

Fugitive Emissions Management in Alberta

Presentation to the Meeting of Canadian Flaring and Venting Regulators

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Overview of ERCB Fugitive Requirements

- D60 Requirements

- Background of Fugitive Requirements
- Current D60 Venting Requirements
- Fugitive BMP and Minimum Expectations

- Bulletin 2009-44 (Dec 2009)

- Clarification

- ERCB Surveillance



Background of Requirements

•CASA Recommendations on Fugitive Emissions Sep 2004

- 43) CAPP and SEPAC develop a best management practices document
- 44) Once a best management practices document has been developed by CAPP and SEPAC, the ERCB should require licensees to develop and implement leak detection and repair programs



Background of Requirements (con't)

CASA –September 2004 Report

Recommendations on BMP

- Should include guidelines on leak detection and repair where leakage is likely to occur such as,
 - Components leaking into flare systems,
 - Gas leakage from compressor seals,
 - Thief hatches and pressure-vacuum safety valves on tanks, and give consideration to management of larger process vent sources.
- Should discuss methods of flow indicators which could be used to determine leakage and
- How information should be used to guide repair decisions and future maintenance.



Directive 60 Venting (Section 8)

- If economic, conserve
- Must be burned if it will support combustion
- Can not be vented if $> 1\% \text{ H}_2\text{S}$
- Must not exceed Alberta Ambient Air Quality Objectives for H_2S – 10 ppb or 14 $\mu\text{g}/\text{m}^3$
- Must not result in off-lease sour odours (even if $< 1\% \text{ H}_2\text{S}$)

Directive 60 Venting (Section 8.7)

Fugitive Emissions Management

- 1) Operators must develop and implement a program to detect and repair leaks.
 - a) These programs must meet or exceed the CAPP *Best Management Practice for Fugitive Emissions Management*.



From CAPP's Fugitive BMP

- When implementing this BMP, companies should keep in mind that the **ERCB Directive 060** imposes a **mandatory requirement** to implement a program to detect and repair leaks and that such a program must meet or exceed **CAPP BMP**.
- In view of the above, the use of the word “should” in this **BMP** does not imply that action is not **necessary** within the context of the **ERCB Directive 060**; i.e., alternative methodologies to those described in the **BMP** can be used as long as the expected results are achieved or exceeded. “No action” is not an option.



Minimum Expectations

- Identify Leaks of Main components
 - Compressor seals
 - Open ended lines
 - Pressure Relief Valves
 - Regulators
 - Control Valves
- Fix leaks **As Soon As Possible** (within 45 days or next turnaround for leak repairs which require a shutdown)
- Quantify and demonstrate that it is not economic if it is not fixed (description of economics in BMP)
- Directed inspection and maintenance is used (focus on equipment that has historically leaked or is likely to)



Minimum Expectations (con't)

- Set out monitoring frequencies based on previous failure history (continuous to quarterly to yearly)
- Gas flow from storage tanks is considered
- A leak that poses a safety concern must be fixed immediately



What the ERCB would Strongly Encourage

- Quantification of Leaks
 - Yes – Show management the \$ value of the work being done (and safety issues which have been addressed)
 - “Usually only the top 5 to 10 percent of leaking components account for 80 to 90 percent of the emissions.” If you don’t measure it how do you know how much you are saving and what you should be focusing on?
- **Fix leaks immediately** (after quantification, if safe to wait)



Bulletin 2009-44 (Dec 2009)

Reminder of the January 1, 2010, Fugitive Emissions Program Effective Date

- High Risk Non-Compliance: Failure of the operator to develop and implement a fugitive emissions program to detect and repair leaks.
- Low Risk Non-Compliance: Failure of the fugitive emissions program to meet the CAPP *Best Management Practice for Fugitive Emissions Management*.



High Risk Items (con't)

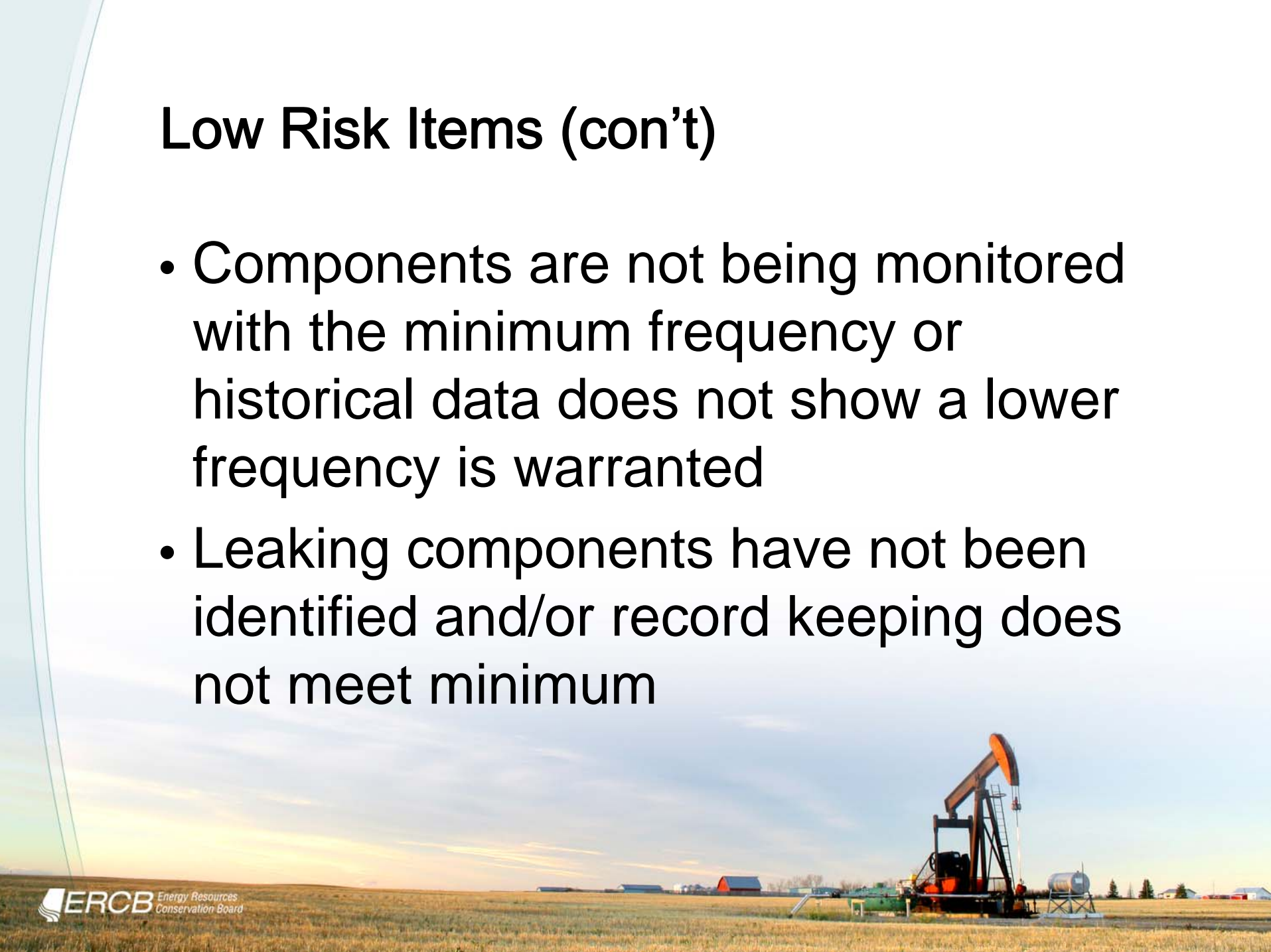
To be considered a program:

- The program must be implemented at the facility (facilities include all licensed facilities)
- The program must address leak repairs within the timeframe required (normally 45 days)
- Repairs must be made when economic test is met



Low Risk Items (con't)

- Components are not being monitored with the minimum frequency or historical data does not show a lower frequency is warranted
- Leaking components have not been identified and/or record keeping does not meet minimum



Current Actions

- Further clarification is being worked on
- Education of industry
- Limited enforcement until clarification is released



Clarifications

- Which facilities
- All streams
- What components
- How frequently
- Documentation requirements



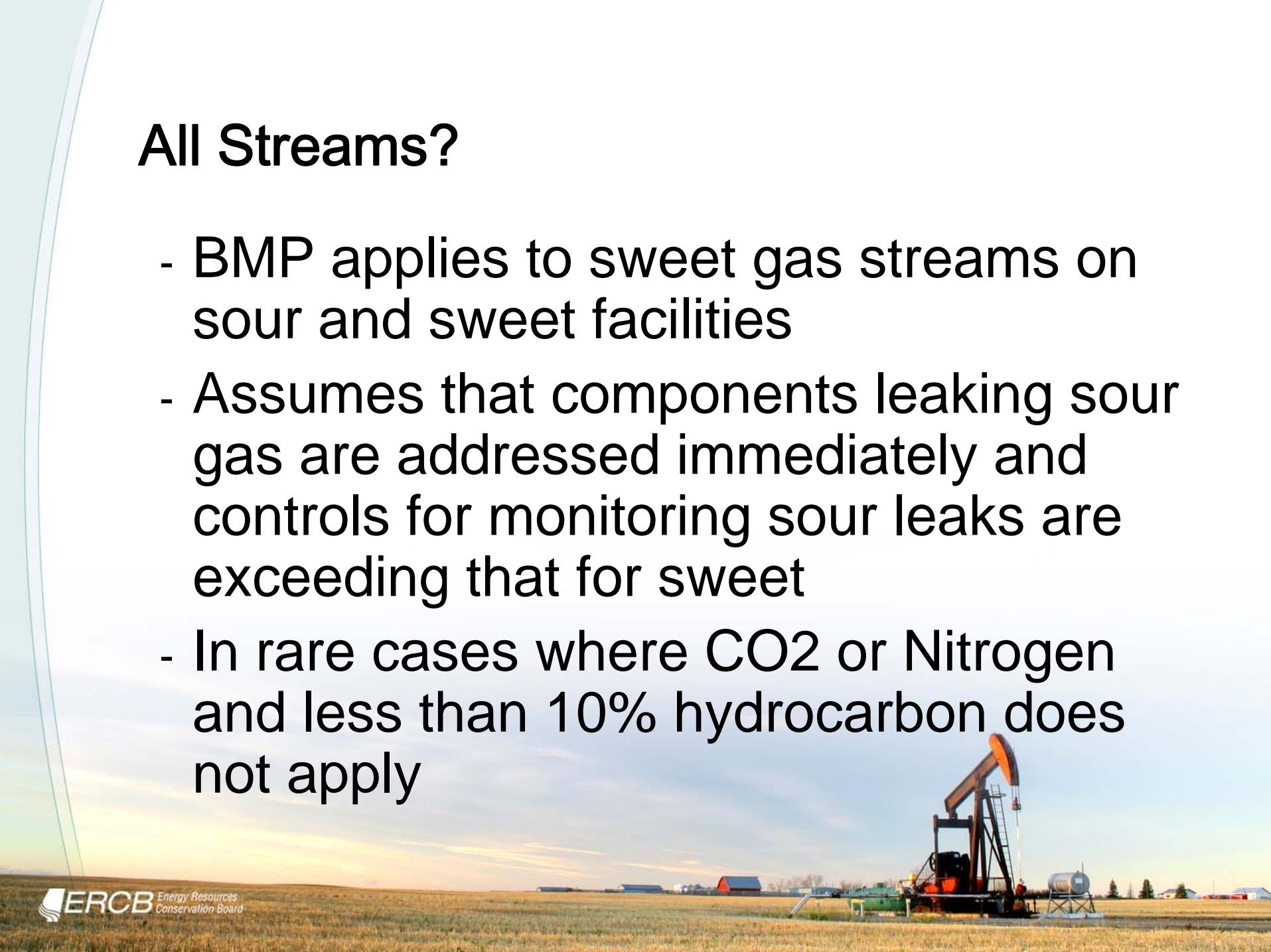
Which Facilities?

All facilities requiring a license under [Directive 056](#): *Energy Development Applications and Schedules* .

- **D56 Facility Definition** *Any building, structure, installation, equipment, or appurtenance over which the ERCB has jurisdiction and that is connected to or associated with the recovery, development, production, handling, processing, treatment, or disposal of hydrocarbon-based resources or any associated substances or wastes. This does not include wells or pipelines. (it does include licensed batteries and licensed compressors)*

All Streams?

- BMP applies to sweet gas streams on sour and sweet facilities
- Assumes that components leaking sour gas are addressed immediately and controls for monitoring sour leaks are exceeding that for sweet
- In rare cases where CO₂ or Nitrogen and less than 10% hydrocarbon does not apply



What Components?

(Appendix 1 of CAPP BMP)

Table 4. Examples of leak monitoring frequencies for leak-prone equipment components, presented by component category and type			
Source Category	Type of Component	Service (sweet gas, light liquid)	Frequency
Process Equipment	Control Valves	Gas/Vapour/LPG	Annually
	Block Valves – Rising Stem	Gas/Vapour/LPG	Annually
	Block Valves – Quarter Turn	Gas/Vapour/LPG	Once every 5 years
	Compressor Seals ¹	All	Quarterly
	Pump Seals ¹	All	Quarterly
	Pressure Relief Valves	All	Annually
	Open-ended Lines	All	Annually
	Emergency Vent ^{1,2}	All	Annually
	Blowdown Systems ^{1,2}	All	Quarterly
Vapour Collection Systems	Tank Hatches ¹	All	Quarterly
	Pressure-Vacuum Safety Valves ¹	All	Quarterly

Monitoring Frequency

- Components must be monitored with the minimum frequency provided in Appendix 1 of the BMP, or
- Company must show that based on historical data at the facility a lower or higher frequency is warranted.

Record Keeping

- [illegible]



Information Sources

ERCB D60

Section 8.7

(ercb.ca)



Directive 060

Revised edition November 16, 2006
(Formerly Guide 60)

Upstream Petroleum Industry Flaring, Incinerating, and Venting

The Alberta Energy and Utilities Board (EUB Board) has approved this directive on November 16, 2006.

<original signed by>

M. N. McCook, Q.C., P.Eng.
Chairman

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EUB Directive 060: Upstream Petroleum Industry Flaring, Incinerating, and Venting (November 2006) - 1

ERCB Bulletin

2009-44

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Bulletin 2009-44

December 16, 2009

Reminder of the January 1, 2010, Fugitive Emissions Program Effective Date

The Energy Resources Conservation Board (ERCB) Directive 060, *Upstream Petroleum Industry Flaring, Incinerating, and Venting* (November 2006) contains the requirements for fugitive emissions management in Section 8.7. These requirements resulted from the work of a Clean Air Strategic Alliance (CASA) multi-stakeholder team in 2004.

The ERCB will be ensuring compliance with the requirements in Section 8.7 of Directive 060 effective January 1, 2010. These requirements will be interpreted as follows:

Enforcement Items

Section 8.7: Fugitive Emissions Management reads:

- 1) Operators must develop and implement a program to detect and repair leaks.

Noncompliance with this requirement is assessed as **High Risk**: Failure of the operator to develop and implement a fugitive emissions program to detect and repair leaks.

To be considered a "program," the following must be met:

- The program must be implemented at the facility to detect and repair leaks. "Facility" includes all facilities requiring a licence under *Directive 056: Energy Development Applications and Schedules*.
- The program must address leak repairs within the timeframe required. Simple repairs must be done in 45 days; repairs requiring a major shutdown (complex repairs) must be done during the next shutdown.
- Repairs that meet the economic test in the Canadian Association of Petroleum Producers (CAPP) *Best Management Practice for Fugitive Emissions Management* must be made.

Section 8.7 item (1) further states:

- a) These programs must meet or exceed the CAPP *Best Management Practice for Fugitive Emissions Management*.

Noncompliance with 1(a) is assessed as **Low Risk**: Failure of the fugitive emissions program to meet the CAPP *Best Management Practice for Fugitive Emissions Management*.

- Components are not being monitored with the minimum frequency provided in Appendix 1 of the CAPP *Best Management Practice for Fugitive Emissions Management* or the company is unable to show that based on historical data at the facility, including surveys or other credible facility-specific operating data, a lower or higher frequency is warranted.

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CAPP BMP

(capp.ca)



BEST MANAGEMENT PRACTICE

Management of Fugitive Emissions at Upstream Oil and Gas Facilities

January 2007

2007-0003

CAPP BMP



BEST MANAGEMENT PRACTICE

Management of Fugitive Emissions at Upstream Oil and Gas Facilities

January 2007

2007-0003

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CAPP BMP - Appendices



BEST MANAGEMENT PRACTICE

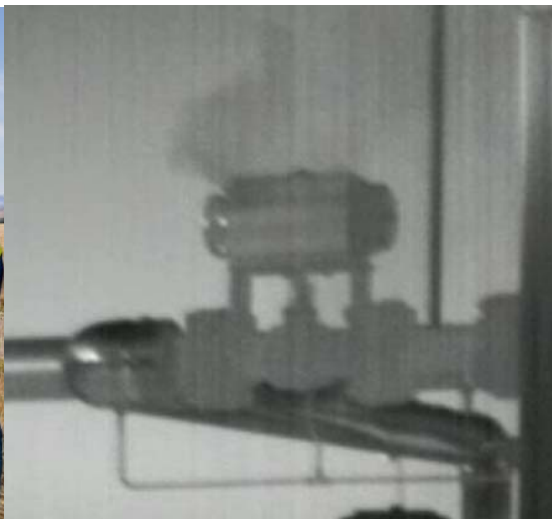
Management of Fugitive Emissions at Upstream Oil and Gas Facilities

January 2007

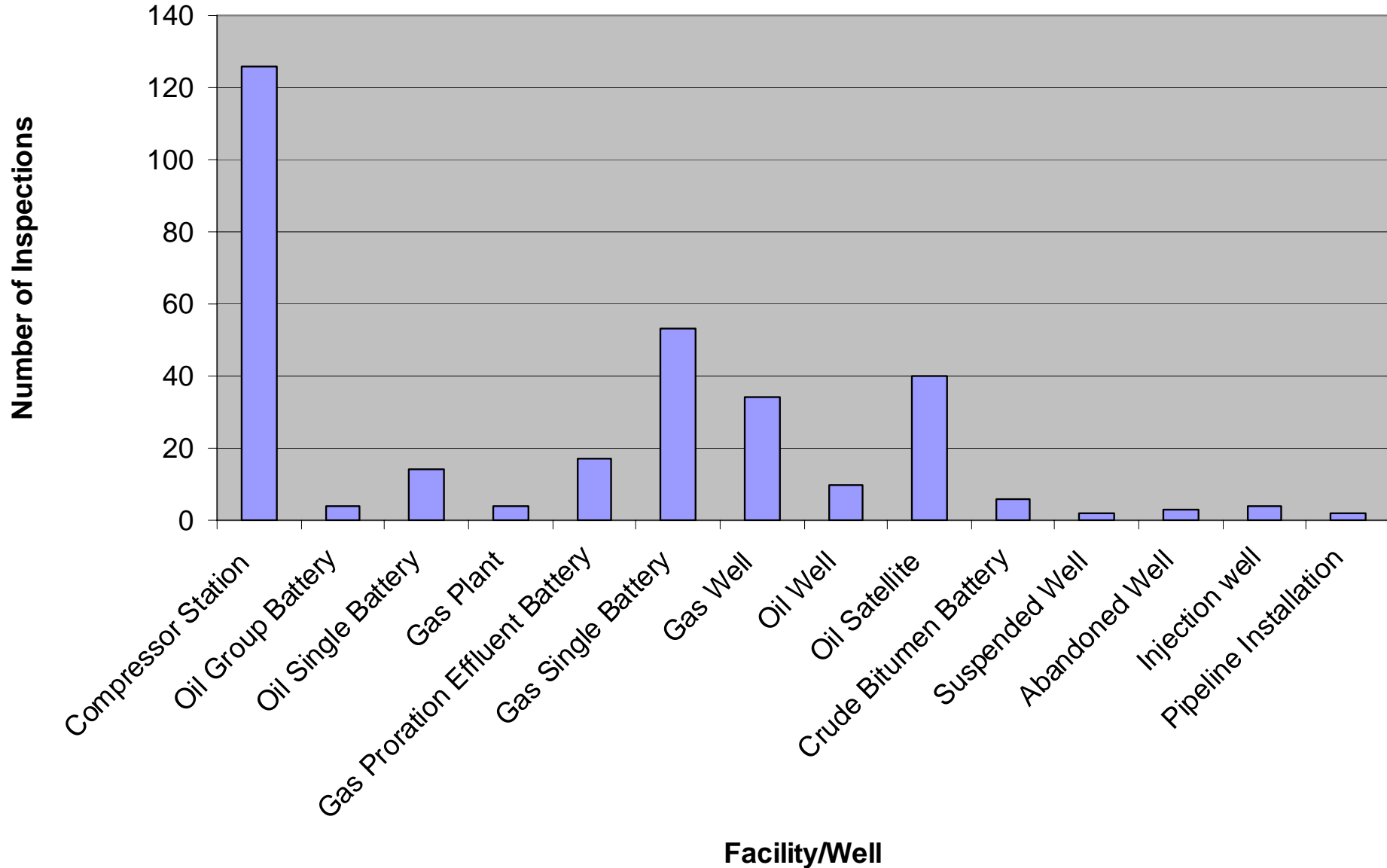
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ERCB Current/Potential Use of Cameras

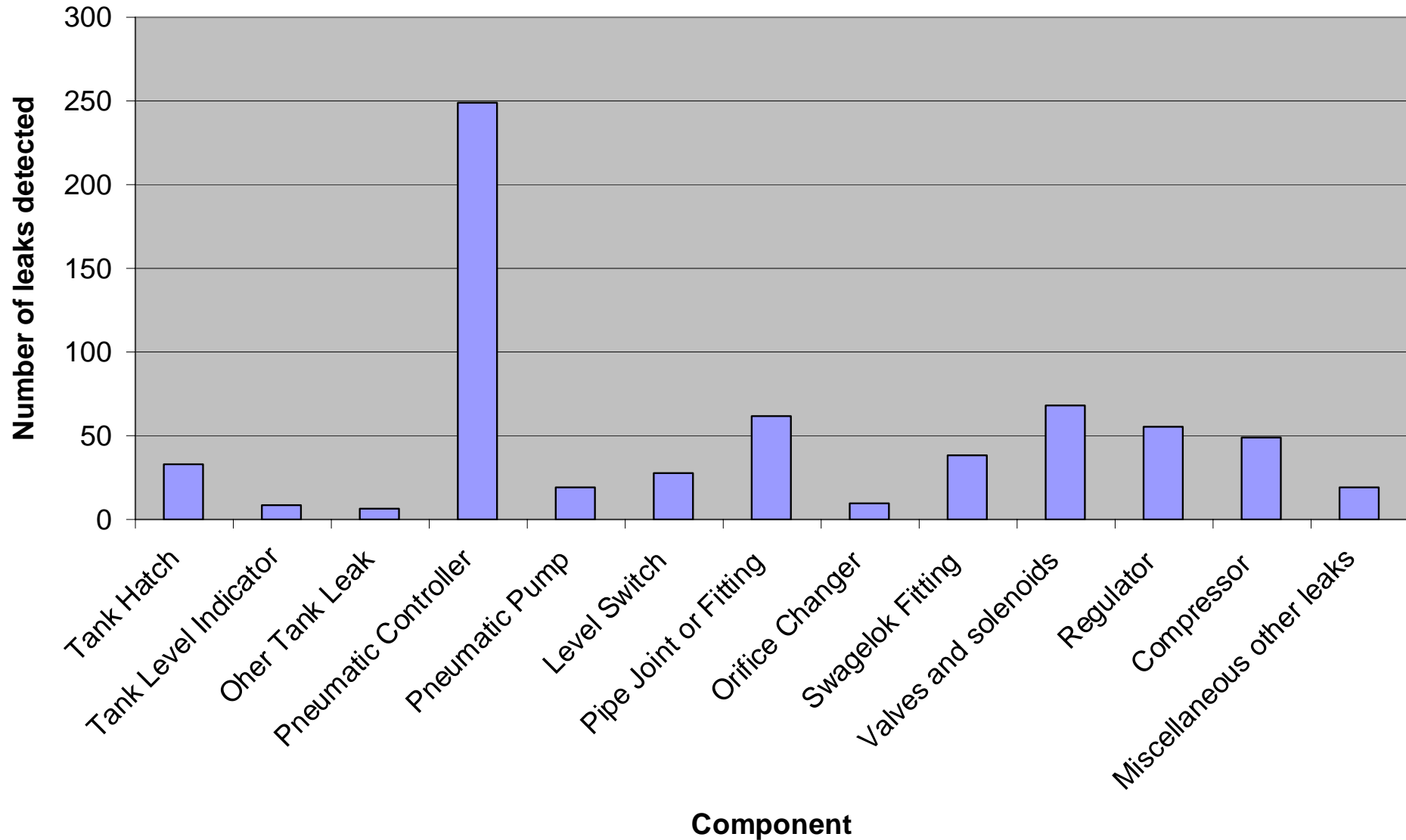
- Complaints
- ERCB Inspections
- Gas Plant Audits
- Blowouts



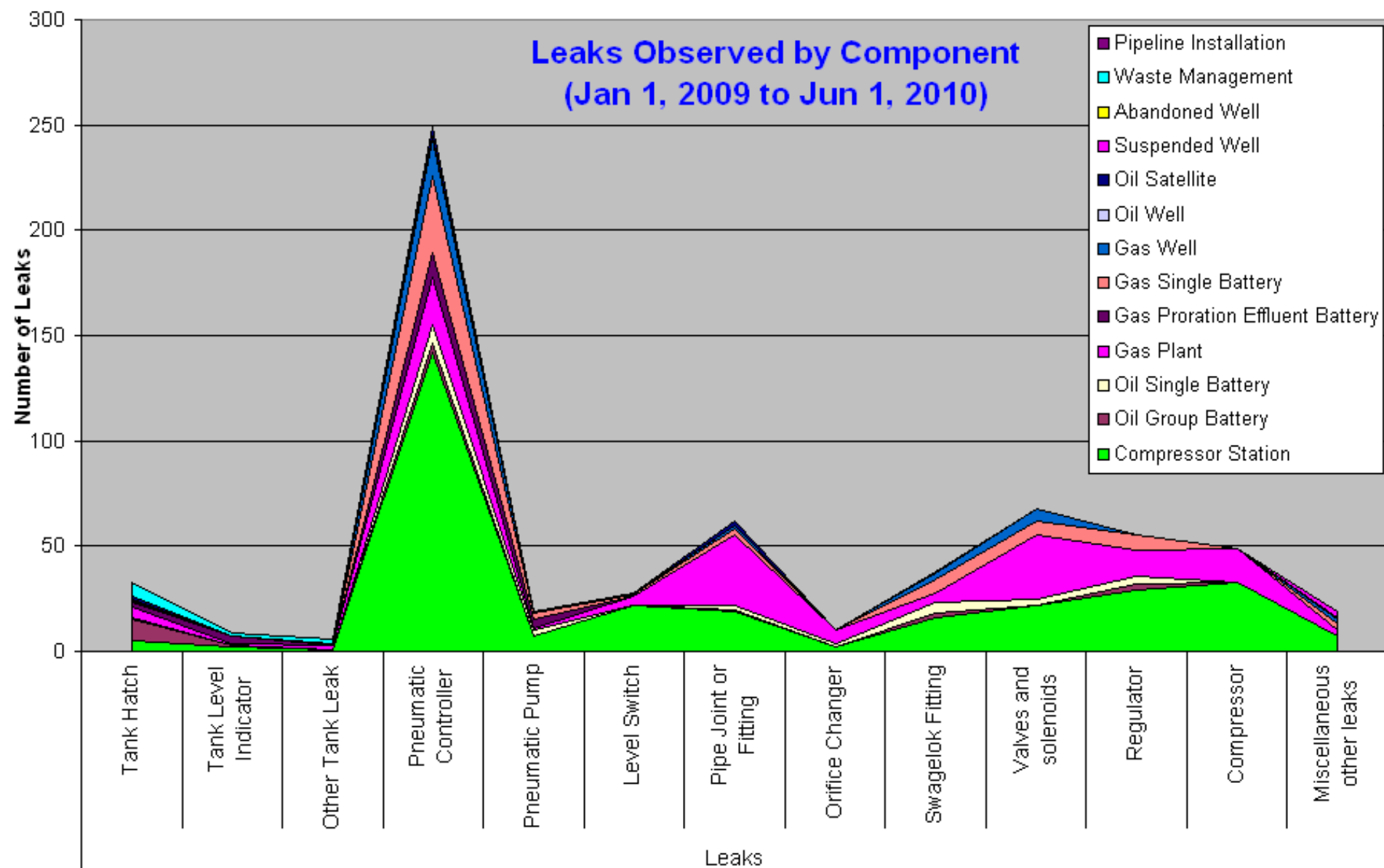
Inspections Done (up to Jun 1, 2010)



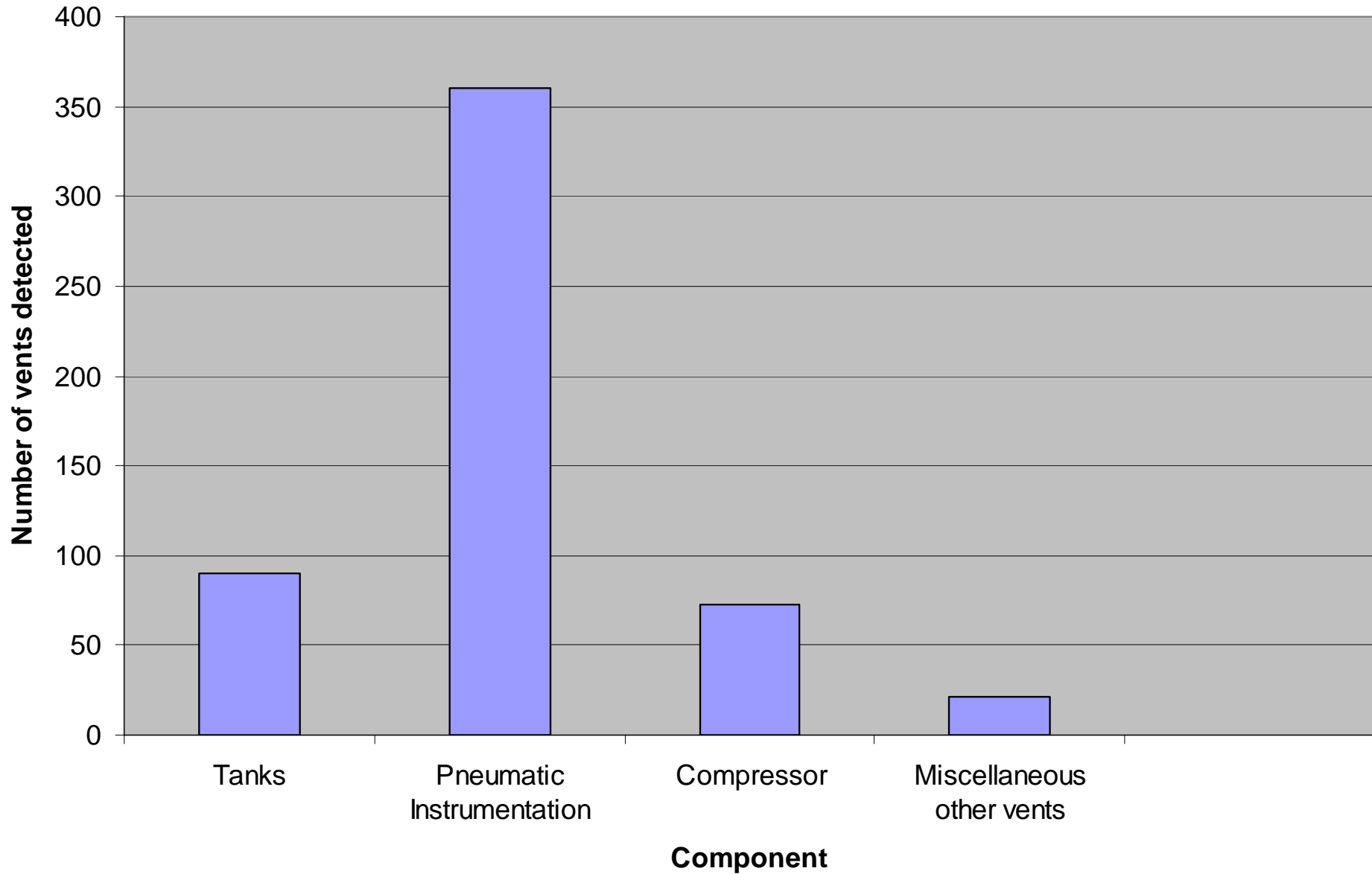
Leaks by Component (up to Jun 1, 2010)



Inspection Statistics



Vents by Component Observed (up to Jun 1, 2010)





Questions ?
