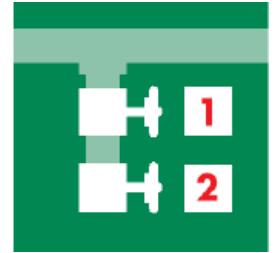


PROCESS SAFETY FUNDAMENTAL

#1

Always use two barriers for hydrocarbon and chemical drains & vents



What does this mean for GOM today?

This applies to vents and drains, not every isolation.

Continue to follow current Permit to Work process and guidance from PtW focal point, Chris Camardelle.

- The “first barrier” constitutes a valve in a vent- or drain-connection.
- 2nd barrier could be valve, bleeder plug, spectacle blind/blind flange

GOM Incidents related to PROCESS SAFETY FUNDAMENTAL

Brutus Tier 1 – process fluid leaking from under HP Sep



Fountain No: 1738245

Multiple chemical and diesel tanks emptying to drain (Mars, Olympus, Ram) Tier 2s

GOM Processes or Systems where PROCESS SAFETY FUNDAMENTAL shows up

Permit to Work – LOTO (including bleed valve management) HSE008

What barriers exist that keep us from complying with this Fundamental?

- Ex. Would be (Engineering design/as built, Sample points, Temp flaring line, Instrument connections - e.g. corrosion coupons, probes)

What ideas do you have on how we close this gap?

Empty box for ideas on how to close the gap.

PROCESS SAFETY FUNDAMENTAL

#2

Do not leave an open drain or critical transfer unattended



What does this mean for GOM today?

Continue to follow current Permit to Work process and guidance from PtW focal point, Chris Camardelle.

This requirement is applicable to hydrocarbon systems and hazardous process water containing hydrocarbons or toxics.

GOM Incidents related to PROCESS SAFETY FUNDAMENTAL

Mars Tier 2 - METHANOL RELEASE TO ESUMP FROM OPEN DRAIN VALVE ON FILTER/STRAINER POT (9/25/15)



Multiple chemical and diesel tanks emptying to drain (Mars, Olympus, Ram) Tier 2s

GOM Processes or Systems where PROCESS SAFETY FUNDAMENTAL shows up

Permit to Work – LOTO (including bleed valve management) HSE008

What barriers exist that keep us from complying with this Fundamental?

- Examples (Extended transfer operating – using temporary equipment, Lack of resources (personnel), How do you manage a step out, Non routine transfer operations (MeOH, Diesel, inter-CoT etc.)


What ideas do you have on how we close this gap?

Empty box for ideas on how to close the gap.

**PROCESS SAFETY
FUNDAMENTAL
#3**



Take interim mitigating measures in case of failure of Safety Critical Equipment

What does this mean for GOM today?	GOM Incidents related to PROCESS SAFETY FUNDAMENTAL
<p>Continue to follow the SCE function impaired guidance and documenting deviations in FSR.</p>  <p>SCE Function Impaired</p>	<p>Managed well in GoM</p>
GOM Processes or Systems where PROCESS SAFETY FUNDAMENTAL shows up eME	

What barriers exist that keep us from complying with this Fundamental?
<ul style="list-style-type: none">•

What ideas do you have on how we close this gap?

PROCESS SAFETY FUNDAMENTAL

#4

For all defined high risk activities, follow the procedures and sign off after each step



What does this mean for GOM today?	GOM Incidents related to PROCESS SAFETY FUNDAMENTAL
Continue to follow OPS176 and guidance from the ESP focal point Tom Beaver.	Perdido Tier 1 2016 - MeOH overfill was, in part, due to poor procedures / procedures not followed Multiple trips related to lack of / incorrect / not following procedures.
GOM Processes or Systems where PROCESS SAFETY FUNDAMENTAL shows up Ensure Safe Production	

What barriers exist that keep us from complying with this Fundamental?
<ul style="list-style-type: none">• Exmples (Not meeting PROCESS SAFETY FUNDAMENTAL's fully, Lack of definition of High risk activities, Common understanding of RAM 4/5 type of activity, Definition of step/granularity, Sign off authority/competence, Incorrect procedures, Escalation process)•

What ideas do you have on how we close this gap?

PROCESS SAFETY FUNDAMENTAL

#5

Walk the Line – Verify and validate any line-up change



What does this mean for GOM today?	GOM Incidents related to PROCESS SAFETY FUNDAMENTAL
<p>Continue to follow current Permit to Work process and guidance from PtW focal point, Chris Camardelle.</p> <p>We can't always walk the line – some lines are inaccessible. However, whenever possible, physical verification is required. Otherwise an alternate means of validation must be used such as monitoring tank or vessel levels immediately following line-up change.</p>	<p>UAC on ESA – Isolation valve on inlet to a flow line PSV left closed. Fortunately no incident. Cougar had the valves around the BDV locked in the closed instead of open position after monthly testing. Have had trips / PSV lifts due to manual valves left closed on pumps and compressors.</p>
<p>GOM Processes or Systems where PROCESS SAFETY FUNDAMENTAL shows up</p> <p>Permit to Work – LOTO, DFT - HSE008</p> <p>MIE – last step in maintenance process informs production that the task is completed and is ready to return to service.</p>	

What barriers exist that keep us from complying with this Fundamental?
<ul style="list-style-type: none">• Examples (Some modern facilities have automated line-up, Difficult to access valves, T/A piping changes in the drafts, Temporary piping/hose changes, Lack of resource, Reliance of 3rd party equipment verification (Shell + contractor)•


What ideas do you have on how we close this gap?

**PROCESS SAFETY
FUNDAMENTAL**

#6

Do not make a change without a proper MOC



What does this mean for GOM today?	GOM Incidents related to PROCESS SAFETY FUNDAMENTAL
<p>Ensure that all changes made to the process have been properly analyzed, are well understood, and result in the intended outcome. Through this process, risks are mitigated or eliminated before changes are introduced.</p> <p>Continue to follow current MOC process and guidance from MOC focal point, Margaret Gallo.</p>	<p>Mars Tier 2 - Backflow to Mars H2S inhibitor tank, change in temporary piping configuration on well flow back equipment at Auger (ie a change that was not MOC'd) resulted in a large release</p> 
<p>GOM Processes or Systems where PROCESS SAFETY FUNDAMENTAL shows up MOC process - HSE0004</p>	


What barriers exist that keep us from complying with this Fundamental?
<ul style="list-style-type: none">• Examples (Incidents occur due to change ID and change management flaws – review/..., What does change mean? Clarify)

What ideas do you have on how we close this gap?

**PROCESS
SAFETY
FUNDAMENTAL
#7**



Verify for completeness of tightness after maintenance work

What does this mean for GOM today?	GOM Incidents related to PROCESS SAFETY FUNDAMENTAL
<p>The intent is to verify the integrity of equipment following maintenance activities before returning the equipment to service. This can be done with a leak test (as per PSSR). Service tests are acceptable in non-hazardous, non-toxic services.</p>	<p>Stones Tier 1 – Flange not tightened on stones compressor skid (fountain #1814932)</p>  <p>Brutus bridle LOPC after shutdown (not quite a Tier 2)</p>
<p>GOM Processes or Systems where PROCESS SAFETY FUNDAMENTAL shows up MIE – Corrective Maintenance Procedures Turnarounds – Flange Management</p>	

What barriers exist that keep us from complying with this Fundamental?
<ul style="list-style-type: none"> • Examples (Torquing procedures, Flange ID/management, Leak test/reinstatement, Acceptable verification, Competence requirements, Package equipment documentation (PEFS))

What ideas do you have on how we close this gap?
Empty space for ideas

PROCESS SAFETY FUNDAMENTAL

#8

**Always check that equipment is pressure free and drained,
and provide safe isolation before starting maintenance work**



What does this mean for GOM today?	GOM Incidents related to PROCESS SAFETY FUNDAMENTAL
<p>Continue to follow current Permit to Work process and guidance from PtW focal point, Chris Camardelle.</p> <p>Validate that mechanical, chemical and thermal hazards have been removed before work begins.</p> <p>Assure that no residual hydrocarbons remain in low spots.</p>	<p>Incident on Ursa with trapped pressure behind a check valve in gas lift piping that was then released in undoing flange. Recent Tier 2 at ESA caused by pressure on chemical injection line – recordable</p>
<p>GOM Processes or Systems where PROCESS SAFETY FUNDAMENTAL shows up</p> <p>Permit to Work – LOTO HSE008</p>	

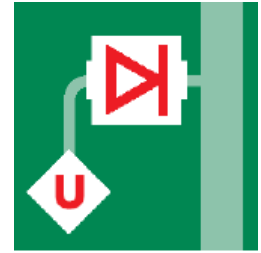
What barriers exist that keep us from complying with this Fundamental?
<p>Examples (There is a process, procedure, assurance (LOTO, PtW, Isolation, PSBR's)And yet incidents happen., Definition of pressure free, We have isolation procedure that allows single isolation/how does this)</p>

What ideas do you have on how we close this gap?

**PROCESS SAFETY
FUNDAMENTAL**

#9

Perform MOC and install backflow protection when connecting utilities to process



What does this mean for GOM today?	GOM Incidents related to PROCESS SAFETY FUNDAMENTAL
To protect the integrity of utility, tank or tote systems reverse flow shall be avoided. A MOC is required any time a utility is connected to “live process”. (Proven Isolated Equipment is not “LIVE”)	Contamination of potable water at WD143 with oil. Suspected back flow from pig trap?
GOM Processes or Systems where PROCESS SAFETY FUNDAMENTAL shows up MOC - HSE0004	

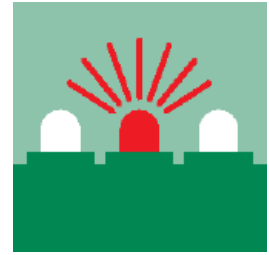
What barriers exist that keep us from complying with this Fundamental?
<ul style="list-style-type: none">•

What ideas do you have on how we close this gap?

**PROCESS SAFETY
FUNDAMENTAL**

#10

Respond to critical alarms in line with the variable table



What does this mean for GOM today?	GOM Incidents related to PROCESS SAFETY FUNDAMENTAL
<p>If you get an alarm, make sure you know how to access your alarm database (also known as alarm catalogue) in order to ensure proper response to the critical alarm.</p> <p>Continue to follow current ESP and alarm management process. You can get guidance from your control systems engineer or ESP focal point, Tom Beaver.</p>	<p>Alarm management project has helped significantly here.</p> <p>Trip (not a PSE) on Ursa due to operator incorrectly interpreting alarm – fluids were leaking past manifold valves into vessel that was not in use (LLP sep) and tagged the LSH.</p>
GOM Processes or Systems where PROCESS SAFETY FUNDAMENTAL shows up ESP- alarm management	

What barriers exist that keep us from complying with this Fundamental?
<ul style="list-style-type: none">•

What ideas do you have on how we close this gap?