Automated Downtime Tracking

Improving System Performance through Enhanced Asset Management

Presented by **Rod Howard**

Williams®

Automated Downtime Tracking

The Problem

226 Turbines

900 Reciprocating Engines

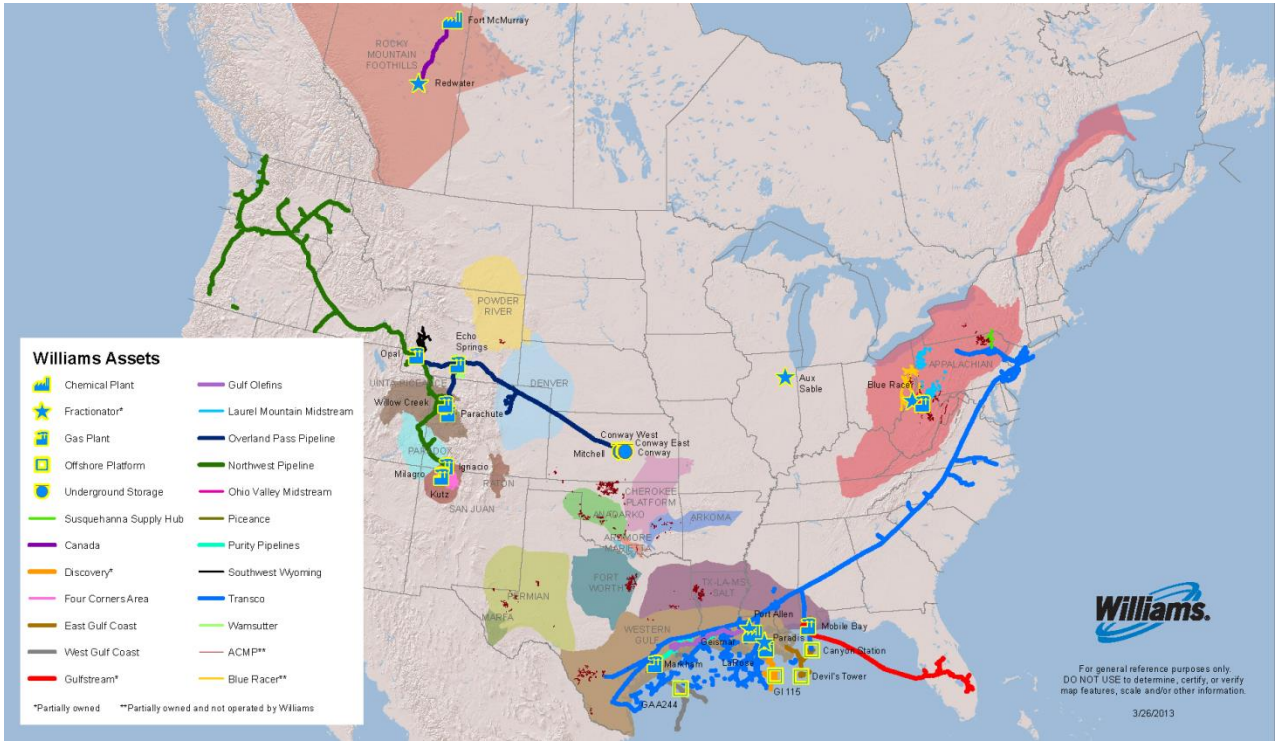
The Solution

- PI AF
- PI Event Frames
- PI OLEDB Enterprise, in conjunction with industry standard reporting systems

The Benefits

- Identify systemic problems that lead to frequent failures
- Correlate system failures with customer impacted volumes
- Reduce downtime
- Improve commercial management
- Track operational improvements in economic terms

About Williams



Natural gas gathering, processing, and transportation company founded in 1908

4,700 Employees

Transport 14% of U.S. natural gas consumption

10,000 miles of oil and gas gathering lines

Gas processing capacity of approximately 6.6 bcf/d

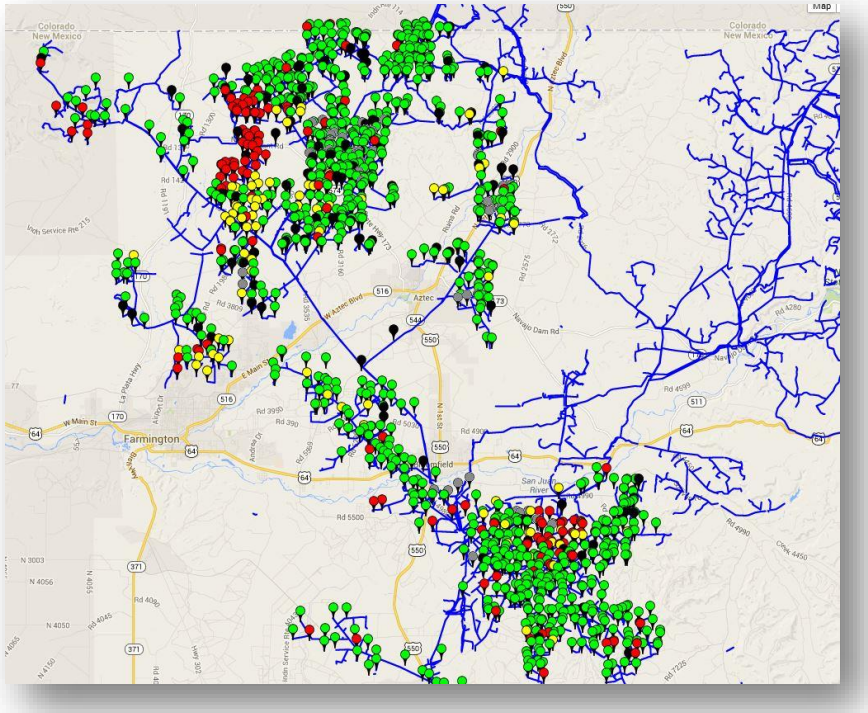
1,400 miles of NGL and olefin transportation pipelines

Downtime Events

Complex Gathering Systems
all the way back to the wellhead

Complex Analysis Requirements

- *Asset redundancy not an option*
- *Downtime is expensive*
- *Reliability tracking is key*



Real-time Well Status Application powered by PI AF

PI Event Frames

1

PI Event Frames Generator Interface collects the downtime incidents

2

Automated and manual data can be associated with the event. Additional attributes in PI AF allow manual qualitative information to be added later.

3

Data analysis using PI OLEDB Enterprise as a data source

- *Excel for analysis and adhoc reporting*
- *MS Powerview for KPIs*
- *MS SSRS for scheduled static reports*

The Tools

PI Event Frames
PI AF SDK
PI OLEDB Enterprise
Microsoft BI

Downtime Data Collection

Source Data

Collection

PI System
Trigger Tag

PI AF

Event Frame Template

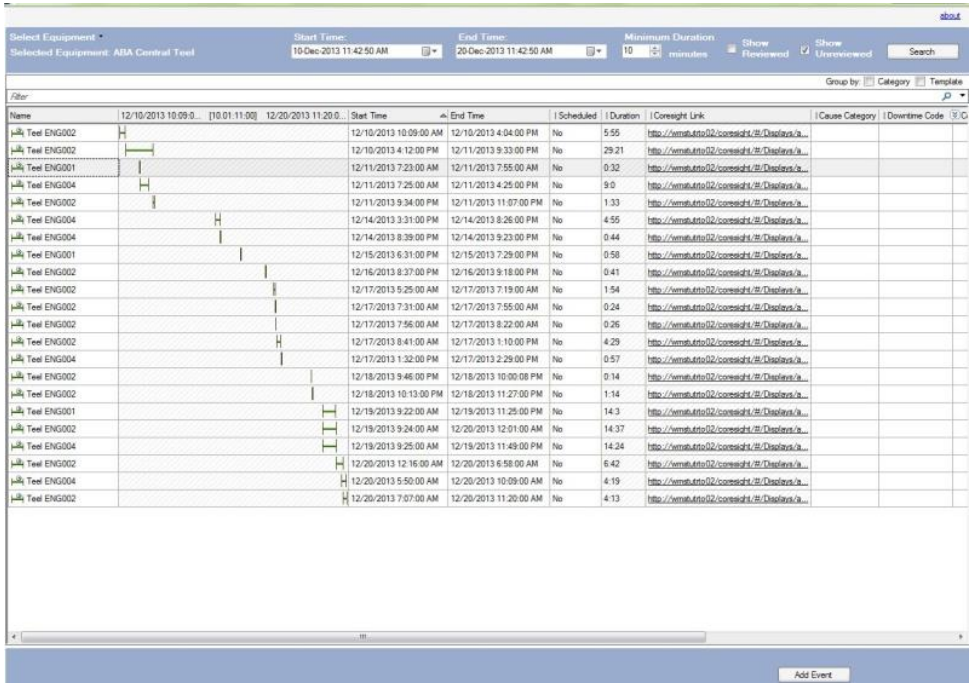
Event Metadata

- *Related Operating Conditions*
- *Placeholders for manual data*
- *Dynamic PI Coresight Links*

PI Event Frames Generator Interface (EFGENI)

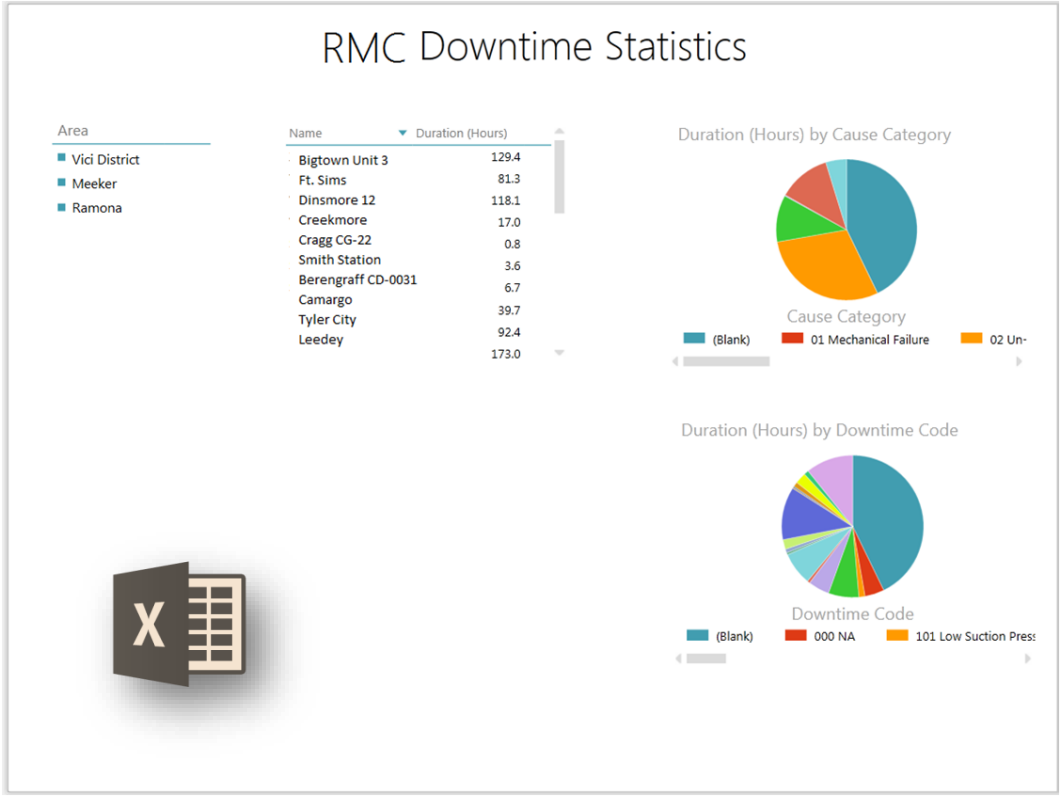
Downtime Data Editing

- Custom Event Frame editor
  - PI AF View Control component (PI AF SDK)
  - Replaces PI System Explorer
- Why Edit?
  - Combine automated data with manual
  - Delete events that may be the result of instrument or communications failures
  - Add manual events that may not have been captured



Downtime Analysis and Reporting

- Use standardized reporting tools
- Scalable
- Common metrics across enterprise
- Merge data into other asset systems



Benefits

- Reduction in manual data gathering and reporting processes
- Improved accuracy and consistency
- Technology helping to drive standardization and formalization of the way we characterize downtime events
- Early identification of systemic reliability issues

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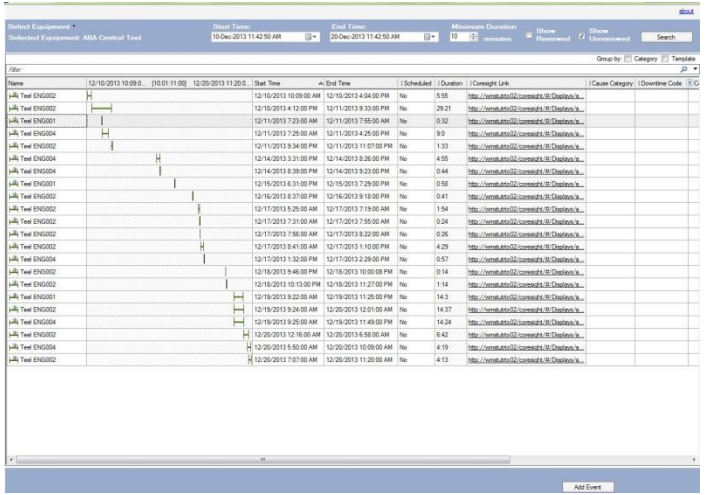
"Automating the downtime events gives our operators and technical staff more time to analyze the events versus spending their time collecting and inputting data."

Mark Nealis

Williams Companies



Business Challenge

- A large number of field assets operating under complex conditions
- Diverse operating units with no common systems for tracking and classifying downtime events
- Extensive manual data analysis and reporting mechanisms

Solution

- PI Event Frames for automatically recording downtime events
- A light client tool using components from the PI System Explorer library for supplementing automated events with qualitative data in the field
- Integrated use of Microsoft BI for reporting

Results and Benefits

- Pilot program being deployed in Northeast Operating Area
- Ability to better analyze and identify common causes of downtime incidents
- Better communication with customers regarding their volumes

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