2021 Annual Performance Report Webinar

September 22, 2022

CENTER FOR OFFSHORE SAFETY

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Presenters

Russell Holmes, COS
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Lindsay Magdaleno, OXY
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Julia FitzGerald, COS

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Accreditation Body (AB)

- Audit Service Providers
- Recognized AB for BSEE
- SEMS Certificates

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Why are we here?

Stimulate cooperation within the industry to share good practices and learn from each other

Provide a platform for collaboration between industry, the government, and other stakeholders

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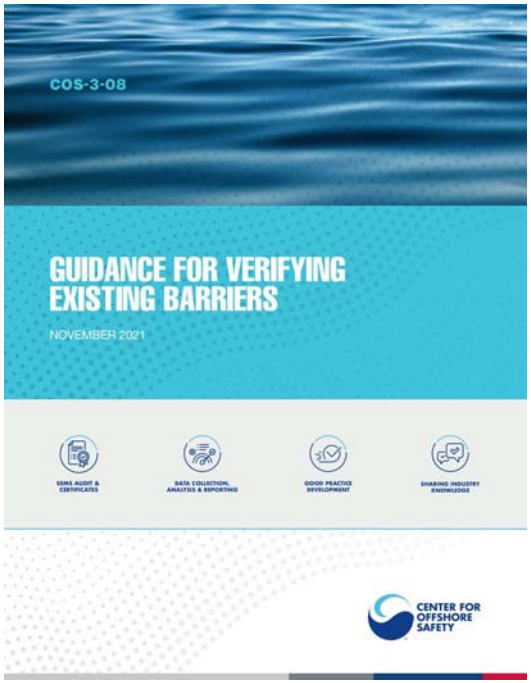


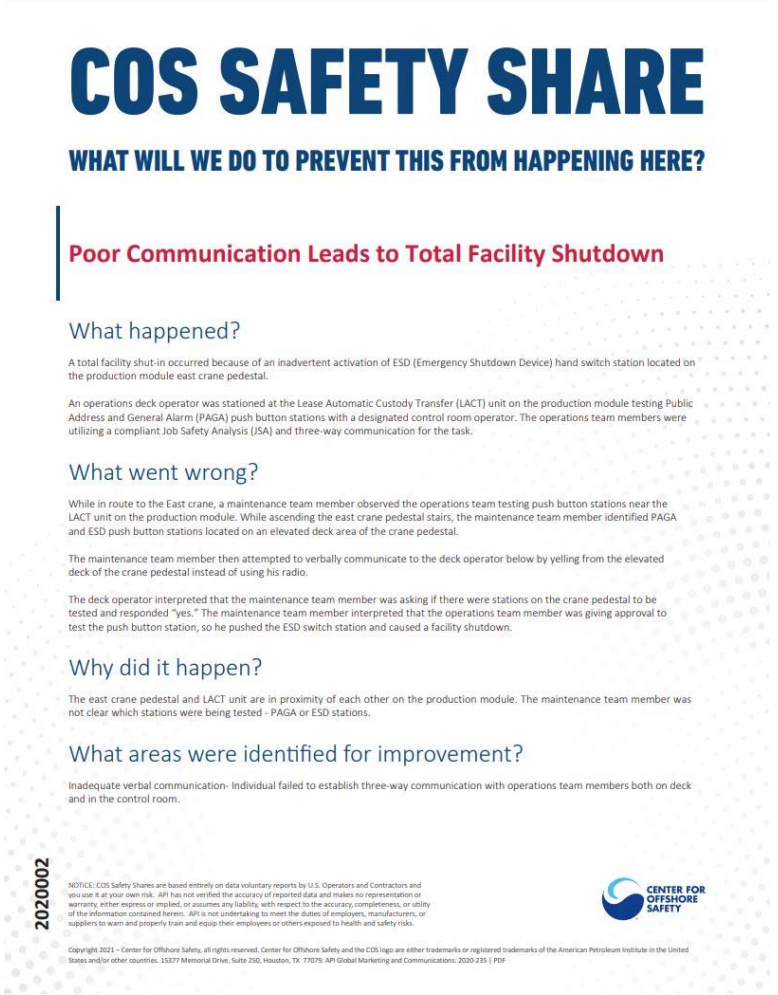
How is COS data used?

Safety Share

What happened?

A total facility shut-in occurred because of an inadvertent activation of ESD (Emergency Shutdown Device) hand switch station located on the production module east crane pedestal.

An operations deck operator was stationed at the Lease Automatic Custody Transfer (LACT) unit on the production module testing Public Address and General Alarm (PAGA) push button stations with a designated control room operator. The operations team members were utilizing a compliant Job Safety Analysis (JSA) and three-way communication for the task.



COS SAFETY SHARE

WHAT WILL WE DO TO PREVENT THIS FROM HAPPENING HERE?

Poor Communication Leads to Total Facility Shutdown

What happened?

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What went wrong?

While in route to the East crane, a maintenance team member observed the operations team testing push button stations near the LACT unit on the production module. While ascending the east crane pedestal stairs, the maintenance team member identified PAGA and ESD push button stations located on an elevated deck area of the crane pedestal.

The maintenance team member then attempted to verbally communicate to the deck operator below by yelling from the elevated deck of the crane pedestal instead of using his radio.

The deck operator interpreted that the maintenance team member was asking if there were stations on the crane pedestal to be tested and responded "yes." The maintenance team member interpreted that the operations team member was giving approval to test the push button station, so he pushed the ESD switch station and caused a facility shutdown.

Why did it happen?

The east crane pedestal and LACT unit are in proximity of each other on the production module. The maintenance team member was not clear which stations were being tested - PAGA or ESD stations.

What areas were identified for improvement?

Inadequate verbal communication- Individual failed to establish three-way communication with operations team members both on deck and in the control room.

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Safety Share

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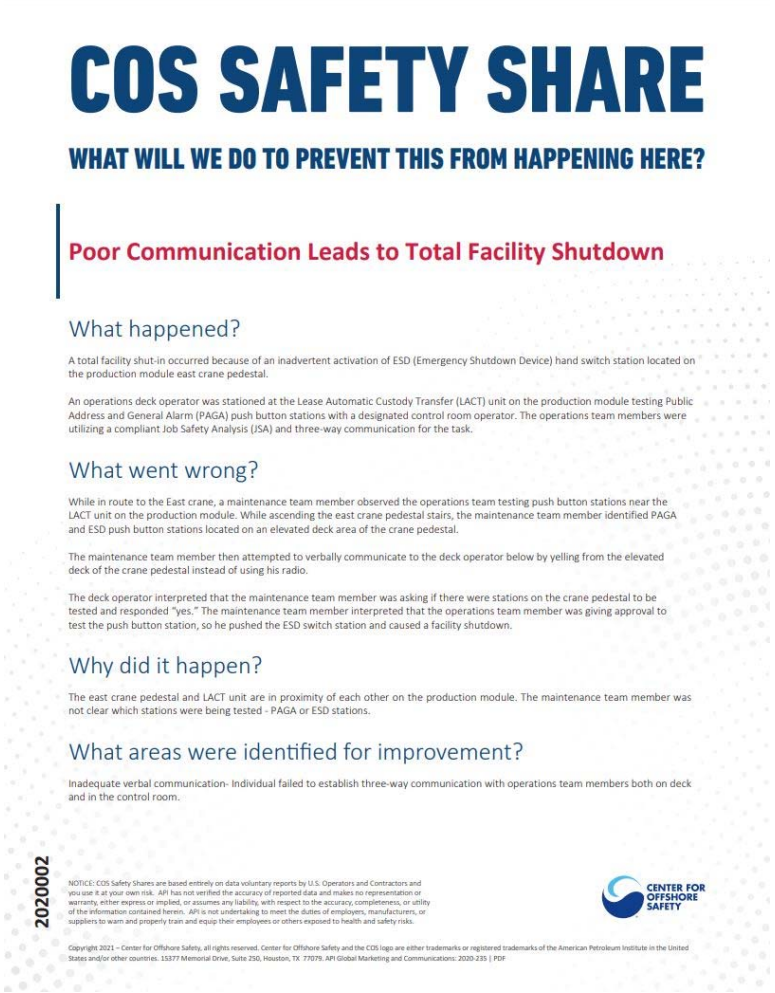

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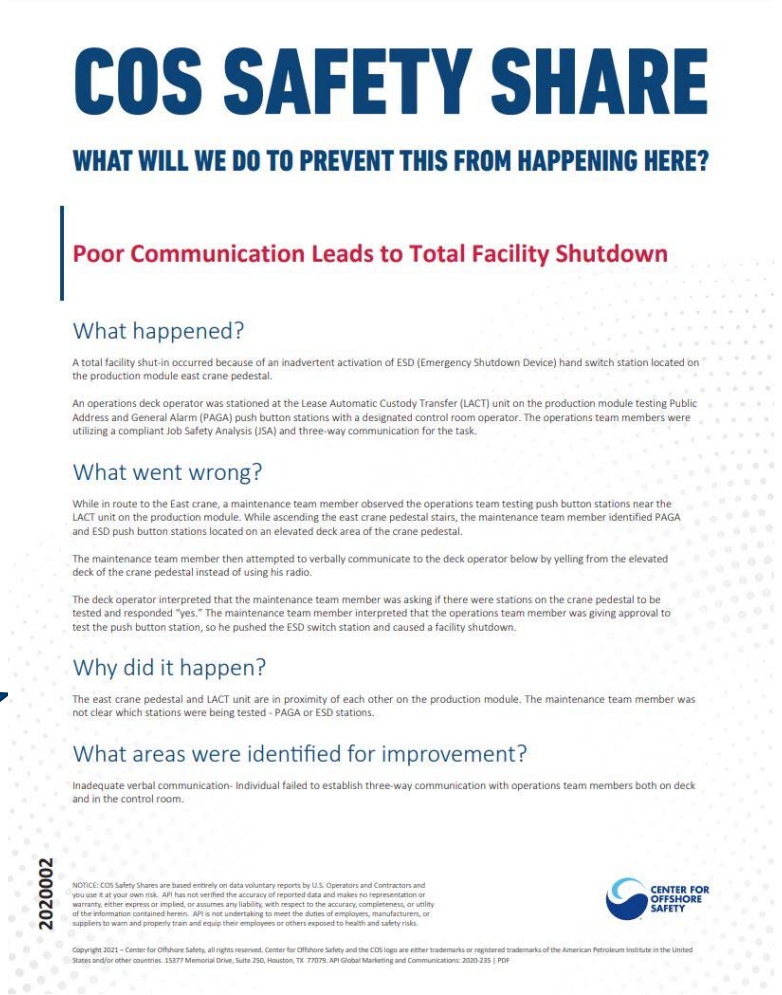

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COS Data Programs:

Safety Performance Indicators (SPI) Program
Learning from Incidents & Events (LFI) Program

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Safety Performance Indicators – US OCS

Operator:

- SPI 1-10
- Work Hours
- ALL incidents – operator and contractor - within 500m of lease
- SPI 5 for Operator owned facilities and equipment

Contractor:

- SPI 1-4, 6-10 Incidents outside 500m or for non-COS Operators
- SPI 5 for Contractor owned facilities and equipment

SPI 1 is the frequency of incidents that resulted in one or more of the following:

A. Fatality
B. Five or more injuries in a single incident
C. Tier 1 process safety event
D. Level 1 Well Control Incident - Loss of well control
E. ≥ $1 million direct cost from damage to or loss of facility / vessel / equipment
F. Oil spill to water ≥ 10,000 gallons (238 barrels)

SPI 2 is the frequency of incidents that do not meet the SPI 1 definition but have resulted in one or more of the following:

G. Tier 2 process safety event
H. Collision resulting in property or equipment damage > $25,000
I. Mechanical Lifting or Lowering Incident
J. Loss of station keeping resulting in a drive off or drift off
K. Life boat, life raft, rescue boat event
L. Level 2 Well Control Incident - Multiple Barrier Systems Failures and Challenges

SPI 3 is the number of SPI 1 and SPI 2 incidents that involved failure of one or more pieces of equipment as a contributing factor.

SPI 4 is a crane or personnel/material handling operations incident.

SPI 5 is the percentage of planned critical maintenance, inspection and testing (MIT) completed on time. Planned critical MIT deferred with a formal risk assessment and appropriate level of approval is not considered overdue.

SPI 6 is number of work-related fatalities.

SPI 7 is the frequency of days away from work, restricted work, and job-transfer injury and illnesses (DART).

SPI 8 is the frequency of recordable injuries and illnesses (RIIF).

SPI 9 is the frequency of oil spills to water ≥ 1 barrel.

SPI 10 is the severity potential of incidents involving a dropped object.

Learning from Incidents & Events

SPI 1 and SPI 2 Incidents

- Following the completion of any incident investigations
- Only 1 form per incident – usually submitted by company that did the investigation.

High Value Learning Events (HVLE)

- Incidents that didn't rise to the level of an SPI 1 or SPI 2, but that still provide valuable insight and learnings.
- Near misses / Close calls!

- US OCS
- *US Onshore/State Waters*
- *International*

LFI - Areas for Improvement (AFI)

Physical Facility, Equipment, and Process

- *Design or Layout of a Facility or Individual Piece of Equipment*
- *Facility or Equipment Material Specification, Fabrication and Construction, or Quality Control*
- *Facility or Equipment Reliability*
- *Instrument, Analyzer and Controls Reliability*

Administrative Processes

- *Risk Assessment and Management*
- *Operating Procedures or Safe Work Practices*
- *Management of Change*
- *Work Direction or Management*
- *Emergency Response*

People

- *Personnel Skills or Knowledge*
- *Quality of Task Planning and Preparation*
- *Individual or Group Decision Making*
- *Quality of Task Execution*
- *Quality of Hazard Mitigation*
- *Communication*

2021 Reporting Year Data

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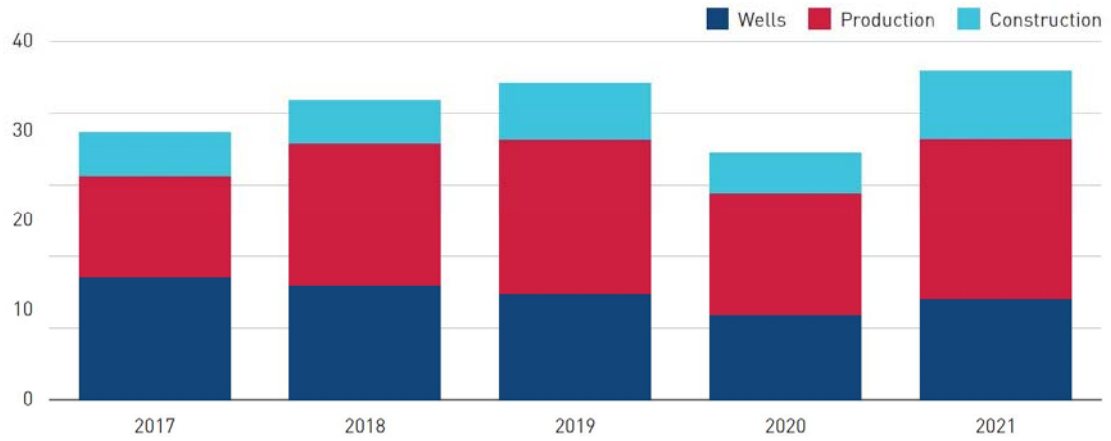
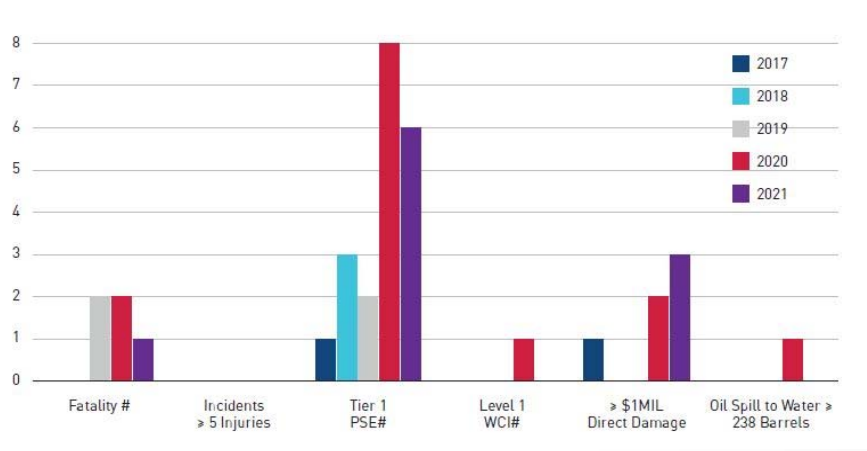
Work Hours (Normalization Factor)

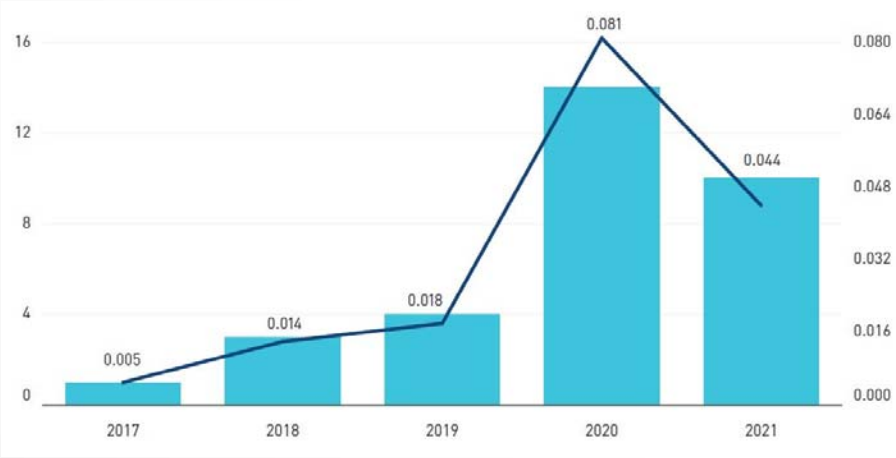


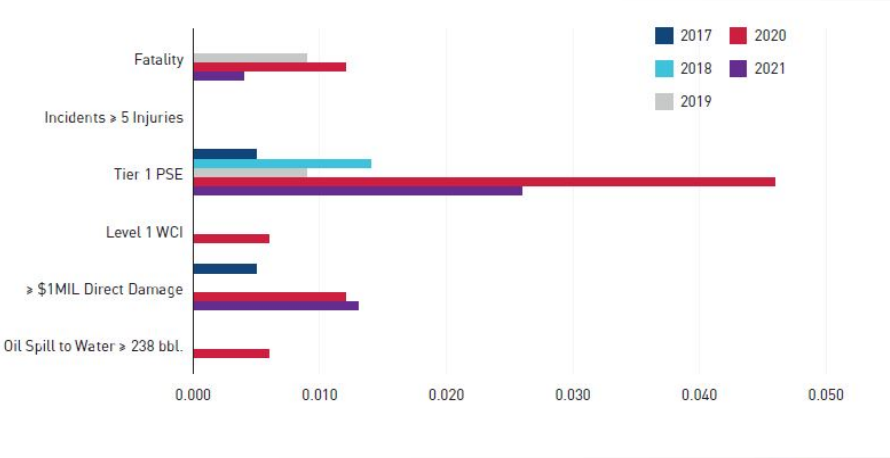
Year	2017	2018	2019	2020	2021
COS U.S. OCS Work Hours (Millions)	37.3	41.7	44.2	34.5	45.9

SPI 1

	2021
Incidents involving 1 or more fatalities	1
Incidents with injuries to 5 or more	0
Tier 1 process safety events	6
Level 1 well control incidents	1*
Incidents resulting in damage ≥ $1MIL	3
Oil spill to water ≥ 238 bbl (10k gallons	0







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LFI Report - SPI 1C Tier 1 Process Safety Event

Pre-incident:

- ***In 2018, the gear operator and position indicator were removed from the 3-way valve due to inoperability of the gear operator. The 3-way valve was operated for the next year and a half using a pipe wrench. Also, during that time, the position indicator was manually manipulated to indicate valve alignment.***

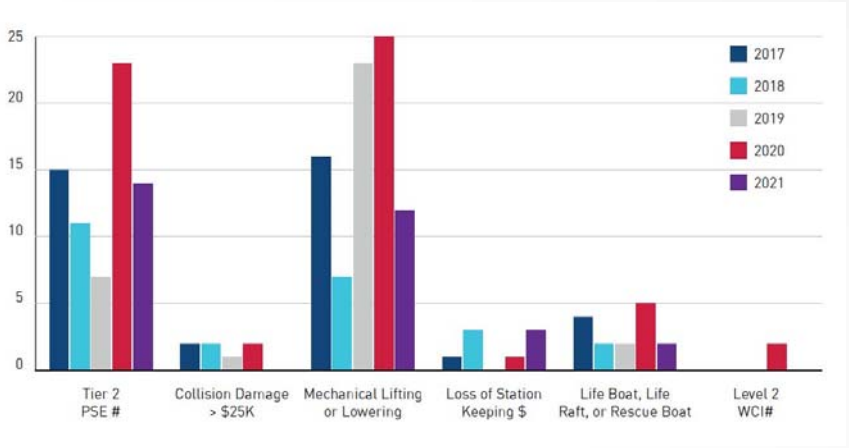
- ***In 2020, a new gear operator was installed misaligned with the valve ball. What was believed to be alignment to flare was alignment to vent and what was believed to be alignment to vent was a blocked-in configuration.***

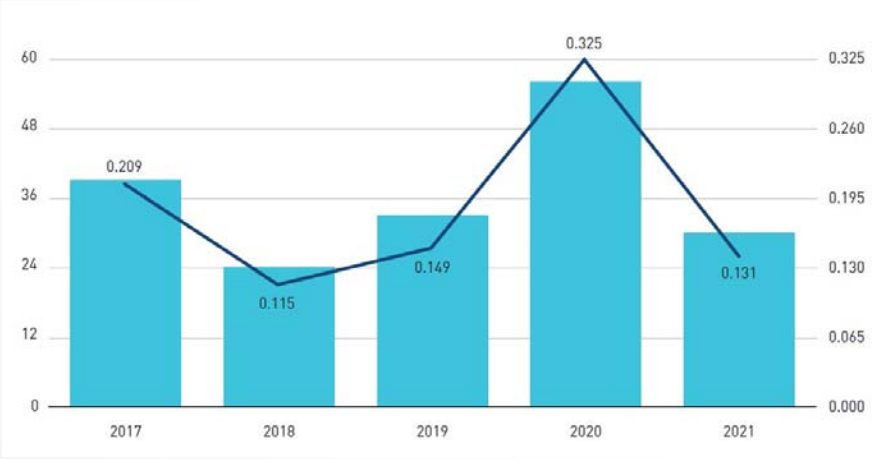
Incident:

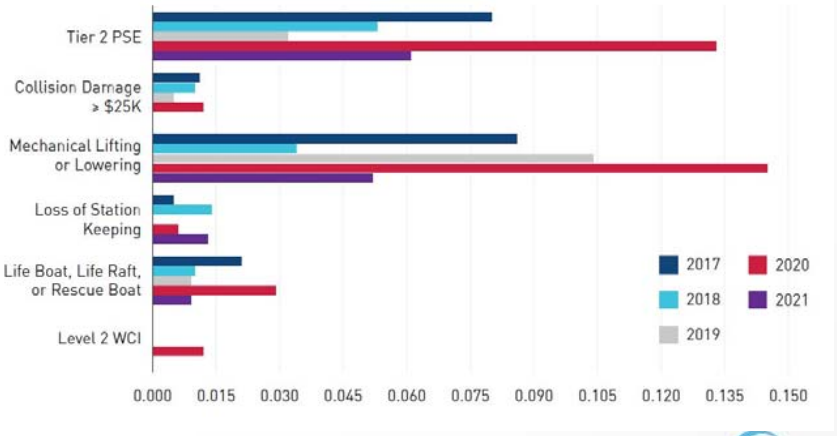
- ***While shutting down the Recycle Gas Compressor (RGC), gas was intended to be directed to flare and was instead inadvertently released to the atmospheric vent via a 3-way valve. Shortly after the blow down valve opened, the control room received notification of a loud noise and visible gas cloud on top of the cooler deck. Subsequent response by deck operators confirmed the RGC blowdown and relief header was aligned to a local vent via a 3-way valve instead of to flare.***

SPI 2

	2021
Tier 2 process safety events	14
Collision damage ≥ $25,000	0
Mechanical lifting incidents	12
Loss of station keeping	3
Lifeboat, life raft, rescue boat	2
Level 2 well control incidents	0







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SPI 2C *NEW* Supplemental Data Collection

SPI 4

- Crane or personnel/material handling operations defined as a failure of the crane itself (e.g., the boom, cables, winches, ball ring), other lifting apparatus (e.g., air tuggers, chain pulls), the rigging hardware (e.g., slings, shackles, turnbuckles), or the load (e.g., striking personnel, dropping the load, damaging the load, damaging the facility). Reference MMS NTL 2019-N05.

SPI 2C (Subset of SPI 4)

Consequences:

- Four or less recordable injuries
- Resulted in $25k -$1MIL damage
- Loss of primary containment resulting in a Tier 2 Process Safety Event
- Dropped load that strikes live process equipment

NEW (Subset of SPI 2C)

- SPI 2C Incidents that involved a ***CRANE***

Lifting SPI	2020	2021
SPI 4 – All lifting	163	**143**
	⇩	⇩
SPI 2C	25	**12**
	⇩	⇩
SPI 2C - *CRANE*	N/A	**9**

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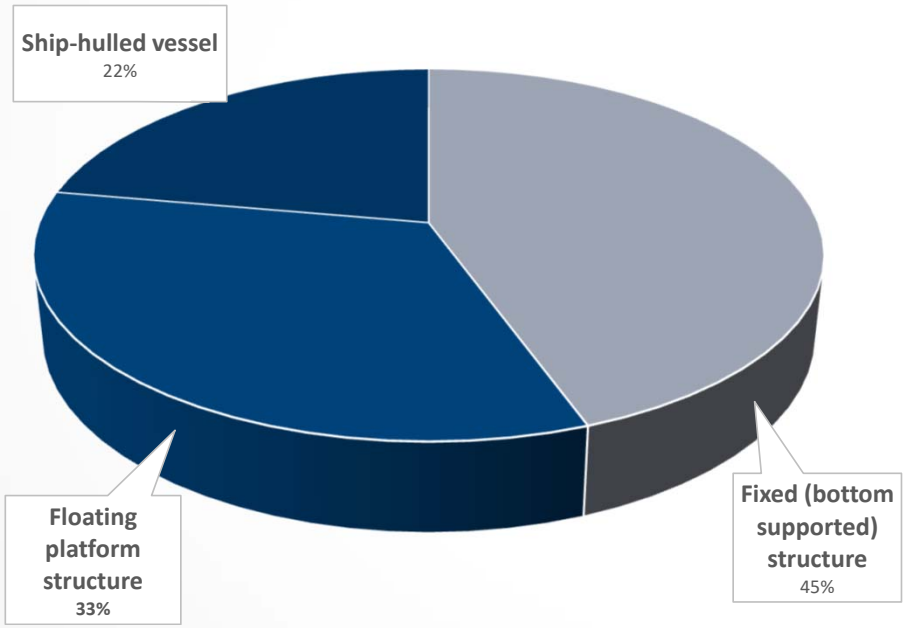
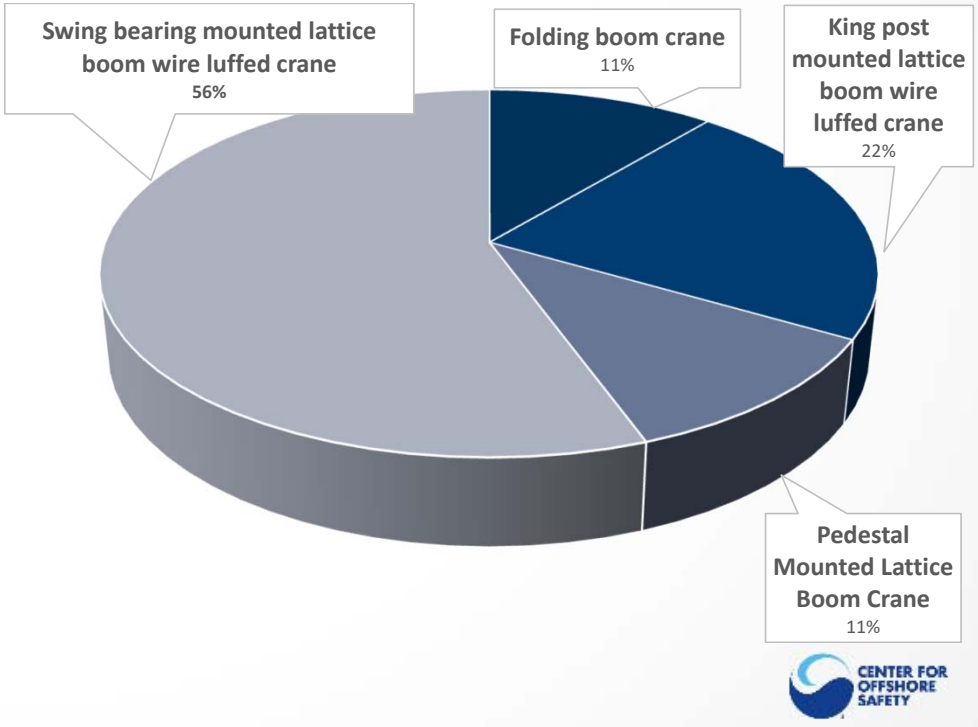
SPI 2C Extra – Facility & Crane Types

Facility Types



Crane Types



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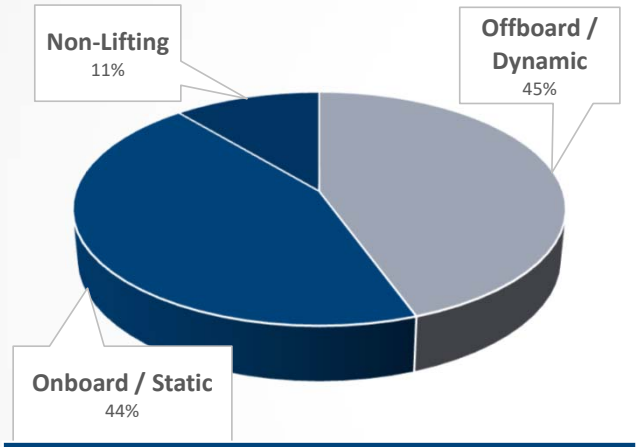
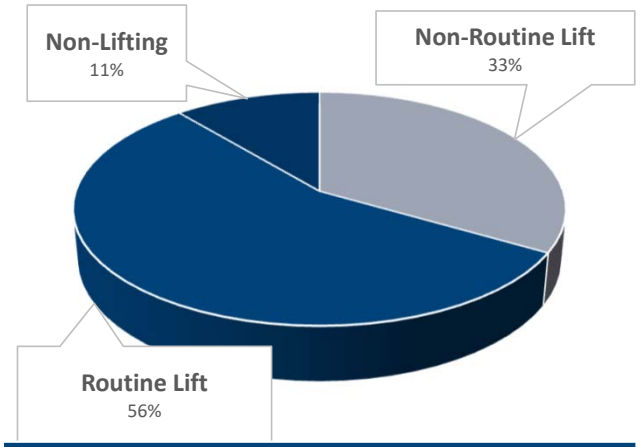
SPI 2C Extra – Lift Types

Onboard vs. Offboard



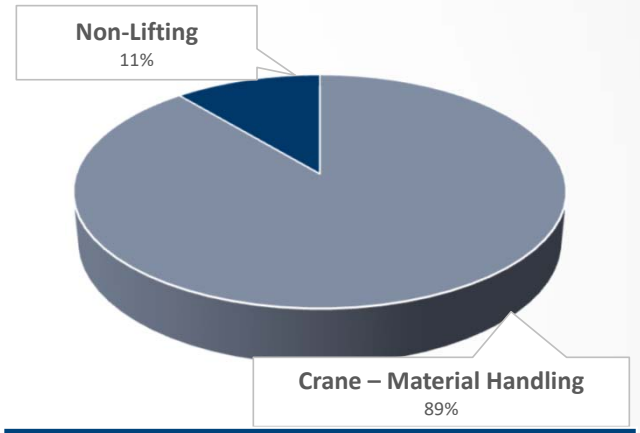
Offboard/Dynamic	4
Onboard/Static	4
Non-Lifting	1

Routine vs. Non-Routine



Routine	5
Non-routine	3
Non-Lifting	1

Material Handing vs. Personnel Transfer vs. Pipe Handing



Material Handling	8
Non-Lifting	1

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SPI 2C Extra – Equipment Failures

Failure of Equipment	Yes	No	N/A
Mechanical (e.g., Hoist and Slewing Brake System)	1	7	1
Structural (e.g., Boom Heel Pins or Boom Jib Section)	0	8	1
Rigging (e.g., Hook Block Assembly or Bridle Assembly)	1	7	1
Below the Hook (e.g., Shackles, Slings, or Personnel Baskets)	1	7	1

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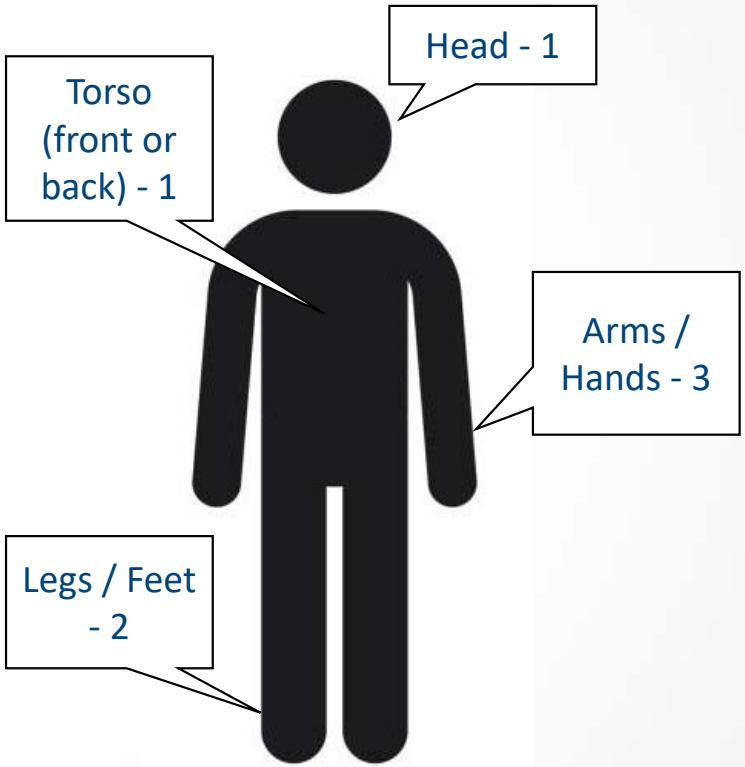
SPI 2C Extra - Injuries

Who was injured?	# of Incidents
• Riggers	3
• Rope Access Workers (multiple)	1

Severity of Injuries	# of Individuals
• Major Injury	3
• Minor Injury	1
• Slight Injury	1



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LFI Report - SPI 2C Mechanical Lifting - Crane

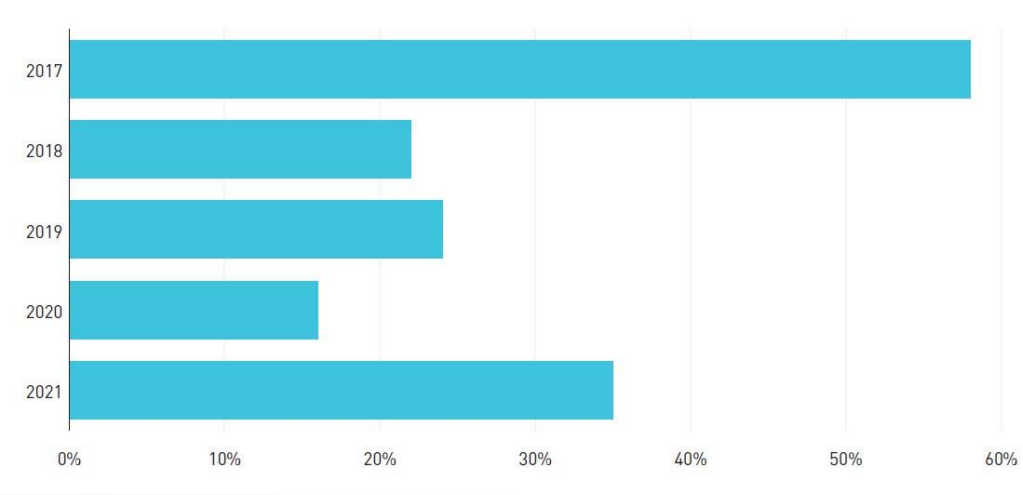
Crane 3 (SE) was parked with boom orientation…over water to the east side of platform. Crane 4 (NE) moved a cargo container from the upper utility deck to the lower utility deck so that a valve could be loaded into the cargo container. The boom was at a high elevation for the swing around and then boomed down to place the load on the deck further to the south.

After the valve was loaded into the cargo container on the lower deck, the crane operator in Crane 4 lifted the load and began swinging the load overboard to the east. The crane boom on Crane 4 was at a lower boom angle when departing with the load as it was compared to coming in with the load previously. As the load was being swung outward to the east, Crane 4 boom contacted the stationary Crane 3 boom.

Lifting operations were stopped and a stop work was issued platform wide. East side of the platform was cleared and barricaded. Crane mechanic made assessments on Crane 3 and Crane 4.

SPI 3

SPI 3 is the number of SPI 1 and SPI 2 incidents that involved failure of one or more pieces of equipment as a contributing factor.



- 40 SPI 1 and SPI 2 Incidents Reported
- 14 (35%) of those 14 cited failure of equipment as a contributing factor
- Equipment Types:
  - 6 - Process Equipment/Pressure Vessels/Piping
  - 1 - Shutdown Systems/Automated Safety Instrumented Systems
  - 2 - Mechanical Lifting Equipment/Personnel Transport Systems
  - 2 - Station Keeping
  - 1 - Lifeboat/Life Raft/Rescue Boat/Launch and Recovery Systems
  - 3 - Other

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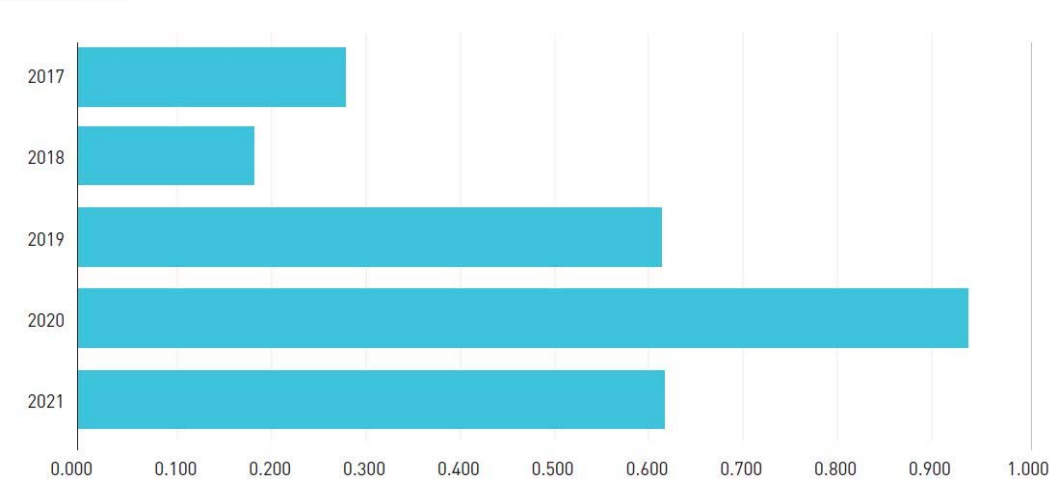
SPI 4

SPI 4 is a crane or personnel/material handling operations incident.



	2020	2021
Count	163	143
Rate / 200k Hours	0.945	0.623

SPI 5

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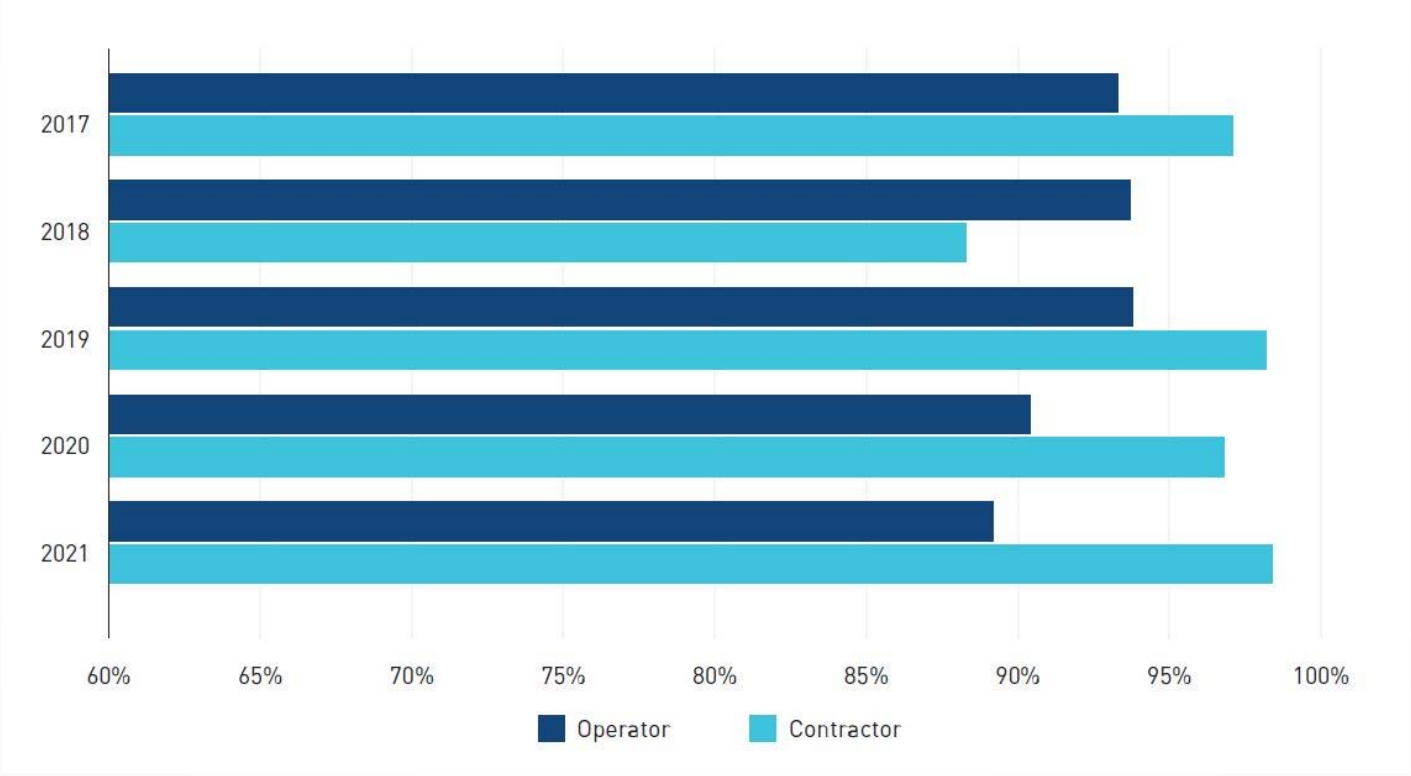

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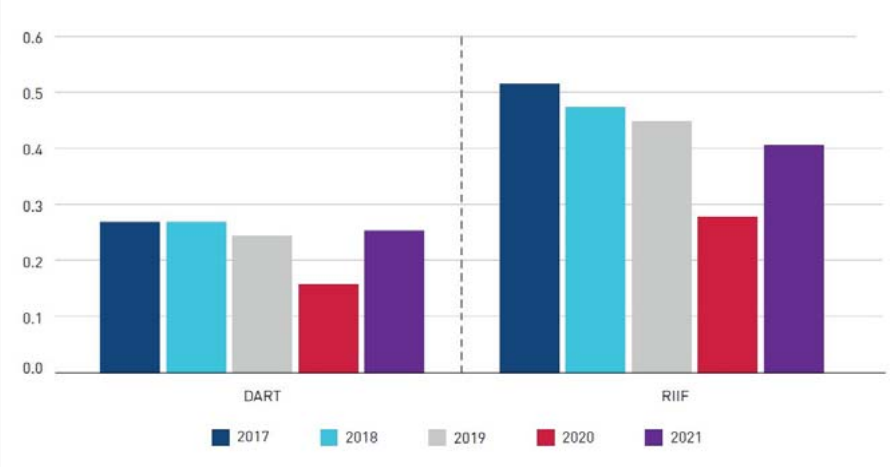
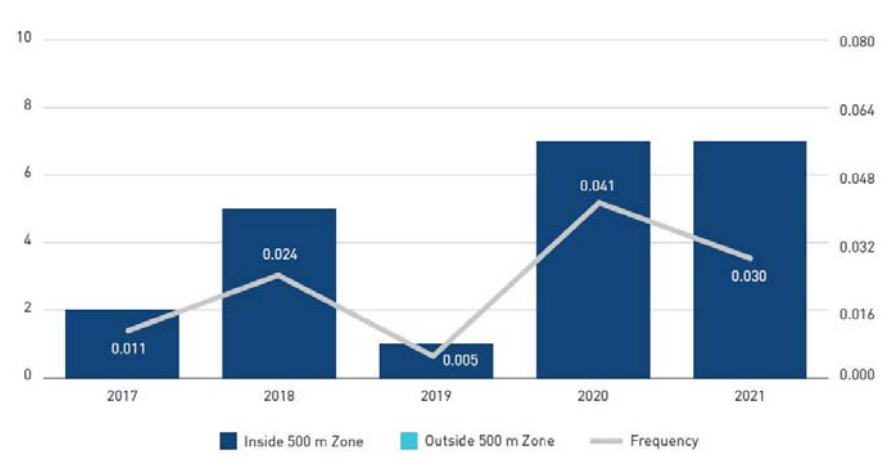
SPI 6-9

SPI 6 is number of work-related fatalities
SPI 7 is the frequency of days away from work, restricted work, and job-transfer injuries and illnesses (DART)
SPI 8 is the frequency of recordable injuries and illnesses (RIIF)
SPI 9 is the frequency of oil spills to water ≥ 1 barrel





DART	2019	2020	2021
Count	54	27	58
Rate / 200k Hours	0.244	0.157	0.253

RIIF	2019	2020	2021
Count	99	48	93
Rate / 200k Hours	0.448	0.278	0.405

≥ 1 barrel	2019	2020	2021
Count	1	7	7
Rate / 200k Hours	0.005	0.041	0.030

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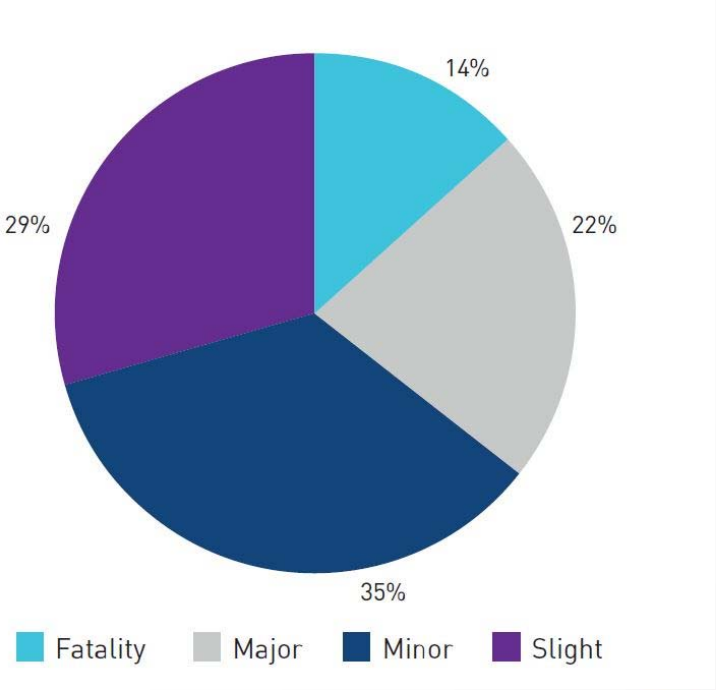
SPI 10

SPI 10 is the severity *potential* of incidents involving a dropped object

- Based on definitions developed by the *DROPSOnline* network

- 213 Dropped Objects reported
  - 59 Slight injury ***potential***
  - 70 Minor injury ***potential***
  - 45 Major injury ***potential***
  - 27 Fatal injury ***potential***

- 162 of 213 (76%) resulted in zero harm



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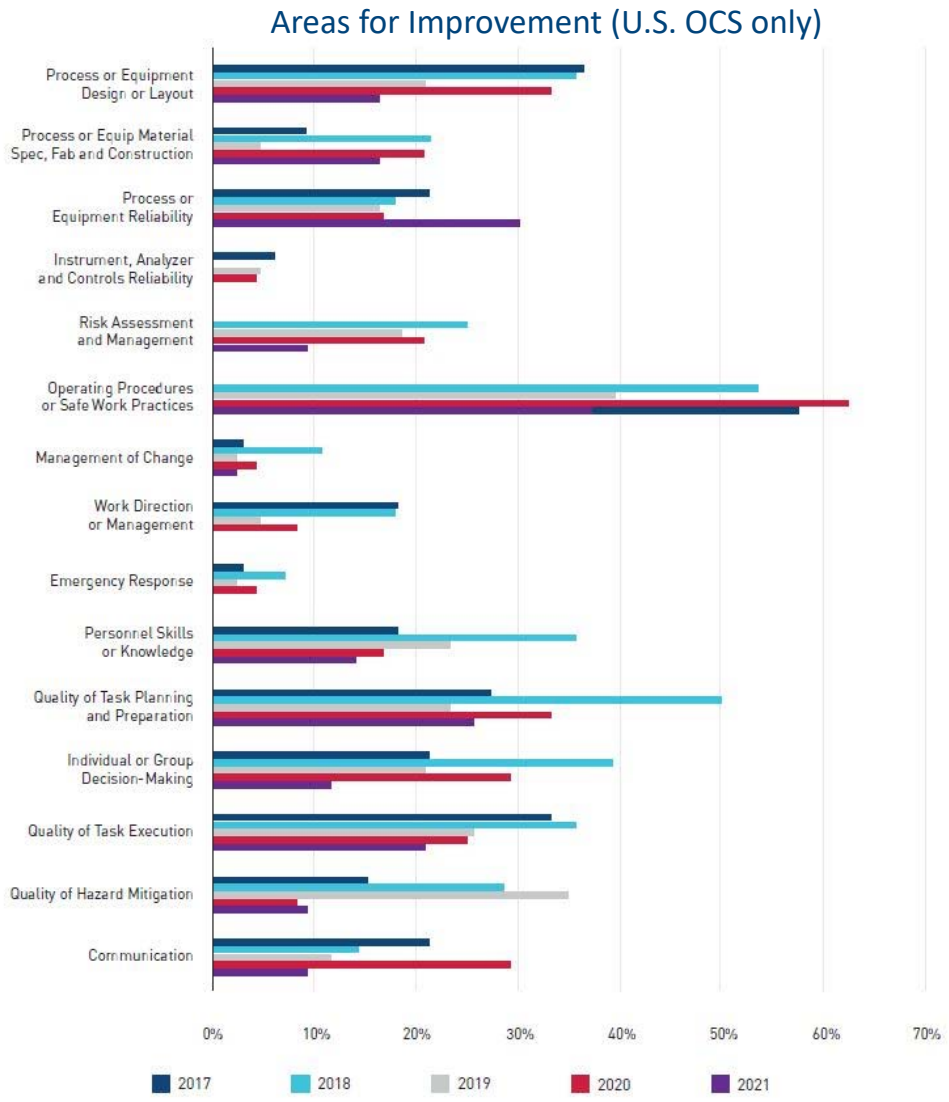
LFI Report - HVLE - Dropped Object

The Assistant Driller was in the process of traveling the [pipe handling equipment] to the forward end of the derrick, to get the next stand, when he heard a loud sound and immediately stopped the operation. It was determined that a clamp weighing 1.63lbs had fallen from the [pipe handling equipment], falling 80 feet onto the drops shed then bouncing off, and finally resting on the base of the [pipe handling equipment].

It was determined that the clamp had come loose due to the nuts being not of the correct locking type and are subject to loosening over time due to the constant vibration of the [pipe handling equipment]. The loose clamp possibly could have been detected earlier, prior to failure with more frequent drops inspections.

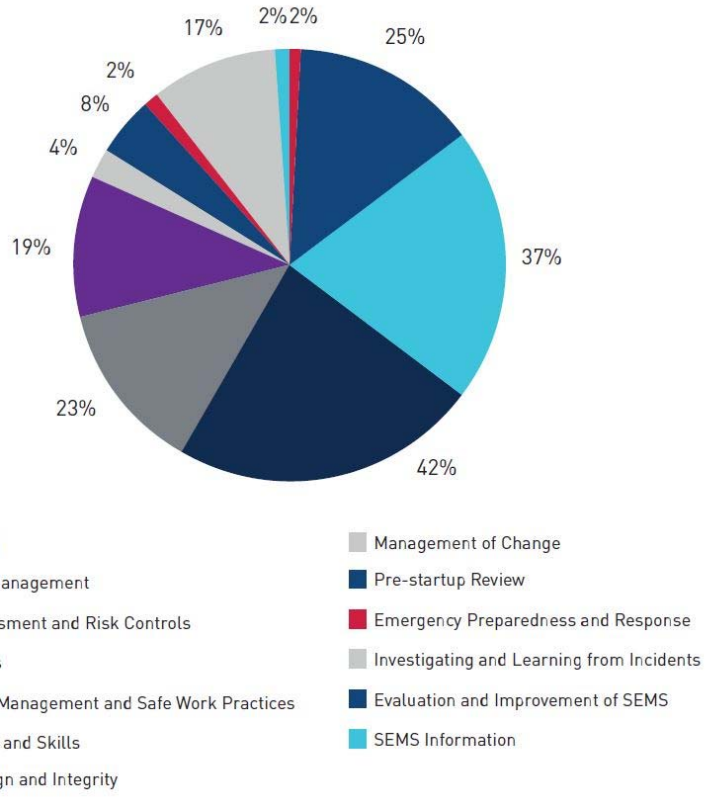
Areas for Improvement
U.S. OCS
2017-2021

Top 5 AFI 2016-2020	2021	5-yr Avg
Operating Procedures or Safe Work Practices	37.2%	**50.1%**
Quality of Task Planning & Preparation	25.6%	**31.9%**
Process or Equipment Design or Layout	16.3%	**28.5%**
Quality of Task Execution	20.9	**28.1%**
Individual or Group Decision Making	11.6%	**24.4%**



NEW – SEMS Elements per LFI & Crane Incident

SEMS Elements	# of times selected	% of incidents
Leadership	1	2%
Interface Management	0	0%
Risk Assessment and Risk Controls	13	25%
Procedures	19	37%
Safe Work Management & Safe Work Practices	22	42%
Knowledge and Skills	12	23%
Asset Design and Integrity	10	19%
Management of Change	2	4%
Pre-Startup Review	4	8%
Emergency Response and Preparedness	1	2%
Investigating and Learning from Incidents	9	17%
Evaluation and Improvement of SEMS	0	0%
SEMS Information	1	2%



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- For Additional Information:
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- Julia FitzGerald – fitzgeraldj@centerforoffshoresafety.org

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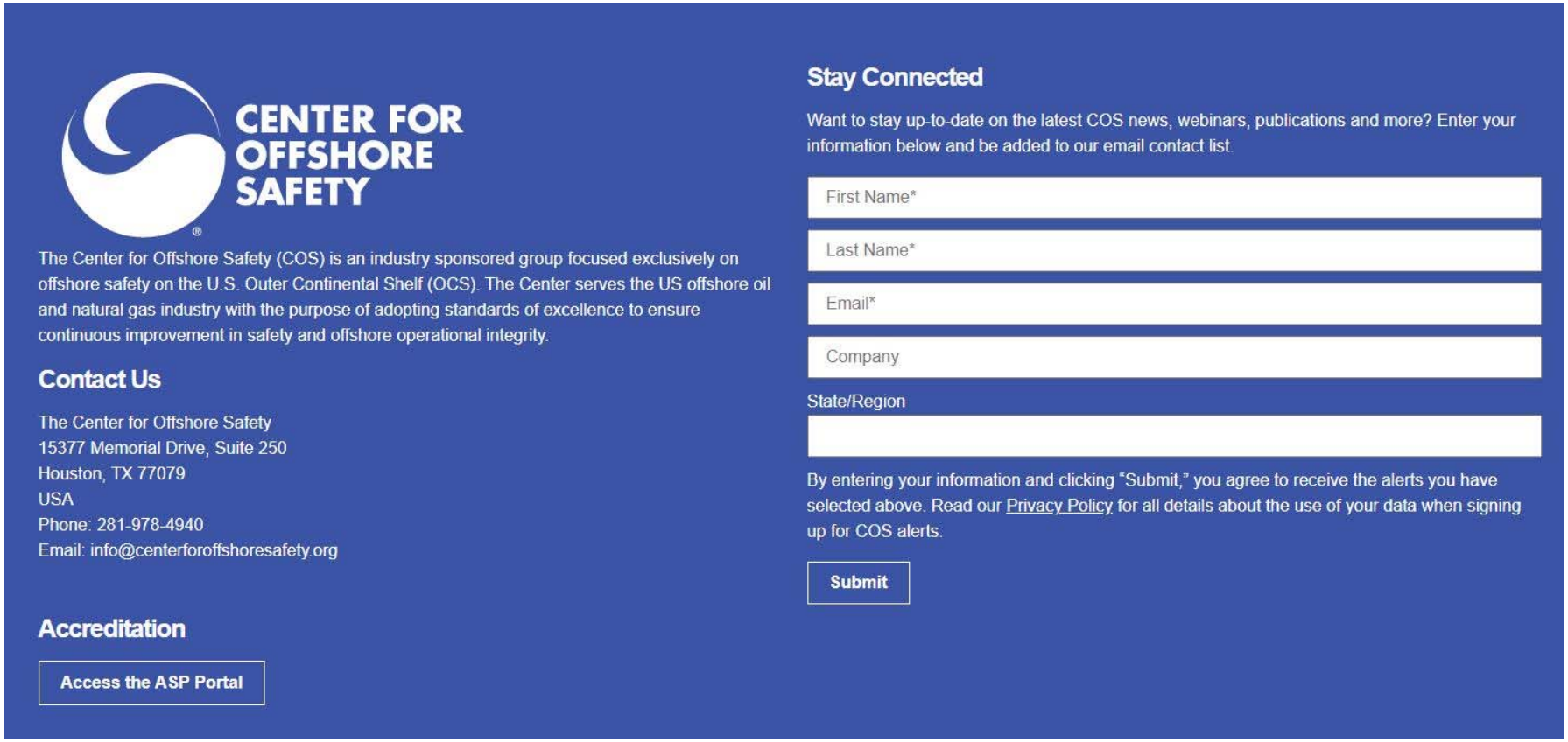

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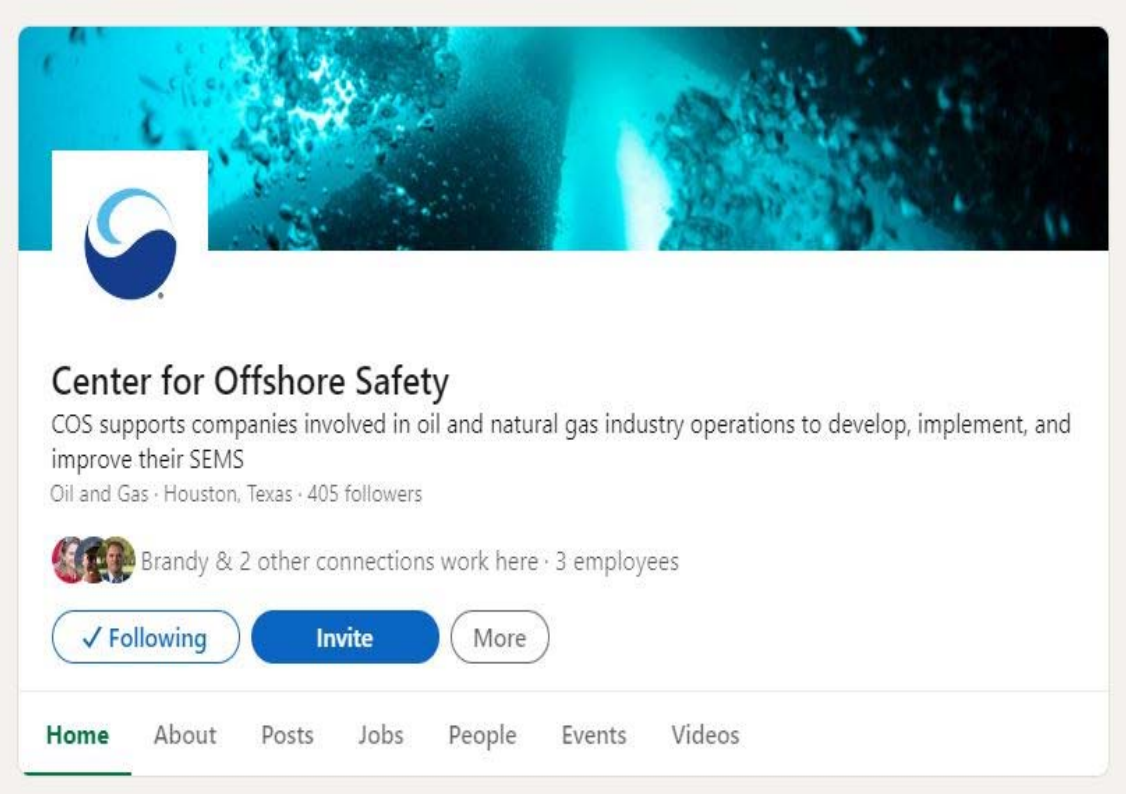

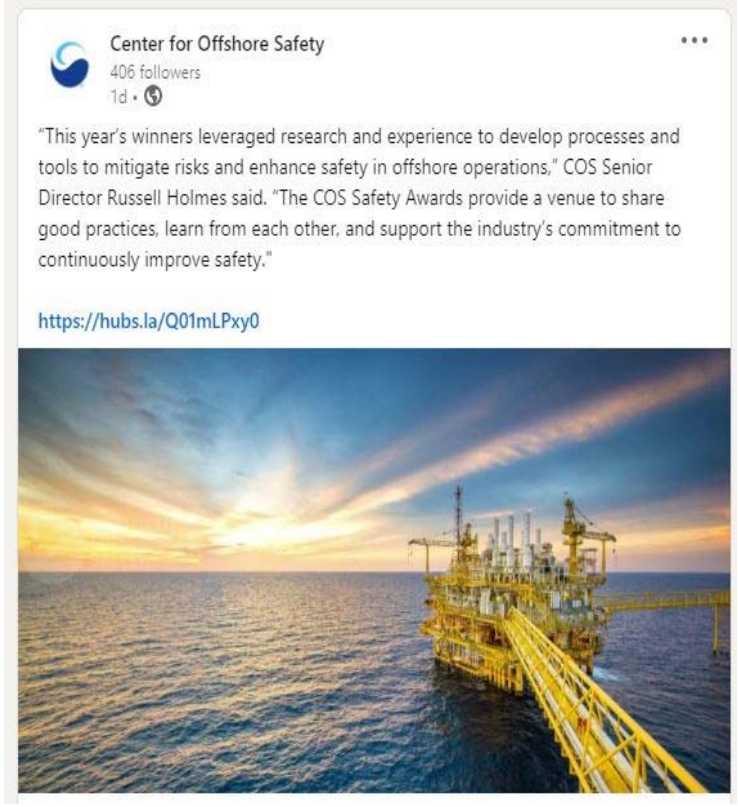

Questions?

Thank you!