Streamlining Air Compliance Reporting with Asset Framework

Presented by **Felicia Douglas**

BARRICK

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Project Summary

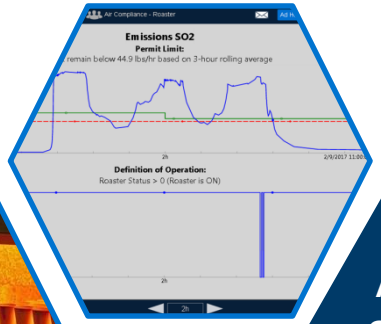
Asset Framework

Notifications

PI System Explorer

PI Coresight

PI DataLink



Automated Compliance Reports

Central Database

Eliminate Spreadsheets

Advanced Analytics

"One Version of the Truth"

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Agenda

1. **Introduction**
   - Barrick Gold Corporation
   - Goldstrike Operations
   - Air Quality Program
2. **Business Challenge**
   - Preparation of Monthly Logs
   - Compliance Evaluations
3. **Business Solution**
   - Asset Framework, Notifications, PI DataLink and PI Coresight
   - Automated Reports
4. **Results & Future Work**
   - Automated Monthly Logs
   - PI Manual Logger
   - Other Divisions and Sites

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Barrick Gold Corporation

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Barrick Nevada – Goldstrike Operations

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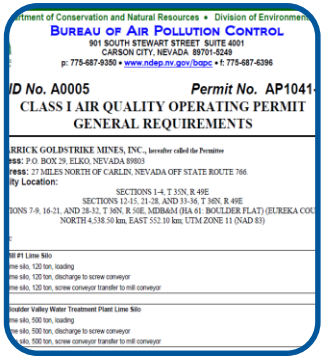
Thousands of Compliance Points in the Title V Air Permit

Clean Air Act

Title V Air Permit



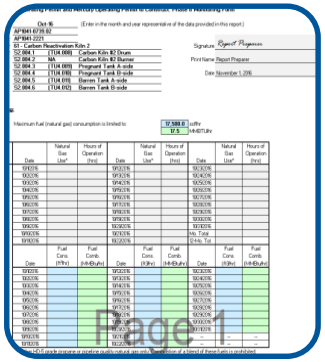
BUREAU OF AIR POLLUTION CONTROL
901 SOUTH STEWART STREET SUITE 4001
CARSON CITY, NEVADA 89701-5249
p: 775-687-9350 • www.ndep.nv.gov/bapc • f: 775-687-6396

ID No. A0005 Permit No. AP1041-

CLASS I AIR QUALITY OPERATING PERMIT
GENERAL REQUIREMENTS

Compliance Monitoring

Compliance Logs



shall be maintained at or above **2 amps** for the A side and **1 amp** for the B side, the secondary voltage for both sides shall be maintained at or above **7 kilovolts** for the A side and **3 kilovolts** for the B side, and the secondary current for both sides shall be maintained at or above **8 milliamps** for the A side and **3 milliamps** for the B side. Excursions shall be defined as anytime the control parameters, based on a one-hour period, fall outside these indicator ranges.

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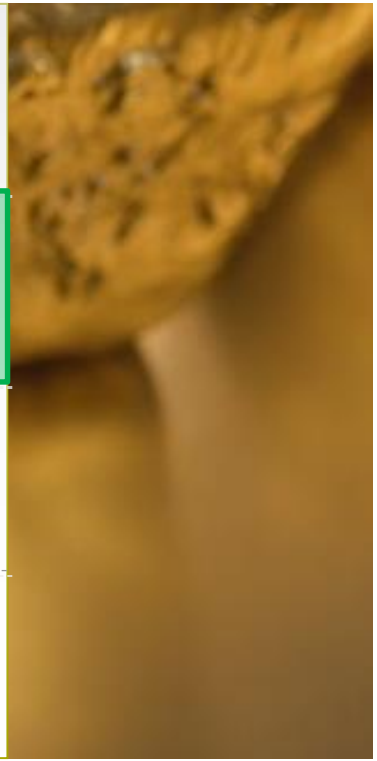

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Current Report Preparation is Extensive and Inefficient

1. **140+ Systems** in the Title V Permit
2. Numerous complex interdependent, **intermediate spreadsheets** currently used to generate compliance logs

- Preparation of monthly compliance logs requires one full-time position

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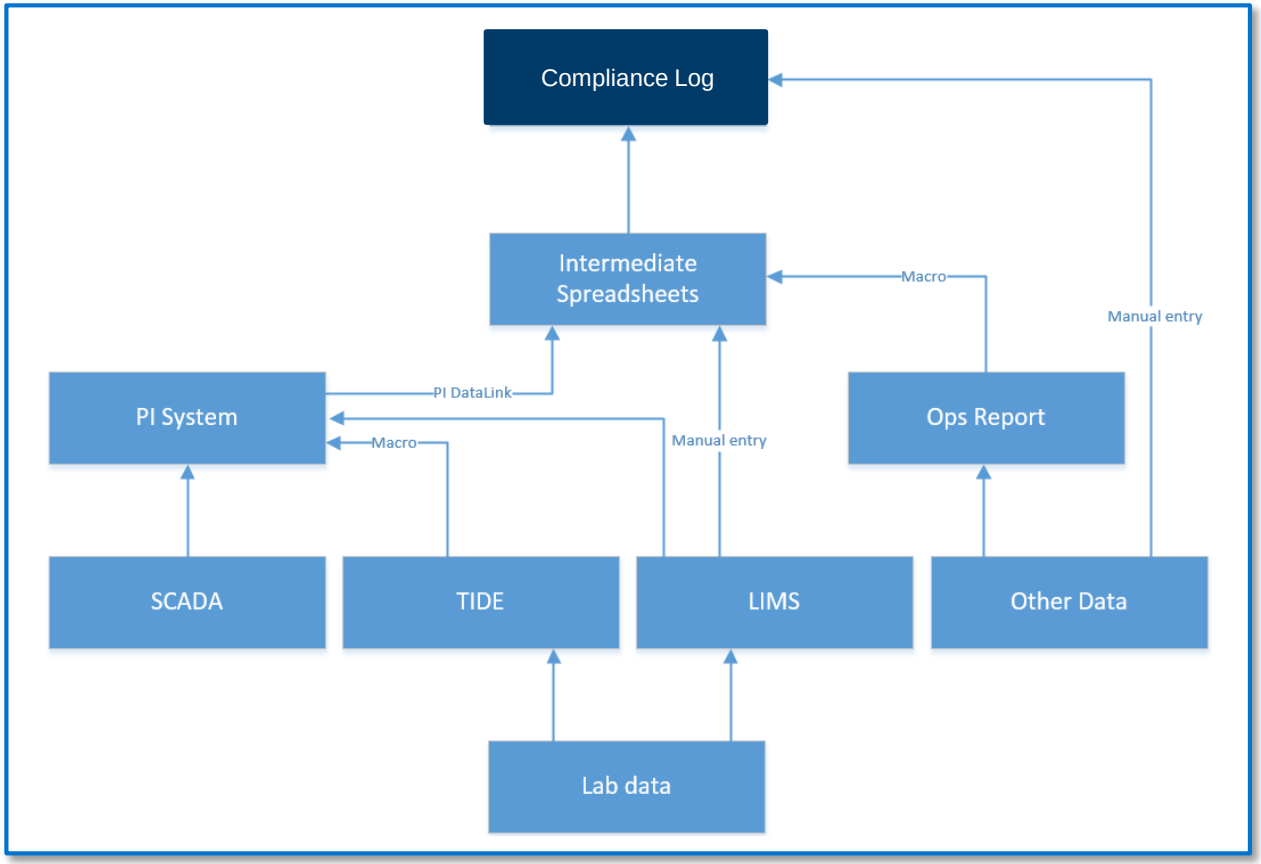
Multiple Data Sources Prevents Real-Time Compliance Evaluations



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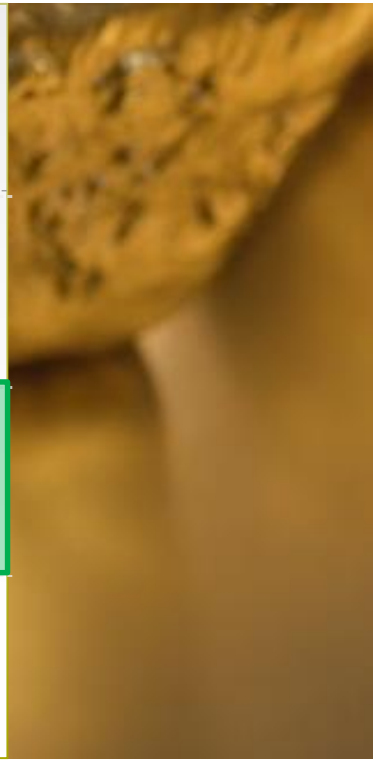

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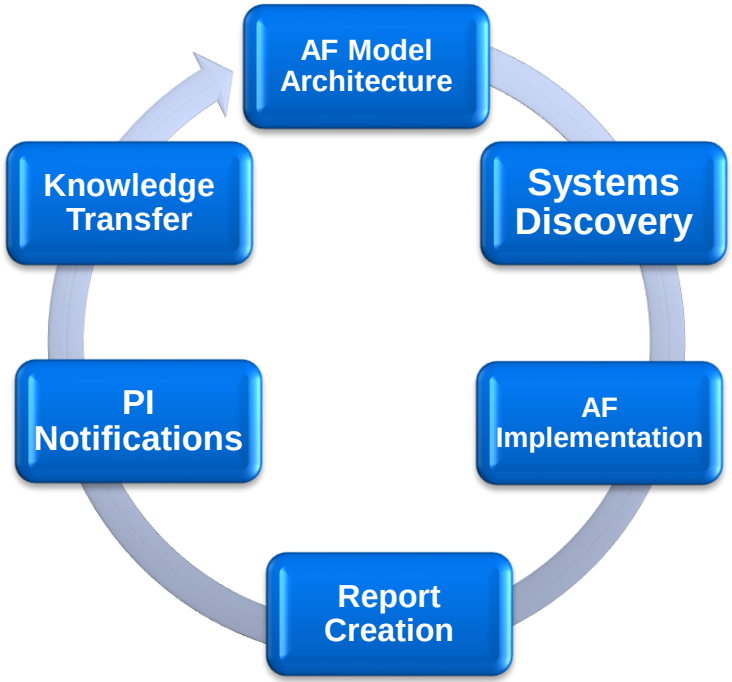
Finding a Solution with Asset Framework

Enterprise Agreement Services	
AF Model Architecture	Build templates and hierarchy design
Systems Discovery	Understand data needs, analyses, and general requirements
AF Implementation	Elements, tables, attributes, formulas, analyses, output tags
Report Creation	**Automated report** and verification of data
Notifications	Real-time compliance notifications
Knowledge Transfer	Documentation, maintenance instructions



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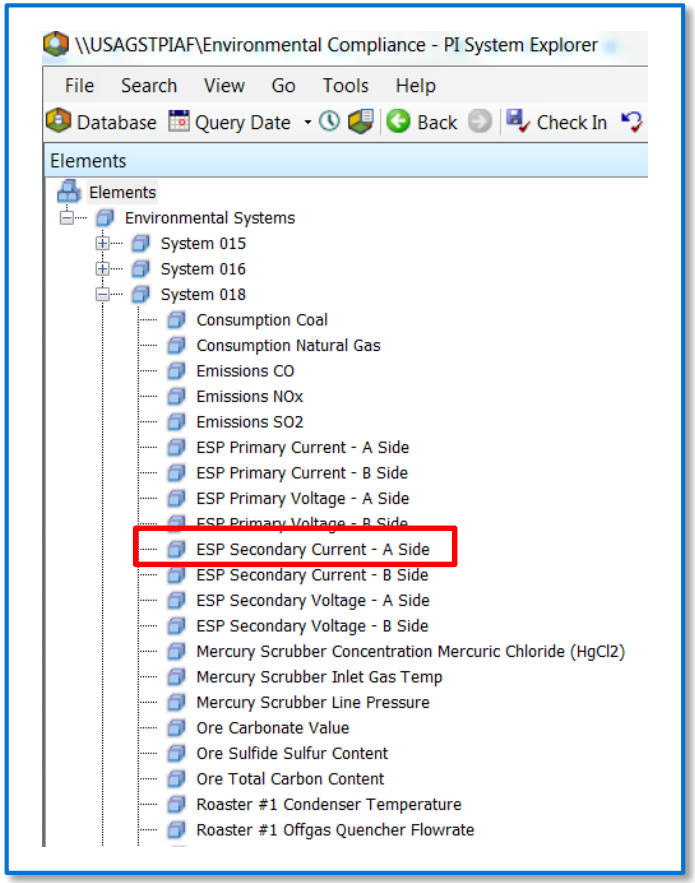
Dynamic Structure that Grows and Adapts with the Permit



Title V Permit Line Items

General | Table | Define Table | Version

Title V Permit Line Items

Filter

System Number	Permit Line Item	Permit Limit	Permit Value
System 018	Consumption Coal	must remain below 6.8 tons/hr	6.8
System 018	Consumption Natural Gas	must remain below 40,000.0 ft3/hr	40000
System 018	Consumption Natural Gas Heat Input	must remain below 40.0 MMBtu/hr	40
System 018	Emissions CO	must remain below 47.08 lbs/hr based on 3-...	47.08
System 018	Emissions CO	must remain below 185.7 ton per 12-month...	185.7
System 018	Emissions NOx	must remain below 36.81 lbs/hr based on 3-...	36.81
System 018	Emissions NOx	must remain below 145.2 ton per 12-month...	145.2
System 018	Emissions SO2	must remain below 44.9 lbs/hr based on 3-h...	44.9
System 018	Emissions SO2	must remain below 196.7 ton per 12-month...	196.7
System 018	ESP Primary Current - A Side	must remain at or above 2 amps	2
System 018	ESP Primary Current - B Side	must remain at or above 1 amp	1
System 018	ESP Primary Voltage - A Side	must remain at or above 110 volts	110
System 018	ESP Primary Voltage - B Side	must remain at or above 110 volts	110
System 018	ESP Secondary Current - A Side	must remain at or above 8 milliamps	8
System 018	ESP Secondary Current - B Side	must remain at or above 3 milliamps	3
System 018	ESP Secondary Voltage - A Side	must remain at or above 7 kilovolts	7
System 018	ESP Secondary Voltage - B Side	must remain at or above 3 kilovolts	3

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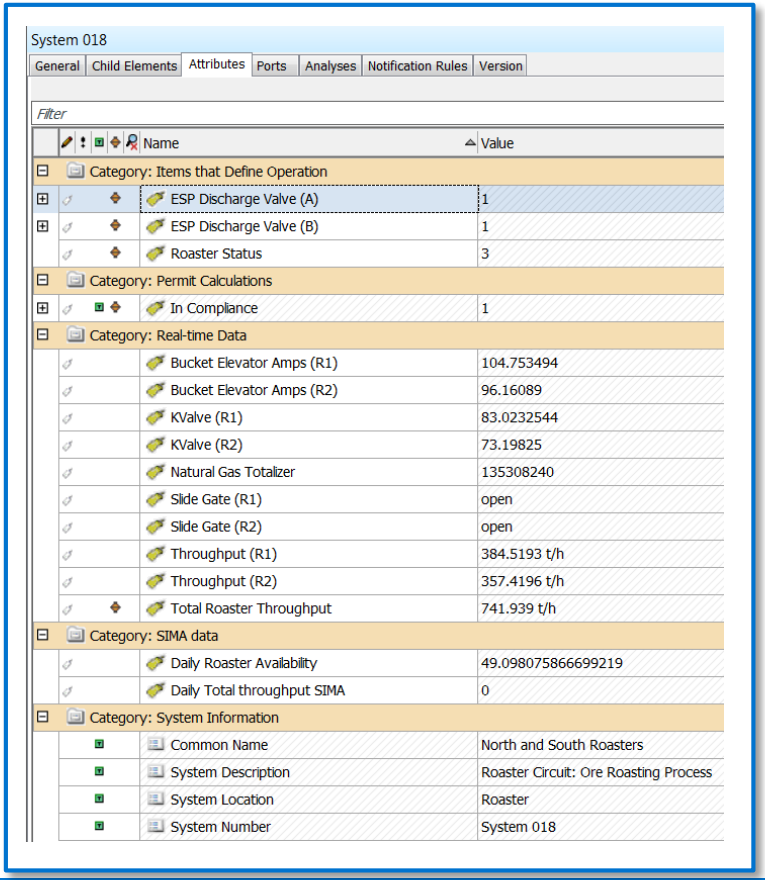
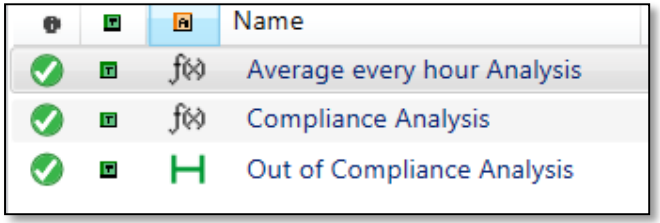
Critical Information Stored in System and Element Attributes



- **Define operation**
- Compliance status
- **Advanced analytics**
- System description



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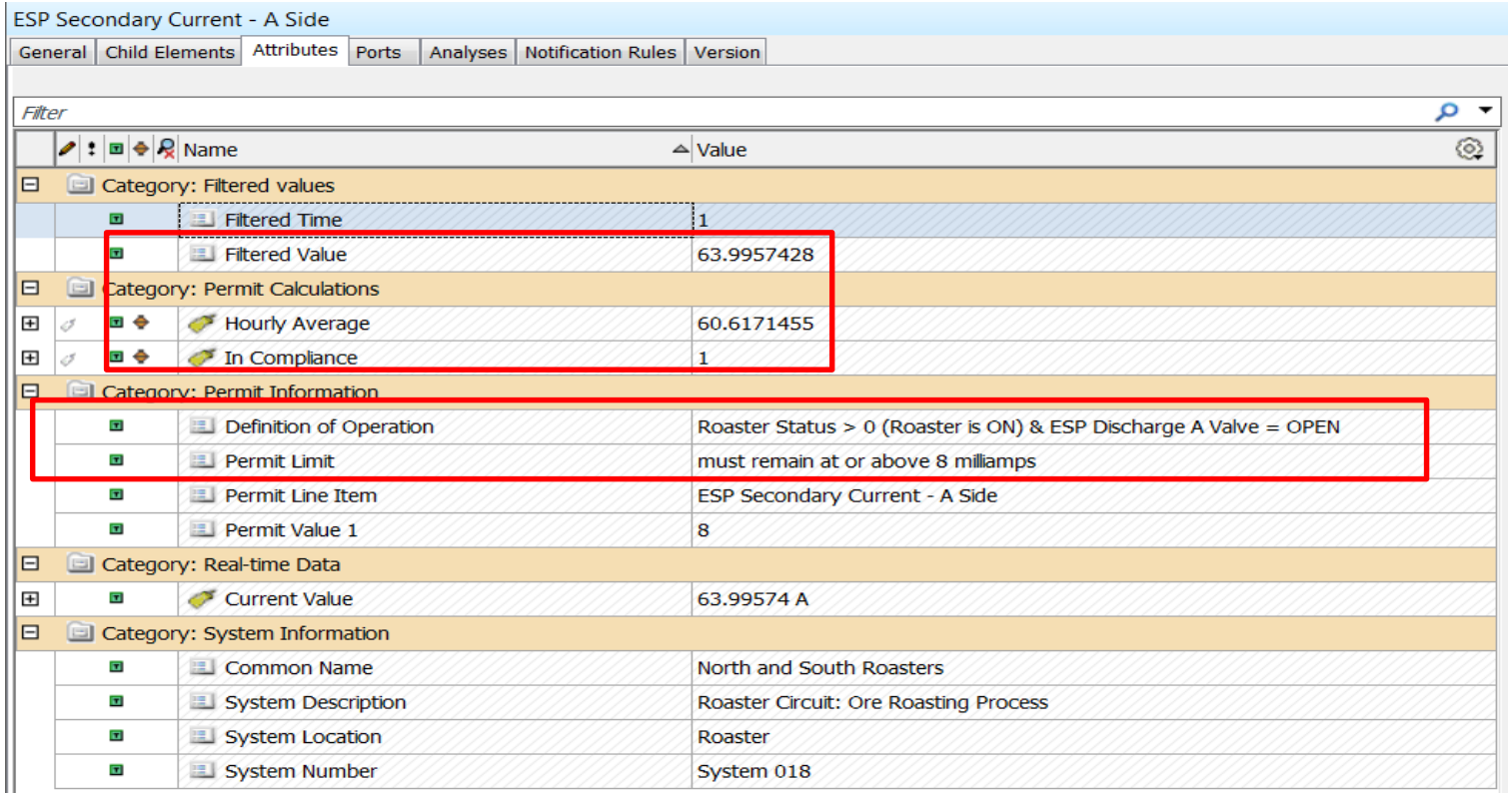
Compliance Evaluated in Real-Time



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Compliance Alerts and Email Notifications

From: Service PI Global (North America)
Sent: Thursday, February 09, 2017 10:00 PM
To: Lacaille, Isabelle
Subject: Air Compliance Alert - System 018: Roaster Circuit: Ore Roasting Process

A potential environmental compliance deviation has occurred involving System 018: Roaster Circuit: Ore Roasting Process. Some details of the event are provided below.

System 018: Roaster Circuit: Ore Roasting Process
Item: Emissions SO2
Permit Limit: must remain below 44.9 lbs/hr based on 3-hour rolling average
Average over the last hour: 56.96149
Current Value: 102.5416
Date & Time: 02/09/2017 21:00:00
Crew: C

This potential deviation should be investigated further to determine its legitimacy. Further actions may be required.

The link to the environmental reporting forms on the intranet is here.

This is an automatically generated email from the Automated Environmental Compliance System.
Please do not reply to this email.
If you would like to unsubscribe from these emails please contact Felicia Douglas.

**This is not a real event. The notification was triggered purposely for this demonstration*

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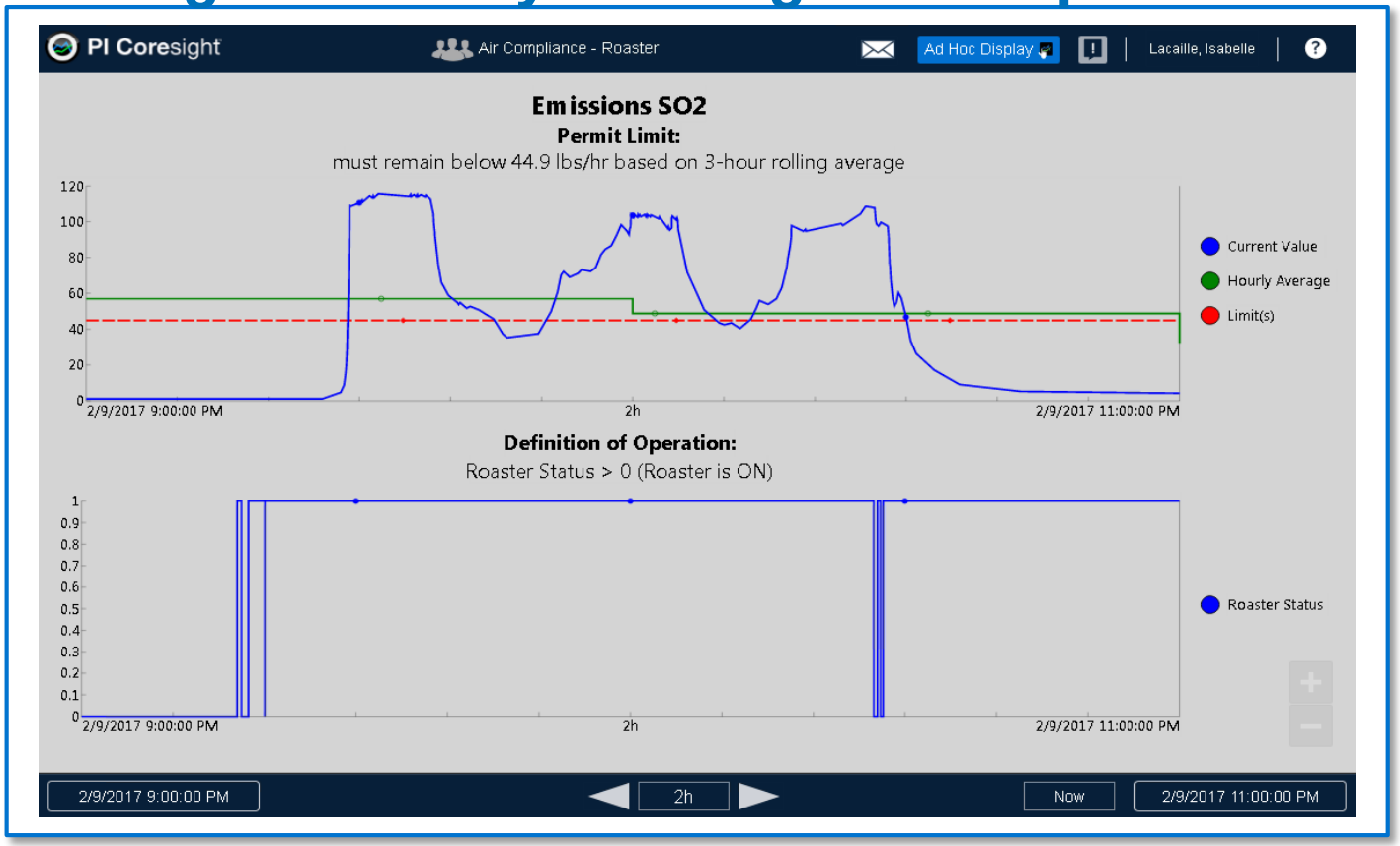
Use PI Coresight to easily Investigate Compliance Alerts



**This is not a real event. It was generated purposely for this demonstration*

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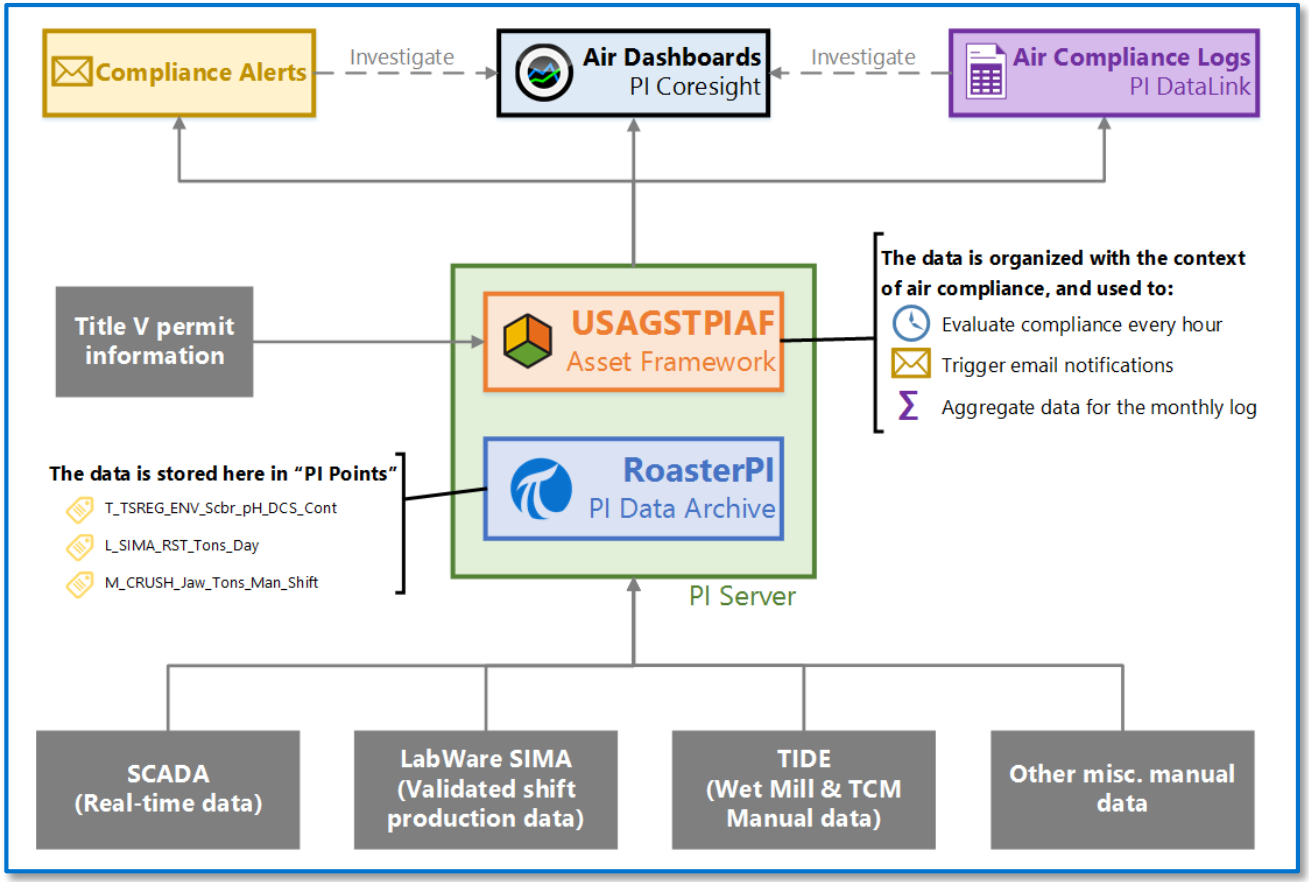
Overall Architecture of the Streamlined Air Compliance System



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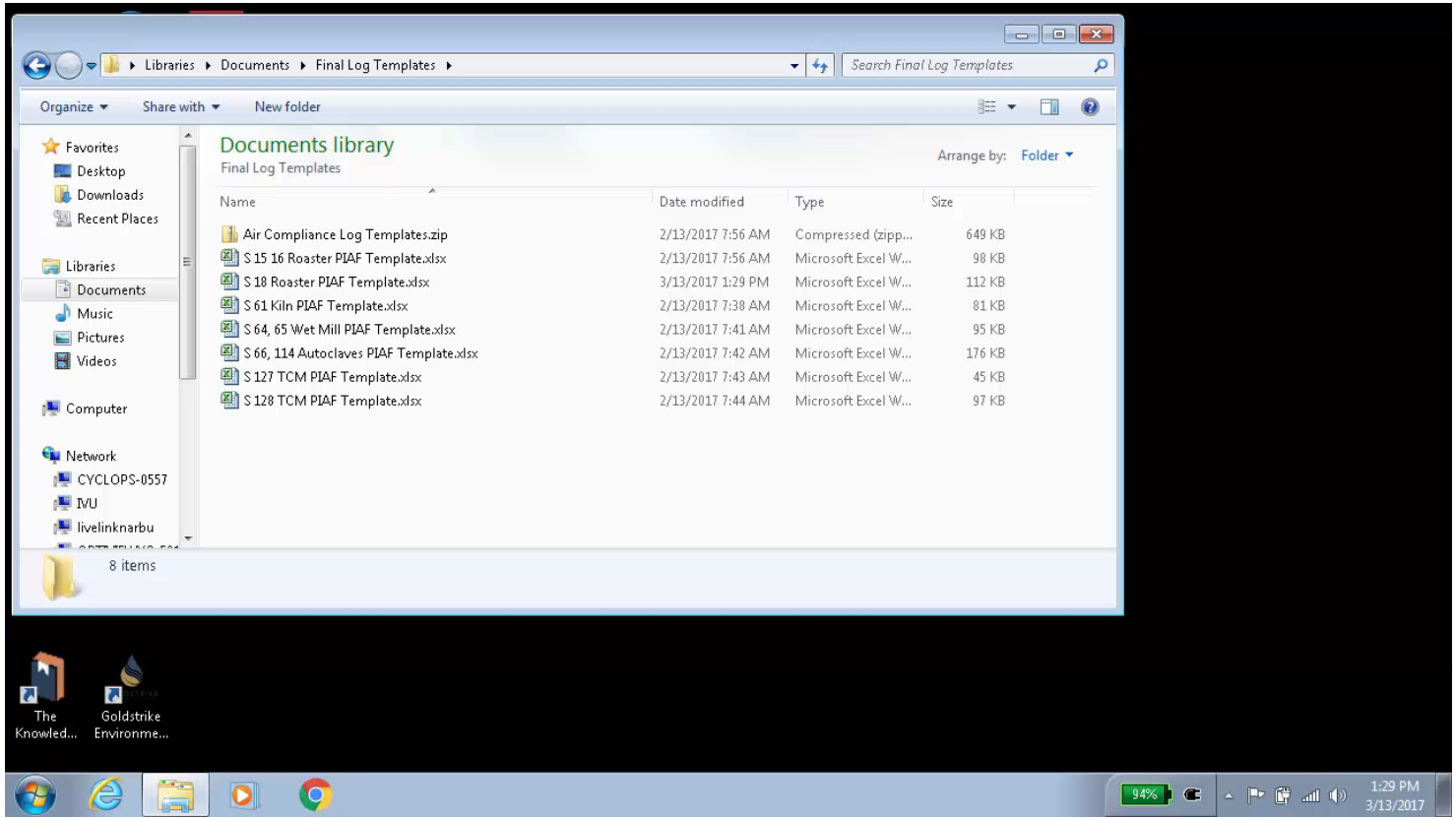
Automatically Generate Monthly Compliance Logs in Minutes



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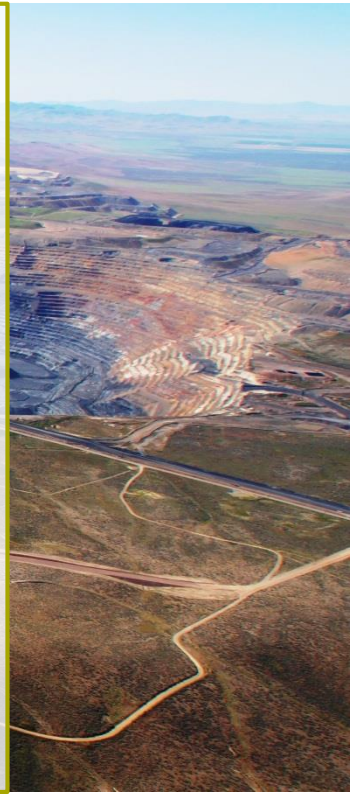
Next Steps…

1. Automate remaining Process Division systems
2. Implement PI Manual Logger
3. Streamline other reporting requirements
4. Deploy automation capabilities at other Goldstrike Divisions and Barrick Sites



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Streamlining Air Compliance Reporting with Asset Framework

COMPANY and GOAL

Barrick Goldstrike operates one of the largest Title V Air Permits in Nevada and needed a more efficient way to generate compliance reports.

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CHALLENGE

Existing reporting framework was complex, redundant, and time-consuming.

- Delays in data collection
- Difficult to track or make changes
- Numerous interdependent spreadsheets

SOLUTION

Leverage the real-time data infrastructure and implement AF and Analytics to automate the reports.

- **Asset Analytics**
- Data Archive
- Notifications
- PI DataLink
- PI Coresight
- PI System Explorer

RESULTS

Centralized data and analytics allows decisions to be made with greater speed, precision, and productivity.

- Added real value to the company; able to analyze data
- Intermediate spreadsheets eliminated
- AF model returns the max or min hourly average

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Contact Information

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Environmental Analyst

Barrick Gold Corporation

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Questions

Please wait for the **microphone** before asking your questions

State your **name & company**

Please remember to…

Complete the Online Survey for this session

http://bit.ly/uc2017-app

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감사합니다

谢谢

Danke

Merci

Gracias

Thank You

ありがとう

Спасибо

Obrigado

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