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El Bhawan Annexe, Bhikaiji Cama Place, RK Puram, New Delhi – 110 066, INDIA Phone No: 0091-11-26102121, 26101419; Fax No: 0091-11-26191714, 26167664

REQUEST FOR QUOTATION (RFQ)

*RFQ No.: AS/A546-604-PA-MR-5010/511 Date: 02-09-2014

To, M/s	Client: INDIAN OIL CORPORATION LIMITED
	Project: COKE CHAMBER REPLACEMENT AND ALLIED MODERNIZATION IN COKER – A UNIT AT BARAUNI REFINERY
	MR No.: A546-604-PA-MR-5010 Rev. A
	Item: PUMPS – CENTRIFUGAL HORIZONTAL (SPP)
	Due Date & Time: 29.09.2014 & Up to 1200 Hrs. (IST)
UNPRICED BID OPENING:	At 1400 Hours (IST) on 29.09.2014 (**) at Business Centre, E. I. Bhawan,Annexe Bhikaiji Cama Place, R.K. Puram, New Delhi – 110066, India
PRICED BID OPENING:	TIME & VENUE SHALL BE INTIMATED LATER.

(**)If the particular day is happened to be a declared holiday in EIL, New Delhi, the next working day shall be considered.

GENTLEMEN,

- Online Bids are requested under competitive bidding on e-procurement basis for the captioned subject item in total compliance to technical specifications, scope and terms & conditions of enquiry documents / attachments.
- 1.1 Bidders are advised to submit quotations strictly based on the specifications, terms & conditions contained in the RFQ documents and not to stipulate any deviation.
- 1.2 Bidders can download the complete enquiry document from the web address http://eprocure.gov.in/eprocure/app.
- 1.3 Commercial requirements are specified in the attached General Purchase Conditions, Special Purchase Conditions & Instructions to Bidders, Terms & Conditions for Site Work (applicable if MR calls for Scope of Site Work), Terms & Conditions for Supervision of Erection, Testing & Commissioning (applicable if MR calls for supervision), Agreed Terms & Conditions (ATC) questionnaire etc. The ATC should be duly filled in, signed & stamped, scanned and uploaded with your bid.
- 1.4 E-Bids are required to be submitted only through Central Public Procurement Portal (CPPP) of Government of India, on or before the bid submission date and time. Bidders are required to register themselves at http://eprocure.gov.in/eprocure/app. No registration fee would be charged from the bidders.

- 1.5 Bidders are required to upload the bid along with all supporting documents & priced part on the etendering website (http://eprocure.gov.in/eprocure/app) only.
- 1.6 Bidders to refer E-Tendering methodology attached with the RFQ.

Various links such as "Help for Contractor", "Information about DSC", "FAQ", "Resources Required", "Bidders Manual Kit" etc. are available on home page of http://eprocure.gov.in/eprocure/app facilitating vendors to participate in the bidding process. Bidder are advised to download & utilize the available information/documents under these links for activities like Registration in CPPP, obtaining User ID & Password, uploading & submission of e-bids etc. Bidders are advised in their own interest to carefully go through Instructions for E-tendering and other related document available against various help links so as to ensure that bids are uploaded in E-tendering website well before the closing date and time of bid submission.

- 1.7 NIC Portal mandates that the bidders are to be registered on the portal before any enquiry can be issued to them. In order to expedite issue of enquiries, the enquiry is being issue through EIL Tender Portal and also being published on Central Public Procurement Portal. The enquiry shall be issued to the bidders on the NIC e-Procurement Portal as soon as their registration is completed in the NIC Portal (https://eprocure.gov.in/eprocure/app).
- 1.8 All those vendors who have still not registered on the NIC Portal are required to register on the same (immediately after issue of enquiry on EIL portal but not later than ten days before the bid due date) for facilitating issue of enquiry to them on the NIC Portal failing which it will not be possible for them to upload their bids. Pursuant to registration, the vendors are also required to login in EIL tender portal and update NIC's registration details and inform the undersigned regarding the same for the subject enquiry.

In any case, the enquiry shall be issued on NIC portal to NIC registered vendors about one week before the bid due date. Therefore, all those bidders who have not complied with the above registration requirements will not be issued this enquiry on NIC portal and will not be eligible to bid. Request for extension in due date of submission of bids due to non registration or delayed registration in NIC portal shall not be entertained.

- 1.9 The bid has to be necessarily submitted on the NIC Portal and only those bidders who are issued the enquiry through NIC Portal will be eligible to submit their bids. In case a bidder does not register on the NIC Portal and as a consequence, cannot be issued the enquiry through NIC Portal, it shall be deemed that he is not interested in bidding against this enquiry and no further correspondence will be entertained.
- 1.10 In future, EIL shall be issuing all enquiries through NIC Portal alone and bidders who do not register with NIC Portal may not be able to submit their bids. Therefore, it is in the interest of the bidders that they register on the NIC Portal at the earliest.
- 2. The vendor registration on NIC Portal is a very user friendly process. However, in case of any doubt, the vendor may also contact the undersigned.
- 3. In the event of failure in bidder's connectivity with EIL/CPPP website during the last few hours on account of problem on bidders account, they are likely to miss the deadline for bid submission. Due date extension request due to this reason will not be entertained. In view of the same, bidders are advised to upload their bid in advance.
- 4. Addendum / corrigendum to the RFQ documents if issued must be signed and submitted along with the bid.
- 5. The order, if any, will be issued by our above-mentioned client.
- 6. Please submit your Acknowledgement against the RFQ on EIL's website

http:tenders.eil.co.in\newtenders within the due date & time, with reasons(s) of not participating in the RFQ in case of regret/negative acknowledgment.

- As Purchaser intends to contract directly with suppliers of the goods for which bids are invited, the bids should be prepared by the suppliers and submitted directly. Purchaser reserves the right to reject offers made by intermediaries.
- 8. Online Bids/ Offer through CPP Portal only shall be accepted. Bids/ Offer through Email or fax/ Telex/Telegraphic / Courier / Open or received through any other mode shall not be accepted and rejected.

9. **Delivery Period:**

- 9.1 <u>FOR INDIAN BIDDERS</u>: 11 (Eleven) Months on FOT Despatch Point basis from the date of Fax of Acceptance. The date of Lorry Receipt (LR) shall be considered as date of delivery.
- 9.2 <u>FOR FOREIGN BIDDERS:</u> 10 (Ten) Months on FOB International Port of Exit basis from the date of Fax of Acceptance. The date of clean bill of lading shall be considered as the date of delivery.

Bidder is requested to quote delivery period as per above requirement. In case Bidder quote higher delivery period than required, Owner reserves rights to reject such offer.

- 10. Transit / Marine / Storage-cum-Erection insurance is excluded from Bidder's scope, since the same shall be arranged by the Owner.
- 11. Validity of Offer: The offer should be valid for Four (4) months from final bid due date.

Bidder to quote validity as required above. In case Bidder quotes shorter validity than required then Bid shall be rejected with no further reference.

- 12. The bidder shall bear all costs associated with the preparation and submission of its bid, and the Purchaser/Consultant shall in no case be responsible or liable for these costs regardless of the conduct or outcome of the bidding process.
- 13. Canvassing in any form by the Bidder or by any other agency on their behalf may lead to disqualification of their bid.
- 14. E-bids received online shall be opened at EIL office on due date and time as specified above. Bids shall be opened in presence of representatives of bidders who choose to attend the same. Such representative shall submit Bid Acknowledgement Number generated by the Portal/System after successful Bid Submission online. Time and Date of opening of Price Bids of technically and commercially acceptable bidders shall be notified to the qualified and acceptable bidders at a later date. However, bidder can also view unpriced / priced Bid Opening online in their office/remote end itself. The bidder's representatives, who are present, shall sign a register evidencing their attendance.
- 15. Bidders to note that price changes against Technical / commercial clarifications, in line with terms & conditions of enquiry documents are not allowed. In case any bidder gives revised prices / price implications against such clarifications, their bid shall be liable for rejection.

16. Payment Terms:

- 16.1 **For Indian Bidder:** As per clause No. 1.5 A, 1.6 A & 1.9.17 of Special Purchase Conditions & Instructions to Bidders (SPC & ITB).
- 16.2 For Foreign Bidder: As per clause No. 1.5 B, 1.6 B & 1.9.18 of Special Purchase Conditions & Instructions to Bidders (SPC & ITB).

- 17. Bidders are requested to quote as per their capability registered in EIL.
- 18. EIL reserves the right to use in-house information for assessment of bidder's capability for consideration of bid.

19. Net Worth

Net worth of the bidder should be positive as per the audited financial results for the immediate preceding financial year.

The offer of the bidder whose net worth is "Negative" in the immediate preceding financial year shall not be considered for further evaluation. However, Indian Central Public Sector Undertakings / Enterprises shall be exempted from the requirement of Positive Net Worth Criteria.

Please submit copy of your <u>complete Annual Financial Statement</u> including Auditor' Report and Schedule of Reserve & Surplus, Balance Sheet & Profit/Loss account and including all notes and schedules forming part of Audited Annual reports for the immediate preceding financial year determination of net-worth of the Bidder.

20.	Bidders are requested to submit following Networth details in their Login of EIL's Tender Portal
	before downloading the Enquiry :

a)	From Financial Month/ Year	to Mor	nth/ Year	
b)	Net worth (Positive/ Negative)			
c)	Upload Audited Financial Statements	(Browse/ Attacl	h) :	

- 21. In case any bidder is found to be involved in cartel formation, his bid will not be considered for evaluation / placement of order. Such bidder will also be debarred from bidding in future.
- 22. Bidder should not be black listed with any PSU and should not be on holiday list of EIL / IOCL.
- 23. IOCL / EIL will follow purchase / price preference policy as per guidelines of Govt. of India in vague.
- 24. We reserve the right to make any changes in the terms and conditions of purchase and to reject any or all the bids received, at its discretion without assigning any reason whatsoever.
- 25. Where any provisions of Special Purchase Conditions & Instructions to Bidders and General Purchase Conditions is in conflict or at variance with any provisions of RFQ Cover Letter, RFQ Cover Letter shall over-ride such provision(s) of Special Purchase Conditions & Instructions to Bidders and General Purchase Conditions only to the extent of such repugnancy or variation.
- 26. Contact Persons for this RFQ are:

Mr. S.K.Singh, AGM (C&P), Tel No. 011-2676 2076 / 2086, email: singh.sk@eil.co.in / kushal.verma@eil.co.in

*Please specify RFQ No.: AS/A546-604-PA-MR-5010/511 in all Correspondence.

THIS IS NOT AN ORDER

Very truly yours, For & on Behalf of IOCL

(S.K.Singh)
AGM(C&P)
ENGINEERS INDIA LIMITED

Enclosure: As per List Attached

LIST OF ENCLOSURES

DOCUMENT

- A) Request For Quotation (RFQ)
- B) Commercial document:
 - i) Price Schedule Format (For Indian / Foreign Bidders)
 - ii) Special Purchase Conditions & Instruction to Bidder (SPC&ITB)
 - iii) General Purchase Conditions including Addendum to GPC
 - iv) Agreed Terms & Conditions (For Indian Bidders)
 - v) Agreed Terms & Conditions (For Foreign Bidders)
 - vi) Terms & Conditions for Site Supervision & Training (For Indian Bidders)
 - vii) Terms & Conditions for Site Supervision & Training (For Foreign Bidders)
 - viii) E-tendering Methodology
 - ix) Instructions for Foreign bidders for DSC
- C) Technical document:

Material Requisition (MR) No.: A546-604-PA-MR-5010 Rev. A

PREAMBLE TO PRICE SCHEDULE (INDIAN) RFQ NO. AS/A546-604-PA-MR-5010/511 ITEM: PUMPS - CENTRIFUGAL HORIZONTAL (SPP) Scope of supply including inspection, testing at manufacturer's works, packing, documentation etc., shall be strictly as per Material Requisition and other documents which are part of RFQ. Bidder shall furnish prices/details, in accordance with RFQ Covering Letter, Special Purchase Conditions & Instructions To Bidders (SPC & ITB), General Purchase Conditions (GPC) and Terms & Conditions for Site Supervision & Training (Form - S) and other referred Terms & Conditions. Bidders must quote Freight charges in the price schedule only. The project is eligible for concessional rate of Customs Duty applicable under the EPCG scheme of Government of India, Bidders shall furnish the quantum of import content (CIF value) included in the bid in Indian Rupees and applicable rate of duty under the EPCG Scheme. Bidder shall furnish built-in CIF value if any, against each item, giving details of description of goods, qty. rate of Custom Duty etc. in attached Format-"CIF/CD". Bidder to clearly indicate 'Quoted' / 'Not Quoted' against each Sr. No. in the price column in the unpriced Price Schedule. Bidders to submit Price Part of above Price Schedule in their Priced Bid and Unpriced Part with the Unpriced Bid. Bidder must quote the price in enclosed Price Schedule formats only. The formats shall not be changed and/or retyped. Quoted prices are firm and fixed till complete execution of the entire order and no variation is allowed on any account. Bidder to furnish seperately itemwise list of commissioning, Special Tools and Tackles included in the Quoted price for main equipment. Itemised Prices for 2 years operation & maintenance spares shall be furnished as per enclosed format and shall not be included in the quoted supply prices. Quoted 2 years operation & maintenance spares shall not be considered for Evalaution. Bidder to note that Technical loading, if any, shall be as per loading criteria if specified in the MR and the same shall be considered for evaluation. Hence, bidder shall quote accordingly. Bidder confirm that he has noted the contents of the Preamble to the Price Schedule, Price Schedule, RFQ, Material Requisition etc and quoted his prices accordingly without any deviation. NOTE: This Price Schedule contains total 5 pages.

PRICE SCHEDULE FOR SUPPLY (INDIAN BIDDERS)

RFQ NO. AS/A546-604-PA-MR-5010/511

ITEM: PUMPS - CENTRIFUGAL HORIZONTAL (SPP)

NAME OF BIDDER: M/S _____

ITEM SL. NO. AS PER MR.	DESCRIPTION OF ITEM	QTY.	QUOTED PRICE	
01.00	SUPPLY OF FOLLOWING ITEMS AS PER COMPLETE SCOPE OF MR. NO. A546-604-PA-MR-5010. (FOR DETAILS OF BUILT IN CIF VALUE OF IMPORT CONTENT, REFER FORMAT - CIF/CD ATTACHED.)		UNIT SUPPLY PRICE ON FOT DESPATCH POINT BASIS (IN INR)	UNIT FRIEGHT CHARGES EXCLUDING CENVATABLE SERVICE TAX PLUS EDU. CESS THEREON UPTO PROJECT SITE (IN INR)
01.01	TAG NO. 604-PA-061A/B; FRACTIONATOR BOTTOM RE- CIRCULATION PUMPS	2 NOS		
01.02	TAG NO. 604-PA-063A/B; NEW LEAN KERO PUMPS	2 NOS		
01.03	TAG NO. 604-PA-066A/B; CFO BOOSTER PUMPS	2 NOS		
01.04	TAG NO. 604-PA-067A/B; DELUGE WATER PUMPS	2 NOS		
01.05	TAG NO. 604-PA-069A/B; CFO CR/IR PUMPS	2 NOS		
04.00	SUPPLY OF MANDATORY SPARES AS PER MR DOCUMENT A546-604-16-45-SL-5010, FOR THE FOLLOWING ITEMS.			
04.01	FOR S.NO. 01.01 ABOVE (TAG NO. {04} 604-PA-061A/B)	1 LOT		
04.02	FOR S.NO. 01.02 ABOVE (TAG NO. {04} 604-PA-063A/B)	1 LOT		
04.03	FOR S.NO. 01.03 ABOVE (TAG NO. {04} 604-PA-066A/B)	1 LOT		
04.04	FOR S.NO. 01.04 ABOVE (TAG NO. {04} 604-PA-067A/B)	1 LOT		
04.05	FOR S.NO. 01.05 ABOVE (TAG NO. {04} 604-PA-069A/B)	1 LOT		
05.00	QUOTATION FOR TWO (2) YEARS OPERATION AND MAINTENANCE SPARES, WITH ITEMISED PRICE LIST.	LOT	(QUOTED SEPERATELY IN ATTACHED FORM - P)	
08.00	SUPERVISION SERVICES FOR ERECTION AND COMMISSIONING AS PER COMPLETE SCOPE OF MR. NO. A546-604-PA-MR-5010.	PER DIEM	(QUOTED SEPERATELY IN ATTACHED FORM - S)	

ENCLOSURE TO PRICE SCHEDULE FOR SUPPLY (INDIAN BIDDERS)

			- /
FOR	ΜΑΊ	r - "Cl	IF/CD

RFQ NO. AS	/A546-604-PA-I	MR-5010/511
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ITEM: PUMPS - CENTRIFUGAL HORIZONTAL (SPP)

NAME OF BIDDER: M/S _____

DETAILS OF BUILT-IN-CIF VALUE OF IMPORT CONTENT CONSIDERED AND INCLUDED IN QUOTED FOT DESPATCH POINT PRICES UNDER PRICE SCHEDULE

DESCRIPTION			CIF value of Import Content included in	RATE OF IMPORT DUTY CONSIDERING EPCG BENEFIT INCLUDED IN QUOTED SUPPLY PRICES				
For Item SI . No. as per MR	Description of Imported Items	Qty. (Unit) *(1)	quoted supply prices for column (2) Qty. (In Rs)	CUSTOM TARRIF NO.	CUSTOMS DUTY (%) CONSIDERING EPCG BENEFIT (INCLUDED IN QUOTED PRICE)			
			Price in Figures		_			
	1	2	3	4	5			
For Item - SL. No - 01.01 -								
For Item - SL. No - 01.02								
For Item - SL. No - 01.03 -								
For Item - SL. No 01.04								
For Item - SL. No - 01.05 -								
TOTAL CI	OTAL CIF VALUE							

PRICE SCHEDULE FOR 2 YEARS OPERATION & MAINTENANCE SPARES (FOR INDIAN BIDDER) - FORM P

RFQ NO. AS/A546-604-PA-MR-5010/511

ITEM: PUMPS - CENTRIFUGAL HORIZONTAL (SPP)

NAME OF BIDDER: M/S

INVIAIT	ANIE OF BIDDER. IN/3						
S. NO.	Item Tag Nos.	Description of spare parts	Qty (Unit _)*	Unit Price on FOT Despatch Point including P&F (INR)	Freight Charges from FOT Despatch Point to Site in %(percentage) -applicable extra on Column No.5		
1	2	3	4	5	6		

^{*}UNIT TO BE SPECIFIED BY BIDDER

^{**} VALIDITY AS SPECIFIED IN CLAUSE NO. 08.00 OF SPECIAL PURCHASE CONDITIONS & INSTRUCTIONS TO BIDDER (SPC & ITB)

PRICE SCHEDULE - SITE SUPERVISION (INDIAN BIDDER) - (FORM - S)

ITEM: PUMPS - CENTRIFUGAL HORIZONTAL (SPP)

RFQ No.: AS/A546-604-PA-MR-5010/511

NAME OF BIDDER:

(A) TERMS & CONDITIONS FOR SITE SUPERVISION SERVICES (INDIAN BIDDERS).

Bidder shall quote per diem charges considering the following:

- Owner shall reimburse economy class airfare to and from the nearest Airport to Kolkata Airport against documentary evidence.
- Transportation charges to and from Kolkata Airport to Project Site at Barauni Refinery, Bihar shall also be reimbursed against submission of documentary evidence (limited to maximum First AC Railway Fare between Kolkata and Begusarai / Barauni / Hathidah / Mokamah)
- The per diem rates shall include lodging, boarding, local transport, medical, all insurance including third party, income tax, all taxes & all other incidental charges.
- The per diem rates shall exclude Service Tax which shall be payable extra
- Per diem rates shall apply from the date the supervisory personnel reach site and upto the day they leave site. No payment shall be made for the transit period.
- Working hours as those prevailing at site upto eight hours a day, Monday through Saturday and holidays as applicable to site personnel shall apply.
- Vendor's supervisory personnel shall observe / abide by site working conditions prevailing in the existing refinery, safety codes and Indian laws.
- A notice period of 15 days will be given for site supervision services.
- For evaluation purpose site supervision of erection and commissioning at site for 5 Man days per Pump shall be used. However, payment shall be made as per actual number of mandays.

(B) CHARGES FOR SITE SUPERVISION OF ERECTION AND COMMISSIONING AT SITE :

S.NO.	DESCRIPTION	RATE IN INR		
1	Per diem charges for upto 8 hours work on normal working days.			
2	Overtime rate / hour beyond normal 8 hours work on normal working days.			
3 Overtime rate / hour for work on weekly off days / holidays (as applicable to Refinery site).				
	•			

PREAMBLE TO PRICE SCHEDULE (FOREIGN) RFQ NO. AS/A546-604-PA-MR-5010/511 ITEM: PUMPS - CENTRIFUGAL HORIZONTAL (SPP) Scope of supply including inspection, testing at manufacturer's works, packing, documentation etc., shall be strictly as per Material Requisition and other documents which are part of RFQ. Bidder shall furnish prices/details, in accordance with RFQ Covering Letter, Special Purchase Conditions & Instructions To Bidders (SPC & ITB), General Purchase Conditions (GPC) and Terms & Conditions for Site Supervision & Training (Form - S) and other referred Terms & Conditions. The project is eligible for rate of Customs Duty applicable under the EPCG scheme of Government of India and the same shall be considered for evaluation purpose. Bidder to clearly indicate 'Quoted'/'Not Quoted' against each Sr. No. in the price column in the unpriced Price Schedule. Bidders to submit Price Part of above Price Schedule in their Priced Bid and Unpriced Part with the Unpriced Bid. Bidder must quote the price in enclosed Price Schedule formats only. The formats shall not be changed and/or retyped. 5 Bidders must quote Ocean Freight charges in the price schedule only. Bidder to furnish seperately itemwise list of commissioning, Special Tools and Tackles included in the Quoted price for main equipment. Itemised Prices for 2 years operation & maintenance spares shall be furnished as per enclosed format and shall not be included in the quoted supply prices. Quoted 2 years operation & maintenance spares shall not be considered for Evalaution. Quoted prices are firm and fixed till complete execution of the entire order and no variation is allowed on any account. Bidder to note that Technical loading, if any, shall be as per loading criteria if specified in the MR and the same shall be considered for evaluation. Hence, bidder shall quote accordingly. 11 Foreign Bidder shall quote in US Dollar / Euro / GBP / JPY / SGD only. Bidder to confirm that he has noted the contents of the preamble to the price schedule, price schedule, RFQ, material requisition etc. and quoted his prices accordingly without any deviation. NOTE: This Price Schedule contains total 4 pages.

RFQ N	PRICE SCHEDULE FOR SUPPLY (FOREIGN BIDDERS) FQ NO. AS/A546-604-PA-MR-5010/511						
	TEM : PUMPS - CENTRIFUGAL HORIZONTAL (SPP) AME OF BIDDER: M/S						
ITEM SL. NO. AS PER MR.	DESCRIPTION OF ITEM	QTY.	QUOTED PRICE				
	SUPPLY OF FOLLOWING ITEMS AS PER COMPLETE SCOPE OF MR. NO. A546-604-LZ-MR-4090.		UNIT SUPPLY PRICE ON FOB INTERNATIONAL PORT OF EXIT BASIS AS PER INCOTERMS 2010 (CURRENCY)	UNIT OCEAN FRIEGHT FROM FOB INTERNATIONAL SEAPORT OF EXIT TO SEA PORT OF ENTRY - KOLKATA / HALDIA (CURRENCY)			
01.01	TAG NO. 604 -PA- $061A/B$; FRACTIONATOR BOTTOM RE-CIRCULATION PUMPS	2 NOS					
01.02	TAG NO. 604-PA-063A/B; NEW LEAN KERO PUMPS	2 NOS					
01.03	TAG NO. 604-PA-066A/B; CFO BOOSTER PUMPS	2 NOS					
01.04	TAG NO. 604-PA-067A/B; DELUGE WATER PUMPS	2 NOS					
01.05	TAG NO. 604-PA-069A/B; CFO CR/IR PUMPS	2 NOS					
04.00	SUPPLY OF MANDATORY SPARES AS PER MR DOCUMENT A546-604- 16-45-SL-5010, FOR THE FOLLOWING ITEMS.						
04.01	FOR S.NO. 01.01 ABOVE (TAG NO. {04} 604-PA-061A/B)	1 LOT					
04.02	FOR S.NO. 01.02 ABOVE (TAG NO. {04} 604-PA-063A/B)	1 LOT					
04.03	FOR S.NO. 01.03 ABOVE (TAG NO. {04} 604-PA-066A/B)	1 LOT					
04.04	FOR S.NO. 01.04 ABOVE (TAG NO. {04} 604-PA-067A/B)	1 LOT					
04.05	FOR S.NO. 01.05 ABOVE (TAG NO. {04} 604-PA-069A/B)	1 LOT					
05.00	QUOTATION FOR TWO (2) YEARS OPERATION AND MAINTENANCE SPARES, WITH ITEMISED PRICE LIST.	LOT	(QUOTED SEPERATELY IN ATTACHED FORM - P)				
08.00	SUPERVISION SERVICES FOR ERECTION AND COMMISSIONING AS PER COMPLETE SCOPE OF MR. NO. A546-604-PA-MR-5010.	PER DIEM	(QUOTED SEPERATELY IN A	TTACHED FORM - S)			

PRICE SCHEDULE FOR 2 YEARS OPERATION & MAINTENANCE SPARES (FOR FOREIGN BIDDER) - FORM P

RFQ NO. AS/A546-604-PA-MR-5010/511

ITEM: PUMPS - CENTRIFUGAL HORIZONTAL (SPP)

NAME	NAME OF BIDDER: M/S					
S. NO.	Item Tag Nos.	Description of spare parts	Qty (Unit	Unit Price on FOB International Seaport of Exit Basis as per Incoterms 2010. (Currency)	Ocean Freight Charges from FOB International Seaport of exit to sea port of entry - Kolkata / Haldia in %(percentage) -applicable extra on Column No.5	
1	2	3	4	5	6	

*UNIT TO BE SPECIFIED BY BIDDER

^{**} VALIDITY AS SPECIFIED IN CLAUSE NO. 08.00 OF SPECIAL PURCHASE CONDITIONS & INSTRUCTIONS TO BIDDER (SPC & ITB)

PRICE SCHEDULE - SITE SUPERVISION (FOREIGN BIDDER) - (FORM - S)

ITEM: PUMPS - CENTRIFUGAL HORIZONTAL (SPP)

RFQ No.: AS/A546-604-PA-MR-5010/511

NAME OF BIDDER:

(A) TERMS & CONDITIONS FOR SITE SUPERVISION (FOREIGN BIDDERS).

Bidder shall quote per diem charges considering the following:

- Owner shall reimburse economy class airfare to and from the nearest International Airport in vendor's country to the International Airport at Kolkata against documentary evidence.
- Transportation charges to and from Kolkata Airport to Project Site at Barauni Refinery, Bihar shall also be reimbursed against submission of documentary evidence (limited to maximum First AC Railway Fare between Kolkata and Begusarai / Barauni / Hathidah / Mokamah)
- The per diem rates shall include lodging, boarding, local transport, medical, all insurance including third party, withholding tax, Corporate Tax (as may be applicable) etc. & all other incidental charges.
- Taxes at source shall be deducted by IOCL as per prevalent Government policy while making payments against each invoice.
- The per diem rates shall exclude Service Tax which shall be payable extra by IOCL
- Per diem rates shall apply from the date the supervisory personnel reach site and upto the day they leave site. No payment shall be made for the transit period.
- Working hours as those prevailing at site upto eight hours a day, Monday through Saturday and holidays as applicable to site personnel shall apply.
- Vendor's supervisory personnel shall observe / abide by site working conditions prevailing in the existing refinery, safety codes and Indian laws.
- All foreign nationals coming to India for execution of projects / orders will have to apply for necessary visa. In their own interest bidders are advised to check latest visa rules from relevant sources in their country in case foreign nationals are required to be deputed to India during execution of order.
- Visa should not contain the clause "Not valid for Prohibited, Restricted and Cantonment Areas"
- A tentative schedule shall be given 15 days in advance so that vendor's personnel reach site within 7 days from final intimation for site supervision services.
- For evaluation purpose site supervision of erection and commissioning at site for 5 Man days per Pump shall be used. However, payment shall be made as per actual number of mandays.

(B) CHARGES FOR SITE SUPERVISION OF ERECTION AND COMMISSIONING AT SITE:

S.NO.	DESCRIPTION	RATE (CURRENCY)	
1	Per diem charges for upto 8 hours work on normal working days.		
2	Overtime rate / hour beyond normal 8 hours work on normal working days.		
3	3 Overtime rate / hour for work on weekly off days / holidays (as applicable to Refinery site).		

SPECIAL PURCHASE CONDITIONS & INSTRUCTIONS TO BIDDERS (SPC & ITB)

(JOB No.: A546)

PROJECT: COKE CHAMBER REPLACEMENT AND ALLIED MODERNIZATION IN COKER A AT BARAUNI REFINERY.

OWNER / PURCHASER: INDIAN OIL CORPORATION LIMITED.

CONSULTANT: ENGINEERS INDIA LIMITED.

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1.0 PAYMENT TERMS

In partial modification to the payment terms as mentioned in the General Purchase Conditions, the following payment terms shall be applicable.

The payment terms at Sr. No _____ for Indigenous Bidders and at Sr. No _____ for Foreign Bidders shall be applicable for this MR.

1.1 Where the Material Requisition is only for supply of materials and there is no Vendor Data Requirement specified in MR e.g. bulk piping items etc.

A. Indigenous Bidders

- 1.1.1 90% payment through bank against negotiation of dispatch documents.
- 1.1.2 10% within 30 days after receipt and acceptance of materials at site,
- 1.1.3 Performance Bank Guarantee shall be submitted within 45 days of Fax of Acceptance.

B. Foreign Bidders

- 1.1.4 100% of FOB value shall be paid through an irrevocable Letter of Credit against submission of shipping documents. The Letter of Credit shall be established only on receipt of acceptance of Fax of Acceptance and submission of performance bank guarantee for 10% of total order value valid till full defect liability period plus three months claim period.
- 1.1.5 Performance Bank Guarantee shall be submitted within 45 days of Fax of Acceptance.
- 1.2 Where the Material Requisition calls for Vendor drawings / Technical Documentation.

A. Indigenous Bidders

- 1.2.1 85% payment through bank against negotiation of despatch documents.
- 1.2.2 5% payment after receipt of final technical documentation as per technical specifications provided in PR and against EIL's certification.
- 1.2.3 10% payment within 30 days of receipt and acceptance of materials at site upon satisfactory completion of order.
- 1.2.4 Performance Bank Guarantee shall be submitted within 45 days of Fax of Acceptance.

B. Foreign Bidders

1.2.5 100% of FOB value shall be paid through an irrevocable Letter of Credit against submission of shipping documents and final technical documents. The Letter of Credit shall be established only after receipt of vendor acceptance of Fax of Acceptance and submission of performance bank guarantee for 10% of total order value valid till full defect liability period plus three months claim period.

Note: All final technical documents as per technical specifications provided in PR, in the required number of copies, MUST be sent to Engineers India Limited before shipment of the equipment. LC shall specify that payment shall be released with EIL certificate of receipt of technical documents as one of the negotiable documents. In case the vendor does not submit these documents to EIL prior to despatch clearance, vendor will claim payment after deducting 5% of their payment due against despatch. This 5% payment shall be made through wire transfer against certification by EIL.

- 1.2.6 Performance Bank Guarantee shall be submitted within 45 days of Fax of Acceptance.
- 1.3 Where supply of materials and erection or site work are in the scope of Supplier and Package items.
- 1.3.1 **Supply**

A. Indigenous Bidders

- 1.3.1.1 5% on approval of all drawings at least in CODE-2 by EIL and QAP by Third Party Inspection Agency (TPIA) duly approved by EIL / IOCL and against submission of advance bank guarantee for an equivalent amount valid till complete execution of order plus three months claim period.
- 1.3.1.2 5% after receipt of identified raw materials at vendor's works and against certification by Third Party Inspection Agency (TPIA) duly approved by EIL / IOCL and on submission of advance bank guarantee for equivalent amount valid till complete execution of order plus three months claim period.
- 1.3.1.3 75% after receipt of equipment / materials at IOCL's site. Billing schedule must be furnished by the Vendor within 45 days of Fax of Acceptance / Purchase Order (whichever is earlier) in case pro-rata payments are required.
- 1.3.1.4 5% after successful installation and erection of equipment. In case installation and erection gets delayed due to reasons not attributable to the vendor, this payment shall be released after 6 months of receipt at site, against submission of Advance Bank Guarantee of equivalent amount valid initially for 6 months and extendable thereafter (if required). This Advance Bank Guarantee shall be in addition to the Performance Bank Guarantee.
- 1.3.1.5 10% within 30 days of handing over the successfully commissioned equipment and on submission of all final technical documents as specified in technical specifications provided in PR and against EIL's certification. In case commissioning gets delayed due to reasons not attributable to the vendor, this payment shall be released after 9 months of receipt at site, against submission of Advance Bank Guarantee of equivalent amount valid initially for 6 months and extendable thereafter (if required). This Advance Bank Guarantee shall be in addition to the Performance Bank Guarantee.
- 1.3.1.6 Performance Bank Guarantee for 10% of total order value (supply plus site work) shall be submitted within 45 days of Fax of Acceptance.

B. Foreign Bidders

- 1.3.1.7 5% on approval of all drawings at least in CODE-2 by EIL, and QAP by Third Party Inspection Agency (TPIA), duly approved by EIL/IOCL against submission of advance bank guarantee for an equivalent amount valid till complete execution of order plus three months claim period.
- 1.3.1.8 5% after receipt of identified raw materials at vendor's works and against certification by Third Party Inspection Agency (TPIA), duly approved by EIL/IOCL and on submission of advance bank guarantee for equivalent amount valid till complete execution of order plus three months claim period.
- 1.3.1.9 75% of FOB value shall be paid through an irrevocable Letter of Credit against submission of shipping documents. Billing schedule must be furnished by the Vendor within 45 days of Fax of Acceptance / Purchase Order (whichever is earlier) in case pro-rata payments are required.
- 1.3.1.10 5% after successful installation and erection of equipment. In case installation and erection gets delayed due to reasons not attributable to the vendor, this payment shall be released after 6 months of completion of delivery at site, against submission of Advance Bank Guarantee of equivalent amount valid initially for 6 months and extendable thereafter (if required). This Advance Bank Guarantee shall be in addition to the Performance Bank Guarantee.
- 1.3.1.11 10% within 30 days of handing over the successfully commissioned equipment and on submission of all final technical documents in the required number of copies as per technical specifications provided in PR.

In case commissioning gets delayed due to reasons not attributable to the vendor, this payment shall be released after 12 months of completion of delivery at site, against submission of Advance Bank Guarantee of equivalent amount valid initially for 6 months and extendable

thereafter (if required). This Advance Bank Guarantee shall be in addition to the Performance Bank Guarantee.

The Letter of Credit shall be established only on receipt of Vendor's acceptance to IOCL's FOA and on submission of 10% PBG as per IOCL's format valid till full defect liability period plus three (3) months claim period.

1.3.1.12 Performance Bank Guarantee for 10% of total order value (supply plus site work) shall be submitted within 45 days of Fax of Acceptance.

1.3.2 <u>Erection / Site work</u>

A. Indigenous Bidders

- 1.3.2.1 90% against monthly running bills (based on agreed billing schedule), duly certified by site incharge.
- 1.3.2.2 10% within 30 days after final handing over of successfully commissioned equipment to IOCL at site duly certified by site in charge.

B. Foreign Bidders

- 1.3.2.3 90% against monthly running bills (based on agreed billing schedule), duly certified by site incharge.
- 1.3.2.4 10% within 30 days after final handing over of successfully commissioned equipment to IOCL at site, duly certified by site in charge.
- 1.3.2.5 Payment shall be made through direct wire transfer through normal banking channels

1.4 Fabricated Items (Vessels, Columns, and Heat Exchangers etc.)

A. Indigenous Bidders

- 1.4.1 5% on approval of all drawings and at least in CODE-2 by EIL and QAP by Third Party Inspection Agency (TPIA), duly approved by EIL/IOCL against submission of advance bank guarantee for an equivalent amount, valid till complete execution of order plus three months claim period.
- 1.4.2 5% after receipt of identified raw materials at Vendor's works and against certification by Third Party Inspection Agency (TPIA), duly approved by EIL/IOCL and on submission of advance bank guarantee for equivalent amount valid till complete execution of order plus three months claim period.
- 1.4.3 75% payment through bank against negotiation of dispatch documents. Billing schedule must be furnished by the Vendor within 45 days of Fax of Acceptance / Purchase Order (whichever is earlier) in case pro-rata payments are required.
- 1.4.4 5% payment after receipt of final documents as specified in the technical specification in PR and against EIL's certification.
- 1.4.5 10% within 30 days of receipt and acceptance of equipment at site.
- 1.4.6 Performance Bank Guarantee shall be submitted within 45 days of Fax of Acceptance.

B. Foreign Bidders

- 1.4.7 5% on approval of all drawings at least in CODE-2 by EIL and QAP by Third Party Inspection Agency (TPIA), duly approved by EIL/IOCL against submission of advance bank guarantee for an equivalent amount, valid till complete execution of order plus three months claim period.
- 1.4.8 5% after receipt of identified raw materials at vendor's works and against certification by Third Party Inspection Agency (TPIA), duly approved by EIL/IOCL and submission of advance bank guarantee for equivalent amount valid till complete execution of order plus three months claim period.

1.4.9 90% of FOB value shall be paid through an irrevocable letter of credit against submission of Shipping Documents. Billing schedule must be furnished by the Vendor within 45 days of Fax of Acceptance / Purchase Order (whichever is earlier) in case pro-rata payments are required.

Note: All final technical documents as per technical specifications provided in PR, in the required number of copies, MUST be sent to Engineers India Limited before shipment of the equipment. LC shall specify that payment shall be released with EIL certificate of receipt of technical documents as one of the negotiable documents. In case the vendor does not submit these documents to EIL prior to despatch clearance, vendor will claim payment after deducting 5% of their payment due against despatch. This 5% payment shall be made through wire transfer against certification by EIL.

The Letter of Credit shall be established only on receipt of Vendor's acceptance to IOCL's FOA and on submission of 10% PBG as per IOCL's format valid till full defect liability period + 3 months claim period.

- 1.4.10 Performance Bank Guarantee shall be submitted within 45 days of Fax of Acceptance.
- 1.5 Other items (Major Pump Packages, Compressors, Switch Gears etc.)

A. Indigenous Bidders

- 1.5.1 5% on approval of all drawings at least in CODE-2 by EIL and QAP by Third Party Inspection Agency (TPIA), duly approved by EIL/IOCL and on submission of advance bank guarantee for an equivalent amount valid till complete execution of order plus three months claim period.
- 1.5.2 80% payment through bank against negotiation of dispatch documents. Billing schedule must be furnished by the Vendor within 45 days of Fax of Acceptance / Purchase Order (whichever is earlier) in case pro-rata payments are required.
- 1.5.3 5% payment after receipt of all final technical documents as specified in technical specifications as per PR and against EIL's certification.
- 1.5.4 10% within 30 days of receipt and acceptance of equipment at site.
- 1.5.5 Performance Bank Guarantee shall be submitted within 45 days of Fax of Acceptance.

B. Foreign Bidders

- 1.5.6 5% on approval of all drawings at least in CODE-2 by EIL and QAP by Third Party Inspection Agency (TPIA), duly approved by EIL/IOCL against submission of advance bank guarantee for an equivalent amount valid till complete execution of order plus three months claim period.
- 1.5.7 95% of FOB value shall be paid through an irrevocable Letter of Credit against submission of Shipping Documents and final technical documents. Billing schedule must be furnished by the Vendor within 45 days of Fax of Acceptance / Purchase Order (whichever is earlier) in case pro-rata payments are required.

Note: All final technical documents as per technical specifications provided in PR, in the required number of copies, MUST be sent to Engineers India Limited, before shipment of the equipment. LC shall specify that payment shall be released with EIL certificate of receipt of technical documents as one of the negotiable documents. In case the vendor does not submit these documents to EIL prior to despatch clearance, vendor will claim payment after deducting 5% of their payment due against despatch. This 5% payment shall be made through wire transfer against certification by EIL.

The Letter of Credit shall be established only on receipt of vendor's acceptance to IOCL's FOA and on submission of performance bank Guarantee for 10% of the total order value valid till full defect liability period plus three (3) months claim period.

- 1.5.8 Performance Bank Guarantee shall be submitted within 45 days of Fax of Acceptance.
- 1.6 Payment of per diem charges for Supervision of Erection and Commissioning
- A. Indigenous Bidders

100% of invoice amount shall be paid on completion of services against submission of Invoice and time sheet certified by Site-in Charge. In case of multiple visits, Site in charge shall approve a Billing Schedule for payment against which prorate payment may be released as certified by Site in charge

B. Foreign Bidders

100% of amount payable by direct wire transfer through normal banking channels on completion of supervision activity, on submission of Invoice, time sheet certified by site incharge and legible copy of visa (showing date of entry and date of exit from India) and passport (showing Name and Nationality of the Personnel). In case of multiple visits, Site in charge shall approve a Billing Schedule for payment against which prorate payment may be released as certified by Site in charge

1.7 **Training:**

A. Indigenous Bidders:

100% payment for training shall be released after satisfactory completion of training and on submission of invoice duly certified by IOCL in-charge. In the event of full training not being availed by IOCL (for reasons attributable to IOCL) within this stipulated period, pro-rata payment shall be made for the partial training imparted.

B. Foreign Bidders:

100% payment for training shall be released by direct wire transfer through normal banking channel, after completion of training and on submission of invoice duly certified by IOCL incharge. In the event of full training not being availed by IOCL (for reasons attributable to IOCL) within this stipulated period, pro-rata payment shall be made for the partial training imparted.

1.8 Post Warranty Comprehensive Annual Maintenance Contract (PWCAMC):

A. Indigenous Bidders:

Payment shall be released on quarterly billing basis at the end of each quarter against bills duly certified by IOCL incharge, for satisfactory performance.

B. Foreign Bidders:

Payment shall be released by direct wire transfer on quarterly billing basis at the end of each quarter against bills duly certified by IOCL incharge, for satisfactory performance.

1.9 **General:**

- 1.9.1 All despatches shall be made only after receipt of Despatch Clearance from IOCL / EIL
- 1.9.2 For indigenous vendors, in case of direct negotiation of despatch documents payment shall be released only after receipt of materials at site.
- 1.9.3 The Excise Duty, Bihar VAT and Service Tax shall be released only on receipt of Cenvatable / Vatable copy of corresponding Invoice valid for availing CENVAT/ VAT credit.
- 1.9.4 No initial advance payment along with order shall be made by Owner against supplies as well as services (i.e. supply, transportation, erection, site work etc.).
- 1.9.5 Total progressive payments shall be limited to maximum as specified above, against receipt of advance bank guarantee for equivalent amount. No progressive payments at any stage other than those milestones specifically mentioned above shall be payable by IOCL.
- 1.9.6 All Bank guarantee(s) shall be issued in line with **Annexure C**, attached.
- 1.9.7 All Bank guarantee will be issued directly to IOCL by the Bank and Vendor shall enclose copy of the same along with invoice. Banks shall be informed to send a separate confirmation immediately on request of IOCL to expedite processing at IOCL's end.

- 1.9.8 All payments shall be released within 30 days of receipt of invoice and all requisite documents, complete in all respects.
- 1.9.9 Billing schedule shall be submitted to IOCL by the vendor for approval within 45 days from the date of Fax of Acceptance / Purchase Order (whichever is earlier) wherever specified in the Purchase Order. No pro-rata dispatch shall be made without the approval of billing schedule.
- 1.9.10 IOCL shall establish the Letter of Credit only on receipt of vendor's acceptance to IOCL's Fax of Acceptance and on submission of 10% PBG by Vendor to IOCL within 30 days of FOA.
- 1.9.11 Performance Bank Guarantee for 10% of total order value valid till full defect liability period plus three months claim period shall be submitted within 45 days of Fax of Acceptance.
- 1.9.12 Format for Advance Bank Guarantee (ABG) is enclosed as Annexure H to this document. Format for Performance Bank Guarantee (PBG) is enclosed as Annexure C to the General Purchase Conditions.
- 1.9.13 Foreign Order ABGs shall be addressed to Indian Oil Corporation Limited, Refineries Head Quarters, New Delhi 110 003.
- 1.9.14 Indigenous Order ABGs shall be addressed to Indian Oil Corporation Limited, Project site Address (which will be indicated in the Purchase Order).
- 1.9.15 In case of indigenous orders ABG and PBG shall be sent to the Project Site address (which will be indicated in the Purchase Order)
- 1.9.16 In case of foreign orders ABG and PBG shall be sent to the following address:

Mr S Sekar (DGM, M-PJ)

Indian Oil Corporation Ltd
Refinery Head Office,
SCOPE Complex,Core-2, Room No – 415A,
4TH FLOOR
7, Institutional Area,
Lodhi Road, New Delhi -110003
Phone - 011-42125467

1.9.17 Transportation charges (Indigenous Bidders)

100% within 30 days after receipt of materials at site.

1.9.18 Ocean Freight (Foreign Bidder)

- (a) Ocean transportation from FOB International Seaport of Exit to Kolkata / Haldia Port (India) shall be arranged by IOCL (For FOB Orders) through their nominated freight forwarder. Bidder shall arrange handing over the material to IOCL designated freight forwarder at the designated port of exit.
- (b) The request for ocean freight up to Kolkata / Haldia Seaport of entry is for comparison of bids and will not in any way, limit the Purchaser's right to contract on different terms.
- (c) Purchaser reserves the right to place the order on any of the specified price basis (FOB or CFR). In case of award, initially the Fax of Acceptance (FOA) shall be placed on FOB basis and IOCL reserves the right to convert the same to CFR basis at a later date.
 - Therefore bidder's quoted ocean freight charges should be valid for the entire duration of contract.
- (d) List of acceptable international seaports for containerized cargo is enclosed as Annexure B. Bidders shall have to choose from the nearest / most convenient seaport to them and indicate in their offer. No other port shall be acceptable. However for despatch from North America / Africa / Australia / Middle East Asia / South America, vendors shall be allowed to choose any major international seaport of exit in the respective area.

- (e) In case of break-bulk consignment bidders shall be allowed to quote from the nearest major International Seaport of Exit.
- (f) The Bidder shall not be allowed to change port of Shipment after quoting.

2.0 EVALUATION CRITERIA FOR COMPARISON OF BIDS:

- 2.1 Following costs, taxes, duties etc., as applicable, shall be used for evaluation of bids:
 - Basic ex-works cost (including special tools and tackles),
 - Cost of mandatory and commissioning spares,
 - Packing & Forwarding charges,
 - Third party inspection charges,
 - FOB charges and taxes, duties in bidder's country (in case of foreign vendors),
 - All taxes and duties applicable in India: Net of CenVAT amount shall be considered
 - Port handling charges (for foreign vendors)
 - Freight (including inland freight charges in case of foreign bidders),
 - Entry Tax, if applicable
 - · Testing charges,
 - Site work charges,
 - Site supervision services charges (for number of days as informed in tender), training charges
 - AMC charges,
 - Technical and commercial loadings, as defined in the RFQ document.
 - · Any other charges indicated by the bidder

Suo moto price discounts and discounts for prompt payments shall not be used for evaluation.

Prices for Post Warranty Comprehensive Annual Maintenance Contract (PWCAMC), if any mentioned in MR, shall be considered for evaluation. However, Purchase order for PWCAMC shall be placed separately by IOCL.

Evaluation shall take into consideration Government of India guideline with respect to Purchase Preference applicable to Central PSUs, Micro and Small Enterprises (MSEs) as well as any applicable Government of India Guidelines.

Ministry of Micro, Small and Medium Enterprises, Government of India have notified the public procurement policy (PPP), 2012 for facilitating promotion and development of Micro and Small Enterprises. Guideline for the same is appended as Annexure-I, which shall be complied with for evaluation and ordering.

Third party inspection charges for equipment / material / goods shall be included by the Supplier(s) in their quoted prices, from any one of the following approved third party inspection agencies for the project

- 1. M/s Certification Engineers International Ltd. (CEIL)
- 2. M/s Lloyds Register of Shipping.
- 3. M/s Det Norske Veritas (DNV)
- 4. M/s Bureau Veritas
- 5. M/s TUV India Pvt. Ltd.
- 6. M/s TUV Rhineland (I) Pvt. Ltd.

2.2 Where only Indian Bids are under comparison

- 2.2.1 Bids shall be evaluated on the basis of net of CENVAT delivered cost at site considering the components relevant to indigenous supplies as indicated above.
- 2.2.2 Site supervision services for required number of days shall be used for evaluation. Bidders shall have to quote firm freight charges upto Project site. If a supplier does not quote freight charges then his ex works price shall be loaded with the maximum freight charges quoted by other bidders or pro-rated (with respect to approximate distance) on maximum freight charges as quoted by other bidders or by 5% (for items other than pipes) or 7% (for pipes), whichever is more. After Loading, if the same Bidder becomes L1 (lowest) then the order will be placed based on Freight Charges payable extra at actual subject to maximum freight charges by which the prices of the L1 bidder has been loaded. Where a bidder has not indicated the freight charges in the original offer but indicates the same against commercial query, the freight loading for evaluation shall still be done as indicated above, but ordering shall be done on the freight indicated by the bidder against commercial query.
- 2.2.3 IOCL shall issue concessional form "C" for Central Sales Tax or concessional Form "for VAT". VAT shall be loaded for price comparison.
- 2.2.4 IOCL shall claim CenVAT benefit. Supplier shall be required to furnish CenVATable invoices issued in accordance with rules.
- 2.3 Where only Foreign Bids are under comparison

Bids shall be evaluated considering the components relevant to imported supplies as indicated above.

- 2.3.1 ODC / OWC cases: Unless specifically mentioned otherwise Bidders shall be required to quote firm freight charges up to Haldia / Kolkata sea-port. Order shall be placed on FOB basis with a provision that IOCL may convert it to CFR basis at a later date, if required. In case of package items requiring FOT site delivery & site work and services, the port clearance shall be done by the bidder and custom duty paid on-behalf of Owner (Paid custom duty reimbursable against documentary evidence). The material so cleared at port of entry, shall be issued to bidder as free issue against Indemnity bond and further loading, local transportation and unloading (on site) shall be done by the bidder.
- 2.3.2 For other than ODC / OWC cases: Bidders shall be required to quote firm freight charges up to Haldia / Kolkata Port. In case a bidder declines to quote firm freight, freight @ 6% of FOB price for Asia Pacific / Europe and 9% of FOB price for other places or the highest freight charges quoted by any other bidder against the RFQ, whichever is higher shall be loaded.

IOCL will release the order on FOB basis with freight arrangement by its own freight forwarder but will have the option of changing to CFR Indian Port at a later date. Ocean freight shall have to be kept valid for the entire duration of the order, irrespective of whether the order has been placed on FOB or CFR basis.

In case of pipes, in case a foreign bidder has not quoted or not included stowage charges, the same shall be loaded @ 10% of Ocean Freight.

Bids shall be evaluated on the basis of landed cost / total cost at Site including third party inspection charges by TPI Agency, all duties, taxes and transportation charges except cenvatable CVD, ACD, Special Additional Duty (SAD), cenvatable service tax, cenvatable educational cess. Cenvatable Secondary & Higher Education Cess (SHEC). Comparison cost shall be arrived at considering net of Cenvatable components and the following:

- i) F.O.B. price quoted by the bidder (including stowage charges in case of pipes)
- ii) Ocean freight as mentioned above

- iii) Marine insurance @1% of FOB price
- iv) Landing Charges @1% of CIF Value.
- v) Prevailing rate of Customs duty calculated with Landing Charges @ 1% of CIF Value. Lower of Effective rate of Customs Duty under the EPCG scheme of Government of India or Customs Duty exemption / waiver if applicable to the products being supplied by bidder under any multi-lateral / bi-lateral trade agreement between India and bidder's country shall be loaded, wherever applicable.
- vi) Port handling charges @ 3% of FOB value.
- vii) Inland freight charges from Port to project site @2% of landed cost at Port of Entry.
- viii) Marine insurance @1% and landing Charge @1% shall be used only to obtain assessable value for Customs Duty calculation and shall be deducted from the final price for evaluation purpose.

Foreign bids shall be compared considering the Bill Selling Rate released by State Bank of India as on the date of price bid opening.

Third party inspection charges for equipment shall be included by the Suppliers. A restricted list of approved TPIs is given in Clause No. 2.0 above and Suppliers shall have to confirm to use services of one of these agencies. All bidders (indigenous as well as foreign) shall include the TPI charges in their quoted basic prices. In case of IBR, Suppliers shall have the option of including IBR inspection charges or quoting as firm percentage / lump sum charges. Charges on lot basis shall not be accepted, unless otherwise specified in the tender. IBR charges shall be paid as claimed by the Supplier and documentary evidence will not required.

2.4 Where Indian as well as Foreign Bids are under comparison

- 2.4.1 **Domestic Bidders:-** Bids shall be evaluated as explained in 2.1 & 2.2 above.
- 2.4.2 **Foreign Bidders:-** Bids shall be evaluated on the basis of landed cost at Site as indicated in 2.1 & 2.3 above.
- The project is eligible for rate of Customs Duty under the EPCG scheme of Government of India, and the customs duty shall be loaded accordingly. The indigenous suppliers shall furnish the quantum of import content (CIF value) included in the bid in Indian Rupees and applicable rate of duty under the EPCG Scheme.
- 2.6 IOCL shall issue concessional form "C" for Central Sales Tax or concessional Form "for VAT" . VAT shall be loaded for price comparison.
- 2.7 Excise duty, Sales Tax, Service Tax and VAT shall not be included in the quoted prices and shall be payable extra at actuals. Further, the amount of Excise Duty, Service Tax and VAT shall only be payable against submission of cenvatable / vatable invoices and in case of non-submission, the same will not be payable. Payment of per diem charges shall be made after deduction of withholding tax/TDS.

3.0 COMMERCIAL LOADING OF OFFERS IN CASE OF DEVIATIONS

3.1 BASIS OF LOADING

- 3.1.1 The Bids shall be loaded on Order Value.
- 3.1.2 Bidders are requested to submit the offer in line with terms and conditions provided in RFQ document.

3.2 **PAYMENT TERMS**

- 3.2.1 The payment terms applicable should be clearly indicated. Loading shall be done on the differential amounts at a rate of 11.4% per annum simple interest or otherwise as defined in the tender for the following periods:
 - (a) Drawing approval 80% of the delivery period.
 - (b) Receipt of raw materials at Supplier's works 50% of the delivery period.
 - (c) 5% against receipt of technical documents after despatch of materials one month
 - (d) Final 10% against despatch document one month.
 - (e) Freight charges against despatch documents Entire freight charges for one month.

3.3 **PERFORMANCE BANK GUARANTEE (PBG)**

3.3.1 Performance Bank Guarantee for Defect Liability Period shall be required for all cases of Supplies. However, for order value upto Rs. 2 lakh, PBG will not be asked for. In case a supplier offers to give a PBG for less than 10% of order value, loading shall be done for the differential amount.

In case of Differential Amount

Amount Offered by Bidder		Loading			
a)	10%	Nil			
b)	Less than 10%	Differential between the offered percentage and 10%			

3.4 DELAYED DELIVERIES (CONSIDERING GPC CLAUSE OF 0.5% DELAYED ~ 5% TOTAL)

3.4.1 In case a Supplier does not accept the delayed delivery clause or takes exception to the percentage rate mentioned in GPC, loading shall be done to the extent of maximum of 5% of the order value or the differential percentage not agreed by the supplier.

In case of procurement of equipments / packages etc. (which are ordered as single line items) the Price Reduction Schedule (GPC clause 12.3) applicable shall be as under:

"If the full Material is not delivered within the contractual completion date stipulated in respect thereof, IOCL shall be entitled to a discount by way of price adjustment in a sum equivalent to 0.5% (half percent) of the price of the total order value including the supply and the site work per week or part thereof (delivery of the materials + completion of the site work) beyond the contractual completion date in respect thereof, subject to a maximum discount of 5% (five percent) of the Total Contract Value."

For Packaged Items: Billing schedule approval shall be only for the purpose of facilitating despatch and not for the purpose of ascertaining the undelivered order value.

In case there are different delivery dates for supply and for site job, PRS at applicable rate shall be applicable, if the vendor has delayed the supply beyond CDD, irrespective of actual date of completion of contract (Site work).

- In case supplier takes an exception, that price reduction in case of delayed delivery should be restricted to 5% of undelivered portion only and not on total order value, then price loading @ 2.5% shall be done.
- 3.4.3 In case supplier insists for liquidated damages or indicates penalty clause in place of Price Reduction Clause, the supplier shall be loaded by 5%.

3.5 FREIGHT CHARGES:

- 3.5.1 For Indigenous suppliers, If a supplier does not quote freight charges, his offer will be loaded with maximum freight charges as quoted by the other bidders or pro-rated (with respect to approximate distance) on maximum freight charges as quoted by other bidders or by 5% (for items other than pipes) or 7% (for pipes), whichever is more.
- 3.5.2 Foreign Bidders shall be required to quote firm freight charges up to Kolkata / Haldia Port. In case a bidder declines to quote firm freight, freight @ 6% of FOB price for Asia Pacific / Europe and 9% of FOB price for other places or the highest freight charges quoted by any other bidder against the tender, whichever is higher shall be loaded.
- In case of pipes, if a foreign bidder has not quoted or not included stowage charges, then the same shall be loaded @10% of ocean freight.

3.6 **PRICE VARIATION**

- 3.6.1 Prices mentioned in the Bid shall remain firm and fixed and valid until contractual completion except in the specific cases where Price Variation Clause with Price Variation Formula has been incorporated in the Bidding Document.
- 3.6.2 However if a bidder on his own gives a price variation formula or gives a different Price Variation Formula other than the one given in the Bidding Document, offers of such bidders shall be rejected.
- 3.6.3 In case a Supplier quotes variable price and indicates the price variation formula and a ceiling, then prices will be loaded with the ceiling so indicated by the supplier. Bids with Price Variation Clause (PVC) but without price variation formula and / or without any ceiling shall be rejected and such price bids shall not be opened.

3.7 **DELIVERY**

3.7.1 In case a supplier quotes delivery longer than required in enquiry, the bid shall be rejected.

3.8 **VALIDITY OF OFFER:**

- In case bidder offer's shorter validity than required in RFQ and seeks to revise prices on being asked to meet validity requirement as per RFQ, the offer shall be rejected.
- In exceptional circumstances, prior to expiry of the original bid validity period, the IOCL/EIL may request the bidder to extend the period of validity for a specified additional period. The requests and the responses thereto shall be made in writing (by e-mail/fax/post). A bidder agreeing to the request will not be required or permitted to modify his bid including change in the prices. However, the bidder may be allowed to withdraw the bid. If a bidder still deviates or changes price, its offer will be rejected.

3.9 **INDIAN TAXES/DUTIES:**

- 3.9.1 Any differential in taxes and duties will be cost loaded on case to case basis. However, if a supplier states that taxes/duties are not applicable at present and will be charged as applicable at the time of delivery then his bid shall be loaded by the maximum rate of taxes/duties applicable as on the date of bid opening.
- 3.10 Cost loading in respect of utilities etc. will be considered as per respective MR stipulation.

4.0 CUSTOMS DUTY AND INVALIDATION LETTER

4.1 IOCL shall be availing the benefit of EPCG scheme under the Foreign Trade Policy (FTP) of Government of India for this project and the Customs Duty shall be loaded accordingly. IOCL shall issue invalidation letter to indigenous suppliers and they shall furnish the quantum of import content (CIF value) included in the bid in Indian Rupees accordingly. All subsequent activities and expenses required for availing EPCG benefits shall be on Supplier's account. Obtaining EPCG benefit is solely the Supplier's responsibility and Owner will not compensate the Supplier for their failure to obtain EPCG benefit / failure to import under EPCG benefit.

- 4.2 Bidder shall submit the following documents along with their un-priced bid to obtain the invalidation letter:
 - Copy of Import Export Certificate.
 - Copy of valid RCMC (Registration-cum-Membership Certificate issued by FEO).
 - Industrial License / SSI Registration.
 - Confirmation on Letter Head regarding factory address for which bidder requires the Invalidation Letter.
- 4.3 Bidder must indicate the address in favour of which they require the Invalidation Letter. Bidder must ensure that the address they intend in invalidation letter is the address on which the Bidder wants the order as well as in RCMC of that vendor.
- 4.4 The following additional undertaking/confirmation would be desirable from the bidders who seek to claim EPCG benefit through Invalidation Letter issued by IOCL:

"At any time after receipt of Invalidation Letter, if it is known / established that the Invalidation Letter for import of raw material as requested in the bid would not be utilized at all, bidder undertakes to promptly return the original Invalidation Letter to the Owner without any condition

Vendor will submit a copy of advance licence or copy of bill of entry for import of raw material along with the invoice at the time of supply of material as per the terms of the PO/ FOA/contract.

Advance licence obtained by the vendor against IOCL's invalidation letter or the copy of bill of entry for import of raw material should be dated later to the date of invalidation letter."

The above condition shall also form an integral part of all FOAs/ POs/ Contracts, wherever applicable, issued by IOCL.

5.0 <u>CONCESSIONAL RATE OF CUSTOMS DUTY (APPLICABLE TO FOREIGN</u> BIDDERS ONLY)

- 5.1 The bidder must ascertain and confirm along with supporting documents in the bid, if any Customs Duty exemption / waiver is applicable to the products being supplied by him under any multi-lateral / bi-lateral trade agreement between India and bidder's country.
- The bidder shall be liable to provide all documentation to ensure availment of the exemption / waiver. In case the bidder defaults on this due to any reason, whatsoever, he shall be liable to bear the incremental Customs Duty applicable, if any.
- Any Customs Duty applicability on account of any change in the bi-lateral / multi-lateral agreement shall be to bidder's account.
- Documentation to be furnished for availing the exemption / waiver of customs duty shall be specifically listed in the Letter of Credit also as the pre-requisite for release of payment against shipping documents and this documentation shall necessarily form part of shipping documents.

6.0 <u>FOREIGN EXCHANAGE RATE VARIATION / CUSTOMS DUTY VARIATION FOR</u> INDIAN BIDDERS (ON BUILT-IN IMPORT CONTENT)

- 6.1 Prices shall remain firm and fixed without any escalation except for statutory variation in customs duty rate. However, the prices shall be firm and fixed on account of FE variation.
- The statutory variation in customs duty shall be subject to the following and the supplier shall be asked to confirm the following in their bid:

- (a) Maximum CIF value of import content shall be furnished in the bid.
- (b) The material to be imported covering the above CIF value to be indicated in the bid.
- (c) Any increase in price due to increase in customs duty rate applicable for Project under EPCG scheme beyond two-third of the quoted delivery period will be to supplier's account. However, any decrease in price due to decrease in customs duty rate at the time of actual clearance of imported materials shall be passed on to IOCL.
- (d) If bidder has considered customs duty for import contents other than the rate applicable for Project under EPCG scheme under the EXIM policy of Govt. of India, then statutory variation on the customs duty shall not be payable extra on any increase in the customs duty rate. However, any decrease in price due to decrease in customs duty rate at the time of actual clearance of imported materials shall be passed on to IOCL.
- (e) Variation in price due to customs duty rate will be dealt with separately after receipt of materials at site against documentary evidence.

7.0 SUO-MOTO CHANGES IN PRICES

7.1 Suo moto price change: In case of any suo moto change in price, following shall apply:

Stage	Price	Price	Evaluation	Ordering
	Increase	Decrease	philosophy	philosophy
After	Not	Acceptable	Evaluation	Ordering shall
opening of	Acceptable,		shall be done	be done
technical bid	Bid liable for		without	considering suo
	rejection,		considering	moto discount
	Action		suo moto	
	regarding		discount	
	Holiday Listing			
	may be taken,			
	EMD shall be			
	forfeited			

8.0 SPARES

- 8.1 Quoted prices shall be inclusive of all Mandatory Spares and all Commissioning spares and special tools and tackles, as per the technical specifications and scope provided in MR.
- 8.2 All spares quoted by suppliers against the specified MR requirement will be evaluated and recommended for ordering with the main equipment except recommended two years operation and maintenance spares. In case a supplier does not quote for all spares, their bid shall be loaded with the maximum price quoted by other suppliers for price evaluation.
- 8.3 Commissioning spares and special tools and tackles, if required and mentioned in MR, will be considered for price evaluation and recommended for ordering as quoted by Suppliers. However, Supplier shall be fully responsible and no additional cost shall be paid by IOCL in case commissioning spares/ special tools & tackles over & above those quoted by supplier are required.
- Bidders are requested to quote for their recommended two years operation and maintenance spares but the same will not be considered for price evaluation. The prices quoted for recommended two years operation and maintenance spares shall remain valid upto the contractual completion/delivery period of Order. Order of recommended two years operation and maintenance spares may be placed by IOCL separately, if required. Spares and its quantity shall be decided by IOCL at the time of Order for two years operation and maintenance spares.

9.0 DOCUMENTS COMPRISING THE BID

- 9.1 The offer must be complete in all respects, leaving no scope for ambiguity. Bidder is fully responsible for the bid submitted and no relief or consideration can be given for errors and omissions.
- 9.2 Deviations to terms and conditions, presumptions etc. shall not be stipulated in Price part of bid and price bids shall also not contain any stapled slips. In case of any conditions stipulated in price bids or the price bid containing any stapled slips, the bids of such bidders shall be summarily rejected and shall not be considered for further evaluation. Evaluation shall be carried out excluding such bidder(s).
- 9.3 Bidders must ensure submission of prices without any erasures or corrections. Use of white fluid for correcting the rates is banned. Wherever rates are corrected with white / erasing fluid and bids are invited on overall basis then those bids shall be rejected. However if the bids are invited on line item basis and the correction is done on a particular line item, then that line item will be rejected.

10.0 CURRENCY OF BID

10.1 Bidding currency shall be Indian Rupees for Indian bidders and US Dollar / Euro / GBP / JPY / SGD for Foreign Bidders.

11.0 CONVERSION TO SINGLE CURRENCY

To facilitate evaluation and comparison, the Owner/EIL will convert all bid prices quoted in various currencies (in which the bid price is payable) to single currency and that will be Indian Rupees only, at the Bills selling exchange rate published by the State Bank of India on the day of price bid opening.

12.0 UNSOLICITED BIDS / BID SUBMISSION AT OTHER PLACE

- 12.1 Unsolicited bids or bids being submitted to address other than one specifically stipulated in the bid document will not be considered for opening / evaluation / award.
- 12.2 Unsolicited bids received from the bidders who were not issued the enquiry shall not be opened. However in case such a bid is accompanied with authorization letter from one of the bidders to whom enquiry was issued, the same shall be opened.

13.0 CONTACTING THE OWNER/ OWNER REPRESENTATIVE

- From the time of the bid opening to the time of the award, if any bidder wishes to contact the Owner for any matter relating to the bid, it should be done in writing.
- Any effort by a bidder to influence the Owner/EIL in any manner in respect of bid evaluation or award will result in the rejection of that bid.

14.0 <u>EXAMINATION OF BIDS AND DETERMINATION OF RESPONSIVENESS</u>

- 14.1 The Owner/EIL will examine the bids to determine whether they are complete, whether any computational errors have been made, whether the documents have been properly signed, and whether the bids are generally in order.
- Prior to the detailed evaluation, the Owner/EIL will determine whether each bid is of acceptable quality, is generally complete and is responsive to the RFQ Documents. For the purposes of this determination, a responsive bid is one that conforms to all the terms, conditions and specifications of the RFQ Documents without deviations, objections, Conditionality or reservations.

- Bidder shall not be allowed to submit any Price Implication or Revised Price after submission of Bid, unless there is change in the stipulations of the RFQ Document and such changes are incorporated through an Amendment. In case Exceptions and Deviations submitted by Bidder along with Bid are not considered as acceptable and no Amendment is issued, then in such a case the Bidders would be required to withdraw such Exceptions/Deviations in favour of stipulations of the RFQ document and Bidders would not be eligible for submission of Price Implication/Revised Price, failing which such Bid(s) shall be considered as non responsive and rejected.
- The Owner/EIL determination of a bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence. If a bid is not responsive, it will be rejected by the Owner/EIL, and may not subsequently be made responsive by the bidder by correction of the nonconformity.

15.0 PRICE BID OPENING

Price part of only those bidders, whose bids are considered techno-commercially acceptable, shall be opened. Bidders selected for opening of their price bids shall be informed about the date of price bid opening. The Price Bid opening shall be done of e-tender portal only and Bidders can also witness bid opening by logging on to the E-Tendering website through their system using their valid digital signature / certificate.

16.0 WORKS CONTRACT TAX / SPLITTING OF ORDERS

Order for supply and site work shall not be split and only single order covering the entire scope of work on each supplier shall be placed. Regarding works contract tax, Bidder may note the following:-

"No works contract tax is envisaged as price has been broken into two parts, viz., (i) procurement and (ii) service which does not include any part of material. All materials are required to be with supply part. If any sales tax under works contract is lawfully assessed by the sales tax authorities on the contract, the contractor shall forward to owner such demand received from the sales tax authorities and the owner shall pay the sales tax under works contract to the sales tax authorities. However, should the owner so require, contractor undertakes to duly and faithfully challenge the claim from sales tax authorities before such authority or authorities or court or tribunal as the owner may from time to time require. Also, contractor undertakes to refund to owner any refund received from the sales tax authorities."

17.0 NEGOTIATION

17.1 Negotiations will not be conducted with the bidders as a matter of routine. However, IOCL reserves the right to conduct negotiations.

18.0 AWARD OF WORK

18.1 IOCL will award the order to the bidder who has been determined as a lowest evaluated bidder.

19.0 OWNER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY BID

19.1 The Owner/EIL reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to award of the order without thereby incurring any liability to the affected bidder or bidders or any obligations to inform the affected bidder or bidders of the ground for Owner/EIL's action.

20.0 NOTIFICATION OF AWARD

- 20.1 Prior to the expiration of period of bid validity Owner will notify the successful bidder in writing by fax/e-mail to be confirmed in writing, that his bid has been accepted. The notification of award / Fax of Acceptance will constitute the formation of the Order.
- The Delivery Schedule shall commence from the date of notification of award / Fax of Acceptance (FOA).
- 20.3 FOA will contain price, delivery and other salient terms of bid and RFQ Document. Bidder will be required to confirm receipt of the same by returning "Copy of the FOA" duly signed and stamped by the bidder as a token of acknowledgement/Acceptance to Owner and ElL. On receipt of acknowledgement without any deviation / condition, detail Purchase Order / Contract will be issued in quadruplicate. Three copies of the same without any condition / deviation will returned duly signed and stamped by the bidder as token а acknowledgement/Acceptance to Owner and EIL.

21.0 FRAUDULENT PRACTICES

- The OWNER requires that Bidders/ Contractors observe the highest standard of ethics during the award/ execution of Contract. "Fraudulent Practice" means a misrepresentation of facts in order to influence the award of a Contract to the detriment of the Owner, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Owner of the benefits of free and open competition.
 - a. The OWNER will reject a proposal for award if it determines that the bidder recommended for award has engaged in fraudulent practices in competing for the Contract in question.
 - b. Bidder is required to furnish the complete and correct information/ documents required for evaluation of their bids. If the information/ documents forming basis of evaluation is found to be false/ forged, the same shall be considered adequate ground for rejection of bids and forfeiture of Earnest Money Deposit.
 - c. In case, the information/ document furnished by the Bidder/ Contractor forming basis of evaluation of his bid is found to be false/ forged after the award of the contract, Owner shall have full right to terminate the contract and get the remaining job executed at the risk & cost of such Bidder/ Contractor without any prejudice to other rights available to Owner under the contract such as forfeiture of CPBG/ Security Deposit, withholding of payment etc.
 - d. In case, this issue of submission of false documents comes to the notice after execution of work, Owner shall have full right to forfeit any amount due to the Bidder/ Contractor along with forfeiture of CPBG/ Security Deposit furnished by the bidder/ contractor.
 - e. Further, such bidder/ contractor shall be put on Blacklist/ Holiday/ Negative List of OWNER/EIL debarring them from future business with Owner & EIL for a time period, as per the prevailing policy of OWNER & EIL.

22.0 CARTEL FORMATION IN BIDDING

In case any bidder is found to be involved in cartel formation, his bid will not be considered for evaluation *I* placement of order. Such bidder(s) will also be debarred from bidding in future for this project apart from penal action as deemed fit.

23.0 <u>INTEGRITY PACT (IF APPLICABLE)</u>

23.1 Bidder to submit the `Integrity Agreement' in the format enclosed with the RFQ, duly signed and stamped along with the unpriced offer. Scanned copy duly authorized signature should be

uploaded in the e-procurement website under e-bidding. Price bids of bidders refusing to submit the duly signed and stamped Integrity Pact shall not be opened.

24.0 ENTRY TAX / OCTROI

- 24.1 Entry Tax shall be payable by vendor as applicable & the same will be reimbursable extra at actuals against documentary evidence, therefore bidder should not include the same in their quoted rates/prices.
- 24.2 Octroi at present is not applicable for this Project.

25.0 ONE BID PER BIDDER

- A Bidder shall submit only one bid in the same bidding process. A Bidder who submits or participates in more than one bid will cause all the proposals in which the bidder has participated to be disqualified.
- 25.2 Alternative price bids are not acceptable.

26.0 LANGUAGE OF BID

- The Bid prepared by the bidder, all correspondence/drawings and documents relating to the bid exchanged by the bidder with the Owner/Consultant shall be in English Language alone provided that any document furnished by the bidder may be written in another language so long as accompanied by an English translation, in which case, for the purpose of interpretation of the bid, the English translation shall govern.
- In the event of submission of any document/ certificate by the Bidder in a language other than English, the English translation of the same duly authenticated by Chamber of Commerce of Bidder's country shall be submitted by the Bidder.

27.0 <u>EARNEST MONEY DEPOSIT</u>

- Indian bidders shall submit Earnest Money Deposit (EMD), if applicable for an amount as indicated in the NIT in the form of demand draft (in INR) or bank guarantee (as per the Proforma provided in the Bidding Document) in favour of "Indian Oil Corporation Ltd, New Delhi". Issuance of Bank Guarantee shall be confirmed directly to the Owner / EIL. In case EMD amount is less than Rs. 1,00,000.00 EMD shall be accepted in the form of Demand Draft only. Bids not accompanied with EMD shall be rejected and bidder shall not be allowed to witness the tender opening.
- Foreign bidders shall submit EMD, if applicable for an amount as indicated in the NIT only through Bank guarantee in favour of "Indian Oil Corporation Ltd, New Delhi" (as per the Proforma provided in the Bidding Document). Bids not accompanied with EMD shall be rejected and bidder shall not be allowed to witness the tender opening.
- Earnest Money Deposit (EMD) as mentioned above shall be submitted within the Bid Due Date. Earnest Money Deposit (EMD) shall be valid for a period of 7 (Seven) months from the due date of opening of Techno-commercial Bids.
- 27.4 Earnest Money Deposit (EMD) in the form of Bank guarantee as mentioned above shall be submitted in accordance with the attached Annexure C.
- 27.5 Exemption of EMD will be applicable for Indian/State CPSUs and Micro or Small Enterprises (MSEs) registered with District Industries Centers or Khadi and Village Industries Commission or Khadi and Village Industries Board or Coir Board or National Small Industries Corporation for corresponding item or Directorate of Handicrafts and Handlooms or any other Body specified by Ministry of Micro, Small and Medium Enterprise are exempted from paying EMD provided that certificate issued by the relevant agency is valid on the date of Un-priced Bid Opening. The bidder shall submit Notary attested copy of the valid MSE registration certificate.

Scanned copy of Notarized Registration certificate should be uploaded in the e-procurement website under e-bidding.

- Bidders are required to submit the EMD (as per the Proforma provided in the Bidding Document) in original at the time of bid submission in sealed envelope and are required to upload the scanned copy of EMD on CPP Portal along with e-Bid. EMD in original shall be submitted in a sealed envelope titled "Earnest Money Deposit for Bidding Document No. (as applicable)". Bidder must upload the scanned copy of EMD (in the prescribed format) on CPP Portal along with the e-bid. Swift message/Cheque/Cash shall not be acceptable. In case bidder fails to upload scanned copy of EMD on CPP Portal by the bid due date & time, such bid shall not be considered for evaluation(in case of e-bidding).
- 27.7 If the Bidder is unable to submit original EMD within the due date and time for Bid submission, he may submit the same within 10 calendar days from the date of unpriced bid opening, provided scanned copy of the same have been uploaded on CPP Portal. Offers of bidders whose original EMDs are not received within 10 calendar days of unpriced bid opening are liable for rejection (of which IOCL shall be the sole judge).
- 27.8 EMD shall be released to the bidders in the following circumstances:
 - (a) EMD of bidders whose price bids are not opened/ disqualified during techno-commercial bid evaluation (unsuccessful Bidder) shall be released after price bid opening.
 - (b) EMD of bidders qualified in the techno-commercial bid but unsuccessful for placement of Purchase Order shall be released after placement of Purchase Order on successful Bidder.
 - (c) EMD of the successful bidder shall be released on receipt of acceptable PBG.
- 27.9 EMD shall be forfeited and the Supplier may be put on "Holiday List" in case;
 - (a) The bidder alters / modifies / withdraws the bid suo-moto after opening the bids (Technical bids in case of two bid system) and within the validity period. In such a case, the offer submitted by the bidder shall be liable to be rejected.
 - (b) The successful bidder who gets the order but fails to deposit the performance bank Guarantee or to execute the order.

28.0 <u>INFORMATION REQUIRED FROM FOREIGN SUPPLIERS / CONTRACTORS /</u> CONSULTANTS

- 28.1 It is mandatory for the foreign supplier/contractor/consultant to furnish the following information in case his receipts are subject to tax deduction at source in india:
 - a. PAN Number as per the Indian Income Tax requirements failing which the Supplier/Contractor/Consultant shall be responsible for any additional tax deduction at source as per the provisions of the Indian Income Tax Act/Rules and the same shall be deducted from the payment made to supplier/contractor/consultant.
 - b. Tax Residency Certificate (TRC) containing prescribed particulars as per the enclosed Annexure D from the Government of foreign country in order to claim the benefits of DTAA as per the Indian Income Tax requirements failing which the relief under DTAA will not be available and consequently the higher rate of withholding tax @ 25% will be applicable and deducted from the payment made to supplier/contractor/consultant (i.e., non-resident taxpayer). The TRC shall be duly verified by the Government of the country of which the assessee claims to be a resident for the purposes of tax.
 - c. In additional to TRC, bidder in order to claim the benefits of DTAA shall also submit additional information in form number 10F (enclosed as Annexure E). Form 10F has to be signed & verified by the assessee himself.

- If some information is already contained in TRC, the bidder shall not be required to provide that information in Form no. 10F but even then Form no. 10F is required to be provided by the bidder.
- However, the bidder may write Not Applicable in the relevant column in case that information is already contained in TRC.
- The above shall be furnished before release of any payment or within one month of the release of Order, whichever is earlier.

29.0 REQUIREMENT OF EMPLOYMENT VISA FOR FOREIGN NATIONALS

- 29.1 All Foreign nationals coming to India for execution of Projects/ Contracts will have to apply for Employment Visa only and that grant of Employment Visa would be subject to strict adherence of following norms:
 - a. Employment Visa is granted only for the skilled and qualified professionals or to a person who is being engaged or appointed by a Company, Organization, Industry or Undertaking etc. in India on contract or employment basis at a senior level, skilled position such as technical expert, senior executive or in managerial position etc.
 - b. Request for Employment Visa for jobs for which large number of qualified Indians are available, is not considered.
 - c. Under no circumstances an Employment Visa is granted for routine, ordinary secretarial/clerical jobs.
- 29.2 Bidders are advised in their own interest to check latest Visa rules from Indian Embassy/ High Commission in their country in case Foreign nationals are required to be deputed to India during execution of the Contract.

30.0 COMPLIANCE TO RFQ DOCUMENT

Bidder shall submit the **compliance to the RFQ document** as per the performa attached as **Annexure – F.** Non-compliant bids may be rejected and clarifications may not be sought if sufficient compliant bids are received.

31.0 <u>SPECIAL PACKAGING REQUIREMENTS (APPLICABLE FOR FOREIGN SUPPLIES)</u>

Refer attached Annexure – G.

32.0 <u>TERMS & CONDITIONS OF POST WARRANTY COMPREHENSIVE ANNUAL</u> MAINTENANCE CONTRACT (PWCAMC)

Refer attached Annexure – J.

PROFORMA OF DECLARATION OF BLACK LISTING / HOLIDAY LISTING

In the case of a Proprietary Concern:

I hereby declare that neither I in my personal name or in the name of my Proprietary concern M/s. which is submitting the accompanying Bid / Tender nor any other concern in which I am proprietor nor any partnership firm in which I am or was involved as a Managing Partner are currently placed on black list or holiday list declared by Indian Oil Corporation Limited or its Administrative Ministry, except as indicated below:

(Give particulars of black listing or holiday listing and in absence thereof state "NIL").

I, hereby do further declare that the following notice(s) have hitherto been issued against proposed action for holiday / black listing and/or the following action for holiday listing / black listing has hitherto been taken, as the case may be, by Indian Oil Corporation Ltd. or its Administrative Ministry in my personal name or in the name of any proprietary concern of mine or against any partnership firm of which I was or am the managing partner.

No. and Date of Show-cause Notice/ Period of Holiday Present Status

Notice of Holiday / Black Listing Listing/Black Listing

(State 'NONE' if there is no such notice or action).

In the case of a Partnership Firm

We, hereby declare that neither we, M/s. submitting the accompanying Bid / Tender nor any partner involved in the management of the said firm either in his individual capacity or as proprietor of any concern or as partner of any firm in which he/she was a Managing Partner, are currently placed on Black List or Holiday List declared by Indian Oil Corporation Limited or its Administrative Ministry, except as indicated below:

(Give particulars of black listing or holiday listing and in absence thereof state "NIL").

We ______ hereby further declare that the following notice(s) have hitherto been issued against proposed action for holiday / black listing and or the following action for holiday listing / black listing has hitherto been taken as the case may be, by Indian Oil Corporation Ltd. or its Administrative Ministry against the above firm or any partner involved in the management of the firm in his individual capacity or as proprietor of any concern or as Managing Partner of any firm.

No. and Date of Show-cause Notice/ Notice of Holiday / Black Listing Period of Holiday Listing/Black Listing **Present Status**

(State 'NONE' if there is no such notice or action).

In the case of Company

Date :	Name of the Signatory	
Place :	Signature of the Bidder	
It is understood that if this declaration is four or its Administrative Ministry, shall have the contract, the contract is liable to be terminate	e right to reject my / our bid, an	•
(State 'NONE' if there is no such notice o	r action).	
No. and Date of Show-cause Notice/ Notice of Holiday / Black Listing	Period of Holiday <u>Listing/Black Listing</u>	Present Status
We, hereby do further de against proposed action for holiday / black isting has hitherto been taken, as the case Ministry against the Company.	listing and / or the following ad	ction for holiday listing / black
Give particulars of black listing or holiday lis	sting and in absence thereof stat	e "NIL").
We hereby declare that we are not currently Corporation Limited or its Administrative Min		

LIST OF SEAPORTS

- A. Europe: Felixstowe / Antwerp / Rotterdam / Hamburg / Barcelona / Genoa / La Spezia / Le Havre / Fos Sur Mer / Gothenburg / Copenhagen
- B. FAR EAST

JAPAN : YOKOHAMA / KOBE / MOJI / NAGOYA / OSAKA CHINA : DALIAN / XINGANG / QINGDAO / SHANGHAI SINGAPORE / PORT KELANG / BUSAN

NOTE: From other continents (Africa, North and South America, Australia) and Middle East Asia, vendors will quote considering FOB major International Seaport of Exit.

PANEL OF BANKS FOR ACCEPTANCE OF BANK GUARANTEE FROM CUSTOMERS/SUPPLIERS/CONTRACTORS

- I. BGs less than Rs. 1 crore may be accepted from any scheduled bank (including nationalized banks, other scheduled commercial banks, scheduled cooperative banks and scheduled regional rural banks) as appearing in the Second Schedule to the RBI Act 1934.
- II. BGs of Rs. 1 crore and above may be accepted, which is issued by any of the following Banks:
- 1. ALLAHABAD BANK
- 2. BANK OF BARODA
- BANK OF INDIA
- 4. BANK OF MAHARASHTRA
- 5. CANARA BANK
- 6. CENTRAL BANK OF INDIA
- 7. CORPORATION BANK
- 8. INDIAN BANK
- 9. STATE BANK OF BIKANER & JAIPUR
- 10. STATE BANK OF HYDERABAD
- 11. STATE BANK OF INDIA
- 12. STATE BANK OF MYSORE
- 13. STATE BANK OF PATIALA
- 14. STATE BANK OF TRAVANCORE
- 15. UCO BANK
- 16. UNION BANK OF INDIA
- 17. UNITED BANK OF INDIA
- 18. VIJAYA BANK
- 19. ANDHRA BANK
- 20. DENA BANK
- 21. IDBI BANK
- 22. INDIAN OVERSEAS BANK
- 23. ORIENTAL BANK OF COMMERCE
- 24. PUNJAB & SIND BANK
- 25. PUNJAB NATIONAL BANK
- 26. SYNDICATE BANK
- 27. ICICI BANK
- 28. HDFC BANK
- 29. KOTAK MAHINDRA BANK
- 30. SOUTH INDIAN BANK
- 31. FEDERAL BANK
- 32. EXIM BANK
- 33. ING VYSYA BANK
- 34. AXIS BANK
- 35. YES BANK
- 36. CITI BANK N.A.
- 37. HSBC BANK
- 38. DEUTSCHE BANK AG
- 39. BANK OF AMERICA N.A.
- 40. ROYAL BANK OF SCOTLAND
- 41. BNPPARIBAS
- 42. BANK OF NOVA SCOTIA

- 43. BANK OF TOKYO-MITSUBISHI UFJ LTD.
- 44. MIZUHO CORPORATION BANK LTD
- 45. BARCLAYS BANK PLC
- 46. ANZBANK
- 47. JP MORGAN CHASE BANK
- 48. STANDARD CHARTERED BANK
- 49. DBS BANK
- 50. FIRST RAND BANK
- III. BGs from any other bank other than above can be accepted only if the same is counter-guarantee by any of the above 50 banks.

The rating of bank sanctioning the BG should not fall below the rating of 'A' from Moody's or equivalent (from other rating agency) in case of foreign bank and rating of at least 'AA' from CRISIL or equivalent (from other rating agency) in case of Indian banks during the tenor of the BG. In case the rating falls below threshold level at any time during the tenor of BG, the party will arrange to replace the BG, at its own cost, through any of the bank acceptable to IOCL CRISIL or equivalent (from other rating agency) in case of Indian banks during the tenor of the BG. In case the rating falls below threshold level at any time during the tenor of BG, the party will arrange to replace the BG, at its own cost, through bank acceptable to IOCL.

TRC obtained by the Non-Resident from Government of Foreign Country shall contain the following particulars:

- (a) Name of the assessee;
- (b) Status (individual, company, firm etc.) of the assessee;
- (c) Nationality (in case of individual);
- (d) Country or specified territory of incorporation or registration (in case of others);
- (e) Assessee's tax identification number in the country or specified territory of residence or in case no such number, then, a unique number on the basis of which the person is identified by the Government of the country or the specified territory;
- (f) Residential status for the purposes of tax;
- (g) Period for which the certificate is applicable; and
- (h) Address of the applicant for the period for which the certificate is applicable;

"FORM NO. 10F [See sub-rule (1) of rule 21AB]

 (i) Status (individual; company, firm etc.) of the assessee : (ii) Permanent Account Number (PAN) of the assessee if allotted : (iii) Nationality (in the case of an individual) or Country or specified territory of incorporation or registration (in the case of others) : (iv) Assessee's tax identification number in the country or specified territory of residence and if there is no such number, then, a unique number on the basis of which the person is identified by the Government of the country or the specified territory of which the assessee claims to be a resident (v) Period for which the residential status as mentioned in the :
(iii) Nationality (in the case of an individual) or Country or specified : territory of incorporation or registration (in the case of others) (iv) Assessee's tax identification number in the country or specified : territory of residence and if there is no such number, then, a unique number on the basis of which the person is identified by the Government of the country or the specified territory of which the assessee claims to be a resident
territory of incorporation or registration (in the case of others) (iv) Assessee's tax identification number in the country or specified territory of residence and if there is no such number, then, a unique number on the basis of which the person is identified by the Government of the country or the specified territory of which the assessee claims to be a resident
territory of residence and if there is no such number, then, a unique number on the basis of which the person is identified by the Government of the country or the specified territory of which the assessee claims to be a resident
(v) Period for which the residential status as mentioned in the
certificate referred to in sub-section (4) of section 90 or sub- section (4) of section 90A is applicable
(vi) Address of the assessee in the country or territory outside India : during the period for which the certificate, mentioned in (v) above, is applicable
obtained a certificate to in sub-section (4) of section 90 of sub-section (4) of section 9 ent of

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correct complete and is truly stated.	knowledge and belief what is stated above is
Verified today theday of	
	Signature of the person providing the information
Place:	
Notes:	

1. *Delete whichever is not applicable.

2. #Write N.A. if the relevant information forms part of the certificate referred to in sub-section (4) of section 90 or sub-section (4) of section 90A.

COMPLIANCE TO REQUIREMENT TO RFQ DOCUMENT

RFQ No:
<u>ITEM:</u>
We * hereby agree to fully comply with, abide by and accept without variation, deviation or reservation all technical, commercial and other condition whatsoever of the Bidding Documents including all Addenda / Corrigenda / Clarifications issued.
Any and all deviations, variations, objections or reservations whatsoever hereto set out, given or indicated in our offer, clarifications, correspondence, communications, or otherwise stands null and void.
**
For & on behalf of
Authorised signatory
 * Here fill in the name of bidder. ** The Compliance Letter must be signed by the person (s) authorised to sign the bid.

SPECIAL PACKAGING REQUIREMENTS (FOR FOREIGN SUPPLIES)

All raw/solid wood packaging material used for packaging shall be appropriately treated and marked as per ISPM-15 (International Standards of Phyto-sanitary measures 15) OR shall be accompanied by a Phytosanitary Certificate with the treatment endorsed.

The treatment of raw/solid wood packaging material prior to export shall include either Methyl Bromide (MB) @ 48 g/m3 for 16 hrs at 21° C and above or any equivalent thereof or heat treatment (HT) at 56° C for 30 min (core temperature of wood) or Kiln Drying (KD) or Chemical Pressure Impregnation (CPI) or any other treatments provided that these meet the HT specifications of the ISPM-15.

However, the above conditions shall not be applicable to wood packaging material wholly made of processed wood products such as ply wood, particle board, oriental strand board of veneer that have been created using glue, heat and pressure or combination thereof. The above conditions shall also not be applicable to wood packaging material such as veneer peeler cores, wood wool & shavings and thin wood pieces (less than 6mm thickness) unless they are found to be harboring any pests.

PROFORMA OF BANK GUARANTEE (ADVANCE)

(On non-judicial paper of appropriate value)

To Indian Oil Corporation Ltd. (Refineries Division)		
Dear Sirs,		
include its successors and assigns) has Supplier" which expression shall include i	awarded M/s ts successors and assigns) the work of designs of a contract as constituted by Purcher to the Supplier (hereinafter called "The	fter called "The Owner" which expression shall (hereinafter called "The gning, manufacturing, fabricating and supply of hase Order No dated e Contract" which expression include all the
(Currency		um of Currency) hereinafter called "The Advance" as hat the advance shall be secured by a Bank
We	Bank	a Bank
incorporated/constituted under registered/principal office at	the laws of	and having its
(hereinafter called "The Bank" woof the aforesaid promises and successors and assigns, and irreversely protest or demur or proof or contime and from time to time clair demanded by you from us, with	hich expression shall include our such at the request of the Supplier DO vocably undertake to pay the Owner dition and without reference to the med by you, as due to you under on	ccessors and assigns) in consideration O HEREBY bind ourselves and our or on first demand in writing without Supplier any and all amounts at any or in respect of the said advance, and to an aggregate limit of Currency
AND, we, the Bank DO HEREBY further a	agree as follows:	
(i) The Owner shall have the fulles	st liberty without reference to the Bank and	without affecting in any way the liability of the

- The Owner shall have the fullest liberty without reference to the Bank and without affecting in any way the liability of the Bank under this Guarantee/Undertaking, at any time and/or from time to time to anywise vary the Contract and/or any of terms and conditions thereof or of or relative to the advance and to extend time for the performance of the Contract and/or repayment of the advance or to postpone for any time or from time to time the obligations of the Supplier and to waive or postpone exercise of any of the rights available to the Owner against the Supplier or to forebear from enforcing any of the terms or conditions of the Contract and/or the advance or any security(ies) available to the Owner, AND the liability of the Bank shall remain in full force and effect notwithstanding any exercise by the Owner of the liberty with reference to any or all the matters aforesaid or by reason of time being given to the Supplier or any forebearance, waiver, act or omission on the part of the Owner or any indulgence by the Owner to the Supplier or any other act, matter or thing whatsoever which under the law relating to sureties would have the effect of releasing the Bank from its liability hereunder or any part thereof, AND the BANK DOTH HEREBY waive all rights at any time inconsistent with the terms of this Guarantee/Undertaking.
- (ii) It shall not be necessary for the Owner to proceed against the Supplier before proceeding against the Bank and this guarantee/undertaking shall be enforceable against the Bank as principal debtor notwithstanding the existence of any other security for any indebtedness of the Supplier to the Owner (including relative to the advance) and notwithstanding that any

such security shall at the time when claim is made against the Bank or proceedings taken against the Bank be outstanding or unrealised.

- (iii) As between the Bank and the Owner for the purpose of this guarantee/undertaking the amount claimed by the Owner from the Bank with reference to this guarantee/undertaking shall be final and binding upon the bank as to the amount payable by the Bank to the Owner hereunder.
- (iv) The liability of the Bank to the Owner under this guarantee/undertaking shall remain in full force and effect notwithstanding the existence of any difference or dispute between the Supplier and the Owner, the Supplier and the Bank and/or the Bank and the Owner, or otherwise howsoever touching or affecting these presents or the liability of the Supplier to the Owner, and notwithstanding the existence of any instructions or purported instructions of the Supplier or any other person(s) to the Bank not to pay or for any cause withhold or defer payment to the Owner under these presents with the intent that notwithstanding the existence of such difference, dispute or instruction, the Bank shall be and remain liable to make payment to the Owner.
- (v) This guarantee/undertaking shall not be affected by any change in the constitution of the Bank or that of the Supplier or the Owner, or any irregularity in the exercise of borrowing powers by or on behalf of the Supplier.
- (vi) This guarantee/undertaking shall be valid for all claims/demands made by the Owner to or upon us upto midnight of provided always that if for any reason, the Supplier is unable to complete supplies under the Contract, the Bank shall at the request of the Owner and without recourse to the Supplier extend the validity of this guarantee/undertaking for a further period of six months. For the purpose of this clause, the Owner's statement that the Supplier is unable to complete supplies under the contract shall be conclusive and final binding on us.

(vii)	Not	withstanding anything contained herein:
	(a)	The Bank's liability under this Guarantee/Undertaking shall not exceed Currency (Currency
		only),
	(b)	This Guarantee/Undertaking shall remain in force upto and any extension(s) thereof; and

The Bank shall be released and discharged from all liability under this Guarantee/Undertaking unless a written claim or demand is issued to the Bank on or before or the date of expiry of any extension(s) thereof if this Guarantee/Undertaking has been extended.

(viii)	The Bank DOTH HEREBY declare that Mr			(name of the person signing on behalf of the Bank) who							
	is	(his designation),	is au	uthorised to	o sign tl	his	guarantee/underta	aking	on	behalf	of the
	Bank and to bind the Bank thereby.										

Dated this	day of
Yours faithfully	
For	
Signature	
Name & Designation	

NOTE

- 1. This Guarantee/Undertaking is not to be witnessed.
- 2. This Guarantee is required to be stamped as an agreement according to the stamp duty act.
- This Guarantee is required to be sent by Vendor's Bankers directly to the Owner. 3.

Name of the Branch _____

MSE POLICY

In exercise of its power under Section 11 of Micro, Small and Medium Enterprises Development Act, 2006 Central Government had notified a public procurement policy for micro and small enterprises effective from 01st April, 2012.

The policy mandates the PSUs to procure twenty percent of its annual requirement of all goods and services from micro and small enterprises. The policy further mandates that out of the twenty percent target of annual procurement from micro and small enterprises four percent shall be earmarked for procurement from micro and small enterprises owned by Scheduled Caste & Scheduled Tribe entrepreneurs. In case there is no participation in the tender or failure to meet the tender requirement by MSEs owned by Scheduled Caste & Scheduled Tribe entrepreneurs the four percent target so earmarked shall be met from other MSEs.

The time frame allowed for implementation of the policy is three years beginning from the year 2012-13 and after three years i.e. from the year 2015-16 overall procurement goal of twenty percent shall be mandatory.

In the event of failure to meet the target of twenty percent, it shall be required to substantiate with reasons for such failure before the Review Committee set up under the Chairmanship of Secretary, Ministry of Micro, Small & Medium Enterprises. A brief summary of the policy requirement are as follows:

- During the three year period till the twenty percent procurement becomes mandatory PSUs are required to set annual goal for procurement from MSE sector and report such goals along with the achievements in the Annual Report.
- The Annual procurement plans are to be uploaded in the official website for enabling the MSEs to get advance information of such annual procurement plan.
- The policy also requires that PSUs shall continue to procure 358 items exclusively reserved for procurement from micro and small enterprises.
- The Review Committee constituted under the Chairmanship of Secretary, Ministry of Micro, Small & Medium Enterprises shall inter alia consider the requests of PSUs for exemption from twenty percent target on case to case basis.
- The website should contain a grievance redressal mechanism for addressing any complaint under the supervision of a senior level nodal officer not below the level of Executive Director.
- MSEs participating in tender and quoting price within a band of L1 plus 15% shall be allowed to supply 20% of tendered value of procurement by matching its price with that of L1 where the L1 is bidder other than MSE. In case more than one MSE bidder qualifies in the tender as per the policy, order for earmarked quantity shall be divided amongst those bidders in the same proportion as is being followed presently for ordering on split basis.
- Out of the twenty percent target of annual procurement from micro and small enterprises four percent shall be earmarked for procurement from micro and small enterprises owned by Scheduled Caste & Scheduled Tribe entrepreneurs. In the event of failure of such MSEs to participate in the tender process or meet the tender requirements and L1 price four percent subtarget so earmarked shall be met from other MSEs.

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- PSUs are required to take steps like organizing vendor development programme, buyer seller meet for enhancing the participation of MSEs owned by Scheduled Caste & Scheduled Tribe entrepreneurs.
- MSEs are to be facilitated by providing free of cost tender documents and also by exempting them from depositing earnest money.

In the light of the above policy requirement following actions are required to be taken:

- a) Units are required to identify the items of material and services that cannot be procured from MSE with proper justification for seeking exemption with regard to twenty percent target from the Review Committee. The annual estimated value of procurements of such items is also required to be determined.
- b) On identification of materials/services that cannot be procured from MSE, annual procurement goals as per the policy for rest of the items are to be set and hosted in the website. The goal setting shall also include those items that falls under the list of 358 items exclusively reserved for procurement from small and micro enterprises.
- c) A web based grievance redressal mechanism for addressing any complaint under the supervision of a senior level nodal officer (not handing procurement function is to be setup. At RHQ an officer in the level of ED shall be the nodal officer.
- d) For the purpose of setting goals revenue budget, additional facility budget and previous year procurements may be used a reference. The goals should be categorized under various material groups and service categories groups to make the information on procurement programme of the corporation more meaningful to the MSEs.
- e) Vendor development programme, buyer seller meet for enhancing the participation of MSEs owned by Scheduled Caste & Scheduled Tribe entrepreneurs may either be organized by the units or units may participate in such programme or meet organized by local industry/ industry association or NSiC or similar bodies.
- f) For the purpose of capturing vendor category at Master level Data, CO-IS has configured the system introduced SAP transaction code YMVC. As regards capturing vendor category data at transaction level modification has been made to capture vendor category during creation of RFQ or maintenance of quotation. The data captured during creation of RFQ (ME41) or Quotation maintenance (ME47) automatically flows to a Purchase order creation (ME21) which has also been modified to capture Order status under the policy.
- g) NIT shall clearly convey the purchase preference to MSEs as per policy. In case MSE bidder is LI entire value of the tender is to be ordered on the LI MSE bidder. Where it is possible to split the tender and the price quoted by the MSE bidder is within a band of LI+15%, 20% of tendered value is to be ordered on MSE subject to matching LI price. In case splitting of the tender is not possible and the price quoted by the MSE bidder is within a band of LI+15%, entire value of the tender is to be ordered on the LI MSE bidder subject to matching LI price. For further clarity in this regard a table is furnished below.

Type of Tender	Price Quoted by MSE	How to Finalize the Tender
Can be split	L1	Full Order on MSE
Can be split	Not L1 but within L1 + 15%.	20% Order on MSE subject to matching L1 price

Cannot be split	L1	Full Order on MSE
Cannot be split	Not L1 but within L1 + 15%.	Full Order on MSE subject to matching L1 price

- h) EMD exemption and provision of tender documents free cost presently followed shall continue.
- i) MSEs registered with District industries Centres (DICs), Khadi & Village Industries Commission (KVIC), Khadi & Village Industries Commission (KVIB), Coir Board, National Small Industries Corporation (NSIC) or any other body specified by Ministry of Micro, Small & Medium Enterprises are covered under this policy. MSEs participating in the tender must submit the certificate of registration with any one of the these agencies indicating the details of the particular tendered item along with their bid.
- j) MSEs owned by SC/ST entrepreneurs shall mean:
 - In case of proprietary MSE, proprietor(s) shall be SC/ST
 - In case of partnership MSE, The SC/ST partners shall be holding at least 51% shares in the enterprise.
 - In case of Private Limited Companies, at least 51% share shall be held by SC/ST promoters.
- k) To qualify for entitlement as SC/ST owned MSE, the SC/ST certificate issued by District Authority must be submitted by the bidder in addition to certificate of registration mentioned in paragraph (i) above. The bidder shall be responsible to furnish necessary documentary evidence for enabling IOCfc to ascertain that the MSE is owned by SC/ST in line with the meaning assigned in paragraph (j) above.

TERMS & CONDITIONS OF POST WARRANTY COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT (PWCAMC)

The prices for PWCAMC are for complete scope of work and services as specified in the MR/technical input.

PWCAMC Charges are inclusive of all the charges for Transportation, Lodging, Boarding, all insurances including third party insurance, taxes & duties and all other incidental charges. The prices also include cost of spares and damaged parts (in case of comprehensive maintenance contract). Purchaser does not have any liability, whatsoever, over and above the prices of PWCAMC.

The PWCAMC charges also include arranging hand tools & tackles, special tools etc. required to carry out the work.

The payment terms for the PWCAMC shall be on quarterly basis on completion of each quarter against submission of Bills duly certified by the Engineer-in-charge.

The order for PWCAMC will be placed separately by IOCL before the expiry of contractual Warranty Period. However, the price of PWCAMC services will remain valid for specified Years (no. of years for which PWCAMC is required) from the date of expiry of Warranty period.

Within Ten days of placement of Order for PWCAMC, Seller shall submit CPBG for 5% of the annual PWCAMC amount and this CPBG shall be renewed on yearly basis. In absence of a valid CPBG, payment for PWCAMC shall not be released.

Periodic and Preventive maintenance: Seller/Contractor shall depute their engineers to installation site as & when required for regular checkups, as part of periodic maintenance. He shall also depute their service engineers periodically for preventive maintenance, major repairs/replacement and reporting. Price shall also include emergency visits as necessary.

GENERAL PURCHASE CONDITIONS

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Material(s)

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Material(s)

GENERAL TERMS AND CONDITIONS OF PURCHASE

1.0 **DEFINITIONS**

- 1.1 Unless repugnant to the subject or context thereof, the following expressions herein used shall carry the meaning hereunder respectively assigned to each, namely:
 - (a) "Bulk Consumables" mean items specifically defined in the Contract Documents to constitute bulk consumables.
 - (b) "Contract" shall mean the contract as derived from:
 - i) The Tender Documents;
 - ii) Agreed Variations to the Tender Documents;
 - iii) Vendor's Priced bid; and
 - iv) The Purchase Order.
 - (c) "Contract Document(s)" shall mean individually and collectively the documents constituting the contract.
 - (d) "Defect Liability Period" in respect of:
 - (i) Bulk Consumables shall be the date of delivery plus 6 (six) months;
 - (ii) In the case of other Material(s) shall be 18 (eighteen) months from the date of delivery or 12 (twelve) months after the same have been put in service or commissioned, whichever is earlier;
 - (iii) In the case of altered or replaced Material(s):
 - (a) With respect to Bulk Consumables, shall be 6 (six) months from the date of alteration, repair or replacement as the case may be; and
 - (b) With respect to other Material(s), shall be 12 (twelve) months from the date of alteration, repair or replacement as the case may be.
 - (e) "Delivery"
 - (i) with respect to Imported Material(s) means the date of completing shipment of the Material(s) on board the designated

- vessel or aircraft at the designated port or place of shipment, securely packed and loaded below deck and unless otherwise determined, shall be deemed to be the date of the relative Bill of Lading or Airway Bill; and
- (ii) with respect to Indigenous Material(s) means the date of completing shipment of Material(s) F.O.R./F.O.T. securely packed and loaded and unless otherwise determined, shall be deemed to be the date of the relative Truck/lorry Receipt or Railway Receipt.
- (f) "Earnest Money Deposit" means the Demand Draft or Banker's Pay Order or the bank guarantee furnished by the Vendor in lieu of cash in support of his/its bid as required by the Bid Documents.
- (g) **"Equipment"** means plant, machinery, equipment, instruments, computer, control and other electronic and electrical systems, and shall include parts, components, assemblies and sub-assemblies thereof.
- (h) "Free Issue Material(s)" means any equipment, parts or components or spares to be supplied by IOCL to the Vendor which are to be incorporated in any supply of Indigenous Material(s).
- (i) "IOCL" means Indian Oil Corporation Ltd., a company incorporated in India and having its registered office at G-9, Ali Yavar Jung Marg, Bandra (East) Mumbai – 400 051 and having the Head Office of its Refineries Division at Scope Complex, Core 2, 7 Institutional Area, Lodhi Road, New Delhi-110 003 and includes its successors, assigns and all persons through whom it acts in any matter for the purpose of the Tender or the Contract.
- (j) "Imported Material(s)" mean(s) the materials to be fabricated, manufactured or procured by the Vendor outside India for shipment to India under the Contract.
- (k) "Indigenous Material(s)" mean(s) materials to be fabricated, manufactured or procured by the Vendor within India for supply under the Contract.
- (I) "Inspectors" means Inspectors nominated, appointed, approved or deputed by IOCL for inspection of the Material(s) prior to Delivery.
- (m) "Material(s)" means any and all raw materials, manufactured articles, equipment, spares and other goods and supplies whatsoever and includes wherever applicable drawings, data, specifications and intellectual property rights and all services (including but not limited to design, fabrication, inspection, delivery and testing) required to be supplied, done, performed, prepared or undertaken to meet the requirements of the Contract.

- (n) "Procurement Coordinator" means the representative or agency appointed by IOCL for managing, expediting and/or coordinating the supply of Material(s).
- (o) "Project" means the Project or Refinery for which the Material(s) is/are required.
- (p) "Project Site" means the site of the Refinery unit or site of the Project for which the Material(s) is/are required.
- (q) "Purchase Order" means IOCL's acceptance of the Vendors' offer/bid and includes any formal or detailed Purchase Order issued by IOCL pursuant to the acceptance of the bid.
- (r) "Stipulated Delivery Period" means the date(s) for delivery of the Material(s) as stipulated in the Contract and failing such stipulation, shall mean the date(s) for such delivery(ies) as agreed between the Vendor and IOCL.
- (s) "Tender Documents" with reference to the Purchase Order mean:
 - (i) Material Requisition/Request for Quote;
 - (ii) General Terms and Conditions of Purchase;
 - (iii) Technical Specifications;
 - (iv) Special Conditions of Purchase (if any);
 - (v) Addendum (a) (if any) to the Tender Documents.
- (t) "Total Contract Value" means total value of the Material(s) and services to be supplied as specified in the Purchase Order, exclusive of reimbursable taxes and duties.
- (u) "**Vendor**" means the successful bidder on whom the Purchase Order is placed.
- 1.2 <u>Interpretation of Contract Documents</u>
- 1.2.1 The several Contract Documents forming the Contract are to be read together as a whole and are to be taken as mutually explanatory.
- 1.2.2 Should there be any doubt or ambiguity in the interpretation of the Contract Documents or in any of them, the Vendor shall prior to commencing the relative supply or work for supply under the Contract apply in writing to IOCL for resolution of the doubt or ambiguity. Should the Vendor fail to apply to IOCL within 7 days from the date of receipt of the Order for its clarification as aforesaid, the Vendor shall perform the relative work and/or make the relative supply at his own risk.
- 1.2.3 Any item of supply or service relative thereto shown, indicated or included by expression or implication in any document forming part of the Contract shall be

deemed to form part of the Scope of Supply with the intent that the indication or inclusion of the supply or service within any of the said documents shall be a sufficient indication of the Scope of Supply or service covered by the Contract.

- 1.2.4 No verbal agreement or assurance, representation or understanding given by any employee or officer of IOCL or so understood by the Vendor shall anywise bind IOCL or alter the Contract Documents unless specifically given in writing and signed by or on behalf of IOCL as an Agreed Variation to the relative term(s) in the Contract Document(s).
- 1.2.5 Clause headings given in this or any other Contract Documents are intended only as a general guide for convenience in reading and segregating the general subject of the various clauses, but shall not govern the meaning or import of the clauses there under appearing or confine or otherwise affect the interpretation thereof.

1.3 Irreconcilable Conflicts

Subject to the provisions of Clause 1.2 hereof, in the event of an irreconcilable conflict between the provision of these General Terms and Conditions of Purchase and/or the Special Conditions of Purchase and/or Addendum (a) and/or the Agreed Variations to the Tender Documents and/or the Purchase Order and/or between any of the other said documents so that the conflicting provision(s) cannot co-exist, to the extent of such irreconcilable conflict, the following order of precedence shall apply so that the conflicting provision(s) in the document lower in the order of precedence set out below shall give way to the conflicting provision(s) in the document higher in the order of precedence, namely:

- (i) Agreed Variations to the Tender Documents;
- (ii) Purchase Order;
- (iii) Addendum/Addenda (a) to the Tender Document;
- (iv) Special Conditions of Purchase;
- (v) General Terms and Conditions of Purchase;
- (vi) Other Contract Documents.

2.0 **CONFIRMATION OF ORDER**

- 2.1 Without prejudice to the formation of contract by acceptance of bid, the Vendor shall acknowledge the acceptance of the Purchase Order by signing and returning the duplicate/photocopy within 7 (seven) days following receipt of the Purchase Order and such acknowledgement shall constitute conclusive evidence of a concluded contract without exception, on the terms and conditions set out in the Bid Documents.
- 2.2 Should the Vendor fail to acknowledge acceptance of the Purchase Order within the period specified above, IOCL may, without prejudice to any other right or remedy available to it, forfeit the Earnest Money Deposit.

3.0 **PRICE**

- 3.1 Unless otherwise specifically stipulated, the price shall be firm and shall not be subject to escalation for any reason.
- 3.2 Unless otherwise specifically stipulated, the price for Indigenous Material(s):
 - (i) shall be inclusive of road/rail worthy water-proof packing and forwarding charges upto effecting delivery at F.O.T./F.O.R despatch point and shall also be inclusive of inland freight and octroi, terminal taxes and entry taxes as leviable on the transportation or entry of goods into any local area or limits pursuant to the Contract; and
 - (ii) shall be exclusive of transit insurance, VAT, Central Sales Tax, State Sales Tax, Excise Duty and/or such other imposts which are leviable by law on the manufacture of finished goods or their sale to IOCL pursuant to the Contract.
- 3.3(a) If it is stipulated that octroi, terminal taxes and entry taxes are to be borne by IOCL, the Vendor shall arrange for the transporter to pay the octroi, terminal taxes and/or entry taxes, if any leviable and claim reimbursement thereof from IOCL against proof of payment.
 - (b) If it is stipulated that dispatch shall be on "freight to pay basis", the Vendor shall advise the transporter to collect the freight from IOCL after the full quantity of the Material(s) has/have been delivered in good condition to the Project Site.
- 3.4 Unless otherwise stipulated, the price of Imported Material(s) shall be the FOB /FCA price of Material(s) and shall be inclusive of sea/air worthy water-proof packing and forwarding charges and loading of Material(s) below deck of vessel and all taxes upto delivery of Material(s) at stipulated Indian Port, shipped through Indian flag vessels, but shall be exclusive of marine/air insurance and ocean/air freight. Except for stipulations to the contrary in the Contract, the provisions of FOB (INCOTERMS-2000) shall apply to ocean shipments and the provisions of FCA (INCOTERMS-2000) shall apply to air shipments.

4.0 **EARNEST MONEY**

- 4.1 A bid is liable to be rejected unless it is supported by earnest money of a value as provided in the Purchase Requisition/ Request for Quote.
- 4.2 Earnest Money by the tenderers shall be accepted only in the form of a Demand Draft or Bankers Pay Order drawn on a local bank in favor of Indian Oil Corporation Limited. Bank Guarantee in the format set forth in **Annexure** "A" hereto may be furnished in lieu thereof if the amount of Earnest Money Deposit is not less than Rs. 100,000/-(Rupees one hundred thousand only).

- 4.3 If the Earnest Money is in the form of a Bank Guarantee, the validity of the Bank Guarantee shall be extended by the Vendor at the Vendor's cost and initiative for a period of 3 (three) months beyond the date of the acceptance of bid by IOCL, failing which the Bank Guarantee may be encashed by IOCL and the proceeds held as security for the performance of Vendor's obligation and the due discharge of Vendor's liability under the resultant Contract until the Vendor acknowledges the acceptance of the Purchase Order and furnishes the Performance Guarantee. Should the Vendor fail to accept the Purchase Order and/or furnish the Performance Guarantee within the time specified in this behalf, or specifically permitted by IOCL for the purpose, IOCL may encash the Bank Guarantee furnished by the Vendor by way of Earnest Money Deposit and/or forfeit such proceeds or other encashable Earnest Money Deposit held by it in cash without prejudice to any other right or remedy available to it.
- 4.4 The Earnest Money paid by the unsuccessful bidder(s) shall be refunded/returned within 15 days of the finalisation of the Tender by IOCL.
- 4.5 Earnest Money furnished by a tenderer may also be forfeited in the following circumstances:
 - (a) If the tenderer alters or modifies or withdraws their bid prior to opening of the price bid and within the specified validity period of the Tender; or
 - (b) If the tenderer withdraws their bid after the Tender is opened.

5.0 **TERMS OF PAYMENT**

- 5.1 For Imported Material(s):
 - a) The price of Imported Material(s) shall be paid in the currency specified in the Contract.
 - b) 100% (one hundred percent) of the price of the relative Imported Material(s) (after considering price reduction for delay, if any, as per clause 12.0) will be paid under an irrevocable Letter of Credit against submission of documents specified in the Letter of Credit. The Letter of Credit shall be substantially in the format set forth in the **Annexure "B"** hereto and shall be established either by the State Bank of India or other bankers of IOCL in India.
 - c) Unless otherwise specified, the Vendor may draw against the Letter of Credit on presentation of all the following documents:
 - (i) Invoice
 - (ii) Clear Bill of Lading/Airway Bill covering the Material(s) invoiced
 - (iii) Packing list for the consignment

- (iv) Third party Inspector's Certificate covering the invoiced Material(s) wherever applicable
- (v) Test/Composition Certificate
- (vi) Certificate of origin
- (vii) Drawing(s)/Catalogue(s) covering the Material(s), wherever applicable.
- (viii) Export Certificate, wherever applicable
- (ix) Invoice of Inspector's charges, wherever applicable
- (x) IOCL's acknowledgement of Performance Bank Guarantee wherever applicable.
- d) Bank charges payable to IOCL's banker for opening of the Letter of Credit shall be borne by IOCL and bank charges payable to the Vendors' banker shall be borne by the Vendor.
- e) Should the Vendor desire to get the Letter of Credit confirmed by any other banker, confirmation charges will be borne by the Vendor.
- f) Unless otherwise agreed, the Letter of Credit shall not permit drawing in more than 3 (three) tranches.
- g) Unless otherwise specified, the Vendor shall furnish a Bank Guarantee towards performance favoring IOCL within 15-days of the Purchase Order for an amount equivalent to 10% (ten) of the Price of Material(s) from a Scheduled bank in India (including an Indian branch of a foreign bank) acceptable to IOCL in the format set forth in **Annexure** "C" hereto valid (in the first instance) for the period specified in Clause 16.12
- h) In the event that IOCL requests the Vendor to hold or to warehouse the Material(s) for any period after the Material(s) are ready for shipment, the storage charges as agreed, shall be borne by IOCL in addition to the Price.

5.2 For Indigenous Supply:

- a) Unless otherwise specified in the Contract, where the total contract value does not exceed Rs.50,000/- (Rupees fifty thousand only), IOCL shall release 100 % of the relative Price of Material(s) within 30 days of receipt of the Material(s) at Project Site and their acceptance.
- b) Unless otherwise specified in the Contract, where the total contract value exceeds Rs. 50,000/-(Rupees fifty thousand only) but is less than Rs. 1,00,000/- (Rupees one hundred thousand only), IOCL shall release 90% of the relative Price of Material(s) on delivery of the documents specified in (c) hereof below relative hereto, and will release the balance 10% of the Vendor's invoice within 30 (thirty) days of receipt of Material(s) at Project Site and their acceptance.

- c) Unless otherwise specified, where the total contract value of the Material(s) is Rs. 1,00,000/- (Rupees one hundred thousand only) and above, IOCL shall release 90% of the relative price against the documents specified here below relative hereto **through IOCL's bankers** and will release the balance 10% on the Vendor's invoice within 30 (thirty) days of receipt of Material(s) at the Project Site and its/their acceptance. Unless otherwise mentioned, the specified documents are:
 - (i) Invoice
 - (ii) Clear Railway Receipt/Truck Receipt/Goods Receipt covering the Material(s) invoiced
 - (iii) Packing list for the consignment
 - (iv) Third Party Inspector's Certificate covering the invoiced Material(s)/ Release Note, wherever applicable
 - (v) Test/Composition Certificate, wherever applicable
 - (vi) IBR Certificate/CMRS Certificate, wherever applicable
 - (vii) Drawing(s)/Catalogue(s) covering the Material(s), wherever applicable
 - (viii) Guarantee/Warranty Certificate(s), wherever applicable
 - (ix) Invoice of Inspector's charges, wherever applicable
 - (x) Freight Memo(s) if freight is not included in the Price and the RR/TR/GR does not give the freight particulars.
 - (xi) Acknowledgement by IOCL of receipt of Performance Bank Guarantee (wherever applicable)
- d) The financial settlement of the Vendor's invoice is liable to be withheld in the event the Vendor fails to submit the drawings, data and all other documents as called for in the Purchase Order.
- (e) Unless otherwise specified, the Vendor shall furnish a Bank Guarantee towards performance favoring IOCL within 15-days of the Purchase Order for an amount equivalent to 10% (ten) of the Price of Material(s) from a Scheduled bank in India (including an Indian branch of a foreign bank) acceptable to IOCL in the format set forth in **Annexure** "C" hereto valid (in the first instance) for the period specified in Clause 16.12.

6.0 **VENDORS' DRAWINGS AND DATA REQUIREMENT**

The Vendor shall submit drawings, data and documentation in accordance with (but not limited to) what is specified in the Purchase Requisition/Tender documents and/or Vendor's drawing and data form attached to the Purchase Order, within 30 (thirty) days of the Purchase Order. The types, quantities and time limits for submitting these must be respected by the Vendor and the Material(s) shall be deemed not to have been delivered for all purposes (including payment) until completion of the said submissions to the satisfaction of IOCL.

7.0 FREE ISSUE MATERIALS (for incorporation in the Indigenous supply)

If the Purchase Order involves the incorporation of any Free Issue Material(s):

- (a) The Vendor shall prior to taking delivery of the Free Issue Material(s) arrange for a Bank Guarantee for the full value of the Free Issue Material in the format set forth in **Annexure** "**D**" hereto valid from the date of the receipt of the Free Issue Material(s) until delivery of the Material(s) in which the Free Issue Material(s) has/have been incorporated.
- (b) The Vendor shall inspect the Free Issue Material(s) at the time of taking delivery thereof and satisfy itself of the quality, quantity and condition of the Free Issue Material(s). IOCL shall not be liable for any claims or complaints whatsoever in respect of the quality, quantity or condition of the Free Issue Material(s) once the Vendor has taken delivery thereof.
- (c) All Free Issue Material(s) shall be taken delivery of, transported, held, stored and utilized by the Vendor as trustee of IOCL, and delivery of the Free Issue Material to the Vendor shall constitute an entrustment thereof by IOCL to the Vendor with the intent that any transportation, utilization, application or disposal thereof by the Vendor otherwise than for incorporation in the Indigenous Material(s) shall constitute a breach by the Vendor.
- (d) The Vendor shall transport the Free Issue Material(s) only by such transportation as is suitable and shall hold and store the Free Issue Material(s) only at such place and/or premises that are air and water tight and otherwise suitable for the storage of the Free Issue Material(s) so as to prevent damage or deterioration or theft or other loss, and shall arrange such watch and ward as shall be necessary to ensure the safety thereof.
- (e) Notwithstanding the Bank Guarantee mentioned in sub-paragraph (a) above, the Vendor shall replace any Free Issue Material(s) which is/are lost, damaged, misused, stolen or deteriorated with other Material(s) of equivalent quantity and quality and condition, and the same shall be deemed to constitute Free Issue Material(s) and the provisions of sub-

- paragraphs (a) to (f) hereof shall apply thereto in the same manner as to the originally supplied Free Issue Material(s).
- (f) Unused Material(s) from the Free Issue Material(s) shall be returned by the Vendor to IOCL and if IOCL so directs, the Vendor shall dispose of the same by sale or otherwise on such terms and conditions as IOCL may stipulate or approve and the Vendor shall pay to IOCL the sale proceeds of the Material(s) so disposed of by sale.

8.0 THE BILL OF MATERIAL(S)

- 8.1 Where the price of Material(s) is a lumpsum price and pro-rata payment is envisaged in the Purchase Order, the Vendor shall within 30 (thirty) days of the issue of the Purchase Order furnish to IOCL for approval, a priced and detailed Bill of Material(s)/ Billing Schedule as required covering all Material(s), which shall conform to the price break-up and Total Contract Value given in the Purchase Order. The Bill of Material(s) shall operate as the Billing Schedule for payment of the price of the Material(s). In preparing the Bill of Material(s), the Vendor shall ensure that all contracted Material(s) are included in the Bill of Material(s) so as to ensure that IOCL is not required, due to any oversight or omission, to pay any taxes and duties on a value in excess of the total Value indicated in the Contract. Should IOCL be required to pay excise duty, sales tax or customs duty on account of such oversight or omission, the Vendor shall reimburse such excess payments to IOCL.
- 8.2 The Material Safety Data Sheets in the case of catalysts and chemicals and other items where ever applicabe shall also be submitted within 30 days after receipt of the Purchase Order.

9.0 **MODIFICATION**

- 9.1 IOCL shall have the right to request changes or modifications in the technical documents and/or specifications comprised in the Contract, subject to the Vendor's approval thereto. IOCL shall bear any additional cost and shall be entitled to the benefit of any reduced cost resultant upon any such change or modification.
- 9.2 As soon as possible after receipt of a written request from IOCL for change(s), the Vendor shall furnish in writing to IOCL an estimate of the additional cost or benefit for the change(s) and/or modification(s) requested and its effect on the delivery date. On agreement with respect to the enhanced/reduced cost and modified delivery time, which shall be finalized within 10 (ten) days of the request for the modification, IOCL shall issue an amendment to the Purchase Vendor shall Order, and the promptly proceed with the change(s)/modification(s) contemplated by the amended Purchase Order.

10.0 **SUB-CONTRACTS**

10.1 The Vendor shall not assign the Contract in whole or part without obtaining the prior written consent of IOCL.

10.2 The Vendor shall, notwithstanding the consent and assignment, remain jointly and severally liable and responsible to IOCL together with the assignee, for and in respect of the due performance of the Contract and the Vendor's obligations there under.

11.0 **EXPEDITING**

- 11.1 IOCL may appoint a Procurement Coordinator to manage, expedite and coordinate the manufacture, shipment and/or despatch of Material(s) covered by the Contract.
- 11.2 The Vendor shall furnish to the Procurement Coordinator within 30 (thirty) days of receiving the Purchase Order, the required number of copies of documents including but not limited to Schedule of manufacture/PERT chart, unpriced copies of sub-orders, phased programme of item-wise manufacture, testing and delivery and any other information and/or documents as may be called for by the Procurement Coordinator.
- 11.3 The Procurement Coordinator shall have free access to the Vendor's shop and sub-suppliers' shop during normal working hours and shall be provided all the necessary assistance and information to help him perform his job.

12.0 RESPECT FOR DELIVERY DATES AND PRICE DISCOUNT

- 12.1 The time and date of Delivery of Material(s) as stipulated in the Contract shall be adhered to on the clear understanding that the Price(s) of the Material(s) has/have been fixed with reference to the said Delivery date(s).
- 12.2 If any delay is anticipated by the Vendor in the delivery of the Material(s) or any of them beyond the stipulated date(s) of Delivery, the Vendor shall forthwith inform IOCL in writing of such anticipated delay and of the steps being taken by the Vendor to remove or reduce the anticipated delay, and shall promptly keep IOCL informed of all subsequent developments.
- 12.3 If any Material(s) is/are not delivered within the Delivery date(s) stipulated in respect thereof, IOCL shall be entitled to a discount by way of price adjustment in a sum equivalent to 0.5% (one half percent) of the price of such Material(s) per week or part thereof that the Material(s) remain(s) undelivered beyond the stipulated Delivery period in respect thereof, subject to a maximum discount of 5% (five percent) of the Total Contract Value. Such discount shall be given by the Vendor by equivalent reduction in the invoice value before presentation of documents to the Bank/IOCL for payment. Should the Vendor fail to deliver the Material(s) or to make such adjustment, the discount may be recovered by any other means.
- 12.4 Without prejudice to its rights under Clause 12.3 hereof and to entitlement to discount(s) accrued in terms thereof and in addition thereto, IOCL may at any time after the expiry of the stipulated date(s) of Delivery in respect of any

Material(s), at its discretion terminate in whole or part the Contract in respect of the undelivered Material(s) or any of them and either purchase such Material(s) from any other available source at the risks and costs of the Vendor and recover from the Vendor any additional cost incurred by it on such purchase or recover from the Vendor without such purchase the difference between the market and contract price of such Material(s) on the date of termination of Contract relative thereto.

13.0 **DELAYS DUE TO FORCE MAJEURE**

- 13.1 If a force majeure event as defined below, affecting the Vendor, arises prior to the expiry of the stipulated Delivery period in respect of any Material(s) and the Vendor intends to claim extension of the stipulated date of delivery in respect of such Material(s) or any of them, the Vendor must advise IOCL by notice in writing of such event by means of communication which secures undisputed service of the notice not later than 10 (ten) days of the occurrence of the event. Such occurrence shall be duly certified by a local Chamber of Commerce or statutory authority. The Vendor shall within 10 (ten) days of the end of the Force Majeure event similarly notify IOCL of such cessation, and of the period and Material(s) for which an extension of Delivery date(s) is consequently claimed. Such notification shall be a mandatory pre-condition to a claim for such extension.
- 13.2 Events of Force Majeure shall mean:
 - (a) natural calamities, civil wars and national strikes which have a duration of more than seven consecutive working days; and
 - (b) strike at Vendor's works for more than 10 consecutive days.
- 13.3 Commercial hardship and third party breach, strike, shutdown or lockout other than as specified in Clause 13.2 hereof shall not constitute an event of Force Majeure.
- 13.4 In the event of Force Majeure, each party shall bear any costs incurred by it resulting therefrom. The party affected by Force Majeure shall use all reasonable efforts to prevent and reduce to a minimum and mitigate the effect of delays occasioned by such Force Majeure.
- 13.5 Subject to receipt of notices under Clause 13.1 above, the stipulated Delivery date(s) may be extended by IOCL. The decision of IOCL on the Vendor's claim for extension of time and the time of extension and Material(s) on which extension is given shall be final and binding on the Vendor. On the grant of such extension, the extended date shall be deemed to be the stipulated Delivery date for the purpose of calculating price discount under Clause 12.3 hereinabove.
- 13.6 If the Vendor is prevented from fulfilling its contractual obligations for a continuous period of three (3) months because of Force Majeure, then the Vendor and IOCL shall consult with each other with a view to agreeing on the action to be taken under the circumstances, and failing such agreement, IOCL

shall be entitled to terminate the contract in whole or to the extent that its performance is prevented by Force Majeure.

14.0 **WARRANTY OF TITLE**

- 14.1 The Vendor warrants that the Material(s) sold and supplied by it to IOCL pursuant to the Contract shall be free from any and all defects in title including but not limited to any charge, third party claim, mortgage, hypothecation, foreclosure, lien, restriction, injunction, attachment or encumbrance whatsoever and shall hold and keep IOCL indemnified from and against any and all contrary claims, demands, actions and proceedings and all costs (including legal costs), charges, expenses and losses suffered or incurred by IOCL as a consequence thereof and/or to defend any such claim, demand, action or proceeding.
- 14.2 The Vendor shall be understood to have represented to IOCL that the use by IOCL of the Material(s) supplied by the Vendor will not infringe any third party patent rights or pending patent applications or other intellectual property rights. Accordingly, the Vendor will hold harmless and indemnify IOCL against all costs (including legal costs), charges and expenses incurred or any damages or other sums that may be assessed or become payable under any decree or judgment of any court or under any settlement resulting from any suit, claim or action for infringement of third party patents or other third party intellectual property.

15.0 **INSPECTION AND TESTING**

- 15.1 In addition to any tests to be conducted by the Vendor under the Contract or any applicable codes or standards, the Material(s) shall be subject to inspection and/or testing by Inspector(s) (including Third Party Inspector(s)) at any time prior to shipment and/or despatch and to final inspection within a reasonable time after arrival at the Project Site. The Inspector(s) shall have the right to carry out the inspection or testing, which will include inspection and testing of the raw materials at manufacturers shop, at fabricators shop and at the time of actual despatch before and/or after completion of packing.
- 15.2 In addition to testing and inspection by Inspectors, IOCL may nominate an institutional agency like Boiler-Inspectorate for official testing of coded equipment. The Vendor shall ensure that all procedures for preparation and performance of tests prescribed by such institution shall be scrupulously complied and observed.
- 15.3 Unless otherwise specified in the Contract, the inspection shall be carried out as per the relevant standards/scope of inspection provided alongwith the Tender Enquiry/Purchase Order. All charges for Third Party Inspectors shall be borne by the Vendor and IOCL shall reimburse these charges at actual against documentary proof of payment (limited to the amount indicated in the Contract towards third party inspection,) unless such inspection has become infructuous for any cause.

- 15.4 All manufacturers' mill test certificates and analytical reports from material laboratories in respect of raw materials employed and components incorporated shall have to be presented by the Vendor.
- 15.5 Before shipping or despatch, the Material(s) will have to be checked and stamped by the Inspector(s) who may forbid the use and dispatch of any equipment and/or Material(s) which during tests and inspection fail(s) to comply with the specifications, codes and testing or other contractual requirements applicable thereto, and the Vendor shall not tender such rejected Material(s) for supply to IOCL nor shall incorporate the same in any Material(s) to be tendered for supply to IOCL.
- 15.6 The Vendor will inform IOCL at least eight (8) days in advance of the exact place, date and time of tendering the Material(s) for required inspection and provide free access to the Inspector(s) during normal working hours at Vendor's or his/its sub-Suppliers' works, and place at the disposal of the Inspector(s) all useful means for undertaking the Inspection, checking the results of tests performed, marking the Material(s), getting additional tests conducted and final stamping of the Material(s).
- 15.7 All tests will be performed at the Vendors' expense and if required by the Inspector(s), shall be conducted in accordance with the Inspector's instructions. The Vendor shall also bear the expense for the preparation and rendering of tests required by the Boiler Inspectorate or other statutory testing or certifying agencies/institutions.
- 15.8 Unless otherwise specified, all charges for the Inspection shall be borne by the Vendor.
- 15.9 IOCL may, at its own expense, have its representative(s) witness any test or inspection. In order to enable IOCL's representative(s) to witness the tests/inspections, the Vendor shall notify IOCL at least 30 (thirty) days in advance, of the schedule of all inspection hold points prior to the initiation of equipment fabrication. IOCL shall be notified eight (8) calendar days in advance of any changes in the schedule of inspection. IOCL will advise the Vendor in advance whether it intends to have its representative(s) be present at any of the inspections.
- 15.10 Even if the inspection and tests are fully carried out, the Vendor shall not be absolved from its responsibilities to ensure that the Material(s), raw materials, components and other inputs are supplied strictly to conform and comply with all the requirements of the Contract at all stages, whether during manufacture and fabrication, or at the time of Delivery as on arrival at site and after its erection or start up or consumption, and during the defect liability period. The inspections and tests are merely intended to prima facie satisfy IOCL that the Material(s) and the parts and components comply with the requirements of the Contract.
- 15.11 The Vendor's responsibility shall also not be anywise reduced or discharged because IOCL or IOCL's representative(s) or Inspector(s) shall have examined

- or commented on the Vendor's drawings or specifications or shall have witnessed the tests or required any chemical or physical or other tests or shall have stamped or approved or certified any Material(s).
- 15.12 Unless otherwise specifically permitted by the Contract, no Material(s) shall be dispatched for delivery or delivered under the Contract without being stamped or otherwise approved for delivery by the Inspector(s).
- 15.13 Notwithstanding approval by the Inspector(s), if on testing and/or inspection after receipt of the Material(s) at Project Site, any Material(s) is/are found not to be in strict conformity with the contractual requirements or specifications, IOCL shall have the right to reject the same and hold the Vendor liable for non-performance of the Contract. The provision of Clause 16.5 to 16.11 shall mutatis mutandis apply to such rejected Materials.

16. <u>ACCEPTANCE OF MATERIALS & GUARANTEES</u>

16.1 The Vendor acknowledges that notwithstanding the provision or approval of any drawings, designs, specifications, source of supply or other data relative thereto by IOCL and/or the testing of Material(s) in accordance with the requirements of the Contract or any applicable code or specification and/or any inspection of the input or Material(s) by the Inspector(s) or issue of an Inspection Certificate relative thereto and/or any other act, matter or thing done or required by IOCL to satisfy itself of the quality, quantity, sufficiency or efficiency of the Material(s) prior to delivery thereof and/or the transfer of title and/or risks in relation to the Material(s), shall not be deemed or understood to constitute acceptance of the Material(s) by IOCL nor shall IOCL be understood to have accepted any Material(s) other than plant, machinery, equipment and parts and components unless such Material(s) have been received at the Project Site of IOCL and found to be acceptable as evidenced by a Certificate of Acceptance issued by IOCL, and in case of plant, machinery, equipment and parts and components, unless they have been incorporated into the relative Project Unit and the said Unit has been tested and the relative plant, machine, equipment, part or component has successfully functioned without patent defect.

16.2 To this end, the Vendor guarantees that:

- (i) All materials used in the execution of the Contract and all Material(s) used in performance thereof shall be in strict compliance and conformity to the characteristics, requirements and specifications of the Contract and suitable for the purpose for which such Material(s) are intended to be used if such purpose has been disclosed or is/are suitable for use to which such Material(s) are ordinarily put to use, if such purpose has not been disclosed.
- (ii) In the case of machinery, plant or equipment with rated capacities, outputs or other characteristics, that the machinery, plant or equipment as the case may be, shall function to such capacities and/or outputs and shall meet the other characteristics required in respect thereof.

- 16.3 The Vendor further undertakes to replace any Material(s) if found not to conform to the guarantees aforesaid at any time during the defect liability period applicable thereto. IOCL shall give written notice of the defect to the Vendor and of the rejection of the defective Material(s).
- 16.4 If the defect can be rectified or repaired without diminishing the quality, utility, efficiency or life of the Material(s) (of which IOCL shall be the sole judge), instead of outright rejection of the Material(s) IOCL may at its discretion permit the Vendor to rectify the defect(s) within a period to be specified by IOCL in this behalf in the notice. Should the Vendor fail to take action satisfactory to IOCL to rectify the defect(s) within the period specified, IOCL may at its option, at the risk and cost of the Vendor in all respects, rectify or repair or cause to be rectified or repaired the defect(s) either by itself or through any other source or agency, or to reject the defective Material(s).
- 16.5 Should IOCL, notwithstanding the endeavour to do so, be unable to rectify or repair or get rectified or repaired the defect(s) within a reasonable time, IOCL may, notwithstanding such endeavour reject the defective Material(s).
- 16.6 The Vendor shall repair, rectify and/or replace, as the case may be, the defective and rejected Material(s) without entitlement to any extra payment. DDP INCOTERMS 2000 shall apply for such replacement parts or components or Material(s) at Project Site with respect to imported parts or components or materials.
- 16.7 The Vendor shall at its own risk and cost remove any rejected Material(s) from the Project Site, and in case of plant, machinery, equipment, parts or components which have been installed, cause the same to be dismantled and removed from the Project Site subject to the Vendor in all cases prior to the removal of the rejected Material(s) from the Project site:
 - (i) furnishing a bank guarantee to IOCL from a Scheduled bank in India (including an Indian branch of a foreign bank acceptable to IOCL) and in a format set forth in **Annexure** "E" hereto for the value paid by IOCL on the Material(s) rejected; and
 - (ii) undertaking to replace the rejected Material(s) with other Material(s) conforming to the Vendor's guarantees aforesaid applicable thereto.
- 16.8 The Vendor shall not without the prior written consent of IOCL utilize any rejected Material(s) in the re-supply.
- 16.9 The Defect Liability Period with respect to any Material(s) replaced, repaired and/or rectified shall be reckoned from the date of such replacement, repair and/or rectification as the case may be.
- 16.10 Should the Vendor fail to dismantle and/or remove any rejected Material(s) from the Project Site within the time specified in the notice of rejection, IOCL may without prejudice to any other right or remedy, at the risk and cost of the

Vendor cause the rejected Material(s) to be dismantled and sold by public auction or private treaty as it deems fit and hold or adjust the sale proceeds for the recovery of the cost of dismantling, sale and removal of the rejected Material(s) and any amount paid by IOCL towards the price of the rejected Material(s). In so doing, IOCL shall not act as a trustee or constructive trustee of the Vendor and shall be entitled to act solely on the basis of its best judgment without being accountable or liable to the Vendor in any manner except for the proceeds of the sale.

- 16.11 The time taken for the repair, rectification or replacement of Material(s) will not be added to the stipulated Delivery date for the purpose of calculating price discount, and delivery of such Material(s) shall be the date of Delivery of the repaired, rectified or replaced Material(s).
- 16.12 As security for the due performance of its obligations and the due discharge of its liabilities under the Contract, the Vendor shall within 15 (fifteen) days of the issue of the Purchase Order furnish to IOCL a Bank Guarantee issued by a Scheduled Bank in India acceptable to IOCL, in the format set forth hereto and marked **Annexure** "C" hereinbefore. The Bank guarantee shall remain in force for the entire period required for the performance of the contract and the defect liability period plus a 3 (three) months claim period thereafter. Any shortfall in the value of the Bank Guarantee, as a result of encashment by IOCL either in full or in part, shall be made good by the Vendor within 7 (seven) days of notice by IOCL to the Vendor in this behalf. Any failure by the Vendor to furnish the Bank Guarantee or to enhance the Value of the Bank guarantee as stated above shall constitute a default by the Vendor for which IOCL shall, without prejudice to any other right or remedy available to it, be entitled to terminate the Contract with consequences as indicated in clause 12.4, the provisions whereof shall mutatis mutandis apply.

17. **FREIGHT, TAXES AND DUTIES**

- 17.1 Subject to the provisions of Clause 17.2, hereunder, Excise duty and Sales tax/VAT payable on the sale and delivery of Material(s) pursuant to the Contract will be paid in the case of Sales tax and reimbursed in the case of VAT and Excise duty at actual within the contractual delivery date. Any increase in the rates of Excise Duty & VAT beyond the contractual completion date or approved extended contractual completion date will be borne by IOCL to the extent CENVATABLE documents passed on to IOCL and IOCL is in a position to get the CENVAT claim from the authorities. However, the benefit of any reduction must be passed on to IOCL
- 17.2 Taxes and duties payable or reimbursable by IOCL to the Vendor on the supply of Indigenous Material(s) shall be included in and shown separately in the Vendor's invoice for the Material(s). However, the Vendor shall not be entitled to claim payment from the bankers or IOCL of CENVATABLE or VATABLE taxes or duties on which IOCL would be entitled to other credits (presently Excise Duty, Value Added Tax (VAT) and Service Tax) without furnishing IOCL

the documents required for IOCL to avail of the full CENVAT / VAT or other tax benefits available to IOCL against the payment of the tax. The Vendor shall prior to despatch of the Material(s) obtain from IOCL a list of the documents required by IOCL to enable it to avail of the relative benefits. Payment or reimbursement of the CENVATABLE / VATABLE / other taxes and duties on which credit is available to IOCL shall be made upon the Vendor furnishing the relevant documents.

- 17.3 Freight and/or octroi and entry and/or terminal taxes, if any, payable or reimbursable by IOCL shall be invoiced separately and shall be paid/re-imbursed by IOCL after receipt of the Material(s) at the Project Site and satisfactory proof of payment of the relative octroi, entry and/or terminal taxes, as the case may be.
- 17.4 Freight, taxes and duties are not intended to operate as a profit centre but are intended only to meet the relevant costs incurred on this account. If any reimbursement or collection of the taxes or duties by the Vendor from IOCL is in excess of the freight, taxes and/or duties actually paid by the Vendor, the Vendor shall forthwith refund such excess to IOCL together with interest thereon at 1% (one percent) per annum above the Prime Lending Rate of the State Bank of India from the date of collection until the date of refund.

18.0 **WEIGHTS AND MEASUREMENTS**

- 18.1 The shipping documents, invoices, packing lists and all other relevant documents shall contain the same units of weights and measurements as given in the Contract Documents, in respect to the following data:
 - a. Unit net weight
 - b. Unit gross weight (including packing)
 - c. Dimensions of packing
- 18.2 All weights and measurements recorded by the Procurement Co-ordinator or Inspector(s) on receipt of the Material(s) at the Project site will be treated as final.

19.0 **PACKING & MARKING**

- 19.1 All Material(s) shall be suitably packed in weatherproof seaworthy/airworthy packing for ocean/air transport under tropical conditions and/or for rail and road or other appropriate transport within India. The Vendor shall ensure that the packing is strong enough to ensure safety and preservation of the Material(s) upto the Project Site or other point of final destination.
- 19.2 Material(s) shall be protected by a suitable coat of paint and all bright parts shall be protected from rust by application of rust preventives as may be necessary. All machinery surfaces shall be suitably protected.
- 19.3 For uniform Material(s) when packed in several cases/crates, progressive serial numbers shall be indicated on each end. In case of bundles, the

- shipping marks shall be embossed on metal or tag and wired securely on each end.
- 19.4. A distinct colour splash in say red-black around each package/crate/bundle shall be given for identification.
- 19.5 All nozzle holes and openings as also all delicate surfaces shall be carefully protected against damage and bad weather. Flange faces of all nozzles shall be protected by blanks. All manufactured surfaces shall be painted with rust proof paint or as specified in the specification.
- 19.6 All threaded fittings shall be greased and provided with a plastic cap. All pipes and sheets shall be marked with strips bearing progressive numbers.
- 19.7 All small pieces shall be packed in cases. All fragile and exposed parts will be packed with care and packages will bear the words "HANDLE WITH CARE" in English and in the case of Indigenous Supply, in Hindi also.
- 19.8 The Vendor shall be held liable for all damages or breakages to the Material(s) due to defective or insufficient packing as well as for corrosion due to insufficient greasing/protection.
- 19.9 On three sides of the packages, the Vendor shall affix or cause to be affixed the following marks clearly visible in indelible paint

FROM: VENDOR

TO: INDIAN OIL CORPORATION LTD.

[Address] INDIA

PURCHASE ORDER NO.: [] Rev. No.: []

10 DIGIT ITEM CODE: []

EQUIPMENT NOMENCLATURE: [

NET WEIGHT: []kg/lb GROSS WEIGHT: []kg/lb

CASE NO.: []OF []TOTAL CASES DIMENSIONS: [] IMPORT LICENCE NO.[]

NOTE:Marking shall be bold with a minimum letter height of 5 cm.

- 19.10 a) For every shipment, packages must be marked with serial progressive numbering. The numbering will be progressively continued for each subsequent shipment covering the Contract.
 - b) All packages will bear warning signs on the outside denoting the center of gravity and sling marks. Packages that require special handling and transport shall have their centers of gravity and points at which they may be gripped clearly indicated and marked "Attention Special Load -

- Handle With Care" in English Language. Any other direction for handling shall also be clearly indicated on the package.
- c) Top heavy containers will be marked either "TOP HEAVY" or "HEAVY ENDS'.
- d) When packing is clean and light colored, a dark black stencil paint shall be acceptable. However, where packing is soiled or dark, a coat of flat Zinc white paint shall be applied and allowed to dry before applying the specific marking(s).
- e) Colour codification shall be used to identify different items e.g, IBR, NACE, Fire Safety Items etc.
- 19.11 In case of large equipments like vessels, heat exchangers etc., documents contained in a waterproof envelope shall be fastened inside a shell connection with an identifying arrow sign "DOCUMENTS" applied with indelible paint.

20.0. **DESPATCH INSTRUCTIONS**

For Indigenous Material(s)

- 20.1 Unless otherwise advised by IOCL or the Procurement Co-ordinator in writing, Material(s) shall not be despatched without prior inspection and/or testing and Release Order/Material(s) Acceptance Certificate issued by the Inspector(s).
- 20.2 The Vendor shall exercise due care to ensure that the consignment is booked under appropriate railway classification, failing which any additional freight incurred by IOCL due to the Vendor booking the Material(s) under a wrong railway classification shall be borne by the Vendor.
- 20.3 The Material(s) shall be consigned in the name of the consignee viz.

Indian Oil Corporation Ltd., [Site address]

- 20.4 The Material(s) shall be transported only through bank approved transporters by the most economical and expeditious mode of transport to the destination as applicable for respective mode of despatches as follows:
 - (a) By Rail in wagon load consignment to : [Name and address of Refinery / Project to be specified]
 - (b) By road transport to: [Name and address of Refinery / Project to be specified]

IOCL and the Procurement Coordinator shall have the right to advise any change in despatch point or destination and/or mode of transport in respect of any Material(s). Any extra expenditure incurred by the Vendor on this account

supported by satisfactory documentary evidence, will be reimbursed to the Vendor by IOCL.

21.0 SHIPMENT AND SHIPMENT NOTICES

21.1 <u>Imported Material</u>

The Vendor shall make shipment only after prior approval of the Inspector(s) unless otherwise specifically authorized in writing by IOCL or the Procurement Coordinator. As soon as any shipment is made, the Vendor shall send advance information by way of FAX message [Fax No 022-26400774] to the Dy. General Manager, Indian Oil Corporation Ltd.(Refinery Division), G-9, Ali Yavar Jung Marg, Bandra (East) Mumbai- 400 051 for Mumbai consignments and to the Dy. General Manager (Fax: 033-24145020) Indian Oil Corporation Ltd.(Refinery Division), Indian Oil Bhavan (Refineries Division) Central Wing, 6th Floor, 2, Gariahat Road (South), Kolkata-700068 for Kolkatta consignments (or other specified authority in respect of Material(s) consigned to other Ports), giving particulars of the shipments, vessel's name, port of shipment, Bill of Lading number and date for ocean shipment and Airway Bill number & Date & Flight details for air consignment, total FOB and freight value with confirmation copy to IOCL, addressed to [designation and address]

21.2 Indigenous Material

Immediately after shipment, the Vendor shall inform despatch particulars to IOCL/ Procurement Coordinator hereunder:

1 copy to Chief Materials Manager, [Address & Fax no]

1 copy to IOCL (Stores) addressed to [Designation, Address & Fax no.]

In the case of project orders, in addition to the above, a copy to the Chief Projects Manager addressed to: [Address & Fax no.]

(PMC as per Purchase Order) addressed to: [Designation, Address & Fax no.]

22.0 MARINE AND TRANSIT RISK INSURANCE

- 22.1 Marine/Air and Transit Risk Insurance shall be covered by IOCL against its Open General Policy.
- 22.2 The Vendor shall send IOCL information of the proposed shipment/consignment well in advance by telegram/fax/e-mail/courier to enable IOCL to take necessary action for the marine/air/transit insurance of the shipment/consignment.
- 22.3 The Vendor shall advise the despatch particulars of the shipment/consignment to the Insurance Company by fax / email under advice to the Procurement Coordinator promptly after shipment to ensure that the consignment is fully covered by insurance. Any failure by the Vendor to do so shall place the consignment at the Vendor's risk.

23.0 SHIPPING AND SHIPPING DOCUMENTS

23.1 For Imported Materials(s)

- (a) The Vendor shall arrange with Vessel owner(s) or Forwarding Agent(s) specified in the Contract Documents for proper storage of the Material(s) in a manner so as to facilitate the handling and off-loading at the port of destination and to avoid any over carriage on discharge. All shipment by ocean vessel shall be under deck.
- (b) The Bill(s) of Lading/Airway Bill shall be made out in favor of "Indian Oil Corporation Ltd." [Refinery/Unit] or to the order of the L/C opening bank, and the notify column should indicate [Designation] Indian Oil Corporation Ltd. [Refinery Division], G-9, Ali Yavar Jung Marg, Bandra (East), Mumbai- 400061 for port of discharge Mumbai and to the Dy. General Manager, Indian Oil Corporation Ltd., Indian Oil Bhavan (Refineries Divison) Central Wing, 6th Floor, 2, Gariahat Road (South), Kolkata-700 068 for port of discharge Kolkatta or other specified authority in respect of Material(s) consigned to other ports.
- (c) All columns in the body of the Bill of Lading/Airway Bill namely marks and Numbers, material description, weight particulars, etc. should be completed accurately and such statement should be uniform in all the shipping documents. The freight particulars should mention the basis of freight tonnage, heavy lift charges, if any, surcharge, discount, etc. clearly and separately and the net total freight payable, shown at the bottom.
- (d) The Bill of Lading/Airway Bill shall be free of any liability of IOCL to the carrier for demurrage.
- (e) The Bill of Lading/Airway Bill shall indicate the following:

Consignee : Indian Oil Corporation Limited [Name of Refinery/Project]

- (f) All documents viz. Bill of Lading/Airway Bill, invoices, packing list, freight memos, country of origin certificate, Third Party Inspection Release Certificate, inspector's certificate, Export certificate (wherever applicable), test certificates, drawings and catalogues should be in the English language.
- (g) (i) In addition to the Bill of Lading/Airway Bill, which should be obtained in 3 (three) stamped originals plus as many copies as required, invoices, packing lists, freight memos (if the freight particulars are not shown in the Bill of Lading), country of origin certificate(s), Third Party Inspection Release Certificate, inspector's certificate, Export certificate (wherever applicable) and test/composition certificate, shall be made out against each shipment in as many number of copies as are shown in Clause 23.3.
 - (ii) The Bill of Lading/Airway Bill, invoice and packing list must specifically show uniformly, the marks and numbers, material description, contents case-wise,

country of origin, consignee's name, port of destination and all other indicated particulars. The invoice must show the unit rates and net total FOB price. The invoice must cover also items packed separately and the value shown accordingly.

- (iii) The packing list must show, apart from other particulars, the actual contents in each case, net and gross weights and dimensions and the total number of packages.
- (iv) All documents must be duly signed by an authorized representative of the Vendor.

23.2 In case of FOB contracts:

- (i) Shipping Arrangements shall be made through nominated freight forwarders (in the country of exit) as detailed in the Purchase Order and freight will be accordingly paid by IOCL in Indian Rupees.
- (ii) The Vendor shall furnish to the respective nominated freight forwarder, the full details of consignment such as outside dimensions, weights (both gross and net), No. of packages, technical description and drawings, name of the supplier, ports of loading etc. two weeks prior to the proposed date of shipment to enable the concerned agency to arrange the shipping space.
- 23.3 The Vendor shall obtain the shipping documents in required number of sets including three original stamped copies of the Bill of Lading/Airway Bill immediately after the shipment is made and airmail the shipping documents in the manner stipulated hereunder to ensure that the documents so forwarded are received at least one week before the vessel's arrival. The Vendor shall be fully responsible for any delay and/or demurrage in clearance of the consignment at the port due to delay in forwarding the shipping documents. If in terms of the Letter of Credit , the complete original set of documents are required to be sent to IOCL through the bank, the distribution indicated below will be confined to obtaining copies of documents only.

Documents	IOCL (Office that issued the PO)	IOCL (Port Office)	IOCL (Project Site)
Bill of lading/Airway Bill	3 (including 1 original)	1 1	1 ′
Invoice	2	2	1
Packing List	2	2	1
Certificate of Origin	2	2	1
Test/Composition Certificate	2	2	1
Third Party Inspection Release Certificate	1	1	1 (original)
Drawing/Catalogue	1	1	1
Invoice of Third Party/Lloyds for Inspection Charges, wherever applicable.	2	1	1
Export Certificate (where applicable)	1	1	1

24.0 INVOICING & NEGOTIATION OF DOCUMENTS

24.1 <u>Indigenous Material(s)</u>

- (a) Unless otherwise directed by IOCL, Invoices and other documents shall be forwarded by the Vendor to IOCL as stipulated hereunder:
 - (i) Original Invoice+1 copy of document as per Purchase Order to the Chief Finance Manager, [Address, Fax No.]
 - (ii) 1 copy of Invoice with original documents as per Purchase Order to Chief Materials Manager, [Address, Fax No.] along with technical catalogues, Inspection certificate and Inspectors Release Note.
- (b) Where payment is to be released to the Vendor against despatch documents through the bank, the Vendor shall forward two complete original sets of the documents specified in clause 5.2(c) to the specified banker of IOCL with a stipulation that the banker shall forward one set of the documents to IOCL with LSC intimation and acceptance before retirement of the documents from the Bank. One complete set of all of the abovementioned documents shall be sent to the Chief Materials Manager [Address, Fax No.]. Documents will not be retired by the bank failing strict compliance by the Vendor of the above mentioned despatch requirements.
- (c) Where payment is to be released to the Vendor directly by IOCL, two sets of all the documents mentioned in (b) above shall be submitted/forwarded directly to the Chief Materials Manager [Address, Fax No.] and upon processing, the payment shall be released through the Finance Department, by cheque.

25.0 TRANSFER OF TITLE AND RISK OF LOSS

25.1 For Indigenous Material(s):

The transfer of property and risk in Indigenous Material(s) shall be deemed to take place as follows:

- (a) For delivery F.O.R. or F.O.T. despatch point: On handing over the Material(s) to the carrier against receipt of clean Railway Receipt/Truck or Lorry Receipt and such receipt having been handed over to IOCL.
- (b) For despatch F.O.R destination station: On removal of the Material(s) by IOCL from the railway authorities at the destination station.
- (c) Equipment sent freight/carriage paid to the Project Site: On receipt of the Material(s) by IOCL at the Project Site.

25.2 For Imported Material(s):

The transfer of property and risks in Imported Material(s) shall be deemed to take place as follows:

- (a) For FOB / FCA deliveries: On handing over the Material(s) to the carrier and issue of clean Bill of Lading/Airway Bill (except for freight to pay) and its transmission to IOCL.
- (b) For CFR deliveries: On receipt of the Material(s) by IOCL from the carrier at the destination port/airport.

26.0 **TERMINATION**

- 26.1 Without prejudice to IOCL's right to price adjustment by way of discount or any other right or remedy available to IOCL, IOCL may terminate the Contract or any part thereof by a written notice to the Vendor, if:
 - i) The Vendor fails to comply with any material term of the Contract.
 - ii) The Vendor informs IOCL of its inability to deliver the Material(s) or any part thereof within the stipulated Delivery Period or such inability otherwise becomes apparent.
 - iii) The Vendor fails to deliver the Material(s) or any part thereof within the stipulated Delivery Period and/or to replace/rectify any rejected or defective Material(s) promptly.
 - iv) The Vendor becomes bankrupt or goes into liquidation.
 - v) The Vendor makes a general assignment for the benefit of creditors.
 - vi) A receiver is appointed for any substantial property owned by the Vendor.
 - vii) The Vendor has misrepresented to IOCL, acting on which misrepresentation IOCL has placed the Purchase Order on the Vendor.
- 26.2 Upon receipt of said termination notice, the Vendor shall discontinue the work on the Contract so far as terminated, and matters connected therewith.
- 26.3 On termination of the Contract, without prejudice to any other right or remedy available to IOCL under the contract, in the event of IOCL suffering any loss on account of delayed delivery or non-delivery, IOCL reserves the right to claim and recover damages from the Vendor in respect thereof.
- 26.4 Notwithstanding anything to the contrary herein contained, IOCL will be at liberty to take independent administrative action to place the Vendor under

'holiday list' for delay or non-performance of its contractual obligations or any of them.

27.0 **RECOVERY OF SUMS DUE**

Whenever there is any claim against the Vendor for payment of sums of money arising out of or under the execution of the Purchase Order, IOCL may, without prejudice to any other mode or source of recovery available, recover the same from any sum(s) then due or which at any time thereafter may become due to the Vendor under this or any other contract with IOCL and/or by recourse to any bank guarantee available to IOCL for this purpose, and should these sum(s) be not sufficient to cover the recoverable amount, the Vendor shall pay IOCL on demand, the balance.

28.0 **NON-WAIVER**

Failure of IOCL/IOCL's representative(s) to insist upon adherence to any of the terms or conditions incorporated in the Contract or failure or delay to exercise any rights or remedies herein or by law accruing, or failure to promptly notify the Vendor in the event of breach or the acceptance of or the payment for any Material(s) hereunder or approval of any design or Material(s) shall not release the Vendor and shall not be deemed a waiver of any right of IOCL to insist upon the strict performance thereof or of any of its rights or remedies as to any such Material(s) regardless of when the Material(s) are shipped, received or accepted nor shall any purported oral modifications or revisions of the Contract by IOCL or IOCL's representative(s) act as a waiver of the terms hereof.

29.0 **COMPLETE AGREEMENT**

The Contract Document(s) including, technical documents, drawings and specifications and other Annexures to the Contract documents constitute the entire agreement between the Vendor and IOCL in relation to the Contract arising out of the Purchase Order. Changes or amendments will be binding only if the amendments/modification are agreed to in writing as an amendment/variation to the relative Contract Document and signed by an authorised representative of IOCL.

30.0 **EXCLUSION OF THE GOVT. OF INDIA'S LIABILITY**

30.1 It is expressly understood and agreed that IOCL has entered into the Contract solely on its own behalf and not on behalf of any other person or entity. In particular, it is expressly understood and agreed that the Government of India is not a party to the Contract and will have no liability, obligation or right whatsoever under the Contract. It is expressly understood and agreed that IOCL is an independent legal entity with power and authority to enter into the Contract solely on its own behalf under the applicable laws of India. The Vendor expressly agrees, acknowledges and undertakes and accepts that IOCL is not an agent, representative or delegate of the Government of India and that the Government of India is not and shall not be liable for any act,

omission, commission, breach or other wrong or liability arising out of the Contract. The Vendor hereby expressly waives, releases and forgoes any and all actions or claims, including cross claims, impleader claims or counter claims, against the Government of India arising out of the Contract and covenants not to sue the Government of India for any manner of claim, cause of action or thing whatsoever arising out of or under the Contract.

31.0 TECHNICAL INFORMATION/CONFIDENTIALITY

- 31.1 Drawings, specifications and details shall at all times be the property of IOCL and shall be returned by the Vendor to IOCL on demand. The Vendor shall not make use of any document, drawing, specification, data or any other information connected with the Contract, for any purpose at any time, save and except in the implementation of the Contract.
- 31.2 The Vendor shall not disclose the technical information furnished or gained by the Vendor under or by virtue of or as a result of the implementation of the Contract and shall make all efforts to ensure that the technical information is kept confidential.

32.0 MODE OF COMMUNICATION

32.1 It is understood that IOCL is a multifaceted and multi-locational organization and that for any communication to receive attention it is a prerequisite that the communication is properly addressed and that the subject of the communication is properly identified. To this end, except where otherwise provided, all communications, drawings, invoices, shipping notes, packages, packing lists and other document connected with reference to the Contract shall in the heading boldly set out the Purchase Order Number and date, and shall be addressed to the following:

Chief Materials Manager Phone Fax [Office issuing the Purchase

[Office issuing the Purchase Order]

Chief Projects Manager Phone Fax [Site address]

Dy. General Manager Phone Fax IOCL [concerned Port office] [Concerned office address] (For imports)

With copies to the following in case a Procurement Co-ordinator or Project Management Consultant is involved:

- (i) Resident Construction Manager Phone Fax [Site address]
- (ii) Dy. General Manager (Inspection) of the Procurement Coordinator/Project Management Consultant.

33.0 PART ORDER/REPEAT ORDER

The Vendor hereby agrees to accept part order at unit prices without limitation and also agrees in case of bulk consumables to accept repeat order(s) during a period of 6 (six) months from the date of original Purchase Order at the same unit price(s) and on the same terms and conditions.

34.0 ARBITRATION AND GOVERNING LAW

- 34.2 <u>Governing Law:</u>The Agreement(s) shall be construed in accordance with and governed by the laws of India. IOCL shall warrant that the terms and conditions of the Purchase Order shall be valid under existing Indian laws.

35.0 **JURISDICTION**

35.1 Notwithstanding any other Court or Courts having jurisdiction to decide the disputed issue, and without prejudice to the provisions or generality of the Arbitration clause, jurisdiction to decide the question(s) arising out of or relative to the Contract in all matters touching or affecting any arbitration, or arising out of or in relation to or under or in accordance with the Arbitration and Conciliation Act, 1996 or otherwise under or with reference to the Contract shall vest exclusively in the court(s) of competent civil jurisdiction at _____ [where the contract(s)/Purchase Order shall be signed on behalf of IOCL] or at New Delhi and only the said Court(s) shall have the jurisdiction to entertain and try any such actions and/or proceedings to the exclusion of all other Courts, provided that nothing herein stated shall be deemed to anywise authorize any party to seek resolution of any dispute(s) otherwise than the recourse to arbitration in accordance with the provisions of the Arbitration clause herein.

Provided always that an award rendered in any arbitration proceedings arising out of or in relation to the Contract may be enforced or executed in any other country or jurisdiction including without limitation a country in which any party against whom the award is to be enforced or executed is located and a country in which the assets of any such party are located.

* * * *

Annexure - A

FORM OF BANK GUARANTEE IN LIEU OF EARNEST MONEY DEPOSIT

(On non-judicial stamp paper of appropriate value)

BG NO:
DATED:
VALID UPTO:
To,
Indian Oil Corporation Limited (Refineries Division) [Address]
Dear Sirs,
In consideration of the Indian Oil Corporation Ltd. [Address], (hereinafter called the "Corporation", which expression shall include its successors and assigns) having agreed interalia to consider the tender of (Name), (Constitution)
of(Name)(Constitution)
(hereinafter referred to as the "Tenderer" which expression shall wherever the subject or context so permits include its successors and assigns) for supply of materials to be awarded under Tender No upon the Tenderer furnishing an undertaking from the Bank as hereinafter appearing in lieu of a Demand Draft or Bankers Pay Order for the Earnest Money.
We
AND THE BANK DOTH HEREBY FURTHER AGREE AS FOLLOWS:

- 1. The amount stated by the Corporation in any demand, claim or notice made or given with reference to this Guarantee/Undertaking shall as between the Bank and the Corporation for the purpose of this Guarantee/Undertaking be conclusive of the amount payable by the Bank to the Corporation hereunder.
- 2. This Guarantee/Undertaking shall not be determined or affected by the liquidation or winding up or dissolution or change of constitution or insolvency of the Tenderer or by any change in the legal constitution of the Bank or the Corporation.

- Without prejudice to any other mode of service, a demand or claim or any other communication may be made, given and/or transmitted by the Corporation to the Bank either by post or by fax. If transmitted by fax, the transmission shall be complete and shall be deemed to have been acknowledged as soon as the "OK" facsimile transmission report for the fax message has been received.
- 4. Notwithstanding anything contained herein:

Name of the Branch:

(i)	The Bank's liability under this Guarantee/Undertaking shall not exceed
	Rs./ US\$ (Rupees / United States Dollars
	only).
(ii)	This Guarantee/Undertaking shall remain in force upto (fill in date) and
	any extension(s) thereof; and
(iii)	The Bank shall be released and discharged from all liability under this
	Guarantee/Undertaking unless a written claim or demand is issued to
	the Bank on or before the midnight of and if extended, the date
	of expiry of the last extension of this Guarantee/Undertaking.
The Deals d	lath baraku daalara that Ohri
	oth hereby declare that Shri[designation] is
Bank thereby	o sign this Guarantee/Undertaking on behalf of the Bank and to bind the
Dank mereb	y.
This da	y of20
Yours faithfu	lly,
Signature:	
Name & Des	signation:

NOTES:

- 1. The Bank Guarantee in lieu of Earnest Money Deposit shall be strictly as per above proforma and shall be through a Scheduled Bank operating in India, including the Indian Branch of a foreign bank recognized as a Scheduled bank in India.
- 2. The Bank Guarantee shall be typed on stamp paper applicable to an agreement in the State in which the Bank Guarantee is issued.
- 3. This Bank Guarantee shall be sent by the Bank directly to:- Chief Materials Manager, IOCL (Refineries Division].

[IRREVOCABLE LETTER OF CREDIT- FORMAT]

То:
This communication is to be considered as our credit instrument and is subject to the Uniform Customs and Practice for Documentary Credit 1993 revision, I.C.C. publication No. 500.
At the request of Indian Oil Corporation Ltd. (hereinafter called "the Corporation" which expression shall include its successors and assignees) we hereby establish our irrevocable Letter of Credit Nodated in favour of :
(Beneficiary) for a sum not exceeding (Currency in figures and words) which is payable at sight at the counter of [Beneficiary's Bank] in [Address], covering the FOB/CIF/C&F port supply of Material(s) and equipment under Purchase Order No.[] for the Unit/Refinery of Indian Oil Corporation Ltd (IOCL).
This Letter of Credit shall be valid up till [Date]
TERMS OF PAYMENT
Payments under this Letter of Credit shall be made of % of the value of the Invoice(s) drawn by the Beneficiary on IOCL under the said Purchase Order against presentation of the following documents:

Imported Materials:

- (i) Invoice;
- (ii) Clear Bill of Lading/Airway Bill covering the Materials(s) invoiced;
- (iii) Packing list for the consignment;
- (iv) Inspector's Certificate covering the invoiced Material(s);
- (v) Test/Composition Certificate;
- (vi) Certificate of origin;
- (vii) Drawing(s)/Catalogue(s) covering the Material(s);
- (viii) Export Certificate, wherever applicable;
- (ix) Invoice of Inspector's charges, wherever applicable;
- (x) Freight Memo(s) if the freight particulars are not shown in the Bill of Lading/Airway Bill.
- (xi) Copy of faxed intimation of the shipment to IOCL certified by the Beneficiary to be a true copy of the faxed intimation of shipment to IOCL.

Indigenous Supply:

- (i) Invoice
- (ii) Clear Railway Receipt/Truck Receipt/Goods Receipt covering the Material(s) invoiced:
- (iii) Packing list for the consignment;
- (iv) Third Party Inspector's Certificate covering the invoiced Material/Release Note;
- (v) Test/Composition Certificate:
- (vi) IBR Certificate/CMRS Certificate;
- (vii) Drawing(s)/Catalogue(s) covering the Material(s);
- (viii) Guarantee/Warranty Certificate(s), wherever applicable;
- (ix) Invoice of Inspector's charges, wherever applicable;
- (x) Freight Memo(s) if inland freight is not included in the Price and the RR/TR/GR does not give the freight particulars.
- (xi) Copy of faxed intimation of the shipment to IOCL certified by the Beneficiary to be a true copy of the faxed intimation of shipment to IOCL.

SPECIAL INSTRUCTIONS

- * All Bank charges and commissions outside India shall be borne by the Beneficiary.
- * Drawing permitted in not more than 3 (three) tranches.
- * Partial shipment is not permitted.
- * Trans-shipment not permitted.
- Negotiating Bank to reimburse itself after giving 7 (seven) banking days notice to the Issuing Bank from Issuing Bank's account with _____ (Name of the Issuing Bank's correspondent in _____) at maturity under telex/cable advice to the Issuing Bank indicating the amount claimed.
- * IOCL to be intimated the shipping details by fax immediately on shipment.
- * Documents to be dispatched to Issuing Bank by courier within 7 banking days of receipt by Negotiating Bank.
- * Documents must be presented within _____ days after the date of shipment/dispatch to ensure receipt thereof 7 days prior to the arrival of the vessel.

* * * *

Annexure -C

[PROFORMA OF BANK GUARANTEE (PERFORMANCE)]

(On non-judicial stamp paper of appropriate value) To Indian Oil Corporation Ltd. [Address]
Dear Sirs,
In consideration of the Indian Oil Corporation Ltd. (hereinafter called the "Corporation which expression shall include its successors and assigns) having awarded to [Name], [Constitution] [Address (hereinafter referred to as the "Supplier" which
We (name) a body corporate registered/constituted under the laws of and having a branch at [Indian branch address (hereinafter called "the Bank" which expression shall include its successors and assigns) with the intent to bind the Bank and its successors and assigns, hereby undertake to pay the Corporation at [place] on first demand in writing without protest or demur or proof or satisfaction or condition and without reference to the Supplier, any and all amounts from time to time demanded by the Corporation from the Bank with reference to this Guarantee/Undertaking upto an aggregate limit of Rs./US\$[] only or [Rupees / United States Dollars]

AND THE BANK DOTH HEREBY FURTHER AGREE AS FOLLOWS:

- 1. This Guarantee/Undertaking shall be in addition to any other guarantee or any other security whatsoever that the Corporation may now or at any time anywise have in relation to the Supplier's obligations and/or liabilities under and/or in connection with the Contract and the Corporation shall have full authority to take recourse to or reinforce this Guarantee/Undertaking in preference to the other guarantee(s) or security(ies) at its discretion, and no failure on the part of the Corporation in enforcing or requiring enforcement of any other guarantee or security shall have the effect of releasing the Bank from its full liability hereunder.
- 2. The Corporation shall be at liberty without reference to the Bank and without affecting the full liability of the Bank hereunder to take any other security in

respect of the Supplier's obligation(s) and/or liability(ies) under/or in connection with the Contract and/or to vary the terms vis-a-vis the Supplier of the Contract and/or to grant time and/or indulgence to the Supplier or to reduce or to increase or otherwise vary the prices or the total contract value or to release or to forebear from enforcement of all or any of the obligations of the Supplier under the Contract and/or the remedies of the Corporation under any other guarantee(s) or security(ies) now or hereafter held by the Corporation and no such dealing(s), variation(s), reduction(s) or other indulgence(s) or arrangement(s) with the Supplier or release or forebearance whatsoever shall have the effect of releasing the Bank from its full liability to the Corporation hereunder or of prejudicing the rights of the Corporation against the Bank.

- 3. This Guarantee/Undertaking shall not be determined or affected by the liquidation or winding up or dissolution or change of constitution or insolvency of the Supplier or any change in the legal constitution of the Bank or of the Corporation.
- 4. The Bank hereby waives all rights at any time inconsistent with the terms of this Guarantee/Undertaking and the obligations of the Bank in terms hereof shall not be anywise affected or suspended by reasons of any dispute or disputes having been raised by the Supplier (whether or not pending before any Arbitrator, Officer, Tribunal or Court) or any denial of liability by the Supplier or any other order or communication whatsoever by the Supplier stopping or preventing or purporting to stop or prevent any payment by the Bank to the Corporation in terms hereof.
- 5. Notwithstanding anything contained herein:

	(a)	The Bank's liability under this Guarantee/Undertaking shall not exceed (currency in figures) (currency in words only)
	(b)	This Guarantee/Undertaking shall remain in force upto (here put the entire period required for the performance of the Contract and the defect liability period plus 3 (three) months) and any extension(s) thereof; and
	(c)	The Bank shall be released and discharged from all liability under this Guarantee/Undertaking unless a written claim or demand is issued to the Bank on or before the midnight of and if extended, the date of expiry of the last extension of this Guarantee/Undertaking.
6.	desig autho	Bank doth hereby declare that Mr[name & nation of the person authorised to sign on behalf of the Bank] is trised to sign this Guarantee/Undertaking on behalf of the Bank and to the Bank thereby.

Yours faithfully,

(Signature) NAME & DESIGNATION NAME OF THE BANK

NOTES:

- 1. The Performance Bank Guarantee shall be strictly as per above proforma and shall be through a Scheduled Bank operating in India, including the Indian Branch of a foreign bank recognized as a Scheduled Bank in India.
- 2. The Bank Guarantee shall be typed on stamp paper applicable to an agreement in the State in which the Bank Guarantee is issued.
- 3. This bank guarantee shall be sent by the bank directly to:-Chief Materials Manager, IOCL (Address)

Annexure D

PROFORMA OF BANK GUARANTEE (FULL VALUE OF FREE ISSUE MATERIALS)

(On non-judicial stamp paper Of appropriate value)

To

Indian Oil Corporation Ltd. [Address]

Dear Sirs,

In consideration of the Indian Oil Corporation Ltd. [address] (hereinafter called the "Corporation" which expression shall include its successors and assigns) having awarded to [Name]. (Address) (hereinafter referred to as (Constitution) the "Supplier" which expression shall wherever the subject or context so permits include its successors and assigns) a Supply Contract in terms, interalia, of the Corporation(s) Purchase Order No. [] dated [] (hereinafter referred to as the "Contract") and having agreed to provide certain free issue material(s) hereinafter referred to as "Free Issue Material" to the Supplier for incorporation in the materials(s) to be supplied under the Contract) upon the condition of the Supplier's furnishing security in lieu of cash for the said Free Issue Material(s) upto a sum of Rs./US\$ (Rupees/ United States Dollars only) being the value of the Free Issue Material(s):

We ______ [name] a body corporate registered/constituted under the laws of [Country] and having a branch at [Indian branch address] (hereinafter called "the Bank" which expression shall include its successors and assigns) with the intent to bind the Bank and its successors and assigns, hereby undertake to pay the Corporation at [place] on first demand in writing without protest or demur or proof or satisfaction or condition, and without reference to the Supplier, any and all amounts from time to time demanded by the Corporation from the Bank with reference to this

Guarantee/Undertaking upto an aggregat	e limit of Rs./US\$	[
] (Rupees/ United States Dollars _	only]	

AND THE BANK DOTH HEREBY FURTHER AGREE AS FOLLOWS:

- 1. This Guarantee/Undertaking shall be in addition to any other guarantee or any other security whatsoever that the Corporation may now or at any time anywise have in relation to the Supplier's obligations and/or liabilities under and/or in connection with the Contract and/or the Free Issue Material and the Corporation shall have full authority to take recourse to or enforce this Guarantee/Undertaking in preference to the other guarantee(s) or security(ies) at its discretion, and no failure on the part of the Corporation in enforcing or requiring enforcement of any other guarantee or security shall have the effect of releasing the Bank from its full liability hereunder.
- 2. The Corporation shall be at liberty without reference to the Bank and without affecting the full liability of the Bank hereunder, to take any other security in respect of the Supplier's obligation(s) and/or liability(ies) under or in connection with the Contract or the Free Issue Material and to vary the terms vis-a-vis the Supplier of the Contract or the Free Issue Material and/or to grant time and/or indulgence to the Supplier and/or to reduce or to increase or otherwise vary the prices or the total contract value or the value of the Free Issue Material or to release or to forebear from enforcement of all or any of the obligations of the Supplier under the Contract and/or the remedies of the Corporation under any other guarantee(s) or security(ies) now or hereafter held by the Corporation and no such dealing(s), variation(s), reduction(s) or other indulgence(s) or arrangement(s) with the Supplier or release or forebearance whatsoever shall have the effect of releasing the Bank from its full liability to the Corporation hereunder or of prejudicing the rights of the Corporation against the Bank.
- 3. This Guarantee/Undertaking shall not be determined or affected by the liquidation or winding up or dissolution or change of constitution or insolvency of the Supplier or any change in the legal constitution of the Bank or of the Corporation.
- 4. The Bank hereby waives all rights at any time inconsistent with the terms of this Guarantee/Undertaking and the obligations of the Bank in terms hereof shall not be anywise affected or suspended by reasons of any dispute or disputes having been raised by the Supplier (whether or not pending before any Arbitrator, Officer, Tribunal or Court) or any denial of liability by the Supplier or any other order or communication whatsoever by the Supplier stopping or preventing or purporting to stop or prevent any payment by the Bank to the Corporation in terms hereof.

5.	Notwithstanding anything	contained h	erein:

(a)	The Bank's liability under this Gu	arantee/Undertaking shall not exceed
` ,	[currency in figures]	[currency in words]
	only;	

- (b) This Guarantee/Undertaking shall remain in force upto the midnight of (here put the scheduled date of delivery of the Free Issue Material + 3 months) and any extension thereof.
- (c) The Bank shall be released and discharged from all liability under this Guarantee/Undertaking unless a written claim or demand is issued to the Bank on or before [] and if extended, the date of expiry of the last extension of this Guarantee/Undertaking.
- 6. The Bank doth hereby declare that Mr. _____(name & designation of the person authorised to sign on behalf of the Bank) is authorised to sign this Guarantee/Undertaking on behalf of the Bank and to bind the Bank thereby.

Yours faithfully,

(Signature)

NAME & DESIGNATION NAME OF THE BANK

NOTES:

- 1. The Bank Guarantee shall be for the full value of the Free Issue Material(s) as specified by IOCL and shall be strictly as per above proforma and shall be through a Scheduled Bank operating in India, including the Indian Branch of a foreign bank recognized as a Scheduled Bank in India.
- 2. The Bank Guarantee shall be typed on stamp paper applicable to an agreement in the State in which the Bank Guarantee is issued.
- 3. This bank guarantee shall be sent by the Bank directly to:-Chief Materials Manager, IOCL [Address].

* *

Annexure E

PROFORMA OF BANK GUARANTEE (FOR THE FULL VALUE OF REJECTED MATERIALS)

(On non-judicial stamp paper Of appropriate value)

То
Indian Oil Corporation Ltd. [Address]
Dear Sirs,
In consideration of the Indian Oil Corporation Ltd. (hereinafter called the "Corporation which expression shall include its successors and assigns) having awarded to [Name], (Constitution) (Address) (hereinafter referred to as the "Supplier" which expression shall wherever the subject or context so permits include its successors and assigns) a Supply Contract in terms interalia, of the Corporation(s Purchase Order No. [] dated [] (hereinafter referred to as the "Contract" and having agreed to permit the Supplier to remove certain rejected material(s) fo which the Corporation has paid the Supplier (hereinafter referred to as the "Rejected Material(s)") upon the condition of the Supplier furnishing security for the satisfactory replacement of the Rejected Material(s) upto a sum of Rs./US\$[] (Rupees United States Dollars only) amounting to the full value of the Rejected Material(s).
We [name] a body corporate registered/constituted under the laws of [Country] and having a branch at [Indian branch address] (hereinafter called "the Bank" which expression shall include its successors and assigns) with the intent to bind the Bank and its successors and assigns, hereby undertake to pay the Corporation at [place] on first demand in writing without protest or demur or proof of satisfaction or condition, and without reference to the Supplier, any and all amounts from time to time demanded by the Corporation from the Bank with reference to this Guarantee/Undertaking upto an aggregate limit of Rs./US\$ [Rupees/United States Dollars].

AND THE BANK DOTH HEREBY FURTHER AGREE AS FOLLOWS:

1. This Guarantee/Undertaking shall be in addition to any other guarantee or any other security whatsoever that the Corporation may now or at any time anywise have in relation to the Supplier's obligations and/or liabilities under and/or in connection with the Contract or the Rejected Material(s) and the Corporation shall have full authority to take recourse to or reinforce this Guarantee/Undertaking in preference to the other guarantee(s) or security(ies) at its discretion, and no failure on the part of the Corporation in enforcing or

requiring enforcement of any other guarantee or security shall have the effect of releasing the Bank from its full liability hereunder.

- 2. The Corporation shall be at liberty without reference to the Bank and without affecting the full liability of the Bank hereunder, to take any other security in respect of the Supplier's obligation(s) and/or liability(ies) under or in connection with the Contract and/or the Rejected Material(s) and to vary the terms vis-a-vis the Supplier of the Contract or Rejected Material(s) and/or to grant time and/or indulgence to the Supplier and/or to reduce or to increase or otherwise vary the prices of the total contract value or the value of the Rejected Material or to release or to forebear from enforcement of all or any of the obligations of the Supplier under the Contract or otherwise in respect of the Rejected Material and/or the remedies of the Corporation under any other quarantee(s) or security(ies) now or hereafter held by the Corporation and no such dealing(s), variation(s), reduction(s) or other indulgence(s) or arrangement(s) with the Supplier or release or forebearance whatsoever shall have the effect of releasing the Bank from its full liability to the Corporation hereunder or of prejudicing rights of the Corporation against the Bank.
- 3.. This Guarantee/Undertaking shall not be determined or affected by the liquidation or winding up or dissolution or change of constitution or insolvency of the Supplier or any change in the legal constitution of the Bank or of the Corporation.
- 4. The Bank hereby waives all rights at any time inconsistent with the terms of this Guarantee/Undertaking and the obligations of the Bank in terms hereof shall not be anywise affected or suspended by reasons of any dispute or disputes having been raised by the Supplier (whether or not pending before any Arbitrator, Officer, Tribunal or Court) or any denial of liability by the Supplier or any other order or communication whatsoever by the Supplier stopping or preventing or purporting to stop or prevent any payment by the Bank to the Corporation in terms hereof.
- (a) The Bank's liability under this Guarantee/Undertaking shall not exceed [currency in figures]......[currency in words only]......

Notwithstanding anything contained herein:

(b) This Guarantee/Undertaking shall remain in force upto (put date fixed for replacement of the Rejected Material + 3 months) and any extension(s) thereof;) and

(c) The Bank shall be released and discharged from all liability under this Guarantee/Undertaking unless a written claim or demand is issued to the Bank on or before [] and if extended, the date of expiry of the last extension of this Guarantee/Undertaking.

6.	The Bank doth hereby declare that Mr.	(name 8
	designation of the person authorised to sign on behalf of the	Bank) is

5.

authorised to sign this Guarantee/Undertaking on behalf of the Bank and to bind the Bank thereby.

Yours faithfully,

(Signature)

NAME & DESIGNATION NAME OF THE BANK

NOTES:

- 1. The Bank Guarantee for full value of Rejected Material(s) shall be strictly as per above proforma and shall be through a Scheduled Bank operating in India, including the Indian Branch of a foreign bank recognized as a Scheduled Bank in India.
- 2. The Bank Guarantee shall be typed on stamp paper applicable to an agreement in the State in which the Bank Guarantee is issued.
- 3. This bank guarantee shall be sent by the Bank directly to:-Chief Materials Manager, IOCL [Address].

* *

AMENDMENTS TO GENERAL PURCHASE CONDITIONS (GPC)

				A THE PRINCE OF
SI No	Clause No.	Clause Heading	Existing Clause	Amended/New Clause
			e de la prima de la major de la prima de la prima de la prima de la major de la major de la major de la major de la prima de la major de l	
1				
+i	Nil	LIMITATION	Not specified	The maximum liability shall be limited to
		OF LIABILITY		fraud and/or wilful negligence. The vendor
	·			of be liable for consequenti
		No.36 to be		account of production revenue or profit.
		appended		
2.	12.3	PRICE	12.3 If any Material(s) is/are not delivered within the	12.3 No change
-	· ගේ	REDUCTION		
	12.4	DUE TO	be entitled to a discount by way of price adjustment in a	
•		DELAY	sum equivalent to 0.5% (one half percent) of the price	
•			of such Material(s) per week or part thereof that the	
-			Material(s) remain(s) undelivered beyond the stipulated	
- ·			Delivery period in respect thereof, subject to a	
-			maximum discount of 5% (five percent) of the Total	
			Contract Value. Such discount shall be given by the	
			Vendor by equivalent reduction in the invoice value	
-			esentation	
			payment. Should the Vendor fail to deliver the	
- · · · · · · · · · · · · · · · · · · ·			Material(s) or to make such adjustment, the discount	
			may be recovered by any other means.	
			12.4 Vilthout prejudice to its rights under Clause 12.3 hereof and to entitlement to discount(s) accrued in	12.4 Without prejudice to its rights under
			of and in addition thereto. IOCL	discount(s) accruded in terms thereof and in
				addition thereto, IOCL may at any time after
			in respect of any Material(s), at its discretion terminate	the expiry of the stipulated date(s) of Delivery

AMENDMENTS TO GENERAL PURCHASE CONDITIONS (GPC)

	SI No	Clause No.	Clause Heading	Existing Clause	Amended/New Clause
_					(Applications)
				in whole or part the Contract in respect of the undelivered Material(s) or any of them and either purchase such Material(s) from any other available	in respect of any Material(s), at its discretion terminate in whole or part the Contract in respect of the undelivered Material(s) or any
				ž°ę	of them and either purchase such Material(s) from any other available source at the risks and recover from the
				purchase the difference between the market and contract price of such Material(s) on the date of termination of Contract relative thereto.	Vendor any additional cost incurred by it on such purchase or recover from the Vendor
					the market and contra erial(s) on the date of ter relative thereto.
					However the maximum liability under this clause shall be the total Contract Value or part thereof for undelivered material.
					This clause shall not limit liability in any case of fraud, deliberate default or reckless misconduct by the vendor.
•	œ.	34.1	ARBITRATION	Arbitration: All disputes or differences which may arise out of or in connection with or are incidental to the Agreement(s) including any dispute or difference regarding the interpretation of the terms and conditions	
				of any clause thereof which cannot be amicably resolved between the parties may be referred to	Arbitration proceedings shall be governed by and conducted in accordance with the

AMENDMENTS TO GENERAL PURCHASE CONDITIONS (GPC)

_				The state of the s
SI No	SI No Clause No.	Clause Heading Existing Clause	Existing Clause	Amended/New Clause
			Arbitration of a person selected by the Vendor out of a Arbitration and Conciliation Act, 1996. The	Arbitration and Conciliation Act, 1996. The
			panel of three persons nominated by the General venue of the arbitration shall be() or	venue of the arbitration shall be() or
	-		Manager of the Unit or Project of Indian Oil Corporation	New Delhi, India provided that arbitrators,
			Ltd. to which the Contract relates. The Arbitration with the consent of the OWNER and the	with the consent of the OWNER and the
		-	proceedings shall be governed by and conducted in VENDOR, may agree upon any other venue.	VENDOR, may agree upon any other venue.
			accordance with the Arbitration and Conciliation Act, Venues other than New Delhi, India would be	Venues other than New Deihi, India would be
-			1996. The venue of the arbitration shall be [] or London or Singapore. Laws of India only	London or Singapore. Laws of India only
	•		New Delhi, India.	would be applicable.
		-		

Offer Covering Letter for Bidders (INDIGENOUS BIDDERS) (to be submitted on letterhead without any modification)

Date:	·
To Engineers India Limited 4 th Floor, Annexe Building, 1, Bhikaiji Cama Place, R.K.Puram, New Delhi - 110066	
Attn: Assistant General Manager (C&P)	
Bid Ref:	dated
RFQ No:	Dated
Item :	
Project: Coke Chamber Replacement and Corporation Ltd. (IOCL) Barauni Refinery.	Allied Modernization In Coker – A Unit Of Indian Oil
Please find herewith our offer in line with yo	ur RFQ requirement. We confirm as under:-
 Offer is in complete compliance wit commercial requirements of RFQ adeviations in the offer. The enclosed PRE-FILLED AGREED shall apply to the offer. The Validity of the offer shall be as possible. We have enclosed following with the aunity of the offer shall be as possible. Price Schedule Form ii. Pre-filled Agreed Townshall. Annexure I duly filled iv. Annual Report for La v. All documents in suppling in a separate section. Proforma of Declaration STAMPED PRICED OFFER: 	
Bidder's Name:	
Signature:	
Seal:	

INDIAN OIL CORPORATION LTD COKE CHAMBER REPLACEMENT AND ALLIED MODERNIZATION IN COKER – A AGREED TERMS & CONDITIONS (FOR INDIGENOUS BIDDERS)

BIDDER's NAME: M/s.			
RFQ No.:		<u>Dated</u>	
Bidder's Offer Ref. No.			
Tel No. :		Fax No.:	
Contact Person :	E-Mail:	Mobile No:	

- 1. DULY SIGNED & STAMPED COPIES OF THIS PRE-FILLED "QUESTIONNAIRE" SHALL BE ENCLOSED WITH UNPRICED QUOTATION.
- 2. FAILURE ON THE PART OF BIDDER IN NOT RETURNING THIS DULY FILLED-UP "QUESTIONNAIRE WITH ALL THE SETS OF UNPRICED QUOTATION AND/OR SUBMITTING INCOMPLETE REPLIES MAY LEAD TO REJECTION OF BIDDER'S QUOTATION".
- 3. ALL THE COMMERCIAL TERMS AND CONDITIONS SHALL BE INDICATED BY VENDOR IN THIS FORMAT ONLY AND NOWWHEREELSE IN HIS QUOTATION. HOWEVER, IN CASE THE SPACE FOR VENDOR'S REPLY IS NOT SUFFICIENT AGAINST A PARTICULAR QUESTION, THE VENDOR SHALL FURNISH SAME BY WAY OF SEPARATE ANNEXURE ATTACHED TO THIS QUESTIONNAIRE, INDICATING CROSS-REFERENCE OF RESPECTIVE CLAUSES.

S.	DESCRIPTION	BIDDER'S
No.		CONFIRMATION
1. a	Quoted prices are as per Price Schedule Format enclosed inclusive of Packing & Forwarding charges.	Packing & Forwarding: QUOTED IN ANNEXURE I
1. b	Specify Despatch Point.	
1. c	Quote firm freight charges extra (in percentage of basic price). The freight charges shall be inclusive of non-cenvatable service tax.	QUOTED IN ANNEXURE I
	Vendor to despatch the materials through only reputed and bank approved transporters having office at Begusarai in Bihar. In case the material is despatched through any other transporter, the same shall be "door delivery, consignee copy attached" basis and payment shall be released only after receipt of materials at IOCL Stores irrespective of payment terms mentioned in any other clause.	CONFIRMED
1. d	Transit risk insurance shall be covered by the Owner against their MCE (Marine cum Erection) Policy and the same shall not be included in the quoted prices.	CONFIRMED
2.a	Excise Duty applicable extra on finished goods:	
	Tariff sub heading no.	1)
	2) Present rate of Excise Duty + Educational Cess payable extra on finished products (including spares).	2) QUOTED IN ANNEXURE I
	Maximum rate applicable (If present rate is nil or concessional)	3)

S. No.	DESCRIPTION	BIDDER'S CONFIRMATION
2.b	Please indicate following break-up	
	Cenvatable Excise Duty + Educational Cess	
	2) Non Cenvatable Excise Duty + Educational Cess	
2.c	The payment against Cenvatable portion shall be made at actual subject to maximum given at 2. (a) above. Confirm acceptance.	CONFIRMED
2.d	The Excise Duty shall be released only on receipt of copy of Invoice, valid for availing CENVAT. Confirm acceptance.	CONFIRMED
2.e 1)	Only statutory variations, if any, in the present rate of excise duty, shall be reimbursed as under:	
	i) Any increase in the rates of Excise Duty within the CDD [contractual delivery date or approved extended date] shall be borne by IOCL.	CONFIRMED
	ii) Any increase in the rates of Excise Duty beyond the CDD [contractual delivery date or approved extended date] will be borne by IOCL to the extent Cenvatable documents are passed on to IOCL and IOCL is in a position to get the CENVAT claim from the Excise authorities. The benefit of any reduction beyond CDD must be passed on to IOCL.	CONFIRMED
	iii) Any variation in Excise Duty at the time of supplies for any reasons, other than statutory, including variations due to turnover, shall be borne by bidder.	CONFIRMED
	iv) Material supplied will be eligible for CENVAT Credit and Bidder shall furnish all documents as required to avail the same.	CONFIRMED
4)	In case Excise Duty is not applicable at present but becomes applicable at the time of contractual delivery period due to any reasons other than statutory, the same shall be borne by bidder. Confirm acceptance.	CONFIRMED
3. 3.a	Sales Tax: Sales tax payable extra Specify CST / BVAT (Bihar VAT)	
3.b	Present rate * * In case of CST, C form shall be provided In case of BVAT, concessional form shall be provided by IOCL.	QUOTED IN ANNEXURE I
3.c	Only statutory variations, if any, in the present rate of CST / BVAT, upto contractual delivery period shall be to Owner's account subject to documentary evidence to be furnished by the Bidder.	CONFIRMED
3.d	If CST / BVAT is not applicable at present due to any reason, the same shall be borne by Bidder if it becomes applicable later.	CONFIRMED

S.	DESCRIPTION	BIDDER'S
No. 4.1	Octroi is not applicable. Confirm that same is not included in the quoted prices	CONFIRMATION CONFIRMED
4.2	Entry Tax, if applicable, on finished goods (including spares) shall be borne and paid by the vendor and reimbursable by Owner at actual against documentary evidence. Confirm that same is not included in the quoted prices	CONFIRMED
4.3	Any increase in the existing taxes / duties or any new or additional taxes or duties imposed after contractual delivery shall be to BIDDER'S account whereas any corresponding decrease shall be passed on to the Owner.	NOTED
5.a	SUPERVISION / TRAINING CHARGES	
	For Supervision / Training Charges, if in the scope of the Bidder as per MR, please confirm the following:	
	Confirm that per diem rate for site supervision services / Training is inclusive of all taxes and duties except Service Tax & Edu. Cess, if in the scope of Bidder as per MR.	CONFIRMED
	2) Percentage of Service Tax & Edu. Cess as applicable extra on Supervision / Training Charges.	5.a 2): Quoted in Annexure I
	Per-diem rate for supervision has been quoted in accordance with the Terms and Conditions for Supervision enclosed with the RFQ Documents	CONFIRMED
5.b	SITE WORK	
	For Site Work, if in the scope of the Bidder as per MR, please confirm the following:	
	Confirm that quoted site work prices are exclusive of Service Tax & Edu. Cess	CONFIRMED
	2) No works contract tax is envisaged as price has been broken into two parts, viz., (i) procurement and (ii) service which does not include any part of material. All materials are required to be with supply part. If any sales tax under works contract is lawfully assessed by the sales tax authorities on the contract, the contractor shall forward to owner such demand received from the sales tax authorities and the owner shall pay the sales tax under works contract to the sales tax authorities. However, should the owner so require, contractor undertakes to duly and faithfully challenge the claim from sales tax authorities before such authority or authorities or court or tribunal as the owner may from time to time require. Also, contractor undertakes to refund to owner any refund received from the sales tax authorities.	NOTED

S. No.	DESCRIPTION	BIDDER'S CONFIRMATION
	3) Confirm that apart from S.No. 5.b 1) & 2) above, quoted site work prices are inclusive of all other applicable taxes & duties and nothing extra shall be payable by OWNER.	CONFIRMED
	Percentage of Service Tax & Edu. Cess as applicable extra on Site Work.	Quoted in Annexure I
5 c)	Any increase in the rates of Cenvatable Service Tax within the CDD [contractual delivery date or approved extended date] shall be borne by IOCL.	NOTED
	2) Any increase in the rates of Cenvatable Service Tax beyond the CDD [contractual delivery date or approved extended date] will be borne by IOCL to the extent Cenvatable documents are passed on to IOCL and IOCL is in a position to get the CENVAT claim. The benefit of any reduction beyond CDD must be passed on to IOCL.	NOTED
6.	Price Reduction Schedule	
	Confirm Acceptance to Clause 12 of GPC and amendment to GPC.	CONFIRMED
	2) In case of procurement of equipments / packages etc. (which are ordered as single line items) following shall be applicable: If the full material is not delivered within the contractual completion date stipulated in respect thereof, IOCL shall be entitled to a discount by way of price adjustment in a sum equivalent to 0.5% (half percent) of the price of the total order value per week or part thereof beyond the contractual completion date in respect thereof, subject to a maximum discount of 5% (five percent) of the Total Contract Value."	CONFIRMED
7.	Delivery Period:	
7.a	Please confirm acceptance to delivery period as stipulated in the RFQ.	CONFIRMED
7.b	Delivery period will be reckoned from the date of IOCL's Fax of Acceptance (FOA).	CONFIRMED

S. No.	DESCRIPTION	BIDDER'S CONFIRMATION
8.	Payment Terms:	COM INWATION
0.	Please confirm acceptance to following:	
	g.	CONFIRMED
8.a	Acceptance of applicable Payment terms as mentioned in	
	the RFQ	
8.b	Advance never entire net eccentable. However, progressive	
0.0	Advance payment is not acceptable. However, progressive payment as specified in the Commercial Terms enclosed	CONFIDMED
	on achievement of specific milestones (under applicable	CONFIRMED
	payment terms) shall be against equivalent Advance Bank	
	Guarantee as per IOCL format for all payments before	
	despatch.	
8.c	In case of delay in delivery, bills shall be submitted after	
0.0	deducting price reduction for delay.	CONFIRMED
9.a.	Part Order:	
J.a.	a) Acceptance of Part Order as per GPC Clause No. 33.	CONFIRMED
	a) risseptance on an ender de per an e endee ner eer	33111 IIIIII 23
	b) Any charges quoted extra as lumpsum (like IBR,	001171717
	Testing, freight, etc.) shall be applicable prorata on	CONFIRMED
	value basis in the event of part order / part quantities / split order.	
9.b	MSME BIDDERS:	
	a) Confirm whether the bidder is a MSME bidder or not.	Yes / No
		(tick √ whichever is applicable)
10.	Repeat Order:	
	Confirm acceptance of repeat order within Six months	CONFIRMED
	from the date of IOCL's FOA, on the same unit price and	
	terms & conditions.	
11.	Performance Bank Guarantee:	0011515155
	Vendor shall submit Performance Bank Guarantee for 10% of total order value as per GPC. PBG shall be valid	CONFIRMED
	for the full Defect Liability Period stipulated in the GPC + 3	
	months claim period.	
12.	Firmness of prices:	
	Quoted prices shall remain Firm and Fixed till complete	CONFIRMED
	execution of the order.	
13.	Testing and Inspection charges:	
13.a	Goods and services shall be subject to stagewise and final	
	inspection by any of the Third Party Inspection (TPI)	
	agencies (listed in the Special Purchase Conditions &	CONFIRMED
	Instructions to Bidders), and TPI charges are included in	
	quoted prices, and no additional charges shall be paid by Owner.	
	Owner.	
13.b	Similarly, all built in import content (if applicable) shall also	
	be subject to inspection by TPI agencies listed in the	CONFIRMED
	Special Purchase Conditions & Instructions to Bidders,	
	in the country of origin of the import content, and charges	
	for the same are included in quoted prices, and no	

S. No.	DE	SCRIPTION	BIDDER'S CONFIRMATION
1101	ado	litional charges shall be paid by Owner.	
13.c	Qu	oted prices are:	
		 i) Inclusive of charges for all facilities required for testing and all inspection requirements specified in the technical specifications and documents enclosed with the RFQ. 	CONFIRMED
		 ii) Inclusive of all IBR/IGC/NACE/Radiography charges as per EIL's technical specifications and the documents enclosed with the RFQ. 	CONFIRMED
14.	If y	port Content: your offer is based on certain imported raw materials purised for equipments / materials offered, please specify following:	
	a)	Please note that IOCL can provide Invalidation letter for enabling you to import raw materials on Customs Duty applicable for supplies against EPCG licence. Also note that Invalidation letter will not be provided for imports of your sub Vendors.	CONFIRMED
	b)	Confirm whether Invalidation letter is required by you as per (a) above.	CONFIRMED
	c)	Indicate rate of customs duty considered and included in the quoted prices.	CONFIRMED
	d)	Indicate brief description/ specification with itemised CIF value and country of origin of imported material. (to enable IOCL to operate part order)	CONFIRMED
	e)	Indicate classification with tariff no. under which Bidder intends to import.	CONFIRMED
	f)	Confirm prices shall be firm on account of variation in foreign exchange rate.	CONFIRMED
	g)	Please note that Owner shall not provide any import licence.	CONFIRMED
	h)	The quoted prices are based on customs duty with issue of Invalidation letter by IOCL. IOCL's responsibility shall be limited up to providing Invalidation letter. All subsequent activities and expenses required for availing EPCG benefits shall be on bidder's account. Obtaining EPCG benefit is solely the Bidder's responsibility. Owner will not compensate Bidder for his failure to obtain EPCG benefit / failure to import under EPCG benefit.	CONFIRMED
	i)	If bidder has considered customs duty for import contents other than the rate applicable for Project under EPCG scheme under the EXIM policy of Govt.	CONFIRMED

S. No.	DESCRIPTION	BIDDER'S CONFIRMATION
	of India, then statutory variation on the customs duty shall not be payable extra on any increase in the customs duty rate. However, any decrease in price due to decrease in customs duty rate at the time of actual clearance of imported materials shall be passed on to IOCL.	
	 j) Quoted prices are after considering the benefit of CENVAT on CVD portion and Additional CVD. 	CONFIRMED
	k) Any upward variation due to change in Customs Duty classifications shall be absorbed by the Bidder. However, any reduction in customs duty due to change in classification shall be passed on to Owner. Please confirm.	CONFIRMED
	 Statutory variations, if any, in the rate of customs duty up to a maximum period of 2/3rd of the contractual delivery period shall be to Owner's account against documentary evidence. Owner will not pay any variation on account of CVD and Additional CVD. Please confirm 	
	m) Any increase in price due to increase in the rate of Customs Duty, due to any reasons, whatsoever, beyond the above specified period i.e. 2/3 rd of contractual delivery period, shall be to Bidder's account. However, any decrease in custom duty rate at the time of actual clearance of imported materials shall be passed on to Owner.	
	n) The CIF Value(s) indicated by the Bidder shall be deemed to be the maximum value(s) for the purpose of payment of variation in custom duty and/or other statutory variations, if any, thereon.	CONFIRMED
	o) Variation in price due to Customs duty rate will be dealt with separately after receipt of equipment at site, against documentary evidence.	CONFIRMED
15.	Validity: Validity of the offer shall be shall be as per RFQ cover letter.	CONFIRMED
16.	 Confirm Acceptance of all other terms & conditions as per attached: a) Request for Quotation (RFQ) b) General Purchase Conditions & Addendum - 1 to GPC. c) Special Purchase Conditions & Instructions to Bidder (SPC & ITB). d) Terms & Conditions for supervision of Erection, Testing & Commissioning for Indigenous Bidders, e) Terms & Conditions for Site Work / HSE. 	CONFIRMED
	f) Integrity Pact.	<i>J</i>

S. No.	DESCRIPTION	BIDDER'S CONFIRMATION
17.	Furnish Balance Sheet/ Annual Reports & Turnover figures of last three years along with your unpriced offer: TURNOVER, if applicable as per RFQ Last Year : Rs 2 years before : Rs 3 years before : Rs	Furnished
18.	Whether any of the Directors of BIDDER is a relative of any Director of Owner or the BIDDER is a firm in which any Director of Owner or his relative is a Partner or the BIDDER is a private company in which any director of Owner is a member or Director.	
19. a	Please confirm you have not been banned or delisted by any Government or Quasi Government agencies or PSUs. If you have been banned, then this fact must be clearly stated. This does not necessarily be a cause for disqualification. However if this declaration is not furnished the bid shall be rejected as non-responsive.	CONFIRMED
19.b	Please confirm that you have filled in, signed and attached the enclosed "Proforma of Declaration of Black Listing / Holiday Listing" along with your unpriced offer.	CONFIRMED
20.	Spares Parts:	
a)	Confirm that your quoted prices are inclusive of all mandatory spares and all commissioning spares as stipulated in EIL's technical specifications (Material Requisition).	CONFIRMED
b)	Confirm that item wise unit price of Recommended spare parts for two years as stipulated in Material Requisition (MR) have been quoted separately indicating Dispatch quantity.	CONFIRMED
c)	Special Tools and Tackles as specified in the MR are included in the quoted prices.	CONFIRMED
21.	Deviations to Terms & Conditions shall lead to loading of prices as per Commercial Terms enclosed with this RFQ or rejection of offer. Please confirm acceptance.	CONFIRMED
22.	Any claim arising out of order shall be sent to Owner in writing with a copy to EIL within 3 months from the date of last Dispatch. In case the claim is received after 3 months, the same shall not be entertained by Consultant/ Owner.	CONFIRMED
23.	Bidder to indicate the complete name and address on which order to be placed by IOCL (in the event of an order)	

S. No.	DESCRIPTION	BIDDER'S CONFIRMATION
24.	Printed terms and conditions, if any, appearing in quotation, shall not be applicable in the event of order. In case of contradiction between the confirmations given above and terms & conditions mentioned elsewhere in the offer, the confirmation given above in this ATC shall prevail.	CONFIRMED
26.	Packing details confirmation.	CONFIRMED

BIDDER'S SIGNATURE & DATE:	
SEAL/ STAMP	

ANNEXURE-I

INDIAN OIL CORPORATION LTD. COKE CHAMBER REPLACEMENT AND ALLIED MODERNIZATION IN COKER – A

Taxes and Duties format for Indian Bidders

NAM	IE OF BIDDER:	
VEN	DOR OFFER REF	Oated
RFQ	NO.:	
The	salient features of the offer are as below:	
1.	SPECIFY DESPATCH POINT	
2.	PACKING & FORWARDING CHARGES	INCLUDED IN THE QUOTED PRICE.
3.	EXCISE DUTY + EDUCATION CESS APPLICABLE ON QUOTED FOT DESPATCH POINT PRICES	% EXTRA
4.	EXCISE DUTY: TARRIF SUB HEADING NO.	
5.	CENTRAL SALES TAX AGAINST FORM 'C' ON QUOTED FOT DESPATCH POINT PRICES	% EXTRA
6.	RATE OF BIHAR VAT WITH CONCESSIONAL FORM ON QUOTED FOT DESPATCH POINT PRICES	% EXTRA
7.	PERCENTAGE INLAND FRIEGHT CHARGES EXTRA UPTO PROJECT SITE APPLICABLE ON FOT DESPATCH POINT PRICE.	Quoted in the Price Schedule.
8.	CENVATABLE SERVICE TAX PLUS EDU. CESS APPLICABLE EXTRA ON FREIGHT CHARGES	% EXTRA
9.	SERVICE TAX PLUS EDU. CESS APPLICABLE EXTRA ON QUOTED SITE SUPERVISION/ TRAINING CHARGES	% EXTRA
10.	SERVICE TAX PLUS EDU. CESS APPLICABLE EXTRA ON QUOTED SITE WORK CHARGES	% EXTRA
_		

BIDDER'S SIGNATURE & DATE: SE	EAL/STAMP
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Offer Covering Letter for Bidders (FOREIGN BIDDERS) (To be submitted on Letterhead without any modification)

Date:
To Engineers India Limited 4 th Floor, Annexe Building, 1, Bhikaiji Cama Place, R.K.Puram, New Delhi - 110066
Attn: Assistant General Manager (C&P)
Our Ref : dated
RFQ No.: dated
Item:
Project: Coke Chamber Replacement and Allied Modernization In Coker – A Unit Of Indian Oil Corporation Ltd. (IOCL) Barauni Refinery
Please find herewith our offer in line with your RFQ requirement. We confirm as under:
 The Delivery/completion period shall be strictly as per the requirement of RFQ document. Offer is in complete compliance with technical specifications / technical documents enclosed with RFQ specifications as well as commercial requirements of RFQ and there are no technical as well as commercial deviations in the offer. The enclosed pre-filled AGREED TERMS & CONDITIONS QUESTIONNAIRE (ATC) shall apply to the offer. The Validity of the offer shall be as per the requirement of RFQ document. We have enclosed following with the offer: UNPRICED OFFER: Price Schedule Format (WITH PRICES BLANKED) Pre-filled Agreed Terms & Conditions (ATC) – DULY SIGNED & STAMPED Annexure I duly filled in and signed with seal Annual Report for Last Three Financial Years (as applicable). All documents in support of meeting the BQC as per IFB shall be submitted in a separate section/booklet (as applicable). Proforma of Declaration of Black Listing/Holiday Listing - DULY SIGNED & STAMPED b. PRICED OFFER: Price Schedule Format
Bidder's Name:
Signature:
Seal:

INDIAN OIL CORPORATION LTD. Coke Chamber Replacement and Allied Modernization In Coker – A AGREED TERMS & CONDITIONS (FOR FOREIGN BIDDERS)

BIDDER's NAME: M/s			
RFQ No.:		<u>Dated</u>	
Bidder's Offer Ref. No.			
Tel No. :	F:	ax No.:	
Contact Person :	E-Mail:	Mobile No:	

- 1. DULY SIGNED & STAMPED COPIES OF THIS PRE-FILLED "QUESTIONNAIRE" SHALL BE ENCLOSED WITH UNPRICED OFFER.
- 2. FAILURE ON THE PART OF BIDDER IN NOT RETURNING THIS DULY FILLED-UP & SIGNED "QUESTIONNAIRE AND/OR SUBMITTING INCOMPLETE REPLIES MAY LEAD TO REJECTION OF BIDDER'S QUOTATION".
- 3. ALL THE COMMERCIAL TERMS AND CONDITONS SHALL BE INDICATED BY VENDOR IN THIS FORMAT ONLY AND NOWHEREELSE IN HIS QUOTATION. HOWEVER, IN CASE THE SPACE FOR VENDOR'S REPLY IS NOT SUFFICIENT AGAINST A PARTICULAR QUESTION, THE VENDOR SHALL FURNISH SAME BY WAY OF SEPARATE ANNEXURE ATTACHED TO THIS QUESTIONNAIRE, INDICATING CROSS-REFERENCE OF RESPECTIVE CLAUSES.

S. No.	DESCRIPTION	BIDDER'S CONFIRMATION WITH DETAILS
1. a	Confirm that the Quoted Unit Prices are on FOB International Sea Port of Exit basis.	CONFIRMED
1. b	Indicate International Seaport of Exit.	Refer Annexure-I
1. c	Indicate firm ocean freight charges up to Port of entry in India (Kolkata / Haldia) (Valid till entire duration of Order).	
1. d	Owner reserves the option to place order on FOB or on CFR basis. Confirm acceptance.	CONFIRMED
1.e	Confirm that your quoted prices include stowage charges (applicable for pipes)	CONFIRMED
1.f	Confirm that quoted prices are inclusive of charges for Phytosanitary fumigation certificate. (if goods are packed in wooden packing material)	
2. a	Delivery Period: Please confirm acceptance to delivery period stipulated in the RFQ Document.	CONFIRMED
2. b	Please confirm that delivery period shall be reckoned from the date of Fax of Acceptance (FOA)	CONFIRMED

S. No.	DESCRIPTION	BIDDER'S CONFIRMATION WITH DETAILS
3.	Transit Insurance: Prices quoted must exclude transit insurance charges from FOB International Sea Port of Exit as the same shall be arranged by the Purchaser. However, all transit insurance charges for inland transit up to FOB International Sea Port of Exit must be included by you in your quoted prices.	
4.	Taxes & Duties:	
4.a	All taxes, duties and levies of any kind payable up to FOB International Sea Port of Exit shall be borne by you.	
4.b	Export permit/licence if required shall be Bidder's responsibility & any expenditure towards same will by borne by you.	
5.	Validity:	
	Confirm Validity of the offer as stipulated in the RFQ covering letter from the final bid due date of submission.	
6.	SUPERVISION/ TRAINING CHARGES 1) Confirm that per diem rate for site supervision / Training (if in the scope of Bidder as per MR have been indicated by Bidder separately in the Price Schedule	
	2) Per-diem rate for supervision has been quoted in accordance with the Terms and Conditions for Supervision enclosed with the RFQ Documents3) Bidder to indicate Permanent Account Number	
	(PAN) to avoid any additional Tax deduction at source as per the prevailing Indian Income Tax Acts/ Rule.	
7. 7.a	Inspection Charges: Goods and services shall be subject to stage wise and final inspection by TPI agencies (as per the TPIA list mentioned in the Special Purchase Conditions & Instructions to Bidders) and EIL's technical specifications. The charges for the same are included in quoted prices, and no additional charges shall be paid by Owner.	CONFIRMED
7.b	Confirm quoted prices are inclusive of all IBR/IGC/NACE/Radiography charges specified in EIL's technical specification and documents enclosed with the RFQ.	CONFIRMED
7.c	Confirm that quoted prices are inclusive of charges for all inspection and all testing requirements specified in the technical specifications and documents enclosed with the RFQ.	

S. No.	DESCRIPTION	BIDDER'S CONFIRMATION WITH DETAILS
8.	Country of Origin: Country of origin from where the goods have been offered.	Refer Annexure-I
9.	Currency of Quote: Furnish the currency of quote. Change in currency once quoted will not be allowed. Bidder shall quote either in US Dollar / Euro / GBP / JPY / SGD only.	Refer Annexure-I
10. 10.a	Spares Parts: Confirm quoted prices are inclusive of all mandatory spares and all commissioning spares and all tools, tackles and consumables as stipulated in EIL's technical specifications (Material Requisition).	
10.b	Confirm item wise unit price (FOB) of Recommended spare parts for two years as stipulated in Material Requisition (MR) have been quoted separately indicating itemised quantity.	
10.c	Indicate firm ocean freight charges as per Price Schedule Format.	CONFIRMED
11.	Confirm documentation charges as per EIL's technical specifications and MR requirements are included in your quoted prices.	
12.	Confirm customer references list for the item/ model quoted by you is given in offer.	CONFIRMED
13.	Confirm complete technical literature/ catalogues as required are submitted along with each copy of the offer.	
14.	Indicate shipping weight (net and gross) &. Volume of the consignment.	Refer Annexure-I
15. a.	Performance Bank Guarantee: Confirm that the goods to be supplied by you shall be guaranteed for performance as per the GPC enclosed. Confirm that you shall submit the 10% PBG.	CONFIRMED
15.b	The Performance Bank Guarantee shall be strictly as per enclosed proforma (in GPC) and as per details given in SPC and Instructions to Bidders.	
16.	Confirm that quoted prices shall remain firm and fixed till complete execution of order. Price Variation or escalation shall not be considered on any account.	

S. No.	DESCRIPTION	BIDDER'S CONFIRMATION WITH DETAILS
17.	Part Order:	
	a) Confirm acceptance to part order.	CONFIRMED
	b) In case of part order confirm all charges quoted extra if any viz, Documentation, testing, third party inspection, packing, crating, handling, FOB, IBR, Freight shall be payable on prorata value basis.	
18.	Repeat Order: Confirm acceptance of repeat order within six months from the date of IOCL's FOA, on the same unit price and terms & conditions.	
19. a.	Price Reduction Clause: 1) Confirm acceptance to Clause 12 of GPC. Liquidated damages or penalty is not acceptable.	
	 In case of procurement of equipments / packages etc. (which are ordered as single line items) following shall be applicable: 	
	If the full material is not delivered within the contractual completion date stipulated in respect thereof, IOCL shall be entitled to a discount by way of price adjustment in a sum equivalent to 0.5% (half percent) of the price of the total order value per week or part thereof beyond the contractual completion date in respect thereof, subject to a maximum discount of 5% (five percent) of the Total Contract Value."	
19.b.	In case of delay in delivery, bidder will reduce the invoice amount by applicable reduction.	CONFIRMED
20.	Payment Terms: Acceptance of applicable Payment terms as mentioned in the RFQ.	CONFIRMED

S. No.	DESCRIPTION	BIDDER'S CONFIRMATION WITH DETAILS		
21.	a) Letter of Credit shall be opened by IOCL after submission of the following documents by vendor to IOCL: (i) Performance bank guarantee (PBG) for 10% of the total order value as per clause 15 of ATC. (ii) Unconditional acceptance of IOCL's Fax of Acceptance.	} } } NOTED & ACCEPTED }		
	b) Letter of Credit shall be opened through a Govt. of India Nationalised/ Scheduled Bank and hence need not be confirmed. Confirm acceptance. OR			
	c) However, if you still insist for confirmed L/C, confirmation charges shall be borne by you. Confirm acceptance.			
22.	All Bank charges and stamp duties payable outside India in connection with payments to be made under the Purchase Order, if placed, shall be borne by you. All bank charges and stamp duties payable in India shall be borne by the Purchaser.	NOTED & ACCEPTED		
23.	Confirm Acceptance of all other terms & conditions as per attached: a) Request for Quotation (RFQ) b) General Purchase Conditions & Addendum - 1 to GPC c) Special Purchase Conditions & Instructions to Bidder (SPC & ITB) d) Terms & Conditions for supervision of Erection, Testing & Commissioning for Foreign Bidders. e) Terms & Conditions for Site Work / HSE. f) Integrity Pact.	 a) CONFIRMED b) CONFIRMED c) CONFIRMED d) CONFIRMED (if applicable as per MR) e) CONFIRMED (if applicable as per MR) f) CONFIRMED 		
24.	Only Direct offer (without the intermediary or an Indian Agent) will be considered.	CONFIRMED		

S. No.	DESCRIPTION	BIDDER'S CONFIRMATION WITH DETAILS
25. a	No correspondence with Indian Agent will be entertained. However, if Indian Agent is involved, the bidder shall provide reason/ justification. Further it should be ensured by bidder that the agents get themselves registered with Reserve Bank of India (RBI). Payments to Indian Agent shall be remitted only after getting proof of registration with RBI, New Delhi. The payments to overseas suppliers (i.e. the principals) shall be released through L/C after deducting the Indian agent's commission from the quoted prices.	
25.b	Indicate the name of the Indian Agent, with his full address and percentage of commission included in your offer.	
25.c	Indian Agent Commission will be paid directly by Owner to Indian Agent in equivalent Indian Rupees (at the conversion rate as applicable on the date of payment to BIDDER) after satisfactory completion of the order. Confirm acceptance.	CONFIRMED
26.	Please indicate name, address, and telephone number, SWIFT code and e-mail ID of your Bankers for L/C opening.	
27.	All correspondence must be in ENGLISH language only.	NOTED & ACCEPTED
28. a	Please confirm you have not been banned or delisted by any Government or Quasi Government agencies or PSUs. If you have been banned, then this fact must be clearly stated. This does not necessarily become a cause for disqualification. However if this declaration is not furnished, the bid shall be rejected as non-responsive,	CONFIRMED
28.b.	Please confirm that you have filled in, signed and attached the enclosed "Proforma of Declaration of Black Listing / Holiday Listing" along with your unpriced offer.	
29.	Furnish Balance Sheet & Turnover figures of last three years along with your unpriced offer: TURNOVER	
	Last Year :	
	2 years before :	
	3 years before :	

S. No.	DESCRIPTION	BIDDER'S CONFIRMATION WITH DETAILS
30.	All commercial terms except the deviations (if any) to IOCL's GPC are given/confirmed in the questionnaire itself and not elsewhere in the quotation. In case of contradiction, the confirmations given herein shall prevail. Confirm your acceptance.	CONFIRMED
31.	Printed terms and conditions, if any, appearing in quotation, shall not be applicable in the event of Order. In case of contradiction between the confirmations given above and terms & conditions mentioned elsewhere in this offer, the confirmation given above in this ATC above shall prevail.	CONFIRMED
32.	Deviations to IOCL's Terms and Conditions shall lead to loading of price as per SITB, or rejection of offer. Please confirm your acceptance.	
33.	Bidder to indicate the complete name and address on which order to be placed by IOCL (in the event of an order)	
34.	Confirm your acceptance (without any deviations) to all technical specifications / all technical documents, enclosed with the RFQ.	

BIDDER'S SIGNATURE & DATE

SEAL/ STAMP

INDIAN OIL CORPORATION LTD Coke Chamber Replacement and Allied Modernization In Coker – A

NAME	OF BIDDER:				
OFFER REF. Dated					
RFQ NO.:					
ITEM :					
The sa	alient features of the offer are as below:				
SL	DESCRIPTION	BIDDER'	S CON	FIRMAT	ION
1)	Indicate International Seaport of Exit				
2)	Ocean Freight From FOB International Seaport Of Exit To Sea Port Of Entry - Kolkata / Haldia.	Quoted Schedule.	in	the	Price
3)	Indicate Indian Permanent Account Number (PAN)				
4)	Manufacturer's name & address				
5)	Country of Origin from where the goods have been offered				
6)	Furnish Currency of quote. Change in currency once quoted will not be allowed. Bidder shall quote either in US Dollar / Euro / GBP / JPY / SGD only.	IN PRICE			
7)	Indicate shipping weight (net & gross) & volume of the consignment.				
8)	Name of the Indian Agent, if any, with his full address and percentage of commission included in your offer.				
9)	Indicate name & address of your Bankers for L/C opening, telephone/E-mail address, SWIFT Code and Account Number				

BIDDER'S SIGNATURE & DATE:	
WITH SEAL/STAMP	

10) Indicate HS Tariff Code and classification.

SITE SUPERVISION SERVICES AND TRAINING (INDIAN BIDDERS)

PROJECT COKE CHAMBER REPLACEMENT AND ALLIED MODERNIZATION IN COKER –

NAME A UNIT AT BARAUNI REFINERY

NAME OF PUMP CENTRIFUGAL HORIZONTAL (SPP) against RFQ No AS/A546-604-PA-

WORK MR-5010/511

NAME OF BIDDER

(A) Terms & conditions for Site Supervision & Training services for indigenous bidders.

- Bidder shall quote per diem charges considering the following:
- Owner shall reimburse economy class airfare to and from the nearest Airport to Kolkata Airport against documentary evidence.
- Transportation charges to and from Kolkata Airport to Project Site at Barauni Refinery, Bihar shall also be reimbursed against submission of documentary evidence (limited to maximum First AC Railway Fare between Kolkata and Begusarai / Barauni / Hathidah / Mokamah)
- The per diem rates shall **include** lodging, boarding, local transport, medical, all insurance including third party, income tax, all taxes & all other incidental charges.
- The per diem rates shall exclude Service Tax which shall be payable extra
- Per diem rates shall apply from the date the supervisory personnel reach site and upto the day they leave site. No payment shall be made for the transit period.
- Working hours as those prevailing at site upto eight hours a day, Monday through Saturday
 and holidays as applicable to site personnel shall apply.
- Vendor's supervisory personnel shall observe / abide by site working conditions prevailing in the existing refinery, safety codes and Indian laws.
- A notice period of 15 days will be given for site supervision services.
- For evaluation purpose site supervision of erection and commissioning at site for 5 Man days per Pump shall be used. However, payment shall be made as per actual number of mandays.

(B) Charges for Site Supervision of erection and commissioning:

S. No.	Description	Man day Rates in INR
1.0	Per diem charges for upto 8 hours work on normal working days.	
2.0	Overtime rate / hour beyond normal 8 hours work on normal working days.	QUOTED IN THE PRICE SCHEDULE
3.0	Overtime rate / hour for work on weekly off days / holidays (as applicable to Refinery site).	

SIGNATURE & SEAL OF BIDDER

NAME OF THE BIDDER

SITE SUPERVISION SERVICES AND TRAINING (FOREIGN BIDDERS)

PROJECT COKE CHAMBER REPLACEMENT AND ALLIED MODERNIZATION IN COKER –

NAME A UNIT AT BARAUNI REFINERY

NAME OF: PUMP CENTRIFUGAL HORIZONTAL (SPP) against RFQ No AS/A546-604-PA-

WORK MR-5010/511

NAME OF : BIDDER

(A) Terms & conditions for Site Supervision & Training Services for foreign bidders.

- Bidder shall quote per diem charges considering the following:
- Owner shall reimburse economy class airfare to and from the nearest International Airport in vendor's country to the International Airport at Kolkata against documentary evidence.
- Transportation charges to and from Kolkata Airport to Project Site at Barauni Refinery, Bihar shall also be reimbursed against submission of documentary evidence (limited to maximum First AC Railway Fare between Kolkata and Begusarai / Barauni / Hathidah / Mokamah)
- The per diem rates shall **include** lodging, boarding, local transport, medical, all insurance including third party, withholding tax, Corporate Tax (as may be applicable) etc. & all other incidental charges.
- Taxes at source shall be deducted by IOCL as per prevalent Government policy while making payments against each invoice.
- The per diem rates shall exclude Service Tax which shall be payable extra by IOCL
- Per diem rates shall apply from the date the supervisory personnel reach site and upto the day they leave site. No payment shall be made for the transit period.
- Working hours as those prevailing at site upto eight hours a day, Monday through Saturday and holidays as applicable to site personnel shall apply.
- Vendor's supervisory personnel shall observe / abide by site working conditions prevailing in the existing refinery, safety codes and Indian laws.
- All foreign nationals coming to India for execution of projects / orders will have to apply for necessary visa. In their own interest bidders are advised to check latest visa rules from relevant sources in their country in case foreign nationals are required to be deputed to India during execution of order.
- Visa should not contain the clause "Not valid for Prohibited, Restricted and Cantonment Areas"
- A tentative schedule shall be given **15 days** in advance so that vendor's personnel reach site within **7 days** from final intimation for site supervision services.
- For evaluation purpose site supervision of erection and commissioning at site for 5
 Man days per Pump shall be used. However, payment shall be made as per actual
 number of mandays.

(B) Charges for Site Supervision of erection and commissioning.

Sr. No	Description	Per Charges currency quote	Diem in of
1	Per Diem charges upto 8 hrs on normal working days.	0110777	
2	Overtime rate per hour (beyond normal 8 hours on normal working days).	QUOTED I	E
3	Overtime rate per hour for work on weekly off days / holidays (as applicable to Refinery Site).	SCHED	ULE

SIGNATURE & SEAL OF BIDDER

NAME OF THE BIDDER

Annexure - 1

E-TENDERING METHODOLOGY

Instructions for Online Bid Submission:

The bidders are required to submit soft copies of their bids electronically on the CPP Portal (URL: http://eprocure.gov.in) only, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.

More detailed information useful for submitting online bids on the CPP Portal may be obtained at:

https://eprocure.gov.in/eprocure/app.

REGISTRATION

- 1) Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL: https://eprocure.gov.in/eprocure/app) by clicking on the link "Click here to Enroll" on the CPP Portal is free of charge.
- 2) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.
- 3) Bidders are advised to register their valid email address and mobile numbers as part of the registration process and submit in EIL tender portal for updation of records (http://tenders.eil.co.in). These details would be used for any communication from the CPP Portal.
- 4) Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (DSC) (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / TCS / nCode / eMudhra etc.), with their profile.
- 5) Foreign Bidders have to refer "DSC details for foreign Bidders" for Digital signature Certificates requirements which comes under Download Tab at https://eprocure.gov.in/eprocure/app and the remaining part is same as above and below.
- 6) Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.
- 7) Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / e-Token.

SEARCHING FOR TENDER DOCUMENTS

- 1) There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, organization name, location, date, value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as organization name, form of contract, location, date, other keywords etc. to search for a tender published on the CPP Portal.
- 2) Once the bidders have selected the tenders they are interested in, the same can be moved to the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.

Dated 02-06-2014 Page 1

3) The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

PREPARATION OF BIDS

- 1) Bidder should take into account any corrigendum published on the tender document before submitting their bids.
- 2) Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.
- 3) Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document and generally, they can be in PDF / XLS / RAR / DWF formats. Bid documents may be scanned with 100 dpi with black and white option. However, Price Schedule / SOR shall be strictly in RAR format without altering any contents of the formats uploaded by EIL in their Bidding Document.
- 4) To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use "My Space" area available to them to upload such documents. These documents may be directly submitted from the "My Space" area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

SUBMISSION OF BIDS

- Bidder should log into the site well in advance for bid submission so that he/she upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
- 2) The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.
- 3) Bidder has to select the payment option as "offline" to pay the tender fee / EMD as applicable and enter details of the instrument.
- 4) Bidder should prepare the EMD as per the instructions specified in the tender document. The original should be posted/couriered/given in person to the Tender Processing Section, with in 7 calendar days of the date of Unpriced bid opening. The details of the DD/any other accepted instrument, physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise the uploaded bid will be rejected.
- 5) A Price Bid format has been provided with the tender document to be filled by all the bidders. Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. Bidders are required to download the Price Bid file, open it and complete the cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the Price Bid file is found to be modified by the bidder, the bid will be rejected.

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- 6) The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.
- 7) All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done.
- 8) The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
- 9) Upon the successful and timely submission of bids, the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.
- 10) The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings.

RETENDER

1) Please note that if Tender has been retendered, than it is mandatory for the bidder to submit their offer again on CPP Portal.

ASSISTANCE TO BIDDERS

- Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.
- Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk. The contact number for the helpdesk is 1800 3070 2232.

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Procedure for obtaining Digital Signature by Foreign Vendors

This document gives the procedure to be followed by bidders who are resident of countries other than India for participating in Online Tendering Activity.

As per the IT ACT 2000, all bidders who participate in the online bidding process in this site should possess a valid Digital Signature issued by any of the Digital Signature Certificate (DSC) vendors approved by CCA, India (https://cca.gov.in). The following document gives the procedure that is generally followed by various vendors.

Generally, the documents that are required to be submitted by Foreign Nationals are as follows:

- 1. Identity Proof (ID Proof) of the person in whose name DSC has to be issued (E.g. Passport copy)
- 2. Bank account statement in country of residence, duly attested by Indian Embassy / High Commission / Consulate / Apostille in the country where the applicant is currently located. (At least 6 months of Bank transactions) with the proof indicating the account is owned by the Individual.
- 3. Copy of the Trade license attested by any one of the authorities as specified in Point 2 above.
- 4. As the Individual is representing the company, an Authorization on company's letter head as given in the form
- 5. Copy of the Authorization letter or invitation letter from department for the participation in the tender by any one of the tender inviting authority.

As of now, it is learnt that GNFC, TCS, eMudhra issue DSCs with the above procedure. The copy of the nCodes, TCS and eMudhra Format is enclosed as Annexure; the Copies of other vendors will be made available on receipt of information from these vendors.

Note: The Information given by the vendors is attached for facilitating the Foreign Nationals to procure DSCs from the Indian CA authorized vendors for information purpose only as shared by the respective CA's.

Please find below the details of various vendors and procedure for obtaining DSC:

- * GNFC
- ***** Tata Consultancy Services
- * eMudhra

M. A. N.		1	Pro			(n)Code
GREC .		a	Pro	-		solutions
Customer Identification No Instructions: 1. This Form is divided into 2		d Form B.		(For Office Use (Only)	
Form A contains details of Form B contains organizat					/ S	Affix recent Passport Size
4. Please fill the form in BLOC	OK LETTERS IN E	nglish only.			_	Photograph of the
 (n)Pro refero Class 3 Orga As per New Inter-portabilit 						applicant
will carry the validity of 0 7. Separate DSC for Signing			FORM.			
TYPE OF DIGITAL CERTIFICA		De IDDUED	Permit .			
1.Class lib: 2.Class l			Validity:		ars.	(Sign scross photo)
NAME OF THE APPLICANT (Please ensure that the name as					selow)	
Surname		First Nam	ē		Initia	is
Office Address:						
Town / City / District:						
State / Union Territory: Pin Code:						
Pin Code:				Department		
Contact No.:	STD Code:		Ph:		Fax:	
Mobile Phone No.:						
Date of Birth:	DD	MMM		YYYY		
E-Mall Address:						
Identity Details: No.						
(Please Tick & Fill Any One)	Passpo	rt		_		
			FORM	3		
Organizational Details to b	e Filled up only	Once for a	n Organizai	ion (Please disre	gard If already s	ubmitted)
Company Name:						
Corporate / Register						
Company Address:						
Town / City / District						
State / Union Territory						
Pin Code						
Contact No.	STD Code:		Ph:		Fax:	
Corporate Website (URL)						
Income Tax Pan No.:						
Bank Details						
Bank Name Bank A/C No						
I hereby agree that I have rea	ui and polosia	od (m) Coole C	duttana CA C	OG and the sub-r-	ribar saraana	and promine to which the
same. I acknowledge that infl						and promise wante the
Place:					Slovet	ure Of Applicant
				INam		

Page: 1 of 2. Licensed Certifying Authority Version 3.8

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	-		Description of the last	Ξ





(e)	(n) Pro	CO
Customer Identification Number:	(For Office Use Only)	
Documents Required and S	Submitted by the Applicant (POR : Proof of rights documents)	
	Organization / Enterprise for all classes of certificates; IIb, IIIb, IIIc	

Certified true copy (from Company Secretary / Director / Partner / Proprietor of the organization:

- Valid business license document
- > Authorization Letter in favor of the certificate applicant from the applicant organization (as per the format attached herewith, on the Company's Letterhead Only)

Documents to be Attested by Indian Embassy/High Commission / Consulate / Apostille in the country where applicant is located:

- > Latest photograph of the applicant on the form
- Passport Copy
- Bank account statement in country of residence

<u>PHYSICAL PRESENCE IS REQUIRED F</u>	FOR CLASS HIS CERTIFICATE APPLICANT
----------------------------------------	-------------------------------------

For further details contact (+91 33 2637 4024 / +91 33 2640 4086) Or, can be deposited directly in any of the HDFC Bank's Branch. H R Infracon Limited, A/C No.: 02082320001689 G T Road Branch, Howrah, IFSC - HDFC0000208

Bank Swift Code No.: HDFCINBB

Visit Us: www.hrinfracon.com	E-Mail: hrinfracon@omail.com	Phone No.: (+91 33 -	2640 4086 / 2637 4061)
Note:	_		
* Applicants for Class IIIb & Class IIIc certific	ate shall present themselves at the Lf	(A location where the re	gistration form for Digital Certif

™ Ару **loote** ACRES IN SEC.

Please refer to the CPS for more information.

	Signature Verification (Authorization) Letter
	(This Authorization Letter is required on the Organization's letterhead
To,	
(n) Code Solutions.	

A Division of Gujarat Narmada Valley Fertilizers Company Limited.							
Application form for issue of Digital Certificate to the best of my i	(Certificate applicant) has provided correct information in the knowledge and belief and is working with Class IIb, IIIb & IIIc Digital Certificate Issued by (n)Code Solutions						

Page: 2 of 2.

Licensed Certifying Authority

Version 3.3

PRINT DOWNLOAD



CERTIFYING AUTHORITY
Recognized by the controller of Certifying Authorities

Q

Affix recent passportsize photograph of the

applicant. Applicant to sign across the

TATA CONSULTANCY SERVICES LIMITED - CERTIFYING AUTHORITY REQUEST FORM FOR CLASS 3 CERTIFICATE INSTRUCTIONS

USER TYPE - COMPANY

Validity of DSC*								photograph
1 year			2 Years				_	
E-Mail Address*^		_						
Alternative E-Mail Address								Ī
Corporate / Branch / Regi	stered	offic	e - Organisation Deta	ails				_
Name*^		-						
House Identifier*^								i
Street Address*^								i
City*^					Pin (Code*^		i
								_
Country*^			·		State	*^		
Telephone*					Mobi	le [
FAX								
PAN*								
Applicant Details								
Gender*	Ом	ale	C Female					
Surname^					Give	n Name*^		
Father/Husband's Name					Initia	als^		
House Identifier*								
Street Address*								
City*					Pin (code*		
Country*					State	*		
								_
Telephone*					Mobi	le		
Nationality*								
DOCUMENT CHECKLIST FOR C	OMPAN	Y TY	PE OF CERTIFICATE					
Corporate / Branch / Regi	istoror	l offic	e /any one ATTESTE	O conv n	aani	rad)		
Public & Private limited	istered	·	e (any one ATTESTEE	copy i	equi	reuj		
	1-				_		1	
Certificate of incorporatio	n				Ш	Business commencement		
Memorandum and articles	5					Latest annual report.		
Partnership Firms								
Partnership deed								
Proprietorship firms								
Latest bank statement	Tr					Latest income tax return		
Latest balance sheet	TE					Sales tax certificate		
Business commencement	1							
Lineace	<u>ا ا</u> الرسورية		ange/ATTESTED -		. AN			
Subscriber proof of identit Identity and Residence	ty and	resid	енсе(АТТЕЅТЕО СОРУ	require	a)			
	T						T	
Passport	4				Ш	Driving License		
Photo Identity Card								

	Identity					
	PAN Card			Passport		
	Driving License			Bank A/C Passbook with Photo		
	Photo Identity Card		t	Prioto		
	Residence		_			
	Latest Telephone Bill			Latest Electricity Bill		
	Latest Bank Statement			Passport		
	Driving License/RC			Water Bill		
	Gas Connection			Service Tax/VAT Tax/Sales tax Registration Certificate		
	Voter Identity Card			Property Tax		
	Letter of Authority*	Letter of Authority				
auth beha	orize If of	in the capacity of th	ie _ ture	is attested below to car of a Class-3/Class-2 Digi	ry out all the necessary formalities on tal Signature Certificate with the validity	
perio	d ofyear(s)	required validity period needs to l	oe m	entioned)		
	ature and Designation uthorizing Person				Signature and Designation of the Applicant	
the s 2. Pa partn 3. Pr	aid company. If the appl artnership Firms: The p ership firm.	icant himself is the head of the org partner who is the applicant of the	aniz ne ce	ation, he can authorize hertificate has to get hin	thorized by the superior to whom he/she in nimself. Inself authorized by the other partner of norize as he is the whole & sole responsit	the said
follov	by confirm that I have read a	ant Declaration nd understood the above instructions and w taining and using the Digital Signature			RA Declaration eived and verified the documents submitted by	
Date:		Cinnature of the Applica	- 1	ate:	Simple of the DA Office	
Place	<u> </u>	Signature of the Applica	nt JP	iace:	Signature of the RA Officer	
The c forwa Duly r	ertificate Request Form, (rded to the following addre	ss: LICATION FOR DIGITAL CERTIFICA	t and		s as per the document checklist have to be	

P

Instructions For Form Filling

- . Items marked with * are mandatory.
- . Items marked with are mandatory and prepopulated in the Certificate request form.
- Items highlighted with black border are modified fields and require reverification.
- . If you want a DSC with PAN. Please select PAN card as proof of identity.
- The applicants name in the Digital Signature Certificate is combination of 1) Surname, 2) Given name, 3) Initials in the mentioned order(1 and 3 are optional). Please provide details accordingly.

Instructions for Document Checklist

- . Copies of the selected documents must be provided to TCS-CA to authenticate the identity & proof of residence.
- In the case of foreign nation, all the validation documents must be notarized by the public notary of the respective country in English.
- Single document copy for both Identity and address proof may be considered. However, if the address in the Photo-id is different from the Address given in the
- application then a separate Address proof must be insisted & collected.
- Attestation of Copy: Gazetted officers, OR Bank Manager OR Post Master. Otherwise the RA may verify the copy of the identity and address proof against the original
- documents and certify the copy stating that has been verified against the originals. Such a copy should be signed by the authorized person of the RA and should bear name and address of the signatory.
- Online enrollment form which is generated on TCS-CA web portal must be submitted along with the request form and other validation documents.

	Instructions For Form Filling
E-mail Address	Enter your E-mail Address. Maximum limit 0f 64 alphanumeric characters. Must be in the format of name@domain.com
Alternative E-mail Address	Enter your Alternative E-mail Address. Maximum limit 0f 64 alphanumeric characters. Must be in the format of name@domain.com
Organisation/Office Name	Enter your Organisation/Office Name. Maximum limit of 64 alphanumeric characters.
Organisation/Office House Identifier	Enter your Organisation/Office House Identifier. Maximum limit of 60 alphanumeric characters.
Organisation/Office Street Address	Enter your Organisation/Office Street Address. Maximum limit of 60 alphanumeric characters.
Office city	Enter your Office city. Maximum limit of 32 alphanumeric characters.
Office PIN Code	Enter your Office PIN Code. Maximum limit of 10 alphanumeric characters.
Office Country	Enter your Office Country
Office State	Enter your Office State. Maximum limit of 32 alphanumeric characters.
Office Telephone Country Code	Enter your Office Telephone Country Code. Maximum limit of 2 numbers.
Office Telephone Area Code	Enter your Office Telephone Area Code. Maximum limit of 4 numbers.
Office Telephone	Enter your Office Telephone. Maximum limit of 15 numbers.
Office Mobile County Code	Enter your Office Mobile County Code. Maximum limit of 2 numbers.
Office Mobile	Enter your Office Mobile. Maximum limit of 15 numbers.
Office FAX Country Code	Enter your Office FAX Country Code. Maximum limit of 2 numbers.
Office FAX Area Code	Enter your Office FAX Area Code. Maximum limit of 4 numbers.
Office PAN	Enter your Office PAN. Eg. AAAAA1111A. Maximum limit of 10 alphanumeric characters.
Surname	Enter your Surname. Maximum limit of 64 alphanumeric characters.
Given Name	Enter your Given Name. Maximum limit of 64 alphanumeric characters.
Father/Husband's Name	Enter your Father/Husband's Name if you want Father/Husband's Name to appear in your Certificate. Maximum limit of 64 alphanumeric characters.
Initials	Enter your Initials if you want Initials to appear in your Certificate. Maximum limit of 64 alphanumeric characters.
Residential House Identifier	Enter your Residential House Identifier. Maximum limit of 60 alphanumeric characters.
Residential Street Address	Enter your Residential Street Address. Maximum limit of 60 alphanumeric characters.
Authorized Applicant city	Enter your Authorized Applicant city. Maximum limit of 32 alphanumeric characters.
Authorized Applicant PIN Code	Enter your Authorized Applicant PIN Code. Maximum limit of 10 alphanumeric characters.
Authorized Applicant Country	Enter your Authorized Applicant Country
Authorized Applicant State	Enter your Authorized Applicant State. Maximum limit of 32 alphanumeric characters.
Authorized Applicant Telephone Country Code	Enter your Authorized Applicant Telephone Country Code. Maximum limit of 2 numbers.
Authorized Applicant Telephone Area Code	Enter your Authorized Applicant Telephone Area Code. Maximum limit of 4 numbers.
Authorized Applicant Telephone	Enter your Authorized Applicant Telephone. Maximum limit of 15 numbers.
Authorized Applicant Mobile County Code	Enter your Authorized Applicant Mobile County Code. Maximum limit of 2 numbers.
Authorized Applicant Mobile	Enter your Authorized Applicant Mobile. Maximum limit of 15 numbers.
Authorized Applicant Nationality	Enter your Authorized Applicant Nationality. Maximum limit of 32 alphanumeric characters.

Documents checklist: Public & Pri	vate limited
Certificate of incorporation	Enter your Certificate of incorporation identification number as in the enclosed attested copy. Maximum limit of 3 characters.
	Must be a Certificate true copy from either the company secretary / Director of the company
Business commencement	Enter your Business commencement identification number as in the enclosed attested copy. Maximum limit of 3: characters.
	Must be a Certificate true copy from either the company secretary / Director of the company
Memorandum and articles	Enter your Memorandum and articles of association identification number as in the enclosed attested copy. Maximum limit of 32 characters.
	Must be a Certificate true copy from either the company secretary / Director of the company
Latest annual report.	Enter your Latest annual report identification number as in the enclosed attested copy. Maximum limit of 32 characters.
Documents checklist: Partnership	Firms
Partnership deed	Enter your Partnership deed identification number as in the enclosed attested copy. Maximum limit of 32 characters. Must be a Certificate true copy from either the company secretary / Director of the company
Documents checklist: Proprietors	hip firms
Latest bank statement	Enter your Latest Bank statement identification number as in the enclosed attested copy. Maximum limit of 32 characters. Must be a latest bank statement certified by the bank manager of the bank where the account is held.
Latest income tax return	Enter your Latest income tax return identification number as in the enclosed attested copy. Maximum limit of 3 characters.
Latest balance sheet	Enter your Latest balance sheet identification number as in the enclosed attested copy. Maximum limit of 32 characters.
Sales tax certificate	Enter your CST identification number as in the enclosed attested copy. Maximum limit of 32 characters. Must be a licensed copy issued by sales tax authority.
Business commencement licence	Enter your Business commencement identification number as in the enclosed attested copy. Maximum limit of 3 characters. Must be a license issued by central / state government to do business in India.
Documents checklist: Identity and	d Residence
Passport	Enter your Passport number as in the enclosed attested copy of your passport. Eg. A3608997. Maximum limit of 3: characters.
Driving License	Enter your Driving License number as in the enclosed attested copy of your Driving License. Eg. DL9246/DEC/95 Maximum limit of 32 characters.
Documents checklist: Identity	
PAN Card	Enter your PAN card number as in the enclosed attested copy of your PAN Card. Eg. AAAAA1111A. Maximum limit of 3: characters.
Passport	Enter your Passport number as in the enclosed attested copy of your passport. Eg. A3608997. Maximum limit of 3: characters.
Driving License	Enter your Driving License number as in the enclosed attested copy of your Driving License. Eg. DL9246/DEC/95 Maximum limit of 32 characters.
Bank A/C Passbook with Photo	Enter your Bank Account number as in the enclosed attested copy of your Bank Account Passbook which is up to date. Eq 000401532978. Maximum limit of 32 characters.
Photo Ideality Cond	Same should be signed by an individual with attestation by the concerned Bank official.
Photo Identity Card	Enter any Photo Identity Card number as in the enclosed attested copy of your Identity Card. Eg. 556789. Maximum limi of 32 characters. Issued by the Ministry of Home Affairs of Centre/State Governments or Any Government issued photo ID Card
	bearing the signatures of the individual.
Documents checklist: Residence	
Latest Telephone Bill	Enter your Latest Telephone Bill. Maximum limit of 32 alphanumeric characters. The bill must be recent proof, but not earlier than 3 months from the date of application should be attached.
Latest Electricity Bill	Enter your Latest Electricity Bill. Maximum limit of 32 alphanumeric characters. The bill must be recent proof, but not earlier than 3 months from the date of application should be attached.
Latest Bank Statement	Enter your Bank Account number as in the enclosed attested copy of your Latest Bank Statement. Eg. 000401532978 Maximum limit of 32 characters. Same should be attested by the the concerned Bank official.
Passport	Enter your Passport number as in the enclosed attested copy of your passport. Eg. A3608997. Maximum limit of 3 characters.
Driving License	Enter your Driving License number as in the enclosed attested copy of your Driving License. Eg. DL9246/DEC/95 Maximum limit of 32 characters.
Documents checklist: Letter of au	thority
Letter of Authority	Enter Submitted or enclosed if you have enclosed attested copy of Letter of Authority.

Instructions for Certificate Management

- . All subscribers are advised to read Certificate Practice Statement of CA.
- The certificate shall be downloaded onto the same computer / Hardware device (USB token, Smart card etc.) by login as same computer user account from where the request was initiated.
- The certificate must not be shared with others or used by them on your behalf
- . Certificate revocation is permanent and irreversible. If your certificate is revoked, you will have to reapply for a fresh certificate.
- . It is your responsibility to remember the passwords that are used while generating/exporting the certificates/keys.
- . If you lose your key pair, you shall inform the RA Administrator immediately and apply for the revocation of your certificate.
- After placing an online request for a certificate, the following activities shall not be carried out until the certificate is successfully downloaded:
- Formatting of the computer
- Deletion of computer user account used to logon when the request was initiated

- Reinstallation or upgrade of the Internet browser on the computer from which the certificate request was initiated.
- · Incomplete/Inconsistent application is liable to be rejected.

Close

APPLICATION FOR DIGITAL SIGNATURE CERTIFICATE



Application ID Number (For office use only): Instructions:
Instructions: 1. Please fill the form in BLOCK LETTERS and (*) MARKED Fields are Mandatory. 2. Inconsistent/incomplete applications are liable to be rejected. 3. Attestation of documents by any Cazeted Officer OR Bank Manager OR Post Master OR present originals to our Registration Authority for verification. 4. For Foreign individuals without a valid Indian Visa the document attestation has to be done by the Indian Embassy 5. All subscribers are advised to read Certification Practice Statement and Subscriber agreement of eMudhra available at wave e-mudhra com 6. All Par Cheque J Demand Draft to be drawn in favour of eMudhra Consumer Services Ltd. 7. For Class III Digital Signatures it is mandatory for the applicant to be physically present before official / agents off eMudhra to complete in person verification 8. All Corrections in the application shall be attested by the applicant in the application shall be attested by the applicant in the application shall be attested by the applicant of the physical present before official / agents off eMudhra to complete in person verification 8. All Corrections in the application shall be attested by the applicant of the physical present before official / agents off eMudhra to complete in person verification 8. All Corrections in the application shall be attested by the applicant of the physical present before official / agents off eMudhra to complete in person verification 8. All Corrections in the applicant of the applicant of the physical present before official / agents off eMudhra to complete in person verification 8. All Corrections in the application shall be aftered by the applicant of the physical present before official / agents off eMudhra to complete in person verification 8. All Corrections in the applicant of the applicant of the physical present before official / agents off eMudhra to complete in person verification 9. All Corrections in the applicant of the applicant of the physical present before official / agents of eMudhra to complete in person verifica
1. Please fill the form in BLOCK LETTERS and (*) MARKED Fields are Mandatory. 2. Inconsider/direcomplete applications are liable to be rejected. 3. Attestation of documents by any Cazeted Office OR Bank Manager OR Post Master OR present originals to our Registration Authority for verification. 4. For Foreign Individuals without valid Indian Visa the document attestation has to be done by the Indian Embassy 5. All subscribers are advised to read Certification Practice Statement and Subscriber agreement of eMudhra available at wave e-rudhra. com 6. At Par Cheque / Demand Draft to be drawn in favour of eMudhra Consumer Services. Ltd. 7. For Class III Digital Signatures it is mandatory for the applicant to be physically present before official / agents off eMudhra to complete in person verification 8. All Corrections in the application shall be attested by the applicant to be physically present before official / agents off eMudhra to complete in person verification 8. All Corrections in the application shall be attested by the applicant of the physically present before official / agents off eMudhra to complete in person verification 8. All Corrections in the application shall be attested by the applicant of the physically present before official / agents off eMudhra to complete in person verification 8. All Corrections in the application shall be attested by the applicant of the physically present before official / agents off eMudhra to complete in person verification 9. For Class 2 Gold Signature 1 1 Year Required 9. Class 2 Gold Signature 1 1 Year Required 9. Class 3 Platinum Encopylion 2 Year Not Required 9. Certificate Category: Individual Organisation APPLICANT DETAILS* (As per applicant's valid ID Proof at SINo.11 below) 5. Name: Mr./Ms./Dr. 6. Date of Birth: 9. Father/Spouse's Name 10. Residential Status* 11. email id December 1 Individual December 1 Ind
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CONTACT DETAILS* for APPLICANT'S ORGANISATION ADDRESS IF APPLYING ON BEHALF OF ORGANISATION
Organisation Name Department
Registration Number Date of Incorporation / Proprietorship
Commencement / Partnership Agreement
Address:
Pincode City State
Telephone No. (e.g. +91-80-23333333) Mobile No. (e.g. + 91-999999999)

Version 1.3 CONFIDENTIAL Page 1 to 3



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Version 1.3 Page 134 of 327 CONFIDENTIAL Page 2 to 3

Checklist of Documents to be Submitted along with Application for Organisation Certificate
a. Attested Copy of anyone as per the list is S.No. 15c
b. Attested copy of any one Certificate of Incorporation Memorandum of Association Regd. Partnership Deed Valid Business License
c. Attested Copy of any one Annual report Latest Income Tax Return Latest organisation Details from the Bank Statement of Income issued by Chartered Accountant
d. Attested Copy of the Organisation PAN Card or equivalent for the corresponding country
e. Authorisation letter in favour of the certificate applicant from the Organisation as per format below
f. List of Partners / members / Directors with their complete name and address details
AUTHORISATION LETTER FORMAT* (This Authorisation Letter is required on the Organisation's Letterhead)
To, Date:
eMudhra Consumer Services Limited 3rd Floor, Sai Arcade, 56 Outer Ring Road Deverabeesanahalli, Opp Intel Bangalore 560103 Phone: +91 80 4336 0000 Dear Sir,
Sub: Authorisation letter for obtaining Digital Signature Certificate.
This is certify that Mr./Mrs./Miss (Certificate applicant) has provided correct information in the 'Application form for issue of Digital Signature Certificate" to the best of my knowledge and belief vide application form dated DD-MM-YYYY. I hereby authorize him/her, on behalf of our Organisation to apply for obtaining the following Class of Digital Signature Certificate issued by eMudhra.
Class of Digital Signature Certificate issued by e-Mudhra. Class 2 Gold Organisation Class 3 Platinum Organisation
Signature: Name: Designation:
CONTACT DETAILS

eMudhra Consumer Services Limited, D.No.2 / 30 A, 1st Floor, Natesa Pandaram Colony, Cherry Road, Landmark: Opp to Post Office, Salem - 636 007. Tamil Nadu Phone: +91 80 4336 0000 Fax: +91 80 4227 5306 Email: info@e-Mudhra.com Website: www.e-Mudhra.com

Version 1.3 **Page 135 of 327** CONFIDENTIAL Page 3 to 3

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MATERIAL REQUISITION (TOP SHEET)

ITEM DESCRIPTION: PUMP-CENTRIFUGAL.HORIZONTAL (SPECIAL PURPOSE PROCESS)

GROUPITEM CODE: 04AB DESTINATION: As per Commercial Documents

MR CATEGORY: II DELIVERY PERIOD: As per Commercial Documents

DOCUMENT NUMBER

(Always quote the Document Number given below as reference)

A546	604	PA	MR	5010	A	08/08/2014	16	45
JOB NO.	UNIT/ AREA	MAIN COST CENTRE	DOC. CODE	SR. NO.	REV.	DATE	DIVN. ORIGI	DEPT. NATOR

NOTES:

- This page is a record of all the Revisions of this Requisition.
- 2 The nature of the Revision is briefly stated in the "Details" column below, the Requisition in its entirety shall be considered for contractual purposes.
- Wendor shall note the MR category and shall submit his offer in line with the requirements included in attached 'Instructions to Bidders'.

REV.	DATE	BY	СНК.	APPD.	DETAILS
А	08/08/2014	AJAY/BBS	NK	DB	ISSUED FOR BIDS

This is a system generated approved document and does not require signature.

SHIS-VIII

ENGINEERS INDIA LIMITED

NEW DELHI

Project: COKE CHAMBER REPLACEMENT AND ALLIED

MODERNIZATION

Client: IOCL

Sheet 1 of 3

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SR. NO.	TAG NO/ ITEM CODE/ [ID. NO.]	DESCRIPTION	QUANTITY
01.00		Design, engineering, manufacture, procurement of materials and bought out components, assembly at shop, inspection, testing at manufacturer's works, packing & delivery of the following, including supply of all commissioning spares (Note-1) & special tools and tackles (Note-2) & documentation as per the enclosed EIL standard specifications, instructions to vendors, job specification, data sheets etc. and other codes and standards attached or referred.	
> 01.01	604-PA-061A/B	FRACTIONATOR BOTTOM RE-CIRCULATION PUMPS	2 Nos
> 01.02	604-PA-063A/B	NEW LEAN KERO PUMPS	2 Nos
> 01.03	604-PA-066A/B	CFO BOOSTER PUMPS	2 Nos
> 01.04	604-PA-067A/B	DELUGE WATER PUMPS	2 Nos
> 01.05	604-PA-069A/B	CFO CR/IR PUMPS	2 Nos
02.00		<< DELETED >>	
03.00		<< DELETED >>	
04.00		Supply of Mandatory Spares as per Doc. # A546-604-16-45-SL-5010 forming part of MR	
>> 04.01	{04}604-PA-061A/B	For Sr. No. 01.01	1 Lot
> 04.02	{04}604-PA-063A/B	For Sr. No. 01.02	1 Lot
> 04.03	{04}604-PA-066A/B	For Sr. No. 01.03	1 Lot
>> 04.04	{04}604-PA-067A/B	For Sr. No. 01.04	1 Lot
> 04.05	{04}604-PA-069A/B	For Sr. No. 01.05	1 Lot
05.00		Quotation of Two Years Operation and Maintenance Spares, as per enclosed instructions to vendor	Lot
06.00		<< DELETED >>	
07.00		<< DELETED >>	
08.00		Supervision of erection and commissioning (Note-3) of items specified at item 1.00 above, as per enclosed instructions to vendor	
> 08.01	{08}604-PA-061A/B	For Sr. No. 01.01	1 /diem rate
> 08.02	{08}604-PA-063A/B	For Sr. No. 01.02	1 /diem rate
≫ 08.03	{08}604-PA-066A/B	For Sr. No. 01.03	1 /diem rate
≫ 08.04	{08}604-PA-067A/B	For Sr. No. 01.04	1 /diem rate
≫ 08.05	{08}604-PA-069A/B	For Sr. No. 01.05	1 /diem rate
09.00		Drawings and documents as per attached Vendor Data requirement for all supplies and services covered above in Sr.Nos.1.00 to Sr.No.8.00	Lot

> Vendors shall quote prices in EIL Price Schedule except for Sr.No.9.00. Price for documentation is implied to be included in the prices quoted against Sr.No.1.00 to Sr.No.8.00

Vendor to note that the numbers given in square '[]' and curly '{}' brackets are not for their use and meant for store purpose only. Items shall be tagged as per main equipment Tag No. only.

	ENGINEERS INDIA LIMITED
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	NEW DELHI

Project:	COKE CHAMBER REPLACEMENT AND ALLIED MODERNIZATION	REQUISITION NO.	REV.
Client:	IOCL	A546-604-PA-MR-5010	A
		Sheet 2 of 3	

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LIST OF ATTACHMENTS

				REVI	SION	
SL.	DOCUMENT TITLE	DOCUMENT NO.	REV.	REV.	REV.	REV.
No.			DATE	DATE	DATE	DATE
1						

In case of any subsequent revision of MR or PR, only revised sheets of the attachments listed above shall be issued alongwith the revision.

GENERAL NOTES:

Refer Table of Contents for List of Attachments.

- 1) Bidders are required to submit a list of commissioning spares (as recommended by them) along with the offer which shall be supplied along with the pump. Further, any spares consumed over and above the spares supplied along with the pump, shall be furnished by the pump vendor at the time of commissioning without any time/cost implication to the purchaser. Any left over spare shall be retained at purchaser's end without any cost implication.
- 2) Bidders are required to submit a list of special tools and tackles (as recommended by them) along with the offer which shall be supplied along with the pump. Bidder shall furnish at-least one set of special tools and tackles for each pump item. If no special tools/tackles are required for normal operation and maintenance of the pumps, the same shall be categorically indicated in the bid.
- 3) For the purpose of commercial comparison, 5 mandays for supervision of each pump shall be considered. However, the payment to the the vendor shall be made on basis of actual mandays consumed on site for supervision of erection and commissioning.

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 Project:
 COKE CHAMBER REPLACEMENT AND ALLIED MODERNIZATION
 REQUISITION NO.
 REV.

 Client:
 IOCL
 A546-604-PA-MR-5010
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 Sheet 3 of 3
 Sheet 3 of 3

File Name: C:\Users\B560\Desktop\5010.pdf

Status Date						Fax :		Remarks										
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rawing/ Doc	Project: COKE CHAMBER REPLACEMENT AND ALLIED MODERNIZATION	PR No.:	Date of LOI:	PO No.:	Date of PO:	Contact Person(EIL):		Vendor Drg. / Doc. Numbe										
	Project: COKE CHAM MODERNIZATION	URPOSE				TATING EQUIPMENT		Drg./ Doc. Nomenclature as per EIL Vendor Data Ver Requirement										
照例 Engineers India Limited	Client: IOCL	Item Description: PUMP- CENTRIFUGAL, HORIZONTAL (SPECIAL PI	PR(<mark>S</mark> ESSS)	400		EIL Originating Department: ROTATING EQUIPMENT		Equipment Number										
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CHECK LIST- MANDATORY SPARE PARTS

DOCUMENT No. A546-604-16-45-SL-5010 Rev. A

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CHECK LIST FOR MANDATORY SPARE PARTS PUMPS- CENTRIFUGAL (HORIZONTAL)

PROJECT: COKER CHAMBER REPLACEMENT & ALLIED

MODERNIZATION IN COKER-A

CLIENT: M/s IOCL, BARAUNI

CONSULTANT: M/s EIL

EIL Job No. : A546

ISSUED WITH MR	AJAY/BBS	NK
	ISSUED WITH MR	ISSUED WITH MR AJAY/BBS



CHECK LIST- MANDATORY SPARE PARTS

DOCUMENT No. A546-604-16-45-SL-5010 Rev. A

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Equip	ment Item Number:	Total N	o. O	f Ur	nits I	nsta	lled:			_	
Sno	Part Description			on	y Ro No.	of In		lled	Quoted (Yes / No /Not Appl)	Unit Price Per Set	Total Price
		1	2								
Α	Centrifugal Pump										
1.	Set of mechanical seals	1	1								
В	Electrical										
1.	Refer Electrical specs.										
С	Instrumentation										
1.	Refer Instrumentation specs.										

Notes:

- 1. The Bidder shall furnish the following checklist of mandatory spares, duly filled in, separately for each equipment Item included in the inquiry, in the proposal.
- 2. The word `Set' means the quantity required for full replacement of that part in one machine.
- 3. The word "TYPE" mentioned as above means the make, Model No., Type, range, Size/length, rating, material as applicable.
- 4. The Bidder shall quote for all the mandatory spares as defined above & as applicable to the proposed design of the equipment. In case, any spare which is listed above but not applicable due to specific construction/design of the equipment, the same shall be highlighted as 'Not Applicable' against that spare supported with proper technical explanation.
- 5. Spare parts shall be identical in all respects to the parts fitted on the main equipment, including dimensions, material of construction & heat treatment.
- 6. The cost of these mandatory spares shall be added to the `Total Cost' for commercial evaluation of the offer.
- 7. The offers, not including the quotation for mandatory spare parts in the commercial section & the un-priced quotation for mandatory spare parts in the technical section shall be considered as incomplete offers and shall be liable for prima-facia rejection. The Bidder is advised to furnish the above checklist, duly completed & consolidated, along with the techno-commercial offer (i.e. both un-priced & priced copies)



JOB SPECIFICATION FOR HORIZONTAL CENTRIFUGAL PUMPS

(Special Purpose Process)

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JOB SPECIFICATION

FOR

HORIZONTAL CENTRIFUGAL PUMPS

(Special Purpose Process)

PROJECT

: COKER CHAMBER REPLACEMENT & ALLIED

MODERNIZATION IN COKER-A

CLIENT

: M/s IOCL, BARAUNI

CONSULTANT:

M/s EIL

EIL Job No.

: A546

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Α	16.07.14	Issued with MR.	AJAY/BBS	NK	DB
Rev. No	Date	Purpose	Prepared by	Checked by	Approved by

JOB SPECIFICATION FOR HORIZONTAL CENTRIFUGAL PUMPS (Special Purpose Process)

SPECIFICATION No. A546-604-16-45-SP-5010 Rev. A Page 2 of 14

1.0 GENERAL

1.1 Scope

- 1.1.1 This specification along with the equipment data sheet, EIL standard specification 6-41-0006 Rev. 2 and applicable API Standards describes the minimum requirements for design, engineering, manufacture, testing, supply, supervision of erection and commissioning of Centrifugal pumps as described hereunder and in other referred documents.
- 1.1.2 The intent of these requirements is to supplement, highlight and modify the requirements as given in the data sheets, specifications as listed under list of attachments forming part of the MR and other applicable standards referred to in the data sheets and specifications. Note that all the requirements enumerated below are for each pump item unless specifically mentioned otherwise.

1.2 Standards

1.2.1 The design, engineering, manufacture, supply and testing and other general requirements of the pumps shall be strictly in accordance with the data sheets, this job specification, P&IDs, standard specifications etc. as listed under "List of Attachments" as well as other referenced codes, standards and recommended practices.

1.3 <u>Precedence</u>

- 1.3.1 In case of any conflict between this Job Specification and other enquiry documents, the following preferential order shall govern:
 - a. Mechanical Datasheets
 - b. Other Data Sheets/Drawings attached
 - Job specification
 - EIL Standard Specifications.
 - e. International Standards/Codes/recommended practices as applicable.

However any such conflict shall be brought to the notice of Owner/Consultant & Owner's/Consultant's decision shall be final in this regard.

- 1.4 Vendor shall make all possible efforts to comply strictly with the requirements. However, if any requirement is not possible to comply due to inherent design of vendor (and not due to cost or time considerations), then such deviations as required by vendor shall be separately consolidated and furnished under "List of Deviations" with specific references to Document no., Page no., Clause no./Para no., Line no. etc. of the applicable document to which deviation applies, along with adequate reasons for each deviation. Further, vendor shall furnish a statement, that except for the deviations furnished by him, his offer is in total conformity with all the data sheets and document Listed under "List of Attachments" and the referenced codes, standards and recommended practices. No deviation shall be considered after award of order. Any comment, deletion, correction on the body of the data sheets/specifications/VDR etc. will not be taken cognisance of and all such deviations shall be deemed to have been withdrawn by the bidder.
- 1.5 Compliance with this specification shall not relieve the vendor of the responsibility of furnishing equipment and auxiliaries of proper design, materials and workmanship to meet specified operating conditions.



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2.0 SCOPE OF SUPPLY

- Vendor's scope of supply is described in data sheets and specifications, forming part of the inquiry document. However, it shall be the responsibility of the vendor to ensure safe and satisfactory operation and maintenance of the offered equipment. For this purpose, in case vendor envisages additional equipment / instruments / control and safety devices, the same shall be offered by the vendor and included in his scope of supply. Such additional items shall be separately listed with reasons for their inclusion.
- 2.2 Following are excluded from vendor's scope of supply:
 - Foundation & civil works.
 - Civil & structural work.
 - Erection & Commissioning (Except supervision).
- 3.0 SAFETY
- 3.1 All controls shall operate in a fail-safe mode.
- 3.2 All electrical components & installations, instruments shall be suitable for the electrical area classification and grouping in which the equipment is installed.
- 3.3 Thermal relief valves shall be provided for components that may be blocked in by isolation valves (including any cooling water return circuit piping of a cooler or a jacket)

4.0 UNITISATION OF PUMP & DRIVER

Unitization of Pump & Driver shall be done in pump manufacturer's shop. All pumps and their Drivers shall be supplied as skid mounted units with all accessories, auxiliaries along with auxiliary piping duly mounted on a single skid except for Lube oil console (if applicable) which shall be supplied on a separate skid.

5.0 SITE & UTILITY DATA

Specification for Site and Utility Data attached in the Enquiry Document shall be referred.

6.0 LOADING & PENALTY CRITERIA

Specification for Loading & Penalty Criteria attached in the Enquiry Document shall be referred.

7.0 EQUIPMENT QUALIFICATION CRITERIA

- 7.1 The equipment qualification criteria as specified in clause 1.6 of EIL standard Specification for centrifugal pumps no. 6-41-0006 shall be met for the offered pump model and manufacturer.
- 7.2 Vendor shall furnish duly filled in experience record proforma to justify provenness of the offered pump model along-with the bid. The offers submitted by bidders shall be evaluated on the basis of offers meeting the EQC requirements of main equipment (pump). The information required to satisfy the EQC requirements for auxiliary/bought outs (if any) shall be submitted during detail engineering stage post order after finalizing the details of such bought out equipment.



JOB SPECIFICATION FOR HORIZONTAL CENTRIFUGAL PUMPS (Special Purpose Process)

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8.0 BASIC DESIGN/SPECIAL REQUIREMENTS

- 8.1 The pump package and associated equipment shall conform to API 610 10th edition together with EIL standard specification 6-41-0006 and other specifications as listed in the list of attachments forming part of the MR.
- 8.2 Maximum allowable working pressure & temperature of the equipment shall not be less than the design pressure & temperature specified in the data sheet nor less than those specified in specifications, codes & standards. Max. Allowable case working pressure at 15°C & at specified design temp. shall be furnished for pump. The pump casing shall also be suitable for operation at max. discharge pressure developed at pump minimum flow with sp. Gr. 1.0(i.e. water),this is required during shop performance test with water at rated speed
- 8.3 Suction flange rating shall be same as that of discharge flange for all pumps.
- 8.4 Inducers shall not be used for any pumps included in the MR.
- 8.5 Pumps shall be suitable to operate at its corresponding minimum continuous flow for prolonged duration. Unless otherwise specified, pump minimum continuous flow shall be less than process rated and normal flow.
- 8.6 No cast iron pressure containing parts shall be used for hydrocarbon service.
- 8.7 For pump item no. 604-PA-00-061 A/B (Fractionator Bottom recirculation pumps), wear ring flushing is required due to presence of coke particles. Vendor shall provide the same and accordingly all necessary hardware (i.e. piping, fitting valves, instrumentation etc.) shall be included in vendor's scope. Vendor shall provide the details (including required flow rate and pressure of flushing liquid, change in power, capacity etc.) of wear ring flushing arrangement for applicable pumps in his proposal.
- 8.8 The maximum permissible running clearances shall not be less than twice the running clearances as specified in API610.
- 8.9 Pumps operating at temperatures less than 150°C shall be suitable for instantaneous startup from ambient to full operating temperature. For higher operating temperatures the vendor shall provide suitable hardware (i.e. piping, valves & fittings) & as part of the operating manual a suitable startup procedure shall be provided. Any required monitoring equipment (i.e., skin thermo couples) to ensure that the pump, including seal(s), does not incur damage due to rapid heat up shall be supplied by pump vendor. The details of such arrangement shall be necessarily furnished by vendor in his offer.
- 8.10 Where specified in datasheets, suitable warming connection shall be provided by vendor. All necessary hardware (i.e. piping, fitting, valves etc.) shall be provided by vendor and details of such arrangement shall be included by vendor in his proposal.
- 8.11 All rotating equipment base plates shall have jacking provision (Horizontal & vertical) for aligning the prime movers.
- 8.12 Base plate drain shall be provided with 2" flanged connection. Also refer EIL std. spec. # 7-44-0321 enclosed elsewhere, for location of seal plans & interfacing piping connections.
- 8.13 All auxiliary piping interface connection shall be terminated with flanged valve at the equipment battery limit (refer EIL Standard 7-44-0321). The purchaser shall provide/receive utilities (like water, air, N2 etc.) at single point inlet/outlet at the edge of base plate for seal cooler & bearing cooling. The terminating flanges at the skid edge shall be of 3/4"(minimum) size. Vendor shall



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provide sight flow glass at each CW outlet. Complete interconnecting piping from and/or to Purchaser's battery limit including Vent, flare, drain, utility piping (i.e. cooling water, instrument air etc) shall be in vendor's scope of supply.

- 8.14 As a minimum piping material shall be stainless steel for seal flushing plans and shall be carbon steel for cooling water plans.
- 8.15 The standard performance envelope curves covering the maximum and minimum impeller sizes, for the offered model, NPSH Curve, Power Curve and efficiency curve at the offered speed of pump shall be furnished along with other data, drawings and documents as per specified VDR with the offer.
- 8.16 Preferred Operating Region and Allowable Operating Region to be marked on the characteristic curve for each pump item. The rated and the normal operating points shall be marked on the characteristic curve. The rated flow shall not exceed 110% of pump capacity at best efficiency point.
- 8.17 Vendor shall indicate the values of thermal minimum continuous flow (MCF) & stable MCF on the pump data sheet(s), in the offer.
- 8.18 Vendor shall fill Utility Data sheet forming part of the Enquiry Document and submit his recommendation along with his proposal. Vendor, in his offer, shall list all the utilities required for the following (Vendor to furnish item wise breakup for the utilities required):
 - Sealing fluid requirement
 - Cooling water requirement for bearing cooling
 - Cooling water required for seal coolers
 - Other utility requirements (if any)

8.19 Couplings

Couplings shall be of metallic, non-lubricated, flexible element type (i.e. either diaphragm type or disc type) with spacer for all equipment.

- 8.19.1 The coupling service factor shall not be less than 1.5 over the driver rating as a minimum.
- 8.19.2 The coupling shall have spacer of adequate length to enable maintenance of seal/bearings without dismantling any equipment of the train. The DBSE shall be more than the seal cartridge length.
- 8.19.3 Removable coupling guard shall be provided which shall be fabricated from non-sparking material, and shall be open at the bottom to permit manual shaft rotation. The guard shall be sufficiently rigid to withstand deflections as a result of bodily contact of nominally 100 kg.

8.20 BEARING DESIGN & LUBE OIL SYSTEM:

8.20.1 Type of bearings for pumps shall, as a minimum, meet the requirements specified in Cl. 5.10.1.1 of API 610 10th edition and shall be as per vendor's standard proven design.

Vendor must furnish adequate past supply references, in his offer, of having supplied similar bearing designs with similar lube oil system for similar services (speeds and power ratings) to justify meeting Equipment Qualification Criteria as per EIL Spec 6-41-0006.

Vendor shall provide details in the ERP (attached elsewhere in the MR) for selected radial and thrust bearings such as type (Antifriction/sleeve, as applicable) to justify the provennes of the offered design.



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- 8.20.2 Type of lubrication shall be as per vendor's standard proven design for similar speed & power ratings for the offered model. Vendor shall furnish necessary and adequate references in the ERP to establish the provenness of the offered type of lubrication.
- 8.20.3 For the bearing housings, a magnetic drain plug shall be provided for inspecting the oil level while the pump is running.

8.21 Equipment Noise Level

Equipment noise level (Driver + Driven equipment train + auxiliaries) shall not exceed **88 dBA** when measured at One-meter distance from the equipment skid in any direction. This shall be demonstrated at site & if the noise limit exceeds the specified value, the necessary arrangement to meet the noise criteria, shall be provided by vendor without any time/cost implication. Jackets for Noise attenuation around the suction and Discharge nozzles shall be supplied by the vendor if found necessary to limit noise level within specified limits.

8.22 MECHANICAL SEALS

8.22.1 Mechanical Seals offered shall be as per API Standard 682, 3rd Edition. Seal type and plan shall be as specified on pump datasheet. Vendor shall obtain seal vendor's recommendation and furnish the same in the proposal.

In case the pump vendor/seal vendor's recommendation are not in agreement with seal details as indicated in respective pump datasheets, the pump vendor shall quote for the following two options (for seals and seal flushing plans):

- i) Strictly as per Pump Datasheets
- As per seal vendor's recommendations.

Pump vendor to indicate separately the price for both the options. The purchaser shall take final decision.

- 8.22.2 Stuffing Box Dimensions shall be as per API Standard 610, 10th edition.
- 8.22.3 Mechanical seals (as per API Std. 682 3rd edition) shall be one of the following makes (as per EIL MVL):

Principals

Indian Counterparts

M/s John Crane

John Crane Engg. Sealing System India Pvt. Ltd.

M/s Flowserve

Flowserve Sanmar Ltd.

M/s Eagle Burgmann

Eagle Burgmann India Pvt. Ltd.

- 8.22.4 Pumps having operating temperatures of 176°C and above shall be provided with stationary metal bellow seals.
- 8.22.5 Seal Qualification tests (SQT) shall have been conducted on the proposed mechanical seal model(s) for standard API 682 seals.
- 8.22.6 In case the offered mechanical seal is intended to be supplied by the Indian counterparts of the seal manufacturers, following requirements shall be met:
 - a. For standard mechanical seals, for which SQT has been conducted by the principals, critical components such as Bellows, Springs and Seal Faces shall be sourced from their principals.
 - b. For Engineered seals, the complete mechanical seal along with sleeve and gland plate shall be sourced from their principals.
- 8.22.7 Mechanical seals/ Seal system to be suitable for maximum shut off pressure/casing design pressure under static conditions.



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8.22.8 <u>Sealing Flushing Plans (Plan 32/52/53B, as applicable)</u> (refer special Requirements for seal flushing Plans attached elsewhere)

- a) The complete sealing system along with instruments and all accessories shall be mounted/installed on the pump base plate. In case of between bearing pumps there shall be two such independent units, one each for each stuffing box and both the system shall be mounted on the same side to allow for maintenance of the pump. Aux. Seals/Flushing Systems & Plans/Cooling Systems & Plans shall be as per API 682 requirements & also as per the attached specification requirements. The Vendor shall ensure that all seal flush plan piping & cooling piping shall be supplied as pre-fabricated. Such piping shall be pre-installed on the pump skid. If due to transportation limitations, such piping is required to be supplied as loose, the same shall be supplied as pre-fabricated along with all fasteners, bolts/studs, nuts gaskets & shall be properly match marked so that assembly at site can be done without requiring any field adjustment and / or welding at site.
- b) Vendor shall furnish recommended Buffer/Barrier Fluids for various pump items in their offer. Process compatibility of the recommended fluids shall be checked at purchaser's end and final Buffer Fluids shall be firmed up during detailed engineering stage. Special or synthetic buffer fluids shall not be recommended.

8.23 Instrumentation

- 8.23.1 Vendor shall refer to the attached data sheets, instrumentation requirements & specifications and standards attached and referred to in the material requisition for the purpose of instrumentation requirements included in the vendor's scope of supply.
- 8.23.2 The pump manufacturer shall supply necessary instruments from any one of the EIL approved makes only.

9.0 INSPECTION AND TESTS

9.1 General

Bidder to include in his scope of supply/works inspection and testing requirements as defined in respective datasheets, specification and codes & standards.

10.0 SPARE PARTS

10.1 Mandatory spare parts

Vendor shall quote for the mandatory spares as per the list attached with the requisition and as specified in the instrumentation and electrical specification. Cost of these mandatory spares shall be added to the total cost for evaluation purposes.

10.2 Commissioning spares

Vendor's scope of supply shall include all commissioning spares (mechanical, electrical and instrumentation) for the pump package as deemed necessary by vendor. Vendor shall include the list of such spares in his proposal. Vendor to note that in case any of the spare is consumed over and above the recommended commissioning spares, the same shall have to be replaced/supplied free of cost by the vendor. Any leftover (un-used) spares after commissioning, out of those included by vendor in his offer, shall be handed over to the owner.

10.3 <u>List along with Quotation for recommended spares for two years normal operation</u>

Vendor shall furnish an itemised list / quotation of recommended spare parts with unit prices for two years normal operation of the complete pump unit, over & above the mandatory spares (including mechanical, electrical and instrumentation spares). Quotation of these spares shall not be considered for commercial evaluation.

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10.4 Special Tools and Tackles

Any special tools and tackles as required for maintenance of pump, motor etc shall be included in the vendor's scope of supply for each pump item no., as applicable. Bidder to categorically confirm for each pump item no, whether the special tools or tackles are required or not.

11.0 VENDOR DATA AND DRAWING

- 11.1 Vendor data and drawings shall be furnished in accordance with the "Vendor Data Requirements Centrifugal Pumps" (A546-604-16-45-VDR-5010) and vendor data required as per Electrical and Instrumentation sections. Vendor shall ensure that complete data is furnished as required.
- 11.2 Complete equipment load and GA drawing (dimensional details along with max. skid size) with all requisite information to decide pilling requirements shall be furnished along with bid (correct to within ±10%). Exact details and other documents as per VDR can be furnished within 15 days of order placement.

12.0 EQUIPMENT STORAGE

All rotating equipment shall be packed for an outside storage period of twelve (12) months. Vendor's recommended extended storage and preservation procedure shall be furnished to Purchaser/owner before dispatch.

Equipment vendor to ensure the following before dispatch:

- All the openings shall be plugged & sealed condition during dispatch
- Instruments like gauges, speed indicators, probes, oiler etc shall be removed from the main equipment and dispatched separately to avoid the damage of these components during transportation handling and erection.
- In addition to normal packing the pump and motor skids shall be separately covered with transparent polythene cover with opening for piping.

13.0 INSTALLATION CRITERIA

All pumps shall be suitable for outdoor installation. No equipment shelter is envisaged.

14.0 INITIAL FILL

The initial fill of lubricants, sealing fluid & other consumables shall not be included in the scope of supply of rotating equipment vendor.

15.0 UTILITY REQUIREMENTS AND LUBRICATION SCHEDULE

Vendor shall furnish filled in utility Requirements and lubrication schedule, as per format attached elsewhere, for all items in his offer.

16.0 SUPERVISION OF ERECTION AND COMMISSIONING

16.1 The vendor shall provide his services for supervision during erection and commissioning of the pump package. The supervisory cost of 5 man-days per Centrifugal Pump-Electric Motor Driven shall be considered for the purpose of commercial comparison. The vendor shall indicate in his proposal the cost of providing the above services on per diem basis. Vendor may propose separate rates for foreign specialist and/or Indian specialist and/or discipline wise specialist; in



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such a case, proposed break up of man-days (within overall number of mandays as specified above) for each type of specialist shall be furnished in proposal.

17.0 PARTICIPATION OF PURCHASER'S ENGINEERS DURING ASSEMBLY AND OTHER IMPORTANT ACTIVITIES:

Owner and/or his Consultant may participate along with the Vendor's inspectors in any inspection and tests. The vendor shall notify to owner of all inspection and tests atleast four weeks before the scheduled date of inspection and test and reconfirm the same at least one week before the date of inspection and testing.

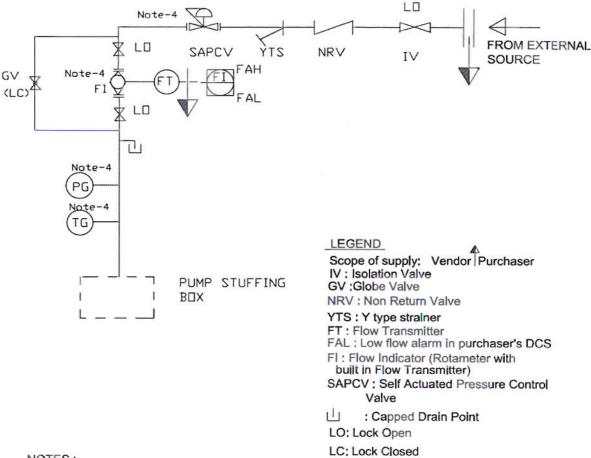


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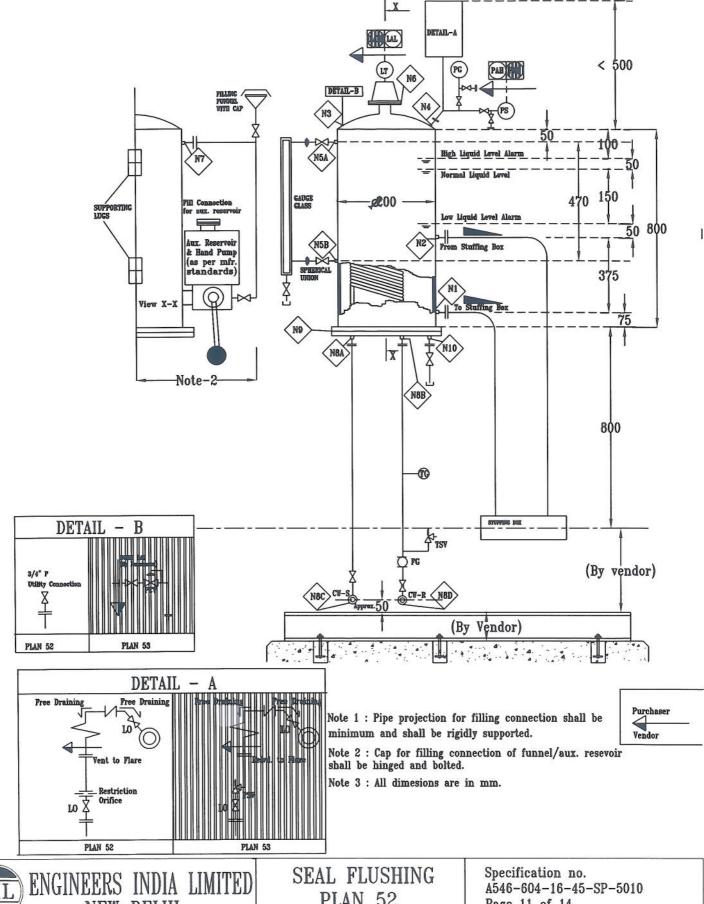
PIPING AND INSTRUMENTATION SCHEMATIC FOR API SEAL FLUSHING PLAN 32



NOTES:

- 1. System shown is for one stuffing box. For between bearing pumps, two such independent systems shall be provided.
- 2. All piping and valves shall be SS 316.
- 3. The flow indicator (FI) shall be a metal tube Rotometer with local flow indication & adjustment and also with built in Flow Transmitter.
- 4. Isolation & drain valves etc. for instruments shall be provided.
- 5. All Instruments shall comply with Instrumentation specifications attached with the Enquiry Document,
- 6. All auxiliary piping supports & routing shall be done in such a way that it should not obstruct pump maintenance,
- 7. All auxillary piping connections shall be either flanged or screwed except for connection shown as flanged in the above drawing.
- 8. All auxiliary piping shall be confined within the baseplate.

Remark 1: Refer Instrumentation specification for details of instruments.



ENGINEERS INDIA LIMITED NEW DELHI

PLAN 52

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API SEAL FLUSHING PLAN 52

DESIGN PARAMETERS	
Optg. Pressure (kg/cm²g) / Optg. Temp (°C)	: As per respective pump data sheets
Design Pressure (kg/cm²g) / Design Temp (°C)	: 40.0 (min.) / Ambient (min.) §
Hydro test pressure (kg/cm²g):	: 1.5 times Design Pressure
Shell	: SS 316L (Sch 40 S)
Head	: SS 316L
Gasket	: SS 304/316: Spiral Wound Gasket

The design of sealing system shall be as per the design parameters indicated above or pressure-temperature rating equal to the maximum discharge pressure & temperature of the pump casing, whichever is higher.

Nozzle	Service	Size, mm (")	Min. ANSI Rating §	Flange type		
N1	To:Stuffing Box	20 (3/4")	300#	SWRF		
N2	Return: Stuffing box	20 (3/4")	300#	SWRF		
N3	Level Transmitter	100 (4")	300#	SWRF		
N4	Vent / Pr. Inst.	20 (3/4")	300#	SWRF		
N5 A/B	Level Gauge	20 (3/4")	3000# (SW)	NPT (F)		
N6 A/B	Cooling Water (at reservoir)	15 (1/2")	300#	SWRF		
N6 C/D	Cooling Water (at grade)	20 (3/4")	150#	SWRF		
N7	Drain	20 (3/4")	300#	SWRF		
N8	Fill Port	20 (3/4")	300#	SWRF		
	Resvr. Flange	I.D≥200 (8")	300#	SWRF		

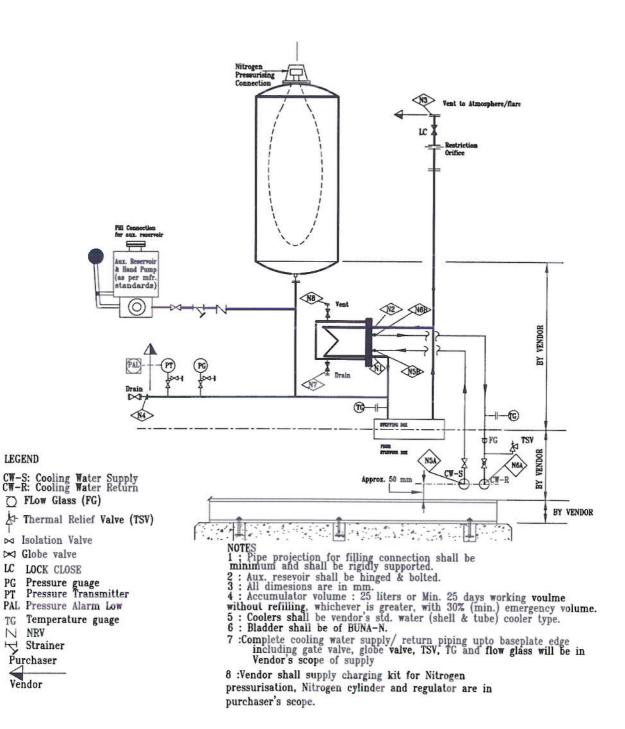
	INSTRUMENTS			
Description	Function	Required	Remark	
Gauge Glass (LG)	Level Indication	YES		
Level Transmitter (LT)	Level Alarm High (LAH)	YES		
Level Transmitter (LT)	Level Alarm Low (LAL)	YES		
Pressure Gauge (PG)	Press. Indication	YES		
Pressure Transmitter (PT)	Press. Alarm Low (PAL)	NO		
Pressure Transmitter (PT)	Press. Alarm High (PAH)	YES		
Temp. Safety Valve (TSV)		YES		
Press. Cont. Valve (PCV)		NO		
Restr. Orifice (RO)		YES		
Press. Safety Valve (PSV)		NO		
Flow Glass (FG)	-	YES		
Temperature Gauge (TG)		NO		

REMARKS

- 1. The Buffer fluid reservoir shall be arranged in accordance with fig G 28 of Annexure- G of API Std 682. In case of any contradiction, the requirements indicated here in shall have precedence over the requirements indicated in API 682.
- 2. The reservoir shall be designed, fabricated & tested in accordance with
 - ISO 15649/ASME B 31.3 using Piping component
 - □ ASME Sec VIII Div 1
- 3. The complete seal system for each stuffing box including the reservoir shall be arranged as one skid and supported/bolted to the base plate in a manner that the projection of any equipment/instruments falls within the confines of base plate. The reservoir and the accessories to be mounted on a structural support furnished by the manufacturer and should not be affected by the pump vibration. In case of between bearing pumps there shall be two such units, one each for each stuffing box mounted on opposite ends of the pump.
- 4. The mechanical design of auxiliary piping shall achieve the following:
 - a) Proper support and protection to prevent damage from vibration or from shipment, operation & maintenance.
 - b) Proper flexibility and normal accessibility for operation, maintenance and thorough cleaning.
 - Installation in a neat and orderly arrangement adapted to the contour of the machine without obstructing access openings.
 - d) Elimination of air pockets by the use of valved vents or non-accumulating piping arrangements.
 - e) Complete drainage through low points without dis-assembly of piping, seal or gland components.
 - f) Reduce the number of potential emission sources and pressure drops by minimising the use of threaded connections, flanges, fittings and valves.
- 5. Refer Instrumentation specification for details of instruments.

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PIPING AND INSTRUMENTATION SCHEMATIC FOR API SEAL FLUSHING PLAN 53B (with Water Cooled Heat Exchanger)



LEGEND

PG

TG

N

Vendor



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DESIGN PARAMETERS	
Optg. Pressure (kg/cm²g) / Optg. Temp (°C)	: As per respective pump data sheets
Design Pressure (kg/cm²g) / Design Temp (°C)	: 40.0 (min.) / Ambient (min.) §
Hydro test pressure (kg/cm²g):	: 1.5 times Design Pressure
MOC of Reservoir	: SS 316L
MOC of Bladder	: BUNA-N

The design of sealing system shall be as per the design parameters indicated above or pressure-temperature rating equal to the maximum discharge pressure & temperature of the pump casing, whichever is higher.

Nozzle	Service	Size, mm (")	Min. ANSI Rating §	Flange type
N1	To:seal	20 (3/4")	300#	SWRF
N2	From Seal	20 (3/4")	300#	SWRF
N3	Vent	15 (1/2")	3000#	SWRF
N4	Drain	20 (3/4")	300#	SWRF
N5A	Cooling water Supply @ grade	20 (3/4")	150#	SWRF
N5 B	Cooling Water Inlet	15 (1/2")	300#	SWRF
N6 A	Cooling Water Return @ grade	20 (3/4")	150#	SWRF
N6 B	Cooling Water Outlet	15 (1/2")	300#	SWRF
N7	HE Drain	15 (1/2")	300#	NPT (F)
N8	HE Vent	15 (1/2")	300#	NPT (F)

	INSTRUMENTS		
Description	Function	Required	Remark
Temperature Gauge (TG)(Barrier Fluid)	Temperature Indication Local	YES	
Pressure Gauge (PG) (Barrier Fluid)	Press. Indication Local	YES	
Pressure Transmitter (PT)	Press. Alarm Low (PAL)	YES	
Temp. Safety Valve (TSV)		YES	
Restr. Orifice (RO)		YES	
Flow Glass (FG)	-	YES	
Temperature Gauge (TG) (CW- R)	Temperature Indication Local	YES	

REMARKS

- 1. The Barrier fluid reservoir shall be arranged in accordance with the schematic shown in the drawing.
- 2. The reservoir shall be designed, fabricated & tested in accordance with
 - ☐ ISO 15649/ASME B 31.3 using Piping component
 - ASME Sec VIII Div 1
- 3. The complete seal system for each stuffing box including the reservoir shall be arranged as one skid and supported/bolted to the base plate in a manner that the projection of any equipment/instruments falls within the confines of base plate. The reservoir and the accessories to be mounted on a structural support furnished by the manufacturer and should not be affected by the pump vibration. In case of between bearing pumps there shall be two such units, one each for each stuffing box mounted on opposite ends of the pump.
- 4. The mechanical design of auxiliary piping shall achieve the following:
 - a) Proper support and protection to prevent damage from vibration or from shipment, operation & maintenance.
 - Proper flexibility and normal accessibility for operation, maintenance and thorough cleaning.
 - Installation in a neat and orderly arrangement adapted to the contour of the machine without obstructing access openings.
 - d) Elimination of air pockets by the use of valved vents or non-accumulating piping arrangements.
 - e) Complete drainage through low points without dis-assembly of piping, seal or gland components.
 - f) Reduce the number of potential emission sources and pressure drops by minimising the use of threaded connections, flanges, fittings and valves.
- 5. Refer Instrumentation specification for details of instruments.



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1									GENE	RAL							
2	Project:	COKE	R-A REV	AMP							Job No.:	A546					
3	Owner:	M/s IO	CL BAR	AUNI							Site:	BARAU	INI				
4	Purchaser:										Unit:	COKER	R-A Un	it No: 6	604		
5	Item No.:	604-PA	\-00-061	A/B							Service:		IONATOR			-	
6	No. Reqd.: 2 (TWO)	Worl	king: 1	(ONE)		Stand	y: 1 (O	NE)	Parallel Operation	Require	d:	☐ Yes	5	■ No	
7	Applicable to	■ Prop	osal					☐ Pur	chase			☐ As B	uilt	•			
8	■ Scope option 8	Informat	ion specifie	ed by pu	ırchaser	· □ Infor	mation Re	eqd. from	& option	left to ve	ndor. Vendor to cross 🗵	the selec	cted option.				
9	Driver: Working	g	E. Mot	or	Stand	by	E. N	lotor	Driver	Supplie	d & Mounted By:	■ Pump	Mfr.	☐ Oth	er		
10		<u> </u>						PERA	TING C	ONDITI							
11	Liquid Handled	t	FRACTI	ONAT	OR BO	оттом	S				Capacity (m ³ /hr): M	lin/Nor/R	ated:	1	0.6 / 21	.2 / 23.3	
	Pumping Temp		Normal		306.8	-314.2	Мах.				Discharge Pressure			5.3			
	Specific Gravit	, ,			0.866	4 - 0.86	85				Suction Pressure: N	Nor./Max	. (kg/cm²,	G) 3	3.3/ 4.9		
14	Vapour Pressu	re at P.	T. (kg/cn	n²,A):	3.85						Diff. Pressure (kg/c	m²) @ Ra	ted Capac	ity: 2	2.0		
15	Viscosity at P.	T. (cP/cs	t): 2.1-2	2.2	Corr.	Eros. B	y: Sulp	hur (Re	m6,7)		Diff. Head (m) @ Ra	ted Capac	city:	2	23.1		
16	Solids in suspe	ension	■ Yes	□ No	Size: R	EM-6		% by wt	. (max.) -	REM-6,7	NPSH Available (m):		5	5.2		
17			l L				MANU	FACTU	RERS S	SPECIF	ICATIONS						
18	Pump Manufacturer:										Model No.:						
19	CONSTRUCTI	ON:	PU	MP T	/PE	• 0	H2 [] BB:	2		PERFORMANCE						
20	Casing Mounting: ■ Centerline □			□ Foot □ Inline			Proposal Curve No										
21	Casing Split:		☐ Axial		■ Rad	dial			•		Visc. Corr. Factor:	Cη	CQ		Сн		
22	Type:	☐ Sing	le Volute)	□ Do	uble Vo	olute			ıser	NPSH Reqd. (Water) (n	NPSH Reqd. (Water) (m):					
23	Casing Conne	ction:	■ Vent		■ Dra	iin		☐ Gau	ige		No. of stages:			Efficie	ncy (%):		
24	Nozzles	Si	ze	A٨	ISI Ra	SI Rating		cing	Pos	ition	Rated BKW(0% To	l.):	kW Max.	BKW rtd	. Imp.: (kV	/)	
25	Suction				300#		RF si	n. fin.			BKW @ MCF(ρ=1.0	0):	kW Rec.	Driver R	ating: (kW)	
26	Discharge				300#		RF sm. fin.				Max.head rtd imp.(r	m):		Cap@ E	BEP(m³/hr)	:	
27	Imp. Ø (mm)	Max:	F	Rated:			Min:		Type:	Closed	MCF (m³/hr):Stable			Therma			
28	Brg.: Type/No.	Radial	:	Т	hrust:			b: Oil			M.A.W.P @ 15°C/P			. •		_/_	
	Cplg.:Make/Ty			lexime	tl w spa		Nonspar	k Guard	■ Yes	□ No	Hydrostatic Test pro	,	• •	:(1.5XI	MAWP)		
	Driver Half cpl				■ Pur	np Mfr.		☐ Oth				n facing coupling end:				CCW	
	Packing Type:			Size:				No. of			Seal flush/Quench	plan:	32, 5		/laterial:		
	Mech. Seal: M			Nodel:				API Co	ode:		Seal flush fluid:			LPM:		/cm ² G/ °C	
	Base Plate Drain			Yes	☐ No		Fdn. Bo		■ Yes	□ No	Seal Barrier fluid:					/cm²G/ °C	
		■ Yes		/latl.:	T		Bal. Dev		■Yes	□ No	Ext. quench fluid:					Kg/cm ² G/ °C	
	Materials (API-):	C-6 (R	tem-6,7)	MOC	AS	TM Gra	des	C.W. Plan :			LPM:	_	/cm²G/ °C	
36	I - Cast Iron		Casing				С				Weight(kg): Pump+Base		-			/er:	
_	B – Bronze		Impeller				С				AUXILIARY PIPING INTERFACE CONNECTIONS (All interface conn.shall be termntd.with a fing. block valves)						
	S – KCS		Inner Ca								(All Interface co	nn.snaii be					
	C - 11-13% Cr h – Hardened	. Sti.	Sleeve S		1						Lantern Ring Inlet/Outle	.+	Size	Kati	ng(ansi	Facing	
	f – Faced				∆Н-ВН	NI .	L C-h				Ext. Seal flush fluid Inle					1	
	K -SS 304L		Casing r	9	_50(mi						Seal Quench fluid Inlet	voullet				-	
42	L -SS 304L		Impeller Shaft	nng			C-h C				Seal pot vent/ drain					1	
	X - AISI 4140		Throttle	Duch			C				Casing vent/ drain					+	
44	Y-		Throat B								C.W Inlet/ Outlet					1	
46	1-		Balance								Base plate drain (only fl	anged)				+	
47					:41	- Di	\/ab.c. a				Casing steam jacket	arigea)				+	
48	□Driver suitab	DIE TOT P	ump star	ting w	ith ope	en Disc.				TG /E A	CH PUMP)						
49				Poo	1d	Witnes			& ILS	13 (EA	CH FUWIF)		lD.	ad	Witnes	oc Obcor	
50	■ Shop Test /	Inchact	ion	Red	. ■	Villes			DCH V~	Dood	■ Per Spec. □ Man	daton	IXE	eqd.	VVILITES	SS Obser	
51	·				_		+ -				■ Per Spec. ⊔ Man n and skid completer		ock				
	■ Hydrostatic								on & re-assembly after								
	■ Performance	e/Source	d Level				ᅡ븜				k of direction of rotat			-	-		
											ec. No. 6-41-0006 R		b Specif				

Remarks:

- 1) Minimum Design Temperature is 5°C.
- 2) Max. Allowable casing working pressure shall not be less than 7.4 kg/cm²G @ 400 ° C.



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- 3) Down Stream Design Pressure is 7.4 kg/cm²G and the maximum suction pressure is 2.4 kg/cm²G. Maximum shut-off pressure, considering max. Suction pressure & max. Specific gravity, including all tolerances shall not exceed the Downstream Design Pressure as indicated above.
- 4) Accessories and Instrumentation shall be as per EIL approved vendors only.
- 5) Unitization of Pump and Driver shall be done in pump manufacturer's shop.
- 6) Corrosion caused by sulphur and erosion caused by coke fines. The size and concentration of coke fines is less than 6 mm and 0.1 WT% respectively. Wear Ring flushing is required. Flushing Liquid type & Pressure will be confirmed during detail engineering.
- 7) Maximum Sulphur = 5.1 wt%.
- 8) Dismantle and inspection of pump after performance test shall be applicable only in case of abnormality in mechanical behavior viz. excessive noise, vibration, bearing temperature rise etc. during performance test

Date	Rev	Prepared by	Approved by
14.07.2014	Α	AJAY/BBS	NK



CENTRIFUGAL PUMP(Special Purpose Process)

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1									GEI	NERAL								
2	Project:	COKER-	A RE	VAMP							Job No.:	A546						
3	Owner:	M/s IOCL	L BAR	RAUNI							Site:	BARAL	JNI					-
4	Purchaser:										Unit:	COKER	R-A	Unit	No:	604		
5	Item No.:	604-PA-0	00-063	3 A/B							Service:	NEW L	EAN KE	RO PL	JMP	S		
6	No. Reqd.: 2 (TWO)	Woi	rking: 1	(ONE)			Standb	y: 1 (0	ONE)	Parallel Operation	Require	d:		∃Ye	es	T	No
7	Applicable to	■ Propos	sal					☐ Pur	chase		1	☐ As B	Built					
8				fied by pu	ırchaser 🗖	Informati	ion R	Regd. from	m & opt	tion left to	vendor. Vendor to cross	X the s	elected op	tion.				
	Driver: Working		E. Mo		Standby				-		ed & Mounted By:				□ Ot	her		
10		5									DITIONS	- r amp						
11	Liquid Handled	ı Lı	EAN Ł	KEROS	ENE						Capacity (m³/hr): Min/Nor/Max: 12.9 /25.8 /28.4							/28.4
12	Pumping Temp		lormal		179.7-187	7.2 Max	ζ.				Discharge Pressure					22.3		
	Specific Gravit	` ,			0.6976 –	6976 - 0.7083					Suction Pressure: N			²,G)	3.6/ 6.3			
14	Vapour Pressu	re at P.T.	. (kg/c	m²,A):	3.64						Diff. Pressure (kg/ci	m²) @ Ra	ated Capa	city:		18.7		
	Viscosity at P.				Corr. /Erc	s. By: \$	Sulp	hur (R	em-6)	Diff. Head (m) @ Ra	ted Capa	city:			268.1		
16	Solids in suspe	ension [Yes	■ No	Size: -			-			NPSH Available (m):				8.0		
17		I .			ı	М	ANU	UFACT	UREF	RS SPE	CIFICATIONS							
18	Pump Manufac	cturer:									Model No.:							
19	CONSTRUCTI	ON:		OH2	2 D B	B2	(Re	m-8)			PERFORMANCE							
20	Casing Mounti	ng: ■	Cent	erline	☐ Foot			nline			Proposal Curve No.							
21	Casing Split:] Axia		■ Radial						Visc. Corr. Factor:			CQ		(Ţ	
22		☐ Single	Volut	te	☐ Double	e Volute				ffuser	NPSH Reqd. (Water) (m	1):				Speed (rpm):		
23	Casing Conne				■ Drain			☐ Gauge			No. of stages:				Efficie		,	
24	Nozzles	Size)	AN	SI Rating		Fac		Po	sition	Rated BKW(0% Tol	,	kW			td. Imp.:	. ,	
25	Suction						n. fin.			BKW @ MCF(ρ=1.0	,	kW			Rating: (' '		
	Discharge				300#			n. fin.			Max.head rtd imp.(r	n):				BEP(m ³	/hr):	
	1 ()			Min:			Type:	Closed	MCF (m³/hr):Stable				herm					
	0 71					ub: Oil			M.A.W.P @ 15°C/P			. •		,	_/			
	Cplg.:Make/Ty			Flexime	l w spacer			_	1	□ No	Hydrostatic Test pre		-					
	Driver Half cpl	g. mounte			■ Pump I	Mfr.				1	Rotation facing cou				□ CV		□ C(
	Packing Type:			Size:				No. of rings: API Code:			Seal flush/Quench	olan:	23,5		.PM:	Materia		
	Mech. Seal: Mase Plate Drain			Model:		Fdn.					Seal flush fluid:						@ Kg/cm²G/ °C	
				■ Yes Matl.:	□ No	Bal.				No No	Seal Barrier fluid:				LPM:		@ Kg/cm²G/ °C@ Kg/cm²G/ °C	
		Yes C			0.5/0					□ No	Ext. quench fluid:	1:			LPM: LPM:		@ Kg/cm²G/ °C@ Kg/cm²G/ °C	
35 36	Materials (API- I - Cast Iron			s):	S-5(Rem	-6) IVIC		ASI	ΓM Gr	ades	C.W. Plan : Weight(kg): Pump+Base	uso i Complina:			.FIVI.		Drive	
	B – Bronze		asing npelle	-		S					AUXILIARY			EACE	CON			
	S – KCS		•	ase pa	rte		,				(All interface							
	C - 11-13% Cr			Packed							(/			ze		ting(AN		Facing
	h – Hardened		leeve		-						Lantern Ring Inlet/Outle	t	31,		· va	9(^!\	,	. uonig
	f – Faced		asing		ΔH-BHN	S-					Ext. Seal flush fluid Inlet				+		+	
	K -SS 304L		npelle		=50(min)	S-					Seal Quench fluid Inlet						\dashv	
43	L -SS 316		haft	.9	l .	X					Seal pot vent/ drain				+		+	
44	X - AISI 4140	TI	hrottle	Bush							Casing vent/ drain						-	
	Y-	TI	hroat	Bush							C.W Inlet/ Outlet						-	
46		В	Balance Drum							Base plate drain (only fla	Base plate drain (only flanged)					_		
47								Casing steam jacket				1		\dashv				
48				3						ESTS (EACH PUMP)		1		1			
49				F	Reqd.	Witnes	SS	Obse	erve	•				Re	eqd \	Witnes	0	bserve
50						■ NPSH	H As Reqd. ■ Per Sp	ec. 🗆 N	/landato	y [
]	■ Visua	l, dimension and ski	d compl	eteness	[
52	i2 ■ Hydrostatic ■ □ □ □						■ Dismantle Inspection & re-assembly after test (Rem-7)											
	■ Performance								_		ation/Check of direc							
54	Applicable Sp	ecificatio	on: AF	PI Std.	610, 10th	Edition	ı, al	ong wi	ith Ell	L Std. S	pec. No. 6-41-0006	Rev. 2,	Job Sp	ecifica	tion			



CENTRIFUGAL PUMP (Special Purpose Process)

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Remarks:

- 1) Minimum Design Temperature is 5°C.
- 2) Max. Allowable casing working pressure shall not be less than 29 kg/cm²G @ 220 ° C.
- 3) Down Stream Design Pressure is 29 kg/cm²G. Maximum shut-off pressure, considering max. Suction pressure & max. Specific gravity, including all tolerances shall not exceed the Downstream Design Pressure as indicated above.
- 4) Accessories and Instrumentation shall be as per EIL approved vendors only.
- 5) Unitization of Pump and Driver shall be done in pump manufacturer's shop.
- 6) Fluid stream has presence of Sulphur @ 1.9 WT%.
- 7) Dismantle and inspection of pump after performance test shall be applicable only in case of abnormality in mechanical behavior viz. excessive noise, vibration, bearing temperature rise etc. during performance test
- 8) Pump construction shall be OH2 or BB2 only. BB2 shall be preferred.

14.07.2014	Α	BBS/AJAY	NK
Date	Rev	Prepared by	Approved by



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1									Ġ	GENER	RAL								
2	Project:	COKER	R-A RE	/AMP									A546						
3	Owner:	M/s IOC	CL BAR	AUNI									BARA						
4	Purchaser:											Unit:	COKE	ER-A	Unit	No: 6	04		
5	Item No.:	604-PA	-00-066	A/B								Service:	CFO I	BOOST	R P	UMP			
6	No. Reqd.: 2 (1	TWO)	Woi	rking: 1	(ONE)			Stan	dby	/: 1 (ON	VE)	Parallel Operation	Requi	red:		l Yes		■ No	
7	Applicable to	■ Prop	osal					□Р	urc	hase			☐ As	Built					
8	■ Scope option &	Informati	on specif	ied by pu	ırchaser	☐ Infor	mation R	eqd. fro	om 8	ያ option	left to ve	ndor. Vendor to cross 🗵	the se	lected opti	on.				
9	Driver: Working	g	E. Mo	tor	Standb	У	E. N	lotor	[Driver S	Supplie	d & Mounted By:	■ Pum	p Mfr.		Othe	er		
10					1		(OPER	ΑT	ING C	ONDITI	ONS		•					
11	Liquid Handled	ı	COKER	RFUEL	OIL							Capacity (m ³ /hr): M	in/Nor	/Rated:		10	0.1 / 20.2	2 / 25.3	
12	Pumping Temp	o. (°C):	Normal		78 (not	te-8)	Мах.					Discharge Pressure (kg/cm²,G):				8.	8.4		
13	Specific Gravity	y at P.T.			0.9105	- 0.94	2					Suction Pressure: N	lor./Ma	ax. (kg/c	m²,G) 5.	4 / 14.5		
14	Vapour Pressu	re at P.	T. (kg/c	m²,A):	0.443							Diff. Pressure (kg/c	m²) @	Rated Cap	acity	: 3			
15	Viscosity at P.7	Γ. (cP/ cst): 11.3	-11.6	Corr. /E	ros. B	y: Sulp	hur (ı	REM	.6)		Diff. Head (m) @ Ra	ted Cap	oacity:		3	3		
16	Solids in suspe	ension	☐ Yes	■ No	Size:			% by	wt. ((max.) –	- 5.1	NPSH Available (m):			8.	.0		
17		•					MANU	FACT	TUR	ERS S	SPECIF	ICATIONS							
18	Pump Manufac	turer:										Model No.:							
19	CONSTRUCTI	ON:	Pl	JMP T	/PE	O	H2 [] в	B2			PERFORMANCE							
20	Casing Mountin	ng:	■ Cent	erline	☐ Foo	t		Inline				Proposal Curve No.							
21	Casing Split:		□ Axia	l	■ Radi	■ Radial				Visc. Corr. Factor:		C			Сн				
22		☐ Sing	le Volut	ie	☐ Dou	ble Vo	lute		☐ Diffuser			NPSH Reqd. (Water) (m	າ):				ed (rpm):		
23	Casing Connection: ■ Vent				■ Drai	■ Drain			aug	је		No. of stages:					ıcy (%):		
24	Nozzles Size Af			A٨	ISI Rati	ng	Fa	cing		Pos	ition	Rated BKW(0% Tol	l.):				Imp.: (kW		
25	Suction				300#		RF s	m. fin				BKW @ MCF(ρ=1.0	,	kWR			ating: (kW)		
26	Discharge				300#		RF s	m. fin				Max.head rtd imp.(r	m):		Ca	ap@ Bl	EP(m³/hr):		
27	Imp. Ø (mm)	Max:		Rated:			Min:			Type:		MCF (m³/hr):Stable				ermal			
28	Brg.: Type/No.	Radial:			hrust:			ıb: Oi l				M.A.W.P @ 15°C/P			• •			_/	
	Cplg.:Make/Ty			Flexime	tl w spac	er	Nonspar	k Guar	d I	Yes	□ No	Hydrostatic Test pre			,G): (′	1.5XN	IAWP)		
30	Driver Half cplo	g. moun			■ Pump Mfr. □ Ot			the	rs		Rotation facing cou				I CW		CCW		
	Packing Type:			Size:				No. o		•		Seal flush/Quench	plan:	53			laterial:		
	Mech. Seal: Ma			Model:				API (Coc	le:		Seal flush fluid:				PM:	_	cm²G/ °C	
	Base Plate Drain				□ No		Fdn. Bo			Yes	□ No	Seal Barrier fluid:			LPM: @ Kg/cm²G				
		■ Yes	— 140	Matl.:	ı		Bal. Dev			□Yes	□ No	-			3				
	Materials (API-			s):	S-5 (R	em-6)	MOC	P	ST	M Gra	des	C.W. Plan:			LF	PM:	_	cm²G/ °C	
	I - Cast Iron		Casing				S					Weight(kg): Pump+Base					Driv		
	B – Bronze		Impelle				S					AUXILIARY PIPING INTERFACE CONNECTIONS (All interface conn.shall be termntd.with a flng. block valves)							
	S – KCS		Inner C				S					(All interface co	nn.shall						
	C - 11-13% Cr.		Sleeve		1							Lantana Diam Inlat/Outla		Siz	ze	Katır	ng(ANSI)	Facing	
	h – Hardened		Sleeve		LALL BUN		L					Lantern Ring Inlet/Outle Ext. Seal flush fluid Inlet						 	
	f – Faced		Casing		∆H-BHN =50(min		S-h					Seal Quench fluid Inlet	Joullet						
	K -SS 304L		Impelle	rring			S-h X					Seal pot vent/ drain							
	L -SS 316		Shaft	Duch			^											1	
	X - AISI 4140		Throttle					-				Casing vent/ drain C.W Inlet/ Outlet							
								Base plate drain (only fla	angod)										
46										Casing steam jacket	angeu)								
	⊔Driver suitab	ie for Pi	ump sta	arting w	ith oper	DISC.					TQ /E ^/	CH PUMP)						<u>. </u>	
48 49						Reqd.		ness			IS (EAL	SITE OWIF)			Ь	eqd.	\\/itnooc	Observ	
	Char Tool /	l									I NIDOL I	As Danid - Danie		Mandai					
	■ Shop Test /					-						As Reqd. ■ Per Spe							
	Material CerHydrostatic	uncates							_			, dimension and skid e Inspection & re-assemb							
	■ Hydrostatic ■ Performance	2/201124	امرما						_			ation/Check of directi	•		.,				
				01 644	610 10	_		_	_			alion/Check of direct			oific	_			

Remarks:

- 1) Max. Allowable casing working pressure shall not be less than **18.3 kg**/cm²G @ 392 ° C.
- 2) Down Stream Design Pressure is 18.3 kg/cm²G and the maximum suction pressure is 14.5 kg/cm²G. Maximum shut-off pressure, considering max. Suction pressure & max.



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Specific gravity, including all tolerances shall not exceed the Downstream Design Pressure as indicated above.

- 3) Accessories and Instrumentation shall be as per EIL approved vendors only.
- **4)** Pump Motor to be sized for end of curve operation. Pump is provided with auto start facility which will be further confirmed.
- 5) Unitisation of Pump and Driver shall be done in pump manufacturer's shop.
- 6) Fluid stream has presence of Sulphur @ 5.1 WT%.
- 7) Dismantle and inspection of pump after performance test shall be applicable only in case of abnormality in mechanical behavior viz. excessive noise, vibration, bearing temperature rise etc. during performance test.
- 8) Pour point (for congealing services) is 45°C. Suitable warm up arrangement shall be provided.

14.07.2014	Α	AJAY/BBS	NK
Date	Rev	Prepared by	Approved by



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1								GENE	RAL						
2	Project:	COKER-	A REV	AMP						Job No.:	A546				
3	Owner:	M/s IOCL	BAR	AUNI						Site:	BARA	UNI			
4	Purchaser:									Unit:	COKE	R-A Un	it No: 6	04	
5	Item No.:	604-PA-0	0-067	A/B						Service:	DELU	GE WATE	R PUM	PS	
	No. Reqd.: 2 ((ONE)		Standb	v: 1 (0	NE)	Parallel Operation			☐ Yes		■ No
	Applicable to				` ,		☐ Pur			'	□ As l				
				ed by nu	rchaser Π Infor	mation Re			left to ve	ndor. Vendor to cross X					
	Driver: Working		E. Mot		Standby										
10	Divor. Working	9	L. 1410t	.01	Otariaby				ONDITI	· · · · · · · · · · · · · · · · · · ·					
	Liquid Handled	ı D	ELUGE	F WAT	FR)	11110	ONDIN	Capacity (m³/hr): M	in/Nor/l	Rated:	1	50 /300	/330
	Pumping Temp				65	Max.				Discharge Pressure				0.9	
	Specific Gravit	, ,	Ommai							Suction Pressure: N				0.3 / 2.4	
	Vapour Pressu		(kg/cm		0.26					Diff. Pressure (kg/ci		, ,		0.6	
	Viscosity at P.			. ,	Corr. /Eros. B	v: H₂S (Rem-5	. 6)		Diff. Head (m) @ Ra				08.1	
	Solids in suspe				Size: 4 mm)· · · <u>· · · · · · · · · · · · · · · · </u>	% by wt		- 0.1	NPSH Available (m		,.	8		
17			.00			MANU	FACTU	RERS	SPECIF	ICATIONS	<u>'</u>				
18	Pump Manufac	turer:								Model No.:					
	CONSTRUCTI		PU	IMP TY	′PE ■ 0	H2 [] BB2)		PERFORMANCE					
	Casing Mountin		Cente		☐ Foot		Inline			Proposal Curve No.					
	Casing Split:] Axial		■ Radial					Visc. Corr. Factor:	C _n	Co		Сн	1
22		☐ Single			☐ Double Vo	lute		☐ Diff	user	NPSH Reqd. (Water) (m			F/L Spe	ed (rpm):	-
23					■ Drain					No. of stages:			Efficie		
	_				SI Rating				sition	Rated BKW(0% Tol	.):	kW Max.	BKW rtd	. Imp.:	
25	Suction				300#		n. fin.			BKW @ MCF(ρ=1.0)):	kW Rec.	Driver R	ating: (kW)
26	Discharge				300#	RF sı	n. fin.			Max.head rtd imp.(r	,	1	Cap@ E	BEP(m³/hr)	:
27	Imp. Ø (mm)	Max:	F	Rated:		Min:		Type:	Closed	MCF (m³/hr):Stable		<u> </u>	Therma	ı	
28	Brg.: Type/No.	Radial:	1	Tł	nrust:	Lu	b: Oil		ı	M.A.W.P @ 15°C/P	.T./Des	ign Temp.	(kg/cm	²,G):/_	
29	Cplg.:Make/Ty	pe:	F	leximet	l w spacer	Nonspar	k Guard	■ Yes	□ No	Hydrostatic Test pre	essure	(kg/cm²,G)	:(1.5XI	MAWP)	
30	Driver Half cplo	g. mounte	d by:		■ Pump Mfr. □ Others				1	Rotation facing cou	pling er	nd:	□ cw		CCW
31	Packing Type:	N	A S	Size:			No. of	rings:		Seal flush/Quench plan: 32 / 61				/laterial:	SS316
32	Mech. Seal: Ma	ake	٨	Model:			API Co	de:		Seal flush fluid:		u .	LPM:	@ Kg	/cm ² G/ °C
33	Base Plate Drain	Rim Type :	•	Yes	□ No	Fdn. Bo	lts:	■ Yes	□ No	Seal Barrier fluid:			LPM:	@ Kg	/cm ² G/ °C
34	Throat Bush:	■ Yes □] No	/latl.:		Bal. Dev	rice:	■Yes	□ No	Ext. quench fluid:			LPM: @ Kg/cm²G		
35	Materials (API-	610 Matl.	Class)):	C-6(Rem-5)	MOC	AS	TM Gra	ades	C.W. Plan :			LPM:	@ Kg	/cm²G/ °C
36	I - Cast Iron	C	asing			С				Weight(kg): Pump+Base				Driv	
-	B – Bronze		npeller			С				AUXILIARY P	IPING	INTERFA	CE CO	NNECTI	SNC
38	S – KCS	In	ner Ca	ase par	ts	С				(All interface con	nn.shall l	be termntd.w			
	C - 11-13% Cr.		leeve F		1							Size	Rati	ng(ANSI)	Facing
	h – Hardened		leeve S			L				Lantern Ring Inlet/Outle					
	f – Faced		asing r	9	∆H-BHN =50(min)	C-h				Ext. Seal flush fluid Inlet	/Outlet				
	K -SS 304L		npeller	ring	-30(IIIIII)	C-h				Seal Quench fluid Inlet					
	L -SS 316		haft			С				Seal pot vent/ drain					
	X - AISI 410		hrottle							Casing vent/ drain					
45	Y-		hroat B							C.W Inlet/ Outlet					
46		В	alance	Drum						Base plate drain (only fla	anged)				
	☐Driver suitab	le for Pur	mp star	rting wi	th open Disc.					Casing steam jacket					
48					1_				TS (EA	CH PUMP)					
49					Reqd.	Witnes	_	serve					Reqd		s Observ
	■ Shop Test /		n		<u> </u>					As Reqd. ■ Per Spe					
	Material Cer	tificates													
	■ Hydrostatic									<u> </u>	•	. ,			
	■ Performance			1011	040 4015 5-15	• • • • • • • • • • • • • • • • • • •				ation/Check of directi					
54	Anniicable Sn	eciticatio	nn. API	i Std (h a Oth Edi	rion ald	ana wit	n ⊢II S	ard. Spe	c. No. 6-41-0006 Re	.v. 2 .l	on Specif	ication		

Remarks:

- 1) Max. Allowable casing working pressure shall not be less than 15.4 kg/cm²G @ 90 ° C.
- 2) Down Stream Design Pressure is 14.6 kg/cm²G and the maximum suction pressure is 2.4 kg/cm²G. Maximum shut-off pressure, considering max. Suction pressure & max. Specific



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gravity, including all tolerances shall not exceed the Downstream Design Pressure as indicated above.

- 3) Accessories and Instrumentation shall be as per EIL approved vendors only.
- 4) Unitisation of Pump and Driver shall be done in pump manufacturer's shop.
- 5) Size and concentration of coke fines is 4mm (max.) and 0.1 WT% (max.) respectively.
- 6) Fluid stream has presence of H_2S @ 1 PPMWT max. The Material of Construction of the Pumps shall meet NACE MR0175/MR0103 requirements. Clause No. 5.12.1.12 of EIL Std. Spec. 6-41-0006 Rev. 2 may please be referred.
- 7) Dismantle and inspection of pump after performance test shall be applicable only in case of abnormality in mechanical behavior viz. excessive noise, vibration, bearing temperature rise etc. during performance test.

14.07.2014	Α	AJAY/BBS Prepared	NK Approved
Date	Rev	bv	by



CENTRIFUGAL PUMP(Special Purpose Process)

Document No. A546-604-16-45-DS-0069 Rev. A Page 1 of 2

1									GEI	NERAL							
2	Project:	COKER										A546					
3	Owner:	M/s IOC	CL BAR	RAUNI								BARAU					
4	Purchaser:											COKER			lo: 604		
5		604-PA											/IR PUMF	S			
6	No. Reqd.: 2 (-		rking: 1	(ONE)			Standb			Parallel Operation				Yes	ļ	■ No
7	Applicable to							☐ Pur				☐ As Bu					
8	■ Scope option 8	k Informati	on speci	fied by pu	ırchaser 🗆	I Inforr	mation F	Reqd. fro	m & opt	tion left to	vendor. Vendor to cross	X the se	ected option	٦.			
9	Driver: Working	g	E. Mo	tor	Standby		E. M	lotor	Drive	r Suppli	ed & Mounted By:	■ Pump l	∕lfr.		Other		
10		'*		<u> </u>				OPER	ATING	G COND	ITIONS						
11	Liquid Handled	t	COKE	R FUEL	OIL						Capacity (m ³ /hr): Mi	in/Nor/Ma	ax:		40.3	/84.3	33 /97
12	Pumping Temp	, ,			382.8-38	7.3 N	Лах.				Discharge Pressure				8.2		
13	Specific Gravit	y at P.T.			0.6993 –	0.73	22				Suction Pressure: N	lor./Max.	(kg/cm²,0	€)	3.1 /	5.44	
14	Vapour Pressu			,							Diff. Pressure (kg/cr	ຠ ²) @ Rat	ed Capacit	y:	5.1		
15	Viscosity at P.	T. (cP/ cst): 0.3		Corr. /Er	os. B	y: Sul p	ohur (R	(em-6		Diff. Head (m) @ Rat		ty:		73		
16	Solids in suspe	ension	☐ Yes	■ No	Size: -			•			NPSH Available (m)):			4		
17							MAN	UFACT	UREF	RS SPE	CIFICATIONS						
18	Pump Manufac	cturer:									Model No.:						
19	CONSTRUCT			OH2		3B2					PERFORMANCE						
20	Casing Mounti	ng:	■ Cent		☐ Foot			nline			Proposal Curve No.						
21	Casing Split:		□ Axia		■ Radia						Visc. Corr. Factor:		С	Q		Сн	
22	Type:	☐ Sing	le Volu	te	☐ Doubl	le Vol				ffuser	NPSH Reqd. (Water) (m	ı):			Speed (r		
23	Casing Conne	ction:	■ Vent		■ Drain			☐ Gau	ige		No. of stages:				iciency		
24	Nozzles	Siz	ze	ANS	SI Rating		Fac	-	Po	sition	Rated BKW(0% Tol	.):			V rtd. Imp		
25	Suction				300#		RF sn	n. fin.			BKW @ MCF(ρ=1.0)):	kW R		ver Ratino	, ,	
26	Discharge				300#		RF sn	n. fin.			Max.head rtd imp.(r	n):		Ca	p@ BEP(m³/hr):	
27	Imp. Ø (mm)	Max:		Rated:		Ν	∕lin:		Type:	Closed	MCF (m³/hr):Stable			The	ermal		
28	Brg.: Type/No.	Radial:			hrust:			ub: Oil			M.A.W.P @ 15°C/P					/	_
29	Cplg.:Make/Ty			Fleximet	l w spacer	.	lonspark	k Guard	■ Yes	□ No	Hydrostatic Test pre	essure (k	g/cm²,G):	(1.5XI	MAWP)		
30	Driver Half cpl	g. moun	ted by:		■ Pump	Mfr.		☐ Oth			Rotation facing cou		:		CW		CCW
31	Packing Type:			Size:				No. of	rings:		Seal flush/Quench p	olan:	32,52		Mate		SS316
32	Mech. Seal: M			Model:				API Co	de:		Seal flush fluid:			LPI	M: @		cm²G/ °C
33	Base Plate Drain		e:	■ Yes	□ No	F	dn. Bol	ts:		,,	Seal Barrier fluid:			LPI	M: @	Ū	cm²G/ °C
34				Matl.:			Bal. Dev				Ext. quench fluid:			LPI	M: @	_	cm²G/ °C
35	Materials (API-	-610 Ma	tl. Clas	s):	S-6(Ren	n-6)	MOC	AST	ΓM Gr	ades	C.W. Plan :			LPI	M: @) Kg/	cm²G/ °C
36	I - Cast Iron		Casing				С				Weight(kg): Pump+Base					Driv	
37	B – Bronze		Impelle	r			С				AUXILIARY	PIPING	INTERFA	CE C	ONNEC	TION	18
	S – KCS			ase par							(All interface of	conn.shall	oe termntd.v				
	C - 11-13% Cr			Packed	1								Size		Rating(ANSI)	Facing
	h – Hardened		Sleeve				L				Lantern Ring Inlet/Outlet						
41	f – Faced		Casing	9	∆H-BHN =50(min)	_	S-h				Ext. Seal flush fluid Inlet	/Outlet					
	K -SS 304L		Impelle	r ring	-00(11111)		S-h				Seal Quench fluid Inlet						
43	L -SS 316		Shaft				Χ				Seal pot vent/ drain						
44	X - AISI 4140		Throttle								Casing vent/ drain						
45	Y-		Throat								C.W Inlet/ Outlet						
46			Balance								Base plate drain (only fla	anged)					
47	☐Driver suitab	ole for P	ump sta	arting wi	ith open l	Disc.					Casing steam jacket						
48										ESTS (EACH PUMP)				. 1		
49				R	leqd.		tness	Obse						_	d Witne	es C	Observe
50	■ Shop Test /	•									l As Reqd. ■ Per Sp					_	
51	■ Material Cer	rtificates									I, dimension and skid						
52	■ Hydrostatic				•	l			_	■ Disma (Rem-7)	ntle Inspection & re-	assembly	after tes	t 🗆			
53	■ Performance	e/Sound	Level								ation/Check of direct	tion of ro	tation			+	
				PI Std. (610, 10th	Edit	ion, al	long w			pec. No. 6-41-0006			ificati	on.		

CENTRIFUGAL PUMP (Special Purpose Process)

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Remarks:

- 1) Minimum Design Temperature is 5°C.
- 2) Max. Allowable casing working pressure shall not be less than 11.9 kg/cm²G @ 430 ° C.
- 3) Down Stream Design Pressure is 11.9 kg/cm²G. Maximum shut-off pressure, considering max. Suction pressure & max. Specific gravity, including all tolerances shall not exceed the Downstream Design Pressure as indicated above.
- 4) Accessories and Instrumentation shall be as per EIL approved vendors only.
- 5) Unitization of Pump and Driver shall be done in pump manufacturer's shop.
- 6) Fluid stream has presence of Sulphur @ 5.1 WT%.
- 7) Dismantle and inspection of pump after performance test shall be applicable only in case of abnormality in mechanical behavior viz. excessive noise, vibration, bearing temperature rise etc. during performance test.
- 8) Pour Point (For Congealing service) shall be 45°C. Suitable warm up arrangement shall be provided.
- 9) Stuffing box shall be LP steam jacketed.

06.08.2014	A	BBS/AJAY	NK
Date	Rev	Prepared by	Approved by

LOADING & PENALTY CRITERIA CENTRIFUGAL PUMPS (Special Purpose Process)

SPECIFICATION No. **A546-604-16-45-LP-5010 Rev. A**Page 1 of 3

LOADING & PENALTY CRITERIA

CENTRIFUGAL PUMPS(Special purpose Process)

PROJECT: COKER CHAMBER REPLACEMENT & ALLIED

MODERNIZATION IN COKER-A

CLIENT : M/s IOCL, BARAUNI

CONSULTANT: M/s EIL

EIL Job No. : A546

Α	16.07.14	Issued with MR	AJAY/BBS	NK	DB
Rev. No	Date	Purpose	Prepared by	Checked by	Approved by



LOADING & PENALTY CRITERIA CENTRIFUGAL PUMPS (Special Purpose Process)

SPECIFICATION No.

A546-604-16-45-LP-5010

Rev. A

Page 2 of 3

1 SCOPE

This specification describes the loading & penalty criteria applicable to Centrifugal Pumps (Special purpose process) and applicable to each pump item (except Item no. 604-PA-00-067 A/B (Deluge Water Pumps)) in this MR.

2 PERFORMANCE GUARANTEES

Loading and penalty criteria shall be based on the guaranteed performance of the Pump. The parameter for loading shall be the BKW of the Pump at the guaranteed (certified) operating point specified in the data sheets.

2.1 **Pumps**

Bidder shall furnish the guaranteed values for BKW of pumps including all losses with zero per cent positive tolerance including errors in instruments and measurement, at the rated operating (i.e. guarantee) point specified in the data sheets.

3 LOADING CRITERIA

3.1 **Total Cost**

The total cost of each pump item (including all working & standby units) for evaluation purposes shall be computed as under:

TOTAL COST OF A PUMP ITEM FOR EVALUATION PURPOSES = A + B + C + DWhere:

A = Capital cost of each pump Item (including all working & standby units) including cost of commissioning spares and special tools & tackles.

B = Cost of Mandatory Spares

C = Differential operating cost as defined hereunder

D = N X 5 X Per diem rate (Supervisory cost)

Where N = No. of pumps including operating as well as standby.

(#) 5 man-days per Centrifugal Pump-Electric Motor Driven pump Package to be considered for supervision and commissioning of each pump.

3.2 Differential operating cost

3.2.1 Differential operating cost (C) is defined as under:

C (in Rupees) = $N_{op} x (BKW_F - BKW_R) x C_F x 8000 x D_F$

Where:

 N_{op} = Number of operating units

 BKW_E = Guaranteed shaft power (kW) for the pump quoted by the bidder under

evaluation.

 $BKW_R =$ Lowest quoted (guaranteed) pump BKW (amongst the technically

acceptable bidders).

 C_F = Cost of Electric Power, <u>9.471</u> Rupees per kWh.

8000 = Number of operating hours per year.

D_F = Discounting factor to arrive at Net Present Value (NPV) based on number of operating years as defined under clause 3.2.2.

3.2.2 Discounting factor (D_F) is defined as under:

$$n = k+1$$

$$D_F = \sum_{n=1}^{\infty} [1 / \{1 + (X/100)\}^n]$$



LOADING & PENALTY CRITERIA CENTRIFUGAL PUMPS (Special Purpose Process)

SPECIFICATION No.

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Where:

k = Number of operating years for which loading is to be done as specified i.e._______Years.

X = Percentage rate of interest 11.4%

 $D_F = 3.2845$

[The above formula considers one year time for start-up of operation.]

3.3 The maximum loading to be applied however shall not exceed <u>10</u> % of the total capital cost of each pump item i.e. (A+B) as defined in 3.1.

4 PENALTY CRITERIA

During the performance test at the vendor's works, in case the pump(s) fail to meet the guaranteed values, the following procedure shall be followed.

4.1 **Pump**

In case during shop performance tests, the BKW consumed by the pump (as defined under clause 2.1) exceeds the stipulated guaranteed value by more than 4% the subject pump gets rejected.

However for excess power (kW) consumed over and above the guaranteed BKW upto a maximum of four percent the bidder shall be penalised for extra energy consumption for each pump having tested BKW greater than the guaranteed value, as defined hereunder:

The penalty shall be worked out on the basis of differential operating cost (P_c) as under:

 P_C (in Rupees) = M_F (BKW_T - BKW_G) x C_F x 8000 x D_F

Where:

 BKW_T = Pump BKW as obtained from shop test results

 $BKW_G = Guaranteed Pump BKW as defined in 2.1.$

 M_F = Multiplying Factor = Number of operating units (N_{op})

Total No. of Units (N)

- - This penalty shall be independent of any other penalties specified elsewhere in the bid/inquiry documents.

SPECIFICATION No.
A546-604-16-45-SU-5010
Rev-A

Page 1 of 5

SITE & UTILITY DATA

PROJECT: COKER-A REVAMP

CLIENT: M/s IOCL-BARAUNI

Issued with MR

Purpose

CONSULTANT: M/s EIL

EIL Job No. : A546

Date

30.07.14

Α

Rev.

No

 NK

Checked &

Approved by

AJAY/BBS

Prepared by



SPECIFICATION No. A546-604-16-45-SU-5010 Rev-A

Page 2 of 5

1. SITE DATA INFORMATION

SITE LOCATION

State : Bihar

Nearest Important Town : Patna (120 KM) Nearest Railway Station : Barauni (10 KM)

METEOROLOGICAL DESIGN DATA

Relevant meteorological design data towards preparing process engineering specifications is as follows:

METEOROLOGICAL	. DATA							
Air temperature max.	/ min.	46 °C / 5 °C						
Design dry bulb	/ wet bulb temperature	46°C / 29°C						
Rainfall								
Annual max recorded	d in 1hour & 24 hour							
Max. recorded in 1 hour 55 mm								
Max. recorded in 24 hour 487 mm								
Design rainfall intens	ity (1 hour)	120 mm/h						
Relative Humidity %								
Maximum		96%						
Minimum		60%						
Barometric Pressure								
Absolute average	ge	750mmHg						
Wind Velocity and Di	rection							
Wind Velocity	Maximum	47 m/s						
	Minimum	17 km/h						
Prevailing Wind Direct	ction	East to West in summer						
Altitude above mean sea level 42.75 m								

Page 3 of 5

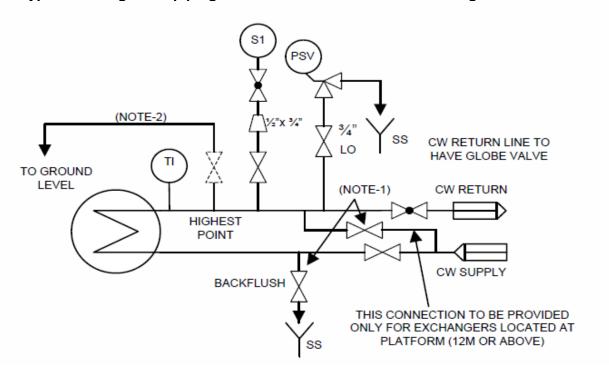
2. UTILITY SPECIFICATIONS

Utility conditions at Unit Battery Limit [All B/L pressures are as measured at grade]

Sl	conditions at Unit Battery Lin Parameter	Minimum	Normal	Maximum	Mech Design					
1		IGH PRESSURE								
	Pressure, kg/cm ² g	32	35	37	44					
	Temperature, °C	370	400	410	450					
2	*		UM PRESSURE (MP) STEAM							
	Pressure, kg/cm ² g	9	10	12	17					
	Temperature, °C	250	275	330	350					
3	•	LOW PRESSURE								
	Pressure, kg/cm ² g	3	3.5	5	7					
	Temperature, °C	150	180	320	320					
4	1	TEAM CONDENS	SATE RETURI	N	<u> </u>					
	Pressure, kg/cm ² g	2.5	3	4.5	7					
	Temperature, °C	90	100-120	165	320					
5		SERVICE V	VATER		<u> </u>					
	Pressure, kg/cm ² g	2.5	3.0	4.5	10.0					
	Temperature, °C		AMB		65					
6	_	CIRCULATING C	OOLING WAT	ER	<u> </u>					
	Supply Pressure, kg/cm ² g	3.8	4.0	4.5	10					
	Return Pressure, kg/cm ² g	2.0	2.0	2.5	10					
	Supply Temperature, °C		33	35	65					
	Return Temperature, °C		42	45	65					
7		DEMINERALIS	EDWATER	ı	l					
	Pressure, kg/cm ² g	4	4	6	11					
	Temperature, °C	15	40	45	75					
8	-	BOILER FEEI	D WATER		1					
	Pressure, kg/cm ² g		59		74					
	Temperature, °C		100		150					
9	-	PLANT	AIR	<u> </u>						
	Pressure, kg/cm ² g	4	6.5	7	13					
	Temperature, °C	15	40	45	65					
10		INSTRUMI	ENT AIR							
	Pressure, kg/cm ² g	4	6.5	7	13					
	Temperature, °C	15	40	45	65					
11		FUEL C	GAS							
	Pressure, kg/cm ² g	1.0	1.8	2.5	7.0					
	Temperature, °C	15	40	45	75					
12		REFINERY F	FUEL OIL		•					
	Supply Pressure, kg/cm ² g	6.0	6.5	7.5	12.0					
	Return Pressure, kg/cm ² g	2.0	2.5		12.0					
	Temperature, °C	75	80	100	137					
13		NITRO	GEN	•						
	Pressure, kg/cm ² g	4	5.5	6.5	11					
	Temperature, °C	15	40	45	65					



3. Typical cooling water piping and instrumentation at heat exchangers



Notes:

- 1. Back flush lines to be provided with same size as main cooling water line when main line size is <=6". One size lower to be provided for main line size upto 10". Two size lower to be provided for main line size>10".
- 2. All pump bridle cooling water lines(for bearing cooling, gland cooling and seal cooling) shall be minimum 1.5"NB.

4. WATER QUALITY (Note 1)

Parameter	Filtered raw	DM Water	BF water	Recirculating cooling water
РН	7.0-7.5	6.8-7.2	8.5-9.5	7.5-8.5
Turbidity, NTU (5 min settled)		NIL		20-50
Total suspended solids, mg/l	15			
Total dissolved solids, mg/l	550-750	< 0.25		1300-2000
Conductivity@20°C, micro mho/cm		<0.5	0.1 - 1.0	
M. Alkalinity, mg/l	420	25	25	100-120
Ca Hardness as CaCO3, mg/l	220			500-550
Total Hardness as CaCO3, mg/l	370	NIL		850-1000
Total cation/ anion as CaCO3, mg/l				

SPECIFICATION No. A546-604-16-45-SU-5010 Rev-A

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Parameter	Filtered raw	DM Water	BF water	Recirculating cooling water
Total reactive Silica as SiO2, mg/l				
Colloidal Silica as SiO2, mg/l	30	<0.02	0.01 ppb	60-100
Sodium as Na, mg/l				
Potassium as K, mg/l				
Chlorides as Cl, mg/l	18	<1.0	NIL	25-100
Free chlorine, mg/l				0.3-1.0
Free Bromine, mg/l				
Sulphates as SO4, mg/l	83			850-1100
Organophosphates as PO4, mg/l				8-10
Inorganophosphates as PO4, mg/l				
Nitrates as NO3, mg/l				
Dissolved oxygen, mg/l				
Total Iron, mg/l	NIL	< 0.05	NIL	1.0-1.5
Total Copper, mg/l				
Lead as Pb, microgram/l				
Manganese as Mn, mg/l				
Zinc as Zn, mg/l				
Chromium as Cr, mg/l				
Polymeric dispersant, mg/l				20-30
Zinc Sulphate as Zn, mg/l				1-2
Benzotriazole, mg/l				
Oil content, mg/l				0-10
KMnO4 value at 100 °C, mg/l				30-60

5. Flare back pressure is to be considered as 1.7 Kg/cm²g.

DATA SHEET NO.
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Rev. A

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UTILITY & LUBRICANT SCHEDULE DATA (ROTATING EQUIPMENT)

PROJECT : COKER-A REVAMP

CLIENT : M/s IOCL-BARAUNI

EIL JOB NO. : A546

NAME OF THE VENDOR:

A	Blank Format Issued with Material Requisitions	AJAY/BBS	NK	NK
Rev. Date	Purpose	Prepared By	Reviewed By	Approved By

Format No. 8-00-0001-F7 Rev. 0

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DATA SHEET NO.

A546-604-16-45-UD-5010 Rev.A

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LEGENDS:

Cooling Requirements

St Stuffing Box Cooling with Steam
S Stuffing Box Cooling with CW
B Bearing Housing Cooling
P Pedestal Cooling
52 Seal Plan 52 cooling
53 Seal Plan 53 cooling

Cooling Plans (As per API Std. 610-8th edition)

A Cooling to bearing housing

B Cooling for bearing housing with parallel flow to gland quench

K Cooling to bearing Housing with parallel flow to seal heat exchangers with FI (As per API Std. 610 8th Ed.)

K(m) Cooling to bearing Housing with parallel flow to seal heat exchangers of plan 52 and seal coolers of plan 23 with FI (As per API 610, 8th Ed.)

D Cooling to Gland Quench

M CW supply to seal heat exchangers of seal plan 23 or 52/53 with FI. (As per API Std. 610, 8th Ed.)

M(m) Parallel flow of CW to seal heat exchangers of plan 52/53 and seal coolers of plan 23 with FI (As per API 610, 8th Ed.)

Others

Psuc nor:: Suction pressure (normal)
Psuc max: Suction pressure (maximum)
Pdis: Discharge Pressure (rated)
Pstb: Stuffing Box Pressure

ABBREVIATIONS:

DMW/BFW DM Water /Boiler Feed Water EG+W Ethylene Glycol + Water

GO Gas Oil

HFLO Heavy Flushing Oil

HGO CR Heavy Gas Oil Circulating Reflux

HGO PDT Heavy Gas Oil Product
HVGO Heavy Vacuum Gas Oil
IT Auto- Ignition temperature

Kero Kerosene

Kero CR Kerosene Circulating Reflux

Kero PDT Kerosene Product

LO Light Oil

LGO CR Light Gas Oil Circulating Reflux

LGO PDT Light GasOil Product
LPG Liquefied Petreoleum Gas
LVGO Light Vacuum Gas Oil

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PL Pumping Liquid

PT Pumping Temperature

PP Pour Point

Pv Vapour Pressure
RCO Reduced Crude Oil
RFN Reformer Feed Naptha
VGO Vacuum Gas Oil
VR Vacuum Residue

NOTES:

- 1. The vendor shall indicate mechanical seal code & seal configuration as per API Std. 682 for the offered sealing arrangement for each item.
- 2. The vendor shall furnish this format duly filled in along with his proposal .If any additional utilities are required, the same may please be added
- 3. Piping for all Utilities (i.e. Cooling water, Instrument air, plant air, LP steam etc.) shall be terminated by Purchaser at the edge of skid/base-plate as single inlet point and single outlet point. Further distribution within the skid shall be by vendor.
- 4. Vendor shall be responsible for supplying all equipment and auxiliary system to be suitable for the purchaser's supplied utilities



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S.	Pump Item No.	Operating	Cooli	ing fluid	Seal flushing			Purchaser's	Remarks			
No.	(Service)	pressure requirements levels (m³/hr per (kg/cm²a) unit)		plans / Cooling plans	Description	Flushing	Buffer / Barrier	Quenc hing	N2	Interfaces		
1	604-PA-061	Daug pari	Ct	(ca/ br)		Fluid:	P.L.		1		MCF line:	
1.	A/B	Psuc nor:	St S:	(kg/hr)		Supply Pr: (kg/cm²g)	1 .L.				MCF Qty:	
		Psuc max: Pdis:	B:			Supply Temp.: (°C)					Casing vent:	
		Pais.	P:			Return Pr: (kg/cm²g)					Flare connection:	
		P SID:	E:			Return Temp: (°C)					Balance leak-off line:	
			52			Quantity: (m3/hr)					Interface to DCS:	
			53			Seal pot Charge capacity (liters)					interface to BCS.	
2.	604-PA-063	Psuc nor:	St	(kg/hr)		Fluid:	P.L				MCF line:	
	A/B	Psuc max:	S:	(119,111)		Supply Pr: (kg/cm²g)					MCF Qty:	
		Pdis:	B:			Supply Temp.: (°C)					Casing vent:	
		P stb:	P:			Return Pr: (kg/cm²g)					Flare connection:	
			E:			Return Temp: (°C)					Balance leak-off line:	
			52			Quantity: (m3/hr)					Interface to DCS:	
			53			Seal pot Charge capacity (liters)						
3.	604-PA-066	Psuc nor:	St	(kg/hr)		Fluid:	External				MCF line:	
	A/B	Psuc max:	S:			Supply Pr: (kg/cm²g)					MCF Qty:	
		Pdis:	B:			Supply Temp.: (°C)					Casing vent:	
		P stb:	P:			Return Pr: (kg/cm²g)					Flare connection:	
			E:			Return Temp: (°C)					Balance leak-off line:	
			52			Quantity: (m3/hr)					Interface to DCS:	
			53			Seal pot Charge capacity (liters)						
4.	604-PA-067	Psuc nor:	St	(kg/hr)		Fluid:	External				MCF line:	
	A/B	Psuc max:	S:			Supply Pr: (kg/cm²g)					MCF Qty:	
		Pdis:	B:			Supply Temp.: (°C)					Casing vent:	
		P stb:	P:			Return Pr: (kg/cm²g)					Flare connection:	



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A546-604-16-45-UD-5010 Rev.A

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S.	Pump Item No.	Operating	Cooling fluid	Seal flushing		Seal Flo	Purchaser's	Remarks			
No.	(Service)	pressure levels (kg/cm²a)	requirements (m³/hr per unit)	plans / Cooling plans	Description	Flushing	Buffer / Barrier	Quenc hing	N2	Interfaces	
			E:		Return Temp: (°C)					Balance leak-off line:	
			52		Quantity: (m3/hr)					Interface to DCS:	
			53		Seal pot Charge capacity (liters)						

LUBRICATION SCHEDULE

LUBRICANTS LIST						CLIENT : M/s IOCL-BARAUNI DATE : VENDOR :		
ITEM NO.	GRADE	MAKE	INTIAL CHARGE	REPLACEMENT CHARGE		MAKE -UP CHARGE		LOCATION TO
	(IS. OR ASTM)		(lit/SET)	QTY. (lit/ SET)	INTERVAL (hours)	QTY. (lit/ SET)	INTERVAL (hours)	LOCATION TO BE USED
604-PA-061 A/B								
604-PA-063 A/B								
604-PA-066 A/B								
604-PA-067 A/B								

VENDOR DATA REQUIREMENTS FOR CENTRIFUGAL PUMPS (SPECIAL PURPOSE)

Document No. A546-604-16-45-VDR-5010 Rev. A

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VENDOR DATA REQUIREMENTS FOR CENTRIFUGAL PUMPS (SPECIAL PURPOSE)

A	08-AUG-2014	ISSUED WITH MR	BBS	NK	NK
Rev.	Date	Purpose	Prepared by	Checked by	Approved by



VENDOR DATA REQUIREMENTS FOR CENTRIFUGAL PUMPS (SPECIAL PURPOSE)

Document No. A546-604-16-45-VDR-5010 Rev. A

Page 2 of 3

VENDOR DATA REQUIREMENTS

The following drawings/documents marked "✓" shall be furnished by the bidder.

CENTRIFUGAL PUMPS - HORIZONTAL

			РО	ST ORD		
S. N O.	DESCRIPTION	WITH BID	FOR REVIEW	FOR RECORD	WITH DATA BOOK (FINAL)	REMARKS
1.	Cross Sectional Drawings (with Bill of Materials & Part Nos.) for Pump			✓	✓	
2.	Precommissioning & commissioning procedures for the complete pump package			✓	✓	
3.	GAD - Sealing system - Seal plan			✓	1	
4.	Cross Sectional Drawings (with Bill of Materials & Part Nos.) - Gear Box/Couplings/Fluid Couplings			✓	✓	
5.	Cross Sectional Drawings (with Bill of Materials & Part Nos.) - Sealing system - Mechanical seal		*		✓	
6.	Test Procedure(s) : MRT, Performance test, NPSH test, Complete unit test		✓		✓	@
7.	Dynamic balancing report (as applicable)			✓	✓	
8.	Analysis Reports - Lateral critical speed analysis / Torsional critical speed analysis			✓	1	
9.	Residual Unbalance check / Damped unbalance response Analysis			✓	✓	
10.	Rotor mechanical and electrical runout for driven equipment with noncontacting vibration probes			✓	✓	
	General Arrangement & Foundation drawing showing main as well as all assosciated equipment / skids (driven equipment, drive transmission devices, driver (turbine / motor / engine), lube oil system, Fuel oil system, local guage board, local control panel, etc.) with interface connection, maintenance space, cable trays, table of termination points and details of foundation bolts, their location, foundation bolt pocket dimensions, foundation load data (static & dynamic), estimated quantity & detai		✓		✓	
12.	Data Sheets for Couplings		✓		1	
13.	List of Mandatory Spares (indicating exact name of the part, part no. and material of construction)	*	*		✓	
14.	Quotation for recommended spare parts for two years of normal operation (indicating exact name of the part, part no. and material of construction)	4		•	✓	
15.	List of recommended commissioning spares (indicating exact name of the part, part no. and material of construction)	*		✓	✓	



VENDOR DATA REQUIREMENTS FOR CENTRIFUGAL PUMPS (SPECIAL PURPOSE)

Document No. A546-604-16-45-VDR-5010 Rev. A

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S.			РО	ST ORD		
N O.	DESCRIPTION	WITH BID	FOR REVIEW	FOR RECORD	WITH DATA BOOK (FINAL)	REMARKS
16.	List of recommended Special Tools & Tackles (indicating exact name of the part and part no.)	✓		*	*	
17.	List of Deviations to specifications/datasheets/standards of MR	✓	✓			
18.	Filled in experience record proforma for main equipment and its driver	✓		*		
19.	Allowable thermal movements pump / steam turbine suction and discharge nozzles			*	*	
20.	Tabulation of Utility consumption data including electric load data, schedule of lubricants, chemicals & consumables with specifications			*	*	
21.	List of loose supply items in vendor's scope, to be installed in purchaser's piping			*	*	
22.	GAD for Pump			1	1	
23.	Test Procedure(s): Witness tests as specified in data sheets / other specs enclosed in the inquiry / MR or as required by approved ITP/QAP			*	*	@
24.	Wk² / GD² value of equipment rotor system referred to driver shaft			*	*	
25.	Curve for pump power-shaft speed v/s torque			1	1	
26.	Installation, Operation & Maintenance manuals - Pump			1	*	
27.	Data Sheets alongwith performance curves - Pump	*	1		1	

Notes:

- 1. "TICK" denotes applicability.
- 2. Post order, drawing / document review shall commence only after approval of Document Control Index (DCI).
- 3. All post order documents shall be submitted / approved through EIL eDMS portal.
- 4. Final documentation shall be submitted in hard copy (Six prints) and soft (two CDs/DVDs) in addition to submission through EIL eDMS.
- 5. Refer 6-78-0001: Specification for quality management system from Bidders.
- 6. Refer 6-78-0003: Specification for documentation requirement from Suppliers.
- 7. All drawings & documents shall be submitted in A4 or A3 paper sizes. Documents in higher paper size shall be submitted in exceptional circumstances or as indicated in the MR/Tender.
- 8. Post order- The schedule of drawing / data submission shall be mutually agreed between EIL & the bidder / contractor / supplier during finalization of Document Control Index (DCI).
- 9. "@" indicates submission of documents to Inspection Agency.
- 10. Bill of Material shall form part of the respective drawing.
- 11. Also refer other department's VDR :-
- 12. Electrical
- 13. Instrumentation



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Format Rev 1 Issue Date: 01/07/2009

EXPERIENCE RECORD - CENTRIFUGAL PUMP (HORIZONTAL)(One/Two Stage)

SERVICE :

ITEM NUMBER. :

VENDOR. :

INSTRUCTIONS TO BIDDERS:

- 1. This proforma duly filled in shall be submitted for each item separately, alongwith the bid.
- 2. Since the information requested in this proforma will be utilised to assess provenness of offered model, it is in the interest of the equipment manufacturer to pick up those cases out of total list of references which most closely match with the offered model. The equipment manufacturer shall also ensure that each & every information asked for is furnished and the same is correct and complete in all respects. **Incorrect information furnished in this proforma shall render the bid liable for rejection.**
- 3. While furnishing the materials, where asked for, the equipment manufacturer shall furnish ASTM equivalents also.
- 4. For the referred installations, the equipment manufacturer shall indicate the name of the person (alongwith his address, telephone no., fax no./email-id etc.) who may be contacted by the Purchaser / his representative, if felt necessary.
- 5. The equipment manufacturer shall also furnish along with the bid his standard reference list for the offered equipment model manufactured and supplied by him.
- 6. The equipment manufacturer shall clarify the meaning of each letter / digit used in the model designation below:

Description of Model designation system:



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Format Rev 1 Issue Date: 01/07/2009

SL.	PARAMETER	INFORMATION ON	INFORMATION C	REMARKS		
NO.		PROPOSED MODEL	Ref 1	Ref2	Ref3	
1.	2.	3.	4.	5.	6.	7.
1	GENERAL					
1.1	Cross reference to manufacturer's Standard Reference list					
1.2	Make					
1.3	Model Number					
1.4	Number of units supplied					
1.5	Type of driver (Electric Motor / Steam Turbine / Gas Turbine / IC Engine)					
1.6	Driver rated kW / Speed(rpm)					
1.7	Drive (Fixed Speed / Variable Speed / Variable Frequency)					
1.8	Shop where pump is designed, manufactured, packaged, tested & supplied with address					
2	OPERATING CONDITIONS					
2.1	Fluid handled					
2.2	Fluid temperature (Min / Max) °C					
2.3	Capacity (m³/hr)					
2.4	Suction pressure (kg/cm²,a)					
2.5	Differential Head, Rated (m)					
2.6	Differential Pressure, Rated (kg/cm²)					
2.7	Discharge Pressure (Kg/cm2 G)					
2.8	NPSHR (m)					
2.9	Efficiency					
2.10	BKW, Rated					
2.11	Minimum Continuous Stable Flow, (m ³ /hr)					
2.12	Rated Speed					
2.13	Speed range for variable speed drive					



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Format Rev 1 Issue Date: 01/07/2009

SL.	PARAMETER	INFORMATION ON	INFORMATION C	REMARKS		
NO.		PROPOSED MODEL	Ref 1	Ref2	Ref3	
1.	2.	3.	4.	5.	6.	7.
2.14	MAWP casing (kg/cm²G) @ 15°C @ pumping temperature					
3	CONSTRUCTION					
3.1	No. of stages (single / two)					
3.2	Casing split (Axial / Radial)					
3.3	Impeller diameter - Rated/ Maximum / Minimum (mm)					
3.4	Whether the proposed model and reference models have identical hydraulic design (for impeller / diffuser / volute)					
3.5	Sealing Element (packing / mechanical seal)					
3.6	Type of mechanical seal (Single / Double)					
3.7	API Sealing Plan No.					
3.8	API Cooling Plan					
4	MATERIAL OF CONSTRUCTION					
4.1	API - 610 Material Code					
4.2	Casing					
4.3	Impellers					
4.4	Shaft					
5	OTHER INFORMATION ON INSTALLATIONS					
5.1	Date of supply of entire unit					
5.2	Date of commissioning of entire unit					
5.3	No. of operating hours completed as on the date of issue of material requisition					
5.4	Major Problems encountered					
5.5	Name of plant					



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Format Rev 1 Issue Date: 01/07/2009

SL.	PARAMETER	INFORMATION ON	INFORMATION ON	REMARKS		
NO.		PROPOSED MODEL	Ref 1	Ref2	Ref3	
1.	2.	3.	4.	5.	6.	7.
5.6	Purchaser's Name and Address					
	Name (Company / Organization)					
	Name of Contact Person					
	Address					
	Telephone No.					
	Fax No.					
	email-id					

उपकेन्द्रीय पम्पों के लिए मानक विनिर्देश विशिष्ठ प्रयोजन प्रक्रिया पम्प

STANDARD SPECIFICATION FOR CENTRIFUGAL PUMPS (SPECIAL PURPOSE PROCESS SERVICE)

				,	Approved by	
Rev.	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
0	13.10.2005	Issued as Standard Specification	DB	KDS	RK	VJN
1	21.03.2011	Re-affirmed and Reissued	SPS	DB	AKN	DM
2	13.02.2013	Revised & Issued as Standard Specification	JSD	тк	DB	DM
			JAMAS	and Some		Smel



STANDARD SPECIFICATION No. 6-41-0006 Rev. 2

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Abbreviations:

API : American Petroleum Institute

ASME : The American Society of Mechanical Engineers EDMS : Electronic Document Management System

EQC : Equipment Qualification Criteria
ISA : Instrumentation Society of America
MAWP : Maximum Allowable Working Pressure

MKS : Meter, Kilogram, Seconds

MOP : Main Oil Pump

P&ID : Piping and Instrumentation Diagram

PTC : Power Test Codes
PTR : Proven Track Record
VDR : Vendor Data Requirements

Rotating Equipment Standards Committee

Convenor: Mr. Dinesh Bhatia

Members: Mr. Nalin Kumar

Mr. Tarun Kumar Mr. Anukul Mandal Mr. Rakesh Mishra Mr. JS Duggal Mr. M.P Jain



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1 SCOPE

- i. This specification together with the attendant Data Sheets and other specifications/attachments to inquiry / order defines the minimum requirements for vertical and horizontal centrifugal pumps including pumps running in reverse direction as hydraulic power recovery turbines and their accessories / auxiliaries for use in the petroleum, petrochemical and natural gas industries.
- ii. Vendor shall make all possible efforts to comply strictly with the requirements of this specification and other specifications/attachments to inquiry/order.

In case deviations are considered essential by the vendor (after exhausting all possible efforts) these shall be separately listed in the vendor's proposal under separate section titled as "List of deviations/exceptions to the inquiry document". Deviation shall be listed separately for each document with cross-reference to Page No./Section/Clause No./Para etc. of the respective document supported with proper reasons for the deviation for purchaser's consideration. Any deviation not listed under the above section, even if reflected in any other portion of the proposal shall not be considered applicable.

No deviation or exception shall be permitted without the written approval of the purchaser.

Compliance with this specification shall not relieve the vendor of the responsibility of furnishing equipment and accessories/auxiliaries of proper design, materials and workmanship to meet the specified start up and operating conditions.

In case the vendor considers requirement of additional instrumentation, controls, safety devices and any other accessories/auxiliaries essential for safe and satisfactory operation of the equipment, he shall recommend the same along with reasons in a separate section along with his proposal and include the same in his scope of supply.

1A CONFLICTING REQUIREMENTS

In case of conflict between this specification and the attendant data sheets, job specifications (if any) and other attached specification the following order of precedence shall govern:

- 1. Equipment Data Sheets.
- 2. Job Specifications (if any)
- 3. P&ID's (if any)
- 4. This specification
- 5. Other specifications
- 6. Other referred codes and standards



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1B EQUIPMENT QUALIFICATION CRITERIA

- Unless otherwise specified elsewhere, the Equipment Qualification Criteria (EQC) specified vide para 1B.2 thru 1B.6 of this specification shall be applied for acceptance of the offered pump model and its manufacturer.
- a)The vendor shall be an established manufacturer of API-610 centrifugal pumps having adequate design, engineering, manufacturing, packaging and testing facilities for pumps and shall be the single point responsibility vendor for the complete centrifugal pump package.
 - b) The vendor shall have designed, engineered, packaged, tested and supplied, in the last TEN (10) years, from the proposed manufacturing plant, at least ONE (1) centrifugal pump package with same type of driver having similar driver power.

As a minimum, this package shall have completed ONE Year of satisfactory operation at site, as on the bid due date.

a) The pump model offered shall be from the existing pump model series and shall be from the regular manufacturing range of the vendor. The mechanical as well as the hydraulic performance (including NPSHR) for the complete range of operation of the offered model shall have been established in the shop test.

The offered pump model shall meet the minimum service and manufacturing experience requirements specified in clause# 1B.3 b) below.

b) Pumps shall be identical in terms of Hydraulics and similar in terms of Power Rating, Inlet flow, Differential Head, Operating Pressure & Temperature, Pumping Liquid, Speed, Number & Type of Impellers, Mechanical Design, Materials, Bearing span (applicable for between bearing pumps), Column Length (applicable for vertically suspended pumps) etc. as compared to at least ONE (1) unit of the proposed model designed, manufactured, tested and supplied from the proposed manufacturing plant in the last TEN (10) years and the reference unit shall have completed ONE year of satisfactory operation at site, as on the bid due date.

In case all the above parameters are not available from single past reference, more than one reference can be cited/considered to satisfy the above qualification requirement.

- In case the vendor is a licensee / member of a group company (As defined in 1B.6 below) and does not meet on his own, the experience criteria of clause# 1B.3 b), the vendor can substitute the references of his Collaborator (licensor) / another member of the group company, who shall also be a regular manufacturer of the proposed pump model, provided the following conditions are met by the vendor:
- 1B.4.1 The vendor shall be a regular & established manufacturer of API 610 centrifugal pumps and shall have supplied smaller & larger sizes of pump models of the same series, from the proposed manufacturing plant and proves to the satisfaction of the purchaser that the vendor does possess the manufacturing & testing facilities for the offered pump model.
- 1B.4.2 The vendor's collaborator (licensor) / the member of group company whose references are being used to establish proven track record of the proposed pump model, meets the criteria as per 1B.3 above.
- 1B.4.3 The vendor's license agreement is valid and continues to remain valid till, at least TWO years after the delivery of the pumps.



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- 1B.4.4 The vendor imports as a minimum the following critical components (including components required for spare parts) from his Collaborator (licensor)/Group Company or their sub-vendors:
 - Impellers/Diffusers (fully machined)
 - Complete Rotor Assembly (dynamically balanced) for multi-stage pumps
 - Casing (proof machined, hydrostatically tested)
 - Bearing Bracket.

The vendor need not import the components defined above, if the same have been designed, manufactured, assembled, tested & supplied by the vendor, in the past from the vendor's proposed manufacturing plant and such references have completed ONE year of satisfactory operation at site as on the bid due date.

- The vendor shall have adequate testing facilities and shall carry out all the inspection and tests as specified in the inquiry/order at the proposed manufacturing plant (except for tests specified in 1B.4.4 above, i.e. dynamic balancing & hydrostatic test) from where the vendor intends to supply the proposed pump model.
- 1B.4.6 The vendor shall indicate the details of such arrangement in the proposal.
- In case the vendor is a licensee / member of a group company (As defined in 1B.6 below) and does not possess the manufacturing experience of the proposed pump models at his own manufacturing plant as per Clause 1B.3 and 1B.4 above, the vendor may propose to supply the complete package with duly performance tested bareshaft pump sourced from the vendor's licensor / another member of the group company, who shall be a regular manufacturer of the proposed pump model, provided the following requirements are met:
- 1B.5.1 The vendor shall be a regular & established manufacturer of API 610 centrifugal pumps and shall be a licensee / member of group company (As defined in 1B.6 below) from where the bareshaft pump is proposed to be sourced.
- 1B.5.2 a) The vendor's license agreement is valid and continues to remain valid till, at least TWO years after the delivery of the pumps. Necessary documents to establish that vendor has requisite facilities and has been authorised to package the proposed pump model shall be furnished in the proposal.
 - b) In case of member of group company also, vendor to furnish requisite documents from group company to establish that vendor has requisite facilities and has been authorised to package the proposed pump model.
- 1B.5.3 The vendor's collaborator (licensor) / the member of group company whose references are being used to establish proven track record of the proposed pump model, meets the criteria as per 1B.3 above.
- 1B.5.4 The vendor shall have adequate equipment handling and testing facilities and shall carry out the Unitization/Complete Unit Test (As applicable) of the complete pump package at his shop.

Hydrostatic test, Performance Test, Mechanical Run Test, Sound & Vibration Level Test, NPSH Test, Dismantle inspection and reassembly after the running test of the bareshaft pump shall be carried out at the pump manufacturer's shop i.e. the shop from where the pump is proposed to be sourced. All the above tests at pump manufacturer's shop shall be duly witnessed as specified/required in Inquiry document. The vendor shall furnish the test certificates for tests carried out at pump manufacturer's shop at the time of final inspection.



STANDARD SPECIFICATION No. 6-41-0006 Rev. 2

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1B.5.5 The vendor shall indicate details of such arrangement in the proposal.

- 1B.6 For the purpose of Cl. 1B, Group Company shall mean one of the following:
 - a) Wholly owned subsidiary of the bidder.
 - b) Principal of whom the bidder is a wholly owned subsidiary.
 - Another wholly owned subsidiary of the Principal of whom the bidder is a
 wholly owned subsidiary.
 Necessary documents to justify above shall be furnished in the proposal.

1B.7 PROVEN TRACK RECORD (PTR)

The vendor shall complete the Experience Record Proforma's enclosed with the inquiry document to amply prove that the offered pumps meet the EQC for technical acceptance. Special attention is drawn to applications involving high suction pressure, high/low operating temperature and low NPSHR. The vendor shall also identify the imported components against each specific reference in the PTR. The vendor may furnish additional information to justify that the EQC is being met. In addition, manufacturer's catalogue and general reference list for Centrifugal Pumps shall also be furnished along with the proposal.

1C AMENDMENTS/SUPPLEMENTS TO API STANDARD 610

- 1C.1 Except as modified herein, the centrifugal pumps shall be designed, manufactured, tested and supplied strictly in accordance with the API Standard 610 Centrifugal Pumps for Petroleum, Petrochemical and Natural gas industries, Tenth Edition, October 2004.
- 1C.2 Except for new paragraphs, the number and title of the paragraphs in this specification correspond to the respective sections and paragraphs of the above standard. Paragraphs not addressed in this specification shall be strictly in accordance to API Standard 610, Tenth Edition, October 2004 requirements.

The word in parenthesis following the number or title of a paragraph indicates the following:

(Addition) : An addition to a part, section or paragraph referred to.

(Modification) : An amplification or rewording has been made to a part of the

corresponding section or paragraph but not a substitution replacing

the entire section or paragraph.

(Substitution) : A substitution has been made for the corresponding section or

paragraph of the standard in its totality.

(New) : A new section or paragraph having no corresponding section or

paragraph in the Standard.

(Delete) : The paragraph is deleted.



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1 SCOPE

Paragraph 1 of API Standard 610 - Centrifugal Pumps for Petroleum, Petrochemical and Natural Gas industries, Tenth Edition, October 2004 stands modified as per para 1, para 1A, para 1B and para 1C above.

2 NORMATIVE REFERENCES (Addition)

Add the following after NACE MR0175:

NACE MR0103, Materials resistant to sulfide stress cracking in corrosive petroleum refining environments (item no. 21305)

3 TERMS AND DEFINITIONS

3.20 Maximum Discharge Pressure (Modification)

Replace 'normal relative density' by 'maximum specified relative density at any specified operating condition'.

4 CLASSIFICATION AND DESIGNATION

4.3 Units and Governing Requirements

4.3.1 (Modification)

Unless otherwise specified, MKS system of units shall be used.

5 BASIC DESIGN

5.1 General

5.1.10 (Addition)

Pumps where difference between NPSHA and NPSHR from quoted minimum flow to rated flow is less than 0.6 meter are not acceptable. The said NPSHR value shall correspond to the maximum value of NPSHR from rated flow down to the recommended minimum continuous stable flow specified by the vendor. However, in case of parallel operation and/or autostart against open discharge valve condition, NPSHR at end of curve shall not exceed specified NPSHA in addition to above margin requirement.

Pumps fitted with inducers for reducing NPSHR are not acceptable.

5.1.13 (Substitution)

Pumps shall have stable head/flowrate curves (continuous head rise to shutoff) for all applications. If parallel operation is specified, the head rise from rated point to shutoff shall be at least 10%. Unless otherwise specified, discharge orifice shall not be used to achieve required head rise to shut off in case of parallel operation.

5.1.14 (Substitution)

Pumps shall have preferred operating region of 70% to 120% of best efficiency flowrate of the pump as furnished. Rated flow shall be within 110% of best efficiency flowrate of the pump as furnished. Vendor shall indicate "Preferred Operating Range" and "Allowable Operating Range" on the characteristic curve.

5.1.16 (Modification)

The last sentence of this para reading "the equipment...for guidance" stands substituted with the following:

Unless otherwise specified, the maximum permissible sound level shall not exceed 88 dBA measured at one (1) meter in any direction from pump train for the recommended range of operation.



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5.1.22 (Modification)

Unless otherwise specified, water cooling systems (jackets, heat exchangers and so forth) shall be designed for the following conditions on the water side:

1.5 - 2.5 m/sec. Velocity over heat exchanger surface ∃ 8.0 kg/cm²g Maximum Allowable Working Pressure (MAWP) \exists 12.0 kg/cm²g Test Pressure (1.5 X MAWP) Maximum Pressure Drop 1.0 kg/cm² 33EC Maximum Inlet Temperature Maximum Outlet Temperature 45EC 12EC Maximum Temperature Rise Minimum Temperature Rise 6EC

Fouling Factor on Water Side : 0.0004 m² hrEC/kcal

Shell Side Corrosion allowance (not for tubes) : 3.2 mm

5.1.30 (Addition)

Unless otherwise specified, equipment shall be designed to be suitable for outdoor installation without a roof.

5.1.32 (New)

For balancing axial thrust in multi-stage pumps, only the following arrangements shall be used:

- Opposed arrangements of impellers.
- A balancing piston

5.1.33 (New)

For rated flows exceeding 1000 m³/Hr, only "Between Bearing Type" pump shall be supplied.

5.2 Pump Types (Modification)

Unless otherwise specified, pump types as listed in Table 2 shall not be offered.

5.3 Pressure Casings

5.3.1 (Substitution)

The maximum discharge pressure shall be the maximum suction pressure plus the maximum differential pressure (including the allowable positive performance tolerance) the pump is able to develop when operating with the furnished impeller at the rated speed and specified maximum relative density (specific gravity).

5.3.3 (Modification)

The 'NOTE' stands modified as under:

Vendor to note that the criteria specified in a) above shall also be used for design of purchaser's associated piping system.

5.3.6 (Modification)

Regions of vertically suspended, double-casing and horizontal multistage pumps (pumps with three or more stages) that are subject only to suction pressure shall be designed for the same MAWP as the discharge section.

5.3.11 (Modification)

The words "except as allowed in 8.2.1.2" stand deleted.

5.5 External Nozzle Forces and Moments



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5.5.1 (Modification)

The pump's pressure casing shall be suitable to withstand twice the forces and moments in Table 2-1A (2-1B) applied simultaneously to the pump through each nozzle, plus internal pressure, without distortion that would impair operation of the pump or seal.

Note: Vendor to note that the above criteria shall be used for design of purchaser's associated piping system.

5.7 Wear Rings and Running Clearances

5.7.3 (Modification)

Tack welding shall not be employed for fitting of the wear rings.

5.7.4c) (Modification)

Non-metallic wear rings, if offered, shall be subject to purchaser's specific approval.

5.7.4d) (New)

The maximum permissible running clearances shall not be less than twice the new running clearances.

5.8 Mechanical Shaft Seals

5.8.1 (Addition)

For the applicable flushing plans, the vendor shall also include in his scope of supply, all items shown as optional items in Annexure D of API standard 682 (Standard Flush Plan and auxiliary Hardware) along with other additional specified/ required items, if any.

5.9 Dynamics

5.9.2.6 (Modification)

Replace the words 'If specified' by 'If torsional analysis is performed'.

5.9.3 VIBRATION

5.9.3.3 (Modification)

The words 'if specified' in the last sentence stand deleted.

5.10 Bearings and Bearing Housings

5.10.2 BEARING HOUSINGS

5.10.2.7 (Modification)

Bearing housings shall be equipped with suitable replaceable noncontact type bearing isolators where shaft passes through the housing.

5.10.2.12 (Substitution)

A flat surface at least 25 mm in diameter shall be supplied for the location of magnetic based vibration measuring equipment, whether or not vibration measuring equipment is included in the vendor's scope of supply.

5.10.2.13 (New)

Bearing housing shall be equipped with magnetic drain plug except for multistage pumps where vendor's standard design may not permit this.

5.11 Lubrication

5.11.3 (Substitution)

Provision shall be made for pure/purge oil mist lubrication as specified.



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5.12 Materials

5.12.1.6c) (Substitution)

Unless otherwise specified, casing in cast iron construction shall not be offered.

5.12.1.8 (Modification)

The words 'if specified' stand deleted.

5.12.1.12 (Modification)

Where even trace quantities of wet H2S are indicated to be present, reduced hardness materials in accordance with NACE MR0175/MR0103 shall be provided by the vendor.

5.12.2.5 (Modification)

The words 'if specified' stand deleted.

The second sentence also stands deleted.

5.12.3.4 (Modification)

e) Requirements of additional examination shall be as specified vide clause 7.2.1.3 of this specification.

5.12.4.3 (Modification)

ASME Sec VIII, Div 1 shall apply with regard to impact testing requirements.

6 ACCESSORIES

6.1 Drivers

6.1.3 (Modification)

Electric motor drivers shall have a maximum continuous rating (MCR) (i.e. service factor equal to 1) not lower than the following unless higher rating is dictated by the Note 1 and / or Note 2:

Pump Rated BKW	Motor MCR (% of Pump Rated BKW
Pump Kateu bikw	MOTOL MICK (% OF LAMP MATER DIX 44

Up-to 22 kW : To suit maximum BKW indicated on pump data sheet

or 125% of rated pump BKW, whichever is higher.

22 kW to 55 kW : 115% Higher than 55 kW : 110%

The electric motor shall be suitable for the electrical area classification specified on the data sheet.

Note:

- 1. The motor nameplate rating for pumps under parallel operation or for pumps with auto-start operation shall not be less than the max. BKW indicated on pump data sheet (maximum power at any point on the pump performance curve from shutoff to end of the curve for the rated impeller) or shall have the specified margin as per this clause whichever is greater. The pump motors shall also be suitable for start-up under open discharge valve condition.
- 2. The motor nameplate rating for applications where the specific gravity of pumped fluid is less than 1.0 shall either be 100% of the BKW of pump at minimum continuous stable flow with clean cold water of sp. gravity 1.0 or shall have the specified margin as per this clause, whichever is greater.



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6.1.8 (Modification)

Unless otherwise specified, steam turbine drivers shall be sized to deliver continuously 110% of pump rated power at minimum inlet and maximum exhaust steam conditions.

The steam turbine rating (with minimum inlet and maximum exhaust steam conditions) for pumps under parallel operation or for pumps with auto-start operation shall not be less than the max. BKW indicated on pump data sheet (maximum power at any point on the pump performance curve from shutoff to end of the curve for the rated impeller). The turbine shall also be suitable for start-up under open discharge valve condition.

In any case, Turbine Rating shall be at least equal to the Motor Rating of the standby pump.

6.2 Couplings and Guards

6.2.3 (Modification)

The words 'if specified' stand deleted

6.2.4 (Substitution)

Unless otherwise specified, all couplings required for multistage pump package(s) (greater than two stages) shall conform to API standard 671 where either the driver rating is greater than 160 kW or the maximum continuous speed is greater than 3000 rpm.

However in case of gear box driven multistage pump units, both low speed and high speed couplings shall conform to API standard 671 if any of the above criteria of speed or power is satisfied.

6.2.7 (Addition)

The coupling service factor shall not be less than 1.5 over the driver rating.

6.2.14 a) (Addition)

Coupling guard shall be open at the bottom to permit manual shaft rotation.

6.2.14 c) (Modification)

Coupling guard shall be fabricated from non-sparking material.

6.3 Base Plates

6.3.1 (Addition)

Pumps in corrosive service shall have provision to collect and drain the leakage from mechanical seal or packing, through a drip pan of metallurgy equivalent or superior to pump casing. Leakages from drip pan shall be piped to base-plate with a flanged connection for onward disposal by purchaser. Where the design of bearing prohibits provision of drip pan, the material of bearing bracket shall be suitable for the corrosive service.

6.3.3 (Modification)

Replace "if specified" by "For all multistage pumps".

6.3.6 (Modification)

The vendor shall furnish the results of the pipe load test data for the proposed pump model(s) along with their proposal indicating the shaft deflections at coupling end. In case pipe load test has not been conducted in the past, the vendor shall demonstrate the pipe load test (Either Physical Testing or Computer Simulation Study) for the proposed pump model(s) at their manufacturing shops within four months of placement of order.

6.3.19 (Modification)

The pump manufacturer shall furnish the anchor bolts.



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6.3.21 (New)

Skid layout of pump trains along-with their auxiliary systems (i.e. seal flushing plans) shall be designed in a manner so as to ensure that there is enough space within the skid for maintenance and operation. Special care shall be taken for pumps provided with seal flushing plans 23 and 52 so that couplings and seals can be attended for maintenance without disturbing any seal piping/cables/other items located on the skid. As far as possible, area on motor terminal box side shall be left clear of all piping and accessories for ease of maintenance.

6.4 Instrumentation

6.4.2.2 (Modification)

The words 'if specified' stand deleted. The vendor shall supply the detectors.

6.4.2.3 (Modification)

The words 'if specified' stand deleted.

6.4.2.4 (Modification)

The words 'if specified' stand deleted.

6.4.2.5 (New)

Horizontal multistage pumps intended for pumping temperature above 120°C shall be provided with pump casing skin temperature monitoring system consisting of the following:

- Four thermocouples along-with yoke mounted temperature transmitters with integral indicator for each thermocouple.
- One Junction Box (JB) to be mounted on the pump base-plate.
- Cables between the thermocouples and transmitters.
- Cables between transmitters and junction box.

6.5 Piping and Appurtenances

6.5.1 GENERAL

6.5.1.6 (Modification)

The words 'if specified' stand deleted.

6.5.1.7 (Modification)

Flange fasteners on stainless steel piping systems shall be of stainless steel.

6.5.2 AUXILIARY PROCESS FLUID PIPING

6.5.2.3 (Modification)

Auxiliary process fluid piping material shall be SS-316 as a minimum.

6.5.2.6 (Substitution)

Casing shall be provided with drain connection with nipple, threaded and seal welded and provided with a socket welded gate valve terminated at edge of the base plate. Gate valve shall be of 800# rating with material of construction (MOC) equal or superior to the pump casing. For multistage pumps with more than one drain point, block valves at each drain point shall be provided and the piping shall be terminated at edge of the base plate with a flange. Unless made self venting design, vent connections shall also be provided with a nipple, threaded and seal welded and terminated with a gate valve. Pressure gauge connection shall not be provided unless specifically required in the inquiry. Nipples shall meet the requirements of 5.4.3.5 & 5.4.3.6.



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6.5.2.8 (Modification)

Flanges are required instead of socket welded unions for all auxiliary process fluid piping.

6.5.2.9 (New)

Unless otherwise specified, material for seal flushing liquid cooler shall be as under:

Tube or Coil : Type 316 stainless steel or Monel.

Casing (or Shell) : Carbon Steel. Cooling water shall be on the casing (Shell) side.

6.5.3 COOLING WATER PIPING

6.5.3.3 (Addition)

Sight flow indicator shall have ball or flag for easy verification of water flowing through pipes.

6.5.3.5 (New)

Thermal relief valve (in each isolatable cooling water circuit) shall be provided upstream of globe valve on the cooling water outlet line.

7 INSPECTION, TESTING AND PREPARATION FOR SHIPMENT

7.1 General

7.1.8 (New)

Prior to start of test, manufacturer shall furnish the certificate of latest calibration / recalibration of driver and measuring instruments for review by purchaser's inspection agency..

Unless electrical or mechanical failure occurs, driver used for shop testing need not be recalibrated and original calibration certificate shall remain valid.

Duration of recalibration for all measuring instruments shall be as per the recommendations of HI Standards.



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7.2 Inspection

7.2.1 GENERAL

7.2.1.3 (Substitution)

The minimum inspection requirement for pressure containing casings shall be as per the following:

Inspection category	Inspection requirement	Remarks
CATEGORY A	Visual inspection and Magnetic Particle or Liquid Penetrant inspection of following components as a minimum: Nozzle weld Butt welds on pressure	C1. Liquid penetrant inspection shall be performed only when specified magnetic particle inspection is not feasible.
	containing components - Fillet welds on pressure containing components Shaft Radiographic or ultrasonic	C2. Magnetic particle or liquid Penetrant inspection shall be carried out in accordance with table 13.
	inspection of the following as a minimum: - Nozzle weld - Butt welds on pressure containing components.	C3. Ultrasonic inspection shall be carried out when radiography is not feasible. Radiography or ultrasonic inspection shall be carried out in accordance with table 13.
CATEGORY B	Visual inspection and Magnetic Particle or Liquid Penetrant inspection of following components as a minimum: - Nozzle weld - Butt welds on pressure containing components - Fillet welds on pressure	B1. Liquid penetrant inspection shall be performed only when specified magnetic particle inspection is not feasible. B2. Magnetic particle or liquid penetrant inspection shall be
CATEGORY C	containing components. - Shaft As per vendor's standard Quality Assurance Plan	carried out in accordance with table 13.

Note:

Category A:

This category is applicable for services with process design pressure above $70 \text{ kg/cm}^2\text{g}$ or process design temperature below -29°C or above 300°C .

Category B

This category is applicable for services within the design pressure and temperature range other than covered under category A above and category C below.

Category C:

This category is applicable for carbon steel and cast iron for services with process design pressure up to $40 \text{ kg/cm}^2\text{g}$ and design temperature from $0 \text{ to } 150 ^{\circ}\text{C}$.

7.2.1.5 (New)

Inspection shall also include dimensional check of pump, driver and auxiliaries (if any) duly mounted on the base plate, in accordance with certified general assembly drawing. This will include all main pump dimensions, base plate dimensions, location of foundation bolt holes, size/position/rating of flanges, coupling guard arrangement, verification of the



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required material certificates and their trace-ability to the respective components. In addition, following checks shall also be carried out:

- A measurement of the actual running clearances throughout the pump.
- A check for the hardness of wear rings.
- A check for good workmanship and finish throughout.

7.2.2 MATERIAL INSPECTIONS

7.2.2.2 (Modification)

The words "if specified" stand deleted.

7.2.2.3 (Modification)

The words "if specified" stand deleted.

7.3 Testing

7.3.1 GENERAL

7.3.1.1 (Modification)

Table 14 stands modified as under:

Rated Head

Zero negative tolerance @ rated flow rate & rated speed

Shut-off Head

Following criteria shall apply:

- a) Positive tolerance permitted as long as maximum shutoff pressure corresponding to shut-off head (as observed during the shop performance test) and the maximum suction pressure (as specified on pump data sheet), does not exceed the downstream design pressure (as specified on pump data sheet).
- b) Negative tolerance (as per Table 4-2 of API Std. 610, 8th edition) may be permitted only if test curve still shows rising characteristics.
- c) Negative tolerance is not permitted for pumps required

for pumps under parallel operation.

[Note: Generally shutoff head should be limited within

120% of rated head.]"

NPSHR

Zero positive tolerance.

Rated BKW

Zero positive tolerance. (However, pumps may be accepted up-to 104% of guaranteed BKW subject to Penalties as

defined elsewhere.

7.3.1.2 (Modification)

The words 'if specified' stand substituted with 'Unless otherwise specified'.

7.3.1.4 (New)

Unless otherwise specified the following tests shall be witnessed by the Purchaser or by their authorised representative or by both together.

- 1. Hydrostatic test as per 4.3.2 for Multistage Pumps.
- 2. Performance test as per 4.3.3.
- 3. NPSHR test as per 4.3.4.1 when specified in the material requisition or when the difference between NPSHA and NPSHR is less or equal to one (1) meter.
- 4. Unitization of Pump with Job Driver at shop.
- 5. Dismantling inspection and reassembly, after the running test
- 6. Dynamic balancing of Complete Rotor in case of Multistage Pumps
- 7. Sound level test.



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Test Certificates for Hydrostatic Test & Dynamic Balancing of Impeller(s) will suffice for single & two stage pumps. These test certificates shall be furnished to purchaser's inspector for review prior to performance testing.

7.3.3 PERFORMANCE TEST

7.3.3.2 (New)

Shop driver shall be used for testing and the rating of the driver shall not exceed 150% of power that may be consumed while running at duty point with water; or power at full valve open condition, whichever is higher. The limitation of 150% is applicable only for medium voltage motors.

7.3.3.4 (Modification)

- b) During the performance test, rise in temperature of bearing oil shall be measured and results recorded on the test log. If specified, pumps provided with oil mist lubrication (Purge/Pure) shall be tested with shop oil mist system & suitable performance at vendor's shop shall be demonstrated.
- 7.3.3.5b) (Modification)

The words 'if specified' stand deleted.

7.3.4 OPTIONAL TESTS

7.3.4.2 NPSHR Test

7.3.4.2.1 (Substitution)

If NPSHR test is specified or if it is required to be done as per para 7.3.1.4(3), NPSHR shall be determined at each test point (7.3.3.3a) except shut-off.

7.3.4.4 Sound Level Test (Modification)

The words "if specified" stand deleted.

During the performance test, the equipment shall be checked for its sound level at minimum flow, at rated flow, at flow at best efficiency point and at 120% BEP flow.

The maximum allowable value shall not exceed the value specified under clause 5.1.16 or as specified in the datasheet, whichever is lower, when measured at one (1) meter from pump surface.

Where complete unit test is specified, vendor is required to demonstrate the noise levels within the maximum permissible sound level for the complete unit.

Recorded sound levels during shop test shall be taken for reference only & not for final acceptance or rejection. However sound level as specified in the inquiry document shall be guaranteed at site.

- 7.3.4.5 Auxiliary Equipment Test (Modification) The words "if specified" stand deleted.
- 7.3.4.7 Mechanical run test
- 7.3.4.7.1 (Delete)
- 7.3.4.7.2 (Modification)

The words 'if specified' stand deleted.

7.3.4.7.3 (Modification)

The words 'if specified' stand deleted.



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7.4 Preparation for Shipment

7.4.1 (Modification)

Unless otherwise specified, the equipment shall be protected for an outdoor storage of 12 months at site. If any extra precaution is to be taken by the Purchaser for storage beyond 12 months the same shall be explicitly indicated in the operation and maintenance manuals.

7.4.6 (Substitution)

Two copies of the manufacturer's job specific installation manual shall be packed and shipped with the equipment.

8 SPECIFIC PUMP TYPES

8.1 Single Stage Overhung Pump

8.1.1 (Addition)

Unless otherwise specified, overhung pumps for rated flow exceeding 1000 m³/hr are not acceptable.

8.1.3 INTEGRAL GEAR DRIVEN (TYPE OH6) PUMPS

8.1.3.6 (Modification)

Diameter of gauges shall be 100mm (4 in.) as a minimum.

8.2 Between Bearing Pumps

8.2.1.2 (Substitution)

Pumps for all services shall be centreline mounted irrespective of pumping temperature.

8.2.2.3 (Modification)

The words 'if specified' stand deleted.

8.2.2.5 (New)

Unless otherwise specified, Maximum number of stages shall not exceed 10 for horizontal pumps.

8.2.4 DYNAMICS

8.2.4.1.2 Table 16-Decision logic for rotor lateral analysis (Modification)

The words 'similar or' stand deleted from step-2.

8.2.4.1.2b) Deleted.

8.2.6 LUBRICATION

8.2.6.2 (Modification)

The words 'ISO 10438-3' shall be replaced with' ISO 10438-3/API standard 614, Chapter 3'

8.2.6.5 (Modification)

The words 'ISO 10438-2' shall be replaced with' ISO 10438-2/API standard 614, Chapter 2'

8.2.6.6 (New)

The pump manufacturer shall supply all the specified/required instrumentation. However, purchaser shall approve the make, type and the specification.



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8.2.6.7 (New)

In case a pressure lubrication system is required and is supplied with shaft-driven main oil pumps (MOP), the MOP shall be suitable for safe coast down of the complete equipment train without necessitating the requirement of overhead rundown tank.

In case MOP is not suitable for safe shutdown of the complete equipment train, the vendor in his offer may propose for purchaser's consideration any special arrangement/provision provided for equipment safety and protection when the equipment decelerates. Provision shall be adequate for coast down time and cool-off time as applicable.

8.2.6.8 (New)

External pressure-lubrication systems shall comply with the following additional requirements:

- Pumps, filters, strainers, coolers, traps, valves and all other components that retain oil under pressure and are external to the reservoir shall be made of steel.
- Except in case of shaft driven pumps, if a positive displacement type of oil pump is supplied, a separate relief valve (not integral with the pump) shall be provided. The relief valve shall not be used for pressure regulation. Horizontal oil pumps shall not be installed on top of the oil reservoir.
- A removable tube bundle design is required for shell and tube coolers with more than 0.5 m².
- The oil side operating pressure of the oil cooler shall be higher than the water-side operating pressure to prevent contamination of oil in case of cooler failure.
- Filters shall be equipped with a continuous flow transfer valves and an equalising line.
- Oil system shall have drain rim or pan to catch oil spills.
- Unless otherwise specified, heating element shall not be provided. However, if in the opinion of vendor such an arrangement is required (especially in view of the lowest ambient temperature prevailing at job site), the same shall be supplied by the pump manufacturer with specific approval of the purchaser.

8.2.7 TESTING

8.2.7.1 (Modification)

The words 'ISO 10438-3' shall be replaced with' ISO 10438-3/API standard 614, Chapter 3'

8.2.7.5 (Modification)

The words 'if specified' stand deleted.

8.2.8 PREPARATION FOR SHIPMENT

8.2.8.2 (Modification)

The words 'if specified' stand deleted.

8,2,8,3 (Modification)

The words 'if specified' stand deleted.

8.2.8.4 (Modification)

The words 'if specified' stand deleted.

8.3 Vertically Suspended Pumps (types VS1 through VS7)

8.3.1 GENERAL

8.3.1.1 (Modification)

Hydraulic performance shall also be corrected for friction head losses in the inlet strainer.



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83	.1.3	(New)
0.0	. 1	LINC VV /

Unless otherwise specified, in case of tank-mounted pumps, the setting depth shall be so arrived that the pump minimum submergence is ensured within the boot of the vessel, i.e. minimum liquid level shall be considered to correspond to bottom of the tank level for ensuring complete evacuation of the tank.

8.3.2 PRESSURE CASINGS

8.3.2.3 (New)

Bowls and columns shall be flanged and bolted.

8.3.3 ROTORS

8.3.3.3 (Addition)

Multi-piece vertical pump line shaft shall not be joined by threaded couplings.

8.3.6 BUSHINGS AND BEARINGS

8.3.6.2 (Modification)

Pump thrust shall not be transferred to driver motor. Vertical pumps shall be provided with their own thrust bearing to carry rotor weight and pump generated axial forces. Thrust bearing shall be positively locked on the pump shaft (shouldered shaft) and the bearing housing.

8.3.7 LUBRICATION (Addition)

For self-lubrication pumps, guide bushing shall be suitable for dry running during start-up.

8.3.8 ACCESSORIES

8.3.8.1 Drivers (Modification)

For vertical pumps, not provided with non-reverse ratchet, vendor shall describe the precaution taken, to prevent damage due to reverse rotation.

8.3.8.3 Mounting Plates

8.3.8.3.1 (Modification)

The words 'if specified' stand deleted.

8.3.8.3.3 (Modification)

The words 'if specified' stand substituted with 'unless otherwise specified'.

8.3.10 SINGLE CASE DIFFUSER (VS1) AND VOLUTE (VS2) PUMPS

8.3.10.5 (Modification)

The words 'if specified' stand deleted.

8.3.13 DOUBLE CASING DIFFUSER (VS6) AND VOLUTE (VS7) PUMPS

8.3.13.2 (Modification)

The words 'if specified' stand deleted.

8.3.13.5 (Modification)

The words 'if specified' stand deleted.



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9 VENDOR'S DATA

9.1 General

9.1.2a) (Substitution)

The purchaser's/owner's/consultant's corporate name.

9.1.3 CO-ORDINATION MEETING (Substitution)

When specified, a co-ordination meeting shall be held at Purchaser's office, preferably within 4 weeks of order.

An agenda shall be prepared for this meeting and would include the following points related to technical aspects:

- Any clarifications required by the vendor on purchaser's order.
- Document Control Index (DCI).
- Vendor Data Review/approval modalities.
- Sub-vendor lists proposed by vendor.
- Utility requirements.
- Preliminary General Arrangement & layout drawings & purchaser's interface drawings.

9.2 Proposals (Substitution)

The vendor's proposals shall as a minimum include the following:

- All data sheets, drawings and documents listed under "PRINTS WITH QUOTE" in the enclosed Vendor Data Requirement Form.
- Vendor's confirmation/comments on post-order Vendor Data Requirements (Type of Documents, no. of prints and date needed) indicated in Vendor Data Requirement forms data sheets and specs.
- List of recommended commissioning spares included in the offer.
- List of insurance/mandatory spares (where specified by the purchaser) included in the offer.
- List of Spare Parts For Two Years Normal Operation

This list shall be made separately for each items including auxiliaries and drivers in the form of a table & shall show:

- i) Part name, description and number.
- ii) Quantity installed in one unit.
- iii) Quantity recommended per unit for 2 years normal operation.
- iv) Quantity recommended for number of units of an item as specified in the inquiry.
- v) Quantity recommended as insurance for the number of units of an item specified in the inquiry.
- An itemised list of special tools included in the offer.
- Any start-up, shutdown or operating restrictions required to protect the integrity of the equipment.
- Any limitations of vendor's test-facility to carryout the specified tests.
- A specific statement that the scope of supply, the offered equipment/systems and all its components are in compliance with the requirement specified in data sheets, job



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specifications, this specifications and all other attachments forming part of the enquiry documents except for specific deviations as listed in the proposal.

Note: Clearance less than those required by Table 5 shall be stated as an exception to API 610.

- 9.3 Contract Data (Substitution)
- 9.3.1 GENERAL
- 9.3.1.1 Drawings and data as required after purchase order has been specified in Vendor Data Requirement. Vendor to note that the drawing/document descriptions/titles as given in the Vendor Data Requirement are generic in nature. It is possible that against one drawing / document specified there are several drawings to be furnished by the vendor or vice versa.
- 9.3.1.2 Vendor shall complete & forward a document "Document Control Index (DCI)" to the purchaser (Destination & contact person as per order). This shall be the first document to be submitted by vendor within two weeks of order.

This document shall list out in consolidated form all drawings and documents required by purchaser (As specified in Data Sheets, Specifications and Vendor Data Requirement forms enclosed with the order).

Against each drawing/document vendor shall indicate the vendor's drawing numbers, titles, Rev. No., category (whether for information or approval) and schedule of submission.

No drawing shall be taken up for review till DCI for the inquiry/order is finalized by vendor.

- 9.3.1.3 All transmittal letters (covers), drawings and data shall have a title block (in addition to vendor's standard title block) which shall as a minimum contain the following contract information:
 - Purchaser's and Consultant's Corporate Name
 - Project Name.
 - Equipment Name and Item No.
 - Purchase Order No.
 - Purchase Requisition No.

Title Block on drawings shall be placed on the lower right hand corner.

- 9.3.1.4 All vendor data/drawings/documents shall be in English Language and in Metric Systems.
- 9.3.1.5 Data specified in the VDR is the minimum requirements of Purchaser. Any additional document/data required or requested by Purchaser for engineering or construction shall also be made available by the vendor.
- 9.3.1.6 Whether or not specified the vendor shall furnish the following, before shipment:
 - As built running clearances and when applicable; thrust bearing, radial bearing and seal running clearances.
 - A supplementary list of spare parts other than those included in his original proposal. The supplementary list shall include recommended spare parts, cross-sectional or assembly type drawings, parts numbers, materials, prices and delivery period. The vendor shall forward this supplementary list to the purchaser promptly after receipt of the reviewed drawings and in time to permit order and delivery of parts before field start-up.



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- A parts list for all equipment supplied. The list shall include pattern, stock, or production drawing numbers and materials of construction. The list shall completely identify each part so that the purchaser may determine the interchangeability of the parts with other equipment furnished by the same manufacturer. Standard purchased items shall be identified by the original manufacturer's name and part number.
- At least 8 weeks before shipment, the vendor shall submit his preservation, packaging and shipping procedures to the purchaser's for his review.

9.3.2 DRAWINGS

- 9.3.2.1 The number of prints and/or reproducible required and the times within which these are to be submitted by vendor are specified in Purchaser's inquiry/order.
 - If specified, drawing review may be through EDMS/VDOCS in soft as per the details provided elsewhere in inquiry document.
- 9.3.2.2 The purchaser's review of the vendor's drawings shall not constitute permission to deviate from any requirements in the purchase order/specifications unless specifically agreed upon in writing. After the drawings have been reviewed, the vendor shall furnish certified copies in the quantity specified. All drawings must be clearly legible and shall be either in A3 or A4 size.

9.3.3 TECHNICAL DATA

9.3.3.1 General Arrangement Drawing

A general arrangement drawing shall contain as a minimum, the following information:

- Outline dimensions (minimum three views) (All principal dimensions).
- Allowable forces and moments on suction and discharge nozzles.
- Location (in all three planes), size, type, rating and identification of all purchaser's interface connections including those of vents, drains, lubricating oil, sealing fluid, cooling water, steam & Electrical/Instrumentation.
- Direction of rotation viewing from the driving end.
- Weight of each assembly/component.
- The weight & location of center of gravity of the heaviest assembly/ components that must be handled for erection.
- Identification and weight, dimensions of the heaviest assembly / subassembly / component required to be handled for maintenance.
- Maintenance clearances and dismantling clearances.
- Speeds of Driven Equipment and Driver with Driver rating. Location of driver terminal box (in case of Electric Motor Driver).
- Layout of auxiliary equipment and operating platform, as applicable.
- Make, Type and Size of couplings and the location of guards and their coverage.
- A list of reference drawings if any.
- A list of any special weather-protection and climatic features.

9.3.3.2 Foundation Drawings

A foundation drawing shall indicate complete information required for foundation design by purchaser including the following:

- Foundation bolt sizes, pipe sleeve details, pocket sizes and locations.



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- Grouting thickness and other necessary technical details.
- Static weight of each skid/independently grouted item and location of center of gravity of each of such skid/items in all three planes.
- Weight distribution for each bolt/subsole plate location and total static weight.
- Dynamic loading caused due to various items grouted independently.
- The direction and magnitude of unbalance forces and moments generated by each such item at the worst operating condition and short circuit moments of motor drivers.
- GD² value of each item resolved to driver speed.
- Maximum permissible amplitude of vibration on the foundation at base level.
- Total mass of rotating parts.
- Suggested dynamic factor and ratio of foundation weight to weight of skid/equipment as per vendor experience.

NOTE: Vendor shall necessarily indicate the recommended type, make & quantity of recommended grouting material (i.e. cementitious or epoxy grout).

9.3.3.3 Layout Drawing (For multi-skid packages)

This drawing shall include at-least the following information:

- Layout of all skid/equipment and their auxiliaries, vessels, control panels, exchangers etc. Vendor shall furnish an optimised layout (considering the space allocated, site wind conditions, area classification, the type of equipment located in the vicinity etc.) indicating elevation and dimension of skids/equipment.
- Minimum spacing required between the various skids / equipment and between the skids and the walls / columns / roof for an easy accessibility and maintenance.
- Layout for water piping, trenches for water piping, cable tray/trenches layout.
- Piping arrangement and piping support arrangement/location for piping in vendor's scope.
- Layout for auxiliary equipment and operating platform details.
- Specification for crane/mono rail (including suggested mono rail layout) recommended for maintenance and height of the lifting hook from the centerline of equipment.

9.3.3.4 Field Alignment Diagram

The diagram shall indicate the relative displacement to be kept between the centerlines of various equipments at the time of installation, so that under normal running conditions the equipments get fully aligned. This relative displacement should be decided on the basis of centerline temperature rise data of driver, gear box/transmission system, driven equipment.

9.3.3.5 Heat Exchanger Drawings

Heat exchanger drawing and data shall include heat and mass balance data, details of provisions for separating and withdrawing the condensate, construction details, cross sections & general arrangement drawings of heat exchangers, vendors recommendations regarding provision for support and piping expansion.

9.3.3.6 P&I Diagrams (with Bill of Materials)

Vendor shall supply P&I Diagrams along with Bill of Materials of each system in the vendor's scope of supply or specified in the order. P&I Diagram shall indicate the system details, location of various auxiliaries, instruments, controls and safety devices as required. Line sizes, piping class, valve sizes and class shall be clearly marked on the P&ID.



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Vendor's scope and purchaser's scope shall be clearly demarcated. Each item shall be identified by an item no./ item tag no., which shall correspond to the item no. shown on the bill of materials. The bill of materials shall include items number, normal value, set value, range, quantity per unit, make and other specifications as applicable.

Legends adopted shall be indicated either at the bottom of drawing or on a separate drawing. The legends shall be as per ISA.

9.3.3.7 Cross-sectional Drawing with Bill of Materials

The vendor shall supply cross-sectional or assembly type drawings for all equipment furnished showing all parts, design assembly and running clearances(minimum and maximum permissible), and balancing data required for erection and maintenance. Each part shall be numbered which shall correspond to the part number on the bill of materials. The bill of materials shall include the part no., name of component, materials quantity installed per unit & sizes where applicable (say for bolts, nuts, rings, gaskets etc.). All boughtout items shall also be indicated with make and brief specifications.

A separate cross-sectional drawing showing installation and setting dimensions for the seals shall be furnished.

- 9.3.3.8 Performance Characteristic Curves
- 9.3.3.8.1 The vendor shall provide complete performance curves to encompass the map of operations, with any limitations indicated thereon.
- 9.3.3.8.2 All curves submitted prior to final performance testing shall be marked "PREDICTED". Any set of curves resulting from a test shall be marked "TESTED".
- 9.3.3.8.3 Certified test curves and data shall be submitted within 15 days after testing and shall include head, power recalculated to the proper specific gravity and efficiency plotted against capacity. If applicable, viscosity corrections shall be indicated. If NPSHR test is specified, the water NPSHR curve (drawn upto minimum continuous flow) shall also be included. The curve sheet shall include the maximum and minimum diameters of the impeller design supplied, the eye area of the first stage impeller, the identification number of the impeller or impellers and the pump serial number.
- 9.3.3.9 Data Sheet

The Vendor shall provide completely filled in data sheets, first for "As Purchased" and then for "As Built". The vendor by shall do this by correcting and filling out the data sheets and submitting copies to the purchaser.

9.3.3.10 Installation Manual

The vendor shall provide sufficient written instructions, including a cross-reference list of all drawings, to enable the purchaser to correctly install, operate and maintain all the equipment. It shall include any special information required for proper installation that is not on the drawings, special alignment or grouting procedures, utility specifications (including quantity) and all installation data. It shall also contain the following information:

- 9.3.3.10.1 Instructions for erecting, aligning (including the expected thermally induced shaft center-line shift between normal site ambient temperature position and that at normal equipment operating temperature) and piping.
- 9.3.3.10.2 A description of rigging procedures, including the lifting of the assembled equipment, and methods of disassembly, repair, adjustment, inspection and reassembly of the equipment and auxiliaries.



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9.3.3.10.3 Pre-commissioning/commissioning/functional test procedures and acceptance criterion.

9.3.3.11 Operation and Maintenance Manual

This shall provide sufficient written instructions and data to enable purchaser to correctly operate and maintain the equipment ordered. It shall include a section to cover special instructions for operation at extreme environmental and/or extreme operating conditions. The following shall be included in this manual:

- 9.3.3.11.1 Instructions covering start-up, normal shutdown, emergency shutdown, operating limits and routine operational procedures.
 - (a) A description of equipment construction features and the functioning of component parts or systems (such as control, lubrication, sealing systems etc.).
 - (b) Outline and sectional drawings, schematics and illustrative sketches in sufficient details to identify all parts and clearly show the operation of all equipment and components and the methods of inspection and repair. Standardised sectional drawings are acceptable only if they represent the actual construction of the equipment.

9.3.3.11.2 The following maintenance information:

- (a) Maximum and minimum bearing, labyrinth and seal clearances including any other clearance between moving and stationary parts of the equipment affecting proper running and maintenance of the equipment.
- (b) Instructions for measuring and adjusting cold clearances, shaft runout, concentricity etc.
- (c) Rotor float allowance.
- (d) Interference fits on parts that are required to be removed or replaced for maintenance of normally consumable spares.
- (e) Balancing tolerances.
- (f) Lubricating schedules indicating recommended grades of oil, their properties, replacement period etc.
- (g) Normal maintenance procedure.
- (h) Preventive maintenance schedules and criterion for replacement of parts.
- (i) Trouble shooting procedures.

9.3.3.11.3 The following reassembly information:

- (a) Bolting sequence and torque values for all bolts affecting equipment performance/integrity/safety.
- (b) Reassembly sequences together with required inspection checks.
- (c) Adjustment procedures to achieve required positions, clearances, float and so forth.
- (d) Detailed procedures for pre-operational checks, including settings and adjustments.
- (e) Seals and coupling installation procedures.
- (f) Parts list indicating cross-sectional drawings of various assemblies and subassemblies, part numbers, materials of construction (ASTM) etc.to facilitate identification of parts and for procurement of spares.

9.3.4 FINAL DOCUMENTATION

9.3.4.1 Technical Data Manual / Mechanical Catalogue



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- 9.3.4.1.1 Technical data manual / mechanical catalogue is a compilation of "as built" drawings and data, manufacturing and test records, installation, operating and maintenance instructions.
- 9.3.4.1.2 Not later than two weeks after successful completion of all specified tests, the vendor shall furnish the required number of technical data manual / mechanical catalogues for the equipment, any auxiliaries and instruments that the vendor is providing. The technical data manual / mechanical catalogue shall include the following documents as a minimum:
 - a) All drawings and data as listed in the vendor data index & schedule. (For drawings, where purchaser's approval is required, the final certified drawings shall be attached.) Sections of technical data manual / mechanical catalogue shall be organised in a manner that data and drawings related to one subject are grouped together such as Mechanical, Electrical, Instrumentation etc.
 - b) All manufacturing, inspection and test data and records.
- 9.3.4.1.3 Following information shall also be included in the Technical data manual / mechanical catalogue:
 - (a) Storage instructions for storing and preserving the equipment (including driver and all the auxiliary units) at the plant site before installation of the same.
 - (b) Instructions for preserving the equipment after it has been installed. This is particularly required in cases where a long time gap is expected between equipment installation and commissioning.
 - (c) Field performance test procedures and acceptance criterion.
- 9.3.4.1.4 Technical data manual / mechanical catalogue shall be in Hard board folder(s) of size 265 mm x 315 mm (10½" x 12½") and shall not be more than 90 mm thickness; it may be of several volumes and each volume shall have a volume number, index of volumes & index of contents of that particular volume.
- 9.3.4.1.5 Title sheet (Top sheet) of each volume of technical data manual / mechanical catalogue shall contain the contract information as defined under 5.2.1.2 besides the volume number.
- 9.3.4.1.6 In case order contains more than one item, separate dedicated mechanical catalogues shall be submitted for each item.
- 9.3.4.1.7 Two (2) sets of Final / "As Built" drawings & documents shall also be submitted as electronic files on secondary storage media (i.e. CD-ROM / DVD-ROM disk).

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FOR PUMP CENTRIFUGAL HORIZONTAL/MULTISTAGE

MR NO. A546-604-PA-MR-5010

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Rev. No	Date	Purpose	Prepared by	Checked by	Approved by



JOB SPECIFICATION AND SCOPE OF WORK FOR INSTRUMENTATION FOR PUMP CENTRIFUGAL HORIZONTAL/MULTISTAGE

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1.0 GENERAL

- 1.1 The purpose of this specification is to define general requirements and philosophy of instrumentation for Mechanical Seal Flushing Plan—23, 32, 52, 53B & 61 (as applicable and as indicated elsewhere in the MR) as per API-610/670/682.
- 1.2 This specification along with attached data sheets / standards and relevant part of this requisition covers the design, engineering, supply and testing of Instrumentation system with all accessories and materials, required for Mechanical Seal Flushing Plan- 23, 32, 52, 53B & 61 (as applicable and as indicated elsewhere in the MR).
- 1.3 If there is any conflict between this specification, data sheets, related standard, code etc. vendor shall refer the matter to owner/consultant for clarification and only after obtaining the same should proceed further.

2.0 SCOPE OF SUPPLY AND WORK

- 2.1 Vendor's scope of instrumentation supply and work shall include the followings as a minimum.
 - a) Supply of all instruments as per attached typical schematic for Seal Flushing Plan-23, 32, 52, 53B & 61 (as applicable and as indicated elsewhere in the MR) and described elsewhere in this requisition & applicable code API-610/670/682.
 - b) Design, Engineering and procurement of instruments.
 - c) Piping and all other erection material including all fittings, mounting accessories, instruments supports (2" yoke type) required for erection of instruments, under vendor's scope of supply, as per list of applicable installation standards attached alongwith.
 - d) Cable glands/plug shall be duly installed with the instruments.
 - e) Submission of filled in data sheets for all instruments along with sizing calculations for restriction orifice, Safety valves, Self Actuated Pressure Control Valve. Vendor shall also indicate make and model numbers of the offered instruments. Data sheets shall be submitted for review/approval with one set of technical catalogues of offered instruments with model decoding details.
- 2.2 Instrumentation cabling required for interconnection between vendor's supplied field instruments like Pressure & Level Transmitters etc. (for Pump seal Plan instrument) and owner's Control System shall be done by others and it is excluded from vendor's scope of work.
- 3.0 DESIGN PHILOSOPHY AND TECHNICAL REQUIREMENTS
- 3.1 All electronic instruments including field transmitters shall be suitable for intrinsic safe circuit and shall be certified by statutory body for hazardous area classification as specified. Instruments shall be suitable for Zone-2 Gr IIA / IIB, T3 certified by a statutory body with gas grouping as specified below. Additionally instruments shall be certified by CCOE/PESO India, irrespective of the origin of the instrument.
- 3.2 All instruments shall be weatherproof to IP-65 as per IS-13947/IEC-60529.

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3.3 Field Transmitters:

All field transmitters (like pressure transmitter, Flow Transmitter) shall be two wire type with 4-20 mA DC output and SMART type with HART protocol(latest version) and Integral LCD display (LCD display shall be configurable for both percentage as well as engineering unit display), suitable for 24 V DC, microprocessor based

i. Accuracy of Field transmitters shall be as follows:

Type of	Range of Transmitter	Accuracy for the rangeability of
Transmitter		1:10
Direct	760 mm WC and above	Equal to or better than ±0.075%
Direct	Less than 760 mm WC	Equal to or better than ±0.15%
Diaphragm seal	500 mm WC and above	Equal to or better than ±0.25%
Diaphragm seal	Less than 500 mm WC	Equal to or better than ±0.5%

The accuracy is defined as the combined effect of repeatability, linearity and hysteresis.

- ii. Transmitter shall update the output at least 8 times a second.
- iii. The over-range/static pressure protection of the transmitter shall be as follows:

Range of Transmitter	Over range/ static pressure <n1></n1>				
®	Pressure Transmitter	Differential Pressure			
	kg/cm ²	Transmitter kg/cm ²			
0 < ® < 250 mm WC	20	20			
250 < ® < 1000 mm	45	52			
WC					
1000 < ® < 5000 mm	45	70			
WC					
5000 < ® < 10000	45	160			
mm WC					
$1 < \mathbb{R} < 10 \text{ kg/cm}^2$	52	160			
10 < ® < 100 kg/cm ²	160	210			
> 100 kg/cm ²	210	210			

<N1> However if the Over range/ static pressure value specified above is less than the maximum/ design pressure of service conditions, offered instrument shall be suitable for the maximum/ design pressure.

Transmitter response time shall be as follows:

For transmitter range of 760 mm WC and above, the response time shall be equal to or better than 500 milliseconds.

For transmitter range below 760mm WC, the response shall be equal to or better than 1 second.

The response time of the transmitter shall be considered as the sum of dead time and 63.2% step response time of the transmitter

3.4 All field instruments/transmitters shall be provided with dual cable entries. Unused entry shall be plugged using suitable metallic plug. All cable entries shall



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be 1/2" NPT (F) size and shall be fitted with double compression type SS 304 cable glands suitable for hazardous area classification as indicated else where in the MR.

- 3.5 All the instruments shall be supplied from EIL / purchaser's approved vendors only. Bidder shall furnish proposed sub-vendor list for EIL / purchaser's approval. It shall be approved by EIL / purchaser during detail engineering after order. This shall have no impact on price and delivery schedule. Bidder shall take prior approval of make and specification of all instrument items before placement of order on sub-vendor.
- 3.6 All instruments and installation material shall have pressure and temperature rating equal to or better than the corresponding piping or pressure vessel rating on which instruments are installed.
- 3.7 All instruments shall have internal terminal block, anti-vibration type for cable termination. Flying leads are not acceptable.
- 3.8 S.S. tag plates shall be provided for all the instruments.
- 3.9 Piping installation shall be used for all instruments. Remote mounted installations shall be used. 2 valve integral manifold (SS material) shall be used for Pressure Transmitter & Pressure Gauge for pressure rating <=600# and for pressure rating >600# fabricated manifold shall be used. Hook-up drawings shall be submitted by the vendor for review and approval.
- 3.10 All electronic instruments shall be provided with canopies.
- 3.11 Typical (skeleton / blank) instrument data sheets for each type of instruments are enclosed with the requisition. Bidder shall furnish filled in data sheet for each tag after sizing, range selection, material selection etc. These data sheets shall be reviewed and approved by EIL / purchaser after placement of order. Proper selection of instruments, materials etc. shall be bidder's responsibility. Any necessary change required later for meeting the specification shall be done by the bidder without any price or delivery implications. While filling the instruments data sheets, the following shall be taken care:
 - a) All the relevant data shall be filled in. If any point is not applicable then N/A shall be indicated.
 - b) Make and model number of the offered instruments shall be indicated with model decoding details for offered instrument, with out model no, data sheet shall not be reviewed.
 - c) Vendor seal with signature shall be provided and pump vendor shall ensure the correctness of the process data.
 - d) Instruments tag numbers /data sheet numbers shall be indicated.

3.12 Level Transmitter

- a) Level Transmitter shall be Time Domain Reflectometry type guided wave radar level instrument upto 1500 mmm with an accuracy of 3 mm as a minimum. Differential pressure transmitter shall be used for level measurement above 1500 mm.
- b) Sensor shall be Wave Guided type with process wetted parts material suitable for process fluid (SS316 / 316L as minimum).
- c) External type instrument shall have external chamber/cage with 2" flanged end connection with 3/4" SW vent and drain connection provided with cap.
- d) Guided wave radar type level instrument shall be two wire type with 4-20 mA DC output and integral LCD display suitable for 24 VDC, microprocessor based and SMART type with HART protocol (latest version).



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e) Transmitter housing shall be of die cast Aluminium material, weatherproof to IP65 and suitably certified for classified hazardous area with suitable cable entry and cable glands (1/2" NPTF).

f) Level transmitter Chamber and other accessories materials like mounting Flanges, Stud bolts material shall be suitable for the process fluid.

3.13 Level Gauge

- a) Level Gauges shall be steel armoured reflex type with body material of SS 316L as a minimum or better corresponding to seal pot material and tempered borosilicate glass.
- b) Level Gauge shall be supplied with off-set type quick closing ball check valve (Gauge Glass and cock type) with carbon steel body and SS 316 trim as a minimum.
- c) Level gauge shall be hydrostatically tested up to 72 Kg/cm² (as a minimum) or up to hydrostatic test pressure of seal pot, whichever is higher. Hydro test certificates shall be furnished.
- d) Vessel (seal pot) connection for level gauge shall be ³/₄" NPT(M) with primary isolation valve and ³/₄" NPT(F) with nipple.
- e) Studs and bolt material shall be ASTM A193 Gr. B7 and ASTM A194 Gr. 2H respectively.

3.14 Pressure Gauge

- a) Pressure gauge dial shall be 6" white of non-rusting material with black figures. Pressure gauge with range 0-100 kg/cm2 and above shall have safety type solid front case.
- b) Pressure gauge shall have 1/2" NPT (M) bottom connection.
- c) Pressure gauge shall be provided with features like screwed bezel, externally adjustable zero, over range protection and blow out disc.
- d) Sensing element (bourdon tube) shall be of SS 316 and movement of SS 304, as a minimum. Casing shall be SS 304.
- e) Pressure gauge shall have an accuracy of \pm 1% of URV (Upper Range Value) and range shall be so selected that gauge normally operates in middle third of the range.
- f) Pressure gauge shall be suitable for maximum pressure or 130% of the range whichever is higher.
- g) Over range protector (Gauge saver) wherever used shall be of SS 316.

3.15 Restriction Orifice Plate

- a) Restriction Orifice Plate shall be concentric square edged type.
- b) Each Restriction Orifice Plate shall have an integral handle, which shall, upon assembly with flanges, extend to a distance of 50 mm. with following informations punched on it:
 - Tag Number.
 - Nominal pipe size in inches and rating in psi.
 - Material of plate.
- c) Restriction Orifice Plate material shall be SS 316 as a minimum or better.

3.16 Temperature Gauges

- a) The temperature gauges shall be provided with $1\frac{1}{2}$ " flanged thermo well with $\frac{1}{2}$ " NPT (F) connection for temperature gauges.
- b) Thermo well shall be fabricated out of bar stock.
- c) Temperature gauges shall have accuracy of ± 1 % of URV (Upper Range Value).
- d) Thermo well and flanges of Thermo well shall be minimum of SS-316 or better to suit the service conditions.



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3.17 Pressure Relief Valve / Thermal Relief Valve

- a) Pressure Relief Valve shall meet the limiting relief valve requirements as defined in API RP-520 (part-I & II) and in API-526.
- b) Pressure Relief Valve shall be full nozzle full lift type and Thermal Relief Valve shall be modified nozzle type.
- c) Percentage Accumulation shall be 10% for Pressure Relief Valve and 25% for Thermal Relief Valve.
- d) Body material shall be Carbon Steel as a minimum. For thermal Relief valve body material shall be same as Nozzle, disc material. Nozzle and disc material shall be SS 316 as a minimum with machined SS guide and spindle.
- e) Spring material shall be selected as per operating conditions. Normally it shall be Cadmium/Nickel/Zinc/Aluminium plated Carbon Steel.
- f) Pressure Relief Valve shall have flanged connections for sizes 1" and above and shall have screwed connection for sizes 3/4" and below. Thermal Relief Valve shall have screwed connection with 0.38 cm² orifice size and inlet outlet shall be of 3/4" NPT(M) X 1" NPT(F) sizes.
- g) Pressure relief valve type shall be vendor's responsibility suitable for the system.

3.18 Self Actuated Control Valve

- a) Body material shall be Carbon Steel as a minimum. Trim material shall be Stainless Steel as a minimum. Actuator shall be diaphragm type and diaphragm material shall be Stainless Steel as a minimum.
- b) Single seated valve shall have top guiding. Double seated valve shall be top and bottom guided.
- c) All pressure parts shall be designed to withstand maximum shut off pressure.
- d) Hardening of trim (includes plug and seat joint, orifice and plug contour) like stelliting etc. shall be considered for pressure drops greater than 10 Kg/cm²g.
- e) Valve shall have flanged connections for sizes 1" and above and shall have screwed connection for sizes 3/4" and below.

3.19 Rota-transmitter (Rota meter with Flow Transmitter)

- a) Rota meter shall be of metal tube type with local digital/analog indication. Transmitter shall be as per clause no. 3.3 of this document.
- b) The material for tube & float shall be SS 316 as a minimum.
- c) The packing material shall be PTFE if the liquid temperature is below 230 C. For temperatures above 230 C, packing shall be of GRAFOIL.
- e) Rota meter shall have an accuracy of minimum ± 2% FSD.

4.0 TAG NUMBERING

- 4.1 Instrumentation symbol shall follow latest edition of ISA standard S 5.1.
- 4.2 All vendor-supplied instruments shall have Tag No. as per the format indicated below. Numerical no. for all the instruments shall be unique i.e. without any repetition of tag no. for same type of instrument.

<u>Unit No.</u>	I <u>nstrument Type</u>	Numerical No.	
AA	BBBB	CCDD	
AA	= Unit Number		
BBBB	= Refer ISA S 5.1		
CC	= Last two digit of P&ID no.		
DD	= Instrument serial number	(To be allotted during detail engineering.)	



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5.0 MANDATORY SPARES

5.1 Vendor shall provide following instruments as Mandatory Spares common for each set of pumps (e.g. 604-PA-061A/B) item as applicable:

Sl. No.	Instrument Item	Quantity				
For Plan-23	<u>]</u>					
1.	Restriction Orifice plate	1				
2.	Set of Gasket for restriction orifice plate	1 set				
3.	Temperature Gauge	1				
4.	Float for Rota meter	1				
5.	1 set					
For Plan-32	<u>)</u> <u>2</u>					
1.	Pressure Gauge	1				
2.	Temperature Gauge	1				
3.	Float for Rota meter	1				
4.	4. Set of Gaskets, gland packing for Rota meter					
5.	1					
6.	Set of Gaskets, gland packing for self actuated control valve	1 set				
For Plan-52)					
1.	Pressure Gauge	1				
2.	Pressure Transmitter	1				
3.	Set of Gaskets for GWR Level Transmitter	1 set				
4.	Set of Gaskets for Level Gauge	1 set				
5	Restriction Orifice plate	1				
6	Set of Gasket for restriction orifice plate	1 set				
7.	Spring for relief valve	1				
8.	Set of gaskets & gland packing for relief valves	1 set				
For Plan-53	BB					
1.	Pressure Gauge	1				
2.	Pressure Transmitter	1				
3.	Set of Gaskets for GWR Level Transmitter	1 set				



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4.	Set of Gaskets for Level Gauge	1 set
5.	Temperature Gauge	1
6.	Diaphragm for self actuated control valve	1
7.	Spring for relief valve	1
8.	Set of gaskets & gland packing for relief valves	1 set
9.	Set of gaskets, gland packing for self actuated control valve	1 set
10.	Restriction Orifice plate	1
11.	Set of Gasket for restriction orifice plate	1 set

5.2 Two Years Spares:

Vendor shall also quote for recommended spares for 2 years operation and Maintenance for instrumentation items as applicable of respective pumps.

6.0 INSPECTION:

6.1 All instruments shall be inspected as stated elsewhere in the requisition (MR) for calibration and proper operation prior to dispatch.



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Page 9 of 10

TECHNICAL COMPLIANCE STATEMENT

SL. NO.	COMPLIANCE STATEMENT / QUERY	BIDDER'S CONFIRMATION/ ANSWER
1.	Compliance to Job Specification and Scope of Work for Instrumentation.	
2.	Compliance to Instrument Vendor List.	
3.	Compliance to Mandatory Spares list	
4.	Deviations, if any shall be specifically brought out by the Contractor. Offer shall be evaluated based on the deviations furnished.	
5.	Bidder shall attached 2 years recommended spares for instruments	

Notes: -

- 1. The Compliance Statement is required to be categorically confirmed / answered by the package Bidder and shall be submitted together with the offer, duly filled, signed and stamped.
- 2. Deviations if any, shall be submitted by package Bidder separately, clause wise.

Bidder's Signature and Stamp



ATTACHMENTS:

A. LIST OF INSTALLATION STANDARDS:

Serial no.	Description	Document no.
1.	Instrument connection on vessels, stand pipes and tanks	A546-7-52-0001
2.	Instrument connection on piping	7-52-0002
3.	Pressure instrument installation scope of work	7-52-0003
4.	Level instrument installation scope of work	7-52-0004
5.	Flow Meter installation scope of work	7-52-0005
6.	Rotameter installation scope of work	7-52-0006
7.	Thermowell installation scope of work	7-52-0007
8.	Thermowell	7-52-0035
9.	Thermowell/RTD assembly with thermowell	7-52-0036
10.	Pressure Guage liquid/gas service	A546-7-52-0434
11.	Pressure instrument general service	A546-7-52-0449
12.	Level guage on vessel	7-52-0481
13.	Level guage on standpipe	7-52-0483
14.	GWR on vessel/standpipe	A546-604-16-51-IS01

B. LIST OF BLANK DATA SHEETS:

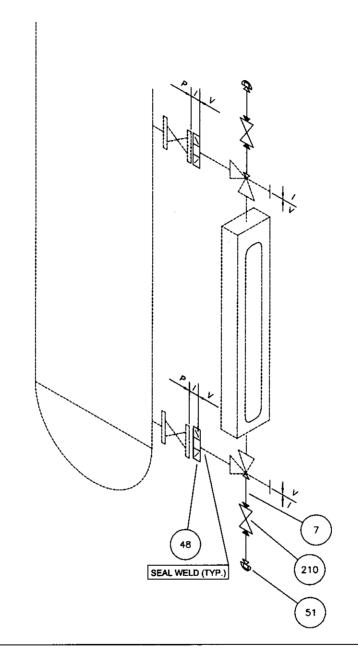
Serial no.	Description	Document no.
1	Restriction Orifice Plates	A546-604-YF-DS-1000
2	Pressure Gauges	A546-604-YP-DS-2000
3	Pressure Transmitter	A546-604-YP-DS-3000
4	Radar Level Instruments	A546-604-YL-DS-4000
5	Gage Glasses and Cocks	A546-604-YL-DS-5000
6	Temperature Gauge	A546-604-YT-DS-6000
7	Self Actuated Control Valve	A546-604-YC-DS-7000
8	Thermal relief Valves	A546-604-YP-DS-8000
9	Rota meter	A546-604-YF-DS-9000

- C. VENDOR DATA REQUIREMENT (DOC NO. A546-604-16-51-VDR-5010 REV A)
- D. INSTRUMENTATION VENDOR LIST (EIL/IOCL) (DOC. NO. A546-604-16-51-MD-5010)

REV. DATE REVISION BY CHECKED APPROVED INSTRUMENTATION 0 16.07.14 ISSUED AS JOB STANDARD ALI RS details given on this format are the property of ENGINEERS INDIA LIMITED. They are merely loaned on the borrower's they will not be reproduced, copied, exhibited or used, except in the limited way permitted by a written consent given by yer for the intended use. ä 28 st — Studs & bolts and gasket by piping. LIST OF **ITEMS** express agreement that QTY. UNIT CODE CODE DESCRIPTION SIZE ENDS DESCRIPTION SIZE **ENDS** QTY. UNIT The drawing, design 9 7 210 2 51 NIPPLE 1/2" TH X PL 2 Nø GATE VALVE 210 1/2" SW 2 Nø CAP 1/2" TΗ 2 Νø 6 28 17 NIPPLE 1/2" PL X PL Nø 1/2" ELBOW SW Νø 17 3/4" X 1/2" SWAGE NIPPLE TH X PL Nø STANDARD REV. GWR LEVEL INSTRUMENT ENGINEERS INDIA LIMITED SIDE-SIDE CONNECTION A546-604-16-51-IS01 0 NEW DELHI (ON VESSEL/STANDPIPE) SHEET 1 OF 1

and

ON VESSEL



				LIST	OF	ITE	MS										
CODE	DESCRIPTION	SIZE	ENDS	QTY.	UNIT	CODE	DESCR	IPTION	SIZE	ENDS	QTY.	UNIT					
7	NIPPLE	1/2"	TH X PL	4	Nø]											
48	FLANGE	2" X 3/4"	FL X TH (Red)	2	Nø												
51	CAP	1/2"	тн	2	Nø												
210	GATE VALVE	1/2"	sw	2	Nø												
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P - BY PIPING

I - BY INSTRUMENTATION V - BY INSTRUMENT VENDOR



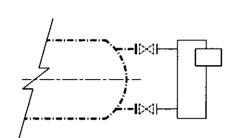
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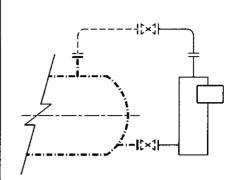
7-52-0004 Rev. 3

Page 1 of 10

(L-1) EXTERNAL DISPLACER / GUIDED WAVE RADAR LEVEL INSTRUMENT ON EQUIPMENT (SIDE - SIDE CONNECTION)

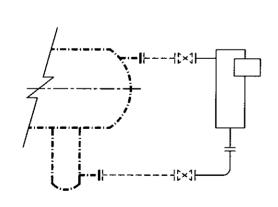
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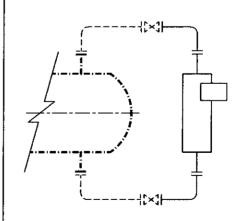




EXTERNAL DISPLACER / GUIDED (L-3)WAVE RADAR LEVEL INSTRUMENT ON EQUIPMENT (SIDE - BOTTOM CONNECTION)

(L-4) EXTERNAL DISPLACER LEVEL INSTRUMENT ON EQUIPMENT (TOP - BOTTOM CONNECTION)





NOTE:

1. FOR SIZE & TYPE OF ISOLATION VALVE REFER STANDARD NO. 7-52-0001.

2. STUDS / NUTS AND GASKET BY PIPING.

INSTRUMENT GROUP

PIPING GROUP **VESSEL GROUP**

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3	26-03-12	REVISED & REISSUED	Manoj	ØRG	RP/JMS	DM
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Rev.	Date	Purpose	Prepared	Checked	Stds. Committee Convenor	Stds. Bureau Chairman
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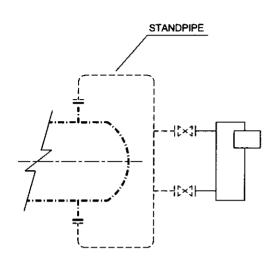


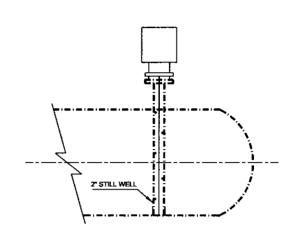
STANDARD No. 7-52-0004 Rev. 3

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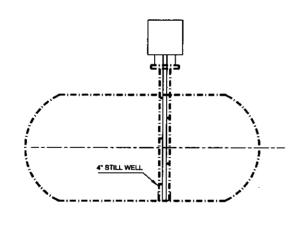
(L-5)EXTERNAL DISPLACER / GUIDED WAVE RADAR LEVEL INSTRUMENT ON STANDPIPE (SIDE - SIDE CONNECTION) (L-6)

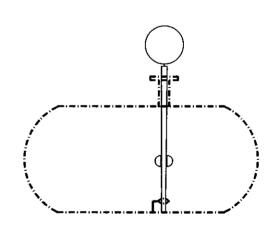
RF TYPE LEVEL INSTRUMENT (TOP MOUNTED)





(L-7)INTERNAL GUIDED WAVE RADAR LEVEL INSTRUMENT (TOP MOUNTED) (L-8)INTERNAL MAGNETIC TYPE LEVEL INSTRUMENT (TOP MOUNTED)





NOTE:

- 1. FOR SIZE & TYPE OF ISOLATION VALVE REFER STANDARD NO. 7-52-0001.
- 2. STUDS / NUTS AND GASKET BY PIPING.

INSTRUMENT GROUP PIPING GROUP

VESSEL GROUP

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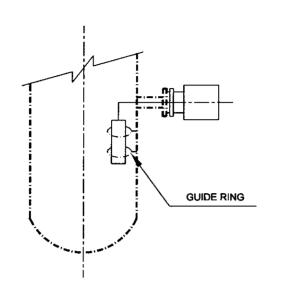
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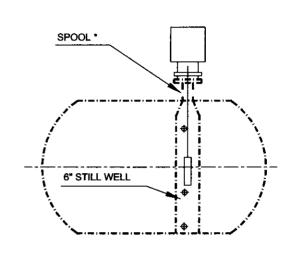
7-52-0004 Rev. 3

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(L-9) INTERNAL DISPLACER LEVEL INSTRUMENT (SIDE MOUNTED)

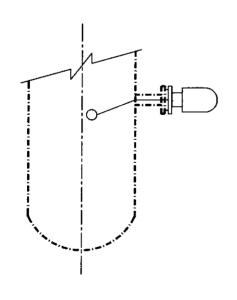
(L-10) INTERNAL DISPLACER LEVEL INSTRUMENT (TOP MOUNTED)

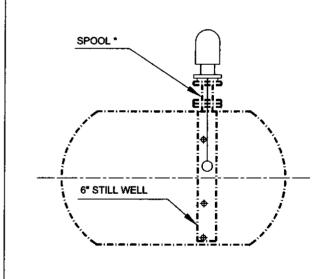




(L-11)INTERNAL BALL FLOAT LEVEL INSTRUMENT (SIDE MOUNTED)

(L-12)INTERNAL BALL FLOAT LEVEL INSTRUMENT (TOP MOUNTED)





- NOTE: *SPOOL I. D. AND LENGTH AS PER INSTRUMENT REQUIREMENT.
 - 1. FOR SIZE & TYPE OF ISOLATION VALVE REFER STANDARD NO. 7-52-0001.

2. STUDS / NUTS AND GASKET BY PIPING.

₹₹7 Manoj 3 28-03-12 **REVISED & REISSUED R**G DΜ 2 08.02.07 **REVISED & REISSUED** MN VC **TGM HCJ** Stds. Bureau Stds. Committee Checked Rev. Prepared Date Purpose Convenor Chairman No. by by Approved by

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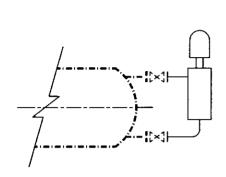
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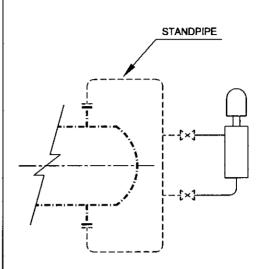
7-52-0004 Rev. 3

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(L-13) EXTERNAL BALL FLOAT LEVEL INTRUMENT ON EQUIPMENT

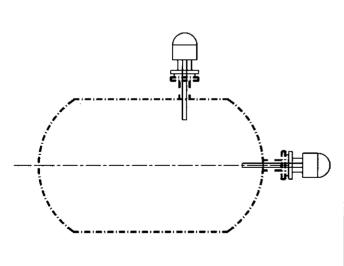
(L-14) EXTERNAL BALL FLOAT LEVEL INSTRUMENT ON STANDPIPE

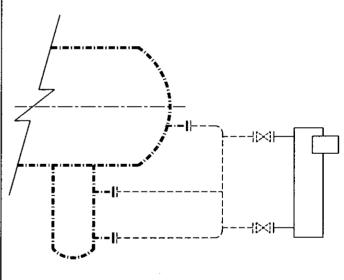




(L-15) INTERNAL CAPACITIVE / RF /
ULTRASONIC LEVEL SWITCH/PROBE ON EQUIPMENT
(TOP/SIDE MOUNTED)

(L-16) EXTERNAL DISPLACER / GUIDED
WAVE RADAR LEVEL INSTRUMENT
ON STANDPIPE (SIDE - BOTTOM CONNECTION)





NOTE:

1. FOR SIZE & TYPE OF ISOLATION VALVE REFER STANDARD NO. 7-52-0001.

2. STUDS / NUTS AND GASKET BY PIPING.

INSTRUMENT GROUP
PIPING GROUP
VESSEL GROUP

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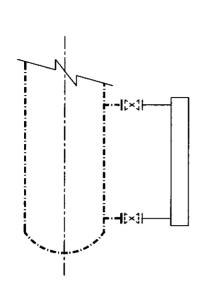


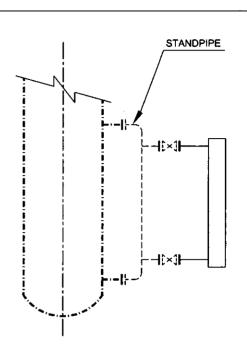
STANDARD No. 7-52-0004 Rev. 3

Page 5 of 10

(L-17) EXTERNAL LEVEL INSTRUMENT/
MAGNETIC LEVEL INSTRUMENT ON EQUIPMENT

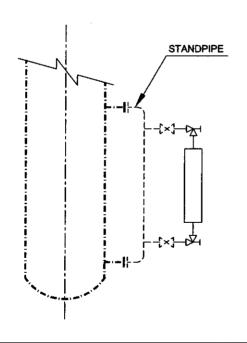
(L-18) MAGNETIC LEVEL INSTRUMENT ON STANDPIPE

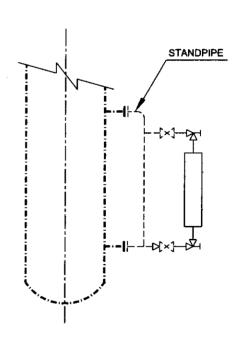




(L-19) LEVEL GAUGE ON STANDPIPE

(L-20) LEVEL GAUGE ON STANDPIPE





NOTE:

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1. FOR SIZE & TYPE OF ISOLATION VALVE REFER STANDARD NO. 7-52-0001.

2. STUDS / NUTS AND GASKET BY PIPING.

INSTRUMENT GROUP PIPING GROUP VESSEL GROUP

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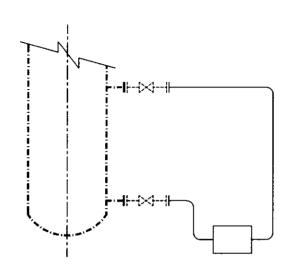
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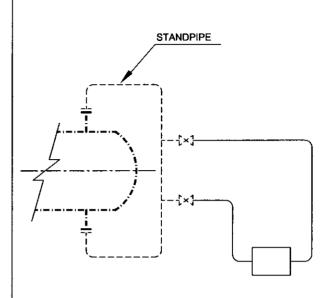
Page 6 of 10

(L-21) D.P. INSTRUMENT ON EQUIPMENT

(L-22)

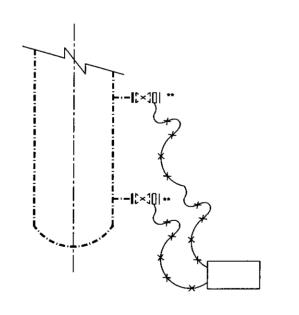
D.P. INSTRUMENT ON STANDPIPE

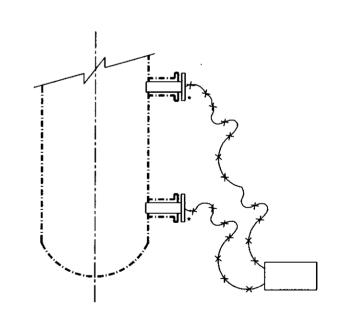




(L-23)
DIAPHRAGM SEAL D.P. INSTRUMENT
ON EQUIPMENT

(L-24)
EXTENDED DIAPHRAGM SEAL D.P. INSTRUMENT
ON EQUIPMENT





NOTE:

- * NOZZLE I.D. AND LENGTH AS PER INSTRUMENT
- ** STUD LENGTH = STANDARD LENGTH + 3" STUD & NUTS BY INSTRUMENT GROUP.
- 1. FOR SIZE & TYPE OF ISOLATION VALVE REFER STANDARD NO. 7-52-0001.

INSTRUMENT GROUP
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-	STUDS / NUTS	AND GASKET BY PIPING, EXCEPT	WHEREVER SPE	CIFIED (**).	2000	Smil
3	26-03-12	REVISED & REISSUED	₹\%Manoj	RG	RP/JMS	DM
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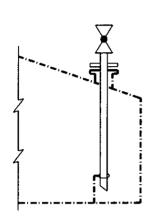
7-52-0004 Rev. 3

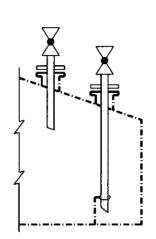
Page 7 of 10

(L-25) DIP-TUBE LEVEL INSTRUMENT ATMOSPHERIC TANK

(L-26)

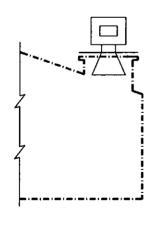
DIP-TUBE LEVEL INSTRUMENT PRESSURISED TANK

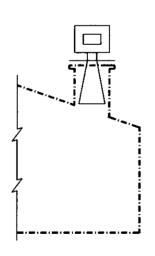




(L-27) TANK LEVEL INSTRUMENT (RADAR)
ATMOSPHERIC TANK
(VISCOUS SERVICE)

(L-28) TANK LEVEL INSTRUMENT (RADAR)
ATMOSPHERIC TANK
(CLEAN SERVICE)





NOTE:

1. FOR SIZE & TYPE OF ISOLATION VALVE REFER STANDARD NO. 7-52-0001.

2. STUDS / NUTS AND GASKET BY PIPING.

INSTRUMENT GROUP

VESSEL GROUP

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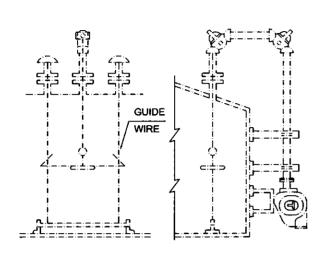
7-52-0004 Rev. 3

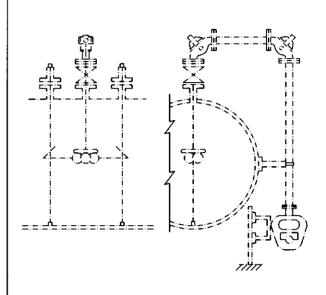
Page 8 of 10

(L-29) TANK LEVEL INSTRUMENT (MECHANICAL)
ATMOSPHERIC

(L-30)

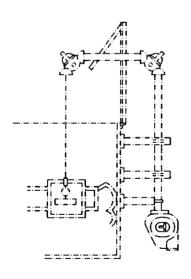
TANK LEVEL INSTRUMENT (MECHANICAL)
PRESSURISED

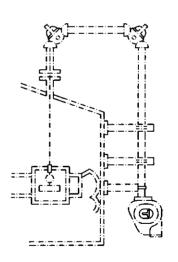




(L-31) TANK LEVEL INSTRUMENT (MECHANICAL) FLOATING ROOF TANK

(L-32) TANK LEVEL INSTRUMENT (MECHANICAL)
CONE CUM FLOATING ROOF TANK





NOTE:

1. FOR SIZE OF INSTRUMENT CONNECTIONS REFER STANDARD NO. 7-52-0001.

2. STUDS / NUTS AND GASKET BY PIPING.

INSTRUMENT GROUP

VESSEL GROUP

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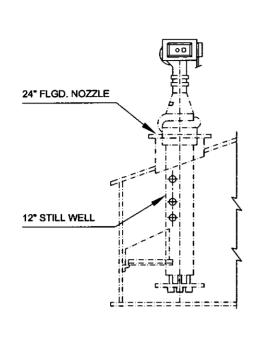
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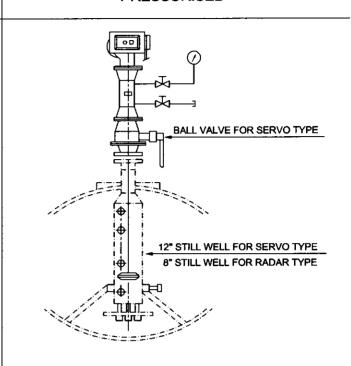
Page 9 of 10

TANK LEVEL INSTRUMENT (SERVO TYPE) (L-33)**ATMOSPHERIC**

(L-34)

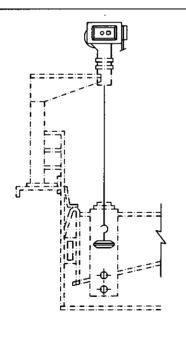
TANK LEVEL INSTRUMENT (SERVO/RADAR TYPE) **PRESSURISED**

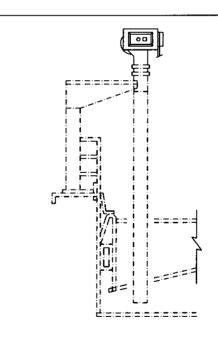




(L-35)TANK LEVEL INSTRUMENT (SERVO TYPE) FLOATING ROOF TANK

(L-36)TANK LEVEL INSTRUMENT (RADAR TYPE) FLOATING ROOF TANK





NOTE:

1. FOR SIZE OF INSTRUMENT CONNECTIONS REFER STANDARD NO. 7-52-0001.

INSTRUMENT GROUP

2. STUDS / NUTS AND GASKET BY PIPING.

VESSEL GROUP

				Q _{nn}	00-00/1/	Sma
3	26-03-12	REVISED & REISSUED	Manoj	OF THE STATE OF TH	RP/JMS	DM
2	08.02.07	REVISED & REISSUED	MN	TGM	HCJ	VC
Rev.	Date	Purpose	Prepared	Checked	Stds. Committee Stds. Bure Convenor Chairma	
No.		•	by	by	Approv	ed by



STANDARD No. 7-52-0004 Rev. 3

Page 10 of 10

SCUP	E OF WORK	Page 10 or 10
(L-37) TANK LEVEL INSTRUMENT (RADAR) PRESSURISED TANK (STILL WELL)		
RLIND FLANGE DARLIED TO STILL WELL SIZE REFLECTOR / DETOM PLATE AS REQUIRED		

NOTE:

1. FOR SIZE & TYPE OF ISOLATION VALVE REFER STANDARD NO. 7-52-0001.

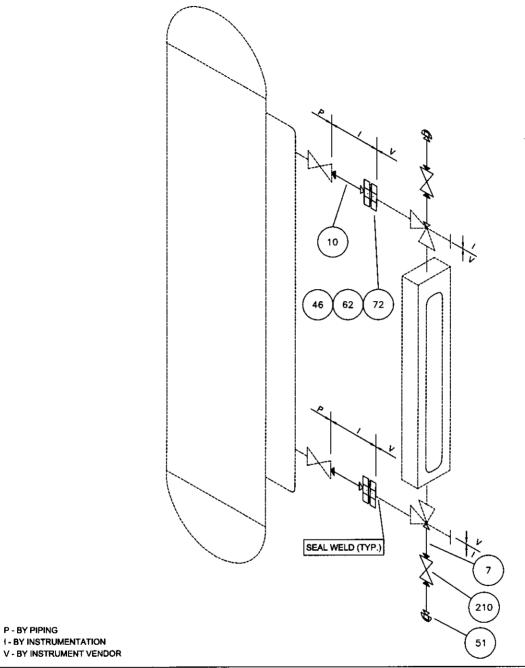
2. STUDS / NUTS AND GASKET BY PIPING.

----- INSTRUMENT GROUP

VESSEL GROUP

				Oan	- Day	smil
3	26-03-12	REVISED & REISSUED	Manoj	⊘V RG	RP/JMS	DM
2	08.02.07	REVISED & REISSUED	MN	TGM	HCJ	vc
Rev.	Date	Purpose	Prepared	Checked	Stds. Committee Stds. Bure Convenor Chairma	
No.		•	by	by	Approve	ed by

Page 1 of 1



				LIST	OF	ITE	MS					
CODE	DESCRIPTION	SIZE	ENDS	QTY.	UNIT	CODE	DESCRI	PTION	SIZE	ENDS	QTY.	UNIT
7	NIPPLE	1/2"	TH X PL	4	Nø							
10	NIPPLE	3/4"	TH X PL	2	Nø							
46	FLANGE	3/4"	TH	4	Nø							
51	CAP	1/2*	TH	2	Nø							
62	GASKET	FOR 3/4" FL		2	Nø							
72	STUDS & NUTS	FOR 3/4* FL		2	Set							
210 GL	GLOBE VALVE	1/2"	SW	2	Nø							
										RP/JMS	Dn	1
2	12-10-11	Revis	ed and Reissued	t		М	anoję 🔨	Ø RG	>	RP/JMS	DM	
1	07-08-06	Reaffir	med and Reissu	ed			NN .	TGM		PM	VJN	
Rev.	Date	Purpose			Prepared by		Checke by	u	s. Committee Convenor Approve	Stds. Bur Chairm		

P - BY PIPING

			Rest	rictio	n Orifice	Plat	tes			
UNITS: Flow	/ -> Li	quid - Kg/hr Gas - Kg/hr	Steam -	Kg/hr Pre	ssure -> Ka/cm	² G Tem	nperature-> °C I	_evel /lenath ->	mm	
	1	Tag Number		* (To be ad	vised later)					
Conoral	3	Line Number Line Size & Schedule		*						
General	4	Service		*						
	5	Plate Only Assembly		1	Assembly					
		Required Pressure Drop		*						
	7	Type Single Stage pressure redu	ation		Square Edge					
	9	Multi Stage pressure reduc	tion	Yes -						
	10	a.a. otago procesa e resua								
		Material		* SS 316						
Plate		Thickness 'W'		*						
		Beta = d/D Bore Diameter 'd'		*						
	15	Vent / Drain Diameter	(mm)	*						
	16	Centre Distance 'R'	(mm)							
	17									
	18 19									
		Туре		*						
	21	Material		*						
		Size & Rating		*						
Cuitable		Facing & Finish		*						
Suitable for		Line I.D. ¦ O.D. Gasket Thickness	(mm)	*						
Flanges	_	Gasket Material	(11111)	*						
3	27	Plate Holder								
		Plate Holder Material								
		Stud Bold Material		*						
		Nut Material Welded Construction		*						
		Spool Piece Length								
Options	33	Connection								
		Material								
		Fluid State	_	*						
		Flow - Minimum Maximur Flow - Normal	n	*						
Service		Inlet Pressure		*						
Cond-		Temp. °C - Operating Max		*						
itions		Sp. Gr. at operating temp.!		*						
		Steam specific volume r Molecular Weight Cp / Cv		*						
		Operating Viscosity m Pa.s		*						
		Compressibility Factor	(0.)							
		Pipe Reynolds Number								
		Make								
NOTES: This		IBR Certification eet is indicative only indicating	minim	roquiromo	t vandarta da :-	on the d-	stail data abaat da	ag dotail ance		
NOTES. THIS	* - Ve	endor to specify / confirm. endor to indicate the manufact			ic, veridor to dever	op me de	nan data sheet dam	ig dotail oligg.		
		ATION		NO DEVIA	TION	V	/ENDORS' SIGNA	TURES WITH SEA	AL.	
VENDOR DRA	WING	NO-	ORDER N	O:-						
FILE-			REQUISIT	ION NO : A	546-604-PA-MR-50	10	16.07.2014			
			CLIENT	: M	l/s IOCL		DATE	BY	CHKD	APPD
्र _{स्माद} ्रण्ले E	NGIN	EERS INDIA LIMITED	PLANT: BA		Unit - 604		DATA	SHEET NO.	•	REV
20		NEW DELHI		WADINI	Offit - 604			46-604-YF-DS-10	00	
This drawing one	المام ماما	sign it covers are the properties of	VENDOR-	OC INIDIA I IM	ITED. They are mor	alv laans d				0

			I	Press	sure	Gauges						
	ıid - Kg/hr (Gas - Kg/hr	Steam - I	Kg/hr Pı	ressure		emperature-> °C Lev					
1. Type-		Direct				13. Connection- Connection	Location-	1/2" NPT(M) Bottom)			
2. Mounting-		Local				14. Movement-						
3. Dial Size-		*150 mm										
Color:		White with b	ack engrav	ings		15. Diaphragm Saservice.)	eal-* (For congealy, corre	osive service a	and heighly	/ viscous		
4. Case Material-		SS 304				Type- Wetted Parts Material- Others Material-						
5. Bezel Ring-		Screwed				Process Connections : Size & Rating: Facing & Finish- Capillary Material-						
6. Window Material-		Shatterproof	glass Armour-Flexible Capillary Leng		rible-Material							
7. Enclosure-		Weatherproo	of to IP-65			r radining, r n	mig Commodati man					
8. Pressure Element- Bourdon T			e			16. Over Range F	Protection-	130% of the pressure wh	•			
9. Element Material-		SS 316				17. Blow Out Pro	tection-	Required	iichever is	riigriei		
10. Socket material-		SS 316			18. Options a. Snubber-							
11. Accuracy- ± 1% of UF			(Upper Ra	nge Valu	e)	b. Syphon- c. Guage Sa	wer-					
12. Zero Adjustment		Micrometer F	Pointer (Ext	ernal)		d. Liquid Filled casing- e. Vaccum Protection- f.						
TAG NO.	RANGE	OPERATI- NG PRESSURE	MAX. SERVICE PRESSU			FLUID	SERVICE		OPT	IONS		
* (To be advised later)	*	*	*	*		*	*			*		
ideory												
NOTES:- This data she	et is indicativ	e only indicat	ing minimu	m require	ement, ve	endor to develop t	I he detail data sheet dur	ing detail engo	g.			
* Vendor to specify	y / confirm.											
Indicate the mak 2. 2 valve manifold												
DEVIAT	TION			NO DE	VIATION		VENDORS' SIGNATUR	RE WITH SEA	\L			
VENDOR DRAWIN	IG NO:-		ORDER NO	1-								
FILE:			REQUISITION	ON NO :	A546-604	1-PA-MR-5010	16.07.2014					
ENCINE	RS INDIA	LIMITED	CLIENT	:	M/s IOCL	-	DATE	BY	CHKD	APPD		
呼 PG,sheet	IEW DELH	 -	PLANT: BA	ARAUNI		Unit - 604	DATA SH			REV		
PG,sheet1	= ==•		VENDOR:				A546-604-	YP-DS-2000		0		

			Pres	ssure Instru	ıments				
UNITS: Flow->Liq-	Gas	3-	Steam-	Pressure->	Temperature->	°C Level	/ Length-> mn	n	
1. Function:- 2. Type:- 3. Case:- 4. Mounting:- 5. Electrical Area Classifica 6. Enclosure:- Enclosure Class:- 7. Intrinsically Safe:- 8. Air Supply:- 9. Power Supply:- 10. Cable Entry:- 11. Accuracy:- 12. Repeatability:- 13. Output 14. Trans.Power Supply:- 15. Output:- 16. A/M Switch:- No. of Positions:-	ation	ENERAL TRANSMITT ELECTRONI MANUFATU YOKE IEC Zone-2, WP to IP 65 Yes 1/2" NPT (S As per Job S NSMITTER 4-20 mA DC 24 VDC ITROLLER	TER (INDICA IC (SMART) RER STANI IIA, IIB, T3 ee note 3)	TING) DARD	23. Service:- 24. Element:- 25. Body Material: 26. Element Material:- 27. Process Conn. 28. Process Conn. 29. Diaphragm Seviscous service.) Wetted Parts M Other Material:- Process Conn.: Size & Rating Facing & Fini Capillary Materi Armour Flexible Armour Flexible Armour Flexible Capillary Lengtl Flush./Fill. Cont	MEASU rial:- ection. ection Locatio	IRING UNIT PRESS DIAPH SS 316 SS 316 1/2" NF n MANUF	SURE RAGM S S PTF FATURER S	
17. Set Point Adjusment:-18. Manual Regulator:-19. Mode:-20. Chart & Chart Drive:-21. Moving Parts Material22. Chart Speed:-	RE	CORDER			31. Options:- a) IS Output b) Test jack (for calibra 32. Load driving c	tion)	Require	ed	
Tag Number	Operating Pressure	Maximum Pressure	Maximum Temp.	Rar Span	nge Set	Control Action	Service	е	Options
TO BE ADVISED LATER	*	*	*	*	*	*	*		*
* BY VENDOR 1. AS PER JOB SPEC 2. WITH SUPERIMPO 3. VENDOR TO PROV 4. CCOE CERTIFICA 5. MAKE AND MODEL 6. 2 valve manifold sha	:. PSED DIGITA VIDE TWO N ATION SHALL L NO. SHALL	AL ENGG. DA O. CABLE EI L BE FURNIS - BE INDICA	NTA (HART NRIES. ONE SHED. TED.) ENO. ENTRY SHALL				INATION IS	S NOT AC
DEVIATION				NO DEVIATION		VENDORS'	SIGNATURE W	ITH SEAL	
VENDOR DRAWING	NO:-		ORDER NO:	-					
FILE:			REQUISITIO	N NO : A546-604-	PA-MR-5010	16.07.2014			
	00 11.51		CLIENT	: M/s IOCL		DATE	BY	CHKD	APPD
I (12 3 112 11 20 12	RS INDIA LII EW DELHI	MITED	PLANT: BA	RAUNI	Unit - 604	DAT	A SHEET N	О.	REV
	 		VENDOR	:		A546	6-604-YP-DS-30	000	0

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		Maria Ordala Trans		LINUTO	++	
	2	Wave Guide Type Response Time		UNITS	.1 Coo Moy roonon	aa ta atan ahanaa
	3	Linearity			<1 Sec Max. respon <0.1% of Probe length	
	4	Repeatability		mm	±1	Jui .
	5	Operating Temp. effect		111111	±0.01% of probe len	ath/°C
•	3	Operating remp. enect			±0.01 /6 of probe left	igiti/ C
Sensor	6	Connection	Orientation			Side-Side
	7	Accuracy		mm	± 3	
	8	Chamber material			ASTM A105 with we process flanges, unl specified	less otherwise
	10	Function – Indicating/ Tra	ns.		Indicate & Transmit	
	11	Output			4-20 mA DC , 2 wire	e, HART Protocol
	12	Electrical Cable Entry -Signature	gnal Power		½" NPTF	
	13	Power Supply	gridi 1 0 11 0 i		24V DC LOOP PO\	WERED
Transmitter	14	Enclosure			IP-66	
	15	Electrical Area Classificat	ion		IEC Zone-2 Gr.IIA/B	3. T3
	16	Intrinsic Safety			Required	.,
	17	Gauge Head Material			Manufacturer's stan	dard
	18				aa.a.a.a.a.a.a.a	
	19	Type			Digital	
Local	20	Location			Integral	
Indicator	21	Graduations				
	22	Enclosure			WP IP65 & IS	
	23				55 & 10	
	24	Vent Connections			3/4" NPTF connection the top of the chamb	oer.
	25	Drain Connections			3/4" NPTF connection the chamber.	n at the bottom of
	26	Interface Devices:			-	
	27	- Temperature Element			Not Required	
	28	- Water Cut Probe			Not Required	
	29	Type			-	
Temperature	30	Element Type No. of			-	
Element	31	Connection Size & Rating			-	
Liomoni	32	Element Anchoring			-	
	33	Sheath Material			-	
Water cut	34	Type			Not Required	
Probe	35	Dedicated With Temp.	Probe		-	
FIUDE	36					
	37	Calibration Pin				
	38	Still Well				
	39	Power Switch				
	40	Mounting Brackets				
Options	41	Built-in Alarm contacts				
	42	Inter connecting cables b				
	43	- Tank side Indicator & Ga				
	44	- Gauge and temperature				
	45	- Tank Gauge & Water P	rope			
	46	- Power cable between ga	auge head & Indicator			
	47	Fluid	Mari	I/ = / = : - O = :		
Service	48	Pressure –Oper.	Max	Kg/cm2g		
Conditions	49	Temp. –Oper.	Max	°C		
	50	Operating Specific Gravit	у			
	51	Viscosity Corrosive Con	stituent	Cst	-	
Certification	52	Statutory			CCOE	
				1	(
Certification	53 54	Others Manufacturer				

Note: This data sheet is indicative only indicating the minimum requirement, package vendor to develop detail data sheet for the required instrument.

[]D	eviation	[] No [eviation		Vendor's Signatu	ıre	
					Requisition No.	A546-604-PA-MR-5010	
0	16.07.14				Order No.		Legend: * By Vendor
Rev	Date	Ву	Chkd	Appd	Vendor		

ENGINEERS INDIA LIMITED NEW DELHI PLANT : BARAUNI CLIENT : M/s IOCL SPECIFICATION REV
A546-604-YL-DS-4000 0

			Ga	ge Gl	lasse	s & Cock	S			
UNITS: Flow -> Liqui	d - Kg/hr Ga	as - Kg/hr S	team - Kg	/hr Press	sure -> l	Kg/cm2G Temp	erature-> °C Level /ler	ngth -> mm		
1. Vendor's Scope of Su		Gauge Glass assembled v	ses & Cock			6. Illuminator: Power Supply Area Class:-		<u> </u>		
	GAUG	E GLASSES				Enclosure :-				
2. Type:-		Reflex				Cable Entry :-	•			
3. Chamber Connection Size & Type :- Location :- Vent & Drain :-	1:-	3/4" NPT(F) * 1/2" NPT (F)	with plug			7. Heating Jacke Medium :- Max. Temp / I Connections :	Press. :-			
4. Material :						Inlet :- Outlet :-				
Chamber :-		*				Outlet :-				
Cover Plate :-		*					COCKS			
Studs :- Nuts :-		ASTM A193 ASTM A194				8. Type:-		Offset		
Gaskets :-		*	G1. 211			9. Type of Conn	ection:			
5. Options: a) Mica Shield						Vessel:- Gauge:- Vent:- Drain:-		3/4" NPT (M 3/4" NPT (F) 1/2" NPT (F) with isolation)) with plug	
b) Illuminator c) Heating Jacke d) Calibrated Sca	ale					10. Material: Body :- Trim :-		* * SS 316		
e) No-Frost Extn f) I.B.R. certificat						11. Closing :- 12. Bonnet Type	٠	Quick Bolted		
g)	.0					13. Ball Checks		Required		
h)	1	1			ı	14. Renewable	Seats :-	Required		1
TAG NUBER	VISIBLE LENGTH	C TO C LENGTH	MAX. OPE	PRESS.	FLUID	LOCATION	VESSEL CONNECTION	OPTIC	ONS	NOTES
* (To be Advised	*	*	*	*	*	*	*	*		*
later)										
								 		
								 		
* Vendor to specify	y / confirm.				nent, vend	I dor to develop the	detail data sheet during d	etail engg.		
accordingly for the	te and model relevel gauges the tag.	number offere shall be as fo	ed.		all be 25	0 mm more than t	he visiblelength. Vendor to	select one c	or more lev	el gauges
220 mm, 470 mr		50 mm.] NO DE	VIATION		VENDORS' SIGNATUR	E WITH SEA	NL	
VENDOR DRAWIN	IG NO:-		ORDER NO):-						
FILE:			1		A546-604	I-PA-MR-5010	16.07.14		1	
			CLIENT		M/s IOCL		DATE	BY	CHKD	APPD
	RS INDIA		PLANT: BA		,3 IOOL	Unit - 604	DATA SH	EET NO		REV
LG N	IEW DELH	II	VENDOR:	AIXAUNI		Oill - 604	A546-604-Y			0
			V LINDOK:				A340-004-1	DO-3000		U

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			Te	mpe	ratur	e Gauges	•			
UNITS: Flow -> Liqu	ıid - Kq/hr	Gas - Kg/hr	Steam - I	Kg/hr Pr	essure	-> Kg/cm²G Te	emperature-> °C Lev	el /length -	> mm	
1. Type-		Bi-metallic				FILL	ED SYSTEM			
2. Well-		Required				15. SAMA Class-				
3. Mounting-		Local				Compensati	on-			
4. Dial Size-		*150 mm				 Bulb Type- Bulb Materia 	ıl-			
5. Color-		White with b	lack engrav	inas		17. Bulb Union T				
6. Case Material-		SS 304	idoit origidy	go		18. Extension Ty				
7. Window Material-		Shatterproof	glass			19. Bulb Dia	•			
8. Connection Location-		Bottom				20. Capillaery Ma Armour Flex				
9. Accuracy-		± 1% of URV	/ (Upper Ra	nge Value	e)	Armour Mat Capillary Le				
10. Enclosure Enclosure	re Class-	Weatherproc	of to IP-66			21. Over Range I	Protection-			
11. Zero Adjustment Scr		Required (Ex	vternal)				ERMOWELL			
		Required (E)	kterriai)			22. Material-		SS 316	D41 -	
BIMETA	.L-					 Construction- Process Con 		Drilled Bar S 1 1/2" Flang		
12. Stem-						25. Guage Conne	ection-	1/2" NPT (F		
Type-		Adjustable U	Inion			26. Thermowell a		7-52-035	,	
Material-		SS-316								
Size-		1/2" NPT (M))			27. Options:				
40. Otam Diameter		T:411				a) Liquid Filled				
13. Stem Diameter- 14.		To suit well								
TAG NO.	RANGE	Tempe	rature	Well	Dim.		Flange	Serv	ice	Options
TAG NO.		Nor.	Max.	U	Т	Material	Rating, Face, Finish	Selv	ice	Options
(As per P&ID) *	*	*	*	*	*	*	*	*		
		+								
		1								
		 								
		1								
NOTES:-	aatiya anlıyin	diacting the m	inimum roo	uiromont	Vandor	to dovolon the det	tail data sheet for the requ	iirad inatruma	nt.	
1. This data sheet is thui	calive offig if	idicating the n	iiriiriurii req	unement.	vendor	to develop the del	iali dala sheel for the requ	illed instrume	ii.	
☐ DEVIAT	ION			NO DE\	/IATION		VENDORS' SIGNATUR	E WITH SEA	۸L	
VENDOR DRAWIN	IG NO:-		ORDER NO	:-						
FILE:			REQUISITION	ON NO :	A546-	604-PA-MR-5010	16.07.2014			
<u> </u>			CLIENT		M/s IOCL	_	DATE	BY	CHKD	APPD
ENGINEE	RS INDIA	LIMITED					DATA SH		O. III.D	
TG,sheet1	IEW DELF	I I	PLANT :	BARAUNI	l	UNIT - 604				REV
TG,sheet1			VENDOR	:			A546-604-Y	T-DS-6000		0

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		Sel	f Act	uate	d Pressure Co	ntrol	Valv	es		
UNITS: Flo	w -> l	Liquid- Ga	s-	Steam	- Kg/hr Pressure ->	Temp	erature-	-> °C Leve	el /length -> ı	nm
	1	Tag No.			*					
General	3	Line No. Line Size & Sch.			*					
General	4	Service			*					
	5									
	6	Type : Standard		erated	*					
	7 8	Size : Body End Conn.: - Size 8	Port							
	9	- Fac	ing & Fir	nish						
		Body Material	g		* CS					
		Trim Material			* SS 316					
		Set Point	4 IEv4		*					
		Impulse Conn.: Int Conn. Size & Type		nal	*					
Valve		Material of Diaphra		.u.	* SS 316					
	16	Bonnet type			*					
			Max.		*					
		Cv : Normal Selected Valve Cv			*					
		Pridicted sound Le	evel dBA		*					
	21	Inlet Velocity			*					
		Packing or seals			*					
		Lubricator Iso	-Valve . of Ports		*					
		Guiding ¦ No Regulation Upsterea			*					
		Pressure Indicator		Jucum						
Accessories	27	Relief Valve								
		Line Stainer			•					
	_	Fluid Stat			*					
		Flow - Normal	•		*					
		Inlet Pressure - Ma	x. ¦ Min		*					
		Inlet Pressure - No			*					
		Del. Pr. Max. No Del. Pr. Shut Off	r.¦Min.		*					
		Temp. °C - Oper.	Max		*					
	37	Oper. S.G Mol. \	Wt.		*					
Service	38	Cp / Cv Comp	ress. Fa		*					
Cond-	39	Flash% Oper.	Visc. mF	Pa.s(cP)	*					
itions		Deg. Of Superheat Vapour Pr. Criti		as	*					
		Model No. Valve		•	*					
		Make and Model N								
	44	IBR Certification								
NOTES TI		Specification Remains				1				
NOTES:- This	data s	neet is indicative only	y indicatir	ng minimu	m requirement, vendor to dev	elop the de	iaii data si	neet during de	etail engg.	
	* - V	endor to Specify / 0	Confirm.							
	1 Ir	dicate the make &	model r	number o	offered. Vendor shall submi	t the mode	el decodii	ng details of	the offered mo	odel
	with t	ech catalogue.								
_										
	DEVI	ATION		Ш	NO DEVIATION	VENDO	RS' SIGNA	ATURES WIT	H SEAL	
VENDOR DRA	AWING	NO-		ORDER N	O:-					
FILE-					ION NO: A546-604-PA-MR-501	16.0	7.14			
				CLIENT	: M/s IOCL	DA	\TE	BY	CHKD	APPD
(इ.माइ.एल) E	NGIN	EERS INDIA LIN	/IITED	PLANT:	BARAUNI Unit - 604		DATA	A SHEET N	10.	REV
		NEW DELHI		VENDOD			Α	546-604-YC-	DS-7000	0

PCV

			Pre	ssure R	elief Valv	'e				
		Tag Number		As per P&ID						
Camaral		Line Number		*						
General	-	Vessel Protected Safety / Relief		Safety Relief						
		Type:		Salety Relief						
		Full Nozzle Full Lift Mod.	Nozzle	Full Nozzle full	ift (Note-3)					
		Bonnet Type		Closed, Bolted	,					
		Conv. / Bellows / Pilot Ope		*						
	9 10	Inlet Connection: Size & Ra		*						
Valve		Outlet Connection: Size &F		*, flanged, *						
10	12	: Facing	& Finish	*						
		Cap Over Adjusting Bolt:		Required						
	14	Screwed	¦ Bolted	Screwed						
		Lifting Gear- Type		Doguirod						
	17	Test Gag		Required						
		Body and Bonnet		*						
	19	Nozzle and Disc		* SS316						
Material		Spring		* Cd / Ni / Zn / A	Al plated CS					
		Bellows		-						
	22					_				
		Resilient Seat Seal		*						
Options		Radiography		*						
•	26	9 . ,								
		Code		API RP 520, AF	rl 526					
Basis	28 29	Basis of Selection								
	-	Fluid and State		*						
		Corrosive Costituent		*						
	32	Required Flow Capacity		*						
		Mol. Wt.¦Sp.Gr. at Relieving	g Temp.	*						
		Operating Pressure	_	*						
Service	35	Operating Temp.:Relieving Valve discharges to	Temp.	*						
Cond-		Back Press. Constant / Valve	ariable	*		-				
itions		Set Pressure	4.145.6	*						
		Cold Bench Test Pressure		*						
		% Over Pressure : % Blowd		*						
	41	Cp/Cv Compressibility Fa Viscosity at Rel. Temp. mP	ctor	*						
	43	Vessel:Wall temp°C:Surf.A	rea-m2			-				
	44	recentral temp ereams								
	45	Calculated Area - cm2		*						
		Sel. Area - cm2 Orifice D		* *						
Orifice		No. of valve required for ca	pacity	*						
		Total area - cm2 Actual Flow Capacity		*		_				
	50	Actual Flow Capacity								
	51	Model No.		*						
Model	52									
Nos.		IBR Certification		-						
	NOTE									
		ndor to specify / confirm.								
		cate the make and model num	ber of the off	ered instrument. \	endor shall submit	the model d	ecoding details with te	echnical ca	atalogue a	t the
		f detail engineering.	\/	II -laala-a-th-a-ala-t	-: -					
		s data sheet is indicative only. thermal Relief valve modidied						oo oo trim	motorial	
	3. FUI	thermal Relief valve modicied	a nozzie is ai	so acceptable. In	case of modified f	lozzie body	materiai shali be san	ie as tilli	materiai	
	DEVIA	ATION		NO DEVIATION	1	VENDOR	RS' SIGNATURES W	ITH SEAL		
VENDOR DRA			ORDER NO:-		•	, LI4DOI	SIGNATORES W	52/12		
	VVIING	INO-			AE46 C04 DA N.D.	5040	16.07.2014			
FILE-			REQUISITIO	N NU:	A546-604-PA-MR-	0010			A	
_		TEED G DIDI A T T TTTT	CLIENT:	M/s IOCL			DATE	BY	CHKD	APPD
$(\overline{\mathfrak{s}},\overline{\mathfrak{p}},\overline{\mathfrak{s}},\overline{\mathfrak{p}})$	NGIN	EERS INDIA LIMITED	PLANT:	BARAUNI	UNIT- 604		DATA SH	IEET N)	
SV SV	,onee	et1NEW DELHI	VENDOR-				A546-604-Y	P-DS-800	00	0

				Rotameters					
UNITS: Flow	/ -> Li	guid - Kg/hr Gas - Kg/hr	Steam -	Kg/hr Pressure -> Kg/cm²G	Temperature-	> °C	Level /lenath ->	mm	
	1	Tag No.		*	I				
	2	Line No.		*					
	3	Service		*					
Conoral	4	Time		METAL TUDE					
General	5 6	Type Function		METAL TUBE LOCAL & DCS INDICATION					
	7	Conn.:-Size:Size & Rating		*					
	8	-Facing & Fin	ish	*					
		Direction : Inlet Outlet		BOTTOM TOP					
	10								
		Tube Size Float Guide		*					
		Tube Matl. Float Matl. Scale length & Type		SS 316 3SS 316					
	14	Scale Gratuation		* & LINEAR					
		Range		*DIRECT READING					
Meter	16	Meter Factor		*					
		End Fitting Matl. (Flg)		*					
		Packing or O-ring Matl.		NOTE-1					
		Accuracy		2% FSD					
	20 21								
Extension		Extension Well Matl.							
<u> </u>		Gasket Matl.		*					
	_	Type (2 wire)		ELECTRONIC SMART					
	25	Power supply or Air supply	/	24 VDC					
		Output		4-20 mA DC, 2 Wire (HART)					
Transmitter		Electrical Area Classification	on	ZONE-2,IIA,IIB,T3					
		Scale Range Enclosure		* IDOS 9 IO					
		Cable Entry		Weatherproof to IP65 & IS 1/2" NPTF	+				
	31	Prot. Shiels with Safety Gla	ass	I/Z INF II					
	32	Jacketting - Medium Con	n.						
	33	- Temp. °C ¦P	ressure						
		Constant - Diff. Relay							
Options		Needle Valve							
		Filter Regulator With Gaug	е						
	37 38								
	39								
		Fluid & State		*	_				
	41	Maximum Flow		*					
		Minimum Flow		*					
		Normal Flow		*					
Service		Pressure - Oper. Max.		*					
Cond- itions		Temp. °C - Min ¦ Oper. ¦ M Oper. S.G. ¦ Mol. Wt.	ax	*					
itions		Max. Oper. Viscosity mPa.s	s(cP)	*					
		Max. Allowable Pr.Drop	J(J.)	*					
	49								
	50								
		Make and Model No.	·	*					
		Tube No. Float No.							
		IBR Certification Specification Remarks							
			o only indi	I icating minimum requirement, ve	ndor to dovolon t	ho d	otail data shoot duri	na dotnil (onga
	NOIL	`*' VENDOR TO FURNISH/C			ndor to develop ti	ne u	etali uata Sileet uulii	ig detail t	erigg
				IPERATURE IS 230 Deg C OR E	RELOW FOR TEL	MDE	DATI IDES HICHER	THAN 2	30 DeaC
		PACKING SHALL BE GRAF		IFERATORE IS 230 Deg C OR E	BLLOW. FOR TEI	IVIFL	.KATOKES HIGHER	CITIAN 2	30 DegC
				BE CERTIFIED INTRINSICALLY	/ SAFE WITH FI	ΔΝΛΕ	PROOF ENCLOSE	IRE FOR	AROVE
		EC. AREA CLASS.	I OI IALL	DE SERVINIES INTRINSIONEE	. CALL WITHING	, WIL). (L 1 OI)	, LDOVL
			BE PROV	/IDED FOR ROTA-TRANSMITTI	FR				
	J. 50	= = =		in a section of the s	-a •				
			_						
	DEVIA	ATION		NO DEVIATION	VENDORS' SIG	GNA	TURES WITH SEAL	_	
VENDOR DRA			ORDER N		1	-			
		-		-	16.07.004	1			
FILE-	AME	TER	KEQUISIT	TION NO:	16.07.201	4			
			CLIENT	: M/s IOCL	DATE		BY	CHKD	APPD
(<u>ई माई</u> एल)) E	NGIN	EERS INDIA LIMITED	PLANT:	BARAUNI Unit - 604	D/	AT/	SHEET NO.		REV
		NEW DELHI	VENDOD		'	Δ	546-604-YF-DS-900	0	0

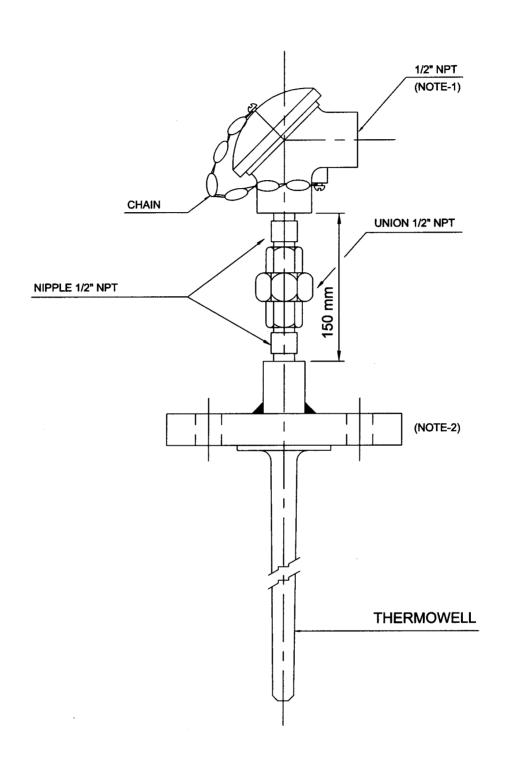


THERMOCOUPLE / RTD ASSEMBLY WITH THERMOWELL

STANDARD No.

7-52-0036 Rev. 3

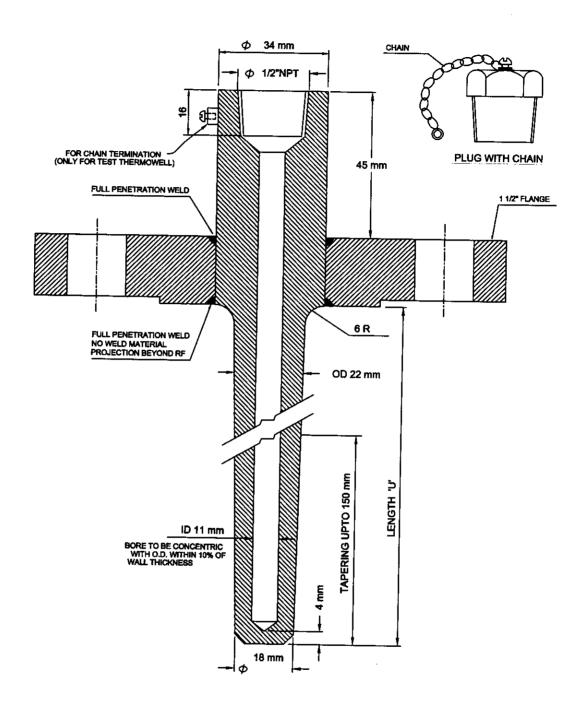
Page 1 of 1



NOTE - 1. IN THE CASE OF DUPLEX THERMOCOUPLE/RTD, TWO INDEPENDENT CABLE ENTRIES SHALL BE PROVIDED.

2. FLANGE TYPE, SIZE AND RATING SHALL BE AS PER DATA SHEET.

		·	~~	Ja	Day -	Dr Dond
3	19-07-11	Revised & Reissued	Manoj	RG	RP/JMS 3	DM
2	22-07-05	Reaffirmed and Reissued	MN	AKG	PM	NLV
Rev.	Date	Purpose	Prepared	Checked	Stds. Committee Convenor	Stds. Bureau Chairman
No.		·	by	by	Approve	ed by



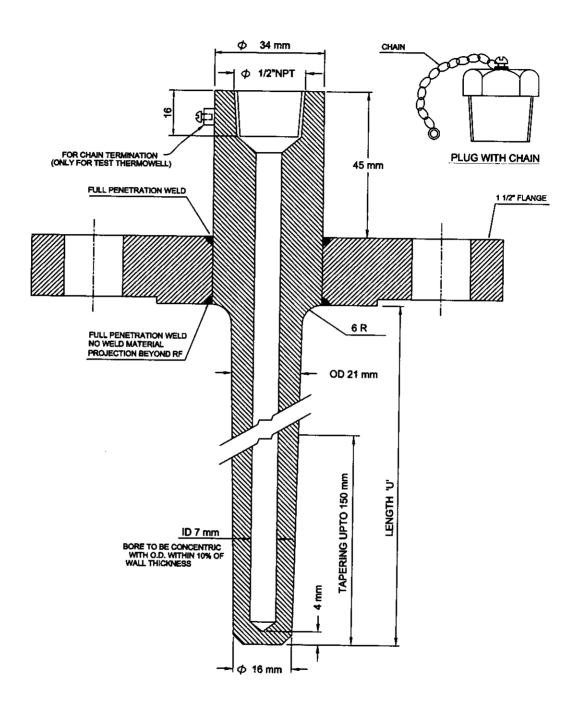
- NOTES 1. THIS STANDARD IS APPLICABLE FOR;
 - a) TEMPERATURE GAUGES, BEADED TEMPERATURE ELEMENTS AND DUPLEX TEMPERATURE ELEMENTS.
 - b) THERMOWELL UPTO 1500 CLASS AS PER ASME OR EQUIVALENT.
 - 2. TYPE OF FLANGE SHALL BE RTJ FOR RATING (AS PER ASME CLASS) > 600.
 - 3. DP TEST SHALL BE CARRIED OUT FOR ALL WELD JOINTS.

4. CHAIN AND PLUG SHALL BE APPLICABLE ONLY FOR TEST THERMOWELLS.

	4. CHA	IN AND PLUG SHALL BE APPLICABLE	ONLY FOR TEST THE	RMOWELLS.	00 Cm	Smel
3	21-03-12	REVISED & REISSUED	Manoj	RG	RP/JMS	DM
2	21-06-06	REVISED & REISSUED	MN	TGM	PM	VJN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
Format N	o. 8-00-0001-F4 Rev 0			Uy	Approv	ed by

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- NOTES 1. THIS STANDARD IS APPLICABLE FOR :
 - a) SINGLE TEMPERATURE ELEMENT.
 - b) THERMOWELL UPTO 1500 CLASS AS PER ASME OR EQUIVALENT.
 - 2. TYPE OF FLANGE SHALL BE RTJ FOR RATING (AS PER ASME CLASS) > 600.
 - 3. DP TEST SHALL BE CARRIED OUT FOR ALL WELD JOINTS.

4. CHAIN AND PLUG SHALL BE APPLICABLE ONLY FOR TEST THERMOWELLS.

				Der	25 ()~	Simil
3	21-03-12	REVISED & REISSUED	Manoj	CORG	RP/JMS	PM
2	21-06-06	REVISED & REISSUED	MN	TGM	PM	VJN
Rev. No.	Date	Purpose	Prepared	Checked	Stds. Committee Convenor	Stds. Bureau Chairman
			by	by	Approv	ed by

Formst No. 8-00-0001-F4 Rev.0

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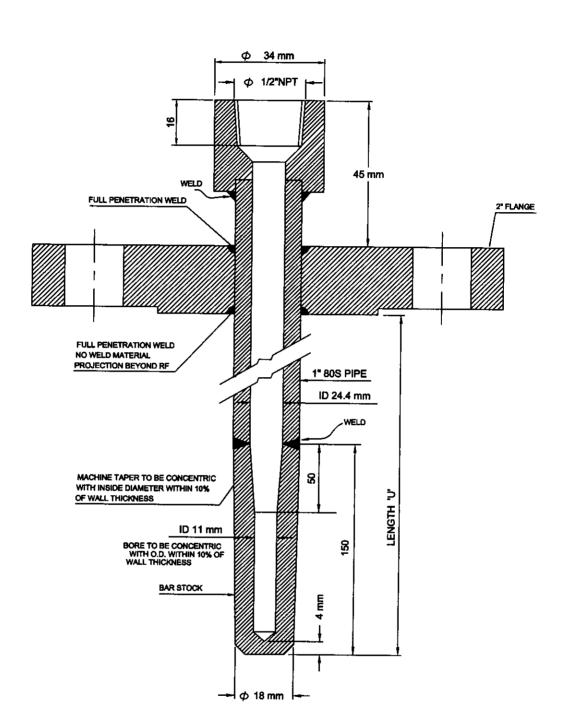
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BUILT-UP THERMOWELL

7-52-0035 Rev. 3

Page 3 of 3



NOTES:-

1. DP TEST SHALL BE CARRIED OUT FOR ALL WELD JOINTS.

No.			by	by	Approve	
₹ev.	Date	Purpose	Prepared	Checked	Stds. Committee Convenor	Stds. Bureau Chairman
2	21-06-06	REVISED & REISSUED	MN	TGM	PM	VJN
3	21-03-12	REVISED & REISSUED	* Manoj	A FAG	RP/JMS	DM



VENDOR DATA REQUIREMENTS FOR PUMP CENTRIFUGAL HORIZONTAL/MULTISTAGE

Document No. A546-604-16-51-VDR-5010 Rev. A

Page 1 of 3

VENDOR DATA REQUIREMENTS FOR PUMP CENTRIFUGAL HORIZONTAL/MULTISTAGE

Α	17-JUL-2014	ISSUED FOR BIDS	ALI	RSC	TM
Rev. No.	Date	Purpose	Prepared by	Checked by	Approved by



VENDOR DATA REQUIREMENTS FOR PUMP CENTRIFUGAL HORIZONTAL/MULTISTAGE

Document No. A546-604-16-51-VDR-5010 Rev. A

Page 2 of 3

VENDOR DATA REQUIREMENTS

The following drawings/documents marked "✓" shall be furnished by the bidder.

PACKAGE MR FOR EPCM JOB

S.		WITH BID	POST ORDER			
0.	DESCRIPTION		FOR REVIEW	FOR RECORD	WITH DATA BOOK (FINAL)	REMARKS
1.	Drawing and Document Schedule		✓			
2.	Sub-Vendor List for Instruments and accessories			1		
3.	Instrument Sizing calculations		✓			
4.	Instrument Installation Drawings		1			
5.	Bill Of Material for installation items		1			
6.	Spare part list for 2 years operation	1		1		
7.	Inspection and test procedure		1			@
8.	Complete catalogues with part list for all vendor supplied instruments, control, etc.			1		
9.	Installation, operation and maintenance manuals			✓		
10.	Data sheet for all instruments (including catalogue with model decoding)		✓			
11.	Alarm Set points			1		
12.	Certificate (statutory/test/calibration/inspection)			1		
13.	As-built drawings/ documents			1		
14.	Tehnical Compliance	1				
15.	Deviation List (if any)	1				
16.	Mandatory Spare Part List	✓	1			

Notes:

- 1. "TICK" denotes applicability.
- 2. Post order, drawing / document review shall commence only after approval of Document Control Index (DCI).
- 3. All post order documents shall be submitted / approved through EIL eDMS portal.
- 4. Final documentation shall be submitted in hard copy (Six prints) and soft (two CDs/DVDs) in addition to submission through EIL eDMS.
- 5. All drawings & documents shall be submitted in A4 or A3 paper sizes. Documents in higher paper size shall be submitted in exceptional circumstances or as indicated in the MR/Tender.
- 6. Post order- The schedule of drawing / data submission shall be mutually agreed between EIL & the bidder / contractor / supplier during finalization of Document Control Index (DCI).
- 7. Bill of Material shall form part of the respective drawing.



VENDOR DATA REQUIREMENTS FOR PUMP CENTRIFUGAL HORIZONTAL/MULTISTAGE

Document No. A546-604-16-51-VDR-5010 Rev. A

Page 3 of 3

8. "@" indicates submission of documents to Inspection Agency.

Page 1 of 4

A546-7-52-0001 Rev.0

INSTRUMENT CONNECTION ON VESSEL, STANDPIPES AND TANKS

0 24.01.2014	ISSUED FOR CLIENT'S COMMENT	RS	KKP	ТМ
Rev. No. Date	Purpose	Prepared by	Checked by	Approved by
Format No. 8-00-0001-F7 Rev. 0				Copyright ⊟II - All rights reserved



INSTRUMENT CONNECTION ON VESSEL, STANDPIPES AND TANKS

STANDARD No.

A546-7-52-0001 Rev. 0

an.		UNCLADDED EQ	UIPMENTS	CLADDED E	QUIPMENTS	***************************************
SR. NO	TYPE OF INSTRUMENTS	EQUIPMENT/STANDPIPE CONNECTION	FIRST BLOCK VALVE	EQUIPMENT/STANDPI PE CONNECTION	FIRST BLOCK VALVE	- INSTRUMENT CONNECTION
1.	EXTERNAL DISPLACER LEVEL INSTRUMENT ON EQUIPMENT	2" FLGD.	2" FLGD.	3" FLGD.	3" FLGD.	2" FLGD.
2.	EXTERNAL DISPLACER LEVEL INSTRUMENT ON STANDPIPE	2" FLGD.	2" FLGD.	2" FLGD.	2" FLGD.	2" FLGD.
3.	EXTERNAL GUIDED WAVE LEVEL INSTRUMENT ON EQUIPMENT	2" FLGD.	2" FLGD.	3" FLGD.	3" FLGD.	2" FLGD.
4.	EXTERNAL GUIDED WAVE LEVEL INSTRUMENT ON STANDPIPE	2" FLGD.	2" FLGD.	2" FLGD.	2" FLGD.	2" FLGD.
5.	EXTERNAL MAGNETIC LEVEL INSTRUMENT/ GAUGE ON EQUIPMENT	2" FLGD.	2" FLGD.	3" FLGD.	3" FLGD.	2" FLGD.
6.	EXTERNAL MAGNETIC LEVEL INSTRUMENT/ GAUGE ON STANDPIPE	2" FLGD.	2" FLGD.	2" FLGD.	2" FLGD.	2" FLGD.
7.	EXTERNAL BALL FLOAT LEVEL INSTRUMENT ON VESSEL	2" FLGD.	2" FLGD.	3" FLGD.	3" FLGD.	1" SW
8.	EXTERNAL BALL FLOAT LEVEL INSTRUMENT ON STANDPIPE	1" SW/BW/FLGD #	1" SW/BW/FLGD#	1" SW/BW/FLGD #	1" SW/BW/FLGD#	1" SW
9.	INTERNAL DISPLACER / FLOAT LEVEL INSTRUMENTS	4" FLGD	-	4" FLGD	-	4" FLGD.
10.	INTERNAL GUIDED WAVE LEVEL INSTRUMENT ON EQUIPMENT	4" FLGD.	-	4" FLGD.	-	4" FLGD.
11.	MAGNETIC LEVEL INSTRUMENT/ GAUGE (INTERNAL - TOP MOUNTED)	4" FLGD.	-	4" FLGD.	-	4" FLGD.
12.	LEVEL GAUGE ON VESSEL	2" FLGD.	2" FLGD.	3" FLGD.	3" FLGD.	³⁄₄" SCRD.
13.	LEVEL GAUGE ON STANDPIPE	3/4" SW/BW/ FLGD #	3/4" SW/BW/ FLGD #	3/4" SW/BW/ FLGD #	34" SW/BW/ FLGD #	³⁄4" SCRD.
14.	SPECIAL LEVEL INSTRUMENT ON EQUIPMENT (CAPACITANCE PROBE/ULTRASONIC PROBE/R.F.PROBE)	2" FLGD.	-	3" FLGD.	-	2" FLGD.
15.	D.P. INSTRUMENT/ GAUGES ON VESSEL	2 " FLGD.	2 " FLGD #	3" FLGD.	3" FLGD.	½ " SCRD.
16.	D.P. INSTRUMENT/ GAUGES ON STANDPIPE	3/4" SW/BW/ FLGD #	3/4" SW/BW/ FLGD #	3/4" SW/BW/ FLGD #	34" SW/BW/ FLGD #	½ " SCRD.
17.	DIAPHRAGM SEAL D.P. INSTRUMENT/ GAUGES ON VESSEL	3" FLGD.	3" FLGD.	3" FLGD.	3" FLGD.	3" FLGD.
18.	EXTENDED DIAPHRAGM SEAL D.P. INSTR/ GAUGE ON VESSEL	4" FLGD. (NOTE-1)	-	4" FLGD. (NOTE-1)	-	4" FLGD.

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INSTRUMENT CONNECTION ON VESSEL, STANDPIPES AND TANKS

STANDARD No.

A546-7-52-0001 Rev. 0

SR.		UNCLADDED EQ	UIPMENTS	CLADDED F	QUIPMENTS	INSTRUMENT	
NO	TYPE OF INSTRUMENTS	EQUIPMENT/STANDPIPE CONNECTION	FIRST BLOCK VALVE	EQUIPMENT/STANDPI PE CONNECTION	FIRST BLOCK VALVE	CONNECTION	
19.	DIP TUBE LEVEL INSTRUMENT	2 "FLGD.	½ " SW (BY INST)	3" FLGD.	½ " SW (BY INST)	½ " SCRD	
20.	TANK LEVEL INSTRUMENT (MECHANICAL)	2 " FLGD	2 " FLGD (BY INST)	-	-	½ " SCRD	
21.	TANK LEVEL INSTRUMENT (SERVO) ON ATMOSPHERIC TANKS	6" FLGD.	6" FLGD. (BY INST)	-	-	6" FLGD	
22	TANK LEVEL INSTRUMENT (SERVO) FOR PRESSURISED EQUIPMENT	6" FLGD.	6" FLGD. (BY INST)	6" FLGD.	6" FLGD. (BY INST)	6" FLGD	
23.	TANK LEVEL INSTRUMENT (RADAR) ON ATMOSPHERIC TANK (CLEAN SERVICE)	8" FLGD.	-	-	-	8" FLGD.	
24.	TANK LEVEL INSTRUMENT (RADAR) ON ATMOSPHERIC TANK (VISCOUS SERVICE)	24" FLGD.	-	-	-	24" FLGD.	
25.	TANK LEVEL INSTRUMENT (RADAR) FOR PRESSURISED EQUIPMENTS	8" FLGD.	-	8" FLGD.	-	8" FLGD.	
26.	TANK LEVEL INSTRUMENT – CAPITANCE / ULTRASONIC/ RF TYPE ON ATMOSPHERIC TANKS/PRESSURISED EQUIPMENTS	2" FLGD.	-	3" FLGD.	-	2" FLGD.	
27.	TANK LEVEL INSTRUMENT – TUNING FORK	3" FLGD.	-	-	-	3" FLGD.	
28.	PRESSURE INSTRUMENT/ GAUGE ON VESSEL	2 " FLGD	2 " FLGD #	3" FLGD.	3" FLGD.	½ " SCRD	
29.	PRESSURE INSTRUMENT/ GAUGE ON STANDPIPE	3/4" SW/BW/ FLGD #	3/4" SW/BW/ FLGD #	3/4" SW/BW/ FLGD #	3/4" SW/BW/ FLGD #	½ " SCRD	
30.	CHEMICAL SEAL PRESSURE INSTRUMENT/ GAUGE ON VESSEL	2 " FLGD	2 " FLGD	3" FLGD.	3" FLGD.	½ " SCRD	
31.	DIAPHRAGM SEAL PRESSURE INSTRUMENT /GAUGE ON VESSEL	2 " FLGD	2 " FLGD	3" FLGD.	3" FLGD.	2" FLGD.	
32.	THERMOWELL ON EQUIPMENT	1.5 " FLGD	-	3" FLGD.	-	1.5 " FLGD/ 3" FLGD	
33.	MULTI-POINT TEMPERATURE ELEMENTS FOR TANKS	3"FLGD.	-	3" FLGD.	-	3" FLGD	
34.	STANDPIPE (RATING UP TO 600#)	2"FLGD.	-	3" FLGD.	-	-	
35.	STANDPIPE (RATING > 600#)	3"FLGD.	-	3" FLGD.	-	-	

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INSTRUMENT CONNECTION ON VESSEL, STANDPIPES AND TANKS

STANDARD No.

A546-7-52-0001 Rev. 0

- NOTES: 1 NOZZLE I.D ON EQUIPMENT SHALL BE SELECTED TO SUIT O.D OF EXTENDED DIAPHRAGM OF INSTRUMENT.
 - 2 ALL FLANGES/SW RATING SHALL BE AS PER PIPING SPECIFICATION.
 - 3 IN CASE OF DIRECT MOUNTED FLANGED INSTRUMENTS AND WHERE FLANGED TYPE FIRST ISOLATION VALVE ARE PROVIDED, BOLTING AND GASKETS SHALL BE IN PIPING SCOPE.
 - 4 INSTALLATION OF TANK LEVEL INSTRUMENTS (SERVO, MECHANICAL AND MULTIPOINT TEMPERATURE ELEMENT) ON TANKS ARE IN TANK VENDOR SCOPE.
 - 5 FOR ANY OTHER INSTRUMENTS NOT REFERED ABOVE THE CONNECTION DETAILS SHALL BE AS PER INDIVIDUAL REQUIREMENT.
 - # AS PER PIPING SPECIFICATION/PROJECT PHILOSOPHY.

INSTRUMENT CONNECTION ON PIPES

				,	Appro	oved by
Rev. No.	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
1	25.09.98	REVISED AND REISSUED	MN	RK	BRS	AS
2	13.04.07	REVISED AND REISSUED	MN	TGM	HCJ	vc
3	11.02.13	REVISED AND REISSUED	MN	XXG	RP/JMS	DM
			14	-0	Die Las	L Dul



INSTRUMENT CONNECTION ON PIPES

STANDARD No. 7-52-0002 Rev. 3

Page 2 of 3

(A) BARE PIPES

S.	TYPE OF INSTRUMENTS			ING CLASS RE RD CONNECT:			ING CLASS RE BW # CONNEC			ING CLASS R GD CONNEC	ECOMMENDS FION
NO			PROCESS CONNECTION	FIRST BLOCK VALVE	INSTRUMENTS CONNECTION	PROCESS CONNECTION	FIRST BLOCK VALVE	INSTRUMENTS CONNECTION	PROCESS CONNECTION	FIRST BLOCK VALVE	INSTRUMENTS CONNECTION
	FLOW METER	≤ 600#	½" SCRD*	½" SCRD*	½" SCRD	½" SCRD*	½" SW/BW#	½" SCRD	½" SCRD*	½" FLGD	½" SCRD
1	ORIFICE	> 600#	-	-	-	3/4" SCRD**	34" SW/BW#	½" SCRD	3⁄4" SCRD**	¾" FLGD	½" SCRD
2	FLOWMETER	≤ 600#	½" FLGD	½" FLGD	½" SCRD	½" FLGD	½" FLGD	½" SCRD	½" FLGD	½" FLGD	½" SCRD
2	VENTURI/NOZZLE	> 600#	-	-	-	¾" FLGD	¾" FLGD	½" SCRD	¾" FLGD	¾" FLGD	½" SCRD
	FLOW METER	≤ 600#	½" SCRD*	½" SCRD*	3"FLGD	½" SCRD*	½" SW/BW#	3" FLGD	½" SCRD*	½" FLGD	3"FLGD
3	ORIFICE (DIAPH.SEAL)	> 600#	-	-	-	3⁄4" SCRD**	3⁄4" SW/BW#	3" FLGD	3⁄4" SCRD**	¾" FLGD	3"FLGD
	FLOW METER	≤ 600#	½" FLGD	1/2" FLGD	3" FLGD	1/2" FLGD	½" FLGD	3" FLGD	½" FLGD	½" FLGD	3"FLGD
4	VENTURI/NOZZLE (DIAPH.SEAL)	> 600#	-	-	-	¾" FLGD	¾" FLGD	3" FLGD	¾" FLGD	¾" FLGD	3"FLGD
5	FLOW METER AVERAGING PITOT	TUBE	3" FLGD	3" FLGD (BY INST)	3" FLGD+	3" FLGD	3" FLGD (BY INST)	3" FLGD	3" FLGD	3" FLGD (BY INST)	3" FLGD+
6	DIFFERENTIAL PRES (DP) INSTRUMENTS		34" SCRD*	34" SCRD*	1/2" SCRD.	3⁄4" SW/BW#	3⁄4" SW/BW#	½" SCRD	¾" FLGD	¾" FLGD	½" SCRD
7	DIAPHGRAM SEAL I INSTRUMENTS <5>	O.P.	3" FLGD.	3" FLGD.	3" FLGD.	3" FLGD.	3" FLGD.	3" FLGD	3" FLGD.	3" FLGD.	3" FLGD.
8	PRESSURE INSTRUM <5>	MENTS	3⁄4" SCRD*	3⁄4" SCRD*	½" SCRD.	3/4" SW/BW#	3/4" SW/BW#	½" SCRD	¾" FLGD	3/4" FLGD	½" SCRD
9	DIAPH. (CHEMICAL) PRESSURE INSTRUMENT<5> (SO		3⁄4" SCRD*	3⁄4" SCRD*	½" SCRD.	3⁄4" SW/BW#	3/4" SW/BW#	1/2" SCRD	¾" FLGD	¾" FLGD	½" SCRD
10	DIAPHGRAM SEAL PRESSURE INSTRUM (FLGD.)	MENTS	1 ½" FLGD.	1 ½" FLGD.	1 ½" FLGD.	1 ½" FLGD.	1 ½" FLGD.	1 ½" FLGD.	1 ½" FLGD.	1 ½" FLGD.	1 ½" FLGD.
11	THERMOWELL		1 1/2" FLGD.	-	1 ½ " FLGD	1 ½" FLGD.	-	1 1/2 " FLGD	1 ½" FLGD.	-	1 ½" FLGD

INSTRUMENT CONNECTION ON PIPES

STANDARD No. 7-52-0002 Rev. 3

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(B) CLADDED\CEMENTED\LINED PIPES

S.	S. TYPE OF INSTRUMENTS		CENEDED IN ES			* *	IPING CLASS MENT LINED P		WHERE PIPING CLASS SPECIFIES RUBBER/TEFLON LINED PIPES		
NO			PROCESS CONNECTION	FIRST BLOCK VALVE	INSTRUMENTS CONNECTION	PROCESS CONNECTION	FIRST BLOCK VALVE	INSTRUMENTS CONNECTION	PROCESS CONNECTION	FIRST BLOCK VALVE	INSTRUMENTS CONNECTION
1	FLOW METER	≤ 600#	½" SCRD*	½" SCRD*	½" SCRD	½" SCRD*	½" SW/BW	½" SCRD	1" FLGD	1" FLGD	½" SCRD
1	ORIFICE	> 600#	3/4" SCRD**	3/4" SW/BW	½" SCRD	-	-	-	-	-	-
2	FLOW METER		½" SCRD*	1/2" SCRD*	3" FLGD	1/2" SCRD*	½" SW/BW	3" FLGD	1" FLGD	1" FLGD	3" FLGD
2	SEAL)	IFICE (DIAPHGRAM. AL)		34" SCRD*	3" FLGD	-	-	-	=	-	-
3	FLOW METER AVERAGING PITO	OT TUBE	3" FLGD	3" FLGD (BY INST)	3" FLGD+	3" FLGD	3" FLGD (BY INST)	3" FLGD+	3" FLGD	3" FLGD (BY INST)	3" FLGD+
4	DP INSTRUMENT	'S <5>	3/4"SW/BW#	3/4"SW/BW#	½" SCRD.	3" FLGD	¾" FLGD	½" SCRD	1½" FLGD	1 ½" FLGD	½" SCRD
5	DIAPHGRAM SEA INSTRUMENTS <		3" FLGD.	3" FLGD.	3" FLGD	3" FLGD	3"FLGD	3" FLGD	3" FLGD.	3" FLGD.	3" FLGD.
6	PRESSURE INSTR	UMENTS	3/4"SW/BW#	3/4"SW/BW#	½" SCRD.	3" FLGD	3/4"SW/BW	½" SCRD	1" FLGD	1" FLGD	½" SCRD
7	DIAPHGRAM (CH SEAL PRESSURE INSTRUMENTS (S	,	3/4"SW/BW#	3⁄4"SW/BW#	½" SCRD.	3" FLGD	1 ½" SW/BW	½" SCRD	1" FLGD	1" FLGD	½" SCRD
8	DIAPHGRAM SEA PRESSURE INSTR (FLGD) <5>		1 ½" FLGD.	1 ½" FLGD.	1 ½" FLGD.	3" FLGD	1 ½"FLGD	1 ½" FLGD	1 ½" FLGD	1 1/2" FLGD	1 ½" FLGD
9	THERMOWELL		1 ½" FLGD.	-	1 ½" FLGD	3" FLGD	-	3" FLGD	3" FLGD	-	3" FLGD

NOTES: 1 FOR ANY OTHER INSTRUMENTS NOT REFERRED ABOVE THE CONNECTION DETAILS SHALL BE AS PER INDIVIDUAL REQUIREMENT.

2 ALL FLANGES/SW RATING SHALL BE AS PER PIPING SPECIFICATION.

3 IN CASE OF DIRECT MOUNTED FLANGED INSTRUMENTS AND WHERE FLANGED FIRST ISOLATION VALVE ARE PROVIDED, BOLTING AND GASKETS SHALL BE IN PIPING SCOPE.

INSTALLATION OF ALL IN LINE INSTRUMENTS SHALL BE IN PIPING SCOPE.

5 PRESSURE INSTRUMENTS INCLUDE PRESSURE TRANSMITTERS AND PRESSURE GAUGES.

* SEAL WELDING REQUIRED.

AS PER PIPING SPECIFICATION.

** STRENGTH WELD

+ CONNECTIONS FOR D.P. INSTRUMENT 1/2" SCRD

4

VENDOR LIST INSTRUMENTATION

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1.0	PRESSURE RELIEF VALVES	
1	ANDERSON GREENWOOD CROSBY	INDIA
2	BHEL (TRICHY)	INDIA
3	BLISS ANAND PVT LTD	INDIA
4	CURTISS WRIGHT FLOW CONTROLS CORPORATION	INDIA
5 6	DRESSER INC FUKUI SEISAKUSHO CO LTD	INDIA JAPAN
7	LESER GMBH & CO. KG	GERMANY
8	NAKAKITA SEISAKUSHO CO LTD	JAPAN
9	TYCO SANMER LTD	JAPAN
10	DARLING MUESCO (IND) PVT LTD	INDIA
2.0	FIELD INSTRUMENTS (PRESSURE TRANSMITTER ETC.)	
1	ABB AUTOMATION PRODUCTS GMBH	INDIA
2	ABB LTD-FARIDABAD	INDIA
3	EMERSON PROCESS MGMT ASIA PACIFIC PTE LTD	INDIA
4 5	EMERSON PROCESS MANAGEMENT INDIA PVT LT FUJI ELECTRIC SYSTEM CO. LTD	INDIA INDIA
6	HONEYWELL AUTOMATION INDIA LTD	INDIA
7	HONEYWELL INC	INDIA
8	INVENSYS INDIA PRIVATE LIMITED	INDIA
9	YOKOGAWA ELECTRIC CORPORATION	INDIA
10	YOKOGAWA INDIA LIMITED	INDIA
3.0	SPECIAL LEVEL INSTRUMENTS (GUIDED WAVE RADAR)	
1	ABB INC	INDIA
2	EMERSON PROCESS MANAGEMENT INDIA PVT LT	INDIA
3	ENDRESS+HAUSER INSTRUMENTS INTL. AG	INDIA
4 5	ENDRESS+HAUSER (I) PVT. LTD. KROHNE MESSTECHNIK GMBH & CO KG	INDIA INDIA
6	L&J TECHNOLOGIES	SINGAPORE
7	MAGNETROL INTERNATIONAL N.V	INDIA
8	VEGA GRIESHABER AG	INDIA
4.0	GAUGE GLASS & COCKS	
1	ASIAN INDUSTRIAL VALVES & INSTRUMENTS	INDIA
2	BLISS ANAND PVT LTD	INDIA
3	CESARE BONNETTI S.P.A.	INDIA
4	CHEMTROLS SAMIL (INDIA) PVT LTD	INDIA
5 6	GENERAL INSTRUMENT CONSORTIUM JERGUSON GAUGE & VALVES	INDIA USA
7	KLINGER SPA	ITALY
8	LEVCON INSTRUMENTS PVT LTD	INDIA
9	NIHON KLINGAGE CO LTD	JAPAN
10	NISAN SCIENTIFIC PROCESS EQUIPMENT P LTD	INDIA
11 12	PENBERTHY INC PHOENIX SYSTEMLEMENTE UND MESSTECHNIK	INDIA GERMANY
13	PRATOLINA INSTRUMENT PVT LTD	INDIA
14	PUNE TECHTROL PVT LTD	INDIA
15	SIGMA INSTRUMENTS CO	INDIA
16	TECNOMATIC INDIA PVT LTD	INDIA
5.0	PRESSURE GAUGES	
1	AN INSTRUMENTS PVT LTD	INDIA
2	ASHCROFT INDIA PVT LTD	INDIA
3 4	BADOTHERM PROCESS INSTRUMENTS B.V. BAUMER BOURDON HAENNI SAS	NETHERLANDS INDIA
5	BAUMER TECHNOLOGIES INDIA PVT LTD	INDIA
6	BRITISH ROTOTHERM CO. LTD	U.K.
7		
8	BUDENBERG GAUGE CO. LTD	U.K.
9	DRESSER INC	USA
10	DRESSER INC FORBES MARSHALL (HYD) PVT LTD	USA INDIA
11	DRESSER INC FORBES MARSHALL (HYD) PVT LTD GENERAL INSTRUMENTS CONSORTIUM	USA INDIA INDIA .
11 12	DRESSER INC FORBES MARSHALL (HYD) PVT LTD GENERAL INSTRUMENTS CONSORTIUM H GURU INSTRUMENTS (SOUTH INDIA) PVT LTD	USA INDIA INDIA . INDIA
11 12 13	DRESSER INC FORBES MARSHALL (HYD) PVT LTD GENERAL INSTRUMENTS CONSORTIUM	USA INDIA INDIA .
12	DRESSER INC FORBES MARSHALL (HYD) PVT LTD GENERAL INSTRUMENTS CONSORTIUM H GURU INSTRUMENTS (SOUTH INDIA) PVT LTD H GURU INDUSTRIES	USA INDIA INDIA INDIA INDIA



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WIKA ALEXANDER WIEGAND & CO GMBH INDIA 16 WIKA INSTRUMENTS INDIA PVT LTD **INDIA** 17 **TUBE FITTINGS** 6.0 ARYA CRAFTS & ENGG PVT LTD ASTEC VALVES & FITTINGS PVT LTD 2 3 **AURA INC** 4 AUTOCLAVE ENGINEERS FLUID COMPONENTS 5 CIRCUR INSTR. TECHNOLOGIES INC. FORM H608 6 **COMFIT & VALVES PVT LTD** 7 EXCEL HYDRO PNEUMATIC PVT LTD 8 EXCELSIOR ENGG. WORKS 9 FLUID CONTROLS PVT LTD MULTI METALS INDUSTRIES 10 11 PANAM ENGINEER PARKER HANNIFIN CORPORATION 12 SWAGELOK CO. 13 SWASTIK ENGINEERING WORKS 14 **TEMPERATURE GAUGE** 7.0 AN INSTRUMENTS PVT LTD **INDIA** 2 ASHCROFT INDIA PVT LTD INDIA 3 BADOTHERM PROCESS INSTRUMENTS B.V. **NETHERLANDS** BAUMER BOURDON HAENNI SAS 4 **INDIA** 5 BAUMER TECHNOLOGIES INDIA PVT. LTD **INDIA** DRESSER INC. 6 USA FORBES MARSHALL (HYD) PVT. LTD. INDIA 7 H GURU INSTRUMENTS (SOUTH INDIA) PVT. LTD 8 **INDIA** 9 H GURU INDUSTRIES INDIA 10 NAGANOKEIKI SEISAKUSHO LTD JAPAN **INDIA** 11 PYRO-ELECTRIC INSTRUMENTS GOA PVT LTD 12 SOLARTRON ISA U.K 13 WALCHANDNAGAR INDUSTRIES LTD INDIA WIKA ALEXANDER WIEGAND & CO GMBH **INDIA** 14 WIKA INSTRUMENTS INDIA PVT LTD 15 **INDIA** 8.0 **ORIFICE PLATES & FLANGES** BALIGA LIGHTING EQUIPMENTS (P) LIMITED **INDIA CAMERON LTD** 2 UK 3 GENERAL INSTRUMENTS CONSORTIUM INDIA MICRO PRECISION PRODUCTS PVT LTD INDIA 4 5 DANIEL MEASUREMENT & CONTROL ASIA PACIFIC SINGAPORE 6 STRA-MECH CONTROLS (INDIA) PVT LTD **INDIA** EUREKA IDUSTRIAL EQUIPMENTS (P) LTD 7 INDIA 8 **GURU NANAK ENGG WORKS INDIA** 9 INSTRUMENTATION LTD (PALGHAT) **INDIA** 10 PETROL VALVES SRL **ITALY** PIFTRO FIORENTINI SPA **ITALY** 11 12 TM TECHNOMATIC SPA **ITALY** 9.0 **ROTAMETER** ALFLOW GLASS EQUIPMENT INDIA **ITALY** 2 ASA SPA 3 ABB AUTOMATION PRODUCTS GMBH **INDIA** 4 **BROOKS INSTRUMENTS INDIA** 5 EUREKA INDUSTRIAL EQUIPMENT(P) LTD INDIA HEINRICHS MESSTECHNIK GMBH 6 **GERMANY** 7 INSTRUMENTATION ENGINEERS PVT LTD **INDIA** 8 KHRONE MESSTECHNIK GMBH & CO KG **GERMANY** KROHNE MARSHALL PVT LTD INDIA 9 10 PLACKA INSTRUMENTS INDIA PVT LTD **INDIA** ROTA YOKOGAWA GMBH & CO KG **INDIA** 11 12 TOKYO KEISO CO LTD JAPAN YOKOGAWA INDIA LIMITED **INDIA** 13 **SELF ACTUATED CONTROL VALVE** 10.0 DRESSER VALVE INDIA PVT LTD INDIA 1 2 DRESSER PRODUITS INDUSTRIES **INDIA** 3. EMERSON PROCESS MANAGEMENT CHENNAI LIMITED **INDIA**



VENDOR LIST INSTRUMENTATION

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4 5 6	NIRMAL INDUSTRIAL CONTROL PVT LTD RMG REGEL+MESSTECHNIK GMBH SAMSON CONTROLS PVT LTD	INDIA GERMANY INDIA
11.0	CABLE GLANDS	
1	BALIGA LIGHTING EQUIPMENTS (P) LIMITED	INDIA
2	FCG FLAMPROOF CONTROL GEARS P. LTD	INDIA
3	FCG POWER INDUSTRIES PVT LTD	INDIA
4	FLAMEPROOF EQUIPMENTS PVT. LTD	INDIA
5	FLEXPRO ELECTRICALS PVT LTD	INDIA
6	GOVAN INDUSTRIES (INDIA) P LTD	INDIA
7	PROMPT ENGINEERING WORKS	INDIA
8	SUDHIR SWITCHGEARS PVT LTD	INDIA

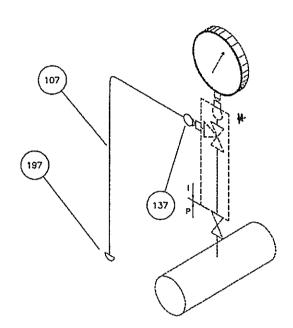


PRESSURE GAUGE WITH STRAIGHT MAY VALVE MANIFOLD

LIQUID/ GAS SERVICE

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HANIFOLF SHALL BE SUPPLIED BY PRESSURE GAUGE JENOOR.

P - BY PIPING I - BY INSTRUMENTATION

				IST	OF	ITE	EMS				-	
CODE	DESCRIPTION	SIZE	ENDS	QTY.	UNIT	CODE	DESCRIPTION	ON	SIZE	ENDS	QTY.	UNIT
	•					107	TUBE	1/2	•	OD	A/R	m
						137	MALE CONNECT	OR 1/2	X 1/2	TH X OD	1	Nø
						197	TUBING CAP	1/2	•	COD	1	Nø
					<u> </u>	ļ	<u> </u>			<u> </u>		
						<u> </u>	<u> </u>			<u> </u>		
						-					_	
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4	01-08-11	Revis	ed & Reissued		1		Manoj	RQQ	$\frac{2}{2}$ $-\frac{1}{2}$	2 2 A	DM	L) m
3	07-08-06	Reaffirm	ed and Reissue	i		*	MN	TGM		PM	NLV	
Rev.	Date	0.	rpose			Pr	•	Checked		Committee Invenor	Stds. But Chairm	
No.	Date		those				by	by	Approved by			<u>u.,</u>

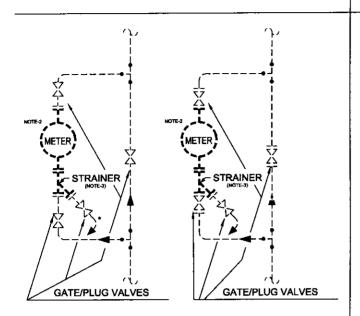


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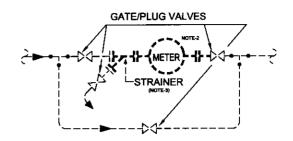
POSITIVE DISPLACEMENT METER IN VERTICAL LINE

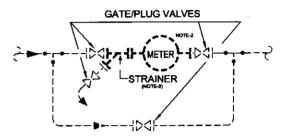
POSITIVE DISPLACEMENT METER IN HORIZONTAL LINE



* DRAIN (TYP.) ALTERNATIVE WITH FLANGED

* VALVES (TYP.)

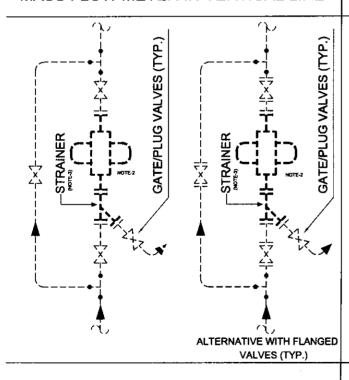


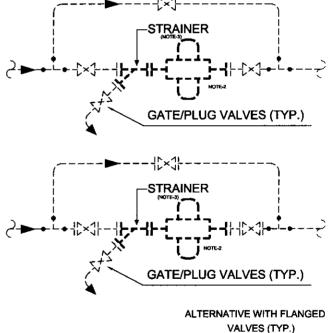


ALTERNATIVE WITH FLANGED VALVES (TYP.)

MASS FLOW METER IN VERTICAL LINE

MASS FLOW METER IN HORIZONTAL LINE





- 1. ENTIRE INSTALLATION SHOWN IS BY PIPING / MECHANICAL CONTRACTOR, P & ID SHALL BE REFERRED FOR FINAL SCHEME.
- 2. PROCUREMENT BY INSTRUMENT GROUP.
- 3. PROCUREMENT BY PIPING / INSTRUMENT GROUP AS PER P&ID.

		MENT OF OTHER ITEMS NOT COVERED IN N		PIPINGS	-0'l~	G I
3	25.10.11	REVISED & REISSUED	Manoj X	G	RP/JMS	DM
2	08.02.07	REVISED & REISSUED	MN	TGM	HCJ	VC
Rev.	Date	Purpose	Prepared	Checked	Stds. Committee Convenor	Stds. Bureau Chairman
NO.			by	by	Approv	ed by



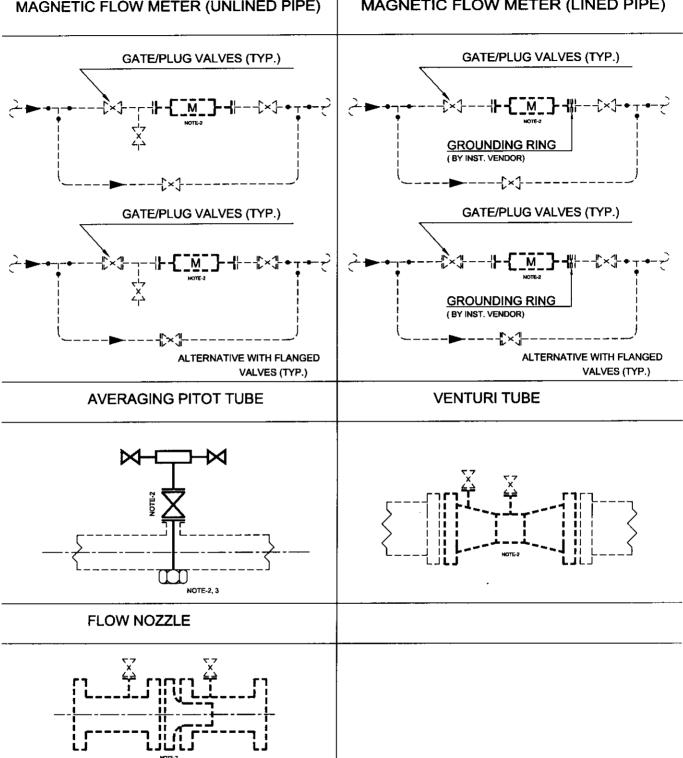
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MAGNETIC FLOW METER (UNLINED PIPE)

MAGNETIC FLOW METER (LINED PIPE)



- 1. ENTIRE INSTALLATION SHOWN IS BY PIPING / MECHANICAL CONTRACTOR, P & ID SHALL BE REFERRED FOR FINAL SCHEME.
- 2. PROCUREMENT BY INSTRUMENT GROUP.
- 3. END SUPPORT, WHEREVER APPLICABLE, SHALL BE AS PER VENDOR DRAWINGS.
- 4. PROCUREMENT OF OTHER ITEMS NOT COVERED IN NOTE-2 & NOTE-3 BY PIPING.

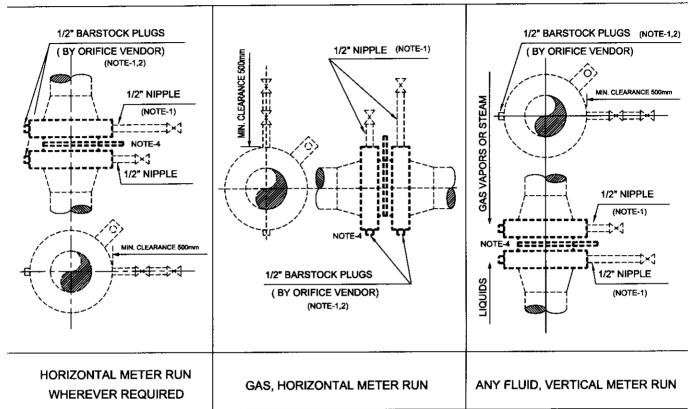
					02:1~	1 mal
3	25.10.11	REVISED & REISSUED	Manoj <	RG	RP/JMS	DM
2	08.02.07	REVISED & REISSUED	MN	TGM	HCJ	VC
Rev.	Date	Purpose	Prepared	Checked	Stds. Committee Convenor	Stds. Bureau Chairman
No.			by	by	Approve	ed by

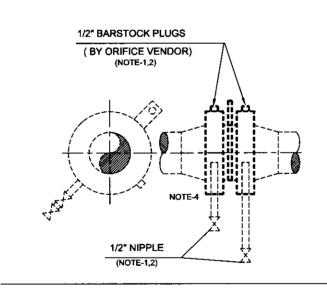


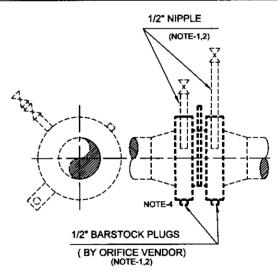
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ORIFICE FLANGE ASSEMBLIES - SINGLE TAPPING (FOR RATING UPTO ASME CLASS 600)







LIQUID LINES ON PIPE RACK

STEAM / GAS LINES ON PIPE RACK

- 1. SEAL WELDING BY PIPING GROUP.
- 2. ORIFICE VENDOR SHALL PROVIDE 1/2" BAR STOCK PLUG FOR SPARE TAPPING.
- 3. ENTIRE INSTALLATION SHOWN IS BY PIPING / MECHANICAL CONTRACTOR.
- 4. PROCUREMENT BY INSTRUMENT GROUP.
- 5. PROCUREMENT OF OTHER ITEMS NOT COVERED IN NOTE-2 & NOTE-4 BY PIPING.

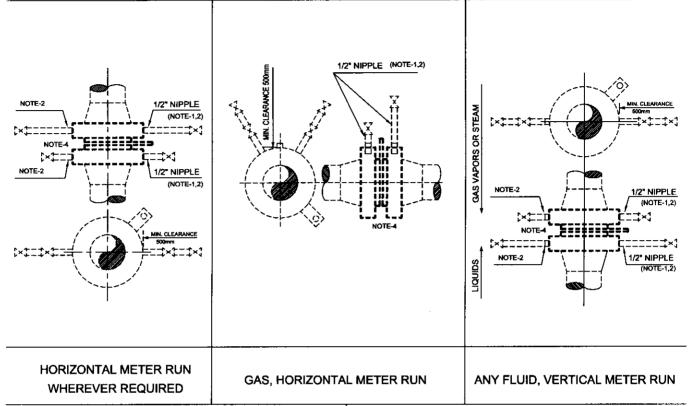
6. IN C	ASE OF PRE-FA	ABRICATED HOOKUP, NIPPLE & ISOLATION VA	ALVE SHALL BE SUPF	LIED BY PREFA	B VENDOR)	mel
3	25.10.11	REVISED & REISSUED	Manoj MA	RG	RP/JMS	DM
2	08.02.07	REVISED & REISSUED	MN	TGM	HCJ	VC
Rev.	Date	Purpose	Prepared	Checked	Stds. Committee Convenor	Stds. Bureau Chairman
NO.			by	by	Approv	ed by

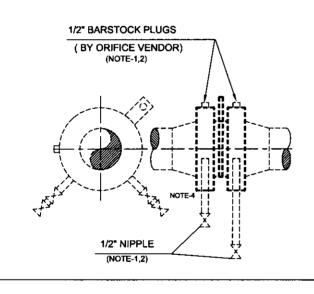


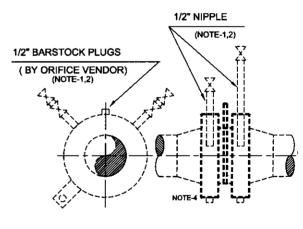
STANDARD No. 7-52-0005 Rev. 3

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ORIFICE FLANGE ASSEMBLIES - TWO TAPPINGS (FOR RATING UPTO ASME CLASS 600)







LIQUID LINES ON PIPE RACK

STEAM / GAS LINES ON PIPE RACK

- 1. SEAL WELDING BY PIPING GROUP.
- 2. ORIFICE VENDOR SHALL PROVIDE 1/2" BAR STOCK PLUG FOR SPARE TAPPING.
- 3. ENTIRE INSTALLATION SHOWN IS BY PIPING / MECHANICAL CONTRACTOR.
- 4. PROCUREMENT BY INSTRUMENT GROUP.
- 5. PROCUREMENT OF OTHER ITEMS NOT COVERED IN NOTE-2 & NOTE-4 BY PIPING.

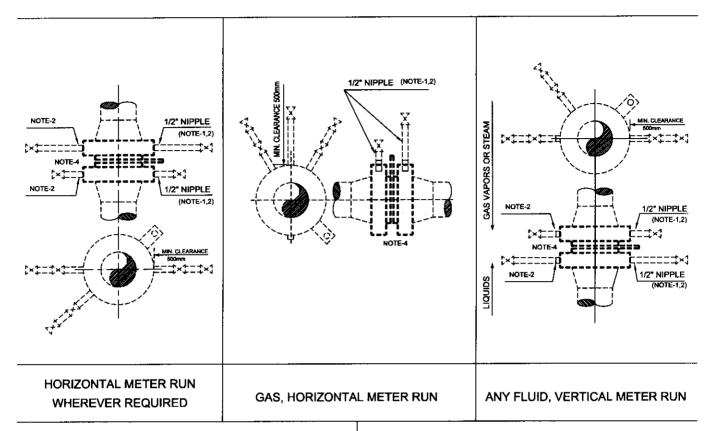
6. IN	6. IN CASE OF PRE-FABRICATED HOOKUP, NIPPLE & ISOLATION VALVE SHALL BE SUPPLIED BY PREFAB VENECA							
3	25.10.11	REVISED & REISSUED	Manoj (RG	RP/JMS	DM		
2	08.02.07	07 REVISED & REISSUED	MN	тсм	HCJ	VC		
Rev.	Date	Purpose	Prepared	Checked by	Stds. Committee Convenor	Stds, Bureau Chairman		
140.		-	by	Бу	Approve	ed by		

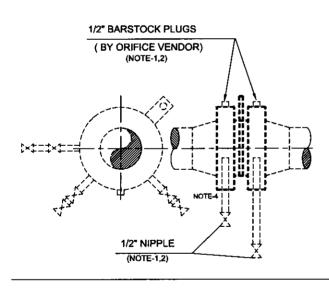


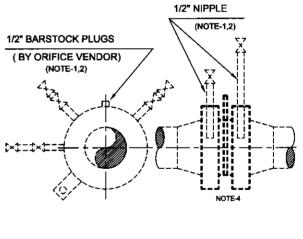
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ORIFICE FLANGE ASSEMBLIES - THREE TAPPINGS (FOR RATING UPTO ASME CLASS 600)







LIQUID LINES ON PIPE RACK

STEAM / GAS LINES ON PIPE RACK

- 1. SEAL WELDING BY PIPING GROUP.
- 2. ORIFICE VENDOR SHALL PROVIDE 1/2" BAR STOCK PLUG FOR SPARE TAPPING.
- 3. ENTIRE INSTALLATION SHOWN IS BY PIPING / MECHANICAL CONTRACTOR.
- 4. PROCUREMENT BY INSTRUMENT GROUP.
- 5. PROCUREMENT OF OTHER ITEMS NOT COVERED IN NOTE-2 & NOTE-4 BY PIPING.

	IN CASE OF PRE-FABRICATED HOOKUP, NIPPLE & ISOLATION VALVE SHALL BE SUPPLIED BY PREFAB VENDOR								
3	25.10.11	REVISED & REISSUED	Manojゃへ	AG RG	PRP/JMS	DM			
2	08.02.07	REVISED & REISSUED	MN	TGM	HCJ	VC			
Rev.	Date	Purpose	Prepared	Checked	Stds. Committee Convenor	Stds. Bureau Chairman			
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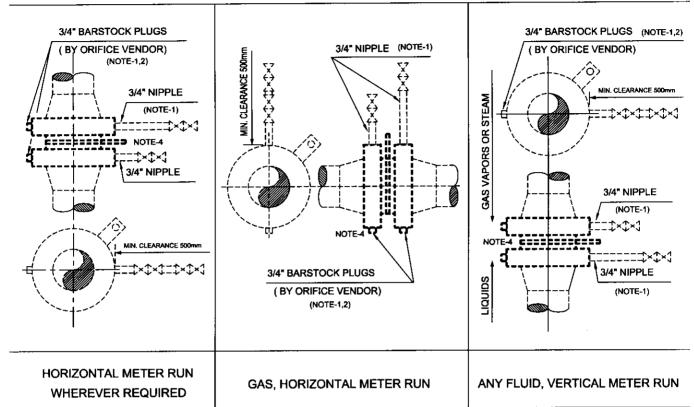


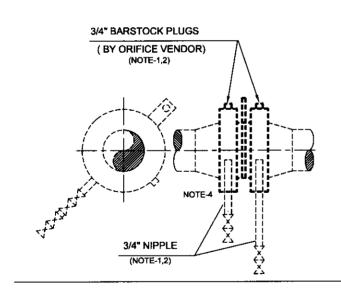
FLOW METER ENGINEERS INDIA LIMITED INSTALLATION HIGH PRESSURE (A Govi of India Undertaking) SCOPE OF WORK

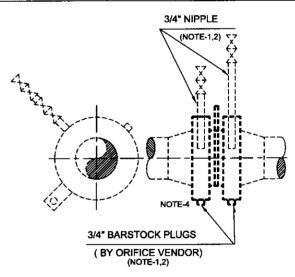
STANDARD No. 7-52-0005 Rev. 3

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ORIFICE FLANGE ASSEMBLIES - SINGLE TAPPING (FOR RATING ABOVE ASME CLASS 600)







LIQUID LINES ON PIPE RACK

STEAM / GAS LINES ON PIPE RACK

- 1. SEAL WELDING BY PIPING GROUP.
- 2. ORIFICE VENDOR SHALL PROVIDE 3/4" BAR STOCK PLUG FOR SPARE TAPPING.
- 3. ENTIRE INSTALLATION SHOWN IS BY PIPING / MECHANICAL CONTRACTOR.
- 4. PROCUREMENT BY INSTRUMENT GROUP.
- 5. PROCUREMENT OF OTHER ITEMS NOT COVERED IN NOTE-2 & NOTE-4 BY PIPING.

6. IN C	6. IN CASE OF PRE-FABRICATED HOOKUP, NIPPLE & ISOLATION VALVE SHALL BE SUPPLIED BY PREFAB VENDOR.							
3	25.10.11	REVISED & REISSUED	Manoj 👭	RG	RP/JMS	DM		
2	08.02.07	REVISED & REISSUED	MN	TGM	HCJ	vc		
Rev.	Date	Purpose	Prepared	Checked	Stds. Committee Convenor	Stds. Bureau Chairman		
No.			by	by	Approv	ed by		

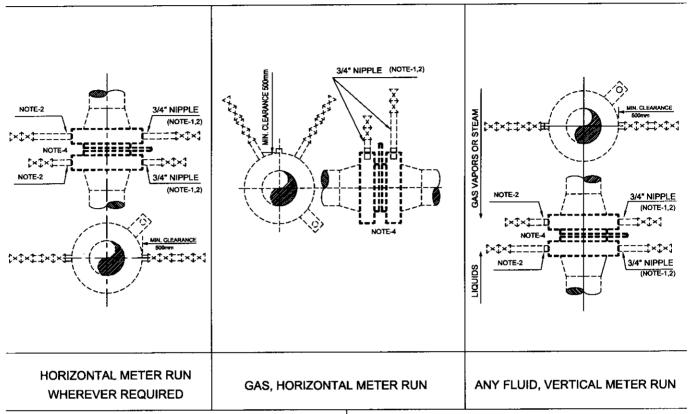


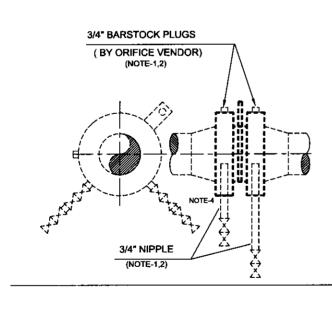
FLOW METER NGINEERS NDIA LIMITED INSTALLATION HIGH PRESSURE SCOPE OF WORK

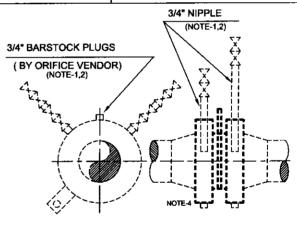
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ORIFICE FLANGE ASSEMBLIES - TWO TAPPINGS (FOR RATING ABOVE ASME CLASS 600)







LIQUID LINES ON PIPE RACK

STEAM / GAS LINES ON PIPE RACK

- 1. SEAL WELDING BY PIPING GROUP.
- 2. ORIFICE VENDOR SHALL PROVIDE 3/4" BAR STOCK PLUG FOR SPARE TAPPING.
- 3. ENTIRE INSTALLATION SHOWN IS BY PIPING / MECHANICAL CONTRACTOR.
- 4. PROCUREMENT BY INSTRUMENT GROUP.
- 5. PROCUREMENT OF OTHER ITEMS NOT COVERED IN NOTE-2 & NOTE-4 BY PIPING.

6. IN	6. IN CASE OF PRE-FABRICATED HOOKUP, NIPPLE & ISOLATION VALVE SHALL BE SUPPLIED BY PREFAB VENDOR					
3	25.10.11	REVISED & REISSUED	Manoj	RG RG	TRP/JMS	DM
2	08.02.07	REVISED & REISSUED	MN	TGM	HCJ	VC
Rev.	Date	Purpose	Prepared by	Checked by -	Stds. Committee Convenor	Stds. Bureau Chairman
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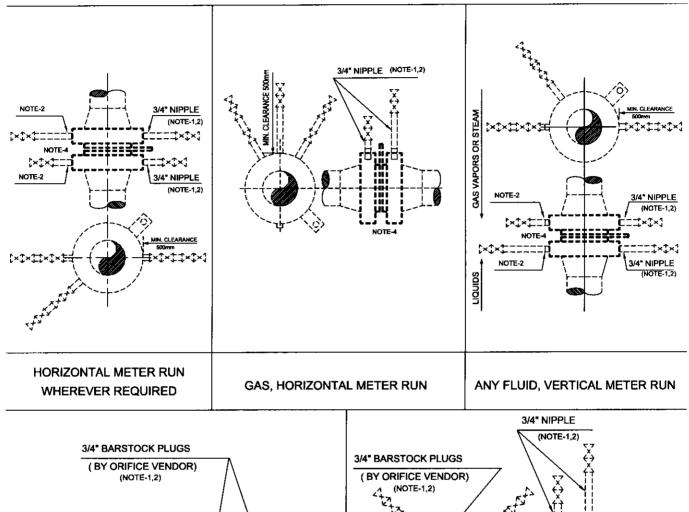


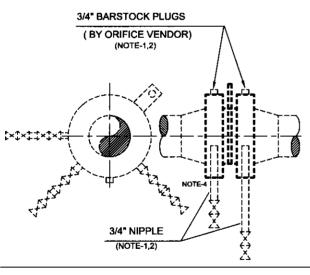
FLOW METER NCINEERS NDIA LIMITED INSTALLATION HIGH PRESSURE Govt of India Undertaking) SCOPE OF WORK

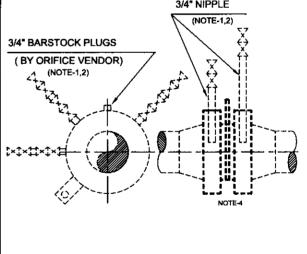
STANDARD No. 7-52-0005 Rev. 3

Page 8 of 8

ORIFICE FLANGE ASSEMBLIES - THREE TAPPINGS (FOR RATING ABOVE ASME CLASS 600)







LIQUID LINES ON PIPE RACK

STEAM / GAS LINES ON PIPE RACK

- 1. SEAL WELDING BY PIPING GROUP.
- 2. ORIFICE VENDOR SHALL PROVIDE 1/2" BAR STOCK PLUG FOR SPARE TAPPING.
- 3. ENTIRE INSTALLATION SHOWN IS BY PIPING / MECHANICAL CONTRACTOR, P & ID SHALL BE REFERRED FOR FINAL SCHEME.
- 4. PROCUREMENT BY INSTRUMENT GROUP.
- 5. PROCUREMENT OF OTHER ITEMS NOT COVERED IN NOTE-2 & NOTE-4 BY PIPING.

6. 11	CASE OF PRE-F	FABRICATED HOOKUP, NIPPLE & ISOLATION	VALVE SHALL BE SUP	PLIED BY PREFA	AB VENDOR ~	Some
3	25.10.11	REVISED & REISSUED	Manoj 👭	RG	RP/JMS	DM
2	08.02.07	REVISED & REISSUED	MN	TGM	HCJ	VC
Rev.	Date	Purpose	Prepared by	Checked by -	Stds. Committee Convenor	Stds. Bureau Chairman
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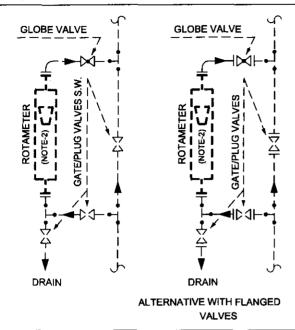
ROTAMETER **INSTALLATION SCOPE OF WORK**

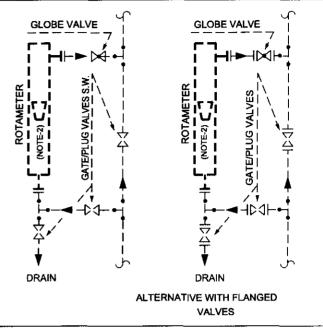
STANDARD No. 7-52-0006 Rev. 3

Page 1 of 1

GLASS AND TUBE ROTAMETER (TOP AND BOTTOM CONNECTIONS)

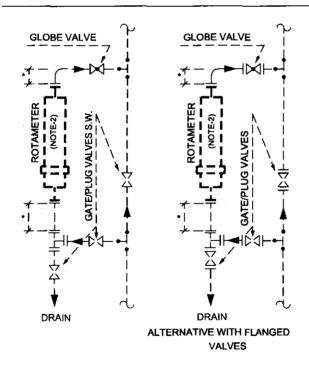
GLASS TUBE ROTAMETER (TOP SIDE AND BOTTOM CONNECTIONS)

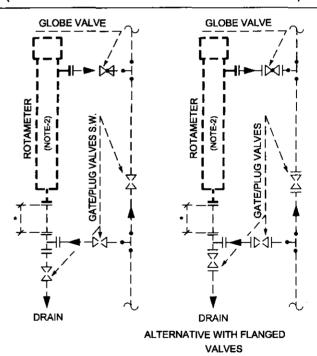




METAL TUBE ROTAMETER (TOP AND BOTTOM CONNECTIONS)

METAL TUBE ROTAMETER (TOP SIDE AND BOTTOM CONNECTIONS)





* A MINIMUM OF 6" STRAIGHT RUN REQUIRED AT THESE POINTS

* A MINIMUM OF 6" STRAIGHT RUN REQUIRED AT THESE POINTS

- 1. ENTIRE INSTALLATION SHOWN IS BY PIPING / MECHANICAL CONTRACTOR, P & ID SHALL BE REFERRED FOR FINAL SCHEME.
- 2. PROCUREMENT BY INSTRUMENT GROUP.

3.	PROCUREMENT	OF OTHER	ITEMS NOT CO	VERED IN NOT	E-2 BY PIPING.

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3	25-10-11	Reaffirmed and Reissued	Manoj *	OFFRG	RP/JMS	DM
2	22-07-05	Reaffirmed and Reissued	MN	AKG	PM	VJN
Rev.	Date	Purpose	Prepared	Checked	Stds. Committee Convenor	Stds. Bureau Chairman
No.		·	by	by	Approv	ed by



PRESSURE INSTRUMENT INSTALLATION SCOPE OF WORK

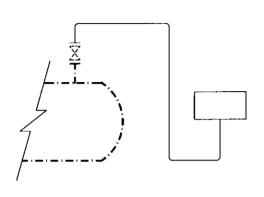
STANDARD No.

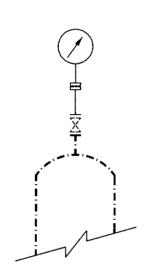
7-52-0003 Rev. 3

Page 1 of 3

(P-1) PRESSURE INSTRUMENT ON VESSEL

(P-2) CHEMICAL SEAL PRESSURE GAUGE (SCRD.) ON VESSEL

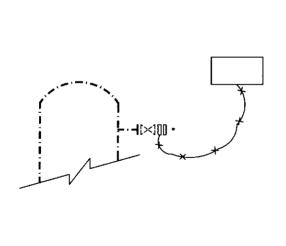


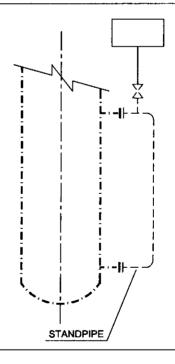


(P-3) DIAPHRAGM SEAL PRESS. INST./GAUGE (FLGD.) ON VESSEL WITH CAPILLARY

(P-4)

PRESSURE INSTRUMENT ON STAND PIPE





NOTE:

- * STUD LENGTH = STANDARD LENGTH + 3" STUD & NUTS BY INSTRUMENT GROUP
- 1. REFER STANDARD NO. 7-52-0001 & 7-52-0002 FOR SIZE & TYPE OF ISOLATION VALVE.

INSTRUMENT GROUP
PIPING GROUP

VESSEL GROUP

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3	11-11-11	REVISED & REISSUED	Manoj 🎝 🔨	RG)	P/JMS	DM
2	08.02.07	REVISED & REISSUED	MN	TGM	HCJ	VC
Rev.	Date	Purpose	Prepared	Checked	Stds. Committee Stds. Bure Convenor Chairma Approved by	
No.			by	by		

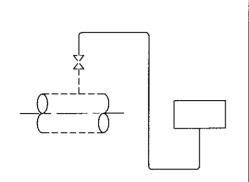


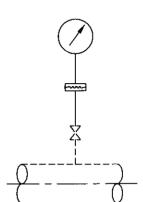
PRESSURE INSTRUMENT INSTALLATION SCOPE OF WORK

STANDARD No. 7-52-0003 Rev. 3

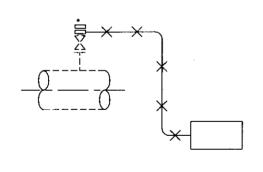
Page 2 of 3

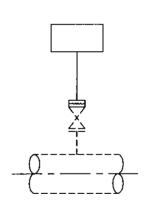
(P-5) PRESSURE INSTRUMENT ON PIPE (P-6) CHEMICAL SEAL PRESSURE GAUGE (SCRD.) ON PIPE





(P-7) DIAPHRAGM SEAL PRESSURE INST./ GAUGE ON PIPE WITH CAPILLARY (P-8) DIAPHRAGM SEAL PRESSURE INST./ GAUGE (FLGD) ON PIPE





NOTE:

* STUD LENGTH = STANDARD LENGTH + 3" STUD & NUTS BY INSTRUMENT GROUP INSTRUMENT GROUP

20

1. REFER STANDARD NO. 7-52-0001 & 7-52-0002 FOR SIZE & TYPE OF ISOLATION VALVE.

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3	11-11-11	REVISED & REISSUED	Manoj 👭	RG	RP/JMS	DM
2	08.02.07	REVISED & REISSUED	MN	TGM	HCJ	VC
Rev.	Date	Purpose	Prepared	Checked	Stds. Committee Convenor	Stds. Bureau Chairman
No.				Approve	ed by	

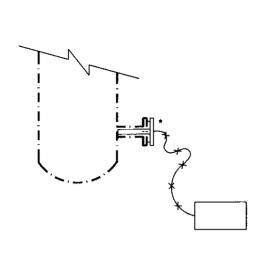


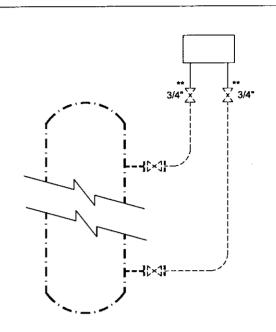
PRESSURE INSTRUMENT **INSTALLATION SCOPE OF WORK**

STANDARD No. 7-52-0003 Rev. 3

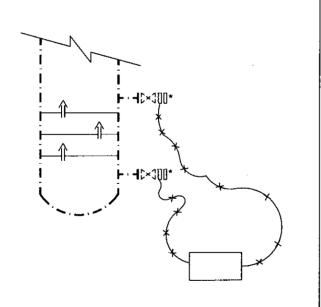
Page 3 of 3

PRESSURE INSTRUMENT (P-9) EXTENDED DIAPHRAGM SEAL ON VESSEL (P-10) DIFFERENTIAL PRESSURE INSTRUMENT **ACROSS COLUMN**





DIAPHRAGM SEAL (P-11) **DP INSTRUMENT ON EQUIPMENT**



INSTRUMENT GROUP

PIPING GROUP

VESSEL GROUP

NOTE: * STUD LENGTH = STANDARD LENGTH + 3"

STUD & NUTS BY INSTRUMENT GROUP

** PROVIDE AT THE PLATFORM ABOVE THE UPPER TAP-OFF POINT.

1. REFER STANDARD NO. 7-52-0001 & 7-52-0002 FOR SIZE & TYPE OF ISOLATION VALVE.

	FOR SIZE & TYPE	OF ISOLATION VALVE.			00.0~	Jonel
3	11-11-11	REVISED & REISSUED	Manoj ⋞∕	RG	AP/JMS	DM
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THERMOWELL INSTALLATION SCOPE OF WORK

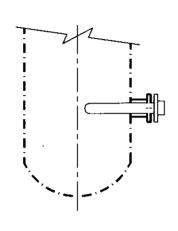
STANDARD No. 7-52-0007 Rev. 3

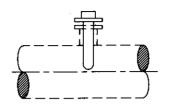
Page 1 of 1

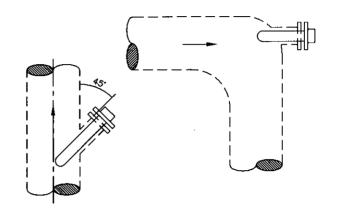
(T-1) THERMOWELL ON VESSEL

(T-2)

THERMOWELL ON PIPE

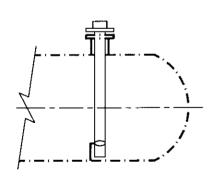


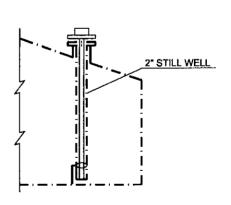




(T-3) THERMOWELL ON BURRIED VESSEL

(T-4) THERMOWELL ON STORAGE TANK





NOTE: 1. REFER STANDARD NO. 7-52-0001 & 7-52-0002 FOR SIZE & TYPE OF ISOLATION VALVE.

- — INSTRUMENT GROUP
- — PIPING GROUP

VESSEL GROUP

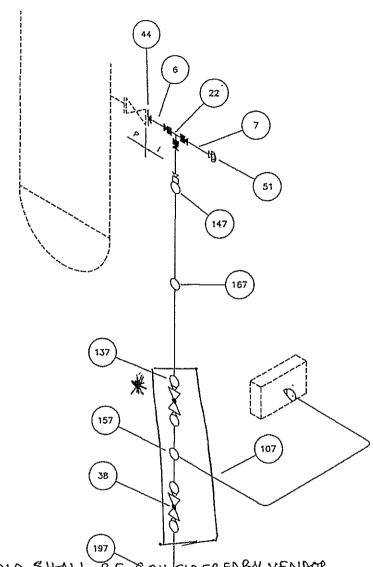
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3	11-11-11	REVISED & REISSUED	Manoj 🔨 🦴	RG/	AP/JMS	DM	
2	08.02.07	REVISED & REISSUED	MN	TGM	HCJ	VC	
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PRESSURE INSTRUMENT GAS SERVICE (ON VESSEL) METER BELOW

STANDARD No. **A 5/67-52-0449** Rev. 2

Page 1 of 1



2 VALVE MANIFOLD SHALL BE CONSIDERED BY VENDOR

HANIFOLD SHALL BE SUPPLIED BY PRESSURE SUSTRUMENT VENDOR

1-BY INSTRUMENTATION

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Rev.	Date	٤	'urpose			Pre	epared	Chec			ommittee venor	Stds, Bur Chairm	
1	09.02.07	Rev	ised & Reissued				MN	TGI	VI	Н	ಬ	vc	
2	01-08-11	Rev	ised & Reissued			٨	ianoj	RG	<i>XX</i>	RP/	UMST	DM	Im
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				1								_	
													-
51	CAP	1/2*	ТН	1	Nø	197-	TUBING CAP		-1/27		OD		Nn-
44	FLANGE	1.1/2" X 1/2"	FLX SW (Red)	11	Ne	167	TUBE UNION		1/2*		QD	1	Nø
38	GLOSE VALVE	1/2	TH .	2	זטאו	157	UNION TEE-		412		00		Nø
22	EQUAL TEE	1/2	sw	1	Ne	147	FEMALE CONN	ECTOR	1/2" X 1/2	2*	THIX OD	1	Ns
7	NIPPLE	1/2"	THXPL	2	Nø	137	MALE CONNEC	TOR	1/2° X 1/	2*	THX OD	11	No
6	NIPPLE	1/2"	PLXPL	1	Nø	107	TUBE		1/2*		OD	A/R	m
CODE	DESCRIPTION	SIZE	ENDS	QTY.	UNIT	CODE	DESCRIPT	NOI	SI	ZE	ENDS	OTY.	דואט

Data Sheet for Squirrel Cage Induction Motors

DOCUMENT No. A546-604-16-50-DS-5010 Rev. A

Page 1 of 3

Data Sheet for Squirrel Cage Induction Motors

General Notes:

- 1) kW rating indicated for motors are estimated rating. Bidder to indicate final kW rating of the offered motors.
- 2) Motor kW shall be decided by bidder for the starting and running conditions specified in pump data sheet.
- 3) Bidder to source drives from the choices given in motor data sheet for Indian makes.
- 4) Space heater shall be provided for motors rated 30kW and above.
- 5) Cable Size for motor space heater shall be 3x2.5 mm² with Cu Conductor.
- **6)** Suitable cable glands and lugs shall be supplied with motors for termination of purchaser's power cables.
- 7) In addition to the hazardous area as specified, offered motors shall be suitable for operating in exposure to coke dust as usually found in refinery de-coking area.
- 8) Bidder to fill appropriate motor data sheet depending upon the rating of motor for the offered model against each pump tag number separately.
 - Sheet- 2 of this data sheet shall be filled for motors up to 55 kW
 - Sheet- 3 of this data sheet shall be filled for motors above 55 kW up to160 kW.
- 9) Recommended quantity and unit price of maintenance spares for two years operation shall be furnished for each rating and type of motor. The same shall include but not limited to the following:-

Item	Unit rate	Recommended qty.
Bearings for DE & NDE		
Cooling fan		
Terminal block		
Terminal box cover with screws.		

Separate quotation required for each rating.

List of Motors for Pump -Centrifugal-Horizontal /Multistage:

S/No	Tag no.	Pump service	Unit No.	Motor kW (Note-1)	No. of Poles
1	604-PM-00-061 A/B	Fractionator Bottom Re-circulation Pumps	604	5.5	
2	604-PM-00-063 A/B	New Lean Kero Pumps	604	75	
3	604-PM-00-066 A/B	CFO Booster pumps	604	9.3	
4	604-PM-00-067 A/B	Deluge Water Pumps	604	160	
5	604-PM-069 A/B	CFO CR/IR Pumps	604	37	

Α	08.08.14	Issued with MR	SA	ST	ST
Rev. No	Date	Purpose	Prepared	Checked	Approved by
			by	by	

Data Sheet for Squirrel Cage Induction Motors

DOCUMENT No. A546-604-16-50-DS-5010 Rev. A

Page 2 of 3

Data Sheet for Medium Voltage Squirrel Cage Induction Motor ELECTRICAL DESIGN DATA – for motors up to 55 KW

1	Motor tag no.: As per Shee	t 1		
2	Voltage(V):415V±10%, Phase:	3, Frequency(Hz.):	50Hz ± 3% Combined variation of voltage &frequency-±10%,	
3	Fault level (kA):	50 KA fo	r 1 second (Motors are MCCB Protected)	
4	Method of starting:	D.O.L.		
5	Phase: THREE	Connection:	DELTA No. of terminals: SIX	
6	Design Ambient temp (°C)	46°C	Temp. rise(°C): 74°C	
7	Cable size(mm ²):	Later	Type Cu / Al. cond., PVC insulated, armoure	
8	Enclosure type	IP-55	Cooling: TEFC	
9	Insulation class		Class "F" (temp. rise limited to class B)	
10	Haz. Area classification/Gas Group: Zone-2, IIA/IIB, T3			
11	Type of explosion protection:	Ex'd'	Applicable Standards: IS, 6-51-0032 Rev. 5	

Technical particulars from Driven equipment manufacturer

12	Suggested Motor Rating in kW / Manufacturer:	*/*
13	Shaft kW / kW at end of curve:	*/*
14	Speed/rotation of equipment from Coupling End:	*/*
15	Starting/max. Torque required (m-kg):	*/*
16	WK ² of equipment Including/excluding flywheel (kg-m ²):	*/*
17	Thrust up/down (kg):	*/*
18	Equipment/coupling type:	*/*
19	Starting Condition -On no load/Under loaded Condition:	*

Technical particulars from Motor Manufacturer

20	Manufacturer(Indigenous): Bharat Bijlee,	Crompton Greaves,	Kirloskar Electric co., Laxmi Hydraulics, Marathon Electric
21	kW Rating:	*	No. of poles:
22	Frame designation:	*	Mounting: *
23	Full load speed (rpm):	*	Full load Torque (m-kg):*
24	Starting torque as %of full load torque:	*	
25	Full load current (A):	*	
26	Starting current at 100% Voltage (A):	*	(<=600 % + Tolerance)
27	Break down or pull out torque%:	*	
28	Rotation viewed from motor NDE:	* (Compa	tible with direction of rotation of driven equipment)
29	Starting time at 75%V (sec.):	*	Starting time at 100%V (sec): *
30	Time (Te) for increased safety motors a	t 100% Voltage (sec): *
31	Locked rotor with stand time cold/hot at	75% V (sec):	*/* At 100% V (sec): */*
32	WK ² of motor (kg-m ²):	*	
33	Power factor at 100%load:	*	Power Factor at 75% load: *
34	Efficiency at 100% load:	*	Efficiency at 75% load: *
35	Space heater watts/volts:	*/240V AC	
36	Bearing type/no. DE:	*/*	Bearing type/no. NDE: */*
37	Type of Lubrication:	*	
38	Weight of motor (kg):	*	
39	Motor Canopy	Required	

NOTES:

- 1) Motor Terminal Box shall be suitable for the cable sizes, to be informed later.
- 2) Vendor shall submit motor data sheets after filling up the same separately for each motor.

Data Sheet for Squirrel Cage Induction Motors

DOCUMENT No. A546-604-16-50-DS-5010 Rev. A

Page 3 of 3

Data Sheet for Medium Voltage Squirrel Cage Induction Motor ELECTRICAL DESIGN DATA – for motors above 55 KW up to 160 kW

1	Motor tag no.: As per Shee	et 1			
2	Voltage(V):415V±10%, Phase:	3, Frequency(Hz	z.): 50Hz ± 3% Combined	d variation of voltage &freq	uency- ±10%,
3	Fault level (kA): 50 K	A for 1 second (r	notors are protected	by combination of AC	B with relay)
4	Method of starting:	D.O.L.			
5	Phase: THREE	Connection:	DELTA	No. of terminals:	SIX
6	Design Ambient temp (°C)	46°C	Temp. rise(°	°C): 74°C	
7	Cable size(mm ²): Later	Туре	Al. cond., PVC insu	ılated, armoured	
8	Enclosure type	IP-55	Cooling:	TEFC	
9	Insulation class		Class "F" (temp. rise limited to clas	ss B)
10	Haz. Area classification/Gas (Group:	Zone-2, IIA	/IIB, T3	
11	Type of explosion protection:	Ex'd'	Applicable S	Standards: IS, 6-51-0032	Rev. 5

Technical particulars from Driven equipment manufacturer

12	Suggested Motor Rating in kW / Manufacturer:	*/*
13	Shaft kW / kW at end of curve:	*/*
14	Speed/rotation of equipment from Coupling End:	*/*
15	Starting/max. Torque required (m-kg):	*/*
16	WK ² of equipment Including/excluding flywheel (kg-m ²):	*/*
17	Thrust up/down (kg):	*/*
18	Equipment/coupling type:	*/*
19	Starting Condition -On no load/Under loaded Condition:	*

Technical particulars from Motor Manufacturer

20	Manufacturer(Indigenous): Bharat Bijlee, C	Crompton Greaves, Kirloskar	Electric co., Laxmi Hydraulics, Marath	on Electric
21	kW Rating:	*	No. of poles: *	
22	Frame designation:	*	Mounting: *	
23	Full load speed (rpm):	*	Full load Torque (m-kg):*	
24	Starting torque as %of full load torque:	*		
25	Full load current (A):	*		
26	Starting current at 100% Voltage (A):	* Upto 75kW (< =600 % + To	olerance), Above 75kW (< =550 % + To	lerance)
27	Break down or pull out torque%:	*		
28	Rotation viewed from motor NDE:	* (Compatible with	n direction of rotation of driven eq	juipment)
29	Starting time at 75%V (sec.):	*	Starting time at 100%V (sec):	*
30	Time (Te) for increased safety motors at	: 100% Voltage (secs.):	*	
31	Locked rotor with stand time cold/hot at	75% V (sec):	*/* At 100% V (sec):	*/*
32	WK ² of motor (kg-m ²):	*		
33	Power factor at 100%load:	*	Power Factor at 75% load:	*
34	Efficiency at 100% load:	*	Efficiency at 75% load:	*
35	Space heater watts/volts:		*/240V AC	
36	Bearing type/no. DE:	*/*	Bearing type/no. NDE: */*	
37	Type of Lubrication:	*		
38	Weight of motor (kg):	*		
39	Heating time constant (min)	Cooling	time constant (min)	
40	Motor Canopy	Required		
		_		

NOTES:

- 1) Motor Terminal Box shall be suitable for the cable size, to be informed later.
- 2) Vendor shall submit motor data sheets after filling up the same separately for each motor.

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Page 1 of 6

मध्यम वोल्टेज मोटरों के लिए निरीक्षण व परीक्षण योजना

INSPECTION AND TEST PLAN FOR MEDIUM VOLTAGE MOTORS

No.	2417	Date	by	by	Approve	d by
Rev.	Date	Purpose	Prepared	Checked	Standards Committee Convenor	Standards Bureau Chairman
0	30.04.2002	Issued for implementation	RG	AKC	AKB	GRR
1	24.12.2007	Revised and Re-issued	SA	CRM	MVKK	VC
2	15.07.2011	Revised and Re-issued	GS	SA	AKC	DM
3.	21.11.2013	Revised and Re-issued	MJ	RS	scG	SC
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STANDARD SPECIFICATION NO.

6-81-1032 Rev. 3

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Abbreviations

AS	:	Alloy Steel	MPT/MT	:	Magnetic Particle Testing
BASEEFA	:	British Approval Service for Electrical Equipment in Flammable	MRT	:	Mechanical Run Test
		Atmospheres			
BIS	:	Bureau of Indian Standard	MTC	:	Material Test Certificate
CCE or CCOE	:	Chief Controller of Explosives	MOC	:	Material of Construction
CEIL	:	Certification Engineers International Limited	NPSH	:	Net Positive Suction Head
CIMFR	:	Central Institute of Mining & Fuel Research	NDT	:	Non Destructive Testing
CE	:	Carbon Equivalent	NEMA	:	National Electrical Manufacturers Association
DFT	:	Dry Film Thickness	PO	:	Purchase Order
DT	:	Destructive Testing	PESO	:	Petroleum Explosive Safety Organization
DPT	:	Dye Penetrate Testing	PQR	:	Procedure Qualification Record
ERTL	:	Electronics Regional Test Laboratory	PR	:	Purchase Requisition
FCRI	:	Fluid Control Research Institute	PMI	:	Positive Material Identification
FM	:	Factory Mutual	PVC	:	Poly Vinyl Chloride
FLP	:	Flame Proof	QC	:	Quality Control
HIC	:	Hydrogen Induced Cracking	RT	:	Radiography Testing
ITP	:	Inspection and Test Plan	TC	:	Test Certificate
IP	:	Ingress Protection	TPI or TPIA	:	Third Party Inspection Agency
IC	:	Inspection Certification	UT	:	Ultrasonic Testing
IGC	:	Inter Granular Corrosion	UL	:	Under writer Laboratories
IEC	:	International Electro technical Commission	VDR	:	Vendor Data Requirement
JEC	:	Japanese Electro technical Committee	WPS	:	Welding Procedure Specification
LPT	:	Liquid Penetrate Testing	WPQ	:	Welders Performance Qualification
			XLPE	:	Cross Linked Poly Ethylene

Inspection Standards Committee

Convenor: Mr. S.C. Gupta

Members:

Mr. R.K. Singh Mr. Rajeev Kumar Mr. Himangshu Pal

Mr. Neeraj Mathur Mr. T Kamalakannan Mr. Deepak Gupta (Project)

Mr. Mayank Jain

1.0 SCOPE

This Inspection and Test Plan covers the minimum testing & inspection requirements of three phase medium voltage squirrel cage induction motors.

2.0 REFERENCE DOCUMENTS

PO/PR & Standards referred there in /Job specifications / Approved documents.

3.0 INSPECTION AND TEST REQUIREMENTS

SL			QUANTUM		SCOPE OF INSPECTION		
NO.	STAGE/ ACTIVITY	STAGE/ ACTIVITY CHARACTERISTICS OF CHECK		RECORD	SUB SUPPLIER	SUPPLIER	EIL/TPIA
1.0	Procedures						
2.0	Material Inspection						
2.1	Raw Material: Body(casting or fabrication), Rotor shaft, Core laminations, Copper, Insulation material, Bearings, Terminals, cable boxes, Cable glands, etc.	Chemical, Physical properties , finish as per relevant standard	100%	Material Test Certificates / Test records	Н	Н	-

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SL	STAGE/ ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
NO.					SUB SUPPLIER	SUPPLIER	EIL/TPIA
3.0	Inprocess Inspection						
3.1	Motor Assembly	Vacuum impregnation and bracing of winding, core assembly, Rotor bars and end rings assembly, Rotor balancing, Terminal box mounting and clearances in between, Bearing setting, etc as per supplier's internal standards	100%	Test Records	-	Н	-
4.0	Final Inspection						
4.1	Motor (Routine Tests)	 Visual check (Nameplate, Terminal box location, terminal type, clearances, size, entries, space adequacy & gland size, Direction of rotation etc.) Dimensions check (shaft height etc.) Cable Glands, cable lugs size and no. of entries in Terminal Box Winding Resistance No load test and measurement of Voltage, Speed, Current, Power Input Measurement of Starting Torque, Starting current, full Load Torque, Pull out torque by JEC (Logarithmic proportion Current method II). Reduced voltage Starting and running Insulation resistance Before & after High Voltage test High Voltage Vibration 	100%	Inspection test records		Н	See Note 3 & 4



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SL NO.	STAGE/ ACTIVITY	CHARACTERISTICS	QUANTUM		SCOP	PE OF INSPECTION	
			OF CHECK	RECORD	SUB SUPPLIER	SUPPLIER	EIL/TPIA
4.2	Motor (Type Tests)	 Full load test and measurement of Voltage, Current, Power, Slip, Power factor, Bearing Noise. Efficiency and Pf at 100%, 75% and 50% load Temp Rise test Momentary overload test Vibration Noise Level Over speed Measurement of Starting Torque, Starting Current, Full Load Torque* 	One sample from each type/rating	Inspection test records	-	Н	See Note 3 & 4
5.0	Painting						
5.1	Painting and Packing	 Visual Suitable protection to prevent entry of foreign material. Proper packing to prevent any damage during transportation and storage. 	100%	Packing list / Supplier's Records	-	Н	-
6.0	Documentation and IC						
6.1	Documentation and IC	 Review of Internal Test Reports Test certificate from recognized testing laboratory for area classification. BIS certificate for FLP motors and accessories as applicable. PESO approved certificates for motors and accessories as applicable. Degree of protection of enclosure IC issuance 	100%	Supplier's Test Records / Certificates from statutory bodies / Inspection Certificate (IC)	-	Н	Н
6.2	Final Document submission	Compilation of Inspection reports ,drawings, etc as	100%	Final data	-	Н	Н



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SL NO.	STAGE/ ACTIVITY	CHARACTERISTICS	QUANTUM	RECORD	SCOPE OF INSPECTION		
			OF CHECK		SUB SUPPLIER	SUPPLIER	EIL/TPIA
		per VDR / PR		folder			
				/Completeness			
				certificate			

Measurements will be made in accordance with standard IEC (Logarithmic proportion method II)

Legends: H- Hold (Do not proceed without approval, R-Review, RW-Random witness (As specified or 10 % - Samples must include min 1 No of each type), W- Witness (Give due notice, work may proceed after scheduled date).

NOTES:-

- 1. This document describes the generic test requirements. Any additional test or inspection scope if specified in contract documents shall also be applicable. (Unless otherwise agreed upon).
- 2. Acceptance Norms for all the activities shall be as per PO/PR/ Standards referred there in/ Job specifications /Approved documents
- 3. Motors up to 55 KW would be accepted based on Manufacturer's test certificates. Higher rating will have witness by TPIA appointed by Main Supplier.
- 4. Motors ordered with integration test (VFD fed motors) requirement as per PR shall be witnessed by EIL/ TPIA and main supplier for integration test (irrespective of rating) at motor manufacturer's works.

VENDOR DATA REQUIREMENTS FOR MV MOTORS

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VENDOR DATA REQUIREMENTS FOR MV MOTORS

Α	08-AUG-2014	ISSUED WITH MR	SA	ST	ST
Rev. No.	Date	Purpose	Prepared by	Checked by	Approved by



VENDOR DATA REQUIREMENTS FOR MV MOTORS

Document No. A546-604-16-50-VR-5010 Rev. A

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VENDOR DATA REQUIREMENTS

The following drawings/documents marked "✓" shall be furnished by the bidder.

MV MOTOR

S.			РО	ST ORD		
0.	DESCRIPTION	DESCRIPTION WITH BID		FOR RECORD	WITH DATA BOOK (FINAL)	REMARKS
1.	Schedule of Vendor Documents		✓		1	
2.	Data Sheets (Duly filled-in)	1	✓		1	
3.	Dimensional/Assembly Drawings : GA Drawing For motors < 75kW			*	*	
4.	Dimensional/Assembly Drawings : GA Drawing For motors >= 75kW		*		✓	
5.	Dimensional/Assembly Drawings : Installation Plan/Mounting Details			✓	✓	
6.	Dimensional/Assembly Drawings : Terminal Box Arrangement			✓	✓	
7.	Dimensional/Assembly Drawings : Name Plate Drawing			✓	✓	
8.	Performance Curves : Speed Torque Curves			✓	1	
9.	Performance Curves : Speed-Current/Time Curves			*	*	
10.	Performance Curves : Thermal Withstand Curves (Hot & Cold)			✓	*	
11.	Performance Curves : P.f. & Efficiency Curves			✓	1	
12.	Inspection & Test Plan (ITP) -For review by Inspection Dept.		1		*	
13.	Test Records			✓	1	
14.	Type Test Certificates for similar equipment	*		✓	1	
15.	List of Maintenance Spares	1				
16.	Data Books/ Manuals : Installation Manual				1	
17.	Data Books/ Manuals : Operating/ Maintenance Manual				*	
18.	Data Books/ Manuals : Catalogues/ Brochures	*		1	1	
19.	Equipment storage procedure at site				1	

Notes:

- 1. "TICK" denotes applicability.
- 2. Post order, drawing / document review shall commence only after approval of Document Control Index (DCI).
- 3. All post order documents shall be submitted / approved through EIL eDMS portal.
- 4. Final documentation shall be submitted in hard copy (Six prints) and soft (two CDs/DVDs) in addition to



VENDOR DATA REQUIREMENTS FOR MV MOTORS

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submission through EIL eDMS.

- 5. Refer 6-78-0001: Specification for quality management system from Bidders.
- 6. Refer 6-78-0003: Specification for documentation requirement from Suppliers.
- 7. All drawings & documents shall be submitted in A4 or A3 paper sizes. Documents in higher paper size shall be submitted in exceptional circumstances or as indicated in the MR/Tender.
- 8. Post order- The schedule of drawing / data submission shall be mutually agreed between EIL & the bidder / contractor / supplier during finalization of Document Control Index (DCI).

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मध्यम वोल्टेज इंडक्शन मोटरों के लिए विनिर्देश

SPECIFICATION FOR MEDIUM VOLTAGE INDUCTION MOTORS

Rev.	26.07.84 Date	ISSUED AS STANDARD SPECIFICATION Purpose	CSM Prepared by	VPS Checked	GNT Standards Committee Convenor	Standards Bureau Chairman
	26.07.84	ISSUED AS STANDARD SPECIFICATION	CSM	VPS	GNT	
1						
2	01.02.97	REVISED AND ISSUED AS STANDARD SPECIFICATION	AAN	VPS	SG	AS
3	09.04.02	REVISED AND RE-ISSUED	UG	AAN	VPS	SKG
4	26.09.07	REVISED AND ISSUED AS STANDARD SPECIFICATION	SD	BRB	JMS	VC
5	02.05.14	REVISED AND ISSUED AS STANDARD SPECIFICATION	SA	VKJ	BRB	sc
			Alul	Maria	Om	Sun



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Abbreviations:

BASSEFA British Approvals Service for Electrical Equipment in Flammable Atmospheres

BIS Bureau of Indian Standards

BS British Standards

CIMFR Central Institute of Mines and Fuel Research

CT Current Transformer
EIL Engineers India Limited

FM Factory Mutual

FRP Fiberglass Reinforced Plastic

IEC International Electro-technical Commission
IEEE Institute of Electrical & Electronics Engineers

IS Indian Standard

JEC Japanese Electro-technical Committee

LCIE Laboratoire Central des Industries Electriques

LRWT Locked Rotor Withstand Time

NEMA National Electrical Manufacturers Association

PO Purchase Order PVC Poly Vinyl Chloride

p.u. per unit

r.m.s Root Mean Square RPM Revolutions per Minute

TETV Totally enclosed Tube Ventilated

UL Underwriter's Laboratories

VDE Verband Deutscher Elektrotechniker

CEA Central Electricity Authority

DOL Direct On line

VFD Variable Frequency Drive

OEM Original Equipment Manufacturers

Third party Impression Agency

TPIA Third party Inspection Agency

PESO Petroleum & Explosives Safety Organisation

Electrical Standards Committee

Convenor: Mr. BR Bhogal

Members: Ms. S. Anand

Mr. Parag Gupta Mr. M.K. Sahu Mr. A.K. Chaudhary Ms. N.P. Guha



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1.0 SCOPE

This specification covers the design, manufacture, testing, packing and supply of three phase medium voltage squirrel cage induction motors for line voltages upto 1000V AC.

2.0 CODES AND STANDARDS

2.1 The squirrel cage induction motors and their components shall comply with the latest editions of following standards issued by BIS.

10 5		Colors for ready mixed points and anomals
IS - 5 IS - 325		Colors for ready mixed paints and enamels. Three phase induction motors.
IS - 323 IS - 1076	:	Preferred numbers.
IS - 1076 IS - 1231	:	Dimensions of three phase foot mounted induction motors.
IS - 1231 IS - 1271	•	Thermal evaluation and classification of electrical insulation.
	•	Dimensions of flange mounted AC Induction motors.
IS - 2223	:	Designation for type of construction and mounting arrangement of
IS - 2253	:	rotating electrical machines.
10 2254		Dimensions of vertical shaft motors for pumps.
IS - 2254 IS - 2968	:	Dimensions of slide rails for electric motors.
	•	Guide for testing three phase induction motors.
IS - 4029	•	<u> </u>
IS - 4889	:	Method of determination of efficiency of rotating electrical machines.
IS - 6362	:	Designation of methods of cooling of rotating electrical machines.
IS - 7816	:	Guide for testing insulation resistance of rotating machines.
IS - 8223	:	Dimensions and output series for rotating electrical machines.
IS - 8789	:	Values of performance characteristics for three phase induction
10 0202		motors.
IS - 9283	:	Motors for submersible pump sets.
IS - 12065	:	Permissible limits of noise level for rotating electrical machines.
IS - 12075	:	Mechanical vibration of rotating Electrical Machines with shaft
		heights 56 mm and higher - measurement, evaluation and limits of
YO. 40.500		vibration severity.
IS - 13529	:	Guide on effects of unbalanced voltages on the performance of three
		phase cage induction motors.
IS - 13555	:	Guide for selection and application of three phase induction motors for
		different types of driven equipment.
IS - 14568	:	Dimensions and output series for rotating electrical machines, frame
		numbers 355 to 1000 and flange numbers 1180 to 2360.
IS-15880	:	Three phase cage induction motors when fed from IGBT Converters-
		Application guide
IS-15881	:	Three phase cage induction motors specifically designed for IGBT
		converter supply
IS /IEC 60079-0	:	Electrical apparatus for explosive gas atmospheres (General
		Requirements)
IS/IEC 60079-1	:	Equipment protection by Flame proof enclosures "d'.
IS/IEC 60079-7	:	Explosive atmospheres-Equipment protection by increased safety –"e"
IS/IEC 60079-15	:	Electrical apparatus for explosive gas atmospheres Construction, test
		& marking of type of protection "n"
IS/IEC 60529	:	Degree of protection provided by enclosures (IP Code)
IS/IEC 60034-5	:	Degrees of protection provided by enclosure for rotating electrical
	-	machinery.
IS/IEC 60034-8	:	Terminal marking and direction of rotation for rotating electrical
13/1EC 00034-0	•	masking and direction of totation for totating electrical

machinery.



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- 2.2 In case of imported motors, standards of the country of origin shall be applicable if these standards are equivalent or stringent than the applicable Indian Standards.
- 2.3 The motors shall also conform to the provisions of CEA regulations and other statutory regulations currently in force in the country.
- 2.4 In case Indian Standards are not available, standards issued by IEC/ BS/ VDE/ IEEE/ JEC/NEMA or equivalent agency shall be applicable.
- 2.5 In case of any conflict between requirements specified in various applicable documents, the most stringent one shall prevail. However, owner's decision in this regard shall be final and binding.

3.0 GENERAL REQUIREMENTS

- 3.1 The offered equipment shall be brand new with state of the art technology and proven field track record. No prototype equipment shall be offered.
- 3.2 Vendor shall ensure availability of spare parts and maintenance support services for the offered equipment at least for 10 years from the date of supply.
- 3.3 Vendor shall give a notice of at least one year to the end user of equipment and EIL before phasing out the product/spares to ensure the end user for placement of order for spares and services.

4.0 OPERATING CONDITIONS

4.1 Ambient Conditions

Motors shall be suitable for operating satisfactorily in humid and corrosive atmosphere found in refineries, petrochemical, fertilizer and metallurgical plants. Service conditions shall be as specified in the motor data sheet. If not specifically mentioned therein, a design ambient temperature of 40°C and an altitude not exceeding 1000 meters above mean sea level shall be taken into consideration.

4.2 Frequency and Voltage Variations

Unless otherwise agreed, motors shall be designed for continuous operation at rated output under the following conditions:

- a) The terminal voltage differing from its rated value by not more than \forall 6 % or
- b) The frequency differing from its rated value by not more the \forall 3 % or
- c) Any combination of (a) and (b)

4.3 Starting

- a) Motors shall be designed for direct-on-line starting or other method of starting as specified in datasheet.
- b) Motors shall be designed for re-acceleration under full load after a momentary loss of voltage with the residual voltage being 100% and in phase opposition to the applied voltage.
- c) Minimum locked rotor thermal withstand time at rated voltage shall be 10 seconds under cold conditions and 8 seconds under hot conditions. In addition, Locked Rotor withstand time under hot conditions at 75% & 100% voltages, shall be minimum 1.4 times the starting time at the corresponding voltage.



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- d) All motors shall be suitable for starting under specified load conditions with 75 % of the rated voltage at the motor terminals.
- e) Motors shall be designed to allow the minimum number of consecutive starts indicated in Table below:

Starts	Min. no. of consecutive starts
No. of consecutive start-ups with initial temp. of the motor at ambient level (cold)	3
No. of consecutive start-ups with initial temp. of the motor at full load operating level (hot).	2

4.4 Direction of Rotation

Motors shall be suitable for either direction of rotation. In case unidirectional fan is provided for motors, direction of rotation for which the motor is designed shall be permanently indicated by means of an arrow. When a motor is provided with bi-directional fan, a double-headed arrow should be provided.

Normally, clockwise rotation is desired as observed from the driving (coupling) end, when the terminals ABC are connected to a power supply giving a terminal phase sequence in the order ABC. Counter-clockwise rotation of the motor shall be obtained by connecting the power supply to terminals so that the phase sequence corresponds to the reversed alphabetical sequence of the terminal letters. Ample space shall be provided at the terminal box for interchanging any two external leads for obtaining the reverse phase sequence.

5.0 PERFORMANCE

- 5.1 Unless otherwise specified, Motors shall be rated for continuous duty (S_1) .
- Unless otherwise specified, the starting current (as % rated current) shall not exceed 600% (subject to IS tolerance). However, motors upto 22KW motors having starting current upto 700% of rated current (subject to IS tolerance) shall also be acceptable.
- 5.3 In particular cases, when the starting current is to be limited, care shall be taken such that the design values of torque meets the load requirement while at the same time complying to clause 4.3 above of this specification.
- 5.4 In particular cases, when the starting with reduced voltage is specified, care shall be taken such that the design values of torque meets the load requirement while at the same time complying to clause 4.3 above of this specification.
- 5.5 Starting torque and minimum torque of the motor shall be compatible with the speed torque curve of the driven equipment under specified starting and operating conditions.
 - In case where characteristics of driven equipment are not available while selecting the motor, minimum starting torque shall be 110% of rated value for motors up to 75 kW and shall be 90% of rated value for motors above 75 kW.
- 5.6 The breakdown torque at the rated voltage shall not be less than 175 percent of the rated load torque with no negative tolerance, the breakdown torque shall not exceed 300 percent of the rated load torque.
 - In case of motors driving equipment with pulsating loads (e.g. reciprocating compressors), the minimum value of breakdown torque at 75 percent of the rated voltage shall be more than the peak value of pulsating torque and the current pulsation shall be limited to 40%.



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- 5.7 Motors fed by variable frequency drive shall additionally meet the following requirements:-
- 5.7.1 The motors shall be suitable for the current wave forms produced by the power supply including harmonics generated by the drive. The necessary coordination by motor manufacturers with drive manufacturers regarding harmonics generated by VFD shall be taken care and incorporated in motor design suitably.
- 5.7.2 The motors shall be designed to operate continuously at any speed over the range as per process requirement with minimum range as 10–100% of rated speed or as specified in data sheet. The characteristics shall be based on the application in terms of constant torque / variable torque as per the driven equipment. Additional cooling fan shall be provided if required to limit the temperature rise to specified limits.
- 5.7.3 The motors shall withstand torque pulsation resulting from harmonics generated by the solid state power supply.
- 5.7.4 The motors required to be transferred to DOL bypass mode shall be rated for specified variations in line voltage and frequency.
- 5.8 The minimum values for performance characteristics of motors shall be as per Table 1-4 below TABLE 1

Values of Performance Characteristic of 2 Pole Induction Motors Rated Frame Full Full **Breakaway** Breakaway Nominal output Designation Load Load Torque in **Current in Terms** Efficiency speed Current terms of Full of full Current, load Torque **Equal or Below** (Refer cl. 5.2) Min Max $\mathbf{k}\mathbf{W}$ Rev/min Amp Min (Percent) (Percent) (Percent) **(1) (2) (4) (5) (6) (8) (3)** 0.37 2790 1.2 170.0 66.0 71 600 0.55 71 2760 170.0 600 1.6 70.0 80 2780 2.0 170.0 73.0 0.75 600 80 2790 2.8 1.1 170.0 600 76.2 1.5 90S 2800 3.7 170.0 600 78.5 2.2 90L 5.0 2810 170.0 600 81.0 3.7 8.0 160.0 100L 2820 600 84.0 132S 5.5 2830 11.0 160.0 600 85.7 7.5 132S 2840 15.0 160.0 600 87.0 9.3 2840 18.5 160M 160.0 600 87.7 11.0 160M 2860 21.5 160.0 600 88.4 15.0 160M 2870 29.0 160.0 600 89.4 18.5 160L 2880 35.0 160.0 90.0 600 22.0 180M 2890 41.5 160.0 90.5 600 91.4 30.0 200L 2900 54.0 160.0 600 2900 37.0 200L 67.0 160.0 600 92.0 45.0 225M 2955 80.0 92.5 160.0 600 55.0 250M 2960 95.0 160.0 600 93.0 75.0 280S 93.6 2970 130.0 160.0 600 90.0 280M 2970 150.0 93.9 160.0 600 110.0 185.0 315S 2980 160.0 600 94.0 125.0 315M 160.0 2980 209.0 600 94.5 $132.0^{||}$ 315M 220.0 2980 160.0 94.5 600 160.0^{\parallel} 600 315L 2980 265.0 160.0 94.8

NOTE: - Output to frame size relation is maintained in accordance with IS 1231 for all motors, except those marked as ||, where in frame size indicated is 'preferred frame size'.



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TABLE 2
Values of Performance Characteristic of 4 Pole Induction Motors.

Rated output	Frame Designation	Full Load speed Min	Full Load Current Max	Breakaway Torque in terms of Full load Torque	Breakaway Current in Terms of full Current, Equal or Below (Refer cl. 5.2)	Nominal Efficiency
kW		Rev/min	Amp	Min (Percent)	(Percent)	(Percent)
(1)	(2)	(3)	(4)	(5)	(6)	(8)
0.37	71	1330	1.4	170.0	600	66.0
0.55	80	1340	1.7	170.0	600	70.0
0.75	80	1360	2.2	170.0	600	73.0
1.1	90S	1370	2.9	170.0	600	76.2
1.5	90L	1380	3.8	170.0	600	78.5
2.2	100L	1390	5.1	170.0	600	81.0
3.7	112M	1410	8.1	160.0	600	84.0
5.5	132S	1420	11.4	160.0	600	85.7
7.5	132M	1430	15.4	160.0	600	87.0
9.3	160M	1430	18.5	160.0	600	87.7
11.0	160M	1440	22.0	160.0	600	88.4
15.0	160L	1440	30.0	160.0	600	89.4
18.5	180M	1440	36.0	160.0	600	90.0
22.0	180L	1440	43.0	160.0	600	90.5
30.0	200L	1450	56.0	160.0	600	91.4
37.0	225S	1450	69.0	160.0	600	92.0
45.0	225M	1460	84.0	160.0	600	92.5
55.0	250M	1460	99.0	160.0	600	93.0
75.0	280S	1470	134.0	160.0	600	93.6
90.0	280M	1470	164.0	160.0	600	93.9
110.0	315S	1480	204.0	160.0	600	94.4
125.0	315M	1480	234.0	160.0	600	94.7
132.0	315M	1480	247.0	160.0	600	94.7
160.0	315L	1480	288.0	160.0	600	95.0

NOTE: - Output to frame size relation is maintained in accordance with IS 1231 for all motors, except those marked as ||, where in frame size indicated is 'preferred frame size'.

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TABLE 3
Values of Performance Characteristic of 6 Pole Induction Motors.

Rated output	Frame Designation	Full Load speed	Full Load Current	Breakaway Torque in terms of Full load Torque Breakaway Current in Terms of full Current, Equal or Below (Refer cl. 5.2)		Nominal Efficiency
kW		Min Rev/min	Max Amp	Min (Percent)	(Percent)	(Percent)
(1)	(2)	(3)	(4)	(5)	(6)	(8)
0.37	80	870	1.4	160.0	600	65.0
0.55	80	870	1.9	160.0	600	68.0
0.75	90S	890	2.3	160.0	600	71.0
1.1	90L	900	3.2	160.0	600	74.0
1.5	100L	900	4.0	160.0	600	76.0
2.2	112M	910	5.5	150.0	600	79.0
3.7	132S	920	8.8	150.0	600	82.5
5.5	132M	920	12.7	150.0	600	84.5
7.5	160M	930	16.7	150.0	600	86.0
9.3	160L	930	20.5	140.0	600	87.0
11.0	160L	935	23.0	140.0	600	87.5
15.0	180L	940	30.5	140.0	600	88.5
18.5	200L	940	37.5	140.0	600	89.5
22.0	200L	945	44.0	140.0	600	90.0
30.0	225M	945	59.0	140.0	600	91.0
37.0	250M	950	72.0	140.0	600	91.5
45.0	280S	960	87.0	140.0	600	92.0
55.0	280M	960	107.0	140.0	600	92.5
75.0	315S	970	145.0	140.0	600	93.0
90.0	315M	970	175.0	140.0	600	93.3
110.0	315M	970	214.0	140.0	600	93.5
132.0	315L	980	257.0	140.0	600	93.8

NOTE: - Output to frame size relation is maintained in accordance with IS 1231 for all motors, except those marked as ||, where in frame size indicated is 'preferred frame size'.

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TABLE 4
Values of Performance Characteristic of 8 Pole Induction Motors.

Rated output	Frame Designation	Full Load speed	Full Load Current	Breakaway Torque in terms of Full load Torque	Breakaway Current in Terms of full Current, Equal or Below (Refer cl. 5.2)	Nominal Efficiency
kW		Min Rev/min	Max Amp	Min (Percent)	(Percent)	(Percent)
(1)	(2)	(3)	(4)	(5)	(6)	(8)
0.37	90S	640	1.5	150.0	600	62.0
0.55	90L	640	2.1	150.0	600	67.0
0.75	100L	650	2.7	150.0	600	70.0
1.1	100L	660	3.5	150.0	600	72.0
1.5	112M	670	4.5	150.0	600	74.0
2.2	132S	680	6.1	140.0	600	77.0
3.7	160M	690	9.8	140.0	600	80.0
5.5	160M	690	14.2	140.0	600	82.5
7.5	160L	695	19.0	140.0	600	84.0
9.3	180L	700	23.0	140.0	600	85.0
11.0	180L	700	26.0	140.0	600	86.0
15.0	200L	705	35.0	130.0	600	87.0
18.5	225S	705	45.0	130.0	600	88.0
22.0	225M	710	52.0	130.0	600	88.5
30.0	250M	710	70.0	130.0	600	90.0
37.0	280S	710	86.0	130.0	600	90.5
45.0	280M	720	99.0	130.0	600	91.0
55.0	315S	720	118.0	130.0	600	91.5
75.0	315M	730	153.0	130.0	600	92.3
90.0	315L	730	182.0	130.0	600	92.8
110.0	315L	730	218.0	130.0	600	93.3

NOTE: - Output to frame size relation is maintained in accordance with IS 1231 for all motors, except those marked as ||, where in frame size indicated is 'preferred frame size'.

6.0 CONSTRUCTION DETAILS

6.1 Windings

- 6.1.1 Unless otherwise specified, Motors shall be provided with class 'B' insulation as a minimum. In case of motors with class 'F' insulation, the permissible temperature rise above the specified ambient temperature shall be limited to those specified in the applicable Indian standards for class 'B' insulation.
- 6.1.2 The winding shall be tropicalised. The windings shall preferably be vacuum impregnated. Alternately the windings shall be suitably varnished, baked and treated with epoxy gel for operating satisfactorily in humid and corrosive atmospheres.
- 6.1.3 Windings shall be adequately braced to prevent any relative movement during operation. In this respect, particular care shall be taken for the stator windings for direct-on-line starting squirrel cage motors. Insulation shall be provided between coils of different phases that lie together. Core laminations must be capable of withstanding burnout for rewind at 400EC without damage or loosening.



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- 6.1.4 In case of motors driving equipment with pulsating loads, special care shall be taken for the joints of rotor bars and end rings to avoid premature failures due to induced fatigue stresses
- 6.1.5 The windings shall be connected in delta. However, for motors rated 2.2 kW and below, star connection may be accepted. In case of motors with star-delta starting, the motor windings shall be fully insulated for delta connection.
- 6.1.7 The ends of the windings shall be brought out into a terminal box. These shall be terminated by means of terminals mounted on an insulating base made of non-hygroscopic and non-flammable material.
- 6.1.6 All motors shall be with six terminals and suitable links to connect them in star or in delta except for motors rated up to and including 2.2 kW which may be accepted with three terminals.

6.2 Terminal Box and Cable Entries

- 6.2.1 The terminal box shall be located on the right hand side as viewed from the driving (coupling) end. The terminal box shall have side cable entry from non-driving end. However, as a special case, terminal box located on top may also be accepted, particularly for hazardous area motors, in case manufacturer has only TOP mounted terminal box design which is duly tested/certified by CIMFR and approved by PESO/CCOE for installation in hazardous area. The terminal box design shall allow rotation in steps of 90° to facilitate cable entry from any direction.
- 6.2.2 Terminal box cover shall be provided with handles to facilitate easy removal. However, for terminal box covers weighing less than 5 kg., terminal box covers without handles can be accepted.
- 6.2.3 The terminal box shall be provided with entries for suitable cable glands corresponding to the size of the specified cable. Crimp type tinned Cu lugs and nickel-plated brass (or aluminum if specifically required), double compression type cable glands shall be supplied along with the motors for the specified cable sizes for power and space heater cables.
- 6.2.4 For flameproof motors, terminal box can be provided in increased safety 'Exe' execution.



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6.2.5 The terminals, cable lugs, terminal box, cable entries and cable glands shall be suitable for the maximum cables sizes as specified below for 2 pole, 4 pole or 6 pole motors:

Motor rating up to and including	Size of phase conductor (mm ²)
2.2 kW and below	4 Al./ 2.5 cu
3.7 kW	10 Al./ 6 cu
5.5 kW	16 Al./ 10 cu
7.5 kW	25 Al./ 16 cu
9.3 kW	25 Al./ 16 cu
11.0 kW	25 Al./ 16 cu
15.0 kW	50 Al.
18.5 kW	70 Al
22.0 kW	70 AI
30.0 kW	95 A1
37.0 kW	120 AI
45.0 kW	150 Al
55.0 kW	185 Al
75.0 kW	2x95 Al
90.0 kW	2x120 A1
110.0 kW	2x185 AI
125.0 kW/132 kW	2x240 Al
150.0 kW	2x240 Al
160.0 kW	2x240 Al

- 6.2.6 Cable sizes for motors having synchronous speeds 750 RPM and below shall be as agreed between the purchaser and the manufacturer.
- 6.2.7 Cables used are of 650/1100 V grade aluminum conductor, PVC /XLPE insulated, PVC extruded inner sheath, armoured with overall PVC sheath. However for cables up to & including 16 mm² cross-section, cables used may be with copper or aluminum conductor as indicated in the motor data sheet.

6.3 Motor Casing and Type of Enclosure

- 6.3.1 The minimum degree of motor enclosures including terminal boxes and bearing housing shall be IP-55 as per IS.
- 6.3.2 Motors for outdoor use shall be suitable for installation and satisfactory operation without any protective shelter or canopy. Motor casing shall be provided with a suitable drain for removal of condensed moisture except in case of flameproof motors (Type Ex d/Exde).
- 6.3.3 All internal and external metallic parts, which may come into contact with cooling air, shall be of corrosion resistant material or appropriately treated to resist the corrosive agents, which may be present in the atmosphere. Screws and bolts shall be of rust proof material or protected against corrosion.
- 6.3.4 Unless otherwise agreed, motors shall have standard frame sizes for various output ratings as stipulated in IS.

6.4 Bearing and Lubrication

6.4.1 Motors shall have grease lubricated ball or roller bearings. In all cases, the bearings shall be chosen to provide a minimum L-10 rating life of 5 years, (40, 000 hours) at rated operating conditions.



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(The L-10 rating life is the number of hours at constant speed that 90% of a group of identical bearings will complete or exceed before the first evidence of failure).

- 6.4.2 The bearings shall be adequate to absorb axial thrust produced by the motor itself or due to shaft expansion. Motors designed to handle external thrust from the driven equipment shall be supplied with a thrust bearing at the non-driving end.
- 6.4.3 In cases such as pumps for hot liquids where the driven equipment operates at high temperatures, bearings shall be cooled by a shaft-mounted fan. This shall ensure efficient ventilation of the bearing and disperse the heat transmitted from the driven equipment by conduction or convection.
- 6.4.4 Bearings shall be capable of grease injection from outside without removal of covers with motors in the running conditions. The bearing boxes shall be provided with necessary features to prevent loss of grease or entry of dust / moisture e.g. labyrinth seal. Where grease nipples are provided, these shall be associated, where necessary, with appropriately located relief devices, which ensure passage of grease through the bearings.
- 6.4.5 Pre-lubricated sealed bearings may be considered provided a full guarantee is given for 4 to 5 years of trouble-free service without the necessity of re-lubrication.

6.5 Cooling System

All motors shall be self-ventilated, fan cooled. Fans shall be corrosion resistant or appropriately protected. They shall be suitable for motor rotation in either direction without affecting the performance of the motor. If this is not possible for large outputs, it shall be possible to reverse the fan without affecting the balancing of the motor.

For motors operating in hazardous area, the fans shall be of an anti-static non-sparking material.

6.6 Rotor

The rotor shall be of squirrel cage type, dynamically balanced to provide a low vibration level and long service life for the bearings. Die cast aluminum rotors for motors in hazardous areas may be accepted provided the same are type tested and approved by competent authorities.

6.7 Shaft Extension

Motors shall be provided with a single shaft extension with key-way and full key. Motor shaft shall be sized to withstand 10 times the rated design torque.

6.8 Lifting Hooks

All motors weighing more than 30 kg. shall be provided with lifting hooks of adequate capacity.

6.9 Earth Terminals

Two earth terminals located preferably on diametrically opposite sides shall be provided for each motor. Necessary nuts and spring washers shall be provided for earth connection.



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7.0 MISCELLANEOUS ACCESSORIES

7.1 Anti-Condensation Heaters

All motors rated 30 kW and above shall be provided with 240 V anti-condensation heaters, sized and located so as to prevent condensation of moisture during shutdown periods.

Motors with heaters installed in hazardous atmospheres (Zone-1 or Zone-2), shall conform to the provisions of applicable Indian standards and temperature classification specified in the motor data sheet

The heater leads shall be brought out, preferably, to a separate terminal box which shall be of the same specification and grade of protection as the main terminal box.

A warning label with indelible red inscription shall be provided on the motor to indicate that the heater supply shall be isolated before carrying out any work on the motor.

7.2 Name Plates

In addition to the motor rating plate, a separate number plate for motor tag number shall be fixed in a readily visible position. This tag number shall be as per the motor data sheets.

8.0 CRITICAL SPEEDS

The first actual critical speed of stiff rotors shall not be lower than 120 % of the synchronous speed. For flexible rotors this shall be between 60 % and 80 % of the synchronous speed; the second actual critical speed shall be above 120 % of the synchronous speed.

9.0 PAINTING

All metal surfaces shall undergo manufacturer's standard cleaning /painting cycle. After preparation of the under surface, the equipment shall be painted with two coats of epoxy based final paint. Color shade of final paint shall be 632 of IS: 5/ RAL-7035. All unpainted steel parts shall be suitably treated to prevent rust formation. If these parts are moving elements, then these shall be greased.

10.0 INSPECTION, TESTING AND ACCEPTANCE

- 10.1 All tests shall be carried out at manufacturer's shop under his care and expense.
- 10.2 The manufacturer shall submit all internal test records of the tests carried out by him on the bought-out items, motor sub-assembly and complete motor assembly.
- 10.3 The manufacturer shall carry out the following routine and acceptance tests as per applicable Standards/ITP on all the motors.
 - a) General visual checks, nameplate details
 - b) Mounting, shaft centre height measurement
 - c) Terminal box location, clearances, size, entries, space adequacy and cable gland sizes
 - d) Terminals type of Exn, Exe, Exd motors
 - e) Free rotation of shaft, shaft centre height, lubrication, fan mounting
 - f) Direction of rotation
 - g) Coupling, bearing details
 - h) Cable glands, cable lug size and no. of entries in terminal box
 - i) Winding resistance



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- j) No load test & measurement of voltage, speed, current, power input
- k) Locked rotor test at reduced voltage and measurement of voltage, current & wattage
- 1) Reduced voltage starting & running
- m) Insulation resistance before and after high voltage test
- n) High voltage
- o) Vibration
- 10.4 The manufacturer shall submit the following type test certificates (one sample from each type/rating):
 - a) Full load test & measurement of voltage, current, power slip, power factor, bearing, noise
 - b) Efficiency & pf at 100%, 75% and 50% load
 - c) Temperature rise test
 - d) Momentary overload test
 - e) Vibration
 - f) Noise level
 - g) Over speed
 - h) Measurement of starting torque, starting current, full load torque.
- 10.5 For VFD fed motors, all tests as specified in the VFD specification shall be followed in addition to the above.

11.0 CERTIFICATION

The motors and associated equipment shall have test certificates issued by recognised independent test house (CIMFR/ CPRI/ ERTL/ Baseefa/ LCIE/ UL/ FM or equivalent). All indigenous motors shall conform to Indian standards and shall be certified by recognised testing agencies. All motors (indigenous & imported) shall also have valid statutory approvals (e.g. PESO, DGMS etc). as applicable for the specified location. All indigenous flameproof motors shall have valid BIS license and marking as required by statutory authorities.

12.0 PACKING AND DESPATCH

All the equipment shall be divided into several sections for protection and ease of handling during transportation. The equipment shall be properly packed for selected mode of transportation i.e. ship/rail or trailer. The equipment shall be wrapped in polythene sheets before being placed in crates/cases to prevent damage to the finish. Crates/cases shall have skid bottom for handling. Special notations such as 'Fragile', 'This side up', 'Center of gravity', 'Weight', 'Owner's particulars', 'PO Nos.' etc. shall be clearly marked on the package together with other details as per purchaser for scrutiny.

The equipment may be stored outdoors for long periods before installation. The packing shall be completely suitable for outdoor storage, in areas with heavy rains/ high ambient temperature.

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बोलीकर्ता से गुणवत्ता प्रबंधन प्रणाली अपेक्षाओं हेतु विनिर्देश

SPECIFICATION FOR QUALITY MANAGEMENT SYSTEM REQUIREMENTS FROM BIDDERS

			Muhuly	35	क्रिकापट्याम	Monda
0	04.06.09	Issued as Standard Specification	QMS Standards Committee	QMS Standards Committee	SCT	ND
Rev.	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standard Bureau Chairman
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Abbreviations:

MR - Material Requisition

PR - Purchase Requisition

PO - Purchase Order

QA - Quality Assurance

QMS - Quality Management System

ISO - International Organization for Standardization

CV - Curriculum Vitae

QMS Standards Committee

Convenor: Mr. S.C. Tyagi

Members: Mr. Chandra Kant (Insp.)

Mr. R.K. Trivedi (Engg.) Mr. R.K. Sabharwal (C&P) Mr. M.P. Jain (Projects) Mr. Ravindra Kumar (Const.)

Mr. Mukesh Meena (CQA)



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Attachment

Format for Concession/Deviation Permit

Format No.5-0000-0180-F1



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1.0 SCOPE

This specification establishes the Quality Management System requirements to be met by BIDDER for following purpose:

• QMS requirements to be met by suppliers/contractors after award of work/during contract execution.

2.0 **DEFINITIONS**

2.1 Bidder

For the purpose of this specification, the word "BIDDER" means the person(s), firm, company or organization who is under the process of being contracted by EIL / Owner for delivery of some products (including service). The word is considered synonymous to supplier, contractor or vendor.

2.2 Project Quality Plan

Document tailored from Standard Quality Management System Manual of BIDDER, specifying how the quality requirements of the project will be met.

2.3 Owner

Owner means the owner of the project for which services / products are being purchased and includes their representatives, successors and assignees.

3.0 REFERENCE DOCUMENTS

6-78-0002 Specification for Documentation Requirements from Contractors
6-78-0003 Specification for Documentation Requirements from Suppliers

4.0 QUALITY MANAGEMENT SYSTEM – GENERAL

Unless otherwise agreed with EIL / Owner, the BIDDER proposed quality system shall fully satisfy all relevant requirements of ISO 9001 "Quality Management Systems – Requirements." Evidence of compliance shall be current certificate of quality system registration to ISO 9001 or a recent compliance audit recommending registration from a registrar. The quality system shall provide the planned and systematic control of all quality related activities for execution of contract. Implementation of the system shall be in accordance with BIDDER'S Quality Manual and PROJECT specific Quality Plan.

5.0 QUALITY SYSTEM REQUIREMENTS

- 5.1 BIDDER shall ensure that the responsible authority for execution of the order / contract has communicated the PO / contract requirements including any identified or intended statutory and regulatory requirements to all concerned in their organization and sub-contractor's organization who are contributing to the execution of the PO/ contract.
- 5.2 BIDDER shall establish a documented Quality Policy and Quality Objectives to achieve the specified and intended requirement of PO / contract.



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- 5.3 BIDDER shall identify and communicate the responsibilities and authorities of the personnel contributing to the execution of the PO / contract.
- 5.4 BIDDER shall deploy competent and trained personnel for various activities for fulfillment of PO / contract. BIDDER shall arrange adequate infrastructure and work environment to ensure that the specification and quality of the deliverable are maintained.
- 5.5 BIDDER shall do the quality planning for all activities involved in delivery of order. The quality planning shall cover as minimum the following:
 - Resources
 - Product / deliverable characteristics to be controlled.
 - Process characteristics to ensure the identified product characteristics are realized
 - Identification of any measurement requirements, acceptance criteria
 - Records to be generated
 - Need for any documented procedure

The quality planning shall result into the quality assurance plan, inspection and test plans (ITPs) and job procedures for the project activities in the scope of bidder. These documents shall be submitted to EIL/Owner for review/approval, before commencement of work.

- Requirements for sub-contracting / purchasing of services specified in contract / tender shall be adhered to. Wherever requirements are not specified, the sub-contractor shall establish and maintain a system for purchasing / sub-contracting to ensure that purchased product / service conforms to specified requirements. Criteria for selection of sub-contractor, evaluation, re-evaluation, maintenance of purchasing data and verification of purchased product (sub-contractor services), constitute important components of this requirement.
- 5.7 BIDDER shall plan and carry production and service provision under controlled conditions. Controlled conditions shall include, as applicable
 - a) the availability of information that describes the characteristics of the product
 - b) the availability of work instructions
 - c) the use of suitable equipment
 - d) the availability and use of monitoring and measuring devices
 - e) the implementation of monitoring and measurement
 - f) the implementation of release, delivery and post delivery activities
- 5.8 BIDDER shall validate any processes for production and service provision where resulting output cannot be verified by subsequent monitoring and measurement. This includes any process where deficiencies become apparent only after the product is in use or service has been delivered.
- 5.9 BIDDER shall establish a system for identification and traceability of product / deliverable throughout product realization. Product status with respect to inspection and testing requirements shall be identified.
- 5.10 BIDDER shall identify, verify, protect and safeguard EIL / Owner property (material / document) provided for use or incorporation into the product. If any Owner / EIL property is lost, damaged or otherwise found to be unsuitable for use, this shall be reported to the EIL / Owner.



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- 5.11 BIDDER shall preserve the conformity of product / deliverable during internal processing and delivery to the intended destination. Requirements mentioned in the tender shall be adhered to.
- 5.12 BIDDER shall establish system to ensure that inspection and testing activities are carried out in a manner that is consistent with the inspection and testing requirements. Where necessary, measuring equipments shall be calibrated at specified frequency, against national or international measurement standards; where no such standard exists, the basis used for calibration shall be recorded. The measuring equipments shall be adjusted or re-adjusted as necessary, identified to enable the calibration status to be determined. The measuring equipments shall be protected from damage during handling, maintenance and storage.
- 5.13 BIDDER shall ensure effective monitoring, using suitable methods, of the processes involved in production and other related processes for delivery of the scope of contract.
- 5.14 BIDDER shall monitor and measure the characteristics of the product/deliverable to verify that product requirement has been met. The inspection (stage as well as final) by BIDDER and EIL / Owner personnel shall be carried out strictly as per the ITPs forming part of the contract. Product release or service delivery shall not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by relevant authority and where applicable by Owner / EIL.
- 5.15 BIDDER shall establish and maintain a documented procedure to ensure that the product which does not conform to requirements is identified and controlled to prevent its unintended use or delivery
- All non-conformities (NCs) / deficiencies found by the BIDDER'S inspection / surveillance staff shall be duly recorded, including their disposal action shall be recorded and resolved suitably. Effective corrective and preventive action shall be implemented by the BIDDER so that similar NCs including deficiencies do not recur.
- All deficiencies noticed and reported by EIL / Owner shall be analyzed by the BIDDER and appropriate corrective and preventive actions shall be implemented. BIDDER shall intimate EIL / Owner of all such corrective and preventive action implemented by him.
- 5.18 BIDDER should follow the standards, specifications and approved drawings. Concessions/Deviations shall be allowed only in case of unavoidable circumstances. In such situations Concession/deviation request must be made by the BIDDER in attached Format No. 5-0000-0180-F1.
- 5.19 BIDDER shall have documented procedure for control of documents.
- All project records shall be carefully kept, maintained and protected for any damage or loss until the project completion, then handed over to EIL / Owner as per contract requirement (Refer Specification Nos. 6-78-0002 Specification for Documentation Requirements from Contractors and 6-78-0003 Specification for Documentation Requirements from Suppliers), or disposed as per relevant project procedure.
- BIDDER shall prepare and submit for review and approval, Project Quality Plan / Quality Assurance Plan for contracted scope / job. The BIDDER'S Quality Plan shall address all of the applicable elements of ISO 9001, identify responsible parties within BIDDER'S organization, for the implementation / control of each area, reference the applicable procedures used to control / assure each area, and verify the documents produced for each area. The Project Quality Plan shall necessarily define control or make reference to the relevant procedures, for design and engineering, purchase, documentation, record control, bid evaluation, inspection, production/manufacturing, preservation, packaging and storage,



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quality control at construction site, pre-commissioning, commissioning and handing over (as applicable) in line with contract requirement and scope of work.

6.0 AUDITS

BIDDER shall plan and carry out the QMS audit for the job. Quality audit programme shall cover design, procurement, construction management and commissioning as applicable including activities carried out by sub-vendors and sub-contractors. This shall be additional to the certification body surveillance audits carried out under BIDDER'S own ISO 9001 certification scheme.

The audit programmes and audit reports shall be submitted to EIL / Owner as per specified documentation requirements. EIL or Owner's representative reserves the right to attend, as a witness, any audit conducted during the execution of the WORKS.

In addition to above EIL, Owner and third party appointed by EIL/Owner may also perform Quality and Technical compliance audits. BIDDER shall provide assistance and access to their systems and sub-contractor / vendor systems as required for this purpose. Any deficiencies noted shall be immediately rectified by BIDDER.

7.0 DOCUMENTATION REQUIREMENTS

BIDDER shall submit following QMS documents immediately after award of work (Within one week) for record / review by EIL / Owner.

- Organization chart (for complete organization structure and for the project)
- Project Quality Plan/Quality Assurance Plan
- Job specific Inspection Test Plans
- Job Procedures
- Inspection/Test Formats

In addition to above QMS documents, following documentation shall be maintained by the BIDDER for submission to EIL / Owner on demand at any point of time during execution of the project.

- Quality Manual
- CVs of the personnel in BIDDER'S QA Organogram
- Certificate of approval for compliance to ISO: 9001 standard
- Procedure for Control of Non-conforming Product
- Procedure for Control of Documents
- Sample audit report of the QMS internal and external audits conducted during last one year
- Customer satisfaction reports from at least 2 customers, during the last one year
- Project audit report
- Corrective action report on the project audits
- Technical audit reports for the project

Documents as specified above are minimum requirements. BIDDER shall submit any other document/data required for completion of the job as per EIL/Owner instructions.



CONCESSION/DEVIATION PERMIT

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CONCESSION/DEVIATION PERMIT

(USE ONLY THIS PAGE FOR COMMUNCIATION WITH VENDOR/CONTRACTOR)

	Project	Originator Ref					
	Job No	Order/Contract No					
	Equipment Title	Item No					
	Originator: Vendor/Contractor						
	Caution : Originator to note that any delay in p shall be to originator's account and shall not b						
	Requirement as per specification						
To BE FILLED BY ORIGINATOR	Why the Concession/Deviation is required? Supporting evidence/calculations enclosed/not en Contractual implications if Concession/Deviation is * Time impact * Cost impact * Performance Warranty/Guarantee Under present constraints requested Concession/does not involve any hazard, and shall meet the s	s granted: More/Less/No change More/Less/No change Affected/Not affected deviation is most optimum for the project and					
	Date:	Olympia					
		Signature Vendor /Contractor (with seal)					
Decisi	on on Concession/Deviation including decision, on (To be filled by the Inspection engineer [at RPO/HO] or RCM, responsible	time and cost implications e for conveying the decision to the originator, after resolution)					
Date:		Signature					
Locati	on:	Name					



CONCESSION/DEVIATION PERMIT

Document No.

Page 2 of 2 Opinion from EIL site supervisor/inspection engineer (Specify whether post-facto approval required for regularization) Name RPO/Site Name_ Original forward to :_____ (Target division/department/group) (Project Manager) Name : Disposal by target division/department Whether any vendor/contractor made 'Technically not Acceptable' during bid evaluation, on the aspect of which this concession/deviation is sought-----YES/NO Date :_____ Name Final decision of Project Manager along with overall review (Client's decision required/not required) Name Client's decision, if required Signature :_____ Name :

Name

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आपूर्तिकर्ताओं से प्रलेखन अपेक्षाओं हेतु विनिर्देश

SPECIFICATION FOR DOCUMENTATION REQUIREMENTS FROM SUPPLIERS

QMS QMS 04.06.09 Issued as Standard Specification **Standards** Standards SCT ND Committee Committee Standards Standards Committe Bureau Rev. Prepared Checked Purpose Convenor Chairman No by by Approved by



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Abbreviations:

HOD - Head of Division / Department

QMS - Quality Management System

MOU - Memorandum of Understanding

PO - Purchase Order

PR - Purchase Requisition

MR - Material Requisition

EDMS - Electronic Document Management System

FOA - Fax of Acceptance

LOA - Letter of Acceptance

ITP - Inspection and Test Plan

URL - Universal Resource Locator

PVC - Poly Vinyl Choloride

TPIA - Third Party Inspection Agency

QMS Standards Committee

Convenor: Mr. S.C. Tyagi

Members: Mr. Chandra Kant (Insp.)

Mr. R.K. Trivedi (Engg.) Mr. R.K. Sabharwal (C&P) Mr. M.P. Jain (Projects) Mr. Ravindra Kumar (Const.) Mr. Mukesh Meena (CQA)



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Attachi	ments			
Format	t for Drawing/Documentation Transmittal	:	Format No. 3-78-0001	
	t for Drawing/Documentation Schedule	:	Format No. 3-78-0002	
Format	for Comments Resolution sheet	:	Format No. 3-78-0003	
Format	for completeness of Final Documentation	•	Format No. 3-78-0004	



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SCOPE 1.0

This specification establishes the Documentation Requirements from Suppliers.

All documents/data against the PO / PR / MR shall be developed and submitted to EIL/Owner by the suppliers for review / records, in line with this specification.

2.0 **DEFINITIONS**

2.1 Supplier

For the purpose of this specification, the word "SUPPLIER" means the person(s), firm, company or organization who is under the process of being contracted by EIL / Owner for delivery of some products (including service). The word is considered synonymous to bidder, contractor or vendor.

2.2 Owner

Owner means the owner of the project for which services / products are being purchased and includes their representatives, successors and assignees.

3.0 REFERENCE DOCUMENTS

6-78-0001

Specification for Quality Management System Requirements from

Bidders

4.0 **DOCUMENTATION REQUIREMENTS**

4.1 Documents/Data to be Submitted by the Supplier

- 4.1.1 The Supplier shall submit the documents and data against the PO/PR/MR as per the list given in respective PO/PR/MR.
- 4.1.2 Review of the supplier drawings by EIL would be only to review the compatibility with basic designs and concepts and in no way absolve the supplierr of his responsibility/contractual obligation to comply with PR requirements, applicable codes, specifications and statutory rules/regulations. Any error/deficiency noticed during any stage of manufacturing/execution/installation shall be promptly corrected by the supplier without any extra cost or time, whether or not comments on the same were received from EIL during the drawing review stage.
- Unless otherwise specified, submission of documents for Review/Records shall commence 4.1.3 as follows from the date of Fax of Intent /Letter of Intent:

OMS

- 1week

Drawing/Document Index - 2weeks

Other Documents/Drawings - As per approved Drawing/Document Index/Schedule

Documents as specified in PO/PR/MR are minimum requirements. Supplier shall submit 4.1.4 any other document/data required for completion of the job as per EIL/Owner instructions.



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4.2 Style and Formatting

- 4.2.1 All Documents shall be in ENGLISH language and in M.K.S System of units.
- 4.2.2 A blank space measuring 75 mm (W) x 38 mm (H) shall be provided on the body of all supplier drawings for marking of review codes by EIL.
- 4.2.3 Before forwarding the drawings and documents, contractor shall ensure that the following information are properly entered in each drawing:

Purchase Requisition Number Name of Equipment / Package Equipment / Package Tag No. Name of Project

Client

Drawing / Document Title

Drawing / Document No.

Drawing / Document Revision No. and Date

Transmittal Number EILVendor Print No.

(In case of second & subsequent Revisions)

Note: EIL "Vendor Print Number" is to be picked up from the EIL Review Code Stamp affixed on the previous revision.

4.3 Review and Approval of Documents by Supplier

4.3.1 The Drawing/Documents shall be reviewed, checked, approved and duly signed/stamped by supplier before submission. Revision number shall be changed during submission of the revised supplier documents and all revisions shall be highlighted by clouds. Whenever the supplier require any sub-supplier drawings to be reviewed by EIL, the same shall be submitted by the supplier after duly reviewed, approved and stamped by the supplier. Direct submission of sub-supplier's drawings without contractor's approval shall not be entertained.

4.4 Document Category

4.4.1 Review Category

Following review codes shall be used for review of supplier Drawings/Documents:

Review Code 1 - No comments.

Review Code 2 - Proceed with manufacture/fabrication as per

commented document. Revised document

required

Review Code 3 - Document does not conform to basic

requirements as marked. Resubmit for review

R - Retained for Records.

V - Void

4.4.2 Records Category

Documents under this category are meant for EIL records. These documents would not be returned to supplier. However, comments, if any, will be communicated to supplier.



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4.5 Methodology for Submission of Documents to EIL/Owner

4.5.1 Submission of Soft Copy of Drawings/Documents

Soft copy of drawings/documents and data shall be uploaded on the EIL EDMS Portal. The detail guidelines for uploading documents on EIL EDMS Portal are available on following URL

http://edocx.eil.co.in/vportal

4.5.2 Submission of Hard Copy of Drawings/Documents

Required number of hard copies of drawings/documents shall be submitted as per PO/PR/MR along with drawing/document transmittal, Format for Drawing/Document Transmittal (Format No. 3-78-0001) is attached with this specification.

4.5.3 Designated Authority for Submission of Drawings/Documents

Drawings/Documents shall be submitted to the designated authority of EIL/Owner as per PO/PR/MR or as communicated to the supplier during kick off meeting or subsequent correspondences.

4.5.4 Details of Contact Persons of Supplier

After placement of order supplier shall inform in writing the details of contact persons associated with the project / job. The details should include e-mail address, mailing address, telephone nos., fax nos. and names of associated persons of the supplier. The above details shall be sent to EIL Project Manager, EIL Inspection HO and concerned Regional Procurement office of EIL.

4.5.5 **Drawing/Document Schedule**

Supplier shall submit total index of drawings/documents required for review/records based on PO/PR/MR along with schedule date of submission of each drawing/document. The drawing schedule shall be submitted in Format No. 3-78-0002 for approval of EIL/Owner. The drawing schedule shall be specific with regard to drawing/document no., the exact title and size of the drawing/document. For submission of drawing schedule, the supplier shall proceed based on PO/PR/MR and subsequent correspondence. With each submission of drawings/documents, supplier shall submit updated index with schedule v/s actual submission dates, status of drawings, revision no., date, of approval etc. Any submission without index shall not be entertained for review. It shall be ensured that proper sequencing of the drawings/documents to be submitted is maintained in the drawing schedule

4.5.6 Schedule and Progress Reporting

Supplier shall submit monthly progress report and updated procurement, engineering and manufacturing status (schedule vs. actual) every month in, beginning within 2 weeks from FOA/LOA. In case of exigencies, EIL/Owner can ask for report submission as required on weekly/fortnightly/adhoc basis depending upon supply status and supplier shall furnish such reports promptly without any price implication. Format for progress report shall be submitted by the Supplier during kick off meeting or within one week of receiving FOA/LOA, whichever is earlier.



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4.5.7 Quality Assurance Plan/Inspection and Test Plan

Inspection and test plans attached if any, to the MR/PR are generic and indicative only. Immediately after receipt of the order, supplier shall submit within one week of receiving FOA/LOA, the Quality Assurance Plan for manufacturing, covering quality control of critical bought out items/materials, inspection & testing at various stages of production, quality control records and site assembly & testing as may be applicable to the specific order and obtain approval from concerned Regional procurement Office of EIL/third party inspection agency, as applicable.

4.5.8 Inspection Release Note (IRN)

Supplier shall ensure that all documents viz. documents reviewed, manufacture's test certificate etc. mentioned in Inspection Release Note(IRN) issued by EIL/third party, are sent to EIL for issue of IRN.

IRN shall be issued by EIL Inspector/ third party inspection agency only after all the drawings/documents as per Supplier's index of drawings/documents are submitted and are accepted under review code-1. Material/Equipments dispatch from Supplier's/sub Supplier's works shall not commence till above condition is met.

Note: Non fulfilling above requirement shall result into appropriate penalty or with-holding of payment as per conditions of PO/PR/MR.

4.5.9 Transportation Plan

Transportation Plan for Over Dimensional Consignments (ODC), if any, shall be submitted to concerned Regional procurement Office within 2 weeks of receiving FOA/LOA, for approval. Consignment with parameters greater than following shall be considered as over dimensional.

Dimensions: 5.5 meters width x 5.5 meters height x 25 meters length

Weight: 100 MT

4.5.10 Statutory Approvals

Wherever approval by any statutory body is required to be taken by Supplier, the Supplier shall submit copy of approval by the authority to EIL.

4.5.11 Comments Resolution Sheets

While re-submitting drawings/documents the supplier shall confirm whether all comments have been incorporated, through a comments resolution sheet (As per attached format No. 3-78-0004). If any comments are not incorporated or excluded, then reason or justification for the same shall be furnished in comments resolution sheet

4.5.12 Multi Sheet Documents

Multi sheet documents other than drawings shall be submitted in their entirety in the event of a re-submission, even if only few sheets are revised.



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4.6 Final Documentation

4.6.1 As Built Drawings

Shop changes made by Supplier after approval of drawings under 'Code 1' by EIL and deviations granted in deviation permits, if any, shall be marked in hard copies of drawings which shall then be stamped 'As-built' by the supplier. These 'As-built' drawings shall be reviewed and stamped by EIL Inspector or TPIA also. Supplier shall prepare scanned images files of all marked – up 'As – built' drawings. Simultaneously Supplier shall incorporate the shop changes in the native soft files of the drawings also.

4.6.2 As Built Final Documents

As built final documents shall be submitted as listed in PO/PR/MR.

4.6.3 Packing/Presentation of Final Documents

Final Documents shall be legible photocopies in A4, A3 size only. Drawings will be inserted in plastic pockets (both sides transparent, sheet thickness minimum 0.1 mm) with an extra strip of 12 mm wide for punching so that drawings are well placed.

Final Documentation shall be bound in Hard board Plastic folder(s) of size 265 mm x 315 mm (10¹/₂ inch x 12¹/₂ inch) and shall not be more that 75 mm thick. It may be of several volumes and each volume shall have a volume number, index of volumes and index of contents of that particular volume. Where number of volumes are more, 90mm thickness can be used. Each volume shall have top PVC sheet of minimum 0.15 mm thick duly fixed and pressed on folder cover and will have 2 lever clip. In case of imported items documents, 4 lever clip shall also be accepted. All four corners of folders shall be properly metal clamped. Indexing of contents with page numbering must be incorporated by supplier. Spiral/Spico bound documents shall not be acceptable. As mentioned above, books should be in hard board plastic folders with sheets punched and having 2/4 lever clips arrangement.

Each volume shall contain on cover a Title Block indicating package Equipment Tag No. & Name, PO/Purchase Requisition No., Name of Project and Name of Customer. Each volume will have hard front cover and a reinforced spine to fit thickness of book. These spines will also have the title printed on them. Title shall include also volume number (say 11 of 15) etc.

4.6.4 Submission of Soft Copies

Supplier shall submit to EIL, the scanned images files as well as the native files of drawings/documents, along with proper index.

In addition to hard copies, Supplier shall submit electronic file (CD-ROM) covering soft copies of all the final drawings and documents, all text documents prepared on computer, scanned images of all important documents (not available as soft files), all relevant catalogues, manuals available as soft files (editable copies of drawings/text documents, while for catalogues/manuals/proprietary information and data PDF files can be furnished).

4.6.5 Completeness of Final Documentation

Supplier shall get the completeness of final documentation verified by EIL and attach the Format for Completeness of Final Documentation (Format No. 3-78-004) duly signed by EIL Inspector or TPIA as applicable to the document folder.



DRAWING/DOCUMENTATION TRANSMITTAL

DRAWING/DOCUMENT TRANSMITTAL SHEET

CONTRACTOR'S VENDOR'S LOGO ETC.
PL. DO NOT CHANGE LOCATION OR EXCEED THIS SPACE

PR/TENDER NO.	:	JOB NO. :
CONTRACTORS/VENDOR'S NAME	:	PROJECT:
EIL LOI/PO NO.	:	CLIENT :
CONTRACTOR'S VENDOR'S LETTER	:	DATE :
NO.		

S. NO.	DRAWING/DOCUMENT NO.	REV.	SHEET	TOTAL	DRAWING/DOCUMENT TITLE	CATEGO RY	NO. OF COPIES	EQUIPMENT NO.
								A1.

CATEGORY CODES:

R- Drawings which are required to be reviewed by EIL

I – Drawings which are to be submitted for EIL record

Page 1 of 1



DRAWING/DOCUMENTATION SCHEDULE

CONTRACTOR'S/VENDOR'S DRAWING/DOCUMENT SCHEDULE

CONTRACTOR'S/VENDOR'S NAME EIL LOI/PO NO. EIL JOB NO.: DATE

CLIENT

PROJECT

CONTRACTOR'S/VENDOR'S NAME, LOGO PL. DO NOT CHANGE LOCATION OR EXCEED THIS SPACE

PACKAGE/ UNIT				
SUB				
AFC/ FINAL ISSUE DATE				
SCHEDULE DATE OF SUBMISSION				
DISCIPLINE				
CATEGORY				
DRAWING/ DOCUMENT TITLE				
TOTAL NO.				
SHEEL NO:				
BEA.				
CONTRACTOR'S/ VENDOR'S DRAWING/DOCUMENT NO.	:			
SF' NO'				

CATEGORY CODES:

R – Drawings which are required to be reviewed by EIL. I – Drawings which are to be submitted for EIL record.

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Comment Resolution Sheet

Job. No			
Project Title_			
Drawing/Docu	ment No		
Revision No			
S. NO.	EIL Comment	Incorporated Resolution	Remark

S. NO.	EIL Comment	Incorporated Resolution	Remarks
	100-42		
	,		



COMPLETENESS OF FINAL DOCUMENTATION

COMPLETENESS OF FINAL DOCUMENTATION

Name of Supplier/Contractor	:		
Customer	:		
Project	:		
EIL's Job No.	:		
Purchase Order No./ Contract No.	:		
Purchase Requisition No./ Tender No.	:		Rev. No. :
Name of the Work/ Equipment	:		
Tag. No.	;		
Supplier's/ Contractor's Works Order No.	:		
Certified that the Engineering supplier are complete in accordance			Test Certificates submitted by the rements of Purchase Requisition.
Signature :		Signature	·
Date :		Date	:
Name :		Name	:
Designation :		Designation	:
Department :		Department	:
Supplier/Contract	or		EIL

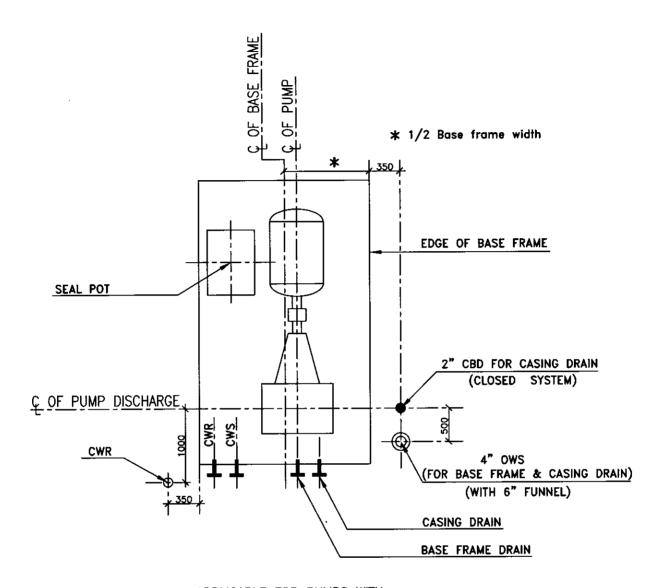


STANDARD FOR ORIENTATION OF SEAL POT & AUXILIARY CONNECTIONS OF CENTRIFUGAL PUMPS

STANDARD No.

7-44-0321 Rev. 0

Page 1 of 1



APPLICABLE FOR PUMPS WITH

- 1. END SUCTION/TOP DISCHARGE
- 2. TOP SUCTION/TOP DISCHARGE
- 3. SIDE SUCTION/SIDE DISCHARGE

NOTES

- Pump supplier to ensure that the locations / orientation of seal pot , Drain connections ,
 CWS & CWR shall be as indicated in this drawing.
- 2. All dimensions are in mm, unless other wise specified.

LEGEND

CBD: CLOSED BLOW DOWN
OWS: OILY WATER SEWER
CWR: COOLING WATER RETURN
CWS: COOLING WATER SUPPLY

			450	(2)	Mp	2mel
0	29.06.12	ISSUED AS STANDARD	TR	HC.	ATD	DM
Rev.	Date	Purpose	Prepared	Checked	Stds. Committee Convenor	Stds. Bureau Chairman
No.	Page 327		by	by	Approv	ed by
Format N	o. 8-00-0001-F4				Copyright EIL	- All rights reserved