

*Methanol Quantification in Whole
Crude Oil via In-Line Gas
Chromatography
May 2001*

PAC

Equilon Pipeline

Envantage, Inc.

ITS Caleb Brett

Topics of Discussion

- ◆ *Background Information*
- ◆ *Methanol Analyzer Alliance*
- ◆ *History & Timeline*
- ◆ *Project Status & Forecast*
- ◆ *System Design /Data Evaluation*
- ◆ *Q&A*

Background Information

- ◆ *Problem - Ethane & Methane Hydrate formation of Offshore Sub-sea Wells.*
- ◆ *Temporary Solution - Use of Methanol (or LDHI containing Methanol) to Eliminate Hydrate Formation*
 - *Added During Production*
 - *Activation of Sub-Sea Wells*
 - *Gas Separators for Gas Wells*
- ◆ *Upstream Solution Creates Downstream Problem*
- ◆ *Early Detection System Required*

Methanol Analyzer Alliance

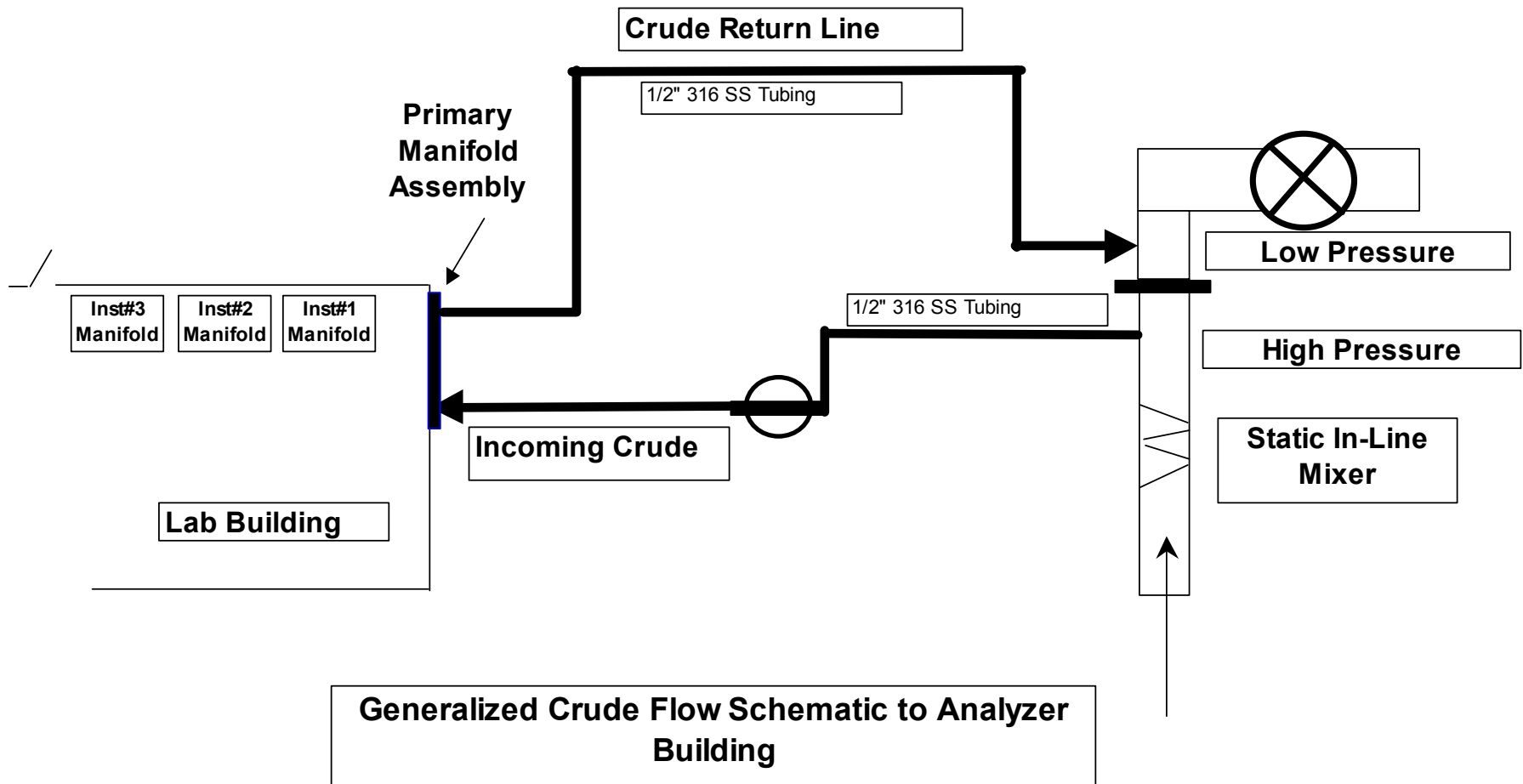
- ◆ *Equilon Pipeline Company LLC*
 - ☞ *Funding*
 - ☞ *Logistical Support - Houma, Louisiana*
- ◆ *Envantage, Inc - Research & Development*
 - ☞ *Method Development & System Design*
 - ☞ *Laboratory Prototype Beta Testing*
- ◆ *PAC/Antek- Instrumentation Manufacturer*
 - ☞ *In-Line Prototype Design & Development*
 - ☞ *Product Support*
- ◆ *ITS Caleb Brett*
 - ☞ *System Design - Sample Introduction System (Patent Pending)*
 - ☞ *Product & System Support*

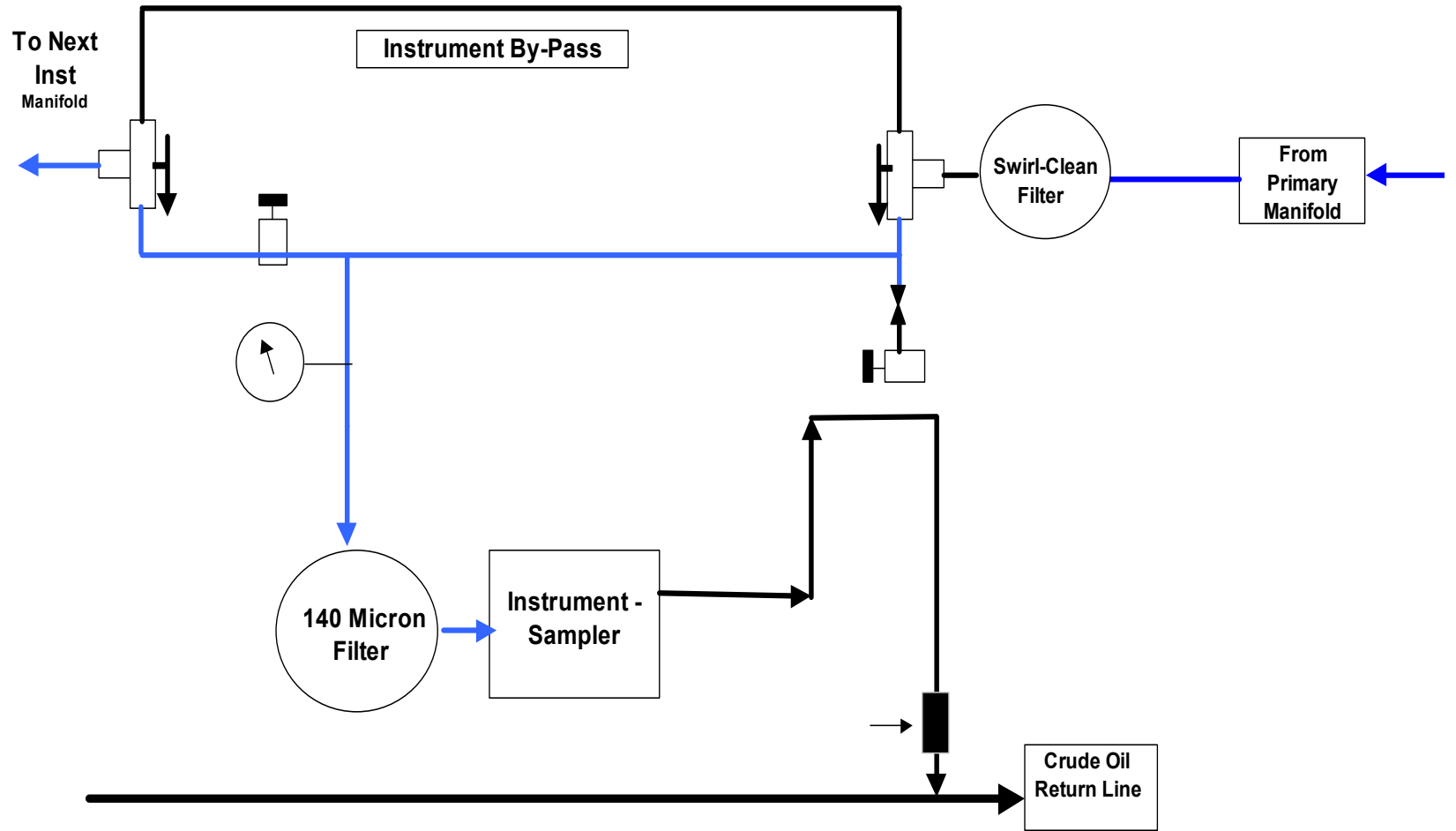
Project History & Timeline

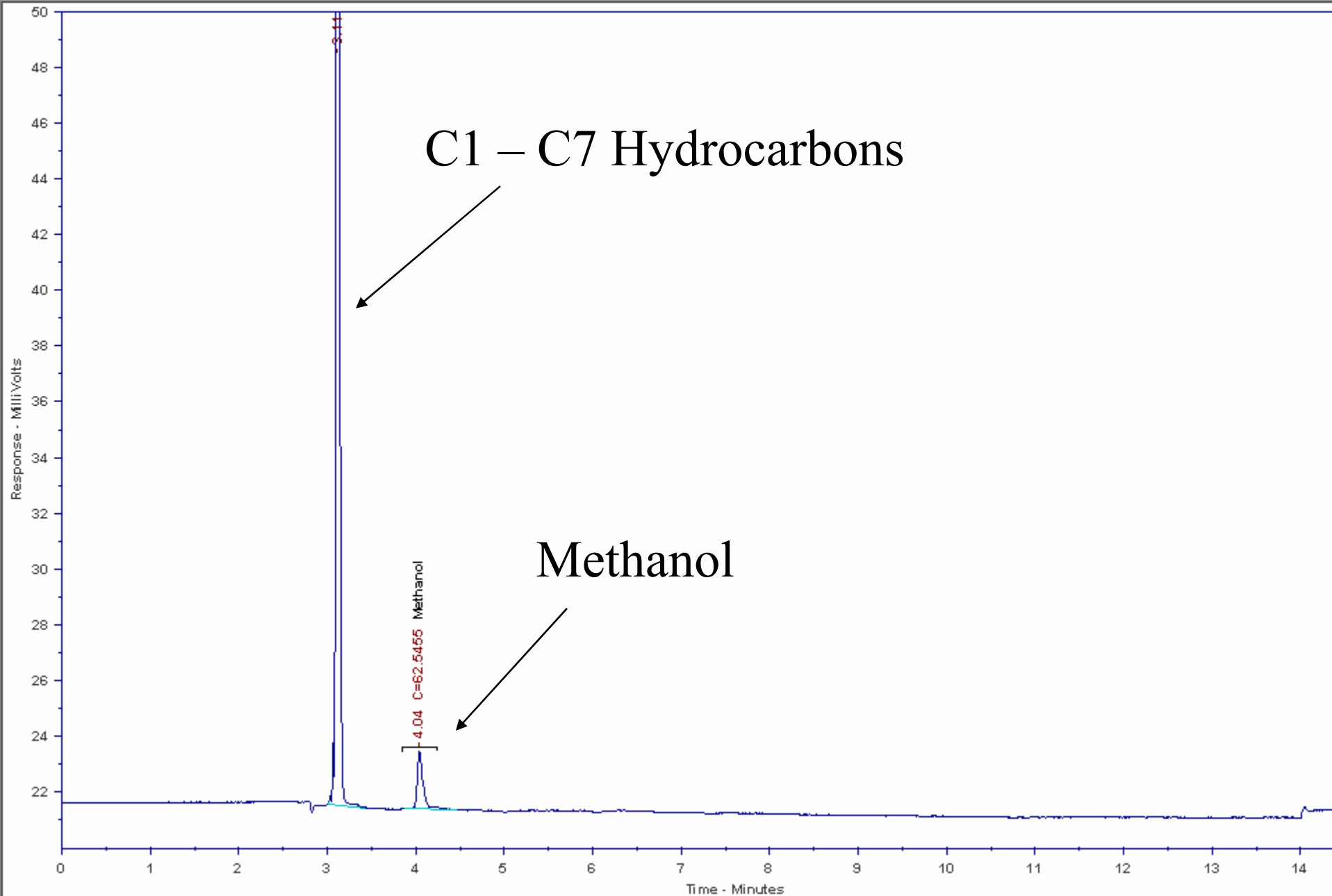
- ◆ *October 1999 - ITS New Orleans Begins Intensive Testing Program*
- ◆ *December 1999 - Initial Conversations w/ Equilon in Regards to In-Line System*
- ◆ *Feb/Mar 2000 - Feasibility Study by Envantage Proved Positive*
- ◆ *August 2000 - First Meeting in Houma to Discuss Project Objectives*
- ◆ *Fall 2000 - Approval of AFE by Equilon to Fund R&D (Phase I begins)*
- ◆ *Jan/Feb/Mar 2001 - Phase II Laboratory Prototype Developed and Laboratory Tested*

Project Status & Forecast

- ◆ *March 27, 2001 - Install Laboratory Prototype in Houma*
- ◆ *April/May 2001 - Side by Side testing of Laboratory Prototype with ITS In-House Methodology*
- ◆ *May 2001 In-Line Prototype Installed w/ Side by Side Testing*

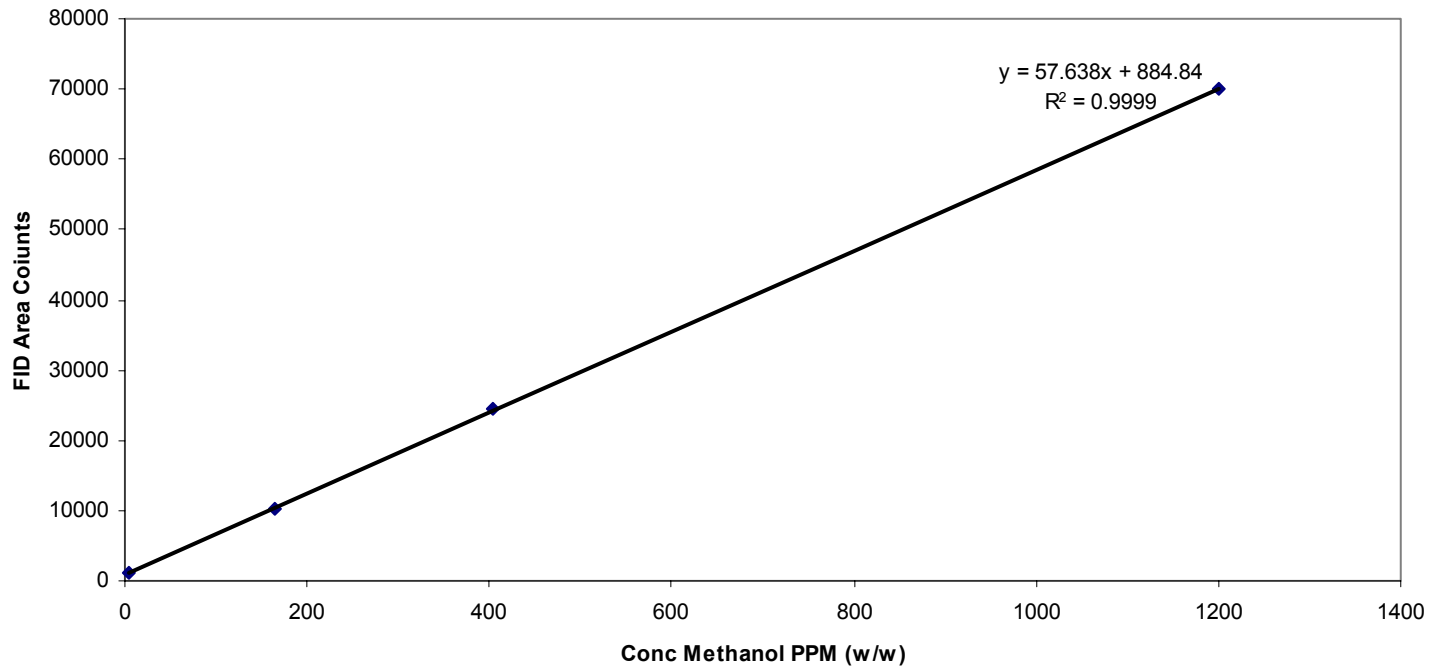




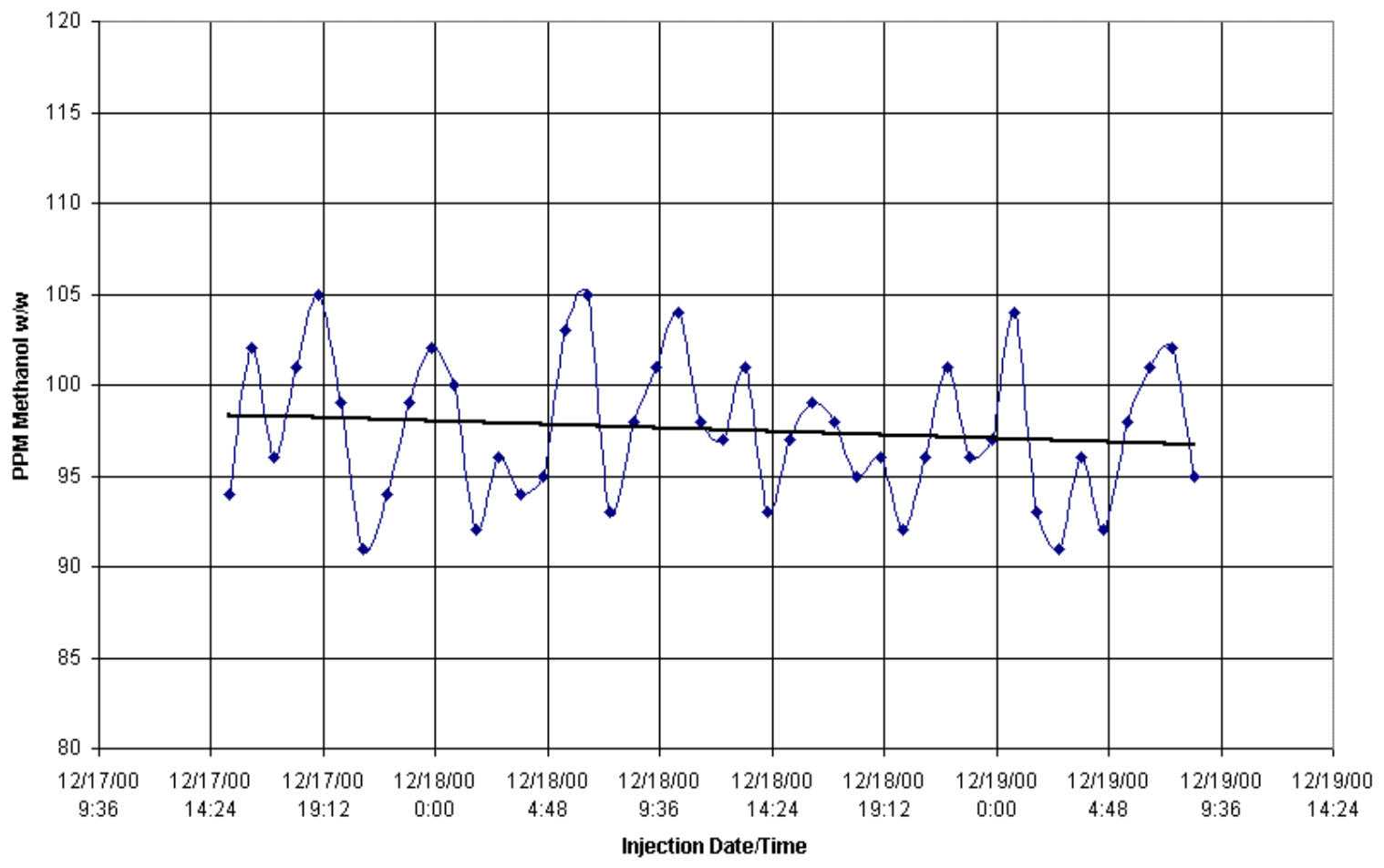


4 Pt. Calibration Curve

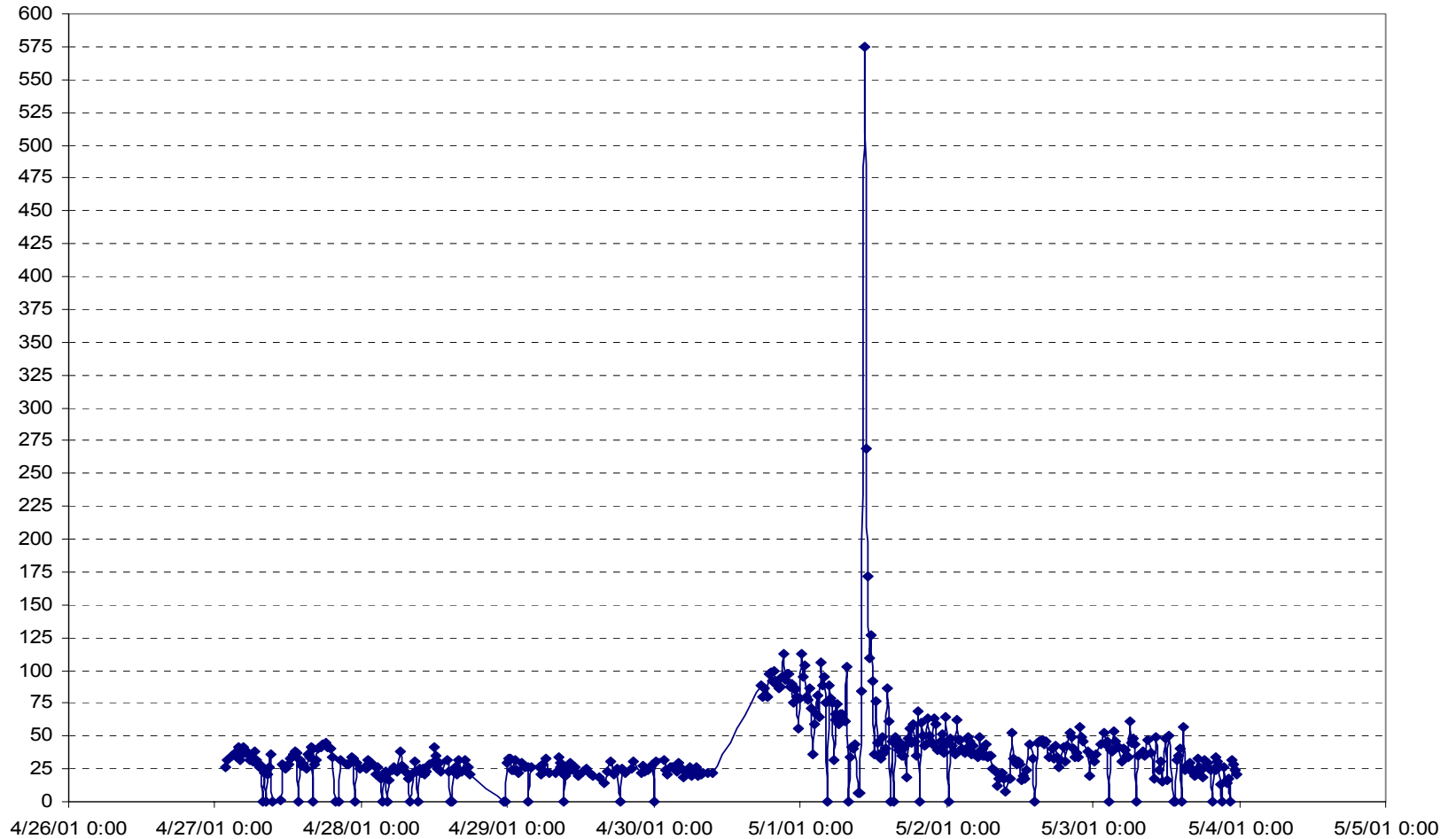
Methanol in Crude Analyzer Lab Prototype Calibration Curve



Poseidon Time Study Prototype Methanol in Crude Analyzer



On-line Process Analyzer Laboratory Prototype



Q & A

☞ *For further information call:*

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- *ranzymorgan@aol.com*