



Enterprise Analytics- Transforming Data into Action

Presented by **Dave Johnson**

NiSource Inc.

Gas Distribution

- One of the Nation's Largest Natural Gas Distribution Companies Serving More Than 3.3 Million Customers
- Established Best-in-Class Platform for Sustainable Earnings Growth Through:
 - Comprehensive long-term infrastructure-investment programs
 - Thoughtful customer programs
 - Creative regulatory approaches

Gas Transmission & Storage

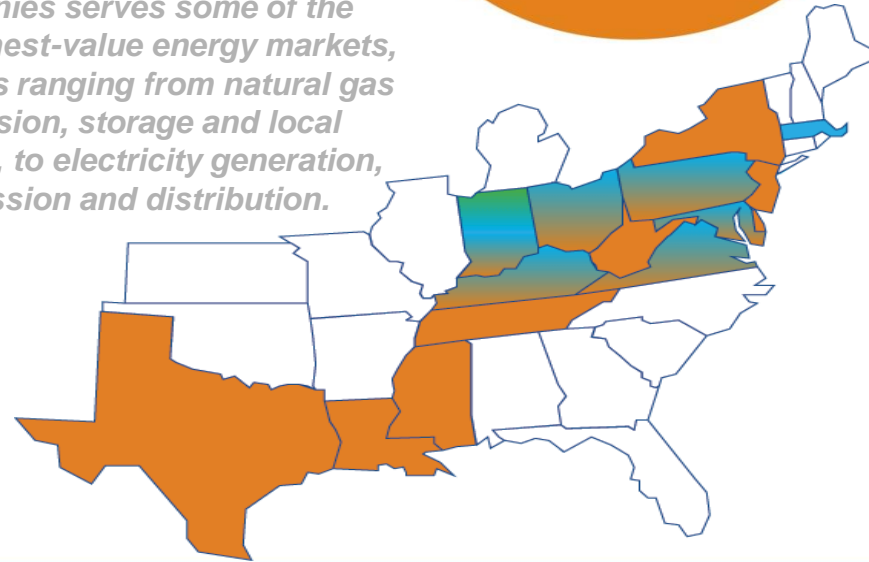
- 15,500-Mile Network of Interstate Natural Gas Pipelines
- One of the Nation's Largest Market Area Storage Systems
- Strong Strategic Footprint in the Growing Marcellus Shale Production Region of Appalachia

Electric Generation & Distribution

- Environmentally Compliant Fleet of Electric Generation Facilities
- Total Generating Capability of 3,322 Megawatts
- More than 450,000 Industrial, Commercial and Residential Electric Customers in a Growing Marketplace



From the Gulf Coast through the Midwest to the Northeast, our portfolio of companies serves some of the nation's highest-value energy markets, with services ranging from natural gas transmission, storage and local distribution, to electricity generation, transmission and distribution.



Pipeline

- More than 15,000 Miles
- Delivers Approximately 1.3Tcf per Year
 - 5% of U.S. Market
 - Serves Customers in 16 States

Compression

- 1.1 Million Horsepower
- 104 Stations

Storage

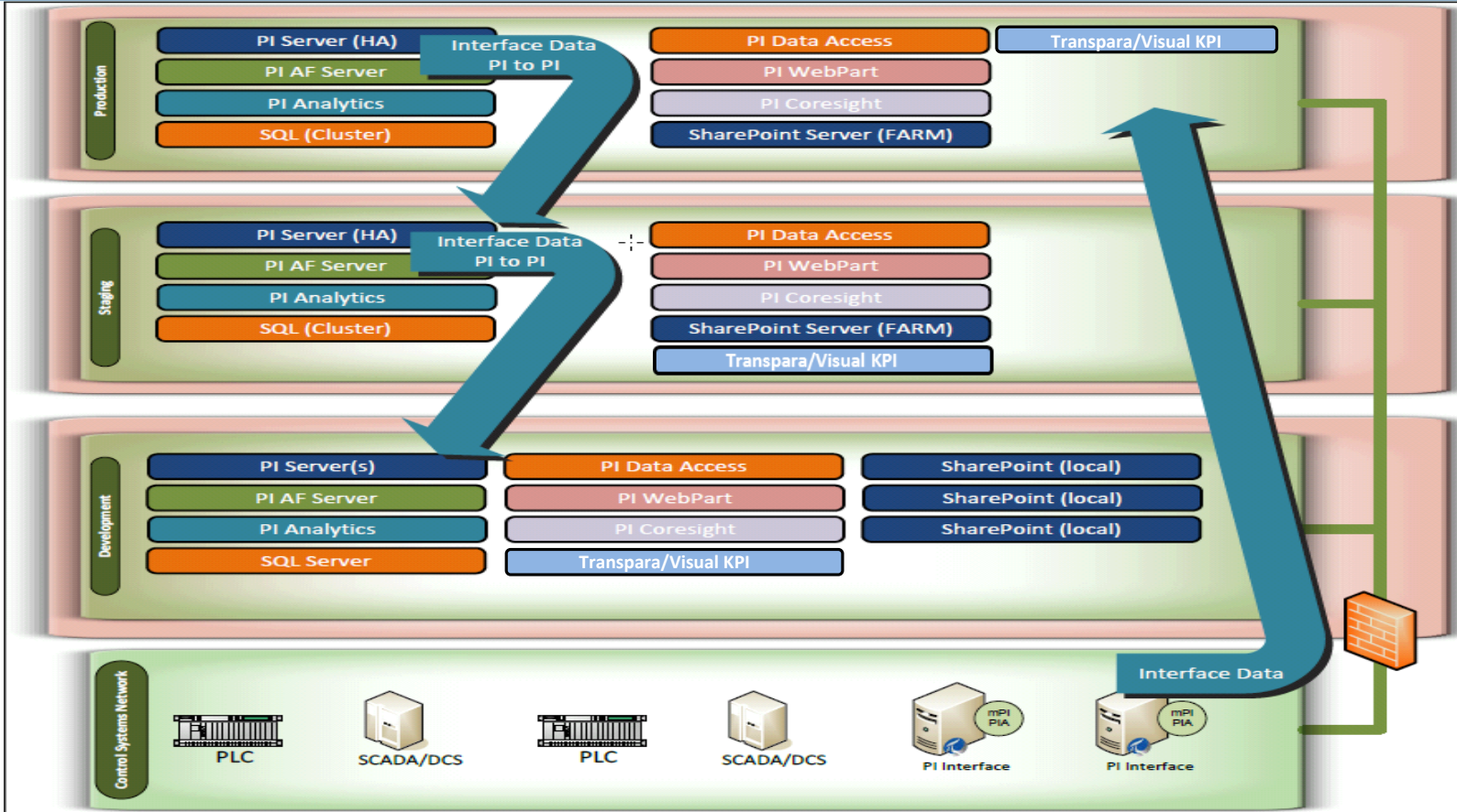
- 280 MMDth
 - 4.7 Bcf/d Deliverability
 - 37 Storage Fields in Four States

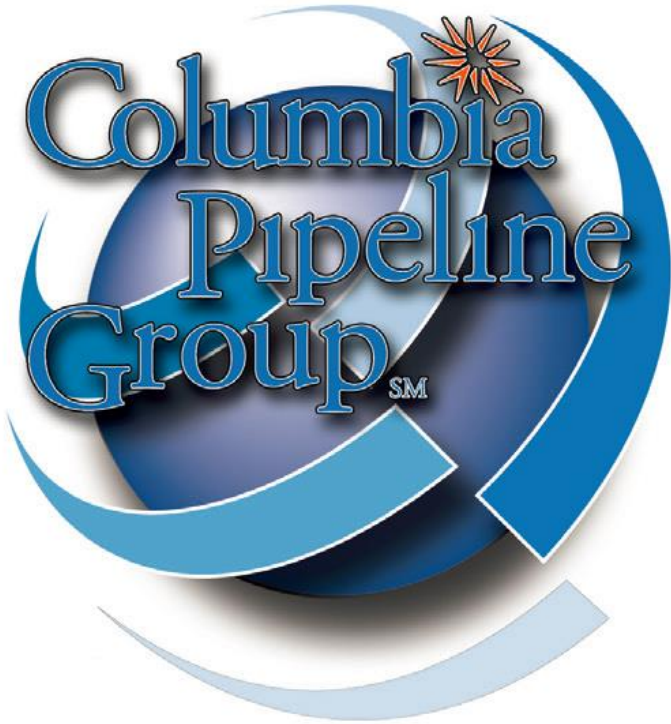


Business Challenges

- Major compression asset failures affecting reliability of system and customer satisfaction
- Reactive use of data instead of Proactive
- Concerns around operational data integrity

INTEGRITY RESULTS INCLUSION
 SAFETY PERSONAL ACCOUNTABILITY TEAMWORK





ENTERPRISE[®]
ANALYTICS
TRANSFORMING DATA INTO ACTION

Columbia Pipeline Group System Reliability



- SYSTEM RELIABILITY
- ENTERPRISE ANALYTICS
- FRACAS
- DEFECT ELIMINATION
- RCA
- METRICS
- GAS QUALITY



Enterprise Analytics Transforming Data into Action

Enterprise Analytics (EA) is a program aimed at leveraging leading technology tools to analyze data (primarily real time data) to allow for proactive actions to be executed to avoid a negative event entirely or minimize the impact of such an event. Other uses include the ability to analyze static data in a more dynamic way so that knowledge based conclusions can be drawn quickly and swift targeted actions can occur.

To the right are areas in which CPG is focusing such efforts. Select a link to access the relative tools.

NOTE:

In order to view the real time dashboards, Adobe SVG Viewer needs to be installed. To install Adobe SVG Viewer please click [here](#). Follow the instructions to complete the installation and restart your browser.

Links

EA - Compression

EA - Fuel

Excel Trending Tool

@ Contact: Dave Johnson

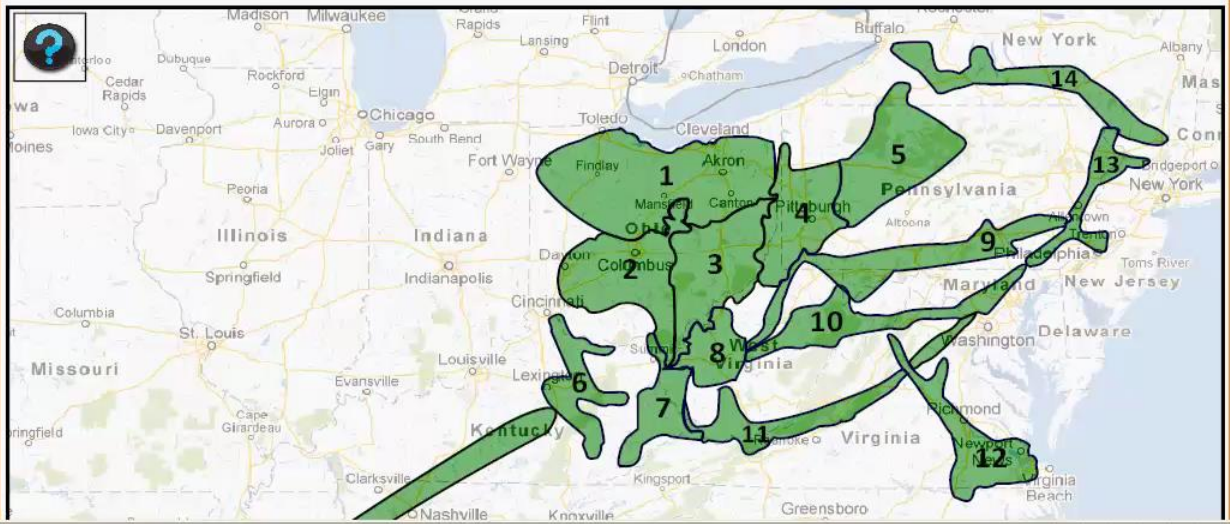


Columbia Pipeline Group System Reliability

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Enterprise Analytics Transforming Data into Action

- Gulf
- Charleston
- Ohio
- Commonwealth
- Pennsylvania
- EA Compression Home





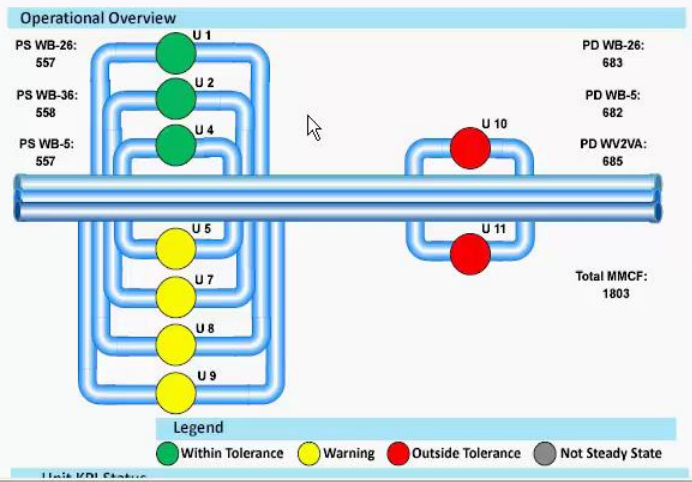
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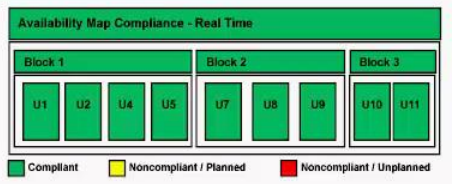
Enterprise Analytics Transforming Data into Action

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Lost River Compressor Station



Compliance 1 2 4 5 7 8 9 10 11



Availability Map Compliance - Monthly Downtime Hours



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Lost River - Unit 10

Unit Status: Run
 Heat Rate: 5821
 BHP: 3971 ABHP

Turbo Speed: 11580 RPM

Fuel: 24 MSCFH

Suction Press: 551 PSIG

Ambient Temp: -53 DegF

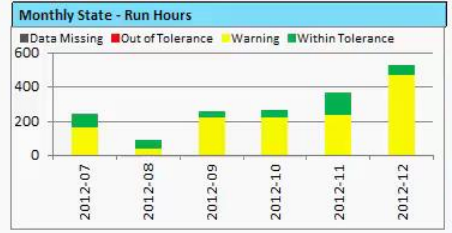
Unit Speed: 300 RPM

Disch Press: 691 PSIG

Capacity: 311 MMSCFD

Reports

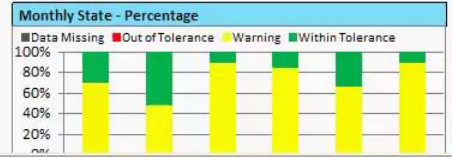
- Comp. Oil Cons.
- Disch. Temp.
- Eng. Balance
- Eng. Oil Cons.
- Fuel Rate
- Heat Rate



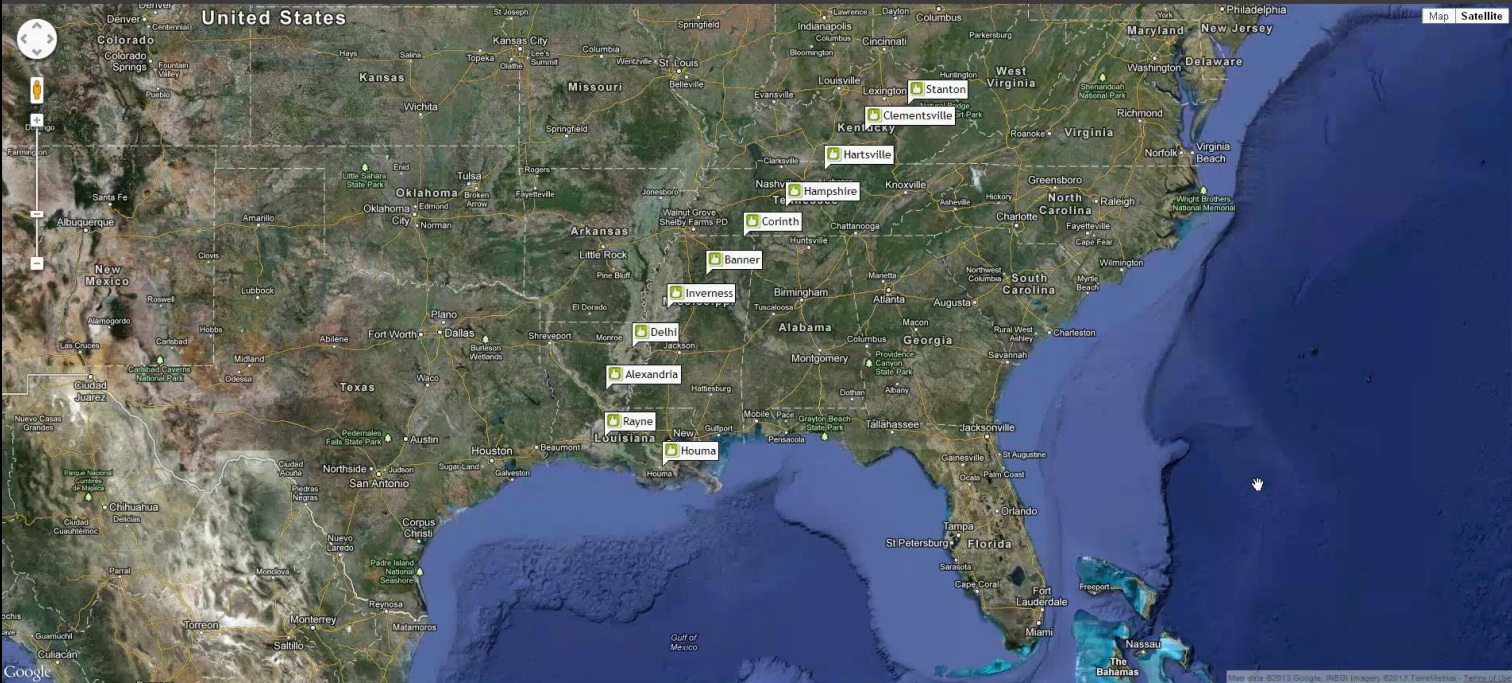
- Select Month(s)
- 2012-07
 - 2012-08
 - 2012-09
 - 2012-10
 - 2012-11
 - 2012-12

KPI Status

Heat Rate Low	Fuel Low	Eng. Balance Within Tolerance
Eng. Oil Cons.	Comp. Oil Cons.	Disch Temp

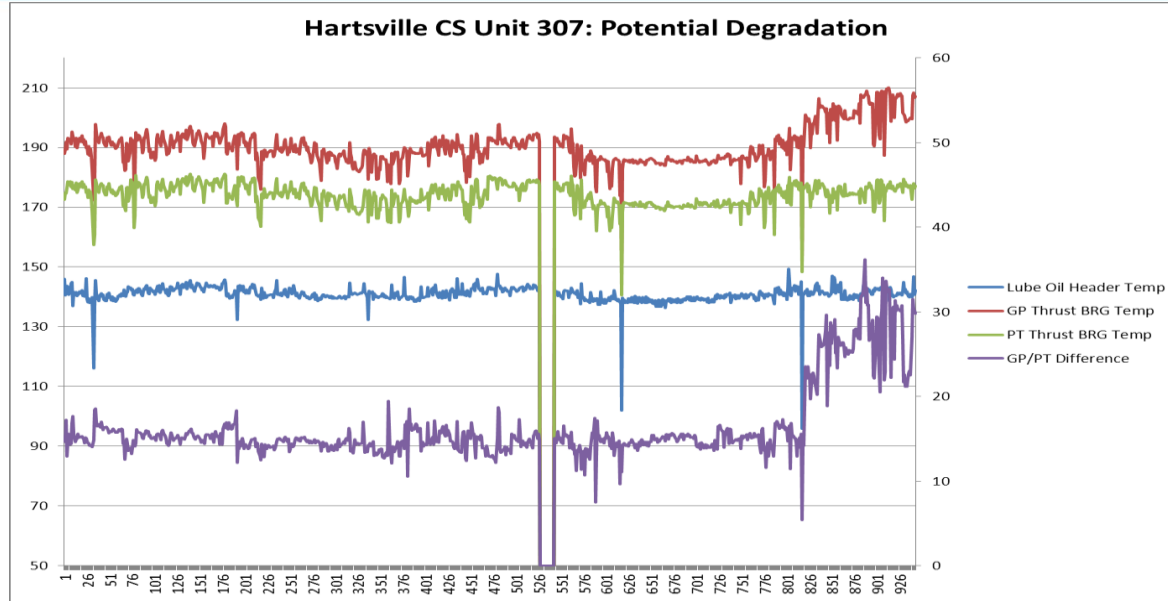






Enterprise Analytics Identified Issues

Hartsville CS Unit 307: Potential Degradation



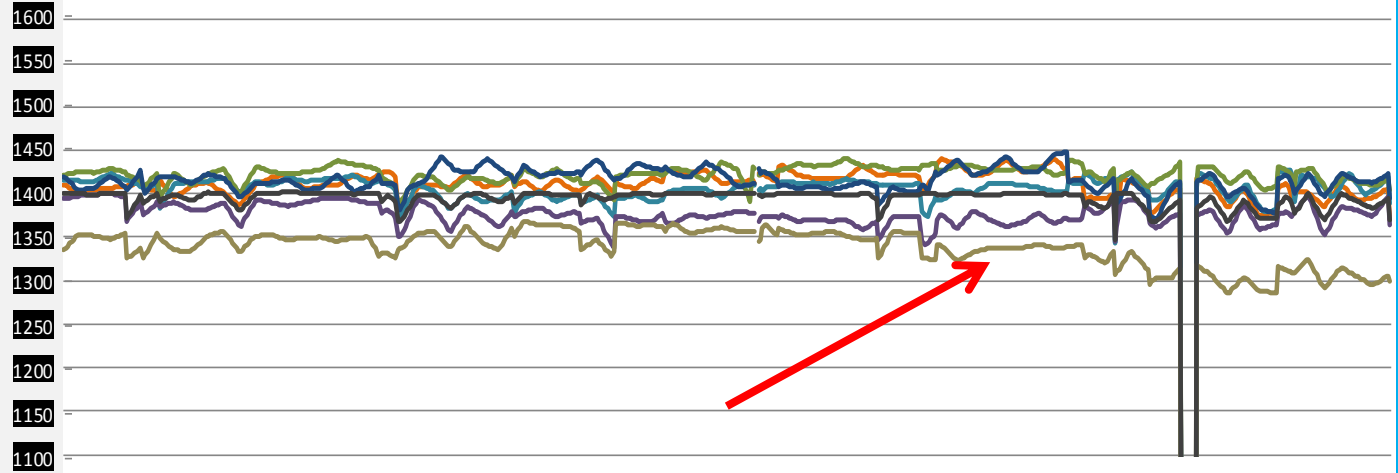
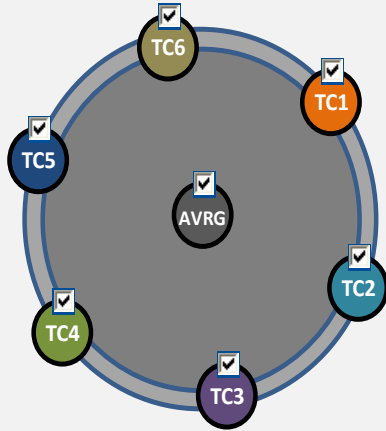
Hartsville CS Unit 307

Gas Producer Thrust Bearing Potential Failure

Enterprise Analytics: Incident #9

SAFETY INTEGRITY RESULTS TEAMWORK
PERSONAL ACCOUNTABILITY

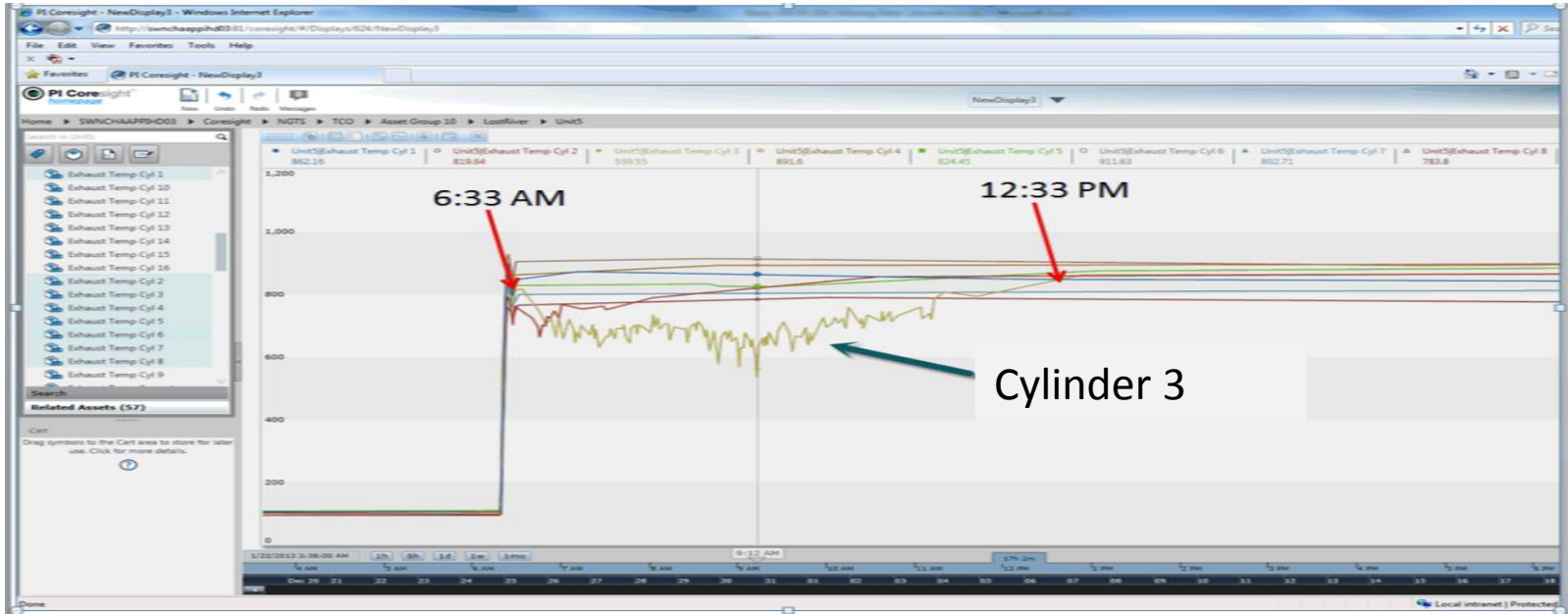
T5 Thermocouples



Hartsville CS Unit 307

Turbine Combustion Chamber Potential Failure

Enterprise Analytics: Incident #10



Lost River CS Unit 5

Engine Balance-Cylinder 3 Lifter

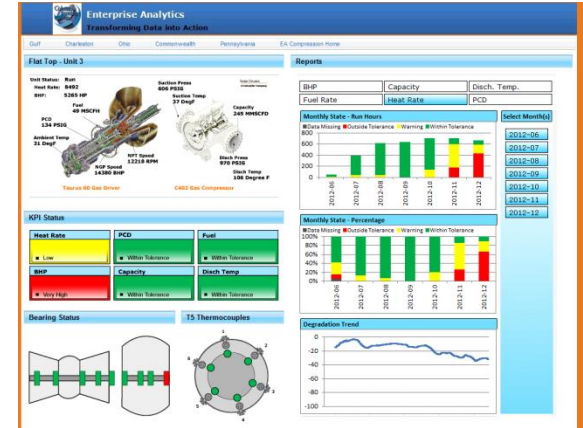
Incident	Station	Unit	Date	Notification	Estimate of Potential Failure Cost	Estimated Failure Avoidance Savings
1	Hartsville CS	307	12/29/2011	Heat Rate	\$315,000	\$78,750
2	Hampshire CS	412	1/11/2012	BHP	\$250,000	\$62,500
3	Hampshire CS	413	1/11/2012	Heat Rate	\$100,000	\$25,000
4	Hartsville CS	307	3/3/2012	Turbine Bearing	\$1,000,000	\$100,000
5	Hampshire CS	413	6/1/2012	Turbine Bearing	\$1,000,000	\$100,000
6	Clementsville CS	210	6/1/2012	Turbine Bearing	\$1,000,000	\$100,000
7	Corinth CS	507	6/1/2012	Turbine Bearing	\$1,000,000	\$250,000
8	Hartsville CS	308	7/20/2012	Fuel Rate	\$100,000	\$25,000
9	Hartsville CS	307	10/8/2012	T5	\$315,000	\$31,500
10	Lost River CS	5	1/22/2013	Engine Balance	\$250,000	\$62,500
11	Lost River CS	10	1/27/2013	Compressor Lube Oil Rate	\$100,000	\$25,000
12	Lost River CS	7	1/27/2013	Jacket Water System	\$500,000	\$125,000

Total Exposure to Failure	\$5,930,000
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Estimated Total Savings	\$985,250
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Enterprise Analytics

“The term Enterprise Analytics refers to a program aimed at leveraging leading technology tools to analyze data to enable the execution of proactive actions intended to avoid a negative event entirely or minimize the impact of such an event.”



Business Challenge

- Major compression asset failures affecting reliability of system and customer satisfaction
- Reactive use of data instead of Proactive
- Concerns around operational data integrity

Solution

- Implement Real Time monitoring system
- Enter into Enterprise Agreement and expand use of OSI tools across company
- Design and build robust HA PI Infrastructure

Results and Benefits

- Minimize risk of major failures at critical compression facilities
- Deployment of PI Infrastructure and tools across system

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Team Leader – System Reliability
Columbia Pipeline Group



THANK

YOU

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