PROPOSAL

Presented To:

Derwick Associates, S.A.

for

Relay Protection

Jusepin II Substation

*Prepared By*





Proposal No. 710-3649 Rev 1

August 31, 2010

This document is privileged and contains confidential information intended for use only by

Derwick Associates.

1. **Introduction**

Energy Parts Solutions (“EPS”) is pleased to offer this proposal to Derwick Associates, S.A. (“Derwick”) for Relay Protection Upgrades at the Jusepin II and WILPRO AP/MP - Petroleos de Venezuela (PDVSA) substations.

1. **Work Scope**

This proposal identifies the need to upgrade the existing 115kV line protection resulting from the upgrades at Furrial substation. The outdated Siemens, ABB REL316\*4 and GE D60 line protection relays are no longer supported by the industry and with the additions to Furrial substation, the need to upgrade the existing 115kV line protection is imperative. The following proposal for engineering of the new 115kV line protection, and 13.8kV protection as requested, includes estimates for material, labor, testing, and commissioning as well.

The existing relay cabinets along with the wiring and terminal blocks are in good shape and are suitable for re-use. We propose to replace the swing doors of the cabinets with new custom doors housing the new protection systems. We have used this technique in the past for similar upgrades and its success has proven to be effective in keeping the cost low and achieving the necessary protection upgrades at the same time. The scope of work will include new primary and backup protection and controls for 115kV lines at Jusepin II and WILPRO AP & MP. The scope will include new panel doors with SEL 421 & SEL 311L for distance, line differential, and directional over current protection for 115kV lines supplying Jusepin I, Furrial, GAS, and Amana, substation. The new SEL 421 will also be used for breaker failure protection. All 115kV metering will be replaced with ION 8800 meters with new test switches. WILPRO AP & MP will be protected by over current and under voltage using SEL 351S with the potential to be tied into a transfer trip scheme upon further evaluation. New Iniven digital multiplexers will replace the ABB Fox 6Plus and GE FSC fiber multiplexers.

The scope of work also includes the 13.8kV protection upgrades at Jusepin II replacing transformer protection with a primary and backup SEL 787 and SEL 581 differential and over current relays; new Kelman on-line DGA monitors for each transformer; and new LTC voltage controllers and positioning indicators. The 13.8kV switchgear protection will also be upgraded by installing new swing panel doors equipped with SEL 351S and Electro Industry metering. All relays will be IEC 61850 compliant and manufactured by Schweitzer. A new substation control centered on the SEL 3354 with HMI will be installed at Jusepin II. The new substation control will have the ability to be integrated into an existing SCADA system. All required yard excavation, foundations and installation of conduits or trench ways will be performed by PDVSA.

* 1. Jusepin II

**Electrical Design**

* Revisions to One Line diagram
* Revisions to Three line diagram
* Schematic diagrams
* New panel layout/arrangement drawing
* Revisions to panel wiring diagrams and interconnect drawings

**115kV Line Protection Relay Panels (R2, R4, R5, R6, R7) for GAS, Furrial, Amana, & Juespin I lines. (115kV Panel R3 to remain)**

* Remove swing panel door including relays.
* New custom swing panel door.
* SEL 421 distance, over current, directional over current relays.
* SEL 311L line differential relays.
* ElectroSwitch LOR lockout relays.
* FT-1 or FT-19R test switches for each relay.

**115kV Bus Protection Panel (RB)**

* Remove swing panel door including relays.
* New custom swing panel doors.
* SEL-487B 115kV Bus Different relay
* SEL 581 Differential (Backup)
* ElectroSwitch LOR lockout relays
* FT-1 or FT-19R test switches for each relay and LOR

**115kV Breaker Protection Panels (R13)**

* Remove swing panel door including relays.
* New custom swing panel door.
* SEL-351S 115kV over current and control relay.
* ElectroSwitch LOR lockout relays
* FT-1 or FT-19R test switches for each relay and LOR

**115kV Line Protection Communication**

* Remove ABB Fox 6PLUS and GE FSC multiplexers.
* New Iniven digital multiplexer.

**115kV Metering for GAS, Amana, Furrial, and Spare**

* Remove swing panel door including relays.
* New custom swing panel door.
* ION 8800 meters.
* FT-1 or FT-19R test switches for each meter.

**Transformer Protection Panels (T3 & T4)**

* Remove swing panel door including relays.
* New custom swing panel doors.
* SEL 787 transformer protection relay with over current and differential.
* SEL 587 differential with over current as backup relay.
* Beckwith M2270 and M2001 LTC voltage controllers.
* LTC indication positioning.
* FT-1 or FT-19R test switches for each relay.

**Transformer On-Line DGA (2 Units Tx3 & Tx4)**

* Kelman TapTrans transformer monitors.
* Develop program and I/O points list.

**13.8kV Switchgear Protection and Control**

* Remove swing panel door including relays.
* SEL 351S over current, synchronism check, and breaker control relays.
* Electro Industry Meters.
* FT-1 or FT-19R test switches for each relay.
* ElectroSwitch LOR lockout relays
* ElectroSwitch 52CRS control switch

**Substation Control Unit and SCADA integration**

* Develop I/O points list.
* SEL 3354 Automated Computing Platform with Human Machine Interface.
* Interface to upgraded 115kV and 13.8kV relays and meters.

**Relay Settings/Programs**

* Develop Relay Protective Setting.
* Develop Programs for SEL relays.
* Develop Programs for Kelman units.
* Develop testing and commissioning requirements for new relay protection schemes.

**Testing/Commissioning**

* Relay
  + Check tightness of connections
  + Functional test of each elements used in the protection scheme.
  + Verify operation of light-emitting diodes, display, and targets.
  + Check all internal logic functions used in the protection scheme.
  + Check all output contacts
  + Check operation of all active digital inputs
* Current Transformers
  + Check tightness of connections
  + Perform Insulation-resistance test of each current transformer and its secondary wiring with respect to ground at 1000 volts dc for one minute.
  + Perform a polarity test of each current transformer.
  + Perform a ratio-verification test
* Voltage Transformers
  + Check tightness of connections
  + Perform insulation-resistance tests winding-to-winding and each winding-to-ground.
  + Perform a turns-ratio test on all tap positions
* Wire check of all protection and control circuits to ensure wiring is installed in accordance with design drawings
* Functional testing of all Protection and control circuits.
  1. GAS (Wilpro AP and Wilpro MP)

**Electrical Design**

* Revisions to One Line diagram
* Revisions to Three line diagram
* Schematic diagrams
* New panel layout/arrangement drawing
* Revisions to panel wiring diagrams and interconnect drawings

**115kV Line Protection Relay Panels**

* Remove entire swing panel door with relays, test switches, and annunciators attached.
* New custom swing panel doors.
* SEL 351S overcurrent and control relays.
* ElectroSwitch LOR lockout relays.
* FT-1 or FT-19R test switches for each relay.

**Relay Settings/Programs**

* Develop Relay Protective Setting.
* Develop Programs for SEL relays.
* Develop testing and commissioning requirements for new relay protection schemes.

**Testing/Commissioning**

* Relay
  + Check tightness of connections
  + Functional test of each elements used in the protection scheme.
  + Verify operation of light-emitting diodes, display, and targets.
  + Check all internal logic functions used in the protection scheme.
  + Check all output contacts
  + Check operation of all active digital inputs
* Current Transformers
  + Check tightness of connections
  + Perform Insulation-resistance test of each current transformer and its secondary wiring with respect to ground at 1000 volts dc for one minute.
  + Perform a polarity test of each current transformer.
  + Perform a ratio-verification test
* Voltage Transformers
  + Check tightness of connections
  + Perform insulation-resistance tests winding-to-winding and each winding-to-ground.
  + Perform a turns-ratio test on all tap positions
* Wire check of all protection and control circuits to ensure wiring is installed in accordance with design drawings
* Functional testing of all Protection and control circuits.

1. **Assumptions and Clarifications**

The following assumptions and clarifications have been made in the preparation of this proposal:

* The above references proposal represents our understanding of your requirements based on our engineering review conducted during the week of July 5th, 2010. If for any reason you do not agree with the above proposed protection scheme please let us know immediately so that we can modify your proposal accordingly.
* A schedule is in production for this project and will be forwarded as soon as it is completed.
* In order to minimize impact on the schedule, evaluation of the proposal is needed as soon as possible with proper instruction given to in regards to moving forward with the engineering of this project.
* Project duration is expected to be one hundred fifty (150) to one hundred eighty (180) days depending on what is determined during engineering.

1. **Pricing**

The scope of work outlined above will be performed for the following pricing:

|  |  |
| --- | --- |
| **Description** | **Price** |
| Engineering | $1,385,900 |
| Installation Labor | $289,000 |
| Testing/Commissioning | $529,000 |
| Material | $1,899,000 |
| **TOTAL** | **$4,102,900** |

* 1. Payment Information

Wire information for Energy Parts Solutions:

JPMorgan Chase & Co.

ABA Routing No.: 021000021

SWIFT CODE: CHASUS33

Account Number: 886042027

This proposal is based on the following payment milestones:

35% Upon placement of order

25% Upon submittal of drawings

25% Upon mobilization to site for installation

15% Upon completion

1. **Terms & Conditions**

This proposal shall be valid for thirty (30) days; provided, however, the obligation to treat this proposal as confidential, and that it cannot be shared with any third party without the prior written consent of ProEnergy, shall survive.

This proposal, and any resulting contract or agreement, shall be subject to the terms and conditions set forth in the attached Supplemental Terms.

1. **Follow Up**

Please contact the following person at ProEnergy for information regarding this proposal:

Joaquin Mavares, Director of International Sales or Omar Petit, Regional Sales Manager

[jmavares@proenergyservices.com](mailto:jmavares@proenergyservices.com) [opetit@proenergyservices.com](mailto:opetit@proenergyservices.com)

Office: 660-829-5100 Office: 660-829-5100

Cell: 713-992-1790 Cell: 660-281-8588

1. **Conclusion**

***Why select ProEnergy Services?***

EPS is the right teaming partner for Derwick! EPS has talent, depth of experience and resources unparalleled in the power generation industry. When you succeed, we succeed. EPS will win your confidence and your business one job at a time, starting now!

**Attachment A**

**Supplemental Terms**

These Supplemental Terms complement and are included as part of Energy Parts Solution’s Proposal No. 710-3649 Rev 1 dated August 31, 2010 to Derwick for the Jusepin II Substation Relay Protection and would be included in any resulting Contract:

1. Terms obligating ProEnergy to accept pre-existing site conditions and drawing specifications shall only apply in the event ProEnergy has actually been to the sight or inspected the drawings prior to commencement of the work.

2. For invoice payments not received by ProEnergy within 30 days from the date of receipt, a late fee of the lesser of 1 ½ % per month or the highest rate allow by applicable law may be assessed. If Client fails to timely make payment ProEnergy may also suspend or terminate performance of any and all of its work.

3. No retainage will apply in the event ProEnergy is required to post a performance bond. In no event shall retainage exceed 10% of each invoiced amount.

4. Any prohibition on placing a lien on the project by ProEnergy shall be subject to Client fulfilling its payment obligations under the Contract.

5. The parties shall indemnify, defend and hold one other harmless from and against any and all liabilities, claims, demands, suits, losses, damages, costs and expenses (including reasonable attorney fees and court costs) for bodily injury to or death of any third person, or damage to or destruction of any property of third party, caused by any negligent act or omission on the part of the indemnifying party its officers, employees, contractors or agents, except to the extent such liabilities, claims, suits, losses, damages, costs and expenses result from any negligent or willful act or omission on the part of the indemnified party, its officers, employees, contractors or agents.

6. ProEnergy’s obligation to indemnify and protect Client against infringement of third party intellectual property rights is subject to: (i) ProEnergy’s right to settle or defend such claim or seek the right of continued use or modify or replace the infringing work, (ii) only work which is otherwise not provided according to Client’s design or instructions, (iii) the work being used by Client for its intended use under the Contract, and (iv) any work not manufactured or developed directly by ProEnergy will be limited only to the indemnity, if any, of the manufacturer or vendor of said work.

7. ProEnergy shall not be responsible or liable for delays in performance of its obligations under the Contract due to any event of force majeure or any other cause beyond its reasonable control.

8. ProEnergy warrants that its work shall be performed in a competent, diligent and workmanlike manner, of good quality and material, and in compliance with any mutually agreed written instructions or specifications. ProEnergy’s work shall be warranted for a period of one (1) year from the date of completing the work. Any repairs or replacements made to ProEnergy’s work during the warranty period shall be warranted for the remainder of the original warranty term or 90 days, whichever is longer. This provision sets forth the exclusive remedies for all claims based on failure of or defect in the ProEnergy’s work provided under the Contract whether the failure arises before, during or after the warranty period and whether said claim is based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise. **NO IMPLIED, STATUTORY, OR COMMON LAW WARRANTY OF ANY KIND, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, SHALL APPLY.** The duties, liabilities and obligations of ProEnergy do not extend to any repairs, adjustments, alterations, replacements or maintenance that may be required as a result of normal wear and tear, normal degradation in the performance of equipment, or as a result of (a) improper repair or alteration by Client or other persons, and (b) misuse, negligence or damage by Client or other persons (c) excessive operation at peak capacity, frequent starting, type of fuel, detrimental air inlet conditions, or erosion, corrosion or material deposit of fluids. The warranty and remedies are further conditioned upon (i) the proper storage, installation, operation and maintenance of the equipment and conformance with the operation and instruction manuals provided by the suppliers and manufacturers and (ii) repair or modification pursuant to the instructions of the suppliers and manufacturers and as otherwise directed by ProEnergy.

9. Care, custody, control and risk of loss for the work of ProEnergy shall pass to Client upon the earlier of when the work is completed or when it is taken over and used by Client.

10. The total liability of ProEnergy for all claims of any kind, whether based on contract, warranty, tort (including negligence), indemnity, strict liability or otherwise, for any loss or damage arising out of, connected with, or resulting from the Contract or its work shall in no case exceed the total contract price for the work giving rise to such claim plus any insurance proceeds recovered under the coverages furnished by ProEnergy under the Contract. Notwithstanding anything in the Contract or at law to the contrary, ProEnergy shall in no event be liable for exemplary, special, incidental, indirect or consequential damages of any kind including, but not limited to, loss of use, profits or revenue. ProEnergy shall have no liability for its competent performance of instructions given by Client or its personnel or representatives in the event such instructions prove to be defective.

11. ProEnergy will be given at least 10 days advance written notice and an opportunity to cure before Client may terminate the Contract for a breach of any material term of the Contract by ProEnergy.

12. In the event ProEnergy agrees to the payment of liquidated damages (LDs) for unexcused shortfalls in any guaranteed performance or delays in any guaranteed completion date(s) then (i) the payment of LDs shall be Client’s exclusive remedy (ii) the total amount of LDs shall not exceed 10% of the total contract price unless otherwise agreed, and (iii) a corresponding bonus shall be paid by Client to ProEnergy in the event of better than guaranteed performance or early completion by ProEnergy.

13. Any dispute which cannot be settled amicably between the parties under the Contract will be submitted to binding and final arbitration under the Rules of the American Arbitration Associationand such proceeding will be held in a mutually agreeable location.

14. ProEnergy is not responsible for furnishing any performance bonds and builder’s risk or professional liability insurance unless specifically included in its proposal and proposal price.