Safety Culture in the Offshore Oil and Gas Industry - A Shell View

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Where Shell Operates around the globe …

- One of the worlds largest oil and gas producers*
- Largest equity LNG supplier*

* Among International Oil Companies

Shell's Safety Culture starts with our HSSE Control Framework …

Aim

- The Shell Group's HSSE&SP Control Framework provides a single source for the Group's expectations covering health, safety, security, the environment and social performance

Approach

- The Shell Group's HSSE & SP Control Framework
  - ✓ Applies to our Upstream, Downstream and Projects Businesses
  - ✓ Includes Mandatory requirements
  - ✓ Also includes guidance/reference information
  - ✓ Each Shell Business is expected to implement the HSSE&SP Control Framework

Our Control Framework has 35 Manuals on Personal and Process Safety…

HSSE Management System Manual

- Competence manual section and specificati
- Emergency Response
- Incident Investigation and Learning
- Impact Assessment
- Joint Venture HSSE Requirements
- Leadership and Commitment
- Management of Change
- Management Review
- Managing Risk
- Organisation, Responsibilities and Resources
- Performance Monitoring and Reporting manual section and specification
- Permit to Work
- Planning and Procedures
- Policy and Objectives
- Risk Assessment Matrix

Personal Safety Manual

- Confined Space Work
- Electrical Safety
- Hotwork
- Ionising Radiation
- Working at Height

Transport Manual

- Driver Safety and Professional Driver Safety

Environment Manual

- Ozone Depleting Substances
- Waste

Process Safety

- AIPSM Application Manual , AIPSM Standards Transition Manual, DEM1, DEM2. Overrides

Health Manual

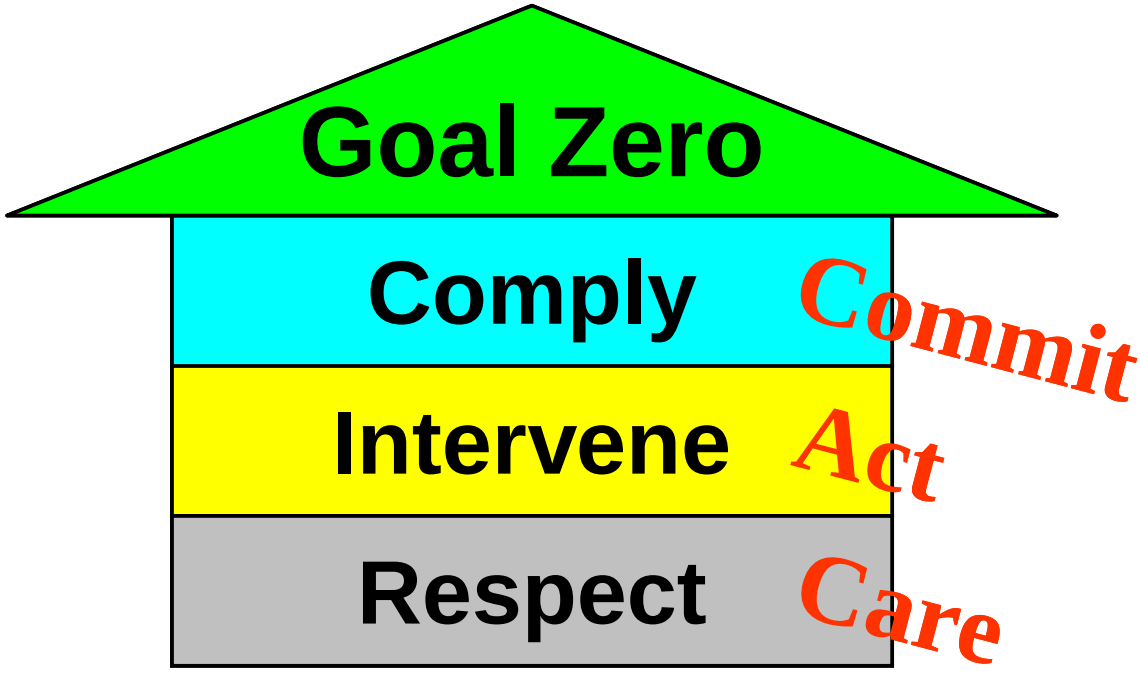
- Asbestos
- Exposure to Acute Toxic Substances
- Fitness to Work
- Food and Drinking Water Safety
- Health Risk Assessment
- Hearing Conservation
- Legionella
- Malaria

Contractor HSSE Manual

Security Manual

Our Safety Culture is based on our three Golden Rules …

"Our House"



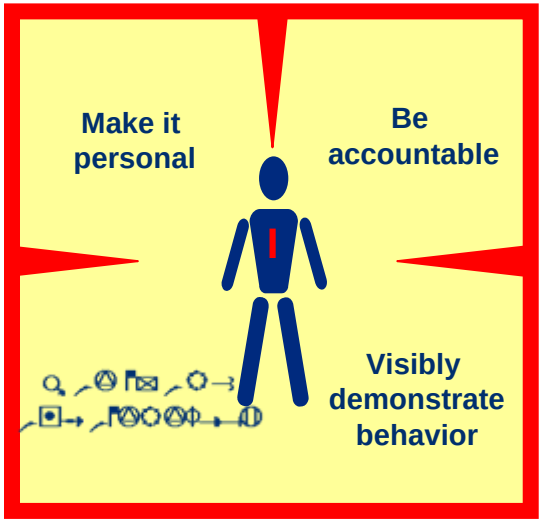
We grow our Safety Culture with a Goal Zero mindset …

Safety is a Value

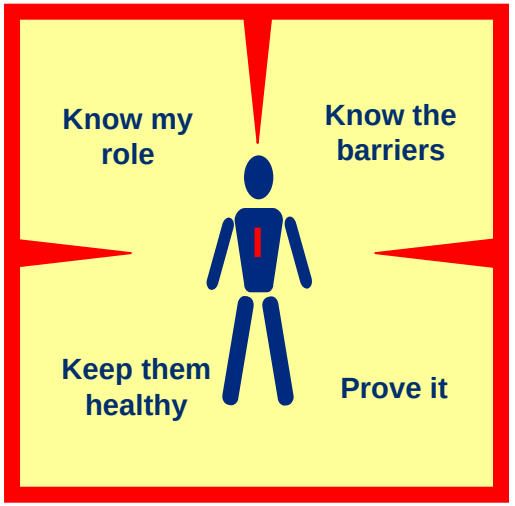
Goal Zero is a Mindset – No harm to people. No leaks.

Chronic Unease is a product of our behaviours.

Personal Safety



Process Safety

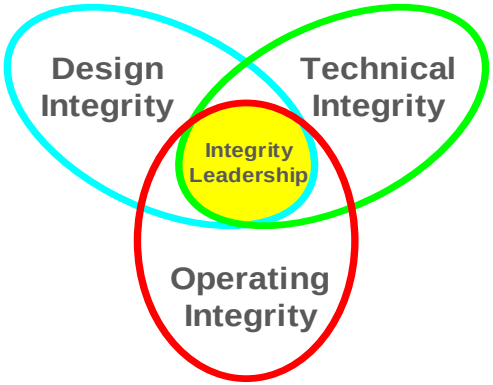


Our Life-Saving Rules show our commitment to people …

1	2	3	4	5	6
Work with a valid work permit when required	Conduct gas tests when required	Verify isolation before work begins and use the specified life protecting equipment	Obtain authorization before entering a confined space	Obtain authorization before overriding or disabling safety critical equipment	Protect yourself against a fall when working at height
					
7	**8**	**9**	**10**	**11**	**12**
					
Do not walk under a suspended load	Do not smoke outside designated smoking areas	No alcohol or drugs while working or driving	While driving, do not use your phone and do not exceed speed limits	Wear your seat belt	Follow prescribed Journey Management Plan

As do our Process Safety Basic Requirements (PSBRs) …

1. SAFE SITING OF PORTABLE BLDGS
2. ESD VALVES ON PLATFORM RISERS
3. TEMPORARY REFUGES
4. PERMIT TO WORK
5. MANAGEMENT OF CHANGE

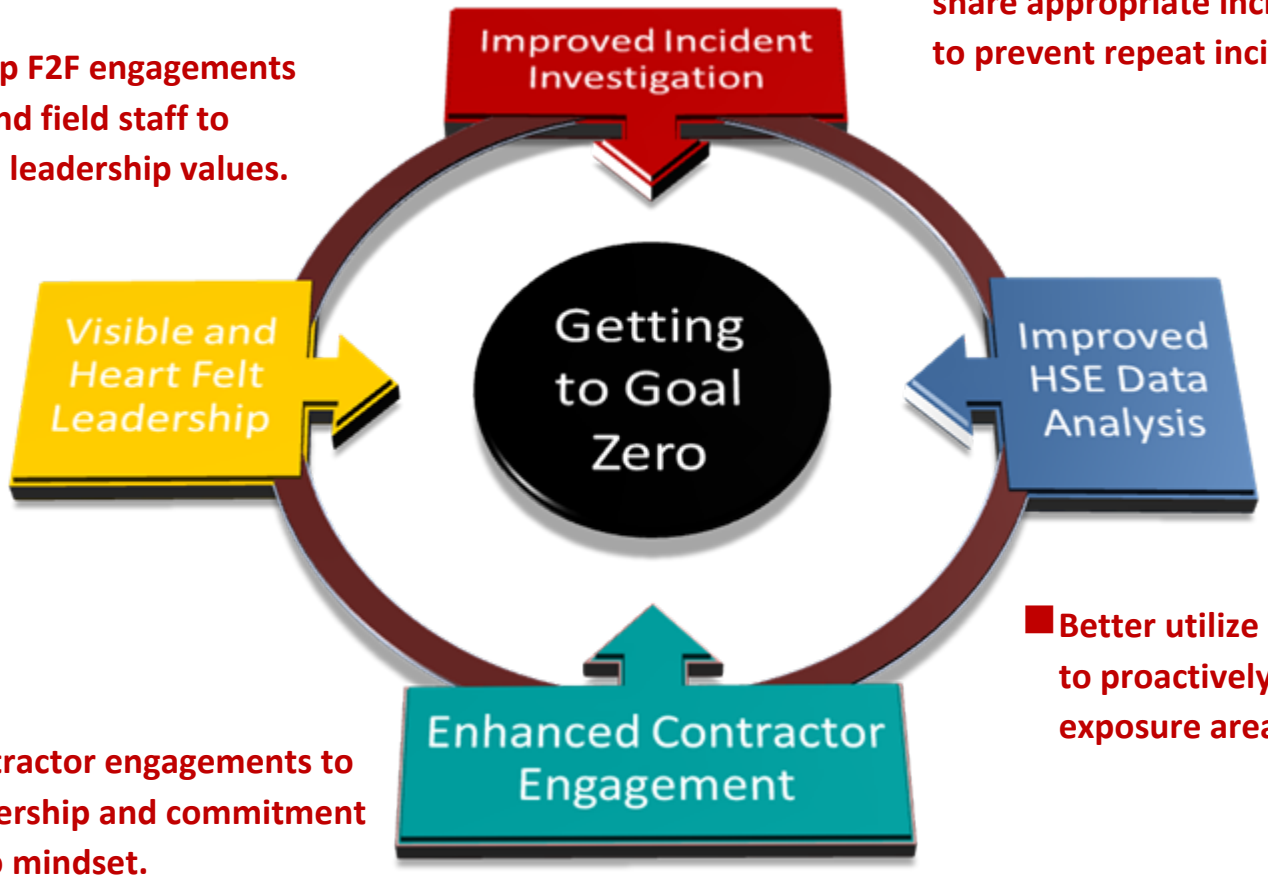


6. AVOID LIQUID RELEASE TO ATMOSPHERE
7. AVOID TANK OVERFILL FOLLOWED BY VAPOR CLOUD RELEASE
8. AVOID BRITTLE FRACTURE OF METALLIC MTLS
9. ALARM MANAGEMENT
10. SOUR GAS (H2S)
11. DEEPWATER WELL DESIGN AND CONSTRUCTION

And where we focus our Safety Leadership attention …

- **Sr. Leadership F2F engagements with office and field staff to demonstrate leadership values.**

- **Develop an effective methodology to share appropriate incident learning's to prevent repeat incidents.**

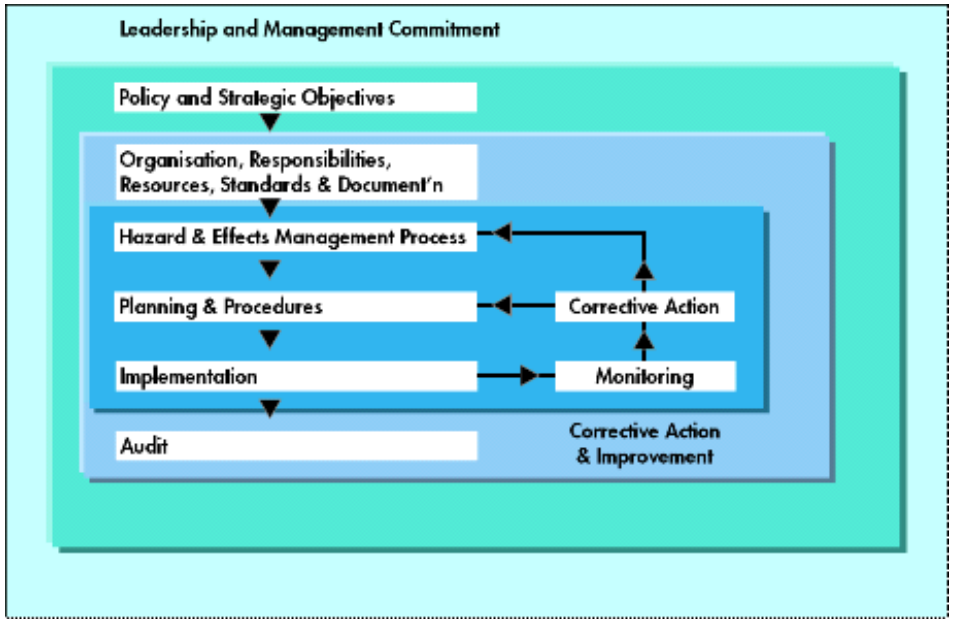


- **Better utilize existing HSE metric s to proactively understand key exposure areas.**

- **Sr level contractor engagements to ensure ownership and commitment to Goal Zero mindset.**

And we have verified our HSE MS equals all the reqts of SEMS …

Shell's HSE MS – 8 Elements



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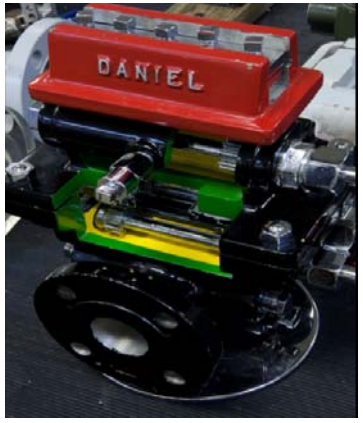
Safety & Environmental Management System (SEMS) - 13 Elements

We consider a good training program essential to a strong Safety Culture...

Shell Robert & Kenia Training Centers

- **HUET Training**
- **Super Safety, Life Saving Rules**
- **Fire Fighting, Crane Operations**
- **Defensive Driving**
- **Waste Management and Dept of Transportation Hazard Materials**
- **Open Water Rescue**
- **Major Emergency Management**
- **Behavioral Based Safety Management (BBSM)**



In summary, what are attributes of a great Safety Culture...

- **Safety is part of everything we do**
- **Consistent leadership behaviours**
- **Great teams**
- **Open and honest communication**
- **Common goals**
- **We are professional and learning is valued**
- **Standardized practices**
- **Consistent rules which apply to all parties**
- **Standardized metrics**
- **Rigorous assurance processes in place**

“It is a pleasure to come to work and we are proud to work here.”

“It’s a safe and secure workplace.”

“Our leadership walk the talk!”

Back Up Slides

Where Shell Operates in the GoM …

- Deepwater Platforms
- Non-Operated
- Shelf Platforms
- Developments

HOUSTON

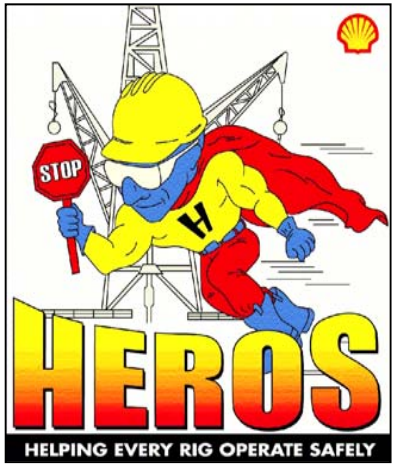
BZ A19
WC-565
NPI-975
Perdido
Auger
Enchilada
Boxer
Cougar
WD-143
Cognac
Ram Powell
Appomattox
Olympus
Na Kika
Vito
Mars
Ursa
Brutus
Holstein

Infrastructure

- 190 wells
- 6 Floating Structures
- 13 Manned Platforms
- 9 Unmanned Jackets
- 5 Non-Operated Ventures

Shell HEROS Program

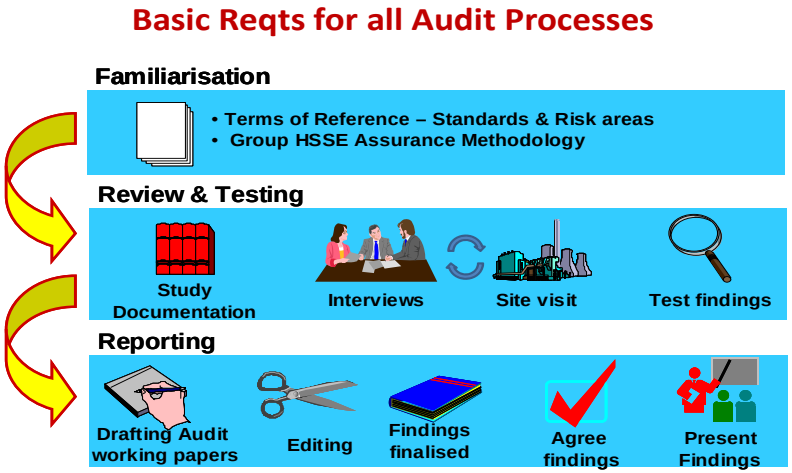
- **HEROS formalizes EPW Wells "Stop Work" expectations by clearly establishing and communicating:**
  - **Stop Work Intervention Policy**
  - **Roles and Responsibilities**
  - **Intervention Protocols**
  - **Reporting**
  - **Follow-up**
  - **Recognition**
  - **Training**



Helping
Every
Rig
Operate
Safely

A key ingredient of our Safety Culture is a robust Assurance Process …

- **Should have multiple levels of assurance;**
  - **Corporate level – audits against company stds/policies, reports to Corporate Business Assurance Committee (BAC)**
  - **Business level - audits against local stds/policies, including regulatory reqts**
  - **Local level - self-assessment against local stds/work procedures**

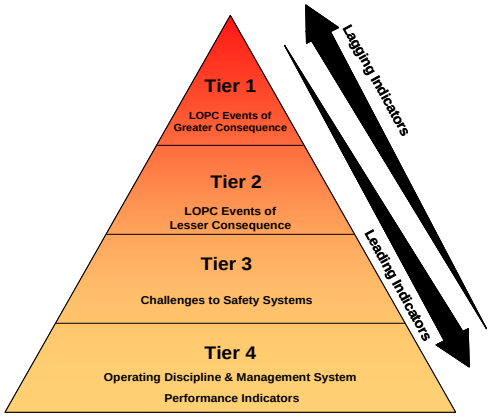


As are measurable Safety Metrics …

- **Management should review asset integrity and process safety performance metrics on a regular basis**
  - **Sr/Executive Management – Quarterly**
  - **Operations/Line Management – Weekly/Monthly**
  - **Field Supervision – Daily/Weekly**

- **Performance metrics should contain a good mix of leading and lagging indicators**
  - **Leading: alarm rates, PM/CM schedule compliance, overdue MoCs, Near Misses**
  - **Lagging: HC spills, OSHA Recordables, fires**

Industry PS Performance Metrics - API RP 754
Four Tiers



Safety measures in place for offshore drilling …

INCIDENT PREVENTION + RESPONSE

Keep within Control Limits

Reduce Likelihood

- Tech. Standards & Procedures
- Equipment testing, certification
- BOP, etc.
- Competent staff
- Rig Safety Case
- Robust multiple barriers

Mitigate Consequences

Plan for Recovery

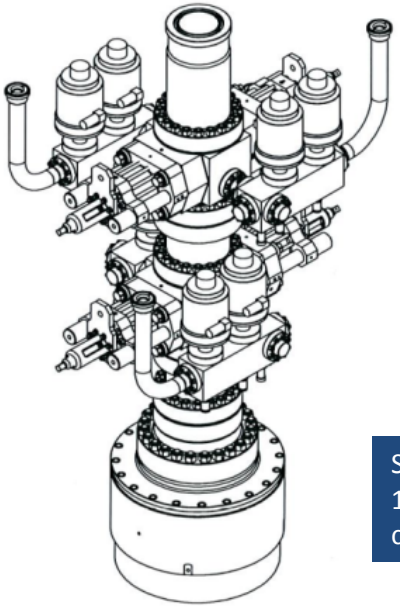
Re-Instate

- Well Control Incident Plan
- Oil Spill Response Plan
- Oil Spill Containment System (JIP)
- Technical Expertise

Safety measures in place for offshore drilling …

SHELL'S CAPPING CAPABILITIES

- Multi-layered well control minimizes risk
- All existing Shell deepwater wells can be capped
- Shell-owned capping stack, covers Shell's global portfolio of deepwater wells
- Alaska-specific cap & containment system



Shell 13-5/8" 10Kpsi dual ram capping stack.

INDUSTY COLLABORATION & RESPONSE

- **Subsea Well Response Project** – Operator; enhances industry's ability to respond to major subsea well control incidents globally.
- **Marine Well Containment Company** - founding and permanent Board Member; enhancing cap & containment capability for the Gulf of Mexico.

SUBSEA WELL RESPONSE PROJECT

MARINE WELL CONTAINMENT COMPANY

Safety measures in place for offshore drilling …

Single Ram Capping Stack

Single Ram Capping Stack

- **Able to cap a well up to 10,000 ft water depth, dual barrier – ram and cap**

Hydraulic Accumulator

- **Accompanied by a subsea hydraulic accumulator skid that is used to actuate all hydraulic requirements**

Hydraulic Accumulator Skid

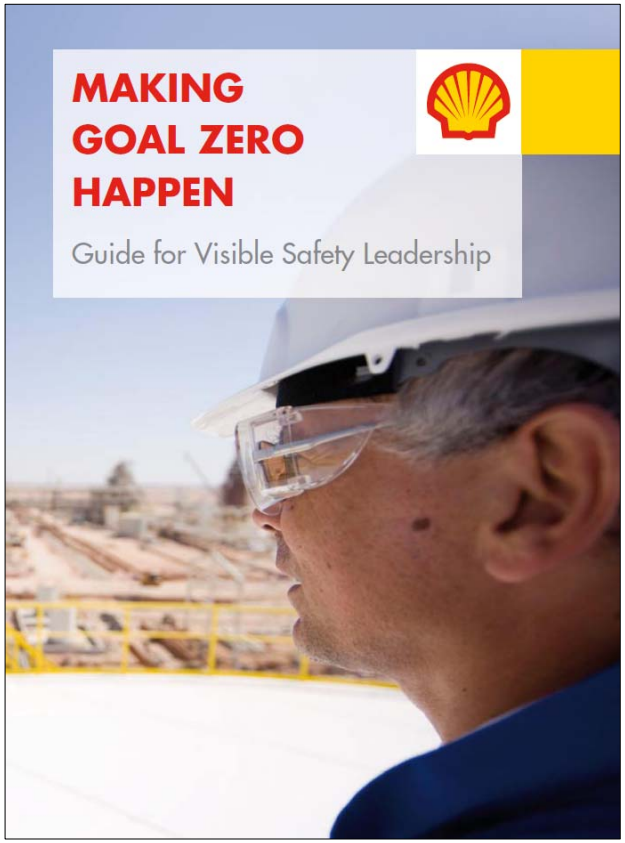
Leadership Demonstration of Chronic Unease out in the field …

Engage with those doing the work – ask "*what could go wrong, how did you assess the risk and what controls are in place to prevent it*?"

Welcome bad news – "*what do you not want to tell me?*" - and react appropriately

Watch traffic light reporting – *challenge the greens and support the reds*

Be on the lookout for weak signals that people are concerned with the current situation, tune into the rhetorical question, the quizzical look on people's faces, the vague statement(s) or unsure answers.

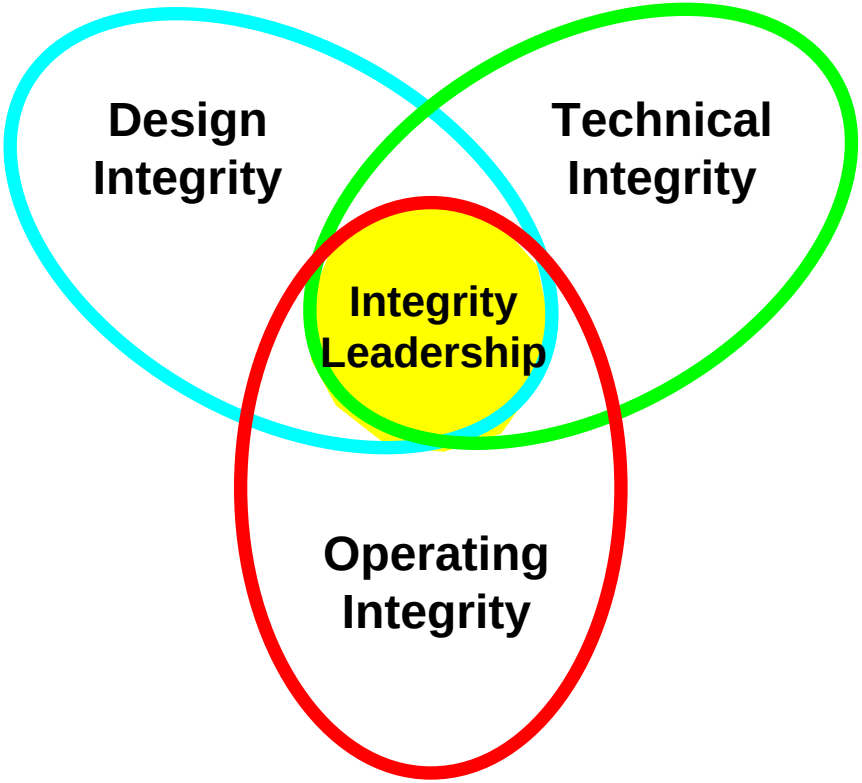


We support a goal-based safety management program approach …

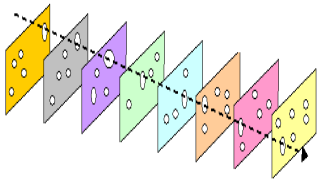
- **Empowers safety leaders and promotes a strong safety culture**
- **Encourages innovation and technological advances**
- **2007-2010 International Regulators Forum (IRF) data suggests that Safety Management Regimes perform better and are more efficient**
- **Aligns with recommendations of Macondo investigations and international experts**
- **Consistent with the direction of leading IRF member programs (i.e. Norway, UK, the Netherlands, Australia)**

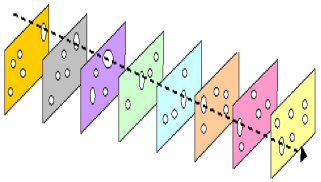
Our Process Safety aspiration – "Our Assets and People are safe and we know it".

We design and build so that AI-PS risks are As Low As Reasonably Practicable (ALARP)



We maintain the hardware barriers





We work within the operational barriers