

REAL-TIME PERFORMANCE MANAGEMENT FOR THE ENTERPRISE

RtPM



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RtPM

Using PI and the COMPASS for Title V Permit Compliance

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- **Identify Requirements**
- **Define Tasks**
- **Map PI Tags**
- **Monitor process parameters**
- **Demonstrate Compliance**





Title V: Clean Air Act

- Major Source

- > 10 tpy (Single HAP)
- > 25 tpy (Combination of HAPs)
- > 100 tpy (Other Regulated Pollutant)

- Annual Compliance Certification



Pop Quiz...

Which of the following applies to Title V Permit Compliance?

- a. Is fun.**
- b. Can be ignored.**
- c. Will go away.**
- d. Requires no extra work.**
- e. Makes responsible officials sleep well.**
- f. Is welcomed by Operations.**
- g. Adds to the bottom line.**
- h. None of the above.**



Title V Compliance – Key Requirements

- Must show compliance – "guilty until proven innocent"
- Must report all deviations
- Must look for deviations – "reasonable inquiry"
- Must review/retain credible evidence – any piece of information that would indicate compliance or non-compliance
- The “Biggy” – **Must certify compliance**



How Does the PI/COMPASS “Marriage” Help Solve my Problem?

- Environmental data stored in PI Historian contributes to a central process data source.
- Some/Most operator task status information is also captured by PI
- PI calculations can be utilized
- PI and COMPASS can be easily linked via a PI Tag
- COMPASS adds evaluation (against regulatory limits), deviation status, and notification/reporting capabilities



What are the Benefits from using PI and the COMPASS for Title V Compliance?

- **Benefits**

- Consistency in compliance implementation across site.
- Consistency in data evaluation.
- Completeness in data evaluation.
- Tracking of deviations for reporting.
- Initial set-up time offset by future reduced data review time.
- Unified compliance plan that has a central source of data to prove compliance.
- PI Server Maintenance/Buffering supported.
- All units can see all compliance data, site-wide.



What are the Benefits from using PI and the COMPASS for Title V Compliance?

- Benefits (Cont.)

- COMPASS retrieves data as needed for a regulation without the need to reconfigure or add new PI tags (and set-up may be done by environmental staff).
- The same PI tag can be used to evaluate multiple compliance statistics, including rolling avg's and max's.
- Changes to tasks that revise statistics produced from PI data fetches are logged in the COMPASS, and data difference are obvious in future compliance "history."
- Responsible Official is confident that review is continuous and "reasonable."
- Only environmental data is retained 5 years.



Title V Permit Compliance using the PI/COMPASS Solution (let's review)...

- a. Is fun? ***Still no.***
- b. Can be ignored? ***Yes, if you like prison.***
- c. Will go away? ***Not likely.***
- d. Requires no extra work? ***No, but the extra work is minimized by letting PI and COMPASS work for you.***
- e. Makes responsible officials sleep well? ***At least better.***
- f. Is welcomed by Operations? ***Minimizes impact to them. Data is already collected by PI.***
- g. Adds to the bottom line? ***Ultimately reduces compliance review time and effort.***



A Word of Caution...

1. If the goal is to miss (as in overlook) deviations, then using PI and COMPASS will not be a good process.

and,

2. If No. 1 is the goal – Good Luck, you are going to need it.

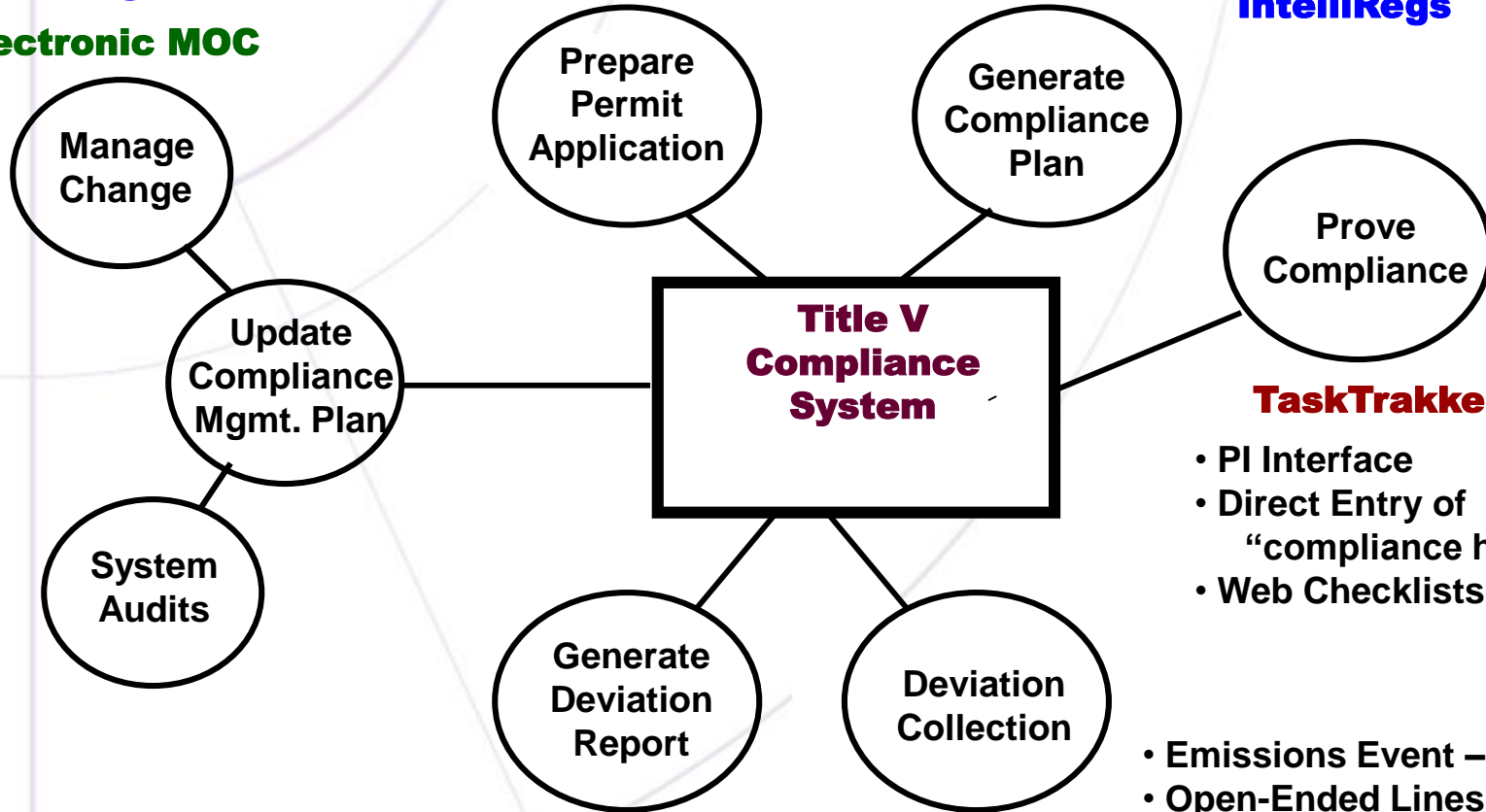


EASTMAN TITLE V TOOLS

TaskTrakker

IntelliRegs

Electronic MOC



IntelliRegs

TaskTrakker

- PI Interface
- Direct Entry of “compliance history”
- Web Checklists

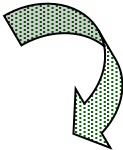
- Emissions Event – Database
- Open-Ended Lines - Database

TaskTrakker

EASTMAN



TOOLS – Purchased Software & Services

- **IntelliRegs** (PDC Corp)
- **COMPASS-TaskTrakker Module** (PDC Corp)
- **Mgmt. of Change Subscription** (PDC Corp) 
 - ✓ **What rules have changed since last quarter, and how do these changes affect my compliance tasks and schedules?**

TOOLS – “Home Grown”

● Emission Events Database

- ✓ Upsets
- ✓ Maintenance
- ✓ Start Up/Shutdown
- ✓ PBR Maintenance
- ✓ Permitted Events
- ✓ Refrigerant PBR

● Event Log Database

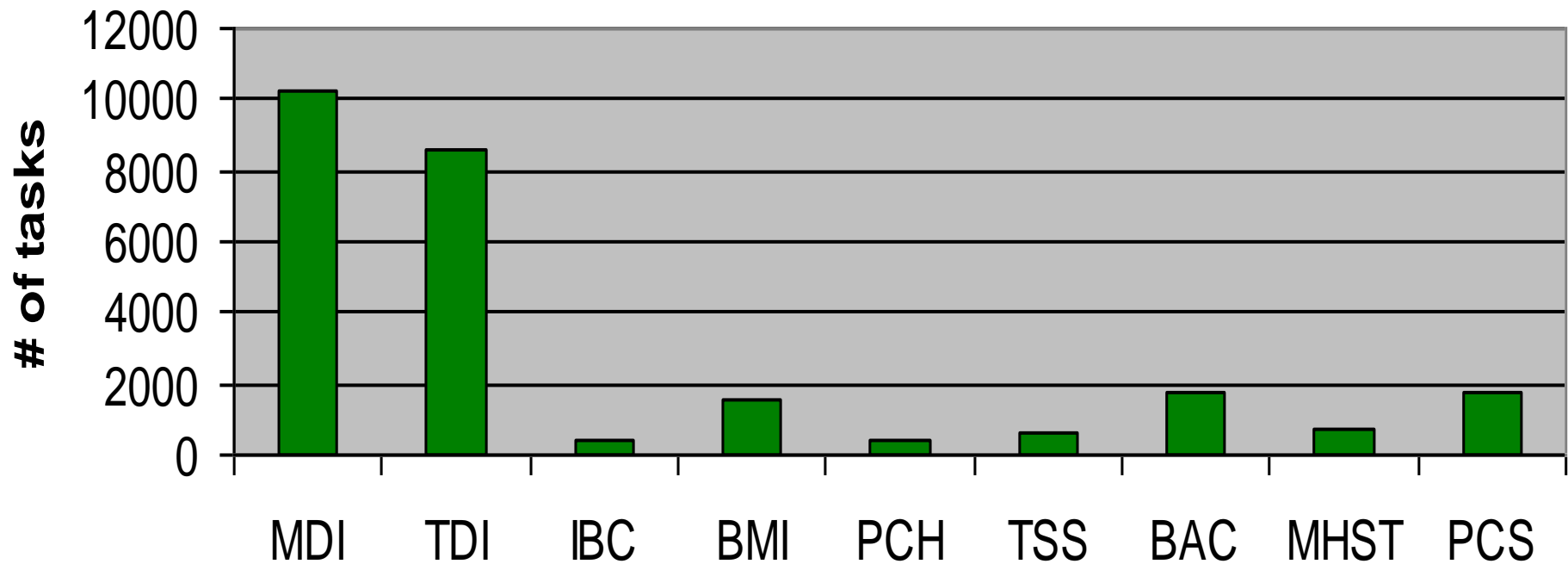
- ✓ Open-Ended Lines
- ✓ Surprises



Bayer Material Science

Title V Tasks

Note: BAC & PCH are LanXess units



Bayer: Science For A Better Life



Bayer



Key Compliance Task Attributes

PI Tag ID

Frequency: How often should COMPASS fetch data

Historian Time Interval of Interest

PI Lag Time: Wait for some time before fetching data

Fetch Type: Min, Max, Sum, Last Recorded Value,
ANSI or Time weighted AVG



Using IntelliRegs to Determine Applicable Rules

Illustration showing Equipment Attributes "driving" rule applicability logic and decisions

FD# 131 RRT Decision Flow

1Y>2Y>3Y>4N>5N>6Y>8N>10Y>11Y>15N>16N>17Y>(C08)>22N>End

Decisions

1 Construction after 7/23/84?

RRT: TX 60Kb (12/16/98) Dbi-Click=Pa into EPA We Form!

Comply Block	Main? Type	Pollutant	Citation Number
C08	ST Yes	VOC	60.112b(a)(3)
C08	MN	VOC	60.116b(a)-(b)
C08	MN	VOC	60.485(b)
C08	RK	VOC	60.115b
C08	RK	VOC	60.116b(a)-(b)
C08	RP	VOC	60.115b
C15	MN	VOC	60.113b(c)(1)
			60.113b(c)(2)
			60.115b(c)
			60.113b(c)(1)
			60.116b(e)(1)
			60.116b(e)(2)(i)

EquipID/N TX 60Kb (12/16/98)


RRT Chart... TX 60Kb (12/16/98)

OP-UA Line Note FuelOil#4 All-Year, Built 7/22/87, Yoder Seals/Yale Ctrls

Attribute **RRTFlow & IDs** **Special Regs** OpenSecs: 13 Data Value **Help** ?

SOP/GOP Index No	Info	60KB-29
Construct/Mod Date	Info	84+
Product Stored	Info	PTCD-BF3
Storage Quantity-Gallons (Enter numeric i.e. 19000)	Info	200000
Storage Capacity (Per TNRCC Valid Values List)	Info	40K+
Maximum TVP Quantity-Psia (Enter the actual quantity/amount i.)	Info	5.5
Maximum TVP (Per TNRCC Valid Values)	Info	0.75-11.1
Storage Vessel Description	Info	CVS-CD

Equipment Attributes



PI Tag Mapping

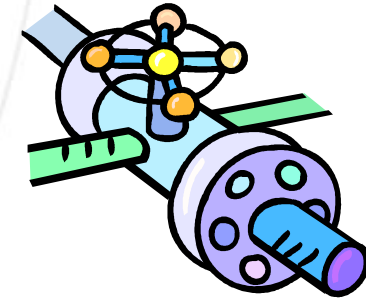
- Distill Requirements into Compliance Tasks
- Assign Frequency
 - How often does the Permit or Rule call for monitoring?
- Select PI Tag
 - Assign PI Fetch Period
 - Select Fetch Type



Monitored Parameters

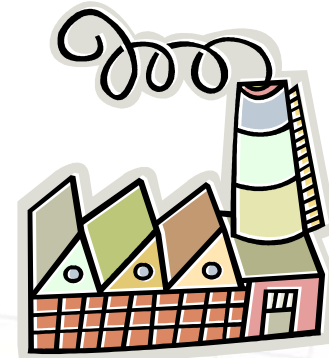
Process Parameters

- Pressure
- Temperature
- Flow Rate
- Level
- Velocity
- Emission Rate



Routine/Manual Tasks

- Flare Smoking?
- AVO Inspection Done?
- Inspect Flanges – Any leaks?
- Inspect Pumps – Dripping Liquids?
- Open Ended Lines/Valves?



TaskTrakker Compliance Task Detail Screen

Regulatory Limits: These limits, up to 2 per Task, are used to determine the potential deviation status of “compliance history” as it is collected by the system.

13 of 24 Task ID: 42596 Primary

Equip Type: Source Equip ID: EP035D203 Equip M

Task Name: Max hourly ChCl3 MAERT Limit(31.9 lbs/hr) Citati

Task Description
Maintain compliance with maximum hourly MAERT limit of 31.9 lb/hr ChCl3.

Task Category: Title V Data Repository: TaskTrakker Module Active Task: Yes No

Task Frequency: Hourly Reg Frequency: Task Type: Monitoring

Task Start Date: 08/19/2002 Task End Date: 00/00/0000 Activity:

Business Unit: C4 Responsible Person: HAC

Limit 1 Operator: < (Less Than) Limit 1: 31.9 Value Type:

Limit 2 Operator: Blank Limit 2: Unit of Measure: lbs/hr

Responsible Department: C4 Is Overdue Always A Deviation? Yes No

When Required: Hours/Task (periodic) OR Hours/Day

Regulatory Retention Time: 5 Years File Reference:

Company Retention Time: 5 Years Monitoring Ref:

Copies Sent To: Link To External Data: [NTMESAPITXHAC] (552TV:C203CHCL3.CV) Calculate Emissions

Calculation Basis: PI Arithmetic Max

Historian Time Interval: Hourly Historian Lag Time: 59 mins

Protective Equipment Required:

Training or Certification Required:

External Data Links: Instruction to record “Compliance History” with a max HOURLY value for the specified PI Tag.

PLANT 2 GC 2 (552PC:P2GC2CHCL3_LB.CV) MUST BE INVESTIGATED TO CONFIRM POTENTIAL DEVIATION. CHANGED TO HOURLY ON 5/14/04 BETWEEN 1 - 2 PM - 6/10/04 PDC looking at PITAG THAT PICKS THE HIGHER OF THE 2 GC RESULTS(552TV:C203CHCL3.CV - ess

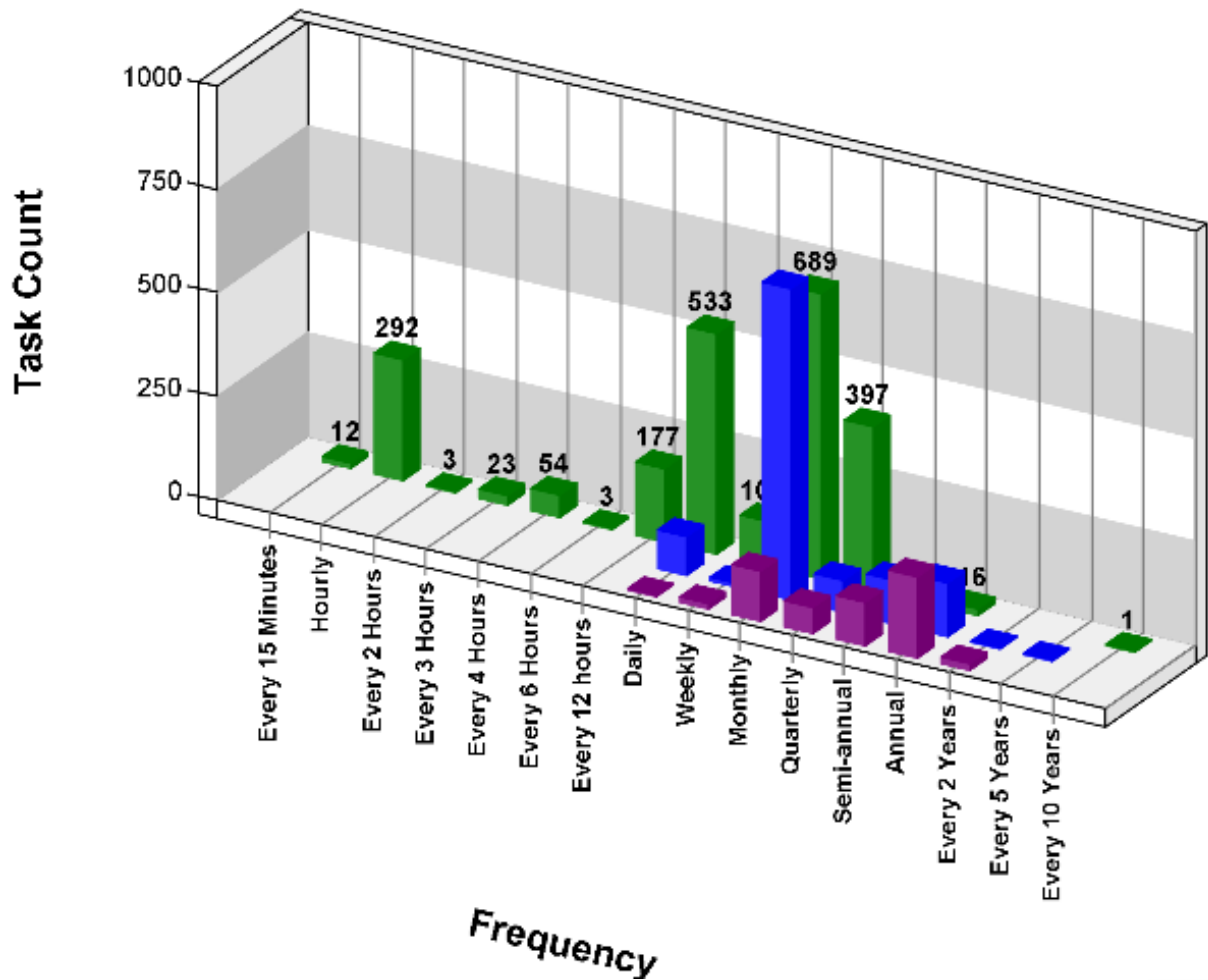
For Purpose of Example Only



Task Definition Count by Frequency



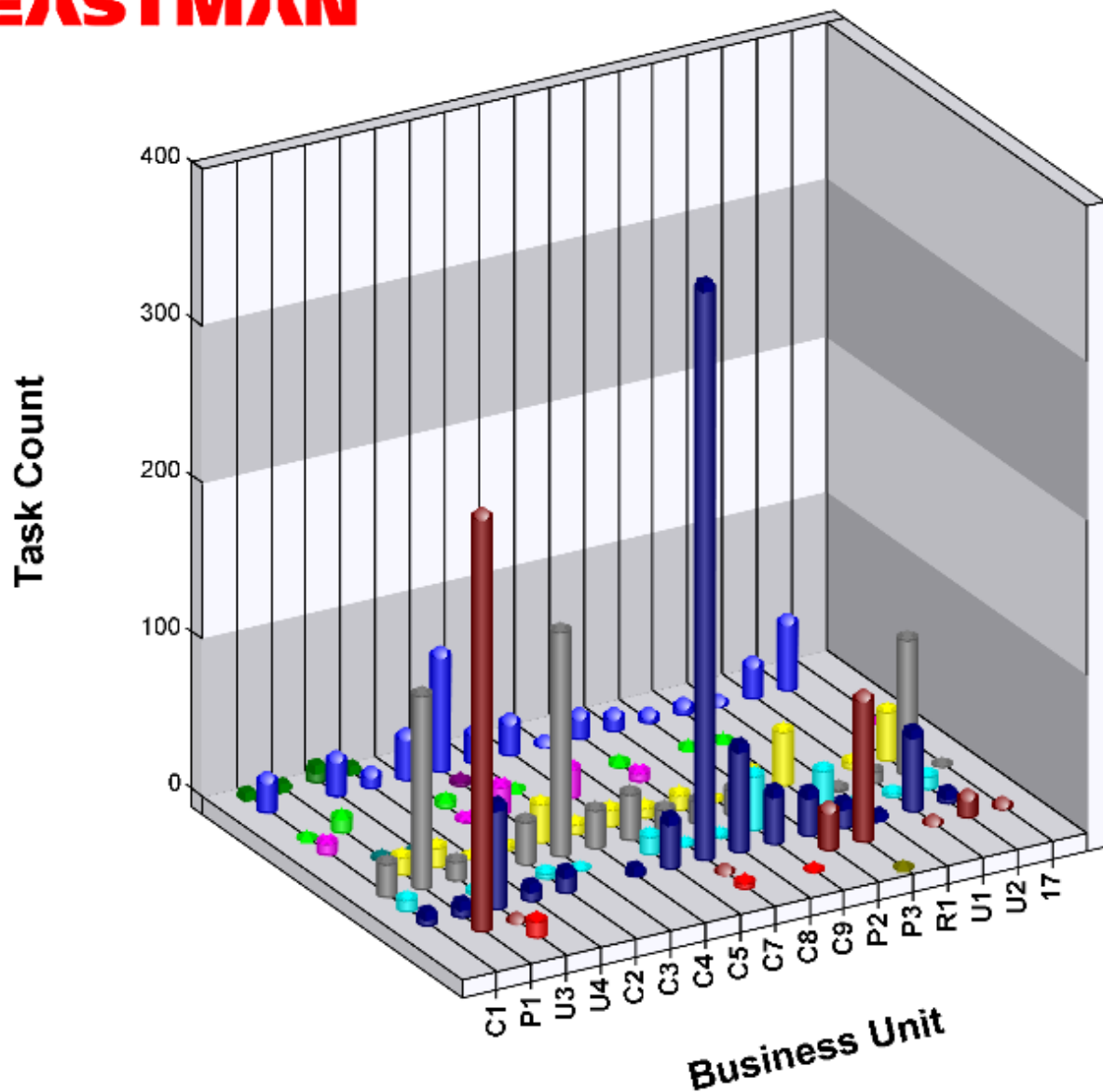
■	PI TASK COUNT
■	CHECKLIST TASK COUNT
■	MANUAL TASK COUNT



Sitewide Totals
PI Tasks: 2348
Checklist Tasks: 1171
Manual Tasks: 525
All Tasks: 4044



PI Task Definition Count by Business Unit

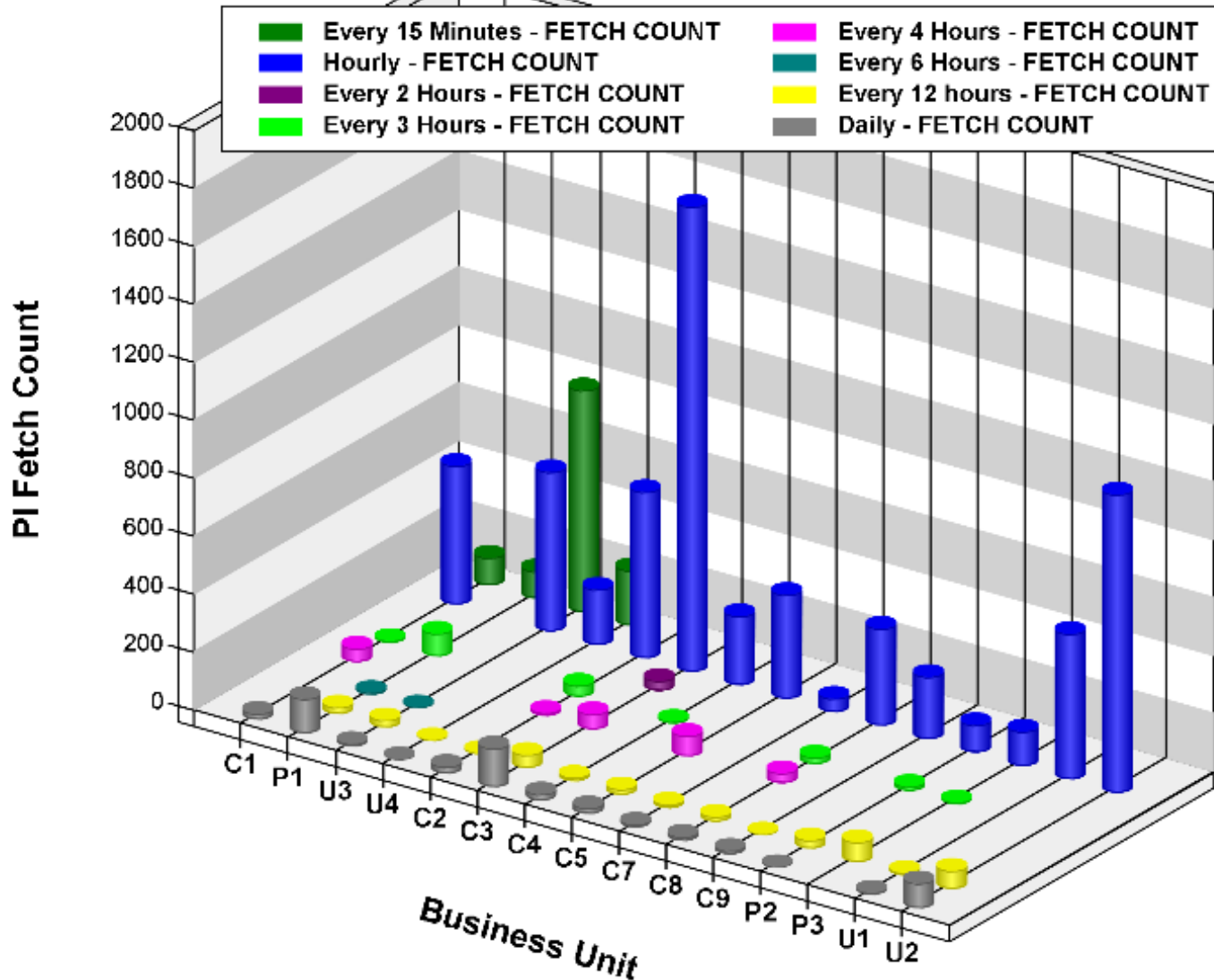


PI Task Count
2348



Daily PI Data Fetch Count by Business Unit

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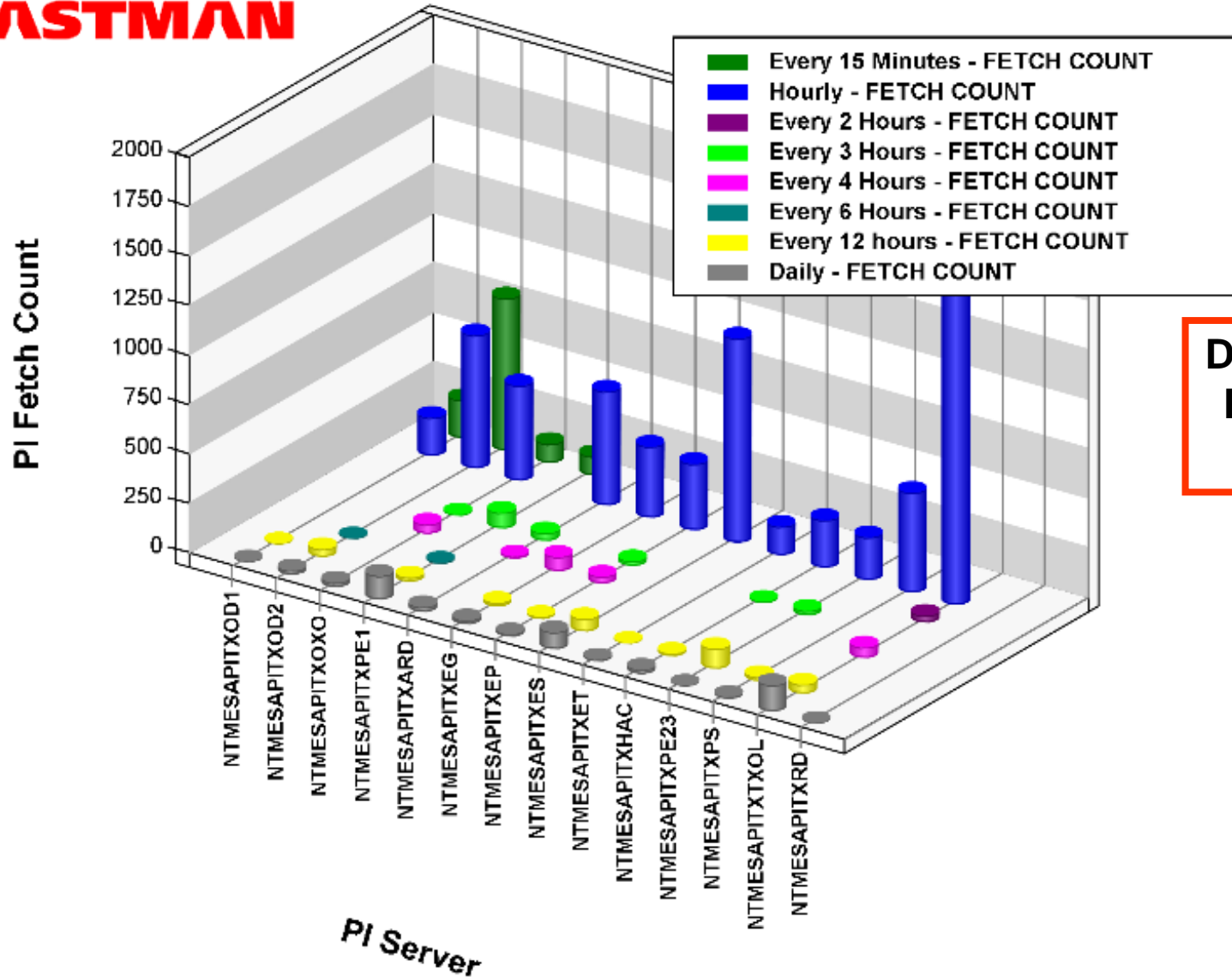


Daily Sitewide Fetch Count
8806



Daily Data Fetch Count by PI Server

EASTMAN



**Daily Sitewide
Fetch Count
8806**

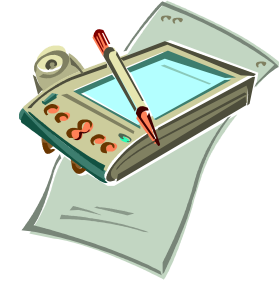


Compliance Data Fetch Modes

Data Manually Recorded Into PI

Applicable Compliance Fetch Types

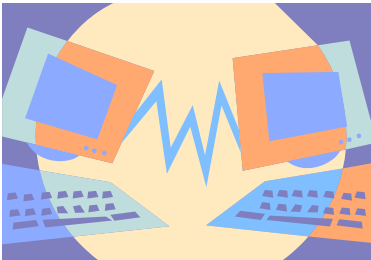
- Discrete Value/Last Recorded Value
- Min, Max, Total
- Arithmetic Avg



Continuous Data Feed From Instrumentation/DCS

Applicable Compliance Fetch Types

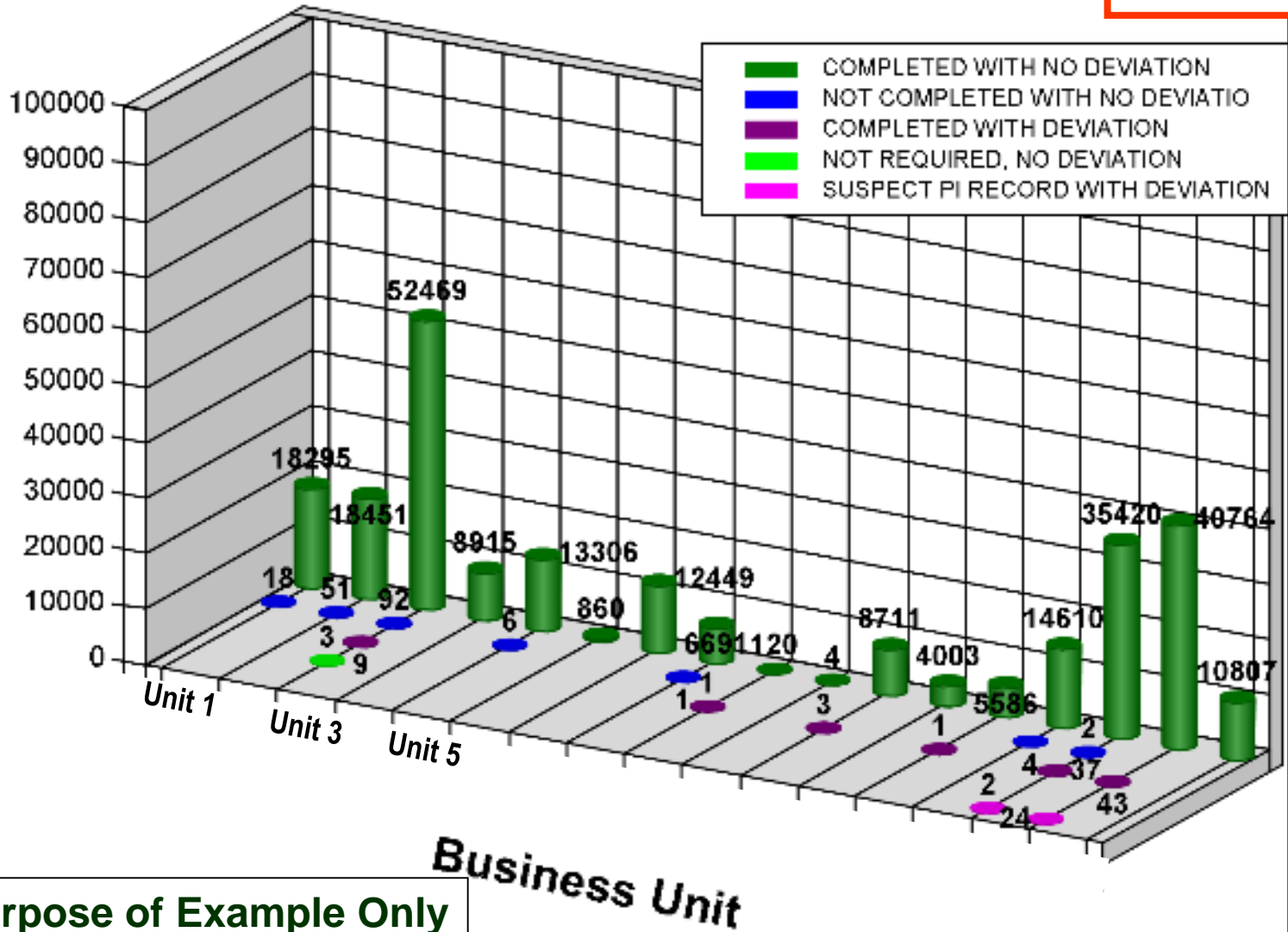
- Discrete Value/Last Recorded Value
- Min, Max, Total
- Time Weighted Avg



**Monthly
History Count
251758**

Feb 2005 History Count By Compliance Status

History Count



For Purpose of Example Only



Update



Compliance Deviation Reporting

For Purpose of Example Only

Deviation Detail Report

Account ID: HH0042M Selected Date Range: 02/01/2005 00:00:00 To 03/01/2005 00:00:00

Business Unit: P1 Entity Type: S Entity Id: PE063CU1 Has Secondaries

Task ID: 93567 Completed On: 2/8/2005 12:00:00 Task Frequency: Every 3 Hours

Recorded By: 1885835 Recorded On: 2/8/2005 12:16:15 Task Description: Operate Catalytic Oxidation Unit (063CU1) at an outlet gas temperature no less than that demonstrated by testing required in Special Condition No. 8 to provide 90 percent destruction efficiency.

Period Start: 2/8/2005 09:00:00 Period End: 2/8/2005 12:00:00

Task Value: 830.2982788085938 **Unit of Measure:** DEG F

User Specified Task Status: Completed With Deviation

Program Determined Status: Completed With Deviation

Deviation Cause: CatOx unit down.

Corrective Action: Restarted CatOx.

Start Date: mm/dd/yyyy Start Time: hh:mi:ss

End Date: mm/dd/yyyy End Time: hh:mi:ss

Citation: 7695~SC06

Planned Person: PE1 Group Mailbox

Planned Dept: P1

Planned Method: Monitor outlet temperature via the DCS. Compare 3-ho

Planned Materials:

Limit 1: >= 840 Limit 2:

Actual Person: PE1 Group Mailbox

Actual Dept: P1

Tag ID: [ntmesapitxpe1](303DC:ENCat_TEMP_OUT.P)

Actual Method: Every 3 Hours, PI Time Weighted Period (2/8/2005 09:00:00 to 2/8/2005 12:00:00)

Actual Materials: PI Tag: '303DC:ENCat_TEMP_OUT.P' Name = 'F' Server: 'NTMESAPITXPE1'

Comments: Division Release Report 283 (site #3265) was turned off during this outage of the Cat-Ox.

The recorded value of 830.3 Degrees F. is less than the minimum operating temp. of 840.0 Degrees F., as required under Special Condition 6 of NSR Permit 7695. Hence, this record indicates that a potential deviation occurred between 9:00 a.m. and noon on Feb 8, 2005.



Software Components (.NET)

1. Windows Service

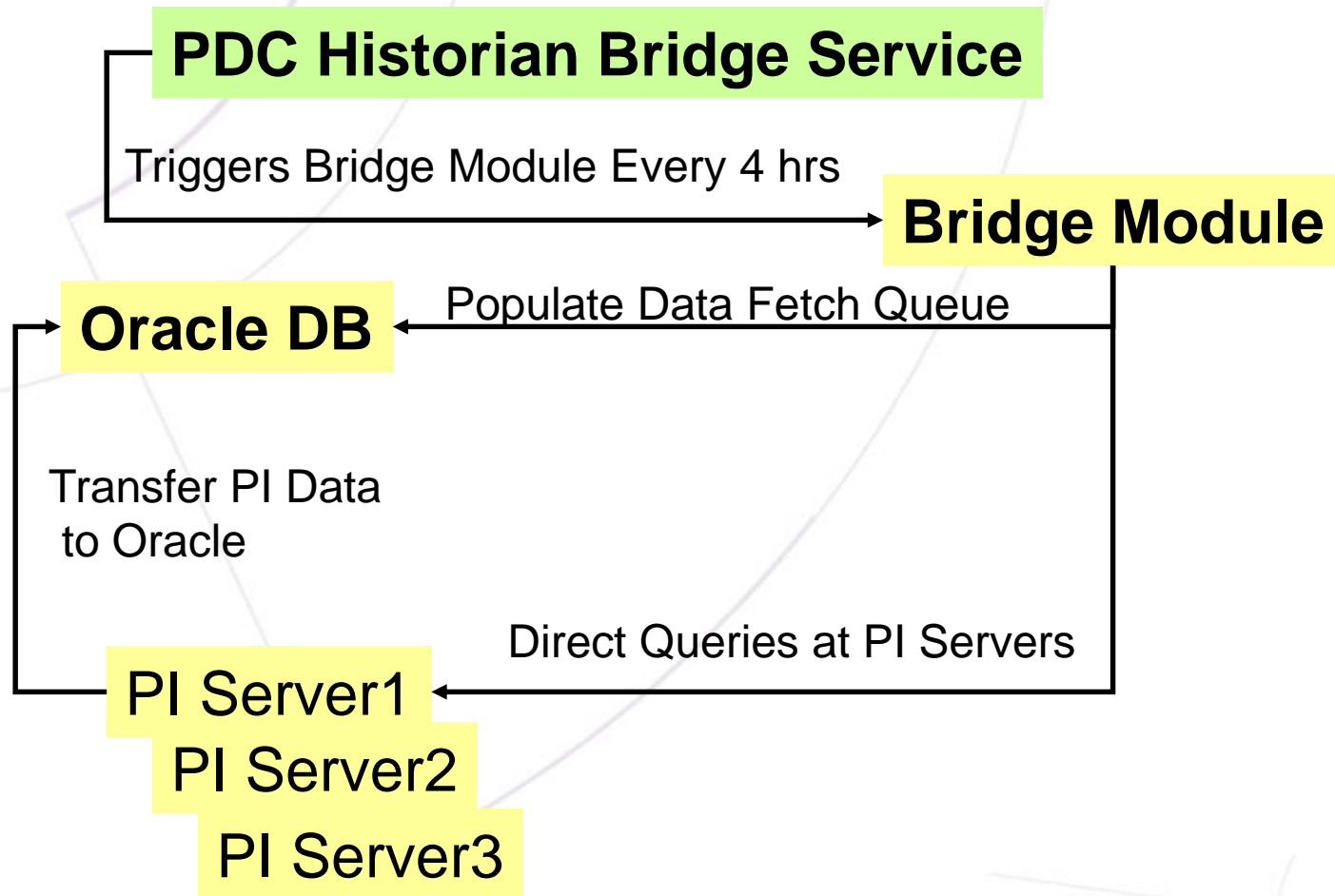
- *Triggers at user specified interval*

2. Bridge Module

- *Runs on each timer event of the Service*
 - ✓ Transfers PI Data into Oracle DB
 - ✓ Compares PI Values against Regulatory Limits
 - ✓ Assigns Compliance Status



Simplified Schematic



Technical Architecture

