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

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VP Health, Safety and Environment (HSE) - Deepwater

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

Aim

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

Approach

- The Shell Group's HSSE & SP Control Framework
  - ✓ *Each Shell Business is required to implement the HSSE&SP Control Framework*
  - ✓ Applies to contractors/subcontractors also
  - ✓ Includes Mandatory requirements
  - ✓ Also includes guidance/reference information

Our Control Framework has 35 Manuals on HSE related activities…

HSSE Management System Manual

- Competence manual section and specification
- 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

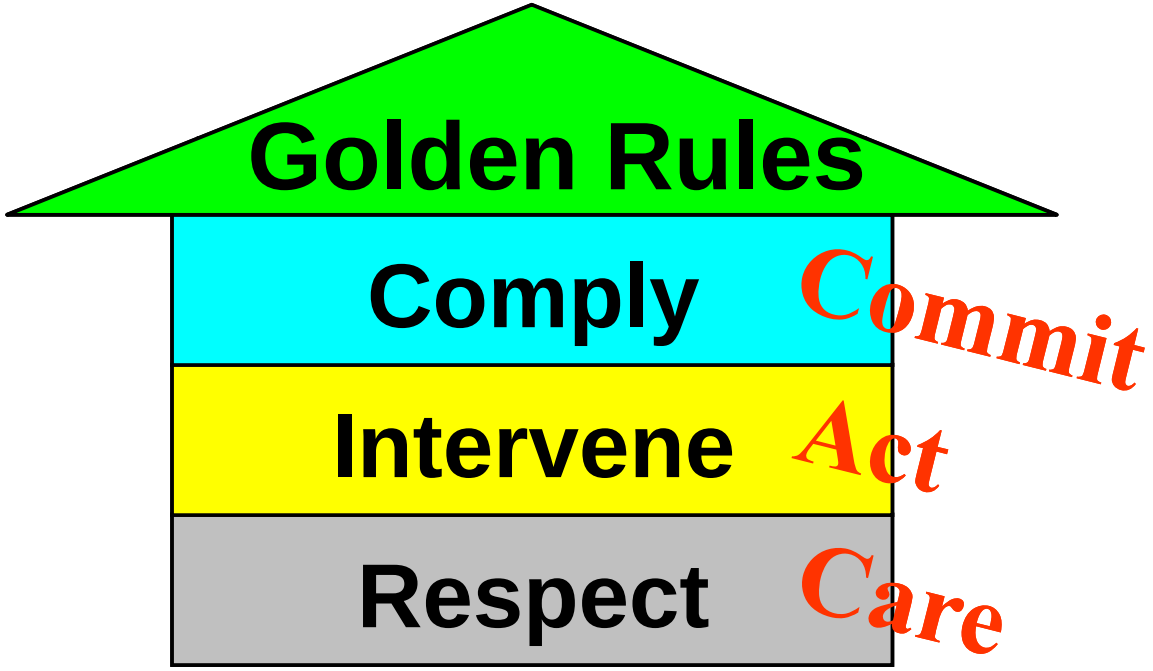
- Asbestos
- Exposure to Acute Toxic Substances
- Fitness to Work
- Food and Drinking Water Safety
- Health Risk Assessment
- Hearing Conservation
- Legionella
- Malaria

Contractor HSSE Manual

Security Manual

Our Safety Culture is based on our three Golden Rules …

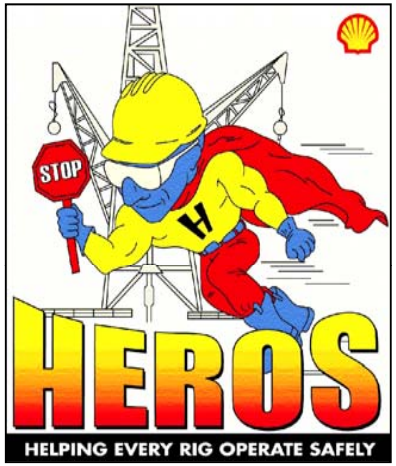
«Our House»



Goal Zero is a Mindset

An Example of our HEROS Program for Stop Work Authority….

- **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**

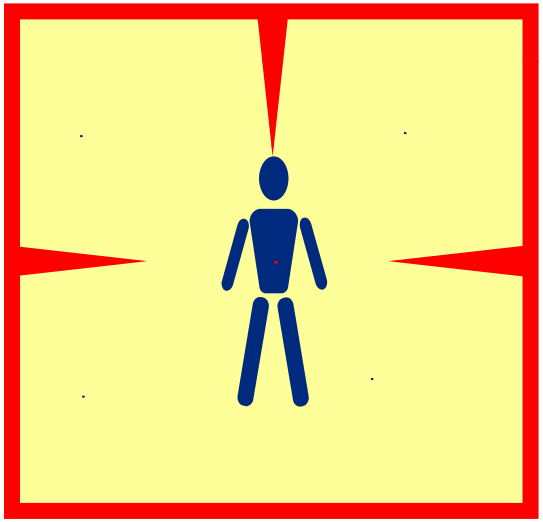


Helping
Every
Rig
Operate
Safely

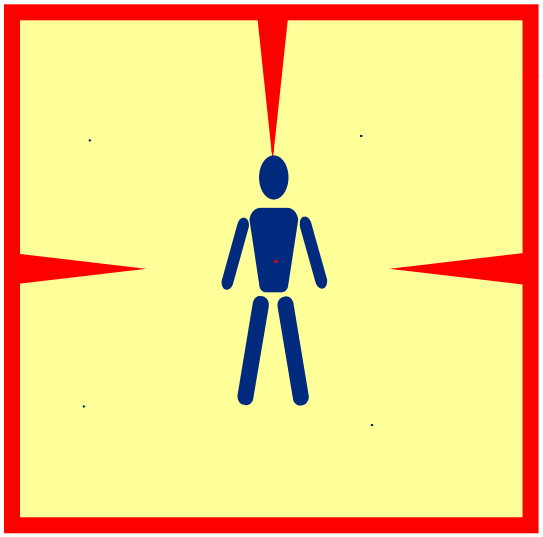
We grow our Safety Culture with a mindset of care …

Safety is a Value

Personal Safety



Process Safety



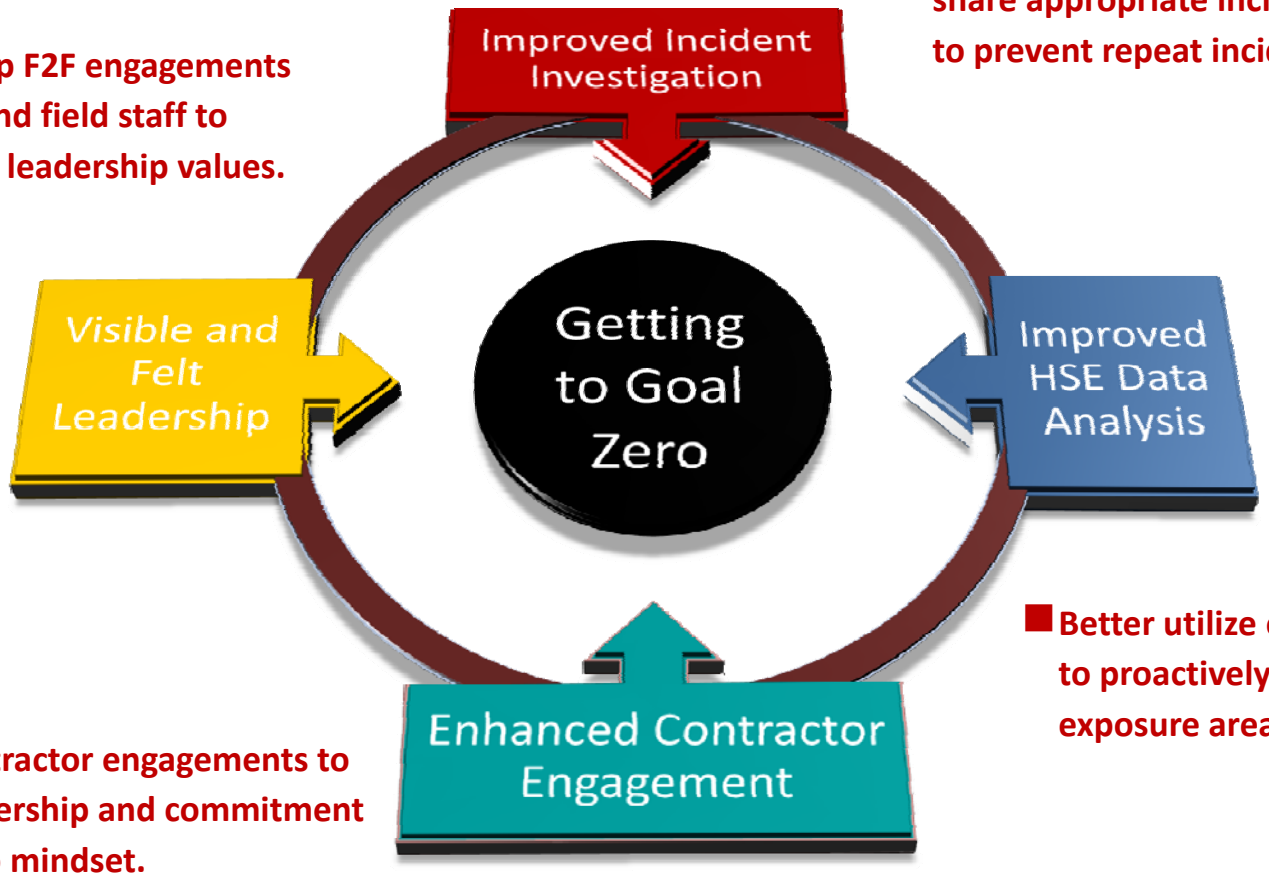
Goal Zero is a Mindset – No harm to people. No leaks.

Chronic Unease is a product of our behaviours.

Where we focus our Safety Leadership attention …

- **Develop an effective methodology to share appropriate incident learnings to prevent repeat incidents.**

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



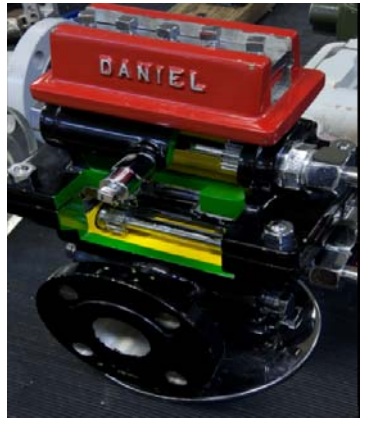
- **Better utilize existing HSE metric s to proactively understand key exposure areas.**

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

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

Shell Robert & Kenai Training Centers

- **HUET Training**
- **Super Safety, Life Saving Rules**
- **Fire Fighting, Crane Operations**
- **Defensive Driving**
- **Deepwater Drilling/Completion Operations**
- **Open Water Rescue**
- **Major Emergency Management**
- **Behavioral Based Safety Management (BBSM)**
- **Cultural Awareness**



As is learning from our and others past incidents...

- **We encourage the reporting of all incidents and failures.**
- **We recognize individuals who intervene and stop potentially unsafe work.**
- **We proactively share learnings and encourage local self assessment.**
- **We look for the causal relationship between culture and performance.**

Learning from incidents
AWARENESS ALERT

Welcome to the December 2012 issue of the Deep Water LFI Newsletter. Published monthly, the contents will provide the latest LFI Alerts & Newsflashes as well as Industry Alerts.

For more information visit The Global Learning from Incidents LFI Alert Database:

- Group LFI Alerts for Significant Incidents, High Potential Incidents (RAM C5, D5, E5) and other incidents with high learning value for multiple Shell businesses
- LFI Alerts issued by businesses
- LFI Newsflashes issued by Group and businesses

UAD Alerts

UAD-AW-201207 LOPC during maintenance, FPSO Fluminense Flash Gas Compressor "A"

The removal of a PSV had been preceded by closing, tagging and locking the single 4" ball isolation valve in line with the permit to work and the facility risk based isolation procedures which called for single isolation only. The valve did not provide a secure isolation. A pressure spike upstream through the HP flare system and a quantity of gas and residual oil in the flare header had blown past the tagged and locked closed 4" isolation valve.

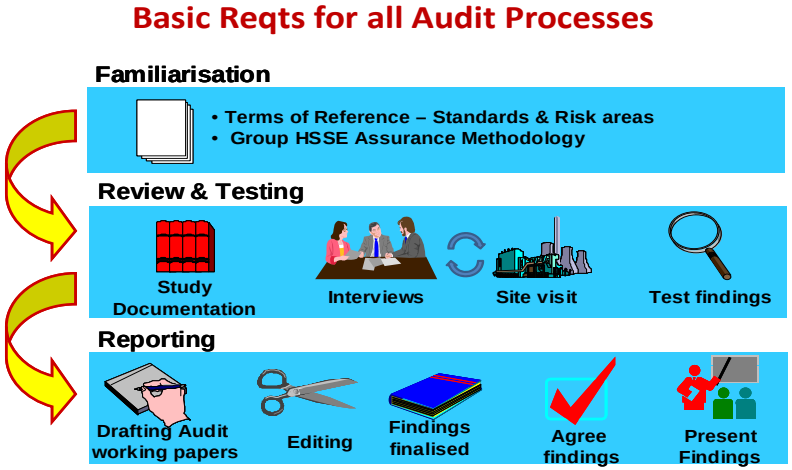
Group Alerts

GRP-AW-201213 Driving in Adverse Weather Conditions

A Shell contracted truck loaded with pipes was travelling to an onshore rig site when it encountered foggy weather and rolled over. The driver sustained minor injuries but the truck was damaged beyond repair.
This Alert was developed by Upstream Americas and contains a reflecting learning video for engaging with frontline staff. Reflective learning videos are one of the new tools developed by the Incident Investigation & Learning GDT. More information on them can be found here.

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**
  - **External – third party audits: Process Safety, SEMS, Asset Integrity Assurance**



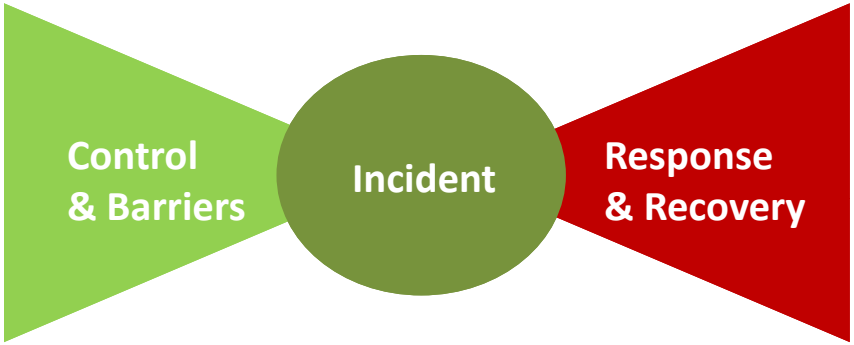
In summary, what are attributes of a great Safety Culture...

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

We strive to create an environment where these attributes are used each and every day.

Back Up Slides

Safety measures in place for offshore drilling …



Keep within Control Limits

Reduce Likelihood

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

Mitigate Consequences

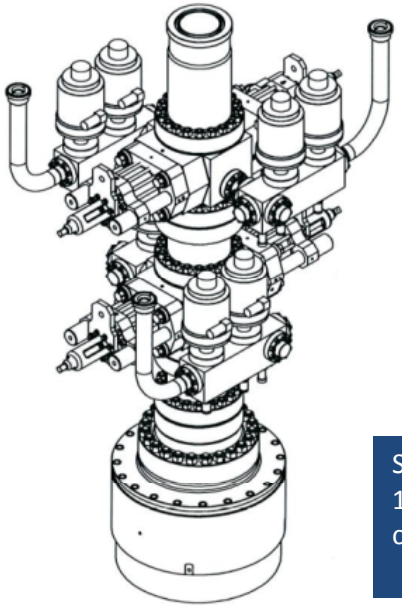
Plan for Recovery

Re-Instate

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

Safety measures in place for offshore drilling …

- 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.

- **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

Our Life-Saving Rules show our commitment to people …

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

Do not walk under a suspended load

Do not smoke outside designated smoking areas

No alcohol or drugs while working or driving

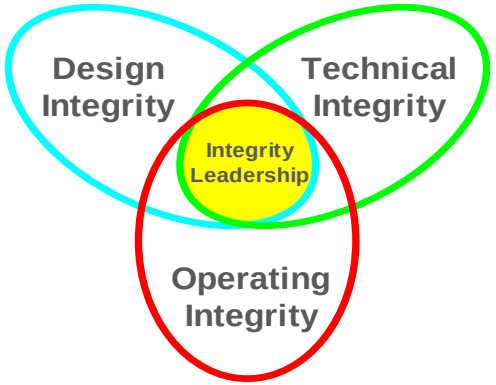
While driving, do not use your phone and do not exceed speed limits

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



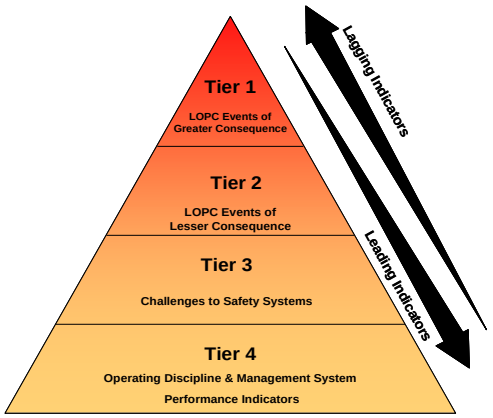
6. AVOID LIQUID RELEASE TO ATMOSPHERE
7. AVOID TANK OVERFILL FOLLOWED BY VAPOR CLOUD RELEASE
8. AVOID BRITTLE FRACTURE OF METALLIC MTLS
9. ALARM MANAGEMENT
10. SOUR GAS (H2S)
11. DEEPWATER WELL DESIGN AND CONSTRUCTION

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**

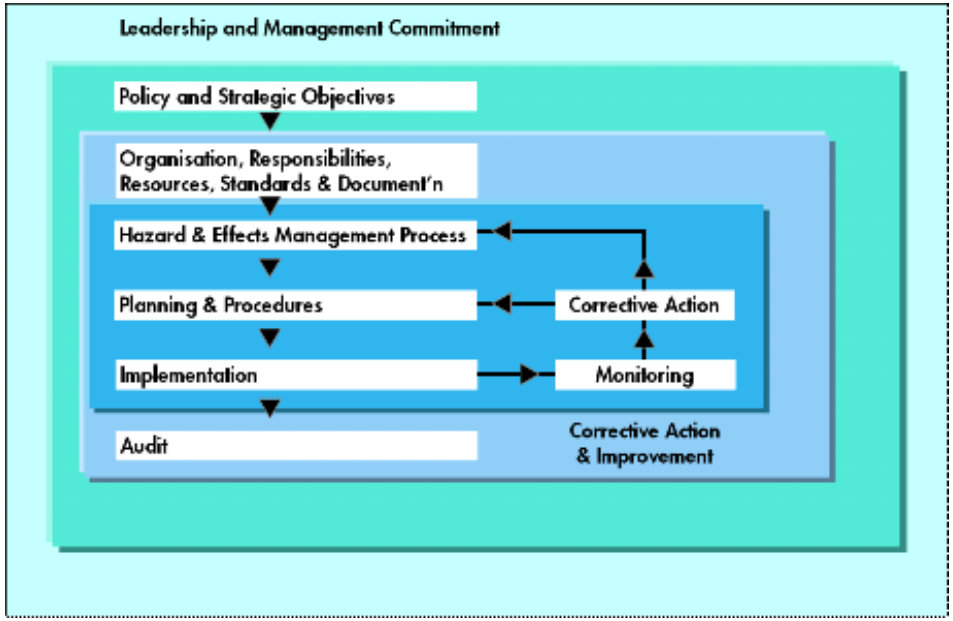
- **Performance metrics should contain a good mix of leading and lagging indicators**
  - **Leading: alarm rates, PM/CM schedule compliance, overdue MoCs, Near Misses**
  - **Lagging: HC spills, OSHA Recordables, fires**

Industry PS Performance Metrics - API RP 754
Four Tiers



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

- General Management Program Principles
- Safety and Environmental Information
- Hazards Analysis
- Management of Change
- Operating Procedures
- Safe Work Practices
- Training
- Quality Assurance/Mechanical Integrity
- Pre-Startup Review
- Emergency Response and Control
- Incident Investigation
- SEMS Element Audit
- Documentation and Recordkeeping