



A Rockwell Automation Company

ConocoPhillips Canada Ltd. Three Hills Creek SCADA System

The Client:

ConocoPhillips is an international, integrated energy company. It is the third largest integrated energy company in the United States, based on market capitalization, oil and gas proved reserves and production; and the second largest refiner in the United States. Worldwide, of non-government controlled companies, ConocoPhillips has the eighth largest total of proved reserves and is the fifth largest refiner in the world.

Headquartered in Houston, Texas, ConocoPhillips operates in more than 40 countries. The company has approximately 35,600 employees worldwide and assets of

\$107 billion. ConocoPhillips stock is listed on the New York Stock Exchange under the symbol "COP."

ConocoPhillips Canada is based at Calgary, Alberta, they explore for and develop oil, natural gas and oil sands resources from western Canada to the Mackenzie Delta and offshore Atlantic Canada. The ConocoPhillips Canada company, which came into being through the acquisition of Gulf Canada Resources Limited in August of 2001 and is a wholly-owned subsidiary of Houston-based ConocoPhillips.

The Requirement:

The ConocoPhillips Canada Three Hills Creek field is located approximately 150 km north east of Calgary. The field consists of approximately 250 sweet gas wells and is sub-divided further into two fields, the Huxley and Three Hills Creek areas, with each area having field compression, and a main gas processing plant with sales gas going into the TCPL pipeline.

The field produces primarily sweet gas. Currently the field has very little automation. The area will benefit from having automation installed by allowing engineering and operations to optimize production, assess well problems more quickly, and attain a greater degree of efficiency in day to day operations. The operators will be able to get to problem areas more quickly as they will operate by exception as opposed to routine.

The automation process consists of installing RTUs on the operating wells, a central SCADA host system at the Elnora field office (04-29-34-23), and three repeater towers. The host at Elnora will gather data from the RTUs allowing monitoring and control of the field. The field will be upgraded to EFM, thereby eliminating the need for charts, and chart recorders. In addition, initial plunger lift setup will be implemented. Control of plunger lift wells will no longer be timer-based, but will utilize the Bristol Control Wave micro self-optimization routines. Tuning of the plunger lift cycles will be available from the Elnora field office host, thereby making optimization of plunger lift operation significantly easier.

The Design Solution:

Add RTUs at 143 well sites in order to optimize plunger lift control and provide Electronic Flow Measurement (EFM). A new Honeywell Experion host was installed at the Elnora plant to provide central operations control and data consolidation. The system is AEUB guide 46 compliant according to current ConocoPhillips field measurement standards.

Plunger lift control allows engineering and field operators to optimize production, assess well or production problems more quickly and attain a greater degree of efficiency in day-to-day operations.

The SCADA host provides alarm callouts to notify operators of abnormal conditions in the field that has the

potential to reduce well down time.

The field automation will be in conformance with the Conoco Phillips Prime Automation Contract (PAC). Project services performed under this include engineering and procurement to PAC standards.

The design stage of this project was expedited by the use of a number of standard documents and PAC templates. The RTU panel is a standard Bristol design that was customized for use in a number of ConocoPhillips applications. A standard gas load was developed that covers the programming of virtually all gas sites in this project.



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System Specifications:

SCADA Host

1. Honeywell Experion SCADA Host (Operator/ Engineering workstation) at Elnora office located at 4-29-34-23W4
2. Supply and installation of dual redundant servers with Honeywell Experion software
3. Supply and installation of Win911 alarm callout c/w Kepware redirection software on server class client.
4. Supply and installation of Autosol OPC software RTU polling engine.
5. Host to be configured to communicate to a Gas 2.4 well load.
6. Build Excel reports using Experion tags:
 - FieldView
 - Daily Production Report
7. A standard FieldView file will be generated by the Experion host for import to the production accounting system.

Communications Infrastructure

A radio system is required to facilitate communications between the host computer and the RTUs spread across the field. A spread spectrum radio system is being utilized. The radio system requirements are outlined below:

1. Confirm radio system coverage of field. (Radio path study is included in well site AFEs – to be funded from pooled AFE.)
2. Replace existing radio communications tower at Elnora office with 96' tower.
3. Install a radio system consisting of a radio and tower for the Experion system, and towers or masts for each Bristol RTU at the well site.
4. Supply and installation of master radio, power supply and antenna.
Supply and installation of three 96' radio communications towers, repeater radios, solar power supplies and antennas at locations to

provide radio coverage for the field.

RTUs: Gas Wells with Plunger Lift Control

An RTU will be installed at each well site. The RTU is the device used to gather data and implement control in the system. The RTU requirements are outlined below:

1. Supply and installation of Bristol Babcock Control Wave Micro RTU panels, instrumentation, communications and solar power for 51 – 100% CPC owned plunger lift gas wells (Gas 2.4)
2. Supply and installation of Bristol Babcock Control Wave Micro RTU panels, instrumentation, communications and solar power for approximately 92 Partner Plunger lift gas wells (Gas 2.4)
3. Supply measurement reporting to EUB Guide 46.
4. Use existing meter run adding MVT.
5. Add casing and tubing pressure transmitters, pipeline pressure transmitter, plunger arrival sensor, and solenoid for interrupter valve.
6. Upgrade plunger from stand-alone control to EFM based control and remote operation.
7. Add tank level transmitter at selected wells.
8. Mount panel, solar mast and array, batteries, 30 foot radio mast and antenna, and install cabling and connections from instrumentation to RTU panel.
9. The Gas 2.4 Template will be used on this project. The following I/O points are included in the scope:
 - a. Tubing pressure (AI)
 - b. Casing pressure (AI)
 - c. Plunger arrival detector (HSC)
 - d. Pipeline pressure (AI)
 - e. Flow meter differential pressure (AI)
 - f. Interrupter valve operate (DO)
 - g. Plunger valve operate (DO)

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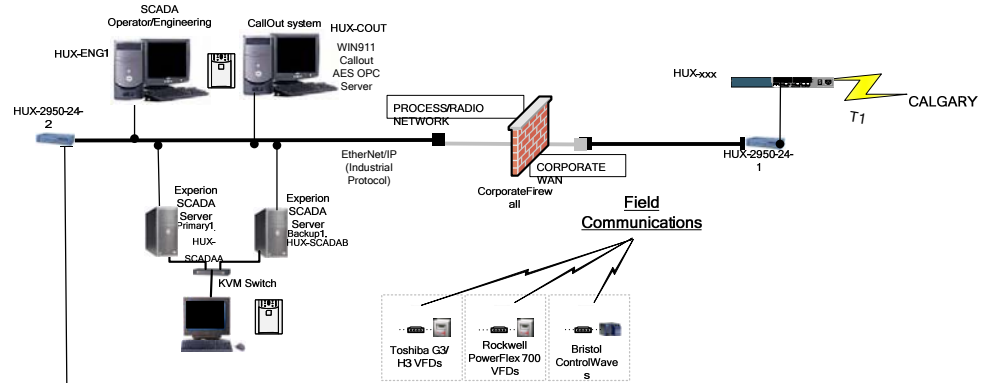


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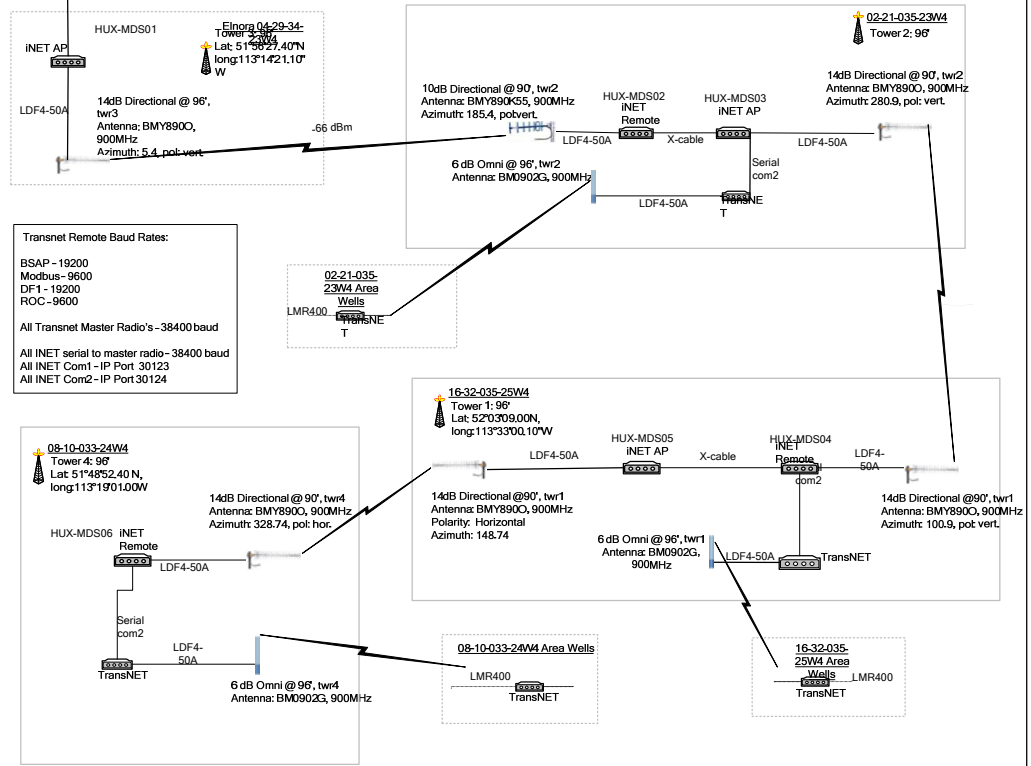
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Elnora Office - 04-29-34-23W4



Backbone Network



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