Offshore Safety Directive Regulator

Department for Business, Energy & Industrial Strategy

HSE

Maintaining Safe Operations Leadership Audits

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MSO Aims – Focus on Leadership

- We wanted to:
  - Develop an understanding of the measures, processes & procedures DHs employ to deliver sustainable asset integrity
  - Test DH capability to manage MAHs, given the challenging economic climate (“lower for longer”)
  - See the clear ‘line of sight’ from boardroom decisions to the impact on operations at the sampled offshore installation
  - See effective operational feedback with the right metrics & ‘dashboards’ in place

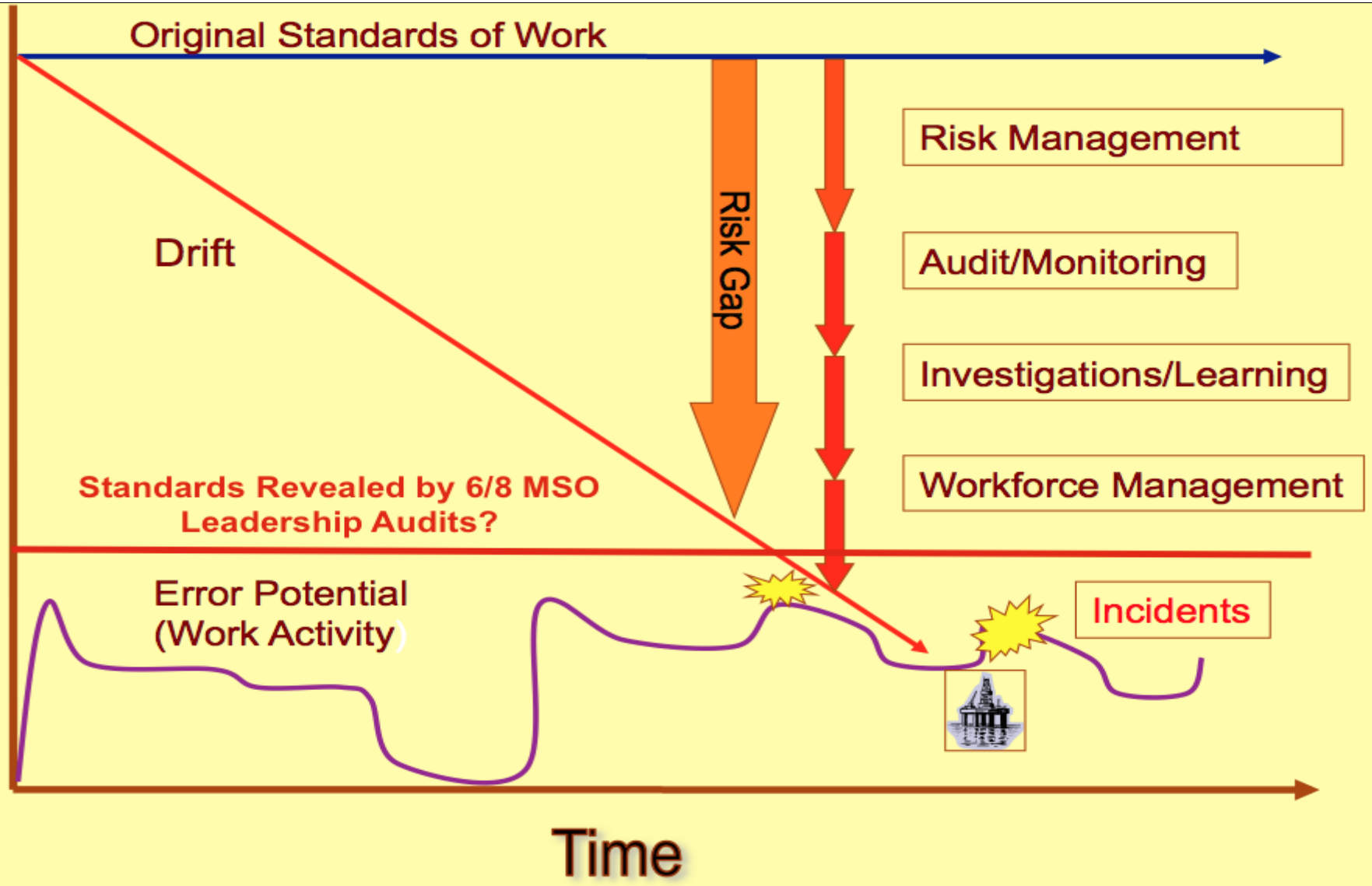
MSO Template & Inspection Guide Scores: Capability & Performance issues

Onshore MSO Template	A	B	C	D	E	F	G	H
Maintenance Basics	30 (BC)		Template	30	40	TNS	TNS	TNS
Organisational Arrangements	30		Not	40 (poor)	40			
Competence & Maintenance Personnel	30		Scored	30	40			
Maintenance Execution	30			30	30			
Recording completed maintenance	30			40	40			
Backlogs	30			40	40			
Deferrals	30			30	40			
ORAs	30			40	40			
Maintenance Monitoring, audit & review	30			40	40			
Verification Basics	30			40	30			
Verification Monitoring, Audit & Review	30			40	40			
Control of Work	30			50 (VP)	40			

Offshore MSO Template	A	B	C	D	E	F	G	H
Maintenance arrangements	30	20 (FC)	Template	30	40	TNS	TNS	TNS
SCE Maintenance	30	30	Not	40	40			
Supervision	30	30	Scored	40	40			
Records	30	30		40	30			
Backlog	30	30		30	20 (FC)			
Deferrals	30	30		40	40			
Corrective Maintenance	30	30		40	40			
Measuring Maintenance Effectiveness	30	20		30	40			
Measuring Quality of Maintenance Work	30	20		40	40			
Verification	30	30		40	30			
ICP's Recommendations	30	30		40	30			
Control of Work	30	NI		50	40			

Inspection Guide Scores	A	B	C	D	E	F	G	H
Control of Work			40		40	40		40
Loss of Containment		30	30	40	40	40	40	40
Maintenance Management	30	30	40	30	40	40	40	40
Operational Risk Assessments	20			40	40	40	40	
SECE Management & Verification		30			40		40	40
Temporary Refuge Integrity		30						

MSOLA looked for "downturn drift", but found systemic SMS weakness in barriers



Leadership inspections (1)

- DHs were addressing the lower oil price by making efficiency and cost savings without significant cuts to either manpower or operational budgets.
- Most DHs were clear that front line maintenance and associated operations have not been cut in any significant way.
- In some cases front line spending had increased.
- IDMSO Inspections required to confirm or challenge the effectiveness of these DH approaches.

Leadership inspections (2)

- A number of DHs are having difficulty reaching levels of safety management that are worthy of maintaining, at least in some areas

- There are weaknesses in some DH's communications
  - to ensure that their messages flow down their organisation
  - are implemented effectively, and
  - in the flow of good and bad news back up to the leadership (**audit, monitoring, KPIs, management visits**, etc).

- Some DHs scored "poor" in a range of the key IG areas. **The failings were fundamental and often appear to be systemic and long lived.**

Leadership inspections (3)

- A number of DHs recognise at least some of their weaknesses in these areas and are attempting to address them.
    - However, there is also a clear need for HSE to help DHs define and articulate what good looks like.
- A number of the DHs recognise that an effective **culture** is central to improving and maintaining standards and they are working hard to improve.
    - However, relative to plant and processes and other people issues, culture can be difficult to define and measure and it is clear that DHs struggle with it. HSE could be doing more to help the industry address this issue.

SMS & Technical Deficiency (1)

- **Failure to undertake effective monitoring, audit and review** of a range of key risk control systems relating to hardware and/or procedures etc and including maintenance and verification systems. How do leaders know they have safe operations?
- **Risk Assessment** for Control of Work etc: Risk Controls LTA / Can't stop job if you don't know when to
- **Operational Risk Assessments** (ORAs, Deviations etc):
  - Inadequate procedures, risk assessments & controls insufficient or not applied.
  - Ineffective or no consideration of cumulative effects.
  - Difference in standards and competency between ORAs for wells and other plant and equipment
- **Inadequate provision of information, instruction, training & supervision** for a range of risk control systems
- **Contractor Management:** Some expect DHs to provide PSM training
- **Investigation and Learning:** Avoid repeating same incident, but don't focus on underlying SMS weaknesses

SMS & Technical Deficiency (2)

- Failures to demonstrate the effective management of structural integrity
- Failure to update P&IDs
- **Operating Procedures unsuitable** and not produced using Safety Critical Task Analysis principles
- **Inability to demonstrate competence for technical roles**, sometimes at up to technical authority role. Some DH's TA resources appeared stretched, but demand was increasing.
- **Ineffective management of small bore tubing**
- Failure to review written schemes of examination for **Risk Based Inspection** schemes
- Maintenance management databases not being correctly populated and/or updated
- **Control of Work** (Permit to work) failings, including risk assessments/risk controls that are not suitable and sufficient and/or failure to follow own CoW procedures. Permits populated by trivia
- **Maintenance procedures not sufficient** to control the risk of HCRs and other incidents that could foreseeably arise from maintenance. Inadequate identification of safety critical tasks
- **Deferrals**: inadequate risk assessments most common failing, but at least one DH had a deferrals process that was not fit for purpose and another didn't have a functioning process.

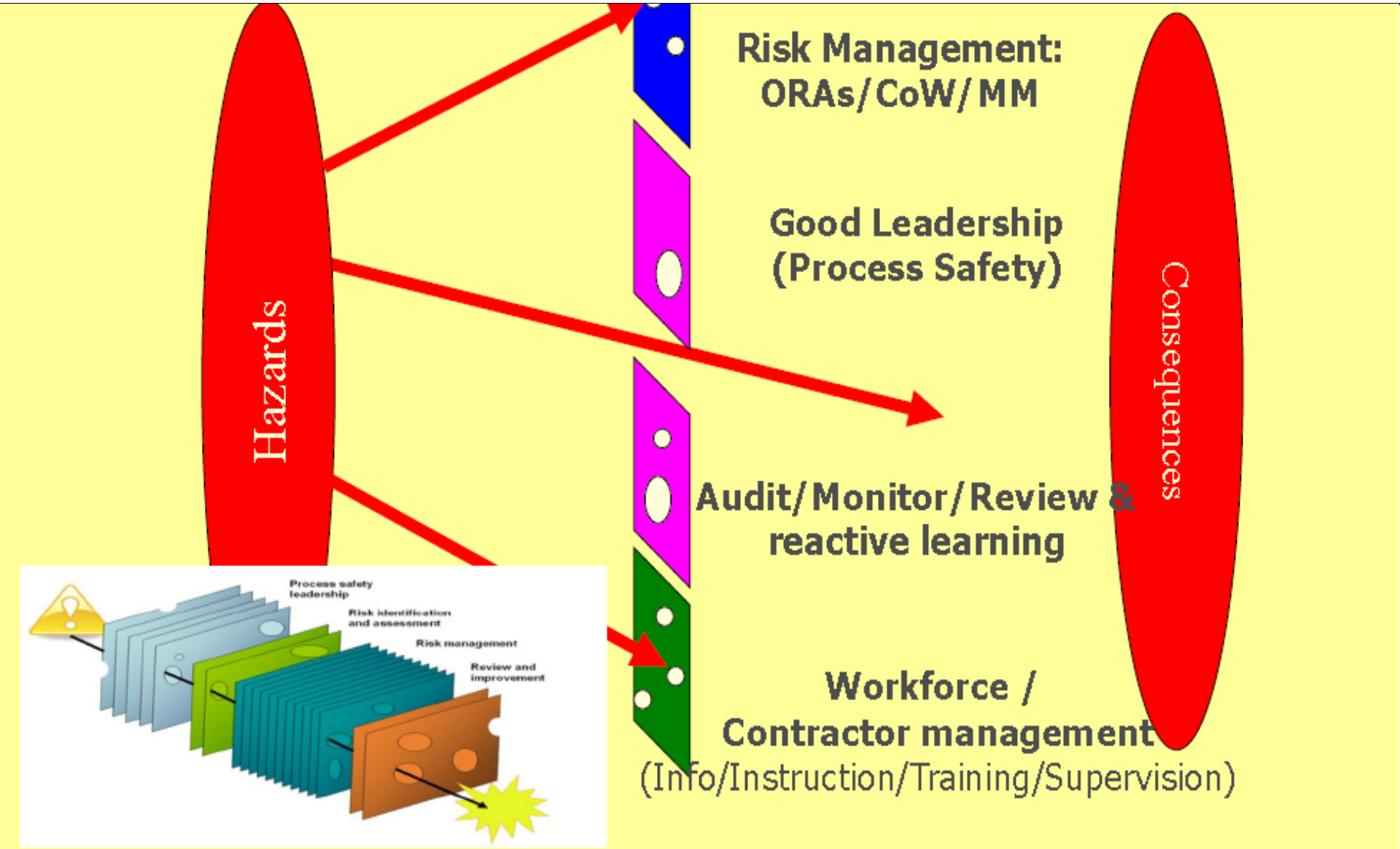
SMS & Technical Deficiency (3)

- Failure to risk assess for attendant vessel collisions
- Review and revision of verification schemes not being undertaken
- Redundant equipment not being managed.
- Inspection work not up to date, including in relation to CUI and structural failure mechanisms.

Common themes appear to be failings in:

- **Risk assessment/risk management**
- **Weakness in audit/monitor/review capability & effectiveness**
- **Provision of information/instruction/training/supervision for offshore workforce**

Some SMS barriers are key components of others so failures may be closer than expected



Balanced Feedback?

SWOT Analysis from the pilot IDMSO inspection

Relative Strengths

- Flat Management Structure – easier to have good line of sight
- Logical structured approach to cost reduction
- Safety Representative portal – good source of information
- Key contractors work in same building
- Handled recent INs maturely and got a lot of buy in from employees
- Safety Critical maintenance planning, looking for opportunities and potential threats to the schedule.
- Implementation of new procedures taking in to account SCTA.
- In-house CRO training for new project equipment.
- Management of DH personnel competency via their CPP folders.
- RBMI system
- Plans for better integration of existing databases
- Trialling new inspection techniques for technically challenging areas
- Safety Critical maintenance planning, looking for opportunities and potential threats to the schedule.
- Open learning attitude

Relative Weaknesses

- Small management team so a risk to continuity if key players were unavailable (Integrity Manager and Maintenance and Reliability Manager).
- Maintenance Instructions not up to same SCT standards of Production procedures
- Suitability/comprehensiveness of written instructions and results recording associated with safety critical element maintenance.
- Wells SCT deferrals have poor risk assessment
- Lack of contingency planning for Wells incidents
- High volume of inspection and remedial work as a legacy of the previous, weak structural inspection programme.
- Redundant equipment taking up inspection resource that could be better deployed
- Risk perception associated with safety critical maintenance deferrals.
- Contingency planning in the event of a task going wrong.
- Potential network gaps (small organisation)
- Compliance rather than effectiveness and compliance verification

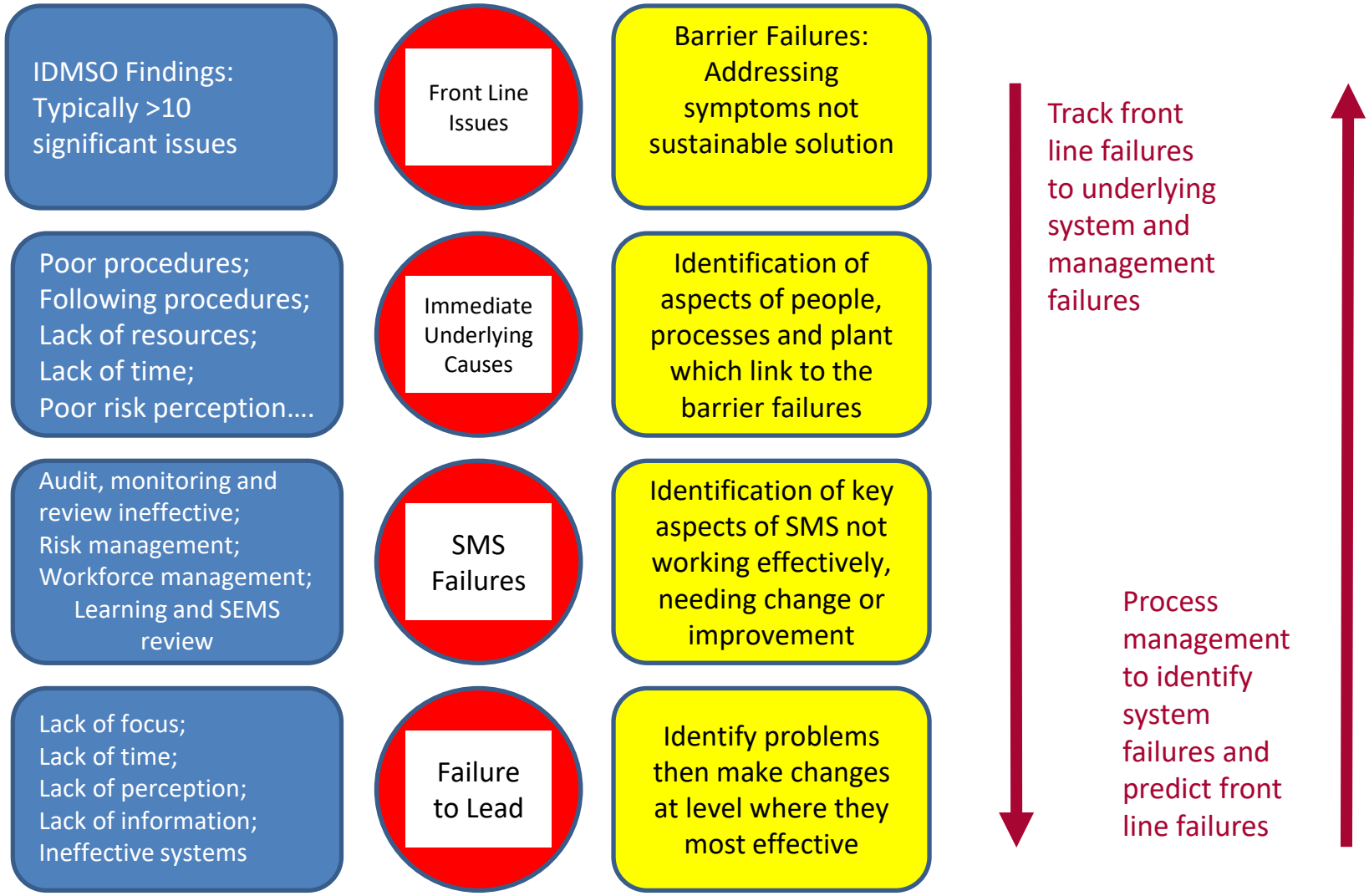
Potential Opportunities

- Safety Representatives engaged in MAH prevention and keen to do more.
- Use ICP more to validate design and inspection planning.
- Delta V simulator for project to improve process understanding , troubleshoot problems and optimise operations project allowing baselining of new vessels and pipework in process stream
- Removal of redundant equipment post-project will reduce costs and simplify plant layout
- Re-vamp area inspections to bring in OIEs from other installations, safety reps or other non-inspection personnel to have a 'fresh eyes' approach
- Use of verifiers 'fresh eyes' on what is safety critical – focus on what is important and improve holistic understanding
- Use of interaction of TAs and offshore personnel to improve operational understanding designed to enhance resilience – consistent with a systems approach to aging assets.

Potential Threats

- A lot of Legacy activities plus new Activities – how will the small team / limited financial resources achieve what is needed
- Wells Team appear not fully integrated with rest of business for Risk Management
- Lack of complete line lists creating 'known unknowns' e.g. insulated lines
- Subsea inspection history and unknowns due to incomplete inspections
- Management of small bore tubing across the installation prior to an inspection campaign being carried out to assess the condition. (Also open ends on systems)
- Sand Management associated with the second stage separation units introducing increased risks to personnel.
- Concentrate on learning from others (with a similar approach) without looking at the wider lessons - e.g. barrier approach and resilience.

Sustained Capability through Leadership



What's next for the Regulator & Industry?

For us: Continue with ID MSO Leadership Audits (4 in 18-19)

- Issue HCR challenge to Industry: Letter to leaders from Chris Flint which will focus on Operational Integrity capability & performance (**HCR Letter sent 26 April 2018**)
- Incorporate learnings and methods from both MSO & OI into:
    - Inspections programme and Development of next phase of intervention strategy
- Release of Step Change HCR Reduction Toolkit and LoC IG on 8 March.
- Repeat of these messages at Safety 30 Conference

For you: Reflect and act on the links between front line safety issues and leadership characteristics

- Are you right to be confident in your arrangements for monitoring/audit/review; instruction/training/supervision & risk management?
- You know your installations and systems better than we ever can. How do you demonstrate to us that you are aware of your barrier failures or weaknesses at all levels and are addressing these?

Maintaining Safe Operations: Leadership Audits

Thank you & any questions?