



A Rockwell Automation Company

## Velvet Exploration Ltd. Morley 11-14-25-7 W5M Well Site

### The Client:

Velvet Exploration Ltd. has acquired number of oil and gas properties throughout Alberta. Velvet Exploration's 11-14-25-7 W5M well site is on the Morley First Nations Reserve west of Calgary. The First Nations people and Velvet are cooperating on a number of projects together.

The 11-14 well site will produce about 100 E3M3 per day of sour gas. The gas is piped through a line heater to the Shell Canada Limited plant at Jumping Pound to be processed

### The Requirement:

Initially, this was to be a typical Shell Canada personnel serviced well site with single wellhead control, a well heater, methanol and chemical injection, and a downhole circulation pump. An Intellution's IFix Human Machine Interface (HMI) was created for Velvet for monitoring the process both locally and remotely.

When third party operators were chosen to operate the well, a new approach for control, flow measurement, communications and graphics was needed. The HMI now had to allow the operators to not only monitor but also control the well site. Velvet Exploration Ltd. required an AGA8 gas volume calculation to be done at the well site for custody transfer and for independent record keeping. Velvet also wanted the ability to monitor the activity at Shell's Line

Heater site remotely from the 11-14 well site.

Communications were required in a number of areas. It was necessary for both the operators and Velvet management to connect by phone line with the HMI to both monitor and control the operation. A remote phone callout system was also required to let the operators know when alarms had come in. It was still necessary for the site to be monitored and controlled through the interface with Shell's SCADA system as well.

A PC computer backup system was also required so that the data and programs stored on site could be saved and kept off site for data retrieval and system back up in case of a computer failure.

### The Design Solution:

The control system utilizes a Modicon 984 E251 Compact Programmable Logic Controller (PLC). All of the station control, alarm monitoring and shutdown logic is controlled by the PLC.

A special loadable was purchased to allow the PLC to do the AGA8 gas flow calculation and to keep the audit trail required by the Alberta Energy and Utilities board for custody transfer of gas. This involved being able to modify the gas composition and flow parameters. As an enhancement to this, Hinz developed a program to capture the daily volumes and flow rates so that this data was both available locally on the HMI and remotely by using the telephone to call in using PC Anywhere.

The Intellution IFix graphics were designed to allow the operators to monitor and control the process, to monitor alarms, change set points, change AGA parameters such as orifice sizes and gas composition. One screen is used to monitor H<sub>2</sub>S and LEL levels. From this screen the operators can bypass the H<sub>2</sub>S and LEL monitors in order to calibrate the transmitters. A screen was developed to graphically show what is happening at the line heater site. One screen simply contains text to step through with the operators how to back-

up the system and obtain the alarm history data.

An MDS radio is used to pass data between the well site and Shell's SCADA host. Shell can monitor all the data it requires. As well, it can remotely ESD the well if required. In order to monitor the Line Heater site it was necessary for the Shell SCADA center to take the data it receives from the line heater site and send it to the Velvet 11-14 well site so that it could be graphically represented on the HMI.

A Barnett telephone call-out system was used. If alarms come in when the site is not manned the Barnett system calls the operator to let them know there is a problem. The alarms are categorized in order that the operator has an idea of the priority of the alarm.

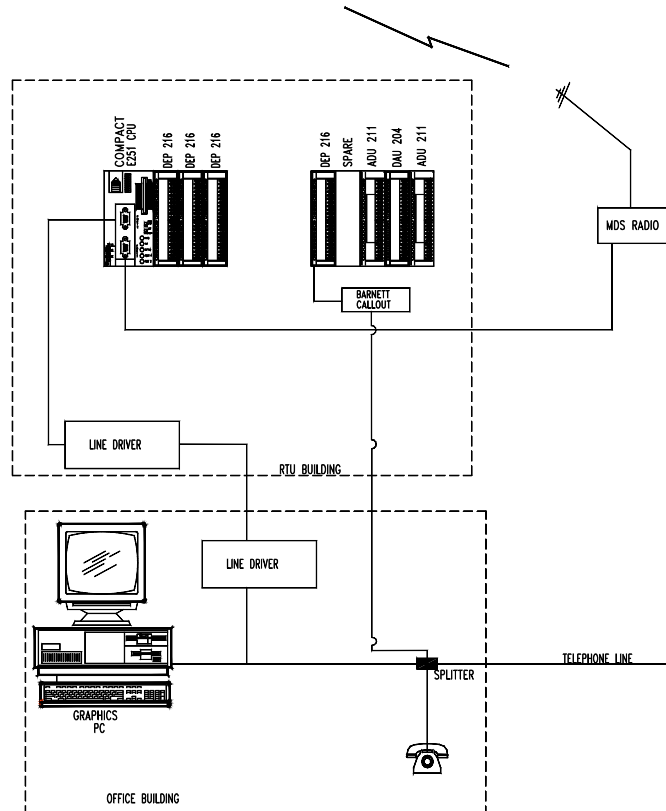
PC Anywhere was installed so that the operators and management can dial in to see what the process is doing from the IFix graphics or to obtain gas volumes or alarm data.

A software program called Backup Executive was installed. Operators are instructed to do regular program back-ups and periodic complete system back-ups to read/write CD disks. These disks are to be kept off site.



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### System Specifications:

- 1 Modicon 984 E251 Compact PLC
- 1 AGA8 Gas Loadable software and interface key
- 1 Barnett Call-out System
- 2 MDS SCADA radio
- 3 Pentium III Desktop Computer
- 1 Prowrx NXT PLC programming software
- 1 IFix Graphic software
- 2 Black Box line drivers between the HMI and PLC
- 3 PC Anywhere software
- 4 Backup Executive software
- 7 Color graphic screens with 5 pop-ups
- 5 Discrete Inputs
- 14 Discrete Outputs
- 9 Analog Inputs
- 6 Analog Outputs
- 3 PID loops

For further information or to contact a Hinz office near you, please check our website at:

[www.hinz.com](http://www.hinz.com)