	PE&SD, BHEL.R.C. Puram, Hyderabad	**Dt: 26.11.21**
PE&SD	**NIT no.:** T0AUX00073_NIT-61520, **Tender id in www.eprocurebhel.in : 2021_BHEL_6177_1 dtd. 18.11.21**	**Rev 00** **Page 1 of 1**

Corrigendum 01

Name of the Work: **"STRUCTURAL STEEL & MECHANICAL EQUIPMENT ERECTION AND PIPING WORKS etc." FOR IOCL PARADIP-STANDBY SRU (525TPD) TRAIN PROJECT".**

Tender No.: T0AUX00073_NIT-61520, in (www.bhel.com), dated 18.11.2021

With reference to above tender, following corrigendum –1 is released.

Sl. No.	Document No./Title/ Reference	As Published	Should be read as/Amended to
1.	Annexure-1 to NIT, i.e PQR of tender	Annexure-1 dated:18.11.2021 i.e Pre-qualification requirement. This document stands null and void	PQR stand revised as per Annexure-1 i.e PQR dated:26.11.2021 shall be applicable.
2.	Technical Conditions of Contract	Not existing	*1) Annexure – A to TCC* *2) Annexure-VIII of TCC* *3) Annexure of TCC* *are attached*

Note: 1.All other terms & conditions of the tender will remain unchanged.

2.Bidders are requested to submit a copy of this corrigendum (as part of technical bid) duly signed by the authorized signatory & stamped with official seal as a token of Bidder's unqualified acceptance to this corrigendum.

Sd/-

Manoj Kumar, DGM,
PE & SD, BHEL, R.C. PURAM
HYDERABAD- 502 032
Ph. 040-23185003/4915,
E-mail: kumarmanoj@bhel.in

Annexure – I (Rev 01)

PRE QUALIFYING REQUIREMENTS (Rev 01)

JOB	**"STRUCTURAL STEEL & MECHANICAL EQUIPMENT ERECTION AND PIPING WORKS etc." FOR IOCL PARADIP-STANDBY SRU (525TPD) TRAIN PROJECT".**
Tender/Enquiry Ref No:	T0AUX00073

BIDDER SHALL SUBMIT BELOW PRE-QUALIFICATION REQUIREMENTS FORMAT, DULY FILLED-IN, SPECIFYING RESPECTIVE ANNEXURE NUMBER AGAINST EACH CRITERIA AND FURNISH RELEVANT DOCUMENT IN THE RESPECTIVE ANNEXURES IN THEIR OFFER.

SL NO	PRE-QUALIFICATION REQUIREMENTS	Bidders claim in respect of fulfilling the PQR Criteria	
		Name and Description of qualifying requirements	Page no of supporting document
A	Submission of Integrity Pact duly signed, if offer value is Rs 2 Cr [excluding taxes and duties] or more, if applicable. (Note: To be submitted by Prime Bidder & Consortium/Technical Tie up partner jointly in case Consortium bidding is permitted, otherwise by the sole bidder)		Applicable
B	Technical Criteria: Bidder/s (In case of consortium bidding, prime bidder or consortium partner/s or Prime Bidder & consortium Partner together as defined in respective clauses of B1, B2, B3 & B4 shall comply this criteria) should meet technical PQR criteria of B1, B2, B3 & B4 during last 07 (Seven) years ending on the last date of submission of bid **B1:** Bidders (Alone or along with consortium partner/s, if any) must have achieved the following criteria (PQR) of B1 (B1.1 or B1.2 or B1.3), value of which should be one of the following, B.1.1 Successfully completed One (1) similar work of value not less **Rs. 1442.00 Lacs.** OR B1.2 Successfully completed Two (2) similar works each of value not less than **Rs. 901.00 Lacs.** OR B.1.3 Successfully completed Three (3) similar works each of value not less than **Rs. 721.00 Lacs**		

	B2: For Steel structure erection work (In case of consortium bidding, Prime bidder shall necessarily comply this criteria): Execution of Structure work for: B.2.1 At least 576MT of Structure Erection work, completed within a period of twelve consecutive months in cumulative of two concurrently running/completed contracts. OR B.2.2 At least 384MT of Structure Erection, completed within a period of twelve consecutive months in one running/completed contract. **B3:** For Piping fabrication and erection works (In case of consortium bidding, prime bidder or consortium partner/s shall individually comply this criteria): B.3.1 Bidder should have executed at least 670MT carbon steel piping works as qualifying requirement. **B4:** For Equipment erection work (In case of consortium bidding, prime bidder or consortium partner/s shall individually comply this criteria): B.4.1 At least 700 MT of Equipment Erection works, completed within a period of twelve consecutive months in cumulative of two concurrently running/completed contracts. OR B 4.2 At least 470 MT of Equipment Erection works, completed within a period of twelve consecutive months in one running/completed contract.		
C 1	Financial Criteria Turnover: Bidders must have achieved an average annual financial turnover (Audited) of **Rs. 560.0** Lacs or more over last three completed Financial Years (FY) i.e. 2017-18,2018-19 & 2019-20.	FY 2017-18: Rs. _____ Lacs FY 2018-19: Rs. _____ Lacs FY 2019-20: Rs. _____ Lacs	
2	Net worth: Net worth of the Bidder based on the latest Audited Accounts as furnished for 'C1' above should be positive.		

	Net worth = Paid up share capital* + Reserves. (*Share Capital OR Partnership Capital OR Proprietor Capital as the case may be)		
3	Cash Profit: Bidder must have earned cash profit in any one of the three Financial Years as applicable in the last three years defined in 'C1 above based on latest Audited Accounts. NET cash profit=(PAT + Non cash expenditure viz depreciation)		
D	Capacity Evaluation of Bidder: Concurrent Commitments of the bidder shall not be greater than or equal to double the average financial turnover of last three completed Financial years i.e. for FY's 2017-18, 2018-19 & 2019-20.		
E	Consortium criteria: Consortium bidding is allowed. Prime bidder and the consortium partner/s to comply with the requirement of clause 23.0 of NIT. The Prime Bidder shall meet technical criteria as specified in B2 above and shall execute "Structure Steel Erection Works" if the work is awarded to them. Works to be executed by each of the other consortium partner/s to be declared for ' Piping fabrication and erection works ' and 'Mechanical Equipment erection works ' corresponding to the PQ criteria B3 and B4 respectively.	**To be filled in case of consortium bidding:** 1."Structure Steel Erection Works": Shall be done by M/s_____(Prime Bidder) 2." ' Piping fabrication and erection works": Shall be done by M/s_____(Consortium Partner 1) 2."Mechanical Equipment erection works": Shall be done by M/s_____(Consortium Partner 2)	
F	Approval of Customer: Note: Name of L-1 Bidder along with the credentials may be sent to end customer (IOCL Paradip) for approval as per customer requirement if sought by them.		Applicable
G	Price Bid opening. Note: Price Bids of only those bidders shall be opened through Reverse auction, who stand qualified after compliance of criteria A to E		By BHEL
	1. Explanatory Notes for the PQR (unless otherwise specified in the PQR): 2. Bidder to submit Audited Balance Sheet and Profit and Loss Account for the respective years as indicated against C-1 above along with all annexures. 3. Audited financial statement have to be submitted for all the three years as indicated against C-1 above. If financial statements are not required to be audited statutorily, then instead of audited financial statements, financial statements are required to be certified by chartered accountant.		

4. Incase audited Financial statements have not been submitted any of three years as indicated against C-1 above, then the applicable audited statements submitted by bidders against the requisite three years, will be averaged for three years i.e. total divided by three.

5. However audited financial statement for FY 2019-20 is necessarily required to be submitted for determining net worth.

6. The bidder can be a company under Companies Act, 1956 or Partnership firm or Proprietor firm. Bidder to submit the document for same.

7. Time period for achievement of the 'Technical' criteria of PQR (as in 'B' above) will be the last 7 years ending on the 'latest date' of Bid submission. If the Qualifying work is executed in the last seven years period, as specified above, even if it has been started earlier, the same will also be considered meeting the qualifying requirements.

8. 'Successfully completed'/'Executed' means the bidder should have achieved the criteria specified in the Technical criteria of PQR (as in 'B'' above) even if the Contract has not been completed or closed. The bidders will be required to submit successful completion of work completed (completion of entire work with closing of contract or part successful completion certificate upto a minimum level specified in the criteria B above).

9. For PQR 'B' value of work is to be updated as per the PVC formula of GCC with Indices for "All India Avg. Consumer Price Index for Industrial Workers" with base month as date of execution and indexed up to two months prior to the bid opening month. This condition will be applicable only for the completed jobs and not for the jobs in progress as on date of technical bid opening.
10. For PQR 'B', 'Similar Work' means any of the following combinations of works executed:

i. Piping and Structure Erection
ii. Equipment Erection & Structure Erection
iii. Equipment erection, Structure Erection and piping works.
"in Hydrocarbon sector (Refineries/ Petrochemical Plant/ Onshore Oil or Gas processing Facility/ Offshore Oil or Gas Processing Facility/ LNG facility/ Fertilizer Plant/ Chemical Plant /Metallurgy (Ferrous) Plant/Power plant(excluding solar/wind)"

11. For the purpose of equipment erection, erection of all types of Mechanical equipment, Electrical equipment, Steel storage (For purpose of storage of water/oil/Gas) tankages or combination thereof are eligible for meeting the PQR criteria at B4.
12. For the purpose of structure erection all types of structural steel, Precast RCC structure, steel tankages or combination thereof are eligible for meeting the PQR criteria at B2

13. Bidders are required to declare the current commitments in the attached format, Form F 09. For the purpose of determining Concurrent commitments.

14. Bidder to submit completion certificate and its Work order for documentary evidence as indicated against criteria B above. Duly certified Payment invoice from the customer organization can be accepted as completion certificate.

15. For compliance to B1.1 criteria for the purpose of ascertaining the value of work done in case of consortium bidding, only one similar work experience certificate each of Prime Bidder & consortium partner shall be reckoned and added together to arrive at the value of work by the consortium.

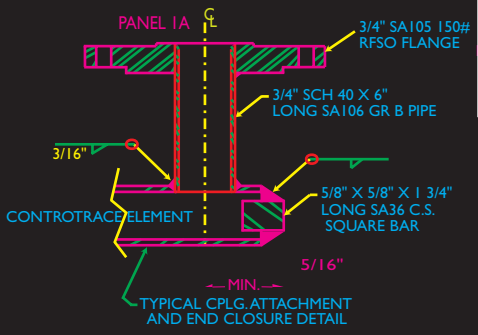
16. For compliance to B1.2 criteria for the purpose of ascertaining the value of work done in

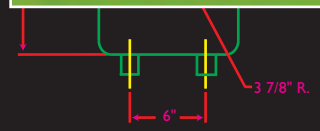
	case of consortium bidding, only maximum of two similar work experience certificates each of Prime Bidder & consortium partner shall be reckoned and added together to arrive at the value of work by the consortium. 17. For compliance to B1.2 criteria for the purpose of ascertaining the value of work done in case of consortium bidding, only maximum of three similar work experience certificates each of Prime Bidder & consortium partner shall be reckoned and added together to arrive at the value of work by the consortium.

Annexure-VIII of TCC

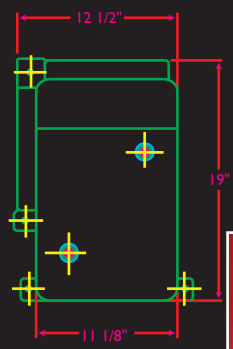
CSI Bulletin CTCH -1

CSI Bolt-On Heating Systems

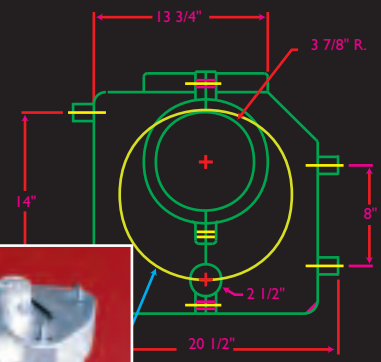




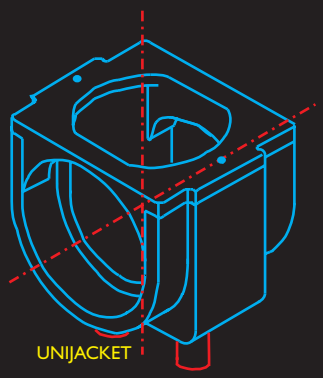
TOP VIEW

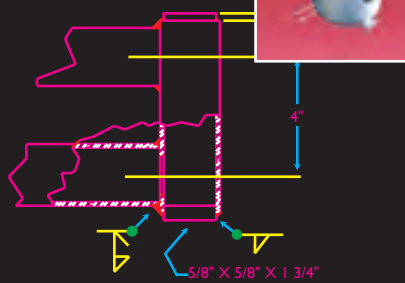


SIDE VIEW

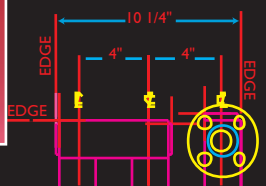


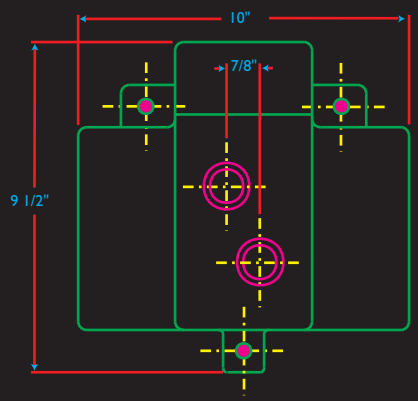
FRONT VIEW

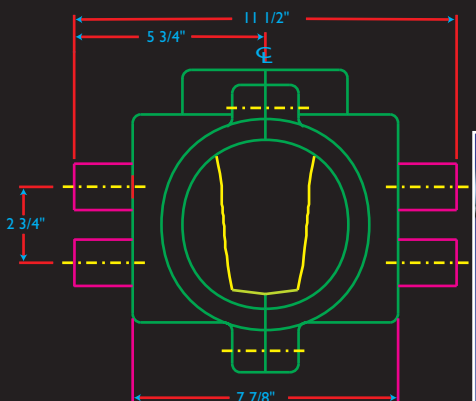




CONTROTRACE BUTTWELD DETAIL







40 3/4"

Piping • Valves • Pumps • Meters • Instruments • Tanks • Vessels

The CSI Bolt-On Heating System

Integrally jacketed piping systems and components have long been the preferred method used with processes that require elevated temperatures for efficient in-plant transfer of products such as sulfur, bitumens, phthalic anhydride, DMT and polymers. Pumpability, product quality, flow properties and reliable equipment operation for many of these processes depend on viscosity ranges controlled by temperature.

Integral jacketing offer the advantages of unit construction, high rates of heat transfer from the heating medium to the process, and the ability to maintain processing temperatures within close tolerances.

The disadvantages of integrally jacketed systems are the limited selections available for jacketed components, relatively long deliveries for these components, and inconsistencies of quality of the jacketed components due to the lack of industry-wide fabrication standards.

The CSI Bolt-On Heating System is comprised of products that respond positively to the disadvantages cited for integral jacketing. The bolt-on system provides thermal performance necessary to meet narrow-envelope processing. The product heating options are versatile, ranging from the primary function of temperature maintenance to more thermally complex applications of heat-up and melt-out, and, infrequently, heat exchanger duty of process heating or cooling.

The CSI Bolt-On Heating System consists of two basic product groups which are discussed in more detail on subsequent pages:

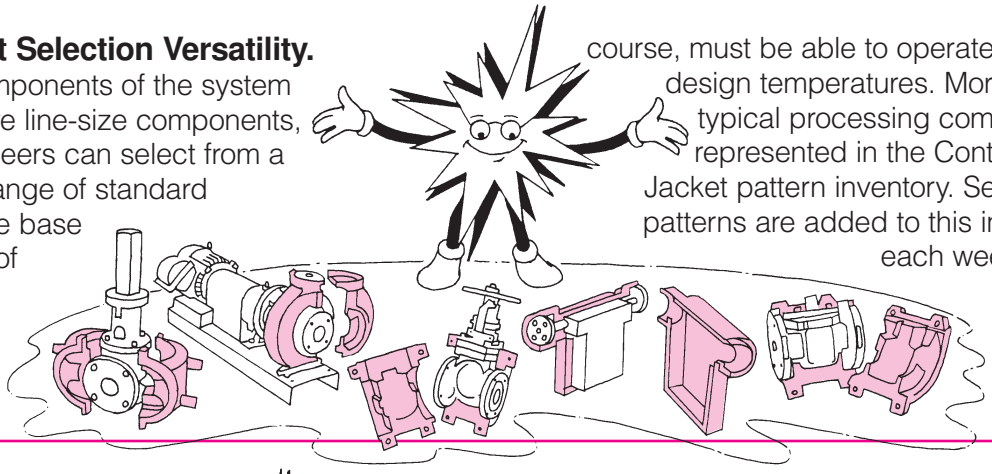
- **ControHeat Bolt-On Jackets** for valves, pumps, meters and other components.
- **ControTrace Heating Elements** for piping, tanks and vessels.

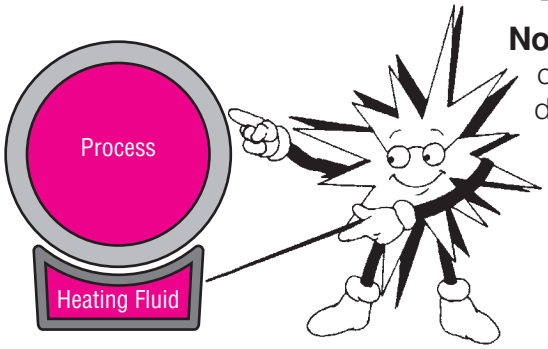
This brochure outlines the products and services offered by CSI to help designers and engineers optimize performance and value for specific bolt-on heating systems.

Benefits of the CSI Bolt-On Heating System

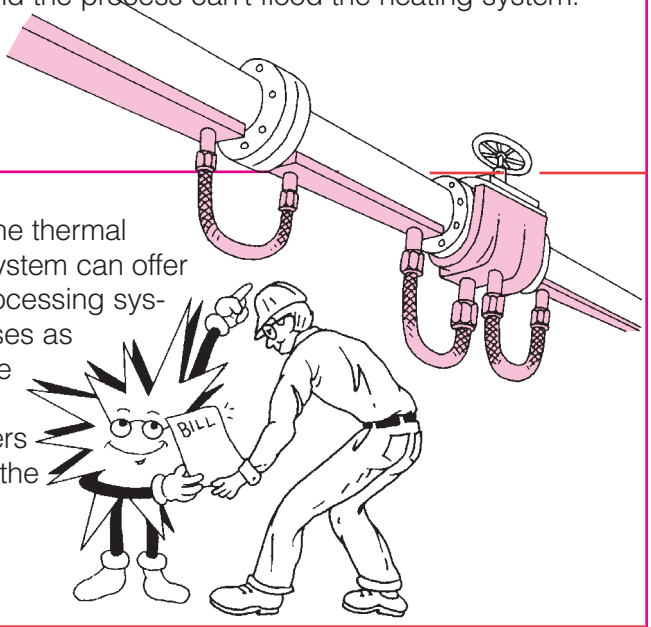
There are several benefits that accompany the CSI Bolt-On Heating System. The major ones are:

Component Selection Versatility. Because components of the system most often are line-size components, project engineers can select from a very broad range of standard products. The base component, of course, must be able to operate at elevated design temperatures. More than 3500 typical processing components are represented in the ControHeat Jacket pattern inventory. Several new patterns are added to this inventory each week.

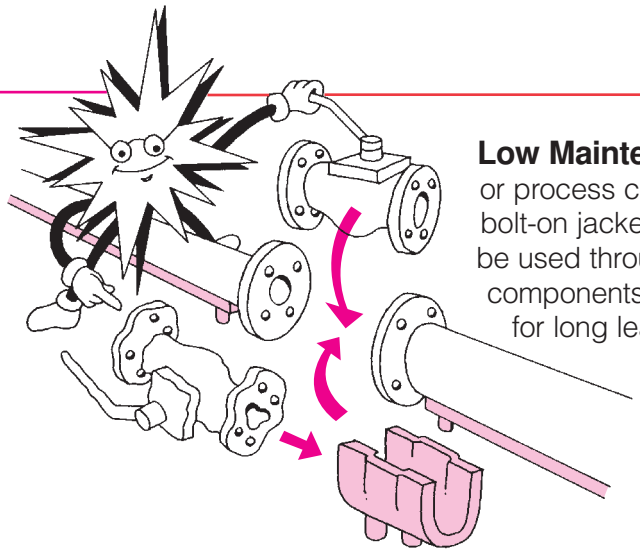




No Cross-Contamination. Defects in castings or cracks in core piping cause cross-contamination. The double-wall design of the bolt-on heating system eliminates the possibility of cross-contamination. The heating fluid can't reach the process, and the process can't flood the heating system.

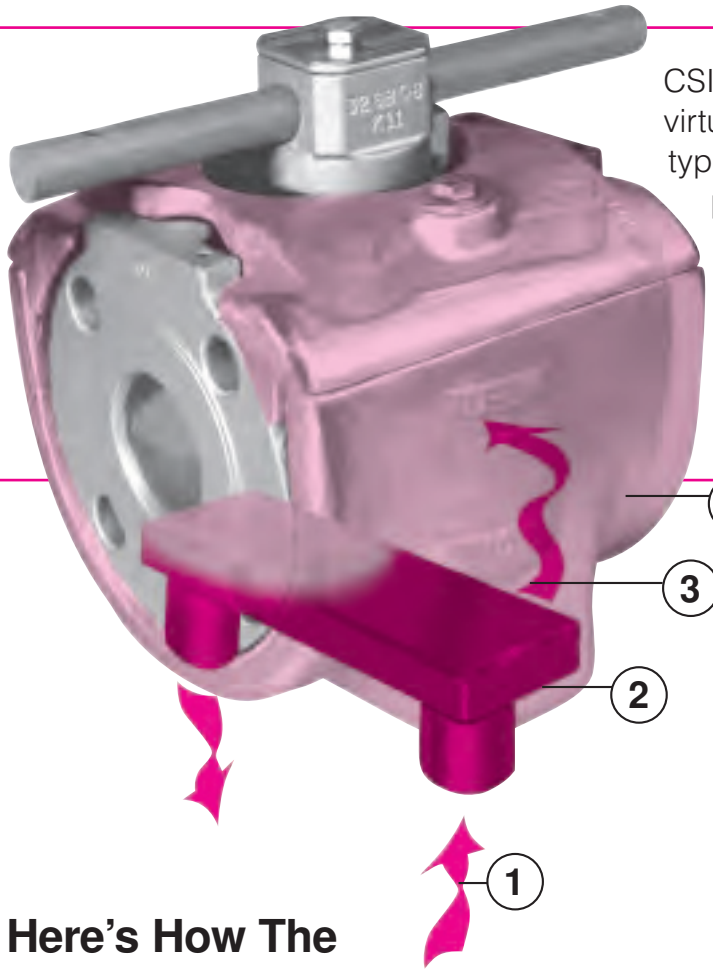


Economical Temperature Control. Depending on the thermal requirements of the process, the CSI Bolt-On Heating System can offer significant cost savings compared to a fully jacketed processing system. In general, the cost of the clamp-on system increases as the required temperature of the process approaches the temperature of the heating fluid. When the design temperature envelope is very narrow, say 2-4°F, designers must carefully analyze potential chill spots to determine the optimum heat coverage.

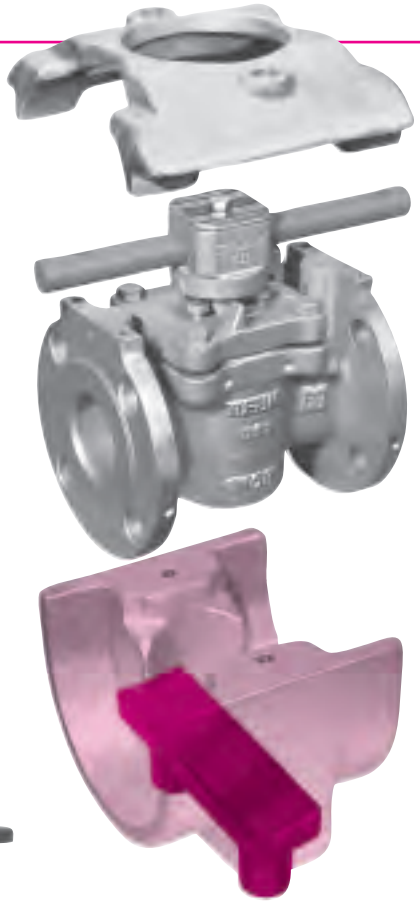


Low Maintenance Costs. Practically any piece of equipment or process component can be economically heated with a bolt-on jacket. Because standard line-size components can be used throughout the system, the replacement of individual components like a valve can be made without concerns for long lead times and "crises" expediting.

ControHeat Jackets Cover Valves



CSI makes ControHeat Bolt-On Jackets for virtually any valve. Generally, there are two types of jacket construction offered: One-piece jackets, called UniJackets, for valves sizes 3-inch and smaller; and two-piece jackets for valves sizes 4-inch and larger. Very large valves like 20-inch gate valves may utilize more than two pieces to accommodate ease of installation.



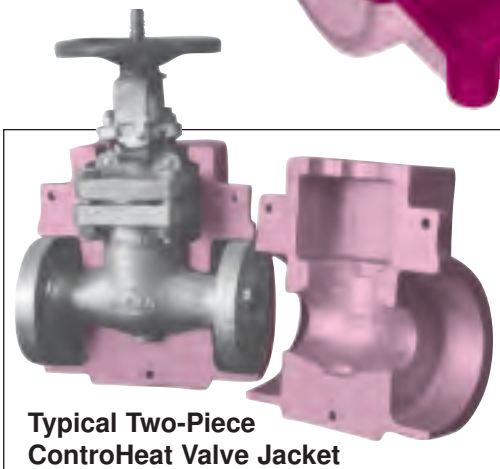
Here's How The ControHeat Jacket Works:

1. Pressurized heating fluid enters the pressure chamber embedded in the aluminum casting.The pressure chamber may be either carbon steel or stainless steel.

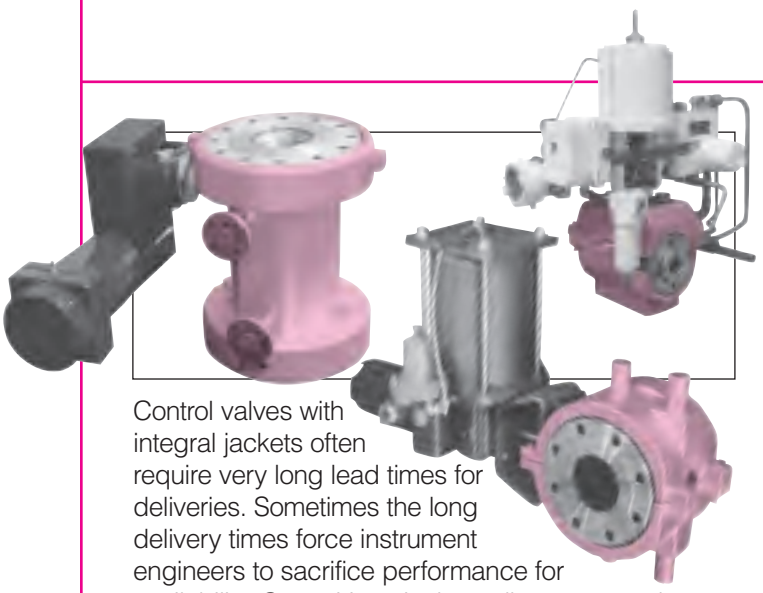
2. The pressure chamber is designed, manufactured and tested in accordance with the ASME Boiler and Pressure Vessel Code, Sec. VIII, Div.1.

3. The aluminum casting, which never contacts the pressurized heating fluid, rapidly transfers heat from the pressure chamber to the external surface of the valve.

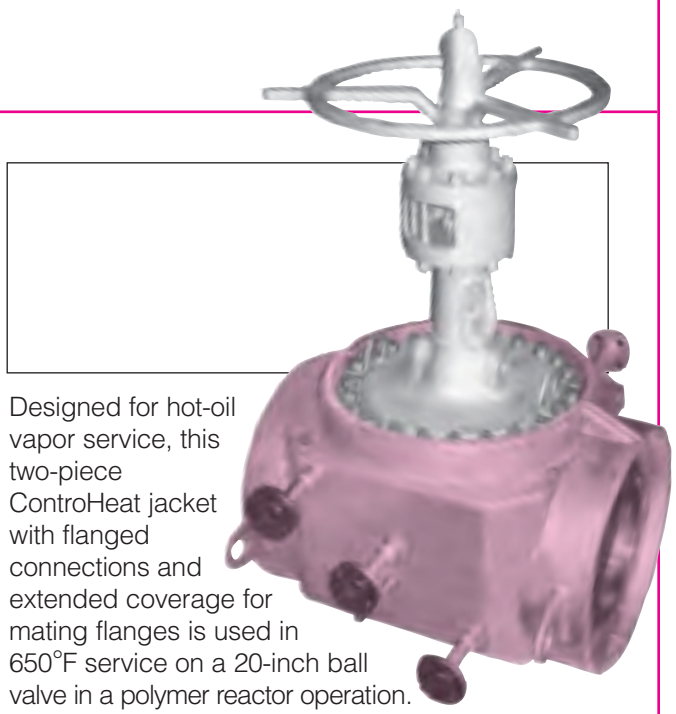
4. Normally, heat transfer cement is used with the jacket to minimize any air gap between the casting and the valve body. The cement promotes efficient heat transfer.



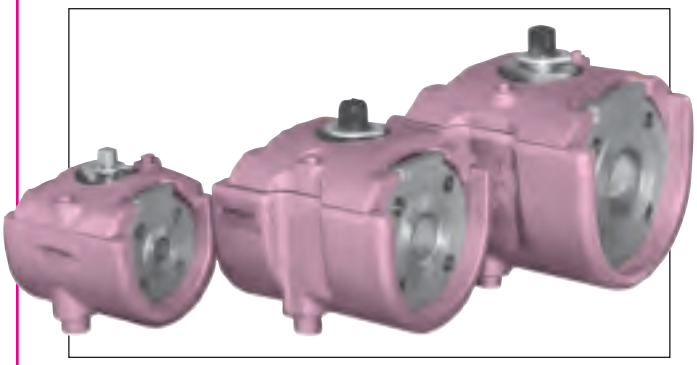
Typical Two-Piece ControHeat Valve Jacket



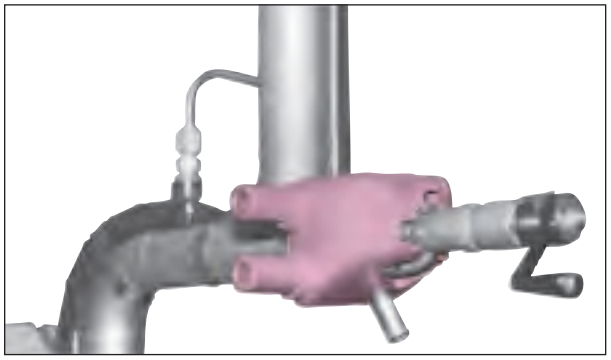
Control valves with integral jackets often require very long lead times for deliveries. Sometimes the long delivery times force instrument engineers to sacrifice performance for availability. ControHeat Jackets allow you to select the optimum valve for the process without concern for the jacket.



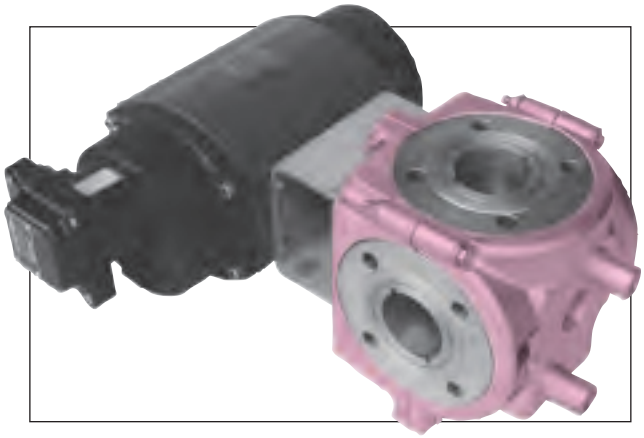
Designed for hot-oil vapor service, this two-piece ControHeat jacket with flanged connections and extended coverage for mating flanges is used in 650°F service on a 20-inch ball valve in a polymer reactor operation.



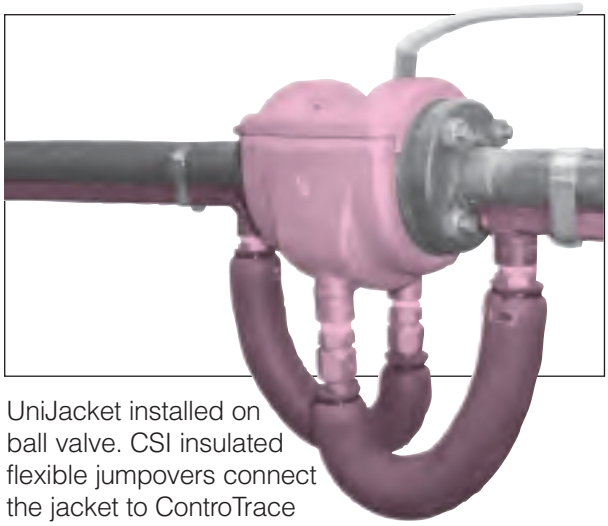
Any ControHeat Valve Jacket can be designed to heat mating pipe flanges as shown on these plug valve jackets used in BPA service.



This UniJacket on an off-the-shelf sampling valve keeps the valve plug-free, ready to operate at all times.



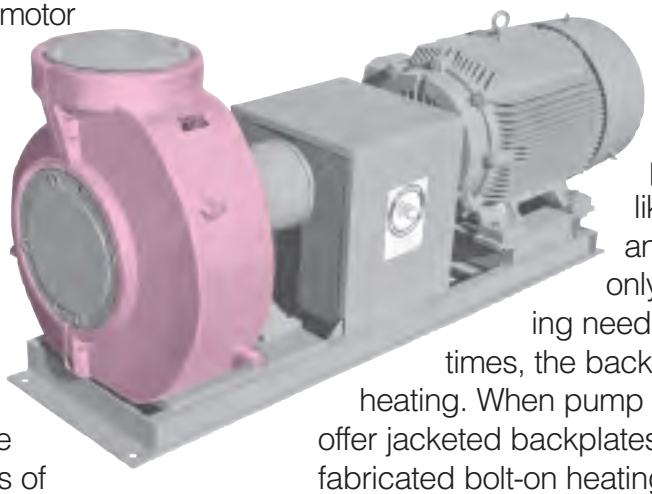
Three-way ball valves are easily heated with ControHeat Jackets. Various styles of actuator brackets can be accommodated.

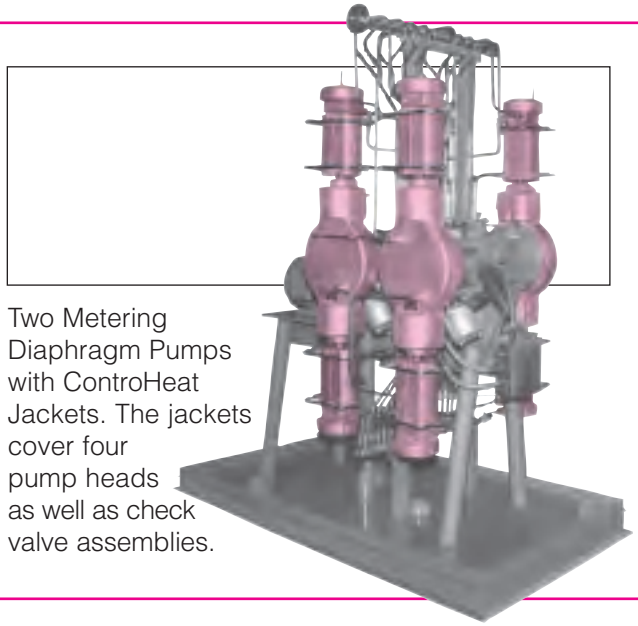


UniJacket installed on ball valve. CSI insulated flexible jumpovers connect the jacket to ControTrace Elements heating adjacent piping.

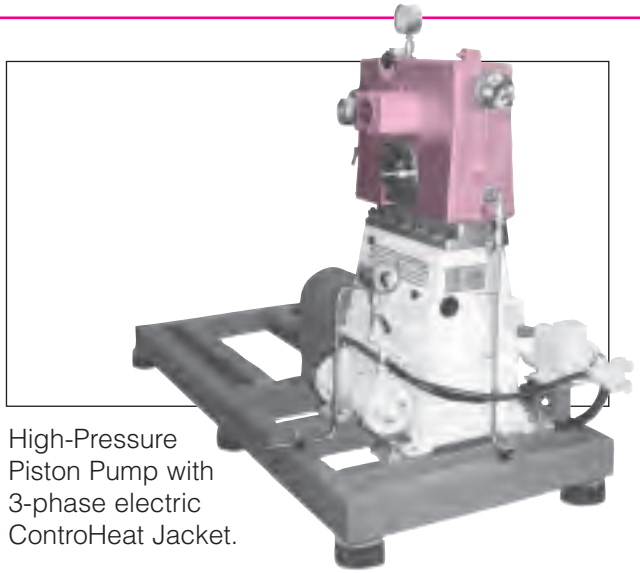
ControHeat Jackets for Pumps

ControHeat Bolt-On Jackets are widely used throughout the processing industry to improve pump efficiencies, prevent motor burnout and promote uniform processing temperatures. Some critical metering pump applications require jacketing to assure accurate throughput. Certain gear pump applications require jacketing to minimize degradation of polymers and other products that are shear sensitive. The barrels of progressive cavity pumps may need to be heated for foodstuffs such as chocolate, syrups and dairy products. In some batch-type operations, pump jacketing may be needed during start-up only. In pumping applications like sulfur, phthalic anhydride, or DMT, not only does the pump casing need to be heated at all times, the backplate also may need heating. When pump manufacturers do not offer jacketed backplates, CSI offers both fabricated bolt-on heating jackets as well as ControHeat Jackets.

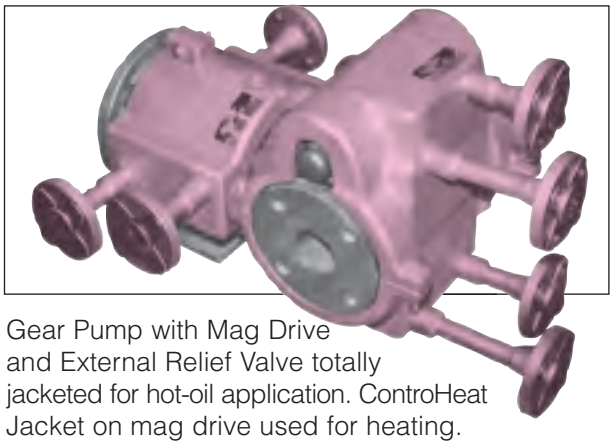




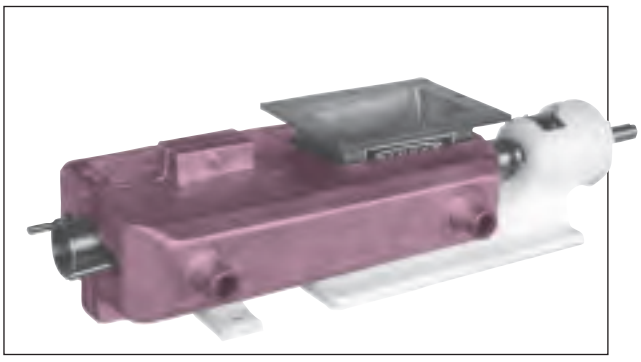
Two Metering Diaphragm Pumps with ControHeat Jackets. The jackets cover four pump heads as well as check valve assemblies.



High-Pressure Piston Pump with 3-phase electric ControHeat Jacket.



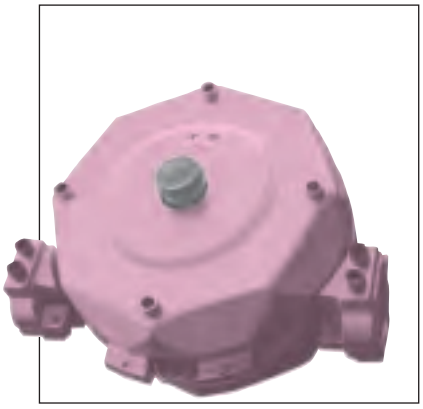
Gear Pump with Mag Drive and External Relief Valve totally jacketed for hot-oil application. ControHeat Jacket on mag drive used for heating.



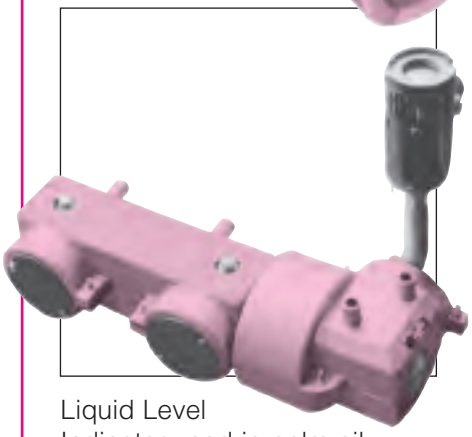
Progressive Cavity Pump for use in CIP service for foodstuffs.

ControHeat Jackets for Meters & Instruments

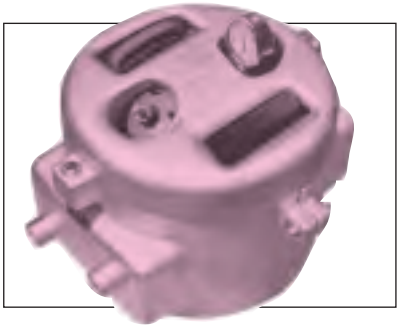
Accurate process data and process performance often depend on instruments, meters and safety devices operating at elevated process temperatures. CSI makes jackets for many types of meters, instruments and related equipment: DP cells, vortex shedding meters, rupture discs, coriolis flow meters, viscometers, tank vents, level indicators and chemical tees. Few of these components are available with integral jackets. The ControHeat Jacket has a history of successful service with these components. In fact, several manufacturers of these products have standardized on the ControHeat Jacket to complement their product lines.



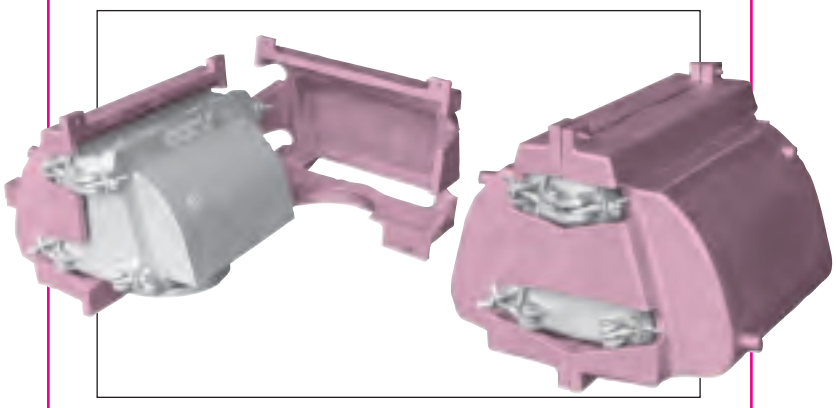
Coriolis Meter used in high temperature service of pre-polymer process. Jacket is hot-oil heated and maintains meter at 600° F.



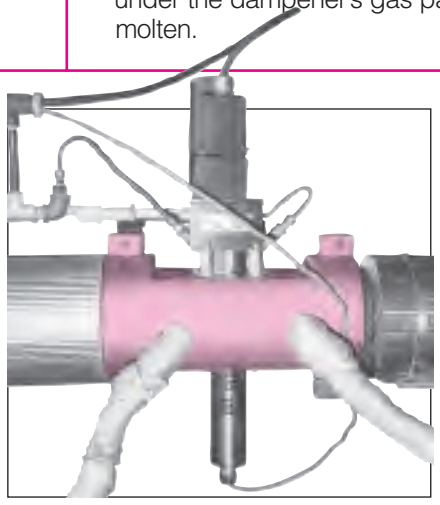
Liquid Level Indicator used in palm oil storage application. Jacket completely covers all process-wetted surfaces.



Pulsation Dampeners with ControHeat Jackets in high-temperature applications provide critical service for downstream instruments and meters. The jacket keeps the stagnent process fluid under the dampener's gas pad molten.



Condensables in gas streams can collect and choke the flow in flame arrestor passages. ControHeat Jackets keep the passages clear.

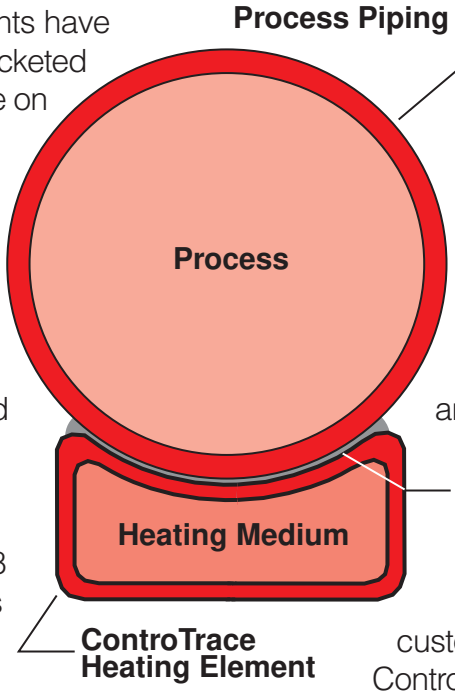


ControHeat Jacket on a Brookfield Viscometer increases the instrument's operating range and longevity, as well as improving accuracy of data collected.

ControTrace Elements Heat Pipe

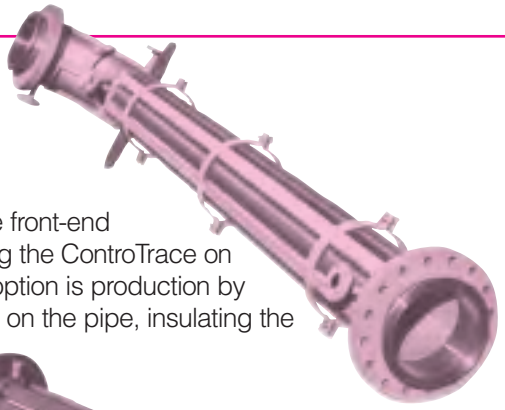
ControTrace Heating Elements have performed very well in diverse applications from chocolate to polyester resin. Numerous plants have drastically curtailed their use of jacketed pipe, preferring to use ControTrace on process piping for DMT, rosins, sulfur, cyanuric chloride, acrylic acid, hot melts and numerous bottoms recirculating lines. Some of these plants fabricate the elements in the field. Others depend on CSI for the complete service of design, fabrication and installation of the bolt-on heating system.

ControTrace Elements are formed from carbon steel, SA178 Gr. A boiler tubing. The elements are pressure rated in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII, Div.1.

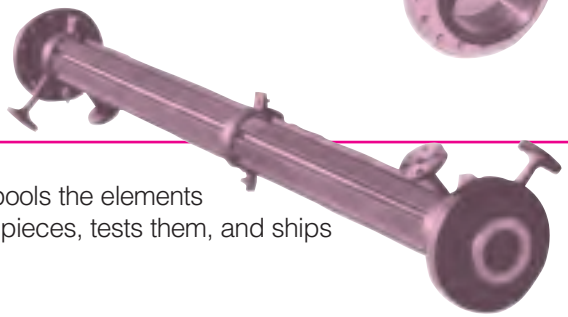


The most popular size of ControTrace is a 1"x 2" rectangular shape with the pipe-side surface formed to match the outside diameter of the pipe on which it will be placed. Normally, a non-drying heat-transfer cement is used to promote heat transfer between the element and the pipe wall. For nominal pipe sizes of 1½" and less, a smaller size of ControTrace (¾"x1½") is available. Other element sizes may be ordered on a custom basis. Stainless steel ControTrace is also offered for very aggressive environments.

Custom Fabrication Options: Customers may opt for one of three methods to use when installing a heated piping system that utilizes ControTrace Elements.

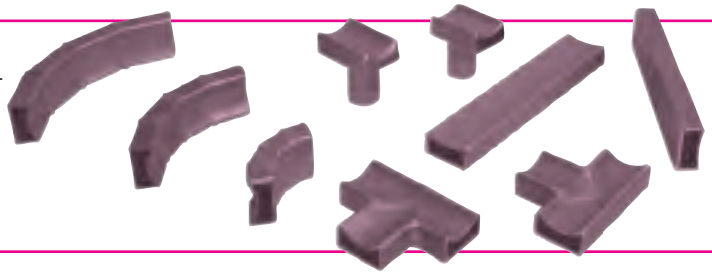


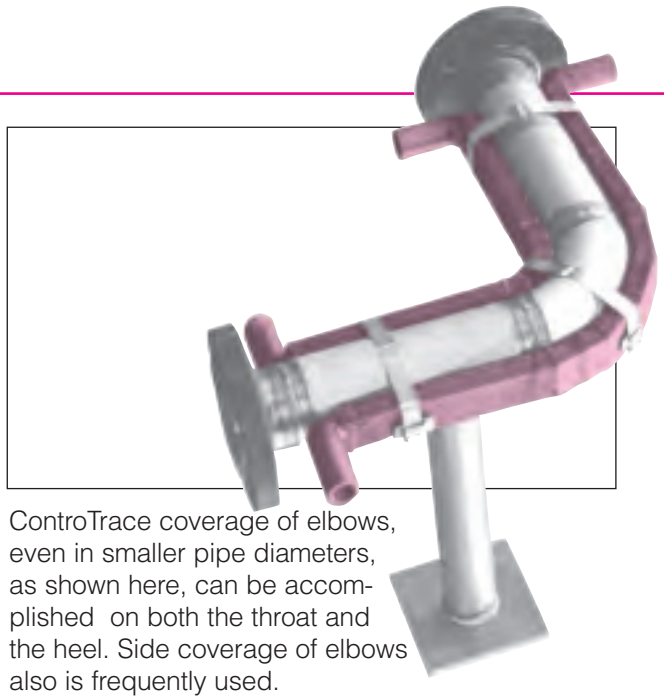
1. CSI can turnkey the complete heated piping system. CSI provides the front-end engineering and drawings, fabricates the pipe and ControTrace (securing the ControTrace on the pipe), and installs the system in your plant. Another frequently used option is production by CSI of both the piping and ControTrace Elements, installing the elements on the pipe, insulating the finished assemblies, and shipping the system to the field for installation by others. We have the flexibility, of course, to provide only specified portions of the project.



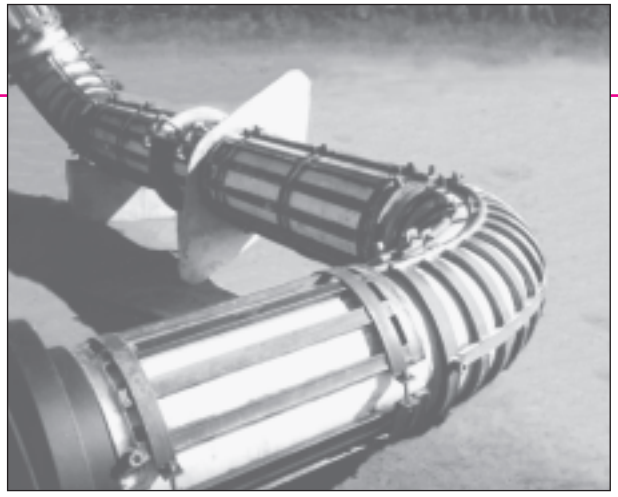
2. Based on isometric drawings provided by the customer, CSI spools the elements and, with the customer's approval, fabricates finished ControTrace pieces, tests them, and ships them to the field, ready for installation on the pipe by others.

3. CSI provides individual components that owners use to fabricate on site their own bolt-on heating systems.

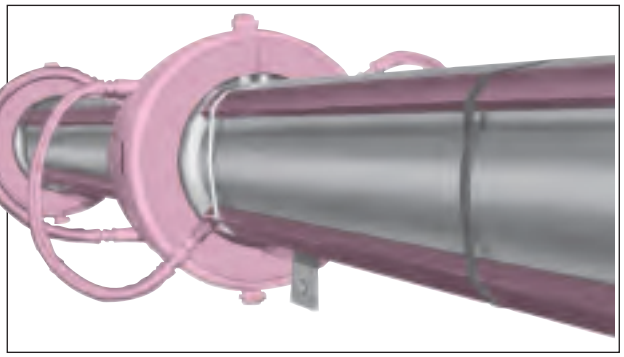




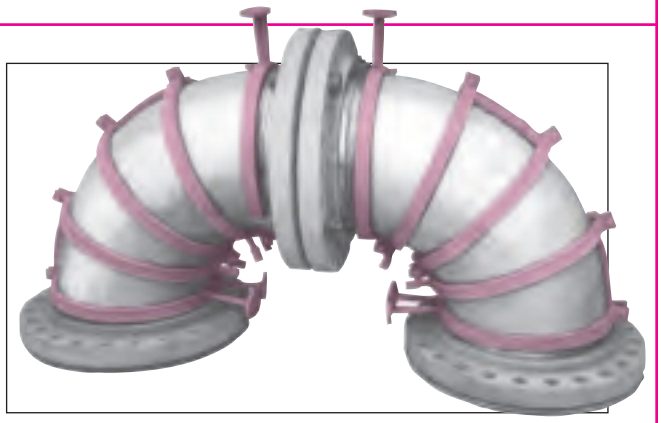
ControTrace coverage of elbows, even in smaller pipe diameters, as shown here, can be accomplished on both the throat and the heel. Side coverage of elbows also is frequently used.



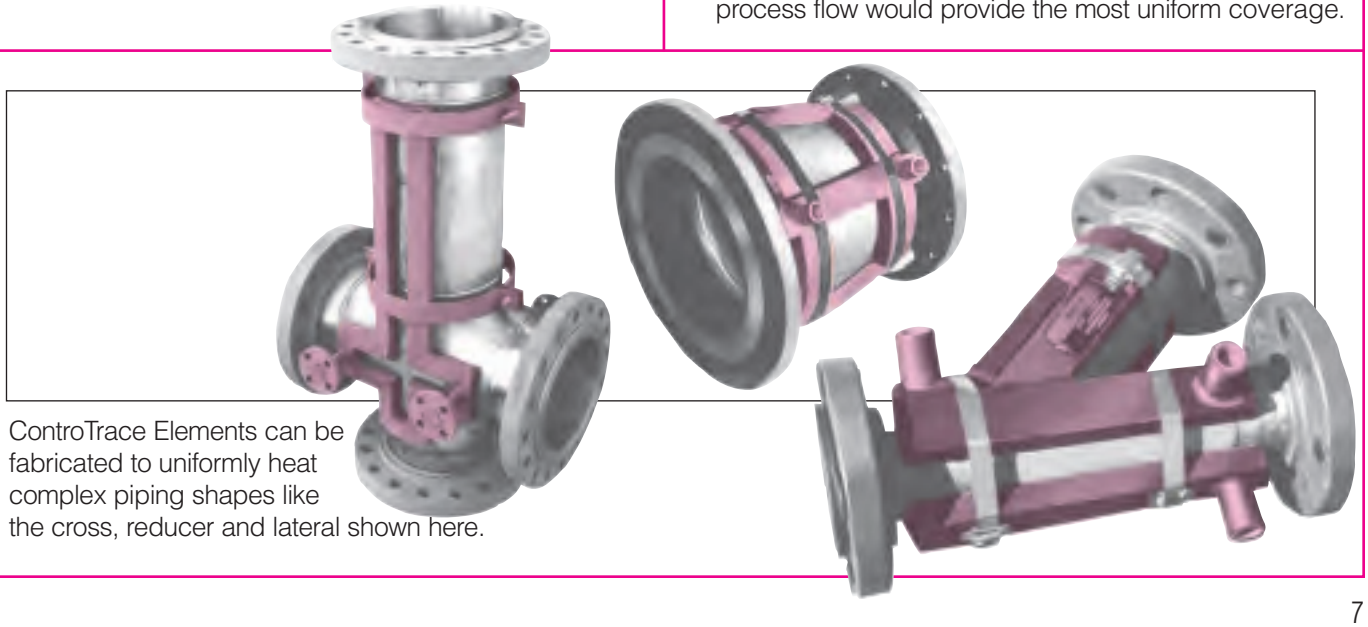
In the application depicted in the accompanying photo, ControTrace Elements proved to be a cost saving alternative to all-stainless steel jacketed pipe. With no external pressure, core piping was selected based on internal process requirements. This allowed a thinner pipe wall and saved money.



ControTrace is used successfully on piping in refineries, terminals, barges and acid plants. Combined with ControHeat jackets, as on the ball joints in this application, uniform heat can be provided to the the entire system very economically.



The design of the ControTrace coverage on a particular piping run depends on the process thermal requirements, pipe schedules, and the type and thickness of insulation used. In this application CSI designers determined that heating elements placed normal to the process flow would provide the most uniform coverage.

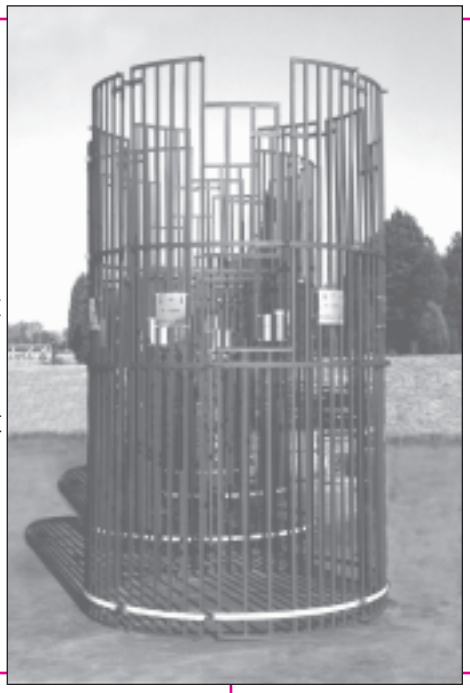


ControTrace Elements can be fabricated to uniformly heat complex piping shapes like the cross, reducer and lateral shown here.

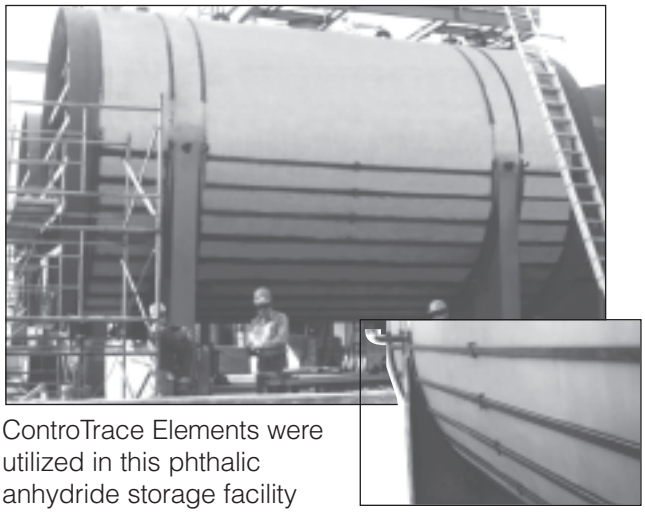
ControTrace Heating Elements for Tanks & Vessels

Storage tanks and vessels up to 25 feet in diameter are in service with ControTrace elements providing uniform heat over their entire surfaces.

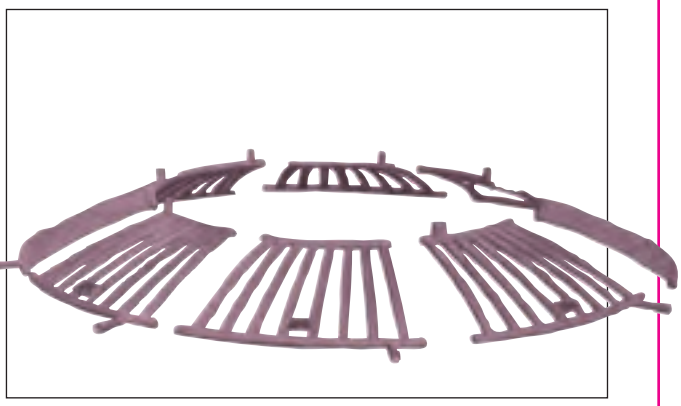
The ControTrace Element configuration can be designed for liquid or vapor heating media. A key benefit of ControTrace is that elements can be dispersed evenly around the vessel, assuring the uniform heat coverage. Jackets can be



fabricated for conic heads as well as elliptical heads. Generally, systems that utilize a liquid heating medium are designed in a serpentine configuration. Systems that use a vapor heating medium are usually constructed for parallel medium flow. When parallel flow must be used on a liquid system, flow diverters can be placed inside the ControTrace assemblies to channel the liquid.



ControTrace Elements were utilized in this phthalic anhydride storage facility because the product could provide economical, uniform temperature maintenance in critical service.



CSI has developed special fabrication techniques to achieve uniform heat coverage of vessel heads, allowing for various sizes of nozzle penetrations.

When liquid heating media are used, jacket elements are fabricated in a serpentine design to provide even heat distribution. Where non-condensables may cause vapor locks, bleed vents are added at strategic jacket locations.

Conical vessel bottom with ControTrace.

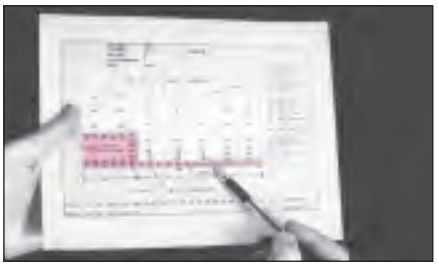
Engineering Support for Bolt-On Heating Systems

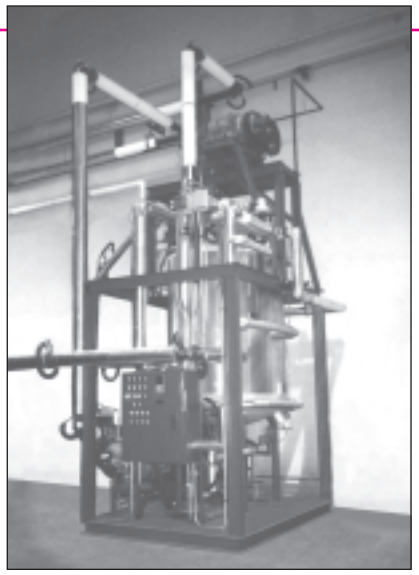
A major segment of CSI's total business is the design and fabrication of jacketed piping systems. The continuing evolution of CSI Bolt-On Heating Systems is linked directly to the knowledge and experience we gain in jacketed piping, because the same engineers and designers who manage jacketed piping projects also design and manage projects for bolt-on heating systems. The singular focus of this cumulative experience, from initial quotations through process start-up, is a satisfied customer that likes doing business with CSI.

Two Computer Tools

1. To assist customers in determining the right amount of bolt-on heat coverage, CSI has developed a computer program that allows inputs of up to five process variables. These variables are type and thickness of insulation, process temperature, heating medium temperature, ambient design temperature, and nominal pipe or tank sizes. Several values may be selected for each variable. The data produced from these variables is used to determine the optimum system. Results of the program tell designers the number of ControTrace Elements to be used, the energy loss per hour per foot of pipe and the consumption of heating fluid used per hour per foot of pipe.

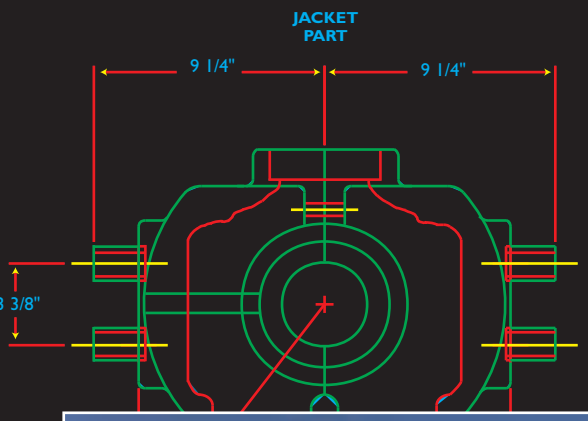
2. The second computer program, more sophisticated than the first, uses finite difference modeling to profile the crossectional thermal performance of the bolt-on heating system. The results yield a detailed temperature profile of the piping system at equilibrium, the heat lost to the atmosphere through the insulation, and the net heat input to the process. This program considers the thermal conductivities of the system components as well as film coefficients of both the process and the heating fluid.

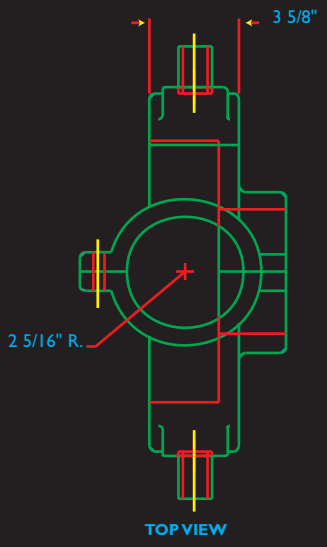




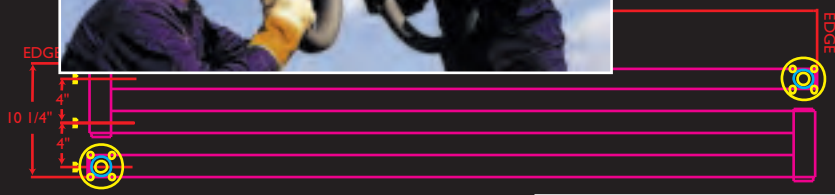
Hot Melt reactor with ControTrace elements on vessel and ControHeat Jackets on valves, pumps and instruments.

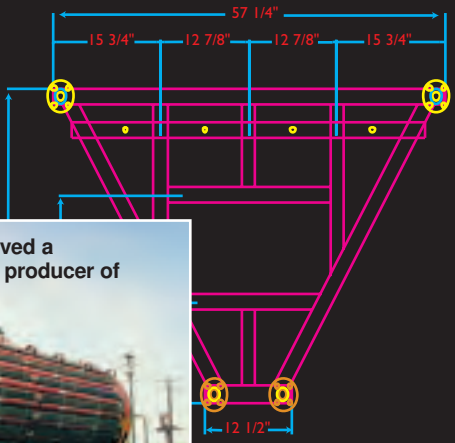
CSI-designed Bolt-on Heating System installed in Sulfur Recovery Unit of a large gas plant. Run-down and distribution piping utilize ControTrace Elements. Fittings are heated with ControHeat Jackets.



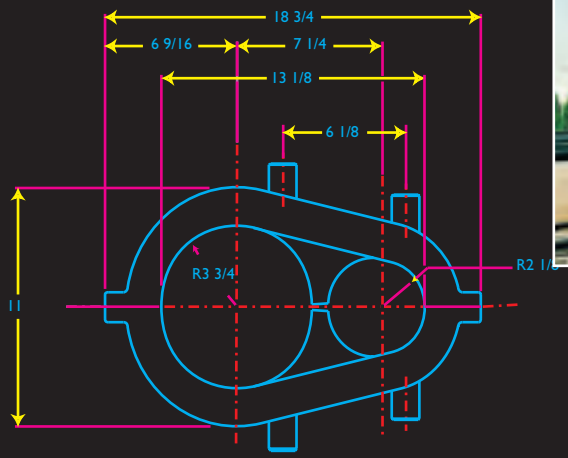


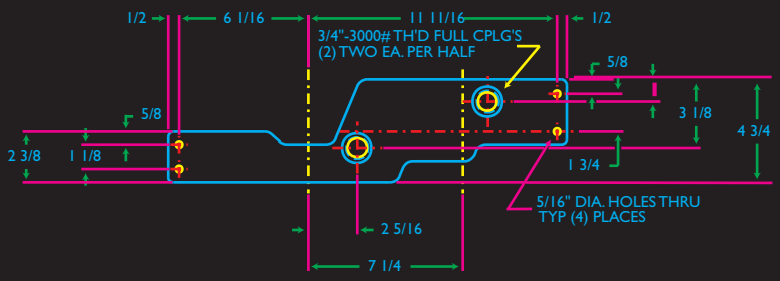

Polymer additive skid with 450°F bolt-on heating system.






ControTrace elements on this rail car solved a critical maintenance problem for a major producer of caprolactam.





For additional information and quotations, please write or call:

Controls Southeast, Inc,
P.O. Box 7500
Charlotte, NC 28241
Phone: (704) 588-3030
Fax: (704) 588-3039
web: www.csiheat.com
e-mail: sales@csiheat.com


CSI Headquarters, Charlotte, North Carolina

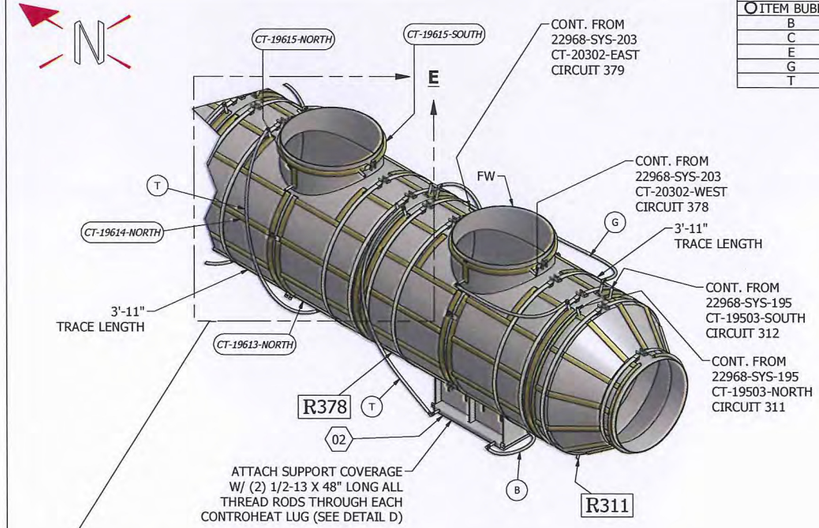
15M498R1

HOSE SCHEDULE		
ITEM BUBBLE	QTY	DESCRIPTION
B	6	3/4" JIC90° x JIC90° x 30" O.A.L.
C	1	3/4" JIC90° x JIC90° x 36" O.A.L.
E	1	3/4" JIC90° x JIC90° x 48" O.A.L.
G	2	3/4" JIC90° x JIC90° x 60" O.A.L.
T	8	3/4" JIC90° x JIC90° x 108" O.A.L.

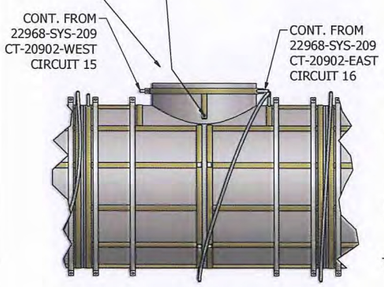
BOLT ON JACKETS			
ITEM	QTY	TAG NO.	DESCRIPTION
01	4	TBD	CONTROHEAT FOR S9-1 SUPPORT
02	2	TBD	CONTROHEAT FOR S9-5 SUPPORT

INSTALLATION BILL OF MATERIAL (SUPPLIED BY CSI)				
ITEM	QTY	DESCRIPTION	ASTM	MATERIAL
1	48	1/2"-13 x 7" LONG THREADED STUD	A193 B7	CS
2	108	1/2"-13 HEAVY HEX HEAD NUT	A194 GR. 2H	CS
3	108	1/2" DIAMETER FLAT WASHER	N/A	CS
4	108	1/2" DIAMETER LOCK WASHER	N/A	CS
5	-	1/2"-13 x 5" LONG THREADED STUD	A193 B7	CS
6	6	1/2"-13 x 48" LONG THREADED ROD	A193 B7	CS
7	8	LS-66-S	N/A	CS
8	-	LS-XX-NS	N/A	CS

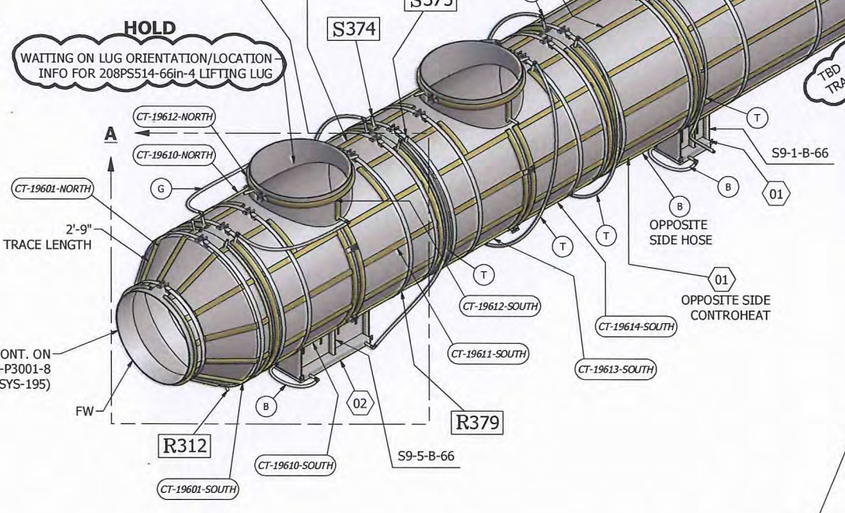
CT DESIGN DATA	
PROCESS	TAIL GAS
THERMAL OBJECTIVE	320° MIN WALL
OPERATING STEAM PRESSURE	150PSIG
PIPE SIZE	66" NPS
INSULATION	4.0"
CONTROTRACE ELEMENTS	12

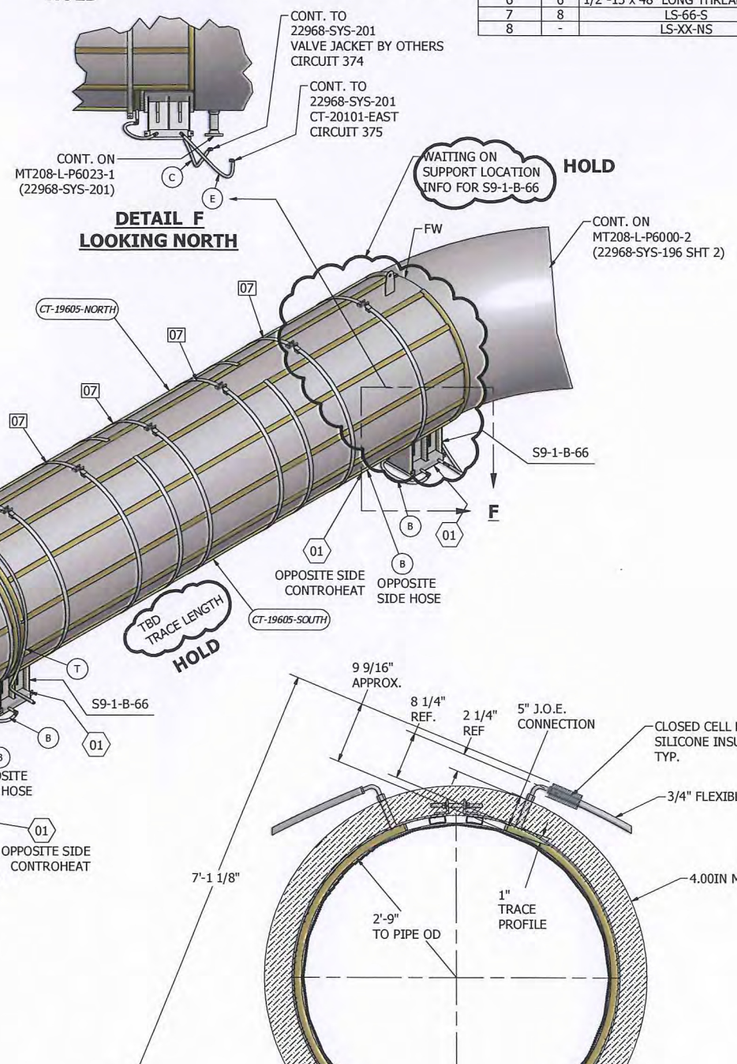


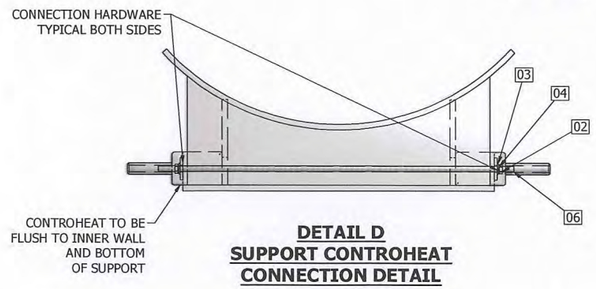
DETAIL A
LOOKING SOUTHEAST



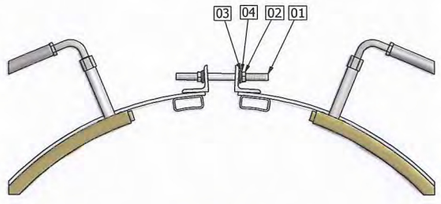
DETAIL E
LOOKING NORTH



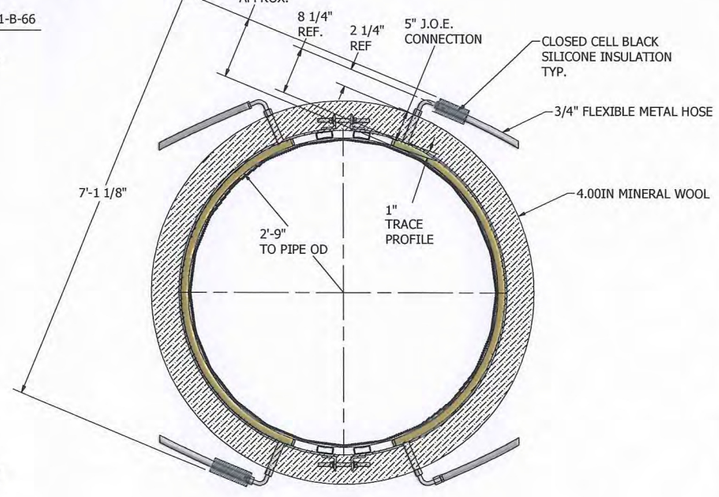




DETAIL D
SUPPORT CONTROHEAT
CONNECTION DETAIL



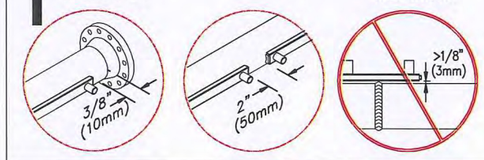
DETAIL C
STANDARD CONNECTION DETAIL



DETAIL B
SECTION VIEW LOOKING
WITH DIRECTION OF FLOW
66" NPS

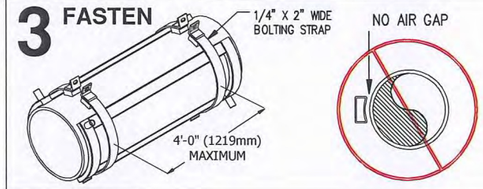
INSTALLATION GUIDE

1 DRY FIT

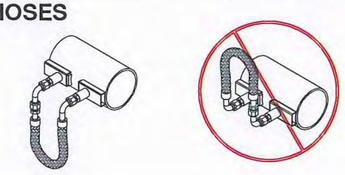


2 APPLY HTC

3 FASTEN



4 HOSES



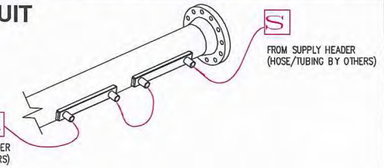
5 INSULATE

COMPLETELY INSULATE ALL FLANGES, SUPPORTS, AND PROCESS INSTRUMENTATION SUCH AS VALVES, FLOW ELEMENTS, ETC.

MAXIMUM SERVICE CONDITIONS FOR THIS SYSTEM ARE:

195 PSIG @ 650°F (13.4BAR @ 343.3¡C)

6 CIRCUIT



CUSTOMER REFERENCE DRAWING:
MT208-L-P6000-2

P.O.#		SALES# 22968		JOB# 67623-0000
REVISION HISTORY				DRAWN
REV	DESCRIPTION	BY	DATE	BY DATE
				KMM 2/5/2009
				CHECKED
				BY DATE
				JMA 02/05/09
				CLIENT APPROVED
A	ISSUED FOR CUSTOMER APPROVAL	KFR	02/05/09	BY DATE

Controls Southeast, Inc.
12201 NATIONS FORD ROAD PINEVILLE, NC 28134 (704) 644-5000
CSI WEBSITE: www.csiheat.com

CLIENT:

TITLE: SYSTEM INSTALLATION DRAWING

DWG. NO. 22968-SYS-196 SHT 1 | REV. A

Client : IOCL	**Dept./Sect. :** 16/43
Project : PARADIP REF-S'BY SRU	
Location : PARADIP, ODISHA	**Tag No: 513FE** **Sheet No. 1 of 1**

GATE VALVE SPECIFICATION

TAG NO. :513FE **PIPING CLASS :** A53G
RATING : 150 **STANDARD** : API-600
SIZE RANGE : 2.0" TO 8.0" **ENDS** : FLGD TO B-16.5 FF/125AARH

MANUF'S OFFER

STANDARD:
MFGRS CAT/FIG:
(For category -II MRs only)
RATING: **ENDS:**

DESCRIPTION	CONSTRUCTION	MATERIAL	CONSTRUCTION	MATERIAL
BODY	CAST	ASTM B62 UNS C83600		
BONNET	BOLTED	ASTM B62 UNS C83600		
STEM	NON RISING	BRONZE		
WEDGE DISC	FLEXIBLE	BRONZE		
BODY SEAT RING	RENEWABLE	BRONZE		
STEM PACKING	RENEWABLE WITH VALVE OPEN ON STREAM	CORROSION INHIBITED DIE FORMED FLEXIBLE GRAPHITE WITH BRAIDED ANTI EXTRUSION RINGS		
HAND WHEEL	NON RISING	MALLEABLE IRON/CAST STEEL/FORGED STEEL/DUCT. IRON		
BONNET BOLTS		ASTM A 193 GR B7 (HDG)		
BONNET NUTS		ASTM A 194 GR 2H (HDG)		
BONNET GASKET		NON ASB. SYNTHETIC FIBER+ RUBBER BINDER		
REQUIREMENT OF GEAR OPERATOR		REFER JOB SUPPLY SPECIFICATION FOR VALVES.		
REQUIREMENT OF RADIOGRAPHY		REFER JOB SUPPLY SPECIFICATION FOR VALVES.		
SPECIAL SERVICE CONDITIONS		MAX. TEMP 70 DEG C		
BACK SEAT & SHOULDER		BRONZE		
OTHERS	OS&Y			
WEDGE FACING RINGS & NUT		BRONZE		
HYDROSTATIC TEST PRESSURE	BODY : 348 PSIG	SEAT : 232 PSIG		
TEST PRESSURE WITH AIR				

NOTES

1 THIS VALVE SPEC SHEET SHALL BE READ IN CONJUNCTION WITH TECHNICAL NOTES FOR VALVES.
2 ONLY IN THE CASE OF CATEGORY - II MRs,BIDDER SHALL CLEARLY WRITE ALL/ ANY DEVIATION AGAINST EACH PART/ MATERIAL OF VALVE IN THE SPACE PROVIDED FOR AND WHEREVER BIDDER AGREES WITH EIL'S SPEC BIDDER SHALL INDICATE "AGREED".
3 NO CUTTING/ OVERWRITING BY BIDDER ON EIL'S SPEC IS ALLOWED.
4 TESTING SHALL BE AS PER API-598.
5 FLANGE END SHALL BE FLAT FACE DRILLED TO ANSI B16.5, 150#.
6 RADIOGRAPHY OF VALVE CASTINGS NOT REQUIRED.

SIGNATURE & SEAL OF MANUFACTURER

SHEET REV. NO.	0	1
DATE	27/04/2021	18/06/2021

513FE

E&C TENDER

PROJECT: IOCL PARADIP 525 TPD STANDBY SRU

PIPE SIZE WISE DATA SUMMARY

ANNEXURE-A1

DOC NO: PY-AE-4-M170-2001-01

	PIPE SIZE IN INCHES		0.5	0.75	1	1.5	2	3	4	6	8	10	12	14	16	18	20	24	28	30	36	44	48	TOTAL
A	**ESTIMATED WEIGHT (MT) (EXCL BOLTING)**																							
	Alloy Steel (P11)	AS (P11)	0.02	-	-	0.10	0.18	-	-	-	-	4.68	-	-	-	-	-	-	-	-	-	-	-	4.98
	Stainless Steel (304L, 316L)	SS	-	0.04	-	0.06	0.04	-	-	-	-	5.64	-	-	-	-	-	-	-	-	-	-	-	5.78
	Carbon Steel (Plain)	CS	12.69	12.97	2.33	8.07	18.52	35.61	40.73	74.36	58.98	74.71	40.42	3.15	41.88	39.61	34.75	45.74	20.62	51.41	156.88	46.08	242.15	1,061.64
	Carbon Steel (Galvanised)	CS (G)	0.01	0.06	1.41	1.52	2.21	3.51	2.29	0.04	-	0.49	-	-	-	-	-	-	-	-	-	-	-	11.55
	Carbon Steel (Internal Epoxy Coated)	CS (IEC)	-	-	-	-	-	-	1.37	1.59	-	8.72	-	-	-	-	-	-	-	-	-	-	-	11.67
	SUB TOTAL		**12.72**	**13.07**	**3.74**	**9.75**	**20.95**	**39.13**	**44.38**	**75.98**	**58.98**	**94.23**	**40.42**	**3.15**	**41.88**	**39.61**	**34.75**	**45.74**	**20.62**	**51.41**	**156.88**	**46.08**	**242.15**	**1,095.61**
B	**ESTIMATED INCH DIA**																							
	Alloy Steel (P11)	AS (P11)	1	-	-	22	21	-	-	-	-	168	-	-	-	-	-	-	-	-	-	-	-	212
	Stainless Steel (304L, 316L)	SS	-	5	-	28	9	-	-	-	-	300	-	-	-	-	-	-	-	-	-	-	-	342
	Carbon Steel (Plain)	CS	743	765	186	520	649	1,504	1,676	2,434	2,013	2,316	1,202	169	1,504	1,712	1,224	2,110	910	1,548	3,377	1,374	6,053	33,989
	Carbon Steel (Galvanised)	CS (G)	1	12	85	95	120	208	137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	658
	Carbon Steel (Internal Epoxy Coated)	CS (IEC)	-	-	-	-	-	-	73	96	-	312	-	-	-	-	-	-	-	-	-	-	-	481
	SUB TOTAL		**745**	**782**	**271**	**665**	**799**	**1,712**	**1,886**	**2,530**	**2,013**	**3,096**	**1,202**	**169**	**1,504**	**1,712**	**1,224**	**2,110**	**910**	**1,548**	**3,377**	**1,374**	**6,053**	**35,692**
C	**ESTIMATED INCH METER**																							
	Alloy Steel (P11)	AS (P11)	2	-	-	15	22	-	-	-	-	252	-	-	-	-	-	-	-	-	-	-	-	291
	Stainless Steel (304L, 316L)	SS	-	3	-	19	3	-	-	-	-	1,032	-	-	-	-	-	-	-	-	-	-	-	1,057
	Carbon Steel (Plain)	CS	3,627	2,891	477	1,759	2,367	5,391	6,003	8,670	7,442	7,932	4,522	387	5,857	4,516	4,272	5,560	1,781	4,680	11,535	5,122	23,847	118,638
	Carbon Steel (Galvanised)	CS (G)	2	12	326	261	500	821	360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,282
	Carbon Steel (Internal Epoxy Coated)	CS (IEC)	-	-	-	-	-	-	269	288	-	1,380	-	-	-	-	-	-	-	-	-	-	-	1,937
	SUB TOTAL		**3,631**	**2,906**	**803**	**2,054**	**2,892**	**6,212**	**6,632**	**8,958**	**7,442**	**10,596**	**4,522**	**387**	**5,857**	**4,516**	**4,272**	**5,560**	**1,781**	**4,680**	**11,535**	**5,122**	**23,847**	**1,24,295**
D	**ESTIMATED NO OF WELDS**																							
	Alloy Steel (P11)	AS (P11)	1	-	-	13	10	-	-	-	-	17	-	-	-	-	-	-	-	-	-	-	-	41
	Stainless Steel (304L, 316L)	SS	-	6	-	17	4	-	-	-	-	30	-	-	-	-	-	-	-	-	-	-	-	57
	Carbon Steel (Plain)	CS	1,472	991	170	335	316	491	414	401	250	232	100	12	94	95	61	88	32	52	94	31	126	5,857
	Carbon Steel (Galvanised)	CS (G)	1	14	82	60	59	68	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	318
	Carbon Steel (Internal Epoxy Coated)	CS (IEC)	-	-	-	-	-	-	18	16	-	31	-	-	-	-	-	-	-	-	-	-	-	65
	SUB TOTAL		**1,474**	**1,011**	**252**	**425**	**389**	**559**	**466**	**417**	**250**	**310**	**100**	**12**	**94**	**95**	**61**	**88**	**32**	**52**	**94**	**31**	**126**	**6,338**
E	**ESTIMATED LENGTH OF PIPE (MTRS)**																							
	Alloy Steel (P11)	AS (P11)	2	-	-	10	11	-	-	-	-	25	-	-	-	-	-	-	-	-	-	-	-	48
	Stainless Steel (304L, 316L)	SS	-	4	-	12	1	-	-	-	-	103	-	-	-	-	-	-	-	-	-	-	-	120
	Carbon Steel (Plain)	CS	7,252	3,851	475	1,172	1,182	1,796	1,500	1,445	930	793	377	28	366	251	214	232	64	156	320	116	497	23,017
	Carbon Steel (Galvanised)	CS (G)	2	16	325	174	290	274	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,131
	Carbon Steel (Internal Epoxy Coated)	CS (IEC)	-	-	-	-	-	-	67	48	-	136	-	-	-	-	-	-	-	-	-	-	-	263
	SUB TOTAL		**7,256**	**3,871**	**800**	**1,368**	**1,444**	**2,070**	**1,657**	**1,493**	**930**	**1,059**	**377**	**28**	**366**	**251**	**214**	**232**	**64**	**156**	**320**	**116**	**497**	**24,569**
F	**ESTIMATED NO OF VALVES**																							
	Alloy Steel (P11)	AS (P11)	9	-	-	2	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	15
	Stainless Steel (304L, 316L)	SS	-	7	-	-	1	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	11
	Carbon Steel (Plain)	CS	319	510	91	121	237	143	80	79	24	22	4	-	7	2	4	2	-	1	4	-	4	1,654
	Carbon Steel (Galvanised)	CS (G)	2	7	24	25	13	8	18	4	-	2	-	-	-	-	-	-	-	-	-	-	-	103
	Carbon Steel (Internal Epoxy Coated)	CS (IEC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SUB TOTAL		**330**	**524**	**115**	**148**	**253**	**151**	**98**	**83**	**24**	**29**	**4**	**-**	**7**	**2**	**4**	**2**	**-**	**1**	**4**	**-**	**4**	**1,783**

II IBR

	PIPE SIZE IN INCHES		0.5	0.75	1	1.5	2	3	4	6	8	10	12	14	16	18	20	24	28	30	36	44	48	TOTAL
A	**ESTIMATED WEIGHT (MT) (EXCL BOLTING)**																							
	Alloy Steel (P11)	AS (P11)	0.02	-	-	0.10	0.18	-	-	-	-	4.68	-	-	-	-	-	-	-	-	-	-	-	4.98
	Stainless Steel (304L, 316L)	SS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Carbon Steel (Plain)	CS	0.10	2.97	0.85	6.85	10.87	11.30	24.15	34.55	20.95	35.76	28.49	-	7.16	39.25	7.76	23.07	-	-	-	-	-	254.07
	Carbon Steel (Galvanised)	CS (G)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Carbon Steel (Internal Epoxy Coated)	CS (IEC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SUB TOTAL		**0.13**	**2.97**	**0.85**	**6.95**	**11.05**	**11.30**	**24.15**	**34.55**	**20.95**	**40.44**	**28.49**	**-**	**7.16**	**39.25**	**7.76**	**23.07**	**-**	**-**	**-**	**-**	**-**	**259.05**
B	**ESTIMATED INCH DIA**																							
	Alloy Steel (P11)	AS (P11)	1	-	-	22	21	-	-	-	-	168	-	-	-	-	-	-	-	-	-	-	-	212
	Stainless Steel (304L, 316L)	SS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Carbon Steel (Plain)	CS	4	156	78	404	380	463	822	862	681	1,092	884	-	291	1,690	384	894	-	-	-	-	-	9,080
	Carbon Steel (Galvanised)	CS (G)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Carbon Steel (Internal Epoxy Coated)	CS (IEC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SUB TOTAL		**5**	**156**	**78**	**426**	**401**	**463**	**822**	**862**	**681**	**1,260**	**884**	**-**	**291**	**1,690**	**384**	**894**	**-**	**-**	**-**	**-**	**-**	**9,297**
C	**ESTIMATED INCH METER**																							
	Alloy Steel (P11)	AS (P11)	2	-	-	15	22	-	-	-	-	252	-	-	-	-	-	-	-	-	-	-	-	291
	Stainless Steel (304L, 316L)	SS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Carbon Steel (Plain)	CS	2	561	193	1,558	1,601	1,491	2,672	2,693	1,969	3,408	3,082	-	692	4,516	1,176	3,514	-	-	-	-	-	29,336
	Carbon Steel (Galvanised)	CS (G)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Carbon Steel (Internal Epoxy Coated)	CS (IEC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SUB TOTAL		**4**	**561**	**193**	**1,573**	**1,623**	**1,491**	**2,672**	**2,693**	**1,969**	**3,660**	**3,082**	**-**	**692**	**4,516**	**1,176**	**3,514**	**-**	**-**	**-**	**-**	**-**	**29,619**
D	**ESTIMATED NO OF WELDS**																							
	Alloy Steel (P11)	AS (P11)	1	-	-	13	10	-	-	-	-	17	-	-	-	-	-	-	-	-	-	-	-	41
	Stainless Steel (304L, 316L)	SS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Carbon Steel (Plain)	CS	5	202	71	263	187	150	203	142	84	109	73	-	18	94	19	37	-	-	-	-	-	1,657
	Carbon Steel (Galvanised)	CS (G)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Carbon Steel (Internal Epoxy Coated)	CS (IEC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SUB TOTAL		**6**	**202**	**71**	**276**	**197**	**150**	**203**	**142**	**84**	**126**	**73**	**-**	**18**	**94**	**19**	**37**	**-**	**-**	**-**	**-**	**-**	**1,698**
E	**ESTIMATED LENGTH OF PIPE (MTRS)**																							
	Alloy Steel (P11)	AS (P11)	2	-	-	10	11	-	-	-	-	25	-	-	-	-	-	-	-	-	-	-	-	48
	Stainless Steel (304L, 316L)	SS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Carbon Steel (Plain)	CS	4	748	192	1,038	800	497	718	449	246	341	257	-	43	251	59	146	-	-	-	-	-	5,789
	Carbon Steel (Galvanised)	CS (G)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Carbon Steel (Internal Epoxy Coated)	CS (IEC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SUB TOTAL		**6**	**748**	**192**	**1,048**	**811**	**497**	**718**	**449**	**246**	**366**	**257**	**-**	**43**	**251**	**59**	**146**	**-**	**-**	**-**	**-**	**-**	**5,837**
F	**ESTIMATED NO OF VALVES**																							
	Alloy Steel (P11)	AS (P11)	9	-	-	2	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	15
	Stainless Steel (304L, 316L)	SS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Carbon Steel (Plain)	CS	20	184	35	94	142	42	37	34	14	12	4	-	2	2	-	-	-	-	-	-	-	622
	Carbon Steel (Galvanised)	CS (G)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Carbon Steel (Internal Epoxy Coated)	CS (IEC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SUB TOTAL		**29**	**184**	**35**	**96**	**144**	**42**	**37**	**34**	**14**	**14**	**4**	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**637**

III NON IBR (NACE & NACE + HIC)

	PIPE SIZE IN INCHES		0.5	0.75	1	1.5	2	3	4	6	8	10	12	14	16	18	20	24	28	30	36	44	48	TOTAL
A	**ESTIMATED WEIGHT (MT) (EXCL BOLTING)**																							
	Alloy Steel (P11)	AS (P11)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Stainless Steel (304L, 316L)	SS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Carbon Steel (Plain)	CS	0.07	1.19	0.15	0.04	2.84	18.68	5.31	6.82	0.15	9.42	-	-	34.70	-	26.99	22.49	20.62	-	23.65	-	169.97	343.09
	Carbon Steel (Galvanised)	CS (G)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Carbon Steel (Internal Epoxy Coated)	CS (IEC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SUB TOTAL		**0.07**	**1.19**	**0.15**	**0.04**	**2.84**	**18.68**	**5.31**	**6.82**	**0.15**	**9.42**	**-**	**-**	**34.70**	**-**	**26.99**	**22.49**	**20.62**	**-**	**23.65**	**-**	**169.97**	**343.09**
B	**ESTIMATED INCH DIA**																							
	Alloy Steel (P11)	AS (P11)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Stainless Steel (304L, 316L)	SS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Carbon Steel (Plain)	CS	7	91	15	24	87	762	306	333	59	360	-	-	1,213	-	840	1,158	910	-	823	-	4,035	11,023

	Carbon Steel (Galvanised)	CS (G)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Carbon Steel (Internal Epoxy Coated)	CS (EC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	SUB TOTAL		**7**	**91**	**15**	**24**	**87**	**762**	**306**	**333**	**59**	**360**	**-**	**-**	**1,213**	**-**	**840**	**1,158**	**910**	**-**	**823**	**-**	**4,035**	**11,023**
C	**ESTIMATED INCH METER**																							
	Alloy Steel (P11)	AS (P11)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Stainless Steel (304L, 316L)	SS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Carbon Steel (Plain)	CS	9	140	17	2	196	3,118	1,095	793	10	1,188	-	-	5,165	-	3,096	2,046	1,781	-	2,722	-	15,610	36,988
	Carbon Steel (Galvanised)	CS (G)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Carbon Steel (Internal Epoxy Coated)	CS (EC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	SUB TOTAL		**9**	**140**	**17**	**2**	**196**	**3,118**	**1,095**	**793**	**10**	**1,188**	**-**	**-**	**5,165**	**-**	**3,096**	**2,046**	**1,781**	**-**	**2,722**	**-**	**15,610**	**36,988**
D	**ESTIMATED NO OF WELDS**																							
	Alloy Steel (P11)	AS (P11)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Stainless Steel (304L, 316L)	SS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Carbon Steel (Plain)	CS	10	112	13	14	41	251	76	54	7	36	-	-	76	-	42	48	32	-	23	-	84	919
	Carbon Steel (Galvanised)	CS (G)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Carbon Steel (Internal Epoxy Coated)	CS (EC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	SUB TOTAL		**10**	**112**	**13**	**14**	**41**	**251**	**76**	**54**	**7**	**36**	**-**	**-**	**76**	**-**	**42**	**48**	**32**	**-**	**23**	**-**	**84**	**919**
E	**ESTIMATED LENGTH OF PIPE (MTRS)**																							
	Alloy Steel (P11)	AS (P11)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Stainless Steel (304L, 316L)	SS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Carbon Steel (Plain)	CS	17	185	17	1	97	1,039	274	132	1	119	-	-	323	-	155	85	64	-	76	-	325	2,910
	Carbon Steel (Galvanised)	CS (G)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Carbon Steel (Internal Epoxy Coated)	CS (EC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	SUB TOTAL		**17**	**185**	**17**	**1**	**97**	**1,039**	**274**	**132**	**1**	**119**	**-**	**-**	**323**	**-**	**155**	**85**	**64**	**-**	**76**	**-**	**325**	**2,910**
F	**ESTIMATED NO OF VALVES**																							
	Alloy Steel (P11)	AS (P11)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Stainless Steel (304L, 316L)	SS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Carbon Steel (Plain)	CS	7	120	8	-	64	57	8	11	-	3	-	-	4	-	4	2	-	-	-	-	4	292
	Carbon Steel (Galvanised)	CS (G)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Carbon Steel (Internal Epoxy Coated)	CS (EC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	SUB TOTAL		**7**	**120**	**8**	**-**	**64**	**57**	**8**	**11**	**-**	**3**	**-**	**-**	**4**	**-**	**4**	**2**	**-**	**-**	**-**	**-**	**4**	**292**

IV NON IBR (NON NACE)

	PIPE SIZE IN INCHES		0.5	0.75	1	1.5	2	3	4	6	8	10	12	14	16	18	20	24	28	30	36	44	48	TOTAL
A	**ESTIMATED WEIGHT (MT) (EXCL BOLTING)**																							
	Alloy Steel (P11)	AS (P11)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Stainless Steel (304L, 316L)	SS	-	0.04	-	0.05	0.04	-	-	-	-	5.64	-	-	-	-	-	-	-	-	-	-	-	5.76
	Carbon Steel (Plain)	CS	12.51	8.81	1.34	1.17	4.82	5.63	11.27	32.99	37.88	29.53	11.93	3.15	0.01	0.36	-	0.18	-	51.41	133.23	46.08	72.18	464.48
	Carbon Steel (Galvanised)	CS (G)	0.01	0.06	1.41	1.52	2.21	3.51	2.29	0.04	-	0.49	-	-	-	-	-	-	-	-	-	-	-	11.55
	Carbon Steel (Internal Epoxy Coated)	CS (EC)	-	-	-	-	-	-	1.37	1.89	-	8.72	-	-	-	-	-	-	-	-	-	-	-	11.67
	SUB TOTAL		**12.52**	**8.92**	**2.75**	**2.76**	**7.06**	**9.14**	**14.92**	**34.61**	**37.88**	**44.38**	**11.93**	**3.15**	**0.01**	**0.36**	**-**	**0.18**	**-**	**51.41**	**133.23**	**46.08**	**72.18**	**493.47**
B	**ESTIMATED INCH DIA**																							
	Alloy Steel (P11)	AS (P11)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Stainless Steel (304L, 316L)	SS	-	5	-	28	9	-	-	-	-	300	-	-	-	-	-	-	-	-	-	-	-	342
	Carbon Steel (Plain)	CS	732	518	93	92	182	279	548	1,239	1,273	864	318	169	-	22	-	58	-	1,548	2,554	1,374	2,018	13,881
	Carbon Steel (Galvanised)	CS (G)	1	12	85	95	120	208	137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	658
	Carbon Steel (Internal Epoxy Coated)	CS (EC)	-	-	-	-	-	-	73	96	-	312	-	-	-	-	-	-	-	-	-	-	-	481
	SUB TOTAL		**733**	**535**	**178**	**215**	**311**	**487**	**758**	**1,335**	**1,273**	**1,476**	**318**	**169**	**-**	**22**	**-**	**58**	**-**	**1,548**	**2,554**	**1,374**	**2,018**	**15,362**
C	**ESTIMATED INCH METER**																							
	Alloy Steel (P11)	AS (P11)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Stainless Steel (304L, 316L)	SS	-	3	-	19	3	-	-	-	-	1,032	-	-	-	-	-	-	-	-	-	-	-	1,057
	Carbon Steel (Plain)	CS	3,616	2,190	267	199	570	762	2,036	5,184	5,463	3,336	1,440	387	-	-	-	-	-	4,680	8,813	5,122	8,237	52,322
	Carbon Steel (Galvanised)	CS (G)	2	12	326	261	500	821	360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,282
	Carbon Steel (Internal Epoxy Coated)	CS (EC)	-	-	-	-	-	-	269	288	-	1,380	-	-	-	-	-	-	-	-	-	-	-	1,937
	SUB TOTAL		**3,618**	**2,205**	**593**	**479**	**1,073**	**1,583**	**2,665**	**5,472**	**5,463**	**5,748**	**1,440**	**387**	**-**	**-**	**-**	**-**	**-**	**4,680**	**8,813**	**5,122**	**8,237**	**57,598**
D	**ESTIMATED NO OF WELDS**																							
	Alloy Steel (P11)	AS (P11)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Stainless Steel (304L, 316L)	SS	-	6	-	17	4	-	-	-	-	30	-	-	-	-	-	-	-	-	-	-	-	57
	Carbon Steel (Plain)	CS	1,458	678	86	58	88	90	136	205	158	86	26	12	-	1	-	2	-	52	71	31	42	3,280
	Carbon Steel (Galvanised)	CS (G)	1	14	82	60	59	68	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	318
	Carbon Steel (Internal Epoxy Coated)	CS (EC)	-	-	-	-	-	-	18	16	-	31	-	-	-	-	-	-	-	-	-	-	-	65
	SUB TOTAL		**1,459**	**698**	**168**	**135**	**151**	**158**	**188**	**221**	**158**	**147**	**26**	**12**	**-**	**1**	**-**	**2**	**-**	**52**	**71**	**31**	**42**	**3,720**
E	**ESTIMATED LENGTH OF PIPE (MTRS)**																							
	Alloy Steel (P11)	AS (P11)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Stainless Steel (304L, 316L)	SS	-	4	-	12	1	-	-	-	-	103	-	-	-	-	-	-	-	-	-	-	-	120
	Carbon Steel (Plain)	CS	7,231	2,918	266	132	284	260	509	864	683	334	120	28	-	-	-	-	-	156	245	116	172	14,318
	Carbon Steel (Galvanised)	CS (G)	2	16	325	174	250	274	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,131
	Carbon Steel (Internal Epoxy Coated)	CS (EC)	-	-	-	-	-	-	67	48	-	138	-	-	-	-	-	-	-	-	-	-	-	253
	SUB TOTAL		**7,233**	**2,938**	**591**	**318**	**535**	**534**	**656**	**912**	**683**	**575**	**120**	**28**	**-**	**-**	**-**	**-**	**-**	**156**	**245**	**116**	**172**	**15,822**
F	**ESTIMATED NO OF VALVES**																							
	Alloy Steel (P11)	AS (P11)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Stainless Steel (304L, 316L)	SS	-	7	-	-	1	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	11
	Carbon Steel (Plain)	CS	293	207	48	28	31	44	35	34	10	7	-	-	-	-	-	-	-	1	4	-	-	742
	Carbon Steel (Galvanised)	CS (G)	2	7	24	25	13	8	18	4	-	2	-	-	-	-	-	-	-	-	-	-	-	103
	Carbon Steel (Internal Epoxy Coated)	CS (EC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	SUB TOTAL		**295**	**221**	**72**	**53**	**45**	**52**	**53**	**38**	**10**	**12**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**4**	**-**	**-**	**896**

E&C TENDER
PROJECT: IOCL PARADIP 525 TPD STANDBY SRU

INCH-DIA / INCH-METER SUMMARY
ANNEXURE-A2
DOC NO: PY-AE-4-M170-2001-01

SL NO	ITEM DESCRIPTION	UOM	QUANTITY
1	PIPING FABRICATION & ERECTION (ABOVE GROUND PIPING)		
	FABRICATION	Inch Dia	35,682
	IBR PIPING	Inch Dia	9,297
1.1	IBR ALLOY STEEL PIPING THK <= 10 mm (ASTM A 335 Gr P11)		
1.1.1	FABRICATION (BUTT WELD)		
1.1.1.1	2" upto 6"	Inch Dia	21
1.1.1.2	8" upto 14"	Inch Dia	0
1.1.1.3	16" upto 24"	Inch Dia	0
1.1.1.4	More than > 24"	Inch Dia	0
1.1.2	FABRICATION (FILLET WELD)		
1.1.2.1	Less than < 2"	Inch Dia	21
1.1.2.2	Slip-on / Socket Welded Flanges	Inch Dia	2
1.2	IBR ALLOY STEEL PIPING THK > 10 mm & <= 20 mm (ASTM A 335 Gr P11)		
1.2.1	FABRICATION (BUTT WELD)		
1.2.1.1	2" upto 6"	Inch Dia	0
1.2.1.2	8" upto 14"	Inch Dia	168
1.2.1.3	16" upto 24"	Inch Dia	0
1.2.1.4	More than > 24"	Inch Dia	0
1.3	IBR CARBON STEEL PIPING THK <= 10 mm (ASTM A 106 Gr B / A 671 Gr CC60 / A672 Gr B60)		
1.3.1	FABRICATION (BUTT WELD)		
1.3.1.1	2" upto 6"	Inch Dia	1,285
1.3.1.2	8" upto 14"	Inch Dia	1,535
1.3.1.3	16" upto 24"	Inch Dia	2,501
1.3.1.4	More than > 24"	Inch Dia	0
1.3.2	FABRICATION (FILLET WELD)		
1.3.2.1	Less than < 2"	Inch Dia	631
1.3.2.2	Slip-on / Socket Welded Flanges	Inch Dia	11
1.4	IBR CARBON STEEL PIPING THK > 10 mm & <= 20 mm (ASTM A 106 Gr B / A 671 Gr CC60 / A672 Gr B60)		
1.4.1	FABRICATION (BUTT WELD)		
1.4.1.1	2" upto 6"	Inch Dia	1,242
1.4.1.2	8" upto 14"	Inch Dia	1,122
1.4.1.3	16" upto 24"	Inch Dia	758
1.4.1.4	More than > 24"	Inch Dia	0

E&C TENDER
PROJECT: IOCL PARADIP 525 TPD STANDBY SRU

INCH-DIA / INCH-METER SUMMARY
ANNEXURE-A2
DOC NO: PY-AE-4-M170-2001-01

SL NO	ITEM DESCRIPTION	UOM	QUANTITY
	NON-IBR PIPING	**Inch Dia**	**26,385**
1.5	**NON-IBR NON-NACE CARBON STEEL PIPING THK <= 10 mm (ASTM A 106 Gr B / A672 Gr B60)**		
1.5.1	**FABRICATION (BUTT WELD)**		
1.5.1.1	2" upto 6"	Inch Dia	**2,248**
1.5.1.2	8" upto 14"	Inch Dia	**2,624**
1.5.1.3	16" upto 24"	Inch Dia	**80**
1.5.1.4	More than > 24"	Inch Dia	**0**
1.5.2	**FABRICATION (FILLET WELD)**		
1.5.2.1	Less than < 2"	Inch Dia	**1,428**
1.5.2.2	Slip-on / Socket Welded Flanges	Inch Dia	**7**
1.6	**NON-IBR NON-NACE CARBON STEEL PIPING THK > 10 mm & <= 20 mm (ASTM A 106 Gr B / A672 Gr B60)**		
1.6.1	**FABRICATION (BUTT WELD)**		
1.6.1.1	2" upto 6"	Inch Dia	**0**
1.6.1.2	8" upto 14"	Inch Dia	**0**
1.6.1.3	16" upto 24"	Inch Dia	**0**
1.6.1.4	More than > 24"	Inch Dia	**7,494**
1.7	**NON-IBR NACE CARBON STEEL PIPING THK <= 10 mm (ASTM A 106 Gr B / A671 Gr CC60)**		
1.7.1	**FABRICATION (BUTT WELD)**		
1.7.1.1	2" upto 6"	Inch Dia	**609**
1.7.1.2	8" upto 14"	Inch Dia	**0**
1.7.1.3	16" upto 24"	Inch Dia	**87**
1.7.1.4	More than > 24"	Inch Dia	**0**
1.7.2	**FABRICATION (FILLET WELD)**		
1.7.2.1	Less than < 2"	Inch Dia	**6**
1.7.2.2	Slip-on / Socket Welded Flanges	Inch Dia	**0**
1.8	**NON-IBR NACE CARBON STEEL PIPING THK > 10 mm & <= 20 mm (ASTM A 106 Gr B / A671 Gr CC60)**		
1.8.1	**FABRICATION (BUTT WELD)**		
1.8.1.1	2" upto 6"	Inch Dia	**0**
1.8.1.2	8" upto 14"	Inch Dia	**0**
1.8.1.3	16" upto 24"	Inch Dia	**0**
1.8.1.4	More than > 24"	Inch Dia	**4,035**
1.9	**NON-IBR NACE+HIC CARBON STEEL PIPING THK <= 10 mm (ASTM A 106 Gr B / A671 Gr CC60)**		
1.9.1	**FABRICATION (BUTT WELD)**		
1.9.1.1	2" upto 6"	Inch Dia	**478**
1.9.1.2	8" upto 14"	Inch Dia	**312**
1.9.1.3	16" upto 24"	Inch Dia	**2,487**
1.9.1.4	More than > 24"	Inch Dia	**0**
1.9.2	**FABRICATION (FILLET WELD)**		
1.9.2.1	Less than < 2"	Inch Dia	**125**
1.9.2.2	Slip-on / Socket Welded Flanges	Inch Dia	**6**
1.10	**NON-IBR NACE+HIC CARBON STEEL PIPING THK > 10 mm & <= 20 mm (ASTM A 106 Gr B / A671 Gr CC60)**		
1.10.1	**FABRICATION (BUTT WELD)**		

INCH-DIA / INCH-METER SUMMARY

SL NO	ITEM DESCRIPTION	UOM	QUANTITY
1.10.1.1	2" upto 6"	Inch Dia	401
1.10.1.2	8" upto 14"	Inch Dia	107
1.10.1.3	16" upto 24"	Inch Dia	637
1.10.1.4	More than > 24"	Inch Dia	1,733
1.11	**STAINLESS STEEL PIPING THK. <= 10 mm (ASTM A 312 TP 304L / 316L)**		
1.11.1	**FABRICATION (BUTT WELD)**		
1.11.1.1	2" upto 6"	Inch Dia	9
1.11.1.2	8" upto 14"	Inch Dia	300
1.11.1.3	16" upto 24"	Inch Dia	0
1.11.1.4	More than > 24"	Inch Dia	0
1.11.2	**FABRICATION (FILLET WELD)**		
1.11.2.1	Less than < 2"	Inch Dia	31
1.11.2.2	Slip-on / Socket Welded Flanges	Inch Dia	2
1.12	**GALVANIZED CARBON STEEL PIPING THK <= 10 mm (ASTM A 106 Gr B (GALV))**		
1.12.1	**FABRICATION (BUTT WELD)**		
1.12.1.1	2" upto 6"	Inch Dia	465
1.12.1.2	8" upto 14"	Inch Dia	0
1.12.1.3	16" upto 24"	Inch Dia	0
1.12.1.4	More than > 24"	Inch Dia	0
1.12.2	**FABRICATION (FILLET WELD)**		
1.12.2.1	Less than < 2"	Inch Dia	187
1.12.2.2	Slip-on / Socket Welded Flanges	Inch Dia	6
1.13	**INTERNAL EXPOXY COATED CARBON STEEL PIPING THK <= 10 mm (ASTM A 106 Gr B)**		
1.13.1	**FABRICATION (BUTT WELD)**		
1.13.1.1	2" upto 6"	Inch Dia	169
1.13.1.2	8" upto 14"	Inch Dia	312
1.13.1.3	16" upto 24"	Inch Dia	0
1.13.1.4	More than > 24"	Inch Dia	0
1.13.2	**FABRICATION (FILLET WELD)**		
1.13.2.1	Less than < 2"	Inch Dia	0
1.13.2.2	Slip-on / Socket Welded Flanges	Inch Dia	0

E&C TENDER
PROJECT: IOCL PARADIP 525 TPD STANDBY SRU

INCH-DIA / INCH-METER SUMMARY
ANNEXURE-A2
DOC NO: PY-AE-4-M170-2001-01

SL NO	ITEM DESCRIPTION	UOM	QUANTITY
	ERECTION	**Inch Meter**	**1,24,205**
	IBR PIPING	**Inch Meter**	**29,619**
1.14	**IBR ALLOY STEEL PIPING THK <= 10 mm (ASTM A 335 Gr P11)**		
1.14.1	**ERECTION (BUTT WELD)**		
1.14.1.1	2" upto 6"	Inch Meter	**22**
1.14.1.2	8" upto 14"	Inch Meter	**0**
1.14.1.3	16" upto 24"	Inch Meter	**0**
1.14.1.4	More than > 24"	Inch Meter	**0**
1.14.2	**ERECTION (FILLET WELD)**		
1.14.2.1	Less than < 2"	Inch Meter	**17**
1.14.2.2	Slip-on / Socket Welded Flanges	Inch Meter	**0**
1.15	**IBR ALLOY STEEL PIPING THK > 10 mm & <= 20 mm (ASTM A 335 Gr P11)**		
1.15.1	**ERECTION (BUTT WELD)**		
1.15.1.1	2" upto 6"	Inch Meter	**0**
1.15.1.2	8" upto 14"	Inch Meter	**252**
1.15.1.3	16" upto 24"	Inch Meter	**0**
1.15.1.4	More than > 24"	Inch Meter	**0**
1.16	**IBR CARBON STEEL PIPING THK <= 10 mm (ASTM A 106 Gr B / A 671 Gr CC60 / A672 Gr B60)**		
1.16.1	**ERECTION (BUTT WELD)**		
1.16.1.1	2" upto 6"	Inch Meter	**4,241**
1.16.1.2	8" upto 14"	Inch Meter	**4,976**
1.16.1.3	16" upto 24"	Inch Meter	**8,558**
1.16.1.4	More than > 24"	Inch Meter	**0**
1.16.2	**ERECTION (FILLET WELD)**		
1.16.2.1	Less than < 2"	Inch Meter	**2,314**
1.16.2.2	Slip-on / Socket Welded Flanges	Inch Meter	**0**
1.17	**IBR CARBON STEEL PIPING THK > 10 mm & <= 20 mm (ASTM A 106 Gr B / A 671 Gr CC60 / A672 Gr B60)**		
1.17.1	**ERECTION (BUTT WELD)**		
1.17.1.1	2" upto 6"	Inch Meter	**4,416**
1.17.1.2	8" upto 14"	Inch Meter	**3,483**
1.17.1.3	16" upto 24"	Inch Meter	**1,340**
1.17.1.4	More than > 24"	Inch Meter	**0**

SL NO	ITEM DESCRIPTION	UOM	QUANTITY
	NON-IBR PIPING	**Inch Meter**	**94,586**
1.18	**NON-IBR NON-NACE CARBON STEEL PIPING THK <= 10 mm (ASTM A 106 Gr B / A672 Gr B60)**		
1.18.1	**ERECTION (BUTT WELD)**		
1.18.1.1	2" upto 6"	Inch Meter	**8,572**
1.18.1.2	8" upto 14"	Inch Meter	**10,626**
1.18.1.3	16" upto 24"	Inch Meter	**0**
1.18.1.4	More than > 24"	Inch Meter	**0**
1.18.2	**ERECTION (FILLET WELD)**		
1.18.2.1	Less than < 2"	Inch Meter	**6,272**
1.18.2.2	Slip-on / Socket Welded Flanges	Inch Meter	**0**
1.19	**NON-IBR NON-NACE CARBON STEEL PIPING THK > 10 mm & <= 20 mm (ASTM A 106 Gr B / A672 Gr B60)**		
1.19.1	**ERECTION (BUTT WELD)**		
1.19.1.1	2" upto 6"	Inch Meter	**0**
1.19.1.2	8" upto 14"	Inch Meter	**0**
1.19.1.3	16" upto 24"	Inch Meter	**0**
1.19.1.4	More than > 24"	Inch Meter	**26,852**
1.20	**NON-IBR NACE CARBON STEEL PIPING THK <= 10 mm (ASTM A 106 Gr B / A671 Gr CC60)**		
1.20.1	**ERECTION (BUTT WELD)**		
1.20.1.1	2" upto 6"	Inch Meter	**2,584**
1.20.1.2	8" upto 14"	Inch Meter	**0**
1.20.1.3	16" upto 24"	Inch Meter	**173**
1.20.1.4	More than > 24"	Inch Meter	**0**
1.20.2	**ERECTION (FILLET WELD)**		
1.20.2.1	Less than < 2"	Inch Meter	**0**
1.20.2.2	Slip-on / Socket Welded Flanges	Inch Meter	**0**
1.21	**NON-IBR NACE CARBON STEEL PIPING THK > 10 mm & <= 20 mm (ASTM A 106 Gr B / A671 Gr CC60)**		
1.21.1	**ERECTION (BUTT WELD)**		
1.21.1.1	2" upto 6"	Inch Meter	**0**
1.21.1.2	8" upto 14"	Inch Meter	**0**
1.21.1.3	16" upto 24"	Inch Meter	**0**
1.21.1.4	More than > 24"	Inch Meter	**15,610**
1.22	**NON-IBR NACE+HIC CARBON STEEL PIPING THK <= 10 mm (ASTM A 106 Gr B / A671 Gr CC60)**		
1.22.1	**ERECTION (BUTT WELD)**		
1.22.1.1	2" upto 6"	Inch Meter	**1,397**
1.22.1.2	8" upto 14"	Inch Meter	**1,152**
1.22.1.3	16" upto 24"	Inch Meter	**8,953**
1.22.1.4	More than > 24"	Inch Meter	**0**

SL NO	ITEM DESCRIPTION	UOM	QUANTITY
1.22.2	**ERECTION (FILLET WELD)**		
1.22.2.1	Less than < 2"	Inch Meter	**168**
1.22.2.2	Slip-on / Socket Welded Flanges	Inch Meter	**0**
1.23	**NON-IBR NACE+HIC CARBON STEEL PIPING THK > 10 mm & <= 20 mm (ASTM A 106 Gr B / A671 Gr CC60)**		
1.23.1	**ERECTION (BUTT WELD)**		
1.23.1.1	2" upto 6"	Inch Meter	**1,221**
1.23.1.2	8" upto 14"	Inch Meter	**46**
1.23.1.3	16" upto 24"	Inch Meter	**1,181**
1.23.1.4	More than > 24"	Inch Meter	**4,503**
1.24	**STAINLESS STEEL PIPING THK. <= 10 mm (ASTM A 312 TP 304L / 316L)**		
1.24.1	**ERECTION (BUTT WELD)**		
1.24.1.1	2" upto 6"	Inch Meter	**3**
1.24.1.2	8" upto 14"	Inch Meter	**1,032**
1.24.1.3	16" upto 24"	Inch Meter	**0**
1.24.1.4	More than > 24"	Inch Meter	**0**
1.24.2	**ERECTION (FILLET WELD)**		
1.24.2.1	Less than < 2"	Inch Meter	**22**
1.24.2.2	Slip-on / Socket Welded Flanges	Inch Meter	**0**
1.25	**GALVANIZED CARBON STEEL PIPING THK <= 10 mm (ASTM A 106 Gr B (GALV))**		
1.25.1	**ERECTION (BUTT WELD)**		
1.25.1.1	2" upto 6"	Inch Meter	**1,681**
1.25.1.2	8" upto 14"	Inch Meter	**0**
1.25.1.3	16" upto 24"	Inch Meter	**0**
1.25.1.4	More than > 24"	Inch Meter	**0**
1.25.2	**ERECTION (FILLET WELD)**		
1.25.2.1	Less than < 2"	Inch Meter	**601**
1.25.2.2	Slip-on / Socket Welded Flanges	Inch Meter	**0**
1.26	**INTERNAL EXPOXY COATED CARBON STEEL PIPING THK <= 10 mm (ASTM A 106 Gr B)**		
1.26.1	**ERECTION (BUTT WELD)**		
1.26.1.1	2" upto 6"	Inch Meter	**557**
1.26.1.2	8" upto 14"	Inch Meter	**1,380**
1.26.1.3	16" upto 24"	Inch Meter	**0**
1.26.1.4	More than > 24"	Inch Meter	**0**
1.26.2	**ERECTION (FILLET WELD)**		
1.26.2.1	Less than < 2"	Inch Meter	**0**
1.26.2.2	Slip-on / Socket Welded Flanges	Inch Meter	**0**

IOCL Paradip 525 TPD Standby SRU Project
INPUTS FOR MSICELLANEOUS ITEMS

The Various Miscellaneous Items Which are part of piping and not covered in the main input are as follows:

- INSTALLATION OF CONTROTRACE®
- STRUCTURAL STEEL FOR THE PIPE SUPPORTS
- INSULATION FOR THE PIPING SYSTEMS
- MISCELLANEUOUS PIPING ITEMS

This Miscellaneous Items are part of the E&C vendor Scope of work.

INSTALLATION OF CONTROTRACE®

1.1 Introduction

Steam Tracing on Tail Gas lines in New SRU unit is to be erected with ControTrace®, a proprietary Bolt-on Heating System from Control Southeast Inc., USA.

ControTrace®

- Is a fully engineered bolt-on heating system, for efficient Steam tracing of pipe lines
- Supplied as fully pre-fabricated bolt-on ControTrace® Panels complete with Steam supply connection and drain connection on either ends
- Bolt-on Panel is made up of individual ControTrace® elements (2"x 1" Rectangular sections) shaped to match the OD of the Pipe
- No welding is envisaged to the Parent pipe and also among the Panels
- Max length of any ControTrace® segment is 12m. Steam Jump overs between panels, from panels to jacketed valves, shall be with flexible hoses, to be supplied along with the package.
- Special Jackets shall be designed and supplied to be installed on the existing Valves

1.2 Scope of Work

A. Installation of ControTrace®
B. Steam supply connections from LP Steam Header to ControTrace® Panels
C. Condensate drain connections from ControTrace® Panels to nearest condensate manifolds / Steam trap stations
D. Installation of Steam Supply manifolds, Condensate manifolds and Steam Trap Stations, as applicable.
E. Installation of Thermal Insulation

1	ControTrace® Package	Includes Bolt-on ControTrace® Panels formed from ControTrace® Elements, Heating Jackets for Valves and other inline components, Bolting Material, Flexible metal Jump over hoses for Steam connectivity, Heat Transfer Compound, Installation Hardware
2	Piping Package for LP Steam Piping	Valves, Steam Traps, Steam supply manifolds, Condensate manifolds for return condensate, Steam Trap stations, Pipes, Fittings, Flanges, Gaskets & Bolting
4	Inch Meter (Erection of Controtrace)	Total Inch meter for the Erection of the contro trace Piping is: 15,000. During the erection of the controtrace panels the Pipe on which the controtrace panels have to be placed are to be cleaned for any foreign particles like Rust, paint. This cleaning activity's is also part of the erection agency.

STRUCTURAL STEEL FOR PIPE SUPPORTS

1) Pipe Support fabrication is in Erection Agency/ Contractor Scope. Necessary plates, pipes, Structural steel Members shall be supplied loose. Pipe Support fabrication & welding is at site. Support's shall be Fabricated as per the BHEL drawings.
2) Spring Hangers and Rigid Hangers are supplied in Loose. The E&C agency activity involves the installation of This Spring hangers and rigid Hangers. Proper setting of this supports is part of E&C agency
3) Fabrication and Installation of Auxiliary Structure for Pipe Supports is in Erection Agency/ Contractor Scope. Necessary Structural Steel and Plates shall be supplied loose. Cutting of structural steel to required dimensions, welding is in erection scope.
4) The Material required for temporary supports are to be arranged by erection contractor.

1	Structural steel for pipe supports.	Total Structural steel which consists of plates , Angles , channels, beams is 100 Mt.
2	Spring Hangers and Rigid Hangers	Total Tonnage of Spring Hangers & Rigid hangers is 80 Mt.

INSULATION FOR THE PIPE AND EQUIPMENT

1) Piping systems and certain Equipment require Insulation. The E&C agency activity involves the installation of this insulation materials along with associated Cladding and auxiliaries. Supply of insulation, cladding, and insulation ancillary materials is not in the scope of the Erection agency.

1	New Thermal Insulation Package	New Thermal Insulation has to be installed and is estimated as 200 Mt (This is inclusive of the mineral wool , Cladding ,insulation auxiliaries) Bifurcation of quantities is as follows : a. Minwool : 120 Mt b. Cladding and auxiliaries :80 Mt

MISCELLANOUS PIPING ITEMS

1) Piping systems involves Erection of the Miscellaneous inline items .They are like strainers, Blow down Valves , Angle Valve , Steam and condensate manifolds, Compact steam traps, Strahman Valves , flexible hoses , Sampling assemblies, etc . The E&C agency activity involves the installation of all this Piping speciality items.

1	Miscellaneous Piping items	The total tonnage of the Piping specialty items are estimated as 25 Mt.The BOQ of the miscellaneous piping items is as per annexure -B3.

REPAIR AND WELDZONE COATING OF THE INTERNAL COATING OF PIPING

1) For the fire water Piping there is a requirement of internal coating of glass flake lining. The pipes and the fittings are internal coated with glass flake lining and supplied to site. However the erection agency has to undertake the repair and weld zone coating of the glass flake lining. After completion of welding at site, internal coating on field joints and repair work to be done by Robot crawler method with minimum DFT: 1000 microns of Glass flaked epoxy and maximum DFT: 1200 microns of glass flaked epoxy.

1	Weld zone coating of the internal glass flake lining.	The quantum of the weld zone coating shall be derived from the Inch dia data provided in the annexure A1.

Piping BOQ

1	Piping BOQ.(Except Jacketed piping)	The BOQ of the Entire piping is attached in annexure-B1

Jacketed piping

1) For the Jacketed piping, pre-fabricated Jacketed piping spools shall be supplied to site .The jacketed piping spools have to erected as per the isometrics issued. The spools shall be connected with the steam & condensate connection.

1	Jacketed piping .	The BOQ of the Jacketed piping is attached in annexure-B2

1- NAC6= NACE + HIC	
2- PIPE QTY IN METRES AND OTHERS IN NUMBERS.	
3- GALVNISATION AS PER ASTM A153	
4- NUTS SHALL BE HEAVY HEXAGONAL	

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)

SR NO	ITEM DESCRIPTION	QTY
1	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, 0.5 INCH, S160	26
2	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, 0.5 INCH, XS	6000
3	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, 0.75 INCH, S160	438
4	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, 0.75 INCH, XS	1993
5	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, 0.75 INCH, XXS	1
6	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, 1.0 INCH, XS	222
7	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, 1.5 INCH, XXS	0.4
8	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, 1.5 INCH, XS	110
9	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 2.0 INCH, S160	86
10	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 2.0 INCH, XS	151
11	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 3.0 INCH, STD	216
12	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 3.0 INCH, XS	1
13	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 4.0 INCH, STD	424
14	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 6.0 INCH, STD	720
15	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 8.0 INCH, STD	569
16	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 10.0 INCH, STD	278
17	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 12.0 INCH, STD	100
18	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 14.0 INCH, STD	23
19	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, IBR, 0.5 INCH, S160	3
20	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, IBR, 0.75 INCH, S160	623
21	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, IBR, 1.0 INCH, S160	3
22	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, IBR, 1.0 INCH, XS	157
23	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, IBR, 1.5 INCH, XS	847
24	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, IBR, 1.5 INCH, S160	18
25	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 2.0 INCH, S160	50
26	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 2.0 INCH, XS	617
27	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 3.0 INCH, S160	39
28	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 3.0 INCH, STD	210
29	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 3.0 INCH, XS	165
30	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 4.0 INCH, S120	442
31	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 4.0 INCH, STD	154
32	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 4.0 INCH, XS	2
33	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 6.0 INCH, XS	75

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
34	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 6.0 INCH, S120	224
35	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 6.0 INCH, STD	75
36	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 8.0 INCH, XS	48
37	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 8.0 INCH, STD	127
38	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 8.0 INCH, S100	30
39	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 10.0 INCH, STD	187
40	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 10.0 INCH, XS	97
41	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 12.0 INCH, XS	109
42	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, IBR, 12.0 INCH, STD	105
43	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, NACE, 2.0 INCH, XS	1
44	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, NACE, 3.0 INCH, STD	628
45	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, NACE, 4.0 INCH, STD	56
46	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, NACE, 6.0 INCH, STD	7
47	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, NAC6, 0.5 INCH, XXS	14
48	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, NAC6, 0.75 INCH, XXS	88
49	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, NAC6, 0.75 INCH, S160	66
50	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, NAC6, 1.0 INCH, XXS	14
51	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, NAC6, 1.5 INCH, XS	1
52	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, NAC6, 2.0 INCH, XS	9
53	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, NAC6, 2.0 INCH, S160	71
54	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, NAC6, 3.0 INCH, S160	213
55	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, NAC6, 3.0 INCH, STD	25
56	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, NAC6, 4.0 INCH, STD	171
57	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, NAC6, 4.0 INCH, XS	1
58	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, NAC6, 6.0 INCH, STD	40
59	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, NAC6, 6.0 INCH, XS	63
60	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, NAC6, 8.0 INCH, XS	1

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
61	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, NAC6, 10.0 INCH, XS	3
62	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, NAC6, 10.0 INCH, STD	96
63	PIPE, B-36.10, ASTM A 106 GR.B(GALV), SCRM, SEAMLESS, 0.5 INCH, S160	2
64	PIPE, B-36.10, ASTM A 106 GR.B(GALV), SCRM, SEAMLESS, 0.75 INCH, S160	13
65	PIPE, B-36.10, ASTM A 106 GR.B(GALV), SCRM, SEAMLESS, 1.0 INCH, XS	271
66	PIPE, B-36.10, ASTM A 106 GR.B(GALV), SCRM, SEAMLESS, 1.5 INCH, XS	145
67	PIPE, B-36.10, ASTM A 106 GR.B(GALV), BE, SEAMLESS, 2.0 INCH, XS	208
68	PIPE, B-36.10, ASTM A 106 GR.B(GALV), BE, SEAMLESS, 3.0 INCH, STD	228
69	PIPE, B-36.10, ASTM A 106 GR.B(GALV), BE, SEAMLESS, 4.0 INCH, STD	75
70	PIPE, B-36.19, ASTM A 312 TP304L, PE, SEAMLESS, 1.5 INCH, 40S	10
71	PIPE, B-36.19, ASTM A 312 TP316L, PE, SEAMLESS, 0.75 INCH, 80S	3
72	PIPE, B-36.19, ASTM A 312 TP316L, PE, SEAMLESS, 1.5 INCH, 40S	0.2
73	PIPE, B-36.19, ASTM A 312 TP316L, BE, SEAMLESS, 2.0 INCH, 40S	1
74	PIPE, B-36.10, ASTM A 335 GR.P11, PE, SEAMLESS, IBR, 0.5 INCH, S160	2
75	PIPE, B-36.10, ASTM A 335 GR.P11, PE, SEAMLESS, IBR, 1.5 INCH, XS	8
76	PIPE, B-36.10, ASTM A 335 GR.P11, BE, SEAMLESS, IBR, 2.0 INCH, XS	9
77	PIPE, B-36.10, ASTM A 335 GR.P11, BE, SEAMLESS, IBR, 10.0 INCH, XS	21
78	PIPE, B-36.19, ASTM A 358 TP316L CL.1, BE, E.FS.W, 10.0 INCH, 6.35 MM THK	86
79	PIPE, B-36.10, ASTM A 671 GR.CC60 CL.32, BE, E.FS.W, NACE, 24.0 INCH, STD	6
80	PIPE, B-36.10, ASTM A 671 GR.CC60 CL.32, BE, E.FS.W, NACE, 48.0 INCH, XS	271
81	PIPE, B-36.10, ASTM A 671 GR.CC60 CL.32, BE, E.FS.W, NAC6, 24.0 INCH, XS	41
82	PIPE, B-36.10, ASTM A671GR.CC60 CL.32 (S2,S3), BE, E.FS.W, NAC6, 16.0 INCH, STD	269
83	PIPE, B-36.10, ASTM A671GR.CC60 CL.32 (S2,S3), BE, E.FS.W, NAC6, 20.0 INCH, STD	129
84	PIPE, B-36.10, ASTM A671GR.CC60 CL.32 (S2,S3), BE, E.FS.W, NAC6, 24.0 INCH, STD	24
85	PIPE, B-36.10, ASTM A671GR.CC60 CL.32 (S2,S3), BE, E.FS.W, NAC6, 28.0 INCH, XS	53
86	PIPE, B-36.10, ASTM A671GR.CC60 CL.32 (S2,S3), BE, E.FS.W, NAC6, 36.0 INCH, XS	63
87	PIPE, B-36.10, ASTM A 672 GR.B60 CL.32, BE, E.FS.W, 30.0 INCH, XS	130
88	PIPE, B-36.10, ASTM A 672 GR.B60 CL.32, BE, E.FS.W, 36.0 INCH, XS	204
89	PIPE, B-36.10, ASTM A 672 GR.B60 CL.32, BE, E.FS.W, 44.0 INCH, XS	97
90	PIPE, B-36.10, ASTM A 672 GR.B60 CL.32, BE, E.FS.W, 48.0 INCH, XS	143
91	PIPE, B-36.10, ASTM A 672 GR.B60 CL.32, BE, E.FS.W, IBR, 16.0 INCH, STD	36
92	PIPE, B-36.10, ASTM A 672 GR.B60 CL.32, BE, E.FS.W, IBR, 18.0 INCH, STD	147
93	PIPE, B-36.10, ASTM A 672 GR.B60 CL.32, BE, E.FS.W, IBR, 18.0 INCH, 16.0 MM THK	62
94	PIPE, B-36.10, ASTM A 672 GR.B60 CL.32, BE, E.FS.W, IBR, 20.0 INCH, STD	49
95	PIPE, B-36.10, ASTM A 672 GR.B60 CL.32, BE, E.FS.W, IBR, 24.0 INCH, STD	122
96	PIPE, B-36.10, ASTM A106GR.B(INT EPOXY COATD), BE, SEAMLESS, 4.0 INCH, STD	56
97	PIPE, B-36.10, ASTM A106GR.B(INT EPOXY COATD), BE, SEAMLESS, 6.0 INCH, STD	40

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	**ITEM DESCRIPTION**	**QTY**
98	PIPE, B-36.10, ASTM A106GR.B(INT EPOXY COATD), BE, SEAMLESS, 10.0 INCH, STD	115
99	NIPPLE, B-36.10, ASTM A 106 GR.B, TOE, SEAMLESS, 0.75 INCH, XXS, 80 MM	4
100	NIPPLE, B-36.10, ASTM A 106 GR.B, TOE, SEAMLESS, 1.0 INCH, S160, 100 MM	130
101	NIPPLE, B-36.10, ASTM A 106 GR.B, TOE, SEAMLESS, 1.0 INCH, S160, 80 MM	2
102	NIPPLE, B-36.10, ASTM A 106 GR.B, TOE, SEAMLESS, 2.0 INCH, XS, 150 MM	261
103	NIPPLE, B-36.10, ASTM A 106 GR.B, TOE, SEAMLESS, IBR, 0.5 INCH, XXS, 80 MM	90
104	NIPPLE, B-36.10, ASTM A 106 GR.B, TOE, SEAMLESS, IBR, 0.75 INCH, XXS, 80 MM	34
105	NIPPLE, B-36.10, ASTM A 106 GR.B, TOE, SEAMLESS, NAC6, 0.5 INCH, XXS, 80 MM	2
106	REINF.PAD, ASTM A 672 GR.B60 CL.32, 30.0 INCH, XS, 14.0 INCH	2
107	REINF.PAD, ASTM A 672 GR.B60 CL.32, 30.0 INCH, XS, 2.0 INCH	1
108	REINF.PAD, ASTM A 672 GR.B60 CL.32, 30.0 INCH, XS, 6.0 INCH	2
109	REINF.PAD, ASTM A 672 GR.B60 CL.32, 36.0 INCH, XS, 2.0 INCH	2
110	REINF.PAD, ASTM A 672 GR.B60 CL.32, 36.0 INCH, XS, 10.0 INCH	2
111	REINF.PAD, ASTM A 672 GR.B60 CL.32, 36.0 INCH, XS, 3.0 INCH	5
112	REINF.PAD, ASTM A 672 GR.B60 CL.32, 44.0 INCH, XS, 30.0 INCH	1
113	REINF.PAD, ASTM A 672 GR.B60 CL.32, 48.0 INCH, XS, 36.0 INCH	3
114	REINF.PAD, ASTM A 672 GR.B60 CL.32, IBR, 18.0 INCH, 16.0 MM THK, 12.0 INCH	4
115	REINF.PAD, ASTM A 672 GR.B60 CL.32, IBR, 18.0 INCH, 16.0 MM THK, 10.0 INCH	1
116	REINF.PAD, ASTM A 672 GR.B60 CL.32, IBR, 18.0 INCH, 16.0 MM THK, 8.0 INCH	1
117	REINF.PAD, ASTM A 672 GR.B60 CL.32, IBR, 18.0 INCH, 16.0 MM THK, 2.0 INCH	2
118	REINF.PAD, ASTM A 672 GR.B60 CL.32, IBR, 18.0 INCH, 16.0 MM THK, 3.0 INCH	3
119	REINF.PAD, ASTM A 672 GR.B60 CL.32, IBR, 18.0 INCH, 16.0 MM THK, 6.0 INCH	1
120	REINF.PAD, ASTM A 671 GR.CC60 CL.32, NACE, 48.0 INCH, XS, 2.0 INCH	1

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
121	REINF.PAD, ASTM A 671 GR.CC60 CL.32, NACE, 48.0 INCH, XS, 16.0 INCH	1
122	REINF.PAD, ASTM A 671 GR.CC60 CL.32, NAC6, 24.0 INCH, XS, 3.0 INCH	1
123	REINF.PAD, ASTM A 671 GR.CC60 CL.32, NAC6, 24.0 INCH, XS, 2.0 INCH	5
124	REINF.PAD, ASTM A 358 TP316L CL.1, 10.0 INCH, 6.35 MM THK, 2.0 INCH	1
125	REINF.PAD, ASTM A 106 GR.B, IBR, 6.0 INCH, S120, 2.0 INCH	4
126	REINF.PAD, ASTM A 335 GR.P11, IBR, 10.0 INCH, XS, 3.0 INCH	1
127	REINF.PAD, ASTM A671GR.CC60 CL.32 (S2,S3), NAC6, 20.0 INCH, STD, 10.0 INCH	1
128	REINF.PAD, ASTM A671GR.CC60 CL.32 (S2,S3), NAC6, 24.0 INCH, STD, 2.0 INCH	1
129	REINF.PAD, ASTM A671GR.CC60 CL.32 (S2,S3), NAC6, 28.0 INCH, XS, 2.0 INCH	2
130	REINF.PAD, ASTM A671GR.CC60 CL.32 (S2,S3), NAC6, 28.0 INCH, XS, 10.0 INCH	1
131	REINF.PAD, ASTM A671GR.CC60 CL.32 (S2,S3), NAC6, 28.0 INCH, XS, 6.0 INCH	2
132	REINF.PAD, ASTM A671GR.CC60 CL.32 (S2,S3), NAC6, 28.0 INCH, XS, 20.0 INCH	1
133	REINF.PAD, ASTM A671GR.CC60 CL.32 (S2,S3), NAC6, 36.0 INCH, XS, 20.0 INCH	1
134	FLNG.SCRD, B-16.5, ASTM A 105 N (GALV.), 150, FF/125AARH, 1.0 INCH	1
135	FLNG.SCRD, B-16.5, ASTM A 105 N (GALV.), 300, FF/125AARH, 1.5 INCH	8
136	FLNG.SCRD, B-16.5, ASTM A 105 N (GALV.), 150, FF/125AARH, 1.5 INCH	6
137	FLNG.SW, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 0.75 INCH, XS	551
138	FLNG.SW, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 0.75 INCH, S160	16
139	FLNG.SW, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 0.75 INCH, XS	8
140	FLNG.SW, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 1.5 INCH, XS	22
141	FLNG.SW, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 1.5 INCH, XXS	2
142	FLNG.SW, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 0.75 INCH, S160	18
143	FLNG.SW, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 1.0 INCH, S160	3
144	FLNG.SW, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, IBR, 1.0 INCH, XS	1
145	FLNG.SW, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 1.5 INCH, XS	5
146	FLNG.SW, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 1.5 INCH, S160	7
147	FLNG.SW, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, IBR, 1.5 INCH, XS	2
148	FLNG.SW, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NAC6, 0.5 INCH, XXS	4
149	FLNG.SW, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NAC6, 0.75 INCH, XXS	36
150	FLNG.SW, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NAC6, 1.5 INCH, XXS	4
151	FLNG.SW, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NAC6, 1.5 INCH, XS	5
152	FLNG.SW, B-16.5, ASTM A 182 GR.F11 CL.2, 600, RF/125AARH, IBR, 1.5 INCH, XS	5
153	FLNG.SW, B-16.5, ASTM A 182 GR.F316L, 300, RF/125AARH, 1.5 INCH, 40S	1
154	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 0.5 INCH, S160	8
155	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 0.75 INCH, S160	89
156	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 0.75 INCH, XXS	3
157	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 1.0 INCH, XS	11

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	**ITEM DESCRIPTION**	**QTY**
158	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 1.5 INCH, XS	5
159	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 2.0 INCH, S160	2
160	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 2.0 INCH, XS	43
161	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, 2.0 INCH, S160	7
162	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 2.0 INCH, XS	4
163	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 3.0 INCH, STD	76
164	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 3.0 INCH, XS	2
165	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 3.0 INCH, XS	1
166	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 3.0 INCH, STD	24
167	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 4.0 INCH, STD	8
168	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 4.0 INCH, STD	65
169	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 6.0 INCH, STD	10
170	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 6.0 INCH, STD	50
171	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 8.0 INCH, STD	14
172	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 10.0 INCH, STD	8
173	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 14.0 INCH, STD	2
174	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 18.0 INCH, STD	2
175	FLNG.WN, B-16.47-B, ASTM A 105 (NORMALISED), 300, RF/125AARH, 30.0 INCH, XS	7
176	FLNG.WN, B-16.47-B, ASTM A 105 (NORMALISED), 150, RF/125AARH, 30.0 INCH, XS	10
177	FLNG.WN, B-16.47-B, ASTM A 105 (NORMALISED), 300, RF/125AARH, 36.0 INCH, XS	6
178	FLNG.WN, B-16.47-B, ASTM A 105 (NORMALISED), 150, RF/125AARH, 36.0 INCH, XS	54
179	FLNG.WN, B-16.47-B, ASTM A 105 (NORMALISED), 150, RF/125AARH, 44.0 INCH, XS	2
180	FLNG.WN, B-16.47-B, ASTM A 105 (NORMALISED), 150, RF/125AARH, 48.0 INCH, XS	3

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
181	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, IBR, 0.75 INCH, S160	6
182	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 0.75 INCH, S160	23
183	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 1.5 INCH, XS	13
184	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, IBR, 1.5 INCH, XS	3
185	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 2.0 INCH, S160	22
186	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 2.0 INCH, XS	38
187	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, IBR, 2.0 INCH, XS	26
188	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 2.0 INCH, XS	100
189	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 3.0 INCH, STD	27
190	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, IBR, 3.0 INCH, STD	2
191	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 3.0 INCH, XS	60
192	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 3.0 INCH, S160	42
193	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, IBR, 3.0 INCH, XS	6
194	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 4.0 INCH, S120	44
195	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 4.0 INCH, STD	2
196	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, IBR, 4.0 INCH, STD	10
197	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 4.0 INCH, XS	2
198	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 4.0 INCH, STD	37
199	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 6.0 INCH, S120	43
200	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, IBR, 6.0 INCH, STD	9
201	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 6.0 INCH, XS	15
202	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 6.0 INCH, STD	21
203	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 8.0 INCH, S100	6
204	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 8.0 INCH, XS	7
205	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 8.0 INCH, STD	26
206	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, IBR, 8.0 INCH, STD	8
207	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, IBR, 10.0 INCH, STD	6
208	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 10.0 INCH, XS	15
209	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 10.0 INCH, STD	1
210	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 10.0 INCH, STD	18
211	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 12.0 INCH, STD	1
212	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 12.0 INCH, XS	5
213	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 12.0 INCH, STD	5
214	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 16.0 INCH, STD	4
215	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 18.0 INCH, STD	7
216	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 24.0 INCH, STD	2
217	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NACE, 2.0 INCH, XS	3

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
218	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NACE, 3.0 INCH, STD	4
219	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NACE, 3.0 INCH, STD	20
220	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NACE, 4.0 INCH, STD	1
221	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NACE, 4.0 INCH, STD	2
222	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NACE, 6.0 INCH, STD	4
223	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NACE, 24.0 INCH, STD	2
224	FLNG.WN, B-16.47-B, ASTM A 105 (NORMALISED), 150, RF/125AARH, NACE, 48.0 INCH, XS	14
225	FLNG.WN, B-16.47-B, ASTM A 105 (NORMALISED), 300, RF/125AARH, NACE, 48.0 INCH, XS	2
226	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 0.75 INCH, S160	34
227	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 0.75 INCH, XXS	26
228	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 2.0 INCH, S160	25
229	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 2.0 INCH, XS	20
230	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NAC6, 2.0 INCH, XS	9
231	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NAC6, 2.0 INCH, S160	44
232	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 3.0 INCH, STD	2
233	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 3.0 INCH, S160	9
234	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NAC6, 3.0 INCH, STD	1
235	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NAC6, 3.0 INCH, S160	64
236	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 4.0 INCH, STD	16
237	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NAC6, 4.0 INCH, XS	2
238	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NAC6, 4.0 INCH, STD	4
239	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 4.0 INCH, XS	4
240	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 6.0 INCH, XS	5

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
241	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 6.0 INCH, STD	13
242	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NAC6, 6.0 INCH, STD	4
243	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 10.0 INCH, STD	6
244	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NAC6, 10.0 INCH, STD	4
245	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 16.0 INCH, STD	14
246	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NAC6, 16.0 INCH, STD	2
247	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 20.0 INCH, STD	9
248	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NAC6, 20.0 INCH, STD	3
249	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 24.0 INCH, XS	4
250	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 24.0 INCH, STD	2
251	FLNG.WN, B-16.47-B, ASTM A 105 (NORMALISED), 300, RF/125AARH, NAC6, 28.0 INCH, XS	7
252	FLNG.WN, B-16.47-B, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 28.0 INCH, XS	5
253	FLNG.WN, B-16.47-B, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 36.0 INCH, XS	2
254	FLNG.WN, B-16.5, ASTM A 182 GR.F11 CL.2, 600, RF/125AARH, IBR, 2.0 INCH, XS	3
255	FLNG.WN, B-16.5, ASTM A 182 GR.F11 CL.2, 600, RF/125AARH, IBR, 10.0 INCH, XS	5
256	FLNG.WN, B-16.5, ASTM A 182 GR.F304L, 150, RF/125AARH, 1.5 INCH, 40S	1
257	FLNG.WN, B-16.5, ASTM A 182 GR.F316L, 150, RF/125AARH, 0.75 INCH, 80S	6
258	FLNG.WN, B-16.5, ASTM A 182 GR.F316L, 150, RF/125AARH, 2.0 INCH, 40S	2
259	FLNG.WN, B-16.5, ASTM A 182 GR.F316L, 300, RF/125AARH, 2.0 INCH, 40S	1
260	FLNG.WN, B-16.5, ASTM A 182 GR.F316L, 150, RF/125AARH, 10.0 INCH, 6.35 MM THK	6
261	FLNG.WN, B-16.5, ASTM A 182 GR.F316L, 300, RF/125AARH, 10.0 INCH, 6.35 MM THK	4
262	FLNG.WN, B-16.5, ASTM A 105 N (GALV.), 150, RF/125AARH, 2.0 INCH, XS	6
263	FLNG.WN, B-16.5, ASTM A105 N (EPOXY COATED), 150, RF/125AARH, 4.0 INCH, STD	19
264	FLNG.WN, B-16.5, ASTM A105 N (EPOXY COATED), 150, RF/125AARH, 6.0 INCH, STD	8
265	FLNG.WN, B-16.5, ASTM A105 N (EPOXY COATED), 150, RF/125AARH, 10.0 INCH, STD	4
266	FLNG.SO, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 3.0 INCH, 2.0 INCH	27
267	FLNG.SO, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 3.0 INCH, 2.0 INCH	2
268	FLNG.SO, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 3.0 INCH, 1.5 INCH	8
269	FLNG.SO, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 4.0 INCH, 3.0 INCH	42
270	FLNG.SO, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 4.0 INCH, 3.0 INCH	2
271	FLNG.SO, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 6.0 INCH	2
272	FLNG.SO, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 6.0 INCH, 4.0 INCH	146
273	FLNG.SO, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 8.0 INCH, 6.0 INCH	173
274	FLNG.SO, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 8.0 INCH, 6.0 INCH	4
275	FLNG.SO, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 10.0 INCH, 8.0 INCH	215
276	FLNG.SO, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 10.0 INCH, 8.0 INCH	2
277	FLNG.SO, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 10.0 INCH	2

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
278	FLNG.SO, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 12.0 INCH, 10.0 INCH	2
279	FLNG.SO, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 12.0 INCH, 10.0 INCH	80
280	FLNG.SO, B-16.5, ASTM A 105 N (GALV.), 150, FF/125AARH, 2.0 INCH	16
281	FLNG.SO, B-16.5, ASTM A 105 N (GALV.), 150, FF/125AARH, 3.0 INCH	21
282	FLNG.SO, B-16.5, ASTM A 105 N (GALV.), 150, FF/125AARH, 4.0 INCH	7
283	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 0.75 INCH	28
284	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 1.5 INCH	5
285	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 2.0 INCH	10
286	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 3.0 INCH	4
287	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 3.0 INCH, 2.0 INCH	4
288	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 4.0 INCH	6
289	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 4.0 INCH, 2.0 INCH	14
290	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 6.0 INCH, 2.0 INCH	37
291	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 6.0 INCH	3
292	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 8.0 INCH, 2.0 INCH	28
293	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 8.0 INCH	1
294	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 10.0 INCH, 2.0 INCH	88
295	FLNG.BLIND, B-16.47-B, ASTM A 105 (NORMALISED), 150, RF/125AARH, 36.0 INCH	1
296	FLNG.BLIND, B-16.47-B, ASTM A 105 (NORMALISED), 150, RF/125AARH, 44.0 INCH	1
297	FLNG.BLIND, B-16.47-B, ASTM A 105 (NORMALISED), 150, RF/125AARH, 48.0 INCH	1
298	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 0.75 INCH	11
299	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 0.75 INCH	10
300	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 1.5 INCH	5
301	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 2.0 INCH	12
302	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 2.0 INCH	11
303	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, IBR, 2.0 INCH	2
304	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, IBR, 3.0 INCH	1
305	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 3.0 INCH	1
306	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 4.0 INCH	1
307	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 4.0 INCH	2
308	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 6.0 INCH	1
309	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 10.0 INCH	1
310	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 12.0 INCH	2
311	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 600, RF/125AARH, IBR, 12.0 INCH	1
312	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 18.0 INCH	3
313	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, IBR, 24.0 INCH	1
314	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NACE, 2.0 INCH	3

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
315	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NACE, 3.0 INCH	2
316	FLNG.BLIND, B-16.47-B, ASTM A 105 (NORMALISED), 150, RF/125AARH, NACE, 48.0 INCH	1
317	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, NAC6, 0.75 INCH	14
318	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 0.75 INCH	32
319	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 2.0 INCH	5
320	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 4.0 INCH	5
321	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 16.0 INCH	1
322	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 20.0 INCH	1
323	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 24.0 INCH	1
324	FLNG.BLIND, B-16.47-B, ASTM A 105 (NORMALISED), 150, RF/125AARH, NAC6, 36.0 INCH	1
325	FLNG.BLIND, B-16.5, ASTM A 182 GR.F316L, 150, RF/125AARH, 0.75 INCH	6
326	FLNG.BLIND, B-16.5, ASTM A 105 N (GALV.), 150, FF/125AARH, 1.5 INCH	6
327	FLNG.BLIND, B-16.5, ASTM A 105 N (GALV.), 150, FF/125AARH, 2.0 INCH	2
328	FLNG.BLIND, B-16.5, ASTM A 105 N (GALV.), 150, RF/125AARH, 2.0 INCH	6
329	FLNG.BLIND, B-16.5, ASTM A 105 N (GALV.), 150, FF/125AARH, 3.0 INCH	5
330	FLNG.BLIND, B-16.5, ASTM A 105 N (GALV.), 150, FF/125AARH, 4.0 INCH	2
331	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, 0.75 INCH	4
332	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, 2.0 INCH	8
333	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, 3.0 INCH	4
334	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 300, FF/125AARH, 3.0 INCH	1
335	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, 4.0 INCH	7
336	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, 6.0 INCH	7
337	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, 8.0 INCH	5
338	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 600, FF/125AARH, IBR, 1.0 INCH	2
339	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 300, FF/125AARH, IBR, 1.0 INCH	1
340	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, IBR, 1.5 INCH	1
341	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, IBR, 2.0 INCH	3
342	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 300, FF/125AARH, IBR, 2.0 INCH	2
343	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, IBR, 3.0 INCH	3
344	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 300, FF/125AARH, IBR, 3.0 INCH	1
345	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 600, FF/125AARH, IBR, 3.0 INCH	6
346	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, IBR, 4.0 INCH	5
347	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 600, FF/125AARH, IBR, 4.0 INCH	9
348	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 600, FF/125AARH, IBR, 6.0 INCH	8
349	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, IBR, 6.0 INCH	4
350	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, IBR, 8.0 INCH	6
351	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 600, FF/125AARH, IBR, 8.0 INCH	1

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
352	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, NACE, 3.0 INCH	4
353	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, NACE, 4.0 INCH	1
354	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, NAC6, 0.75 INCH	9
355	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 300, FF/125AARH, NAC6, 0.75 INCH	4
356	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, NAC6, 2.0 INCH	2
357	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 300, FF/125AARH, NAC6, 3.0 INCH	9
358	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, NAC6, 3.0 INCH	2
359	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, NAC6, 4.0 INCH	2
360	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, NAC6, 6.0 INCH	2
361	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 300, FF/125AARH, NAC6, 6.0 INCH	1
362	FLNG.FIG.8, ASME-B16.48, ASTM A 516N Gr.70 (GALV.), 150, FF/125AARH, 2.0 INCH	1
363	FLNG.FIG.8, ASME-B16.48, ASTM A 516N Gr.70 (GALV.), 150, FF/125AARH, 3.0 INCH	3
364	FLNG.FIG.8, ASME-B16.48, ASTM A 516N Gr.70 (GALV.), 150, FF/125AARH, 4.0 INCH	1
365	SPCR&BLND, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, 10.0 INCH	4
366	SPCR&BLND, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, 12.0 INCH	1
367	SPCR&BLND, ASME B16.47B/JOB'STD, ASTM A 516 GR.70(NORMALISED), 300, FF/125AARH, 30.0 INCH	3
368	SPCR&BLND, ASME B16.47B/JOB'STD, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, 30.0 INCH	2
369	SPCR&BLND, ASME B16.47B/JOB'STD, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, 36.0 INCH	20
370	SPCR&BLND, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 600, FF/125AARH, IBR, 10.0 INCH	2
371	SPCR&BLND, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, IBR, 10.0 INCH	2
372	SPCR&BLND, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, IBR, 12.0 INCH	1
373	SPCR&BLND, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, IBR, 18.0 INCH	2
374	SPCR&BLND, ASME B16.47B/EIL'STD, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, NACE, 48.0 INCH	2
375	SPCR&BLND, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, NAC6, 10.0 INCH	4
376	SPCR&BLND, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, NAC6, 16.0 INCH	2
377	SPCR&BLND, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, NAC6, 20.0 INCH	2
378	SPCR&BLND, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 300, FF/125AARH, NAC6, 20.0 INCH	1
379	SPCR&BLND, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, NAC6, 24.0 INCH	1
380	SPCR&BLND, ASME B16.47B/JOB'STD, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, NAC6, 28.0 INCH	1
381	SPCR&BLND, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 300, FF/125AARH, NAC6, 28.0 INCH	1
382	ELBOW.90, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, 0.5 INCH	50
383	ELBOW.90, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, 0.75 INCH	786
384	ELBOW.90, B-16.11, ASTM A 105 (NORMALISED), SW, 9000, 0.75 INCH	6
385	ELBOW.90, B-16.11, ASTM A 105 (NORMALISED), SW, 6000, 0.75 INCH	213
386	ELBOW.90, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, 1.0 INCH	104
387	ELBOW.90, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, 1.5 INCH	34
388	ELBOW.90, B-16.11, ASTM A 105 (NORMALISED), SW, 6000, IBR, 0.75 INCH	219

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SR NO	ITEM DESCRIPTION	QTY
389	ELBOW.90, B-16.11, ASTM A 105 (NORMALISED), SW, 6000, IBR, 1.0 INCH	3
390	ELBOW.90, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, IBR, 1.0 INCH	83
391	ELBOW.90, B-16.11, ASTM A 105 (NORMALISED), SW, 6000, IBR, 1.5 INCH	6
392	ELBOW.90, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, IBR, 1.5 INCH	242
393	ELBOW.90, B-16.11, ASTM A 105 (NORMALISED), SW, 9000, NAC6, 0.5 INCH	8
394	ELBOW.90, B-16.11, ASTM A 105 (NORMALISED), SW, 6000, NAC6, 0.75 INCH	24
395	ELBOW.90, B-16.11, ASTM A 105 (NORMALISED), SW, 9000, NAC6, 0.75 INCH	42
396	ELBOW.90, B-16.11, ASTM A 105 (NORMALISED), SW, 9000, NAC6, 1.0 INCH	10
397	ELBOW.90, B-16.11, ASTM A 182 GR.F11 CL.2, SW, 3000, IBR, 1.5 INCH	3
398	ELBOW.90, B-16.11, ASTM A 182 GR.F304L, SW, 3000, 1.5 INCH	2
399	ELBOW.90, B-16.9, ASTM A 234 GR.WP11 CL.1, BW, 1.5D, IBR, 2.0 INCH, XS	6
400	ELBOW.90, B-16.9, ASTM A 234 GR.WP11 CL.1, BW, 1.5D, IBR, 10.0 INCH, XS	3
401	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, 2.0 INCH, S160	17
402	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, 2.0 INCH, XS	41
403	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, 3.0 INCH, STD	44
404	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, 4.0 INCH, STD	45
405	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, 6.0 INCH, STD	62
406	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, 8.0 INCH, STD	18
407	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, 10.0 INCH, STD	4
408	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, 14.0 INCH, STD	8
409	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 2.0 INCH, S160	17
410	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 2.0 INCH, XS	188
411	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 3.0 INCH, S160	22
412	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 3.0 INCH, STD	57
413	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 3.0 INCH, XS	71
414	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 4.0 INCH, S120	62
415	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 4.0 INCH, STD	38
416	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 4.0 INCH, XS	2
417	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 6.0 INCH, S120	58
418	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 6.0 INCH, STD	31
419	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 6.0 INCH, XS	8
420	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 8.0 INCH, S100	9
421	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 8.0 INCH, STD	32
422	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 8.0 INCH, XS	11
423	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 10.0 INCH, STD	48
424	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 10.0 INCH, XS	17
425	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 12.0 INCH, STD	11

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
426	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 12.0 INCH, XS	9
427	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, NACE, 3.0 INCH, STD	59
428	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, NACE, 4.0 INCH, STD	10
429	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, NAC6, 2.0 INCH, S160	20
430	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, NAC6, 2.0 INCH, XS	2
431	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, NAC6, 3.0 INCH, S160	65
432	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, NAC6, 3.0 INCH, STD	5
433	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, NAC6, 4.0 INCH, STD	18
434	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, NAC6, 6.0 INCH, STD	18
435	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, NAC6, 6.0 INCH, XS	10
436	ELBOW.90, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, NAC6, 10.0 INCH, STD	20
437	ELBOW.90, B-16.9, ASTM A 234 GR.WPB(GALV), BW, 1.5D, 2.0 INCH, XS	32
438	ELBOW.90, B-16.9, ASTM A 234 GR.WPB(GALV), BW, 1.5D, 3.0 INCH, STD	8
439	ELBOW.90, B-16.9, ASTM A 234 GR.WPB(GALV), BW, 1.5D, 4.0 INCH, STD	6
440	ELBOW.90, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, 30.0 INCH, XS	14
441	ELBOW.90, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, 36.0 INCH, XS	38
442	ELBOW.90, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, 44.0 INCH, XS	4
443	ELBOW.90, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, 48.0 INCH, XS	4
444	ELBOW.90, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, IBR, 16.0 INCH, STD	12
445	ELBOW.90, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, IBR, 18.0 INCH, 16.0 MM THK	1
446	ELBOW.90, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, IBR, 18.0 INCH, STD	9
447	ELBOW.90, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, IBR, 20.0 INCH, STD	2
448	ELBOW.90, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, IBR, 24.0 INCH, STD	6
449	ELBOW.90, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, NACE, 48.0 INCH, XS	18
450	ELBOW.90, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, NAC6, 16.0 INCH, STD	18
451	ELBOW.90, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, NAC6, 20.0 INCH, STD	15
452	ELBOW.90, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, NAC6, 24.0 INCH, XS	4
453	ELBOW.90, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, NAC6, 24.0 INCH, STD	5
454	ELBOW.90, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, NAC6, 28.0 INCH, XS	8
455	ELBOW.90, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, NAC6, 36.0 INCH, XS	2
456	ELBOW.90, B-16.9, ASTM A 403 GR.WP316L-WX, BW, 1.5D, 10.0 INCH, 6.35 MM THK	11
457	ELBOW.90, B-16.9, A 234 GR WPB(INT:EPOXY CTD), BW, 1.5D, 4.0 INCH, STD	24
458	ELBOW.90, B-16.9, A 234 GR WPB(INT:EPOXY CTD), BW, 1.5D, 6.0 INCH, STD	8
459	ELBOW.90, B-16.9, A 234 GR WPB(INT:EPOXY CTD), BW, 1.5D, 10.0 INCH, STD	6
460	ELBOW.90, B-16.11, ASTM A 105 N (GALV.), SCRF, 2000, 1.0 INCH	99
461	ELBOW.90, B-16.11, ASTM A 105 N (GALV.), SCRF, 2000, 1.5 INCH	52
462	ELBOW.45, B-16.11, ASTM A 105 (NORMALISED), SW, 6000, 0.75 INCH	3

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
463	ELBOW.45, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, 1.0 INCH	27
464	ELBOW.45, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, IBR, 1.0 INCH	27
465	ELBOW.45, B-16.11, ASTM A 105 (NORMALISED), SW, 6000, NAC6, 0.75 INCH	1
466	ELBOW.45, B-16.11, ASTM A 182 GR.F304L, SW, 3000, 1.5 INCH	1
467	ELBOW.45, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, 2.0 INCH, S160	1
468	ELBOW.45, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, 2.0 INCH, XS	1
469	ELBOW.45, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, 3.0 INCH, STD	3
470	ELBOW.45, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, 6.0 INCH, STD	1
471	ELBOW.45, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, 8.0 INCH, STD	1
472	ELBOW.45, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, 10.0 INCH, STD	2
473	ELBOW.45, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, 14.0 INCH, STD	1
474	ELBOW.45, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 2.0 INCH, XS	4
475	ELBOW.45, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 3.0 INCH, S160	2
476	ELBOW.45, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 3.0 INCH, XS	2
477	ELBOW.45, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 3.0 INCH, STD	2
478	ELBOW.45, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 4.0 INCH, S120	1
479	ELBOW.45, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, IBR, 10.0 INCH, STD	5
480	ELBOW.45, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, NAC6, 2.0 INCH, S160	1
481	ELBOW.45, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, NAC6, 3.0 INCH, S160	3
482	ELBOW.45, B-16.9, ASTM A 234 GR.WPB, BW, 1.5D, NAC6, 10.0 INCH, STD	1
483	ELBOW.45, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, 30.0 INCH, XS	2
484	ELBOW.45, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, 36.0 INCH, XS	2
485	ELBOW.45, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, IBR, 18.0 INCH, STD	1
486	ELBOW.45, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, IBR, 20.0 INCH, STD	3
487	ELBOW.45, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, NACE, 48.0 INCH, XS	1
488	ELBOW.45, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, NAC6, 16.0 INCH, STD	1
489	ELBOW.45, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, NAC6, 20.0 INCH, STD	1
490	ELBOW.45, B-16.9, ASTM A 234 GR.WPB-W, BW, 1.5D, NAC6, 24.0 INCH, STD	2
491	ELBOW.45, B-16.11, ASTM A 105 N (GALV.), SCRF, 2000, 1.0 INCH	27
492	T.EQUAL, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, 0.5 INCH	150
493	T.EQUAL, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, 0.75 INCH	60
494	T.EQUAL, B-16.11, ASTM A 105 (NORMALISED), SW, 6000, 0.75 INCH	20
495	T.EQUAL, B-16.11, ASTM A 105 (NORMALISED), SW, 9000, 0.75 INCH	1
496	T.EQUAL, B-16.11, ASTM A 105 (NORMALISED), SW, 6000, IBR, 0.75 INCH	19
497	T.EQUAL, B-16.11, ASTM A 105 (NORMALISED), SW, 6000, NAC6, 0.75 INCH	2
498	T.EQUAL, B-16.11, ASTM A 105 (NORMALISED), SW, 9000, NAC6, 0.75 INCH	6
499	T.EQUAL, B-16.9, ASTM A 234 GR.WP11 CL.1, BW, IBR, 2.0 INCH, XS	1

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
500	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, 2.0 INCH, XS	1
501	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, 3.0 INCH, STD	4
502	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, 4.0 INCH, STD	2
503	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, 6.0 INCH, STD	6
504	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 2.0 INCH, S160	7
505	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 2.0 INCH, XS	17
506	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 3.0 INCH, STD	2
507	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 3.0 INCH, XS	12
508	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 4.0 INCH, S120	5
509	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 4.0 INCH, STD	5
510	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 6.0 INCH, XS	1
511	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 6.0 INCH, S120	6
512	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 6.0 INCH, STD	3
513	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 8.0 INCH, S100	1
514	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 8.0 INCH, STD	1
515	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 8.0 INCH, XS	1
516	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 10.0 INCH, STD	3
517	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 10.0 INCH, XS	2
518	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 12.0 INCH, STD	2
519	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, NACE, 3.0 INCH, STD	3
520	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 2.0 INCH, S160	11
521	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 3.0 INCH, S160	13
522	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 4.0 INCH, STD	1
523	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 6.0 INCH, STD	1
524	T.EQUAL, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 6.0 INCH, XS	3
525	T.EQUAL, B-16.9, ASTM A 234 GR.WPB(GALV), BW, 2.0 INCH, XS	1
526	T.EQUAL, B-16.9, ASTM A 234 GR.WPB(GALV), BW, 3.0 INCH, STD	2
527	T.EQUAL, B-16.9, ASTM A 234 GR.WPB(GALV), BW, 4.0 INCH, STD	1
528	T.EQUAL, B-16.9, ASTM A 234 GR.WPB-W, BW, 36.0 INCH, XS	6
529	T.EQUAL, B-16.9, ASTM A 234 GR.WPB-W, BW, IBR, 18.0 INCH, STD	1
530	T.EQUAL, B-16.9, ASTM A 234 GR.WPB-W, BW, IBR, 18.0 INCH, 16.0 MM THK	1
531	T.EQUAL, B-16.9, ASTM A 234 GR.WPB-W, BW, NACE, 48.0 INCH, XS	1
532	T.EQUAL, B-16.9, ASTM A 234 GR.WPB-W, BW, NAC6, 16.0 INCH, STD	1
533	T.EQUAL, B-16.9, ASTM A 234 GR.WPB-W, BW, NAC6, 24.0 INCH, XS	1
534	T.RED, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, 1.0 INCH, 0.75 INCH	6
535	T.RED, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, 1.5 INCH, 1.0 INCH	10
536	T.RED, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, IBR, 1.5 INCH, 0.75 INCH	1

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
537	T.RED, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, IBR, 1.5 INCH, 1.0 INCH	11
538	T.RED, B-16.11, ASTM A 105 (NORMALISED), SW, 9000, NAC6, 0.75 INCH, 0.5 INCH	4
539	T.RED, B-16.9, ASTM A 234 GR.WP11 CL.1, BW, IBR, 10.0 INCH, XS, 8.0 INCH, XS	1
540	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, 3.0 INCH, STD, 2.0 INCH, XS	4
541	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, 4.0 INCH, STD, 3.0 INCH, STD	2
542	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, 4.0 INCH, STD, 2.0 INCH, XS	3
543	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, 6.0 INCH, STD, 3.0 INCH, STD	5
544	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, 6.0 INCH, STD, 4.0 INCH, STD	4
545	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, 8.0 INCH, STD, 6.0 INCH, STD	2
546	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 3.0 INCH, XS, 2.0 INCH, XS	2
547	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 3.0 INCH, STD, 2.0 INCH, XS	4
548	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 3.0 INCH, S160, 2.0 INCH, S160	1
549	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 4.0 INCH, S120, 3.0 INCH, S160	1
550	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 4.0 INCH, STD, 3.0 INCH, STD	1
551	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 4.0 INCH, STD, 2.0 INCH, XS	1
552	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 4.0 INCH, S120, 2.0 INCH, S160	3
553	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 6.0 INCH, XS, 3.0 INCH, XS	1
554	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 6.0 INCH, STD, 4.0 INCH, STD	1
555	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 6.0 INCH, S120, 3.0 INCH, S160	4
556	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 6.0 INCH, S120, 4.0 INCH, S120	3
557	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 10.0 INCH, XS, 6.0 INCH, S120	1
558	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 10.0 INCH, XS, 8.0 INCH, XS	1
559	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 12.0 INCH, XS, 8.0 INCH, XS	1
560	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, NACE, 3.0 INCH, STD, 2.0 INCH, XS	2
561	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 3.0 INCH, S160, 2.0 INCH, S160	16
562	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 3.0 INCH, STD, 2.0 INCH, XS	4
563	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 6.0 INCH, XS, 3.0 INCH, S160	1
564	T.RED, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 8.0 INCH, XS, 6.0 INCH, XS	1
565	T.RED, B-16.9, ASTM A 234 GR.WPB(GALV), BW, 3.0 INCH, STD, 2.0 INCH, XS	4
566	T.RED, B-16.9, ASTM A 234 GR.WPB(GALV), BW, 4.0 INCH, STD, 2.0 INCH, XS	1
567	T.RED, B-16.9, ASTM A 234 GR.WPB-W, BW, IBR, 18.0 INCH, STD, 16.0 INCH, STD	2
568	T.RED, B-16.9, ASTM A 234 GR.WPB-W, BW, IBR, 24.0 INCH, STD, 18.0 INCH, STD	2
569	T.RED, B-16.11, ASTM A 105 N (GALV.), SCRF, 2000, 1.5 INCH, 1.0 INCH	10
570	T.RED, B-16.11, ASTM A 105 N (GALV.), SCRF, 2000, 1.5 INCH, 0.75 INCH	4
571	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 3.0 INCH, STD, 1.5 INCH, XS	2
572	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 3.0 INCH, STD, 2.0 INCH, XS	1
573	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 4.0 INCH, STD, 2.0 INCH, XS	3

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
574	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 4.0 INCH, STD, 3.0 INCH, STD	7
575	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 6.0 INCH, STD, 4.0 INCH, STD	3
576	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 6.0 INCH, STD, 3.0 INCH, STD	1
577	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 8.0 INCH, STD, 4.0 INCH, STD	2
578	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 8.0 INCH, STD, 6.0 INCH, STD	2
579	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 10.0 INCH, STD, 8.0 INCH, STD	1
580	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 10.0 INCH, STD, 6.0 INCH, STD	1
581	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 3.0 INCH, XS, 2.0 INCH, XS	2
582	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 4.0 INCH, STD, 3.0 INCH, STD	1
583	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 4.0 INCH, XS, 3.0 INCH, XS	2
584	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 4.0 INCH, STD, 2.0 INCH, XS	1
585	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 8.0 INCH, STD, 4.0 INCH, STD	4
586	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 10.0 INCH, STD, 8.0 INCH, STD	3
587	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 10.0 INCH, STD, 4.0 INCH, STD	2
588	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 12.0 INCH, STD, 10.0 INCH, STD	1
589	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 3.0 INCH, STD, 2.0 INCH, XS	3
590	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 6.0 INCH, STD, 3.0 INCH, STD	2
591	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 10.0 INCH, XS, 6.0 INCH, XS	1
592	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB(GALV), BW, 3.0 INCH, STD, 2.0 INCH, XS	1
593	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB(GALV), BW, 4.0 INCH, STD, 2.0 INCH, XS	2
594	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB(GALV), BW, 4.0 INCH, STD, 3.0 INCH, STD	3
595	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB-W, BW, IBR, 16.0 INCH, STD, 8.0 INCH, STD	2
596	REDUC.CONC, B-16.9, A 234 GR WPB(INT:EPOXY CTD), BW, 6.0 INCH, STD, 4.0 INCH, STD	4
597	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, 3.0 INCH, STD, 2.0 INCH, XS	1
598	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, 4.0 INCH, STD, 2.0 INCH, XS	1
599	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, 4.0 INCH, STD, 3.0 INCH, STD	2
600	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, 6.0 INCH, STD, 4.0 INCH, STD	2
601	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 3.0 INCH, S160, 2.0 INCH, S160	1
602	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 3.0 INCH, STD, 2.0 INCH, XS	7
603	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 4.0 INCH, S120, 2.0 INCH, S160	5
604	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 4.0 INCH, XS, 3.0 INCH, XS	2
605	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 4.0 INCH, STD, 3.0 INCH, STD	4
606	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 4.0 INCH, S120, 3.0 INCH, S160	9
607	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 4.0 INCH, STD, 2.0 INCH, XS	1
608	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 6.0 INCH, S120, 4.0 INCH, S120	3
609	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 6.0 INCH, S120, 3.0 INCH, S160	4
610	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 6.0 INCH, STD, 4.0 INCH, STD	2

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
611	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 8.0 INCH, S100, 4.0 INCH, S120	4
612	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 8.0 INCH, STD, 4.0 INCH, STD	2
613	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 8.0 INCH, STD, 6.0 INCH, STD	2
614	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 10.0 INCH, STD, 4.0 INCH, STD	2
615	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 10.0 INCH, STD, 6.0 INCH, STD	4
616	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 10.0 INCH, XS, 8.0 INCH, S100	1
617	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 12.0 INCH, STD, 10.0 INCH, STD	4
618	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, NACE, 4.0 INCH, STD, 3.0 INCH, STD	1
619	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 3.0 INCH, S160, 2.0 INCH, S160	4
620	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 6.0 INCH, XS, 4.0 INCH, XS	2
621	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 8.0 INCH, XS, 6.0 INCH, XS	2
622	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB-W, BW, 24.0 INCH, STD, 18.0 INCH, STD	2
623	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB-W, BW, 30.0 INCH, XS, 24.0 INCH, STD	2
624	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB-W, BW, IBR, 16.0 INCH, STD, 8.0 INCH, STD	2
625	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB-W, BW, IBR, 20.0 INCH, STD, 12.0 INCH, STD	4
626	REDUC.ECC, B-16.9, ASTM A 234 GR.WPB-W, BW, NAC6, 24.0 INCH, STD, 20.0 INCH, STD	1
627	SWAGE.CONC, MSS-SP95, ASTM A 105 (NORMALISED), PBE, 0.75 INCH, S160, 0.5 INCH, S160	50
628	SWAGE.CONC, MSS-SP95, ASTM A 105 (NORMALISED), PBE, IBR, 1.5 INCH, XS, 0.75 INCH, S160	2
629	SWAGE.CONC, MSS-SP95, ASTM A 105 (NORMALISED), PBE, IBR, 2.0 INCH, XS, 1.5 INCH, XS	3
630	SWAGE.CONC, MSS-SP95, ASTM A 105 (NORMALISED), PBE, NAC6, 2.0 INCH, XS, 0.75 INCH, S160	2
631	SWAGE.CONC, BS-3799, ASTM A 105 N (GALV.), TBE, 1.5 INCH, XS, 0.75 INCH, S160	1
632	SWAGE.ECC, MSS-SP95, ASTM A 105 (NORMALISED), PBE, 2.0 INCH, XS, 1.0 INCH, XS	2
633	SWAGE.ECC, MSS-SP95, ASTM A 105 (NORMALISED), PBE, IBR, 2.0 INCH, XS, 1.5 INCH, XS	2
634	SWAGE.ECC, MSS-SP95, ASTM A 105 (NORMALISED), PBE, IBR, 2.0 INCH, XS, 0.75 INCH, S160	1
635	SWAGE.ECC, MSS-SP95, ASTM A 105 (NORMALISED), PBE, IBR, 3.0 INCH, STD, 1.5 INCH, XS	1
636	SWAGE.ECC, MSS-SP95, ASTM A 105 (NORMALISED), PBE, NAC6, 3.0 INCH, S160, 1.5 INCH, XXS	4
637	CAP, B-16.11, ASTM A 105 (NORMALISED), SCRF, 3000, 0.75 INCH	4
638	CAP, B-16.11, ASTM A 105 (NORMALISED), SCRF, 3000, 1.0 INCH	123
639	CAP, B-16.11, ASTM A 105 (NORMALISED), SCRF, 3000, 2.0 INCH, 1.0 INCH	235
640	CAP, B-16.11, ASTM A 105 (NORMALISED), SCRF, 3000, IBR, 0.5 INCH	90
641	CAP, B-16.11, ASTM A 105 (NORMALISED), SCRF, 3000, IBR, 0.75 INCH	100
642	CAP, B-16.11, ASTM A 105 (NORMALISED), SCRF, 3000, IBR, 1.5 INCH	25
643	CAP, B-16.9, ASTM A 234 GR.WPB, BW, 4.0 INCH, STD	1
644	CAP, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 3.0 INCH, STD	1
645	CAP, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 3.0 INCH, XS	4
646	CAP, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 4.0 INCH, STD	1
647	CAP, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 6.0 INCH, S120	2

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
648	CAP, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 6.0 INCH, XS	1
649	CAP, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 6.0 INCH, STD	1
650	CAP, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 8.0 INCH, XS	1
651	CAP, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 10.0 INCH, XS	1
652	CAP, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 12.0 INCH, XS	3
653	CAP, B-16.9, ASTM A 234 GR.WPB, BW, IBR, 18.0 INCH, 16.0 MM THK	3
654	CAP, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 6.0 INCH, XS	1
655	CAP, B-16.9, ASTM A 234 GR.WPB, BW, NAC6, 10.0 INCH, XS	1
656	CAP, B-16.9, ASTM A 234 GR.WPB-W, BW, NAC6, 24.0 INCH, XS	1
657	PLUG, B-16.11, ASTM A 105 (NORMALISED), SCRM, 0.5 INCH	125
658	PLUG, B-16.11, ASTM A 105 (NORMALISED), SCRM, 0.75 INCH	60
659	CPLNG.FULL, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, 0.5 INCH	1000
660	CPLNG.FULL, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, 0.75 INCH	200
661	CPLNG.FULL, B-16.11, ASTM A 105 (NORMALISED), SW, 6000, 0.75 INCH	10
662	CPLNG.FULL, B-16.11, ASTM A 105 (NORMALISED), SW, 6000, IBR, 0.75 INCH	28
663	CPLNG.FULL, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, IBR, 1.5 INCH	6
664	CPLNG.FULL, B-16.11, ASTM A 105 (NORMALISED), SW, 6000, NAC6, 0.75 INCH	5
665	CPLNG.FULL, B-16.11, ASTM A 182 GR.F304L, SW, 3000, 1.5 INCH	2
666	CPLNG.FULL, B-16.11, ASTM A 105 N (GALV.), SCRF, 2000, 1.0 INCH	19
667	CROSS, B-16.9, ASTM A 234 GR.WPB, BW, 2.0 INCH, XS	4
668	CROSS, B-16.9, ASTM A 234 GR.WPB, BW, 3.0 INCH, STD	7
669	CROSS, B-16.9, ASTM A 234 GR.WPB, BW, 4.0 INCH, STD	25
670	CROSS, B-16.9, ASTM A 234 GR.WPB, BW, 6.0 INCH, STD	39
671	CROSS, B-16.9, ASTM A 234 GR.WPB, BW, 8.0 INCH, STD	45
672	CROSS, B-16.9, ASTM A 234 GR.WPB, BW, 10.0 INCH, STD	16
673	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 2.0 INCH, 1.0 INCH	12
674	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, 2.0 INCH, 0.75 INCH	3
675	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 3.0 INCH, 1.0 INCH	1
676	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 3.0 INCH, 0.75 INCH	16
677	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, 3.0 INCH, 0.75 INCH	6
678	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, 4.0 INCH, 0.75 INCH	37
679	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 4.0 INCH, 1.5 INCH	4
680	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 4.0 INCH, 0.75 INCH	27
681	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 4.0 INCH, 1.0 INCH	2
682	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 6.0 INCH, 0.75 INCH	107
683	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 6.0 INCH, 1.0 INCH	7
684	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 6.0 INCH, 1.5 INCH	5

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
685	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, 6.0 INCH, 0.75 INCH	14
686	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, 8.0 INCH, 0.75 INCH	1
687	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 8.0 INCH, 0.75 INCH	80
688	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 8.0 INCH, 1.5 INCH	3
689	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 10.0 INCH, 0.75 INCH	139
690	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 12.0 INCH, 0.75 INCH	40
691	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, 14.0 INCH, 0.75 INCH	1
692	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 30.0 INCH, 1.5 INCH	1
693	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, 30.0 INCH, 0.75 INCH	19
694	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 36.0 INCH, 1.0 INCH	4
695	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, 36.0 INCH, 0.75 INCH	9
696	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 36.0 INCH, 1.5 INCH	14
697	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, IBR, 2.0 INCH, 1.5 INCH	3
698	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, IBR, 2.0 INCH, 0.75 INCH	13
699	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, IBR, 3.0 INCH, 1.0 INCH	2
700	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, IBR, 3.0 INCH, 0.75 INCH	5
701	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, IBR, 4.0 INCH, 0.75 INCH	9
702	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, IBR, 4.0 INCH, 1.5 INCH	2
703	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, IBR, 4.0 INCH, 1.5 INCH	2
704	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, IBR, 6.0 INCH, 1.0 INCH	2
705	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, IBR, 6.0 INCH, 0.75 INCH	11
706	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, IBR, 6.0 INCH, 1.0 INCH	3
707	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, IBR, 6.0 INCH, 1.5 INCH	6
708	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, IBR, 6.0 INCH, 1.5 INCH	3
709	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, IBR, 8.0 INCH, 1.0 INCH	4
710	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, IBR, 8.0 INCH, 1.5 INCH	27
711	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, IBR, 8.0 INCH, 0.75 INCH	14
712	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, IBR, 10.0 INCH, 1.5 INCH	1
713	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, IBR, 10.0 INCH, 1.0 INCH	5
714	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, IBR, 10.0 INCH, 0.75 INCH	3
715	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, IBR, 12.0 INCH, 0.75 INCH	17
716	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, IBR, 12.0 INCH, 1.5 INCH	4
717	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, IBR, 16.0 INCH, 0.75 INCH	11
718	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, IBR, 18.0 INCH, 1.0 INCH	3
719	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, IBR, 18.0 INCH, 1.5 INCH	38
720	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, IBR, 18.0 INCH, 0.75 INCH	2
721	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 6000, IBR, 20.0 INCH, 0.75 INCH	2

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
722	SOCKOLET, MSS-SP97, ASTM A 182 GR.F11 CL.2, SW, 3000, IBR, 2.0 INCH, 1.5 INCH	1
723	SOCKOLET, MSS-SP97, ASTM A 182 GR.F11 CL.2, SW, 3000, IBR, 10.0 INCH, 1.5 INCH	5
724	SOCKOLET, MSS-SP97, ASTM A 105 N (GALV.), SW, 3000, 4.0 INCH, 1.5 INCH	15
725	SOCKOLET, MSS-SP97, ASTM A182 GR.F316/316L DUAL, SW, 3000, 10.0 INCH, 0.75 INCH	8
726	SOCKOLET, MSS-SP97, ASTM A182 GR.F316/316L DUAL, SW, 3000, 10.0 INCH, 1.5 INCH	1
727	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, 36.0 INCH, XS, 0.75 INCH, XXS	1
728	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, 36.0 INCH, XS, 1.5 INCH, XXS	2
729	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NACE, 3.0 INCH, STD, 0.75 INCH, S160	4
730	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NACE, 48.0 INCH, XS, 0.75 INCH, S160	2
731	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 2.0 INCH, S160, 0.75 INCH, XXS	2
732	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 2.0 INCH, S160, 1.0 INCH, XXS	3
733	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 2.0 INCH, XS, 0.75 INCH, S160	2
734	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 3.0 INCH, S160, 0.75 INCH, XXS	18
735	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 3.0 INCH, STD, 0.75 INCH, S160	1
736	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 4.0 INCH, STD, 0.75 INCH, S160	5
737	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 6.0 INCH, STD, 0.75 INCH, S160	11
738	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 6.0 INCH, STD, 1.5 INCH, XS	3
739	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 6.0 INCH, XS, 0.75 INCH, XXS	2
740	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 6.0 INCH, XS, 1.0 INCH, XXS	1
741	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 10.0 INCH, STD, 0.75 INCH, S160	9
742	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 10.0 INCH, STD, 1.5 INCH, XS	1
743	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 16.0 INCH, STD, 0.75 INCH, S160	2
744	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 20.0 INCH, STD, 0.75 INCH, S160	8
745	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 24.0 INCH, STD, 0.75 INCH, S160	2
746	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 28.0 INCH, XS, 0.75 INCH, S160	4
747	WELDOLET, MSS-SP97, ASTM A 105 (NORMALISED), BW, NAC6, 28.0 INCH, XS, 1.5 INCH, XS	2
748	THREADOLET, MSS-SP97, ASTM A 105 N (GALV.), SCRF, 3000, 2.0 INCH, 0.75 INCH	1
749	THREADOLET, MSS-SP97, ASTM A 105 N (GALV.), SCRF, 3000, 2.0 INCH, 1.0 INCH	7
750	THREADOLET, MSS-SP97, ASTM A 105 N (GALV.), SCRF, 3000, 3.0 INCH, 0.75 INCH	4
751	THREADOLET, MSS-SP97, ASTM A 105 N (GALV.), SCRF, 3000, 3.0 INCH, 1.0 INCH	5
752	THREADOLET, MSS-SP97, ASTM A 105 N (GALV.), SCRF, 3000, 3.0 INCH, 1.5 INCH	2
753	THREADOLET, MSS-SP97, ASTM A 105 N (GALV.), SCRF, 3000, 4.0 INCH, 0.75 INCH	1
754	THREADOLET, MSS-SP97, ASTM A 105 N (GALV.), SCRF, 3000, 4.0 INCH, 1.5 INCH	6
755	VLV.GATE, SHEET 510AA, 0.5 INCH	10
756	VLV.GATE, SHEET 510AA, 0.75 INCH	51
757	VLV.GATE, SHEET 510AA, 1.0 INCH	1
758	VLV.GATE, SHEET 513AA, 2.0 INCH	7

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
759	VLV.GATE, SHEET 513AA, 3.0 INCH, LOCK OPEN	2
760	VLV.GATE, SHEET 513AA, 3.0 INCH	9
761	VLV.GATE, SHEET 513AA, 6.0 INCH	4
762	VLV.GATE, SHEET 513AA, 10.0 INCH	2
763	VLV.GATE, SHEET 510AB, IBR, 0.5 INCH	8
764	VLV.GATE, SHEET 510AB, IBR, 0.75 INCH	124
765	VLV.GATE, SHEET 510AB, IBR, 1.5 INCH	76
766	VLV.GATE, SHEET 514AB, IBR, 2.0 INCH	21
767	VLV.GATE, SHEET 515AB, IBR, 2.0 INCH	46
768	VLV.GATE, SHEET 513AB, IBR, 2.0 INCH	37
769	VLV.GATE, SHEET 513AB, IBR, 2.0 INCH, LOCK OPEN	2
770	VLV.GATE, SHEET 515AB, IBR, 3.0 INCH	14
771	VLV.GATE, SHEET 514AB, IBR, 3.0 INCH	2
772	VLV.GATE, SHEET 513AB, IBR, 3.0 INCH	5
773	VLV.GATE, SHEET 513AB, IBR, 3.0 INCH, LOCK OPEN	1
774	VLV.GATE, SHEET 513AB, IBR, 4.0 INCH	12
775	VLV.GATE, SHEET 513AB, IBR, 4.0 INCH, LOCK OPEN	1
776	VLV.GATE, SHEET 515AB, IBR, 6.0 INCH	5
777	VLV.GATE, SHEET 513AB, IBR, 6.0 INCH	7
778	VLV.GATE, SHEET 515AB, IBR, 8.0 INCH	3
779	VLV.GATE, SHEET 513AB, IBR, 8.0 INCH	6
780	VLV.GATE, SHEET 513AB, IBR, 10.0 INCH, LOCK CLOSED	1
781	VLV.GATE, SHEET 513AB, IBR, 10.0 INCH, LOCK OPEN	5
782	VLV.GATE, SHEET 515AB, IBR, 10.0 INCH	4
783	VLV.GATE, SHEET 513AB, IBR, 12.0 INCH	1
784	VLV.GATE, SHEET 513AB, IBR, 12.0 INCH, LOCK OPEN	1
785	VLV.GATE, SHEET 515AB, IBR, 12.0 INCH	2
786	VLV.GATE, SHEET 513AB, IBR, 16.0 INCH, LOCK OPEN	2
787	VLV.GATE, SHEET 513AB, IBR, 18.0 INCH, LOCK OPEN	2
788	VLV.GATE, SHEET 513AE, 1.5 INCH	13
789	VLV.GATE, SHEET 510AF, IBR, 0.5 INCH	8
790	VLV.GATE, SHEET 510AF, IBR, 1.5 INCH	1
791	VLV.GATE, SHEET 515AF, IBR, 2.0 INCH	1
792	VLV.GATE, SHEET 515AF, IBR, 10.0 INCH	1
793	VLV.GATE, SHEET 510AM, 0.75 INCH	6
794	VLV.GATE, SHEET 513AM, 2.0 INCH	1
795	VLV.GATE, SHEET 513AM, 10.0 INCH	3

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
796	VLV.GATE, SHEET 510BB, IBR, 0.75 INCH	1
797	VLV.GATE, SHEET 510BB, IBR, 1.0 INCH	1
798	VLV.GATE, SHEET 513BE, 2.0 INCH	6
799	VLV.GATE, SHEET 510CB, IBR, 0.5 INCH	6
800	VLV.GATE, SHEET 510CB, IBR, 0.75 INCH	16
801	VLV.GATE, SHEET 510CB, IBR, 1.0 INCH	3
802	VLV.GATE, SHEET 510CB, IBR, 1.5 INCH	2
803	VLV.GATE, SHEET 513CE, 4.0 INCH	10
804	VLV.GATE, SHEET 513CE, 10.0 INCH	2
805	VLV.GATE, SHEET 510DA, 0.75 INCH	10
806	VLV.GATE, SHEET 510DA, 1.0 INCH	22
807	VLV.GATE, SHEET 513DA, 2.0 INCH	2
808	VLV.GATE, SHEET 513DA, 3.0 INCH	3
809	VLV.GATE, SHEET 513DA, 4.0 INCH	2
810	VLV.GATE, SHEET 510DB, IBR, 0.5 INCH	4
811	VLV.GATE, SHEET 510DB, IBR, 0.75 INCH	20
812	VLV.GATE, SHEET 510DB, IBR, 1.0 INCH	3
813	VLV.GATE, SHEET 510DB, IBR, 1.5 INCH	4
814	VLV.GATE, SHEET 515DB, IBR, 2.0 INCH	5
815	VLV.GATE, SHEET 515DB, IBR, 3.0 INCH	3
816	VLV.GATE, SHEET 515DB, IBR, 4.0 INCH	15
817	VLV.GATE, SHEET 515DB, IBR, 4.0 INCH, LOCK OPEN	1
818	VLV.GATE, SHEET 515DB, IBR, 6.0 INCH	14
819	VLV.GATE, SHEET 515DB, IBR, 8.0 INCH	3
820	VLV.GATE, SHEET 515DB, IBR, 10.0 INCH	1
821	VLV.GATE, SHEET 510FA, 0.5 INCH	4
822	VLV.GATE, SHEET 510FA, 0.75 INCH	38
823	VLV.GATE, SHEET 510FA, 1.0 INCH	5
824	VLV.GATE, SHEET 510FA, 1.5 INCH	2
825	VLV.GATE, SHEET 513FA, 2.0 INCH	3
826	VLV.GATE, SHEET 513FA, 3.0 INCH, LOCK OPEN	4
827	VLV.GATE, SHEET 513FA, 3.0 INCH	4
828	VLV.GATE, SHEET 513FA, 4.0 INCH	3
829	VLV.GATE, SHEET 513FA, 6.0 INCH, LOCK OPEN	4
830	VLV.GATE, SHEET 513FA, 6.0 INCH	1
831	VLV.GATE, SHEET 510FE, 0.75 INCH	5
832	VLV.GATE, SHEET 510FE, 1.0 INCH	21

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
833	VLV.GATE, SHEET 510FE, 1.5 INCH	8
834	VLV.GATE, SHEET 513FE, 2.0 INCH	6
835	VLV.GATE, SHEET 513FE, 3.0 INCH	5
836	VLV.GATE, SHEET 513FE, 3.0 INCH, LOCK OPEN	2
837	VLV.GATE, SHEET 513FE, 4.0 INCH, LOCK OPEN	2
838	VLV.GATE, SHEET 513FE, 4.0 INCH	1
839	VLV.GATE, SHEET 513HC, NACE, 2.0 INCH	3
840	VLV.GATE, SHEET 513HC, NACE, 3.0 INCH	8
841	VLV.GATE, SHEET 513HC, NACE, 4.0 INCH	1
842	VLV.GATE, SHEET 513HC, NACE, 6.0 INCH, LOCK OPEN	1
843	VLV.GATE, SHEET 510KA, 0.5 INCH	2
844	VLV.GATE, SHEET 510KA, 0.75 INCH	10
845	VLV.GATE, SHEET 513KA, 2.0 INCH	3
846	VLV.GATE, SHEET 513KA, 3.0 INCH	7
847	VLV.GATE, SHEET 513KA, 6.0 INCH	2
848	VLV.GATE, SHEET 513NA, 2.0 INCH	2
849	VLV.GATE, SHEET 513NA, 3.0 INCH	1
850	VLV.GATE, SHEET 515PA, 2.0 INCH	2
851	VLV.GATE, SHEET 510QA, 0.5 INCH	125
852	VLV.GATE, SHEET 510QA, 0.75 INCH	60
853	VLV.GATE, SHEET 510RA, 0.5 INCH	125
854	VLV.GATE, SHEET 510TC, NAC6, 0.5 INCH	2
855	VLV.GATE, SHEET 510TC, NAC6, 0.75 INCH	44
856	VLV.GATE, SHEET 513TC, NAC6, 2.0 INCH	8
857	VLV.GATE, SHEET 513TC, NAC6, 3.0 INCH, LOCK OPEN	1
858	VLV.GATE, SHEET 513TC, NAC6, 4.0 INCH	2
859	VLV.GATE, SHEET 513TC, NAC6, 6.0 INCH, LOCK OPEN	2
860	VLV.GATE, SHEET 513TC, NAC6, 6.0 INCH, LOCK OPEN	1
861	VLV.GATE, SHEET 513TC, NAC6, 6.0 INCH	1
862	VLV.GATE, SHEET 513TC, NAC6, 10.0 INCH	3
863	VLV.GATE, SHEET 513TC, NAC6, 20.0 INCH	4
864	VLV.GATE, SHEET 510VC, NAC6, 0.5 INCH	4
865	VLV.GATE, SHEET 510VC, NAC6, 0.75 INCH	56
866	VLV.GATE, SHEET 510VC, NAC6, 1.0 INCH	4
867	VLV.GATE, SHEET 513VC, NAC6, 2.0 INCH, LOCK CLOSED	3
868	VLV.GATE, SHEET 513VC, NAC6, 2.0 INCH	11
869	VLV.GATE, SHEET 514VC, NAC6, 2.0 INCH	30

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
870	VLV.GATE, SHEET 514VC, NAC6, 3.0 INCH	34
871	VLV.GATE, SHEET 513VC, NAC6, 3.0 INCH, LOCK OPEN	2
872	VLV.GATE, SHEET 513VC, NAC6, 3.0 INCH, LOCK OPEN	1
873	VLV.GATE, SHEET 513VC, NAC6, 4.0 INCH	4
874	VLV.GATE, SHEET 513VC, NAC6, 6.0 INCH, LOCK OPEN	2
875	VLV.GATE, SHEET 513VC, NAC6, 6.0 INCH, LOCK OPEN	1
876	VLV.GATE, SHEET 513VC, NAC6, 24.0 INCH	1
877	VLV.GATE, SHEET 513VC, NAC6, 24.0 INCH, LOCK OPEN	1
878	VLV.GLOBE, SHEET 523AA, 3.0 INCH	1
879	VLV.GLOBE, SHEET 523AA, 4.0 INCH	1
880	VLV.GLOBE, SHEET 520AB, IBR, 1.0 INCH	23
881	VLV.GLOBE, SHEET 523AB, IBR, 2.0 INCH	9
882	VLV.GLOBE, SHEET 525AB, IBR, 2.0 INCH	1
883	VLV.GLOBE, SHEET 525AB, IBR, 3.0 INCH	6
884	VLV.GLOBE, SHEET 523AB, IBR, 4.0 INCH	1
885	VLV.GLOBE, SHEET 520AF, IBR, 1.5 INCH	1
886	VLV.GLOBE, SHEET 525AF, IBR, 2.0 INCH	1
887	VLV.GLOBE, SHEET 525AF, IBR, 10.0 INCH	1
888	VLV.GLOBE, SHEET 520CB, IBR, 0.75 INCH	6
889	VLV.GLOBE, SHEET 520CB, IBR, 1.0 INCH	2
890	VLV.GLOBE, SHEET 520CB, IBR, 1.5 INCH	2
891	VLV.GLOBE, SHEET 520DA, 1.0 INCH	1
892	VLV.GLOBE, SHEET 525DB, IBR, 2.0 INCH	3
893	VLV.GLOBE, SHEET 525DB, IBR, 3.0 INCH	6
894	VLV.GLOBE, SHEET 525DB, IBR, 4.0 INCH	1
895	VLV.GLOBE, SHEET 525DB, IBR, 6.0 INCH	1
896	VLV.GLOBE, SHEET 520FA, 1.0 INCH	6
897	VLV.GLOBE, SHEET 520FE, 1.0 INCH	1
898	VLV.GLOBE, SHEET 523TC, NAC6, 2.0 INCH, LOCK CLOSED	2
899	VLV.GLOBE, SHEET 520VC, NAC6, 0.75 INCH	5
900	VLV.GLOBE, SHEET 524VC, NAC6, 3.0 INCH	2
901	VLV.CHECK, SHEET 533AA, 2.0 INCH	1
902	VLV.CHECK, SHEET 533AA, 3.0 INCH	4
903	VLV.CHECK, SHEET 533AA, 6.0 INCH	1
904	VLV.CHECK, SHEET 535AB, IBR, 2.0 INCH	1
905	VLV.CHECK, SHEET 533AB, IBR, 2.0 INCH	3
906	VLV.CHECK, SHEET 535AB, IBR, 3.0 INCH	1

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
907	VLV.CHECK, SHEET 533AB, IBR, 4.0 INCH	2
908	VLV.CHECK, SHEET 533AB, IBR, 6.0 INCH	2
909	VLV.CHECK, SHEET 535AB, IBR, 6.0 INCH	1
910	VLV.CHECK, SHEET 535AB, IBR, 8.0 INCH	1
911	VLV.CHECK, SHEET 533BD, 6.0 INCH	1
912	VLV.CHECK, SHEET 533DA, 4.0 INCH	1
913	VLV.CHECK, SHEET 530DB, IBR, 1.5 INCH	1
914	VLV.CHECK, SHEET 535DB, IBR, 4.0 INCH	1
915	VLV.CHECK, SHEET 535DB, IBR, 6.0 INCH	1
916	VLV.CHECK, SHEET 530FA, 0.5 INCH	23
917	VLV.CHECK, SHEET 530FA, 1.0 INCH	6
918	VLV.CHECK, SHEET 533FA, 2.0 INCH	1
919	VLV.CHECK, SHEET 533FA, 3.0 INCH	1
920	VLV.CHECK, SHEET 533FA, 4.0 INCH	1
921	VLV.CHECK, SHEET 533FA, 6.0 INCH	2
922	VLV.CHECK, SHEET 530FE, 0.5 INCH	2
923	VLV.CHECK, SHEET 530FE, 0.75 INCH	1
924	VLV.CHECK, SHEET 530FE, 1.5 INCH	2
925	VLV.CHECK, SHEET 530KA, 0.75 INCH	1
926	VLV.CHECK, SHEET 533KA, 4.0 INCH	2
927	VLV.CHECK, SHEET 533KA, 6.0 INCH	2
928	VLV.CHECK, SHEET 535PA, 2.0 INCH	1
929	VLV.CHECK, SHEET 530TC, NAC6, 0.75 INCH	2
930	VLV.CHECK, SHEET 533TC, NAC6, 6.0 INCH	2
931	VLV.CHECK, SHEET 530VC, NAC6, 0.75 INCH	2
932	VLV.CHECK, SHEET 530VC, NAC6, 1.0 INCH	3
933	VLV.CHECK, SHEET 533VC, NAC6, 2.0 INCH	1
934	VLV.CHECK, SHEET 534VC, NAC6, 3.0 INCH	4
935	VLV.BALL, SHEET 543BB, IBR, 2.0 INCH	1
936	VLV.BALL, SHEET 543FA, 6.0 INCH	1
937	VLV.BALL, SHEET 543KA, 0.75 INCH	18
938	VLV.BALL, SHEET 543KA, 1.0 INCH	3
939	VLV.BALL, SHEET 543LA, 2.0 INCH, LOCK CLOSED	1
940	VLV.BALL, SHEET 543LA, 2.0 INCH	3
941	VLV.BALL, SHEET 543LA, 3.0 INCH, LOCK OPEN	2
942	VLV.BALL, SHEET 543LA, 4.0 INCH	5
943	VLV.BALL, SHEET 543LA, 6.0 INCH	4

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
944	VLV.BALL, SHEET 543LA, 8.0 INCH	3
945	VLV.PLUG, SHEET 553BD, 2.0 INCH	2
946	VLV.PLUG, SHEET 553BD, 3.0 INCH	1
947	VLV.PLUG, SHEET 553BD, 3.0 INCH, LOCK OPEN	1
948	VLV.PLUG, SHEET 553BD, 4.0 INCH, LOCK OPEN	4
949	VLV.PLUG, SHEET 553BD, 4.0 INCH	4
950	VLV.PLUG, SHEET 553BD, 6.0 INCH, LOCK OPEN	2
951	VLV.PLUG, SHEET 553BD, 6.0 INCH	7
952	VLV.PLUG, SHEET 553BD, 8.0 INCH	6
953	VLV.PLUG, SHEET 553BD, 10.0 INCH	4
954	VLV.BTRFLY, SHEET 563BA, 30.0 INCH	1
955	VLV.BTRFLY, SHEET 563BA, 36.0 INCH	4
956	VLV.BTRFLY, SHEET 563BE, 4.0 INCH	3
957	VLV.BTRFLY, SHEET 563BE, 6.0 INCH	4
958	VLV.BTRFLY, SHEET 563DA, 4.0 INCH, LOCK OPEN	3
959	VLV.BTRFLY, SHEET 563DA, 4.0 INCH	6
960	VLV.BTRFLY, SHEET 563JC, NACE, 48.0 INCH	4
961	VLV.BTRFLY, SHEET 563UC, NAC6, 16.0 INCH	4
962	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B16, A194 GR.4, 0.625 INCH X 4.25 INCH	32
963	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B16, A194 GR.4, 0.75 INCH X 4.25 INCH	20
964	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B16, A194 GR.4, 1.25 INCH X 9.75 INCH	80
965	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.5 INCH X 2.75 INCH	84
966	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.5 INCH X 2.5 INCH	1728
967	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.5 INCH X 2.25 INCH	32
968	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.5 INCH X 3.25 INCH	4
969	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.625 INCH X 3 INCH	120
970	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.625 INCH X 3.25 INCH	740
971	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.625 INCH X 3.5 INCH	468
972	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.625 INCH X 3.75 INCH	1688
973	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.625 INCH X 4 INCH	52
974	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.625 INCH X 4.25 INCH	1080
975	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.75 INCH X 3.5 INCH	112
976	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.75 INCH X 7.5 INCH	88
977	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.75 INCH X 6 INCH	24
978	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.75 INCH X 5.75 INCH	316
979	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.75 INCH X 5 INCH	1052
980	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.75 INCH X 4.75 INCH	104

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
981	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.75 INCH X 4 INCH	1432
982	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.75 INCH X 4.25 INCH	1112
983	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.75 INCH X 4.5 INCH	176
984	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.875 INCH X 5.5 INCH	168
985	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.875 INCH X 4.75 INCH	2808
986	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.875 INCH X 6.75 INCH	1016
987	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.875 INCH X 6.5 INCH	72
988	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.875 INCH X 5.75 INCH	332
989	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.875 INCH X 8.75 INCH	880
990	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.0 INCH X 7.75 INCH	552
991	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.0 INCH X 7.25 INCH	160
992	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.0 INCH X 6.25 INCH	64
993	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.0 INCH X 8.25 INCH	32
994	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.0 INCH X 8.75 INCH	148
995	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.125 INCH X 7 INCH	96
996	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.125 INCH X 8 INCH	32
997	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.125 INCH X 8.25 INCH	72
998	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.125 INCH X 8.75 INCH	156
999	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.125 INCH X 9.5 INCH	44
1000	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.125 INCH X 10 INCH	12
1001	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.25 INCH X 8 INCH	20
1002	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.25 INCH X 11.25 INCH	32
1003	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.25 INCH X 10 INCH	120
1004	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.25 INCH X 9 INCH	48
1005	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.25 INCH X 9.75 INCH	208
1006	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.375 INCH X 15.5 INCH	36
1007	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.375 INCH X 12.75 INCH	288
1008	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.625 INCH X 14 INCH	192
1009	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7(GALV), A194 2H(GALV), 0.5 INCH X 2.5 INCH	4
1010	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7(GALV), A194 2H(GALV), 0.5 INCH X 2.75 INCH	24
1011	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7(GALV), A194 2H(GALV), 0.625 INCH X 3.25 INCH	56
1012	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7(GALV), A194 2H(GALV), 0.625 INCH X 3.75 INCH	128
1013	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7(GALV), A194 2H(GALV), 0.625 INCH X 4.0 INCH	12
1014	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7(GALV), A194 2H(GALV), 0.625 INCH X 4.25 INCH	8
1015	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7(GALV), A194 2H(GALV), 0.75 INCH X 3.5 INCH	32
1016	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NACE, 0.625 INCH X 3.25 INCH	24
1017	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NACE, 0.625 INCH X 3.75 INCH	64

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
1018	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NACE, 0.625 INCH X 4.25 INCH	8
1019	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NACE, 0.625 INCH X 4.0 INCH	16
1020	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NACE, 0.75 INCH X 4.0 INCH	16
1021	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NACE, 0.75 INCH X 4.25 INCH	32
1022	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NACE, 0.75 INCH X 4.5 INCH	16
1023	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NACE, 1.125 INCH X 9.5 INCH	396
1024	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NACE, 1.125 INCH X 12.25 INCH	88
1025	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NACE, 1.875 INCH X 17.75 INCH	80
1026	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.5 INCH X 2.5 INCH	184
1027	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.5 INCH X 2.75 INCH	36
1028	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.625 INCH X 4.75 INCH	24
1029	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.625 INCH X 3.75 INCH	212
1030	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.625 INCH X 4.0 INCH	8
1031	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.625 INCH X 4.25 INCH	16
1032	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.625 INCH X 3.25 INCH	208
1033	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.625 INCH X 3.0 INCH	124
1034	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.625 INCH X 3.5 INCH	632
1035	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.75 INCH X 4.0 INCH	160
1036	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.75 INCH X 3.5 INCH	36
1037	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.75 INCH X 4.25 INCH	648
1038	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.75 INCH X 7.5 INCH	40
1039	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.75 INCH X 5.75 INCH	92
1040	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.75 INCH X 5.5 INCH	16
1041	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.75 INCH X 5.0 INCH	36
1042	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.75 INCH X 4.5 INCH	48
1043	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.75 INCH X 4.75 INCH	88
1044	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.875 INCH X 5.5 INCH	48
1045	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.875 INCH X 4.75 INCH	48
1046	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 0.875 INCH X 6.75 INCH	44
1047	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 1.0 INCH X 6.25 INCH	144
1048	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 1.0 INCH X 7.25 INCH	96
1049	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 1.125 INCH X 7.5 INCH	140
1050	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 1.125 INCH X 8.75 INCH	40
1051	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 1.25 INCH X 11.75 INCH	288
1052	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 1.25 INCH X 9.5 INCH	20
1053	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 1.25 INCH X 9.25 INCH	96
1054	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 1.25 INCH X 8.75 INCH	40

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
1055	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7M, A194 GR.2HM, NAC6, 1.25 INCH X 8.0 INCH	100
1056	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL, SPIRAL, 300, NAC6, 0.5 INCH	4
1057	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL, SPIRAL, 300, NAC6, 0.75 INCH	30
1058	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL, SPIRAL, 300, NAC6, 1.5 INCH	4
1059	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL, SPIRAL, 300, NAC6, 2.0 INCH	68
1060	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL, SPIRAL, 300, NAC6, 3.0 INCH	97
1061	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 0.75 INCH	30
1062	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 1.0 INCH	2
1063	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 600, 1.5 INCH	5
1064	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 1.5 INCH	25
1065	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 2.0 INCH	52
1066	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 600, 2.0 INCH	14
1067	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 3.0 INCH	38
1068	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 600, 4.0 INCH	2
1069	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 4.0 INCH	26
1070	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 6.0 INCH	15
1071	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 8.0 INCH	12
1072	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 10.0 INCH	8
1073	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 600, 10.0 INCH	6
1074	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 600, 12.0 INCH	1
1075	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 12.0 INCH	2
1076	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 14.0 INCH	2
1077	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 18.0 INCH	2
1078	GASKET, B-16.20-ANSI B16.47B, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 30.0 INCH	10
1079	GASKET, B-16.20-ANSI B16.47B, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 36.0 INCH	6
1080	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, NACE, 3.0 INCH	4
1081	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, NACE, 4.0 INCH	2
1082	GASKET, B-16.20-ANSI B16.47B, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, NACE, 48.0 INCH	2
1083	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, NAC6, 0.75 INCH	9
1084	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, NAC6, 1.5 INCH	5
1085	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, NAC6, 2.0 INCH	12
1086	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, NAC6, 3.0 INCH	5
1087	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, NAC6, 4.0 INCH	6
1088	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, NAC6, 6.0 INCH	5
1089	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, NAC6, 10.0 INCH	4
1090	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, NAC6, 16.0 INCH	2
1091	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, NAC6, 20.0 INCH	4

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
1092	GASKET, B-16.20-ANSI B16.47B, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, NAC6, 28.0 INCH	8
1093	GASKET, B-16.20-ANSI B16.5, SP.WND SS316L+GRAFIL+ I RING, SPIRAL, 600, 0.75 INCH	18
1094	GASKET, B-16.20-ANSI B16.5, SP.WND SS316L+GRAFIL+ I RING, SPIRAL, 600, 1.0 INCH	4
1095	GASKET, B-16.20-ANSI B16.5, SP.WND SS316L+GRAFIL+ I RING, SPIRAL, 600, 1.5 INCH	12
1096	GASKET, B-16.20-ANSI B16.5, SP.WND SS316L+GRAFIL+ I RING, SPIRAL, 300, 1.5 INCH	1
1097	GASKET, B-16.20-ANSI B16.5, SP.WND SS316L+GRAFIL+ I RING, SPIRAL, 300, 2.0 INCH	1
1098	GASKET, B-16.20-ANSI B16.5, SP.WND SS316L+GRAFIL+ I RING, SPIRAL, 600, 2.0 INCH	113
1099	GASKET, B-16.20-ANSI B16.5, SP.WND SS316L+GRAFIL+ I RING, SPIRAL, 600, 3.0 INCH	109
1100	GASKET, B-16.20-ANSI B16.5, SP.WND SS316L+GRAFIL+ I RING, SPIRAL, 600, 4.0 INCH	57
1101	GASKET, B-16.20-ANSI B16.5, SP.WND SS316L+GRAFIL+ I RING, SPIRAL, 600, 6.0 INCH	65
1102	GASKET, B-16.20-ANSI B16.5, SP.WND SS316L+GRAFIL+ I RING, SPIRAL, 600, 8.0 INCH	15
1103	GASKET, B-16.20-ANSI B16.5, SP.WND SS316L+GRAFIL+ I RING, SPIRAL, 600, 10.0 INCH	17
1104	GASKET, B-16.20-ANSI B16.5, SP.WND SS316L+GRAFIL+ I RING, SPIRAL, 300, 10.0 INCH	4
1105	GASKET, B-16.20-ANSI B16.5, SP.WND SS316L+GRAFIL+ I RING, SPIRAL, 600, 12.0 INCH	6
1106	GASKET, B-16.21-ANSI B16.5, NONASB. SYN FIBRE+ RUBR BINDER, FULLFACE, 150, 1.0 INCH, 2 MM	1
1107	GASKET, B-16.21-ANSI B16.5, NONASB. SYN FIBRE+ RUBR BINDER, FULLFACE, 300, 1.5 INCH, 2 MM	8
1108	GASKET, B-16.21-ANSI B16.5, NONASB. SYN FIBRE+ RUBR BINDER, FULLFACE, 150, 1.5 INCH, 2 MM	6
1109	GASKET, B-16.21-ANSI B16.5, NONASB. SYN FIBRE+ RUBR BINDER, FULLFACE, 150, 2.0 INCH, 2 MM	18
1110	GASKET, B-16.21-ANSI B16.5, NONASB. SYN FIBRE+ RUBR BINDER, FULLFACE, 150, 3.0 INCH, 2 MM	25
1111	GASKET, B-16.21-ANSI B16.5, NONASB. SYN FIBRE+ RUBR BINDER, FULLFACE, 150, 4.0 INCH, 2 MM	10
1112	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFOIL+I RING, SPIRAL, 300, 1.5 INCH	4
1113	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFOIL+I RING, SPIRAL, 300, 4.0 INCH	2
1114	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFOIL+I RING, SPIRAL, 300, 6.0 INCH	4
1115	GASKET, B-16.21-ANSI B16.5, NONASBESTOS BS7531 GR X, RING, 150, 0.75 INCH, 2 MM	306
1116	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 0.5 INCH	8
1117	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 0.75 INCH	119
1118	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 1.0 INCH	9
1119	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 1.5 INCH	19
1120	GASKET, B-16.21-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 2.0 INCH	12
1121	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 2.0 INCH	194
1122	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 3.0 INCH	136
1123	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 4.0 INCH	142
1124	GASKET, B-16.21-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 4.0 INCH	29
1125	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 6.0 INCH	192
1126	GASKET, B-16.21-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 6.0 INCH	8
1127	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 8.0 INCH	120
1128	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 10.0 INCH	174

PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B1)		
SR NO	ITEM DESCRIPTION	QTY
1129	GASKET, B-16.21-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 10.0 INCH	4
1130	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 12.0 INCH	67
1131	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 16.0 INCH	4
1132	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 18.0 INCH	10
1133	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 24.0 INCH	2
1134	GASKET, B-16.20-ANSI B16.47B, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 30.0 INCH	9
1135	GASKET, B-16.20-ANSI B16.47B, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 36.0 INCH	63
1136	GASKET, B-16.20-ANSI B16.47B, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 44.0 INCH	2
1137	GASKET, B-16.20-ANSI B16.47B, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 48.0 INCH	3
1138	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NACE, 2.0 INCH	6
1139	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NACE, 3.0 INCH	24
1140	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NACE, 4.0 INCH	3
1141	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NACE, 6.0 INCH	3
1142	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NACE, 24.0 INCH	1
1143	GASKET, B-16.20-ANSI B16.47B, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NACE, 48.0 INCH	14
1144	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NAC6, 0.75 INCH	60
1145	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NAC6, 2.0 INCH	56
1146	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NAC6, 3.0 INCH	13
1147	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NAC6, 4.0 INCH	26
1148	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NAC6, 6.0 INCH	24
1149	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NAC6, 10.0 INCH	12
1150	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NAC6, 16.0 INCH	14
1151	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NAC6, 20.0 INCH	12
1152	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NAC6, 24.0 INCH	7
1153	GASKET, B-16.20-ANSI B16.47B, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NAC6, 28.0 INCH	4
1154	GASKET, B-16.20-ANSI B16.47B, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, NAC6, 36.0 INCH	2
1155	GASKET, B-16.20-ANSI B16.5, LS SPWND SS316L+FLEX GRAFIL+IR, SPIRAL, 150, 0.75 INCH	6
1156	GASKET, B-16.20-ANSI B16.5, LS SPWND SS316L+FLEX GRAFIL+IR, SPIRAL, 150, 2.0 INCH	2
1157	GASKET, B-16.20-ANSI B16.5, LS SPWND SS316L+FLEX GRAFIL+IR, SPIRAL, 150, 10.0 INCH	6
1158	SPLIT EQUAL TEE, B16.9, ASTM A234 WPB, BW, SP-1, 3.0 INCH, STD (EQUAL TEE TO BE IN TWO HALVES	11

Jacketed PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B2)

SL.No	ITEM DESCRIPTION	QTY
1	PIPE, B-36.10, ASTM A 106 GR.B, PE, SEAMLESS, 0.75 INCH, XS	213
2	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 2.0 INCH, XS	14
3	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 3.0 INCH, STD	37
4	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 4.0 INCH, STD	101
5	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 6.0 INCH, STD	365
6	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 8.0 INCH, STD	499
7	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 10.0 INCH, STD	431
8	PIPE, B-36.10, ASTM A 106 GR.B, BE, SEAMLESS, 12.0 INCH, STD	260
9	NIPPLE, B-36.10, ASTM A 106 GR.B, TOE, SEAMLESS, 1.0 INCH, S160, 100 MM	162
10	NIPPLE, B-36.10, ASTM A 106 GR.B, TOE, SEAMLESS, 2.0 INCH, XS, 150 MM	322
11	FLNG.SW, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 0.75 INCH, XS	8
12	FLNG.WN, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 0.75 INCH, XS	590
13	FLNG.RED. SO, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 3.0 INCH, 2.0 INCH	2
14	FLNG.RED. SO, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 3.0 INCH, 1.5 INCH	8
15	FLNG.RED. SO, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 3.0 INCH, 2.0 INCH	27
16	FLNG.RED. SO, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 4.0 INCH, 3.0 INCH	2
17	FLNG.RED. SO, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 4.0 INCH, 3.0 INCH	42
18	FLNG.RED. SO, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 6.0 INCH, 4.0 INCH	148
19	FLNG.RED. SO, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 8.0 INCH, 6.0 INCH	7
20	FLNG.RED. SO, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 8.0 INCH, 6.0 INCH	262
21	FLNG.RED. SO, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 10.0 INCH, 8.0 INCH	214
22	FLNG.RED. SO, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 10.0 INCH, 8.0 INCH	2
23	FLNG.RED. SO, B-16.5, ASTM A 105 (NORMALISED), 300, RF/125AARH, 12.0 INCH, 10.0 INC	4
24	FLNG.RED. SO, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 12.0 INCH, 10.0 INC	146
25	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 3.0 INCH, 2.0 INCH	4
26	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 4.0 INCH, 2.0 INCH	14
27	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 6.0 INCH, 2.0 INCH	37
28	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 8.0 INCH, 2.0 INCH	54
29	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 10.0 INCH, 2.0 INCH	79
30	FLNG.BLIND, B-16.5, ASTM A 105 (NORMALISED), 150, RF/125AARH, 12.0 INCH, 2.0 INCH	54
31	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, 6.0 INCH	3
32	FLNG.FIG.8, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, 8.0 INCH	5
33	SPCR&BLND, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, 10.0 INCH	1
34	SPCR&BLND, ASME-B16.48, ASTM A 516 GR.70(NORMALISED), 150, FF/125AARH, 12.0 INCH	3
35	ELBOW.90, B-16.11, ASTM A 105 (NORMALISED), SW, 3000, 0.75 INCH	1030
36	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 3.0 INCH, STD, 2.0 INCH, XS	1

SL.No	ITEM DESCRIPTION	QTY
37	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 4.0 INCH, STD, 2.0 INCH, XS	3
38	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 4.0 INCH, STD, 3.0 INCH, STD	3
39	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 6.0 INCH, STD, 3.0 INCH, STD	1
40	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 6.0 INCH, STD, 4.0 INCH, STD	3
41	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 8.0 INCH, STD, 6.0 INCH, STD	3
42	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 8.0 INCH, STD, 4.0 INCH, STD	2
43	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 10.0 INCH, STD, 8.0 INCH, STD	2
44	REDUC.CONC, B-16.9, ASTM A 234 GR.WPB, BW, 10.0 INCH, STD, 6.0 INCH, STD	1
45	CAP, B-16.11, ASTM A 105 (NORMALISED), SCRF, 3000, 1.0 INCH	156
46	CAP, B-16.11, ASTM A 105 (NORMALISED), SCRF, 3000, 2.0 INCH	156
47	CAP, B-16.11, ASTM A 105 (NORMALISED), SCRF, 3000, 2.0 INCH, 1.0 INCH	156
48	CROSS, B-16.9, ASTM A 234 GR.WPB, BW, 2.0 INCH, XS	4
49	CROSS, B-16.9, ASTM A 234 GR.WPB, BW, 3.0 INCH, STD	7
50	CROSS, B-16.9, ASTM A 234 GR.WPB, BW, 4.0 INCH, STD	25
51	CROSS, B-16.9, ASTM A 234 GR.WPB, BW, 6.0 INCH, STD	54
52	CROSS, B-16.9, ASTM A 234 GR.WPB, BW, 8.0 INCH, STD	41
53	CROSS, B-16.9, ASTM A 234 GR.WPB, BW, 10.0 INCH, STD	28
54	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 3.0 INCH, 0.75 INCH	16
55	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 4.0 INCH, 0.75 INCH	27
56	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 4.0 INCH, 1.5 INCH	2
57	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 6.0 INCH, 0.75 INCH	107
58	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 6.0 INCH, 1.5 INCH	3
59	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 8.0 INCH, 0.75 INCH	100
60	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 8.0 INCH, 1.5 INCH	3
61	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 10.0 INCH, 0.75 INCH	179
62	SOCKOLET, MSS-SP97, ASTM A 105 (NORMALISED), SW, 3000, 12.0 INCH, 0.75 INCH	80

SL.No	ITEM DESCRIPTION	QTY
63	VLV.CHECK, SHEET 533BD, 6.0 INCH	1
64	VLV.PLUG, SHEET 553CD, 2.0 INCH	2
65	VLV.PLUG, SHEET 553CD, 3.0 INCH	1
66	VLV.PLUG, SHEET 553CD, 4.0 INCH, LOCK OPEN	4
67	VLV.PLUG, SHEET 553CD, 4.0 INCH	4
68	VLV.PLUG, SHEET 553CD, 6.0 INCH, LOCK OPEN	4
69	VLV.PLUG, SHEET 553CD, 6.0 INCH	9
70	VLV.PLUG, SHEET 553CD, 8.0 INCH	1
71	VLV.PLUG, SHEET 553DD, 3.0 INCH, LOCK OPEN	1
72	VLV.PLUG, SHEET 553DD, 8.0 INCH	4
73	VLV.PLUG, SHEET 553DD, 10.0 INCH, LOCK OPEN	2
74	VLV.PLUG, SHEET 553DD, 10.0 INCH	5
75	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.5 INCH X 2.5 INCH	1188
76	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.625 INCH X 3 INCH	32
77	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.625 INCH X 3.75 INCH	324
78	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.75 INCH X 4 INCH	848
79	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.75 INCH X 4.25 INCH	1128
80	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.75 INCH X 4.5 INCH	16
81	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.75 INCH X 4.75 INCH	16
82	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.75 INCH X 5 INCH	8
83	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.875 INCH X 4.75 INCH	2676
84	BOLT.STUD WITH 2 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 0.875 INCH X 5.5 INCH	84
85	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.0 INCH X 7.25 INCH	32
86	BOLT.STUD WITH 3 NUTS, B-18.2, A193 GR.B7, A194 GR.2H, 1.125 INCH X 8 INCH	96
87	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 0.75 INCH	8
88	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 3.0 INCH	10
89	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 4.0 INCH	2
90	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 8.0 INCH	6
91	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 10.0 INCH	2
92	GASKET, B-16.20-ANSI B16.5, SP.WND SS316+GRAFIL+ I RING, SPIRAL, 300, 12.0 INCH	6
93	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 0.75 INCH	297
94	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 3.0 INCH	21
95	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 4.0 INCH	30
96	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 6.0 INCH	110
97	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 8.0 INCH	133
98	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 10.0 INCH	137

Jacketed PIPING MTO SUMMARY_SRU PARADIP_(E&C INPUT-Annexure-B2)

SL.No	ITEM DESCRIPTION	QTY
99	GASKET, B-16.20-ANSI B16.5, LS SP.WND SS316+FLEX GRAFIL+IR, SPIRAL, 150, 12.0 INCH	88
100	SPLIT TEE, B-16.9, ASTM A 234 GR.WPB, BW, 3.0 INCH, STD, (NOTE-A)	8
101	SPLIT TEE, B-16.9, ASTM A 234 GR.WPB, BW, 4.0 INCH, STD, (NOTE-A)	14
102	SPLIT TEE, B-16.9, ASTM A 234 GR.WPB, BW, 6.0 INCH, STD, (NOTE-A)	50
103	SPLIT TEE, B-16.9, ASTM A 234 GR.WPB, BW, 8.0 INCH, STD, (NOTE-A)	108
104	SPLIT TEE, B-16.9, ASTM A 234 GR.WPB, BW, 10.0 INCH, STD, (NOTE-A)	82
105	SPLIT TEE, B-16.9, ASTM A 234 GR.WPB, BW, 12.0 INCH, STD, (NOTE-A)	56

Speciality Piping BOQ (ANNEXURE-B3)

S.NO	SPECIAL ITEM	QTY.
1	ANGLE CHECK VALVE	1
2	ANGLE CHECK VALVE	1
3	ANGLE STOP CHECK VALVE	1
4	BLOWDOWN ANGLE VALVE	1
5	BLOWDOWN ANGLE VALVE	1
6	BLOWDOWN ANGLE VALVE	1
7	BLOWDOWN ANGLE VALVE	1
8	BLOWDOWN ANGLE VALVE	1
9	BLOWDOWN ANGLE VALVE	1
10	BLOWDOWN ANGLE VALVE	1
11	BLOWDOWN ANGLE VALVE	1
12	BLOWDOWN ANGLE VALVE	1
13	BLOWDOWN ANGLE VALVE	1
14	BLOWDOWN ANGLE VALVE	1
15	CONDENSATE RECOVERY MANIFOLD	1
16	csta (compact steam trap assembly)	1
17	csta (compact steam trap assembly)	1
18	csta (compact steam trap assembly)	1
19	csta (compact steam trap assembly)	1
20	csta (compact steam trap assembly)	1
21	csta (compact steam trap assembly)	1
22	csta (compact steam trap assembly)	1
23	csta (compact steam trap assembly)	1
24	csta (compact steam trap assembly)	1
25	csta (compact steam trap assembly)	1
26	csta (compact steam trap assembly)	1
27	csta (compact steam trap assembly)	1
28	csta (compact steam trap assembly)	1
29	csta (compact steam trap assembly)	1
30	csta (compact steam trap assembly)	1
31	csta (compact steam trap assembly)	1
32	csta (compact steam trap assembly)	1
33	csta (compact steam trap assembly)	1
34	csta (compact steam trap assembly)	
35	csta (compact steam trap assembly)	
36	FILTER	1
37	FILTER	1
38	FLEXIBLE HOSE	1
39	FLEXIBLE HOSE	1
40	FLEXIBLE HOSE	
41	FLEXIBLE HOSE	
42	FLEXIBLE HOSE	
43	JACKETED PLUG VALVE WITH EXTENDED STEM	1
44	SC-1(Sample Bomb)	1
45	SC-1(Sample Bomb)	1
46	SC-1(Sample Bomb)	1
47	SC-1(Sample Bomb)	1
48	SC-1(Sample Bomb)	1

S.NO	SPECIAL ITEM	QTY.
49	SC-1(Sample Bomb)	1
50	SC-1(Sample Bomb)	1
51	SC-1(Sample Bomb)	1
52	SC-1(Sample Bomb)	1
53	SC-1(Sample Bomb)	1
54	SC-2(Sample Cooler)	1
55	SC-2(Sample Cooler)	1
56	SC-2(Sample Cooler)	1
57	SC-2(Sample Cooler)	1
58	SC-2(Sample Cooler)	1
59	SC-2(Sample Cooler)	1
60	SC-2(Sample Cooler)	1
61	SC-4(Sample bomb + Cooler)	1
62	SC-4(Sample bomb + Cooler)	1
63	STEAM SUPPLY MANIFOLD	
64	STRAHMAN PISTON TYPE STEAM JACKETED	1
65	STRAHMAN PISTON TYPE STEAM JACKETED	1
66	STRAHMAN PISTON TYPE STEAM JACKETED	1
67	STRAHMAN PISTON TYPE STEAM JACKETED	1
68	STRAHMAN PISTON TYPE STEAM JACKETED	1
69	STRAHMAN PISTON TYPE VALVE	1
70	STRAHMAN PISTON TYPE VALVE	1
71	STRAHMAN PISTON TYPE VALVE	1
72	STRAHMAN PISTON TYPE VALVE	1
73	STRAHMAN PISTON TYPE VALVE	1
74	STRAHMAN PISTON TYPE VALVE	1
75	STRAHMAN PISTON TYPE VALVE	1
76	STRAHMAN PISTON TYPE VALVE	1
77	STRAHMAN PISTON TYPE VALVE	1
78	STRAHMAN PISTON TYPE VALVE	1
79	T-TYPE STRAINER	1
80	T-TYPE STRAINER	1
81	T-TYPE STRAINER	1
82	T-TYPE STRAINER	1
83	T-TYPE STRAINER	1
84	T-TYPE STRAINER	1
85	Y TYPE STRAINER	1
86	SC-2(Sample Cooler)	1
87	SC-2(Sample Cooler)	1
88	Y TYPE STRAINER	1

S.NO	UNIT	P&ID	REV	SPECIAL ITEM	SPEC	SIZE (INCHES)	QTY.	LINE NO.	TAG NO.	EQUIPMENT NO.	REMARKS
1	088	0018	0	BASKET STRAINER	A2A	6	1	150-CL-088-3202-A2A-IH		088-EJ-001A/B	EJECTOR 088-EJ-001A/B VENDOR SCOPE. TO BE CONFIRMED BY VENDOR.
2	088	0019	0	CANOPY	A15A		1	200-PA-088-3321-A15A-IJ		088-SU-001	SITE FABRICATED
3	088	0009	3	SIGHT PORT	A28A	4	1		088-SP-028	088-F-001	REACTION FURNACE PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
4	088	0009	3	SIGHT PORT	A28A	NOT MENTIONED	1		088-SP-030	088-F-001	REACTION FURNACE PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
5	088	0009	3	SIGHT PORT	A28A	4	1		088-SP-032	088-F-002	REACTION FURNACE PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
6	088	0009	3	SIGHT PORT	A28A	4	1		088-SP-035	088-F-002	REACTION FURNACE PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
7	088	0009	3	SIGHT PORT	A28A	4	1		088-SP-036	088-F-002	REACTION FURNACE PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
8	088	0009	3	SPECIAL BALL VALVE	A28A	NOT MENTIONED	1		088-SP-031	088-F-001	REACTION FURNACE PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
9	088	0009	3	SPECIAL GATE VALVE	A28A	4	1		088-SP-029	088-F-001	REACTION FURNACE PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
10	088	0009	3	SPECIAL GATE VALVE	A28A	4	1		088-SP-033	088-F-002	REACTION FURNACE PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
11	088	0009	3	SPECIAL GATE VALVE	A28A	4	1		088-SP-034	088-F-002	REACTION FURNACE PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
12	088	0009	3	SPECIAL GATE VALVE	A28A	4	1		088-SP-037	088-F-002	REACTION FURNACE PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
13	088	0018	0	Y TYPE STRAINER	A2A	6	1	150-CL-088-3202-A2A-IH		088-EJ-001A/B	EJECTOR 088-EJ-001A/B VENDOR SCOPE. TO BE CONFIRMED BY VENDOR.
14	090	0021	2	AIR FILTER	A12A	44	1	1100-PA-090-3301-A12A-IH	090-GN-006	090-K-001A/B	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
15	090	0023	2	ANGLE STOP CHECK VALVE	D9D	10	1	250-SH-090-3501-D2A-IH		090-DS-002	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
16	090	0023	2	ANGLE STOP CHECK VALVE	D2A	8	1	200-SH-090-3508-D2A-IH		090-V-006	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
17	090	0021	2	BELLOW	A12A	44	1	1100-PA-090-3301-A12A-IH		090-K-001A	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
18	090	0021	2	BELLOW	A12A	44	1	1100-PA-090-3301-A12A-IH		090-K-001B	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
19	090	0021	2	BELLOW	A12A	36	1	900-PA-090-3304-A12A-NI		090-K-001A	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
20	090	0021	2	BELLOW	A12A	36	1	900-PA-090-3303-A12A-NI		090-K-001B	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
21	090	0023	2	BLOWDOWN ANGLE VALVE	D31A	2*2	1	100-BD-090-3513-D31A-PP	090-SP-053	090-V-007	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
22	090	0023	2	BLOWDOWN ANGLE VALVE	D31A	2*2	1	100-BD-090-3524-D31A-PP	090-SP-054	090-V-007	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
23	090	0023	2	BLOWDOWN ANGLE VALVE	D31A	2*2	1	50-BD-090-3511-D31A-PP	090-SP-055	090-V-006	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR
24	090	0022	2	FILTER	A52A	0.75	1	20-FG-090-3203-A52A-IT	090-SP-038	090-F-001	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED FROM VENDOR.
25	090	0022	2	FILTER	A53G	1.5	1	40-AI-090-3204-A53G-NI	090-SP-040	090-F-001	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED FROM VENDOR.
26	090	0022	2	FLEXIBLE HOSE	A52A	0.75	1	20-FG-090-3203-A52A-IT	090-SP-039	090-F-001	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED FROM VENDOR.
27	090	0022	2	FLEXIBLE HOSE	A53G	1.5	1	40-AI-090-3204-A53G-NI	090-SP-041	090-F-001	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED FROM VENDOR.
28	090	0022	2	ON-OFF BALL VALVE	A28A	.75	1	100-P-090-3414-A28A-IT	090-HZV-0458	090-F-001	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED FROM VENDOR.
29	090	0023	2	SC-2	D31A	0.75	1	100-BD-090-3511-D31A-PP	090-SC-2302	090-V-006	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED FROM VENDOR.
30	090	0022	2	SIGHT PORT	A12A	4	1		090-SP-042	090-F-001	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED FROM VENDOR.
31	090	0022	2	SIGHT PORT	A12A	4	1		090-SP-044	090-F-001	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED FROM VENDOR.
32	090	0022	2	SIGHT PORT	A12A	4	1		090-SP-046	090-F-001	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED FROM VENDOR.
33	090	0022	2	SIGHT PORT	A12A	4	1		090-SP-048	090-F-001	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED FROM VENDOR.
34	090	0022	2	SPECIAL BALL VALVE	A12A	4	1		090-SP-043	090-F-001	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED FROM VENDOR.
35	090	0022	2	SPECIAL BALL VALVE	A12A	4	1		090-SP-045	090-F-001	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED FROM VENDOR.
36	090	0022	2	SPECIAL BALL VALVE	A12A	4	1		090-SP-047	090-F-001	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED FROM VENDOR.
37	090	0022	2	SPECIAL BALL VALVE	A12A	4	1		090-SP-049	090-F-001	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED FROM VENDOR.
38	090	0021	2	WAFER CHECK VALVE	A12A	36	1	900-PA-090-3304-A12A-NI	090-SP-036	090-K-001A	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED FROM VENDOR.
39	090	0021	2	WAFER CHECK VALVE	A12A	36	1	900-PA-090-3303-A12A-NI	090-SP-037	090-K-001B	INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED FROM VENDOR.
40	090	0028	2	Y TYPE STRAINER	A52A	1	1	50-FG-090-4509-A52A-IT			WITH BALL VALVE AND THREADED END CAP. INCINERATOR PACKAGE VENDOR SCOPE. TO BE CONFIRMED BY VENDOR