



UCH COMPRESSION PROJECT

Design Engineering, Procurement (Supply), Construction, Installation/Erection, Pre-Commissioning, Commissioning & Start-up (including performance testing and Reliability Guarantee Test) of Compression System at UCH Compression Project

Tender Enquiry No. PROC-FC/CB/PROJ/UCH(COM)-4462/2019

Pre-Bid Clarification-01 (SEC-III; SCOPE OF WORK)

2.0 PROCESS ENGINEERING

Reference No.	Existing Clause	Ammended Clause
2nd Para of section 2.1, Page 17 Of 114 Each Turbo compressor contains single stage centrifugal Compressor driven driven by Gas Turbine with other BOE (balance of equipment), for Compressor Datasheet, refer Tender Document/ Volume-IIA. Each Turbo Compressor driven by directly coupled Gas Turbine with other BOE (balance of equipment), for Compressor Datasheet, refer Tender Document. Other BOE
7th Para of section 2.1, Page 18 Of 114 The surge points shall be shown on the performance curves. For compressors that have a back-to-back The surge points shall be shown on the performance curves. The EPCC/vendor shall ensure that the sectional head-capacity characteristic curve shall rise continuously from the rated point to predicted surge point. The compressor, without the use of a bypass, shall be suitable for continuous operation at any capacity at least 10% greater than the predicted surge capacity shown in the proposal. Furthermore, during machine shutdown, the surge does not occur above 75% speed. For compressors that have a back-to-back.....
Whole Para of section 2.4, Page 19 Of 114	<u>Compressor Trains Settling out & Design Pressure</u> Design pressure of equipments (i.e. scrubbers, coolers, piping & Instrumentations, etc) for Compressor Trains is considered as 10% of settle-out pressure on lowest pressure equipment. Preliminary calculation is made at this stage but EPCC shall provide detailed calculation of settling pressure at detailed engineering stage. Settling out Pressure: 590 Psig	Deleted.
section 2.5, Page 19 Of 114	Following modifications in the existing process system of UCH-I Plant shall be included in EPCC Scope of work but not limited to: 1. Gas Outlet Line of existing UCH-I Slug catcher (M-200) relocated before FEC tie-in points. 2. A new Slug Catcher at UCH-I shall be installed parallel arrangement. 3. New PCV-2101 and New BDV-2102 shall aforesaid PCV & BDV.	Following modifications in the existing process system of UCH-I Plant shall be included in EPCC Scope of work but not limited to: 1. Gas Outlet Line of existing UCH-I Slug catcher (M-200) relocated before FEC tie-in points. 2. A bypass line for PSV-2015, installed at UCH-I existing Slug Catcher M-200, shall also be required. 3. A new Slug Catcher at UCH-I shall be installed parallel arrangement. 4. New PCV-2101 and New BDV-2102 shall aforesaid PCV & BDV.
section 2.5, Page 20 Of 114	Following modifications in the existing process system of UCH-II Plant shall be included in EPCC Scope of work but not limited to: 1. Combined Gas manifold at Gas Gathering Area of UCH-II tie-in P&IDs of UCH-II Plant.	Following modifications in the existing process system of UCH-II Plant shall be included in EPCC Scope of work but not limited to: 1. Combined Gas manifold at Gas Gathering Area of UCH-II tie-in P&IDs of UCH-II Plant. 2. Tie-in points at UCH-II Slug Catchers for future UCH-II feed enhancement purpose shall also be in EPCC scope as shown in tie-in P&IDs.

Para # 2 of 'Cooling Water System', section 2.6, Page 20 Of 114	The existing UCH-II plants' raw water tank (930-TK103) fire water header. The makeup water requirement is considered as 2.2% of design flow (10% margin on operating flow) i.e, 138 USGPM. For New Cooling System duty specification, refer 'Datasheet for Cooling Water System' in Tender Document/Volume-IIA).	The existing UCH-II plants' raw water tank (930-TK103) fire water header. For New Cooling System duty specification, refer 'Datasheet for Cooling Water System' in Tender Document/Volume-IIA).Furthermore, a new utility water pump i.e. 930-P103-C shall also be installed in parallel operation with existing utility pumps at UCH-II Plant.
Para # 1 of 'Fuel Gas System', section 2.6, Page 21 Of 114	A new fuel gas system shall be installed for FEC, 430 - 480 Btu/Scf. However for cold startup, raw gas shall be taken from Eastern well # UCH-27 having heating value 720 - 740 Btu/Scf.	A new fuel gas system shall be installed for FEC, 430 - 480 Btu/Scf. However for startup only, raw gas shall be taken from either Eastern Well # UCH-27 or Well # UCH-32 having heating value 720 - 740 Btu/Scf.
section 15.2, Page 108 Of 114	0221-A-1001 Design Basis . . 0221-DS-1708 Data Sheet of Fuel Gas Heater	0221-A-1001 Design Basis . . 0221-DS-1708 Data Sheet of Fuel Gas Heater 0221-DS-1710 Data Sheet of Utility Water Pump (930-P103C)
UCH-II Tie-in P&IDS, section 16.2, Page 111 Of 114	4985-PB-2104 P&ID For Well # UCH - 27 4985-PB-2118 P&ID For UCH-II Gathering System (Eastern Lobe) 4985-PB-2124 P&ID For UCH-II Logic Box 4985-PB-2200 P&ID For UCH-II Drain System (Slop Vessel & Blow Case) 4985-PB-2203 P&ID For Fire Water distribution 4985-PB-2205 (Sheet 2of 2) P&ID For UCH-II Flare & Blowdown System HC Flare Header 4985-PB-2223 P&ID For UCH-II Utility Water Header	4985-PB-2104 P&ID For Well # UCH - 27 4985-PB-2118 P&ID For UCH-II Gathering System (Eastern Lobe) 4985-PB-2121 P&ID For UCH-II Eastern Lobe Slug Catcher 4985-PB-2122 P&ID For UCH-II Central Lobe Slug Catcher 4985-PB-2123 P&ID For UCH-II Western Lobe Slug Catcher 4985-PB-2124 P&ID For UCH-II Logic Box 4985-PB-2200 P&ID For UCH-II Drain System (Slop Vessel & Blow Case) 4985-PB-2203 P&ID For Fire Water distribution 4985-PB-2205 (Sheet 2 of 2) P&ID For UCH-II Flare & Blowdown System HC Flare Header 4985-PB-2216 (Sheet 2 of 3) P&ID For UCH-II Raw Water Storage System 4985-PB-2223 P&ID For UCH-II Utility Water Header

4.0 ELECTRICAL ENGINEERING

section 4.7, Page 29 of 114	In general, the design shall include sizing of equipment, design for safe installation & operation, and preparation & issue of specifications, data sheets, calculations, design and construction drawings for the complete electrical system which shall include, but not be restricted to, the following: a. b,..... s. t.	In general, the design shall include sizing of equipment, design for safe installation & operation, and preparation & issue of specifications, data sheets, calculations, design and construction drawings for the complete electrical system which shall include, but not be restricted to, the following: a & b same c. The electrical system consists supply and installation of 02nos. step down transformers capable of catering for total plant load sharing 50% load in normal operation and 100% load on single transformer during malfunction / maintenance of any one transformer. Refer Single line diagram Doc. No. 0221-ELB-6600. 20% spare margin in rating to be provided by EPCC for future loads. d. same e. There shall be supply and installation of 400/230V, 50 Hz, on-line Dual redundant complete UPS system with separate battery banks for each unit, along with distribution board for load distribution. Each Battery bank will be sized for 60 minutes duty with 100% load for each unit. A UPS system shall be utilized for the Instrument Control System, Switchgear controls, various essential and critical services. 20% spare margin in UPS rating shall be provided to accommodate future additions. f & g same h. The Contractor shall also designed, supplied and installed a comprehensive lightening protection system in accordance with IEC 62305. The lightning protection system shall be provided with separate ground rods, one for each down conductor irrespective of study results. i. same
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<p>section 4.8, Page 32 of 114</p>	<p>h. Battery sizing calculations</p>	<p>h. UPS & Battery sizing calculations</p>
<p>section 4.16, Page 33 of 114</p>	<p>The scope shall be as minimum as follows;</p> <p>a. b..... k. l.</p>	<p>The scope shall be as minimum as follows;</p> <p>a& b same</p> <p>c. As far as practicable, existing power, control & lighting cables to be relocated and re-used, however, if not possible then following work/scope (mentioned in subsequent section-i & d) to be performed/covered under EPCC responsibilities.</p> <p>i. The power, control and Lighting cables installed shall not be dismantled and relocated from existing location. The cables shall only be unterminated from both ends, & shall be capped & tapped at both ends that are from MCC to equipment terminal boxes, junction boxes and lighting fixtures etc.</p> <p>d, e, f, g, h, i & j same</p> <p>k. Existing Cathodic protection equipment/material of aforementioned relocated diesel storage tank (external only) and piping, as far as practicable, shall be dismantled, relocated and to be installed in view of detail engineering design results. Additional equipment/material that are required for further use as per design requirement shall be supplied by EPCC without any additional cost. Client (OGDCL) inspection team shall examine the dismantle material and certify that whether equipment/material are suitable for re-installation/re-used or not. It is the responsibility of EPCC to evaluate the existing CP system and shall be provided accordingly. If existing CP exist then as far as practicable, existing equipment/material to be relocated, otherwise, all CP material to be procured and provided newly in line with min. of existing specs shall be furnished by EPCC without additional cost.</p> <p>l. same</p> <p>m. Due to relocation of aforementioned work, nearby services may also be disturbed which necessitate more units to be relocated that are not intended so far, therefore, aforementioned relocation work, along with any other work that may arise at the time of project execution .i.e. Foam generating skid motor, Power and control cables, Transformer rectifier, conduits, trays, shall be carried out by contractor without any additional cost.</p>

5.0 INSTRUMENTATION AND CONTROL ENGINEERING

Sec 5.11, Page 37 Of 114	New industrial type dedicated One Operator and One Engineering HMI Workstations shall be supplied, configured and installed in plant existing control room for remote operation, monitoring and control. New Operator and Engineering Workstations shall be common for entire Compression Facility (Three Compressors).	New industrial type dedicated Two Operator and One Engineering HMI Workstations and engineering Laptop shall be supplied, configured and installed in plant existing control room for remote operation, monitoring and control. New Operator and Engineering Workstations shall be common for entire Compression Facility (Three Compressors).
Sec 5.28	-	Emergency Shutdown Valves with tags nos. 251-ESDV-013 & 251-ESDV-012 , which are proposed to be installed on fuel gas skid shall be SIL-3 rated. EPCC contractor shall provide proper SIL certification certificates for the mentioned valves.
Sec 5.29	-	All fire and gas detectors along with manual call points (MAC) and Sounder/Beacon of compressor area shall interface, controlled and monitored by Package Control System for initiating packages trips, shutdown and alarm generation.
Sec 5.30	-	EPCC contractor is responsible for Design, Supply and installation of New PLC based extension panel for existing DCS System with redundant controller, I/Os modules, redundant power supplies and other accessories complete in all aspects as per the basic requirements mentioned in this document and relevant project documents / drawings. EPCC contractor shall consider minimum of 25% spares to the actual I/O counts before designing New DCS extension system. The existing installed DCS system is of ABB 800XA and therefore same Make/Model shall be preferred for new extension panel.
Sec 5.31	-	EPCC Contractor shall be responsible for complete Engineering, Configuration, Logic development, HMI Development, Scale Range Values Setting, I/O assignment, Panel wiring etc. required for new I/O points in new DCS extension panel. All the work shall be done in accordance with Control System philosophy and latest revision of Cause & Effect, P&ID, and Instrument I/O Lists, provided in Tender Document.

Note: Further clarifications/ confirmations (if any) etc. shall be made as per above PBC1.