPMS ch. 7	Static Temperature Determination Using Fixed Automatic Tank Thermometer

OIML, International Organization of Legal Metrology:

OIML R85:2008	Conformity to pattern requirements by the International Organization of Legal Metrology (OIML) R85, version 2008.
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6-3-System requirements

- a- The manufacturer of the tank gauging system shall comply with the international standards ISO 9001 and ISO 14001.
- b- The level measurement of the tank gauging system shall be based on high precision Radar Tank Gauges (RTG).
- c- The system shall be certified according to the OIML R85:2008 standard. The certificate shall include gauges for tanks with and without still-pipes.
- d- Each RTG shall be individually tested for accuracy over a distance up to at least 30 meters. The test shall be performed in a test range approved by a nationally accredited institute.
- e- The tank gauging system shall consist of a total system solution from tank units to Operator Interface and external data communication.

f- The system shall be able to measure tank levels, temperature, pressure and water interface levels. Based on the measured values the system shall provide Inventory calculations (net volumes, density and mass).

g- The system shall internally use an international standardized communication bus. No proprietary protocols shall be used. The system shall be scalable enabling add-on of devices at a later stage.

h- The tank gauging system shall be able to integrate a wide range of measurement devices in order to meet different performance and functionality criteria required for each tank in the system.

i- The RTG, associated temperature transmitters, pressure transmitters, field displays and related equipment shall be Intrinsically Safe (IS), 2-wire and bus-powered. The devices shall be FISCO certified. All sensors and devices shall communicate via digital communication.

j- The system shall automatically adjust to external power in the range of 24 – 48 VDC or 48 – 240 VAC, 50/60 Hz.

l- The tank gauging system shall have the ability to emulate and interface with other types of tank gauging systems using built-in communication adapters and protocol drivers.

m- The system shall have a separate safety function suitable for use in Safety Instrumented Systems (SIS). The function must be certified by a third party to meet Safety Integrity Level 3 (SIL 3) requirements as per IEC 61508. The system shall be certified for Safety Integrity Level 3 (SIL 3) using a single radar tank gauging unit.

n- The tank gauging system shall have optional relay outputs, which are controlled by customer-selected variables such as level and temperature. The relays can be used for control of pumps, valves etc. or indication of alarms. The relay outputs shall meet requirements for overfill prevention. The relay alarms shall be configurable from the software residing in the operator interface unit in the control room. It shall be possible to control each relay by multiple inputs and multiple alarm criteria.

The system must be able to perform alarm and error handling for all system components. All devices shall have built-in status LEDs.

o- The system shall provide for certain levels of redundancy;

- The level gauging device shall have built-in redundancy for all function including power supply .
- The system design shall support dual devices for each function.
- The system shall support redundant communication paths from the tank to the data collector/control room. Dual hard wired buses or a combination of wired communication and *Wireless* HART.
- Critical system devices such as the field data concentrators shall have the ability to operate in hot standby redundancy mode. The switch to redundant standby units shall be automatic.

p- The system shall have the possibility to be provided with field mounted indicators. The system shall support up to three (3) field displays per tank. The readout devices shall be user configurable in Metric units. The display digits shall have a height of at least 25 mm (1 in.) and be back-lit. The displays shall be configurable for various read-out parameters and view modes. Field level indicator integral to the field control unit shall display exactly the same level as indicated in the control room operator console.

q- Measurement devices in the system shall be configurable remotely from a software package in the control room, or locally on the tank using an Intrinsically Safe (IS) handheld field communicator, or in case of wireless communication via the wireless interface. All configurable measurement devices shall have an optional hardware based write protection function which can be sealed.

6-4 Environmental Conditions

All measuring devices shall be designed for continuous operation in ambient temperature of -40 to +70 °C (-40 to +158 °F) and relative humidity of 100%, non-condensing. For hot climates, self-ventilating sun radiation protection shall be provided. The control room equipment such as operator workstations and associated peripheral equipment shall be installed indoors. The control room equipment shall be designed for operation at ambient temperatures of 0 - 50 °C (32 - 122 °F) and a relative humidity of 95%, non-condensing. The system shall have lightning and surge protection.

The field equipment shall be designed with galvanic isolation on communication and power connections. The field units shall be equipped with transient suppression components.

During normal operation, bench testing or field service, the RTG shall not generate microwave power levels hazardous to humans. International health requirements stipulate that the radiated power shall be less than 2 mW EIRP.

6-5 Requirements of the Rim-seal Fire Protection system of the Floating Roof Tanks

This specification applies to all the floating roof tanks, the system shall be a fully automatic foam system specifically designed for extremely fast detection and extinction of any type of Rim-seal fire. Each system shall protect 40 meters (as a maximum) of tank perimeter, detection or actuation of the Rim-seal foam protection system shall be performed mechanically (pneumatically). Supervisory signal (Nitrogen pressure low) and Fire alarm signal (Foam pressure low) shall be sent through cables terminated to a suitable junction box (Explosion proof) installed at the bottom of the tank. A conventional fire alarm panel displaying the above mentioned signals for all the floating roof tanks shall be supplied with 30% spare capacity, the fire alarm cable between the junction box at the bottom of the tank and the panel at the fire fighting station shall be specified by the vendor.

Three Explosion proof junction boxes one marshaling JB above the roof, the second one at the end of the spiral ladder, and the final one at the bottom of the tank shall be supplied with each tank. All the documents and manufacturer technical catalogues for the proposed system shall be submitted with the offer, Spare parts for the commissioning stage and for two- year operation shall be supplied.

6-6 General Radar Tank Gauge Design

The device must use Frequency Modulated Continuous Wave (FMCW). Radar technology which measures level based on elapsed time between send/receive of a fixed frequency signal, (pulse or time domain) shall not be used for high performance tank gauging. Incremental phase evaluation shall not be used since it can lead to significant level gauging errors.

The radar tank gauge (RTG) shall have a signal processing system optimized for high accuracy tank gauging.

The RTG shall have a separate safety function suitable for use in Safety Instrumented Systems (SIS). The function must be certified by a third party to at a minimum meet Safety Integrity Level 3 (SIL 3) requirements as per IEC 61508.

The RTG subparts (antennas, electronics, housing etc.) shall be designed in such a way that they can be freely interchanged, without recalibration.

The radar gauge itself shall calculate the level rate value. The filtering of the level rate value shall be adjustable. The level rate value shall be available on the field bus as a standard parameter in the communication protocol. A host calculated level rate shall not be used since timing errors make it unreliable.

The gauge shall be able to operate in a stand-alone mode (single gauge installation) or in a network of up to at least 300 gauges and operator interface workstations in the control room. Level update time shall not exceed one (1) second in the field data concentrator. The standard fieldbus communication shall have a baud rate of at least 4800 Baud.

The RTG shall be equipped with dual memory banks enabling reprogramming and configuration under continuous operation.

6-7-Installation on fixed roof tanks

RTG which is installed on an existing tank opening then the radar beam shall be such that interfering echoes are avoided. The antenna design shall be such that minimum influence from the tank wall is obtained. Both inclination and orientation of the antenna shall be easily adjustable without special tools.

The antenna design shall be made with sloping surfaces to ensure condensation drip-off. Therefore a horizontal, flat antenna surface is not to be used in fixed roof tanks.

The material in the antenna shall be proven to be compatible for the chemical composition of the tank products.

The antenna design shall be rugged to withstand tank atmosphere and temperatures up to 230 °C (450 °F) for many years of service.

6-8- Installation on still-pipes

The RTG shall be made to fit pipe diameters from 5 to 12 inches with different wall thickness.

The antenna for still-pipe gauges shall operate in the Low Loss-circular-symmetric transmission mode to prevent loss of accuracy due to slots, holes, rust and deposits.

The antenna design shall be made with sloping surfaces to ensure condensation drip-off. Therefore a horizontal, flat antenna is not to be used in still-pipes.

When fresh insert still pipes are specified, it shall be such that the insertion stilling well design addresses on-line retrofitment on normal working tanks without the need for any hot work. As this design requires a no. of safety features such as Anti-Sparking Spacers for self-alignment, Special pipe brackets, the design proposed for any such fresh Insert stilling well shall be "field proven". A valid site reference within the same country / region demonstrating identical installation shall be evidenced with full details and End user contact information.

6-9-Temperature System

The temperature conversion accuracy in the temperature transmitter must be ± 0.1 °C

(± 0.1 °F) or better. Spot and averaging temperature elements shall be of Pt-100 type (RTD). The RTD system measurement accuracy shall be ± 0.5 °C (± 1.0 °F) or better. The field electronics shall be capable of automatically determining a true average from the submerged RTDs. In case of non-cylindrical tanks, weighing factors shall be possible to use for correct average product temperature calments. In case of 4-wire RTD elements, configuration of calibration data shall be supportedculations.

The distance between the individual elements shall not exceed 3 meters (10 ft).

The system shall support up to 16 RTD elements per temperature transmitter. The system shall support multiple temperature transmitters per tank.

The system shall be able to handle both 3-wire and 4-wire RTD ele.

Averaging temperature elements shall include a specified number of RTD elements of graduated lengths housed in a common flexible metal thermo-well.

6-10-Performance Criteria

For storage tank applications, the instrument accuracy of the RTG shall be equal to or better than ± 1 mm max deviation over the entire measuring range. The vendor shall on request provide accuracy certification documentation for each individual gauge. The test procedure shall be traceable to national standards.

The RTG shall deliver stated accuracy from the day of the initial adjustment on the tank. The instrument must not need emptying or filling operations for calibration.

The RTG must operate under the same accuracy under both static and dynamic process conditions i.e. moving or steady levels.

Proposed solution shall have been verified for the stated Field Installed Accuracy by 3rd party recognized agency and duly certified for Custody Transfer use as per relevant International Standards and practices. Copies of such certification from any major terminal operator from within the Middle East region shall be submitted.

Offered gauges/ system shall have at least three (3) years satisfactory field proven record for similar application within the country of end use. Vendor to furnish full reference list with contact details of such local reference. Where new models are proposed, it shall be traced back to Min. 1 year successful field trial and suitably substantiated with common design and measurement principle used from previous proven models.

6-11-Human Machine Interface (HMI)

The HMI shall consist of a PC based, user configurable graphical interface. It shall perform calculations, system management, alarm handling, configuration and data storage.

The HMI shall support network functions. Real-time data from all tanks shall be available on all server and client stations. It shall be possible to configure which tanks shall be available on each server and client PC station.

The HMI must, at a minimum provide, the following general categories of standard functions:

- All standard windows shall be able to customize on demand. Standard operator' views shall be easily customized on-site, e.g. possible to change font, color and presented parameters.
- The HMI shall have the ability to support local languages.
- The HMI software shall have the ability to interface to all common DCS, PLC, SCADA systems or similar. The Slave interfaces shall be Modbus serial links and OPC DA format.
- The HMI software shall be able to act as a master for other types of tank gauging systems. All standard parameters shall be supported. The HMI system shall present diagnostics and support maintenance and service commands to connected devices. The Master interface to other systems shall be Modbus RTU and OPC DA. The collected data shall be mappable to any tank in the HMI software.
- An alarm log shall be provided which displays all current acknowledged and cleared alarms. An alarm inhibit function shall be provided so a single or group of alarms could be de-activated. The ability to inhibit any alarm shall be multi-level password protected.
- A group configuration function shall be provided that permits the plant operator(s) to define the groupings of tanks for display on the group view screen and the group Inventory screen. A similar grouping function shall be available for alarm handling.

- A value entry function shall be provided that permits the plant operator(s) to manually enter process values and operating parameters for each tank. It shall be possible to configure tanks in the system which are not equipped **with RTGs**.
- An engineering function interface shall be provided for system configuration and set-up. All configuration changes shall be password protected.

6-12-Tank Inventory Management

The HMI shall be able to calculate tank inventory values according to API. All values in the calculation process shall be displayed. The Inventory calculations shall be certified by an independent third party.

The system shall have an input for ambient air temperature. The system shall be able to use this temperature value combined with the product temperature, for compensation of thermal tank shell expansion.

The system shall be capable of storing unique volume tables and correction factors, with at least 1000 strapping points for each storage tank. These tables will provide level to volume conversion of the tank.

The system shall be capable of handling primary and secondary value units. (e.g. primary volumetric values in cubic meters and secondary unit in barrels).

Leakage Alarm: The system shall generate leakage alarms based on the change in level or the Net Standard Volume of the products in the storage tanks.

Flow rate: The system shall provide a calculated volume rate of change based on the true level rate from the RTG and the tank capacity table.

Alarming Capabilities: The system shall generate multiple High, Low, and Safe alarms for level, level rate, temperature, pressure and water interface level. Configurable time delays shall be provided for each process variable to minimize nuisance alarms.

Batch handling: The system shall provide importing and exporting flow indications based on volume movements in the tank. Indications of "estimated end time of batch" shall be provided based on user set points. The Batch Handling shall be able to handle multiple destinations and sources. The Batch function shall generate printable batch reports.

Report functions: The system shall be able to generate reports in different formats, minimum in text-, PDF- and HTML-format. All reports shall be printable, sent via e-mail or store as a file. All reports shall be generated manually or automatic by user defined schedules. Minimum required reports include: Tank reports, Inventory balance reports and Alarm reports. Reports shall be configurable by the user.

6-13-System Diagnostics

The system diagnostics shall be capable of performing self-checks on each tank gauge and data collection or control units. At a minimum, the following features shall be included:

All field inputs, including level, temperature, pressure and water level interface signals shall be monitored for errors. All errors shall be alerted and logged. The error indications shall be categorized as communication failure, measuring device failure or software failure.

All diagnostic information shall be displayed, alarmed, stored in historical files and included in reports. This diagnostic information shall include details of all failure types, system status and configuration modifications. All diagnostic alarms shall be presented locally or distributed via e-mail.

6-14-System Security

The tank gauging software shall have functions to enable auto start of the software when the PC is powered up. The software shall be able to run as a shell, in order to prevent the PC to be used for other activities.

A metrological seal function shall be provided in the HMI to prevent unauthorized tampering of the system. The method of sealing shall be approved by NMI (the Netherlands) and PTB (Germany).

The HMI and main application software shall have a minimum of 15 levels of password protection. The security level of certain functions shall be changeable in all configuration windows. All functions shall have a pre-set security password level.

It shall be possible to set up individual user accounts with unique passwords and security levels for each operator. This shall enable tracking of system changes recorded in a log file. The system administrator with the highest level of authority and password shall handle the assignment of user accounts.

6-15-System and Data Recovery

The tank gauging software shall support redundancy in several ways. The PC-based system itself shall support redundancy as well as being able to handle redundant data concentrators and communications ports.

The tank gauging software shall be capable of automatic data backup of all system configuration and process parameters. The system shall also be capable of retrieving all configuration parameters once a system failure has been cleared.

6-16- JUNCTION BOXE

Light alloy casting corrosion resistant, weather proof IP 55 for signal JB and EX for power JB .
With all accessories (electrical terminals, copper bar- ground, earthing bolt, Fuses for power JB).

6-17- FIELD CABLES

Twisted pairs 7-strand bare tinned copper .
105 °C flame retardant PVC insulation.
Cable shield 0.002" polyester backed aluminum tape.
Drain wire 7-strands tinned copper.
Inner jackets 90°C Flame retardant PVC .
Armor ANSI 1006 several soft annealed galvanized steel wire.
Outer Jacket 90°C flame retardant PVC.

6-18- Equipments should be with the following conditions:

- 1.All cables, cable trays, cable glands, junction boxes, terminal & numbers and cable ties suitable for the project should be supplied.
2. supply 2 portable electronic open gauge device
3. Supplier should be investigate our needs and advise the best solution for our application.
4. FAT will be carried by two SRC engineers with third party inspector (third party authority certificate should be provided from SGS group European office or any other well known international inspector company, inspection should be for overall check and verification for design, operation , and calibration).
5. one year warrantee from start up.
6. Practical training course for 3 engineers for 2 weeks at manufacturer factory include (installation, operation, maintenance, calibration) .The training course items should be approved by SRC metering department staff .
7. spare parts recommended for two years fixed in a list with parts number .
8. one laptop with operation system.
9. Supply Hart communicator for configuration
10. set off hand tools recommended for start-up.
11. Three set of documents in English for (installation, operation procedure, calibration, drawing & measurements, maintenance and troubleshooting).
12. certificate of origin issued, the origin should be USA,UK,Germany,France.
13. Electrical area caldification is classI, GroupD, Divition1
14. power supply 110 V 50 HZ.
15. The system of units is SI units.
16. the traceability unit system is MPMS.
17. any miss design is supplier responsibility.

Address of the manufacturers and supplier companies:

www.honeywellprocess.com Honeywell Enraf
Email : cdt@cdtcompany.com USA

www.loopsautomation.com Loops automation
info@loopsautomation.com Email :
USA yousef@loopsautomation.com And

www.ii.endress.com Endress+hauser
GERMANY mushtaq.alalwan@ae.endress.com Email :

www.EmersonProcess.com Emerson
info@sgedco.com Email :
USA s.douglah@sgedco.com And

www.varec.com Varec
aramires@varec.com Email :
And s.shmareey@ramallahengineering.com USA

7- CIVIL REQIERMENT

The contractor shall carry out all civil engineering (basic & detailed) bills of quantities and supervision (if required) for the items listed but not limited to the following as minimum requirements:

7-1`Tank s foundation

Note: the type of tanks foundations shall be specified by contractor according to soil investigation report which be provided by **SRC**.

7-2 Structural analysis and design of the structural steel elements of the tanks.

7-3 Site services shall includes whatever services required to complete the requirements (in accordance with the tender documents) such as (yet not limited to) the following :-

- Foundations for all (equipments , pumps , machinery , skids, ----- etc.).
- Foundations and steel structures for sheds with cranes (if required).
- Concrete pits with (supports & covers) if required.
- Foundations and all civil works for skids mounted metering systems (if required).
- Pipe supports & sleepers.
- All civil works required to connect the new facilities with existing facilities as per tender documents requirements.
- All civil works required for (electrical , control , instrumentation , ----- etc.) systems with their facilities & services required at the site.
- All civil works required for steel platforms with access ladders and walkways.
- All civil works required for vents & drains.
- All civil works required for cooling water system.
- All civil works required for firefighting / protection systems.
- All civil works required for pipe and cable trenches.
- All civil works required for road crossing.
- All civil works required for earthing & cathodic protection.
- All civil works required for drainage systems.
- Access paved roads , areas , and walkways including drainage and lighting.
- All civil works required for tie-ins point as per tender documents requirements.
- All other civil works required to complete the design of the project.

- Detail engineering design of tank foundation must be done by professional engineers.
- Leak detection system required.
- Specification of internal & external coating required.
- Estimated settlement at the center of the tank is required.
- Design of dykes around tanks is required.

All above design work , calculations , and drawings shall be carried out by using the computer software wherever it requires.

7-4 The contractor shall provide all design calculations , basic and detailed engineering design drawings , bill of quantities , construction specifications , as well as fabrication / erection drawings , which shall be subjected to **SRC** approval.

7-5 All civil works mentioned above shall be carried out in accordance with the **SRC** design criteria and , the latest editions of the following codes , standards , and specifications:

- ACI-Cods 318 M for ordinary concrete structures.
- ACI-Code 350-06 for environmental engineering
Concrete structures.
- ASTM for all supplied materials.
- AISC for all steel works.
- UBC/IBC for structural loading.
- EN 10025 for definition of steel shapes.
- API standards.

The design of tanks & foundations shall be investigated for all possible loading combinations as per API standards.

Foundations shall be designed so as meet the requirements of safety and settlement.

The design shall take into account the worst soil conditions.

7-6SUPPLY OF MATERIALS :

7-6.1 - The contractor shall supply all the materials required for the civil works (yet not limited) to the listed here below , except the locally available materials which are listed in para.

7.6.2.

- Structural steel sheds , and cranes/monorails (if required).
- Steel platforms with grating (if required) .
- Steel pipe racks .
- Cladding for roofs and sides with or wkithout insulation as required.
- Anchor bolts.
- Embedded materials.
- Grouting materiajs.
- Steel grating.
- Checkered plates.
- Special paints (if required).

Any other necessary materials required to complete the civil works of the project.

7.6.2 - List of civil engineering materials shall be supplied by

SRC.

- All type of cement.
- Reinforcing steel + tie wires.
- B.R.C. mesh reinforcement.
- Concrete block.
- Brick.
- Sand.
- Gravel.
- Asphalt.
- Limestone.

7-7 CLIMATE

Ambient air temperature :

- (-5 to +55) °C
- Black object under direct sun 85 °C

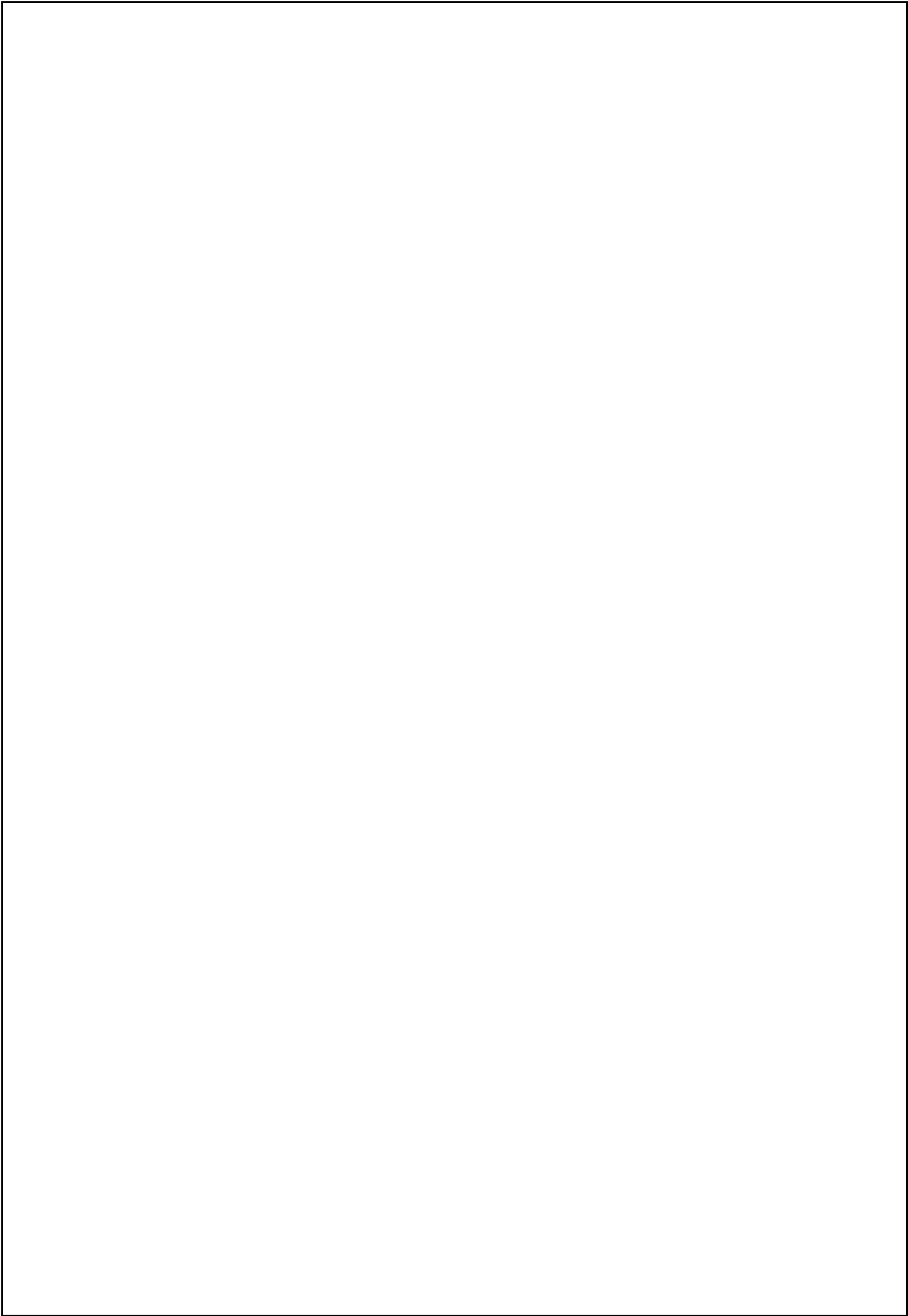
Humidity:

- Relative humidity (maximum) :100%
- Relative humidity (minimum) :15%

Max wind speed 180 km\hr

Prevailing wind direction west-north, west

Sesmic zone1 (z= 0.075) , code UBC



SECTION FOUR :- GENERAL CONDITIONS

A. Contract and Interpretation

1. Definitions

1.1 The following words and expressions shall have the meanings hereby assigned to them:

“Contract” means the Contract Agreement entered into between the Employer and the Contractor, together with the Contract Documents referred to therein; they shall constitute the Contract, and the term “the Contract” shall in all such documents be construed accordingly.

“Contract Documents” means the documents listed in Article 1.1 (Contract Documents) of the Contract Agreement (including any amendments thereto).

“Completion” means that the Facilities (or a specific part thereof where specific parts are specified in the Contract) have been delivered to employer

“Contractor” means the person(s) whose bid to perform the Contract has been accepted by the Employer and is named as Contractor in the Contract Agreement, and includes the legal successors or permitted assigns of the Contractor.

“Contract Price” means the sum specified in the Contract Agreement, subject to such additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract.

“Country of origin” mean all countries and territories are acceptable to SRC

“day” means calendar day .

“Effective Date” means the date of fulfillment of all conditions stated in Article 3 (Effective Date) of the Contract Agreement, from which the Time for Completion shall be counted.

“Employer” means South Refineries Company on behalf of the Ministry of Oil of the Republic of Iraq and includes the legal successors or permitted assigns of the Employer.

“Facilities “means the material,equipments,piping,instrumentation,electrical,pumps,... to be supplied.

“GC” means the General Conditions hereof.

“month” means calendar month.

“Party” means the Employer or the Contractor, as the context

requires, and “Parties” means both of them.

“Provisional Acceptance” means the acceptance by the Employer of the Facilities (or any part of the Facilities where the Contract provides for acceptance of the Facilities in parts), which certifies the Contractor’s fulfillment of the Contract .

“Site” means the land and other places upon which the Facilities are to be supplied, and such other land or places as may be specified in the Contract as forming part of the Site.

“Subcontractor,” including manufacturers, means any person to whom execution of any part of the Facilities, including preparation of any design or supply of any facilities, is sub-contracted directly or indirectly by the Contractor, and includes its legal successors or permitted assigns.

“Time for Completion” means the time within which Completion of the Facilities as a whole (or of a part of the Facilities where a separate Time for Completion of such part has been prescribed) is to be attained, as referred to in GC Clause 8 and in accordance with the relevant provisions of the Contract.

“year” means 365 days.

2. Contract Documents

- 2.1 All documents forming part of the Contract (and all parts thereof) are intended to be correlative, complementary and mutually explanatory. The Contract shall be read as a whole.

3. Interpretation

3.2 Entire Agreement

The Contract constitutes the entire agreement between the Employer and Contractor with respect to the subject matter of Contract and supersedes all communications, negotiations and agreements (whether written or oral) of Parties with respect thereto made prior to the date of Contract.

3.3 Amendment

No amendment or other variation of the Contract shall be effective unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each Party hereto.

3.4 Independent Contractor

The Contractor shall be an independent contractor performing the Contract. The Contract does not create any agency, partnership, joint venture or other joint relationship between the Parties hereto. Subject

to the provisions of the Contract, the Contractor shall be solely responsible for the manner in which the Contract is performed. All employees, representatives or Subcontractors engaged by the Contractor in connection with the performance of the Contract shall be under the complete control of the Contractor and shall not be deemed to be employees of the Employer, and nothing contained in the Contract or in any subcontract awarded by the Contractor shall be construed to create any contractual relationship between any such employees, representatives or Subcontractors and the Employer.

3.4 Severability

If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.

3.5 Country of Origin

“Origin” means the place where the facilities and component parts thereof are mined, grown, produced or manufactured, and from which the services are provided. Facilities components are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that is substantially in its basic characteristics or in purpose or utility from its components.

4. **Communications**

4.1 Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:

- (a) in writing and delivered against receipt; and
- (b) delivered, sent or transmitted to the address for the recipient's communications as stated in the Contract Agreement.

When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party

5. **Law and Language**

5.1 The Contract shall be governed by and interpreted in accordance with laws of the Republic of Iraq.

5.2 The ruling language of the Contract shall be English.

5.3 The language for communications shall be the ruling language.

6. **Fraud and Corruption**

6.1 If the Employer determines that the Contractor and/or its subcontractors has engaged in corrupt, fraudulent, collusive coercive or obstructive practices, in competing for or in executing the

Contract, then the Employer may, after giving fourteen (14) days notice to the Contractor, terminate the Contractor's employment under the Contract and the provisions of Clause 22 shall apply as if such expulsion had been made under Sub-Clause 27.2.1 (c).

- 6.2 Should any employee of the Contractor be determined to have engaged in corrupt, fraudulent, collusive, coercive or obstructive practice during the execution of the Works, then that employee shall be removed.

B. Subject Matter of Contract

- | | |
|--|--|
| 7. Scope of Facilities | 7.1 Unless otherwise expressly limited in the Employer's Requirements, the Contractor's obligations cover and the performance of all Services required for the design, and the manufacture (including procurement, quality assurance, delivery) of the facilities, in accordance with the plans, procedures, specifications, drawings, codes and any other documents as specified in the Section, Employer's Requirements. Such specifications include materials, equipment, spare parts (if any); transportation (including, without limitation, unloading and hauling to, from and at the Site). |
| 8. Time for Commencement and Completion | <p>8.1 The Contractor shall commence work on the Facilities on the Effective Date of the Contract, without prejudice to GC Sub-Clause 18.2 hereof, the Contractor shall thereafter proceed with the Facilities in accordance with the time schedule shall be provided by contractor.</p> <p>8.2 The Contractor shall attain Completion of the Facilities within the time for completion of the whole of the Facilities of (SEVEN) months from the Effective Date or within such extended time to which the Contractor shall be entitled under GC Clause 25 hereof.</p> |
| 9. Contractor's Responsibilities | <p>9.1 The Contractor shall design, manufacture including associated purchases and/or subcontracting, complete the Facilities in accordance with the Contract. When completed, the Facilities should be fit for the purposes for which they are intended as defined in the Contract.</p> <p>9.2 The Contractor confirms that it has entered into this Contract on the basis of a proper examination of the data relating to the Facilities including any data as to boring tests provided by the Employer, and of other data readily available to it relating to the Facilities as of the date twenty-eight (28) days prior to bid submission. The Contractor acknowledges that any failure to acquaint itself with all such data and information shall not relieve its responsibility for properly estimating the difficulty or cost of successfully performing the</p> |

Facilities.

- 9.3 If the Contractor is a joint venture, or association (JVA) of two or more persons, all such persons shall be jointly and severally bound to the Employer for the fulfillment of the provisions of the Contract, and shall designate one of such persons to act as a leader with authority to bind the JVA. The composition or the constitution of the JVA shall not be altered without the prior consent of the Employer.

C. Payment

10. Contract Price

- 10.1 The Contract Price shall be specified in (Contract Price and Terms of Payment) of the Contract Agreement.
- 10.2 The Contract Price shall be a firm lump sum not subject to any alteration, except in the event of a Change in the Facilities or as otherwise provided in the Contract.
- 10.3 Subject to GC Sub-Clauses 9.2, the Contractor shall be deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price, which shall, except as otherwise provided for in the Contract, cover all its obligations under the Contract.

11. Terms of Payment

- 11.1 The currency or currencies in which payments are made to the Contractor under this Contract shall be specified in the the Contract Agreement , subject to the general principle that payments will be made in the currency or currencies in which the Contract Price has been stated in the Contractor's bid.

12. Securities

- 12.1 Issuance of Securities

The Contractor shall provide the securities specified below in favor of the Employer at the times, and in the amount, manner and form specified below.

- 12.2 Advance Payment Security

12.2.1 The Contractor shall, after signing the contract and open the LC, provide a security in an amount equal to 10 % the advance payment, and in the same currency or currencies.

12.2.2 The security shall be in the form provided in the Contract Agreement. The amount of the security shall be reduced in proportion to the value of the Facilities executed by and paid to the Contractor from time to time, and shall automatically become null and void when the full amount of the advance payment has been recovered by the Employer. The security shall be returned to the Contractor immediately after its expiration.

12.3 Performance Security

12.3.1 The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide a security for the due performance of the Contract in the amount of five percent (5%) of the Contract Price.

12.3.2 The Performance Security shall be denominated in the currency or currencies of the Contract, or in a freely convertible currency acceptable to the Employer, and shall be in the form of the Bank Guarantee set forth in the Contract Agreement.

12.3.3 The contractor should be submit to SRC before signing the contract Unconditional performance bond, bank guaranty or certified cheque equivalent to 5 % of the total amount of the contract in formal bank guarantee exdusively through TRAD BANK OF IRAQ (TBI) or any Iraqi bank dependable from central bank of Iraq. It shall remain valid and not be released until the contractor fulfill all his obligations under his contract but not later than two months from the date of SRC Acceptance certificate

12.3.4 The Employer shall not make a claim under the Performance Security, except for amounts to which the Employer is entitled under the Contract. The Employer shall indemnify and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the Performance Security to the extent to which the Employer was not entitled to make the claim.

13. Taxes and Duties

13.1 Except as otherwise specifically provided in the Contract, the Contractor shall bear and pay all taxes, duties, levies and charges assessed on the Contractor, its Subcontractors or their employees by all municipal, state or national government authorities in connection with the Facilities in and outside of the country where the Site is located.

13.12 For the purpose of the Contract, it is agreed that the Contract Price specified in (Contract Price and Terms of Payment) of the Contract Agreement is based on the taxes, duties, levies and charges prevailing at the date twenty-eight (28) days prior to the date of bid submission in the country where the Site is located (hereinafter called "Tax" in this GC Sub-Clause 13.1).

D-Execution of the Facilities

14- Design and Engineering

14.1 Specifications and Drawings

14.1.1 The Contractor shall execute the basic and detailed design and the engineering work in compliance with the provisions of the Contract, or where not so specified, in accordance with good engineering practice.

The Contractor shall be responsible for any discrepancies, errors or omissions in the specifications, drawings and other technical documents that it has prepared, whether such specifications, drawings and other documents have been approved by the employer or not, provided that such discrepancies, errors or omissions are not because of inaccurate information furnished in writing to the Contractor by the Employer.

14.1.2 The Contractor shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designated by or on behalf of the Employer, by giving a notice of such disclaimer to the employer.

14.2 Codes and Standards

Wherever references are made in the Contract to codes and standards in accordance with which the Contract shall be executed, the edition or the revised version of such codes and standards current at the date twenty-eight (28) days prior to date of bid submission shall apply unless otherwise specified. During Contract execution, any changes in such codes and standards shall be applied subject to approval by the Employer and shall be treated in accordance with GC Clause 24.

14.3 Approval/Review of Technical Documents by employer

14.3.1 The Contractor shall prepare or cause its Subcontractors to prepare, and furnish to the employer the documents for

Approval or Review,

Any part of the Facilities covered by or related to the documents to be approved by the employer shall be executed only after the employer approval thereof.

GC Sub-Clauses 14.3.2 through 14.3.5 shall apply to those documents requiring the employer's approval, but not to those furnished to the employer for its review only.

- 14.3.2 Within twenty one (21) days after receipt by the employer of any document requiring the employer approval in accordance with GC Sub-Clause 14.3.1, the employer shall either return one copy thereof to the Contractor with its approval endorsed thereon or shall notify the Contractor in writing of its disapproval thereof and the reasons therefor and the modifications that the employer proposes.

If the employer fails to take such action within the said fourteen (21) days, then the said document shall be deemed to have been approved by the employer.

- 14.3.3 If any dispute or difference occurs between the Employer and the Contractor in connection with or arising out of the disapproval by the employer of any document and/or any modification(s) thereto that cannot be settled between the Parties within a reasonable period, then such dispute or difference may be referred to a Dispute Board for determination in accordance with GC Sub-Clause 30.1 hereof. If such dispute or difference is referred to a Dispute Board, the employer shall give instructions as to whether and if so, how, performance of the Contract is to proceed. The Contractor shall proceed with the Contract in accordance with the employer's instructions, provided that if the Dispute Board upholds the Contractor's view on the dispute and if the Employer has not given notice under GC Sub-Clause 30.3 hereof, then the Contractor shall be reimbursed by the Employer for any additional costs incurred by reason of such instructions and shall be relieved of such responsibility or liability in connection with the dispute and the execution of the instructions as the Dispute Board shall decide, and the Time for Completion shall be extended accordingly.

- 14.3.4 The employer's approval, with or without modification of the document furnished by the Contractor, shall not relieve the Contractor of any responsibility or liability

imposed upon it by any provisions of the Contract except to the extent that any subsequent failure results from modifications required by the employer.

14.3.5 The Contractor shall not depart from any approved document unless the Contractor has first submitted to the employer an amended document and obtained the employer's approval thereof, pursuant to the provisions of this GC Sub-Clause 14.3.

If the employer requests any change in any already approved document and/or in any document based thereon, the provisions of GC Clause 24 shall apply to such request.

15. Procurement

15.1 Facilities

The Contractor shall procure and transport all facilities in an expeditious and orderly manner to the Site.

15.2 Transportation

15.2.1 The Contractor shall at its own risk and expense transport all the materials and Equipments to the Site by the mode of transport that the Contractor judges most suitable under all the circumstances.

15.2.2 Unless otherwise provided in the Contract, the Contractor shall be entitled to select any safe mode of transport operated by any person to carry the materials and Equipments.

15.2.3 Upon dispatch of each shipment of materials and Equipments, the Contractor shall notify the Employer by telex, cable, facsimile or electronic means, of the description of the materials and, the point and means of dispatch, and the estimated time and point of arrival in the country where the Site is located, if applicable, and at the Site. The Contractor shall furnish the Employer with relevant shipping documents to be agreed upon between the Parties.

15.2.4 The Contractor shall be responsible for obtaining, if necessary, approvals from the authorities for transportation of the materials and Equipment to the Site. The Employer shall use its best endeavors in a timely and

expeditious manner to assist the Contractor in obtaining such approvals, if requested by the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any claim for damage to roads, bridges or any other traffic facilities that may be caused by the transport of the materials and Equipments to the Site.

21.3 Customs Clearance

The Contractor shall, at its own expense, handle all imported materials Equipments at the point(s) of import and shall handle any formalities for customs clearance.

16. Test and Inspection

16.1 The Contractor shall at its own expense carry out at the place of manufacture all such tests and/or inspections of the facilities and any part of the Facilities as are specified in the Contract.

16.2 The Employer shall be entitled to attend the aforesaid test and/or inspection, provided that the Employer shall bear all costs and expenses incurred in connection with such attendance including, but not limited to, all traveling and board and lodging expenses.

16.3 Whenever the Contractor is ready to carry out any such test and/or inspection, the Contractor shall give a reasonable advance notice of such test and/or inspection and of the place and time thereof to the employer. The Contractor shall obtain from any relevant third Party or manufacturer any necessary permission or consent to enable the employer to attend the test and/or inspection.

16.4 The Contractor shall provide the employer with a certified report of the results of any such test and/or inspection.

If the Employer fails to attend the test and/or inspection, or if it is agreed between the Parties that such persons shall not do so, then the Contractor may proceed with the test and/or inspection in the absence of such persons, and may provide the employer with a certified report of the results thereof.

16.5 If any facilities or any part fails to pass any test and/or inspection, the Contractor shall either rectify or replace such facilities or any part of the Facilities and shall repeat the test and/or inspection upon giving a notice under GC Sub-Clause 16.3.

16.6 If any dispute or difference of opinion shall arise between the Parties in connection with or arising out of the test and/or inspection of the facilities or part of the Facilities that cannot be settled between the Parties within a reasonable period of time, it

may be referred to an Dispute Board for determination in accordance with GC Sub-Clause 30.1.

- 16.7 The Contractor shall afford the Employer, at the Employer's expense, access at any reasonable time to any place where the facilities are being manufactured, in order to inspect the progress and the manner of manufacture or installation, provided that the employer shall give the Contractor a reasonable prior notice.
- 16.8 The Contractor agrees that neither the execution of a test and/or inspection of facilities or any part, nor the attendance by the Employer, nor the issue of any test certificate pursuant to GC Sub-Clause 16.4, shall release the Contractor from any other responsibilities under the Contract.
- 16.9 No part of the Facilities or shall be covered up on the Site without the Contractor carrying out any test and/or inspection required under the Contract. The Contractor shall give a reasonable notice to the employer whenever any such parts of the Facilities are ready or about to be ready for test and/or inspection; such test and/or inspection and notice thereof shall be subject to the requirements of the Contract.

17-Completion of the Facilities

17.1 As soon as the Facilities or any part thereof has, in the opinion of the Contractor, been supplied & completed and put in a dean condition as specified in the Employer's Requirements, , the Contractor shall so notify the Employer in writing.

17.2

If the employer notifies the Contractor of any defects and/or deficiencies, the Contractor shall then correct such defects and/or deficiencies.

If the employer is satisfied that the Facilities or that part thereof have reached Completion, the employer shall, within thirty (30) days after receipt of the Contractor's repeated notice, issue a provisional acceptance stating that the Facilities or that part thereof have supplied and Completion as of the date of the Contractor's repeated notice.

If the employer is not so satisfied, then it shall notify the Contractor in writing of any defects and/or deficiencies within twenty one (21) days after receipt of the Contractor's repeated notice.

E. Guarantees and Liabilities

18. Completion Time Guarantee

18.1 The Contractor guarantees that it shall attain Completion of the Facilities (or a part for which a separate time for completion is specified) within the Time for Completion specified in the PC pursuant to GC Sub-Clause 8.2, or within such extended time to which the Contractor shall be entitled under GC Clause 25 hereof.

18.2 If the Contractor fails to attain Completion of the Facilities or any part thereof within the Time for Completion or any extension thereof under GC Clause 25, the Contractor shall pay to the Employer liquidated damages in the amount specified in section 1(instruction to bidder)-Clause33.

Such payment shall completely satisfy the Contractor's obligation to attain Completion of the Facilities or the relevant part thereof within the Time for Completion or any extension thereof under GC Clause 25. The Contractor shall have no further liability whatsoever to the Employer in respect thereof.

However, the payment of liquidated damages shall not in any way relieve the Contractor from any of its obligations to complete the Facilities or from any other obligations and liabilities of the Contractor under the Contract

20. Limitation of Liability

20.1 Except in cases of criminal negligence or willful misconduct,

- (a) neither Party shall be liable to the other Party, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, which may be suffered by the other Party in connection with the Contract, other than specifically provided as any obligation of the Party in the Contract, and
- (b) the aggregate liability of the Contractor to the Employer, whether under the Contract, in tort or otherwise, shall not exceed the amount of () percent (%) of the Contract Price,

provided that this limitation shall not apply to the cost of repairing or replacing defective facilities, or to any obligation of the Contractor to indemnify the Employer with respect to patent infringement.

F-Risk Distribution

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| ;21. Care of Facilities | 21.1 The Contractor shall be responsible for the care and custody of the Facilities or any part thereof until the date of arrived the facilities to the site, and shall make good at its own cost any loss or damage that may occur to the Facilities from any cause whatsoever during such period. The Contractor shall also be responsible for any loss or damage to the Facilities caused by the Contractor or its Subcontractors in the course of any work carried out. |
| | 21.2 The Contractor shall be liable for any loss of or damage to any Contractor's Equipment, or any other property of the Contractor used or intended to be used for purposes of the Facilities. |
| 22. Loss of or Damage to Property; Accident or Injury to Workers; Indemnification | 22.1 Subject to GC Sub-Clause 22.3, the Contractor shall indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, in respect of the death or injury of any person or loss of or damage to any property other than the Facilities whether accepted or not, arising in connection with the supply of the Facilities and by reason of the negligence of the Contractor or its Subcontractors, or their employees, officers or agents. |
| | 22.2 The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from any liability for loss of provided that such fire, explosion or other perils were not caused by any act or failure of the Contractor. |
| 23. Force Majeure | 23.1 "Force Majeure" shall mean any event beyond the reasonable control of the Employer or of the Contractor, as the case may be, and which is unavoidable notwithstanding the reasonable care of the Party |

affected, and shall include, without limitation, the following:

- (a) war, hostilities or warlike operations whether a state of war be declared or not, invasion, act of foreign enemy and civil war,
- (b) rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts,
- (c) confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government or de jure or de facto authority or ruler or any other act or failure to act of any local state or national government authority,
- (d) strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine and plague,
- (e) earthquake, landslide, volcanic activity, fire, flood or inundation, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear and pressure waves or other natural or physical disaster,

- 23.2 If either Party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within fourteen (30) days after the occurrence of such event.
- 23.3 The Party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such Party's performance is prevented, hindered or delayed. The Time for Completion shall be extended in accordance with GC Clause 25.
- 23.4 The Party or Parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect thereof upon its or their performance of the Contract and to fulfill its or their obligations under the Contract, but without prejudice to either Party's right to terminate the Contract under GC Sub-Clauses 23.5.
- 23.5 If the performance of the Contract is substantially prevented, hindered or delayed for a single period of more than ninety (90) days or an aggregate period of more than one hundred and fifty (150) days on account of one or more events of Force Majeure during the currency of the Contract, the Parties will attempt to develop a

mutually satisfactory solution, failing which either Party may terminate the Contract by giving a notice to the other,.

- 23.6 In the event of termination pursuant to GC Sub-Clause 23.5, the rights and obligations of the Employer and the Contractor shall be as specified in GC Sub-Clauses 27.1.2 and 27.1.3.
- 23.7 Force Majeure shall not apply to any obligation of the Employer to make payments to the Contractor herein.

G. Change in Contract Elements

24. Change in the Facilities

24.1 Introducing a Change

- 24.1.1 The Employer shall have the right to propose, and subsequently order the Contractor from time to time during the performance of the Contract to make any change, modification, addition or deletion to, in or from the Facilities hereinafter called "Change", provided that such Change falls within the general scope of the Facilities and does not constitute unrelated work and that it is technically practicable, taking into account both the state of advancement of the Facilities and the technical compatibility of the Change envisaged with the nature of the Facilities as specified in the Contract.
- 24.1.2 The Contractor may from time to time during its performance of the Contract propose to the Employer any Change that the Contractor considers necessary or desirable to improve the quality, efficiency or safety of the Facilities. The Employer may at its discretion approve or reject any Change proposed by the Contractor, provided that the Employer shall approve any Change proposed by the Contractor to ensure the safety of the Facilities.
- 24.1.3 Notwithstanding GC Sub-Clauses 24.1.1 and 24.1.2, no change made necessary because of any default of the Contractor in the performance of its obligations under the Contract shall be deemed to be a Change, and such change shall not result in any adjustment of the Contract Price or the Time for Completion.
- 24.1.4 The procedure on how to proceed with and execute Changes is

specified in GC Sub-Clauses 24.2

24.2 Changes Originating from Employer

24.2.1 If the Employer proposes a Change pursuant to GC Sub-Clause 24.1.1, it shall send to the Contractor a "Request for Change Proposal," requiring the Contractor to prepare and furnish to the employer as soon as reasonably practicable a "Change Proposal," which shall include the following:

- (a) brief description of the Change
- (b) effect on the Time for Completion
- (c) estimated cost of the Change
- (e) effect on the Facilities
- (f) effect on any other provisions of the Contract.

24.2.2 Prior to preparing and submitting the "Change Proposal," the Contractor shall submit to the employer an "Estimate for Change Proposal," which shall be an estimate of the cost of preparing and submitting the Change Proposal.

Upon receipt of the Contractor's Estimate for Change Proposal, the Employer shall do one of the following:

- (a) accept the Contractor's estimate with instructions to the Contractor to proceed with the preparation of the Change Proposal
- (b) advise the Contractor of any part of its Estimate for Change Proposal that is unacceptable and request the Contractor to review its estimate
- (c) advise the Contractor that the Employer does not intend to proceed with the Change.

24.2.3 Upon receipt of the Employer's instruction to proceed under GC Sub-Clause 24.2.2 (a), the Contractor shall, with proper expedition, proceed with the preparation of the Change Proposal, in accordance with GC Sub-Clause 24.2.1.

24.2.4 The pricing of any Change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract. If such rates and prices are inequitable, the Parties thereto shall agree on specific rates for the valuation of the Change..

24.2.5 Upon receipt of the Change Proposal, the Employer and the Contractor shall mutually agree upon all matters therein contained. Within fourteen (21) days after such agreement, the Employer shall, if it intends to proceed with the Change, issue the Contractor with a Change Order.

If the Employer is unable to reach a decision within thirty (30) days, it shall notify the Contractor with details of when the Contractor can expect a decision.

If the Employer decides not to proceed with the Change for whatever reason, it shall, within the said period of twenty one (21) days, notify the Contractor accordingly. Under such circumstances

25. Extension of Time for Completion

25.1 The Time(s) for Completion specified in the PC pursuant to GC Sub-Clause 8.2 shall be extended if the Contractor is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following:

- (a) any Change in the Facilities as provided in GC Clause 24;
- (b) any occurrence of Force Majeure as provided in GC Clause 23,
- (c) any suspension order given by the Employer under GC Clause 26 hereof .
- (e) any delays attributable to employer

by such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Contractor.

25.2 Except where otherwise specifically provided in the Contract, the Contractor shall submit to the employer a notice of a claim for an extension of the Time for Completion, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the Employer and the Contractor shall agree upon the period of such extension. In the event that the Contractor does not accept the Employer's estimate of a fair and reasonable time extension, the Contractor shall be entitled to refer the matter to a Dispute Board, pursuant to GC Sub-Clause 30.1.

25.3 The Contractor shall at all times use its reasonable efforts to minimize

any delay in the performance of its obligations under the Contract.

- 25.4 In all cases where the Contractor has given a notice of a claim for an extension of time under GC 25.2, the Contractor shall consult with the employer in order to determine the steps (if any) which can be taken to overcome or minimize the actual or anticipated delay. The Contractor shall thereafter comply with all reasonable instructions which the employer shall give in order to minimize such delay. If compliance with such instructions shall cause the Contractor to incur extra costs and the Contractor is entitled to an extension of time under GC 25.1, the amount of such extra costs shall be added to the Contract Price.

26. Suspension

- 26.1 The Employer may order the Contractor to suspend performance of any or all of its obligations under the Contract. Such notice shall specify the obligation of which performance is to be suspended, the effective date of the suspension and the reasons therefor. The Contractor shall thereupon suspend performance of such obligation, except those obligations necessary for the care or preservation of the Facilities, until ordered in writing to resume such performance by the employer

If, by virtue of a suspension order given by the employer, other than by reason of the Contractor's default or breach of the Contract, the Contractor's performance of any of its obligations is suspended for an aggregate period of more than ninety (90) days, then at any time thereafter and provided that at that time such performance is still suspended, the Contractor may give a notice to the employer requiring that the Employer shall, within twenty-eight (28) days of receipt of the notice, order the resumption of such performance or request and subsequently order a change in accordance with GC Clause 24, excluding the performance of the suspended obligations from the Contract.

If the Employer fails to do so within such period, the Contractor may, by a further notice to the employer, elect to treat the suspension, where it affects a part only of the Facilities, as a deletion of such part in accordance with GC Clause 24 or, where it affects the whole of the Facilities, as termination of the Contract under GC Sub-Clause 27.1.

- 26.2 If the Contractor's performance of its obligations is suspended or the rate of progress is reduced pursuant to this GC Clause 26, then the Time for Completion shall be extended in accordance with GC Sub-Clause 25.1.

27. Termination

27.1 Termination for Employer's Convenience

27.1.1 The Employer may at any time terminate the Contract for any reason by giving the Contractor a notice of termination that refers to this GC Sub-Clause 27.1.

27.1.2 Upon receipt of the notice of termination under GC Sub-Clause 27.1.1, the Contractor shall either immediately or upon the date specified in the notice of termination:

- (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed.
- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) (ii) below;
- (d) subject to the payment specified in GC Sub-Clause 27.1.3,
 - (i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination;
 - (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors; and
 - (iii) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as at the date of termination in connection with the Facilities.

27.1.3 In the event of termination of the Contract under GC Sub-Clause 27.1.1, the Employer shall pay to the Contractor the following amounts:

- (a) the Contract Price, properly attributable to the parts of the Facilities executed by the Contractor as of the date of termination;
- (c) any amounts to be paid by the Contractor to its Subcontractors in connection with the termination of

any subcontracts, including any cancellation charges;

27.2 Termination for Contractor's Default

27.2.1 The Employer, without prejudice to any other rights or remedies it may possess, may terminate the Contract forthwith in the following circumstances by giving a notice of termination and its reasons therefor to the Contractor, referring to this GC Sub-Clause 27.2:

- (a) if the Contractor becomes bankrupt or insolvent, has a receiving order issued against it,.
- (b) if the Contractor assigns or transfers the Contract or any right or interest therein in violation of the provision of GC Clause 28.
- (c) if the Contractor, in the judgment of the Employer has engaged in corrupt, collusive, coercive, or fraudulent practices, as defined in GC Clause 6, in competing for or in executing the Contract.

27.2.2 If the Contractor:

- (a) has abandoned or repudiated the Contract;
- (b) has without valid reason failed to commence work on the Facilities promptly or has suspended, the progress of Contract performance for more than twenty-one (21) days after receiving a written instruction from the Employer to proceed;
- (c) persistently fails to execute the Contract in accordance with the Contract or persistently neglects to carry out its obligations under the Contract without just cause; or
- (d) refuses or is unable to provide sufficient materials, services or labor to execute and complete the Facilities.

then the Employer may, without prejudice to any other rights it may possess under the Contract, give a notice to the Contractor stating the nature of the default and requiring the Contractor to remedy the same. If the Contractor fails to remedy or to take steps to remedy the same within fourteen (14) days of its receipt of such notice, then the Employer may terminate the Contract forthwith by giving a notice of termination to the Contractor that refers to this GC Sub-Clause 27.2.

27.2.3 Upon receipt of the notice of termination under GC Sub-Clauses 27.2.1 or 27.2.2, the Contractor shall, either immediately or upon such date as is specified in the notice of termination:

- (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed.,
- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) below,
- (c) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination,
- (d) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors,
- (e) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.

27.2.4 The Employer may expel the Contractor, and complete the Facilities itself or by employing any third Party. The Employer may, to the exclusion of any right of the Contractor over the same, take over and use with the payment of a fair rental rate to the Contractor, to the account of the Employer and with an indemnification by the Employer for all liability including damage or injury to persons arising out of the Employer's use of such equipment.

27.2.5 Subject to GC Sub-Clause 27.2.6, the Contractor shall be entitled to be paid the Contract Price attributable to the Facilities executed as of the date of termination. Any sums due the Employer from the Contractor accruing prior to the date of termination shall be deducted from the amount to be paid to the Contractor under this Contract.

27.2.6 If the Employer completes the Facilities, the cost of completing

the Facilities by the Employer shall be determined.

If the sum that the Contractor is entitled to be paid, pursuant to GC Sub-Clause 27.2.5, plus the reasonable costs incurred by the Employer in completing the Facilities, exceeds the Contract Price, the Contractor shall be liable for such excess.

If such excess is greater than the sums due the Contractor under GC Sub-Clause 27.2.5, the Contractor shall pay the balance to the Employer, and if such excess is less than the sums due the Contractor under GC Sub-Clause 27.2.5, the Employer shall pay the balance to the Contractor.

The Employer and the Contractor shall agree, in writing, on the computation described above and the manner in which any sums shall be paid.

27.3 Termination by the Contractor

27.3.1 If

- (a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, fails to remedy the breach or take steps to remedy the breach within twenty one (21) days after receipt of the Contractor's notice, or
- (b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer.

then the Contractor may give a notice to the Employer thereof, and if the Employer has failed to pay the outstanding sum, to approve the invoice or supporting documents, to give its reasons for withholding such approval, or to remedy the breach within twenty-eight (28) days of such notice, or if the Contractor is still unable to carry out any of its obligations under the Contract for any reason attributable to the Employer within twenty-eight (28) days of the said notice, the Contractor

may by a further notice to the Employer referring to this GC Sub-Clause 27.3.1, forthwith terminate the Contract.

27.3.2 The Contractor may terminate the Contract forthwith by giving a notice to the Employer to that effect, referring to this GC Sub-Clause 27.3.2, if the Employer becomes bankrupt or insolvent, has a receiving order issued against it.

27.3.3 If the Contract is terminated under GC Sub-Clauses 27.3.1 or 27.3.2, then the Contractor shall immediately:

- (a) cease all further work, except for such work as may be necessary for the purpose of protecting that part of the Facilities already executed.
- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) (ii);
- (d) subject to the payment specified in GC Sub-Clause 27.3.4,
 - (i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination;
 - (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors; and
 - (iii) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.

27.3.4 If the Contract is terminated under GC Sub-Clauses 27.3.1 or 27.3.2, the Employer shall pay to the Contractor all payments specified in GC Sub-Clause 27.1.3.

27.3.5 Termination by the Contractor pursuant to this GC Sub-Clause 27.3 is without prejudice to any other rights or remedies of the Contractor that may be exercised in lieu of or in addition to rights conferred by GC Sub-Clause 27.3

27.4 In this GC Clause 27, in calculating any monies due from the Employer to

the Contractor, account shall be taken of any sum previously paid by the Employer to the Contractor under the Contract, including any advance payment paid.

28. Assignment

28.1 Neither the Employer nor the Contractor shall, without the express prior written consent of the other Party, which consent shall not be unreasonably withheld, assign to any third Party the Contract or any part thereof, or any right, benefit, obligation or interest therein or thereunder, except that the Contractor shall be entitled to assign either absolutely or by way of charge any monies due and payable to it or that may become due and payable to it under the Contract.

H. Claims, Disputes and Arbitration

29. Contractor's Claims

29.1 If the Contractor considers himself to be entitled to any extension of the Time for Completion, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall submit a notice to the employer, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than twenty-eight (28) days after the Contractor became aware, or should have become aware, of the event or circumstance.

If the Contractor fails to give notice of a claim within such period of twenty-eight (28) days, the Time for Completion shall not be extended, and the Employer shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.

The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.

Within forty-two (42) days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the employer, the Contractor shall send to the employer fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time

Within forty-two (42) days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the employer and approved by the Contractor, the employer shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within such time.

Each Payment Certificate shall include such amounts for any claim as have been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied

are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.

The employer shall agree with the Contractor or estimate the extension (if any) of the Time for Completion (before or after its expiry) in accordance with GC Clause 25, In the event that the Contractor and the Employer cannot agree on any matter relating to a claim, either Party may refer the matter to the Dispute Board pursuant to GC 30 hereof.

30. Disputes and Arbitration

30.1 Appointment of the Dispute Board

Disputes shall be referred to a DB for decision in accordance with GC Sub-Clause 30.3. The Parties shall jointly appoint a DB by the date forty five(45) days after a Party gives notice to the other Party of its intention to refer a dispute to a DB in accordance with Sub-Clause 30.3.

The DB shall comprise three suitably qualified persons ("the members"), each of whom shall be fluent in the language for communication defined in the Contract and shall be a professional experienced in the type of activities involved in the performance of the Contract and with the interpretation of contractual documents.

If the Parties have not jointly appointed the DB twenty-one (21) days before the date mentioned above, and the DB is to comprise three persons, each Party shall nominate one member for the approval of the other Party. The first two members shall recommend and the Parties shall agree upon the third member, who shall act as chairman.

The terms of the remuneration of each of the three members, including the remuneration of any expert whom the DB consults, shall be mutually agreed upon by the Parties when agreeing the terms of appointment of the member or such expert (as the case may be). Each Party shall be responsible for paying one-half of this remuneration.

The appointment of any member may be terminated by mutual agreement of both Parties, but not by the Employer or the Contractor acting alone. Unless otherwise agreed by both Parties.

30.2 Failure to Agree on the Composition of the Dispute Board

If any of the following conditions apply, namely:

- (a) either Party fails to nominate a member (for approval by the other Party) of a DB of three persons by the date stated in the first paragraph of GC Sub-Clause 30.1,
- (b) the Parties fail to agree upon the appointment of the third member (to act as chairman) of the DB by the date stated in

the first paragraph of GC Sub-Clause 30.1, or

- (c) the Parties fail to agree upon the appointment of a replacement person within forty-two (42) days after the date on which one of the three members declines to act or is unable to act as a result of death, disability, resignation or termination of appointment,

then the appointing entity or official named in the Appendix to Tender shall, upon the request of either or both of the Parties and after due consultation with both Parties, appoint this member of the DB. This appointment shall be final and conclusive. Each Party shall be responsible for paying one-half of the remuneration of the appointing entity or official.

30.3 Obtaining Dispute Board's Decision

If a dispute (of any kind whatsoever) arises between the Parties in connection with the performance of the Contract, including any dispute as to any certificate, determination, instruction, opinion or valuation of the employer, either Party may refer the dispute in writing to the DB for its decision, with copies to the other Party and the employer. Such reference shall state that it is given under this Sub-Clause.

For a DB of three persons, the DB shall be deemed to have received such reference on the date when it is received by the chairman of the DB.

Both Parties shall promptly make available to the DB all such additional information, further access to the Site, and appropriate facilities, as the DB may require for the purposes of making a decision on such dispute. The DB shall be deemed to be not acting as arbitrator(s).

Within eighty-four (84) days after receiving such reference, or within such other period as may be proposed by the DB and approved by both Parties, the DB shall give its decision, which shall be reasoned and shall state that it is given under this Sub-Clause. The decision shall be binding on both Parties, who shall promptly give effect to it unless and until it shall be revised in an amicable settlement or an arbitral award as described below. Unless the Contract has already been abandoned, repudiated or terminated, the Contractor shall continue with the performance of the Facilities in accordance with the Contract.

If either Party is dissatisfied with the DB's decision, then either Party may, within twenty-eight (28) days after receiving the decision, give notice to the other Party of its dissatisfaction and intention to commence arbitration. If the DB fails to give its decision within the period of eighty-four (84) days (or as otherwise approved) after receiving such reference, then either Party may, within twenty-eight (28) days after this period has expired, give notice to the other Party

of its dissatisfaction and intention to commence arbitration.

In either event, this notice of dissatisfaction shall state that it is given under this Sub-Clause, and shall set out the matter in dispute and the reason(s) for dissatisfaction. Except as stated in GC Sub-Clauses 30.6 and 30.7, neither Party shall be entitled to commence arbitration of a dispute unless a notice of dissatisfaction has been given in accordance with this Sub-Clause.

If the DB has given its decision as to a matter in dispute to both Parties, and no notice of dissatisfaction has been given by either Party within twenty-eight (28) days after it received the DB's decision, then the decision shall become final and binding upon both Parties.

30.4 Amicable Settlement

Where notice of dissatisfaction has been given under GC Sub-Clause 30.3 above, both Parties shall attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, arbitration may be commenced on or after the fifty-sixth (56) day after the day on which notice of dissatisfaction and intention to commence arbitration was given, even if no attempt at amicable settlement has been made.

30.5 Arbitration

Any dispute not settled amicably and in respect of which the DB's decision (if any) has not become final and binding shall be finally settled by arbitration. Unless otherwise agreed by both Parties;

- (i) the dispute shall be finally settled under the Rules of Conciliation and Arbitration of the International Chamber of Commerce,
- (ii) the dispute shall be settled by three arbitrators appointed in accordance with these Rules, and,
- (iii) the arbitration shall be conducted in the language for communications defined in Sub-Clause 5.3.

The arbitrator(s) shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the employer, and any decision of the DB, relevant to the dispute.

Neither Party shall be limited in the proceedings before the arbitrator(s) to the evidence nor arguments previously put before the DB to obtain its decision, or to the reasons for dissatisfaction given in its notice of dissatisfaction. Any decision of the DB shall be admissible in evidence in the arbitration.

Arbitration may be commenced prior to or after completion of the Works. The obligations of the Parties and the DB shall not be altered by reason of any arbitration being conducted during the progress of

the Works.

30.6 Failure to Comply with Dispute Board's Decision

In the event that a Party fails to comply with a DB decision which has become final and binding, then the other Party may, without prejudice to any other rights it may have, refer the failure itself to arbitration under GC Sub-Clause 30.5. GC Sub-Clauses 30.3 and 30.4 shall not apply to this reference.

30.7 Expiry of Dispute Board's Appointment

If a dispute arises between the Parties in connection with the performance of the Contract, and there is no DB in place, whether by reason of the expiry of the DB's appointment or otherwise:

- (a) GC Sub-Clauses 30.3 and 30.4 shall not apply, and
- (b) the dispute may be referred directly to arbitration under GC Sub-Clause 30.5.

Attached no. 1

NOM.CAP(M3)				DESIGN TEMP.(C°)						MATERIALS					
SERVICE				Operating temp.(C°)						Bottom : Annular					
Int. diam.(mm):				Design pressure: ATM						Shell PLT:					
Shell height(mm):				Operating pressure: ATM						Roof PLT:					
Spec. gravity:				Wind speed: Km\hr						Wind girder:					
Code : API 650 latest edition				Seismic Zone:						Structure:					
TANK DESIGN DATA				Corrosion allow.(mm)						Valves:					
Bottom				Bottom						PIPES:					
Bottom slope: %				Roof:						Flanges:					
Bottom PLT. THK:				Shell:						Stud bolts & Nuts:					NOTES:
Annular PLT. THK.				Pos.	Description	No.	Size	Note	POS.	Description	No	Size	Note		
Shell				Bottom						SHELL					
Course	THK.MM	HT.MM	WT.KG	1	D.OFF SUMP				21	MANHOLE				BIDDER SHALL FILL IN THE BLANKS	
1 ST.				2	INT.C.P.				22	MANHOLE					
2 ND.				3	EXT.C.P.				23	INLET\ OUT NZ.					
3 RD.				ROOF					24	MIXER NO					
4 TH.				4	MANHOLE				25	RECIRC. NOZ					
5 TH.				5	ROLL LADER				26	SPARE NOZ.					
6 TH.				6	GIDE POLE				27	SPARE NOZ.					
TOP ANGLE:				7	ROOF DRAIN				28	FLOW RET. NO.					
TOP WIND GIRDER:				8	EMERG. DRAIN				29	ROOF DR. NO.					
SEC.WIND GIRDER :				9	RIM VENT NO.				30	DRAW OFF NOZ.					
SEC.WIND GIRDER:				10	AUTO BI. VENT				31	SAMPLING NOZ.					
ROOF				11	G. HATCH NO.				32	SWITCH L.NOZ.					
ROOF TYPE:				12	GROUDING				33	TEMP. IND. NOZ.					
PLT.THK.				FITTINGS & INSTRUMENT.					34	CL. OUT DOOR					
PRIM SEAL TYPE				13	LIGHTING				35	TOP PLATFORM					
SECO. SEAL TYPE				14	THERMOMETER				36	EX.INC.LADDER					
WEIGHT				15	BREATH.VALVE				37						
BOTTOM TOT.WT.(T):				16	FLAME ARRES.				38	EARTH LUGS					
SHELL TOT.WT.(T):				17	SIDE MIXER				FIRE FIGTING SYST.						
ROOF TOT.WT.(T):				18	MECH.L.I.ND				39	FOAM SYSTEM				PROJECT NO.:	
TANK ACCESS. WT.(T):				19	AUT.L.I.ND				40	WATER COOLING SYSTEM				DATA SHEET NO.:	
TANK TOT. WT.(T)				20	LEVEL SWITCH				41	RIMSEAL FIRE PROT. SYST.				DATE:	

Attached no. 2

Cru de oil

Sample source:

Sample date: JULY / 2013

Sample time:

item	Test	Result
1	Density at 15 °C g / cm ³	0.8545
2	API	33.99
3	Sulphur Content WT%	2.2
4	Water and sediment vol %	0.1
5	Water content vol %	Nil
6	Salt content ppm as NaCl	82.27 ≈28.8 Lb / 1000 brl
7	Kin.Vis. at 40 °C cst	6.0
8	H ₂ S ppm	-
9	Pour point °C	< - 30
10	Carbon residue (conrd) WT%	4.1
11	Reaid vapor pressure Kg/CM ²	-
12	Asphaltenes wt%	1.3
13	Ash content wt%	0.008
14	Distillation	
	IBP °C	46
	Recovery @ 50%ml	0.3
	75%ml	3
	100%ml	8
	125%ml	13
	150%ml	18
	175%ml	23
	200%ml	28
	225%ml	33
	250%ml	37
	275%ml	40
	300%ml	45
	Total distillation vol %	47

Research and quality control department

PRODUCT: GAS OIL CERTIFICATE

Tank NO. :

DATE: JULY – 2013

DATCH NO.

TESTS	RESULTS	Marketing Specifications
Density at 15 °C g / cm ³	0.8175	0.85
API Gravity at 15.6°C	41.50	
Viscosity at 40 °C cst	2.19	5.6 max
Flash point (P.M) °C	62	54 min
Pour point ,°C	-9	-9 max
Sulphur content , %wt	0.83	1.0 max
Carbon residue(rams) (10% ras)	0.13	0.2 max
Diesel index	65.97	55 min
Cetane index	55	53 min
Calorific value kcal /kg (gross) EST	10928	10800
Distilled at 350 °C %V.	99	85 min
Colour ASTM	0.5	

Attached no.4

;

South Refineries Company**Research and quality control department****PRODCT: Kerosine Certificate****Tank NO. :****DATE: JULY - 2013**

TESTS	RESULTS	Marketing Specifications
Density at 15 °C g / cm ³	0.7795	0.801
API Gravity at 15.6°C	49.96	
Colour (Saybolt)	+26	+25 min
Flash point (Abel) °C	42	38.0 min
Sulphur content , %wt	0.09	0.2 max
Smoke point , mm	25	25 min
Char value , mg / kg	-	20 max
Aromatic content %	17	20 max
Distillation 185 °C	70	20 min
Final boiling point-°C	221	300 max
Calorific value kcal /kg (gross) EST	11125	10900
Doctor Test	Neg.	Neg.

attached: 5

Research and Quality Control Department

product : Heavy Naphtha

Date : 19/12/2010

TEST	RESULTS
SP. GR. 15.6 C	0.7048
SULFUR %	0.08
DOCTOR TEST	POSTIVE
DISTLATION IBP C	36
5%	44
10%	50
30%	74
50%	98
70%	120
90%	148
95%	164
END POINT	170

REQ. NO.(174/2014/E)

***TENDER INVITATION FOR DESIGN AND SUPPLYING STORAGE TANKS AND SUPPLYING
PUMPS (EP) PROJECT***

STORAGE TANK

SECTION ONE: - INSTRUCTION TO BIDDING

A. General

- 1. Scope of Bid**
 - 1.1 The Employer, South Refineries Company with a registered address at Shuaiba P.O. Box 84977, Basrah, Iraq on behalf of Iraqi Minister of Oil, issues these Bidding Documents for the design ,engineering and supplying of storage Tanks and supplying pumps Project (“EP as specified in Employer’s Requirements). The reference identification number of the contract is (.....).
- 2. Fraud and Corruption**
 - 2.1 It is SRC policy to require that Bidders and Contractors, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, SRC.will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question.
- 3. Eligible Bidders**
 - 3.1 A Bidder may be a single entity or any combination of such entities in the form of a joint venture or association (JVA)constituted *in to a legally enforceable JVA to inter in to an agreement or under un existing agreement* . In the case of a JVA:
 - (a) all partners to the JVA shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms; and
 - (b) the JVA shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the partners of the JVA during the bidding process, and in the event the JVA is awarded the Contract, during contract execution.
 - 3.2 A Bidder and all partners constituting the Bidder shall be from an eligible source country accepted to Iraq
 - 3.3 A Bidder and all partners constituting the Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified.
 - 3.4 A Bidder shall submit only one bid in the same bidding process, either individually as a Bidder or as a partner of a JVA. A Bidder who submits or participates in, more than one bid will cause all of the proposals in

which the Bidder has participated to be disqualified. No Bidder can be a subcontractor while submitting a bid individually or as a partner of a JVA in the same bidding process. A Bidder, if acting in the capacity of subcontractor in any bid, may participate in more than one bid, but only in that capacity.

4. Eligible EP Services

- 4.1 The EP Services to be supplied under the Contract shall have their origin in eligible source countries accepted to Iraq and all expenditures under the Contract will be limited to such EP Services.

B. Contents of Bidding Documents

5. Sections of Bidding Documents

- 5.1 The Bidding Documents consists of the following sections:

Section one :- instruction to bidder (ITB)

Section two :- Bidding & contractor forms

Section three:- Employer's Requirements

1- Contractor's Scope of work

2- Technical Requirements

Section four :- conditions of contract

- 5.2 The Employer is not responsible for the completeness of the Bidding Documents and its addenda, if they were not obtained directly from the source stated by the Employer in the Invitation for Bids.

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

5.4 Examination of Enquiry Package and Explanation to Bidders

The Bidder is responsible for examining with appropriate care the complete ITB package including all Bid bulletins and is also responsible for informing itself with respect to all conditions which might in any way affect the cost or the performance of the Work. Failure to do so will be at the sole risk of the Bidder and no relief can be given for error or omission by the Bidder.

Should the Bidder find discrepancies in or omissions from the

ITB package or should their intent or meaning appear unclear or ambiguous or should any other question arise relative to the ITB package, the Bidder must notify the Employer of such finding in writing

6. Clarification of Bidding Documents, Site Visit, Pre-Bid Meeting

- 6.1 A prospective Bidder requiring any clarification of the Bidding Documents shall contact the Employer in writing at the Employer's address at Shuaiba P.O. Box 84977, Basrah, Iraq or raise his enquiries during the pre-bid meeting if provided for in accordance with ITB 6.0. The Employer will respond to any request for clarification, provided that such request is received no later than twenty one (21) days prior to the deadline for submission of bids. . Should the Employer deem it necessary to amend the Bidding Documents as a result of a request for clarification, it shall do so following the procedure under ITB 7 and ITB 19.
- 6.2 The Bidder's designated representative is invited to attend a pre-bid meeting to be held at (>>>>) on ((>>>>)). The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 6.3 The Bidder is requested, as far as possible, to submit any questions in writing, to reach the Employer not later than one (1) week before the meeting.
- 6.4 Minutes of the pre-bid meeting, including the text of the questions raised without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Bidding Documents in accordance to ITB 5.2. Any modification to the Bidding Documents that may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to ITB 7 and not through the minutes of the pre-bid meeting.
- 6.5 Nonattendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.

7. Amendment of Bidding Documents

- 7.1 At any time prior to the deadline for submission of bids, the Employer may amend the Bidding Documents by issuing addenda.
- 7.2 Any addendum issued shall be part of the Bidding Documents and shall be communicated in writing to all who have obtained the Bidding Documents from the Employer in accordance to ITB 5.2.
- 7.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may, at its discretion, extend the deadline for the submission of bids pursuant to ITB 19.2.

C. Preparation of Bids

- 8. Cost of Bidding** 8.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
- 9. Language of Bid** 9.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in the English language. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the English language, in which case, for purposes of interpretation of the Bid, such translation shall govern.
- 10. Documents Comprising the Bid** 10.1 The Bid submitted by the Bidder shall comprise the following:
- (a) Letter of Bid.
 - (b) completed schedules as required, including Price Schedules in accordance with ITB 11,13.
 - (c) Bid Security in accordance with ITB 16.
 - (d) alternative bids, if permissible in accordance with ITB 12.
 - (f) written confirmation authorizing the signatory of the Bid to commit the Bidder in accordance with ITB 17.2.
 - (i) documentary evidence established that the EP Services offered by the Bidder conform to the Bidding Documents;
 - (j) in the case of a bid submitted by a JVA, JVA agreement, or letter of intent to enter into a JVA including a draft agreement, indicating at least the parts of the EP to be executed by the respective partners;
 - (k) list of subcontractors.
 - (l) any other document requested in Bidding Documents.
- 11. Letter of Bid and Schedules** 11.1 The Bidder shall complete the Letter of Bid, including the appropriate Price Schedules using the attached Form.
- 12. Alternative Bids** 12.1 The alternative bids for the Time Schedule are accepted. The time Schedule presented in (six months) is the Employer's estimate for referential purpose. Bidder is requested to propose possible Time Schedule as an alternative to the Time Schedule in (one months).
- 13. Bid Prices and Discounts** 13.1 Bidders shall quote for the entire EP Services on a "single responsibility" basis such that the total bid price covers all the Contractor's obligations mentioned in or to be reasonably inferred from the Bidding Documents in respect of the design, manufacture, including procurement and subcontracting (if any), delivery.
- 13.2 Bidders are required to quote the price for the commercial,

contractual and technical obligations outlined in the Bidding Documents.

13.3 Bidders shall give a breakdown of the prices in the manner and detail called for in the Price Schedules as mentioned in section 2

13.4 The prices quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.

13.5 Bidders wishing to offer any unconditional discount shall specify in their Letter of Bid the offered discounts and the manner in which price discounts will apply.

14. Currencies of Bid and Payment

14.1 The currency of the bid and the currency of payments shall be basically in USD \$ or Euro.

14.2 Bidders may be required by the Employer to justify, to the Employer's satisfaction, their local and foreign currency requirements.

15. Period of Validity of Bids

15.1 Bids shall remain valid for the period of one hundred eighty days (180 days) after the bid submission deadline date prescribed by the Employer. A bid valid for a shorter period shall be rejected by the Employer as non-responsive.

15.2 In exceptional circumstances, prior to the expiration of the bid validity period, the Employer may request Bidders to extend the period of validity of their bids. The request and the responses shall be made in writing. If a Bid Security is requested in accordance with ITB 16, the Bidder granting the request shall also extend the Bid Security for twenty-eight (28) days beyond the deadline of the extended validity period.. A Bidder granting the request shall not be required or permitted to modify its bid.

16. Bid Security

16.1 The Bidder shall furnish a Bid Security as part of its bid in **1%** of the bid amount

16.2 If a Bid Security is specified pursuant to ITB 16.1, the Bid Security shall be an unconditional guarantee issued by Trade Bank of Iraq. The Bid Security shall be submitted either using the attached Bid Security Form, or in another substantially similar format approved by the Employer prior to bid submission. In either case, the form must include the complete name of the Bidder. The Bid Security shall be valid for twenty-eight (28) days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 15.2.

16.3 If a Bid Security is specified pursuant to ITB 16.1, any bid not accompanied by a substantially responsive Bid Security shall be rejected by the Employer as non-responsive.

16.4 If a Bid Security is specified pursuant to ITB 16.1, the Bid Security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's furnishing of the Performance Security pursuant to ITB 31.

16.5 The Bid Security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required Performance Security.

16.6 The Bid Security may be forfeited:

(a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid or

(b) if the successful Bidder fails to:

(i) furnish a Performance Security in accordance with ITB 30.

(ii) *sign the Contract in accordance with ITB 31*

16.7 The Bid Security of a JVA shall be in the name of the JVA that submits the bid. , the Bid Security shall be in the names of all future partners referred to in ITB 3.1.

17. Format and Signing of Bid

17.1 The Bidder shall prepare one original of the documents comprising the bid as described in ITB 10 and clearly mark it "ORIGINAL." In addition, the Bidder shall submit three (3) copies of the bid and clearly mark them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail.

17.2 Per each original and copy, the Bidder shall prepare the bid in two (2) separate volumes such as "Technical Proposal" and "Commercial Bid" with following contents:

(a) Technical Proposal shall include the following documents;

- Copy of Letter of Bid by concealed prices indication

- Copy of Bid Security

Note: When the Bid Security is issued by Trade Bank of Iraq (TBI), a copy of Bid Security can be filed in the Technical Proposal, since an original shall be delivered to the Employer directly by TBI at the time of TBI 's acceptance of the request from Bidders' bank to issue such Bid Security.

- Power of Attorney

- Deviations (if any) (without prices)

- Technical Proposal Scheduled

(b) Commercial Bid shall include the following documents. _____

- Original Letter of Bid
- Price Schedules
- Deviations (if any) (with prices)

17.3 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by legal representative of the Bidder or duly authorized person with the legalized power of attorney and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid where entries or amendments have been made shall be signed or initialed by the person signing the bid.

17.4 A bid submitted by a JVA shall comply with the following requirements:

- (a) Be signed so as to be legally binding on all partners; and
- (b) Include the Representative's authorization referred to in ITB 3.1 (b), consisting of a power of attorney signed by those legally authorized to sign on behalf of the JVA.

17.5 Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the bid.

D. Submission and Opening of Bids

18. Submission, Sealing and Marking of Bids

18.1 Bidders shall enclose the original and each copy of the bid, including alternative bids, if permitted in accordance with ITB 12, in separate sealed envelopes, duly marking the envelopes as "TECHNICAL PROPOSAL", "COMMERCIAL BID", "ORIGINAL," "ALTERNATIVE" and "COPY." These envelopes containing the original and the copies shall then be enclosed in one single envelope. The divisions into suitable volume in one envelop are acceptable depending on its volume, but each envelop should be clearly marked in its series.

18.2 The inner and outer envelopes shall:

- (a) bear the name and address of the Bidder;
- (b) be addressed to the Employer in accordance with ITB 19.1;
- (c) bear the specific reference identification number of this bidding process,
- (d) bear a warning not to open before the time and date for bid

opening.

18.3 If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the bid.

19. Deadline for Submission of Bids

19.1 Bids must be received by the Employer at the address and no later than the date and time mentioned below;

Address:

Date: \ \ 2014

Time: 12.00 pm

19.2 The Employer may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Documents in accordance with ITB 7, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

20. Late Bids

20.1 The Employer shall not consider any bid that arrives after the deadline for submission of bids, in accordance with ITB 19. Any bid received by the Employer after the deadline for submission of bids shall be declared late, rejected, and returned unopened to the Bidder.

21. Bid Opening

21.1 The Employer shall open the bids in public, in the presence of Bidders' designated representatives and anyone who choose to attend, and at the address, date and time mentioned below;

Address:

Date:

Time:

Commercial Bids of the Bidders who have passed the Technical Evaluation, , will be opened soon after the Technical Evaluation and the exact place of bid opening and time will be advised later.

21.2 All other envelopes shall be opened one at a time, reading out: the name of the Bidder and indicating whether there is a modification; the presence or absence of a Bid Security, and any other details as the Employer may consider appropriate. No bid shall be rejected at bid opening except for late bids, in accordance with ITB 20.1.

21.3 The Employer shall prepare a record of the bid opening that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, or modification; and the presence or absence of a Bid Security. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of

the record shall be distributed to all Bidders.

21.4 The bid opening of Commercial Bids shall be done as same manners described in ITB 21.2and 21.3, reading out the name of the Bidders and Bid Price(s) including any discounts and record and to be distributed to all attended Bidders.

E. Evaluation and Comparison of Bids

22. Confidentiality

22.1 Information relating to the evaluation of bids and recommendation of Contract award shall not be disclosed to Bidders or any other persons not officially concerned with such process until information on Contract award is communicated to all Bidders.

22.2 Any attempt by a Bidder to influence the Employer in the evaluation of the bids or Contract award decisions may result in the rejection of its bid.

22.3 Notwithstanding ITB 22.2, from the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it should do so in writing.

23. Clarification of Bids

23.1 To assist in the examination, evaluation, and comparison of the bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change in the prices or substance of the bid shall be sought, offered, or permitted, except to confirm the correction of arithmetical errors discovered by the Employer in the evaluation of the bids, in accordance with ITB 25.

23.2 If a Bidder does not provide clarifications of its bid by the date and time set in the Employer's request for clarification, its bid may be rejected.

24. Determination of Responsiveness

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

24.2 The Employer shall examine the technical aspects of the bid in particular, to confirm that all requirements of , technical Requirements have been met without any material deviation, reservation, or omission.

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

25. Correction of Arithmetical Errors

25.1 Provided that the bid is substantially responsive, the Employer shall correct arithmetical errors on the following basis:

(a) where there are errors between the total of the amounts given under the column for the price breakdown and the amount given under the

Total Price, the former shall prevail and the latter will be corrected accordingly;

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

25.2 If the Bidder does not accept the correction of errors, its bid shall be declared non-responsive.

26. Conversion to Single Currency

26.1 For evaluation and comparison purposes, the currency (ies) of the bid shall be converted into a single currency in USD \$ with the exchange rate issued by the Central Bank of Iraq (CBI).

27. Employer's Right to Accept Any Bid, and to Reject Any or All Bids(Bid Requirements)

27.1 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to Contract award, without thereby incurring any liability to Bidders. In case of annulment, all bids submitted and specifically, Bid Securities, shall be promptly returned to the Bidders.

27.2 Bid Conditions and Rejection of Bid

Employer has sole right to select or reject any Bid. Employer is not bound to award the Contract to any Bidder or the lowest priced Bid resulting from this ITB.

Bidder should make every effort during the tendering period to seek clarifications from Employer on any matters which are not clear and which could give rise to Bid.

Bidder accepts that Employer's decision in selection of the successful Bidder shall be final. Employer is not obliged to provide an explanation of the reason for Employer's selection decision or enter into any correspondence with unsuccessful Bidders.

Employer shall have the sole right to allow or refuse any irregularities in any Bid or any deviation from the requirements of the ITB. Employer shall have no obligation to review a non-compliant Bid.

The acceptance by Employer of the delivery of a Bid, and the opening of a Bid, does not preclude subsequent rejection of such Bid by Employer in the event it is found on detailed review to be non-compliant with the ITB.

F. Award of Contract

28. Award Criteria

28.1 Subject to ITB 27.1, the Employer shall award the Contract to the Bidder whose offer has been determined to be the first successful Bidder

lowest and is substantially responsive to the Bidding Documents, provided further that the Bidder is determined to be eligible and qualified to perform the Contract satisfactorily.

29. Notification of Award

29.1 Prior to the expiration of the period of bid validity, the Employer shall notify the successful Bidder, in writing, that its bid has been accepted.

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

29.3 Contract Documents

The Contract documents to be executed by Employer and the selected Bidder will comprise:

Conditions of Contract

Commercial Attachments and schedule a

Employer's Requirements

30. Performance Security

30.1 Within twenty-eight (28) days of the receipt of notification of award from the Employer, the successful Bidder shall furnish the Performance Security, using for that purpose the attached Performance Security, or another form acceptable to the Employer. If the Performance Security furnished by the successful Bidder is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder to be acceptable to the Employer. A foreign institution providing a Performance Security shall have a correspondent financial institution located in the Employer's Country.

30.2 Failure of the successful Bidder to submit the above-mentioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security. In that event the Employer may award the Contract to the next successful Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily.

31. Signing of Contract

31.1 Within twenty-eight (28) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.

32. Depts.

Debts due to first party will be deduct according to the law of governmental debts obtainment no 56 of 1977 or by any other alternative law

33. Penalties

Contractor has to pay Penalties for each delay according to the following equation which should not exceed 10 % of the total amount of the contract (total amount of the contract/delivery period /by day X10%= penalty per

day. Before the penalty reach the 10 % Total amount of the contract and when the delayed period reach 25 % of the contract period plus all given period the client has the right to cancel the contract or withdrew the work and the contract will be fulfilled on contractor amount and the contractor shall be bear all financial consequence arising from without any need for notification or warning or any judgment

When the bidder purchase the bid , after termination decide to execute any part of contractor obligation another party , the rate of the administrative charge should not exceed 20 % of the actual cost of executing such obligation

34. Administration

Charge

Which is equal to 0.002 of the total contract amount of the contract should be borne by the contractor

35. Stamp Fee

SECTION TWO :- BIDDING & CONTRACT FORMS

Attachment No.1-Letter of Bid

Date: _____

Reference ID No.: _____

To: _____

We, the undersigned, declare that:

(a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) 7;

(b) We offer to *[insert the services that apply, i.e., design, manufacture, test, deliver, install, precommission and commission]*, in conformity with the Bidding Documents, the following facilities: *[insert a brief description of the Plant and Services]*

(c) The price of our Bid, excluding any discounts offered in item (d) below is the sum of: *[insert amount in words] (amount in figures)*;

(d) The discounts offered and the methodology for their application are: *[insert any discounts offered and the methodology for their application]*;

(e) Our bid shall be valid for a period of *[insert number of days in words and figures]* days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(f) If our bid is accepted, we commit to obtain a Performance Security in accordance with the Bidding Documents;

(g) We are not submitting more than one bid in this bidding process as a Bidder, either individually or as a partner in a joint venture, in accordance with ITB3.4, except for alternative offers permitted under ITB 12;

(h) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and

(i) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

Name _____ In the capacity of _____

Signed _____

Duly authorized to sign the bid for and on behalf of _____

Dated on _____ day of _____, _____

Attachment No.2
Employer's requirements

Declaration of Endorsement of

We dedare that we have read carefully all of the Employer's Requirements Section III part of ITB and are satisfied with the quality, quantity and degree of detail of the Employer's Requirements

We confirm that the said the Employer's Requirements have been checked by ourselves and found clear of any errors, omissions, deficiencies, inaccuracies, contradictions, ambiguities and/or discrepancies of whatever nature.

However, in the event, any errors, omissions, deficiencies, inaccuracies, contradictions, ambiguities and/or discrepancies are found existing in the the Employer's Requirements , provision has been made in our Bid for rectification of any such errors, omissions, deficiencies, inaccuracies, contradictions, ambiguities and/or discrepancies whether or not these have been formally notified to the Employer during the bidding period. The Employer's decision shall be final and binding on the rectification of any such erros, omissions, deficiencies, inaccuracies, contradictions, ambiguities and/or discrepancies.

We confirm that, we therefore endorse the the Employer's Requirements and accept full technical and commercial responsibility associated with the said the Employer's Requirements and thereby accept the same responsibility to the Employer in respect of them as if we had prepared such the Employer's Requirements ourselves.

We confirm that the said the Employer's Requirements documents of the Contract Form are perfectly suitable as a sound basis for submitting a lump sum bid against the subject bidding and for subsequent execution of the Work under the Agreement without recourse to a variation, and we commit ourselves not to question them at any time. We hereby waive any right of recourse, whatsoever, in respect thereof against the Employer.

Signature

Date

Signed by

In the capacity of

Attachments No.3

Schedules

1-Schedules of Rates and prices

Grand summary of price

Description	Price
	Total
1- Engineering	
2- Equipment & materials	
3- Training	
4- Other expences (third party inspection , insurances , others)	
Bid price total	

Schedule No.2 provisional sum	
Description	Price
	Total
Spare parts for two years operation	
Provisional sum	

Name of Bidder :

Signature of Bidder:

Schedule No.3

Spare parts for two years operation (As Provisional)

	Unit No.	Item No.	Spare parts Description	Quantity	Total price
				(1)	
Total					

Name of Bidder:

Signature of Bidder:

Schedule No.4

Training

	Description	Total
	Total	

Name of Bidder:

Signature of Bidder:

Schedule No.5

Equipment and Materials

	Total		
	Quantity m/ton	weight kg	Price
Equipment & material			
Pumps			
Piping materials			
Electrical material			
Instrument material			
Others			
Total			

Name of Bidder:

Signature of Bidder

Attachment No.4- Technical Proposal

Attachment No.5- Shipping Plan and Inland Transportatio

Attachment No.6- Form of Bid Security (Bank Guarantee)

Beneficiary: _____

Date: _____

BID GUARANTEE No.: _____

We have been informed that *[insert name of Bidder]* (hereinafter called “the Bidder”) has submitted to you its bid dated *[insert date]* (hereinafter called “the Bid”) for the execution of *[name of contract]*

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

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

(a) _____ has withdrawn its Bid during the period of bid validity specified by the Bidder in the Form of Bid; or

(b) _____ having been notified of the acceptance of its Bid by the Employer during the period of bid validity, (i) fails or refuses to execute the Contract Form, if required, or (ii) fails or refuses to furnish the Performance Security, in accordance with the Instructions to Bidders.

This guarantee will expire: (a) if the Bidder is the successful Bidder, upon our receipt of copies of the contract signed by the Bidder and the Performance Security issued to you upon the instruction of the Bidder; and (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy your notification to the Bidder of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of the Bidder’s bid.

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

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

Notification of Award - Letter of Acceptance

[on letterhead paper of the Employer]

[insert date]

To: *[insert name and address of the Contractor]*

This is to notify you that your Bid dated *[insert date]* for execution of the *[insert name of the contract and identification number]* for the Accepted Contract Amount of the equivalent of *[insert amount in numbers and words] [insert name of currency]*, as corrected and modified in accordance with the Instructions to Bidders and on the terms and conditions set forth in the Contract Agreement attached hereto, is hereby accepted by our Agency.

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose one of the Performance Security Forms included in section II to the Contract Agreement below.

Authorized Signature: _____

Name and Title of Signatory: _____

Name of Agency: _____

Attachment No.7-Contract Agreement

THIS AGREEMENT is made the (_____) day of (_____), (____),
BETWEEN

- (1) South Refineries Company on behalf of the Ministry of Oil of the Republic of Iraq, a corporation incorporated under the laws of the Republic +
- (2) of Iraq and having its principal place of business at Shuaiba, P.O. Box 84944, Basrah, Iraq (hereinafter called "the Employer"), and (2) *[insert name of Contractor]*, a corporation incorporated under the laws of and having its principal place of business at *[insert address of Contractor]* (hereinafter called "the Contractor").

WHEREAS the Employer desires to engage the Contractor to design, manufacture, test, deliver, certain Facilities ("the Facilities"), and the Contractor has agreed to such engagement upon and subject to the terms and conditions hereinafter appearing.

NOW IT IS HEREBY AGREED as follows:

Article 1. Contract Documents

1.1 Contract Documents (Reference GC Clause 2)

The following documents shall constitute the Contract between the Employer and the Contractor, and each shall be read and construed as an integral part of the Contract:

- (a) This Contract Agreement and the Appendices hereto
- (b) Letter of Bid and Price Schedules submitted by the Contractor
- (c) Particular Conditions (not applicable)
- (d) General Conditions (GC)
- (e) Specification
- (f) Drawings
- (g) Other completed bidding forms submitted with the Bid
- (h) Any other documents forming part of the Employer's Requirements

1.2 Order of Precedence (Reference GC Clause 2)

In the event of any ambiguity or conflict between the Contract Documents

listed above, the order of precedence shall be the order in which the Contract Documents are listed in Article 1.1 (Contract Documents) above.

**Article 2. Contract
Price and Terms
of Payment**

2.1 Contract Price (Reference GC Clause 10)

The Employer hereby agrees to pay to the Contractor the Contract Price in consideration of the performance by the Contractor of its obligations hereunder. The Contract Price shall be the aggregate of: *[insert amount in words]*, *[amount in figures]* as specified in Price Schedule No. (_____) (Grand Summary), or such other sums as may be determined in accordance with the terms and conditions of the Contract.

2.2 Terms of Payment (Reference GC Clause 11)

The terms and procedures of payment according to which the Employer will reimburse the Contractor (Terms and Procedures of Payment) are agreed between the parties.

The Employer may instruct its bank to issue an irrevocable confirmed documentary credit made available to the Contractor in a bank in the country of the Contractor.

In the event that the amount payable under Price Schedule No. 1 is adjusted in accordance with GC 10.2 or with any of the other terms of the Contract, the Employer shall arrange for the documentary credit to be amended accordingly.

**Article 3. Effective
Date**

3.1 Effective Date (Reference GC Clause 1)

The Effective Date from which the Time for Completion of the Facilities shall be counted is the date when all of the following conditions have been fulfilled:

- (a) This Contract Agreement has been duly executed for and on behalf of the Employer and the Contractor; and
- (b) The Contractor has submitted to the Employer the performance security and the advance payment guarantee; and
- (c) (d) The concurrences and/or registrations of the Contract shall be completed in accordance with the rules and regulations of the Republic of Iraq; and
- (e) The Contractor has been advised that the documentary credit referred to in Article 2.2 above has been issued in its favor; and
- (f) The Employer shall have issued a written Notice to Proceed to be sent by e-mail in PDF form to the Contractor.

Each party shall use its best efforts to fulfill those of the above conditions for which it is responsible as soon as practicable.

3.2 not Used

**Article 4. Communica-
tions**

4.1 The address of the Employer for notice purposes, pursuant to GC 4.1 is:

Attention : (_____)

Address: (_____)

E-mail: (_____)

Facsimile: (_____)

Phone: (_____)

4.2 The address of the Contractor for notice purposes, pursuant to GC 4.1 is:

Attention : (_____)

Address: (_____)

E-mail: (_____)

Facsimile: (_____)

Phone: (_____)

Article 5.

5.1 not Used Not Used

Article 6. Appendices

6.1 The formes and attached hereto shall be deemed to form an integral part of this Contract Agreement.

IN WITNESS WHEREOF the Employer and the Contractor have caused this Agreement to be duly executed by their duly authorized representatives the day and year first above written.

Signed by, for and on behalf of the Employer

[Signature]

[Title]

in the presence of _____

Signed by, for and on behalf of the Contracto

[Signature]

[Title]

in the presence of _____

Attachment-8- Performance Security Form – Bank Guarantee

[insert Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: *[insert name and address of Employer]*

Date: _____

PERFORMANCE GUARANTEE No.: _____

We have been informed that *[insert name of Contractor]* (hereinafter called "the Contractor") has entered into Contract No. *[insert reference number of the contract]* dated *[insert date of the contract]* with you, for the execution of *[insert name of contract and brief description of Facilities]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Contractor, we *[insert name of Bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[insert amount in figures ([amount in words])]*, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall be reduced by half upon our receipt of a copy of the Operational Acceptance Certificate

.

This guarantee shall expire no later than the earlier of:

(a) eighteen months after our receipt of:

(i) a copy of the Completion Certificate;

(b) the ____ day of ____, 2__.

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

[signature(s)]

Attachment-9- Bank Guarantee Form for Advance Payment

[insert Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: *[insert name and address of the Employer]*

Date: _____

ADVANCE PAYMENT GUARANTEE No.: _____

We have been informed that *[insert name of Contractor]* (hereinafter called "the Contractor") has entered into Contract No. *[insert reference number of the contract]* dated *[insert date of the contract]* with you, for the execution of *[insert name of contract and brief description of Facilities]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum of *[insert amount in figures]([amount in words])* is to be made against an advance payment guarantee.

At the request of the Contractor, we *[insert name of Bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[insert amount in figures]([amount in words])* upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than toward the execution of the Works.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above must have been received by the Contractor on his account number *[insert account number]* at *[insert name and address of Bank]*.

The maximum amount of this guarantee shall be progressively reduced in proportion to the value of each part-shipment or part-delivery of plant and equipment to the site, as indicated

in copies of the relevant shipping and delivery documents that shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of documentation indicating full repayment by the Contractor of the amount of the advance payment, or on the ____ day of _____, 2____, whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

[signature(s) name of bank or financial institution

Attachment-10- Form of Completion Certificate

Date: _____

Loan Agreement N°: _____

Reference ID N°: _____

To: _____

Ladies and/or Gentlemen,

Pursuant to GC Clause 17 (Completion of the Facilities) of the General Conditions of the Contract entered into between yourselves and the Employer dated _____, relating to the _____, we hereby notify you that the following part(s) of the Facilities was (were) complete on the date specified below, and that, in accordance with the terms of the Contract, the Employer hereby takes over the said part(s) of the Facilities, together with the responsibility for care and custody and the risk of loss thereof on the date mentioned below.

1. Description of the Facilities or part thereof: _____
2. Date of Completion: _____

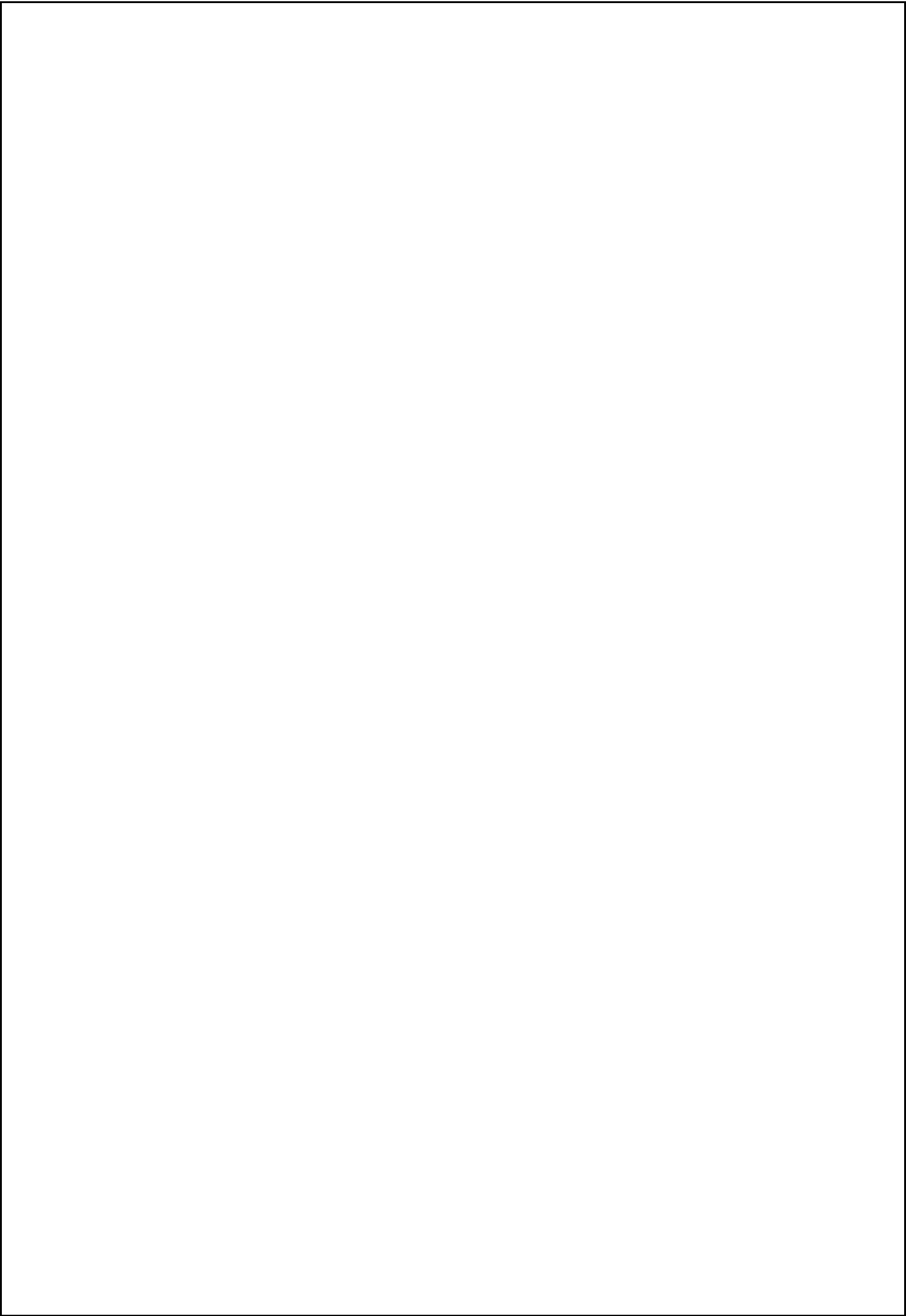
However, you are required to complete the outstanding items listed in the attachment hereto as soon as practicable.

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

Title

(employer)



SECTION THREE: - EMPLOYER REQUIERMENT

A- Contractor's scope of work and supply

1-Scope

This specification covers the minimum requirement for the design, fabrication , inspection , field erection testing of atmospheric , welded steel , above ground storage tanks, and supplying pumps .

- 1-1 bidder shall quote for the design , supply and delivery for all necessary materials and accessories required to tanks indicated in table (A) and pumps as specifications in table(B).
- 1-2 The successful bidder shall include in his scope of work a detailed list of material for each tank and pump separately.
- 1-3 The offer shall included all services required for the tanks including not limited to the verification of basic design given in the attached tank data sheets and detailes engineering .
- 1-4 Contractor should be responsible of overall basic design , complete detail engineering for all storage tanks requirements and interconnection piping , procurement (material and equipment supply)
- 1-5 A third party inspection agency shall be utilized to inspect material, equipments. test certificates and approval documents shall be signed by the said agency .All costs associated with third party inspection are to be included in contract price. Contract shall nominate at least three agencies for SRC approval.
- 1-6 Bidder shall submit a vendor list and country for each group of materials and equipments to SRC for approval.
- 1-7 Interconnection between tanks and existing units and tanks shall be included
- 1-8 Fire fighting and foam system shall be included.
- 1-9 Factory Acceptance Test (FAT).
- 1-10 Price list shall be include in commercial offer and unprice list in the technical offer.
- 1-11All equipment for tanks , pumps and accessories shall arrived to basrah site CIP
- 1-12Vendor's proposal shall include a completed data sheet for each tank.

2.0 DRAWINGS AND DOCUMENTS

The drawings and documents mentioned beneath are to be supplied in the number and copies and within the time periods established in the inquiry and purchase order.

Vendor to present, for comment, within the time periods established in the number and copies and within the time periods established in the inquiry and purchase order.

Vendor to present, for comment, within the time periods established in the purchase order, the following drawings complete with all fabrication details:

- a-All details calculations necessary for tank design .
- b-Dimensional drawing , showing the main dimensions of tank.
- c-Drawings of bottom layout .
- d- Shell layout .
- e-Roof drawing and roof structure.
- f-Drawings of accessories .
- g-Drawing of nozzles .
- h-Testing procedure.
- i-Stress relief treatment.
- j-Floating roof sealing system.
- k-Stairways.
- l-Loa diagram and other information required for tank foundation design.

The approval of any of the above mentioned documents shall not be construed as permission for deviation from code or specification requirements

3.0 TRANSPORTATION , SHIPMENT, PACKING AND IDENTIFICATION

A general transportation schedule shall be prepared by vendor and submitted to SRC for approval. Before shipment each package and container shall be properly marked .

Tanks, pumps and parts there of shall be properly protected . weather hoods shall be provided wherever practical. Tanks and parts there of shall be protected against atmospheric corrosion, entry of water and other foreign material shall be avoided . flanges shall be protected with wooden lids. Loose parts shall be packed in boxes.

Tanks and parts thereof that have been heat treated or are internally lined shall have the phrases below painted with easily readable letters .

“HEAT TREATED-DO NOT WELD”

“INTERNALLY LINED- DO NOT WELD

4.0 TANKS REQUIERMENTS

4-1 Design and supply storage tanks required as bellow completed fully prefabricated material ready for erection with all accessories needed for good and safety operation and all consumable needed (welding electrode & wire flux , gouging electrode , grinding stones, cutting stone and tools for erection).

Operatin g capacity m 3	Mixtur e	Flui d	Sp.g r	Inlet rate M3\h r	Outlet rate m3\h r	NO. OF TANK S	TYPE
30000	Yes	CRUDE OIL				3	FLOATIN G

4-2 Tanks Accessories

- **ROOF**

- 1- Roof manholes
- 2- Pontoon manholes
- 3- Emergency roof drain
- 4- Automatic bleeder vent
- 5- Deck manholes
- 6- Guide pole
- 7- Deck support
- 8- Rolling larder & ladder run way
- 9- Seal device :Mechanical seal with stainless steel sheet.
- 10- Deck Earth.
- 11- Platform.
- 12- Run Way.
- 13- Drain system for floating roof.

- **SHEEL**

- 1- Inlet Nozzle
- 2- Return Nozzle
- 3- Outlet Nozzle
- 4- Shell Manhole
- 5- Temp. Themocouple
- 6- Foam System according to NFPA standards (last addition)
- 7- Roff drain Nozzle
- 8- Stair Way
- 9- Earth connect device
- 10- Cathodes protection (as per attached specification)

- 11- Name plate
- 12- Lighting(as per attached specification)
- 13- Transfer line
- 14- Wind girder
- 15- Top angle
- 16- Cooling water system according to NFPA standards
- 17- Over Flow
- 18- Foam dams

4-3 Consumables.

Semi automatic welding wire with flux for bottom plates joint , other plates joints of the tank should be welded by electrode AWSE 7018, AWSE 60113 for pipes , gauging electrodes grinding stone , cutting stone) with 10% extra.

4-4 Control valves

Contractor shall supply For inlet and outlet motorize valves as bellow.

24 inch motorize valve (2) for each tanks

16 inch motorize valve (1) for each tanks

12 inch motorize valve (2) for each taanks

4-5 Valves: For all supplied nozzles according to API standard and ANSI B16.5

4-6 Tanks nozzle

ROOF NOZZLE

FUNCTION	Tank of crude	
	Size	NO.
Man way	30	3
Venting filter		
Sample	1.5	3
Level gauge		
Venting filter		
Level messurmerment		

SHELL NOZZLE:

FUNCTION	Tank of crude	
	Size	NO.
Inlet	16	2
Inlet	12	2
Outlet	24	2
Inlet heat steam		
Outlet steam cond.		
Water draw off	6	2
Draining	6	1
Roof water drain	8	1
Nozzle for mixer	24	3
Thermo well	2	1
Over flow		
Nozzle for extinguishing	6	2

Man way	30	3
Rectangular manhole		1
Welded on piece		

NOTE:-

Bidders shall fill in the blanks data sheet in attached No.(1)

2-5 General Requirements:

1- Vender shall be responsible for the following main activities:

- a) Basic and detail design.
- b) Preparation of bill of quantities and requisitions.
- c) Shop fabrication.
- d) Shop, testing and inspection certification.
- e) Equipment preparation and protection for transportation.
- f) Loading and transportation.

g) Supply of all documents related to the followings:

*Basic design

*Detail design

*Plot plans and Key plans.

*Support standard and location

*Shop inspection report.

*Shop testing report.

*Loading and transportation.

h) All documents related to calculations.

i) Supply of all documents related to the followings:

*Erection

*Testing

*Operation manuals

*Maintenance guides

*Preparation of bill of materials, and the supply of all consumable materials related to erection at site.

2- Activities indicated in above shall be documented and assumed official

after SRC approval.

3- Modification imposed by SRC on all above documents shall be accepted by vendor without any modification to contract original price when such modification are related to one or more of the reasons indicated below:

- *Modification in accordance with agreed Specification, Standard, or Codes and tender documents.

- *Modification needed to ease maintenance or operation.

- *Modification related to safety.

4- Additional (Specification, Standards, and Design Practices) required to cover all materials necessary for the project shall be submitted to SRC for approval.

5- Additional Codes or Specification of International nature shall be limited to the American code of practice such as (ASME, ANSI, API and ASTM).

6- All necessary Walkways, platforms are within the scope of supply.

7- All documents related to details design for,

- *tanks

- *Supports for piping.

- * Walkways and platforms.

- * Steel structures/shed.

- * pumps.

Shall be submitted to SRC for approval.

8- pumps shall be located under sheds

accordingly the following materials shall be within the scope of vendor supply.

- a) All necessary sheds and their supports.

- b) All necessary lifting equipments to lift and move heavy parts.

9 - If any divergence between the required specification & proposed. The contractor should follow more stringent specification provided the SRC approves.

B-TECHNICAL REQUIERMENT

1-PROCESS REQUIERMENT

*Large welded vertical above ground storage tanks for atmospheric or near atmospheric and pumps for crude oil which have specifications in Attached NO. 2, Unless otherwise specified tank height and diameter shall be proportioned for the most economical design, contractor shall indicate in his submittal data how required liquid capacity is calculated

* pumps for light product (kerosene, heavy Naphtha and Gasoil) which have specifications in attached NO. 3 , 4&5

1-1 BOTTOM

*All bottom plate shall have a minimum thickness of 6.3mm exclusive of any corrosion allowance.

*Lap joint shall not be allowed in bottom welded to tank shell , the prepheral ring on which shell plates shall be welded shall have a minimum of 750mm.

*The joint between inner plates with each other shall be of the overlapping type. Overlap shall not be less than five times the nominal plate thickness.

*The joint between the inner plates with those of the peripheral ring shall be of the overlapping type, overlap shall be not be less than 60mm.

*The plates of the peripheral ring shall be always jointed by butt joints, they may be single welded with backing strip, or welded.

*Welding sequence shall be made in order to minimize plate distiotion , the welding sequence plan shall submitted to SRC for review.

*Tank bottom shall be installed with a 1:120 minimum slope from coenter to periphery, unless otherwise specified on the tank data sheet.

*Before the welding work is started, overlapping limits shall be marked to simplify the inspection work.

*Wear plates, 360mm diameter by 12mm thick shall be supplied and shall be continuously seal-welded to bottom plates under all roof legs and supports that contact the tank bottom.

*Tanks which are intended to be set concrete ring wall foundation shall be provide with a drip angle around the tank base ring.

*All tanks shall have draw-off sump with associated internal piping and shell nozzle. Sumps shall be near the periphery of the tank and close to manhole.

*A bitumen's paints coal-tar base type shall be applied on the outer surface of the bottom plates.

*Metal surface shall be carefully cleaned before paint application . coal-tar film thickness shall not less than 2mm.

1-2 SHELL

Minimum thickness of tank shell to be calculated accordance with API standard 650.

Corrosion allowance shall be as specified in tank data sheet.

Minimum thickness for shop-assembled tank shell should be according to API standard 650.....

Reinforcing pads shall be welded to the shell for all pipe supports, gauges and sample lines. All attachment to the shell, such as roof external appurtenances which include reinforcing pads , shall seal-welded all around . seal welding is required on the underside of fixed roof only if the roof is to be internally lined or painted.

Reinforcing pads and all other external attachment pads shall have rounded corners of minimum 50mm radius.

Nozzle reinforcing pads and pads that cross shell seams shall be provided with a 1¼ inch tapped hole for a compressed air-Soapsuds test of sealing welds.

All horizontal butt joints have complete penetration and fusion. Square groove btt joints shall be permitted to a maximum plate thickness of 7mm. except that this may be increased to 9mm. plate thickness if submerged arc welding process is used or if one side of the weld is background to form a grove.

Automatic welding of vertical joints is not permitted unless specifically approved.

Submittals for approval by SRC shall include all necessary information and previous experience.

1-3 ROOF

Coon roof tank of large diameter up to 6 meters shall be provide with roof supporting structure , this structure may use solid Web beam of stresses columns may or may not use. Roof shall be designed with a minimum slop of 1:16 from center to periphery, This minimum value shall be used whenever possible . Roof with slopes steeper than 1';16 shall be provided with protective handrail around the entire circumference. Cone roofs shall have a maximum slope of 75mm in 300mm(3 inches in one root).

Floating roof shall be design in accordance with appendix c of API 650 .

They shall be of the multiple completely type, low deck pontoon or double deck as noted.

Pontoon bulkhead shall be completely welded for liquid tightness. Roof shall be fabricated with 4.76 mm(3\16) inch plates. Welded joints shall be of the overlap type , Roof surface shall be free of concavities to ensure complete rainwater runoff.

Pontoon type floating roof 35 meter diameter or larger shall have the central deck properly reinforced to avoid buckling or distortion of the steel plates.

Floating roofs shall have a performance guarantee against specific gravity variations of the stored liquid up to (- 10%) , Unless otherwise mentioned on the tank data sheet.
Contractor shall inform of the design criteria for the design of the roof supporting legs .
Supporting legs shall be provided with base plates, thickness shall be no less than 10mm.
Floating roof shall not sink or in any other way be render inoperative in either of the following conditions concerning floating requirements.

(A) First condition :- Roof flooded with 250 mm of rain water while floating on a liquid with specific gravity equal 0.7

(B) Second condition :- Two adjacent compartments flooded and central deck flooded as ruptured , while floating on a liquid with specific gravity equal to 0.7 , contractor shall be inform and analytically demodulate which are the most critical compartments with respect to floatability.

Floating roof drawing shall indicate floating level for actual operation and hydrostatic conditions.

Pantograph-type seal shoes shall be eclectically bonded to the roof with stainless steel shunts at intervals of 3 meter , maximum on the tank circumference in tanks to be protected with non-conductive internal shell coating the e roof shall be bonded to the shell by a suspended cable arrangement. Roof rotation shall be prevented by means of vertical guide pipe. If specified this pipe shall be arranged to permit sampling through it.

Floating Roof drawing shall indicate floating levels for actual operation and hydrostats conditions.

Floating roof drains shall be manufactured with steel pipe with swing joints or flexible pipe with exterior cover suitable for hydrocarbon service , exact type shall be indicated on job specification.

The flexible pipe shall be oriented to prevent interference with roof support legs or other internals. A check valve shall be provide between roof rain water collection and drain piping. This valve shall be located so as to allow easy access and maintenance .Tanks up to 36 meter diameter shall be provided with 4 inch minimum diameter drain line. Larger tank drain line shall be at least 6 inch diameter . Drain sizing shall take into consideration the maximum local rainfall . Each of the proposed drains shall be able to drain all roof water with the other drains inoperative calculation sheet regarding floating roofs draining system design shall be submitted to SRC for approval.

Seals for floating shall be as specified in tank data sheet.

Non- metallic type seals when specified shall be equipped with metallic weather hood unless secondary seals are provide.

Seals shall be of the foam-filled type , non – metallic seal material shall be satisfactory for use with petroleum products with aromatic content up to 75%.

Seal material shall have a flame spread rating of not more than 35 in accordance with ASTM E162.

If metallic seal is specified, the seal material dosing the rim space between the metal shoe and the floating roof shall be a vapor-tight, weatherproof, and fire resistance. The fabric seal shall be durable in its environment and shall not contaminate, discolor or be affected by the liquid stored.

The metal shoes employed in the sealing. Device between the roof and the tank shell shall be ASTM A240 Type 304 stainless steel, 1.6 mm thickness minimum.

The followings are specific requirement for secondary seals:-

(A) Seal material shall be compatible with tank product.

(B) The seal design shall have been tested by the vendor or an independent laboratory. Result shall be submitted to SRC with the vendor's bid.

(C) The seal shall be designed for a temperature rang from zero to 80°C.

(D) The seal shall be designed or tested for at least 2000 cycles of tank filling.

(E) The seal shall be inspection of the primary seal without removal.

*Roof plate shall be joined by mean of single welded lap joints, overlap shall be no less than the larger value of the following

(A) Five times the nominal thickness of the plates being joined

(B) 25mm (10 inch)

* Overlap shall be oriented so as to provide adequate rainwater runoff.

*Roof to shell weld joints shall be designed so that in case of excessive internal pressure they will fail before failure occurs in the tank shell to bottom joint.

*Welding sequence shall be made in order to minimize plate distortion. Welding sequence shall submitted to SRC for review.

*Bloted joints of roof structure shall be designed so as to allow axial expansion of beams, and shall also be cabable of absorbing movement caused by foundation settlement.

1-4 ACCESSORIES

(A) NOZZLES

Unless otherwise mentioned flanges shall be ANSI B16.5 slip-on type. Bolt holes shall straddle tank center line.

*All shell nozzles 2 inch diameter and larger shall be provided with reinforcing plates the dimension of which shall be as specified in API650.

*All bottom nozzles shall be provided with reinforcing plates the dimensions of which shall be as specified in API 650.

*Coupling and half couplings shall be made of forged carbon steel, 3000-ib class.

*The neck of nozzle used as mixer supports shall be reinforced by gusset plates.

*Cleanout fittings shall be flush. Type; dimensions shall be as specified by API 650.

*Gauge hatches shall be made of non- sparking material with hinged gas tight lids.

*Flanges for –non – process piping, such as man ways , may be light weight plate flanges. Carbon steel forgings shall meet the requirement of API standard 650.

*Manholes cover shall be fixed to a davit when the weight exceeds 50 kg.

Nozzle lengths shall be long enough to permit removal of a standard length bolt from the back side of the flange and clear the –tank shell.

*Nozzles welded to tank shells or roofs shall have full penetration welds.

*For nozzles in the first course of field- erected API 650 tanks , a stress analysis of the tank to piping intersection shall be performed to assure adequacy of the design . the analysis shall be submitted to SRC for review .

*Flush – type cleanout doors are required to facilitate cleaning. A 900 mm.by 1200 mm cleanout door shall be used on all tanks having a capacity of 1600 cu.m or greater and storing diesel ,crude, or fuels. The cleanout door shall be used on all tank (regardless of product stored) with diameters above 30m.

Where possible cleanout doors and bottom cleanouts shall be located transverse to the prevailing winds and easily accessible from the roadway .

(B) ADJUSTABLE (ROLLING) LADDER

Floating roofs shall be supplied with one inside Rolling ladder and runway. The ladder shall be designed to connect with the top stair platform. The lower end of the ladder shall have wheels of such size as to prevent binding in position of the roof. The wheels shall have bearings that do not require lubrication after erection, and which will not oxidize or rust in a corrosive atmosphere.

(C) SPIRAL STAIRWAY AND HANDRAILS

Unless otherwise specified in tank data sheet, all tank shall be equipped with an external stairway and handrail stairway angle with the horizontal shall be 45 degree. Non-slip material shall be used for the treads.

In insulated tank stairway should be provided with a handrail on both sides, with sufficient available space to permit the shell of the tank to be insulated.

Hand rails shall be provided on the top wind girder and tank roof the entire circumference. external carbon steel attachments, such as brackets, shall be seal- welded at all joining edges in addition to strength welds.

External attachments which will retain rainwater shall not be used.

Stairways shall be located on the upwind side of the tank when possible .

(D) WIND GIRDERS

Floating – roof tank shall be provided with ring type wind girders. This girder shall be placed 1.0 m below the reinforcing shell top angle.

Unless otherwise specified width of wind girder shall not be less than 600mm. and shall be provided with handrail.

(E) GROUDING

Each tank shall be furnished with electrical grounding plate(s) at least 12 * 75 * 75 mm. of 300 series stainless steel welded perpendicular to the tank near grade.

Grounding details shall be clearly shown on tank drawings. Number of grounding plates shall be as indicated on tank data sheet.

(F) MECHANICAL REQUIRMENTS FOR FIRE PROTECTION SYSTEM

*The distribution and riser piping for the fire protection system shall be in accordance with project piping material specification.

*The splash boards shall be mounted to top of the tank shell. The height of the splash board shall be such that discharge port of the foam maker is above the roof and seal when the roof is at its highest position.

*The splash board shall be fabricated of steel plate with steel angle members for structural stiffening.

*The splash board shall be adequately braced to the shell and wind grader, so as to prevent deflection and movement under design wind loading.

*The bottom edge of the splash board shall mate smoothly with the inside of the tank shell such that the foam will flow evenly to the shell.

*Foam dam shall be of a height such that the top of the dam extends at least 50mm above the top of the weather seal, but not shall be less than 600 mm high. The dam shall be

*provide with drain slots at the bottom, evenly spaced along the circumference.

*The dam shall be fabricated of steel and shall be adequately braced to hold the hydraulic head generated by the foam.

1.5 MATERIALS SPECIFICATIONS

Materials shall comply with the requirements of API 650, unless equivalent materials are proposed by the vendor and approved by SRC. Such material shall comply as a minimum with ASTM specification, chemical and mechanical properties shall be furnished by the vendor for evaluation.

Plate material for shell, roof, bottom shall be A-283 Gr C, material of reinforcing plates to be the same as for base plates.

Structural shape, shall be A-36 OR A-53.

Forging, including lap-joint flanges, shall be A-181, or A-105.

Structural shape, shall be A-53.

Forging, including lap-joint flanges, shall be A-181, or A-105.

Piping shall be seamless carbon steel A-53, A-106, Gr A or B, or API 5L.

External bolting for man ways, flanges, and connections shall be stud bolts and hex nuts.

Material grade shall be not less than A-193 Gr B7 for bolts and A-194 Gr 2H for nuts.

Tank internals made of carbon steel that are joined by bolting shall use A-193 Gr B6 bolts and A-194 Gr 6 (AISI 416) nuts.

Internal bolting for connecting parts in areas of corrosion shall be 18-8 stainless steel.

Gaskets for raised or flat face pressure connections, handholds, shall be compressed asbestos.

Man ways and end flanges gaskets shall be compressed asbestos, 1.6mm thick
Gasket shall seat against surface finishes of 125 AARH minimum to 200 AARH
maximum (arithmetic average roughness height).

At least two sets of gaskets to be supplied one for the hydrostatic test and
other, Un-used, should be supplied separately with suitable protection .

Rimmed and capped steels are acceptable only for low stressed components
such as hand rails, but are not permitted for roof (fixed or floating), bottom and
shell plates.

2-MECHANICAL REQUIERMENT

2.1. General

This mechanical requirements covers the minimum requirements for design

Elaboration materials, procurement, construction, Pipeline and all related accessories shall be engineering and procurement (EP) .

2.2 Summary

The scope of Bidder's mechanical works covers the followings:

- *Complete design and engineering of the project.
- *Procurement and supply of all equipment, materials, and relevant spare parts, including shop inspection and tests.
- *Mechanical manuals, Operating manuals in English language including construction (installation manual).
- *Spare parts for pumps for two years
- *Mechanical and performance guaranty for pumps.

The work described in this tender is intended to give the Bidder an overall view of the project. The Bidder shall refer to the complete specifications and drawings included within the tender; and shall be responsible for the checking, verification, modification and redesigning wherever deemed necessary; the bidder shall provide whatever is required for the mechanical completion of the project so.

* All material shall conform to ASTM specification and shall be selected for the specified design conditions.

*All tank materials shall be new and free from rust and pits . Materials shall be in accordance with API 650 latest addition.

*Reinforcing pads and rolled plates nozzle necks shall be of the same quality as specified for materials of tank part to which they are attached .

*Bidder shall supply mill test reports on all plates to be used in the construction of the tanks. Plates not having mill test certificates shall be acceptable and shall be rejected.

*All bolting shall conform to ASTM standard. External bolting for man ways, flanges and connections shall be stud bolts

2-3 Country Of Origin:

*All required materials related to this tender document shall be sourced from

the following countries (UK, USA, CANADA, ITALY, BELGIUM,

GERMANY, FRANCE, SPAIN, SWITZERLAND, NORWAY, SWEDEN,

FINLAND, JAPAN and SOUTH KOREA).

*The equipment shall be supplied from reliable manufacture.

*Vendor list for equipment shall be submitted to SRC for approval.

2-4 Piping Systems:

A-Contractor activities shall include but not limited to:

1) Hydrostatically test all piping as required by the drawings or specifications

2) Check pipe hangers, supports, guides and pipe specialties for the removal

of all shipping and erection stops and for the correctness of the cold

settings for the design service.

3) Metallurgy check to confirm the correct material is used.

B- Contractor shall supply pipes required for interconnections as below

24 inch pipe carbon steel (1200m)

16 inch pipe carbon steel (1250m)

12 inch pipe carbon steel (1750m)

6 inch pipe carbon steel (100m).

2-5 pumps

A-Pump Engineering shall include, but not be limited to the following:

- 1 -Select equipment and auxiliaries as required best suiting the process conditions throughout various operating
- 2-Review/complete data sheets prepared by process in accordance with Project specifications..
- 3-Define principles and integrate equipment control system with plant control systems such as DCS, ESD, Fire & Gas, etc. The integration includes, but is not limited to the required hardware and software in terms of serial interface, data base and display configuration, etc. Define machine conditions and performance monitoring systems.
- 4-Prepare packaged equipment auxiliary and system P&IDs in accordance with relevant Project Standards, including symbols and level of details.
- 5-Develop pump and other related calculations applicable for Pump design and engineering.
- 6-Prepare material requisitions for inquiry.
- 7- Issue technical evaluation and recommendation reports for COMPANY approval.
- 8- Prepare and issue material requisitions for order, including definition of shop testing and documentation requirements.
- 9-Define Vendor's scope for performance tests in field and the performance guarantee requirements.

10-Arrange kick-off meetings and pre-inspection meetings between
VENDOR, COMPANY and CONTRACTOR.

11- Receive, review and approve VENDOR data, drawings, calculations and
documentation including operating and maintenance manuals and
manufacturing data reports.

12-Carry-out shop inspection activities and issue periodic and shop test
inspection reports to COMPANY.

13- Witness testing of all final shop tests (mechanical run tests/performance
tests/string tests/, etc.).

14-Perform audit of major (API 612, 617, 618 and large API 610) equipment
by a Third Party and incorporate their recommendations.

15-Approve shop and field test procedures.

16-Prepare and issue Operation and Maintenance philosophy and any
specific requirements on an equipment tag number basis.

17-Process all VENDOR concession requests, maintain a log and gain
COMPANY approval if necessary.

18-Define VENDOR'S assistance required for field installation and start-up of
rotating equipment.

19-Supply final technical assistance for equipment field installation which
includes:

- Level base plated and soleplates and grout all bearing surfaces.
- Remove rust preventers.

20-Supply requirements and prepare procedures for field
hydrostatic/pneumatic testing.

21-Assign the criticality rating to all equipment data sheets in accordance
with project specifications.

22-Check, verify and confirm material selection and develop material

specification data sheets, giving ASME/ASTM material designations, for all items.

23- Prepare specifications/standard drawings for equipment.

24-Supply final technical requirements for equipment purchase.

25-Prepare a detailed Inspection Quality Plan for each individual equipment, including a fabrication schedule, all in agreement with Project Requirements.

26-Define interfaces with Civil for support, etc.

B-The contractor shall supply six pumps as below specifications

1 - Two completely crude oil pumps according to API 610 Last addition

Service crude oil which have specifications in attached NO.2

Specific gravity at minimum operate 0.84 to .86 API 32 TO 36

Viscosity @ 40 C 6.0 sct

Capacity 600m³| hr

Operating pressure 10 kg|cm²

2 - four completely light product pumps according to API 610 plus addition

a. Tow pumps for Heavy Naphtha as specification below(See attached NO.5)

Capacity :-250 m³/hr

Specific gravity :-((0.67 -0.76)) at 15 c°

Operating pressure :- 10 kg/ cm³ at 43 c°

Vapour pressure :- (0.78 -0.85) atm at 15 c°

b. One pump for Kerosene as specification below(See attached NO.3) :-

Capacity :- 250m³/hr

Density :- 0.8

Operating pressure :- 10 kg/ cm³ at 55 c°

Vapour pressure :- (0.78 -0.85) atm at 15 c°

c. One pump Gas oil (See attached NO.4)

Capacity :- 250m³/hr

Density :- 0.84

Temperature (minimum) :- 30 c°

Operating pressure :- 10 kg/ cm³ at 63 c°

Viscosity :- 208 cst at 40 c°

3- spare part for two years operation must be providing with the fooling :-

- Shift with key and nut 2
- Bearing bracket 1 set
- Impeller 1 set
- Casing wear ring 1 set
- Mechanical seal 2
- Shaft sleeve 2
- Coupling complete 1
- Set of gasket 4

2-6 Tanks, And Pig Traps

tanks and relevant internal tanks engineering shall include,

but not be limited to the following:

1-Provide tank calculations required by codes and Project

specifications for all equipment items.

2-Prepare/complete the tank data sheets and/or general arrangement

tank drawings

3-Prepare/complete all of the detailed material requirements on the data

sheets, giving the ASME/ASTM designations.

4-Identify all of the required reference specifications and standard drawings

and input to data sheets.

5-Prepare nozzle orientation and detailed support drawings.

6-Prepare design drawings for vessel internal/external details and special

flanges.

7-Prepare/complete nozzle loadings and develop reinforcement calculations.

8-Prepare/complete any nozzle or pipe support loadings to tank VENDOR

for analysis.

9-Check and approve all VENDOR calculations, data, drawings and

procedures.

10-Prepare drawings showing orientations for ladder and platforms, pipe

supports/guides, column davits and support clips. These drawings shall be

in line with Company specifications, the ladders and platforms requirements indicated on drawings for tanks.

11-Perform structural and local loading calculations for ladder and platforms, pipe supports/guides, column, davits and support clips.

12-Review and approval of final data/information from VENDORS, including as built data and Manufacturer's Data Reports.

13-Define inspection heat treatment and NDE requirements.

14-Coordinate interfaces between ladder and platform VENDOR and vessel VENDOR.

15-Complete equipment material selection requirements and specifications.

16-Complete heat treatment requirements.

17-Provide welding procedures (WPS/PQR/WPQ, welding key forms, etc.) both for VENDOR shop and field welding.

18-Provide field heat treatment procedures.

19-Prepare material requisitions and perform technical evaluation for COMPANY approval.

20-Prepare material requisitions for order.

21-Supply final technical requirements for equipment purchase.

22-Prepare a detailed Inspection Quality Plan for each individual equipment,

23-Supply requirements and procedures for field hydrostatic/pneumatic testing.

2-7 Tanks Technical Requirements:

1- All materials are delivered fabricated and ready for construction.

2- The offer shall include all services required for the tanks including but not limited to the verification of basic design given in the attached tank data sheet and detailed engineering.

3- Detailed engineering shall include the following:

3.1 Tank detailed engineering which shall be performed in accordance with the latest edition of API 650, API 620 and the attached data sheets for the tanks. This detailed engineering shall be subject for SRC's approval and shall include the followings:

- Thickness calculation.
- Shell stability calculation.
- Safety devices calculation.
- Material and equipment specification.
- Tank erection and installation specification.
- Inspection specification.
- Nozzle orientation.
- Testing specification.

3-2 Detailed fabrication drawings including bill of materials for bottom, shell, roof, attachments and accessories.

2-8 Fired Equipments:

Fired equipment engineering shall include, but not be limited to the following services:

- 1- Preparation of supporting specification to Project specification and Standards as required.
- 2- Development of all equipment and auxiliary data sheets and/or duty specifications to the level of detail required by PROJECT specification.
- 3- Preparation of material requisition for inquiry for fired equipment.
- 4- Analysis and technical evaluation of Vendors proposal, for COMPANY approval.
- 5- Preparation of material requisition for order with updating of equipment and auxiliary data sheets with as-purchased information.

6- Review and approval of all vendors data, drawings, calculations, procedures and documentation as required.

7- Perform engineering and pre-inspection meeting with VENDORS.

8- Definition and integration of the equipment control and emergency shutdown system with the plant control and Emergency Shutdown (ESD) system.

9- Provide welding documentation according to contractual Codes (WPS/PQR, WPQ, welding key forms, etc.) for both VENDOR shop & field welding activities.

10- Definition of the VENDORS assistance required for field equipment assembly, commissioning and start-up

11- Supply requirements and procedures for field hydrostatic/pneumatic testing.

3- INSPECTION REQUIERMENT

Design and supply oil storage tanks, (three) double- deck floating roof tanks and completely prefabricated ready for erection with all accessories needed for good and safety operation with piping systems connection between these tanks . And (6) pumps as specification mention in mechanical requirement . The requirements for this Order included but not limited as below:

*** Codes and standard (last edition):**

API 650 with applicable appendixes (welded tanks for oil storage tank).

API 2000 (venting atmospheric and low –pressure storage tank).

API 651 (cathodic protection of aboveground petroleum storage) .

ASME 16.5 (pipe flanges and flanged fittings) .

ASME 16.25 (butt welding ends) .

ASME 16.9 (valves , flanges, fitting and gasket) .

ASME 16.34 (valves –flanged, threaded and welding end) .

ASME SEC IX (welding and brazing qualifications) .

ASTM for pipes and tubes.

***Design data :**

- Shell thickness calculations shall be one –foot method
- -corrosion allowances for shell plates shall be (2) mm, for roof plates(2 mm), for
- Bottom plates shall be(3 mm) for submerged piping (3mm).
- Design Temperature liquids at 93c
- Minimum design metal temperature (MDMT) min.-5 C ,max. 55C
- Rainfall shall be 250 mm\year , wind velocity 180 km\hour

Materials :

The storage tank plates shall be prefabricated, assembled according to API 650 sec 4 with thicknesses considerations.

- flush- type clean out connections shall be fully fabricated and heat- treated according to API Standard Before furnished.
- .
- for first shell course exceed 25 mm thickness with nozzle size (12 in.) shall supply completely fabricated, assembled and stress relieve according to API.
- all plates shall be primer coated.
- mill and shop inspection shall not release the manufacturer from responsibilities for replacing any defective material that discovered later in our site.
- the plates shall be the same type of metal for all tank plates .
- materials groups IV,V,IVA,VI shall be excluded.
- materials of tank plates shall be according to ASTM.
- the minimum thickness for the highest shells plates courses shall be 8mm .
- plate used to reinforce shell opening and insert plate shall be the same plate as shell plate to which they are attached except for nozzle and man way neck the material shall be equal or greater than yield and tensile strength .
- for pipes less than 16 in. shall be according to ASTM 106 GR.B SCH.STD.
- for pipes greater than 16 in. shall be API 5L SCH. STD (SAW) single straight.

-**the insulation materials** is usually fitted externally to the wall of the tank and must be design to avoid the absorption of oil and water with feature included but not limited to :

- 1- supply the insulation materials according to ASTM
- 2- thermally efficient ,energy –saving contracture
- 3- eliminate potential condensation and mold
- 4- high load capacity structural integrity , and personnel health , safety concerns
- 5- low thermal conductivity to reduce loss heat

DOCUMENTATIONS :

THE Manufacturer shall supply these documentations that related to storage tanks (included but not limited to).

- Materials test reports (MTR),(MTC) approved by third party
- Shop inspections certificate approved by third party
- Drawings for all storage tanks with 6 copies and 3 on CD that contain all details for Erections.
- Weld assembly sequences .

- Welding procedure specifications.
- Insulations procedure if applicable for tanks .
- All NDE requirements and inspection plans.
- Hydrostatic test certificate if applicable such as coil steam.
- Heat treatment procedures requirement.

Calculations :

- Determinations of thickness for all pressure boundary elements to Satisfy all loading condition ,included but not limited to contents Pressure , partial vacuum , rain load , dead load , snow load, roof Flootation ,dike or flood plain partial submergence ,wind and seismic activity , rainfall rate
Overturning check and anchorage ,due to wind forces ,seismic forces, And internal pressure if applicable
- Seismic design requirements (eg. base shear ,long. Compression, sliding Friction resistance checks ,overturning moment checks , and anchorage , if applicable .
Stability checks to determine whether shell stiffeners or increased shell Course. Thicknesses will be required.
- Floating roof buoyancy calculations
- Intermediate wind girders calculations
- . determination of the venting requirement.
- The calculations shall be in SI unit

Third Party:

The third party inspection shall be carried out by one of the following (TUV , Lloyds ,B.V)

Responsibilities of third party inspection:

- Review drawings, documentations and applicable document check list.
- Review WPS, PQR, welding key forms and welder qualification.
- Review NDT personal qualification ,procedure ,&NDT report .
- Review base &filler metal certificate .
- Review and verify transfer marking of basic material .
- Witness welding , monitor welding process as per relevant WPS at random basis.
- check beveling (weld preparation) and visual testing of weld during production.
- review NDE inspection plan and results of NDE records
- examine surface and weld visually for parts that welded in the shop .
- review pressure test report if applicable .
- verify the identification stamping .
-

MARKING:

all plates (special plate which are cut to shape before shipments) roof, supporting structural members shall marked as shown on the manufacturer drawings.

. PACKING:

- all accessories for each tank shall be packed or boxed (for small sizes) individually marked with tank number.

SHIPMENT:

Tank plates and other materials ship in a manner that ensure without damage ,others

Shall be boxed ,all flange and machined surfaces shall protected .

5- ELECTRICAL REQUIERMENT

GENERAL: The purpose of this specification is to:

- a) Elaborate the general scope of work of the electrical system.
 - b) Define the technical basis for the design, equipment selection, and supply, installation.
- It's intended in this design requirement to indicate the relevant codes and standards and general requirements in order to understand the bases of SRC requirement and carry out the following unless so modified in the tender document.

- Basic design
- Detailed design
- Material and equipment supply

Electric outdoor panel:

400V, metal glad with stainless steel sun shade, EEXed, IP65, 50Hz, 3Ph+N+E
busbar rated as designer in addition of 1.5 safety factor, control voltage for motor 220V,
control voltage for actuators as designe ,this panel should have a main CB and divided to
multi section to deliver electric power for all tanks as lighting fixtures ,actuators
,cathodic protection &mixers motor starters.

Motor starter the starter should have motor circuit breaker, contactor, motor protective device with earth fault ,MCB for control voltage, current transformer secondary 5 ampere ,digital ampere meter, control and signaling unit ,local/remote selector switch .

EEXed Sites motor controlling Start/stop push button (starting box)with ampere meter should be supplied for each mixer and pump motor.

Lighting:

lighting fixtures should be 220V, 50Hz , EEXed , IP55, each tank should have switch to control lighting installed at the first step of the ladder .

Earthing system:

A complete earthing system should designed and supplied (all materials must be pure copper) for all tanks to achieve earthing resistance less or equal to 4 Ω .

Power and Control cables :

All the cables from the electric panel above till each our required tanks accessories(lighting fixtures ,actuators ,cathodic protection &mixers motor starters) should be PVC/SWA/ PVC stranded copper wire.

Motors :

3 ph induction motors, heavy duty (S1), ambient temperature 55°C, EExedT3, insulation class F, temperature rise class B, cast iron, IP 55, 380 V, 50 Hz.

Cathodic protection system:

A cathodic protection system should be designed and offered for all tanks , anods should be metal oxide ,oil cooled transformer, high impressed current, portable Cu/CuSo4 reference cell quantity 2 should be supplied.

Lightning arrester system:

Each tank should be protected against lightning by surge arresters.

Actuators

- 1- 3-phase 380 50Hz IQ rang
- 2- EExedIIBT4
- 3- IP 55
- 4- Temp. rise 80K
- 5- Ambient temp 60C°
- 6- Insulation Class F
- 7- Winding over temperature protection
- 8- Over load motor protection
- 9- Lost phase protection
- 10- Automatic phase rotation correction
- 11- 60 start / hour
- 12- 40%-100% setting torque
- 13- (2-40) mA position indicator CPT
- 14- LCD for showing(alarm , trip , status , torque.....etc.)
- 15- LED for (ON, open ,close) indication
- 16- open/close push
- 17- Local /remote selector
- 18- IQ Setting tool qty (3)

Manufacturers:

a- For cables :

Japan or USA or West Europe.

b- For other equipment :

- ABB / France or UK.
- Alstoms / France.
- Schneider / France.
- Siemens / Germany.
- GE / USA.

c- ROTORK for actuator

6- INSTRUMENT REQUIERMENT

6.1 General

The Instrumentation and control system shall be designed to manage all the process facilities for storage tanks and pumps according to latest International codes and standards

This request defines the requirements for **supply, install, operating and commissioning** high precision radar tank gauge with custody transfer and inventory accuracy for storage tanks in **Basrah** refinery . The request covers all hardware, software, software configuration, calibration and communication with host to connected to our existing system and software In addition to level measurement, the request covers auxiliary temperature, pressure and water level interface instrumentation.

The Main Automation Contractor (MAC) shall be responsible of Engineering, Procurement, Construction and (pre-commissioning and commissioning) activities for all the process units (including Offsite and Utilities) and any other supporting systems.

The new facilities comprising the Project units will be provided with their own dedicated systems for safe and reliable process operations by installing an integrated Control and Safety system (ICSS)

which shall include a Distributed Control System (DCS), Emergency Shutdown system (ESD), Fire and Gas system

Fire and Gas System (FGS)

Alarm Management System (AMS)

Tank Gauging system :- A tank gauging system shall be used for inventory management within the Project units. Radar tank gauging (for custody transfer/ highest measurement accuracy) shall be the preferred method of implementation for tank gauging systems, together with tank strapping tables and temperature and pressure compensation as required.

The tank gauging system shall be an independent system with communication links to the DCS and ESD as required. All control and operation around these tanks shall be performed on the DCS/ESD system and not on the tank gauging system.

6-2 Industry Standards

American Petroleum Institute/Manual of Petroleum Measurement Standards:

API MPMS ch. 1	Vocabulary
API MPMS ch. 3.1A	Standard Practice for Manual Gauging of Petroleum and Petroleum Products in Stationary Tanks
API MPMS ch. 3.1B	Standard Practice for Level Measurement of Liquid Hydrocarbons in Stationary Tanks by Automatic Tank Gauging
API MPMS ch. 3.3	Standard Practice for Level Measurement of Liquid Hydrocarbons in Stationary Pressurized Storage Tanks by Automatic Tank Gauging
API MPMS ch. 3.6	Measurement of Liquid Hydrocarbons by Hybrid Tank Measuring Systems
API MPMS ch. 7	Static Temperature Determination Using Fixed Automatic Tank Thermometer

OIML, International Organization of Legal Metrology:

OIML R85:2008	Conformity to pattern requirements by the International Organization of Legal Metrology (OIML) R85, version 2008.
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6-3-System requirements

- a- The manufacturer of the tank gauging system shall comply with the international standards ISO 9001 and ISO 14001.
- b- The level measurement of the tank gauging system shall be based on high precision Radar Tank Gauges (RTG).
- c- The system shall be certified according to the OIML R85:2008 standard. The certificate shall include gauges for tanks with and without still-pipes.
- d- Each RTG shall be individually tested for accuracy over a distance up to at least 30 meters. The test shall be performed in a test range approved by a nationally accredited institute.
- e- The tank gauging system shall consist of a total system solution from tank units to Operator Interface and external data communication.

f- The system shall be able to measure tank levels, temperature, pressure and water interface levels. Based on the measured values the system shall provide Inventory calculations (net volumes, density and mass).

g- The system shall internally use an international standardized communication bus. No proprietary protocols shall be used. The system shall be scalable enabling add-on of devices at a later stage.

h- The tank gauging system shall be able to integrate a wide range of measurement devices in order to meet different performance and functionality criteria required for each tank in the system.

i- The RTG, associated temperature transmitters, pressure transmitters, field displays and related equipment shall be Intrinsically Safe (IS), 2-wire and bus-powered. The devices shall be FISCO certified. All sensors and devices shall communicate via digital communication.

j- The system shall automatically adjust to external power in the range of 24 – 48 VDC or 48 – 240 VAC, 50/60 Hz.

l- The tank gauging system shall have the ability to emulate and interface with other types of tank gauging systems using built-in communication adapters and protocol drivers.

m- The system shall have a separate safety function suitable for use in Safety Instrumented Systems (SIS). The function must be certified by a third party to meet Safety Integrity Level 3 (SIL 3) requirements as per IEC 61508. The system shall be certified for Safety Integrity Level 3 (SIL 3) using a single radar tank gauging unit.

n- The tank gauging system shall have optional relay outputs, which are controlled by customer-selected variables such as level and temperature. The relays can be used for control of pumps, valves etc. or indication of alarms. The relay outputs shall meet requirements for overfill prevention. The relay alarms shall be configurable from the software residing in the operator interface unit in the control room. It shall be possible to control each relay by multiple inputs and multiple alarm criteria.

The system must be able to perform alarm and error handling for all system components. All devices shall have built-in status LEDs.

o- The system shall provide for certain levels of redundancy;

- The level gauging device shall have built-in redundancy for all function including power supply .
- The system design shall support dual devices for each function.
- The system shall support redundant communication paths from the tank to the data collector/control room. Dual hard wired buses or a combination of wired communication and *Wireless* HART.
- Critical system devices such as the field data concentrators shall have the ability to operate in hot standby redundancy mode. The switch to redundant standby units shall be automatic.

p- The system shall have the possibility to be provided with field mounted indicators. The system shall support up to three (3) field displays per tank. The readout devices shall be user configurable in Metric units. The display digits shall have a height of at least 25 mm (1 in.) and be back-lit. The displays shall be configurable for various read-out parameters and view modes. Field level indicator integral to the field control unit shall display exactly the same level as indicated in the control room operator console.

q- Measurement devices in the system shall be configurable remotely from a software package in the control room, or locally on the tank using an Intrinsically Safe (IS) handheld field communicator, or in case of wireless communication via the wireless interface. All configurable measurement devices shall have an optional hardware based write protection function which can be sealed.

6-4 Environmental Conditions

All measuring devices shall be designed for continuous operation in ambient temperature of -40 to +70 °C (-40 to +158 °F) and relative humidity of 100%, non-condensing. For hot climates, self-ventilating sun radiation protection shall be provided. The control room equipment such as operator workstations and associated peripheral equipment shall be installed indoors. The control room equipment shall be designed for operation at ambient temperatures of 0 - 50 °C (32 - 122 °F) and a relative humidity of 95%, non-condensing. The system shall have lightning and surge protection.

The field equipment shall be designed with galvanic isolation on communication and power connections. The field units shall be equipped with transient suppression components.

During normal operation, bench testing or field service, the RTG shall not generate microwave power levels hazardous to humans. International health requirements stipulate that the radiated power shall be less than 2 mW EIRP.

6-5 Requirements of the Rim-seal Fire Protection system of the Floating Roof Tanks

This specification applies to all the floating roof tanks, the system shall be a fully automatic foam system specifically designed for extremely fast detection and extinction of any type of Rim-seal fire. Each system shall protect 40 meters (as a maximum) of tank perimeter, detection or actuation of the Rim-seal foam protection system shall be performed mechanically (pneumatically). Supervisory signal (Nitrogen pressure low) and Fire alarm signal (Foam pressure low) shall be sent through cables terminated to a suitable junction box (Explosion proof) installed at the bottom of the tank. A conventional fire alarm panel displaying the above mentioned signals for all the floating roof tanks shall be supplied with 30% spare capacity, the fire alarm cable between the junction box at the bottom of the tank and the panel at the fire fighting station shall be specified by the vendor.

Three Explosion proof junction boxes one marshaling JB above the roof, the second one at the end of the spiral ladder, and the final one at the bottom of the tank shall be supplied with each tank. All the documents and manufacturer technical catalogues for the proposed system shall be submitted with the offer, Spare parts for the commissioning stage and for two- year operation shall be supplied.

6-6 General Radar Tank Gauge Design

The device must use Frequency Modulated Continuous Wave (FMCW). Radar technology which measures level based on elapsed time between send/receive of a fixed frequency signal, (pulse or time domain) shall not be used for high performance tank gauging. Incremental phase evaluation shall not be used since it can lead to significant level gauging errors.

The radar tank gauge (RTG) shall have a signal processing system optimized for high accuracy tank gauging.

The RTG shall have a separate safety function suitable for use in Safety Instrumented Systems (SIS). The function must be certified by a third party to at a minimum meet Safety Integrity Level 3 (SIL 3) requirements as per IEC 61508.

The RTG subparts (antennas, electronics, housing etc.) shall be designed in such a way that they can be freely interchanged, without recalibration.

The radar gauge itself shall calculate the level rate value. The filtering of the level rate value shall be adjustable. The level rate value shall be available on the field bus as a standard parameter in the communication protocol. A host calculated level rate shall not be used since timing errors make it unreliable.

The gauge shall be able to operate in a stand-alone mode (single gauge installation) or in a network of up to at least 300 gauges and operator interface workstations in the control room. Level update time shall not exceed one (1) second in the field data concentrator. The standard fieldbus communication shall have a baud rate of at least 4800 Baud.

The RTG shall be equipped with dual memory banks enabling reprogramming and configuration under continuous operation.

6-7-Installation on fixed roof tanks

RTG which is installed on an existing tank opening then the radar beam shall be such that interfering echoes are avoided. The antenna design shall be such that minimum influence from the tank wall is obtained. Both inclination and orientation of the antenna shall be easily adjustable without special tools.

The antenna design shall be made with sloping surfaces to ensure condensation drip-off. Therefore a horizontal, flat antenna surface is not to be used in fixed roof tanks.

The material in the antenna shall be proven to be compatible for the chemical composition of the tank products.

The antenna design shall be rugged to withstand tank atmosphere and temperatures up to 230 °C (450 °F) for many years of service.

6-8- Installation on still-pipes

The RTG shall be made to fit pipe diameters from 5 to 12 inches with different wall thickness.

The antenna for still-pipe gauges shall operate in the Low Loss-circular-symmetric transmission mode to prevent loss of accuracy due to slots, holes, rust and deposits.

The antenna design shall be made with sloping surfaces to ensure condensation drip-off. Therefore a horizontal, flat antenna is not to be used in still-pipes.

When fresh insert still pipes are specified, it shall be such that the insertion stilling well design addresses on-line retrofitment on normal working tanks without the need for any hot work. As this design requires a no. of safety features such as Anti-Sparking Spacers for self-alignment, Special pipe brackets, the design proposed for any such fresh Insert stilling well shall be "field proven". A valid site reference within the same country / region demonstrating identical installation shall be evidenced with full details and End user contact information.

6-9-Temperature System

The temperature conversion accuracy in the temperature transmitter must be ± 0.1 °C

(± 0.1 °F) or better. Spot and averaging temperature elements shall be of Pt-100 type (RTD). The RTD system measurement accuracy shall be ± 0.5 °C (± 1.0 °F) or better. The field electronics shall be capable of automatically determining a true average from the submerged RTDs. In case of non-cylindrical tanks, weighing factors shall be possible to use for correct average product temperature calments. In case of 4-wire RTD elements, configuration of calibration data shall be supportedculations.

The distance between the individual elements shall not exceed 3 meters (10 ft).

The system shall support up to 16 RTD elements per temperature transmitter. The system shall support multiple temperature transmitters per tank.

The system shall be able to handle both 3-wire and 4-wire RTD ele.

Averaging temperature elements shall include a specified number of RTD elements of graduated lengths housed in a common flexible metal thermo-well.

6-10-Performance Criteria

For storage tank applications, the instrument accuracy of the RTG shall be equal to or better than ± 1 mm max deviation over the entire measuring range. The vendor shall on request provide accuracy certification documentation for each individual gauge. The test procedure shall be traceable to national standards.

The RTG shall deliver stated accuracy from the day of the initial adjustment on the tank. The instrument must not need emptying or filling operations for calibration.

The RTG must operate under the same accuracy under both static and dynamic process conditions i.e. moving or steady levels.

Proposed solution shall have been verified for the stated Field Installed Accuracy by 3rd party recognized agency and duly certified for Custody Transfer use as per relevant International Standards and practices. Copies of such certification from any major terminal operator from within the Middle East region shall be submitted.

Offered gauges/ system shall have at least three (3) years satisfactory field proven record for similar application within the country of end use. Vendor to furnish full reference list with contact details of such local reference. Where new models are proposed, it shall be traced back to Min. 1 year successful field trial and suitably substantiated with common design and measurement principle used from previous proven models.

6-11-Human Machine Interface (HMI)

The HMI shall consist of a PC based, user configurable graphical interface. It shall perform calculations, system management, alarm handling, configuration and data storage.

The HMI shall support network functions. Real-time data from all tanks shall be available on all server and client stations. It shall be possible to configure which tanks shall be available on each server and client PC station.

The HMI must, at a minimum provide, the following general categories of standard functions:

- All standard windows shall be able to customize on demand. Standard operator' views shall be easily customized on-site, e.g. possible to change font, color and presented parameters.
- The HMI shall have the ability to support local languages.
- The HMI software shall have the ability to interface to all common DCS, PLC, SCADA systems or similar. The Slave interfaces shall be Modbus serial links and OPC DA format.
- The HMI software shall be able to act as a master for other types of tank gauging systems. All standard parameters shall be supported. The HMI system shall present diagnostics and support maintenance and service commands to connected devices. The Master interface to other systems shall be Modbus RTU and OPC DA. The collected data shall be mappable to any tank in the HMI software.
- An alarm log shall be provided which displays all current acknowledged and cleared alarms. An alarm inhibit function shall be provided so a single or group of alarms could be de-activated. The ability to inhibit any alarm shall be multi-level password protected.
- A group configuration function shall be provided that permits the plant operator(s) to define the groupings of tanks for display on the group view screen and the group Inventory screen. A similar grouping function shall be available for alarm handling.

- A value entry function shall be provided that permits the plant operator(s) to manually enter process values and operating parameters for each tank. It shall be possible to configure tanks in the system which are not equipped **with RTGs**.
- An engineering function interface shall be provided for system configuration and set-up. All configuration changes shall be password protected.

6-12-Tank Inventory Management

The HMI shall be able to calculate tank inventory values according to API. All values in the calculation process shall be displayed. The Inventory calculations shall be certified by an independent third party.

The system shall have an input for ambient air temperature. The system shall be able to use this temperature value combined with the product temperature, for compensation of thermal tank shell expansion.

The system shall be capable of storing unique volume tables and correction factors, with at least 1000 strapping points for each storage tank. These tables will provide level to volume conversion of the tank.

The system shall be capable of handling primary and secondary value units. (e.g. primary volumetric values in cubic meters and secondary unit in barrels).

Leakage Alarm: The system shall generate leakage alarms based on the change in level or the Net Standard Volume of the products in the storage tanks.

Flow rate: The system shall provide a calculated volume rate of change based on the true level rate from the RTG and the tank capacity table.

Alarming Capabilities: The system shall generate multiple High, Low, and Safe alarms for level, level rate, temperature, pressure and water interface level. Configurable time delays shall be provided for each process variable to minimize nuisance alarms.

Batch handling: The system shall provide importing and exporting flow indications based on volume movements in the tank. Indications of "estimated end time of batch" shall be provided based on user set points. The Batch Handling shall be able to handle multiple destinations and sources. The Batch function shall generate printable batch reports.

Report functions: The system shall be able to generate reports in different formats, minimum in text-, PDF- and HTML-format. All reports shall be printable, sent via e-mail or store as a file. All reports shall be generated manually or automatic by user defined schedules. Minimum required reports include: Tank reports, Inventory balance reports and Alarm reports. Reports shall be configurable by the user.

6-13-System Diagnostics

The system diagnostics shall be capable of performing self-checks on each tank gauge and data collection or control units. At a minimum, the following features shall be included:

All field inputs, including level, temperature, pressure and water level interface signals shall be monitored for errors. All errors shall be alerted and logged. The error indications shall be categorized as communication failure, measuring device failure or software failure.

All diagnostic information shall be displayed, alarmed, stored in historical files and included in reports. This diagnostic information shall include details of all failure types, system status and configuration modifications. All diagnostic alarms shall be presented locally or distributed via e-mail.

6-14-System Security

The tank gauging software shall have functions to enable auto start of the software when the PC is powered up. The software shall be able to run as a shell, in order to prevent the PC to be used for other activities.

A metrological seal function shall be provided in the HMI to prevent unauthorized tampering of the system. The method of sealing shall be approved by NMI (the Netherlands) and PTB (Germany).

The HMI and main application software shall have a minimum of 15 levels of password protection. The security level of certain functions shall be changeable in all configuration windows. All functions shall have a pre-set security password level.

It shall be possible to set up individual user accounts with unique passwords and security levels for each operator. This shall enable tracking of system changes recorded in a log file. The system administrator with the highest level of authority and password shall handle the assignment of user accounts.

6-15-System and Data Recovery

The tank gauging software shall support redundancy in several ways. The PC-based system itself shall support redundancy as well as being able to handle redundant data concentrators and communications ports.

The tank gauging software shall be capable of automatic data backup of all system configuration and process parameters. The system shall also be capable of retrieving all configuration parameters once a system failure has been cleared.

6-16- JUNCTION BOXE

Light alloy casting corrosion resistant, weather proof IP 55 for signal JB and EX for power JB .
With all accessories (electrical terminals, copper bar- ground, earthing bolt, Fuses for power JB).

6-17- FIELD CABLES

Twisted pairs 7-strand bare tinned copper .
105 °C flame retardant PVC insulation.
Cable shield 0.002" polyester backed aluminum tape.
Drain wire 7-strands tinned copper.
Inner jackets 90°C Flame retardant PVC .
Armor ANSI 1006 several soft annealed galvanized steel wire.
Outer Jacket 90°C flame retardant PVC.

6-18- Equipments should be with the following conditions:

- 1.All cables, cable trays, cable glands, junction boxes, terminal & numbers and cable ties suitable for the project should be supplied.
2. supply 2 portable electronic open gauge device
3. Supplier should be investigate our needs and advise the best solution for our application.
4. FAT will be carried by two SRC engineers with third party inspector (third party authority certificate should be provided from SGS group European office or any other well known international inspector company, inspection should be for overall check and verification for design, operation , and calibration).
5. one year warrantee from start up.
6. Practical training course for 3 engineers for 2 weeks at manufacturer factory include (installation, operation, maintenance, calibration) .The training course items should be approved by SRC metering department staff .
7. spare parts recommended for two years fixed in a list with parts number .
8. one laptop with operation system.
9. Supply Hart communicator for configuration
10. set off hand tools recommended for start-up.
11. Three set of documents in English for (installation, operation procedure, calibration, drawing & measurements, maintenance and troubleshooting).
12. certificate of origin issued, the origin should be USA,UK,Germany,France.
13. Electrical area caldification is classI, GroupD, Divition1
14. power supply 110 V 50 HZ.
15. The system of units is SI units.
16. the traceability unit system is MPMS.
17. any miss design is supplier responsibility.

Address of the manufacturers and supplier companies:

www.honeywellprocess.com Honeywell Enraf
Email : cdt@cdtcompany.com USA

www.loopsautomation.com Loops automation
info@loopsautomation.com Email :
USA yousef@loopsautomation.com And

www.ii.endress.com Endress+hauser
GERMANY mushtaq.alalwan@ae.endress.com Email :

www.EmersonProcess.com Emerson
info@sgedco.com Email :
USA s.douglah@sgedco.com And

www.varec.com Varec
aramires@varec.com Email :
And s.shmareey@ramallahengineering.com USA

7- CIVIL REQIERMENT

The contractor shall carry out all civil engineering (basic & detailed) bills of quantities and supervision (if required) for the items listed but not limited to the following as minimum requirements:

7-1`Tank s foundation

Note: the type of tanks foundations shall be specified by contractor according to soil investigation report which be provided by **SRC**.

7-2 Structural analysis and design of the structural steel elements of the tanks.

7-3 Site services shall includes whatever services required to complete the requirements (in accordance with the tender documents) such as (yet not limited to) the following :-

- Foundations for all (equipments , pumps , machinery , skids, ----- etc.).
- Foundations and steel structures for sheds with cranes (if required).
- Concrete pits with (supports & covers) if required.
- Foundations and all civil works for skids mounted metering systems (if required).
- Pipe supports & sleepers.
- All civil works required to connect the new facilities with existing facilities as per tender documents requirements.
- All civil works required for (electrical , control , instrumentation , ----- etc.) systems with their facilities & services required at the site.
- All civil works required for steel platforms with access ladders and walkways.
- All civil works required for vents & drains.
- All civil works required for cooling water system.
- All civil works required for firefighting / protection systems.
- All civil works required for pipe and cable trenches.
- All civil works required for road crossing.
- All civil works required for earthing & cathodic protection.
- All civil works required for drainage systems.
- Access paved roads , areas , and walkways including drainage and lighting.
- All civil works required for tie-ins point as per tender documents requirements.
- All other civil works required to complete the design of the project.

- Detail engineering design of tank foundation must be done by professional engineers.
- Leak detection system required.
- Specification of internal & external coating required.
- Estimated settlement at the center of the tank is required.
- Design of dykes around tanks is required.

All above design work , calculations , and drawings shall be carried out by using the computer software wherever it requires.

7-4 The contractor shall provide all design calculations , basic and detailed engineering design drawings , bill of quantities , construction specifications , as well as fabrication / erection drawings , which shall be subjected to **SRC** approval.

7-5 All civil works mentioned above shall be carried out in accordance with the **SRC** design criteria and , the latest editions of the following codes , standards , and specifications:

- ACI-Cods 318 M for ordinary concrete structures.
- ACI-Code 350-06 for environmental engineering Concrete structures.
- ASTM for all supplied materials.
- AISC for all steel works.
- UBC/IBC for structural loading.
- EN 10025 for definition of steel shapes.
- API standards.

The design of tanks & foundations shall be investigated for all possible loading combinations as per API standards.

Foundations shall be designed so as meet the requirements of safety and settlement.

The design shall take into account the worst soil conditions.

7-6SUPPLY OF MATERIALS :

7-6.1 - The contractor shall supply all the materials required for the civil works (yet not limited) to the listed here below , except the locally available materials which are listed in para.

7.6.2.

- Structural steel sheds , and cranes/monorails (if required).
- Steel platforms with grating (if required) .
- Steel pipe racks .
- Cladding for roofs and sides with or wkithout insulation as required.
- Anchor bolts.
- Embedded materials.
- Grouting materiajs.
- Steel grating.
- Checkered plates.
- Special paints (if required).

Any other necessary materials required to complete the civil works of the project.

7.6.2 - List of civil engineering materials shall be supplied by

SRC.

- All type of cement.
- Reinforcing steel + tie wires.
- B.R.C. mesh reinforcement.
- Concrete block.
- Brick.
- Sand.
- Gravel.
- Asphalt.
- Limestone.

7-7 CLIMATE

Ambient air temperature :

- (-5 to +55) °C
- Black object under direct sun 85 °C

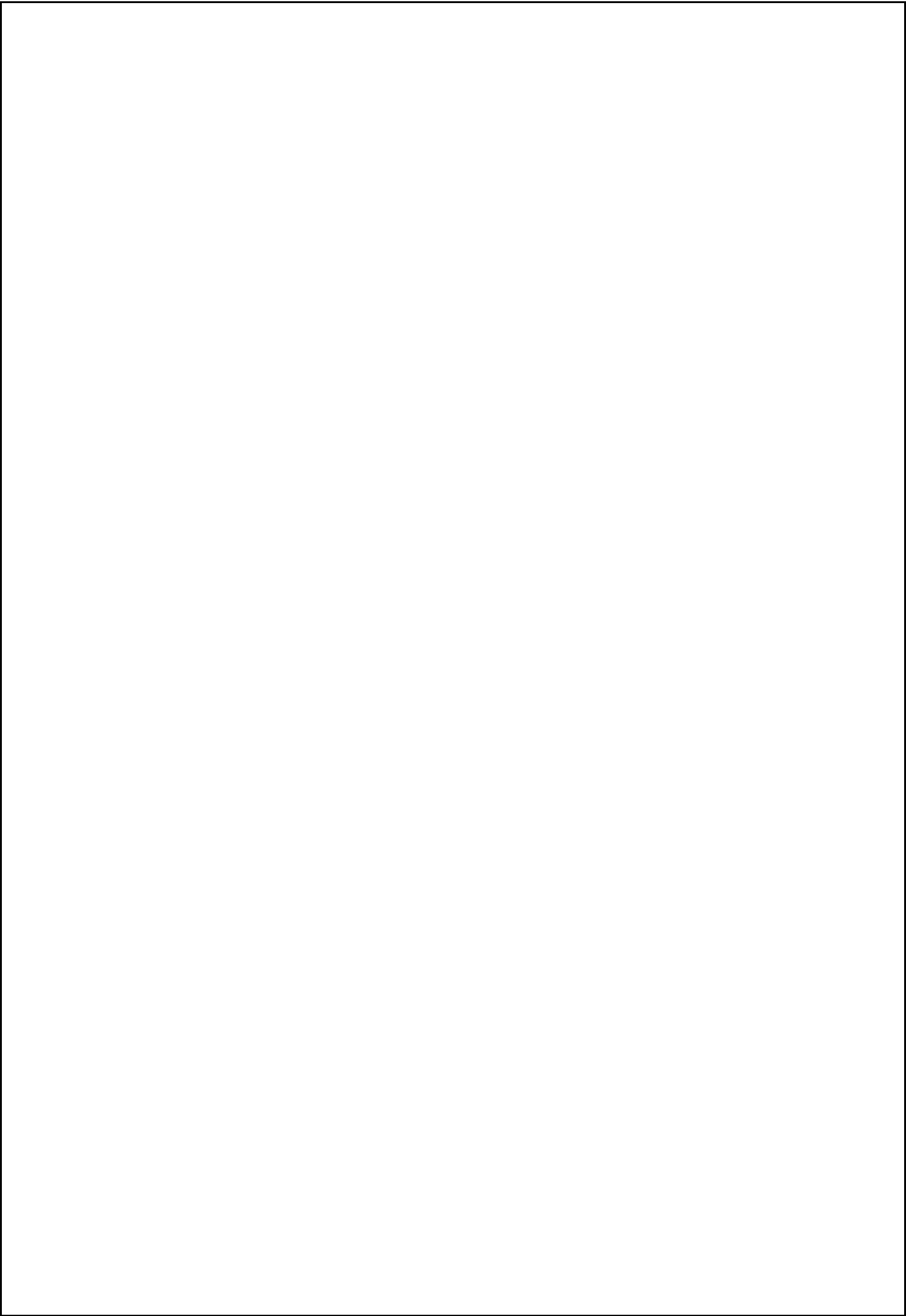
Humidity:

- Relative humidity (maximum) :100%
- Relative humidity (minimum) :15%

Max wind speed 180 km\hr

Prevailing wind direction west-north, west

Sesmic zone1 (z= 0.075) , code UBC



SECTION FOUR :- GENERAL CONDITIONS

A. Contract and Interpretation

1. Definitions

1.1 The following words and expressions shall have the meanings hereby assigned to them:

“Contract” means the Contract Agreement entered into between the Employer and the Contractor, together with the Contract Documents referred to therein; they shall constitute the Contract, and the term “the Contract” shall in all such documents be construed accordingly.

“Contract Documents” means the documents listed in Article 1.1 (Contract Documents) of the Contract Agreement (including any amendments thereto).

“Completion” means that the Facilities (or a specific part thereof where specific parts are specified in the Contract) have been delivered to employer

“Contractor” means the person(s) whose bid to perform the Contract has been accepted by the Employer and is named as Contractor in the Contract Agreement, and includes the legal successors or permitted assigns of the Contractor.

“Contract Price” means the sum specified in the Contract Agreement, subject to such additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract.

“Country of origin” mean all countries and territories are acceptable to SRC

“day” means calendar day .

“Effective Date” means the date of fulfillment of all conditions stated in Article 3 (Effective Date) of the Contract Agreement, from which the Time for Completion shall be counted.

“Employer” means South Refineries Company on behalf of the Ministry of Oil of the Republic of Iraq and includes the legal successors or permitted assigns of the Employer.

“Facilities “means the material,equipments,piping,instrumentation,electrical,pumps,... to be supplied.

“GC” means the General Conditions hereof.

“month” means calendar month.

“Party” means the Employer or the Contractor, as the context

requires, and “Parties” means both of them.

“Provisional Acceptance” means the acceptance by the Employer of the Facilities (or any part of the Facilities where the Contract provides for acceptance of the Facilities in parts), which certifies the Contractor’s fulfillment of the Contract .

“Site” means the land and other places upon which the Facilities are to be supplied, and such other land or places as may be specified in the Contract as forming part of the Site.

“Subcontractor,” including manufacturers, means any person to whom execution of any part of the Facilities, including preparation of any design or supply of any facilities, is sub-contracted directly or indirectly by the Contractor, and includes its legal successors or permitted assigns.

“Time for Completion” means the time within which Completion of the Facilities as a whole (or of a part of the Facilities where a separate Time for Completion of such part has been prescribed) is to be attained, as referred to in GC Clause 8 and in accordance with the relevant provisions of the Contract.

“year” means 365 days.

2. Contract Documents

- 2.1 All documents forming part of the Contract (and all parts thereof) are intended to be correlative, complementary and mutually explanatory. The Contract shall be read as a whole.

3. Interpretation

3.2 Entire Agreement

The Contract constitutes the entire agreement between the Employer and Contractor with respect to the subject matter of Contract and supersedes all communications, negotiations and agreements (whether written or oral) of Parties with respect thereto made prior to the date of Contract.

3.3 Amendment

No amendment or other variation of the Contract shall be effective unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each Party hereto.

3.4 Independent Contractor

The Contractor shall be an independent contractor performing the Contract. The Contract does not create any agency, partnership, joint venture or other joint relationship between the Parties hereto. Subject

to the provisions of the Contract, the Contractor shall be solely responsible for the manner in which the Contract is performed. All employees, representatives or Subcontractors engaged by the Contractor in connection with the performance of the Contract shall be under the complete control of the Contractor and shall not be deemed to be employees of the Employer, and nothing contained in the Contract or in any subcontract awarded by the Contractor shall be construed to create any contractual relationship between any such employees, representatives or Subcontractors and the Employer.

3.4 Severability

If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.

3.5 Country of Origin

“Origin” means the place where the facilities and component parts thereof are mined, grown, produced or manufactured, and from which the services are provided. Facilities components are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that is substantially in its basic characteristics or in purpose or utility from its components.

4. **Communications**

4.1 Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:

- (a) in writing and delivered against receipt; and
- (b) delivered, sent or transmitted to the address for the recipient's communications as stated in the Contract Agreement.

When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party

5. **Law and Language**

5.1 The Contract shall be governed by and interpreted in accordance with laws of the Republic of Iraq.

5.2 The ruling language of the Contract shall be English.

5.3 The language for communications shall be the ruling language.

6. **Fraud and Corruption**

6.1 If the Employer determines that the Contractor and/or its subcontractors has engaged in corrupt, fraudulent, collusive coercive or obstructive practices, in competing for or in executing the

Contract, then the Employer may, after giving fourteen (14) days notice to the Contractor, terminate the Contractor's employment under the Contract and the provisions of Clause 22 shall apply as if such expulsion had been made under Sub-Clause 27.2.1 (c).

- 6.2 Should any employee of the Contractor be determined to have engaged in corrupt, fraudulent, collusive, coercive or obstructive practice during the execution of the Works, then that employee shall be removed.

B. Subject Matter of Contract

- | | |
|--|---|
| 7. Scope of Facilities | 7.1 Unless otherwise expressly limited in the Employer's Requirements, the Contractor's obligations cover and the performance of all Services required for the design, and the manufacture (including procurement, quality assurance, delivery) of the facilities, in accordance with the plans, procedures, specifications, drawings, codes and any other documents as specified in the Section, Employer's Requirements. Such specifications include materials, equipment, spare parts (if any); transportation (including, without limitation, unloading and hauling to, from and at the Site). |
| 8. Time for Commencement and Completion | 8.1 The Contractor shall commence work on the Facilities on the Effective Date of the Contract, without prejudice to GC Sub-Clause 18.2 hereof, the Contractor shall thereafter proceed with the Facilities in accordance with the time schedule shall be provided by contractor.

8.2 The Contractor shall attain Completion of the Facilities within the time for completion of the whole of the Facilities of (SEVEN) months from the Effective Date or within such extended time to which the Contractor shall be entitled under GC Clause 25 hereof. |
| 9. Contractor's Responsibilities | 9.1 The Contractor shall design, manufacture including associated purchases and/or subcontracting, complete the Facilities in accordance with the Contract. When completed, the Facilities should be fit for the purposes for which they are intended as defined in the Contract.

9.2 The Contractor confirms that it has entered into this Contract on the basis of a proper examination of the data relating to the Facilities including any data as to boring tests provided by the Employer, and of other data readily available to it relating to the Facilities as of the date twenty-eight (28) days prior to bid submission. The Contractor acknowledges that any failure to acquaint itself with all such data and information shall not relieve its responsibility for properly estimating the difficulty or cost of successfully performing the |

Facilities.

- 9.3 If the Contractor is a joint venture, or association (JVA) of two or more persons, all such persons shall be jointly and severally bound to the Employer for the fulfillment of the provisions of the Contract, and shall designate one of such persons to act as a leader with authority to bind the JVA. The composition or the constitution of the JVA shall not be altered without the prior consent of the Employer.

C. Payment

10. Contract Price

- 10.1 The Contract Price shall be specified in (Contract Price and Terms of Payment) of the Contract Agreement.
- 10.2 The Contract Price shall be a firm lump sum not subject to any alteration, except in the event of a Change in the Facilities or as otherwise provided in the Contract.
- 10.3 Subject to GC Sub-Clauses 9.2, the Contractor shall be deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price, which shall, except as otherwise provided for in the Contract, cover all its obligations under the Contract.

11. Terms of Payment

- 11.1 The currency or currencies in which payments are made to the Contractor under this Contract shall be specified in the the Contract Agreement , subject to the general principle that payments will be made in the currency or currencies in which the Contract Price has been stated in the Contractor's bid.

12. Securities

- 12.1 Issuance of Securities

The Contractor shall provide the securities specified below in favor of the Employer at the times, and in the amount, manner and form specified below.

- 12.2 Advance Payment Security

12.2.1 The Contractor shall, after signing the contract and open the LC, provide a security in an amount equal to 10 % the advance payment, and in the same currency or currencies.

12.2.2 The security shall be in the form provided in the Contract Agreement. The amount of the security shall be reduced in proportion to the value of the Facilities executed by and paid to the Contractor from time to time, and shall automatically become null and void when the full amount of the advance payment has been recovered by the Employer. The security shall be returned to the Contractor immediately after its expiration.

12.3 Performance Security

12.3.1 The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide a security for the due performance of the Contract in the amount of five percent (5%) of the Contract Price.

12.3.2 The Performance Security shall be denominated in the currency or currencies of the Contract, or in a freely convertible currency acceptable to the Employer, and shall be in the form of the Bank Guarantee set forth in the Contract Agreement.

12.3.3 The contractor should be submit to SRC before signing the contract Unconditional performance bond, bank guaranty or certified cheque equivalent to 5 % of the total amount of the contract in formal bank guarantee exdusively through TRAD BANK OF IRAQ (TBI) or any Iraqi bank dependable from central bank of Iraq. It shall remain valid and not be released until the contractor fulfill all his obligations under his contract but not later than two months from the date of SRC Acceptance certificate

12.3.4 The Employer shall not make a claim under the Performance Security, except for amounts to which the Employer is entitled under the Contract. The Employer shall indemnify and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the Performance Security to the extent to which the Employer was not entitled to make the claim.

13. Taxes and Duties

13.1 Except as otherwise specifically provided in the Contract, the Contractor shall bear and pay all taxes, duties, levies and charges assessed on the Contractor, its Subcontractors or their employees by all municipal, state or national government authorities in connection with the Facilities in and outside of the country where the Site is located.

13.12 For the purpose of the Contract, it is agreed that the Contract Price specified in (Contract Price and Terms of Payment) of the Contract Agreement is based on the taxes, duties, levies and charges prevailing at the date twenty-eight (28) days prior to the date of bid submission in the country where the Site is located (hereinafter called "Tax" in this GC Sub-Clause 13.1).

D-Execution of the Facilities

14- Design and Engineering

14.1 Specifications and Drawings

14.1.1 The Contractor shall execute the basic and detailed design and the engineering work in compliance with the provisions of the Contract, or where not so specified, in accordance with good engineering practice.

The Contractor shall be responsible for any discrepancies, errors or omissions in the specifications, drawings and other technical documents that it has prepared, whether such specifications, drawings and other documents have been approved by the employer or not, provided that such discrepancies, errors or omissions are not because of inaccurate information furnished in writing to the Contractor by the Employer.

14.1.2 The Contractor shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designated by or on behalf of the Employer, by giving a notice of such disclaimer to the employer.

14.2 Codes and Standards

Wherever references are made in the Contract to codes and standards in accordance with which the Contract shall be executed, the edition or the revised version of such codes and standards current at the date twenty-eight (28) days prior to date of bid submission shall apply unless otherwise specified. During Contract execution, any changes in such codes and standards shall be applied subject to approval by the Employer and shall be treated in accordance with GC Clause 24.

14.3 Approval/Review of Technical Documents by employer

14.3.1 The Contractor shall prepare or cause its Subcontractors to prepare, and furnish to the employer the documents for

Approval or Review,

Any part of the Facilities covered by or related to the documents to be approved by the employer shall be executed only after the employer approval thereof.

GC Sub-Clauses 14.3.2 through 14.3.5 shall apply to those documents requiring the employer's approval, but not to those furnished to the employer for its review only.

- 14.3.2 Within twenty one (21) days after receipt by the employer of any document requiring the employer approval in accordance with GC Sub-Clause 14.3.1, the employer shall either return one copy thereof to the Contractor with its approval endorsed thereon or shall notify the Contractor in writing of its disapproval thereof and the reasons therefor and the modifications that the employer proposes.

If the employer fails to take such action within the said fourteen (21) days, then the said document shall be deemed to have been approved by the employer.

- 14.3.3 If any dispute or difference occurs between the Employer and the Contractor in connection with or arising out of the disapproval by the employer of any document and/or any modification(s) thereto that cannot be settled between the Parties within a reasonable period, then such dispute or difference may be referred to a Dispute Board for determination in accordance with GC Sub-Clause 30.1 hereof. If such dispute or difference is referred to a Dispute Board, the employer shall give instructions as to whether and if so, how, performance of the Contract is to proceed. The Contractor shall proceed with the Contract in accordance with the employer's instructions, provided that if the Dispute Board upholds the Contractor's view on the dispute and if the Employer has not given notice under GC Sub-Clause 30.3 hereof, then the Contractor shall be reimbursed by the Employer for any additional costs incurred by reason of such instructions and shall be relieved of such responsibility or liability in connection with the dispute and the execution of the instructions as the Dispute Board shall decide, and the Time for Completion shall be extended accordingly.

- 14.3.4 The employer's approval, with or without modification of the document furnished by the Contractor, shall not relieve the Contractor of any responsibility or liability

imposed upon it by any provisions of the Contract except to the extent that any subsequent failure results from modifications required by the employer.

14.3.5 The Contractor shall not depart from any approved document unless the Contractor has first submitted to the employer an amended document and obtained the employer's approval thereof, pursuant to the provisions of this GC Sub-Clause 14.3.

If the employer requests any change in any already approved document and/or in any document based thereon, the provisions of GC Clause 24 shall apply to such request.

15. Procurement

15.1 Facilities

The Contractor shall procure and transport all facilities in an expeditious and orderly manner to the Site.

15.2 Transportation

15.2.1 The Contractor shall at its own risk and expense transport all the materials and Equipments to the Site by the mode of transport that the Contractor judges most suitable under all the circumstances.

15.2.2 Unless otherwise provided in the Contract, the Contractor shall be entitled to select any safe mode of transport operated by any person to carry the materials and Equipments.

15.2.3 Upon dispatch of each shipment of materials and Equipments, the Contractor shall notify the Employer by telex, cable, facsimile or electronic means, of the description of the materials and, the point and means of dispatch, and the estimated time and point of arrival in the country where the Site is located, if applicable, and at the Site. The Contractor shall furnish the Employer with relevant shipping documents to be agreed upon between the Parties.

15.2.4 The Contractor shall be responsible for obtaining, if necessary, approvals from the authorities for transportation of the materials and Equipment to the Site. The Employer shall use its best endeavors in a timely and

expeditious manner to assist the Contractor in obtaining such approvals, if requested by the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any claim for damage to roads, bridges or any other traffic facilities that may be caused by the transport of the materials and Equipments to the Site.

21.3 Customs Clearance

The Contractor shall, at its own expense, handle all imported materials Equipments at the point(s) of import and shall handle any formalities for customs clearance.

16. Test and Inspection

16.1 The Contractor shall at its own expense carry out at the place of manufacture all such tests and/or inspections of the facilities and any part of the Facilities as are specified in the Contract.

16.2 The Employer shall be entitled to attend the aforesaid test and/or inspection, provided that the Employer shall bear all costs and expenses incurred in connection with such attendance including, but not limited to, all traveling and board and lodging expenses.

16.3 Whenever the Contractor is ready to carry out any such test and/or inspection, the Contractor shall give a reasonable advance notice of such test and/or inspection and of the place and time thereof to the employer. The Contractor shall obtain from any relevant third Party or manufacturer any necessary permission or consent to enable the employer to attend the test and/or inspection.

16.4 The Contractor shall provide the employer with a certified report of the results of any such test and/or inspection.

If the Employer fails to attend the test and/or inspection, or if it is agreed between the Parties that such persons shall not do so, then the Contractor may proceed with the test and/or inspection in the absence of such persons, and may provide the employer with a certified report of the results thereof.

16.5 If any facilities or any part fails to pass any test and/or inspection, the Contractor shall either rectify or replace such facilities or any part of the Facilities and shall repeat the test and/or inspection upon giving a notice under GC Sub-Clause 16.3.

16.6 If any dispute or difference of opinion shall arise between the Parties in connection with or arising out of the test and/or inspection of the facilities or part of the Facilities that cannot be settled between the Parties within a reasonable period of time, it

may be referred to an Dispute Board for determination in accordance with GC Sub-Clause 30.1.

- 16.7 The Contractor shall afford the Employer, at the Employer's expense, access at any reasonable time to any place where the facilities are being manufactured, in order to inspect the progress and the manner of manufacture or installation, provided that the employer shall give the Contractor a reasonable prior notice.
- 16.8 The Contractor agrees that neither the execution of a test and/or inspection of facilities or any part, nor the attendance by the Employer, nor the issue of any test certificate pursuant to GC Sub-Clause 16.4, shall release the Contractor from any other responsibilities under the Contract.
- 16.9 No part of the Facilities or shall be covered up on the Site without the Contractor carrying out any test and/or inspection required under the Contract. The Contractor shall give a reasonable notice to the employer whenever any such parts of the Facilities are ready or about to be ready for test and/or inspection; such test and/or inspection and notice thereof shall be subject to the requirements of the Contract.

17-Completion of the Facilities

17.1 As soon as the Facilities or any part thereof has, in the opinion of the Contractor, been supplied & completed and put in a dean condition as specified in the Employer's Requirements, , the Contractor shall so notify the Employer in writing.

17.2

If the employer notifies the Contractor of any defects and/or deficiencies, the Contractor shall then correct such defects and/or deficiencies.

If the employer is satisfied that the Facilities or that part thereof have reached Completion, the employer shall, within thirty (30) days after receipt of the Contractor's repeated notice, issue a provisional acceptance stating that the Facilities or that part thereof have supplied and Completion as of the date of the Contractor's repeated notice.

If the employer is not so satisfied, then it shall notify the Contractor in writing of any defects and/or deficiencies within twenty one (21) days after receipt of the Contractor's repeated notice.

E. Guarantees and Liabilities

18. Completion Time Guarantee

18.1 The Contractor guarantees that it shall attain Completion of the Facilities (or a part for which a separate time for completion is specified) within the Time for Completion specified in the PC pursuant to GC Sub-Clause 8.2, or within such extended time to which the Contractor shall be entitled under GC Clause 25 hereof.

18.2 If the Contractor fails to attain Completion of the Facilities or any part thereof within the Time for Completion or any extension thereof under GC Clause 25, the Contractor shall pay to the Employer liquidated damages in the amount specified in section 1(instruction to bidder)-Clause33.

Such payment shall completely satisfy the Contractor's obligation to attain Completion of the Facilities or the relevant part thereof within the Time for Completion or any extension thereof under GC Clause 25. The Contractor shall have no further liability whatsoever to the Employer in respect thereof.

However, the payment of liquidated damages shall not in any way relieve the Contractor from any of its obligations to complete the Facilities or from any other obligations and liabilities of the Contractor under the Contract

20. Limitation of Liability

20.1 Except in cases of criminal negligence or willful misconduct,

- (a) neither Party shall be liable to the other Party, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, which may be suffered by the other Party in connection with the Contract, other than specifically provided as any obligation of the Party in the Contract, and
- (b) the aggregate liability of the Contractor to the Employer, whether under the Contract, in tort or otherwise, shall not exceed the amount of () percent (%) of the Contract Price,

provided that this limitation shall not apply to the cost of repairing or replacing defective facilities, or to any obligation of the Contractor to indemnify the Employer with respect to patent infringement.

F-Risk Distribution

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| ;21. Care of Facilities | 21.1 The Contractor shall be responsible for the care and custody of the Facilities or any part thereof until the date of arrived the facilities to the site, and shall make good at its own cost any loss or damage that may occur to the Facilities from any cause whatsoever during such period. The Contractor shall also be responsible for any loss or damage to the Facilities caused by the Contractor or its Subcontractors in the course of any work carried out. |
| | 21.2 The Contractor shall be liable for any loss of or damage to any Contractor's Equipment, or any other property of the Contractor used or intended to be used for purposes of the Facilities. |
| 22. Loss of or Damage to Property; Accident or Injury to Workers; Indemnification | 22.1 Subject to GC Sub-Clause 22.3, the Contractor shall indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, in respect of the death or injury of any person or loss of or damage to any property other than the Facilities whether accepted or not, arising in connection with the supply of the Facilities and by reason of the negligence of the Contractor or its Subcontractors, or their employees, officers or agents. |
| | 22.2 The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from any liability for loss of provided that such fire, explosion or other perils were not caused by any act or failure of the Contractor. |
| 23. Force Majeure | 23.1 "Force Majeure" shall mean any event beyond the reasonable control of the Employer or of the Contractor, as the case may be, and which is unavoidable notwithstanding the reasonable care of the Party |

affected, and shall include, without limitation, the following:

- (a) war, hostilities or warlike operations whether a state of war be declared or not, invasion, act of foreign enemy and civil war,
- (b) rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts,
- (c) confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government or de jure or de facto authority or ruler or any other act or failure to act of any local state or national government authority,
- (d) strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine and plague,
- (e) earthquake, landslide, volcanic activity, fire, flood or inundation, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear and pressure waves or other natural or physical disaster,

- 23.2 If either Party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within fourteen (30) days after the occurrence of such event.
- 23.3 The Party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such Party's performance is prevented, hindered or delayed. The Time for Completion shall be extended in accordance with GC Clause 25.
- 23.4 The Party or Parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect thereof upon its or their performance of the Contract and to fulfill its or their obligations under the Contract, but without prejudice to either Party's right to terminate the Contract under GC Sub-Clauses 23.5.
- 23.5 If the performance of the Contract is substantially prevented, hindered or delayed for a single period of more than ninety (90) days or an aggregate period of more than one hundred and fifty (150) days on account of one or more events of Force Majeure during the currency of the Contract, the Parties will attempt to develop a

mutually satisfactory solution, failing which either Party may terminate the Contract by giving a notice to the other,.

- 23.6 In the event of termination pursuant to GC Sub-Clause 23.5, the rights and obligations of the Employer and the Contractor shall be as specified in GC Sub-Clauses 27.1.2 and 27.1.3.
- 23.7 Force Majeure shall not apply to any obligation of the Employer to make payments to the Contractor herein.

G. Change in Contract Elements

24. Change in the Facilities

24.1 Introducing a Change

- 24.1.1 The Employer shall have the right to propose, and subsequently order the Contractor from time to time during the performance of the Contract to make any change, modification, addition or deletion to, in or from the Facilities hereinafter called "Change", provided that such Change falls within the general scope of the Facilities and does not constitute unrelated work and that it is technically practicable, taking into account both the state of advancement of the Facilities and the technical compatibility of the Change envisaged with the nature of the Facilities as specified in the Contract.
- 24.1.2 The Contractor may from time to time during its performance of the Contract propose to the Employer any Change that the Contractor considers necessary or desirable to improve the quality, efficiency or safety of the Facilities. The Employer may at its discretion approve or reject any Change proposed by the Contractor, provided that the Employer shall approve any Change proposed by the Contractor to ensure the safety of the Facilities.
- 24.1.3 Notwithstanding GC Sub-Clauses 24.1.1 and 24.1.2, no change made necessary because of any default of the Contractor in the performance of its obligations under the Contract shall be deemed to be a Change, and such change shall not result in any adjustment of the Contract Price or the Time for Completion.
- 24.1.4 The procedure on how to proceed with and execute Changes is

specified in GC Sub-Clauses 24.2

24.2 Changes Originating from Employer

24.2.1 If the Employer proposes a Change pursuant to GC Sub-Clause 24.1.1, it shall send to the Contractor a "Request for Change Proposal," requiring the Contractor to prepare and furnish to the employer as soon as reasonably practicable a "Change Proposal," which shall include the following:

- (a) brief description of the Change
- (b) effect on the Time for Completion
- (c) estimated cost of the Change
- (e) effect on the Facilities
- (f) effect on any other provisions of the Contract.

24.2.2 Prior to preparing and submitting the "Change Proposal," the Contractor shall submit to the employer an "Estimate for Change Proposal," which shall be an estimate of the cost of preparing and submitting the Change Proposal.

Upon receipt of the Contractor's Estimate for Change Proposal, the Employer shall do one of the following:

- (a) accept the Contractor's estimate with instructions to the Contractor to proceed with the preparation of the Change Proposal
- (b) advise the Contractor of any part of its Estimate for Change Proposal that is unacceptable and request the Contractor to review its estimate
- (c) advise the Contractor that the Employer does not intend to proceed with the Change.

24.2.3 Upon receipt of the Employer's instruction to proceed under GC Sub-Clause 24.2.2 (a), the Contractor shall, with proper expedition, proceed with the preparation of the Change Proposal, in accordance with GC Sub-Clause 24.2.1.

24.2.4 The pricing of any Change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract. If such rates and prices are inequitable, the Parties thereto shall agree on specific rates for the valuation of the Change..

24.2.5 Upon receipt of the Change Proposal, the Employer and the Contractor shall mutually agree upon all matters therein contained. Within fourteen (14) days after such agreement, the Employer shall, if it intends to proceed with the Change, issue the Contractor with a Change Order.

If the Employer is unable to reach a decision within thirty (30) days, it shall notify the Contractor with details of when the Contractor can expect a decision.

If the Employer decides not to proceed with the Change for whatever reason, it shall, within the said period of twenty one (21) days, notify the Contractor accordingly. Under such circumstances

25. Extension of Time for Completion

25.1 The Time(s) for Completion specified in the PC pursuant to GC Sub-Clause 8.2 shall be extended if the Contractor is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following:

- (a) any Change in the Facilities as provided in GC Clause 24;
- (b) any occurrence of Force Majeure as provided in GC Clause 23,
- (c) any suspension order given by the Employer under GC Clause 26 hereof .
- (e) any delays attributable to employer

by such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Contractor.

25.2 Except where otherwise specifically provided in the Contract, the Contractor shall submit to the employer a notice of a claim for an extension of the Time for Completion, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the Employer and the Contractor shall agree upon the period of such extension. In the event that the Contractor does not accept the Employer's estimate of a fair and reasonable time extension, the Contractor shall be entitled to refer the matter to a Dispute Board, pursuant to GC Sub-Clause 30.1.

25.3 The Contractor shall at all times use its reasonable efforts to minimize

any delay in the performance of its obligations under the Contract.

- 25.4 In all cases where the Contractor has given a notice of a claim for an extension of time under GC 25.2, the Contractor shall consult with the employer in order to determine the steps (if any) which can be taken to overcome or minimize the actual or anticipated delay. The Contractor shall thereafter comply with all reasonable instructions which the employer shall give in order to minimize such delay. If compliance with such instructions shall cause the Contractor to incur extra costs and the Contractor is entitled to an extension of time under GC 25.1, the amount of such extra costs shall be added to the Contract Price.

26. Suspension

- 26.1 The Employer may order the Contractor to suspend performance of any or all of its obligations under the Contract. Such notice shall specify the obligation of which performance is to be suspended, the effective date of the suspension and the reasons therefor. The Contractor shall thereupon suspend performance of such obligation, except those obligations necessary for the care or preservation of the Facilities, until ordered in writing to resume such performance by the employer

If, by virtue of a suspension order given by the employer, other than by reason of the Contractor's default or breach of the Contract, the Contractor's performance of any of its obligations is suspended for an aggregate period of more than ninety (90) days, then at any time thereafter and provided that at that time such performance is still suspended, the Contractor may give a notice to the employer requiring that the Employer shall, within twenty-eight (28) days of receipt of the notice, order the resumption of such performance or request and subsequently order a change in accordance with GC Clause 24, excluding the performance of the suspended obligations from the Contract.

If the Employer fails to do so within such period, the Contractor may, by a further notice to the employer, elect to treat the suspension, where it affects a part only of the Facilities, as a deletion of such part in accordance with GC Clause 24 or, where it affects the whole of the Facilities, as termination of the Contract under GC Sub-Clause 27.1.

- 26.2 If the Contractor's performance of its obligations is suspended or the rate of progress is reduced pursuant to this GC Clause 26, then the Time for Completion shall be extended in accordance with GC Sub-Clause 25.1.

27. Termination

27.1 Termination for Employer's Convenience

27.1.1 The Employer may at any time terminate the Contract for any reason by giving the Contractor a notice of termination that refers to this GC Sub-Clause 27.1.

27.1.2 Upon receipt of the notice of termination under GC Sub-Clause 27.1.1, the Contractor shall either immediately or upon the date specified in the notice of termination:

- (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed.
- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) (ii) below;
- (d) subject to the payment specified in GC Sub-Clause 27.1.3,
 - (i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination;
 - (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors; and
 - (iii) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as at the date of termination in connection with the Facilities.

27.1.3 In the event of termination of the Contract under GC Sub-Clause 27.1.1, the Employer shall pay to the Contractor the following amounts:

- (a) the Contract Price, properly attributable to the parts of the Facilities executed by the Contractor as of the date of termination;
- (c) any amounts to be paid by the Contractor to its Subcontractors in connection with the termination of

any subcontracts, including any cancellation charges;

27.2 Termination for Contractor's Default

27.2.1 The Employer, without prejudice to any other rights or remedies it may possess, may terminate the Contract forthwith in the following circumstances by giving a notice of termination and its reasons therefor to the Contractor, referring to this GC Sub-Clause 27.2:

- (a) if the Contractor becomes bankrupt or insolvent, has a receiving order issued against it,.
- (b) if the Contractor assigns or transfers the Contract or any right or interest therein in violation of the provision of GC Clause 28.
- (c) if the Contractor, in the judgment of the Employer has engaged in corrupt, collusive, coercive, or fraudulent practices, as defined in GC Clause 6, in competing for or in executing the Contract.

27.2.2 If the Contractor:

- (a) has abandoned or repudiated the Contract;
- (b) has without valid reason failed to commence work on the Facilities promptly or has suspended, the progress of Contract performance for more than twenty-one (21) days after receiving a written instruction from the Employer to proceed;
- (c) persistently fails to execute the Contract in accordance with the Contract or persistently neglects to carry out its obligations under the Contract without just cause; or
- (d) refuses or is unable to provide sufficient materials, services or labor to execute and complete the Facilities.

then the Employer may, without prejudice to any other rights it may possess under the Contract, give a notice to the Contractor stating the nature of the default and requiring the Contractor to remedy the same. If the Contractor fails to remedy or to take steps to remedy the same within fourteen (14) days of its receipt of such notice, then the Employer may terminate the Contract forthwith by giving a notice of termination to the Contractor that refers to this GC Sub-Clause 27.2.

27.2.3 Upon receipt of the notice of termination under GC Sub-Clauses 27.2.1 or 27.2.2, the Contractor shall, either immediately or upon such date as is specified in the notice of termination:

- (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed.,
- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) below,
- (c) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination,
- (d) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors,
- (e) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.

27.2.4 The Employer may expel the Contractor, and complete the Facilities itself or by employing any third Party. The Employer may, to the exclusion of any right of the Contractor over the same, take over and use with the payment of a fair rental rate to the Contractor, to the account of the Employer and with an indemnification by the Employer for all liability including damage or injury to persons arising out of the Employer's use of such equipment.

27.2.5 Subject to GC Sub-Clause 27.2.6, the Contractor shall be entitled to be paid the Contract Price attributable to the Facilities executed as of the date of termination. Any sums due the Employer from the Contractor accruing prior to the date of termination shall be deducted from the amount to be paid to the Contractor under this Contract.

27.2.6 If the Employer completes the Facilities, the cost of completing

the Facilities by the Employer shall be determined.

If the sum that the Contractor is entitled to be paid, pursuant to GC Sub-Clause 27.2.5, plus the reasonable costs incurred by the Employer in completing the Facilities, exceeds the Contract Price, the Contractor shall be liable for such excess.

If such excess is greater than the sums due the Contractor under GC Sub-Clause 27.2.5, the Contractor shall pay the balance to the Employer, and if such excess is less than the sums due the Contractor under GC Sub-Clause 27.2.5, the Employer shall pay the balance to the Contractor.

The Employer and the Contractor shall agree, in writing, on the computation described above and the manner in which any sums shall be paid.

27.3 Termination by the Contractor

27.3.1 If

- (a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, fails to remedy the breach or take steps to remedy the breach within twenty one (21) days after receipt of the Contractor's notice, or
- (b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer.

then the Contractor may give a notice to the Employer thereof, and if the Employer has failed to pay the outstanding sum, to approve the invoice or supporting documents, to give its reasons for withholding such approval, or to remedy the breach within twenty-eight (28) days of such notice, or if the Contractor is still unable to carry out any of its obligations under the Contract for any reason attributable to the Employer within twenty-eight (28) days of the said notice, the Contractor

may by a further notice to the Employer referring to this GC Sub-Clause 27.3.1, forthwith terminate the Contract.

27.3.2 The Contractor may terminate the Contract forthwith by giving a notice to the Employer to that effect, referring to this GC Sub-Clause 27.3.2, if the Employer becomes bankrupt or insolvent, has a receiving order issued against it.

27.3.3 If the Contract is terminated under GC Sub-Clauses 27.3.1 or 27.3.2, then the Contractor shall immediately:

- (a) cease all further work, except for such work as may be necessary for the purpose of protecting that part of the Facilities already executed.
- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) (ii);
- (d) subject to the payment specified in GC Sub-Clause 27.3.4,
 - (i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination;
 - (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors; and
 - (iii) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.

27.3.4 If the Contract is terminated under GC Sub-Clauses 27.3.1 or 27.3.2, the Employer shall pay to the Contractor all payments specified in GC Sub-Clause 27.1.3.

27.3.5 Termination by the Contractor pursuant to this GC Sub-Clause 27.3 is without prejudice to any other rights or remedies of the Contractor that may be exercised in lieu of or in addition to rights conferred by GC Sub-Clause 27.3

27.4 In this GC Clause 27, in calculating any monies due from the Employer to

the Contractor, account shall be taken of any sum previously paid by the Employer to the Contractor under the Contract, including any advance payment paid.

28. Assignment

28.1 Neither the Employer nor the Contractor shall, without the express prior written consent of the other Party, which consent shall not be unreasonably withheld, assign to any third Party the Contract or any part thereof, or any right, benefit, obligation or interest therein or thereunder, except that the Contractor shall be entitled to assign either absolutely or by way of charge any monies due and payable to it or that may become due and payable to it under the Contract.

H. Claims, Disputes and Arbitration

29. Contractor's Claims

29.1 If the Contractor considers himself to be entitled to any extension of the Time for Completion, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall submit a notice to the employer, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than twenty-eight (28) days after the Contractor became aware, or should have become aware, of the event or circumstance.

If the Contractor fails to give notice of a claim within such period of twenty-eight (28) days, the Time for Completion shall not be extended, and the Employer shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.

The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.

Within forty-two (42) days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the employer, the Contractor shall send to the employer fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time

Within forty-two (42) days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the employer and approved by the Contractor, the employer shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within such time.

Each Payment Certificate shall include such amounts for any claim as have been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied

are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.

The employer shall agree with the Contractor or estimate the extension (if any) of the Time for Completion (before or after its expiry) in accordance with GC Clause 25, In the event that the Contractor and the Employer cannot agree on any matter relating to a claim, either Party may refer the matter to the Dispute Board pursuant to GC 30 hereof.

30. Disputes and Arbitration

30.1 Appointment of the Dispute Board

Disputes shall be referred to a DB for decision in accordance with GC Sub-Clause 30.3. The Parties shall jointly appoint a DB by the date forty five(45) days after a Party gives notice to the other Party of its intention to refer a dispute to a DB in accordance with Sub-Clause 30.3.

The DB shall comprise three suitably qualified persons ("the members"), each of whom shall be fluent in the language for communication defined in the Contract and shall be a professional experienced in the type of activities involved in the performance of the Contract and with the interpretation of contractual documents.

If the Parties have not jointly appointed the DB twenty-one (21) days before the date mentioned above, and the DB is to comprise three persons, each Party shall nominate one member for the approval of the other Party. The first two members shall recommend and the Parties shall agree upon the third member, who shall act as chairman.

The terms of the remuneration of each of the three members, including the remuneration of any expert whom the DB consults, shall be mutually agreed upon by the Parties when agreeing the terms of appointment of the member or such expert (as the case may be). Each Party shall be responsible for paying one-half of this remuneration.

The appointment of any member may be terminated by mutual agreement of both Parties, but not by the Employer or the Contractor acting alone. Unless otherwise agreed by both Parties.

30.2 Failure to Agree on the Composition of the Dispute Board

If any of the following conditions apply, namely:

- (a) either Party fails to nominate a member (for approval by the other Party) of a DB of three persons by the date stated in the first paragraph of GC Sub-Clause 30.1,
- (b) the Parties fail to agree upon the appointment of the third member (to act as chairman) of the DB by the date stated in

the first paragraph of GC Sub-Clause 30.1, or

- (c) the Parties fail to agree upon the appointment of a replacement person within forty-two (42) days after the date on which one of the three members declines to act or is unable to act as a result of death, disability, resignation or termination of appointment,

then the appointing entity or official named in the Appendix to Tender shall, upon the request of either or both of the Parties and after due consultation with both Parties, appoint this member of the DB. This appointment shall be final and conclusive. Each Party shall be responsible for paying one-half of the remuneration of the appointing entity or official.

30.3 Obtaining Dispute Board's Decision

If a dispute (of any kind whatsoever) arises between the Parties in connection with the performance of the Contract, including any dispute as to any certificate, determination, instruction, opinion or valuation of the employer, either Party may refer the dispute in writing to the DB for its decision, with copies to the other Party and the employer. Such reference shall state that it is given under this Sub-Clause.

For a DB of three persons, the DB shall be deemed to have received such reference on the date when it is received by the chairman of the DB.

Both Parties shall promptly make available to the DB all such additional information, further access to the Site, and appropriate facilities, as the DB may require for the purposes of making a decision on such dispute. The DB shall be deemed to be not acting as arbitrator(s).

Within eighty-four (84) days after receiving such reference, or within such other period as may be proposed by the DB and approved by both Parties, the DB shall give its decision, which shall be reasoned and shall state that it is given under this Sub-Clause. The decision shall be binding on both Parties, who shall promptly give effect to it unless and until it shall be revised in an amicable settlement or an arbitral award as described below. Unless the Contract has already been abandoned, repudiated or terminated, the Contractor shall continue with the performance of the Facilities in accordance with the Contract.

If either Party is dissatisfied with the DB's decision, then either Party may, within twenty-eight (28) days after receiving the decision, give notice to the other Party of its dissatisfaction and intention to commence arbitration. If the DB fails to give its decision within the period of eighty-four (84) days (or as otherwise approved) after receiving such reference, then either Party may, within twenty-eight (28) days after this period has expired, give notice to the other Party

of its dissatisfaction and intention to commence arbitration.

In either event, this notice of dissatisfaction shall state that it is given under this Sub-Clause, and shall set out the matter in dispute and the reason(s) for dissatisfaction. Except as stated in GC Sub-Clauses 30.6 and 30.7, neither Party shall be entitled to commence arbitration of a dispute unless a notice of dissatisfaction has been given in accordance with this Sub-Clause.

If the DB has given its decision as to a matter in dispute to both Parties, and no notice of dissatisfaction has been given by either Party within twenty-eight (28) days after it received the DB's decision, then the decision shall become final and binding upon both Parties.

30.4 Amicable Settlement

Where notice of dissatisfaction has been given under GC Sub-Clause 30.3 above, both Parties shall attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, arbitration may be commenced on or after the fifty-sixth (56) day after the day on which notice of dissatisfaction and intention to commence arbitration was given, even if no attempt at amicable settlement has been made.

30.5 Arbitration

Any dispute not settled amicably and in respect of which the DB's decision (if any) has not become final and binding shall be finally settled by arbitration. Unless otherwise agreed by both Parties;

- (i) the dispute shall be finally settled under the Rules of Conciliation and Arbitration of the International Chamber of Commerce,
- (ii) the dispute shall be settled by three arbitrators appointed in accordance with these Rules, and,
- (iii) the arbitration shall be conducted in the language for communications defined in Sub-Clause 5.3.

The arbitrator(s) shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the employer, and any decision of the DB, relevant to the dispute.

Neither Party shall be limited in the proceedings before the arbitrator(s) to the evidence nor arguments previously put before the DB to obtain its decision, or to the reasons for dissatisfaction given in its notice of dissatisfaction. Any decision of the DB shall be admissible in evidence in the arbitration.

Arbitration may be commenced prior to or after completion of the Works. The obligations of the Parties and the DB shall not be altered by reason of any arbitration being conducted during the progress of

the Works.

30.6 Failure to Comply with Dispute Board's Decision

In the event that a Party fails to comply with a DB decision which has become final and binding, then the other Party may, without prejudice to any other rights it may have, refer the failure itself to arbitration under GC Sub-Clause 30.5. GC Sub-Clauses 30.3 and 30.4 shall not apply to this reference.

30.7 Expiry of Dispute Board's Appointment

If a dispute arises between the Parties in connection with the performance of the Contract, and there is no DB in place, whether by reason of the expiry of the DB's appointment or otherwise:

- (a) GC Sub-Clauses 30.3 and 30.4 shall not apply, and
- (b) the dispute may be referred directly to arbitration under GC Sub-Clause 30.5.

Attached no. 1

NOM.CAP(M3)				DESIGN TEMP.(C°)						MATERIALS					
SERVICE				Operating temp.(C°)						Bottom : Annular					
Int. diam.(mm):				Design pressure: ATM						Shell PLT:					
Shell height(mm):				Operating pressure: ATM						Roof PLT:					
Spec. gravity:				Wind speed: Km\hr						Wind girder:					
Code : API 650 latest edition				Seismic Zone:						Structure:					
TANK DESIGN DATA				Corrosion allow.(mm)						Valves:					
Bottom				Bottom						PIPES:					
Bottom slope: %				Roof:						Flanges:					
Bottom PLT. THK:				Shell:						Stud bolts & Nuts:					NOTES:
Annular PLT. THK.				Pos.	Description	No.	Size	Note	POS.	Description	No	Size	Note		
Shell				Bottom						SHELL					
Course	THK.MM	HT.MM	WT.KG	1	D.OFF SUMP				21	MANHOLE				BIDDER SHALL FILL IN THE BLANKS	
1 ST.				2	INT.C.P.				22	MANHOLE					
2 ND.				3	EXT.C.P.				23	INLET\ OUT NZ.					
3 RD.				ROOF					24	MIXER NO					
4 TH.				4	MANHOLE				25	RECIRC. NOZ					
5 TH.				5	ROLL LADER				26	SPARE NOZ.					
6 TH.				6	GIDE POLE				27	SPARE NOZ.					
TOP ANGLE:				7	ROOF DRAIN				28	FLOW RET. NO.					
TOP WIND GIRDER:				8	EMERG. DRAIN				29	ROOF DR. NO.					
SEC.WIND GIRDER :				9	RIM VENT NO.				30	DRAW OFF NOZ.					
SEC.WIND GIRDER:				10	AUTO BI. VENT				31	SAMPLING NOZ.					
ROOF				11	G. HATCH NO.				32	SWITCH L.NOZ.					
ROOF TYPE:				12	GROUDING				33	TEMP. IND. NOZ.					
PLT.THK.				FITTINGS & INSTRUMENT.					34	CL. OUT DOOR					
PRIM SEAL TYPE				13	LIGHTING				35	TOP PLATFORM					
SECO. SEAL TYPE				14	THERMOMETER				36	EX.INC.LADDER					
WEIGHT				15	BREATH.VALVE				37						
BOTTOM TOT.WT.(T):				16	FLAME ARRES.				38	EARTH LUGS					
SHELL TOT.WT.(T):				17	SIDE MIXER				FIRE FIGTING SYST.						
ROOF TOT.WT.(T):				18	MECH.LIND				39	FOAM SYSTEM				PROJECT NO.:	
TANK ACCESS. WT.(T):				19	AUT.L.LIND				40	WATER COOLING SYSTEM				DATA SHEET NO.:	
TANK TOT. WT.(T)				20	LEVEL SWITCH				41	RIMSEAL FIRE PROT. SYST.				DATE:	

Attached no. 2

Cru de oil

Sample source:

Sample date: JULY / 2013

Sample time:

item	Test	Result
1	Density at 15 °C g / cm ³	0.8545
2	API	33.99
3	Sulphur Content WT%	2.2
4	Water and sediment vol %	0.1
5	Water content vol %	Nil
6	Salt content ppm as NaCl	82.27 ≈28.8 Lb / 1000 brl
7	Kin.Vis. at 40 °C cst	6.0
8	H ₂ S ppm	-
9	Pour point °C	< - 30
10	Carbon residue (conrd) WT%	4.1
11	Reaid vapor pressure Kg/CM ²	-
12	Asphaltenes wt%	1.3
13	Ash content wt%	0.008
14	Distillation	
	IBP °C	46
	Recovery @ 50%ml	0.3
	75%ml	3
	100%ml	8
	125%ml	13
	150%ml	18
	175%ml	23
	200%ml	28
	225%ml	33
	250%ml	37
	275%ml	40
	300%ml	45
	Total distillation vol %	47

Research and quality control department

PRODUCT: GAS OIL CERTIFICATE

Tank NO. :

DATE: JULY – 2013

DATCH NO.

TESTS	RESULTS	Marketing Specifications
Density at 15 °C g / cm ³	0.8175	0.85
API Gravity at 15.6°C	41.50	
Viscosity at 40 °C cst	2.19	5.6 max
Flash point (P.M) °C	62	54 min
Pour point ,°C	-9	-9 max
Sulphur content , %wt	0.83	1.0 max
Carbon residue(rams) (10% ras)	0.13	0.2 max
Diesel index	65.97	55 min
Cetane index	55	53 min
Calorific value kcal /kg (gross) EST	10928	10800
Distilled at 350 °C %V.	99	85 min
Colour ASTM	0.5	

Attached no.4

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South Refineries Company**Research and quality control department****PRODCT: Kerosine Certificate****Tank NO. :****DATE: JULY - 2013**

TESTS	RESULTS	Marketing Specifications	
Density at 15 °C g / cm ³	0.7795	0.801	
API Gravity at 15.6 °C	49.96		
Colour (Saybolt)	+26	+25	min
Flash point (Abel) °C	42	38.0	min
Sulphur content , %wt	0.09	0.2	max
Smoke point , mm	25	25	min
Char value , mg / kg	-	20	max
Aromatic content %	17	20	max
Distillation 185 °C	70	20	min
Final boiling point-°C	221	300	max
Calorific value kcal /kg (gross) EST	11125	10900	
Doctor Test	Neg.	Neg.	

attached: 5

Research and Quality Control Department

product : Heavy Naphtha

Date : 19/12/2010

TEST	RESULTS
SP. GR. 15.6 C	0.7048
SULFUR %	0.08
DOCTOR TEST	POSTIVE
DISTLATION IBP C	36
5%	44
10%	50
30%	74
50%	98
70%	120
90%	148
95%	164
END POINT	170