UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 8-K

CURRENT REPORT

PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

Date of report (Date of earliest event reported): November 30, 2012

LSB INDUSTRIES, INC.

(Exact name of registrant as specified in its charter)

Delaware	**1-7677**	**73-1015226**
(State or other jurisdiction of incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**

16 South Pennsylvania Avenue, Oklahoma City, Oklahoma	**73107**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code (405) 235-4546

Not applicable
(Former name or former address, if changed since last report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Item 1.01 Entry into a Material Definitive Agreement

El Dorado Facility Nitric Acid Plant

On November 30, 2012, El Dorado Chemical Company ("EDCC"), a subsidiary within the Chemical Business of LSB Industries, Inc. (the "Company"), entered into an agreement (the "Agreement") with Weatherly Inc. ("Weatherly") for the licensing, engineering, and procurement of major manufacturing equipment for a new 1,100 ton per day 65% strength nitric acid plant to be constructed at EDCC's El Dorado, Arkansas facility (the "El Dorado Facility").

The Agreement requires Weatherly to license certain process technologies and to provide engineering and advisory services in connection with the construction of the nitric acid plant. Pursuant to the terms of the Agreement, Weatherly will also supply to the plant site certain major equipment. The total consideration to by paid by EDCC under the Agreement is approximately $57 million, subject to customary retainage with respect to equipment and materials. The nitric acid plant is expected to be operational by mid-2015.

The Company is currently negotiating a contract for the purchase of a plant to work in conjunction with the new nitric acid plant that further concentrates a portion of the output up to 98.5% strength. The estimated cost of the new nitric acid plant, together with the cost of the nitric acid concentrator plant and supporting facilities, including construction, is anticipated to total approximately $120 million (including amounts to be paid under the Agreement). The Company expects a substantial portion of this cost to be paid from insurance proceeds resulting from the May 15, 2012 event that damaged the El Dorado Facility. However, the actual amount of insurance proceeds is not known at this time.

The Company's press release, issued December 4, 2012, is attached to this report as Exhibit 99.1.

El Dorado Facility Sulfuric Acid Plant

On December 4, 2012, the Company announced the recommencement of operations at the El Dorado Facility's sulfuric acid plant. The Company's press release, issued December 4, 2012, is attached to this report as Exhibit 99.1.

Cautionary Note Regarding Forward-Looking Statements

This report contains certain forward-looking statements within the meaning of the Private Securities Litigation Act of 1995. These forward-looking statements generally are identifiable by use of the words "believe," "expects," "intends," "plans to," "estimates," "projects" or similar expressions, and such forward-looking statements include, but are not limited to, the nitric acid plant is expected to be operational by mid-2015, the total cost of the new plants including construction, and the amount of insurance proceeds. Investors are cautioned that such forward-looking statements are not guarantees of future performance and involve risk and uncertainties, and that actual results may differ materially from the forward-looking statements, as a result of various factors, including, without limitation, general economic conditions, negotiations with our insurance companies, ability to obtain replacement and repair equipment and parts in a timely manner, weather conditions, labor conditions, and other factors set forth under "A Special Note Regarding Forward-Looking Statements" in our Form 10-K for year ended December 31, 2011, and the Form 10-Qs for the quarters ended March 31, 2012, June 30, 2012 and September 30, 2012.

Item 9.01 Financial Statements and Exhibits

(d) Exhibits.

99.1 Press release, dated December 4, 2012.

99.2 Contract, between Weatherly Inc. and El Dorado Chemical Company, dated November 30, 2012.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Company has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Dated: December 6, 2012

LSB INDUSTRIES, INC.

By: /s/ Tony M. Shelby
Tony M. Shelby,
Executive Vice President of Finance,
Chief Financial Officer

Exhibit 99.1

COMPANY CONTACT:
Tony M. Shelby, Chief Financial Officer
(405) 235-4546

Investor Relations Contact:
Linda Latman (212) 836-9609
Fred Buonocore (212) 836-9607
The Equity Group Inc.

FOR IMMEDIATE RELEASE

LSB INDUSTRIES, INC.'S EL DORADO FACILITY SIGNS CONTRACT FOR A NEW NITRIC ACID PLANT, AND COMPLETES RECONSTRUCTION AND RESUMES PRODUCTION AT ITS SULFURIC ACID PLANT

Oklahoma City, Oklahoma – December 4, 2012 – LSB Industries, Inc. (the "Company") (NYSE: LXU) today announced that its chemical business' El Dorado, Arkansas facility ("El Dorado Facility") has signed an agreement with Weatherly Inc. for the licensing, engineering, and procurement of major manufacturing equipment for a new 1,100 ton per day 65% strength nitric acid plant. The new plant is expected to be operational by mid-2015.

In addition, the Company is currently negotiating a contract for the purchase of a plant to work in conjunction with the new nitric acid plant that further concentrates a portion of the output up to 98.5% strength.

The cost of the new nitric acid plant, the nitric acid concentrator plant and supporting facilities, including construction, is anticipated to total approximately $120 million, a significant portion of which is expected to be paid from insurance proceeds resulting from the May 15, 2012 event that damaged the El Dorado Facility. The amount of insurance proceeds is not known at this time.

The Company also announced today the recommencement of operations at the El Dorado Facility's sulfuric acid plant. This represents the final phase of repair and production recovery at the facility following the May 15, 2012 event, other than the construction of the aforementioned new nitric acid plant and acid concentrator plant.

Jack E. Golsen, LSB's Board Chairman and CEO stated, "All of the plants at the El Dorado Facility are up and running, other than the DSN plant, which is being replaced by the new Weatherly nitric acid plant. With the addition of a new nitric acid plant and concentrator, we believe that the El Dorado Facility will be able to regain its position as a leading merchant marketer of concentrated nitric acid in the United States."

LSB is a manufacturing and marketing company. LSB's principal business activities consist of the manufacture and sale of chemical products for the agricultural, mining, and industrial markets and the manufacture and sale of commercial and residential climate control products, such as geothermal and water source heat pumps, hydronic fan coils, modular geothermal chillers, and large custom air handlers.

This press release contains certain forward-looking statements within the meaning of the Private Securities Litigation Act of 1995. These forward-looking statements generally are identifiable by use of the words "believe," "expects," "intends," "plans to," "estimates," "projects" or similar expressions, and such forward-looking statements include, but are not limited to, total cost of the new plants including construction, amount of insurance proceeds, construction and commissioning activities, improvement of the El Dorado Facility, ability to regain its position as a leading merchant marketer of concentrated nitric acid. Investors are cautioned that such forward-looking statements are not guarantees of future performance and involve risk and uncertainties, and that actual results may differ materially from the forward-looking statements, as a result of various factors, including, without limitation, general economic conditions, negotiations with our insurance company, ability to obtain replacement and repair equipment and parts in a timely manner, weather conditions, labor conditions, and other factors set forth under "A Special Note Regarding Forward-Looking Statements" in our Form 10-K for year ended December 31, 2011, and the Form 10-Qs for the quarters ended March 31, 2012, June 30, 2012 and September 30, 2012.

Contract

on the supply of

Basic Engineering Package,
Detail Engineering Package,
Tagged Major Equipment and
related Advisory Services

(hereinafter “Contract”)

between

Weatherly Inc
1100 Spring Street NW
Suite 308
Atlanta, Georgia 30309

(hereinafter “THE SELLER”)

and

El Dorado Chemical Company
16 South Pennsylvania Avenue
Oklahoma City, Oklahoma 73107

(hereinafter “THE BUYER”)

Table of Content

Preamble

WHEREAS, THE BUYER desires THE SELLER to provide THE BUYER with a Basic Engineering Package and a Detail Engineering Package, to supply tagged items of Major Equipment and Materials together with Advisory Services and Technology License for a plant for the production of 1100 STPD of Weak Nitric Acid at a minimum concentration of 65 wt%. to be built by THE BUYER in El Dorado, Arkansas, USA;

WHEREAS, THE SELLER is the owner of certain process technologies and is in possession of the necessary technical knowledge, skill and experience to perform such engineering and advisory services and to supply the requisite Equipment and Materials, all as hereinafter defined, and desires to provide such services and equipment to THE BUYER;

NOW THEREFORE, in consideration of the mutual covenants hereinafter set forth, the parties hereto agree as follows:

Article 1. Definitions

As used in this Contract, the following terms shall have the following meanings.

1.1. "Acceptance" shall mean Acceptance of the plant upon successful completion of the Performance Tests according to Article 12.5 hereof.

1.2. "Acceptance Certificate" shall mean the certificate to be issued or deemed to be issued according to Article 12.5 hereof.

1.3. "Advisory Services" shall mean the services referred to in Article 3.5 hereof.

1.4. "Affiliate" of El Dorado Chemical Company shall mean LSB Industries, Inc. and any of its subsidiaries.

1.5. "Change Order" shall mean any formal change in the Scope of Work as defined in Article 9 hereof.

1.6. "Contract" shall mean this document with its Annexes and the related rights and duties of each party as defined in this document in detail.

1.7. "Contract Price" shall mean the price to be paid by THE BUYER as defined in Article 5.1 hereof.

1.8. "Effective Date" shall have the meaning as defined in Article 21.11 hereof.

1.9. "Basic Engineering Package and Detail Engineering Package" shall have the meaning as defined in Article 3.1 hereof.

1.10. "Mechanical Completion" shall have the meaning as defined in Article 12.1 hereof.

1.11. "THE BUYER's Contractor" shall mean any engineering firm and/or construction firm elected by THE BUYER after consultation with THE SELLER to perform additional detailed engineering, construction and start-up services for the Plant.

1.12. "THE BUYER's Proprietary Data" shall have the meaning as defined in Article 10.2 hereof.

1.13. "Performance Guarantees" shall have the meaning as defined in Article 12.3 hereof.

1.14. "Plant" shall mean the facility using the process technology for the production of Weak Nitric Acid and having the design capacity of 1100 STPD as 100% basis. (Eleven Hundred Short Tons per Day according to the specifications in **ANNEX 1** to be constructed and built by THE BUYER in El Dorado, Arkansas, USA on the basis of the Technical Information provided by THE SELLER.

1.15. "THE SELLER's Proprietary Data" shall mean all of THE SELLER's Process Technology and Technical Information as further defined in Article 10.1 hereof.

1.16. "Process Technology and Technical Information" shall mean any and all know-how, data and information including the process and methods (including but not limited to patents and/or patent rights and applications, if any) relating to the design, Basic Engineering and Detail Engineering as specified herein, equipment, erection, start-up, maintenance and operation of a plant for the production of Weak Nitric Acid and having the design capacity of 1100 STPD as 100% basis, which are owned and practiced by THE SELLER as of the Effective Date of this Contract and which may be acquired and/or developed by THE SELLER during the term of this Contract.

1.17. “Tagged Major Equipment and Materials” shall have the meaning as defined in Article 3.2 hereof.

1.18. “Time Schedule” shall have the meaning as defined in Article 6.1 hereof.

1.19. “Warranties” shall mean the Services, Process and Equipment Warranties as further defined in Article 11 hereof.

1.20. “Weak Nitric Acid” shall mean nitric acid meeting the specifications provided in this Contract and which has a minimum concentration of 65 wt%.

1.21. “Work” shall mean THE SELLER’s scope of Work as part of the Plant as described in Article 3 hereof.

1.22. “Initial Operation of the Plant” Such words shall mean the date when Weak Nitric Acid product meeting the product specifications of Section 3.5 of ANNEX 1 is first produced from the Plant at a rate of 1100 short tons per day (100% acid basis) for a period of 72 consecutive hours and meeting the required emissions limits.

Article 2. Object of Contract

The object of this Contract is the supply by THE SELLER of a Basic Engineering Package, Detail Engineering Package, the procurement and supply of Tagged Major Equipment and Materials, together with the provision of related Advisory Services as well as the grant of a technology license, all of which is further defined in this Contract.

Article 3. Scope of Work

3.1. Basic Engineering Package and Detail Engineering Package

THE SELLER shall supply to THE BUYER a Basic Engineering Package and Detail Engineering Package containing all of the Process Technology and Technical Information as further defined in A**NNEX 2** necessary for THE BUYER for the procurement of untagged materials, construction and operation of the Plant in conformity with all Performance Guarantees and Warranties contained herein and capable of operating in a safe, efficient and reliable manner. Such Basic Engineering Package and Detail Engineering Package shall follow the US system of measurement for design and construction and shall be based on applicable US codes and standards.

If and when requested by THE BUYER to do so, THE SELLER will attend a reasonable number of meetings called by THE BUYER to discuss the progress of the Work.

3.2. Tagged Major Equipment and Materials

THE SELLER shall supply to THE BUYER all Tagged Major Equipment and Materials for the Major Equipment and as listed in **ANNEX 3** hereof. Any additional spare parts shall be supplied at cost.

3.3. Instruments and Control Systems

THE SELLER shall supply to THE BUYER all as listed in **ANNEX 3** hereof. Any additional spare parts shall be agreed upon and supplied at cost

3.4. The design of the plant shall incorporate Safety Integrity Level – Level of Protection Analysis (SIL-LOPA) features in its design which meet all requirements based on the most stringent of the following standards: OHSA 1910 Process Safety Management requirements; THE BUYER's SIL-LOPA corporate standards; any SIL-LOPA requirements as the result of a process hazards review.

3.5. Advisory Services

In addition to those Advisory Services included in the contract prices in Section 5.1 which are for commissioning and start-up which are defined in ANNEX 4 Section 1.1.1, upon THE BUYER's written request for additional Advisory Services, THE SELLER shall provide Advisory Services, subject to the service fees as stipulated in **ANNEX 4.** Advisory Services are required for commissioning and start-up to maintain the Performance Guarantees in ANNEX 6

3.6. Grant of License

THE SELLER agrees to grant and hereby grants to THE BUYER a non-exclusive, irrevocable, transferable to Affiliates, successors and assignees right and license to use, apply and practice the Process Technology and Technical Information to produce Weak Nitric Acid (65 minimum wt.%) and having the design capacity of 1100 STPD as 100% basis at their site in El Dorado, Arkansas, USA.

3.7 The responsibility for work to be performed under this Contract and related contracts, in order to complete the 1100 short ton per day nitric acid, shall generally be split per **ANNEX 8 "SPLIT OF WORK."**

Article 4. Parties Representatives

4.1. THE SELLER's Representatives

THE SELLER appoints Thomas H. Saulnier as project manager (the "Project Manager") and shall give all necessary communication details. The Project Manager or his designee shall be authorized to receive instructions and to act for THE SELLER in all matters with respect to the Work. THE BUYER shall not act upon instructions given on behalf of THE SELLER by any person other than the Project Manager, or such persons as THE SELLER may from time to time appoint in writing. Any directions or instructions given to THE BUYER by any person other than the Project Manager or his designee shall not be binding upon THE SELLER.

4.2. THE BUYER's Representatives

THE BUYER appoints Larry D. Fitzwater as THE BUYER's representative. THE BUYER shall give THE SELLER all necessary communication details. THE BUYER's representative or such person or persons as THE BUYER may from time to time appoint in writing for such purpose, will be authorized to issue and receive directions and instructions pursuant to and within the scope of this Contract. Directions and instructions given to THE SELLER by any person other than THE BUYER's representative shall not be binding upon THE BUYER.

Article 5. Price and Payment

5.1. Contract Price

For the Scope of Work according to Article 3.1, 3.2 and 3.6, THE BUYER shall pay to THE SELLER a lump sum amount of $56,996,600 US Dollars (hereinafter “Contract Price”). The Contract Price is divided into six parts:

License Fee	$ 1,100,000.00
Basic Engineering	$ 1,810,000.00
Detailed Engineering	$ 4,360,000.00
Tagged Items of Equipment	$47,276,600.00
Instruments and Specialty Piping	$ 2,250,000.00
Startup and Commissioning	$ 200,000.00
Total Contract Price	$56,996,600.00

5.2. Price Term

The goods under this Contract, including the Basic Engineering Package and Detail Engineering Package and Tagged Major Equipment and Materials shall be delivered by THE SELLER on the basis of Delivery Duty Paid (“DDP”), subject to INCOTERMS 2010.

5.3. Terms of Payment

The Contract Price shall be paid in the following manner:

a) Payment for License Fee

One-third of the total license fee ($366,666) shall be paid against presentation of below mentioned documents by telegraphic bank transfer to the SELLER’s account not later than thirty (30) days from the DATE OF SIGNATURE. One-third of the total license fee ($366,666) shall be paid against presentation of the below documents by telegraphic bank transfer to the SELLER’s account not later than (30) day from the date of the delivery of the complete BASIC ENGINEERING PACKAGE as defined in **ANNEX 7**; one-third of the total license fee ($366,666) shall be paid against presentation of the below documents by telegraphic bank transfer to the SELLER’s account not later than (30) days from the date of Initial Operation of the plant.

(1) two original copies of an invoice covering the due amount;

b) Payment for Basic and Detailed Engineering Documentation

The payment for the Basic and Detailed Engineering Package shall be paid in pace with and proportion to the value of the made deliveries found in **ANNEX 2** against presentation of below mentioned documents by telegraphic bank transfer to the SELLER's account not later than (30) day from the date of invoice. The payment amounts are based on the milestones listed in **ANNEX 7**.

(1) two original copies of an invoice covering the due amount;

c) Payment for Tagged Equipment and Materials

The term "subcontractor(s)" in this section c) and the following section d) includes, without limitation, Dresser-Rand and all other suppliers of Tagged Equipment and Materials and related services for this Contract which are obtained by THE SELLER's purchase orders.

10 % of the total price for the Tagged Equipment and Materials (TBD) shall be paid against presentation of below mentioned documents by Advanced Payment Guarantee to the SELLER's account not later than thirty (30) days from the DATE OF SIGNATURE.

(1) two original copies of an invoice covering the due amount;

The remaining 90 % of the total price for the Tagged Equipment and Materials in Section 5.1 (TBD) less any disputed amount and retainage specified in the following section d), shall be paid against presentation of below mentioned documents by telegraphic bank transfer to the SELLER's account not later than thirty (30) days from the due date of the invoice. The payment amounts are based on the milestones listed in **ANNEX 7.**

(1) one original copy of THE SELLER's invoice covering the due amount;

(2) un-priced copies of subcontractor's invoices indicating milestone.

(3) Lien waivers and Affidavits from the subcontractor and THE SELLER in a form reasonably acceptable to **THE BUYER** as proof that the subcontractor has been paid by THE SELLER for the equipment and services being invoiced to THE BUYER.

d) BUYER shall pay to SELLER the face amount of each invoice [less 10% paid initially to THE SELLER as an equipment down payment and less any disputed amount and less 5.0% as retainage]. The retainage is intended as partial security and as a fund to address performance and payment issues by THE SELLER, including without limitation, the following:

(a) defective work not remedied;

(b) third-party claims for payment or liens filed or reasonable evidence indicating the probable filing of such claims or liens;

(c) failure of THE SELLER to make payments properly due to subcontractors pursuant to applicable subcontracts or purchase orders or failure of the subcontractors to make payment properly due for any portion of the Work and

(d) damage to THE BUYER or another contractor, or subcontractor caused by THE SELLER, or any entity for whom THE SELLER is responsible.

THE BUYER shall pay the 5.0% retainage to THE SELLER on the earlier of (i) within 15 days after Acceptance, (ii) termination of this contract due to breach by the Buyer for Buyer's convenience, or (iii) 42 months from the Effective Date unless the cause of the delay in successfully completing plant commissioning or the Performance Test within the projected time period is due to the acts or omissions of Seller or its subcontractors.

5.4. Rates for Advisory Services

Any of THE SELLER's Advisory Services, excluding those services included in the Contract Price under Section 5.1 and ANNEX 4 Section 1.1.1, performed at the request of THE BUYER shall be charged at THE SELLER's daily rates pursuant to the schedule attached as **Annex 4** hereto and shall be paid by THE BUYER within 30 (thirty) days after receipt of any corresponding invoice to be made out in monthly intervals, based on attendance sheets countersigned by THE BUYER.

5.5. Reimbursible Costs

THE BUYER shall compensate THE SELLER for reimbursable costs on demand against THE SELLER's invoice payable within 30 (thirty) days.

Article 6. Commencement and Execution of Work

6.1. Time Schedule

Within fifteen (15) days from the Effective Date, THE SELLER shall provide THE BUYER with a detailed time schedule for achieving the delivery dates set forth in **ANNEX 5** hereof, indicating the target dates relating to THE SELLER's execution schedule and the approximate date on which items of the Tagged Major Equipment and Materials will arrive at the delivery point.

THE SELLER has commenced the execution of the Work under this Contract under THE BUYER's purchase order number 350886 effective July 11, 2012 and shall continue to execute the Work with all possible promptness and diligence and use every reasonable effort to complete the Work in accordance with the Time Schedule attached as **ANNEX 5** hereto, unless and insofar as any delay is caused by reasons not attributable to THE SELLER or attributable to Force Majeure. THE SELLER and THE BUYER shall notify each other of the occurrence or threatened occurrence of any event which may jeopardize mechanical completion of the Plant according to the Time Schedule, as may be amended from time to time.

6.2. Delivery of Basic Engineering Package and Detail Engineering Package

All specifications, designs, drawings, calculations and other information necessary for the construction, operation, maintenance, repair and replacement of items of equipment delivered under this Contract shall be delivered by THE SELLER to THE BUYER in orderly, timely and detailed manner so that THE BUYER has reasonable time for review and comment and can achieve its target dates for mechanical completion of the Plant.

6.3. Delivery of Tagged Major Equipment and Materials

THE SELLER shall deliver all Tagged Major Equipment and Materials to be provided by THE SELLER hereunder to jobsite no later than the delivery dates as specified in **ANNEX 5** hereof according to Incoterms 2010 as referred to in Article 5.2 hereof. BUYER is responsible for receiving and storing all Tagged Major Equipment and Materials delivered to jobsite. Equipment suppliers shall include in their supply quote any applicable special handling storage and installation requirements for which THE BUYER or its representatives will be responsible.

6.4. Extension of Time Schedule

The Time Schedule according to **ANNEX 5** and any of the target dates contained therein shall only be changed

a) where a written Change Order has been agreed and signed between THE BUYER and THE SELLER in accordance with Article 9 and such Change Order affects the Time Schedule ; or

b) where THE SELLER has been delayed in the execution of the Work by reasons not attributable to THE SELLER, in which case the target dates shall be postponed for a period of time equivalent to any time reasonably required to make up for such delay and the resulting unavoidable extra cost, if any, shall be borne by THE BUYER, provided THE SELLER has used its best efforts to minimize effects on costs and schedule; or

c) in the event of a delay caused by Force Majeure, whereupon the target dates will be extended for a time period reasonably required to make up for such delay and each party shall bear its own additional costs incurred as a result of the Force Majeure event, such costs being necessary to fulfill each party’s respective obligations under the Contract .

6.5. Progress Reports

THE SELLER shall submit to THE BUYER a detailed monthly progress report within 10 (ten) days of the last calendar day of each month showing the Work performed in the previous month, compliance with the Time Schedule and the steps proposed to be taken to correct any delays in the Time Schedule, if necessary. THE SELLER shall also provide a weekly simplified progress report which describes THE SELLER’s activities of the past week or new developments which may significantly affect the Contract schedule or cost.

6.6. Liquidated Damages for Delay

In the event THE SELLER fails to deliver all Tagged Major Equipment and Materials to be provided by THE SELLER according to Article 3.2 hereunder within the delivery dates as set forth in **ANNEX 5** for reasons solely attributable to THE SELLER, THE BUYER shall be entitled, after a grace period of 2 (two) weeks, to ask for liquidated damages at a rate of 0.3% (zero point three percent) of the value of any delayed shipment for each completed week of delay and for each subsequently completed week of late delivery up to a maximum of 5(five) % of the Contract Price. However, THE SELLER shall not be liable for any liquidated damages to the extent such delay in delivery of Tagged Major Equipment and Materials does not result in a delay of Mechanical Completion hereunder.

Article 7. Inspection and Testing

7.1. Inspection by THE SELLER

The Tagged Major Equipment and Materials supplied by THE SELLER for the Plant shall be new, constructed by BUYER's approved vendors and workshops, and shall conform to the specifications. THE SELLER shall, at no additional cost to THE BUYER, carry out inspection and no load, pressure, vacuum and other required testing of equipment in THE SELLER's vendor's workshops or other places of manufacture/fabrication in order to ensure that the specified materials have been used in the manufacture/fabrication of the Tagged Major Equipment and Materials to be provided by THE SELLER under this Contract and that their workmanship corresponds to the required standards and specification.

7.2. Inspection by THE BUYER

THE BUYER or its duly appointed representatives, on giving reasonable written notice to THE SELLER, shall have the right to visit THE SELLER's vendor's workshops during normal business hours for inspection. THE SELLER shall provide to THE BUYER a schedule of inspections to be carried out on the Tagged Major Equipment and Materials at least 30 (thirty) days prior to the first inspection. THE SELLER shall give to THE BUYER reasonably in advance notice of readiness of the equipment for inspection or testing and THE BUYER shall have the right to participate in such inspection and testing, provided that THE BUYER's participation does not cause any delay or inconvenience to THE SELLER. Any such participation of THE BUYER in such inspection and testing shall be at THE BUYER's sole expense. In the event THE BUYER discovers any defects in construction, materials or failure to conform to specifications, THE BUYER shall promptly notify THE SELLER of such discovery, and THE SELLER shall notify the appropriate Vendor(s) to promptly correct the defect or non-conformity and make reasonable efforts to maintain the original delivery schedule without additional cost to THE BUYER, provided, however, that any approval of vendors or workshops by BUYER, or inspection by Buyer, or identification by Buyer of actual or potential defects, shall in no manner relieve or affect the SELLER's responsibility and liability regarding the subject equipment.

7.3. Inspection documents

THE SELLER shall provide THE BUYER with inspection reports and testing certificates for all such inspection and testing, including tests certificates issued by the relevant authorities, if so required.

Article 8. Shipping Preparation and Arrangements

8.1. Protection and packing

After inspection, and before dispatch, THE SELLER shall, at its own expense, take necessary steps required to ensure that each item of Tagged Major Equipment and Materials be properly protected against damage, deterioration and corrosion and packed with proper protection for safe arrival at the destination in accordance with THE SELLER's standard export packing and labeling and be suitable for storage at the site if stored in accordance with THE SELLER's instructions.

8.2. Delivery Confirmation

THE BUYER shall receive and inspect the deliveries and inform THE SELLER that the deliveries were received in good order. BUYER will take title to the Tagged Major Equipment and Materials upon confirmation that the items were received in good order. If the deliveries are not received in good order, THE BUYER will promptly notify THE SELLER and title shall not pass until the delivered item has been satisfactorily remediated or replaced with a replacement item satisfactory to THE BUYER. Such that multiple items are in a delivery, BUYER shall take title to all non-defective items in the delivery.

8.3. Air freight documents

In case of air freight, one set of shipping documents shall be enclosed in the cargo package.

8.4. Delivered Price

The contractual price for deliveries of all Tagged Major Equipment and Materials shall be DDP at THE BUYER's site in El Dorado, Arkansas and shall be duty and delivery paid.

Article 9. Change Orders and Price Adjustment

THE BUYER may, by written instructions to THE SELLER, require additions, changes or alterations to THE SELLER's Scope of Work. Within 10 (ten) working days after THE SELLER receives such written instructions from THE BUYER, THE SELLER shall furnish to THE BUYER a written statement in detail of its proposed net increase or decrease to the Contract Price (hereinafter referred to as "Proposed Price Adjustment") and/or the estimated increase or decrease in the reimbursable costs, if any, the estimated effect on the Time Schedule and/or any other effect on any other provision of this Contract resulting from THE SELLER's compliance with said written instructions. THE SELLER shall proceed with any such additional work or change if directed to do so by THE BUYER, provided THE BUYER and THE SELLER have executed a formal written Change Order stipulating the exact amount of increase or decrease to the Contract Price and/or the estimated increase or decrease in the reimbursable costs, if any, and the estimated effect on the Time Schedule as well as the effect on any other provision of this Contract. Change orders shall be consecutively ordered and submitted in a standard format mutually agreed to by The BUYER and THE SELLER.

Article 10. Use of Technical Information

10.1. THE SELLER's Proprietary Data

THE BUYER expressly recognizes and acknowledges that the Process Technology and Technical Information to be disclosed and licensed by THE SELLER hereunder consist of data, experience and know-how which constitutes THE SELLER's proprietary and confidential information (hereinafter "THE SELLER's Proprietary Data"). THE BUYER shall for a period of 10 (ten) years from the Effective Date hold in confidence all of THE SELLER's Proprietary Data and the knowledge gained there from and shall, furthermore, take all reasonable precautions to prevent the same, in whole or in part, from reaching third parties other than THE BUYER's affiliates, and shall make no use thereof except for the purposes of this Contract and the operation, maintenance and repair of the Plant without the prior written consent of THE SELLER. However, THE BUYER shall have the right to disclose any or all of THE SELLER's Proprietary Data to its officers or employees, THE BUYER's third party Project Manager who is acting on behalf of THE BUYER, BUYER's and contractors, to the erection Contractor and its subcontractors and vendors to the extent required for the performance of this Contract, provided that the parties or persons to whom such disclosures are made shall have assumed obligations of confidence and restricted use consistent with this Article 10 and in accordance with THE BUYER's regular procedures established for the protection of THE BUYER's own proprietary and confidential information. THE SELLER reserves the right to require erection contractor and its subcontractors and vendors to enter into a confidentiality Contract directly with THE SELLER regarding THE SELLER's Proprietary Data; however, such confidentiality Contracts shall not conflict with the terms of any confidentiality Contract between THE SELLER and THE BUYER.

10.2. THE BUYER's Proprietary Data

THE SELLER shall for a period of 10 (ten) years after the Effective Date hold in confidence all of THE BUYER's Proprietary Data including manufacturing and selling costs, sales and marketing data, project investment costs, emissions data not generally available to the public or other information which THE BUYER may reasonably designate as Proprietary Data ,and the knowledge gained there from, and shall take all reasonable precautions to prevent the same, in whole or in part, from reaching third parties and shall make no use thereof except for the purposes of this Contract without the prior written consent of THE BUYER. However, THE SELLER shall have the right to disclose any or all of THE BUYER's Proprietary Data to its officers or employees, subcontractors and vendors to the extent required for the performance of this Contract, provided that the parties or persons to whom such disclosures are made shall have assumed obligations of confidence and restricted use in accordance with THE SELLER's regular procedures established for the protection of THE SELLER's own proprietary and confidential information.

10.3. Exclusions

The obligations of confidence and restricted use under Article 10.1 and 10.2 above shall not apply to any information which, as evidenced by appropriate documentation:

a) was in the receiving party's lawful possession prior to submission thereof by the disclosing party and had not been obtained by the receiving party either directly or indirectly from the disclosing party; or

b) is hereafter lawfully made available to the receiving party by a third party having no obligation of secrecy to the disclosing party as to said information; or

c) is or at the time becomes available to the public by publication through no act or failure to act by the receiving party; or

d) is required to be disclosed under law;

Article 11. Service and Equipment Warranties

11.1. Services Warranty

THE SELLER shall perform all engineering and, as the case may be, advisory services with the degree of care, skill and judgment that is generally exercised by professional engineering companies of international reputation in performing like services (hereinafter referred to as the "Services Warranty"). Design services shall be performed by qualified engineers and other professionals, properly qualified, experienced and licensed to perform those services.

THE BUYER shall promptly notify THE SELLER of any breach of the Services Warranty but in no event later than 15 (fifteen) days after the date THE BUYER has knowledge of such breach. If THE SELLER breaches the Services Warranty and is timely notified thereof, and does not make substantial progress to remedy the breach within 10 (ten) days after receipt of THE BUYER's written notice then BUYER may obtain work and services elsewhere or wait until THE SELLER in fact performs under the Service Warranty, and SELLER shall bear the costs associated with such breach (and any delay in the Mechanical Completion resulting from such breach shall be subject to liquid damages pursuant to Article 6.6).

The Services Warranty shall expire 12 (twelve) months after the successful completion of performance tests. A failure to give THE SELLER notice of any breach of the Services Warranty prior to ten (10) days following the expiration of the Services Warranty period shall be deemed a waiver by THE BUYER of such warranty.

11.2. Equipment Warranty

THE SELLER hereby warrants that the Tagged Major Equipment and Materials will be new and of suitable grade for their intended purpose and free of liens and defects in material and workmanship. However, THE SELLER does not warrant the Tagged Major Equipment and Materials to be free from defects caused by or related to damage caused by improper handling and/or installation at THE BUYERs Plant site (hereinafter the "Equipment Warranty") unless such damage was caused as a result of following the installation procedures specified by THE SELLER any contractor or agent of THE SELLER, or THE SELLER's equipment vendor.

THE BUYER shall promptly notify THE SELLER of any breach of the Equipment Warranty but in no event later than 15 (fifteen) days after the date THE BUYER has knowledge of such breach. If THE SELLER breaches the Equipment Warranty and is timely notified thereof, and does not make substantial progress to remedy the breach within 30 (thirty) days after receipt of THE BUYER's written notice, then THE BUYER may obtain work and services elsewhere or wait until THE SELLER in fact performs under the Service Warranty, and Seller shall ITHE SELLER shall not be responsible for installation of defective equipment if THE BUYER knows prior to installation the equipment was defective.

The Equipment Warranty shall expire 12 (twelve) months after the “Initial Operation of the Plant”, A failure to give THE SELLER notice of any breach of the Equipment Warranty prior to ten (10) days following the expiration of the Equipment Warranty period shall be deemed a waiver by THE BUYER of such warranty. In the event the Article 12 Performance Guarantees are not met as a result of faulty design or manufacture of equipment which must be corrected to meet the performance guarantees, the Equipment Warranty for the faulty design or parts of the equipment shall be extended 12 (twelve) months beyond the date on which such correction of the faulty equipment has been completed.

THE SELLER shall include in its purchase orders for the supply of Tagged Major Equipment and Materials, written provisions whereby the manufacturer, supplier or vendor agrees to repair or replace at its own expense any defects in material or workmanship which may develop within the equipment warranty period, or such longer period as THE SELLER may be able to obtain, and such other warranty provisions as may customarily be obtainable in the circumstances. Each purchase order shall also provide that all warranties granted hereunder shall extend directly to THE BUYER. THE SELLER shall cooperate with and assist THE BUYER in the enforcement of all such warranties on behalf of THE BUYER during the equipment warranty period but shall not be required to commence any action or proceeding in connection with such warranties. Any additional cost which may be charged by a manufacturer, supplier or vendor of equipment for extending its warranty coverage beyond its normal warranty period, if approved by THE BUYER, shall be reimbursed to THE SELLER by THE BUYER in accordance with Article 9.

11.3. Exclusions and Limitations

THE SELLER shall have no obligation for breach of warranty if THE BUYER or THE BUYER’s Contractor fails to store, operate or maintain the equipment in accordance with

(i) generally approved industry practices,

(ii) the provisions of this Contract, or

(iii) the provisions of any storage, operating or maintenance instructions furnished to THE BUYER or THE BUYER’s Contractor by THE SELLER.

THE SELLER shall have no obligation for breach of warranty due to

(i) normal wear and tear,

(ii) faulty or improper installation unless THE BUYER or its Contractor was following the instructions of THE SELLER ; or

(iii) any cause attributable to THE BUYER or THE BUYER’s Contractor misuse or neglect.

The warranties set forth in this Article 11 are exclusive and in lieu of all other warranties and guarantees (including any warranty of merchantability or fitness for use or the purpose intended, whether written or oral or implied in fact or in law, and whether based on statute, contract, tort (including negligence) or otherwise. Any costs incurred by THE SELLER in performing corrective work or repairing or replacing defective equipment and otherwise complying with its obligations under this Article 11 shall not accrue or apply against, or be limited by, any liability limitation.

Article 12. Completion and Acceptance

12.1. Mechanical Completion

At such time as THE BUYER determines that the Plant, including all related equipment, control systems and components thereof, has been mechanically completed and THE BUYER and/or THE BUYER's Contractor has successfully completed mechanical testing and cleaning of the Plant such that it is ready to begin commissioning, using THE SELLER's Advisory Services, where required, THE BUYER shall provide THE SELLER with a copy of the certificate of Mechanical Completion. Any minor deficiencies which will not preclude start-up and performance testing shall be corrected or caused to be corrected by THE BUYER within a reasonable time.

Notwithstanding the forgoing the Plant shall be deemed mechanically accepted upon commencement of Commissioning and Start-Up of the Plant. Nothing in this Article 12.1 shall obligate THE SELLER to perform or correct any installation or construction work for the Plant, or render THE SELLER liable for any defective installation or construction work performed by THE BUYER or THE BUYER's contractors unless THE BUYER or its Contractor was following the instructions of THE SELLER.

12.2. Commissioning and Start-Up

Promptly after Mechanical Completion has occurred, THE BUYER shall commence commissioning and start-up of the Plant in order to bring the Plant into a stable operating condition ready for performance testing. THE BUYER shall notify THE SELLER in writing 10 (ten) working days in advance of the number of personnel to be assigned for and the envisaged duration of the requested Advisory Services. Upon such written request, THE SELLER shall assign qualified personnel for and render Advisory Services during the commissioning, start-up and/or the subsequent performance testing of the Plant, as the case may be. Advisory Services shall not exceed $200,000.00, for commissioning, startup and performance testing of the plant, in Article 5.2, unless delays extend the period of Advisory Services due to errors by persons other than THE SELLER. The foregoing limitation excludes any Advisory Services that may be requested by BUYER of SELLER not in conjunction with commissioning, startup and performance testing related activities.

12.3. Performance Guarantees

THE SELLER warrants the correctness and sufficiency of the Process Technology and the Technical Information as specified in the Basic and Detailed Engineering Package for THE BUYER to erect, operate and maintain the Plant and that the Plant and all advisory and engineering services to the extent supplied by THE SELLER hereunder shall be in material conformity with the requirements of this Contract and shall conform to generally accepted engineering practice, safety and quality control requirements as set forth in the applicable codes and industry standards.

THE SELLER warrants that if the Plant is constructed and operated in conformity with the Basic and Detailed Engineering Package supplied by THE SELLER and supplied with raw materials, chemicals and utilities as specified in the Basic Engineering Package, the Plant shall achieve the performance specified in **ANNEX 6** hereof.

12.4. Performance Test

The performance test of the Plant will be conducted in accordance with the performance test procedure as defined in ANNEX 6. THE BUYER's personnel shall conduct the performance test with the assistance of THE SELLER's personnel assigned for Advisory Services. THE BUYER shall conduct the performance test within 60 (Sixty) days after the Plant has reached stable operation at design rate and all necessary adjustments have been made. The performance test run shall be conducted for 72 (Seventy Two) consecutive hours. The Performance Guarantees shall be met if the performance values are achieved, on a 24 (twenty-four) hours average during the test run. THE BUYER shall at any time during the Performance Test and any repeat thereof ensure the availability of sufficient qualified operating personnel, raw materials, chemicals and utilities.

THE BUYER shall provide to THE SELLER written notice of successful performance testing within 5 (five) days of completion of a successful performance test. If the Plant fails to pass the performance test for reasons attributable to THE SELLER, the deficiencies will be promptly identified by THE BUYER and THE SELLER, and corrective measures will be agreed to by THE BUYER and THE SELLER at the earliest practicable date.

If the failed performance test is attributable to THE SELLER, THE SELLER shall take such action as may be necessary to remedy, at its expense, all deficiency attributable to THE SELLER which prevented the Plant from successfully completing the performance test, whereupon a second performance test run shall take place.

In the event that also during this second test run one or more of the Performance Guarantees are not met for reasons attributable to THE SELLER, THE SELLER shall, at its option, either take such action as may be necessary to remedy, at its expense, all deficiency attributable to THE SELLER which prevented the Plant from successfully completing the performance test, or pay to THE BUYER the liquidated damages provided for in **ANNEX 6.** The payment of such liquidated damages shall be in lieu of all liability for any damages for failure to satisfy the Performance Guarantees provided for in **ANNEX 6** and shall be the sole remedy of THE BUYER against THE SELLER for such failed performance; THE BUYER having acknowledged that the amount of liquidated damages is fair and reasonable under the circumstances. The total maximum liquidated damages which are payable by THE SELLER to THE BUYER under this Article 12.4 shall not exceed 7 (seven) % of the of the Total Contract Price or the overall limit of liability, whichever is greater

If the failed performance test is attributable to THE BUYER, THE BUYER's contractor, or any person other than THE SELLER or THE SELLER's vendors, then THE BUYER shall, at its option, either take such action as may be necessary to remedy, at its expense, all such deficiencies which prevented the Plant from successfully completing the performance test, or issue to THE SELLER a written waiver of the performance testing, in which event, all Performance Guarantees provided for in **ANNEX 6** shall be deemed to have been fulfilled.

12.5. Accuracy of Performance Data for Acceptance

Prior to the start of the performance test THE BUYER and THE SELLER shall mutually agree on a written performance test procedure which shall include data recording, minimum duration of performance testing, meter calibration and analytical procedures and acceptable range of error in accuracy of performance data which shall be deemed acceptable in meeting the performance guarantees.

12.6. Acceptance

Upon successful completion of the performance test that meets all performance guarantees in accordance with ANNEX 6, THE BUYER shall promptly issue to THE SELLER the Acceptance Certificate. If due to no fault of THE SELLER, THE BUYER fails or is unable to issue the Acceptance Certificate to THE SELLER within 3 (three) months after Mechanical Completion but in no event later than 42 (forty-two) months after the Effective Date (subject to Section 5.3 (d)), the Acceptance Certificate shall be deemed issued without further action by either party, unless otherwise agreed by the parties. The issuance of the Acceptance Certificate by THE BUYER shall not release THE SELLER of any of its warranty obligations under Article 11 of this Contract.

Article 13. Patent Liability

13.1. Indemnity by THE SELLER

THE SELLER agrees to indemnify, hold harmless and defend THE BUYER from any action against THE BUYER based on a claim that THE BUYER's use of the Work, the Process Technology and Technical Information in accordance with THE SELLER's design specifications and instructions constitutes infringement of any third party patents issued prior to the Effective Date, provided THE SELLER is notified promptly in writing by THE BUYER of such claim and THE BUYER agrees to cooperate with THE SELLER in the defense of such action. THE BUYER's cooperation shall include rendering to THE SELLER and its counsel all available assistance for the purpose of contesting the third parties infringement claims and actions and providing all evidence at its disposal.

13.2. Resolution of Claims

THE SELLER shall be entitled to conduct at its expense all negotiations for the settlement of any infringement claims and the defense of any litigation which may arise from such claims. THE BUYER may enter into a commitment, settlement or compromise to any third party claim only at the direction of THE SELLER, provided such settlement does not prejudice THE SELLER, or if Seller is not providing an adequate defense or indemnity. THE SELLER shall be entitled to make at its expense modifications to the Plant or take such other action with respect to the Plant to avoid the alleged infringement of the third party's rights, provided such changes do not in any way negatively affect the operation, efficiency, capacity or reliability of the Plant.

13.3. Limit of Patent Liability

THE SELLER's aggregate liability under this Article 13, including the costs of modifying the Plant, shall not be subject to the limitations of liability contained in Article 20.

Article 14. Indemnity

14.1. Indemnity by THE SELLER

THE SELLER shall within the scope of its statutory, legal or contractual liability indemnify and hold THE BUYER, and its personnel harmless from and against all claims, damages, losses and expenses arising out of or resulting from THE SELLER's performance of its obligations under this Contract and claims, damages, losses or expenses are caused by negligent acts or omissions of THE SELLER or its personnel or contractors.

14.2. Indemnity by THE BUYER

THE BUYER shall indemnify and hold THE SELLER and its personnel harmless from and against all claims, damages, losses and expenses arising out of negligent acts or omissions of THE BUYER or its personnel. THE BUYER shall further indemnify and hold THE SELLER and its personnel harmless from and against any and all claims for damages and losses which might occur to the Plant and to the facilities already existing during erection and start-up of the Plant, including performance tests up to Acceptance, except where such claims are caused by THE SELLER or its personnel.

Article 15. Insurance

15.1. General Insurance Requirements

SELLER shall maintain, or cause to be carried and maintained, the following insurance during the term of this Contract with the limits as specified below, for each type of insurance. BUYER shall be listed as an additional insured on the policies required by subparagraphs (2) through (5) below, which policies shall be written on an occurrence basis.

(1) Worker's Compensation insurance within the statutory limits and, if necessary, including occupational illness or disease coverage in accordance with the laws of the nation, state, territory, or province exercising jurisdiction over the employees.

(2) Employers Liability insurance with a minimum limit of $1,000,000 per occurrence.

(3) Commercial General Liability Insurance, including, but not limited to, Contractual Liability, Products and Completed Operations Liability, Broad Form Property Damage and Bodily Injury Liability, and Explosion, Collapse and Underground Liability, and blanket contractual covering the indemnity specified in this Contract, with a minimum limit of $10,000,000 per occurrence.

(4) Comprehensive Automobile Insurance, including, but not limited to, all owned, non-owned or hired vehicles with a minimum limit of $1,000,000 per occurrence for bodily injury and property damage.

(5) Excess Liability Insurance which serves to bring the available limits under coverages specified in (2) and (4) above to a minimum combined single limit of $10,000,000 per occurrence for bodily injury, property damage and personal injury, and, Excess Liability Insurance which serves to bring the available limits under (3) above to a

minimum combined single limit of $30,000,000 per occurrence for bodily injury, property damage and personal injury. This coverage shall be written on an occurrence basis and provide coverage at least as broad as the underlying insurance policies specified above.

(6) Professional Liability Insurance with a minimum limit of $2,000,000.

15.2. Subrogation Rights

BUYER and SELLER hereby waive all subrogation rights under respective insurance as set forth in this ARTICLE 15, and agree to keep such waivers effective, for the benefit of each party, their subsidiaries, agents, affiliated companies and their employees, officers and directors.

15.3. Insurance Certificates

Prior to commencing Services, THE SELLER will provide BUYER with insurance certificates confirming the existence of the above insurance and shall maintain these coverages until THE BUYER issues written notice of successful performance testing and THE SELLER's representatives have left the site.

15.4. Lien Waivers on Tagged Items of Equipment:

THE SELLER will provide lien wavers from vendors for all Tagged Major Equipment and Materials.

Article 16. Governmental Regulations and Taxes

16.1. Permits and Licenses

THE BUYER shall obtain any permits and licenses required for the building and subsequent operation of the Plant. THE SELLER shall, if so required, obtain the necessary export license for the Tagged Major Equipment and Materials.

16.2. Taxes

In addition to and not a part of the Contract Price and any adjustments thereto, BUYER shall reimburse SELLER for any and all amounts necessary to pay any and all excise, sales, use and gross receipts taxes (excluding income or franchise tax) or any other similar taxes and duties, arising out of or related to this Contract.

Article 17. Title and Risk of Loss

Title to the Tagged Major Equipment and Materials shall pass to THE BUYER at the time of delivery in accordance with Article 3.2 provided, however, THE SELLER was paid in full for the respective shipment in accordance with Article 5.2 hereof. Care, custody and control of the equipment shall pass to THE BUYER upon delivery of the Tagged Major Equipment and Materials to THE BUYER's jobsite.

Article 18. Termination

18.1. Termination for Convenience

THE BUYER may terminate this Contract in whole or in part at any time by written notice to THE SELLER stating the extent and effective date of such termination. Thereupon, THE SELLER shall

(i) stop all work and place no further purchase orders or subcontracts for services or Tagged Major Equipment and Materials, except as may be necessary to complete portions of the Work not terminated;

(ii) terminate purchase orders and subcontracts outstanding, to the extent that they relate to the terminated portion of the Work;

(iii) take any necessary action to protect property in THE SELLER's possession in which THE BUYER has or may acquire an interest;

(iv) complete performance of the un-terminated portion of the Work; and

(v) take any other action toward termination of the Work which THE BUYER may reasonably direct.

In the event of termination under this Article 18.1, THE BUYER will pay to THE SELLER the Contract Price for work performed prior to termination or non-cancelable obilgations incurred, according to Article 5 less the License Fee (unless THE BUYER shall complete and operate the Plant, in which case the License Fee shall be payable in full) and any saved expenses and costs.

After receipt of a notice of termination, THE SELLER shall submit to THE BUYER its written termination claim together with its schedule for closing down the terminated portion of the Work. Such claim shall be paid promptly, but in no event later than 30 (thirty) days after the date, THE SELLER's termination claim is submitted to THE BUYER.

18.2. Termination for Material Breach

In the event of any material breach of this Contract by either party hereto which is not initiated to be corrected within 30 (thirty) days after written notice thereof to the party in breach from the respective other party, this Contract and the Technology License granted hereunder may be terminated by a written notice thereof from the non-breaching party. Termination of this Contract for material breach shall be without prejudice to all the accrued rights and liabilities of the parties hereto, including but not limited to THE BUYER's remaining obligation under Article 10 hereof.

18.3. Termination for certain Acts

Should an application be filed either by or against either of the parties hereto in any court or pursuant to any statute, either in bankruptcy, insolvency or similar proceedings, which is not dismissed within 30 (thirty) days of filing; or should either party make an assignment for the benefit of creditors, the respective other party may terminate this Contract at its option by 10 (ten) days prior written notice to the other party. Upon any termination under this Article 18.3, THE BUYER shall forthwith return to THE SELLER all data, drawings, design and other materials containing any of THE SELLER's Proprietary Data.

Notwithstanding any termination of this Contract by either party under this Article 18.3,

i. The obligations of confidentiality and restricted use contained in this Contract, specifically in Article 10, shall remain in force and effect.

ii. In the event of bankruptcy of THE SELLER, THE BUYER shall be entitled to retain all goods and services for which THE BUYER has paid THE SELLER.

Article 19. Force Majeure

Neither party shall be liable to the other party for non-performance or delay in performance of any of its obligations under this Contract due to reasons beyond the reasonable control of either party, including, but not limited to, decrease of governments, acts of god, strikes, war, riots, civil insurrection, sabotage, floods, fire, unavoidable accidents, explosions, earth quakes, embargoes and other governmental restrains and acts of civil or military authorities (all together hereinafter referred to as “Force Majeure”).

Unless prevented by Force Majeure, the party claiming Force Majeure shall promptly notify in writing the other party, specifying the nature of the delay caused by Force Majeure and the probable extent of the delay, if determinable. If such notice is duly given, the time for performance hereunder shall be extended for such period as may be reasonable and necessary to make up for the delay. If any such delay shall cause a suspension of the Work or any part thereof and the cost of the Work or such part thereof is increased as a consequence of such suspension, such increase shall be deemed to be one resulting from a change in the scope of Work and the parties agree to execute a change order in accordance with Article 9.

Article 20. Limitations of Liability

20.1. Overall Limit of Liability

The aggregate liability of THE SELLER with respect to claims and costs arising out of or incurred in connection with this Contract, except as specifically provided in this Agreement, shall not exceed in the aggregate an amount equal to 7 (Seven) % of the total Contract Price under Article 5.1 of this Contract. Specifically excluded in the aggregate liability of THE SELLER are liabilities for patent indemnity. The aggregate limit of liability of THE SELLER shall be satisfied or reduced by any payments to THE BUYER under and pursuant to any insurance policy required to be provided by THE SELLER hereunder.

20.2. Exclusion of Consequential Damages

Notwithstanding any other provisions of this Contract, neither THE SELLER nor THE BUYER shall have any liability whatsoever to the other party for any special, incidental, indirect or consequential loss or damages, commercial injury or damages of any nature such as, but not limited to, loss of income, profit, business opportunity or production or loss by reason of Plant shut-down, delay or any other caused or increased use of raw material, energy or labor, claims of customers, increased financing costs or insurance premiums, or the like.

20.3. Exclusion of Exemplary Damages

THE BUYER expressly waives any right to claim or to seek recovery of exemplary or punitive damages from THE SELLER for any act or omission arising out of or in connection with the performance of THE SELLER's obligations under this Contract or otherwise.

Article 21. General Provisions

21.1. Non-Assignment

This Contract shall not be assignable by THE BUYER or THE SELLER without the prior written consent of the other party hereto, which consent shall not be unreasonably withheld; however, notwithstanding the foregoing provision THE BUYER may assign this contract to its Affiliates.

21.2. Compliance with Laws

During the performance of its obligations under this Contract, THE SELLER shall comply with all laws, rules, codes of practice and regulations applicable to the Work. Should any changes in the applicable laws and regulations be introduced after the Effective Date, such changes are subject to a Change Order in accordance with Article 9 with respect to the Contract Price and Time Schedule, all if appropriate.

21.3. Entire Contract

This Contract including its Annexes between THE BUYER and THE SELLER constitute the entire Contract between the parties with respect to the subject matter hereof and shall supersede all prior written and oral Contracts and undertakings between the parties. Both parties expressly acknowledge that there are no representations or warranties, express or implied, except as herein specifically set forth.

21.4. Amendment

Any modifications or amendments to this Contract shall only be valid if executed in writing and signed by both parties hereto. This shall also apply to a change in the written form.

21.5. Applicable Law and Governing Language

This Contract shall be governed and construed in accordance with the laws of Georgia—USA to the exclusion of its conflict of law provisions. This Contract is in the English language only, and the English language shall be governing in all respects under or in connection with this Contract.

21.6. Notices

Any notice, demand or request required or which may be given hereunder to the respective parties shall be in writing to the following addresses:

to THE SELLER:

Weatherly Inc

1100 Spring Street NW

Suite 308

Atlanta, Ga 30309

Attn: David E. Boyd, Jr. – President

to THE BUYER:

El Dorado Chemical Company

4500 N West Avenue

El Dorado, AR 71730

Attn: Greg Withrow – Plant Manager

with copy to THE BUYER's General Counsel

El Dorado Chemical Company

16 South Pennsylvania

Oklahoma City, OK 73107

Attn: David Shear – General Counsel

Notice by certified or registered mail shall be deemed received 5 (five) days following deposit in a depository under the exclusive custody or control of the local postal service. Changes of address for notice shall be made in compliance with this Article 21.6.

21.7. Headings

Headings or captions herein are merely for convenience and are not part of this Contract and shall not in any way modify or affect the provisions of this Contract.

21.8. Binding Effect

This Contract shall be binding upon and inure to the benefit of the parties hereto and their respective successors or permitted assigns.

At any time and with THE BUYER's consent, THE SELLER shall have the right to freely access the Plant together with a potential client. THE BUYER shall not unreasonably withhold its consent.

21.9. Non-Waiver

The forbearance or delay of either party in exercising any rights under this Contract shall not be deemed to be a waiver or release of such right unless expressly set forth in writing by such party.

21.10. Conflict in Interpretation

In the event of conflict between the provisions of this Contract and any of the appendices attached hereto and made a part hereof, the provisions of this Contract shall prevail, unless otherwise specifically set forth in this contract.

21.11. Term and Effective Date

This Contract shall take effect as of the Effective Date and the rights and obligations hereunder shall remain in full force and effect until they are fulfilled or deemed to be fulfilled.

The Effective Date shall be the following date which is the latest:

a) the Contract has been approved by THE BUYER;

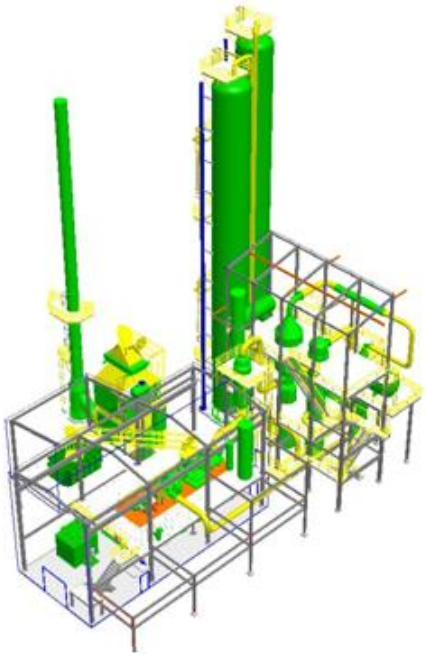
b) the Contract has been approved by THE SELLER.

c) Advanced Payment has been received by SELLER

IN WITNESS WHEREOF, the parties hereto have caused this Contract in duplicate to be executed on their behalf by their duly authorized representatives as of the date first written above.

/s/ Jack E. Golsen, Chairman	/s/ David E. Boyd
THE BUYER	THE SELLER
El Dorado Chemical Company	Weatherly Inc
Date: 11/30/2012	Date: 11/29/2012

ANNEX 1 Technical Description of the Plant



TECHNICAL DESCRIPTION

FOR

A

1100 STPD NITRIC ACID PLANT, 65 wt.% Nitric Acid Minimum

FOR

EL DORADO CHEMICAL COMPANY

IN

EL DORADO, ARKANSAS

WEATHERLY INC.
ATLANTA, GEORGIA
USA

PREFACE

[Note: Covered by Section 10 of Agreement]

INDEX

1. INTRODUCTION

1.1 This document provides an outline of the design of the plant for the manufacture of 1100 STPD (91,667 lb/h 100% basis) of nitric acid, at a nominal concentration of at least 65 wt.%, and containing less than 0.01 wt.% of dissolved oxides of nitrogen.

The expected performance shown in Section 3.1 is based on using an air compressor set consisting of a Dresser-Rand Model CVM-4GIC Centrifugal Volute Multistage Air Compressor driven by a Dresser-Rand Model E-526 Five Stage Hot Gas Expander and a Dresser Rand Model SMST 77 multi-stage, condensing steam turbine, all as specified by Weatherly.

1.2 Principle features of the design of the nitric acid plant are as follows:

1.2.1 High ammonia filtration efficiency provided by:

High quality filtration of both air and ammonia feeds to the gauze.

Intimate mixing of feeds in a static mixer.

Weatherly's proven converter design.

1.2.2 Control of NO_x and N2O emissions is obtained by utilizing Weatherly's proven extended absorption design coupled with proven tertiary selective catalytic NO_x and N2O reduction systems and a converter basket design which can accommodate installation of secondary N2O reduction catalyst.

1.2.3 High efficiency heat recovery including:

Generation of 609 psig/750 °F superheated steam for feed to the steam turbine.

Tail gas reheating to 1200 °F for enhanced power recovery in the expander.

1.2.4 Compact layout providing easy access for operation and maintenance.

2.1 PROCESS DESCRIPTIONS

(Refer to flow diagrams PFS-01 and UFS-01, Issue P.)

Correct for external bleacher… Bubble cap in second tower. Ammonia system etc…

Nitric Acid Plant

The raw materials required for production of nitric acid are atmospheric air and ammonia. These raw materials are combined at elevated temperature and pressure and passed over a platinum catalyst where the ammonia reacts with the oxygen. The resultant process gas is passed through the heat exchanger train where the major portion of this reaction energy is recovered as heat. The process gas is cooled

and oxidized further in the cooler condenser and absorber where nitric oxide, nitrogen dioxide, oxygen and water combine to form nitric acid. A portion of the reaction energy recovered in the heat exchanger train is used to reheat the tail gas to provide power for the air compressor by driving a hot gas expander.

Atmospheric air is filtered in a two-stage inlet air filter. The filtered air is then compressed by the air compressor. The air compressor is powered by a condensing steam turbine and a hot gas expander. The hot gas expander supplies more than 90% of the compressor power required.

Air from the compressor discharges enters the air/tail gas interchanger where it is cooled by heating the tail gas before entering the tail gas heater. The air then flows to the air heater, which is part of the process gas heat exchanger train, and is heated by process gas. It is then filtered in a high efficiency sintered metal filter, before entering the ammonia/air mixer. The bleach air stream is fed from the main air stream before entering the air heater and is routed under manual flow control to the bleacher section of the absorber.

Liquid ammonia feed to the plant is filtered in a cartridge type filter for removal of suspended solids before entering the ammonia vaporizer. The process design shall include a steam-fed ammonia vaporizer sized to vaporize 100% of the process ammonia required at full capacity. The ammonia system shall also have the capability to use vaporized ammonia from either site ammonia storage or a proposed on-site ammonia manufacturing facility. The ammonia superheater superheats to prevent any liquid carryover, which could damage the platinum catalyst. The resulting superheated ammonia vapor stream is filtered in a high efficiency sintered metal filter to remove possible contaminants and protect the platinum catalyst.

Catalyst temperature is controlled by direct adjustment of the ammonia flow to the ammonia air mixer. This control scheme has proven extremely effective in maintaining stable catalyst temperatures and has been used widely in Weatherly nitric acid plants.

The clean streams of air and ammonia are intimately mixed in the ammonia/air mixer and the mixture is evenly distributed over the catalyst where reaction occurs producing nitric oxide and water vapor. The resulting high temperature process gas then flows through the heat recovery system, which consists of the expander gas heater, waste heat boiler, steam superheater, an oxidation spool, the tail gas heater, the platinum filter and the air heater.

The heat recovered by the waste heat boiler is used to generate 609 psig steam, which is then superheated to 750 ºF in the steam superheater. The steam so generated is sufficient to supply a steam export after fulfilling all steam requirements for the air compressor set steam turbine driver. Additional energy is recovered by the tail gas heater to reheat tail gas which increases power recovery in the hot gas expander.

Process gas from the tail gas heater is fed to the platinum filter, which recovers platinum particles lost from the platinum gauze during the course of operations. The shell of the platinum filter provides volume for additional oxidation to enhance downstream heat recovery in the air heater where the process gas is further cooled by heating the process air feed to the ammonia/air mixer.

The process gas then enters the cooler condenser where it is cooled by cooling water. Water vapor is condensed and reacts with the nitrogen dioxides in the gas stream to form weak nitric acid. The weak acid and process gas are separated in the outlet channel of the cooler condenser. The gas flows into the absorber column in a separate line while the weak acid pumped to the appropriate absorber tray.

The absorber columns are sieve tray absorbers. The bottom portion of the first absorber contains a process gas conditioning zone. Product acid is gravity fed to an external bleach column where dissolved NOx is stripped out of the product. Absorber feedwater of suitable quality is fed to the top tray of the absorber.

The process gas from the cooler condenser is mixed with the bleach air stream leaving the bleacher carrying the nitrogen oxides stripped from the product acid. This additional air supplies the oxygen requirements for the reoxidation of nitric oxide to nitrogen dioxide, which takes place continuously in the absorber column. The mixed gas stream enters the absorption column and passes through a gas conditioning zone before reaching the first absorption tray. The heat of the oxidation reaction in this zone is removed by passing the gas through trays which are equipped with cooling coils and on which a liquid level is maintained automatically by further continuous condensation of a small amount of weak acid from the process gas stream. This additional weak acid flows to the bleacher section mixing with the product acid prior to bleaching.

After leaving the gas conditioning zone, the process gas flows upward through absorption trays where it is contacted counter-currently with absorber feedwater and weak acid to produce nitric acid of the desired strength.

Product acid flows from the bottom absorption tray through an external acid heater into the bleacher. In the bleacher, the product acid contacts a counter-current flow of bleach air, which strips the remaining dissolved nitrogen oxides from the acid. The stream of clear, bleached acid is then allowed to flow under pressure to storage.

The heat produced in the oxidation and absorption reactions is removed by cooling water passing through coils on the trays in the column. The tail gas, which has been reduced in NO_x content to 750 ppm by volume, leaves the absorber and flows to the tail gas reheating system.

Tail gas first enters the steam tail gas preheater where 100 psig steam is used to preheat the tail gas leaving the absorber. Tail gas is heated further by interchanging the tail gas with air from the compressor set before it enters the shell side of the tail gas heater. The tail gas is preheated sufficiently to avoid process gas condensation in the tail gas heater. The tail gas then passes through the air/tail gas interchanger where it is further heated by air from the compressor discharge.

In the tail gas heater, the tail gas is heated to approximately 650 °F. It then flows to the expander gas heater where it is further heated to 1200 ºF before being fed to the N2O abator and then on to the hot gas expander. The N2O content in the tail gas is catalytically reduced by 95% across the N2O abator catalyst. The tail gas is then fed to the hot gas expander where power is recovered to assist in driving the air compressor set.

Tail gas from the hot gas expander is mixed with a small stream of ammonia and air in the ammonia/tail gas mixer before entering the NO_x abator. In the NO_x abator, the tail gas NO_x concentration will be reduced to a level which will allow the plant to be consistently compliant with the applicable Title V Air Permit which THE BUYER currently assumes will be required by the latest U.S. EPA New Source Performance Standard for NOx in nitric acid plants. Current design will meet 0.5 lb NOx per ton of acid produced (based on the U.S. EPA standard for a 30-day rolling average including periods of start-up, shut-down and reasonably anticipated potential malfunctions) and 95% N2O reduction across the tertiary reduction system.

During start-up and controlled shutdowns, a start-up heater located upstream of the NO_x abator is used to heat the tail gas and abator before gauze light-off. The start-up heater utilizes 600 psig steam imported from battery limits to heat the tail gas and abator to approximately 400 °F. This insures that the NO_x abator can operate during start-up and controlled shutdown to help achieve a near colorless tail gas stack.

The majority of the compression power required for the plant is extracted from the heated tail gas in the hot gas expander. The tail gas is discharged from the expander, flows through the NO_x abator and into the economizer to preheat boiler feedwater. The tail gas then exhausts to the atmosphere through the stack.

2.2 PROCESS DESIGN FEATURES

2.2.1 High Purity Air to Process

High purity air is essential for both high ammonia conversion efficiency and extended gauze runs of up to 90 days.

The design features which ensure the required high purity air are:

a) High efficiency air intake filtration.
b) Corrosion resistant materials of construction in the air flow path between the inlet air filter and the gauze.
c) A final discharge air filter before the ammonia/air mixer.

a) Inlet Air Filter

Two stage filtering is employed for the air intake to the air compressor set. The filter unit contains multiple individual filtration cells, each containing one pair of rigid aluminum frame first and second stage filter elements. The first stage element removes the bulk of atmospheric contaminants. This washable element can be removed on the run for washing and/or replacement with a clean element, without disturbing either the second stage element or its seal to the filter housing frame. The second stage element is not washable and has an expected life of 1 year.

b) Materials of Construction

The ductwork from the inlet air filter to the air compressor, the discharge piping from the air compressor to the ammonia/air mixer, together with the air heater and discharge air filter are all stainless steel.

c) Discharge Air Filter

As final protection against casual contamination, the discharge air filter uses stainless steel sintered metal washable elements. These durable high efficiency elements are subjected to a two-stage washing and rinsing procedure as required and are returned to service with complete renewal of the original performance.

2.2.2 High Purity Ammonia

Clean ammonia is just as important as clean air in increasing gauze life and ammonia yields. In this process THE BUYER will use standard commercial grade anhydrous ammonia supply meeting the following specifications:

Ammonia:	99.5 wt.% minimum
Water:	0.2 wt.% minimum
Oil	5 parts per million by weight, maximum

Weatherly plants utilize a single liquid ammonia filter to remove most contaminants before the liquid ammonia enters the vaporizer system. This filter contains disposable cartridge type elements, which can be easily changed during the catalyst changes.

From this point to the gauze, including all piping, the ammonia vaporizer and the auxiliary ammonia vaporizer/superheater, only stainless steel materials are allowed to come in contact with the ammonia. Final vapor ammonia filtering is accomplished using high efficiency, washable sintered metal filter elements similar to those used in the discharge air filter.

2.2.3 Ammonia/Air Mixing (Review for tab mixer).

Ammonia/air mixing takes place in a static mixing system. This motionless in line mixer uses a large number of small intersecting channels to divide and redivide the gas stream resulting in a homogenous gas mixture leaving the unit.

2.2.4 Converter Basket Design

Clean raw materials streams and homogeneous mixing produce long gauze life, but good overall ammonia conversion also requires a converter basket design which allows no bypassing around the periphery of the catalyst.

The Weatherly catalyst basket design, developed and proven over many years of plant experience, has been effective in demonstrating high ammonia conversion efficiencies. The basket design is capable of using all of the latest platinum recovery gauze and getter systems.

2.2.5 Absorber Design (Review for current design)

The absorber design is based on use of sieve trays which optimize the absorber cost, performance, and pressure drop. The sieve tray absorber requires recirculation of weak acid to the top tray and a substantial air flow through the absorber to establish sealed trays prior to gauze light-off.

2.2.6 Compressor Selection

The main compressor set is an all centrifugal design with carefully matched impellers. This feature greatly simplifies overall plant design, while eliminating the need for variable stator geometry often encountered in axial/centrifugal and axial/axial designs. Blow-off during start-up and for anti-surge control is not required. This greatly simplifies the design of the anti-surge control system. Furthermore, the range of stability of this type of air compressor set allows turndown to 70% of nameplate capacity be achieved via speed changes in the compressor set without having to resort to the complexity of variable stator geometry in the expander. This is all accomplished using minimum power because of intercooling coupled with special high efficiency impellers.

2.2.7 Corrosion Control

Weatherly uses process design as a tool in avoiding conditions that lead to corrosion problems in nitric acid plants. The temperature cut-off points for heat recovery in gas to gas exchangers in the tail gas and the air heaters have been selected specifically to avoid corrosion problems associated with condensing acid from process gas on the inside tube walls at the low temperature end of each unit. Acid condensation from process gas takes place only within the tubes of the cooler-condenser, which features zirconium tubes and zirconium-clad S.S. tube sheets for long life in this corrosive environment.

2.2.8 Plant Capacity

Weatherly nitric acid plants are designed to produce acid at the nominal design rate on a design summer day. Built into the design is the capability to turn down the production rate or run the plant at “over capacity”, provided ambient conditions are favorable.

Plant turndown is achieved by plant air bypassing; for turndown, air must be bypassed around the converter and routed to the tail gas system to maintain mass flow through the expander, which sets the plant pressure. Nitric acid production efficiency in the absorber is a direct function of pressure, therefore, satisfactory NO_x abatement for lower production rates is sustained when plant pressure is preserved at a high level. The limiting factor in turndown ratio now becomes absorber tray efficiencies due to lower slot velocities in the bubble caps in the absorber. Turndown to approximately 70% design production rate can be achieved with the standard absorber tray designs.

Since the air compressor is a fixed volume machine, overcapacity can be achieved when cooler than summer design ambient temperatures are present. Cooler ambient temperatures furnish additional mass flow, therefore, additional air is available for acid production. Usually the limiting factor in overcapacity is the mechanical design pressure of the equipment in the process. Conversely to turndown, the plant pressure will increase with more mass flow through the expander.

For the project, equipment for the Weatherly nitric acid plant is generally designed to operate continuously from 70% to 115% of design production capacity.

2.2.9 On-Stream Time

The Weatherly nitric acid plant is designed to be on-stream 96% of the time. The converter design, including the mixed gas inlet stream, takes into account the need for minimum down-time and minimum labor for catalyst changes. Because of the relatively compact design of the converter and removable catalyst basket, total down-time from production is usually only six to eight hours with an experienced crew.

2.2.10 Personnel Requirements

Normal operation of the nitric acid plant will require one-fifth of a control room operator and one-fourth of a field operator. One control room operator and one field operator are required for startup and shutdown.

2.2.11 Instrumentation

General

This is a brief general description of the principles that should be taken into account during the electrical, instrumentation and automation design of the Plant. Any figures and numbers which can be found within the document are preliminary and shall only be used as guidelines.

The electrical and instrumentation equipment used in the Plant shall be of high industrial and technical standard and be fit for its specific application, as well as for the environment it is to be exposed to. Additional parameters to consider during design and procurement should be, among others; manufacturer reputation, expected lifetime, guarantees as well as service and support-solutions offered where the Plant is to be erected.

Systems, functions and equipment are described in this document independent whether they are supplied by THE SELLER or not. A functional design specification for the process control system and the safety instrumented system shall be submitted to owner for review and approval.

Terminology and Abbreviations

APS	Alternative Power Supply; Diesel generator which can supply critical parts of the Plant with ≤400VAC emergency power.
ATEX	EU directive regarding explosion protection in hazardous environments.
BPCS	Basic Process Control System; handles the day-to-day control of the process.
MCC	Motor Control Centre; handles power distribution ≤5000VAC within the Plant.
OCS	Operator Control Station; usually a personal computer which provides an interface between the operator and the control system.
SIS	Safety Instrumented System; handles emergency shut-down of the Plant as well as safety critical control parameters.
UPS	Uninterruptable Power Supply; handles back-up power to critical parts of the low voltage system (≤230VAC).

Standards

The design, construction and performance of the electrical, instrumentation and automation equipment shall comply with currently applicable standards, regulations and local safety codes where the system is to be installed. Wherever local regulations do not exist or any uncertainties over valid regulations are found, it is recommended that the equipment meet and follow the standards given by the IEC, applicable OSHA regulations including those requirement in 29 CFR 1910 and the NFPA where applicable.

The required vendor for control systems is Rockwell,

Plant Operation

The Plant is designed for remote control from a central control room located within the Plant premises. The Plant is to be automated as far as possible in order to increase efficiency, profitability and safety. Separate panels might be found on or around third-party equipment which require local control. If possible, these third-party signals shall be monitored from the central control room and preferably be available at least as indications in the control system.

System Layout and Scope

A simplified general overview of the system layout can be found in Figure 1 below.

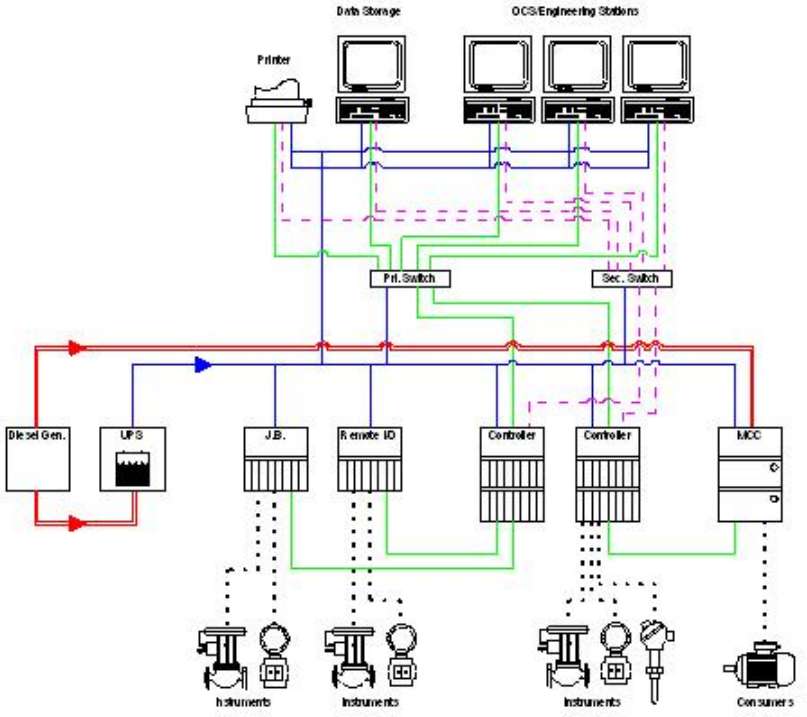


Figure 1. ***Typical system design. In case of a fieldbus instrumented system, the junction box will be replaced by fieldbus segments connected into the controller or remote I/O.***

OCS

Operator Control Stations (OCS) are to be located within the central control room. It should be possible to operate any part or section of the Plant from either of the stations.

BPCS

The Basic Process Control Systems (BPCS) performs the basic control of the Plant, such as monitoring, indication, regulation, handling of process alarms and interlocks, trending and history collection etc. The BPCS is connected to the OCS through a redundant network.

SIS

A Safety Instrumented System (SIS) for emergency shutdown of the Plant is considered necessary. The SIS logic processing and I/O system must be completely separated from the BPCS, and be designed according to IEC-61508 and IEC 61511.

A common interface between the BPCS and the SIS for information exchange as to allow indication of all critical parameters monitored in the SIS to the OCS.

MCC (Supplied by Others)

The Motor Control Centre consists of equipment necessary to feed, operate and control all electrical equipment used in the Plant. It is recommended that intelligent switchgear is used for consumers in the Plant as this will reduce operation cost, increase efficiency and safety as well as simplify the installation. The MCC is to be connected to the BPCS and SIS as required.

UPS (Supplied by Others)

The OCS, BPCS and SIS shall be supplied through an Uninterruptible Power Supply (UPS) unit. The unit shall be designed to maintain a continuous stable power supply to the system for a minimum of 30 minutes in order to allow a safe shutdown of the Process in case of power failure and continuous monitoring of critical parameters.

APS (Supplied by Others)

It is recommended that a diesel generator is installed, which can supply emergency power (≤480VAC) to critical parts of the Plant. An APS will also reduce the overall cost and complexity of the UPS, as well as provide a more straightforward emergency power solution.

Basic Process Control System (Responsibilities Defined in ANNEX 2)

The overall design of the BPCS should incorporate current best industry practice regarding control, safety and shut-down system requirements. It is recommended to use at least dual-screen OCS's to provide operators with a better overview of how to control the Plant. At least one printer should be connected to the system in order to produce paper-copies of trends, process pictures, status and alarms as required. A separate unit for historical data collection and system backup should be included, as to assure that a minimum of important information is lost in case of a system malfunction. The system should be completely redundant from the controllers up to the operator interface. A separate Data Acquisition and Handling System (DAHS)shall be included for recording and organizing all required air emissions data from the tail gas stack Continuous Emissions Monitoring System (CEMS) as required by EPA parts 60, 75 and 90. (

OCS Requirements (Responsibilities Defined in ANNEX 2)

The OCS and engineering station usually has similar requirements regarding hardware specifications. Depending on the manufacturer design, a server architecture might be advisable and recommended for certain applications. Generally, the basic requirement for an OCS is as follows;

Desktop Computer or Server.
Keyboard.
Pointing Device.
TFT Screen.

System and Application Software for the OCS and engineering stations should at least include and support the following features;

Monitoring and alarm/interlock functions.
Alarm Management.
Process Displays.
Real-time and Historical Trends and Events.
Reports.
Security Management.
OPC Capabilities.
Configuration and modification of system.

BPCS Requirements (Responsibilities Defined in ANNEX 2)

The Basic Process Control System consists of necessary system power supply, controller/PLC, I/O-subsystem (conventional and/or bus) and termination modules. The controller/PLC shall be able to perform all typical calculations and functions normally used within an automated Plant, such as regulation, cascade/remote control, monitoring, interlocks and sequences etc. Typical I/O-cards to be used are as follows;

Analog Input, 4.20 mA HART.
Analog Output, 4.20 mA HART.
Digital Input.
Digital Output.
Profibus DP and PA.
Foundation Fieldbus.
Serial Interface, e.g. Modbus.
Intrinsically safe cards and barriers are to be used as required for hazardous areas.

Safety Instrumented System

A Safety Instrumented System must be used for emergency shutdown and monitoring/control of safety-critical parameters in the Plant. The SIS shall be designed in accordance with IEC 61508 and IEC 61511. There should be an interface between the BPCS and the SIS for information exchange as to allow indication and status of all critical parameters and functions handled in the SIS directly to the operator.

The hardware used to create the SIS shall fulfill and comply with all relevant standards (such as IEC 61508) accepted by the industrial community. Equipment included in the system shall be chosen with appropriate SIL-classification as necessary. The software configuration must be performed by competent engineers.

The basic design of the SIS is founded on different methods of risk assessment analyses, as well as feedback and experience from previous Plant designs. If required,

a separate and additional risk assessment will be performed for each individual system. This is done in order to guarantee that all client-specific issues are covered in the design, including local regulations which might deviate from general international standard

Instrumentation

All vital Process parameters are to be monitored through the control system. Hence, electronic transmitters are to be used for both measurement and control. The major portion of instruments should be equipped with a local indicator or display in order to provide local indication in the Plant. The use of bus-systems such as Foundation Fieldbus or Profibus PA is recommended as the amount of information available from the instruments is extensive. This information can be used for e.g. preventive maintenance, enhanced performance and other cost saving and production improving functions for the Plant.

Control and remote On/Off-valves are to be pneumatically operated. Some valves should have actual position feedback.

It is recommended that all instrumentation located in hazardous areas are designed and approved according to valid ATEX-directives.

Instrument Air

Clean, oil-free and dry instrument air is to be supplied to different consumers within the process, mainly Control- and remote On/Off-valves, at a stable and suitable pressure according to vendor requirements. THE BUYER's site will supply instrument air at approximately 90 psig and a maximum dew point of -20 ^{o}F. and has a back-up tank to allow safe shut-down of the Plant in case of a failure in the air supply system.

Electrical Equipment

Energy efficient electrical equipment such as pump motors and lighting should be used throughout the Plant subject to review and approval of THE BUYER. It is recommended to use motors which comply with EFF1-demands and requirements. Variable Frequency drives should be considered wherever economically evaluations show an electricity savings payback of five years or less.

It is recommended that all electrical equipment located in hazardous areas should be designed and approved according to valid ATEX-directives.

2.3 ENERGY CONSERVATION FEATURES

The Weatherly nitric acid plant design includes an integrated system of energy utilization which recovers process heat to minimize energy losses in cooling water and stack tail gas.

2.3.1 Process Heat Recovery

Process heat, recovered from the air-NO_x mixture as it is cooled in the expander gas heater, waste heat boiler, steam superheater, and tail gas heater, amounts to about 153 million BTUs.

This very high heat recovery is due in part to the use of high pressure process gas (about 170 psig at the gauze) which favors the rapid oxidation of NO to NO_2, which goes to almost 90% completion at the exit of the heat recovery system. Much of the oxidation heat released, about 33.0 million BTUs, would not be available at lower process gas pressures and would thus be lost to cooling water in the cooler condenser and absorber tower.

Final cooling of the process gas, amounting to about 98.7 million BTUs, takes place in the cooler condenser. Approximately 8.2 million BTUs of this energy is subsequently recovered by vaporization of ammonia, resulting in an overall process heat recovery of 95.5 million BTU.

2.3.2 Tail Gas Reheating and Power Recovery

Tail gas reheating is the primary use for recoverable process energy because the heat and pressure energy can be used in the expander, which is the most efficient producer of power available in a nitric acid plant. Using proven gas expander technology, the power recoverable in the expander is approximately 89 % of the air compressor set requirement for the various plant options.

2.3.3 Steam System

The high pressure steam system is designed to generate 609 psig/750 °F superheated steam to provide approximately 100% of the steam required by the steam turbine in normal operation after process light-off. High pressure steam must be imported during start-up, the amount of which will be determined after the compressor train design is final. (Startup Heater is required to meet the requirements of the current U.S. EPA New Source Performance Standard for “weak” nitric acid plants) Low pressure steam is made up by letting down and desuperheating the high pressure steam. Steam is imported at 50 psig for supply to steam tracing, auxiliary ammonia vaporizer/superheater, and steam tail gas preheater. All remaining steam desuperheated and exported from the plant battery limits at 600 psig and 750 °F.

3.1 EXPECTED UNIT CONSUMPTION OF RAW MATERIALS AND UTILITIES

Nitric Acid Plant (Revise for new Air Compressor and ammonia vaporizer system)

When the plant is operated in accordance with the procedures recommended by Weatherly Inc., Weatherly expects that the plant will consume the following quantities of raw materials and utilities per short (2,000 pound) ton of nitric acid (100% basis) produced at the 1100 STPD rate.

	Amount Per Short Ton Acid (100% Basis) **1100 STPD**
Ammonia (100% basis) s. ton including NOx abatement requirement	0.2875
Gross Platinum Catalyst Troy oz.	0.0080
Net Platinum Catalyst Troy oz. (Note 1)	0.0024
600 psig/750 °F Steam Export s. ton	<0.814>
50 psig Steam Import s. ton	0.073
Steam Condensate Export s. ton	<0.073>
Boiler Feedwater s. ton (Note 2)	1.032
Cooling Water Mgals (Note 3)	25.0
Electric Power – 480v KWh (Note 4)	7.2
Turbine Condensate Export s.ton	0.013

NOTES:

1. Based on using a platinum recovery gauze and a platinum filter. A loss of approximately 0.45 grams of palladium is assumed for every gram of platinum recovered by the recovery gauze.

2. Boiler feedwater to be of suitable quality to permit 1% blowdown while generating 609 psig steam.
3. Based on a cooling water temperature rise of 16 °F.
4. Includes pumps, lighting, and instrumentation in the Inside Battery Limits but excludes electricity for cooling tower operation, optional chillers or other items not in the Weatherly scope of design.

3.2 DESIGN REQUIREMENTS FOR SUPPLY OF RAW MATERIALS AND UTILITIES

The information contained in this section is provided to assist the Owner in the evaluation and design of the support facilities, including the supply of raw materials and utilities, yard piping, electric feeder system, etc. required for the operation of the plant at 665 STPD (~600 MTPD).

Item:	Ammonia (What are the conditions?)
Conditions:	Supplied at pipe rack elevation as either liquid at 200-220 psig and approximately 40 °F at, with a maximum water content of 0.5 wt.%., or as vapor from a proposed ammonia plant at XXX psig and YYY oF.
Remarks:	In normal operation, the required flow is approximately 26,486 lb/h, but the system should be sized for at least 30,500 lb/h.
Item:	High Pressure Steam Export
Conditions:	Supplied at pipe rack elevation at 600 psig and 750 °F.
Remarks:	In normal operation, the flow is approximately 74,644 lb/h. The system should be sized for 100,000 lb/h.
Item:	High Pressure Steam Import at Startup
Conditions:	Supplied at pipe rack elevation at 600 psig and 750 °F.
Remarks:	Not required for normal operation. For nitric acid plant start-up, an import of approximately 115,000 lb/h is required.
Item:	Cooling Water System
Conditions:	Supplied at grade from a circulated cooling water system treated for normal scaling and corrosion control at 70 psig and 88°F. Water is returned from the plant at 25 psig and 104 °F at grade.
Remarks:	In normal operation, the required flow is approximately 22,813 gpm, but the system should be sized for 25,000 gpm for start-up and other upset conditions.
Item:	Boiler Feedwater Import
Conditions:	Supplied at pipe rack elevation at 775 psig and 229 °F. Should be of suitable quality to provide 1% blowdown for a 609 psig boiler system.
Remarks:	In normal operation, the flow is approximately 94,609 lb/h. The system should be sized for 110,000 lb/h.
Item:	Steam Condensate
Conditions:	Supplied at pipe rack elevation at 35 psig and 235°F.
Remarks:	In normal operation, the flow is approximately 6,667 lb/h. The system should be sized for 8,000 lb/h for nitric acid plant start-up.
Item:	Electricity 480V, 3 Phase, 60 Hertz

Conditions:	Supplied and connected.
Remarks:	The system is to be sized for maximum connected load of 486 kVA.
Item:	Instrument Air
Conditions:	At a nominal 90 psig and – 20 °F dew point at pipe rack elevation.
Remarks:	Not more than 100 scfm..
Item:	Plant Air
Conditions:	Nominally 85 psig.
Remarks:	Not required for normal plant operation. Required for intermittent usage at utility station(s).
Item:	Potable Water
Conditions:	Pipe rack elevation at 70 psig and ambient temperature.
Remarks:	Not required for operation. Intermittent use for safety showers, eye-baths, etc.
Item:	Nitric Acid Product (65 minimum wt. %)
Conditions:	At 30 psig and 115°F (Product Acid Cooler Required)
Remarks:	In normal operation, the flow is approximately 141,025 lb/h on an “as is” basis. The outside battery limit (OSBL) product receiving and storage system should be sized for at least165,000 lb/h.

3.3 EFFLUENTS

The following items are the expected effluents from the nitric acid plant during normal design day operations.

Item: Boiler Blowdown
Conditions: Saturated liquid at atmospheric pressure and 212°F supplied to battery limits in underground drain.
Remarks: Normal flow is approximately 946 lb/h, but intermittently may be a maximum of 2500 lb/h.

Item: Gaseous Effluent
Conditions: Tail gas at 260 °F and atmospheric pressure from stack.
Remarks: Tail Gas Composition:

Component	lbmol/h	lb/h	ppm
O2	306.947	9816.7	23984
N2	12425.053	348068.0	970861
NO+NO2	0.499	23.0	39
HN03	0.000	0.0	0
NH3	0.128	2.2	10
N2O	0.480	21.1	37
H2O	64.873	1168.7	5069
Total	**12798.0**	**359100**	**1000000**
Average MW		28.06	
Volumetric Flow		80932 SCFM	
Temperature		260.00 F	

N2O content based on end of gauze run and 95% removal across the N2O abator. Values shown are for Start of Run on platinum catalyst. End of Run values for N2O at maximum capacity (1265 STPD) will be approximately1600 ppm.

NOx content must be controlled at low enough levels to always be in compliance with the air permit which is anticipated to at least meet the new EPA NSPS standard of 0.5 lb NOx maximum per ton of acid produced on a 30 day rolling average.

3.4 CONSUMABLES AND CATALYST

3.4.1 Consumables

The following consumables will be required for ISBL operation of the nitric acid plant and excludes consumables outside the ISBL such as cooling tower chemicals:

Item: Lubricants
Description: Lubrication of equipment as required per vendors' recommendations.

Item: Hydrogen
Conditions: Supplied in 10 m^3 commercial cylinders by owner.
Remarks: Not required for normal operation. During startup approximately one-third to one-half a cylinder is required to light the gauze catalyst using the hydrogen torch.

3.4.2 Catalyst

Introduction

The ammonia conversion catalyst used in the nitric acid plant is a pad consisting of multiple layers of woven platinum gauze. When a "getter" gauze is utilized, additional sheets of gauze containing Pd or other noble metals are added. Pt and Rh are captured on these layers while additional Pd is preferentially lost.

Special proprietary gauze support packs may also be used. These special support packs may permit lower catalyst loadings to be used.

Weight of Catalyst Charge

The catalyst basket used for holding the pad of gauzes is designed so that it can accommodate either a standard platinum gauze or a standard plus recovery gauze, or a standard platinum gauze with special support pack. In addition the basket design should be capable of accommodating optional honeycomb catalyst such that a minimum of 80% of the N_2O generated in the converter can be abated by this catalyst with no more than 1 psi pressure drop through the honeycomb catalyst at full capacity. (These are design parameters to BASF… WI will endeavor to comply with this requirement, but ultimate responsibility for pressure drop and N2O removal will reside with BASF).

The recommended minimum effective weight of catalyst to be installed without the use of a recovery gauze or special support pack is approximately 1.6 troy oz. per short ton per day of nitric acid produced. For a 1100 STPD production rate, the total catalyst charge is as follows:

	1100 STPD
Effective Diameter (in):	95.75
Number of sheets per charge:	20
Total weight per charge (troy oz):	1934.2
Effective weight per charge (troy oz):	1800.2

Life Of Catalyst Charge

The efficiency of the conversion of ammonia to nitric oxide declines gradually during the course of a production run, resulting in increasing operation costs. The length of run for a single charge of catalyst is sometimes extended to meet immediate demands for continued production.

A standard length run shall be at least 70—90 days. During initial operations, the first catalyst charge may be exposed to contaminants from the newly constructed process system which will result in decreased life. As contaminants are gradually cleared from the system and the rate of catalyst poisoning decreases, the operating life of subsequent catalyst charges will increase.

Changing Catalyst

The catalyst is installed in a basket which is removable from the converter for ease of changing catalyst. The converter design, including the mixed gas inlet system, takes into account the need for quick catalyst changes. When using a second preloaded basket, the time to switch converter baskets is four to five hours with an experienced crew. The plant can be restarted with a total down-time of only six to seven hours.

Catalyst Recovery Systems

The nitric acid plant is provided with a platinum filter for recovery of platinum from the catalyst. It is expected that one filter element is sufficient for two catalyst campaigns, after which the element is removed and sent for platinum recovery. It is expected that the platinum filter will recover approximately 30—50 % of the feed to the filter.

Additionally, platinum recovery gauzes, sometimes referred to as “getters”, can be employed directly beneath the platinum catalyst. These units typically capture approximately 60—70 % of the gross catalyst burn off. They are constructed primarily of palladium and lose approximately 0.45 grams of palladium for every gram of platinum recovered.

3.5 PRODUCT SPECIFICATION

When the plant is operated in accordance with the procedures established by Weatherly Inc, the following product specifications shall be met:

Nitric Acid

Concentration:	Not less than 65 wt.% Nitric Acid
Dissolved oxides of nitrogen:	Not more than 0.01 wt.% expressed as HNO_2 with typical less than 30 ppm
Iron	1.3 ppm maximum (may require demin water for AFW and not turbine condensate)
Color	water white color (<30 APHA color scale
Delivery Temperature	115° F maximum
Chlorides	10 ppm maximum,
Sulfates	10 ppm maximum with typical of 0 ppm

4.1 EQUIPMENT LIST

Item No.	Equipment Name
F1001	Inlet Air Filter
B1004	Air Compressor Set (Steam Turbine)
S1005	Interstage Vent Silencer (by compressor vendor)
S1006	Discharge Air Silencer (by compressor vendor)
T1007	Lube Oil Accumulator
E1009	Surface Condenser
P1010 A&B	Condensate Pumps
S1011	Tail Gas Vent Silencer
L1040	Building Crane
F1201	Liquid Ammonia Filter
E1202	Ammonia Vaporizer
E1203	Ammonia Superheater
F1204	Ammonia Filter
S1205	Ammonia Blowdown Pot
M1401	Ammonia/Air Mixer
R1402	Converter
R1402.01	Converter Basket (1 Each)
R1402.02	Hydrogen Torch
E1403	Expander Gas Heater
E1404	Waste Heat Boiler
S1405	Steam Drum
E1406	Blowdown Sample Cooler
S1407	Blowdown Drum
E1408	Steam Superheater
S1409	Steam Superheater Separator
E1410	Tail Gas Heater/Platinum Filter Shell
F1411	Platinum Filter Element (1 Each)
E1412	Steam Tail Gas Preheater
E1413	Air - Tail Gas Interchanger
X1420	Desuperheater
L1440	Converter Hoist
E1601	Air Heater
E1602	Cooler Condenser
F1604	Discharge Air Filter

C1606 A	Absorber A
C1606 B	Absorber B
P1607 A,B,C,&D	Weak Acid Transfer Pumps
P1608	Sump Pump
T1609	Sump Tank
E1610	Acid Heater
E1611	Product Acid Heater
P1615 A&B	Cooling Water Booster Pumps
E1616	Bleach Air Cooler
E1617	Product Acid Cooler
T1620	Absorber Feedwater Tank
P1621 A&B	Absorber Feedwater Pumps
L1640	Discharge Filter Hoist
H1801	Exhaust Stack
E1803	Economizer
R1804	NOx Abator
X1804	NOx Abator Catalyst
M1805	Ammonia/Tail Gas Mixer
M1806	Ammonia/Tail Gas Premixer
E1807	Start-Up Heater
B1812	Abator Tail Gas Blower
R1813	N2O Reduction Reactor
X1814	N2O Reduction Catalyst

4.2 EQUIPMENT DESCRIPTION

Equipment descriptions are similar for all plants. THE SELLER shall provide THE BUYER with a full set of specifications and or drawings for THE BUYER's review prior to placement of the order.

Item No.	Equipment Name	
F1001	Inlet Air Filter	
	Function:	Filtration of atmospheric air to air compressor
	Description:	Two-stage filtration for removal of 99.97% of 0.3 micron and larger particles
	Construction:	Vendor to select: materials in contact with air shall not be a source of contamination from scaling or corrosion
B1004	Air Compressor Set	
	Function:	Compression of atmospheric air to process
	Description:	Multistage air compressor powered by a hot gas expander and a steam turbine
	Construction:	Vendor to select: materials in contact with air shall not be a source of contamination from scaling or corrosion
T1007	Lube Oil Accumulator	
	Function:	To provide lube oil rundown capacity for the air compressor set
	Description:	Horizontal atmospheric tank
	Construction:	304SS
E1009	Surface Condenser	
	Function:	Condensation of steam exit the steam turbine
	Description:	Fixed tube sheet heat exchanger
	Construction:	Tubes:CS Shell:CS
P1010 A&B	Condensate Pumps	
	Function:	Pumps for export of condensate from surface condenser
	Description:	Centrifugal pumps with mechanical seals
	Construction:	CS or DI
S1011	Tail Gas Vent Silencer	
	Function:	Reduction of noise emanating from tail gas vent
	Description:	In-line vertical acoustical silencer
	Construction:	Vendor to select. Materials in contact with tail gas shall be 316SS
L1040	Building Crane	
	Function:	Maintenance for air compressor set
	Description:	Horizontal bridge crane with movable trolley
	Construction:	Vendor to select. No copper alloys where exposed to air.

Rated Capacity to be minimum of 125% of weight of heaviest fully-assembled compressor train component (air compressor, steam turbine or expander) or converter , whichever is heaviest. (Discuss further and decide).

F1201 Liquid Ammonia Filter
- Function: Filtration of liquid ammonia to the ammonia vaporizer
- Description: Single in-line filter to remove 99% of 1 micron particles
- Construction: SS vessel with disposable polypropylene filter cartridges

E1202 Ammonia Vaporizer
- Function: Vaporizing of liquid ammonia for the nitric acid plant
- Description: BEM heat exchanger
- Construction: Tubes: 304SS
  Shell: 304 SS

E1203 Ammonia Superheater
- Function: Superheating of ammonia vapor to the ammonia/air mixer
- Description: BEM heat exchanger
- Construction: Tubes: 439SS
  Shell: 304 SS

F1204 Ammonia Filter
- Function: Final filtration of process ammonia vapor
- Description: Sintered metal filter for 100% removal of 3 micron and larger, 98% removal of 1.3 micron and larger particles
- Construction: 304 SS porous filter media in stainless steel shell

M1401 Ammonia/Air Mixer
- Function: Creating a homogeneous mixture of the process air and vapor ammonia to the converter catalyst
- Description: In-line static mixer
- Construction: 304 SS

R1402 Converter
- Function: Zone for catalytic reaction of ammonia and air
- Description: Unit consists of an inlet cone and catalyst basket
- Construction: Inlet Cone: 304 SS
  Catalyst Basket: 310 SS/Alloy 230

E1403 Expander Gas Heater
- Function: Process heat recovery to tail gas inlet the expander
- Description: Shell and tube heat exchanger (radial U-tube)
- Construction: Tubes: SB-163-800H
  Tubesheet: SA-182F316/SB-564-800H
  Shell: SA-240-316

E1404 Waste Heat Boiler
- Function: Process heat recovery and production of 600 psig steam
- Description: Fixed tubesheet heat exchanger
- Construction: Tubes: CS/Inco-800 ferrules
  Shell: CS

S1405 Steam Drum

Function:	Vessel for separation of waste heat boiler steam from boiler feedwater
Description:	horizontal pressure vessel with internals
Construction:	CS

E1406 Blowdown Sample Cooler

Function:	Cooling of waste heat boiler blowdown for sampling
Description:	non-code heat exchanger
Construction:	CS

S1407 Blowdown Drum

Function:	Vessel for separation of waste heat boiler blowdown steam and condensate
Description:	non-code vertical vessel
Construction:	CS

E1408 Steam Superheater

Function:	Superheating 600 psig saturated steam produced to 750FC
Description:	Fintube heat exchanger
Construction:	Tubes: SA-106-B with CS fins
	Shell: SA-240-321

S1409 Steam Superheater Separator

Function:	Removal of entrained water from steam to steam superheater
Description:	Standard in-line commercial unit
Construction:	Internals: SS
	Shell, Heads, and nozzles: CS

E1410 Tail Gas Heater/Platinum Filter Shell

Function:	Recovery of process heat by heating of tail gas
Description:	NEN heat exchanger
Construction:	Tubes: 304L SS
	Shell: 304L SS

F1411 Platinum Filter Element

Function:	Filtration process gas and recovery of platinum catalyst particles
Description:	Reusable rigid cage wrapped with flexible filter media
Construction:	304 SS cage with chemical grade fiberglass media

E1412 Steam Tail Gas Preheater

Function:	Start-up operation heating of tail gas inlet the tail gas heater
Description:	BEM heat exchanger
Construction:	Tubes: SB-338-Gr 2 (w)
	Shell: CS

E1413 Air/Tail Gas Interchanger

Function:	Heating of tail gas by cooling air from compressor
Description:	BEM heat exchanger
Construction:	Tubes: 304L SS Shell: 304L SS

R1414 N2O Abator

Function:	To reduce the N2O in the tail gas prior to discharge to atmosphere by 95%.
Description:	Catalyst and pressure vessel
Construction:	316LSS

L1440 Converter Hoist

Function:	Maintenance for converter, platinum filter, and discharge air filter
Description:	Monorail hoist with movable trolley
Construction:	Vendor to select. No copper alloys where exposed to air.

E1601 Air Heater

Function:	Heating of process air to the ammonia/air mixer
Description:	NFU heat exchanger
Construction:	Tubes:304L SS Shell:304 SS

E1602 Cooler Condenser

Function:	Cooling and condensation of process gas to the absorber
Description:	NEN heat exchanger
Construction:	Tubes:Zirconium Tubesheet:Zirconium clad on 304SS Shell:CS

S1603 Cooler Condenser Mist Eliminator

Function:	Separation of entrained weak nitric acid from process gas entering the absorber
Description:	Unit housed inside the exit bonnet of the cooler condenser
Construction:	304L SS

F1604 Discharge Air Filter

Function:	Final filtration of process air
Description:	Sintered metal filter for 100% removal of 3 micron and larger, 98% removal of 0.6 micron and larger particles
Construction:	304 SS porous filter media in stainless steel shell

C1606A Absorber A

Function:	Absorption of NO^2 into water; concentration of nitric acid; and bleaching of product acid
Description:	Sieve tray absorber with internal cooling coils on each tray
Construction:	304L SS

C1606A	Absorber B	
	Function:	Absorption of NO_2 into water; concentration of nitric acid; and bleaching of product acid
	Description:	Sieve tray absorber with internal cooling coils on each tray
	Construction:	304L SS
P1607 A,B,C & D	Weak Acid Transfer Pumps	
	Function:	Pump weak nitric acid from Absorber B to Absorber A.
	Description:	Horizontal – Magnetic Drive
	Construction:	304 SS-316SS
P1608	Sump Pump	
	Function:	Pump nitric acid to absorber product acid sump
	Description:	Vertical submerged
	Construction:	304 SS
T1609	Sump Tank	
	Function:	Collection of nitric acid from process drains and absorber sample collection purge
	Description:	Below grade tank
	Construction:	304L SS
C1611	Bleach Column	
	Function:	To bleach product acid
	Description:	Sieve tray desorber
	Construction:	304L SS
E1616	Bleach Air Cooler	
	Function:	Cool bleach air before entering nitric acid bleacher (internal to absorber)
	Description:	Jacketed Pipe
	Construction:	Tubes: 304L SS
		Shell: CS

E1617 Product Acid Cooler
- Function: Cool product acid prior to acid being sent to storage
- Description: Plate and Frame Heat Exchanger
- Construction: Tubes: 304L SS
  Shell: CS

T1620 Absorber Feed Water Tank
- Function: Collection of turbine condensate for feedwater for the absorber
- Description: Atmospheric tank
- Construction: 304L SS

P1621 A&B Absorber Feedwater Pumps
- Function: Pumps for pumping feedwater to top of absorber
- Description: Centrifugal pumps with mechanical seals
- Construction: SS

H1801 Exhaust Stack
- Function: Discharge of tail gas to atmosphere
- Description: Free standing stack
- Construction: CS

E1803 Economizer
- Function: Heat recovery from tail gas to exhaust stack by preheating boiler feedwater
- Description: Fintube heat exchanger
- Construction: Tubes: SA-178A
  Shell: CS

H1804 NOx Abator
- Function: To reduce nitrogen oxides in the tail gas prior to discharge to atmosphere
- Description: Atmospheric catalyst and housing
- Construction: CS Housing

M1805 Ammonia/Tail Gas Mixer
- Function: To provide homogeneous mixing of ammonia vapor and tail gas for reaction in the NO_x abator
- Description: In-line static mixer
- Construction: 304 SS

M1806 Ammonia/Tail Gas Premixer
- Function: To provide homogeneous pre-mixing of ammonia and air for mixing with tail gas
- Description: In-line static mixer
- Construction: CS

E1807 Start-Up Heater
- Function: To preheat tail gas to enable operation of NOx abator to minimize emissions during start-up

Description: Fintube heat exchanger
Construction: Tubes: SA-178A
Shell: CS

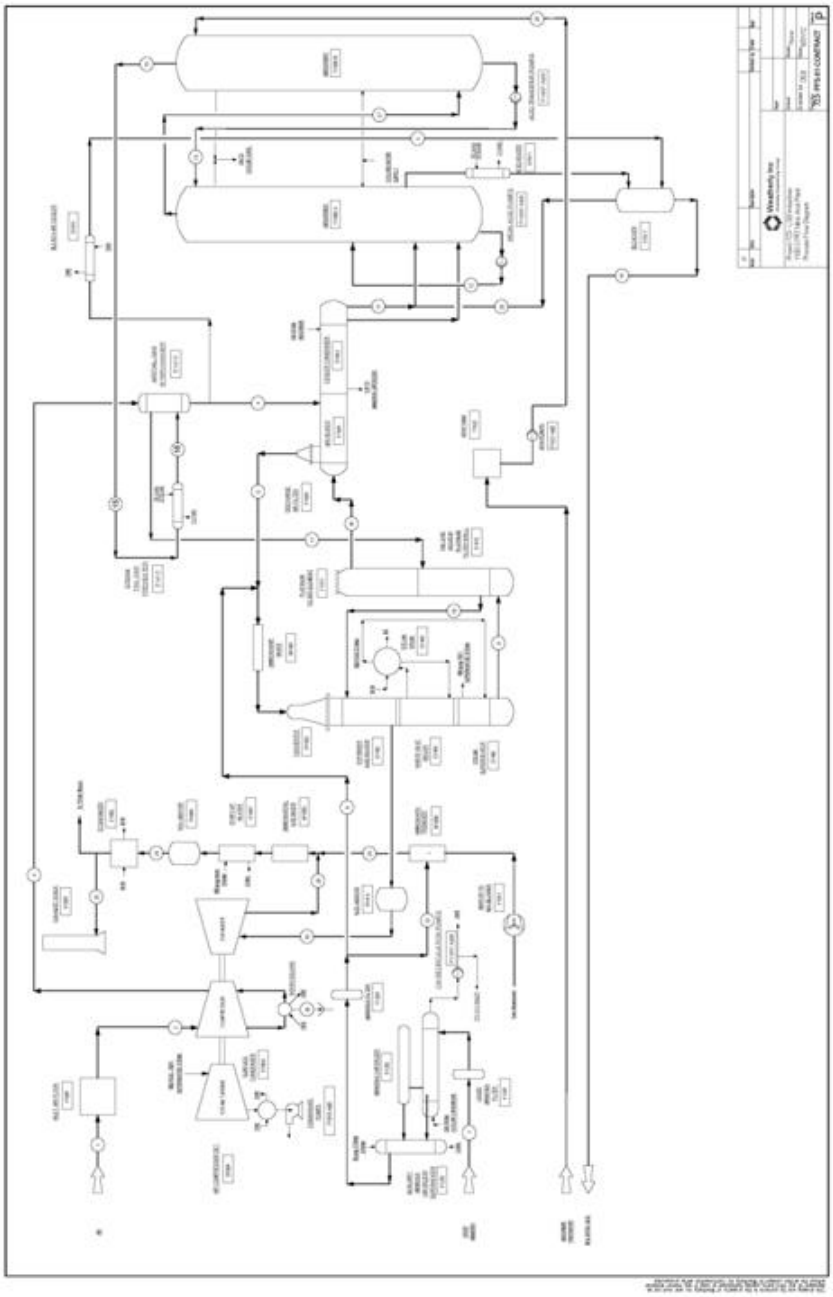
B1812 Abator Tail Gas Blower

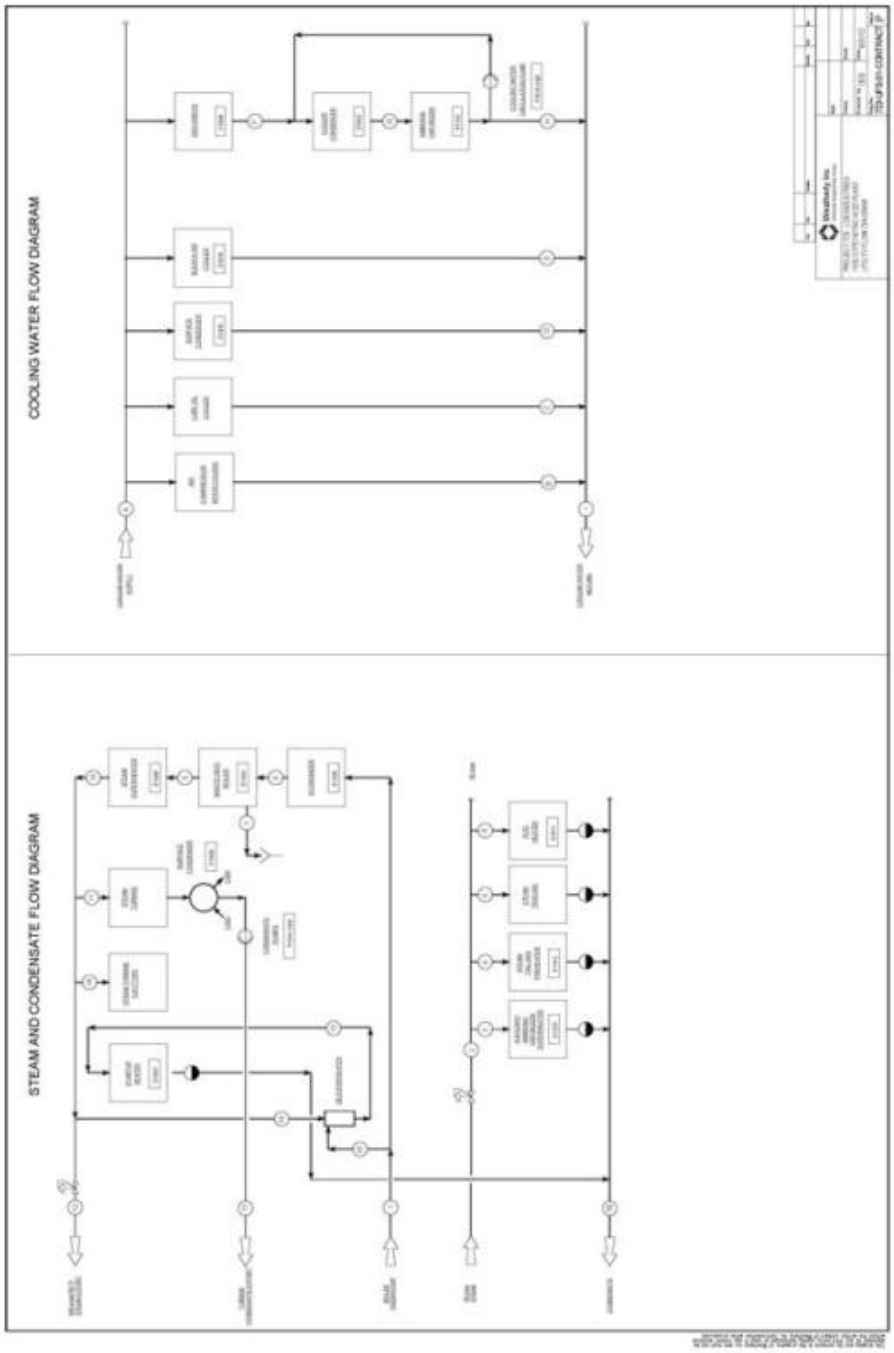
Function: To supply recycled tail gas for pre-mixing with ammonia feed to the NOx abator
Description: Centrifugal fan
Construction: 304 SS

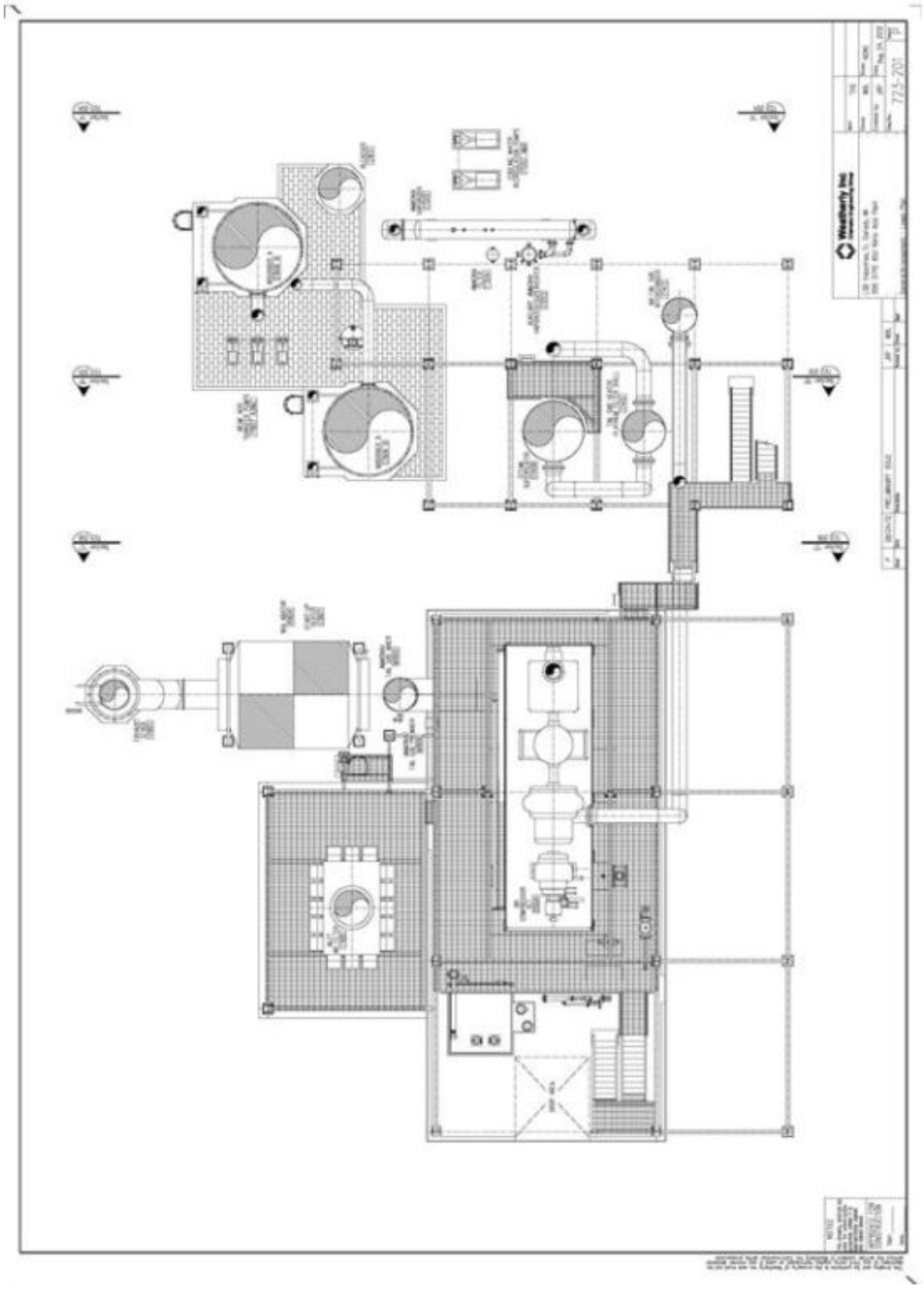
5. DRAWINGS

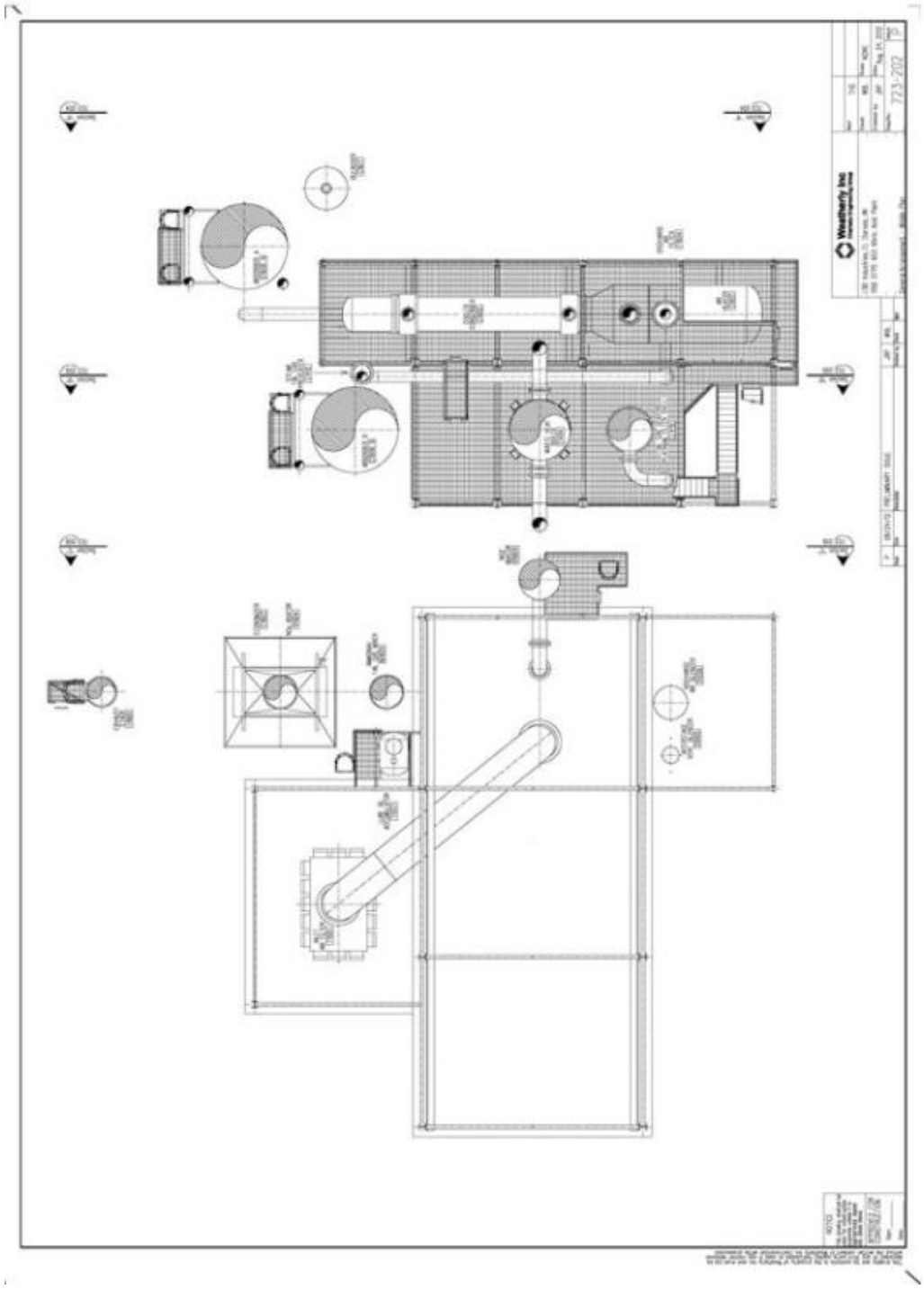
Dwg No.	Issue	Title
PFS-01	P	Process Flow Sheet – 1100 STPD Nitric Acid Plant
UFS-01	P	Utility Flow Sheet
201	P	General Arrangement—Plan
202	P	General Arrangement—Elevation
203	P	General Arrangement—Elevation
204	P	General Arrangement—Elevation
205	P	General Arrangement—Elevation
206	P	General Arrangement—Elevation
207	P	Axonometric View

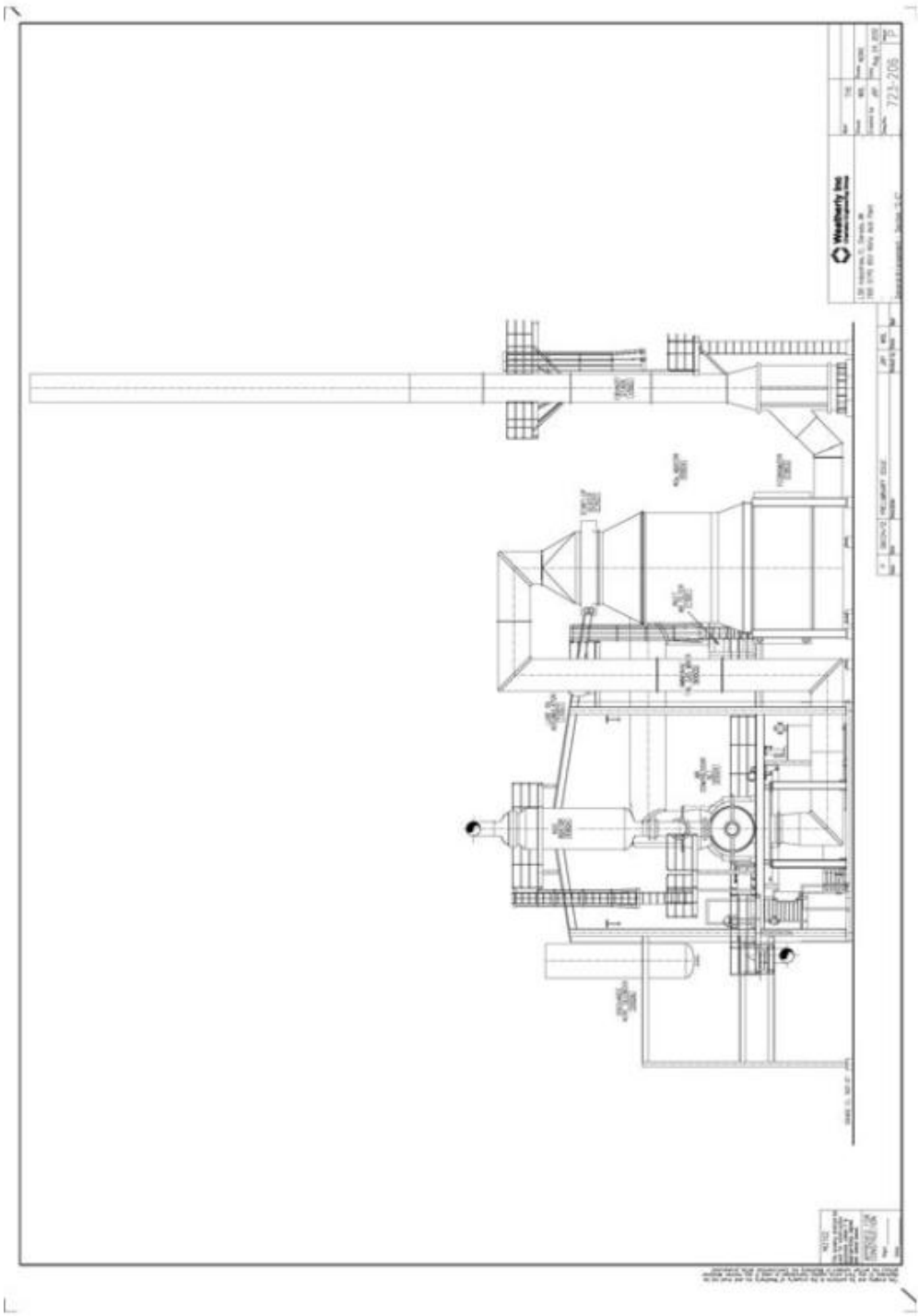
Drawings are for illustration only and final design will be subject to review for hazards, operability, reliability, accessibility, regulatory compliance and other requirements required to properly operate and maintain the process.

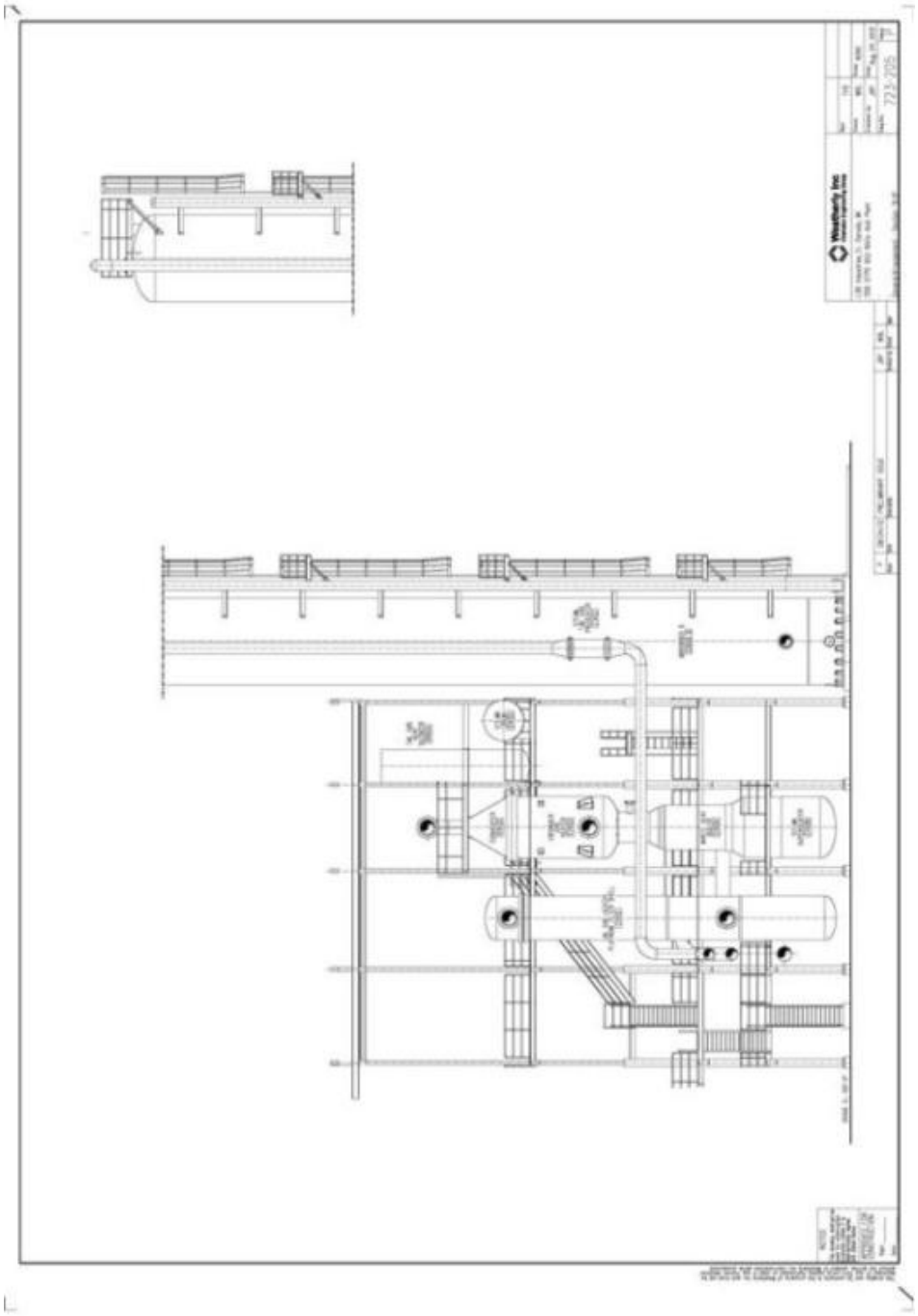


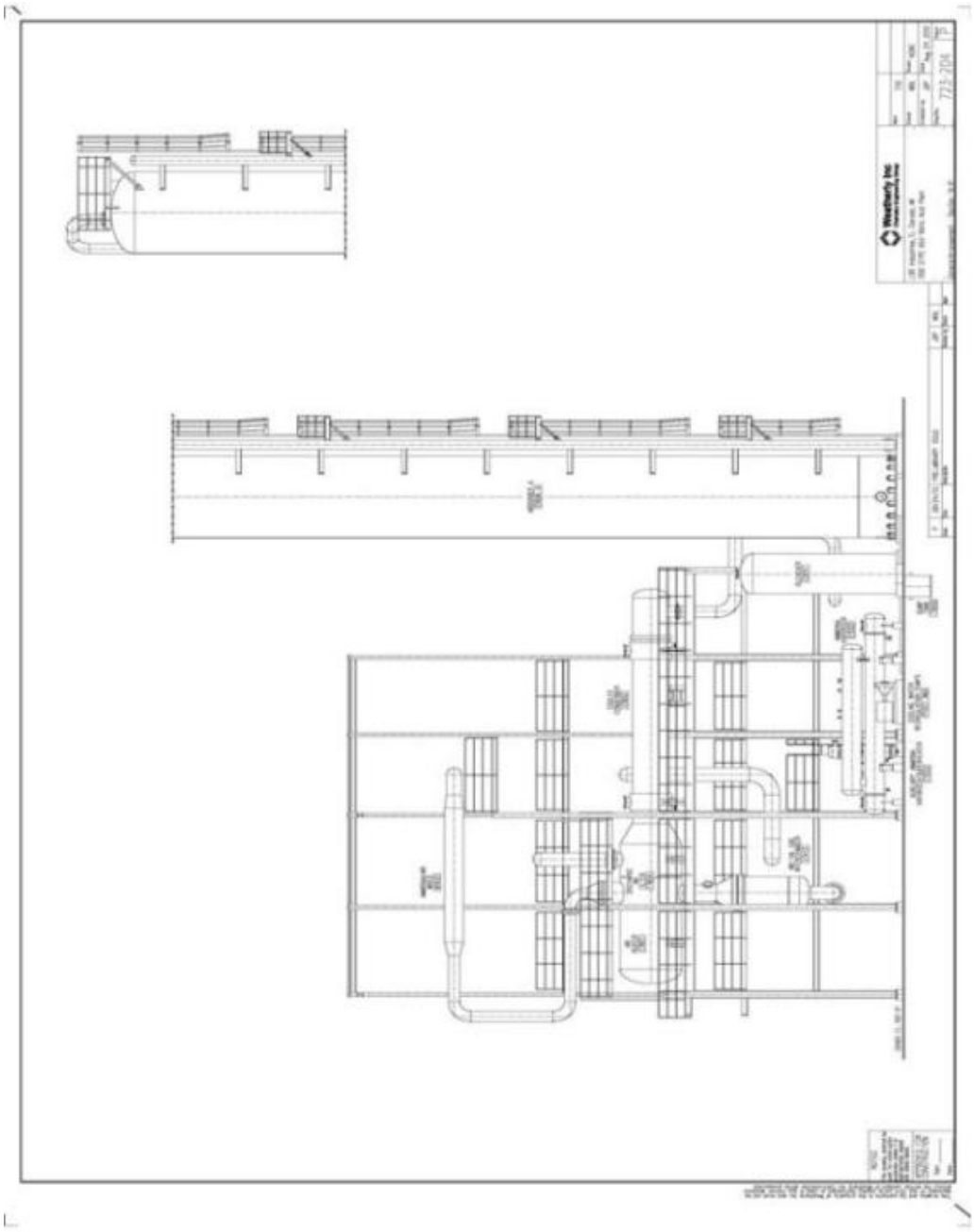

COOLING WATER FLOW DIAGRAM
STEAM AND CONDENSATE FLOW DIAGRAM

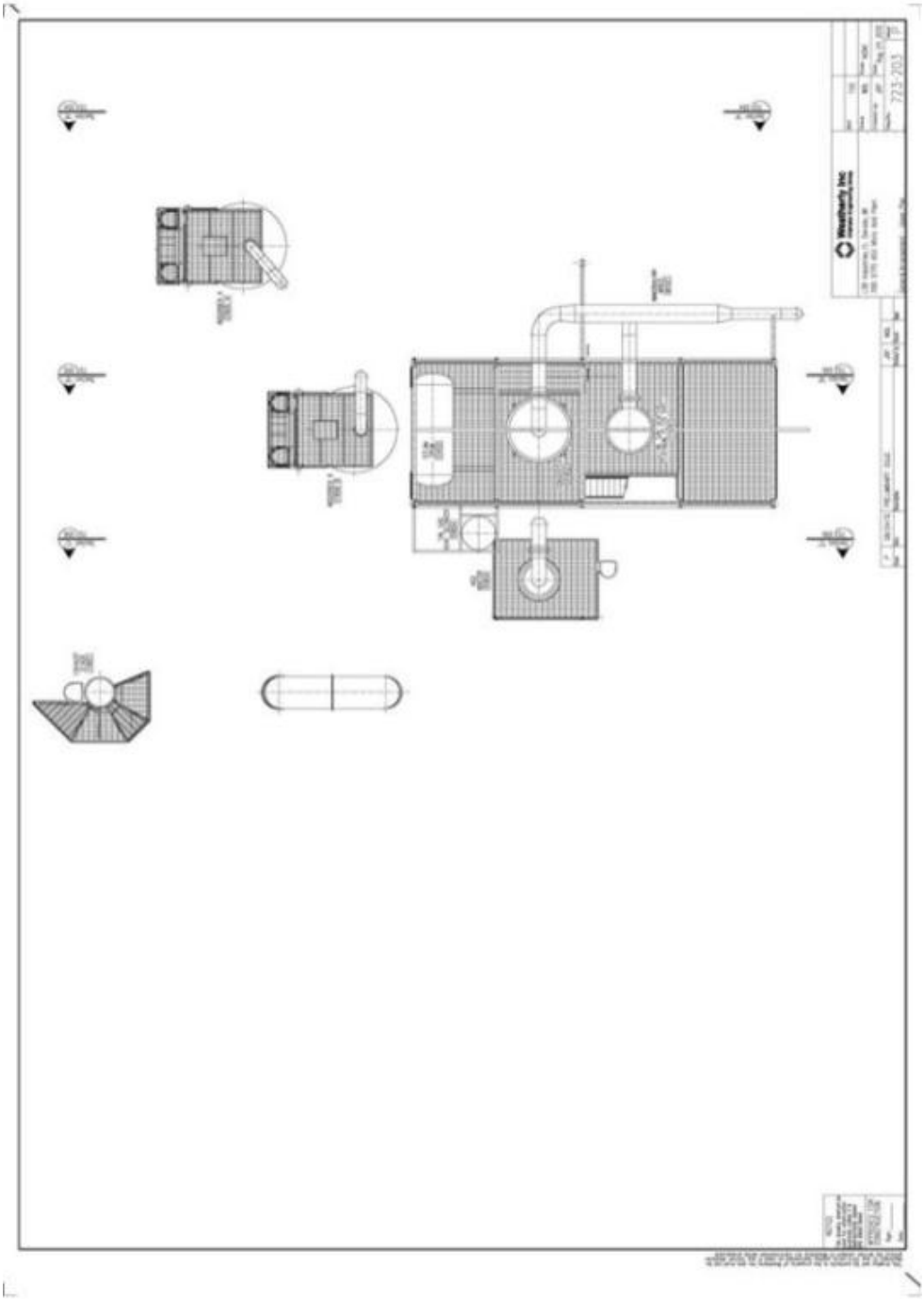


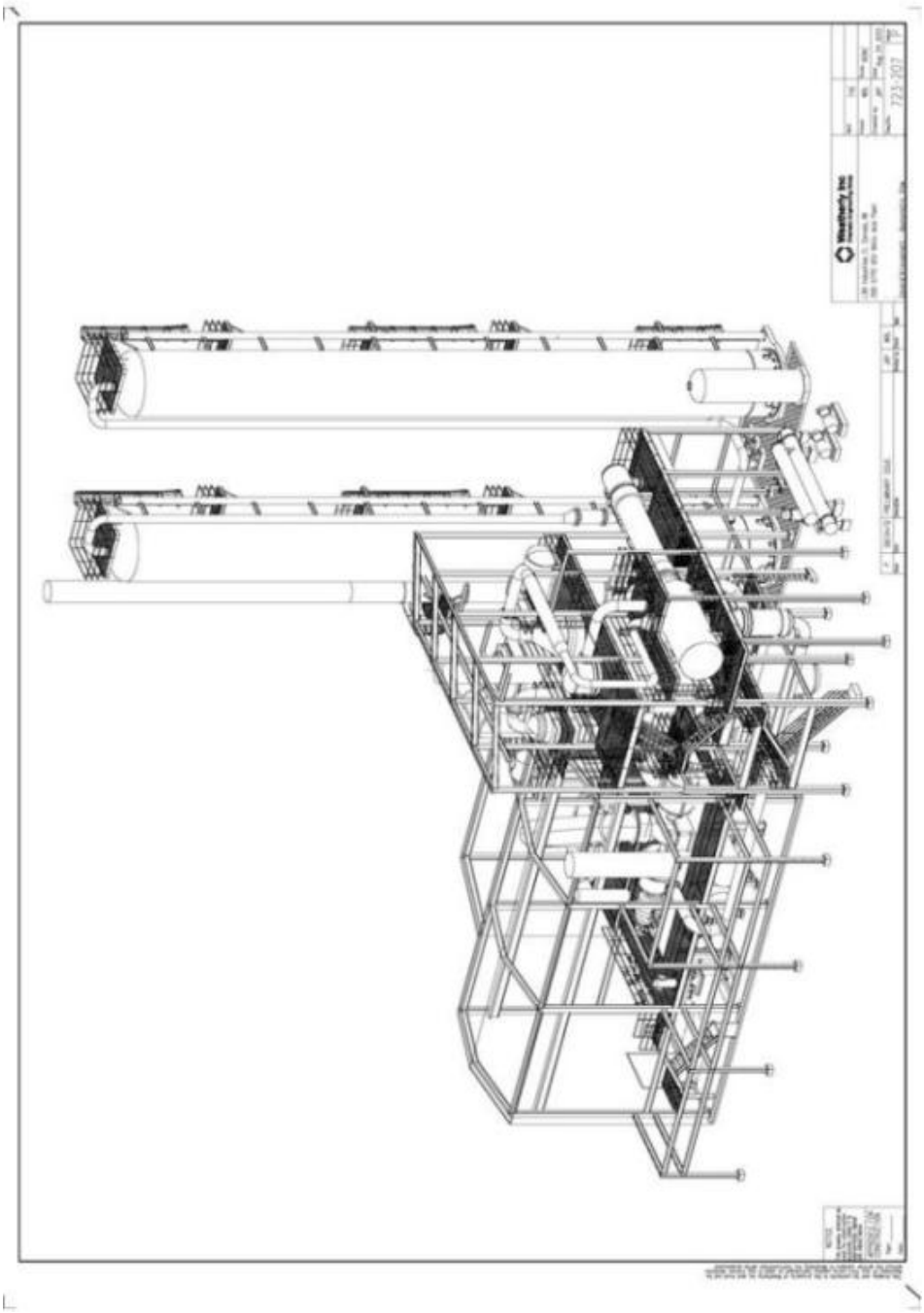












ANNEX 2 Basic and Detailed Engineering Package Documentation

The technical documentation will consist of the following 6 (Six) Volumes of documents in accordance with the following volume table of contents. Three (3) hard copies of the six (6) volumes shall be provided bound and organized per the table of contents. In addition to hard copies all documentation shall be provided electronically with drawings provided in Autocad DWG format. All XREFS to be bound. All drawings that are referenced to be included in the package. Items marked with B will be issued during the basic engineering phase, while items marked with C will be issued during the detailed engineering phase. Items marked B/C will be issued during both phases with the C phase issue being the final issue. All documents due under ANNEX 2 shall be promptly delivered to THE BUYER within 5 days of the date Contract has been executed by THE SELLER and THE BUYER.

VOLUME 1 A
GENERAL DESIGN AND PROJECT BASIS DOCUMENTATION

		Note	Delivery Month
1.1	General Requirements		
1.1.1	General Design Requirements	B/C	1
1.1.2	Plant Capacity	B/C	1
1.1.3	Personnel Requirements	B/C	1
1.2	Battery Limit Definition and Description		
1.2.1	Battery Limit Definition and Description	B/C	1
1.3	Specifications		
1.3.1	Specification of Applied Engineering Units	B/C	1
1.3.2	Specification of Applied Codes and Standards	B/C	1
1.4	Graphic Symbols and Item Numbering Legend Sheet	B/C	1

Note 1. The marking B or C indicates the following general information dependent on Scope of Work Contracted
B = Documents to be supplied in the Basic Design package
C = Documents to be supplied in the Detail Engineering package
N/A = Not Applicable to this package
F/D = Delivery Based on Field Construction Schedule

Note 2. The marking B/C indicates that the final document is included in the Detail Engineering package should detailed engineering be included in Weatherly's scope of work.

Note 3. Delivery items marked "p" for preliminary and "f" for final.

Note 4: So as not to confuse "Delivery month 1" is designated August 2012 and the project schedule started on August 1, 2012. (Deliverables are based on effective date of contract, with the exception of process design (i.e. PFD, UFD, Permitting, and mechanical (equipment drawings for long lead items) which are being worked on for the pre contract stage.VOLUME 1B
GENERAL ENGINEERING DOCUMENTATION

		Note	Delivery Month
1.5	List of Items		
1.5.1	List of Contract Items	N/A	
1.5.2	List of Flow Sheet Items	B/C	3
1.6	Diagrams		
1.6.1	Piping and Instrument Diagrams, Process (PID)	B/C	6p-16f
1.6.2	Piping and Instrument Diagrams, Utilities (UID)	B/C	6p-16f
1.6.3	Index Flow Sheet (IFS)	N/A	

VOLUME 2
PROCESS ENGINEERING DOCUMENTATION

		Note	Delivery Month
2.1	Consumption and Production Rates		
2.1.1	Consumption and Production Rates	B/C	3
2.2	Technical Specifications		
2.2.1	Raw, Intermediary and Auxiliary Materials	B/C	3
2.2.2	Finished Product and Byproducts	B/C	3
2.2.3	Utilities	B/C	3
2.2.4	Effluents	B/C	3
2.2.5	Media Codes	B/C	3
2.3	Environmental Considerations (no special considerations… dealt with in 2.2.4 Effluents).		
2.3.1	Waste Disposal Techniques		
2.3.2	Environmental Quality Control		
2.3.3	Emission Flow Sheet (EFS)		
2.4	Physical and Chemical Properties		
2.4.1	Physical and Chemical Properties	B/C	3
2.5	Process Description		
2.5.1	Chemistry of the Process	B/C	3
2.5.2	Brief Process Description	B/C	3
2.5.3	Detailed Process Description	B/C	3
2.6	Flow sheets and Block Diagrams		
2.6.1	Block Flow Diagrams (BFD)	N/A	
2.6.2	Process Flow Sheets (PFS)	B/C	3p-8f
2.6.3	Utility Flow Sheets (UFS)	B/C	3p-8f

VOLUME 2
PROCESS ENGINEERING DOCUMENTATION
(Cont.)

		Note	Delivery Month
2.7	Process Control		
2.7.1	Special Loop Function	B/C	3p-8f
2.8	Laboratory, Analyzing and Test Instructions (When applicable and for example consisting of)	B/C	16
	Sampling and Analysis Principles Sampling Schedule Analytical Methods Special Sampling and Analytical Equipment Sampling Frequency Reagent and Equipment Methods Analyzing Report		
2.9	Operating Manual (For example consisting of)	B/C	16
	Plant Capacity Technical Specifications Brief Process Description Chemistry of the Process Detailed Technical Process Description Operating Procedures Waste Disposal and Environmental Quality Control Start-up Manual/Normal shutdown, Emergency shutdown		

VOLUME 3
CIVIL ENGINEERING DOCUMENTATION

		Note	Delivery Month
3.1	Site		
3.1.1	Site Layout General (SLG)	N/A	
3.1.2	Site Layout Detail (SLD)	C	6p-12f
3.1.3	Battery Limit Drawings (CBL)	N/A	
3.1.4	Sitework Descriptions (For example consisting of descriptions for) Soil and Rock Excavataion Work Filling Work Paved Areas Excavation and Filling for Electrical Cables	B/C	6p-12f
3.1.5	Sitework Drawings (SWD) (For example consisting of drawings for) Soil and Rock Excavataion Work Filling Work Paved Areas Excavation and Filling for Electrical Cables	N/A	
3.2	Building Layout Drawings	N/A	
3.2.1	Plans and Sections, incl. loads whenever applicable (BLD)	N/A	
3.3	Building and Room Requirements		
3.3.1	Building and Room Numbers and Description	N/A	
3.3.2	Building Requirements and Principles	N/A	
3.3.3	Room Requirements	N/A	
3.3.4	Heating and Ventilation Requirements	N/A	
3.4	Foundation plans and drawings (replaced by actual drawings 3.5.5) (for equipment supplied by THE SELLER)	N/A	
3.4.1	Equipment Foundation Sketches	N/A	
3.4.2	Soils and Geotechnical Assessments	C	

VOLUME 3
CIVIL ENGINEERING DOCUMENTATION
(Cont.)

		Note	Delivery Month
3.5	Detail Building Drawings and Descriptions		
3.5.1	Descriptions (For example consisting of) General Requirements, Codes and Standards A Brief Building Description Room Description Painting List of Materials Concrete Construction, Tolerances Regulations for Steel Specification of Doors, Windows etc. Directions for Block Work and Rendering Calculations Reinforcement Schedules	B/C	6p-12f
3.5.2	Building General Drawings (BGD) (For example consisting of) Plans and Sections Elevations	C	15
3.5.3	Building Arrangement Drawings (BAD) (For example consisting of) Drawings with Mixed Materials Detail Drawings	N/A	
3.5.4	Steel Drawings (CSD) (For example consisting of) Steel Structure Plans, Sections and Elevations, Details Stairs, Railings Forgings Embedments Pipe Racks	C	14

VOLUME 3
CIVIL ENGINEERING DOCUMENTATION
(Cont.)

		Note	Delivery Month
3.5.5	Concrete Drawings (CCD) (For example consisting of) Dimension Drawings Reinforcement Drawings Foundation Drawings	C	10

VOLUME 4
EQUIPMENT ENGINEERING DOCUMENTATION

		Note	Delivery Month
4.1	Equipment Location		
4.1.1	Equipment Layout Drawing (ELD)	N/A	
4.1.2	Equipment Arrangement Drawing (EAD)	C	16
4.2	Equipment Insulation		
4.2.1	Insulation Principles for Equipment	B/C	6p-16f
4.2.2	Insulation Specification for Equipment	C	16
4.3	Equipment Specifications/Sketches/Drawings (Equipment supplied by BUYER)		
4.3.1	Equipment Specification Spec Items only	B/C	4
4.3.2	Equipment Drawings	B	4-7
4.4	Equipment Documentation (for equipment supplied by THE SELLER and for example consisting of at least)	C	Varies
	Equipment Specifications General Operation and Design Data General Drawings Operation Instructions Pamphlets and Descriptions Installation Instructions Spare Part List Maintenance Instruction Additional Requirements		
4.5	Equipment Vendor Shop Inspection Reports	C	Varies
4.6	Equipment Acceptance Documentation	C	Varies
4.7	Equipment Installation		
4.7.1	Equipment Installation Principles	N/A	
4.7.2	Equipment Installation Requirements	C	Varies

VOLUME 5
PIPING ENGINEERING DOCUMENTATION

		Note	Delivery Months
5.1	Piping Specifications		
5.1.1	Abbreviated Piping Specifications	B	6
5.1.2	Piping Specifications (incl. Component Data sheets)	C	8
5.2	List & Isometrics		
5.2.1	Pipe/Line List	B	6
5.2.2	Piping Isometric Drawings (PIS)	C	8-16
5.2.3	List of Pipe Supports	C	14
5.3	Pipe Insulation		
5.3.1	Insulation Principles for Pipes	B/C	6p-16f
5.3.2	Insulation Specifications for Pipes	B/C	6p-16f
5.4	List and Specification of Components Installed in Pipes (Incl. Component Data Sheets) (When applicable)	B/C	8-16
5.4.1	Flame Arrestors		
5.4.2	Safety Relief Valves		
5.4.3	Conservation Vents		
5.4.4	Restriction Orifices		
5.4.5	Rupture Discs		
5.4.6	Valves including Check Valves		
5.4.7	Sight Glasses		
5.4.8	Strainers/Screens		
5.4.9	Steam Traps		
5.4.10	Steam-Water Mixers		
5.4.11	Hoses		
5.4.12	Expansion Joints and Other Stress Relief Devices		
5.4.13	Miscellaneous		

VOLUME 5
PIPING ENGINEERING DOCUMENTATION
(Cont.)

		Note	Delivery Month
5.5	Pipe Tracing Diagram		
5.5.1	Pipe Tracing Principles	B/C	6/12
5.5.2	Pipe Tracing Diagrams (PTD)	C	12
5.6	Pipe Drawings		
5.6.1	Piping Arrangement Drawings (PAD)	C	16
5.6.2	Piping Axonometric Drawings (PXP)	C	16
5.6.3	Piping Battery Limit Drawing (PBD)	C	16
5.7	Pipe Supports		
5.7.1	Pipe Support System	C	16
5.7.2	Pipe Support, Types	C	16
5.7.3	Primary Support Specification (Standard)	C	16
5.7.4	Primary Support Specification (Spring Hangers)	C	16
5.7.5	Secondary Support Drawings (SSD)	C	16
5.8	Piping Material		
5.8.1	Piping Material Summary	C	16
5.8.2	Recommended Pipe Insulation Summary (Insulation sub is normally responsible for insulation take-off). WI will generate a report that directs the sub to the appropriate documents in the DE package to be considered in the take-off.	C	16
5.9	Piping Installation		
5.9.1	Piping Installation Principles	N/A	
5.9.2	Pre-Commissioning of Piping	N/A	
5.9.3	Welding of Piping	N/A	
5.9.4	Non-Destructive Test of Piping (see Note 1)	C	16
5.9.5	Pipe Identification	N/A	
5.9.6	Painting Principles of Piping/Painting Specifications of Piping	B/C	6/16
5.9.7	Earthing of Piping	N/A	
5.9.8	Platforms to Access Critical and Frequently Operated Valves	N/A	

Note 1 – All X-Ray films which Weatherly may acquire from equipment suppliers or other sources related to this project shall become the property of THE BUYER and sent to THE BUYER within 60 days of project Acceptance, Performance of non-destructive testing (NDT) is understood to be the responsibility of the equipment suppliers and constructor and outside of WI scope.

VOLUME 6
ELECTRICAL AND INSTRUMENT ENGINEERING DOCUMENTATION

	6.1 Electrical	Note	Delivery Month
6.1.1	Power Service Coordination (Utility To or On Site)	N/A	
6.1.2	I/O List	B/C	8p-14f
6.1.3	Drawing List	C	16
6.1.4	List of Energy Consumers	C	3p-12f
6.1.7	Load Study	N/A	
6.1.8	Short Circuit Study	N/A	
6.1.9	Single Line Diagrams	C	8p-16f
6.1.10	MCC Layouts	N/A	
6.1.11	Electrical Site Plan	C	16
6.1.12	Electrical Area Classification Study	B/C	8p-16f
6.1.13	Grounding Plans	C	10
6.1.14	Control System Power Distribution [For Dresser Rand supplied control system only]	C	16
6.1.15	Electrical Room Layout	N/A	
6.1.16	Electrical Power Plans	C	16
6.1.17	Electrical Lighting Plans	C	16
6.1.18	Lightning Plans and Specifications	N/A	
6.1.19	Cable and Conduit Schedule	C	16
6.1.20	Conduit and tray Layout	C	16
6.1.21	Grounding Details	C	10
6.1.22	Installation Details	C	16
6.1.23	Low Voltage System Plans (Security, Fire, Comms)	N/A	
6.1.24	Enclosure Layout	C	12
6.1.25	Panelboard Schedules	C	16
6.1.26	Motor Elementaries	C	16
6.1.27	Misc. Connection Diagrams	C	16
6.1.28	Electric Heat Trace	C	16
6.1.29	Electrical Equipment Specifications	C	16
6.1.30	Electrical Construction Specification	C	16
6.1.31	Final Documentation (as built – supplied after mechanical completion… Information to be provided by construction contractor)	C	+31

		Note	Delivery Month
6.2	**Instrumentation**		
6.2.1	Process & Instrument Diagrams See Process Engineering	B/C	
6.2.2	I/O List	B/C	8p-14f
6.2.3	Instrument Database	C	8p-16f
6.2.4	Instrument Specifications	C	16
6.2.5	Instrument Locations	C	16
6.2.6	Installation Details	C	8p-16f
6.2.7	Instrument Loop Sheets, Conventional	C	16
6.2.8	Fieldbus Design / Documentation	C	16
6.2.9	ModBUS Connections [For Dresser Rand supplied control system only]	C	16
6.2.10	I/O Module Connection Diagrams [For Dresser Rand supplied control system only]	C	16
6.2.11	Miscellaneous Connection Diagrams [For Dresser Rand supplied control system only]	C	16
6.2.12	Instrument Plans	C	16
6.2.13	Enclosure Layouts [For Dresser Rand supplied control system only]	C	12
6.2.14	Enclosure Wiring [For Dresser Rand supplied control system only]	C	16
6.2.15	Marshalling Panel Layout [For Dresser Rand supplied control system only]	CN/A	16
6.2.16	Control & Maintenance Building Layouts	N/A	
6.2.17	HAZOP/SIF/SIL	C	14
6.2.18	Construction Specifications	C	16
6.2.19	Drawing List	C	16
6.2.20	Final Documentation (as built – supplied after mechanical completion… Information to be provided by construction contractor)	C	+31
6.3	**Process Control System**		
	Detailed Specification		
6.3.1	SAMA Diagrams	C	10p-14f
6.3.2	Boolean Logic Diagram	C	8p-14f
	Software Configuration [For Dresser Rand supplied control system only]		
6.3.3	I/O Tag Database [For Dresser Rand supplied control system only]	C	8p-14f
6.3.4	Continuous Control Strategies	C	8p-14f
6.3.5	Motor and Other Discrete Control Logic	C	8p-14f
6.3.6	External Interfaces [For Dresser Rand supplied control system only]	C	8p-14f
6.3.7	Process Graphic Displays (Overview) [For Dresser Rand supplied control system only]	C	8p-14f

6.3.8	Process Graphic Displays (Details) [For Dresser Rand supplied control system only]	C	8p-14f
6.3.9	Process Graphic Displays (Interlocks) [For Dresser Rand supplied control system only]	C	8p-14f
6.3.10	Trend Displays[For Dresser Rand supplied control system only]	C	8p-14f
6.3.11	Historical Data Point Entries[For Dresser Rand supplied control system only]	C	8p-14f
6.3.12	System Architecture[For Dresser Rand supplied control system only]	C	8p-14f
6.3.13	Report Configuration[For Dresser Rand supplied control system only]	C	8p-14f
6.3.14	Process Simulation	N/A	
	Pre-Installation Testing		
6.3.15	Internal Testing[For Dresser Rand supplied control system only]	N/A	
6.3.16	Customer Acceptance Testing [For Dresser Rand supplied control system only]	C	14
	Commissioning		
6.3.17	System Site Setup & Initialization Testing	F/D	
6.3.18	Loop Check-out	F/D	
6.3.20	Startup Assistance	F/D	
6.3.21	Process Control Tuning	F/D	
6.3.22	Operation Verification Testing	F/D	
	Procurement		
6.3.23	Control System HW & SW DCS [For Dresser Rand supplied control system only]	C	16
6.3.24	Instrumentation	C	16
6.3.25	Electrical Equipment	C	16
	Installation		
6.3.26	Project Management / Supervision	N/A	
6.3.27	On Site I&E Rep During Construction	N/A	

Meetings Included in Price:

1. Four General Meetings (one day each) for project review at Jobsite. Attendance by project manager and one engineer.
2. PID Review Meeting at jobsite (3 days) (approximate date 1 month after initial issue of PIDs). Attendance by project manager, process engineer, and mechanical engineer.
3. Initial HAZOP meeting (5 days) in El Dorado, AR (approximate date 1 month after PID review). Attendance by process and mechanical engineer. Qualified HAZOP leader and recorder to be provided by THE BUYER. HAZOP software vendor shall be Dyadem “PHA” or other vendor acceptable to both THE SELLER and THE BUYER.
4. Final HAZOP and operability review meeting (5 days) in Arkansas. Attendance by process and mechanical engineers.

ANNEX 3 Tagged Major Equipment and Materials

The following is a list of equipment and materials with fixed prices that the SELLER will supply to the plant site in El Dorado, AR. The cost of specifying and purchasing this equipment is borne by and included in THE SELLER's Detailed Engineering and Procurement fee as described in "Section 5.1 Contract Price" of the Contract. THE BUYER will pay THE SELLER for Tagged Major Equipment and Materials at including delivery to THE SELLER's Job Site, at the following fixed prices.

ANNEX 3

WEATHERLY INC. 11/19/12
1100 STPD NA

LSB-EDCC

Tagged Major Equipment

Item	Description	Delivered Price
F1001	Inlet Air Filter	$ 121,200
B1004	Air Compressor Set (Steam Turbine)	$20,576,700
	Air Comoressor Spare Parts & Rotors	$ 3,779,000
S1005	Interstage Vent Silencer (by compressor vendor)	$ —
S1006	Discharge Air Silencer (by compressor vendor)	$ —
T1007	Lube Oil Accumulator	$ 25,500
E1009	Surface Condenser	$ 541,800
P1010 A&B	Condensate Pumps	$ 30,600
S1011	Tail Gas Vent Silencer	$ 63,700
L1040	Building Crane	$ 82,800
F1201	Liquid Ammonia Filter	$ 19,100
E1202	Ammonia Vaporizer	$ 388,800
E1203	Auxiliary Ammonia Vaporizer/Superheater	$ 140,300
F1204	Ammonia Filter	$ 57,400
P1205 A&B	Cooling Water Recirculation Pumps	$ 75,200
M1401	Ammonia/Air Mixer	$ 63,700
R1402	Converter	$ 318,700
R1402.01	Converter Basket (1 Each)	$ 541,800
R1402.02	Hydrogen Torch	$ 1,900
E1403	Expander Gas Heater	$ 2,868,400
E1404	Waste Heat Boiler	$ 887,300
S1405	Steam Drum	$ 267,700
E1406	Blowdown Sample Cooler	$ 1,100
S1407	Blowdown Drum	$ 15,300
E1408	Steam Superheater	$ 710,000
S1409	Steam Superheater Separator	$ 44,600

E1410	Tail Gas Heater/Platinum Filter Shell	$ 777,700
F1411	Platinum Filter Element (1 Each)	$ 48,400
E1412	Steam Tail Gas Preheater	$ 153,000
E1413	Air - Tail Gas Interchanger	$ 286,800
X1420	Desuperheater	$ 15,300
L1440	Converter Hoist	$ 48,400
E1601	Air Heater	$ 828,600
E1602	Cooler Condenser	$ 2,111,100
F1604	Discharge Air Filter	$ 229,400
P1605 A,B,C, & D	Weak Acid Pumps	$ 127,500
C1606 A	Absorber A	$ 3,371,000
C1606 B	Absorber B	$ 3,371,000
P1608	Sump Pump	$ 15,300
T1609	Sump Tank	$ 16,500
E1610	Acid Heater	$ 101,900
E1611	Product Acid Heater	$ 127,500
P1615 A&B	Cooling Water Booster Pumps	$ 67,500
E1616	Bleach Air Cooler	$ 44,600
T1620	Absorber Feedwater Tank	$ 76,500
P1621 A&B	Absorber Feedwater Pumps	$ 25,500
L1640	Discharge Filter Hoist	$ 3,800
H1801	Exhaust Stack	$ 212,900
E1803	Economizer	$ 216,800
R1804	NOx Abator	$ 127,500
X1804	NOx Abator Catalyst	$ 369,700
M1805	Ammonia/Tail Gas Mixer	$ 61,200
M1806	Ammonia/Tail Gas Premixer	$ 14,000
E1807	Start-Up Heater	$ 70,100
B1812	Abator Tail Gas Blower	$ 31,900
R1813	N2O Reduction Reactor	$ 790,400
X1814	N2O Reduction Catalyst	$ 1,912,200
Totals		$47,276,600

Note 1) B1004 Price Includes Spares without additional mark-up as provided in September 24, 2012 Dresser Rand Bid Summary for Requisition 0723-R1001

PREFERRED VENDORS

(Preferred Instrument Vendors to be added)

TAGGED EQUIPMENT VENDORS

Item No.	Equipment Name	Suggested Suppliers (red font = single source) (italics = preferred by WI) (green font=EDC Proffered/Recommended)	
F1001	Inlet Air Filter	Dollinger	
B1004	Air Compressor Set (Steam Turbine)	Dresser Rand	
S1005	Interstage Vent Silencer (by compressor vendor)	Dresser Rand	
S1006	Discharge Air Silencer (by compressor vendor)	Dresser Rand	
T1007	Lube Oil Accumulator	Savannah Tank, Modern Welding, Addison, AT&F, IPC	**PMC - Memphis, TN; M.L. SMITH - Ruston, LA**
E1009	Surface Condenser	Graham, API-Basco	
P1010 A&B	Condensate Pumps	Flowserve, Goulds	**DXP Bossier City, LA; CENTRO El Dorado, AR**
S1011	Tail Gas Vent Silencer	Fluid Kinetics, Maxim, Pulsco	
L1040	Building Crane	Kone-Cranes, Ace, Hoosier & Piedmont	**Yale - (NEMA Standard Elecrical, high speed)**
P1050	Condensate Sump Pump	*Corcoran*, Durco, Goulds	**DXP Bossier City, LA; CENTRO El Dorado, AR**
F1201	Liquid Ammonia Filter	*Pall*, Pentair	
E1202	Ammonia Vaporizer	Cataract, Hoffman, Trumbo, RAS, Gaspar, CBT	**PMC - Memphis, TN; M.L. SMITH - Ruston, LA**

E1203	Auxiliary Ammonia Vaporizer/Superheater	Cataract, Hoffman, Trumbo, RAS, Gaspar, CBT	**PMC - Memphis, TN; M.L. SMITH - Ruston, LA**
F1204	Ammonia Filter - Housing	Savannah Tank, Modern Welding, Addison, AT&F, IPC, CBT	**PMC - Memphis, TN; M.L. SMITH - Ruston, LA**
F1204	Ammonia Filter - Elements	Pall	**GRAVER**
S1205	Ammonia Blowdown Pot	Savannah Tank, Modern Welding, Addison, AT&F, IPC, CBT	**PMC - Memphis, TN; M.L. SMITH - Ruston, LA**
P1205 A&B	Cooling Water Recirculation Pumps	Flowserve, Goulds	**DXP Bossier City, LA; CENTRO El Dorado, AR**
M1401	Ammonia/Air Mixer	Sulzer, Chemineer-Kenics	
R1402	Converter	Zanon, Marks Bros, Alpec, Joseph Oat, Ellett	**Alloy Engineering**
R1402.01	Converter Basket	Alloy Engineering, Ferralloy, Marks, Titan	**PMC - Memphis, TN; Alloy Engineering**
R1402.02	Hydrogen Torch	Savannah Tank, Modern Welding, Addison, AT&F, IPC	**PMC - Memphis, TN; M.L. SMITH - Ruston, LA**
E1403	Expander Gas Heater	Zanon, Marks Bros, Alpec, Joseph Oat, Ellett	**PMC - Memphis, TN; Alloy Engineering**
E1404	Waste Heat Boiler	Zanon, Alpec, Joseph Oat, Lucey Boiler, CBT	**PMC - Memphis, TN; Alloy Engineering**
S1405	Steam Drum	Zanon, Hooper, Joseph Oat, Lucey Boiler, CBT, Taylor Forge	**PMC - Memphis, TN; Alloy Engineering**
E1406	Blowdown Sample Cooler	Sentry	
S1407	Blowdown Drum	Savannah Tank, Modern Welding, Addison, AT&F, IPC, CBT	**PMC - Memphis, TN; Alloy Engineering**
E1408	Steam Superheater	Zanon, Alpec, Joseph Oat, Lucey Boiler, CBT	**PMC - Memphis, TN; Alloy Engineering**
S1409	Steam Superheater Separator	Peerless	
E1410	Tail Gas Heater/Platinum Filter Shell	Zanon, Marks Bros, Apex, Joseph Oat, Titan, Ellett, RAS, Gaspar	**PMC - Memphis, TN; Alloy Engineering**
F1411	Platinum Filter Element	Graver, Dollinger, CECO	**GRAVER**

E1412	Steam Tail Gas Preheater	Apex, Titan, Gaspar, Ellett, Mersen	
E1413	Air - Tail Gas Interchanger	Cataract, Hoffman, Trumbo, RAS, Gaspar, CBT	
X1420	Desuperheater	Graham, Schutte and Koerting	**SCHUTTE KOERTING**
L1440	Converter Hoist	Kone-Cranes, Ace, Hoosier, Piedmont	**Yale - (NEMA Standard Elecrical, high speed)**
E1601	Air Heater	Zanon, Marks Bros, Apex, Joseph Oat, Titan, Ellett, RAS, Gaspar	**PMC - Memphis, TN; Alloy Engineering**
E1602	Cooler Condenser	Apex, Titan, Gaspar, Ellett, Mersen	**PMC - Memphis, TN; Alloy Engineering**
F1604	Discharge Air Filter - Elements	Pall	**GRAVER**
P1605 A&B	Weak Acid Pumps	Innomag, Dean Brothers Klaus-Union	**INNOMAG - SOUTHERN DESIGN & MECHANICAL Smackover, AR**
C1606 A	Absorber A	Advanced Precision, Joseph Oat, CBT, Alpec, Sauder, Roberts	**PMC - Memphis, TN; Alloy Engineering**
C1606 B	Absorber B	Advanced Precision, Joseph Oat, CBT, Alpec, Sauder, Roberts	**PMC - Memphis, TN; Alloy Engineering**
P1607 A&B	Weak Acid Transfer Pumps	Innomag, Dean Brothers Klaus-Union	**INNOMAG - SOUTHERN DESIGN & MECHANICAL Smackover, AR**
P1608	Sump Pump	*Corcoran*, Durco, Goulds	**3796 GOULDS DXP BOSSIER CITY, LA.**
T1609	Sump Tank	Savannah Tank, Modern Welding, Addison, AT&F, IPC	**PMC - Memphis, TN; M.L. SMITH - Ruston, LA**
E1610	Acid Heater	Apex, Titan, Gaspar, Ellett, Mersen	
E1616	Bleach Air Cooler	Cataract, Hoffman, Trumbo, RAS, Gaspar, CBT	
C1617	Bleacher	Advanced Precision, Joseph Oat, CBT, Sauder, Roberts	
T1620	Absorber Feedwater Tank	Savannah Tank, Modern Welding, Addison, AT&F, IPC	**PMC - Memphis, TN; M.L. SMITH - Ruston, LA**
P1621 A&B	Absorber Feedwater Pumps	*Grundfos*, Sundyne	**SUNDYNE - DELTA PROCESS Baton Rouge, LA**
L1640	Discharge Filter Hoist	Kone-Cranes, Ace, Hoosier, Piedmont	**Yale - (NEMA Standard Elecrical, high speed)**
H1801	Exhaust Stack	Ben Parker, Modern Welding, Addison, IPC, Mid-South Steel	

E1803	Economizer	Kentube	
R1804	NOx Abator	Ben Parker, Modern Welding, Addison, IPC, Mid-South Steel	
X1804	NOx Abator Catalyst	Enprosol, CRI	**Mel-Mon Environmental, llc - Montgomery, TX**
M1805	Ammonia/Tail Gas Mixer	Chemineer-Kenics, Sulzer	
M1806	Ammonia/Tail Gas Premixer	Chemineer-Kenics, Sulzer	
E1807	Start-Up Heater	Kentube	
B1812	Abator Tail Gas Blower	NY Blower, Nothern Blower, Chicago Blower, Twin City, Buffalo	
R1813	N2O Reduction Reactor	Invista, CRI	**Mel-Mon Environmental, llc - Montgomery, TX**
X1814	N2O Reduction Catalyst	Invista, CRI	**Mel-Mon Environmental, llc - Montgomery, TX**

*Innomag Sealless pumps are preferred for acid service. Goulds 3796 preferred for sump pumps and Sundyne for Boiler Feed water pumps.

Supplier	Info	City	State/Province/Country
Ace	Ace Industries	Cincinnati	OH
Addison	Addison Fabricators	Addison	AL
Advanced Precision	Advanced Precision Fabricators	Tulsa	OK
Alloy Engineering	Fabricators	Berea	OH
Alpec	Spin off of Hantech. South Korean Fabricators.	Pohang	South Korea

Apex	Apex Engineered Products. Spin off of Astro Cosmos	Clark	PA
API-Basco	Through API Heat Transfer	Buffalo	NY
AT&F	AT&F Advanced Metals. Subsidiary of American Tank & Fabricating Company. Spin off of Astro Cosmos	Orrville	OH
Ben Parker	Non-Code Shop	Chattanooga	TN
Buffalo	Buffalo Blower	Buffalo	NY
Cataract	Cataract Steel. Locally represented by Hutchco.	Niagara Falls	NY
CBT	Chattanooga Boiler and Tank	Chattanooga	TN
CECO	CECO Filters	Conshohocken	PA
Chemineer-Kenics	Kenics division of Chemineer. Locally represented by Carl Eric Johnson Company.	North Andover	MA
Chicago Blower	Fans	Glendale Heights	IL
Corcoran	R.S. Corcoran Co.	New Lenox	IL
CRI	CRI Catalyst. Subsidiary of Royal Dutch Shell.	Houston	TX
Dean Brothers	Owned and Distributed by Met-Pro	Indianapolis	IN
Dollinger	SPX Dollinger	Ocala	FL
Dresser Rand	Compressor	Olean	NY

Durco	Durco-Flowserve. Locally represented by Pumping Systems		
Ellett	Ellett Industries	Port Coquitlam	B.C. Canada
Enprosol	Enprosol Catalyst	St. Petersburg	FL
Ferralloy	Fabricators	Cleveland	OH
Flowserve	Durco-Flowserve. Locally represented by Pumping Systems		
Fluid Kinetics	CCI	Winfield	KS
Gaspar	Gaspar Inc. Welding and Fabricators	Canton	OH
Goulds	GPM	Seneca Falls	NY
Graham	Desuperheaters	Houston	TX
Graver	Graver Technologies	Glasgow	DE
Grundfos	Locally Represented by Carl Eric Johnson Company		
Hoffman	Hoffman Process	Bridgeville	PA
Hooper	Hooper Welding	Oakville	Ontario, CA
Hoosier	Hoosier Crane	Elkhart	IN
Innomag	Locally represented by Voigt Abernathy		
Invista	Invista Catalyst	Wilmington	NC
IPC	IPC Fabricators	Tulsa	OK
Joseph Oat	Fabricators	Camden	NJ
Kentube	Fintube	Tulsa	OK

Klaus-Union	Mag Drive Pumps	Houston	TX
Konecranes	Cranes/Hoists	Atlanta	GA
Lucey Boiler	Fabricators	Chattanooga	TN
Marks Bros	Fabricators	Boring	OR
Maxim	Mixim Silencers	Stafford	TX
Mersen	Previously Astro Cosmos	Oxnard	CA
Mid-South Steel	Fabricators	Pelham	AL
Modern Welding	Fabricators	Fresno	CA
Nothern Blower	Fans	Winnipeg	Manitoba, CA
NY Blower	Locally represented by ADC Fans of ATL.	Laporte	IN
Pall	Locally Represented by Fluid Flow		
Peerless	Peerless Manufacturing	Dallas	TX
Pentair	Pentair Industrial	Hanover Park	IL
Piedmont	Piedmont Hoist and Crane		
Pulsco	Vent silencers. Locally represented by Control Southern		
RAS	RAS Process Equipment	Robbinsville	NJ
Roberts	Roberts Company	Winterville	NC
Sauder	Sauder Custom Fabrication	Emporia	KS

Savannah Tank	Savannah Tank and Manufacturing Company	Savannah	GA
Schutte and Koerting	Process Equipment	Trevose	PA
Sentry	Sentry Equipment	Oconomowoc	WI
Sulzer	Sulzer Pumps, Sulzer Chemtech	Multiple	Locations
Sundyne	Locally represented by W.E. Marshall Company		
Taylor Forge	Taylor Forge Engineered Systems	Paola	KS
Titan	Titan Metal Fabricators. Spin Off of Astro Cosmos	Camarillo	CA
Trumbo	Trumbo Inc. Custom Fabrication	Memphis	TN
Twin City	Twin City Fans and Blowers	Minneapolis	MN
Zanon	Fabricators	Schio	Italy

PREFERRED INSTRUMENTATION VENDORS

INSTRUMENT TYPE	VENDOR
Flow meter. SS or PTFE	Foxboro, Endress & Hauser
Flow meter, Steam	Sierra, Rosemont
Flow meter, Air and Ammonia	Rosemont
Flow meter, Acid	Micromotion, Endress & Hauser
High Volume Trip Valves	Zwick
Pneumatic control valve, PTFE	Richter, Samson
Control valves, SS/CS /Ti	Samson – Stainless Steel Kammer –Stainless Steel Fisher – Carbon Steel
Pneumatic actuator for control valve	Samson – 304L Stainless Steel acid service
Pneumatic actuator for ON/OFF valve	Jamesbury / Neles
I/P Positioner	Samson, Siemens, ABB
Pressure reducer for instrument air	K-Tek,, Samson Endress & Hauser
Level Measurements	K-Tek, Radar, Vega, Endress & Hauser
Boiler Trip	Magnatrol, Clark Reliance
Pressure gauge	Ashcroft, Wika, Wise
Pressure Transmitter	Rosemont, Endress & Hauser
ON/OFF Valve, SS	Jamesbury
ON/OFF valve, PTFE	Samson, Flowserve
Density Measuring	Micromotion, Endress & Hauser
Conductivity transmitter	Mettler Toledo
Dial Thermometer	Wika, Wise
Resistance thermometer, Tantalum, Flange	Pyromation, Schramm, ABB
Resistance thermometer, SS, CS, weld-in	Schramm, ABB
RTD transmitter, Remote	ABB, Wika, Endress & Hauser
ELECTRICAL PARTS	
Motors	Siemens, US Motor

2.0 The SELLER will supply some piping items and all instrumentation for the nitric acid plant. The price of this supply will be determined within 60 days of the effective date of the contract. This price will not exceed $2,250,000 excluding the cost of the Distributive Control/Process Logic Controllers control system and the Continuous Emissions Monitoring System (CEMS) which must be approved by THE BUYER. The SELLER's scope of supply of materials required for the nitric acid plant is listed herein below:

Description

Specialty Piping Items (Expansion Joints)
Temperature Instruments
Pressure Instruments
Flow Instruments
Level Instruments
Analytical Instruments
Signal Input Instruments
Voltmeters, Ammeters

Control Valves
Relief Valves
Process Control PLC[For Dresser Rand supplied control system only]
CEMS (added to price above)

2.1 Instrumentation requirements purchases are subject to THE BUYER's approval after receipt and review of Mass and Energy balances and Process & Instrument diagrams.

ANNEX 4 SELLER's Advisory Services

1.1 In addition to the contract Scope of Work, SELLER will furnish the services of engineers and technicians to assist BUYER as requested for items listed below.

1.1.1 Assist the BUYER with plant operation. Advisory Services for pre-commissioning, commissioning and startup and the Performance Test are required for performance guarantees and are included in the contract price Article 5.1 of the Contract.

1.2 Excluding the Advisory Services set forth in the preceding Section 1.1.1, BUYER shall pay for the services set forth hereinbefore the applicable per diem charge set out in 1.6.3 below per day for each day, including travel time, while away from SELLER'S Atlanta, Georgia office, plus actual living and traveling expenses incurred.

1.3 SELLER shall, on or about the first day of each month, submit an invoice to OWNER for payment for the services rendered to BUYER during the previous calendar month and, within thirty (30) calendar days after receipt thereof and agreement by BUYER to the accuracy of the invoice, BUYER shall pay to SELLER the face amount of each invoice less any disputed amount withheld as retainage on account of any of the following: (a) defective work not remedied; or

(b) third-party claims for payment or liens filed or reasonable evidence indicating the probable filing of such claims or liens; or

(c) failure of THE SELLER to make payments properly due to subcontractors pursuant to applicable subcontracts or purchase orders or failure of the subcontractors to make payment properly due for any portion of the Work or failure of EPC Contractor or its subcontractors to make payment properly due for equipment, materials or labor; or

(d) damage to THE BUYER or another contractor, or subcontractor caused by THE SELLER, or any entity for whom THE SELLER is responsible.

1.4 Reimbursable items for performing engineering, procurement, and construction Work shall include the following:

1.4.1 Personnel rates listed in 1.5.1 below for time charged directly to the Work for work performed.

1.4.2 Personnel rates listed in 1.5.3 below for Work performed outside the home office, including travel time, while employee is away from the SELLER's Atlanta, Georgia office.

1.4.3 Living and traveling expenses for employees while traveling outside the home office in Atlanta, Georgia on the Work.

1.4.4 Cost of long distance telephone, telefax, and communication expenses incurred for the Work.

1.4.5 Actual cost to SELLER for inspection fees, custom duties, licenses, permits, testing, and other fees and charges incurred on account of the Work.

1.4.6 Cost of copying and printing the actual quantity of drawings, manuals, specifications, and other documents at the rates listed in 1.6.2 below.

1.5 Rates for performing engineering, procurement, home offices advisory services and construction work.

1.5.1 Personnel Rates

	($/Hour)
Project Support	65.00
Engineer	165.00
Start-Up Advisor	165.00
Project Manager	175.00

1.5.3 Rates for work performed outside SELLER home office, based on a 40-hour work-week and away from home office seven days or more.

Employee Classification	US Dollar Per Diem Rate	($/Hour)
Project Support	520.00	65.00
Engineer	1320.00	165.00
Start-Up Advisor	1320.00	165.00
Department/Project Manager	1400.00	175.00
Construction Advisor	1400.00	175.00

1.5.4 The above rates in 1.5.1 and 1.5.3 are based on a forty (40) hour work week. An overtime charge will be made for hours worked in excess of forty (40) hours based on the following formula:

$$\text{Overtime Charge} = \frac{\text{Excess Hours}}{8} \times \text{rate} \times 1.50$$

ANNEX 5 Time Schedule

A general bar chart is included below. Within 10 days of the effective date of the contract, a project schedule will be issued to THE BUYER for BUYER'S approval and for tracking the job. This schedule will be updated every month and re-issued to THE BUYER.

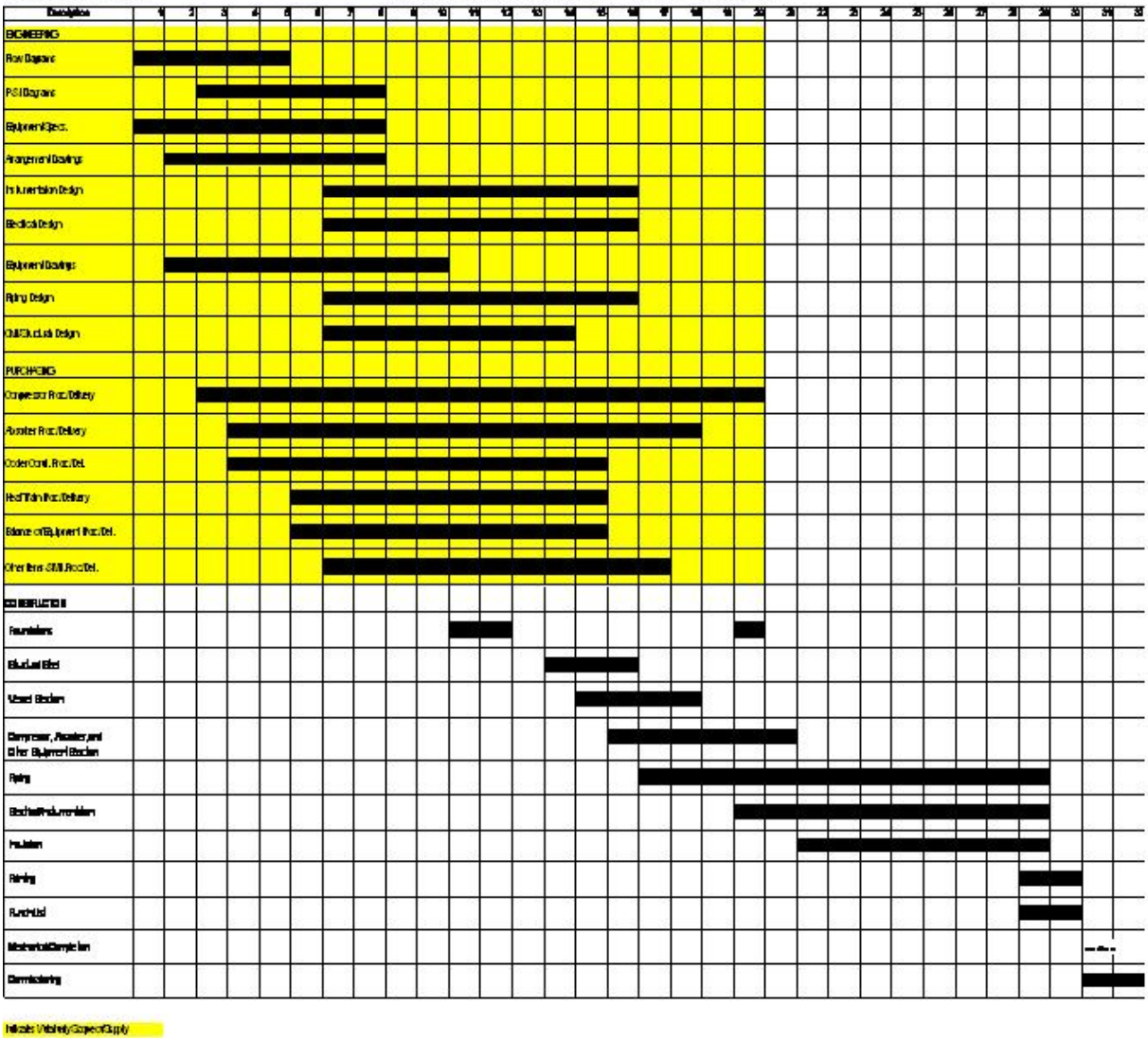
The estimated milestones are as follows:

Overall schedule is 31 months from start to mechanical completion.
Startup and commissioning is estimated to be completed approximately 1 month after mechanical completion
Basic Engineering is estimated to be completed 8 months after effective date of contract. Detailed Engineering is estimated to be completed 18 months after effective date of contract Procurement of equipment and materials is estimated to be completed 24 months after effective date of contract.

BUYER.

WEATHERLY INC.
El Dorado Chemical Co.

PROJECT 723 ISSUE for Contract
PROJECT BAR CHART SCHEDULE AS OF: Sept 1, 2012



Indicates Weatherly Scope of Supply

ANNEX 6 Performance Guarantees

1.1 SELLER guarantees that, when the Nitric Acid Plant as designed by SELLER (hereinafter referred to as Plant) is operated in accordance with SELLER's instructions and recommendations, with SELLER's representative present, and is supplied with adequate quantities of raw materials and utilities of the quality and kind and at the conditions required by SELLER's design, the Plant will, during a performance test run conducted by the BUYER over a period of seventy-two (72) substantially consecutive hours:

1.1.1 **Meet the following performance standards:**

Capacity of Product

A total of not less than 1100 short tons per day of nitric acid (expressed as 100 wt% HNO_3) shall be produced at a concentration of 65 minimum wt% with the rate being adjusted for ambient conditions to be equivalent to an air temperature and % Relative Humidity which represent the 98th percentile of hot weather conditions at THE BUYER's site .

Quality of Product

The quality of the Product shall meet the specifications set forth in Section 3.5 of ANNEX 1

Gaseous Emissions

The NOx emissions shall not exceed the Environmental Protection Agency and the State of Arkansas standards established and effective on or prior to the effective date of Contract. The foregoing notwithstanding, the stack shall be colorless and contain less than 0.5 lb NOx (expressed as NO2) per ton of nitric acid (100% basis produced) at all times consistent with the requirements of the U.S. Environmental Protection Agency New Source Performance for nitric acid plants as published in the *U.S. Federal Register* on August 14, 2012.

The N2O emissions shall be reduced by 95% in a tertiary N2O abatement system at the end of life of the primary catalyst run. This provision shall be demonstrated in a separate 72 hour performance test occurring in days 80 through 90 of a primary gauze campaign if the balance of performance testing is not conducted in days 80 through 90 of a primary gauze campaign.

1.1.2 **Meet the following Economic Warranty**:

Item	Unit Cost	Unit/ton product	$/ton
Ammonia, (tons) (i)	TBD	0.290 maximum	$ TBD
Net Steam Export, (tons)	$ 10.00	(0.700) minimum	($ 7.00)
Gross Pt Catalyst Loss, (troy oz.) (ii)	$1800.00	0.008	$ 14.40
Total Cost per ton of product produced			**$ TBD**

(i) Including ammonia for NOx abatement. Unit ammonia cost to be used shall be the “Tampa/US Gulf” ammonia key price as published in the “Fertecon” Ammonia Report which is effective on the day on which the Performance Test is started.

(ii) Gross catalyst loss based upon using a palladium recovery gauze and a platinum catalyst gauze, which shall not exceed 1910 total Troy ounces and be fabricated in a manner mutually agreed to by both THE BUYER and THE SELLER

1.2 The ability of the Plant to meet the performance standards and economic warranty set out in 1.1.1 and 1.1.2 above will be measured solely by the performance tests provided for herein.

BUYER and SELLER shall agree prior to start of a performance test run on methods to be used to determine and evaluate performance of the Plant with respect to the Performance Standard and Economic Warranty.

1.3 BUYER will, in carrying out the performance test, do the following:

1.3.1 Operate the Plant in accordance with SELLER’s instructions and recommendations at which time SELLER’s representative is also present;

1.3.2 Furnish trained operators, maintenance, non-warrantied spare parts, raw materials, energy, and utilities of the quality and kind and at the conditions required by SELLER’s design and in the amounts required by the Plant for the durations of the performance test;

1.3.3 Complete the performance test within sixty (60) days after Initial Operation of the Plant by BUYER, unless said completion within said sixty (60) days is prevented due to the sole fault of SELLER in which event said sixty (60) day period shall be extended by the time the completion of the performance test is prevented due to the sole fault of SELLER. Participation by BUYER in start-up and operation for purposes of achieving the performance testing or prior to the performance testing shall not be considered initial operation of the Plant by BUYER for purposes of this paragraph 1.3.3. Tests for N2O emissions shall be run and capacity test results shall be adjusted for ambient conditions as specified in section 1.1.1.

1.4 If the Plant during the performance test meets the performance standards and economic warranty set out in 1.1.1 and 1.1.2 above, said standards and economic warranty shall be deemed to have been met.

1.5 In the event that during the performance test the Plant does not meet the performance standards set out in 1.1.1 above, provided such failure to meet is the fault of SELLER, SELLER shall, subject to the provisions of the Contract, for SELLER’s Work, perform all corrective engineering, repairs, and modifications to the Plant at its own expense to cause the Plant to meet said performance standards.

1.6 In the event that during the performance test the Plant meets the Performance Standard, but fails to meet the Economic Warranty, BUYER and SELLER shall agree on the cause of such failure and corrections required to cause the Plant to meet said Economic Warranty; subject to the provisions of the Contract and any limitations of SELLER’s liability set out therein, at SELLER’s option (i) SELLER shall perform all corrections to SELLER’s Work at its own expense and BUYER shall perform all other corrections and work at its own expense required to cause the Plant to meet said Economic Warranty or (ii) SELLER shall pay to BUYER as liquidated damages the amount in US $ determined using the following method:

$$L = (A - 197.56) \times (P)$$

where,

L = Liability for Economic Warranty, $
A = Actual Operating Cost ($ per short ton) based on the prices in 1.1.2
P = One Year Production at 330 Operating Days x 1100 STPD = 363,000 ST

1.7 In the event BUYER fails to carry out and complete the performance test as provided in 1.3.3 above, provided such failure is not due to the fault of SELLER, BUYER shall be deemed to have agreed to, and so notified SELLER of, Final Acceptance of Work as provided in the Contract.

1.8 SELLER's liability described in 1.5 and 1.6 above shall be subject to a maximum limit of liability of ten percent (10%) of the Contract Price. The maximum liability for Performance Standard and Economic Warranty is a part of and subject to the aggregate limit of liability described in ARTICLE 20.1.

1.9 Except as set out herein and in the Contract, the foregoing guarantees, warranties and remedies are exclusive and in lieu of all other guarantees, and warranties. All implied warranties of fitness for a particular purpose or of merchantability are expressly excluded.

ANNEX 7 Milestone Payment Values

Basic Engineering Documentation Values for Milestones

	Annex 2	Value	$Value	Estimated Month
Month 1 Progress Payment		10%	$ 181,000	1
Month 2 Progress Payment		10%	$ 181,000	2
Month 3 Progress Payment		10%	$ 181,000	3
Process Engineering				
PFD First Issue	2.6.2	5.00%	$ 90,500	3
UFD First Issue	2.6.3	5.00%	$ 90,500	3
PID First Issue	1.6.1	20.00%	$ 362,000	6
UID First Issue	1.6.2	5.00%	$ 90,500	6
Mechanical Engineering				
Equipment Specifications for Spec Items	4.3.1	5.00%	$ 90,500	4
Equipment Drawings	4.3.2	5.00%	$ 90,500	6
Equipment Arrangement Drawing (EAD)	4.1.2	5.00%	$ 90,500	8
Instrument and Electrial				
I/O List	6.2.2	2.50%	$ 45,250	8
List of Energy Consumers	6.1.6	2.50%	$ 45,250	3
Complete BE Package		15.00%	$ 271,500	8
Total		100%	$1,810,000	

Detailed Engineering Documentation Values for Milestones

	Annex 2	Value	$Value	Estimated Month
Monthly Progress Payments		5%	$ 218,000	7
Monthly Progress Payments		5%	$ 218,000	8
Monthly Progress Payments		5%	$ 218,000	9
Monthly Progress Payments		5%	$ 218,000	10
Process Engineering				
PFD Issue for Construction	2.6.2	2%	$ 87,200	12
UFD Issue for Construction	2.6.3	2%	$ 87,200	12
PID Issue for Construction	1.6.1	5%	$ 218,000	12
UID Issue for Construction	1.6.2	2%	$ 87,200	12
Operation Manual	2.9	5%	$ 218,000	18
Civil Structural				
Site Drawings (SLD)	3.1.2	2%	$ 87,200	10
Steel Drawings (CSD)	3.5.4	5%	$ 218,000	14
Concrete Drawings (CCD)	3.5.5	5%	$ 218,000	10
Piping Engineering				
Piping Isometric Drawings (PIS)	5.2.2	5%	$ 218,000	15
Piping Arrangement Drawings (PAD)	5.6.1	5%	$ 218,000	14
3D Model with Piping Material Summary	5.8.1	5%	$ 218,000	14
Secondary Support Drawings	5.7.5	5%	$ 218,000	16
Instrument and Electrial Engineering				
Sincle Line Diagram	6.1.9	5%	$ 218,000	16
SAMA & Boolean Logic Diagrams	6.3.1 & 6.3.2	5%	$ 218,000	14
Instrument Loop Sheets	6.2.7	5%	$ 218,000	16
Instrument Specifications	6.2.4	5%	$ 218,000	16
HAZOP-SIF-SIL	6.2.17	2%	$ 87,200	14
Preliminary Construction Package for Contractor		5%	$ 218,000	12
Complete DE Package		5%	$ 218,000	18
Total		100%	$4,360,000	

The Major Payment Values Table shown below shall not apply to these tagged pieces of equipment. Each of the payment values and timing for these tagged pieces of equipment shall be determined by negotiations with the respective equipment vendor and approved by both THE BUYER and THE SELLER .

Eq. Tag No.	Description	Value
B1004	Air Compressor Set (Steam Turbine)	$20,576,700.00
	Air Comoressor Spare Parts & Rotors	$ 3,779,000.00
E1403	Expander Gas Heater	$ 2,868,400.00
E1404	Waste Heat Boiler	$ 887,300.00
E1602	Cooler Condenser	$ 2,111,100.00
C1606 A	Absorber A	$ 3,371,000.00
C1606 B	Absorber B	$ 3,371,000.00
R1813	N2O Reduction Reactor	$ 790,400.00
X1814	N2O Reduction Catalyst	$ 1,912,200.00
Total Value		$39,667,100.00

Major Equipment Payment Values

WEATHERLY INC.

Document No:

LSB Industries
1100 STPD NA Plant

Item	Description	DownPayment With contract	PO Placement	Vendor Print Issue	Materials Ordered	Materials Received	Midway Point	Equipment Tested	Equipment Delivery
F1001	Inlet Air Filter	10%	9%	14%	32%				36%
B1004	Air Compressor Set (Steam Turbine)	10%	TBD	TBD	TBD	TBD	TBD	TBD	TBD
S1005	Interstage Vent Silencer (by compressor vendor)								
S1006	Discharge Air Silencer (by compressor vendor)								
T1007	Lube Oil Accumulator	10%	9%	14%		32%			36%
E1009	Surface Condenser	10%	9%	14%		32%	18%		18%
P1010 A&B	Condensate Pumps	10%	9%	14%		32%			36%
S1011	Tail Gas Vent Silencer	10%	9%	14%		32%			36%
L1040	Building Crane	10%	9%	14%		32%			36%
F1201	Liquid Ammonia Filter	10%	9%	14%		32%			36%
E1202	Ammonia Vaporizer	10%	9%	14%		32%	18%		18%
E1203	Auxiliary Ammonia Vaporizer/Superheater	10%	9%	14%		32%			36%
F1204	Ammonia Filter	10%	9%	14%		32%			36%
S1205	Ammonia Blowdown Pot	10%	9%	14%		32%			36%
P1205 A&B	Cooling Water Recirculation Pumps	10%	9%	14%		32%			36%
M1401	Ammonia/Air Mixer	10%	9%	14%		32%			36%
R1402	Converter	10%	9%	14%		32%	18%		18%
R1402.01	Converter Basket (1 Each)	10%	9%	14%		32%	18%		18%
R1402.02	Hydrogen Torch	10%	9%	14%		32%			36%
E1403	Expander Gas Heater	10%	TBD	TBD	TBD	TBD	TBD	TBD	TBD
E1404	Waste Heat Boiler	10%	TBD	TBD	TBD	TBD	TBD	TBD	TBD
S1405	Steam Drum	10%	9%	14%		32%	18%		18%
E1406	Blowdown Sample Cooler	10%	9%	14%		32%			36%
S1407	Blowdown Drum	10%	9%	14%		32%			36%
E1408	Steam Superheater	10%	9%	14%		32%	18%		18%
S1409	Steam Superheater Separator	10%	9%	14%		32%			36%
E1410	Tail Gas Heater/Platinum Filter Shell	10%	9%	14%		32%	18%		18%
F1411	Platinum Filter Element (1 Each)	10%	9%	14%		32%			36%
E1412	Steam Tail Gas Preheater	10%	9%	14%		32%	18%		18%
E1413	Air - Tail Gas Intercharger	10%	9%	14%		32%	18%		18%
X1420	Desuperheater	10%	9%	14%		32%			36%
L1440	Converter Hoist	10%	9%	14%		32%			36%
E1601	Air Heater	10%	9%	14%		32%			36%
E1602	Cooler Condenser	10%	TBD	TBD	TBD	TBD	TBD	TBD	TBD
F1604	Discharge Air Filter	10%	9%	14%		32%			36%
C1606 A	Absorber A	10%	TBD	TBD	TBD	TBD	TBD	TBD	TBD
C1606 B	Absorber B	10%	TBD	TBD	TBD	TBD	TBD	TBD	TBD
P1607 A,B,C,&D	Weak Acid Transfer Pumps	10%	9%	14%		32%			36%
P1608	Sump Pump	10%	9%	14%		32%			36%
T1609	Sump Tank	10%	9%	14%		32%			36%
E1610	Acid Heater	10%	9%	14%		32%			36%
E1611	Product Acid Cooler	10%	9%	14%		32%			36%
E1616	Bleach Air Cooler	10%	9%	14%		32%			36%
T1620	Absorber Feedwater Tank	10%	9%	14%		32%			36%
P1621 A&B	Absorber Feedwater Pumps	10%	9%	14%		32%			36%
L1640	Discharge Filter Hoist	10%	9%	14%		32%			36%
H1801	Exhaust Stack	10%	9%	14%		32%			36%
E1803	Economizer	10%	9%	14%		32%			36%
R1804	NOx Abator	10%	9%	14%		32%			36%
X1804	NOx Abator Catalyst	10%	45%	0%		0%			45%
M1805	Ammonia/Tail Gas Mixer	10%	9%	14%		32%			36%
M1806	Ammonia/Tail Gas Premixer	10%	9%	14%		32%			36%
E1807	Start-Up Heater	10%	9%	14%		32%			36%
B1812	Abator Tail Gas Blower	10%	9%	14%		32%			36%
R1813	N2O Reduction Reactor	10%	TBD	TBD	TBD	TBD	TBD	TBD	TBD
X1814	N2O Reduction Catalyst	10%	TBD	TBD	TBD	TBD	TBD	TBD	TBD

ANNEX 8: SPLIT OF WORK

SPLIT OF WORK

Between LDC (E) Construction (C) Weatherly (W) LLL (L)

Revised November 13, 2012

	Description	Supply	Engineer	Purchase	Erect / Install	Notes
	PROJECT MANAGEMENT AND PROJECT CONTROLS					
	Project Manager Overall	L				
	Client Representative	E				Client Project Manager
	Engineering Management OSBL Unit	W				For Weatherly Scope of Work
	Engineering Management Drill	L				
	Project Engineer	L / W				For Weatherly Scope of Work
	Engineering Staff OSBL	W				For Weatherly Scope of Work
	Engineering Staff OSBL & Site	L				
	Project Secretary	W				For Weatherly Scope of Work
	Project Controls Staff Overall schedules	L				
ISBL	Prepare / Maintain Eng and Procurement Sch	W				For Weatherly Scope of Work
OSBL	Prepare and Maintain Lump Sum Schedule	L				
	Project Execution Plan	L				For Overall Scope of Work
	Detailed and Resource Loaded EPC Schedule	L				For Overall Scope of Work
	Monthly Project Progress Reports - Overall Project	L				For Overall Scope of Work
	Monthly Project Progress Reports ISBL / OSBL	W				For Weatherly Scope of Work
	PROCESS ENGINEERING					
ISBL	Heat and Material Balance		W			For Weatherly Scope of Work
OSBL	Heat and Material Balance		L			
ISBL	Process Design		W			For Weatherly Scope of Work
OSBL	Process Design		L			
ISBL	Process Flow Diagrams		W			For Weatherly Scope of Work
OSBL	Process Flow Diagrams		L			
ISBL	Piping and Instrumentation Diagrams		W			For Weatherly Scope of Work
OSBL	Piping and Instrumentation Diagrams		L			
ISBL	Time Tag		W			For Weatherly Scope of Work
OSBL	Line List		L			
	DOCUMENTATION AND APPROVALS					
ISBL	Job Data Book w/ Mech., Elec., Ctrl Equip Data	W				
OSBL	Job Data Book w/ Mech., Elec., Ctrl Equip Data	L				
ISBL	Job Data for new Elec. & Ctrl Equip Data	W				
OSBL	Job Data for new Elec. & Ctrl Equip Data	L				
ISBL	Operating Manual	W				
OSBL	Operating Manual	L				
	Time and Costs for Terra Trips to Vendor Facilities	L				
	Time and Costs for Construction Trips to Vendor Facilities	C				
	Time and Costs for Weatherly Trips to Vendor Facilities	W				
	Local Authority Documentation Approval	L				
	Overall Area Classification Drawings	L				
ISBL	Area Classification Drawings	W				
	Client Approvals					
	Process Flow Diagrams	W / L				

SPLIT OF WORK
Between EDC (E) Construction (C) Weatherly (W) LEI (L)
Revised November 13, 2012

Description	Supply	Engineer	Purchase	Erect / Install	Notes
Sub Contract Documents	C/W/L				
Over Time	C / L				
Piping and Instrumentation Diagrams	W / L				
Lifting Plan / Procedure	C				
Equipment Data Sheets	W / L				
Area Classification Drawings	W / L				
Electrical One-Line Diagrams	W / L				
Heat and Material Balances	W / L				
Piping Line Lists	C/W/L				
New & Revised Piping Isometric Drawings	C/W/L				
Overall Plot Plan	L				
Plot Plan for UAN Process Unit	W				
Building Designs	L				
Design and Engineering Other Documents	W / L				As specified required by LSB
As-built drawings (redlined marked-up drawings)	C				
PERMITS, FEES, TAX, INSURANCE					
Obtain and Pay for Environmental Permits	E / L		E		
Obtain and Pay for Building / Construction Permits	E / L		E		
Obtain and Pay for Right of Way / Easement Permits	E / L		E		
Obtain and Pay for Water Rights	E / L		E		
Obtain and Pay for Other Permits	E / L		E		
Insurance with Premiums and Deductibles					
General Liability	C			C	As specified required by LSB
Sales Tax / Gross Receipts Tax	C / E				Purchaser will pay all applicable US taxes.
Lifting Permits	E / C			C	
Customs Duties	C / W				Purchaser will pay all applicable taxes.
SAFETY, QUALITY ASSURANCE, INSPECTION, TESTING					
Home Office Safety Coordinator	C				
On-site Safety Superintendent	C			C	
Safety Plan	C / L				
Safety Permitting	C / L				To meet LSB site requirements
First Aid Services / Emergency Medical Treatment	C			C	For Construction Scope of Work
Quality Assurance Inspector	C			C / W	For Construction & Weatherly Scope of Work
Quality Assurance Plan	C				For Construction & Weatherly Scope of Work
Concrete Testing	C			C	
Soils Investigate and Foundation Recommendations	L			L	
Metallurgical Destructive and Non-Destructive Testing	C / W			C / W	For Construction & Weatherly Scope of Work
CONSTRUCTION MANAGEMENT and TEMPORARY FACILITIES					
Field Construction Management Offices			C		For Construction Personnel Only
Field Construction Manager			C		For Construction Personnel Only
Field Office Manager			C		
Field Office Secretary			C		

SPLIT OF WORK
Between EDC (E) Construction (C) Weatherly (W) LEI (L)
Revised November 13, 2012

Description	Supply	Engineer	Purchase	Erect / Install	Notes
Field Project Controls Representative			C		
First Phone Line and Telephone			E	E	
Additional Phone Lines and Telephones			C	C	
Telephone Bills			C		
Temporary Power Set-up					
Source			E	E	
Hook-up and Distribution			E	E	
Consumption			E	E	
Temporary Lighting			C	C	
Compressed Air					
Source			C	C	
Hook-up and Distribution			C	C	
Consumption			C	C	
Potable Water					
Source			E	E	
Hook-up and Distribution			E	E	
Consumption			E	E	
Construction Water					
Source			F	F	
Hook-up and Distribution			C	C	
Consumption			C	C	
Hydrostatic Testing Water			C	C	
Sewer					
Connection			C	C	
Restrooms			C	C	
Field Office Trailer					
Ventech			C	C	
Sub-contractor			C	C	
Owner			E	E	
Furniture	C		C	C	
Cooler	C		C	C	
Fax Machine	C		C	C	
Internet Connection and Service Provider	C		C	C	
Computers: Hardware and Software	C		C	C	
Supplies	C		C	C	
Trash Receptacles and Disposal	C		C	C	
General Clean up and Janitorial Service	C		C	C	
Laydown Area	E			C	
Set up of Laydown Area				C	
Construction Warehousing/Receiving/Unloading/Inspection/Storage					
Labor				C	
Supply of the Buildings	C / E				

SPLIT OF WORK
Between LDC (L) Construction (C) Weatherly (W) LLL (L)
Revised November 13, 2012

Description		Supply	Engineer	Purchase	Erect / Install	Notes
Buses					C	
Housing		C		C		
Security						
	Personnel	E	C	C	C	
	Plant	E	E	E	E	
	SHIPPING AND TRANSPORTATION					
Equipment and material shipment to site						
ISBL	From Vendors to Site(Major Equipment only)			W		For Weatherly Purchased Scope of Supply
OSBL	From Vendors to Site			C		For Construction Purchased Scope of Supply
	From Ventech Houston to Site			C		For Construction fabricated items
Crating, saddles, boxing, packaging		C / W	C / W	C / W	C / W	For Construction & Weatherly Purchased Scope of Supply
Lifting (Cranes) off loading at site		C			C	Purchaser shall provide loading at suppliers.
Permits		C / W			C / W	Purchaser shall obtain as necessary to move the cargo to the site
Escorts		C / W			C / W	Purchaser shall obtain as necessary to move the cargo to the site.
Handling		C / W			C / W	Purchaser shall obtain as necessary to move the cargo to the site.
Routing		C / W			C / W	For Construction & Weatherly Purchased Scope of Supply
Expediting		C / W			C / W	For Construction & Weatherly Purchased Scope of Supply
Receiving and unloading labor		C			C	For Construction & Weatherly Purchased Scope of Supply
	CONSTRUCTION AREA REQUIREMENTS					
Land for Construction Area and Laydown Area		E		E		
Access to site		E			E	
Construction Security Service/Building/Utilities		E		E		
Temporary Roads		E			C	
Environmental						
	Revegetation, Landscaping, Seeding	E		E	E	
	Fences and Gates	E		E	E	
	Monitoring	E		E	E	
	Enhancement	E		E	E	
Handling and Disposal of Hazardous Waste		E		E	E	
Construction Equipment						
	Rental			C		
	Operator	C				
	Fuel	C				
	Lubricants	C				
	Maintenance	C				
	CIVIL					
Site Survey		C	C		C	LDC shall provide any available data for new site.
Remove existing buildings from site		C	C		C	
Above Ground Demolition		C	C		C	

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Description	Supply	Engineer	Purchase	Erect / Install	Notes
Site Clearing and Grubbing	C	C		C	
Rock Excavation / Blasting, as required	C	C		C	
Locate or Remove underground utilities or obstructions	C	C		C	
Mass Excavation and Backfill	C	C		C	
Excavation, Backfill (Structural Soil Fill) and Compaction	C	C		C	
Dewatering (Surface Water)	C	C		C	
Dewatering (Ground Water)	C	C		C	
Trenches	C	C		C	
Soil Tests	C	C		C	
ISBL Civils design specifications	W	W			
OSBL Civils design specifications	L	L			
Concrete					
Form Work		C	C	C	Weatherly will supply detailed foundation design
Rebar and Mesh		C	C	C	for ISBL Nitric Acid process unit only.
Anchor Bolts and Embeds		C	C	C	
Grouting		C	C	C	Construction will procure materials and install for ISBL and OSBL.
Joint Fillers		C	C	C	
Mortar for Lining		C	C	C	
Special Coatings and Sealants		C	C	C	
Precast Concrete		C	C	C	
Cold/Hot Weather Concrete		C	C	C	
Shoring		C	C	C	
Drilled (Concrete) Piers		C	C	C	
Piles, Caissons		C	C	C	
Foundations / Mats		C	C	C	
Storm Sewers, with underground piping, basins, etc.		C	C	C	
Hydrocarbon containing sewers, with P traps		C	C	C	
Sanitary Sewers		C	C	C	
Buildings and Architectural		C			
Control Room Building		C	C	C	
Sub Stations		C	C	C	
MCC Building		C	C	C	
Administration Building		C	C	C	
Maintenance and Warehouse		C	C	C	
Ponds, Dikes, Reservoirs, Dams		C	C	C	
Concrete Area Paving, Culverts and Drainage		C / W	C	C	
Gravel at unpaved areas		C	C	C	
Grouting for Structural Steel and Equipment		C / W	C	C	
STRUCTURAL					
ISBL Design Specifications		W			
OSBL Design Specifications		C			
Pipe Rack		C / W	C	C	Weatherly will supply detailed Structural designs &

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	Description	Supply	Engineer	Purchase	Erect / Install	Notes
	Additions / Modifications to Pipe Rack		C / W	C	C	diagrams, provide MTO's
	Equipment Support Structures		C / W	C	C	
	Platforms, Stairs and Ladders		C / W	C	C	Construction will supply
	Bolts and nuts		C / W	C	C	diagrams, provide MTO's, procure and provide all bulks
	Sleepers		C / W	C	C	materials for OSBL and ISBL facilities
	T Supports		C / W	C	C	Construction will install both ISBL & OSBL structures.
	Equipment Structures		C / W	C	C	
	Handrails, Grating, Checkered Plate		C / W	C	C	
	Ladders, Cages		C / W	C	C	
	Secondary Steel for Pipe, Electrical, Ductwork		C / W	C	C	
	Primer/Finish Painting of Steel		C / W	C	C	
	Touch-up Paint		C / W	C	C	
	Grouting of Structural Steel		C / W	C	C	
	EQUIPMENT					
ISBL	Equipment and Materials Specifications		W			
OSBL	Equipment and Materials Specifications		C			
ISBL	New Process Equipment, per Equipment List		W			Weatherly will supply detailed Equipment designs &
OSBL	New Process Equipment, per Equipment List		C			diagrams, procure all equipment and tagged instrumentation on attac
	Field Erected Storage Tanks		C	C	C	as required for the ISBL Nitric Acid process unit only
	Equipment Insulation		C / W	C	C	Construction will procure all other equipment not ISBL.
	Refractory		C / W	C	C	Contruction will procure associated bulk
	Finish Painting		C / W	C	C	materials in accordance with scope of supply.
	Touch-up Paint		C / W	C	C	Construction will install both ISBL & OSBL equipment at site
	Grouting		C / W	C	C	
	Equipment Inspections and Tests		C / W	C / W	C	Testing in accordance with scope of supply.
	Hydrostatic Testing		C / W	C / W	C	Testing in accordance with scope of supply
	Pneumatic Testing		C / W	C / W	C	Testing in accordance with scope of supply.
	Combination Hydrostatic / Pneumatic Testing		C / W	C / W	C	Testing in accordance with scope of supply.
	Post Weld Heat Treatment / Stress Relieving		C / W	C / W	C	materials in accordance with scope of supply.
	Fasteners, Hardware, Shims, Gaskets, Nuts, Bolts, Studs, etc.		C / W	C	C	Construction will procure associated bulk
	Showers and Eye Wash Stations		C / W	C	C	materials in accordance with scope of supply.
	Start-up Spare Parts	E	C / W	C / W	C	As specified by LSE and procured by relevant party
	2-Year Supply of Operational Spare Parts	E	C / W	C / W	C	As specified by LSE and procured by relevant party
	Normal Plant Maintenance Tools	E	C / W	C / W	C	As specified by LSE and procured by relevant party
	Special tools recommended by vendor for maintenance.	E	C / W	C / W	C	As specified by LSE and procured by relevant party
	PIPING					
ISBL	Piping and Materials Specifications		W			
OSBL	Piping and Materials Specifications		L			Weatherly will supply detailed Piping designs including Iso's and MTO
	Piping Design					diagrams. Construction will procure and deliver all piping materials
	Plans		C /W			as required for the ISBL and OSBL Nitric Acid process unit with the e
	Sections		C /W			

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	Description	Supply	Engineer	Purchase	Erect / Install	Notes
	Elevations		C / W			Construction will procure all other materials.
	ISOS		C / W			
ISBL	Detailed Plot Plans		W			
OSBL	Detailed Plot Plans		L			Construction will procure associated bulk
Overall	Detailed Plot Plans		L			materials in accordance
Pipe Stress Isometric Drawings and Calculations			W / L			with scope of supply
Steam & Electric Tracing requirements			C / W			
Piping						Construction and Weatherly will provide specifications for the
	Underground		C / W	C	C	Testing in accordance with scope of supply
	Above ground		C / W	C	C	
	Tie-ins		C / W	C	C	Construction will deliver piping materials in
Temporary Strainers			C / W	C	C	accordance with their scope to the fabrication site.
Permanent Strainers			C / W	C	C	
Post Weld Heat Treatment			C / W	C	C	Construction will perform piping spools production for both
Fire Water Piping						ISBL and OSBL facilities.
	Above-ground		C / W	C	C	
	Underground		C	C	C	Construction will install both ISBL & OSBL piping at site.
Fire Water Monitors			C	C	C	
Pipe and Fittings						
	2" and Smaller (small bore)		C / W	C	C	
	2" and Larger (large bore)		C / W	C	C	
	Shop fabricated Spools		C / W	C	C	
Valves						
	2" and smaller manual		C / W	C	C	
	2 1/2" and larger manual		C / W	C	C	
	In-line Specialty Valves		C / W	C	C	
	Underground Valves		C / W	C	C	
Utility Stations			C / W	C	C	
Fasteners, Hardware, Shims, Gaskets, Nuts, Bolts, Studs, etc.			C / W	C	C	
Hangers, Supports, Shoes, Spring Cans, Spring Hangers						
	Small Bore Field Fabed		C / W	C	C	
	Large Bore Field Fabed		C / W	C	C	
	Small Bore Patented Type (Grinnell, etc.)		C / W	C	C	
	Large Bore Patented Type (Grinnell, etc.)		C / W	C	C	
	Anchors and Guides		C / W	C	C	
	Spring Hangers and Engineered Supports		C / W	C	C	
	Seismic Design and Supports		C / W	C	C	
Tie Ins			C / W	C	C	
Battery Limit Spectacle Blinds			C / W	C	C	
Hydrostatic Testing			C / W	C	C	
Pneumatic Testing			C / W	C	C	
Combination Hydrostatic / Pneumatic Testing			C / W	C	C	

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Between EDC (E) Construction (C) Weatherly (W) LEI (L)
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Description	Supply	Engineer	Purchase	Erect / Install	Notes
Post Weld Heat Treatment / Stress Relieving		C / W	C	C	
Pipe Labeling and Banding		C / W	C	C	
Primer and Finish Coating on Hangers and Supports		C / W	C	C	
Underground Pipe Structural Excavation		C	C	C	
Underground Pipe Structural Backfill		C	C	C	
Underground Pipe Bedding		C	C	C	
Underground Pipe and Fittings		C / W	C	C	
Buffalo Boxes		C	C	C	
Firewater Loop and Monitors		C	C	C	
Grounding		C / W	C	C	
Primer and Finish Painting		C / W	C	C	
Touch-up Paint		C	C	C	
Insulation		C / W	C	C	
INSTRUMENTATION					
ISBL Instrumentation Specifications		W			
OSBL Instrumentation Specifications		L			Weatherly will supply detailed instrumentation designs &
New Field Instruments		C / W	C	C	diagrams
New Field Instruments Calibration					as required for the ISBL Nitric Acid process unit only.
Bench		C / W	C	C	Weatherly will procure all ISBL tagged instrumentation
In-line Specialty Valves		C / W	C	C	Construction will procure all other materials for ISBL & OSBL
Loop Checks		C / W	C	C	
Function Test		C / W	C	C	
Instrument Building (Incl w/Pre-engineered Bldg)		C / W	C	C	Construction will procure associated bulk
DCS		E / L	C	C	materials in accordance
DCS Configuration		E / L	C	C	with scope of supply.
PLC		E / L	C	C	
PLC Programming		E / L	C	C	Weatherly will deliver instrumentation materials
UPS DC Battery System		C	C	C	in accordance with their scope to the project site.
Local Equipment Control Panels		C / W	C / W	C	
Instrumentation Wiring and Related Materials		C / W	C	C	Construction and Weatherly will provide specifications for the
Instrument Valves and Fittings		C / W	C	C	Testing in accordance with scope of supply
Instrumentation Tubing, Tray and Related Materials		C / W	C	C	
Instrument Supports and Shanks		C / W	C	C	Construction will install both ISBL & OSBL instrumentation and
Instrument Air Header with Block Valves		C / W	C	C	control systems.
Control Valves ISBL		W	W	C	
Control Valves ISBL		C	C	C	
Process and Operational Alarm System		C / W	C	C	
Wiring from I/O building to Control Room		C	C	C	Construction will perform configuration and testing.
Analyzers		C / W	C	C	Weatherly will specify. Construction to procure.
Custody Exchange Meters		C / W	C	C	
ELECTRICAL					
ISBL Electrical Specifications		W			

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	Description	Supply	Engineer	Purchase	Erect / Install	Notes
OSBL	Electrical Specifications		L			Weatherly will supply detailed Electrical designs &
ISBL	Area Classification Drawings		W			diagrams. Construction will procure and deliver all electrical material
OSBL	Area Classification Drawings		L			as required for the ISBL Nitric Acid process unit and OSBL.
Overall Area Classification Drawings			L			
Electrical One-line drawings			W / L	C	C	A TBD company will supply detailed Electrical designs &
Switchgear			W / L	C	C	diagrams, and Construction will procure all other materials not ISBL
Power Feed to transformer			C	C	C	
Transformers						Weatherly will procure associated bulk
	Medium - Low Voltage 4160/2300		C	C	C	materials and specialized electricalt items in accordance
	High - Medium Voltage (from local power source)		C	C	C	with scope of supply
MCC Building (incl. With pre-engineered bldg.)			C	C	C	
MCC in Building			C / W	C	C	Construction will deliver electrical materials
Panel Boards			C / W	C	C	in accordance with their scope to the project site.
Cable Tray			C / W	C	C	
Conduit and Fittings			C / W	C	C	Weatherly and a company TBD will provide specifications for the
Wire and Cables						Testing in accordance with scope of supply.
	Low Voltage		C / W	C	C	
	High Voltage		C / W	C	C	Construction will install both ISBL & OSBL electrical and
	Instrument		C / W	C	C	control systems.
	Megger and Hi-Pot Cables		C	C	C	Construction will perform Testing at site.
Communication System						
	In plant/Walkie Talkie		E	E	C	LSB to specify and purchase. Construction install.
	Telephone		E	E	C	
	Intercom		E	E	C	
Grounding Loop with test wells			C / W	C	C	
Uninterruptible Power Supply (UPS)			C	C	C	
New fixtures, receptacles, switches			C / W	C	C	
New Field Termination Panels			C / W	C	C	
New Area Lighting Fixtures and Structures			C / W	C	C	
Battery Back-up Emergency Lighting			C / W	C	C	
Cathodic Protection			C / W	C	C	
Electric Heat Tracing			C / W	C	C	
Loop Checks			C / W		C	
Field Motor Control Devices			C / W	C	C	
Lightning Protection			C / W	C	C	
Fire Detection		E	E	C	C	
Transmission Overhead Pole Or Underground			C	C	C	
Metering		E	C / W	C	C	LSB to specify.
Fuses and Lamps			C / W	C	C	
Local Utility Tie-in		E	C	C	C	LSB to specify.
Wiring between MCC & I/O buildings.			C	C	C	
	PROTECTIVE COATINGS					

SPLIT OF WORK
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	Description	Supply	Engineer	Purchase	Erect / Install	Notes
ISBL	Protective Coatings Specifications	E	W			Weatherly will supply detailed Protective Coatings designs
OSBL	Protective Coatings Specifications	E	L			& diagrams, procure and deliver all bulk materials
						as required for the ISBL Nitric Acid process unit only.
Painting			W / L	C	C	LSB will supply detailed Protective coatings designs &
Insulation			W / L	C	C	diagrams, and Construction will procure all other materials not ISBL
Refractory			W / L	C	C	Construction will procure associated bulk materials and specialized items for ISBL and OSBL in accordance with scope of supply.
						Construction will deliver any coating materials
	Note: Assume main equipment id delivered already painted to finish coat.					in accordance with the scope to the project site.
						Construction will install both ISBL & OSBL coatings and make-good any coatings damaged in transit from suppliers.
	COMMISSIONING AND START-UP					
Pre-commissioning activities		L / W	W / TBD		W / C	LSB and Weatherly will specify. Construction will assist as required
Start-up Procedures		L / W	W / TBD			LSB and Weatherly will specify
Vendor Rep. during Commissioning & Start up		L	W	L	W / C	LSB and Weatherly will specify. Construction will assist as required
Comm. and Start Up Assistance Team		E / L		L	C	Under direction of LSB as required.
Start up Craft Assistance		E / L		L	C	Under direction of LSB as required.
Operator Training		E / L		E / L	E / L	
Plant Operational and Maintenance Personnel		E		E	E	
Chemicals, Lubricants, Desiccants						
	Start-up	E	W / L	E	L / C	LSB and Weatherly will specify. Construction will assist as required
	Operational	E	W / L	E	L / C	LSB and Weatherly will specify. Construction will assist as required
Utilities for Check out, Testing and Mechanical Completion						
	Steam	E	W / L	L	C	LSB will make available. Construction & Weatherly will specify.
	Water	E	W / L	L	C	Construction will provide any temporary facilities and connections.
	Air	E	W / L	L	C	
	Nitrogen	E	W / L	L	C	
	Electricity	E	W / L	L	C	
	Fuel	E	W / L	L	C	
Utilities for Start-up, Performance Test and Final Acceptance						
	Steam	E	W / L	L	W / C	LSB and Weatherly will specify. Construction will assist and
	Water	E	W / L	L	W / C	participate as necessary to meet performance acceptance.
	Air	E	W / L	L	W / C	
	Nitrogen	E	W / L	L	W / C	
	Electricity	E	W / L	L	W / C	
	Fuel	E	W / L	L	W / C	