

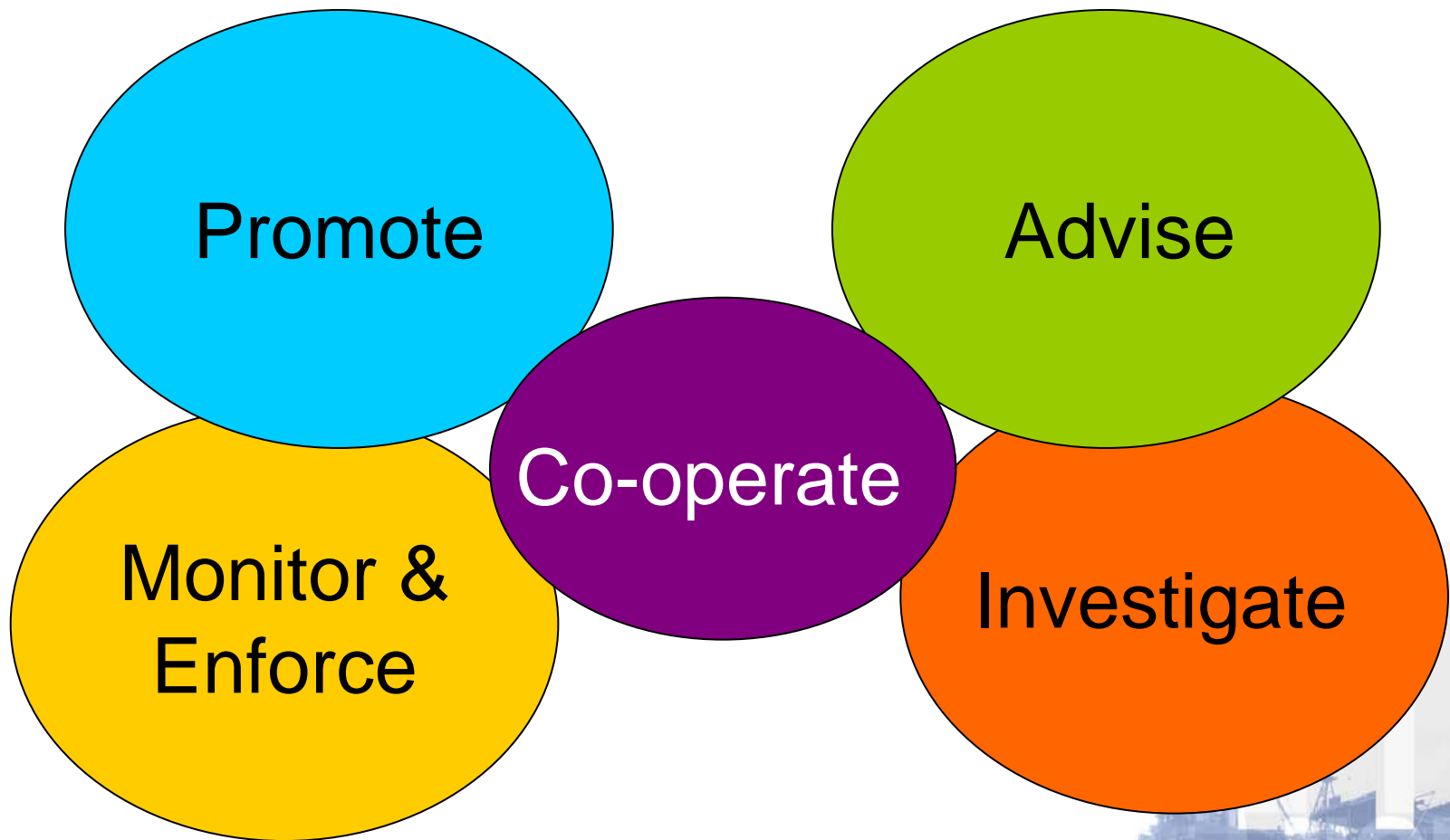
2009 National Oil & Gas Safety Conference

Improving Industry Health & Safety Performance

Simon Schubach
Acting CEO, NOPSA
Aug 2009



NOPSA's functions



Balanced judgment is required for these functions

NOPSA Activities 2008-09

Proactive

27 OHS Inspectors ▶ 89 Inspections
163 Facilities (68 pipelines)

Reactive

| | |
|-----------------------------|--------------------------|
| Assessments | ~ 220 |
| Accident & DO Notifications | ~ 400 |
| Complaints | ~ 25 |
| Enforcement | Improvement Notices ~ 40 |
| | Prohibition Notices ~ 10 |



(Based on current data Jul 2008 – Jun 2009)

NOPSA focus areas: 2009-2010

- Industry safety leadership
- Asset integrity
- Emergency preparedness
- Contractors

Safety Leadership & Asset Integrity

Themed Audits

What is a themed audit?
Company-wide critical examination of operator systems and facilities

To be conducted this year:

- 5 safety leadership audits
- 5 asset integrity audits

Themed Audits

Elements

Safety Leadership Audits

- draw on Baker Panel & Buncefield reports and consider:
 - Process safety expectations,
 - Communications & visibility,
 - Involvement in process safety audits,
 - Employee empowerment,
 - Resources & positioning,
 - Process safety in decision-making

Asset Integrity Audits

- draw on NOPSA FI results and sources such as OGP Asset Integrity question set:
 - Facility major incidents & barriers
 - Critical equipment
 - People & processes
 - Projects
 - Culture

We are **VULNERABLE** ...

so be **VIGILANT**



**21st Anniversary of the Piper Alpha tragedy
6 July 1988**

Texas City Refinery

15 Fatalities – March 2005



\$US ~1 Billion
Victim Compensation

\$US ~1 Billion
Renewal Plan

US Chemical Safety Board

- Mistakes made in Texas City have their roots in decisions made by managers, sometimes years earlier
- Safety culture is first and foremost about how managerial decisions are made
- Are production and cost control being rewarded at the expense of safety and risk management?
- Recommended BP set up independent panel

Major Accident Prevention – US CSB

Ask yourself these questions:

- Is it an engineering problem?
- Is it a problem of employee compliance?
- Is it a matter of corporate policy and behaviors?

Preventing process
accidents requires
vigilance...

People can forget to be

afraid!

Corporate safety culture

- effective process safety leadership
- operating discipline: no toleration of deviations from safe operating practice

Process safety management systems

- process safety standards & good engineering practices
- translate corporate expectations into process safety criteria

Performance evaluation, corrective action and oversight

- effective root cause analysis of incidents & audits to ensure performance
- senior management oversight of process safety



Buncefield Oil Storage Depot

United Kingdom

Dec 2005

£1 Billion
Economic Impact

Buncefield Investigation Findings

- Leadership and Culture

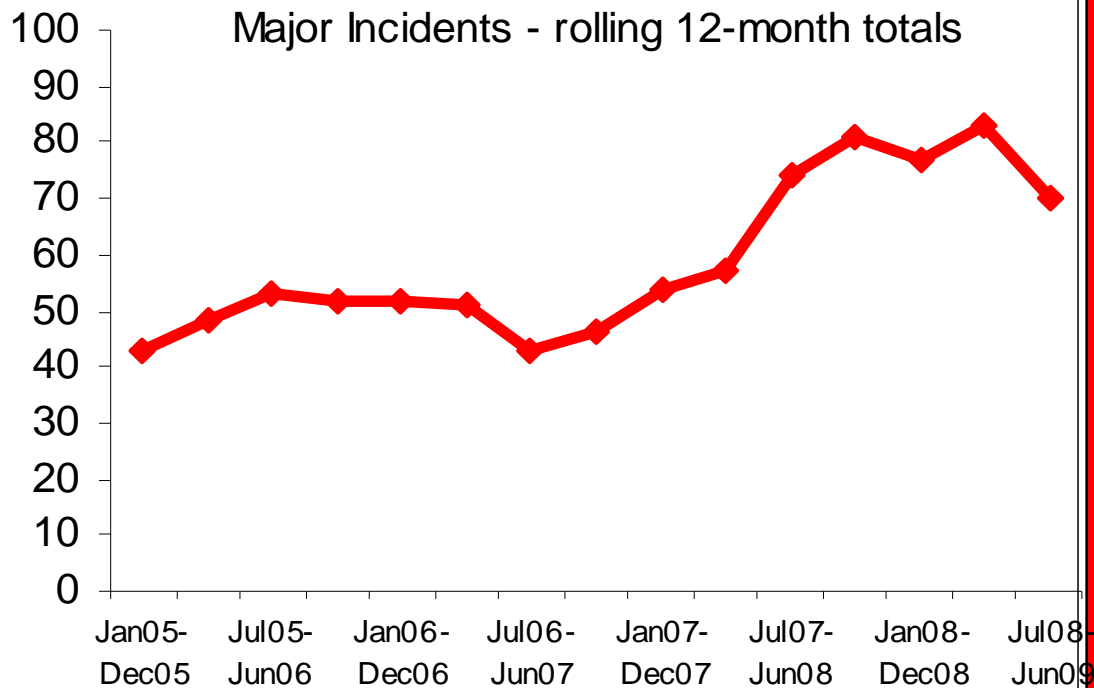
- Collate and communicate data
 - high potential incidents
 - solutions and control measures
- Undertake thorough root cause investigation
- Share lessons learned and best practices

Offshore Petroleum Industry Health & Safety Performance

Collected since NOPSA commenced

- Accidents and Dangerous Occurrences
- Planned Inspections
- National Programmes

MAJOR Accidents & Dangerous Occurrences

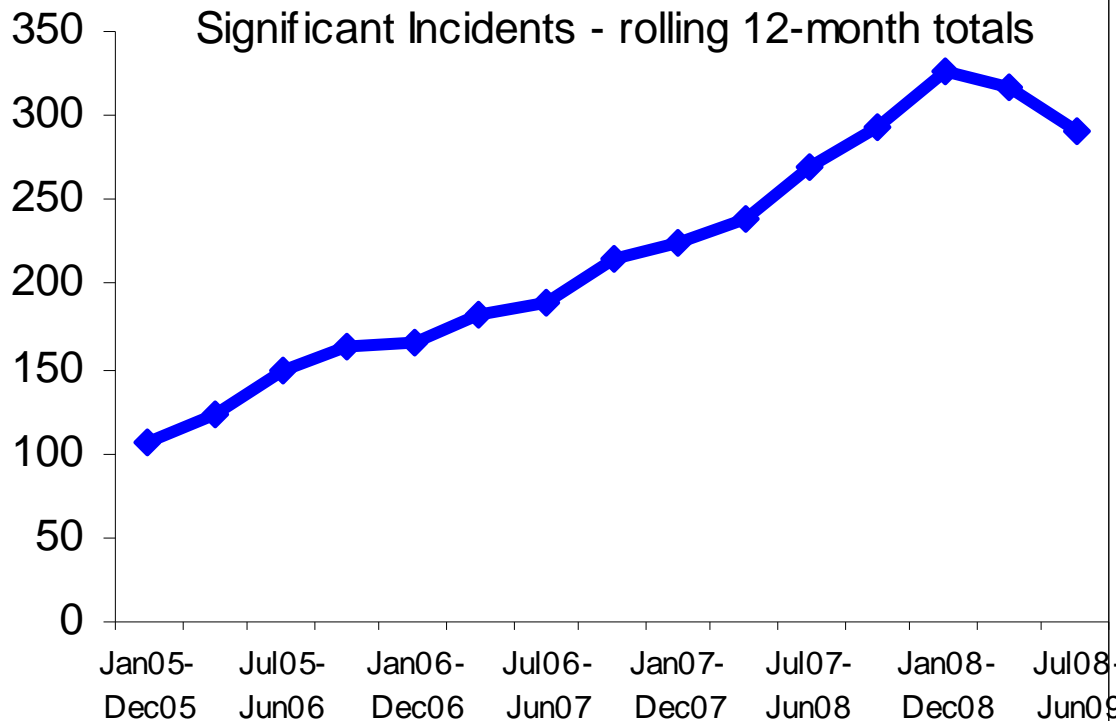


MAJOR A + DOs include:

- Death/serious injury
- Could cause death/serious injury
- Fires or explosions
- Collision marine vessel & facility
- Hydrocarbon gas release >300 kg
- Petroleum liquid release >12 500 L

The International Regulators Forum (IRF) has devised a severity rating. **'Major'** is considered more serious, followed by **'Significant'**.

SIGNIFICANT Accident & Dangerous Occurrences



SIGNIFICANT A + DOs include:

Incapacitation LTI ≥ 3 days

Could cause an LTI ≥ 3 days

Other kind needing immediate investigation

Damage to Safety-critical Equipment

HC gas release $>1-300$ kg

PL release $>80 -12\ 500$ L

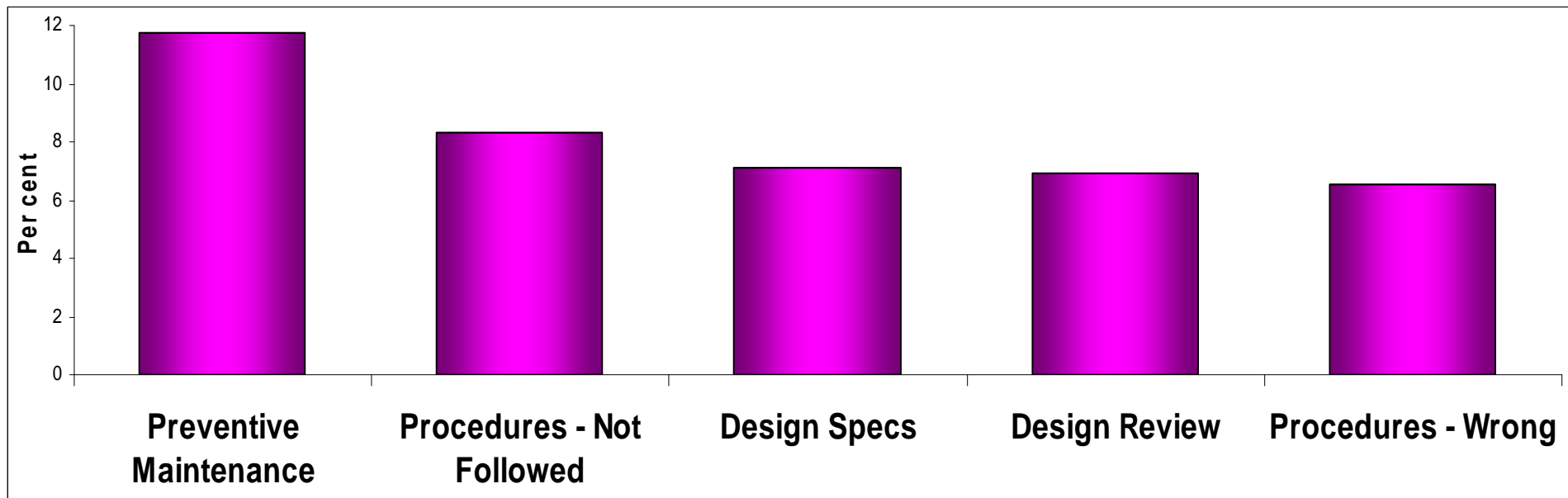
Well kick >50 barrels

Unplanned Event - Implement ERP

The International Regulators Forum (IRF) has devised a severity rating. 'Major' is considered more serious, followed by 'Significant'.

Accidents & Dangerous Occurrences

Top 5 Root Causes



Data from Jul 2008 – Jun 2009

Root Causes

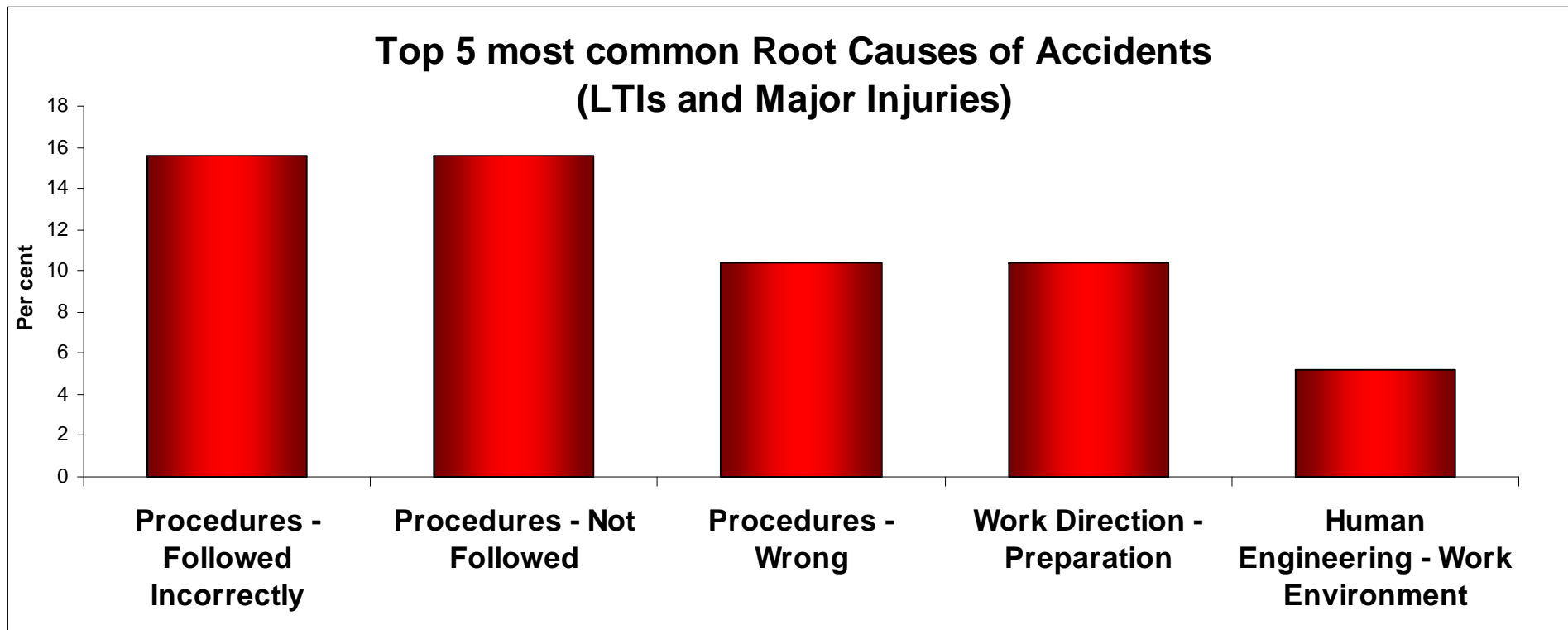
Comparison with previous years

| 2005 | 2006 | 2007 | 2008 | YTD 2009 |
|------------------------------|---------------------------------------|---------------------------|--|---------------------------|
| Procedures - Not Followed | Preventive Maintenance | Preventive Maintenance | Preventive Maintenance | Procedures - Wrong |
| Preventive Maintenance | Procedures - Not Followed | Design Specs | Procedures - Not Followed | Design Specs |
| Design Specs | Human Engineering - Machine Interface | Procedures - Not Followed | Design Specs | Preventive Maintenance |
| Work Direction - Preparation | Design Specs | Procedures - Wrong | Equipment / Parts Defective - Handling | Equipment - Design Review |
| Other | Work Direction - Preparation | Equipment - Design Review | Procedures - Followed Incorrectly | Procedures - Not Followed |

Accidents

Top 5 Root Causes

**Top 5 most common Root Causes of Accidents
(LTIs and Major Injuries)**



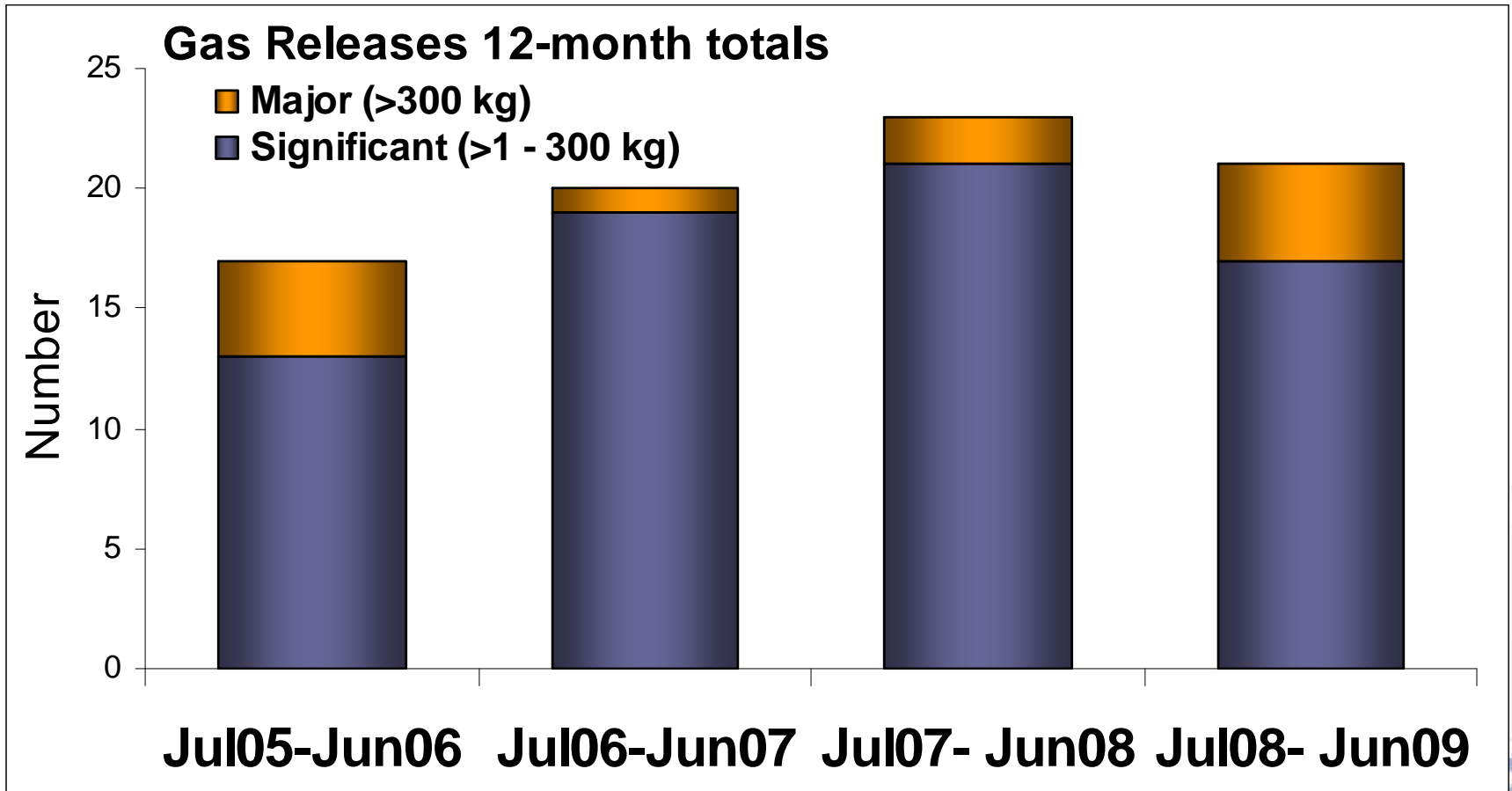
Data from Jul 2008 – Jun 2009

Comparison with IRF injury rates

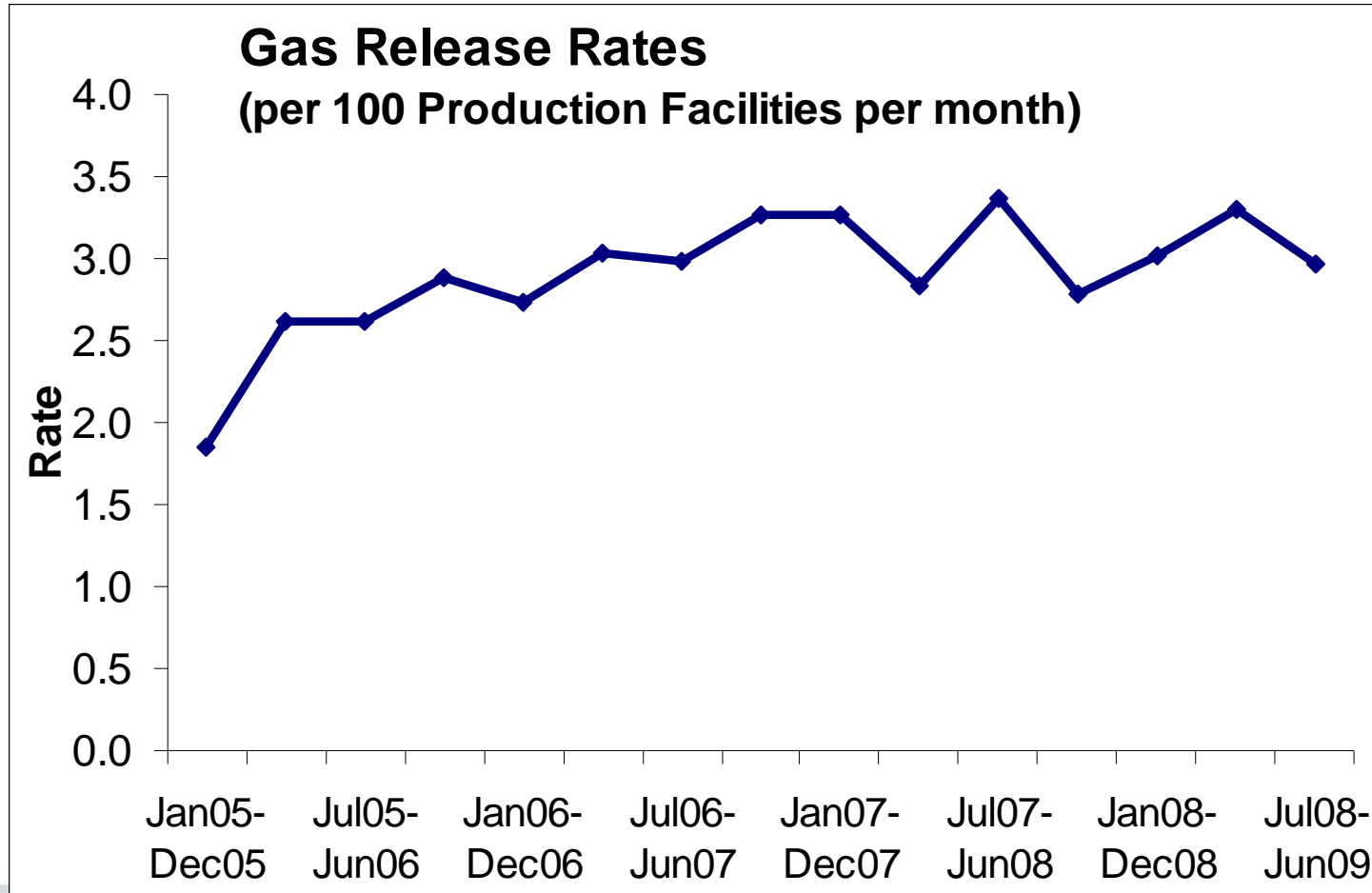
| (ADI + LTI) Rate ≥ 1 day | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|-------------|-------------|-------------|-------------|-------------|
| Australian Rate | | 4.94 | 6.99 | 8.35 | 7.81 |
| IRF Average Rate (Benchmark)* | 3.28 | 3.74 | 3.68 | 3.19 | |
| IRF Best Rate | 2.93 | 2.23 | 2.75 | 2.06 | |
| | US | Netherlands | Netherlands | US | |

Hydrocarbon Gas Releases

Number per year



Even taking into account higher levels of activity ...



As per IRF guidelines – process-related releases only.

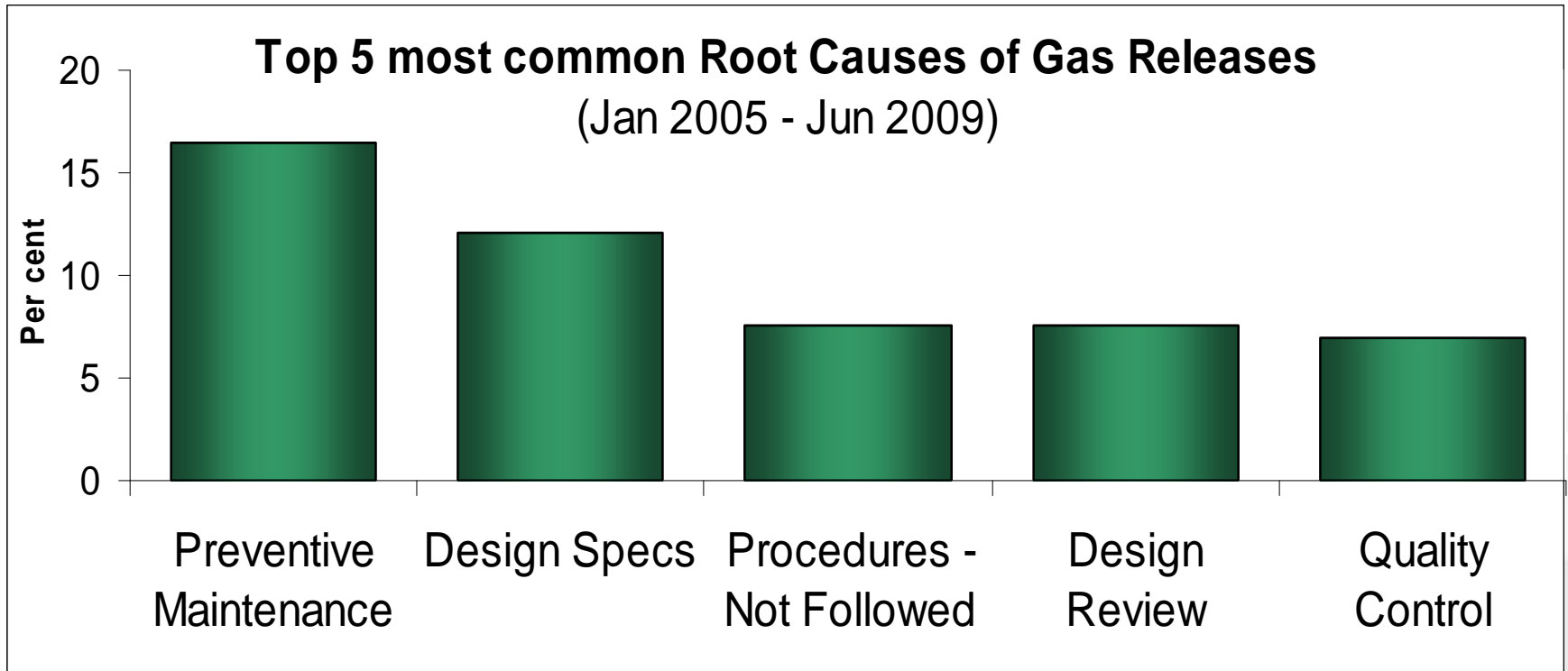
i.e. NOPSA Gas Release Rates only include data from the following facility types: Platforms, FPSOs, FSOs, MOPUs

Comparison with IRF gas release rates

| | Australia Total Rate | International Benchmark Total Rate |
|------|-------------------------|--|
| 2005 | 1.85 | 3.08 |
| 2006 | 2.73 | 3.46 |
| 2007 | 3.27 | 5.16 |
| 2008 | 3.02 | not yet available |

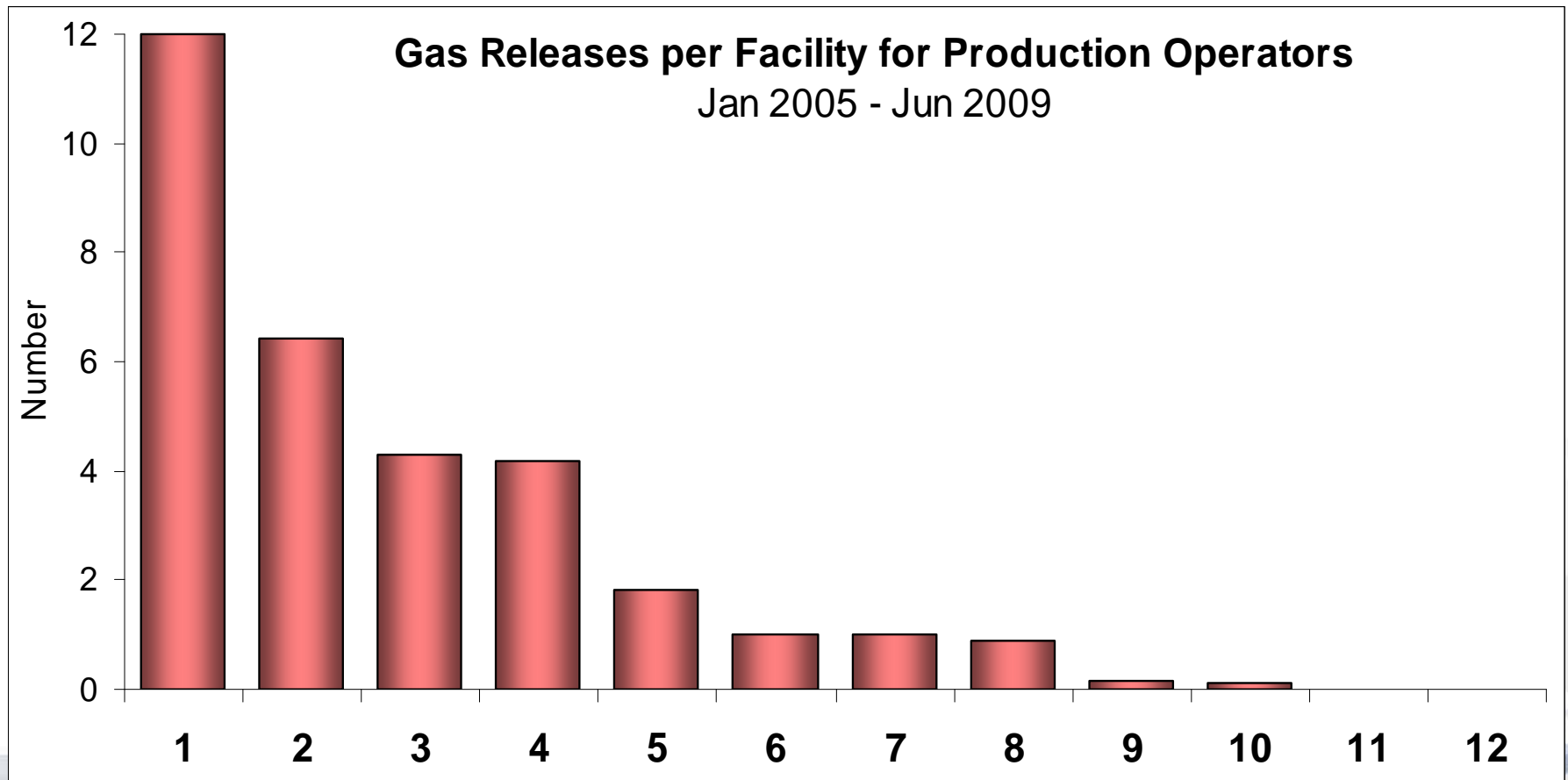
Hydrocarbon Gas Releases

Root Causes



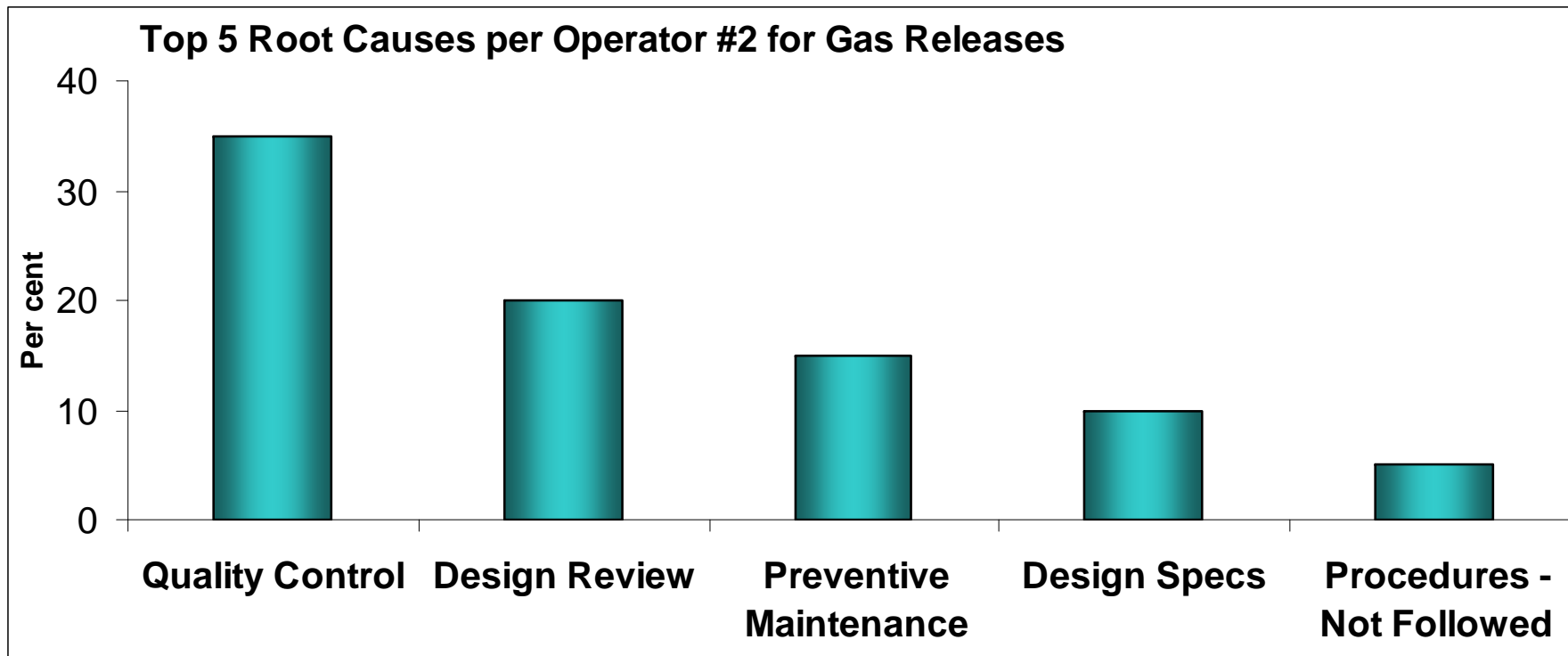
Production Operators

Gas releases per Facility per Operator



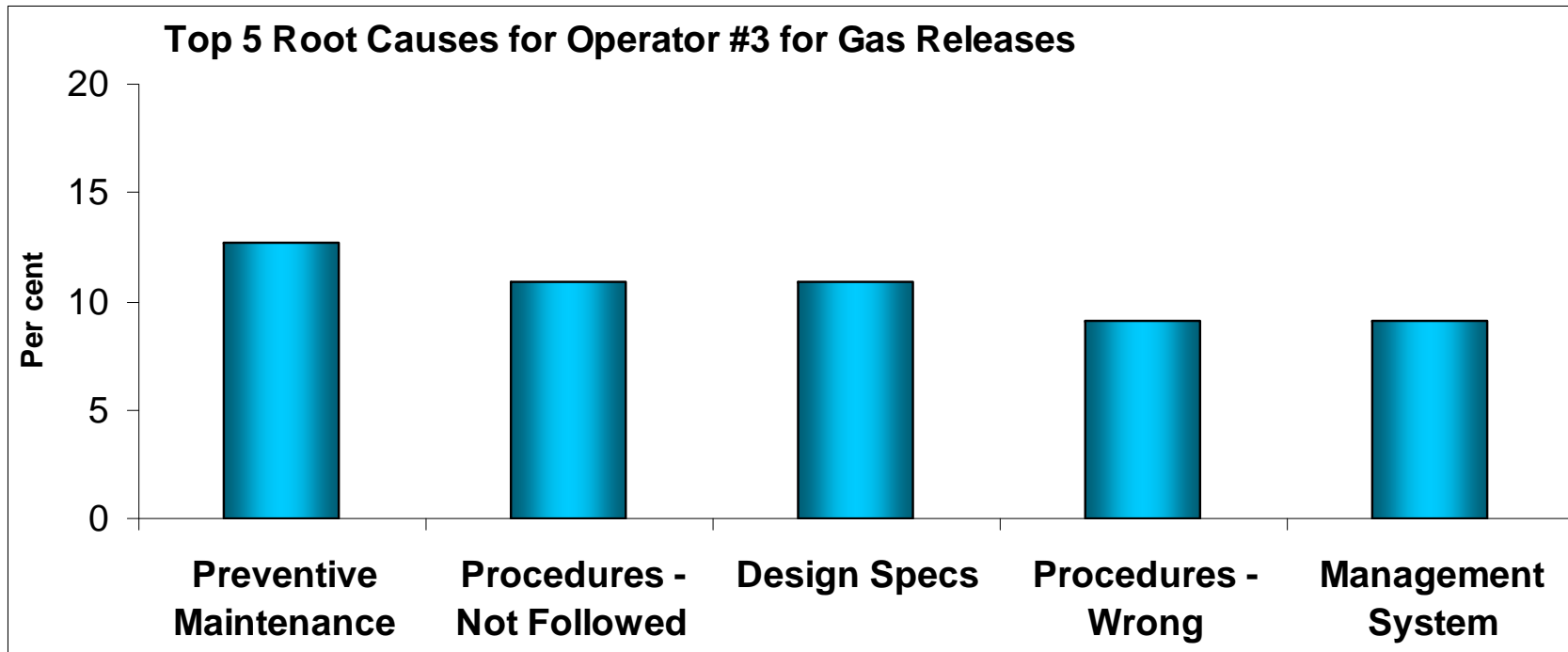
Production Operator # 2

Root Causes



Production Operator # 3

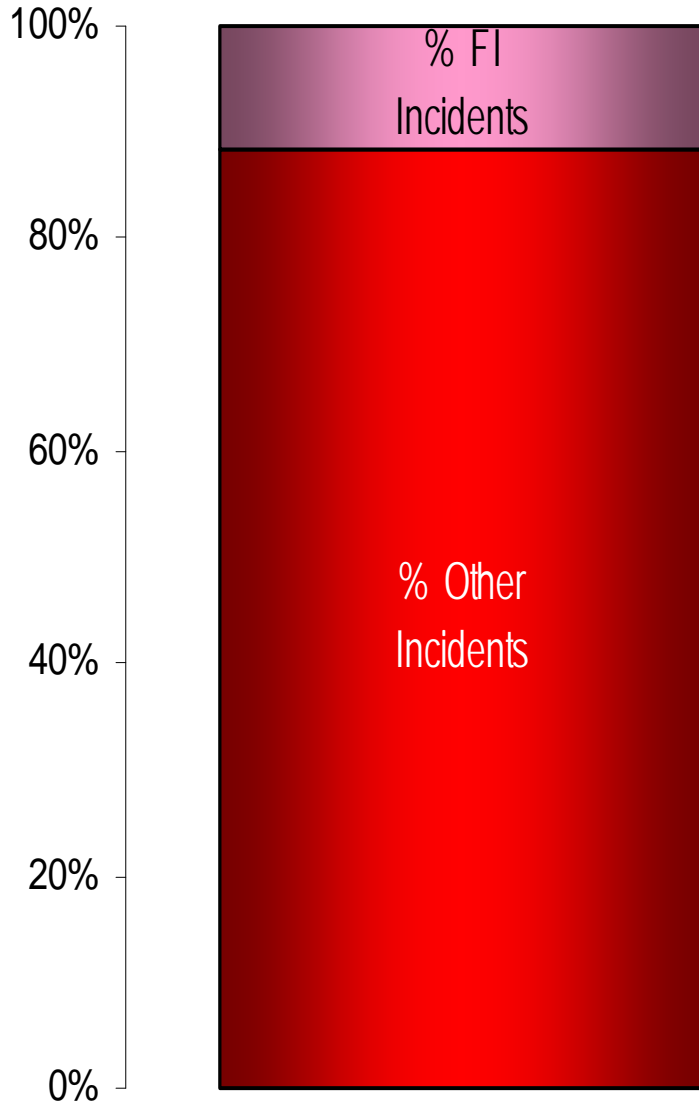
Root Causes



Facility Integrity National Programmes

Overall Proportion of FI Releases

Jan 2005 - Jun 2009

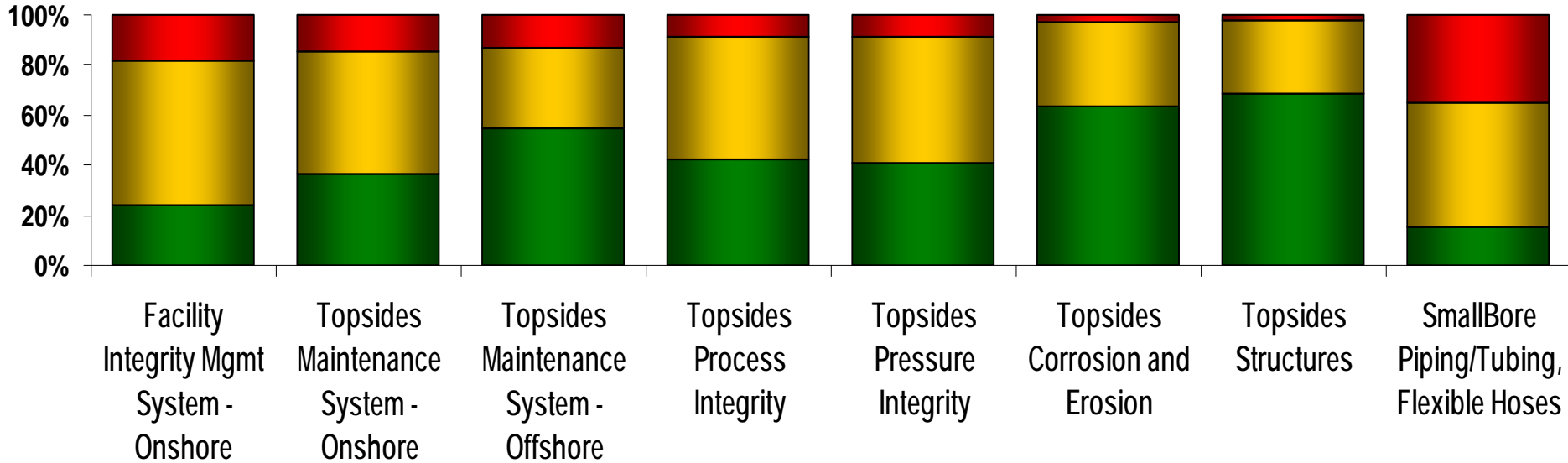


- NOPSA Inspections (FI Prompt sheets)
- Analysis of Accident & Dangerous Occurrences

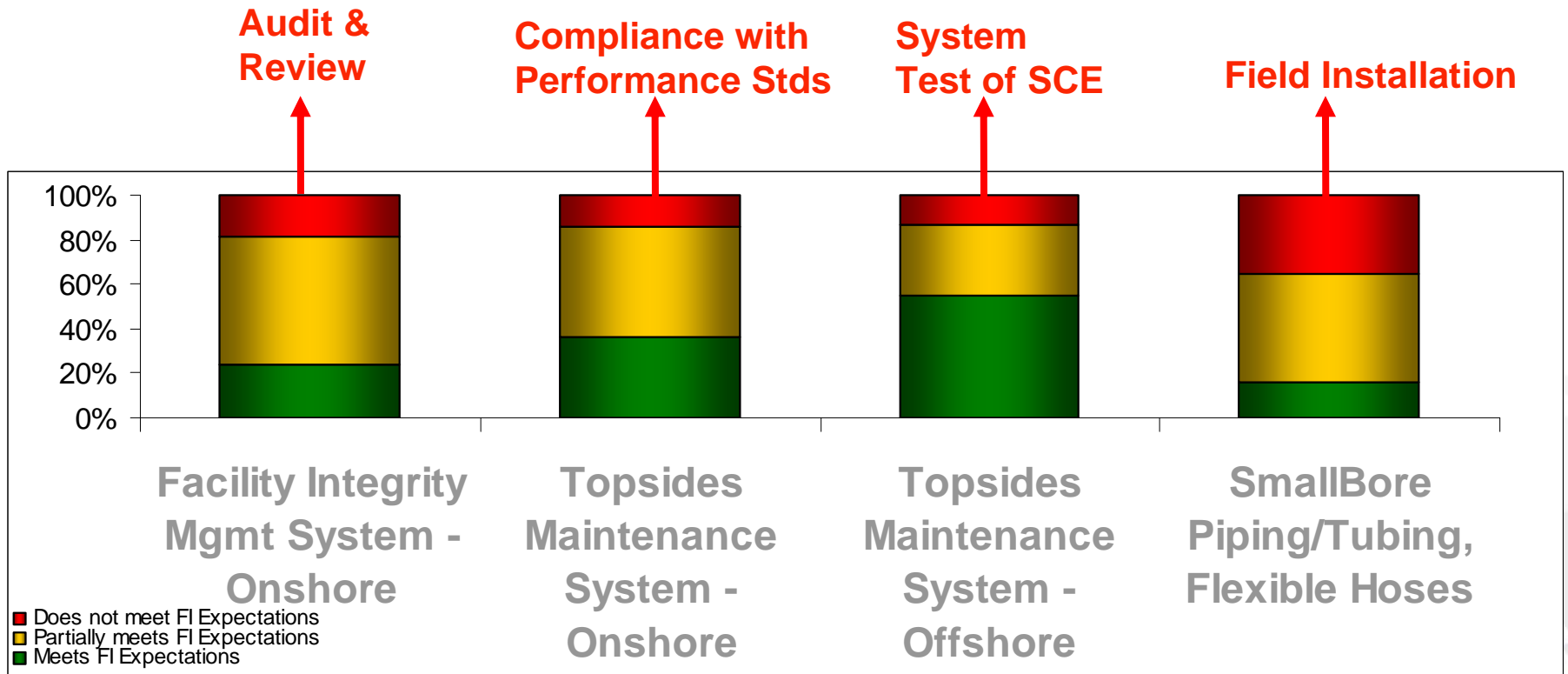
FI: Inspection Results by Focus Areas

Percentage Facilities at each FI Expectation Level
at Jun 2009

- Does not meet FI Expectations
- Partially meets FI Expectations
- Meets FI Expectations



FI: Focus Area Elements that require attention



8 areas, also; process pressure corrosion structures

Key Findings from National Programmes

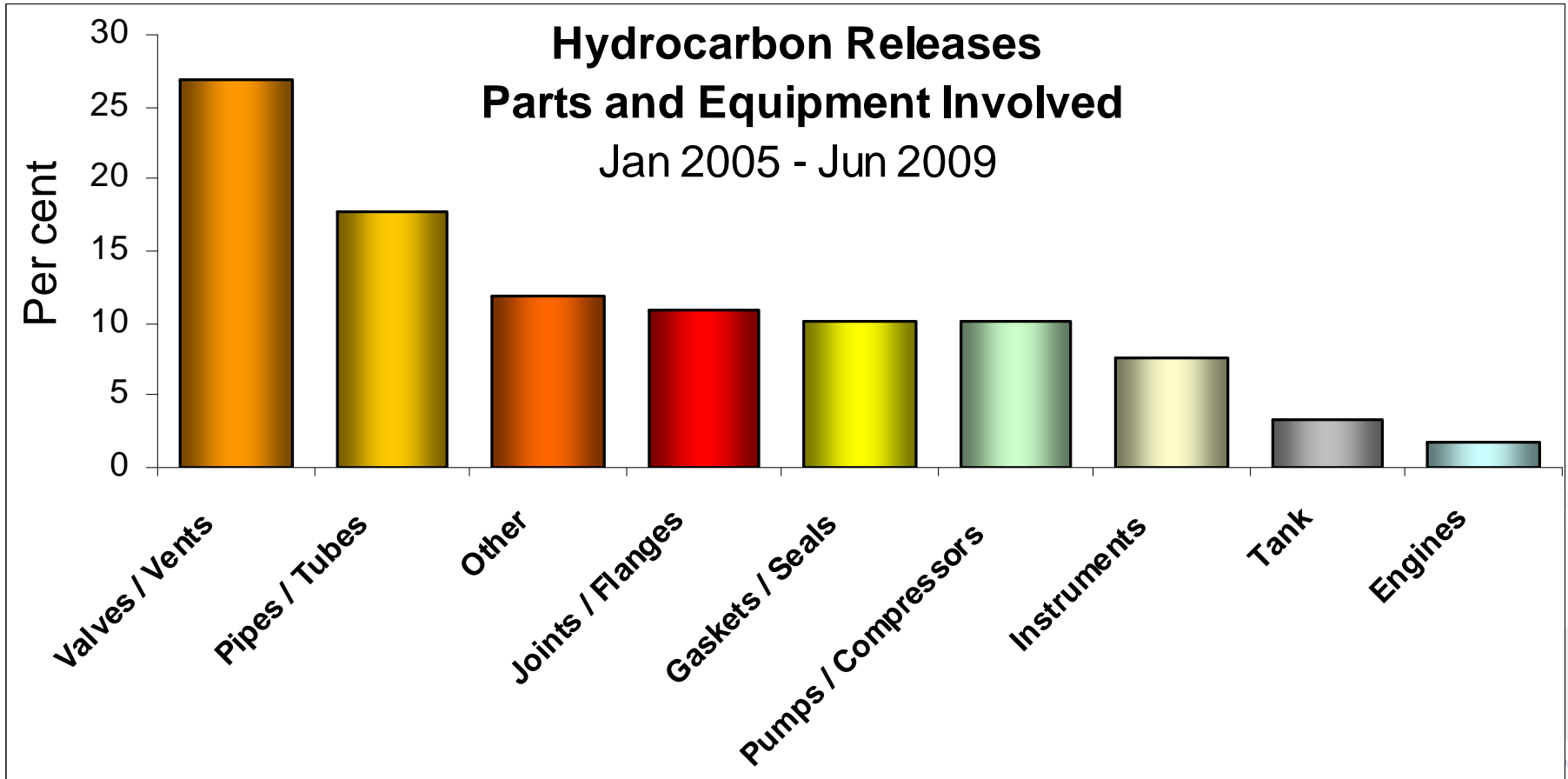
1. NOPSA Inspections (FI Prompt sheets)

- Backlogs in testing & maintenance of safety critical elements
- Monitoring, independent auditing and review

2. Analysis of Accident & Dangerous Occurrences

- Safety Critical Elements: inadequate testing & maintenance
- Equipment and Parts Defects

Parts and Equipment Involved in FI Incidents



HSE (UK) Asset Integrity Programme (KP3)

Maintenance Management System areas of concern:

- Maintenance of SCEs
- Backlog
- Deferrals
- Measuring compliance with Performance Stds
- Corrective Maintenance

Process safety indicators

- APPEA has taken the initiative to trial 3 leading indicators:
safety tours, high potential incidents and audit action close-outs
- AIChE CCPS (www.ccpsonline.org) has proposed a series of leading process safety indicators, including one for mechanical integrity:
SCE inspections completed/Total SCE inspections due

Accidents & Dangerous Occurrences Root Causes

Overall Top 3 (Jan 2005 – Jun 2009)

1. Preventive maintenance

needs improvement

2. Procedures

not used/not followed

3. Design specifications

needs improvement

2009 National Oil & Gas Safety Conference

Thank you